

Product Brochure | 2024

English

TOIREX

...Powerfully Small!



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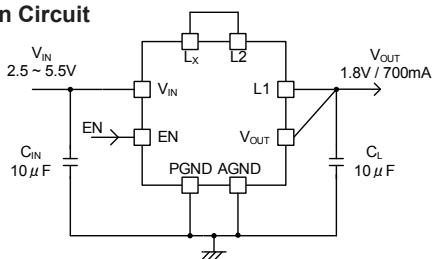
XCL243/XCL244 : 700mA HiSAT-COT® Step-down "Micro DC/DC" Converter

■Ultra Small / Low Noise / High Speed Transient Response

Features

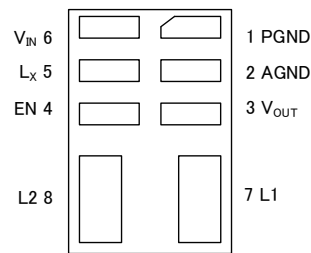
Input Voltage	: 2.5V ~ 5.5V (Absolute Max.:6.2V)
Output Voltage	: 0.8V ~ 3.6V (±2.0%)
Output Current	: 700mA
Oscillation Frequency	: 3.0MHz
Supply Current	: 25µA
Control Method	: HiSAT-COT Control F-PWM (XCL243) PWM/PFM (XCL244)
Efficiency	: 83% (V _{IN} =3.8V, V _{OUT} =1.8V, I _{OUT} =400mA)
Function	: Soft-start C _L Discharge , UVLO
Protection	: Short Protection Current Limit Thermal Shutdown
Package	: USP-8B04
Operating Ambient Temp.	: -40°C ~ 105°C

Typical Application Circuit



Package

USP-8B04
(2.25x1.5x0.75mm)



Ordering Information

XCL243①②③④⑤⑥⑦ PWM
XCL244①②③④⑤⑥⑦ PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Fixed	B	-
②③	Output Voltage	08 ~ 36	Output Voltage e.g.)1.2V → ②=1, ③=2 1.25V → ②=1, ③=C 0.05V Increments: 0.05=A,0.15=B,0.25=C,0.35=D, 0.45=E,0.55=F,0.65=H, 0.75=K,0.85=L,0.95=M
④	Oscillation Frequency	3	3.0MHz
⑤⑥⑦	Package (Order Unit)	D2-G	USP-8B04 (3,000pcs/Reel)

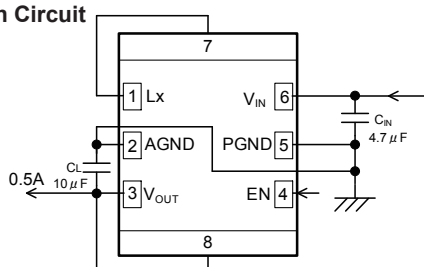
XCL241/XCL242 : 500mA HiSAT-COT® Step-down "Micro DC/DC" Converter

■Ultra Small / Low Noise / High Speed Transient Response

Features

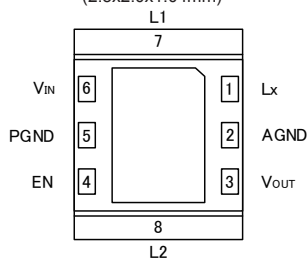
Input Voltage	: 2.5V ~ 5.5V (Absolute Max.:6.2V)
Output Voltage	: 0.8V ~ 3.6V (±2.0%)
Output Current	: 500mA
Oscillation Frequency	: 1.2MHz
Supply Current	: 15µA
Control Method	: HiSAT-COT Control F-PWM (XCL241) PWM/PFM (XCL242)
Efficiency	: 92% (V _{IN} =3.8V, V _{OUT} =1.8V, I _{OUT} =200mA)
Function	: Soft-start C _L Discharge, UVLO
Protection	: Short Protection Current Limit Thermal Shutdown
Package	: CL-2025-02
Operating Ambient Temp.	: -40°C ~ 105°C

Typical Application Circuit



Package

CL-2025-02
(2.5x2.0x1.04mm)



Ordering Information

XCL241①②③④⑤⑥⑦ : PWM
XCL242①②③④⑤⑥⑦ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Fixed	B	-
②③	Output Voltage	08 ~ 36	Output Voltage e.g.)1.2V → ②=1, ③=2 1.25V → ②=1, ③=C 0.05V Increments: 0.05=A,0.15=B,0.25=C,0.35=D, 0.45=E,0.55=F,0.65=H, 0.75=K,0.85=L,0.95=M
④	Oscillation Frequency	1	1.2MHz
⑤⑥⑦	Package (Order Unit)	KR-G	CL-2025-02 (3,000pcs/Reel)

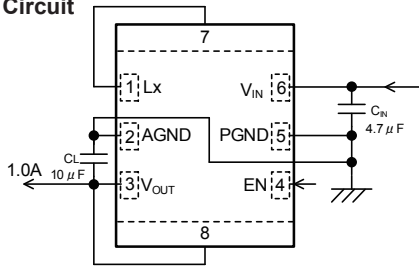
XCL239/XCL240 : 1.0A HiSAT-COT® Step-down "Micro DC/DC" Converter

■Ultra Small / Low Noise / High Speed Transient Response

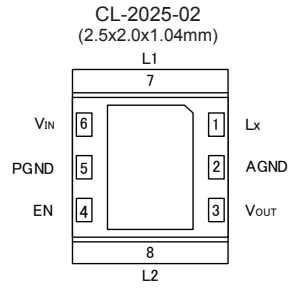
Features

Input Voltage	: 2.5V ~ 5.5V (Absolute Max.:6.2V)
Output Voltage	: 0.8V ~ 3.6V (±2.0%)
Output Current	: 1.0A
Oscillation Frequency	: 3.0MHz
Supply Current	: 25µA
Control Method	: HiSAT-COT Control F-PWM (XCL239) PWM/PFM (XCL240)
Efficiency	: 90% (V _{IN} =3.8V, V _{OUT} =1.8V, I _{OUT} =200mA)
Function	: Soft-start C _L Discharge, UVLO
Protection	: Short Protection Current Limit Thermal Shutdown
Package	: CL-2025-02
Operating Ambient Temp.	: -40°C ~ 105°C

Typical Application Circuit



Package



Ordering Information

XCL239①②③④⑤⑥-⑦ : PWM
XCL240①②③④⑤⑥-⑦ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Fixed	B	-
②③	Output Voltage	08 ~ 36	Output Voltage e.g.)1.2V → ②=1, ③=2 1.25V → ②=1, ③=C 0.05V Increments: 0.05=A, 0.15=B, 0.25=C, 0.35=D, 0.45=E, 0.55=F, 0.65=H, 0.75=K, 0.85=L, 0.95=M
④	Oscillation Frequency	3	3.0MHz
⑤⑥-⑦	Package (Order Unit)	FR-G	CL-2025-02 (3,000pcs/Reel)

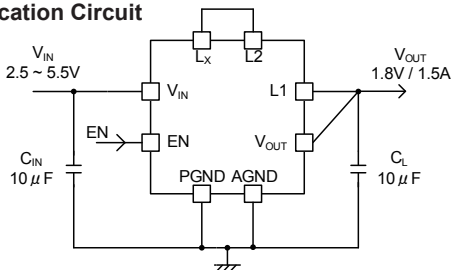
XCL237/XCL238 : 1.5A HiSAT-COT® Step-down "Micro DC/DC" Converter

■Ultra Small / Low Noise / High Speed Transient Response

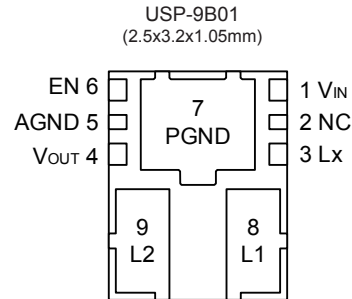
Features

Input Voltage	: 2.5V ~ 5.5V (Absolute Max.:6.2V)
Output Voltage	: 0.8V ~ 3.6V (±2.0%)
Output Current	: 1.5A
Oscillation Frequency	: 3.0MHz
Supply Current	: 25µA
Control Method	: HiSAT-COT Control F-PWM (XCL237) PWM/PFM (XCL238)
Efficiency	: 89% (V _{IN} =3.8V, V _{OUT} =1.8V, I _{OUT} =500mA)
Function	: Soft-start C _L Discharge, UVLO
Protection	: Short Protection Current Limit Thermal Shutdown
Package	: USP-9B01
Operating Ambient Temp.	: -40°C ~ 105°C

Typical Application Circuit



Package



Ordering Information

XCL237①②③④⑤⑥-⑦ : PWM
XCL238①②③④⑤⑥-⑦ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B	Soft-start time : 0.3ms
		E	Soft-start time : 0.4ms
②③	Output Voltage	08 ~ 36	Output Voltage e.g.)1.2V → ②=1, ③=2 1.25V → ②=1, ③=C 0.05V Increments: 0.05=A, 0.15=B, 0.25=C, 0.35=D, 0.45=E, 0.55=F, 0.65=H, 0.75=K, 0.85=L, 0.95=M
④	Oscillation Frequency	3	3.0MHz
⑤⑥-⑦	Package (Order Unit)	D2-G	USP-9B01 (3,000pcs/Reel)

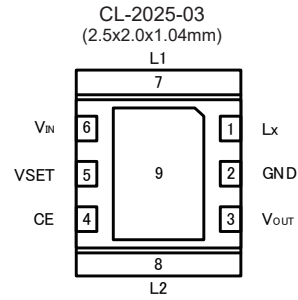
XCL233 : Iq=200nA 150mA Ultra-Low Power Step-down with V_{SET}, "Micro DC/DC" Converter

■Ultra Small / Ultra Low Power / Output Voltage Select Function (V_{SET})

Features

Input Voltage	: 1.8V ~ 6.0V (Absolute Max.:7.0V)
Output Voltage	: 0.5V ~ 1.9V (0.05V increments) 2.0V ~ 3.6V (0.1V increments)
Output Voltage Accuracy	: ±2.0%
Output Current	: 150mA
Supply Current	: 200nA@V _{OUT} =1.8V
Control Method	: PFM
Efficiency	: 86% (V _{IN} =3.6V, V _{OUT} =1.8V, I _{OUT} =10mA)
Function	: Output Voltage selectable function C _L Discharge (D Type) UVLO
Protection	: Short Protection
Package	: CL-2025-03
Operating Ambient Temp.	: -40°C ~ 85°C

Package



Ordering Information

XCL233①②③④⑤⑥-⑦

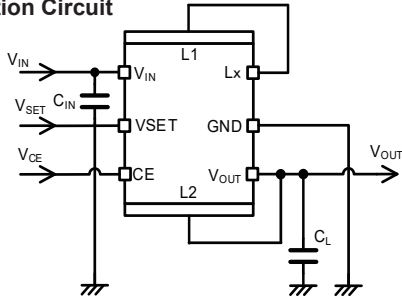
DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B	Without C _L Discharge
		D	With C _L Discharge
②③④	Output Voltage (*)	Refer to datasheet https://www.torexsemi.com/file/XCL233/XCL233.pdf	Output Voltage Combination V _{OUT1} , V _{OUT2} : 0.50V ~ 3.60V (V _{OUT1,2} ≤ 1.9V : 0.05V increments, V _{OUT1,2} > 1.9V : 0.1V increments)
⑤⑥-⑦ (*)	Package (Order Unit)	KR-G	CL-2025-03 (3,000pcs/Reel)

(*) V_{OUT1} < V_{OUT2} is our standard specification.

●Selection Guide

FUNCTION	B Type		D Type	
	V _{OUT1} or V _{OUT2} < 1.2V	V _{OUT1,2} ≥ 1.2V	V _{OUT1} or V _{OUT2} < 1.2V	V _{OUT1,2} ≥ 1.2V
Output Voltage	Output Voltage selectable by V _{SET} pin			
Short Protection	-	Yes	-	Yes
C _L Discharge	-		Yes	

Typical Application Circuit



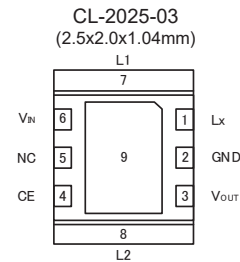
XCL232 : Iq=200nA 150mA Ultra-Low Power, Step-down "Micro DC/DC" Converter

■Ultra Small / Ultra Low Power

Features

Input Voltage	: 1.8V ~ 6.0V (Absolute Max.:7.0V)
Output Voltage	: 0.5V ~ 1.9V (0.05V increments) 2.0V ~ 3.6V (0.1V increments)
Output Voltage Accuracy	: ±2.0%
Output Current	: 150mA
Supply Current	: 200nA @ V _{OUT} =1.8V
Control Method	: PFM
Efficiency	: 86% (V _{IN} =3.6V, V _{OUT} =1.8V, I _{OUT} =10mA)
Function	: C _L Discharge (D Type) UVLO
Protection	: Short Protection
Package	: CL-2025-03
Operating Ambient Temp.	: -40°C ~ 85°C

Package



Ordering Information

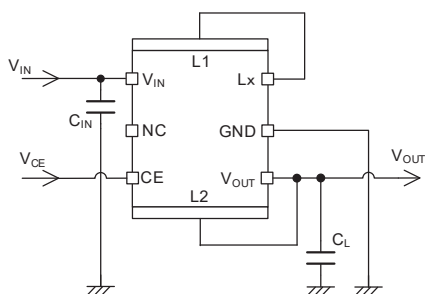
XCL232①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B	Without C _L Discharge
		D	With C _L Discharge
②③	Output Voltage	05 ~ 36	Output Voltage e.g. 1.2V → ② = 1 ③ = 2, 1.25V → ② = 1 ③ = C 0.05V increments: 0.05=A, 0.15=B, 0.25=C, 0.35=D, 0.45=E, 0.55=F, 0.65=H, 0.75=K, 0.85=L, 0.95=M (V _{OUT} ≤ 1.9V : 0.05V increments, V _{OUT} > 1.9V : 0.1V increments)
④	Fixed number	1	-
⑤⑥-⑦	Package (Order Unit)	KR-G	CL-2025-03 (3,000pcs/Reel)

●Selection Guide

FUNCTION	B Type		D Type	
	V _{OUT} < 1.2V	V _{OUT} ≥ 1.2V	V _{OUT} < 1.2V	V _{OUT} ≥ 1.2V
Short Protection	-	Yes	-	Yes
C _L Discharge	-		Yes	

Typical Application Circuit



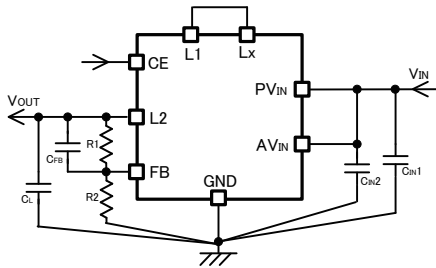
XCL211/XCL212 : 2A Step-down "Micro DC/DC" Converter

■Ultra Small / Low Noise

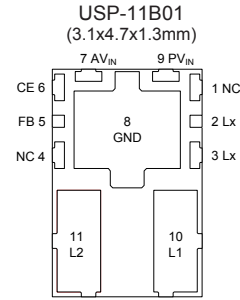
Features

- Input Voltage : 2.7V ~ 6.0V (Absolute Max.: 7.0V)
- Output Voltage : 0.9V ~ V_{IN} (FB Voltage=0.8V±2.0%)
- Output Current : 2.0A
- Oscillation Frequency : 2.4MHz
- Control Method : F-PWM (XCL211)
PWM/PFM (XCL212)
- Efficiency : 94% ($V_{IN}=5.0V, V_{OUT}=3.3V$)
- Function : ON/OFF
Soft-Start
C_L Discharge, UVLO
- Protection : Current Limit (Automatic Recovery)
Thermal Shutdown
- Package : USP-11B01
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XCL211①②③④⑤⑥ : PWM
XCL212①②③④⑤⑥ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B	Refer to Selection Guide
②③	FB Voltage	08	0.8V
④	Oscillation Frequency	2	2.4MHz
⑤⑥	Package (Order Unit)	DR	USP-11B01 (1,000pcs/Reel)

•Selection Guide

Type	SOFT-START TIME	CHIP ENABLE	CURRENT LIMITER	THERMAL SHUTDOWN	UVLO	C _L DISCHARGE
B	Fixed	Yes	Yes	Yes	Yes	Yes

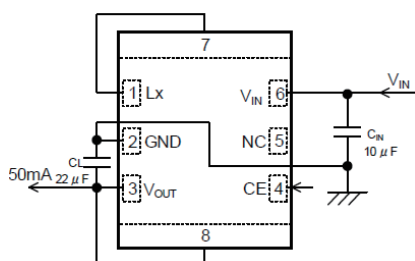
XCL210 : Ultra Low Power (0.5µA) Step-down "Micro DC/DC" Converter

■Ultra Small / Low Noise / Ultra Low Power Consumption

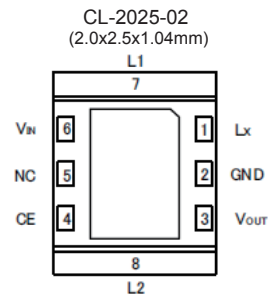
Features

- Input Voltage : 2.0V ~ 6.0V (Absolute Max.: 7.0V)
- Output Voltage : 1.0V ~ 4.0V (±2.0%)
- Output Current : 200mA (A/C Type)
50mA (B/D Type)
- Supply Current : 0.5µA
- Control Method : PFM
- Efficiency : 93% ($V_{IN}=3.6V, V_{OUT}=3.0V/100µA$)
- PFM Switching Current : 330mA (A/C Type)
180mA (B/D Type)
- Function : ON/OFF
C_L Discharge (C/D Type)
- Protection : Short Protection, UVLO
- Package : CL-2025-02
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XCL210①②③④⑤⑥-⑦ : PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	$I_{OUT}=200mA$, Without C _L Discharge
		B	$I_{OUT}=50mA$ Without C _L Discharge
		C	$I_{OUT}=200mA$, With C _L Discharge
		D	$I_{OUT}=50mA$, With C _L Discharge
②③	Output Voltage	10 ~ 40	Output Voltage e.g. 1.2V → ② = 1 ③ = 2 1.25V → ② = 1 ③ = C 0.05V increments : 0.05=A, 0.15=B, 0.25=C, 0.35=D, 0.45=E, 0.55=F, 0.65=H, 0.75=K, 0.85=L, 0.95=M
④	Fixed number	1	-
⑤⑥-⑦	Package (Order Unit)	GR-G	CL-2025-02 (3,000pcs/Reel)

1. Inductor Built-in "micro DC/DC"
2. Step-Down DC/DC
3. Step-Up DC/DC
4. Step-Up&Down DC/DC
5. Charge Pump
6. LED Driver
7. Multi Channel DC/DC
8. Voltage Detectors
9. Voltage Regulators Single Type
10. Voltage Regulator With reset function

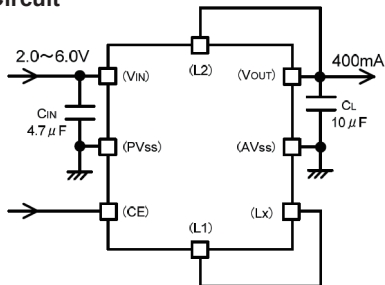
XCL208/XCL209 A/B : 3MHz, 400mA Step-down "Micro DC/DC" Converter, Fixed Output Voltage

Ultra Small / Low Noise

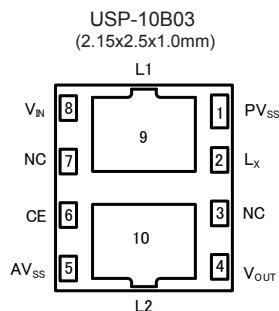
Features

- Input Voltage : 2.0V ~ 6.0V (Absolute Max.: 6.5V)
- Output Voltage : 0.8V ~ 4.0V ($\pm 2.0\%$)
- Output Current : 400mA
- Oscillation Frequency : 3.0MHz
- Control Method : PWM (XCL208)
PWM/PFM (XCL209)
- Efficiency : 90% ($V_{IN}=4.2V, V_{OUT}=3.3V$)
- Function : ON/OFF, UVLO
Soft-start
C_L Discharge
- Protection : Current Limit
Short Protection
- Package : USP-10B03
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XCL208①②③④⑤⑥ : PWM
XCL209①②③④⑤⑥ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	$V_{IN} \geq 2.0V$, Fixed Output Voltage Standard soft-start, No C _L Discharge
		B	$V_{IN} \geq 2.0V$, Fixed Output Voltage C _L Discharge, High speed soft-start
②③	Output Voltage (*)	10, 12, 15, 18, 25, 28, 2L, 30, 33	Output Voltage 10 → 1.0V, 12 → 1.2V, 15 → 1.5V, 18 → 1.8V 25 → 2.5V, 2L → 2.85V, 30 → 3.0V, 33 → 3.3V
④	Oscillation Frequency	3	3.0MHz
⑤⑥	Package (Order Unit)	DR	USP-10B03 (3,000pcs/Reel)

(*) When other output voltages are needed, please contact your local Torex sales office for more information. Output Voltage Range is 0.8~4.0V.

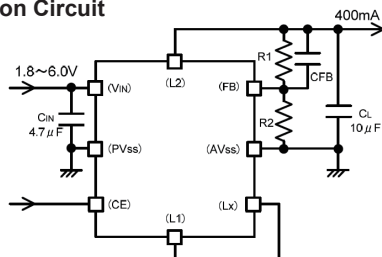
XCL208/XCL209 F : 3MHz, 400mA Step-down "Micro DC/DC" Converter, Output Voltage External Setting

Ultra Small / Low Noise

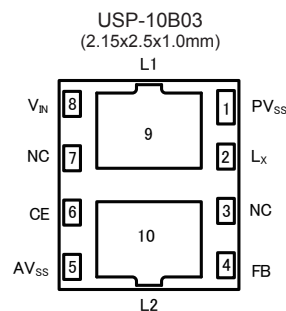
Features

- Input Voltage : 1.8V ~ 6.0V (Absolute Max.: 6.5V)
- Output Voltage : 0.9V ~ V_{IN}
- FB Voltage : 0.8V $\pm 2.0\%$
- Output Current : 400mA
- Oscillation Frequency : 3.0MHz
- Control Method : PWM (XCL208)
PWM/PFM (XCL209)
- Efficiency : 90% ($V_{IN}=4.2V, V_{OUT}=3.3V$)
- Function : ON/OFF, UVLO
Soft-start
C_L Discharge
- Protection : Current Limit
Short Protection
- Package : USP-10B03
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XCL208①②③④⑤⑥ : PWM
XCL209①②③④⑤⑥ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	F	$V_{IN} \geq 1.8V$, Output Voltage External Setting C _L Discharge, High speed soft-start
②③	FB Voltage	08	0.8V
④	Oscillation Frequency	3	3.0MHz
⑤⑥	Package (Order Unit)	DR	USP-10B03 (3,000pcs/Reel)

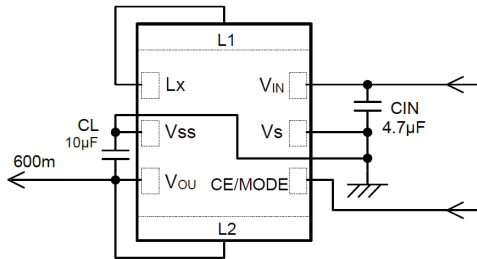
XCL205/XCL206/XCL207 A/B/C/G : 600mA Step-down "Micro DC/DC" Converter, Fixed Output Voltage

Ultra Small / Low Noise

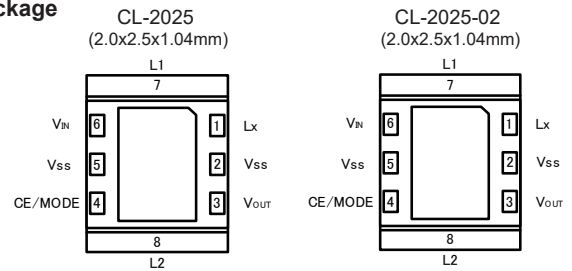
Features

- Input Voltage : 1.8V ~ 6.0V (Absolute Max.: 6.5V)
- Output Voltage : 0.8V ~ 4.0V ($\pm 2.0\%$)
- Output Current : 600mA
- Oscillation Frequency : 3.0MHz
- Control Method : PWM (XCL205)
PWM/PFM (XCL206)
PWM or PWM/PFM (XCL207)
- Efficiency : 90% ($V_{IN}=4.2V, V_{OUT}=3.3V$)
- Function : ON/OFF, UVLO
C_L Discharge
Soft-Start
- Protection : Current Limit
Short Protection
- Package : CL-2025, CL-2025-02
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XCL205①②③④⑤⑥⑦ : PWM
XCL206①②③④⑤⑥⑦ : PWM/PFM
XCL207①②③④⑤⑥⑦ : PWM or PWM/PFM (Manual Mode Selection)

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION			
①	Type	Fixed Output Voltage	A $V_{IN} \geq 2.0V$, No C _L Discharge, Standard soft-start			
			B $V_{IN} \geq 2.0V$, C _L Discharge, High speed soft-start			
			C $V_{IN} \geq 2.0V$, C _L Discharge, Standard soft-start			
			G $V_{IN} \geq 1.8V$, C _L Discharge, High speed soft-start			
②③	Output Voltage	0 ~ 9 A ~ M	Output Voltage e.g. 1.2V → ②=1, ③=2, 1.25V → ②=1, ③=C 0.05V increments : 0.05=A, 0.15=B, 0.25=C, 0.35=D, 0.45=E, 0.55=F, 0.65=H, 0.75=K, 0.85=L, 0.95=M			
			④	Oscillation Frequency	3	3.0MHz
			⑤⑥⑦	Package (Order Unit)	AR-G ⁽¹⁾	CL-2025 (3,000pcs/Reel)
					CR-G ⁽²⁾	CL-2025-02 (3,000pcs/Reel)

⁽¹⁾ AR-G is storage temperature Range "-40°C ~ 105°C".
⁽²⁾ CR-G is storage temperature Range "-40°C ~ 125°C".

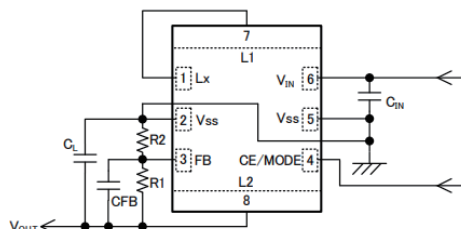
XCL205/XCL206/XCL207 F : 600mA Step-down "Micro DC/DC" Converter, Output Voltage External Setting

Ultra Small / Low Noise

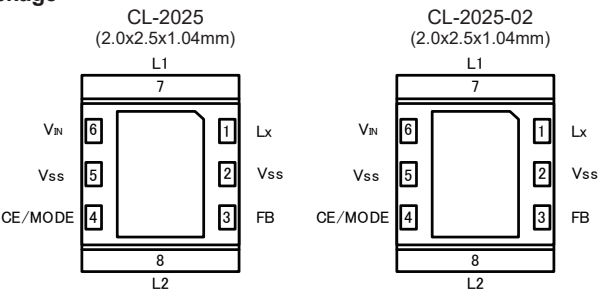
Features

- Input Voltage : 1.8V ~ 6.0V (Absolute Max.: 6.5V)
- Output Voltage : 0.9V ~ V_{IN}
- FB Voltage : 0.8V $\pm 2.0\%$
- Output Current : 600mA
- Oscillation Frequency : 3.0MHz
- Control Method : PWM (XCL205)
PWM/PFM (XCL206)
PWM or PWM/PFM (XCL207)
- Efficiency : 90% ($V_{IN}=4.2V, V_{OUT}=3.3V$)
- Function : ON/OFF, UVLO
C_L Discharge
Soft-Start
- Protection : Current Limit
Short Protection
- Package : CL-2025, CL-2025-02
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XCL205①②③④⑤⑥⑦ : PWM
XCL206①②③④⑤⑥⑦ : PWM/PFM
XCL207①②③④⑤⑥⑦ : PWM or PWM/PFM (Manual Mode Selection)

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	Output Voltage External Setting	F $V_{IN} \geq 1.8V$ C _L Discharge, High Speed Soft-start
②③	FB Voltage	08	0.8V
④	Oscillation Frequency	3	3.0MHz
⑤⑥⑦	Package (Order Unit)	AR-G ⁽¹⁾	CL-2025 (3,000pcs/Reel)
		CR-G ⁽²⁾	CL-2025-02 (3,000pcs/Reel)

⁽¹⁾ AR-G is storage temperature Range "-40°C ~ 105°C".
⁽²⁾ CR-G is storage temperature Range "-40°C ~ 125°C".

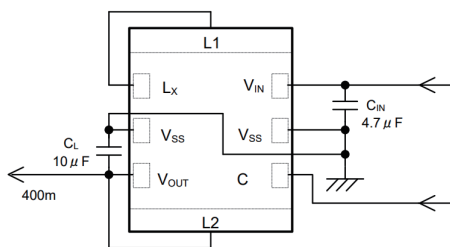
XCL201/XCL202 : 400mA Low EMI Step-down "Micro DC/DC" Converter

Ultra Small / Low Noise

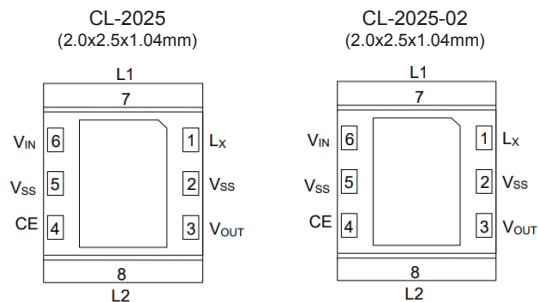
Features

- Input Voltage : 2.0V ~ 6.0V (Absolute Max.: 6.5V)
- Output Voltage : 0.8V ~ 4.0V ($\pm 2.0\%$)
- Output Current : 400mA
- Oscillation Frequency : 1.2MHz
- Control Method : PWM (XCL201)
PWM/PFM (XCL202)
- Efficiency : 92% ($V_{IN}=4.2V, V_{OUT}=3.3V$)
- Function : ON/OFF, UVLO
Soft-Start
 C_L Discharge
- Protection : Current Limit
Short Protection
- Package : CL-2025, CL-2025-02
- Operating Ambient Temp. : $-40^\circ C \sim 85^\circ C$

Typical Application Circuit



Package



Ordering Information

XCL201①②③④⑤⑥-⑦ : PWM
 XCL202①②③④⑤⑥-⑦ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B	C_L Discharge, High Speed Soft-start
②③	Output Voltage	08 ~ 40	e.g. 1.2V → ②=1, ③=2, 1.25V → ②=1, ③=C 0.05V increments : 0.05=A, 0.15=B, 0.25=C, 0.35=D, 0.45=E, 0.55=F, 0.65=H, 0.75=K, 0.85=L, 0.95=M
④	Oscillation Frequency	1	1.2MHz
⑤⑥-⑦	Package (Order Unit)	BR-G ⁽¹⁾ ER-G ⁽²⁾	CL-2025 (3,000pcs/Reel) CL-2025-02 (3,000pcs/Reel)

⁽¹⁾ BR-G is storage temperature range $-40^\circ C \sim 105^\circ C$.
⁽²⁾ ER-G is storage temperature range $-40^\circ C \sim 125^\circ C$.

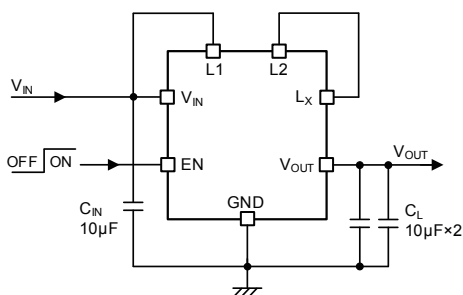
XCL108 : 400nA Ultra Low Consumption Current 0.5A Step-up DC/DC "Micro DC/DC" Converter

Ultra Small / Ultra Low Power

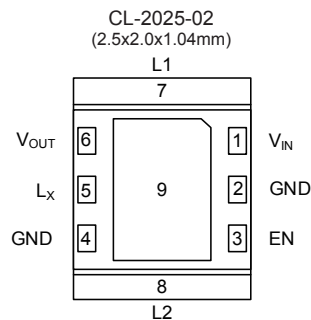
Features

- Input Voltage : 0.65V ~ 5.5V (Absolute Max.:6.6V)
- Operation Start Voltage : 1.6V
- Output Voltage : 3.0V ~ 5.5V
- Output Current : 300mA@ $V_{OUT}=5.0V, V_{IN}=3.3V$
200mA@ $V_{OUT}=3.3V, V_{IN}=1.8V$
- Oscillation Frequency : 1.2MHz
- Supply Current : 400nA
- Control Method : PWM/PFM
- Function : Soft-start
Load disconnection
- Protection : Current limit
- Package : CL-2025-02
- Operating Ambient Temp. : $-40^\circ C \sim 105^\circ C$

Typical Application Circuit



Package



Ordering Information

XCL108①②③④⑤⑥-⑦ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B	-
②③	Output Voltage	30 ~ 55	e.g. 3.0V → ②=3, ③=0
④	Oscillation Frequency	1	1.2MHz
⑤⑥-⑦	Package (Order Unit)	ER-G	CL-2025-02 (3,000pcs/Reel)

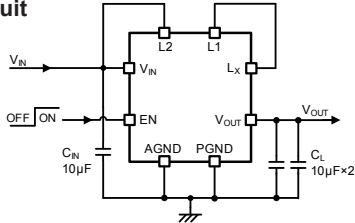
XCL104/XCL105 : Highly functionality, $I_{in}=1.4A$ Step-up DC/DC "Micro DC/DC" Converter

■Ultra Small / Low Noise / Load Disconnection, Bypass Function and OR Connection Selectable

Features

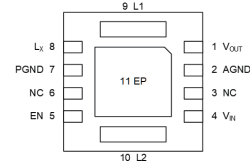
- Input Voltage : 0.65V ~ 6.0V (Absolute Max.: 7.0V)
- Operation Start Voltage : 0.9V
- Output Voltage : 1.8V ~ 5.5V ($\pm 2.0\%$)
- Output Current : 590mA@ $V_{OUT}=5.0V, V_{IN}=3.3V$
490mA@ $V_{OUT}=3.3V, V_{IN}=1.8V$
- Oscillation Frequency : 1.2MHz
- Supply Current : 19 μ A
- Control Method : F-PWM (XCL104), PWM/PFM (XCL105)
- Type : Load Disconnection & C_L Discharge (A/D/G/J)
Bypass (XCL105B/E/H/K)
OR Connection(XCL105C/F/M/L)
- Function : ON/OFF, Soft-Start
UVLO (G/J, XCL105H/K/M/L)
- Protection : Thermal Shutdown
Current Limit
Integral latch & Short Protection (D/E/F/J/K/L)
- Package : DFN3030-10B
- Operating Ambient Temp.: -40°C ~ 105°C

Typical Application Circuit



Package

DFN3030-10B
(3.0x3.0x1.7mm)



Ordering Information

XCL104①②③④⑤⑥⑦ : PWM
XCL105①②③④⑤⑥⑦ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	-
		D	Load Disconnection
		G	C_L Discharge
		J	Short circuit & Latch UVLO UVLO / Short circuit & Latch

XCL105①②③④⑤⑥⑦ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B	-
		E	Bypass
		H	Short circuit & Latch UVLO
		K	UVLO / Short circuit & Latch
		C	-
		F	OR
		M	Connection
		L	Short circuit & Latch UVLO UVLO / Short circuit & Latch

②③	Output Voltage	18 ~ 55 (A/B/C) 22 ~ 55 (others)	e.g. 3.0V → ②=3, ③=0
④	Oscillation Frequency	1	1.2MHz
⑤⑥⑦	Package (Order Unit)	H2-G	DFN3030-10B (3,000pcs/Reel)

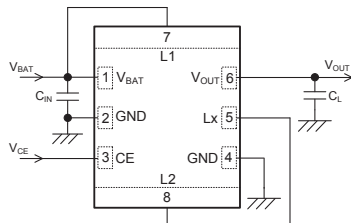
XCL102/XCL103 : $I_{IN}=0.8A$ Step-up "Micro DC/DC" Converter

■Ultra Small / Low Noise / Low Power Consumption

Features

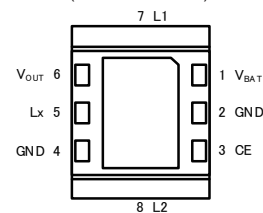
- Input Voltage : 0.65V ~ 6.0V (Absolute Max.: 7.0V)
- Operation Start Voltage : 0.9V
- Output Voltage : 2.2V ~ 5.5V ($\pm 2.0\%$)
- Oscillation Frequency : 3.0MHz
- Output Current : 450mA@ $V_{OUT}=5.0V, V_{BAT}=3.3V$
280mA@ $V_{OUT}=3.3V, V_{BAT}=1.8V$
- Control Method : F-PWM (XCL102)
PWM/PFM (XCL103)
- Function : ON/OFF, Soft-start
Load Disconnection (D Type)
 C_L Discharge (D Type)
Bypass (E Type)
- Protection : Current Limit (Integral latch method)
Short Protection
- Package : CL-2025-02
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package

CL-2025-02
(2.0x2.5x1.04mm)



Ordering Information

XCL102①②③④⑤⑥⑦ : PWM
XCL103①②③④⑤⑥⑦ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	D	Refer to Selection Guide
		E	
②③	Output Voltage	22 ~ 55	e.g. 3.3V → ②=3, ③=3, 5.0V → ②=5, ③=0
④	Oscillation Frequency	3	3.0MHz
⑤⑥⑦	Package (Order Unit)	CR-G	CL-2025-02 (3,000pcs/Reel)

•Selection Guide

Type	C_L Discharge	Bypass Switch	Load Disconnection	Current Limit with integral latch	Short Protection with latch
D	Yes	No	Yes	Yes	Yes
E	No	Yes	No	Yes	Yes

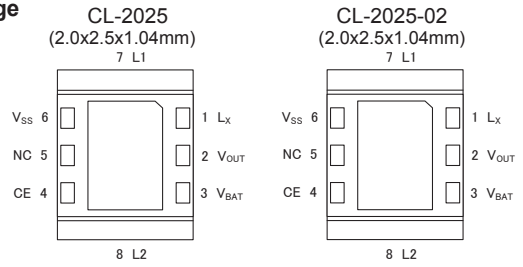
XCL100/XCL101 : PFM Step-up "Micro DC/DC" Converter

■Ultra Small / Low Noise / Low Power Consumption

Features

- Input Voltage : 0.7V ~ 5.5V (Absolute Max.: 7.0V)
- Operation Start Voltage : 0.9V
- Output Voltage Range : XCL100 - 3.0V ~ 5.0V (±2.0%)
XCL101 - 1.8V ~ 5.0V (±2.0%)
- Output Current : 80mA@V_{OUT}=3.3V, V_{BAT}=1.8V
- Supply Current : 6.3µA (V_{BAT}=V_{OUT}+0.5V)
- Control Method : PFM
- PFM Switching Current : 350mA
- Function : Load Disconnection or Bypass Mode
C_L Discharge, UVLO
- Package : CL-2025, CL-2025-02
- Operating Ambient Temp. : -40°C ~ 85°C

Package



Ordering Information

XCL100①②③④⑤⑥-⑦ : PFM, With UVLO function

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Load Disconnection Without C _L Discharge
		B	Load Disconnection With C _L Discharge
		C	V _{BAT} Bypass Without C _L Discharge
②③	Output Voltage	30 ~ 50	e.g. 3.6V⇒②=3, ③=6
④ ⁽¹⁾	UVLO Function	1	V _{UVLO,R} =1.65V
⑤⑥-⑦	Package (Order Unit)	ER-G ⁽²⁾	CL-2025-02 (3,000pcs/Reel)

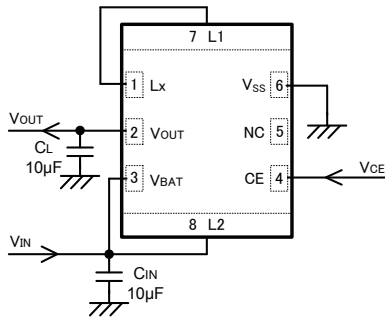
⁽¹⁾ It can be set from 1.65V to 2.2V in 0.05V increments. Please contact our sales representatives for UVLO Release Voltage other than those listed above.

XCL101①②③④⑤⑥-⑦ : PFM, Without UVLO function

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Load Disconnection Without C _L Discharge
		B	Load Disconnection With C _L Discharge
		C	V _{BAT} Bypass Without C _L Discharge
②③	Output Voltage	18 ~ 50	e.g. 3.6V⇒②=3, ③=6
④	UVLO Function	1	No UVLO
⑤⑥-⑦	Package (Order Unit)	BR-G	CL-2025 (3,000pcs/Reel)
		ER-G ⁽²⁾	CL-2025-02 (3,000pcs/Reel)

⁽²⁾ ER-G is storage temperature Range "-40°C ~ 125 °C".

Typical Application Circuit



2. Step-down DC/DC Converter and Controller ICs

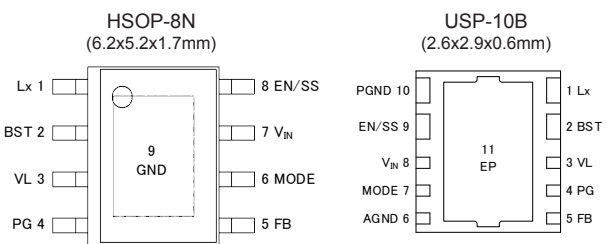
XC9702 : 60V 300mA High voltage Step-down DC/DC convertor

■60V Smallest solution size / Low Iq and high efficiency at light loads / Supports high Step-down ratios

Features

- Input Voltage Range : 4.5V ~ 60.0V (Absolute Max. : 66V)
- Output Voltage Range: 2.5V ~ 12.0V (FB: 0.75V±1.5%)
- Output Current : 300mA
- Supply Current : 12µA
- Oscillation Frequency : 1.0MHz
- Efficiency : 83% (V_{IN}=12V, V_{OUT}=5V, I_{OUT}=1mA)
- Control Method : F-PWM (MODE="H")
PWM/PFM (MODE="L")
- Functions : Soft-start (External Adj.)
Power Good, UVLO
- Protections : Current Limit, Over Protection
Thermal Shutdown
Lx Short-Circuit Protection
- Package : HSOP-8N, USP-10B
- Operation voltages : -40°C ~ 125°C

Package

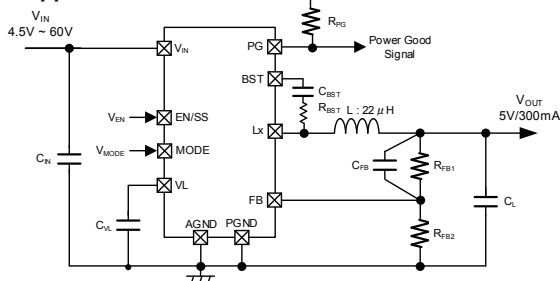


Ordering Information

XC9702①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	-
②③	FB Voltage	75	0.75V
④	Oscillation Frequency	C	1MHz
⑤⑥-⑦	Package (Order Unit)	DR-G	USP-10B (3,000pcs/Reel)
		RR-G	HSOP-8N (1,000pcs/Reel)

Typical Application Circuit



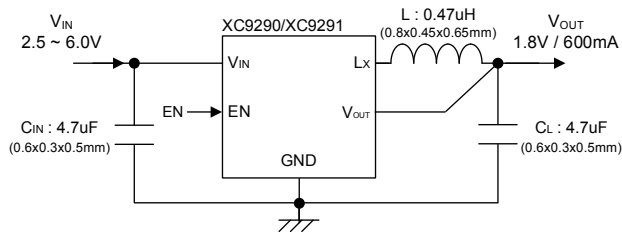
XC9290/XC9291 : 600mA HiSAT-COT® Control Step-down DC/DC converter

■World's smallest solution area / Low EMI

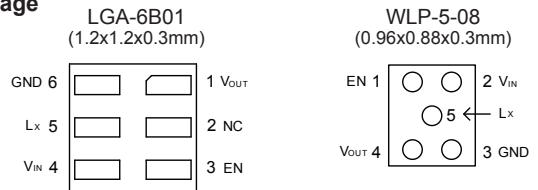
Features

Input Voltage	: 2.5V ~ 6.0V (Absolute Max.: 7.0V)
Output Voltage	: 0.7V ~ 3.6V (±2.0%)
Output Current	: 600mA
Oscillation Frequency	: 4.0MHz, 6.0MHz
Efficiency	: 90% ($V_{IN}=3.7V$, $V_{OUT}=1.8V$, $I_{OUT}=200mA$)
Control Method	: HiSAT-COT Control F-PWM (XC9290) PWM/PFM (XC9291)
Function	: Soft-start UVLO C_L Discharge (Type B)
Protection	: Current Limit
Package	: LGA-6B01, WLP-5-08
Operating Ambient Temp.	: -40°C ~ 105°C

Typical Application Circuit



Package



Ordering Information

XC9290①②③④⑤⑥-⑦ : PWM
XC9291①②③④⑤⑥-⑦ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Without C_L Discharge
		B	With C_L Discharge
②③	FB Voltage	07 ~ 36	e.g. 3.6V ⇒ ②=3, ③=6
④	Oscillation Frequency	D	4MHz
		E	6MHz
⑤⑥-⑦	Package (Order Unit)	1R-G	LGA-6B01 (5,000pcs/Reel)
		0R-G	WLP-5-08 (5,000pcs/Reel)

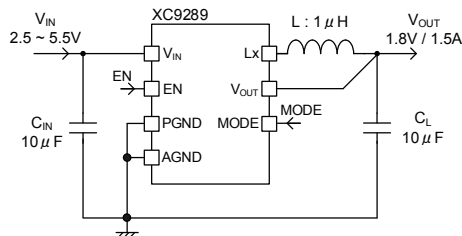
XC9289 : 1.5A HiSAT-COT® Control Step-down DC/DC converter

■High Speed Transient Response / Small Package

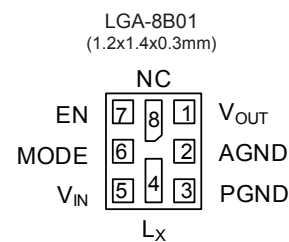
Features

Input Voltage	: 2.5V ~ 5.5V (Absolute Max.:6.2V)
Output Voltage Range	: 0.8V ~ 3.6V (±2.0%)
Output Current	: 1.5A
Oscillation Frequency	: 1.2MHz, 3.0MHz
Control Method	: HiSAT-COT Control F-PWM (MODE= "H") PWM/PFM (MODE= "L")
Efficiency	: 90% ($V_{IN}=3.7V$, $V_{OUT}=1.8V$, $I_{OUT}=200mA$)
Function	: Soft-start UVLO C_L Discharge (Type B)
Protection	: Short Protection (Type B) Current Limit Thermal Shutdown
Package	: LGA-8B01
Operating Ambient Temp.	: -40°C ~ 105°C

Typical Application Circuit



Package



Ordering Information

XC9289①②③④⑤⑥-⑦ : PWM⇒PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Without Short Protection, Without C_L Discharge
		B	With Short Protection, With C_L Discharge
②③	Output Voltage	08 ~ 36	Output voltage e.g. 1.2V → ②=1, ③=2, 1.25V → ②=1, ③=C 0.05V increments : 0.05=A, 0.15=B, 0.25=C, 0.35=D, 0.45=E, 0.55=F, 0.65=H, 0.75=K, 0.85=L, 0.95=M
④	Oscillation Frequency	C	1.2MHz
		D	3.0MHz
⑤⑥-⑦	Package (Order Unit)	1R-G	LGA-8B01 (5,000pcs/Reel)

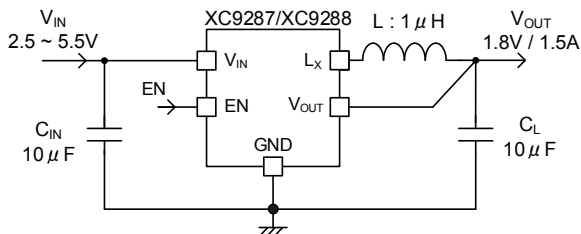
XC9287/XC9288 : 1.5A HiSAT-COT® Control Step-down DC/DC converter

High Speed Transient Response / Small Package

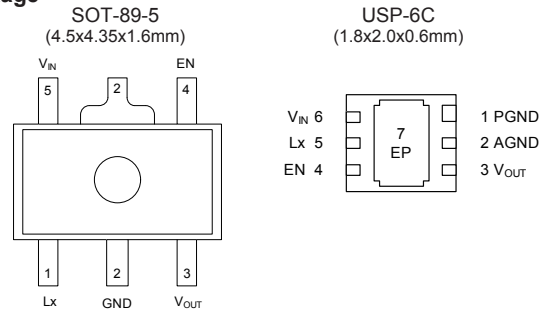
Features

Input Voltage	: 2.5V ~ 5.5V (Absolute Max.:6.2V)
Output Voltage Range	: 0.8V ~ 3.6V (±2.0%)
Output Current	: 1.5A
Oscillation Frequency	: 1.2MHz, 3.0MHz
Control Method	: HiSAT-COT Control F-PWM (XC9287) PWM/PFM (XC9288)
Efficiency	: 90% ($V_{IN}=3.7V$, $V_{OUT}=1.8V$, $I_{OUT}=200mA$)
Function	: Soft-start UVLO C _L Discharge (Type B)
Protection	: Short Protection (Type B) Current Limit Thermal Shutdown
Package	: SOT-89-5, USP-6C
Operating Ambient Temp.	: -40°C ~ 105°C

Typical Application Circuit



Package



Ordering Information

XC9287①②③④⑤⑥⑦ : PWM
XC9288①②③④⑤⑥⑦ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Without Short Protection, Without C _L Discharge
		B	With Short Protection, With C _L Discharge
②③	Output Voltage	08 ~ 36	Output voltage e.g. 1.2V → ②=1, ③=2, 1.25V → ②=1, ③=C 0.05V increments : 0.05=A, 0.15=B, 0.25=C, 0.35=D, 0.45=E, 0.55=F, 0.65=H, 0.75=K, 0.85=L, 0.95=M
			C
④	Oscillation Frequency	D	3.0MHz
		Package (Order Unit)	PR-G
ER-G	USP-6C (3,000pcs/Reel)		

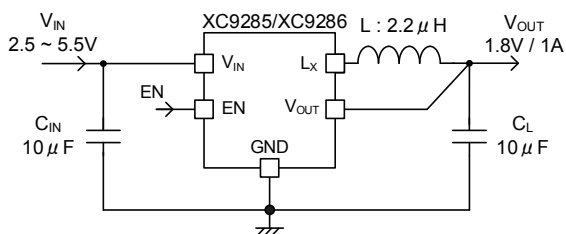
XC9285/XC9286 : 1.0A HiSAT-COT® Control Step-down DC/DC converter

High Speed Transient Response / Small Package

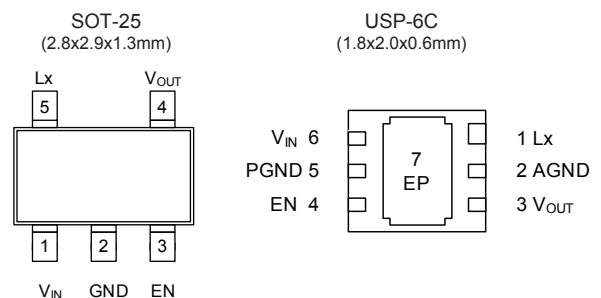
Features

Input Voltage	: 2.5V ~ 5.5V (Absolute Max.:6.2V)
Output Voltage Range	: 0.8V ~ 3.6V (±2.0%)
Output Current	: 1.0A
Oscillation Frequency	: 1.2MHz
Control Method	: HiSAT-COT Control F-PWM (XC9285) PWM/PFM (XC9286)
Efficiency	: 92% ($V_{IN}=5.0V$, $V_{OUT}=1.8V$, $I_{OUT}=300mA$)
Function	: Soft-start UVLO C _L Discharge (Type B)
Protection	: Short Protection (Type B) Current Limit Thermal Shutdown
Package	: SOT-25, USP-6C
Operating Ambient Temp.	: -40°C ~ 105°C

Typical Application Circuit



Package



Ordering Information

XC9285①②③④⑤⑥⑦ : PWM
XC9286①②③④⑤⑥⑦ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Without Short Protection, Without C _L Discharge
		B	With Short Protection, With C _L Discharge
②③	Output Voltage	08 ~ 36	Output voltage e.g. 1.2V → ②=1, ③=2, 1.25V → ②=1, ③=C 0.05V increments : 0.05=A, 0.15=B, 0.25=C, 0.35=D, 0.45=E, 0.55=F, 0.65=H, 0.75=K, 0.85=L, 0.95=M
			C
⑤⑥⑦	Package (Order Unit)	MR-G	SOT-25 (3,000pcs/Reel)
		ER-G	USP-6C (3,000pcs/Reel)

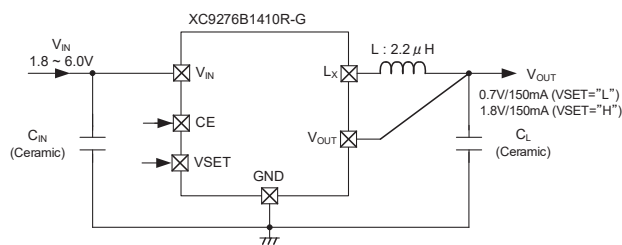
XC9276 : Ultra-Low Power(Iq=200nA) 150mA Step-down DC/DC with V_{SET}

■Ultra Low Power / Output Voltage Select Function (V_{SET})

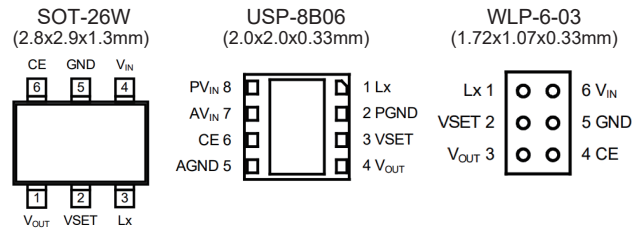
Features

- Input Voltage : 1.8V ~ 6.0V (Absolute Max.:7.0V)
- Output Voltage : 0.5V ~ 1.9V (0.05V increments)
2.0V ~ 3.6V (0.1V increments)
- Output Voltage Accuracy : ±2.0%
- Output Current : 150mA
- Supply Current : 200nA@V_{OUT}=1.8V
- Control Method : PFM
- Efficiency : 89.6% (V_{IN}=3.6V, V_{OUT}=1.8V, I_{OUT}=10mA)
- Function : Output Voltage selectable function
C_L Discharge (D Type)
UVLO
- Protection : Short Protection
- Package : WLP-6-03, SOT-26W, USP-8B06
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC9276①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B	Without C _L Discharge
		D	With C _L Discharge
②③④	Output Voltage (*1)	Refer to datasheet https://www.torexsemi.com/file/XC9276/XC9276.pdf	
		V _{OUT1} , V _{OUT2} : 0.50V ~ 3.60V (V _{OUT1,2} ≤ 1.9V : 0.05V increments, V _{OUT1,2} > 1.9V : 0.1V increments)	
⑤⑥⑦ (*1)	Package (Order Unit)	0R-G	WLP-6-03 (5,000pcs/Reel)
		MR-G	SOT-26W (3,000pcs/Reel)
		ER-G	USP-8B06 (5,000pcs/Reel)

(*1) V_{OUT1} < V_{OUT2} is our standard specification.

●Selection Guide

FUNCTION	B Type		D Type	
	V _{OUT1} or V _{OUT2} < 1.2V	V _{OUT1,2} ≥ 1.2V	V _{OUT1} or V _{OUT2} < 1.2V	V _{OUT1,2} ≥ 1.2V
Output Voltage	Output voltage selectable by V _{SET} pin			
Short Protection	-	Yes	-	Yes
C _L Discharge	-	-	Yes	

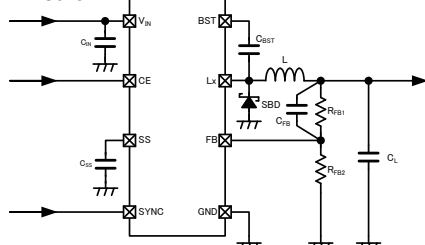
XC9270/XC9271 : 30V 2A Step-down DC/DC Converter

■High Efficiency / Synchronizing to an External CLK

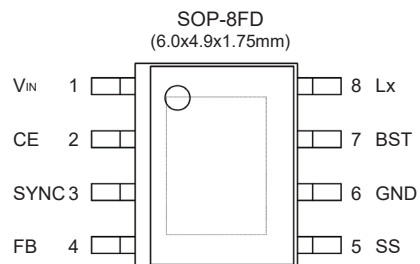
Features

- Input Voltage : 7.0V ~ 30V (Absolute Max.: 36.0V)
- Surge Voltage : 46.0V (Applied Time ≤ 400ms)
- Output Voltage Range : 1.2V ~ 12.0V (FB: 0.8V ± 2.0%)
- Output Current : 2.0A
- Oscillation Frequency : 300kHz, 500kHz
- Efficiency : 91% (V_{IN}=12V, V_{OUT}=5V, I_{OUT}=1A)
- Control Method : PWM (XC9270)
PWM/PFM (XC9271)
- Function : ON/OFF, Soft-Start (Adj by Ext Cap)
External CLK Sync
- Protection : Current Limit
- Integral Latch Method (A Type)
- Automatic Recovery (B Type)
Thermal Shutdown, UVLO
- Package : SOP-8FD
- Operating Ambient Temp. : -40°C ~ 105°C

Typical Application Circuit



Package



Ordering Information

XC9270①②③④⑤⑥⑦ : PWM
XC9271①②③④⑤⑥⑦ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Latch Protection
		B	Foldback Protection
②③	FB Voltage	08	0.8V
		3	300kHz
④	Oscillation Frequency	5	500kHz
		⑤⑥⑦	Package (Order Unit)

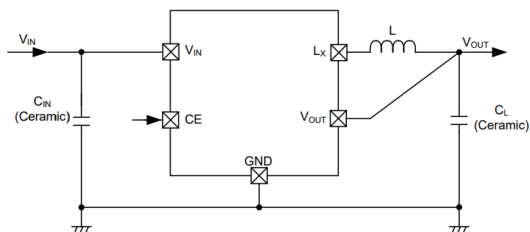
XC9265 : Ultra Low Power(0.5μA) PFM Step-down DC/DC Converter

■Ultra Low Power 0.5μA / High Efficiency at Light Load

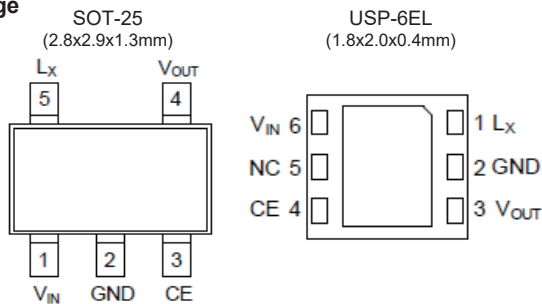
Features

- Input Voltage : 2.0V ~ 6.0V (Absolute Max.: 7.0V)
- Output Voltage Setting : 1.0V ~ 4.0V (±2.0%)
- Output Current : 200mA (A/C Type)
50mA (B/D Type)
- Supply Current : 0.5μA
- Control Method : PFM
- Efficiency : 88.9% (VIN=3.6V, VOUT=1.8V, IOUT=100μA)
- High Speed Transient : 50mV@IOUT=10μA → 50mA
- PFM Switching Current : 330mA (A/C Type), 180mA (B/D Type)
- Function : ON/OFF
CL Discharge (C/D Type)
UVLO
- Protection : Short Protection
- Package : SOT-25, USP-6EL
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC9265①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	IOUT=200mA Without CL Discharge
		B	IOUT=50mA Without CL Discharge
		C	IOUT=200mA With CL Discharge
		D	IOUT=50mA With CL Discharge
②③	Output Voltage	10 ~ 40	Output Voltage : e.g. 1.80V⇒②=1, ③=8 0.05V increments
④	Output Voltage Type	1	Output Voltage (x.x0V) (the 2nd decimal place is "0")
		B	Output Voltage (x.x5V) (the 2nd decimal place is "5")
⑤⑥-⑦	Package (Order Unit)	4R-G	USP-6EL (3,000pcs/Reel)
		MR-G	SOT-25 (3,000pcs/Reel)

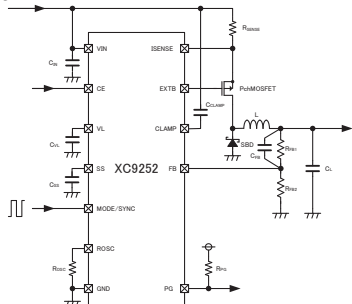
XC9252 : 30V Step-down DC/DC Controller

■Control Method Selectable via the MODE Pin/ External CLK Sync

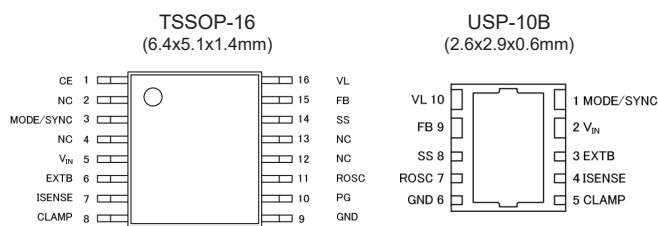
Features

- Input Voltage : 3.0V ~ 30V (Absolute Max.: 36.0V)
- Surge Voltage : 46.0V (Applied Time ≤ 400ms)
- Output Voltage Range : 1.5V ~ VIN (FB:0.8V±2.0%)
- Oscillation Frequency : 280kHz ~ 550kHz (External Resistor)
- External Clocking Synchronous : ±25% of the internal clock
- Control Method : PWM (MODE=H)
PWM/PFM (MODE=L)
- Soft-Start : External set (Output Capacitor)
- Protection : Current limit (External Resistor)
- Automatic Recovery (A/B Type)
- Integral Latch Protection (C Type)
Thermal shutdown
- Package : TSSOP-16 (A/C Type), USP-10B (B Type)
- Operating Ambient Temp. : -40°C ~ 105°C

Typical Application Circuit



Package



Ordering Information

XC9252①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Standard Type (TSSOP-16)
		B	Without Chip Enable & Power Good(USP-10B)
		C	Standard Type with Latch Protection(TSSOP-16)
②③	FB Voltage	08	0.8V
④	Oscillation Frequency	A	Adjustable
⑤⑥-⑦	Package (Order Unit)	VR-G	TSSOP-16 (3,000pcs/Reel) *Only Type A,C
		DR-G	USP-10B (3,000pcs/Reel)*Only Type B

1. Inductor Built-in "micro DC/DC"
 2. Step-Down DC/DC
 3. Step-Up DC/DC
 4. Step-Up&Down DC/DC
 5. Charge Pump
 6. LED Driver
 7. Multi Channel DC/DC
 8. Voltage Detectors
 9. Voltage Regulators Single Type
 10. Voltage Regulator With reset function

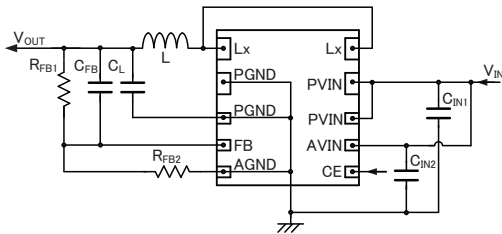
XC9242/XC9243 : 2A Step-down DC/DC Converter

■2A / High Efficiency

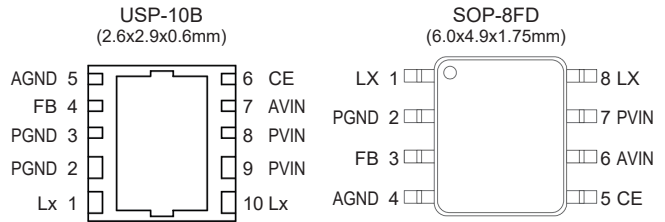
Features

Input Voltage	: 2.7V ~ 6.0V (Absolute Max.: 7.0V)
Output Voltage Setting	: 0.9V ~ V _{IN}
FB Voltage	: 0.8V ±2.0%
Output Current	: 2.0A
Oscillation Frequency	: 1.2MHz, 2.4MHz
Efficiency	: 95%
Control Method	: F-PWM (XC9242) PWM/PFM (XC9243)
Function	: Soft-Start C _L Discharge UVLO
Protection	: Current Limit (Automatic Recovery) Thermal Shutdown
Package	: USP-10B, SOP-8FD
Operating Ambient Temp.	: -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC9242①②③④⑤⑥-⑦ : PWM
XC9243①②③④⑤⑥-⑦ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B	-
②③	FB Voltage	08	0.8V
④	Oscillation Frequency	C	1.2MHz
		D	2.4MHz
⑤⑥-⑦	Package (Order Unit)	DR-G	USP-10B (3,000pcs/Reel)
		QR-G	SOP-8FD (1,000pcs/Reel)

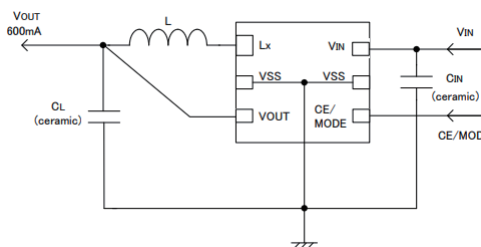
XC9235/XC9236/XC9237 A/B/C/E/G : 600mA Step-down DC/DC Converter, Fixed Output Voltage

■Ultra Small / Low Noise

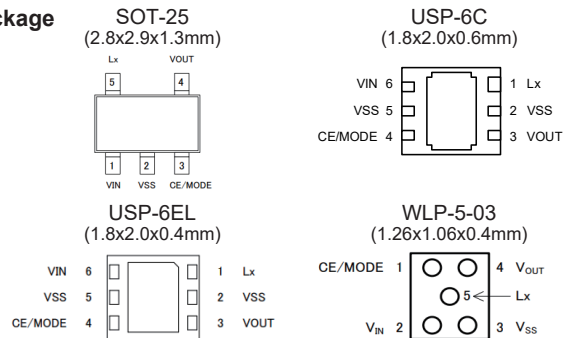
Features

Input Voltage	: 1.8V ~ 6.0V (Absolute Max.: 6.5V)
Output Voltage	: 0.8V ~ 4.0V (±2.0%)
Output Current	: 600mA
Oscillation Frequency	: 1.2MHz, 3.0MHz
Control Method	: PWM (XC9235) PWM/PFM (XC9236) PWM or PWM/PFM (XC9237)
Efficiency	: 92% (V _{IN} =4.2V, V _{OUT} =3.3V)
Function	: ON/OFF, UVLO C _L Discharge Soft-Start
Protection	: Current Limit Short Protection
Package	: SOT-25, USP-6C, USP-6EL, WLP-5-03
Operating Ambient Temp.	: -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC9235①②③④⑤⑥-⑦ : PWM
XC9236①②③④⑤⑥-⑦ : PWM/PFM
XC9237①②③④⑤⑥-⑦ : PWM or PWM/PFM (Manual Mode Selection)

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION	
①	Type	Fixed Output Voltage	A	V _{IN} ≥2.0V, Standard soft-start, Without C _L Discharge
			B	V _{IN} ≥2.0V, High speed soft-start, With C _L Discharge
			C	V _{IN} ≥2.0V, Standard soft-start, With C _L Discharge
			E	V _{IN} ≥1.8V, Standard soft-start, With C _L Discharge
			G	V _{IN} ≥1.8V, High speed soft-start, With C _L Discharge
			②③	Output Voltage
④	Oscillation Frequency	C	1.2MHz	
		D	3.0MHz	
⑤⑥-⑦	Package (Order Unit)	MR-G	SOT-25 (3,000pcs/Reel) *A/B/C Type only	
		ER-G	USP-6C (3,000pcs/Reel)	
		4R-G	USP-6EL (3,000pcs/Reel) *A/B/C/G Type only	
		0R-G	WLP-5-03 (3,000pcs/Reel) *A/B Type only	

XC9235/XC9236/XC9237 D/F

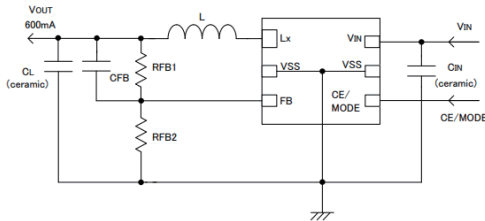
 : 600mA Step-down DC/DC Converter, Output Voltage External Setting

Ultra Small / Low Noise

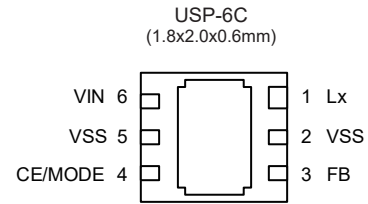
Features

Input Voltage	: 1.8V ~ 6.0V (Absolute Max.: 6.5V)
Output Voltage	: 0.9V ~ V_{IN}
FB Voltage	: $0.8V \pm 2.0\%$
Output Current	: 600mA
Oscillation Frequency	: 1.2MHz, 3.0MHz
Control Method	: PWM (XC9235) PWM/PFM (XC9236) PWM or PWM/PFM (XC9237)
Efficiency	: 92% ($V_{IN}=4.2V$, $V_{OUT}=3.3V$)
Function	: ON/OFF, UVLO C _L Discharge Soft-Start
Protection	: Current Limit Short Protection
Package	: USP-6C
Operating Ambient Temp.	: -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC9235①②③④⑤⑥⑦ : PWM
XC9236①②③④⑤⑥⑦ : PWM/PFM
XC9237①②③④⑤⑥⑦ : PWM or PWM/PFM (Manual Mode Selection)

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	Output Voltage External Setting	D $V_{IN} \geq 1.8V$, Standard soft-start, With C _L Discharge
			F $V_{IN} \geq 1.8V$, High speed soft-start, With C _L Discharge
②③	FB Voltage	08	0.8V
④	Oscillation Frequency	C	1.2MHz
		D	3.0MHz
⑤⑥⑦	Package (Order Unit)	ER-G	USP-6C (3,000pcs/Reel)

XC9220/XC9221

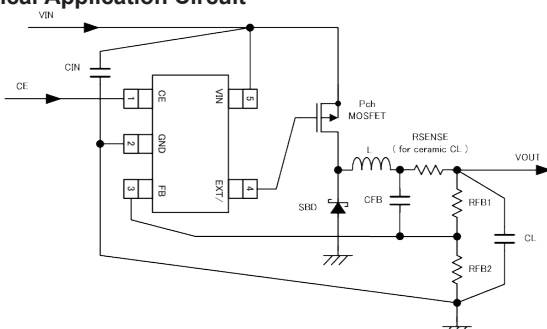
 : 16V Step-down DC/DC Controller

High Efficiency / High Current

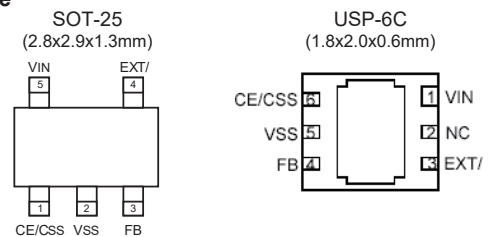
Features

Operating Voltage	: 2.8V ~ 16.0V (Absolute Max.: 18.0V)
Output Voltage Externally Set Range	: 1.2V or more ($V_{FB}=0.9V \pm 1.5\%$)
Output Current	: 5.0A
Oscillation Frequency	: 300kHz, 500kHz, 1.0MHz
Control Method	: PWM (XC9220) PWM/PFM (XC9221)
Soft-Start	: 4ms, internally set (A/C Type, 500kHz) Externally set (B/D Type)
Protection	: Integral Latch 1.0ms (A/B Type) Short Protection
Output Capacitor	: Ceramic Capacitor Compatible
Package	: SOT-25, USP-6C
Operating Ambient Temp.	: -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC9220①②③④⑤⑥⑦ : PWM
XC9221①②③④⑤⑥⑦ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Soft-start internally set with integral Latch
		B	Soft-start externally set with integral Latch
		C	Soft-start internally set without integral Latch
		D	Soft-start externally set without integral Latch
②③	FB Voltage	09	0.9V
④	Oscillation Frequency	3	300kHz
		5	500kHz
		A	1.0MHz
⑤⑥⑦	Package (Order Unit)	MR-G	SOT-25 (3,000pcs/Reel)
		ER-G	USP-6C (3,000pcs/Reel)

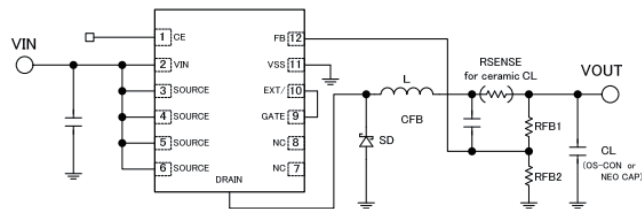
XCM526 : 16V, 3A, PWM or PWM/PFM Step-Down DC/DC Converter

■High Efficiency / High Current

Features

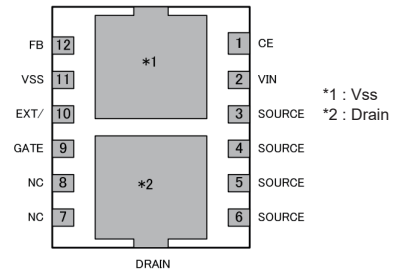
- Operating Voltage : 4.0V ~ 16.0V (Absolute Max.: 18V)
- Output Voltage Externally Set Range : 1.2V or more ($V_{FB}=0.9V\pm 1.5\%$)
- Output Current : 3.0A
- Oscillation Frequency : 500kHz, 1.0MHz
- Control Method : PWM (XCM526A)
PWM/PFM (XCM526B)
- Soft-Start : 4ms, Internally Set (C Type, 500kHz)
Externally Set (D Type)
- Protection : Short Protection
- Package : USP-12B01
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package

USP-12B01
(2.3x2.8x0.6mm)



Ordering Information

XCM526A①②③④⑤⑥-⑦ : PWM
XCM526B①②③④⑤⑥-⑦ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	C	Soft-start Internally Set
		D	Soft-start Externally Set
②	FB Voltage	9	0.9V
		5	500kHz
③	Oscillation Frequency	A	1.0MHz
		④-⑤⑥	Package (Order Unit)

3. Step-up DC/DC Converter and Controller ICs

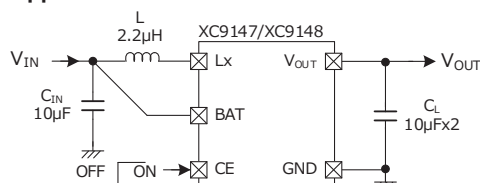
XC9147/XC9148 : Highly functionality, $I_{IN}=1.4A$ Step-up DC/DC Converter

■Load Disconnection, Bypass Function and OR Connection Selectable

Features

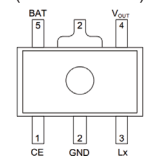
- Input Voltage : 0.65V ~ 6.0V (Absolute Max.: 7.0V)
- Operation Start Voltage : 0.9V
- Output Voltage : 1.8V ~ 5.5V ($\pm 2.0\%$)
- Output Current : 750mA@ $V_{OUT}=5.0V, V_{BAT}=3.3V$
500mA@ $V_{OUT}=3.3V, V_{BAT}=1.8V$
- Supply Current : 19μA (1.2MHz)
- Oscillation Frequency : 1.2MHz, 3.0MHz
- Control Method : F-PWM (XC9147), PWM/PFM (XC9148)
- Type : Load Disconnection (A/C/D/F/G/M/J/L)
Bypass (XC9148B/E/H/K)
OR Connection (XC9148C/F/M/L)
- Function : C_L Discharge (A/D/G/J)
UVLO (G/H/M/J/K/L)
- Protection : Current Limit, Thermal Shutdown
Integral Latch Method (D/E/F/J/K/L)
Short Protection (D/E/F/J/K/L)
- Package : USP-6C, SOT-89-5
- Operating Ambient Temp. : -40°C ~ 105°C

Typical Application Circuit

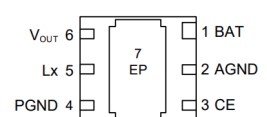


Package

SOT-89-5
(4.5x4.6x1.6mm)



USP-6C
(1.8x2.0x0.6mm)



Ordering Information

XC9147①②③④⑤⑥-⑦ : PWM
XC9148①②③④⑤⑥-⑦ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	-
		D	Load Disconnection
		G	C _L Discharge
		J	UVLO / Short circuit & Latch

XC9148①②③④⑤⑥-⑦ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B	-
		E	Bypass
		H	Short circuit & Latch
		K	UVLO
		C	UVLO / Short circuit & Latch
		F	-
		M	OR Connection
		L	Short circuit & Latch

②③	Output Voltage	18 ~ 55 (A/B/C) 22 ~ 55 (others)	e.g. 3.0V ⇒ ②=3, ③=0
④	Oscillation Frequency	C	1.2MHz
		D	3.0MHz
⑤⑥-⑦	Package (Order Unit)	PR-G	SOT-89-5 (1,000pcs/Reel)
		ER-G	USP-6C (3,000pcs/Reel)

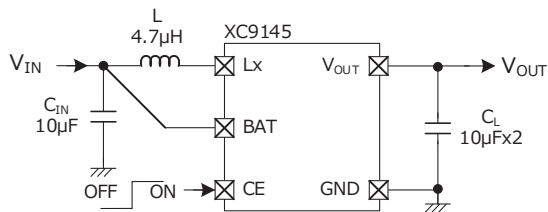
XC9145 : $I_{DD}=400\text{nA}$, $I_{IN}=0.8\text{A}$, Ultra Low Power Step-up DC/DC Converter

■Ultra Low Power

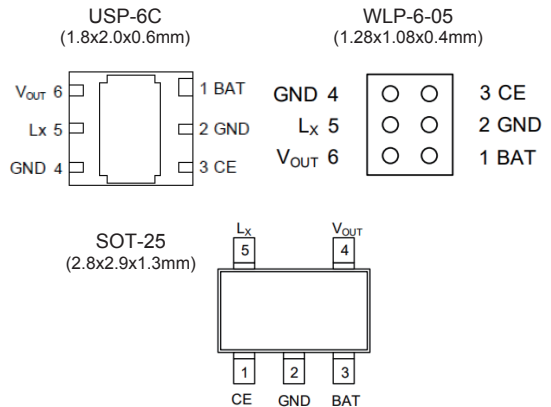
Features

Input Voltage	: 0.65V ~ 5.5V (Absolute Max.: 6.6V)
Operation Start Voltage	: 1.6V
Output Voltage	: 3.0V ~ 5.5V
Oscillation Frequency	: 1.2MHz
Supply Current	: 400nA
Output Current	: 430mA@ $V_{OUT}=5.0\text{V}$, $V_{BAT}=3.3\text{V}$ 300mA@ $V_{OUT}=3.3\text{V}$, $V_{BAT}=1.8\text{V}$
Efficiency	: 89.9% (2.4V \Rightarrow 3.3V, 10 μA) 93.2% ($V_{BAT}=2.4\text{V}$, $V_{OUT}=3.3\text{V}$, $I_{OUT}=100\text{mA}$)
Control Method	: PWM/PFM
Function	: Load Disconnection Soft-Start
Protection	: Current limit
Package	: USP-6C, WLP-6-05, SOT-25
Operating Ambient Temp.	: -40°C ~ 105°C

Typical Application Circuit



Package



Ordering Information

XC9145①②③④⑤⑥⑦ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B	-
②③	Output Voltage	30 ~ 55	e.g. 3.0V \Rightarrow ②=3, ③=0
④	Oscillation Frequency	C	1.2MHz
⑤⑥⑦	Package (Order Unit)	ER-G	USP-6C (3,000pcs/Reel)
		MR-G	SOT-25 (3,000pcs/Reel)
		OR-G	WLP-6-05 (5,000pcs/Reel)

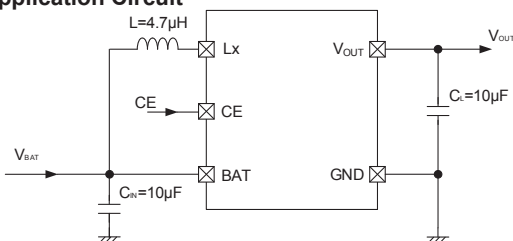
XC9141/XC9142 : $I_{IN}=0.8\text{A}$ Step-up DC/DC Converter

■Load Disconnect Function or Bypass Mode Function Selectable

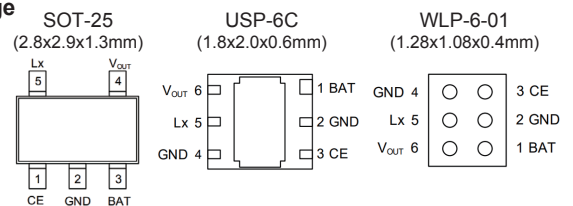
Features

Input Voltage	: 0.65V ~ 6.0V (Absolute Max.: 7.0V)
Operation Start Voltage	: 0.9V
Output Voltage	: 1.8V ~ 5.5V (A/B/C Type) 2.2V ~ 5.5V (D/E/F Type)
Oscillation Frequency	: 1.2MHz, 3.0MHz
Output Current	: 500mA@ $V_{OUT}=5.0\text{V}$, $V_{BAT}=3.3\text{V}$ 330mA@ $V_{OUT}=3.3\text{V}$, $V_{BAT}=1.8\text{V}$
Efficiency	: 92% (1.8V \Rightarrow 3.3V/100mA)
Control	: F-PWM (XC9141), PWM/PFM (XC9142)
Function	: ON/OFF, Soft-start Load Disconnect (A/C/D/F Type) Bypass (B/E Type) C _L Discharge (A/D Type)
Protection	: Current Limit Short Protection with Latch (D/E/F Type)
Package	: SOT-25, USP-6C, WLP-6-01
Operating Ambient Temp.	: -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC9141①②③④⑤⑥⑦ : PWM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Load Disconnect
		D	C _L Discharge
		B	Bypass
		E	
		-	Integral Latch

XC9142①②③④⑤⑥⑦ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Load Disconnect
		D	C _L Discharge
		B	Bypass
		E	
		-	Integral Latch
②③	Output Voltage	18 ~ 55 (A/B/C) 22 ~ 55 (D/E/F)	e.g. 3.0V \Rightarrow ②=3, ③=0
④	Oscillation Frequency	C	1.2MHz
		D	3.0MHz
⑤⑥⑦	Package (Order Unit)	MR-G	SOT-25 (3,000pcs/Reel)
		ER-G	USP-6C (3,000pcs/Reel)
		OR-G	WLP-6-01 (5,000pcs/Reel)

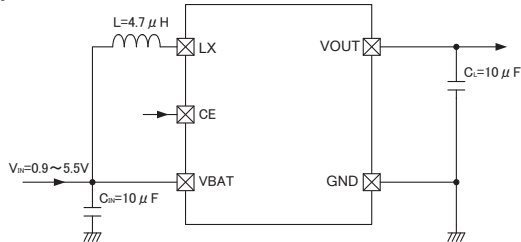
XC9140 : PFM Step-up DC/DC Converter

■Load Disconnect Function or Bypass Mode Function Selectable / High Efficiency at Light Load

Features

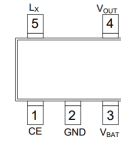
- Input Voltage : 0.7V ~ 5.5V (Absolute Max.: 7.0V)
- Start-up Voltage : 0.9V
- Output Voltage Setting : Without UVLO - 1.8V ~ 5.0V (±2.0%)
With UVLO - 3.0V ~ 5.0V (±2.0%)
- Efficiency : 90% (3.0V⇒5.0V/100mA)
- PFM Switch Current : 350mA
- Output Current : 85mA@ V_{OUT}=3.3V, V_{BAT}=1.8V
- Supply Current : 6.3μA
- Control : PFM
- Function : ON/OFF
Load Disconnection (A/B Type)
Bypass (C Type)
C_L Discharge (B Type), UVLO
- Package : SOT-25, USP-6EL
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit

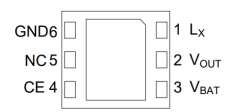


Package

SOT-25
(2.8x2.9x1.3mm)



USP-6EL
(1.8x2.0x0.4mm)



Ordering Information

XC9140①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Load Disconnection Without C _L Discharge
		B	Load Disconnection With C _L Discharge
		C	V _{BAT} Bypass Without C _L Discharge
②③	Output Voltage	18 ~ 50	e.g. 3.6V⇒②=3, ③=6
④	UVLO Function	1	No UVLO
⑤⑥⑦	Package (Order Unit)	4R-G	USP-6EL (3,000pcs/Reel)
		MR-G	SOT-25 (3,000pcs/Reel)

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Load Disconnection Without C _L Discharge
		B	Load Disconnection With C _L Discharge
		C	V _{BAT} Bypass Without C _L Discharge
②③	Output Voltage	30 ~ 50	e.g. 3.6V⇒②=3, ③=6
④ (*)	UVLO Function	2	V _{UVLO_R} =2.15V
		6	V _{UVLO_R} =1.65V
⑤⑥⑦	Package (Order Unit)	4R-G	USP-6EL (3,000pcs/Reel)
		MR-G	SOT-25 (3,000pcs/Reel)

(*) Please contact our sales representatives for UVLO Release Voltage other than those listed above. It can be set from 1.65V to 2.2V in 0.05V increments.

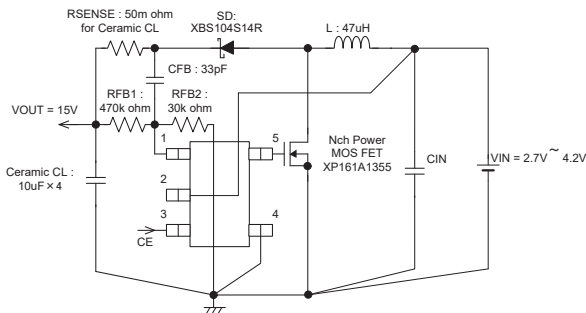
XC9120/XC9121/XC9122 : Step-up DC/DC Controller

■Max Duty: 93%

Features

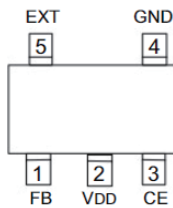
- V_{DD} pin Voltage : 1.8V ~ 6.0V (Absolute Max.:12.0V)
- Output Voltage Range : 1.5V ~ 30V (Externally Set)
- FB Voltage : 0.9V ±2.0%
- Oscillation Frequency : 100kHz
- Output Current : ≥80mA (V_{IN}=3.6V, V_{OUT}=15V)
- Control : PWM (XC9120)
PWM/PFM (XC9121)
PWM or PWM/PFM (XC9122)
- Efficiency : 85% (V_{IN}=3.6V, V_{OUT}=15V, I_{OUT}=10mA)
- Output Capacitor : Ceramic Capacitor Compatible
- Maximum Duty : 93% for High Step-up Ratio
- Package : SOT-25, USP-6C
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit

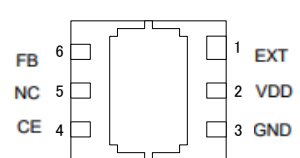


Package

SOT-25
(2.8x2.9x1.3mm)



USP-6C
(1.8x2.0x0.6mm)



Ordering Information

XC9120①②③④⑤⑥⑦ : PWM
XC9121①②③④⑤⑥⑦ : PWM/PFM
XC9122①②③④⑤⑥⑦ : PWM or PWM/PFM (Manual Mode Selection)

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	D	-
②③	FB Voltage	09	0.9V
④	Oscillation Frequency	1	100kHz
⑤⑥⑦	Package (Order Unit)	MR-G	SOT-25 (3,000pcs/Reel)
		ER-G	USP-6C (3,000pcs/Reel)

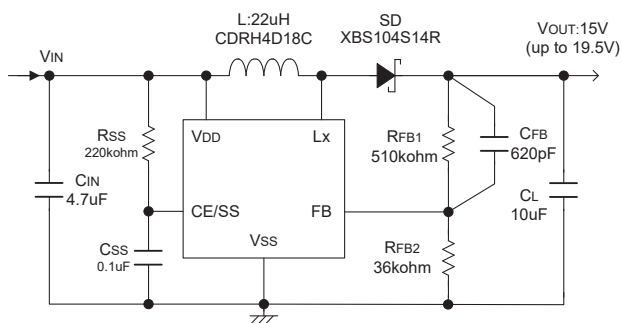
XC9119 : 19.5V 1MHz PWM Step-up DC/DC Converter

Small External Components Compatible

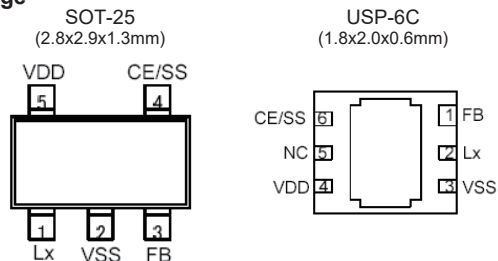
Features

- Operating Voltage : 2.5V ~ 6.0V(Absolute Max.: 7.0V)
- Output Voltage Range : Up to 19.5V externally set-up
- FB Voltage : 1.0V±2.0%
- Oscillation Frequency : 1.0MHz
- ON Resistance : 2.0Ω (V_{DD}=3.6V, V_{DS}=0.4V)
- Efficiency : 86% (V_{OUT}=15V, V_{DD}=3.6V, I_{OUT}=10mA)
- Control : PWM
- Lx Limit Current : 400mA (V_{DD}=3.6V)
- Package : SOT-25, USP-6C
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC9119D①②③④⑤⑥

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①②	FB Voltage	10	1.0V
③	Oscillation Frequency	A	1MHz
④⑤⑥	Package (Order Unit)	MR-G	SOT-25 (3,000pcs/Reel)
		ER-G	USP-6C (3,000pcs/Reel)

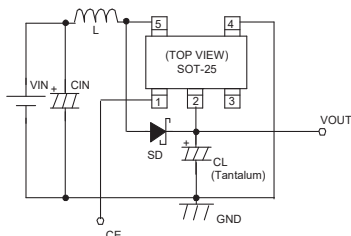
XC9110/XC9111 : PFM Controlled Step-up DC/DC Converter / Controller

Low Power Consumption

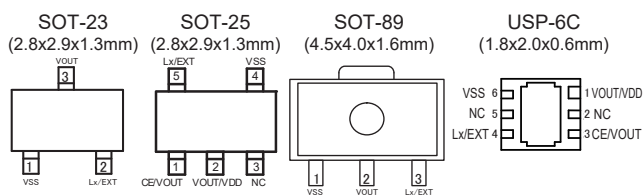
Features

- Input Voltage : 0.7V ~ 10.0V (Absolute Max.: 12.0V)
- Start-up Voltage : 0.9V
- Output Voltage Range : 1.5V ~ 7.0V (0.1V increments)
- Output Accuracy : ±2.5%
- Oscillation Frequency : 100kHz
180kHz (at 56% duty of XC9111)
- Built-in Switch Types : A/C/E Type
- N-ch FET On-Resistance : 2.5Ω@V_{DD}=3.0V
- External Transistor Types : B/D/F Type
- Lx Limit Voltage : more than V_{DD}=2.0V (E Type)
more than V_{OUT}=2.0V (A, C Type)
- Max Duty : 75% (XC9110)
56%/75% Auto change (XC9111)
- Supply Current : 2.0μA@V_{OUT}=3V
- Package : SOT-23, SOT-89 (XC9111),
SOT-25, USP-6C
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC9110①②③④⑤⑥⑦ : PFM, 75% duty
XC9111①②③④⑤⑥⑦ : PFM, 56% / 75% duty variable

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	V _{DD} / V _{OUT} Common Type (for XC9111) Built-in Transistor
		B	V _{DD} / V _{OUT} Common Type (for XC9111) External Transistor
		C	CE pin, Built-in Transistor
		D	CE pin, External Transistor
		E	V _{DD} / V _{OUT} Separated, Built-in Transistor
		F	V _{DD} / V _{OUT} Separated, External Transistor
②③	Output Voltage	15 ~ 70	e.g. 3.5V → ②= 3, ③= 5
④	Oscillation Frequency	1	100kHz
⑤⑥⑦	Package (Order Unit)	MR-G	①=A ~ B SOT-23 (3,000pcs/Reel)
		PR-G	①=A ~ B SOT-89 (1,000pcs/Reel)
		ER-G	①=C ~ F USP-6C (3,000pcs/Reel)

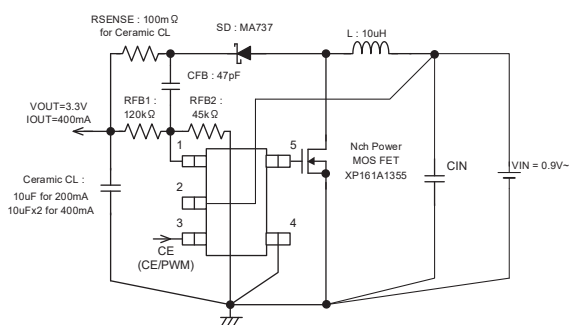
XC9103/XC9104/XC9105 : Step-up DC/DC Controller

■Standard Step-up Controller

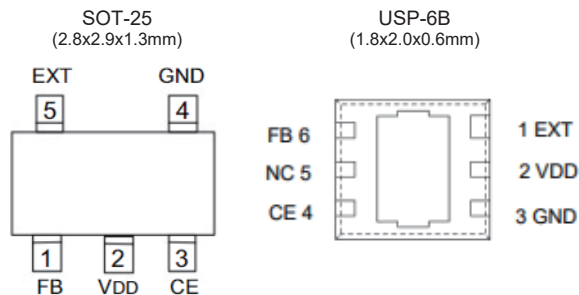
Features

- V_{DD} pin Voltage : 1.8V ~ 10.0V (Absolute Max.: 12.0V)
- FB Voltage : 0.9V ±2.0%
- Output Voltage Range : 1.5V ~ 30V
- Oscillation Frequency : 100kHz, 180kHz, 300kHz, 500kHz
- Output Current : more than 400mA (V_{IN}=1.8V, V_{OUT}=3.3V)
- Controls : PWM (XC9103)
PWM/PFM (XC9104)
PWM or PWM/PFM (XC9105)
- Efficiency : 85%
- Output Capacitor : Ceramic Capacitor Compatible
- Package : SOT-25, USP-6B
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC9103①②③④⑤⑥-⑦ : PWM
XC9104①②③④⑤⑥-⑦ : PWM/PFM
XC9105①②③④⑤⑥-⑦ : PWM/PFM (Manual Mode Selection)

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	D	-
②③	FB Voltage	09	0.9V
④	Oscillation Frequency	3	300kHz
		1	100kHz
		2	180kHz
⑤⑥-⑦	Package (Order Unit)	MR-G	SOT-25 (3,000pcs/Reel)
		DR-G	USP-6B (3,000pcs/Reel)

4. Step-up & Down DC/DC Controller ICs

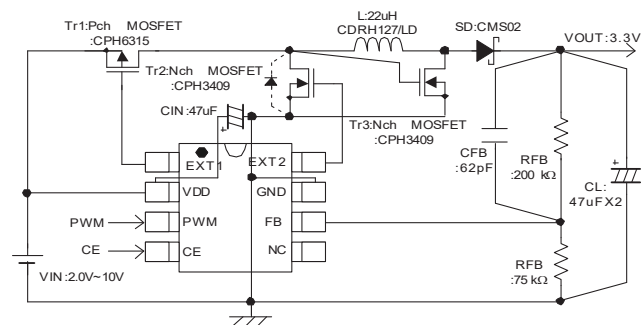
XC9303 : High Efficiency Step-up & Down DC/DC Controller

■Standard Step-up & Down DC/DC Controller

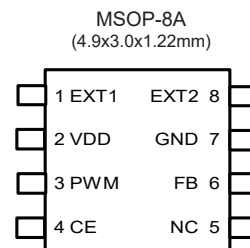
Features

- Input Voltage : 2.0V ~ 10.0V (Absolute Max.:12.0V)
- Output Voltage Range : 2.0V ~ 6.0V
- FB Voltage : 0.9V ±2.0%
- Oscillation Frequency : 300kHz
- Output Current : 800mA (V_{IN}=4.2V, V_{OUT}=3.3V)
- Maximum Duty : 78%
- Efficiency : 84%
- Soft-start Time : 10ms
- Package : MSOP-8A
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC9303①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B	-
②③	FB Voltage	09	0.9V
④	Oscillation Frequency	3	300kHz
⑤⑥-⑦	Package (Order Unit)	KR-G	MSOP-8A (1,000pcs/Reel)

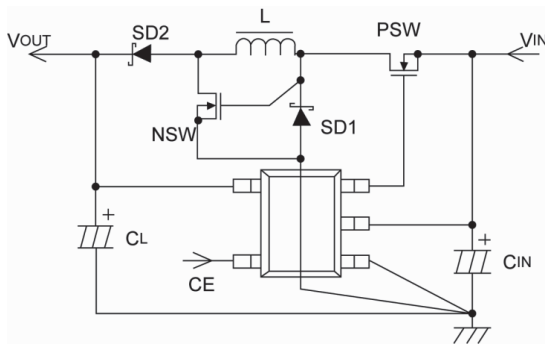
XC9301/XC9302 : Step-up & Down DC/DC Controller

Standard Step-up & Down DC/DC Controller

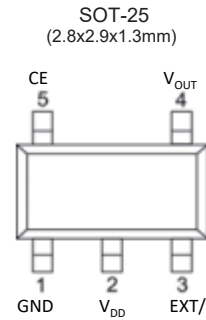
Features

Input Voltage	: 2.0V ~ 10.0V (Absolute Max.:12.0V)
Output Voltage Range	: 2.4V ~ 6.0V (0.1V increments)
Output Accuracy	: ±2.5%
Oscillation Frequency	: 180kHz, 300kHz
Output Current	: 250mA ($V_{IN}=2.4V$, $V_{OUT}=3.3V$)
Efficiency	: 81% @ $V_{OUT}=5.0V$ 78% @ $V_{OUT}=3.3V$
Maximum Duty	: 85%
Package	: SOT-25
Operating Ambient Temp.	: -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC9301①②③④⑤⑥⑦ : PWM
XC9302①②③④⑤⑥⑦ : PWM/PFM

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	-
②③	Output Voltage	20~60	e.g. 3.0V→②3, ③0, 5.3V→②5, ③3
④	Oscillation Frequency	2	180kHz
		3	300kHz
⑤⑥⑦	Package (Order Unit)	MR-G	SOT-25 (3,000pcs/Reel)

5. Charge Pump ICs

XC9801/XC9802 : Step-up Charge Pump with Regulated V_{OUT} Function

Inductor Less Step-up Solution / Output Stabilization

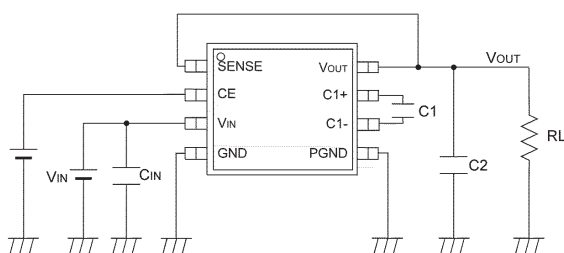
Features

Input Voltage	: 1.8V ~ 5.5V (Absolute Max.: 6.0V)
Output Voltage Range	: 2.5V ~ 6.0V
Supply Current	: 80μA (no load : XC9802)
Output Current	: 80mA ($V_{IN}=3.6V$, $V_{OUT}=5.0V$)
Oscillation Frequency	: 300kHz

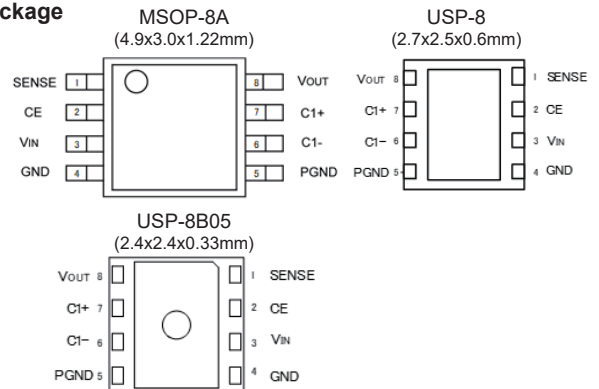
Can be used as a Step-up doubler (SENSE=0V)
PFM Operation During Light Loads (XC9802)

Package	: MSOP-8A, USP-8, USP-8B05
Operating Ambient Temp.	: -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC9801①②③④⑤⑥⑦ : With Pulse Skip
XC9802①②③④⑤⑥⑦ : Without Pulse Skip

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	True Logic Level at CE Pin	B	Positive
②③	Output Voltage	50	Standard e.g. 5.0V→②=5, ③=0
		25 ~ 60	Semi-custom e.g. 2.5V→②=2, ③=5
④	Oscillation Frequency	3	300kHz
⑤⑥⑦	Package (Order Unit)	KR-G	MSOP-8A (1,000pcs/Reel)
		DR-G	USP-8 (3,000pcs/Reel)
		ER-G	USP-8B05 (5,000pcs/Reel)

Regulated output voltage function cannot be used by the following input voltage condition:
 $V_{IN} < (V_{OUT}/2)$, or $V_{IN} \geq V_{OUT}$

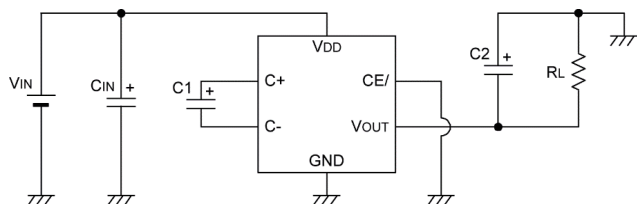
XC6351A : Inverting Charge Pump

■ Inductor Less Inverting Solution

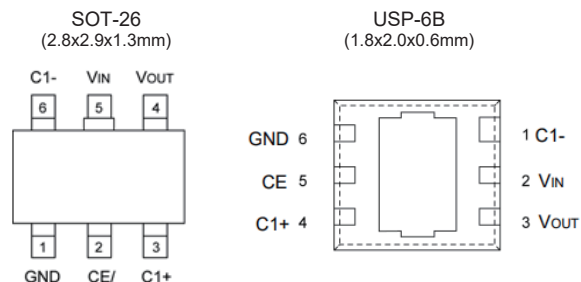
Features

Operating Voltage	: 1.2V ~ 5.0V (Absolute Max.: 6.0V)
Oscillation Frequency	: 120kHz 35kHz (Custom)
Supply Current	: 310μA 100μA (35kHz)
Efficiency	: 90% (RL = 2kΩ)
Function	: ON/OFF
Package	: SOT-26 ,USP-6B
Operating Ambient Temp.	: -30°C ~ 80°C

Typical Application Circuit



Package



Ordering Information

XC6351A①②③④⑤-⑥

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①②③	Oscillation Frequency	120	120kHz
		035	35kHz (Custom)
④⑤-⑥	Package (Order Unit)	MR-G	SOT-26 (3,000pcs/Reel)
		DR-G	USP-6B (3,000pcs/Reel)

6. LED Backlight Driver

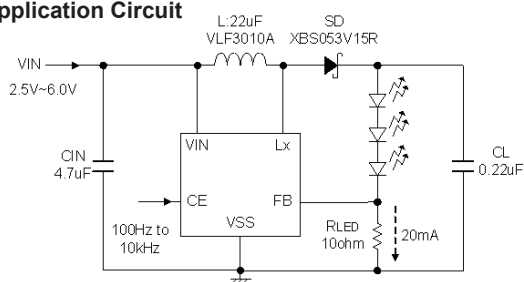
XC9133 : White LED Driver Step-up DC/DC Converter

■ Drive Up to Four White LED's in Series

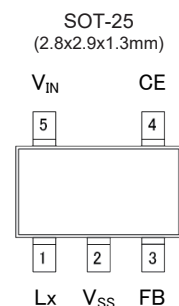
Features

Input Voltage	: 2.5V ~ 6.0V (Absolute Max.: 7.0V)
Output Voltage Range	: Up to 17.5V externally set-up
FB Voltage	: 0.2V±5.0%
Oscillation Frequency	: 1.0MHz
ON Resistance	: 2.4Ω
Efficiency	: 85%
	: 3 white LEDs in series, VIN=3.6V, ILED=20mA
Control	: PWM
Output Capacitor	: 0.22μF, Ceramic
Limit Current	: 360mA
Lx Overvoltage Limit	: 19V
Package	: SOT-25
Operating Ambient Temp.	: -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC9133①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Lx Overvoltage Limit	B	Available
②③	FB Voltage	02	0.2V
④	Oscillation Frequency	A	1MHz
⑤⑥-⑦	Package (Order Unit)	MR-G	SOT-25 (3,000pcs/Reel)

XC9505 : 2-Channel Step-down / Inverting DC/DC Controller

Control Method Selectable via the MODE Pin

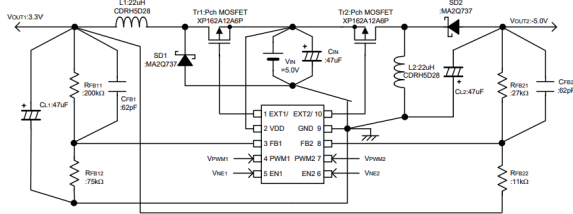
Features

- 2ch. DC/DC Controller (Step-down + Inverting)
- <Output 1: Step-down DC/DC Controller>
 - Output Voltage Range : 0.9V ~ 6.0V (set by FB1 pin)
 - Output Current : More than 1A ($V_{IN}=5.0V, V_{OUT}=3.3V$)
- <Output 2: Inverting DC/DC Controller>
 - Output Voltage Range : -30V ~ 0V (set by FB2 pin)
 - Output Current : More than -100mA ($V_{IN}=5.0V, V_{OUT}=-3.3V$)

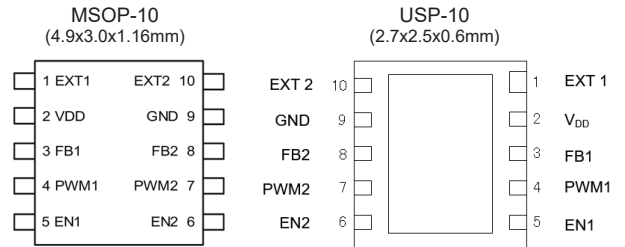
- <Common>
 - Input Voltage : 2.0V ~ 10.0V
 - V_{DD} pin Voltage : 2.0V ~ 10.0V (Absolute Max.: 12.0V)
 - Oscillation Frequency : 180kHz (Custom: 300kHz,500kHz)
 - Soft-Start Internally Set-Up
 - Control Method : PWM or PWM/PFM Selectable
 - Package : MSOP-10, USP-10
 - Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit

<XC9505B092A Input: 2 cells, OUTPUT①: 3.3V, OUTPUT②: -5.0V>



Package



Ordering Information

XC9505①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B	-
②③	FB Voltage	09	0.9V
④	Oscillation Frequency	2	180kHz
		3	300kHz (Custom)
		5	500kHz (Custom)
⑤⑥-⑦	Package (Order Unit)	AR-G	MSOP-10 (1,000pcs/Reel)
		DR-G	USP-10 (3,000pcs/Reel)

XC9504 : 2-Channel Step-up / Inverting DC/DC Controller

Control Method Selectable via the MODE Pin

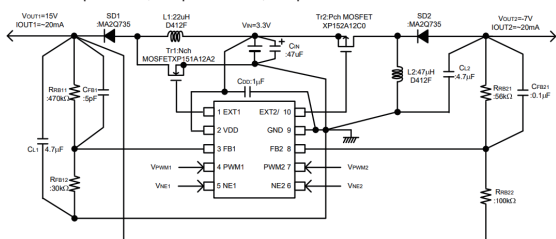
Features

- 2ch. DC/DC Controller (Step-up + Inverting)
- <Output 1: Step-up DC/DC Controller>
 - Output Voltage Range : 1.5V ~ 30V (set by FB1 pin)
 - Output Current : More than 20mA ($V_{IN}=3.3V, V_{OUT}=15V$)
- <Output 2: Inverting DC/DC Controller>
 - Output Voltage Range : -30V ~ 0V (set by FB2 pin)
 - Output Current : $\geq -20mA$ ($V_{IN}=3.3V, V_{OUT}=-7.0V$)

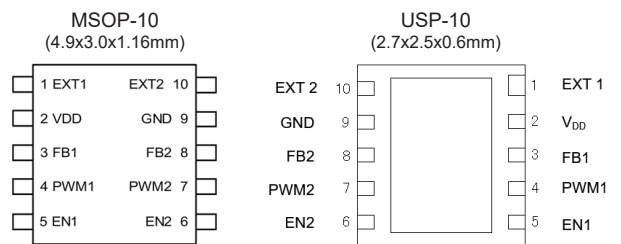
- <Common>
 - Input Voltage : 0.9V ~ 10.0V
 - V_{DD} pin Voltage : 2.0V ~ 10.0V (Absolute Max.: 12.0V)
 - Oscillation Frequency : 180kHz (Custom: 300kHz,500kHz)
 - Maximum Duty : 80%
 - Package : MSOP-10, USP-10
 - Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit

<XC9504B092A Input: 3.3V, Output ①: 15V, Output ②: -7V>



Package



Ordering Information

XC9504①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B	-
②③	FB Voltage	09	0.9V
④	Oscillation Frequency	2	180kHz
		3	300kHz (Custom)
		5	500kHz (Custom)
⑤⑥-⑦	Package (Order Unit)	AR-G	MSOP-10 (1,000pcs/Reel)
		DR-G	USP-10 (3,000pcs/Reel)

1. Inductor Built-in "micro DC/DC"
 2. Step-Down DC/DC
 3. Step-Up DC/DC
 4. Step-Up&Down DC/DC
 5. Charge Pump
 6. LED Driver
 7. Multi Channel DC/DC
 8. Voltage Detectors
 9. Voltage Regulators Single Type
 10. Voltage Regulator With reset function

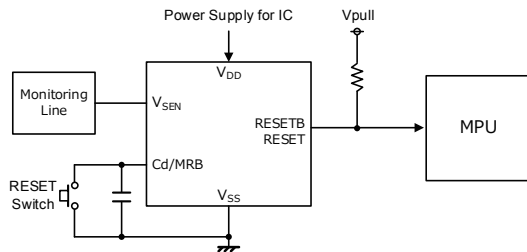
XC6138 : Voltage Detectors for 48V detection, with Separated Sense pin and Delay

■Detect (VSEN) Pin 76V Operation / Ultra Low Power / Wide Range of Hysteresis Settings

Features

- Operating Voltage : 2.2V ~ 6.0V (Absolute max.: 6.5V)
- Sense Input Voltage : 0V ~ 76.0V (Absolute max.: 80.0V)
- Detect Voltage Range : 2.3V ~ 20.0V
- Release Voltage Range : 2.5V ~ 24.0V
- Accuracy : ±1.5% (Ta=25°C), ±3.0% (Ta=-40~125°C)
- Temperature Characteristics : ±50ppm/°C
- Hysteresis Range : 5% ~ 50% (semi-custom)
- Supply Current : V_{DD}: 0.5µA, V_{SEN}: 0.15µA@12V
- Output Type : CMOS / Nch open drain
- Output Logic : "H" level or "L" level at detection
- Function : Release delay / Detection delay Adj
*Detect/Release time ratio is selectable.
Manual RESET
Separated Sense Pin
- Package : SOT-25, DFN1515-6A
- Operating Ambient Temp. : -40 °C ~ 125 °C (Tjmax=150°C)

Typical Application Circuit



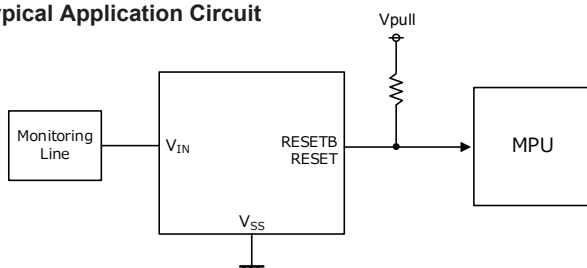
XC6136 : Ultra-Low Power (88nA) Voltage Detector

■Ultra-Low Power / High Accuracy / Ultra Small

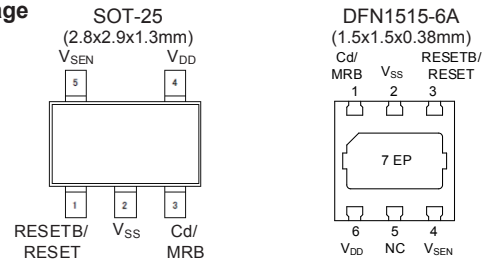
Features

- Operating Voltage : 1.1V ~ 6.0V (Absolute Max.:7.0V)
- Detection Holding Voltage : 0.4V ~ @ CMOS
0.79V(V_{UVL,OD}) ~ @ Nch Open Drain
- Detect Voltage Range : 1.2V ~ 5.0V (0.1V increments)
- Accuracy : ±0.8%
- Temperature Characteristics : ±50ppm/°C
- Hysteresis width : V_{DF}×5.0% (A/C Type)
2mV ~ 28mV (B/D Type)
- Supply Current : 88nA
- Output Type : CMOS, Nch Open drain
- Output Logic : "H" level or "L" level at detection
- Function : Undefined Operation Protection
- Package : USPQ-4B05, SSOT-24, SOT-25
- Operating ambient Temp. : -40°C ~ 105°C

Typical Application Circuit



Package



Ordering Information

XC6138①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B/C/M/N	Refer to Selection Guide ①
②	Delay Type	A ~ H	Refer to Selection Guide ②
③④	Product Code	01 ~	Sequential number Refer to Datasheet https://www.torexsemi.com/file/XC6138/XC6138.pdf
⑤⑥-⑦	Package (Order Unit)	MR-G 6R-G	SOT-25 (3,000pcs/Reel) DFN1515-6A (5,000pcs/Reel)

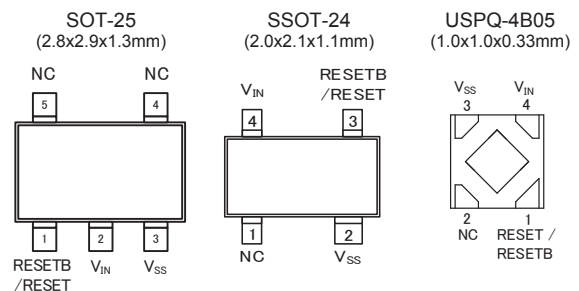
●Selection Guide①

Type	RESETB/RESET OUTPUT	Output Configuration
B	Active "H"	CMOS Output
M	("H" level at detection)	Nch Open drain output
C	Active "L"	CMOS Output
N	("L" level at detection)	Nch Open drain output

●Selection Guide②

Type	DELAY (Rp:Rn)
A	1 : 0.000
B	1 : 0.100
C	1 : 0.125
D	1 : 0.250
E	1 : 0.500
F	1 : 1.000
H	0 : 1.000

Package



Ordering Information

XC6136①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Output Configuration	C	CMOS output
		N	Nch Open drain output
②③	Detect Voltage	12 ~ 50	e.g. 1.2V → ②=1, ③=2
④	Type	A ~ D	Refer to Selection Guide
⑤⑥-⑦	Package (Order Unit)	9R-G	USPQ-4B05 (5,000pcs/Reel)
		NR-G	SSOT-24 (3,000pcs/Reel)
		MR-G	SOT-25 (3,000pcs/Reel) (*)

(*) SOT-25 uses Cu bonding wires.

●Selection Guide

Type	RESETB/RESET OUTPUT	HYSTERESIS
A	Active "L"	V _{DF} ×5.0%
B	("L" level at detection)	2mV ~ 28mV
C	Active "H"	V _{DF} ×5.0%
D	("H" level at detection)	2mV ~ 28mV

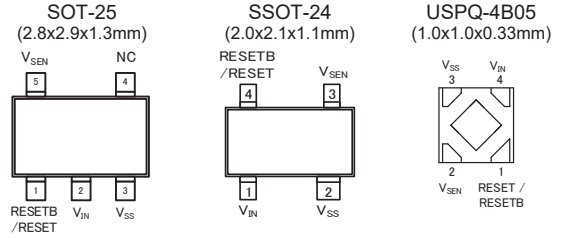
XC6135 : Ultra-Low Power Voltage Detector with Separated Sense Pin

■Ultra-Low Power / Separated Sense Pin / Undefined Operation Protection

Features

- Operating Voltage : 1.1V ~ 6.0V (Absolute Max.:7.0V)
- Detect Voltage Range : 0.5V ~ 5.0V (0.1V increments)
- Accuracy : ±0.8%
- Temperature Characteristics : ±50ppm/°C
- Hysteresis width : $V_{DF} \times 5.0\%$ (A/C Type)
2mV ~ 28mV (B/D Type)
- Supply Current : 53nA (@detection, $V_{IN}=1.1V$)
44nA (@released, $V_{IN}=1.1V$)
- Output Type : CMOS, Nch Open drain
- Output Logic : RESETB (Active "L")
- Undefined Operation Protection: Output Voltage 0.38V ($MAX.Ta=-40^{\circ}C \sim 105^{\circ}C$)
(CMOS Output only) @ V_{IN} pin < Minimum operation Voltage
- Function : Separated Sense Pin
- Package : USPQ-4B05, SSOT-24, SOT-25
- Operating ambient Temp. : -40°C ~ 105°C

Package



Ordering Information

XC6135①②③④⑤⑥⑦

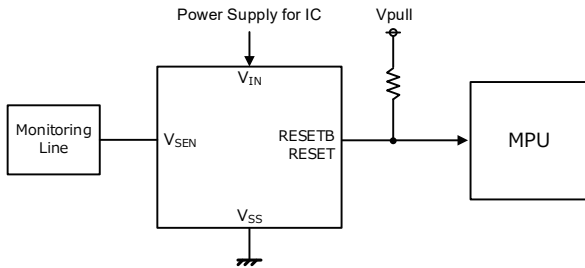
DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Output Configuration	C	CMOS output
		N	Nch Open drain output
②③	Detect Voltage	05 ~ 50	e.g. 5.0V → ②=5, ③=0
④	Type	A ~ D	Refer to Selection Guide
		9R-G	USPQ-4B05 (5,000pcs/Reel)
⑤⑥⑦	Package (Order Unit)	NR-G	SSOT-24 (3,000pcs/Reel)
		MR-G	SOT-25 (3,000pcs/Reel) (*)

(*) SOT-25 uses Cu bonding wires.

Selection Guide

Type	RESETB/RESET OUTPUT	HYSTERESIS
A	Active "L" ("L" level at detection)	$V_{DF} \times 5.0\%$
B		2mV ~ 28mV
C	Active "H" ("H" level at detection)	$V_{DF} \times 5.0\%$
D		2mV ~ 28mV

Typical Application Circuit



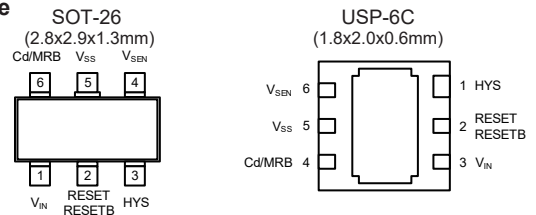
XC6134 : Voltage Detector with Sense Pin, Hys adj. and Detect/Release delay adj.

■Delay Capacitor Adjustable / Separated Sense Pin / HYS External Adjustment

Features

- Operating Voltage : 1.6V ~ 6.0V (Absolute Max.:7.0V)
- Detect Voltage Range : 0.8V ~ 5.0V
- Detect Voltage Accuracy : ±1.2%
- Temperature Characteristics : ±50ppm/°C
- Hysteresis width : $V_{DF} \times 0.1\%$
- Supply Current : 1.28μA
- Function : Separated Sense Pin
Manual Reset
Release delay / Detection delay Adj
Adj Hysteresis Width
- Output Type : CMOS, Nch Open drain
- Output Logic : "H" level or "L" level at detection
- Package : USP-6C, SOT-26
- Operating Ambient Temp. : -40°C ~ 125°C

Package



Ordering Information

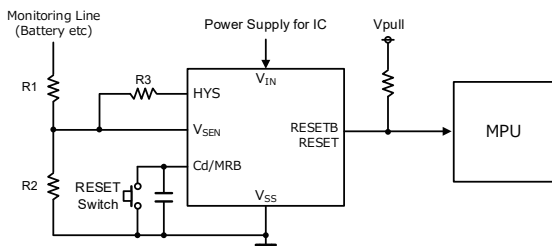
XC6134①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Output Configuration	C	CMOS output
		N	Nch Open drain output
②③	Detect Voltage	08~50	e.g. 1.0V → ②=1, ③=0
④	Type	A~M	Refer to Selection Guide
		MR-G	SOT-26 (3,000pcs/Reel)
⑤⑥⑦	Package (Order Unit)	ER-G	USP-6C (3,000pcs/Reel)

Selection Guide

Type	RESET/RESETB OUTPUT	DELAY (Rp:Rn)	
A	Active "H" ("H" level at detection)	1:0	144kΩ:0Ω
B		1:0.125	144kΩ:18kΩ
C		1:1	144kΩ:144kΩ
D		2:1	288kΩ:144kΩ
L	Active "L" ("L" level at detection)	0.076:1	11kΩ:144kΩ
E		1:0	144kΩ:0Ω
F		1:0.125	144kΩ:18kΩ
H		1:1	144kΩ:144kΩ
K		2:1	288kΩ:144kΩ
M		0.076:1	11kΩ:144kΩ

Typical Application Circuit



High voltage lines can be monitored and adjusted to any detect/release voltage by R1-3

1. Inductor Built-in "micro DC/DC"
2. Step-Down DC/DC
3. Step-Up DC/DC
4. Step-Up&Down DC/DC
5. Charge Pump
6. LED Driver
7. Multi Channel DC/DC
8. Voltage Detectors
9. Voltage Regulators Single Type
10. Voltage Regulator With reset function

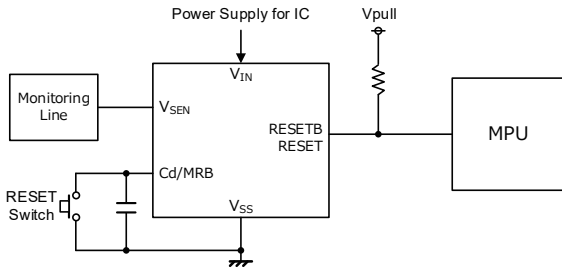
XC6133 : Voltage Detector with Sense Pin and Detect/Release delay adj.

■Delay Capacitor Adjustable / Separated Sense Pin

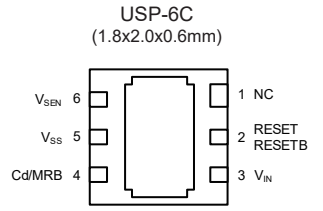
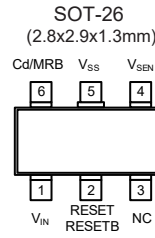
Features

- Operating Voltage : 1.6V ~ 6.0V (Absolute Max.:7.0V)
- Detect Voltage Range : 1.0V ~ 5.0V
- Detect Voltage Accuracy : ±1.2% (Ta=25°C)
±2.7% (Ta=-40~125°C)
- Temperature Characteristics : ±50ppm/°C
- Hysteresis width : $V_{DF} \times 5.0\%$
- Supply Current : 1.28µA
- Function : Separated Sense Pin
Manual Reset
Release delay / Detection delay Adj
- Output Type : CMOS, Nch Open drain
- Output Logic : "H" level or "L" level at detection
- Package : USP-6C, SOT-26
- Operating Ambient Temp. : -40°C ~ 125°C

Typical Application Circuit



Package



Ordering Information

XC6133①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Output Configuration	C	CMOS output
		N	Nch Open drain output
②③	Detect Voltage	10~50	e.g. 1.0V → ②=1, ③=0
④	Type	A~M	Refer to Selection Guide
⑤⑥-⑦	Package (Order Unit)	MR-G	SOT-26 (3,000pcs/Reel)
		ER-G	USP-6C (3,000pcs/Reel)

■Selection Guide

Type	RESET/RESETB OUTPUT	DELAY (Rp:Rn)	
A, B, C, D	Active "H" ("H" level at detection)	1:0	144kΩ:0Ω
		1:0.125	144kΩ:18kΩ
		1:1	144kΩ:144kΩ
		2:1	288kΩ:144kΩ
E, F, H, K, M	Active "L" ("L" level at detection)	0.076:1	11kΩ:144kΩ
		1:0	144kΩ:0Ω
		1:0.125	144kΩ:18kΩ
		1:1	144kΩ:144kΩ
	2:1	288kΩ:144kΩ	
	0.076:1	11kΩ:144kΩ	

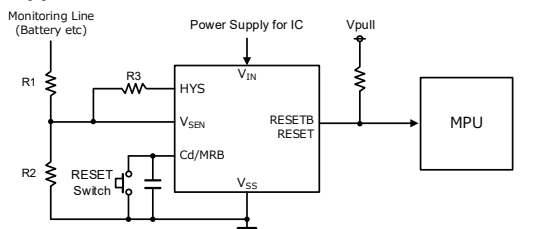
XC6132 : Voltage Detector with Sense Pin(Surge Protection), Hys adj. and delay adj.

■Delay Capacitor Adjustable / Surge Voltage Protection / HYS External Adjustment

Features

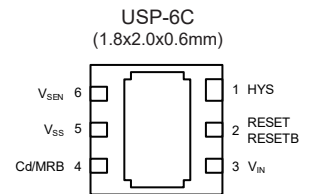
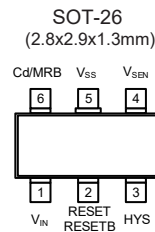
- Operating Voltage : 1.6V ~ 6.0V (Absolute Max.:7.0V)
- Detect Voltage Range : 0.8V ~ 2.0V
- Detect Voltage Accuracy : ±1.2% (Ta=25°C)
±2.7% (Ta=-40~125°C)
- Temperature Characteristics : ±50ppm/°C
- Hysteresis width : $V_{DF} \times 0.1\%$
- Supply Current : 1.28µA
- Function : Separated Sense Pin/Surge Protection
Manual Reset
Release delay / Detection delay Adj
Adj Hysteresis Width
- Output Type : CMOS, Nch Open drain
- Output Logic : "H" level or "L" level at detection
- Package : USP-6C, SOT-26
- Operating Ambient Temp. : -40°C ~ 125°C

Typical Application Circuit



High voltage lines can be monitored and adjusted to any detect/release voltage by R1-3

Package



Ordering Information

XC6132①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Output Configuration	C	CMOS output
		N	Nch Open drain output
②③	Detect Voltage	08 ~ 20	e.g. 1.0V → ②=1, ③=0
④	Type	A~M	Refer to Selection Guide
⑤⑥-⑦	Package (Order Unit)	MR-G	SOT-26 (3,000pcs/Reel)
		ER-G	USP-6C (3,000pcs/Reel)

■Selection Guide

Type	RESET/RESETB OUTPUT	DELAY (Rp:Rn)	
A, B, C, D	Active "H" ("H" level at detection)	1:0	144kΩ:0Ω
		1:0.125	144kΩ:18kΩ
		1:1	144kΩ:144kΩ
		2:1	288kΩ:144kΩ
E, F, H, K, M	Active "L" ("L" level at detection)	0.076:1	11kΩ:144kΩ
		1:0	144kΩ:0Ω
		1:0.125	144kΩ:18kΩ
		1:1	144kΩ:144kΩ
	2:1	288kΩ:144kΩ	
	0.076:1	11kΩ:144kΩ	

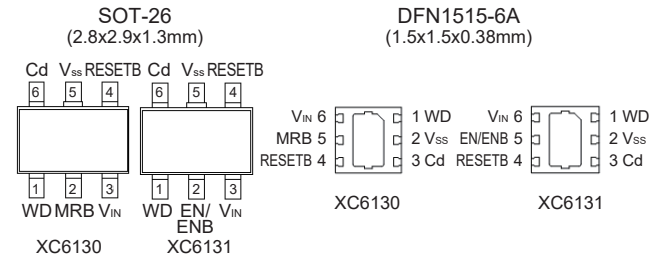
XC6130/XC6131 : Voltage Detector with Adjustable Watchdog Timer

Wide Operating Temperature ~125°C / Watchdog Function ON_OFF / Manual Reset

Features

- Operating Voltage : 1.5V ~ 6.0V (Absolute Max.: 7.0V)
- Detect Voltage Range : 1.6V ~ 5.0V ±1.0% (SOT-26)
1.6V ~ 5.0V ±1.5% (DFN1515-6A)
- Temperature Characteristics : ±50ppm/°C
- Hysteresis Width : $V_{DFL} \times 5.0\%$
- Output Configuration : Nch Open drain
- Supply Current : 8.1µA : Detect
9.8µA : Release
2.5µA : Release (EN=L)
- WD Timeout Time : 100ms (Cd=0.1µF)
- Release Delay Time : 100ms (Cd=0.1µF) (at power on)
10ms (Cd=0.1µF) (After Watchdog Timeout)
- Function : Manual Reset (XC6130)
Watchdog Function ON/OFF (XC6131)
- Package : SOT-26, DFN1515-6A
- Operating Ambient Temp. : -40°C ~ 125°C

Package



Ordering Information

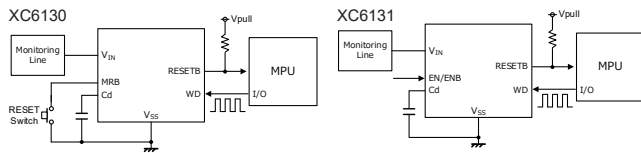
XC6130 ①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	MRB pin With pull-up resistor
②③	Detect Voltage	16 ~ 50	e.g. 1.6V → ②=1, ③=6
④	Detect Accuracy	1	±1.0% (SOT-26)
		A	±1.5% (DFN1515-6A)
⑤⑥-⑦	Package (Order Unit)	MR-G	SOT-26 (3,000pcs/Reel)
		6R-G	DFN1515-6A (5,000pcs/Reel)

XC6131 ①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	EN pin With pull-up resistor
		B	ENB pin With pull-down resistor
②③	Detect Voltage	16 ~ 50	e.g. 1.6V → ②=1, ③=6
④	Detect Accuracy	1	±1.0% (SOT-26)
		A	±1.5% (DFN1515-6A)
⑤⑥-⑦	Package (Order Unit)	MR-G	SOT-26 (3,000pcs /Reel)
		6R-G	DFN1515-6A (5,000pcs /Reel)

Typical Application Circuit



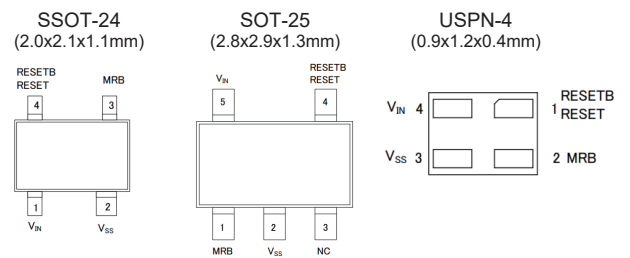
XC6127 : Voltage Detector with built in Delay and Manual Reset

Available in both "L" and "H" for Output Logic / Built in Delay / Manual Reset

Features

- Operating Voltage : 0.7V ~ 6.0V (Absolute Max.: 6.5V)
- Detect Voltage Range : 1.5V ~ 5.5V
- Accuracy : ±0.8%
- Temperature Characteristics : ±50ppm/°C
- Supply Current : 0.6µA (Detect)
0.7µA (Release)
- Output Configuration : CMOS, Nch Open drain
- Output Logic : "H" level or "L" level at detection
- Release Delay Time : 50ms/100ms/200ms/400m/800ms±15%
- Function : Manual Reset (Built-in Pull-up resistance)
- Package : USPN-4, SSOT-24, SOT-25
- Operating Ambient Temp. : -40°C ~ 85°C

Package

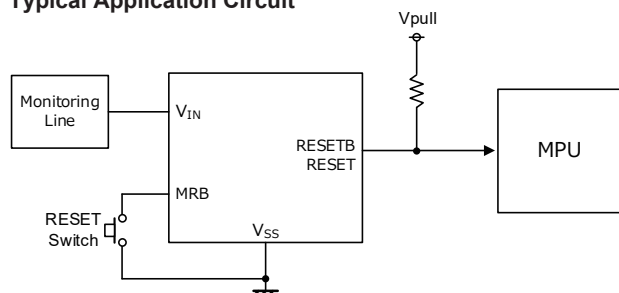


Ordering Information

XC6127 ①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Output Configuration	C	CMOS output
		N	Nch Open drain output
②③	Detect Voltage	15~55	e.g. 2.7V → ②=2, ③=7
④	Type	A	Reset Active "L", Release Delay Time: 50ms
		B	Reset Active "L", Release Delay Time: 100ms
		C	Reset Active "L", Release Delay Time: 200ms
		D	Reset Active "L", Release Delay Time: 400ms
		E	Reset Active "L", Release Delay Time: 800ms
		F	Reset Active "H", Release Delay Time: 50ms
		G	Reset Active "H", Release Delay Time: 100ms
		H	Reset Active "H", Release Delay Time: 200ms
		J	Reset Active "H", Release Delay Time: 400ms
		K	Reset Active "H", Release Delay Time: 800ms
		⑤⑥-⑦	Package (Order Unit)
MR-G	SOT-25 (3,000pcs/Reel)		
NR-G	SSOT-24 (3,000pcs/Reel)		

Typical Application Circuit



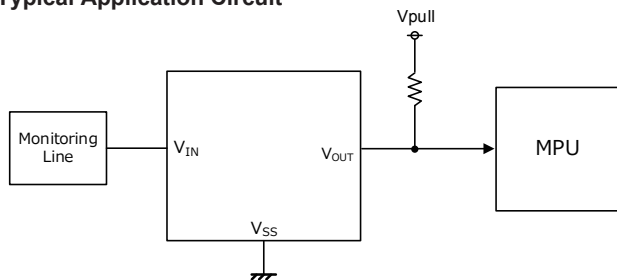
XC6126 : Ultra Small, Highly Accurate Voltage Detector

■Ultra Small / High Accuracy / Low Power Consumption

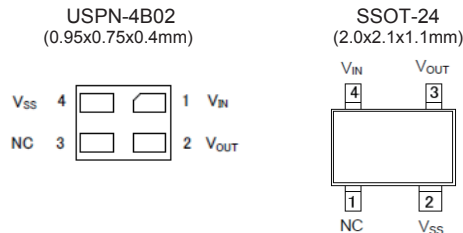
Features

- Operating Voltage : 0.7V ~ 6.0V (Absolute Max.: 6.5V)
- Detect Voltage Range : 1.5V ~ 5.5V (0.1V increments)
- Accuracy : ±0.8%
- Temperature Characteristics : ±50ppm/°C
- Supply Current : 0.6µA
- Output Configuration : CMOS, Nch Open drain
- Output Logic : "L" level at detection
- Package : USPN-4B02, SSOT-24
- Operating Ambient Temp. : -40 ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC6126①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Output Configuration	C	CMOS output
		N	Nch Open drain output
②③	Detect Voltage	15~55	e.g. 2.7V → ②=2, ③=7
④	Detect Accuracy	A	±0.8%
⑤⑥⑦	Package (Order Unit)	7R-G	USPN-4B02 (5,000pcs/Reel)
		NR-G	SSOT-24 (3,000pcs/Reel)

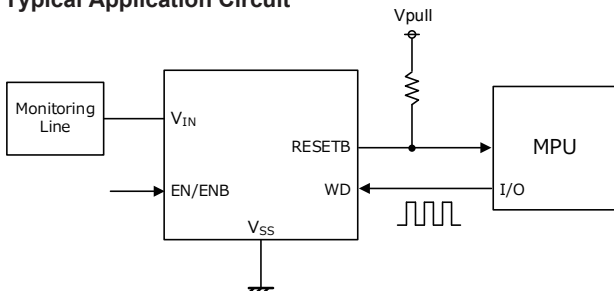
XC6121/XC6122/XC6123/XC6124 : Voltage Detector with Watchdog

■ON_OFF Control / Watchdog Timer / Built-in Delay

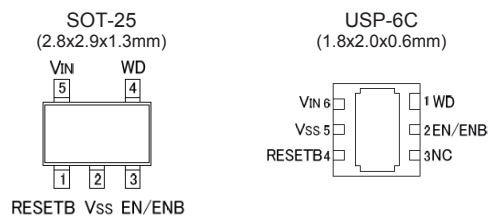
Features

- Operating Voltage : 1.0V ~ 6.0V (Absolute Max.: 7.0V)
- Detect Voltage Range : 1.6V ~ 5.0V (±2%)
- Hysteresis Width : V_{DF} x5.0%
- Temperature Characteristics : ±100ppm/°C
- Output Configuration : Nch Open drain
- Release Delay Time : 400ms, 200ms, 100ms, 50ms, 3.13ms
- Watchdog Timeout Period : 1.6s, 800ms, 400ms, 200ms, 100ms, 50ms
- Function : Watchdog Function ON/OFF
- Package : SOT-25, USP-6C
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC6121①②③④⑤⑥⑦: EN Pin, No Pull-Up Resistor
 XC6122①②③④⑤⑥⑦: EN Pin, Pull-Up Resistor
 XC6123①②③④⑤⑥⑦: ENB Pin, No Pull-Down Resistor
 XC6124①②③④⑤⑥⑦: ENB Pin, Pull-Down Resistor

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Release Delay Time ^(*)	A	3.13ms
		C	50ms
		D	100ms
		E	200ms
		F	400ms
		G	400ms
②	Watchdog Timeout Period	2	50ms
		3	100ms
		4	200ms
		5	400ms
		6	1.6s
		7	800ms
		③④	Detect Voltage
⑤⑥⑦	Package(Order Unit)	MR-G	SOT-25 (3,000pcs/Reel)
		ER-G	USP-6C (3,000pcs/Reel)

^(*) Please set the release delay time shorter than or equal to the watchdog timeout period. ex.) XC6121D327MR or XC6121D627MR

XC6120

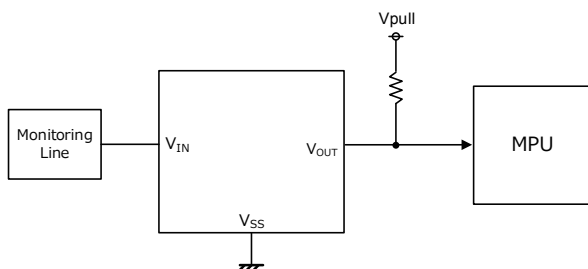
 : Low Power Voltage Detector

■Ultra Small / Low Power Consumption

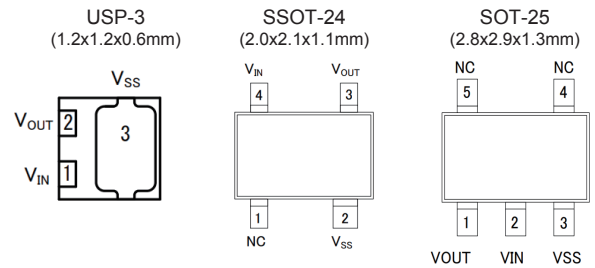
Features

Operating Voltage	: 0.7V ~ 6.0V (Absolute Max.:7.0V)
Detect Voltage Range	: 1.0V ~ 5.0V (0.1V increments)
Accuracy	: ±2.0%
Temperature Characteristics	: ±100ppm/°C
Hysteresis Width	: $V_{DF} \times 5\%$
Supply Current	: 0.6μA
Output Configuration	: CMOS, Nch Open drain
Output Logic	: "L" level at detection
Package	: USP-3, SSOT-24, SOT-25
Operating Ambient Temp.	: -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC6120①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Output Configuration	C	CMOS output
		N	Nch Open drain output
②③	Detect Voltage	10~50	e.g. 1.0V → ②1, ③0
④	Detect Accuracy	2	±30mV ($V_{DF} < 1.5V$) ±2.0% ($1.5V \leq V_{DF}$)
⑤⑥⑦ ^(*)	Package (Order Unit)	HR-G	USP-3 (3,000pcs/Reel)
		NR-G	SSOT-24 (3,000pcs/Reel)
		SR-G	SOT-25 (3,000pcs/Reel) Standard feed ^(*)
		SL-G	SOT-25 (3,000pcs/Reel) Reverse feed ^(*)

(*) SOT-25 uses Cu wires.

XC6119

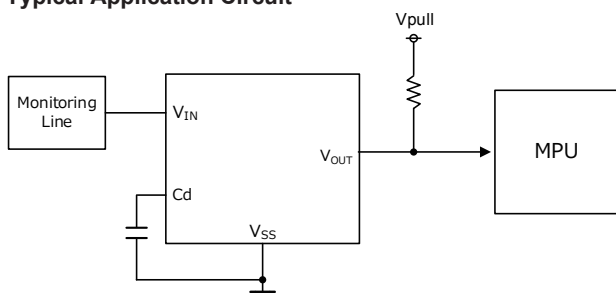
 : Low Power Voltage Detector with External Delay

■Low Power Consumption / External Delay

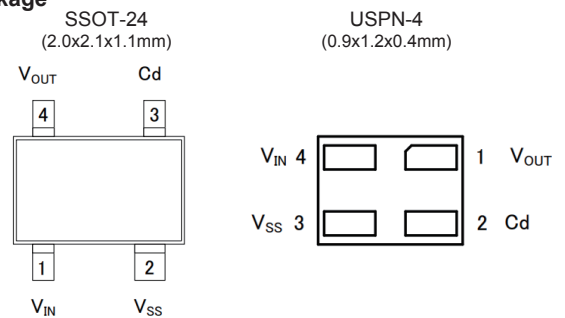
Features

Operating Voltage	: 0.7V ~ 6.0V (Absolute Max.:7.0V)
Detect Voltage Range	: 0.8V ~ 5.0V (0.1V increments)
Accuracy	: ±2.0%
Temperature Characteristics	: ±100ppm/°C
Hysteresis Width	: $V_{DF} \times 5.0\%$
Supply Current	: 0.5μA in detect state 0.9μA in release state
Output Configuration	: CMOS, Nch Open drain
Output Logic	: "L" level at detection
Function	: Delay Time Adjustable
Package	: SSOT-24, USPN-4
Operating Ambient Temp.	: -40 °C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC6119①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Output Configuration	C	CMOS output
		N	Nch Open drain output
②③	Detect Voltage	08~50	e.g. 18→1.8V
④	Output Delay & Hysteresis	A	Built-in delay pin & hysteresis 5%
⑤⑥⑦	Package (Order Unit)	7R-G	USPN-4 (5,000pcs/Reel)
		NR-G	SSOT-24 (3,000pcs/Reel)

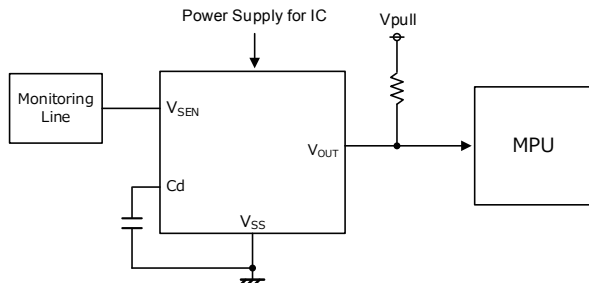
XC6118 : Voltage Detector with Sense Pin & External Delay

■Separated Sense pin / External Delay

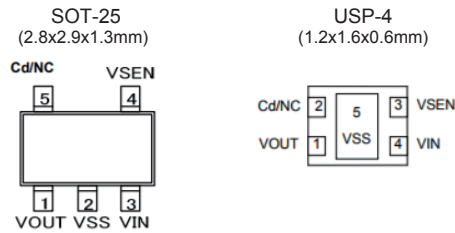
Features

Operating Voltage	: 1.0V ~ 6.0V (Absolute Max.:7.0V)
Detect Voltage Range	: 0.8V ~ 5.0V (0.1V increments)
Accuracy	: ±2.0%
Temperature Characteristics	: ±100ppm/°C
Supply Current	: 0.4μA (Detect, $V_{IN}=1.0V$) 0.8μA (Release, $V_{IN}=1.0V$)
Output Configuration	: CMOS, Nch Open drain
Output Logic	: "L" level at detection
Function	: Separated Sense Pin Release delay time adjustable
Package	: USP-4, SOT-25
Operating Ambient Temp.	: -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC6118①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Output Configuration	C	CMOS output
		N	Nch Open drain output
②③	Detect Voltage	08 ~ 50	e.g. 18→1.8V
		A	Built-in delay capacitance pin, hysteresis 5%
④	Options	B	Built-in delay capacitance pin, hysteresis less than 1%
		C	No Built-in delay capacitance pin, hysteresis 5% (Semi-custom)
		D	No Built-in delay capacitance pin, hysteresis less than 1% (Semi-custom)
⑤⑥-⑦	Package (Order Unit)	GR-G	USP-4 (3,000pcs/Reel)
		MR-G	SOT-25 (3,000pcs/Reel)

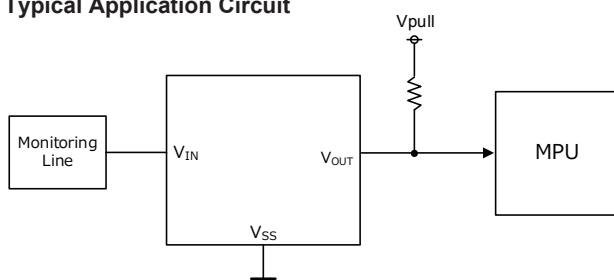
XC61F/XC61H : 10V Voltage Detector with Built-in Delay Circuit

■Low Power Consumption / 10V Input Voltage / Built-in Delay Circuit

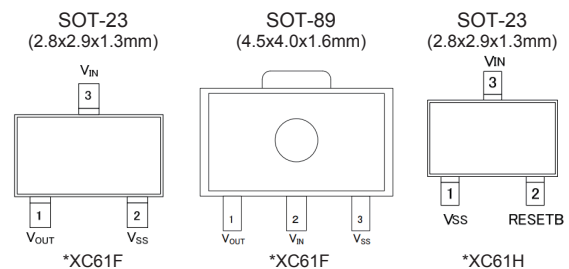
Features

Operating Voltage	: 0.7V ~ 10.0V (Absolute Max.: 12.0V)
Detect Voltage Range	: 1.6V ~ 6.0V (0.1V increments)
Accuracy	: ±2%
Temperature Characteristics	: ±100ppm/°C
Hysteresis Width	: $V_{DF} \times 5.0\%$
Supply Current	: 1.0μA
Built-in Release Delay time:	① 1ms ~ 50ms ② 50ms ~ 200ms ③ 80ms ~ 400ms
Output Configuration	: CMOS, Nch Open drain
Output Logic	: "L" level at detection
Package	: XC61F : SOT-23, SOT-89 XC61H : SOT-23
Operating Ambient Temp.	: -30°C ~ 80°C

Typical Application Circuit



Package



Ordering Information

XC61F①②③④⑤⑥⑦-⑧
XC61H①②③④⑤⑥⑦-⑧

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Output Configuration	C	CMOS output
		N	Nch Open drain output
②③	Detect Voltage	16 ~ 60	e.g. 2.5V → ②2, ③5
④	Built-in Release Delay time	1	50ms ~ 200ms
		4	80ms ~ 400ms
		5	1ms ~ 50ms
⑤	Detect Accuracy	2	± 2.0%
⑥⑦-⑧	Package (Order Unit)	MR-G	SOT-23 (3,000pcs/Reel)
		PR-G	SOT-89 (1,000pcs/Reel) *XC61F

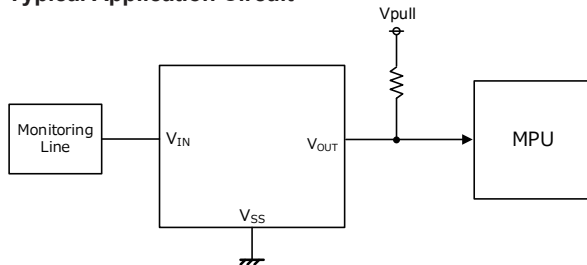
XC61C/XC61G : 10V Voltage Detector with built-in delay

Low Power Consumption / 10V Input Voltage

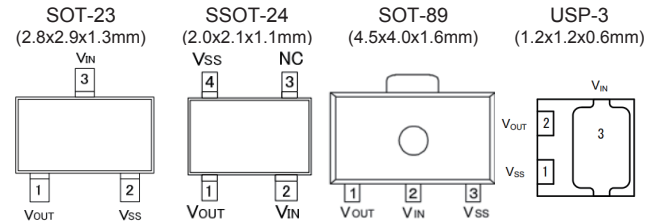
Features

Operating Voltage	: 0.7V ~ 6.0V ($V_{DF(T)} \leq 1.5V$, Absolute Max.: 9.0V) 0.7V ~ 10.0V ($1.6V \leq V_{DF(T)}$, Absolute Max.: 12.0V)
Detect Voltage Range	: 0.8V ~ 6.0V (0.1V increments)
Accuracy	: $\pm 2.0\%$: $\pm 1.0\%$ *XC61C (Standard Voltage : 2.6V ~ 5.1V)
Temperature Characteristics	: $\pm 100\text{ppm}/^\circ\text{C}$
Supply Current	: $0.7\mu\text{A}$
Output Configuration	: CMOS, Nch Open drain
Output Logic	: "L" level at detection
Package	: XC61C : SSOT-24, SOT-23, SOT-89 XC61G : USP-3
Operating Ambient Temp.	: $-40^\circ\text{C} \sim 85^\circ\text{C}$

Typical Application Circuit



Package



Ordering Information

XC61C①②③④⑤⑥⑦-⑧
XC61G①②③④⑤⑥⑦-⑧

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Output Configuration	C	CMOS output
		N	Nch Open drain output
②③	Detect Voltage	08 ~ 60	e.g. 0.9V → ②0, ③9, 1.5V → ②1, ③5
④	Output Delay	0	No delay
⑤	Detect Accuracy	1	$\pm 1.0\%$ ($V_{DF}=2.6V\sim 5.1V$) *XC61C
		2	$\pm 2.0\%$
⑥⑦-⑧	Package (Order Unit)	NR-G	SSOT-24 (3,000pcs/Reel) *XC61C
		MR-G	SOT-23 (3,000pcs/Reel) *XC61C
		PR-G	SOT-89 (1,000pcs/Reel) *XC61C
		HR-G	USP-3 (3,000pcs/Reel) *XC61G

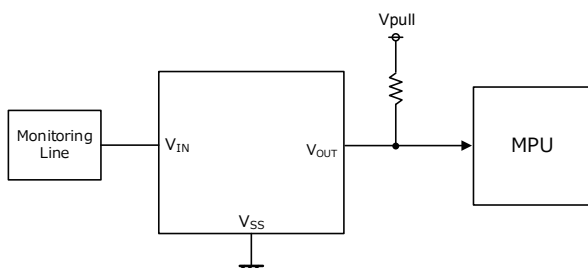
XC61J : Low Power Voltage Detector

Low Power Consumption

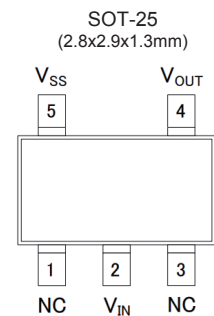
Features

Operating Voltage	: 0.7V ~ 6.0V (Absolute Max.: 7.0V)
Detect Voltage Range	: 1.0V ~ 5.0V (0.1V increments)
Accuracy	: $\pm 2.0\%$
Supply Current	: $0.6\mu\text{A}$
Temperature Characteristics	: $\pm 100\text{ppm}/^\circ\text{C}$
Output Configuration	: CMOS or Nch Open drain
Output Logic	: "L" level at detection
Package	: SOT-25
Operating Ambient Temp.	: $-40^\circ\text{C} \sim 85^\circ\text{C}$

Typical Application Circuit



Package



Ordering Information

XC61J①②③④⑤⑥⑦-⑧

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Output Configuration	C	CMOS output
		N	Nch Open drain output
②③	Detect Voltage	10~50	e.g. 1.0V → ②=1, ③=0
④⑤	Detect Accuracy	2	$\pm 30\text{mV}$ ($V_{DF} < 1.5V$) $\pm 2.0\%$ ($1.5V \leq V_{DF}$)
⑥⑦-⑧	Package (Order Unit)	MR-G	SOT-25 (3,000pcs/Reel) Standard feed
		ML-G	SOT-25 (3,000pcs/Reel) Reverse feed

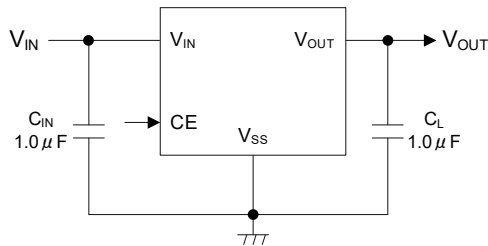
XC6241 : 150mA Voltage Regulator with Green Operation

■Green Operation Function(Low Supply Current & High Speed)

Features

- Input Voltage : 1.6V ~ 6.0V (Absolute Max.:6.5V)
- Output Voltage Range : 1.2V ~ 5.0V (0.05V increments)
- Accuracy : ±1.0%
- Output Current : 150mA
- Ripple Rejection (PSRR) : 60dB@1kHz (@High Speed Mode)
- Supply Current : 0.6µA (@Power Save Mode)
- Function : Green Operation
ON/OFF
C_L Discharge (A Type)
- Protection : Current Limit
- Package : USPQ-4B05, SSOT-24
- Operating Ambient Temp. : -40°C ~ 105°C

Typical Application Circuit



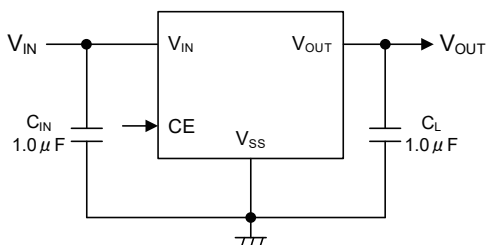
XC6238 : 300mA High Speed LDO Regulator with Inrush Current Prevention

■Low Noise / High Speed

Features

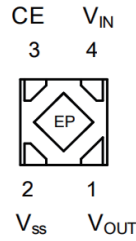
- Input Voltage : 1.6V ~ 5.5V (Absolute Max.: 7.0V)
- Output Voltages : 1.2V ~ 1.95V (±20mV)
2.0V ~ 4.0V (±1.0%)
0.05V increments
- Output Current : 300mA
- Ripple Rejection (PSRR) : 80dB@1kHz
- Supply Current : 100µA
- Dropout Voltage : 200mV@300mA (V_{OUT}=3.0V)
- Function : ON/OFF
C_L Discharge
- Protection : Current Limit
Inrush Current Protection (Type H)
- Low ESR Capacitors : C_{IN}=1µF, C_L=1µF
- Package : UFN-4A01
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit

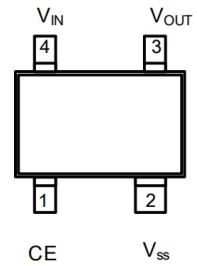


Package

USPQ-4B05
(1.0x1.0x0.33mm)



SSOT-24
(2.0x2.1x1.1mm)



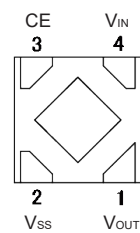
Ordering Information

XC6241①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	With C _L Discharge
		B	Without C _L Discharge
②③	Output Voltage	12 ~ 50	e.g. 2.8V → ②=2, ③=8
④	Output Voltage (the 2 nd decimal place)	1	Output Voltage {x.x0V} e.g. 2.80V → ②=2, ③=8, ④=1
		B	Output Voltage {x.x5V} e.g. 2.85V → ②=2, ③=8, ④=B
⑤⑥-⑦	Package (Order Unit)	9R-G	USPQ-4B05 (5,000pcs/Reel)
		NR-G	SSOT-24 (3,000pcs/Reel)

Package

UFN-4A01
(1.0x1.0x0.6mm)



Ordering Information

XC6238①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	D	Without Inrush Current Prevention
		H	With Inrush Current Prevention
②③	Output Voltage	12 ~ 40	e.g. 2.8V → ②=2, ③=8
④	Fixed No.	1	±1.0% (V _{OUT} ≥ 2.00V) ±20mV (V _{OUT} < 2.00V) In case of 2nd decimal place 0 e.g. 2.80V → ④=1
		B	±1.0% (V _{OUT} ≥ 2.00V) ±20mV (V _{OUT} < 2.00V) In case of 2nd decimal place 5 e.g. 2.85V → ④=B
⑤⑥-⑦	Package (Order Unit)	6R-G	UFN-4A01 (3,000pcs/Reel)

1. Inductor Built-in "Micro DC/DC"
2. Step-Down DC/DC
3. Step-Up DC/DC
4. Step-Up&Down DC/DC
5. Charge Pump
6. LED Driver
7. Multi Channel DC/DC
8. Voltage Detectors
9. Voltage Regulators Single Type
10. Voltage Regulator With reset function

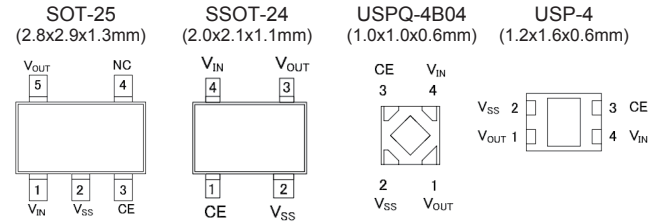
XC6233 : 200mA High Speed Voltage Regulator with Inrush Current Protection

High Speed / Low Noise / Inrush Current Protection

Features

- Input Voltage : 1.7V ~ 5.5V (Absolute Max.: 6.0V)
- Output Voltage Range : 1.2V ~ 3.6V ($\pm 1.0\%$)
- Dropout Voltage : 240mV@200mA ($V_{OUT}=3.0V$)
- Output Current : 200mA
- Supply Current : 45 μ A
- Ripple Rejection (PSRR) : 75dB@1kHz
- Function : ON/OFF
Inrush Current Protection
 C_L Discharge
- Protection : Current Limit
- Package : USP-4, SSOT-24, SOT-25, USPQ-4B04
- Operating Ambient Temp. : -40°C ~ 85°C

Package

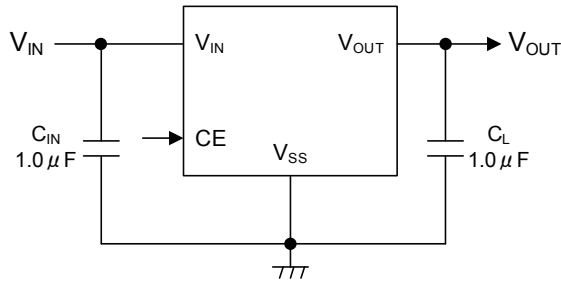


Ordering Information

XC6233①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	H	CE Pull-down, C_L Discharge, Inrush Current Protection
②③	Output Voltage	12~36	e.g. 2.8V → ②=2, ③=8
④	Output Voltage Accuracy	1	0.1V increments, $\pm 1.0\%$ ($V_{OUT} \geq 2.00V$), $\pm 20mV$ ($V_{OUT} < 2.00V$) e.g. 2.8V → ④=1
		B	0.05V increments, $\pm 1.0\%$ ($V_{OUT} \geq 2.05V$), $\pm 20mV$ ($V_{OUT} < 2.05V$) e.g. 2.85V → ④=B
⑤⑥-⑦	Package (Order Unit)	9R-G	USPQ-4B04 (3,000pcs/Reel)
		GR-G	USP-4 (3,000pcs/Reel)
		NR-G	SSOT-24 (3,000pcs/Reel)
		MR-G	SOT-25 (3,000pcs/Reel)

Typical Application Circuit



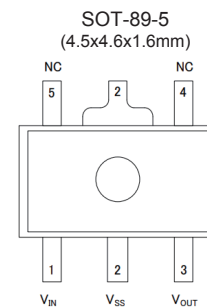
XC6231 : 10V 500mA Voltage Regulator in SOT-89-5

10V / High Speed

Features

- Input Voltage : 2.0V ~ 10.0V (Absolute Max.: 12.0V)
- Output Voltage Range : 0.9V ~ 5.5V ($\pm 2.0\%$)
- Output Current : 500mA (600mA Limit)
($2.5V \leq V_{OUT} \leq 5.5V$)
- Ripple Rejection (PSRR) : 65dB@10kHz
- Supply Current : 35 μ A
- Dropout Voltage : 200mV@100mA
- Protection : Current Limit
- Package : SOT-89-5
- Operating Ambient Temp. : -40°C ~ 85°C

Package

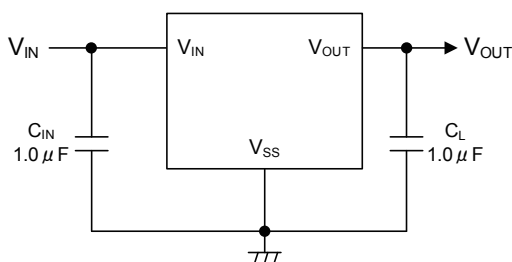


Ordering Information

XC6231A①②③④⑤-⑥

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①②	Output Voltage	09~55	0.9V~5.5V (0.1V increments)
③	Output Voltage Accuracy	2	$\pm 2.0\%$
④⑤-⑥	Package (Order Unit)	PR-G	SOT-89-5 (1,000pcs/Reel)

Typical Application Circuit



1. Inductor Built-in "Micro DC/DC"
 2. Step-Down DC/DC
 3. Step-Up DC/DC
 4. Step-Up&Down DC/DC
 5. Charge Pump
 6. LED Driver
 7. Multi Channel DC/DC
 8. Voltage Detectors
 9. Voltage Regulators Single Type
 10. Voltage Regulator With reset function

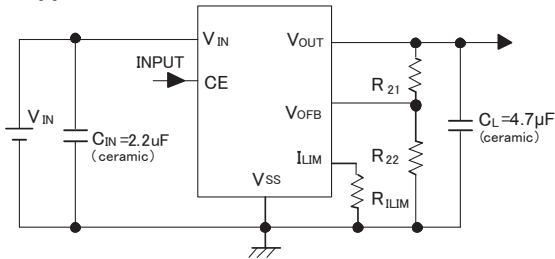
XC6230 : Adjustable 2A High Speed Voltage Regulator with Multifunction

■Low ON-resistance / High Speed / Reverse Current Protection

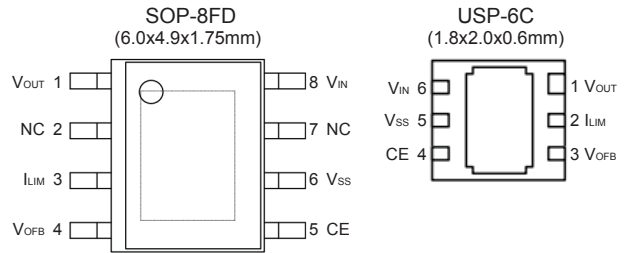
Features

- Input Voltage : 1.7V ~ 6.0V (Absolute Max.: 7.0V)
- Output Voltage Setting Range: 1.2V ~ 5.0V ($V_{OFB} \pm 1.0\%$)
- Output Current : 2.0A
- Dropout Voltage : 0.17V@1A (USP-6C)
0.23V@1A (SOP-8FD)
- Ripple Rejection (PSRR) : 70dB@1kHz
- Supply Current : 45μA
- Function : ON/OFF
Reverse Current Protection
Inrush Current Protection
Output Voltage Adjustable
Current Limit Adjustable
C_L Discharge
- Protection : Current limit
Thermal shutdown
- Package : USP-6C, SOP-8FD
- Operating Ambient Temp. : -40°C ~ 105°C

Typical Application Circuit



Package



Ordering Information

XC6230①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	With C _L Discharge
		B	Without C _L Discharge
②③	Adjustable Output Voltage	00	1.20V
④	Adjustable Output Voltage Accuracy	1	±1.0%
⑤⑥-⑦	Package (Order Unit)	ER-G	USP-6C (3,000pcs/Reel)
		QR-G	SOP-8FD (1,000pcs/Reel)

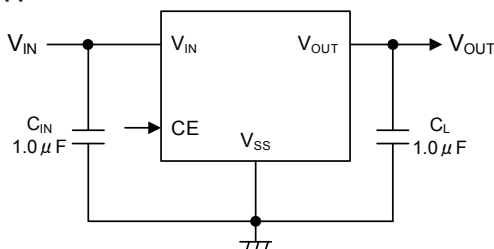
XC6229 : Ultra Small 300mA High Speed, Low Noise LDO

■Inrush Protection/ High Speed / Ultra Small

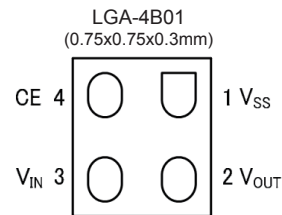
Features

- Input Voltage : 1.6V ~ 5.5V (Absolute Max.:7.0V)
- Output Voltages : 1.2V ~ 4.0V
- Accuracy : ±1.0%
- Output Current : 300mA
- Ripple Rejection (PSRR) : 80dB@1kHz
- Supply Current : 100μA
- Dropout Voltage : 80mV@150mA
- Function : ON/OFF
C_L Discharge
- Protection : Current Limit
Thermal Shutdown
Inrush Current Protection
- Output Capacitor : C_{IN} = 1.0μF, C_L = 1.0μF
- Package : LGA-4B01
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC6229①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	D	Without Inrush Current Protection
		H	With Inrush Current Protection
②③	Output Voltage	12~40	e.g. 2.8V → ②=2, ③=8
④	Output Voltage (the 2 nd decimal place)	1	In case of 2 nd decimal place 0 (e.g. 2.80V → ④=1)
		B	In case of 2 nd decimal place 5 (e.g. 2.85V → ④=B)
⑤⑥-⑦	Package (Order Unit)	1R-G	LGA-4B01 (5,000pcs/Reel)

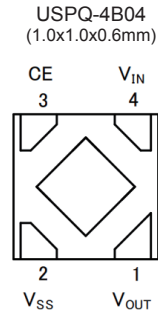
XC6228 : 300mA High Speed Voltage Regulator with Inrush Current Protection

Low Noise / High Speed / Inrush Current Protection

Features

- Input Voltage : 1.6V ~ 5.5V (Absolute Max.: 7.0V)
- Output Voltage : 1.2V ~ 4.0V (±2%)
- Output Current : 300mA
- Dropout Voltage : 200mV@300mA (V_{OUT}=3.0V)
- Supply Current : 100µA
- Ripple Rejection (PSRR) : 80dB@1kHz
- Function : ON/OFF
C_L Discharge
- Protection : Current Limit
Inrush Current Protection
- Output Capacitor : C_{IN}=1µF, C_L=1µF
- Small Package : USPQ-4B04
- Operating Ambient Temp. : -40°C ~ 85°C

Package

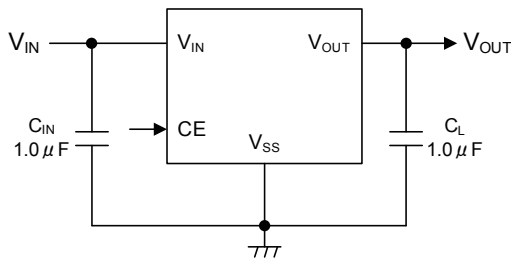


Ordering Information

XC6228①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Inrush Current Protection CE Pull-down
②③	Output Voltage	12 ~ 40	e.g. 2.80V → ②=2, ③=8
④	Output Voltage Accuracy	2	±2.0%
⑤⑥-⑦	Package (Order Unit)	9R-G	USPQ-4B04 (3,000pcs/Reel)

Typical Application Circuit



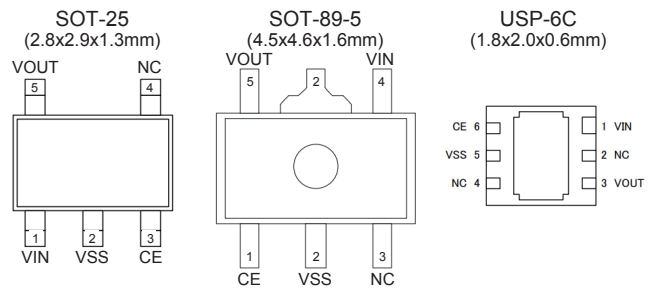
XC6227 : 700mA High Speed Voltage Regulator with Reverse Current Protection

Low Noise / High Speed / Reverse Current Protection

Features

- Input Voltage : 1.7V ~ 6.0V (Absolute Max.:6.5V)
- Output Voltages : 0.8V ~ 5.0V (0.05V increments)
- Accuracy : ±1.0%
- Output Current : 700mA
- Ripple Rejection (PSRR) : 65dB@1kHz
- Supply Current : 100µA
- Dropout Voltage : 120mV@300mA(V_{OUT}=3.0V)
- Function : ON/OFF
Reverse Current Protection
- Protection : Thermal shutdown
Current limit
- Package : USP-6C, SOT-25, SOT-89-5
- Operating Ambient Temp. : -40°C ~ 85°C

Package

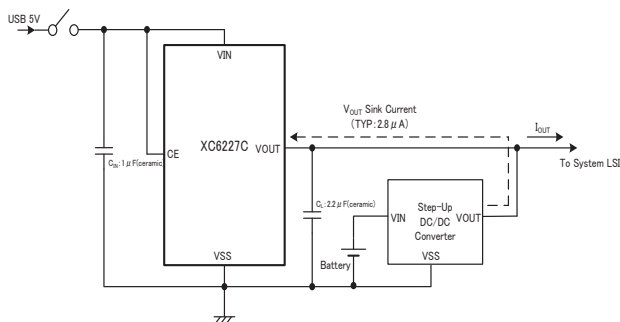


Ordering Information

XC6227①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Without CE pull-down
		C	With CE pull-down
②③	Output Voltage	08 ~ 50	e.g. 2.8V → ②=2, ③=8
④	Output Voltage Type (the 2 nd decimal place)	1	Output voltage {x.x0V} (the 2 nd decimal place is "0") ±1.0% (V _{OUT} >2.0V), ±20mV (V _{OUT} ≤2.0V)
		B	Output voltage {x.x5V} (the 2 nd decimal place is "5") ±1.0% (V _{OUT} >2.0V), ±20mV (V _{OUT} ≤2.0V)
⑤⑥-⑦	Package (Order Unit)	MR-G	SOT-25 (3,000pcs/Reel)
		PR-G	SOT-89-5 (1,000pcs/Reel)
		ER-G	USP-6C (3,000pcs/Reel)

Typical Application Circuit



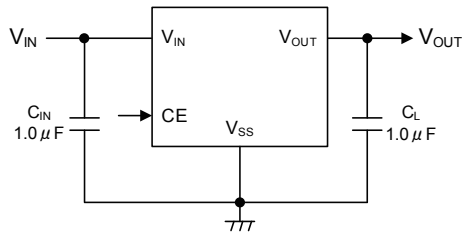
XC6223 : 300mA High Speed Voltage Regulator with Inrush Current Protection

Low Noise / High Speed

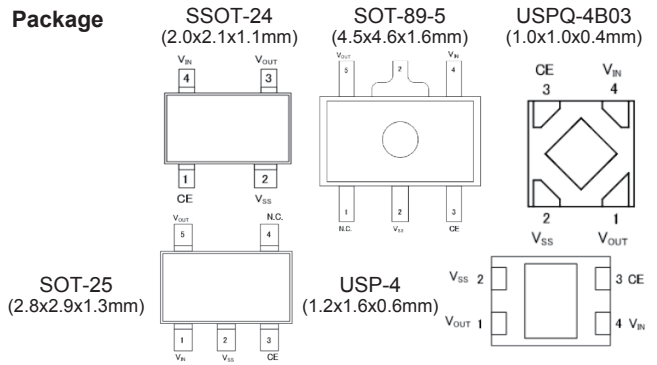
Features

- Input Voltage : 1.6V ~ 5.5V (Absolute Max.: 7.0V)
- Output Voltage : 2.0V ~ 4.0V ($\pm 1.0\%$)
1.2V ~ 1.95V ($\pm 20\text{mV}$)
- Output Current : 300mA
- Dropout Voltage : 200mV@300mA ($V_{\text{OUT}}=3.0\text{V}$)
- Supply Current : 100 μA
- Ripple Rejection (PSRR) : 80dB@1kHz
- Function : ON/OFF, C_L Discharge
Inrush Current Protection
- Protection : Current Limit
Thermal Shutdown
- Output Capacitor : $C_{\text{IN}}=1.0\mu\text{F}$, $C_L=1.0\mu\text{F}$
- Package : USPQ-4B03, USP-4, SSOT-24,
SOT-25, SOT-89-5
- Operating Ambient Temp. : $-40^\circ\text{C} \sim 105^\circ\text{C}$

Typical Application Circuit



Package



Ordering Information

XC6223①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	J/K/M/N/ P/Q/R/T	Refer to Selection Guide
②③	Output Voltage	12 ~ 40	e.g. 2.8V → ②=2, ③=8
④	Output Voltage Type	1	In case of 2nd decimal place 0 (e.g. 2.80V → ④=1)
		B	In case of 2nd decimal place 5 (e.g. 2.85V → ④=B)
⑤⑥⑦	Package (Order Unit)	9R-G	USPQ-4B03 (5,000pcs/Reel)
		GR-G	USP-4 (3,000pcs/Reel)
		NR-G	SSOT-24 (3000pcs/Reel)
		PR-G	SOT-89-5 (1,000pcs/Reel)

Selection Guide

Type	Inrush Current Protection	CE Pull-down	C_L Discharge	Type	Inrush Current Protection	CE Pull-down	C_L Discharge
J	No	No	No	P	Yes	No	No
K			Yes	Q			Yes
M		Yes	No	R		No	
N			Yes	T		Yes	

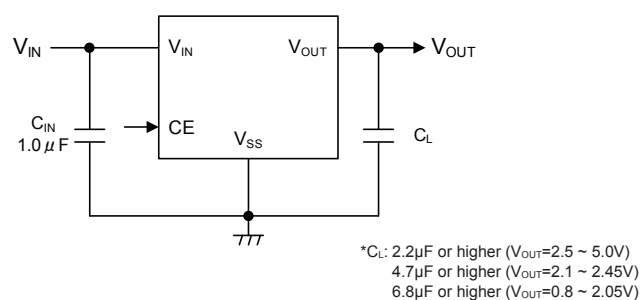
XC6222 : 700mA High Speed Voltage Regulator

Low Noise / High Speed

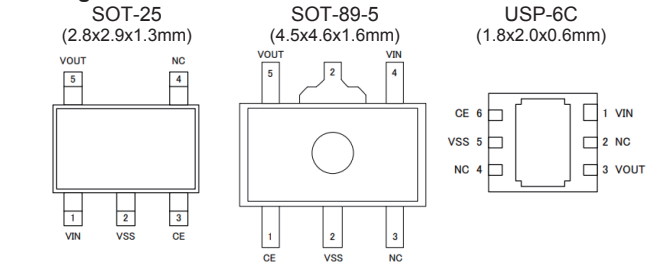
Features

- Input Voltage : 1.7V ~ 6.0V (Absolute Max.:6.5V)
- Output Voltage : 0.8V ~ 5.0V (0.05V increments)
- Accuracy : $\pm 1.0\%$
- Output Current : 700mA
- Ripple Rejection (PSRR) : 65dB@1kHz
- Supply Current : 100 μA
- Dropout Voltage : 120mV@300mA ($V_{\text{OUT}}=3.0\text{V}$)
- Function : ON/OFF, C_L Discharge
- Protection : Current Limit
Thermal Shutdown
- Package : USP-6C, SOT-25, SOT-89-5
- Operating Ambient Temp. : $-40^\circ\text{C} \sim 85^\circ\text{C}$

Typical Application Circuit



Package



Ordering Information

XC6222①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Without CE Pull-down resistor, without C_L Discharge
		B	Without CE Pull-down resistor, with C_L Discharge
		C	With CE Pull-down resistor, without C_L Discharge
		D	With CE Pull-down resistor, with C_L Discharge (The Recommended Type)
②③	Output Voltage	08 ~ 50	e.g. 2.8V → ②=2, ③=8 (0.05V increments)
④	Output Voltage Accuracy	1	Output Voltage {x.x0V} (the 2nd decimal place is "0") $\pm 1.0\%$ ($V_{\text{OUT}} > 2.0\text{V}$), $\pm 20\text{mV}$ ($V_{\text{OUT}} \leq 2.0\text{V}$)
		B	Output Voltage {x.x5V} (the 2nd decimal place is "5") $\pm 1.0\%$ ($V_{\text{OUT}} > 2.0\text{V}$), $\pm 20\text{mV}$ ($V_{\text{OUT}} \leq 2.0\text{V}$)
⑤⑥⑦	Package (Order Unit)	ER-G	USP-6C (3,000pcs/Reel)
		MR-G	SOT-25 (3,000pcs/Reel)
		PR-G	SOT-89-5 (1,000pcs/Reel)

1. Inductor Built-in "Micro DC/DC"
 2. Step-Down DC/DC
 3. Step-Up DC/DC
 4. Step-Up&Down DC/DC
 5. Charge Pump
 6. LED Driver
 7. Multi Channel DC/DC
 8. Voltage Detectors
 9. Voltage Regulators Single Type
 10. Voltage Regulator With reset function

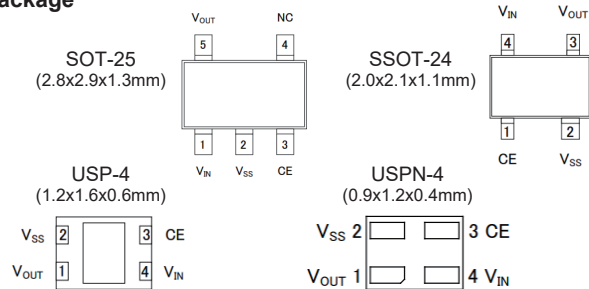
XC6221 : 200mA High Speed, Low Noise Voltage Regulator

Low Noise / High Speed

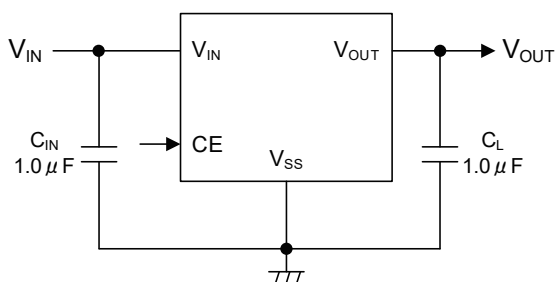
Features

- Operating Voltage : 1.6V ~ 6.0V (Absolute Max.: 6.5V)
- Output Voltage Range : 0.8V ~ 5.0V (0.05V increments)
- Output Current : 200mA
- Dropout Voltage : 80mV@100mA (V_{OUT}=3.0V)
- Supply Current : 25μA
- Ripple Rejection (PSRR) : 70dB@1kHz
- Function : ON/OFF
C_L Discharge (B/D Type)
- Protection : Current Limit
- Package : USP-4, SOT-25, SSOT-24 USP-4
- Operating Ambient Temp. : -40°C ~ 85°C

Package



Typical Application Circuit



Ordering Information

XC6221①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Without CE pull-down resistor, without C _L Discharge
		B	Without CE pull-down resistor, with C _L Discharge
		C	With CE pull-down resistor, without C _L Discharge
		D	With CE pull-down resistor, with C _L Discharge
②③	Output Voltage	08 ~ 50	e.g. 3.00V → ② = 3, ③ = 0
		2	±30mV (V _{OUT} ≤ 1.40V), ±2.0% (V _{OUT} ≥ 1.50V) e.g. 0.80V → ② = 0, ③ = 8, ④ = 2
④	Output Voltage Accuracy	A	±30mV (V _{OUT} ≤ 1.45V), ±2.0% (V _{OUT} ≥ 1.55V) e.g. 0.85V → ② = 0, ③ = 8, ④ = A
		1	±20mV (V _{OUT} ≤ 1.90V), ±1.0% (V _{OUT} ≥ 2.00V) e.g. 0.80V → ② = 0, ③ = 8, ④ = 1
		B	±20mV (V _{OUT} ≤ 1.95V), ±1.0% (V _{OUT} ≥ 2.05V) e.g. 0.80V → ② = 0, ③ = 8, ④ = B
⑤⑥-⑦	Package (Order Unit)	GR-G	USP-4 (3,000pcs/Reel)
		MR-G	SOT-25 (3,000pcs/Reel)
		NR-G	SSOT-24 (3,000pcs/Reel)
		7R-G	USPN-4 (5,000pcs/Reel)

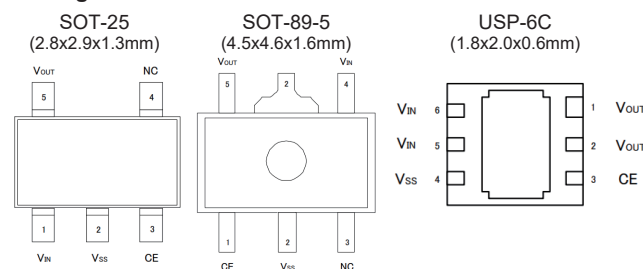
XC6220 : 1A High Speed, Low Noise, Ultra Low V-Drop "GO" LDO

Low Noise / High Speed / Green Operation

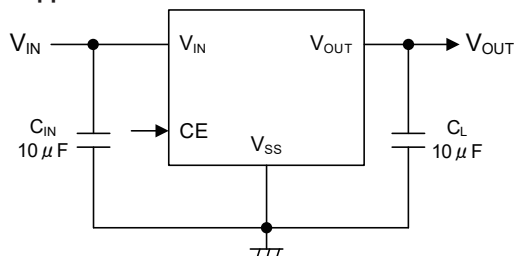
Features

- Input Voltage : 1.6V ~ 6.0V (Absolute Max.: 6.5V)
- Output Voltage Range : 0.8V ~ 5.0V (0.05V increments)
- Accuracy : ±1.0%
- Output Current : 1A (1.2V ≤ V_{OUT})
- Ripple Rejection (PSRR) : 65dB@1kHz
- Supply Current : 8μA @ Power Save mode
50μA @ High Speed mode
- Dropout Voltage : 20mV@100mA (V_{OUT}=3.0V)
60mV@300mA (V_{OUT}=3.0V)
- Thermal Shutdown : Detect 150°C, Release 135°C
- Inrush Current Protection : 700mA (MAX.)
- C_L Discharge : B/D Type
- CE Pull-down Resistor : C/D Type
- Package : USP-6C, SOT-25, SOT-89-5
- Operating Ambient Temp. : -40°C ~ 85°C

Package



Typical Application Circuit



Ordering Information

XC6220①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Without CE Pull-down resistor, without C _L Discharge
		B	Without CE Pull-down resistor, with C _L Discharge (Standard)
		C	With CE Pull-down resistor, without C _L Discharge
		D	With CE Pull-down resistor, with C _L Discharge
②③	Output Voltage	08 ~ 50	e.g. 3.0V → ② = 3, ③ = 0
		1	Output Voltage {x.x0V} (the 2 nd decimal place is "0")
④	Output Voltage (the 2 nd decimal place)	B	Output Voltage {x.x5V} (the 2 nd decimal place is "5")
⑤⑥-⑦	Package (Order Unit)	MR-G	SOT-25 (3,000pcs/Reel)
		PR-G	SOT-89-5 (1,000pcs/Reel)
		ER-G	USP-6C (3,000pcs/Reel)

1. Inductor Built-in "Micro DC/DC"
 2. Step-Down DC/DC
 3. Step-Up DC/DC
 4. Step-Up&Down DC/DC
 5. Charge Pump
 6. LED Driver
 7. Multi Channel DC/DC
 8. Voltage Detectors
 9. Voltage Regulators Single Type
 10. Voltage Regulator With reset function

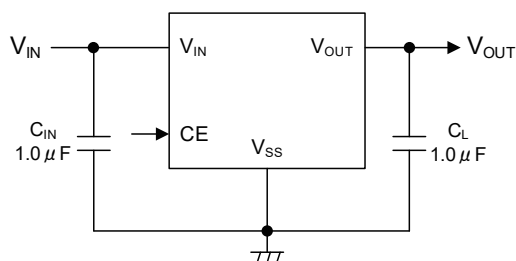
XC6219 : 300mA High Speed, Low Noise Voltage Regulator

Low Noise / High Speed

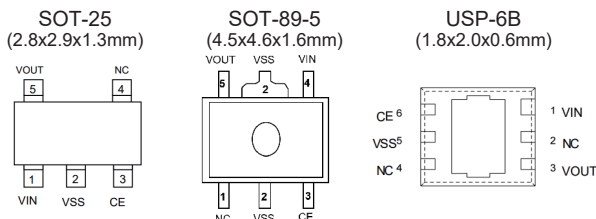
Features

- Input Voltage : 2.0V ~ 6.0V (Absolute Max.:7.0V)
- Output Voltage Range : 0.9V ~ 5.0V (0.05V increments)
- Accuracy : ±1.0%, ±2.0%
- Output Current : 150mA ($V_{OUT} < 1.75V$, A~D Type)
240mA ($V_{OUT} \geq 1.8V$, A~D Type)
300mA ($V_{OUT} \geq 1.3V$, E~H Type)
- Ripple Rejection (PSRR) : 65dB@10kHz
- Supply Current : 25µA
- Dropout Voltage : 60mV@30mA
200mV@100mA
- Package : SOT-25, SOT-89-5, USP-6B
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC6219①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	150mA, Active "H", pull-down resistor
		B	150mA, Active "H", no pull-down resistor (Standard)
		C	150mA, Active "L", pull-up resistor
		D	150mA, Active "L", no pull-up resistor
		E	300mA, Active "H", pull-down resistor
		F	300mA, Active "H", no pull-down resistor (Standard)
		G	300mA, Active "L", pull-up resistor
		H	300mA, Active "L", no pull-up resistor
②③	Output Voltage	09 ~ 50	e.g. ②=3, ③=0, → 3.0V
		2 ^(*)	0.1V increments, ±2.0% : e.g. ②③④=282 → 2.80V
④	Output Voltage Accuracy	1 ^(*)	0.1V increments, ±1.0% : e.g. ②③④=301 → 3.00V
		A ^(*)	0.05V increments, ±2.0% : e.g. ②③④=28A → 2.85V
		B ^(*)	0.05V increments, ±1.0% : e.g. ②③④=30B → 3.05V
⑤⑥⑦	Package (Order Unit)	MR-G	SOT-25 (3,000pcs/Reel)
		PR-G	SOT-89-5 (1,000pcs/Reel)
		DR-G	USP-6B (3,000pcs/Reel)

^(*) Output voltage of the ±1.0% accuracy product is 3.0V or more.
^(*) Output voltage accuracy of the $V_{OUT} \leq 1.5V$ is ±30mV.

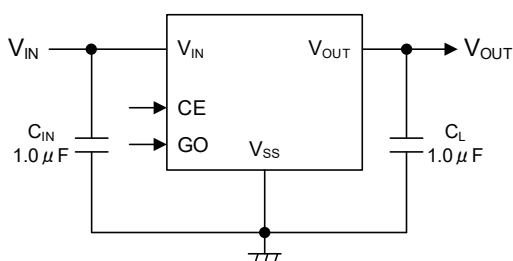
XC6217 : 200mA Green Operation Voltage Regulator

Green Operation Function(Low Supply Current & High Speed)

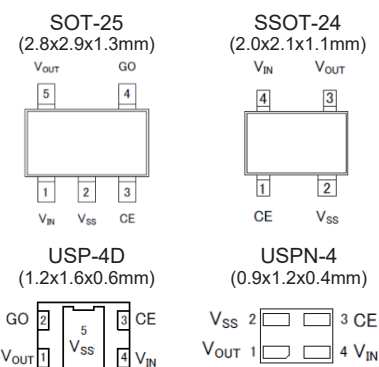
Features

- Input Voltage : 1.6V ~ 6.0V (Absolute Max.:6.5V)
- Output Voltage Range : 0.8V ~ 4.0V (0.05V increments)
- Accuracy : ±1.0%, ±2.0%
- Output Current : 200mA
- Ripple Rejection (PSRR) : 70dB@1kHz (High Speed mode)
- Supply Current : 4.5µA@Power Save mode
25µA@High Speed mode
- Dropout Voltage : 80mV@100mA, $V_{OUT}=3.0V$
- Function : ON/OFF
Green Operation (GO)
 C_L Discharge (B/D Type)
- Protection : Current Limit
- Package : USP-4D, SOT-25 (A/B Type)
SSOT-24, USP-4 (C/D Type)
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC6217①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Without C_L Discharge
		B	With C_L Discharge
		C	Without C_L Discharge, no GO pin
		D	With C_L Discharge, no GO pin
②③	Output Voltage	08 ~ 40	e.g. 3.0V → ② = 3, ③ = 0
		2	0.1V increments (±2.0%), e.g. 2.00V → ②③④=202
④	Output Accuracy	A	0.05V increments (±2.0%), e.g. 2.05V → ②③④=20A
		1	0.1V increments (±1.0%), e.g. 2.00V → ②③④=201
		B	0.05V increments (±1.0%), e.g. 2.05V → ②③④=20B
⑤⑥⑦	Package (Order Unit)	GR-G	USP-4D (A/B Type) (3,000pcs/Reel)
		MR-G	SOT-25 (A/B Type) (3,000pcs/Reel)
		NR-G	SSOT-24 (C/D Type) (3,000pcs/Reel)
		7R-G	USPN-4 (C/D Type) ^(*) (5,000pcs/Reel)

^(*) Output range of USP-4 1.6V ≤ V_{OUT} ≤ 4.00V

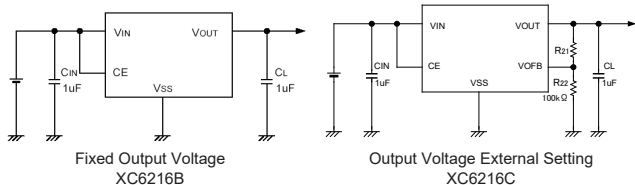
XC6216B/C : 28V 150mA Voltage Regulator

Low Supply Current / 28V Input Voltage

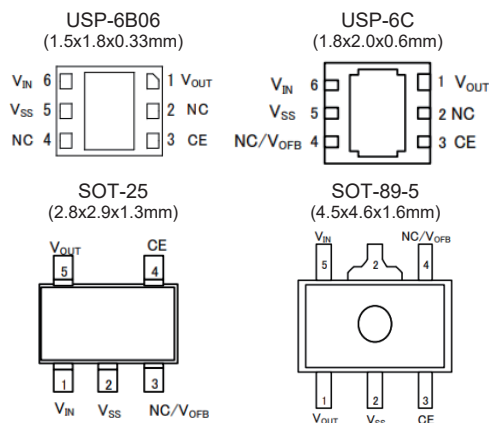
Features

Input Voltage	: 2.0V ~ 28.0V (Absolute Max.: 30.0V)
Output Voltage Range	: 1.8V ~ 12.0V (0.1V increments) 2.0V ~ 23V with external resistors
Output Accuracy	: ±1.0% ($V_{OUT} \geq 2.00V$) ±20mV ($V_{OUT} \leq 1.9V$)
Output Current	: 150mA
Ripple Rejection (PSRR)	: 30dB@1kHz
Supply Current	: 5µA
Dropout Voltage	: 300mV@20mA
Function	: ON/OFF Output Voltage External setting (C Type)
Protection	: Current Limit Thermal Shutdown
Package	: SOT-25, SOT-89-5, USP-6C, USP-6B06
Operating Ambient Temp.	: -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC6216①②③④⑤⑥-⑦ : CE (Active "H") Fixed output voltage 1.8V ~ 12.0V

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B	Fixed output voltage
		C	Output Voltage externally set ($V_{OVB}=2.0V$) ^(*)
②③	Output Voltage	18 ~ C0	1.8V~9.9V : e.g. 2.5V ⇒ 25, 5.0V ⇒ 50
		20	10.0V ~ 12.0V : e.g. 10.6V ⇒ A6, 11.2V ⇒ B2, 12.0V ⇒ C0
④	Output Voltage Accuracy	2	For C Type (Output Voltage externally set), $V_{OVB}=2.0V$
		1	±2.0%
⑤⑥-⑦	Package (Order Unit)	MR-G	SOT-25 (3,000pcs/Reel)
		PR-G	SOT-89-5 (1,000pcs/Reel)
		ER-G	USP-6C (3,000pcs/Reel)
		8R-G	USP-6B06 (5,000pcs/Reel)

^(*) For the Type C and Output Voltage Accuracy±1.0% (±20mV) do not have USP-6B06 package

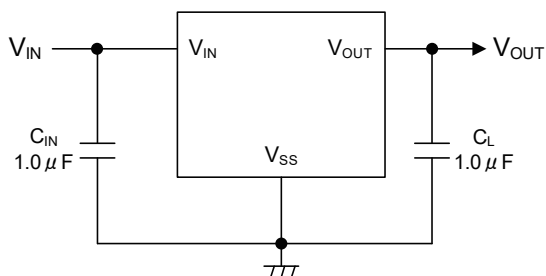
XC6216D : 28V 150mA 3-pin voltage regulator

Low Supply Current / 28V Input Voltage / 3-pin voltage regulator

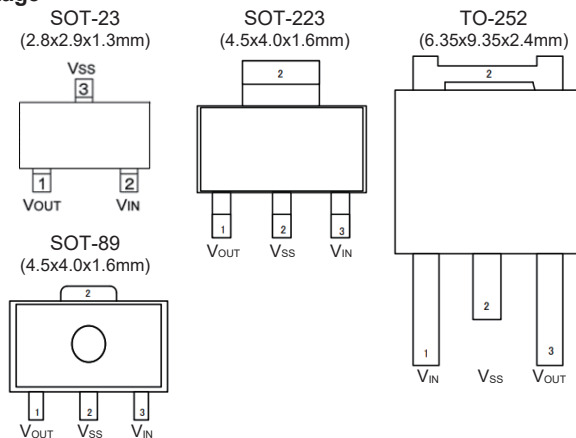
Features

Input Voltage	: 2.0V ~ 28.0V (Absolute Max.: 30.0V)
Output Voltage Range	: 1.8V ~ 12.0V (0.1V increments)
Output Accuracy	: ±1.0%, ±2.0%
Output Current	: 150mA
Ripple Rejection (PSRR)	: 30dB@1kHz
Supply Current	: 5µA
Dropout Voltage	: 300mV@20mA
Protection	: Current Limit Thermal Shutdown
Package	: SOT-23, SOT-223, TO-252, SOT-89
Operating Ambient Temp.	: -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC6216D①②③④⑤-⑥ : 3 pin regulator (No CE function)

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①②	Output Voltage	18 ~ C0	1.8V~9.9V : e.g. 2.5V ⇒ 25, 5.0V ⇒ 50
		20	10.0V ~ 12.0V : e.g. 10.6V ⇒ A6, 11.2V ⇒ B2, 12.0V ⇒ C0
③	Output Voltage Accuracy	2	±2.0%
		1	$V_{OUT} \geq 2.0V: \pm 1.0\%, V_{OUT} \leq 1.9V: \pm 20mV$
④⑤-⑥	Package (Order Unit)	PR-G	SOT-89 (1,000pcs/Reel)
		FR-G	SOT-223 (1,000pcs/Reel)
		JR-G	TO-252 (2,500pcs/Reel)
		MR-G	SOT-23 (3,000pcs/Reel)

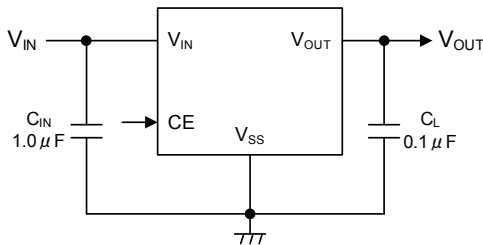
XC6215B : 200mA Low Power Voltage Regulator

Low Supply Current / Ultra Low Profile Package

Features

- Input Voltage : 1.5V ~ 6.0V (Absolute Max.:7.0V)
- Output Voltage Range : 0.9V ~ 5.0V (0.1V Increments)
- Accuracy : ±2.0%
- Output Current : 200mA (300mA Limit)
@V_{OUT}=3.0V, V_{IN}=4.0V
- Ripple Rejection (PSRR) : 35dB@1kHz
- Supply Current : 0.8µA
- Dropout Voltage : 320mV@100mA (V_{OUT}=3.0V)
- Function : ON/OFF
- Protection : Current Limit
- Package : USP-4, SSOT-24, SOT-25, USPN-4
USP-6B06
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



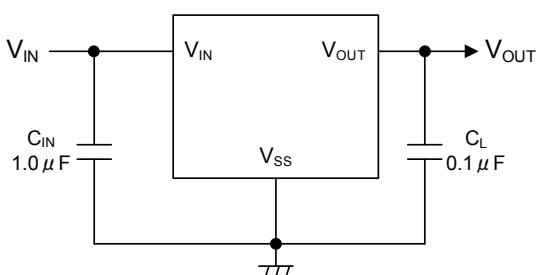
XC6215P : 200mA, Low Power 3-pin voltage regulator

Low Supply Current / 3-pin voltage regulator

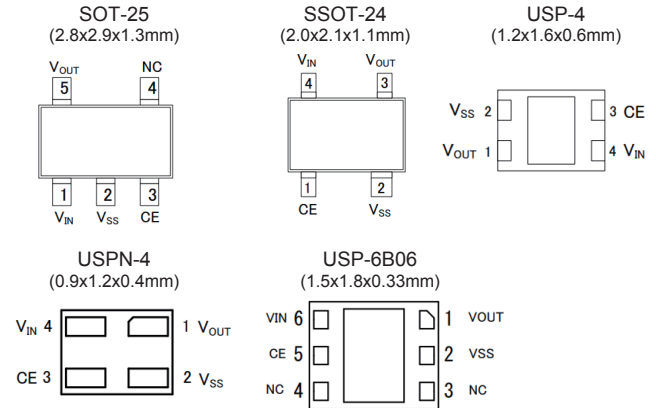
Features

- Input Voltage : 1.5V ~ 6.0V (Absolute Max.: 7.0V)
- Output Voltage Range : 0.9V ~ 5.0V (0.1V Increments)
- Accuracy : ±2.0%
- Output Current : 200mA (300mA Limit)
@V_{OUT}=3.0V, V_{IN}=4.0V
- Ripple Rejection (PSRR) : 35dB@1kHz
- Supply Current : 0.8µA
- Dropout Voltage : 320mV@100mA (V_{OUT}=3.0V)
- Protection : Current Limit
- Package : USP-3
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package

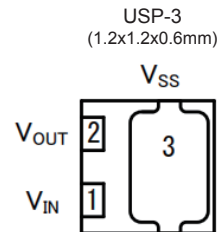


Ordering Information

XC6215①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B	CE Active "H" without pull-down resistor
②③	Output Voltage	09 ~ 50	e.g. 3.0V ②=3, ③=0
④	Output Voltage Accuracy	2	±2.0%
⑤⑥⑦	Package (Order Unit)	GR-G NR-G MR-G 7R-G 8R-G	USP-4 (3,000pcs/Reel) SSOT-24 (3,000pcs/Reel) SOT-25 (3,000pcs/Reel) USPN-4 (5,000pcs/Reel) USP-6B06 (5,000pcs/Reel)

Package



Ordering Information

XC6215①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	P	3 pin regulator without CE pin
②③	Output Voltage	09 ~ 50	e.g. 3.0V ②=3, ③=0
④	Output Voltage Accuracy	2	±2.0%
⑤⑥⑦	Package (Order Unit)	HR-G	USP-3 (3,000pcs/Reel)

1. Inductor Built-in "micro DC/DC"
 2. Step-Down DC/DC
 3. Step-Up DC/DC
 4. Step-Up&Down DC/DC
 5. Charge Pump
 6. LED Driver
 7. Multi Channel DC/DC
 8. Voltage Detectors
 9. Voltage Regulators Single Type
 10. Voltage Regulator With reset function

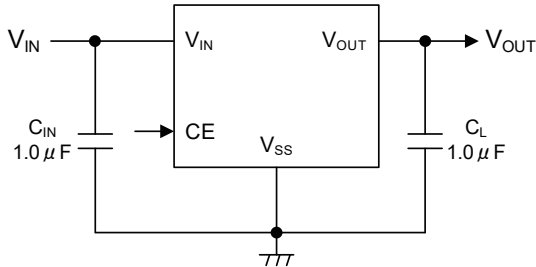
XC6209 : High Speed, Low Noise Voltage Regulator

High Speed / Low Noise / 10V Input Voltage

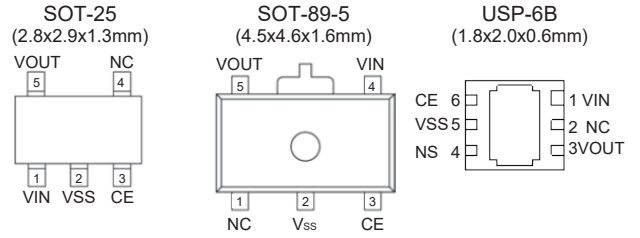
Features

- Input Voltage : 2.0V ~ 10.0V (Absolute Max.: 12.0V)
- Output Voltage Range : 0.9V ~ 6.0V
- Output Current : 150mA (A~D Types)
300mA (E~H Types)
- Low Output Noise : 45µVrms
- Low Drop-out Voltage : 60mV@30mA
200mV@100mA
- Supply Current : 25µA
- CE : Active "H" or Active "L"
- Ripple Rejection (PSRR) : 70dB@10kHz
- Package : SOT-25, SOT-89-5, USP-6B
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC6209①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
① (*)	Type	A/E	Active "H", Pull-down resistor
		B/F	Active "H", No pull-down resistor (Standard)
		C/G	Active "L", Pull-up resistor
		D/H	Active "L", No pull-up resistor
②③	Output Voltage	09~60	e.g. 3.0V→②=3, ③=0
④	Output Voltage Accuracy	2	0.1V increments, ±2.0% (*) e.g. 2.80V→②=2, ③=8, ④=2
		1	0.1V increments, ±1.0% (*) e.g. 3.00V→②=3, ③=0, ④=1
		A	0.05V increments, ±2.0% (*) e.g. 2.85V→②=2, ③=8, ④=A
		B	0.05V increments, ±1.0% (*) e.g. 3.05V→②=3, ③=0, ④=B
⑤⑥-⑦	Package (Order Unit)	MR-G	SOT-25 (3,000pcs/Reel)
		PR-G	SOT-89-5 (1,000pcs/Reel)
		DR-G	USP-6B (3,000pcs/Reel)

(*) The Output Current of Type E~H depends on setting output voltage.
(**) The output voltage accuracy is ±30mV at $V_{OUT} \leq 1.5V$.

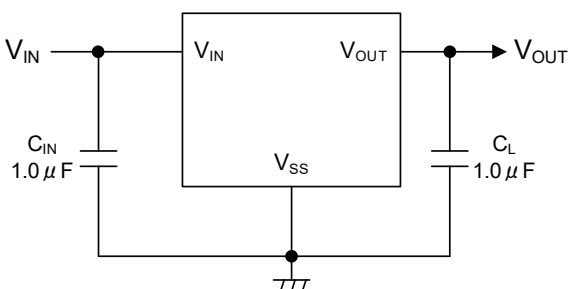
XC6206 : 200mA Low Power Voltage Regulator

Low Supply Current

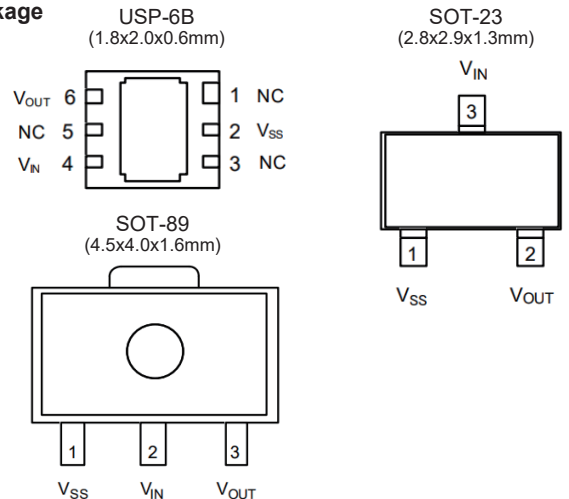
Features

- Input Voltage : 1.8V ~ 6.0V (Absolute Max.:7.0V)
- Output Voltage Range : 1.2V ~ 5.0V
- Accuracy : ±1.0%, ±2.0%
- Output Current : 200mA ($V_{OUT}=3.0V$)
- Ripple Rejection (PSRR) : 35dB@1kHz
- Supply Current : 1.0µA
- Dropout Voltage : 250mV@100mA ($V_{OUT}=3.0V$)
- Protection : Current Limit
- Package : SOT-23, SOT-89, USP-6B
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC6206P①②③④⑤-⑥

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①②	Output Voltage	12 ~ 50	e.g. 3.0V→①=3, ②=0
③	Accuracy	2	±2.0% ($V_{OUT} \geq 1.5V$), ±30mV ($V_{OUT} < 1.5V$)
		1	±1.0% ($V_{OUT} \geq 2.0V$)
④⑤-⑥	Package (Order Unit)	MR-G	SOT-23 (3,000pcs/Reel)
		PR-G	SOT-89 (1,000pcs/Reel)
		DR-G	USP-6B (3,000pcs/Reel)

1. Inductor Built-in "micro DC/DC"
 2. Step-Down DC/DC
 3. Step-Up DC/DC
 4. Step-Up&Down DC/DC
 5. Charge Pump
 6. LED Driver
 7. Multi Channel DC/DC
 8. Voltage Detectors
 9. Voltage Regulators Single Type
 10. Voltage Regulator With reset function

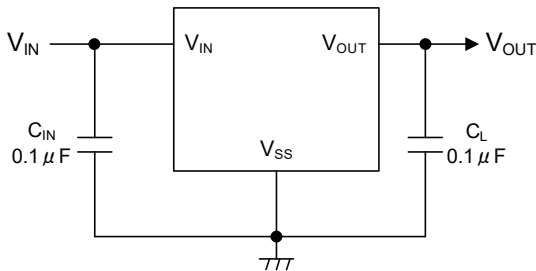
XC6206J : 200mA Low Power Voltage Regulator

Low Supply Current

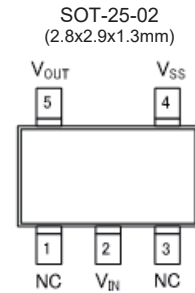
Features

- Input Voltage : 1.5V ~ 6.0V (Absolute Max.: 7.0V)
- Output Voltages : 0.9V ~ 4.0V (0.1V increments)
- Output Current : 200mA
- Supply Current : 1.0μA
- Dropout Voltage : 200mV@100mA (V_{OUT}=3.0V)
- Protection : Current Limit
- Output Capacitor : 0.1μF ~ 1.0μF
- Package : SOT-25-02
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC6206J①②③④⑤-⑥

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①②	Output Voltage	09 ~ 40	e.g. 3.0V → ①= 3, ②= 0
③	Output Voltage Accuracy	2	±2.0% (V _{OUT} ≥1.50V), ±30mV(V _{OUT} <1.50V)
④⑤-⑥	Package (Order Unit)	MR-G	SOT-25-02 (3,000pcs/Reel)

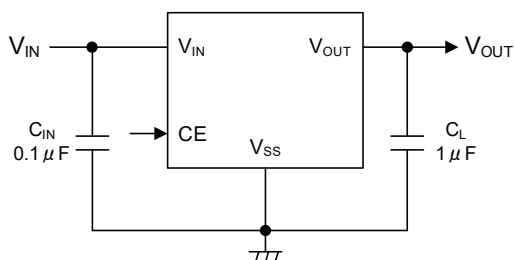
XC6204/XC6205 : High Speed, Low Noise Voltage Regulator

High Speed / Low Noise / 10V Input Voltage

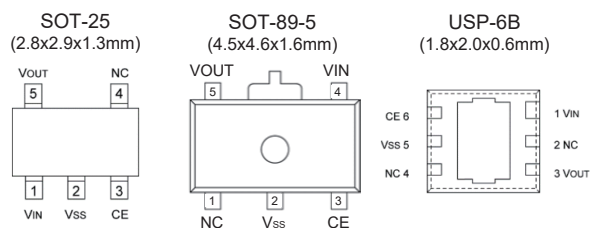
Features

- Operating Voltage : 2.0V ~ 10.0V (Absolute Max.: 12.0V)
- Output Voltage Range : 1.8V ~ 6.0V (XC6204)
0.9V ~ 1.75V (XC6205)
- Accuracy : ±2.0%, ±1.0%
- Output Current : 150mA
300mA (XC6204 E~H)
- Dropout Voltage : 200mV@100mA
60mV@30mA
- Supply Current : 70μA
- Ripple Rejection (PSRR) : 70dB@10kHz (XC6204)
60dB@10kHz (XC6205)
- Output Capacitor : Ceramic Capacitor Compatible
- Package : SOT-25, SOT-89-5, USP-6B
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC6204/XC6205①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
① ^(*)	Type, CE pin Logic	A / E	150mA Active "H", pull-down resistor
		B / F	150mA Active "H", no pull-down resistor (Standard)
		C / G	150mA Active "L", pull-up resistor
		D / H	150mA Active "L", no pull-up resistor
②③	Output Voltage	09 ~ 60	XC6204 (1.8V~6.0V), XC6205(0.9V~1.75V) e.g. 2.0V → ②=2, ③=0
		2	0.1V increments, ±2.0% e.g. 2.80V → ②=3, ③=8, ④=2
④	Output Voltage Accuracy	1 ^(*)	0.1V increments, ±1.0% e.g. 3.00V → ②=3, ③=0, ④=1
		A	0.05V increments, ±2.0% e.g. 2.85V → ②=2, ③=8, ④=A
		B ^(*)	0.05V increments, ±1.0% e.g. 3.85V → ②=3, ③=8, ④=B
		⑤⑥-⑦	Package (Order Unit)

^(*) E to H Types are compatible to 300mA of XC6204 series.
(XC6205 can not draw 300mA depending on output voltage.)
^(*) Output voltage range of the ±1.0% accuracy product is 2.95V to 6.0V.

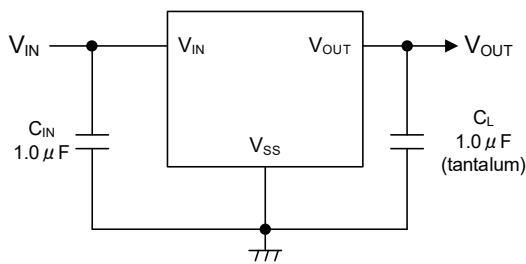
XC6201 : 10V 250mA Low Power Voltage Regulator

Low Supply Current / Wide Input Voltage

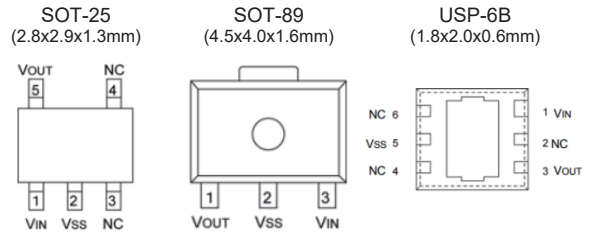
Features

- Input Voltage : 1.8V ~ 10.0V (Absolute Max.: 12.0V)
- Output Voltage Range : 1.3V ~ 6.0V (0.1V increments)
- Accuracy : $\pm 1.0\%$ ($V_{OUT} \geq 2.0V$), $\pm 2.0\%$
- Output Current : 250mA
- Dropout Voltage : 0.16V@100mA
0.40V@200mA
- Supply Current : 2.0 μ A
- Output Capacitor : Ceramic Capacitor Compatible
- Package : SOT-25, SOT-89, USP-6B
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC6201P①②③④⑤⑥

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①②	Output Voltage	13~60	e.g. 3.0V → ①=3, ②=0
③	Output Voltage Accuracy	1	$\pm 1.0\%$
		2	$\pm 2.0\%$
④⑤⑥	Package (Order Unit)	MR-G	SOT-25 (3,000pcs/Reel)
		PR-G	SOT-89 (1,000pcs/Reel)
		DR-G	USP-6B (3000pcs/Reel)

※* $\pm 1.0\%$ accuracy can be set at $V_{OUT} \geq 2.0V$.

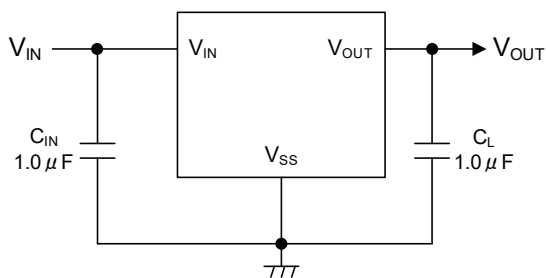
XC62FJ : 10V 200mA Low Power Voltage Regulator

Low Power Consumption

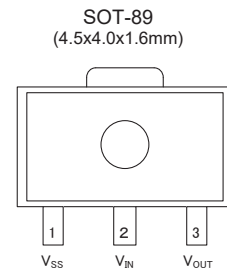
Features

- Input Voltage : 1.8V ~ 10.0V (Absolute Max.: 12.0V)
- Output Voltage : 1.7V ~ 6.0V ($\pm 2.0\%$) 0.1V increments
- Output Current : 200mA
- Dropout Voltage : 160mV@100mA ($V_{OUT}=5.0V$)
- Consumption Current : 2.0 μ A
- Output Capacitor : Ceramic Capacitor Compatible
- Package : SOT-89
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC62FJ①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①②	Output Voltage	17 ~ 60	e.g. 3.0V → ①=3, ②=0
③④	Output Voltage Accuracy	02	$\pm 2.0\%$
⑤⑥⑦	Package (Order Unit)	PR-G	SOT-89 (1,000 pcs/Reel)

1. Inductor Built-in "micro DC/DC"
 2. Step-Down DC/DC
 3. Step-Up DC/DC
 4. Step-Up&Down DC/DC
 5. Charge Pump
 6. LED Driver
 7. Multi Channel DC/DC
 8. Voltage Detectors
 9. Voltage Regulators Single Type
 10. Voltage Regulator With reset function

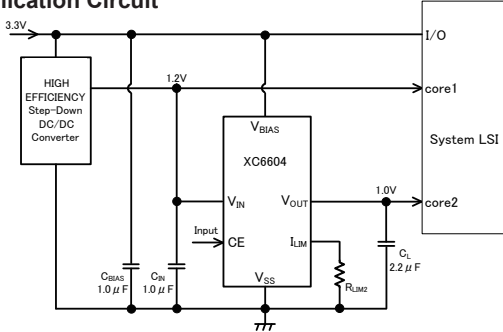
XC6604 : 1A 0.5V Ultra-Low Dropout Voltage Regulator With Adjustable Current Limit

■High Speed / High Accuracy / Adjustable Current Limit

Features

- Bias Voltage Range : 2.5V ~ 6.0V (Absolute Max.: 6.5V)
- Input Voltage : 0.5V ~ 3.0V (Absolute Max.: 6.5V)
- Output Voltage Range : 0.5V ~ 1.8V (0.1V increments)
- Output Voltage Accuracy : $\pm 15\text{mV}@V_{\text{OUT}} < 1.2\text{V}$, $\pm 20\text{mV}@V_{\text{OUT}} \geq 1.2\text{V}$
- Output Current : 1A (1.3A Limit)
- Ripple Rejection (PSRR) : $60\text{dB}@1\text{kHz}$ ($V_{\text{BIAS_PSRR}}$), $75\text{dB}@1\text{kHz}$ ($V_{\text{IN_PSRR}}$)
- Supply Current : $100\mu\text{A}$ (V_{BIAS}), $6.5\mu\text{A}$ ($V_{\text{IN}}@V_{\text{OUT}}=1.2\text{V}$)
- ON Resistance : $0.15\Omega@V_{\text{BIAS}}=3.6\text{V}$, $V_{\text{OUT}}=1.2\text{V}$
- Function : Soft-start, C_L Discharge, UVLO
- Protection : Adjustable Current Limit
Thermal Shutdown
- Output Capacitor : Ceramic Capacitor Compatible
- Package : USP-6C, SOT-26W
- Operating Ambient Temp. : $-40^\circ\text{C} \sim 85^\circ\text{C}$

Typical Application Circuit



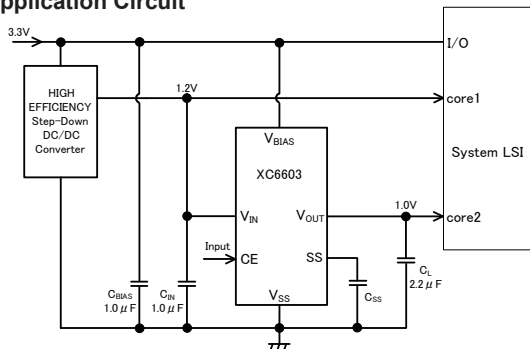
XC6603 : 1A 0.5V Ultra-Low Dropout Voltage Regulator With Adjustable Soft-Start

■High Speed / High Accuracy / Adjustable Soft-Start

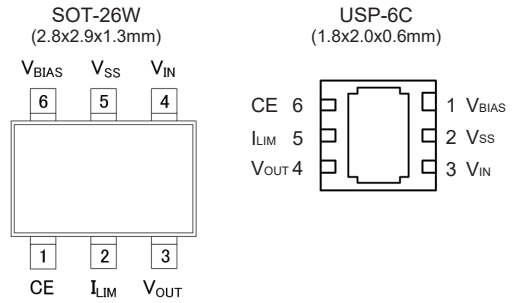
Features

- Bias Voltage Range : 2.5V ~ 6.0V (Absolute Max.: 6.5V)
- Input Voltage : 0.5V ~ 3.0V (Absolute Max.: 6.5V)
- Output Voltage Range : 0.5V ~ 1.8V (0.1V increments)
- Output Voltage Accuracy : $\pm 15\text{mV}@V_{\text{OUT}} < 1.2\text{V}$, $\pm 20\text{mV}@V_{\text{OUT}} \geq 1.2\text{V}$
- Output Current : 1A (1.3A Limit)
- ON Resistance : $0.15\Omega@V_{\text{BIAS}}=3.6\text{V}$, $V_{\text{OUT}}=1.2\text{V}$
- Ripple Rejection (PSRR) : $60\text{dB}@1\text{kHz}$ ($V_{\text{BIAS_PSRR}}$), $75\text{dB}@1\text{kHz}$ ($V_{\text{IN_PSRR}}$)
- Supply Current : $100\mu\text{A}$ (V_{BIAS}), $6.5\mu\text{A}$ ($V_{\text{IN}}@V_{\text{OUT}}=1.2\text{V}$)
- Function : Adjustable Soft-start time, C_L Discharge, UVLO
- Protection : Current Limit, Thermal Shutdown
- Output Capacitor : Ceramic Capacitor Compatible
- Package : USP-6C, SOT-26W
- Operating Ambient Temp. : $-40^\circ\text{C} \sim 85^\circ\text{C}$

Typical Application Circuit



Package

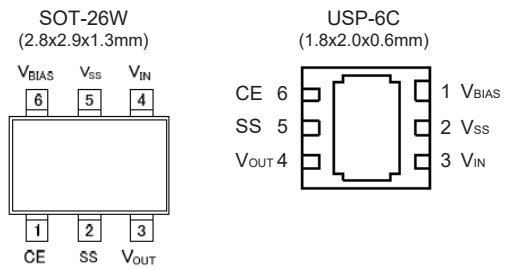


Ordering Information

XC6604①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	With Soft-start
		B	Without Soft-start
②③	Output Voltage	05~18	e.g. 1.2V → ②=1, ③=2
④	Output Voltage Accuracy	1	$\pm 15\text{mV}$ ($V_{\text{OUT}} < 1.2\text{V}$) $\pm 20\text{mV}$ ($V_{\text{OUT}} \geq 1.2\text{V}$)
⑤⑥-⑦	Package (Order Unit)	ER-G	USP-6C (3,000pcs/Reel)
		MR-G	SOT-26W (3,000pcs/Reel)

Package



Ordering Information

XC6603①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	With Adjustable Soft-Start
		B	Without Soft-start
②③	Output Voltage	05~18	e.g. 1.2V → ②=1, ③=2
④	Output Voltage Accuracy	1	$\pm 15\text{mV}$ ($V_{\text{OUT}} < 1.2\text{V}$) $\pm 20\text{mV}$ ($V_{\text{OUT}} \geq 1.2\text{V}$)
⑤⑥-⑦	Package (Order Unit)	ER-G	USP-6C (3,000pcs/Reel)
		MR-G	SOT-26W (3,000pcs/Reel)

1. Inductor Built-in "micro DC/DC"
 2. Step-Down DC/DC
 3. Step-Up DC/DC
 4. Step-Up&Down DC/DC
 5. Charge Pump
 6. LED Driver
 7. Multi Channel DC/DC
 8. Voltage Detectors
 9. Voltage Regulators Single Type
 10. Voltage Regulator With reset function

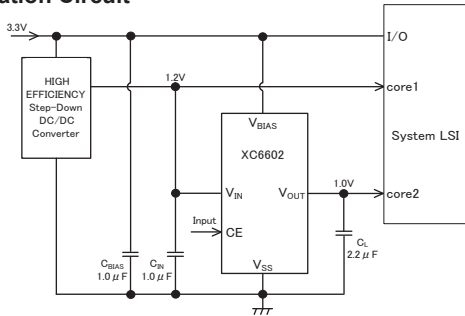
XC6602 : 1A 0.5V Ultra-Low Dropout Voltage Regulator With Soft-Start

■Ultra-Low Dropout / Soft-Start

Features

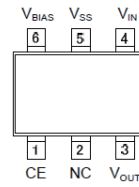
- Bias Voltage Range : 2.5V ~ 6.0V (Absolute Max.: 6.5V)
- Input Voltage : 0.5V ~ 3.0V (Absolute Max.: 6.5V)
- Output Voltage Range : 0.5V ~ 1.8V (0.1V increments)
- Output Voltage Accuracy : $\pm 15\text{mV}@V_{\text{OUT}} < 1.2\text{V}$, $\pm 20\text{mV}@V_{\text{OUT}} \geq 1.2\text{V}$
- Output Current : 1A (1.3A Limit)
- Ripple Rejection (PSRR) : 60dB@1kHz ($V_{\text{BIAS_PSRR}}$), 75dB@1kHz($V_{\text{IN_PSRR}}$)
- Supply Current : 100 μA (V_{BIAS}), 6.5 μA (V_{IN})@ $V_{\text{OUT}}=1.2\text{V}$
- ON Resistance : 0.15 Ω @ $V_{\text{BIAS}}=3.6\text{V}$, $V_{\text{OUT}}=1.2\text{V}$
- Function : Soft-start, C_L Discharge, UVLO
- Protection : Current Limit, Thermal Shutdown
- Output Capacitor : Ceramic Capacitor Compatible
- Package : USP-6C, SOT-26W, SOT-89-5, WLP-5-02
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit

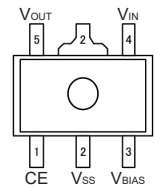


Package

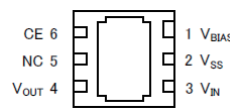
SOT-26W
(2.8x2.9x1.3mm)



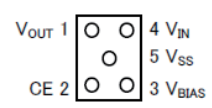
SOT-89-5
(4.5x4.6x1.6mm)



USP-6C
(1.8x2.0x0.6mm)



WLP-5-02
(1.25x0.88x0.4mm)



Ordering Information

XC6602①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Soft-start included
		B	Soft-start excluded
②③	Output Voltage	05 ~ 18	e.g. 1.2V → ②=1, ③=2
		④	Output Voltage Accuracy
⑤⑥-⑦	Package (Order Unit)	ER-G	USP-6C (3,000pcs/Reel)
		MR-G	SOT-26W (3,000pcs/Reel)
		PR-G	SOT-89-5 (1,000pcs/Reel)
		0R-G	WLP-5-02 (3,000pcs/Reel)

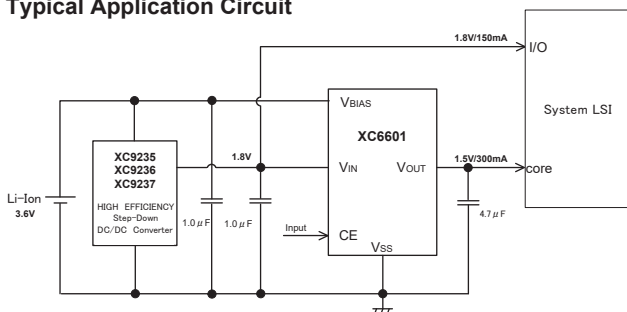
XC6601 : 400mA Low Voltage Input Voltage Regulator

■Low Input Voltage / Soft-start Function

Features

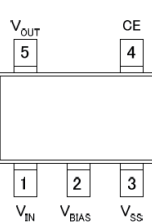
- Bias Voltage Range : 2.5V ~ 6.0V (Absolute Max.: 7.0V)
- Input Voltage : 1.0V ~ 3.0V (Absolute Max.: 7.0V)
- Output Voltage Range : 0.7V ~ 1.8V (0.05V increments)
- Accuracy : $\pm 20\text{mV}$
- Output Current : 400mA
- Power Consumption : $I_{\text{BIAS}}=25\mu\text{A}$, $I_{\text{IN}}=1.0\mu\text{A}$
- Dropout Voltage : 38mV@100mA, $V_{\text{BIAS}} - V_{\text{OUT}}=2.4\text{V}$
- UVLO : $V_{\text{BIAS}}=2.0\text{V}$, $V_{\text{IN}}=0.4\text{V}$
- Thermal Shutdown : 150°C/125°C
- Soft-Start Time : 240 μs @ $V_{\text{OUT}}=1.2\text{V}$
- Function : C_L Discharge
- Package : USP-6C, SOT-25, SOT-89-5
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit

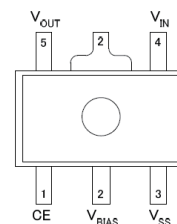


Package

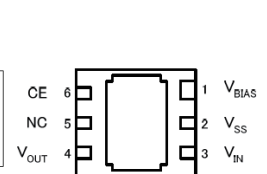
SOT-25
(2.8x2.9x1.3mm)



SOT-89-5
(4.5x4.6x1.6mm)



USP-6C
(1.8x2.0x0.6mm)



Ordering Information

XC6601①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Pull-Down Resistor
		B	No Pull-Down Resistor
②③	Output Voltage	07~18	e.g. 1.2V → ②=1, ③=2
		④	Output Voltage Type
B	0.05V increments e.g. 1.25V → ②=1, ③=2, ④=B		
⑤⑥-⑦	Package (Order Unit)	MR-G	SOT-25 (3,000pcs/Reel)
		ER-G	USP-6C (3,000pcs/Reel)
		PR-G	SOT-89-5 (1,000pcs/Reel)

1. Inductor Built-in "micro DC/DC"
2. Step-Down DC/DC
3. Step-Up DC/DC
4. Step-Up&Down DC/DC
5. Charge Pump
6. LED Driver
7. Multi Channel DC/DC
8. Voltage Detectors
9. Voltage Regulators Single Type
10. Voltage Regulator With reset function

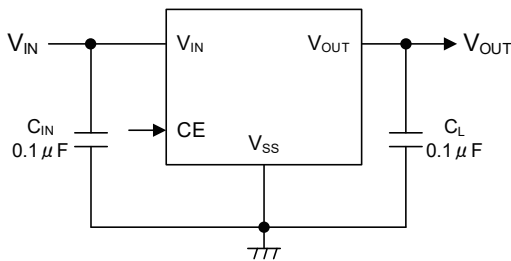
XC6506 : 6.0V 150mA Low Power Voltage Regulator

Low Power

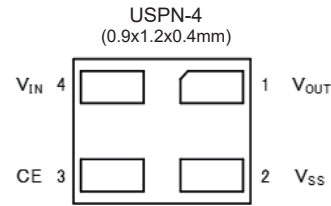
Features

- Operating Input Voltage : 1.5V ~ 6.0V (Absolute Max.:7.0V)
- Output Current : 150mA
- Output Voltage (Option) : 1.2V ~ 5.0V (0.1V increments)
- Output Accuracy : ±2.0%
- Supply Current : 0.8µA
- Dropout Voltage : 360mV@100mA (V_{OUT}=3.3V)
- Function : ON/OFF
- Protection : Current limit
- Package : USPN-4
- Operating Ambient Temp. : -40°C ~ 105°C

Typical Application Circuit



Package



Ordering Information

XC6506①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B	-
②③	Output Voltage	12 ~ 50	e.g. 3.3V ⇒ 33, 5.0V ⇒ 50
④	Output Voltage Accuracy	2	±2.0% (V _{OUT} ≥ 1.5V) ±30mV (V _{OUT} < 1.5V)
⑤⑥-⑦	Package (Order Unit)	7R-G	USPN-4 (5,000pcs/Reel)

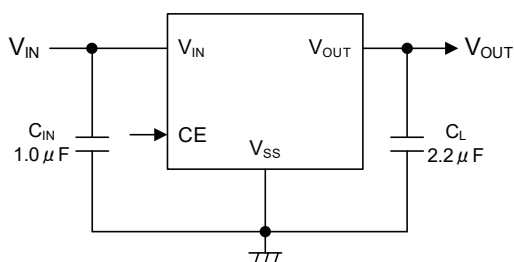
XC6505 : 10.5V 200mA High Speed Low Power Voltage Regulator

Low Power Consumption / High Speed / Low Noise

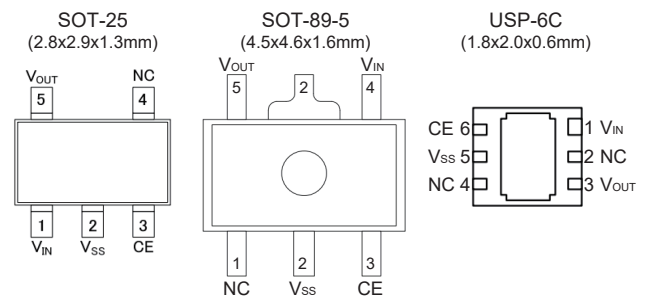
Features

- Input Voltage : 1.7V ~ 10.5V (Absolute Max.:12.0V)
- Output Voltage : 1.5V ~ 8.0V (0.1V increments)
- Accuracy : ±1.0%
- Output Current : 200mA
- Ripple Rejection (PSRR) : 60dB@1kHz
- Supply Current : 5.5µA
- Dropout Voltage : 190mV@V_{OUT}=3.3V, 100mA
- Function : ON/OFF
- Protection : Current Limit
Thermal Shutdown
- Package : USP-6C, SOT-25, SOT-89-5
- Operating Ambient Temp. : -40°C ~ 105°C

Typical Application Circuit



Package



Ordering Information

XC6505①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Without CE Pull-down, without C _L Discharge
		B	Without CE Pull-down, with C _L Discharge (The Recommended Type)
②③	Output Voltage	15~80	e.g. 2.8V → ②=2, ③=8
④	Output Accuracy	1	±20mV (1.5V~1.9V), ±1.0% (2.0V~8.0V)
⑤⑥-⑦	Package (Order Unit)	ER-G	USP-6C (3,000pcs/Reel)
		MR-G	SOT-25 (3,000pcs/Reel)
		PR-G	SOT-89-5 (1,000pcs/Reel)

(*) With CE Pull-down, please contact your local Torex sales office or representative.

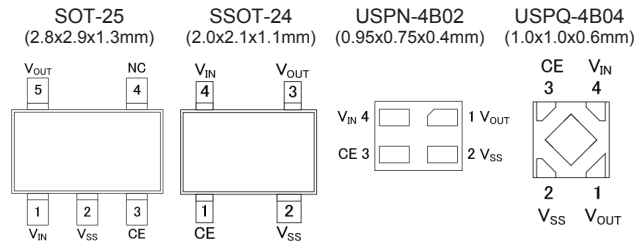
XC6504 : Iq=0.6μA "No CL Cap", 150mA Voltage Regulator

Low Power Consumption / CL Capacitor-Less Compatible

Features

- Input Voltage : 1.4V ~ 6.0V (Absolute Max.:6.5V)
- Output Voltage Range : 1.1V ~ 5.0V (0.1V increments)
- Output Accuracy : ±1.0%
- Output Current : 150mA
- Supply Current : 0.6μA
- On Resistance : 3.3Ω@V_{OUT}=3.0V
- Function : ON/OFF
CL Discharge
- Protection : Current Limit
- Output Capacitor : Capacitor-less Compatible
- Package : USPN-4B02, SSOT-24,
SOT-25, USPQ-4B04
- Operating Ambient Temp. : -40°C ~ 85°C

Package

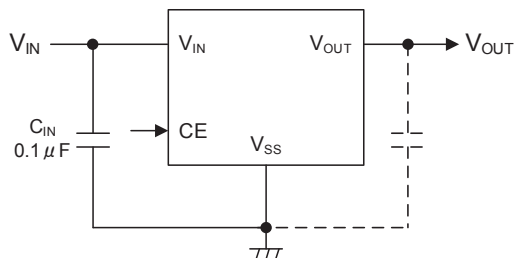


Ordering Information

XC6504①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	CL Discharge
②③	Output Voltage	11~50	e.g. 1.8V → ②=1, ③=8
④	Output Voltage Accuracy	1	±20mV (V _{OUT} <2.0V), ±1.0% (V _{OUT} ≥2.0V)
⑤⑥-⑦	Package (Order Unit)	7R-G	USPN-4B02 (5,000pcs/Reel)
		NR-G	SSOT-24 (3,000pcs/Reel)
		MR-G	SOT-25 (3,000pcs/Reel)
		9R-G	USPQ-4B04 (3,000pcs/Reel)

Typical Application Circuit



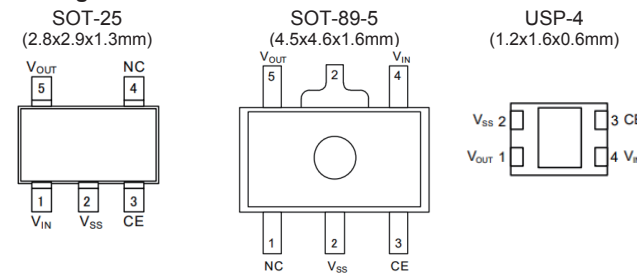
XC6503A-D : No "CL Cap" 500mA Low Power, High Speed Voltage Regulator

High Speed / Low Noise / CL Capacitor-Less Compatible

Features

- Input Voltage : 1.7V ~ 6.0V (Absolute Max.:6.5V)
- Output Voltage Range : 1.2V ~ 5.0V (0.05V increments)
- Output Accuracy : ±1.0%
- Output Current : 500mA
- Ripple Rejection (PSRR) : 55dB@1kHz, V_{OUT}=2.8V
- Supply Current : 15μA
- Dropout Voltage : 190mV@V_{OUT}=2.8V, 300mA
- Function : ON/OFF
CL Discharge
- Protection : Current Limit
Thermal Shutdown
- Output Capacitor : Capacitor-less Compatible
- Package : USP-4, SOT-25, SOT-89-5
- Operating Ambient Temp. : -40°C ~ 85°C

Package



Ordering Information

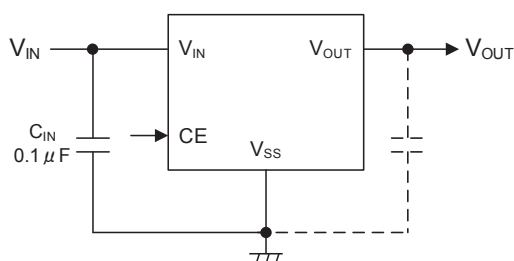
XC6503①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A ~ D	Refer to Selection Guide
②③	Output Voltage	12 ~ 50	e.g.) ②=2, ③=8 → 2.8V
④	Output Accuracy	1	0.1V increments: ±20mV (1.2~1.9V), ±1.0% (2.0~5.0V) e.g. 1.80V → ②=1, ③=8, ④=1
		A	0.05V increments: ±20mV(~1.95V), ±1.0%(2.05V~) e.g. 1.85V → ②=1, ③=8, ④=A
⑤⑥-⑦	Package (Order Unit)	GR-G	USP-4 (3,000pcs/Reel)
		MR-G	SOT-25 (3,000pcs/Reel)
		PR-G	SOT-89-5 (1,000pcs/Reel)

Selection Guide

Type	CE Pull-down	CL Discharge	CE PIN
A	No	No	Yes
B	No	Yes	Yes
C	Yes	No	Yes
D	Yes	Yes	Yes

Typical Application Circuit



1. Inductor Built-in "micro DC/DC"
 2. Step-Down DC/DC
 3. Step-Up DC/DC
 4. Step-Up&Down DC/DC
 5. Charge Pump
 6. LED Driver
 7. Multi Channel DC/DC
 8. Voltage Detectors
 9. Voltage Regulators Single Type
 10. Voltage Regulator With reset function

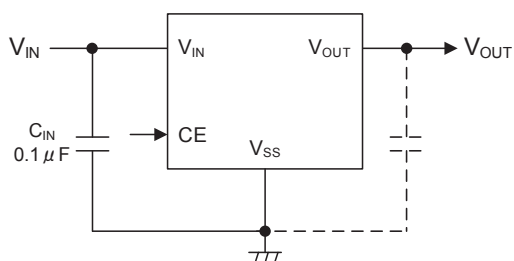
XC6503P : No "C_L Cap" 500mA Low Power, High Speed 3-pin Voltage Regulator

■High Speed / Low Noise / C_L Capacitor-Less Compatible / 3-pin Voltage Regulator

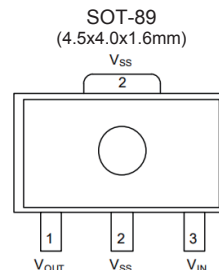
Features

- Input Voltage : 1.7V ~ 6.0V (Absolute Max.:6.5V)
- Output Voltage Range : 1.2V ~ 5.0V (0.05V increments)
- Output Accuracy : ±1.0%
- Output Current : 500mA
- Ripple Rejection (PSRR) : 55dB@1kHz, V_{OUT}=2.8V
- Supply Current : 15μA
- Dropout Voltage : 190mV@V_{OUT}=2.8V, 300mA
- Protection : Current Limit
Thermal Shutdown
- Output Capacitor : Capacitor-less Compatible
- Package : SOT-89
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC6503①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	P	3 pin regulator without CE pin
②③	Output Voltage	12 ~ 50	e.g.) ②=2, ③=8 → 2.8V
④	Output Voltage Accuracy	1	0.1V increments: ±20mV (1.2~1.9V), ±1.0% (2.0~5.0V) e.g. 1.80V → ②=1, ③=8, ④=1
		A	0.05V increments: ±20mV(~1.95V), ±1.0%(2.05V~) e.g. 1.85V → ②=1, ③=8, ④=A
⑤⑥⑦	Package (Order Unit)	PR-G	SOT-89 (1,000pcs/Reel)

XC6501A-D : No "C_L Cap", 200mA Voltage Regulator

■High Speed / Low Noise / C_L Capacitor-Less Compatible

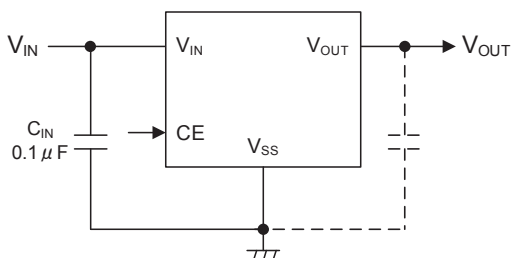
Features

- Input Voltage : 1.4V ~ 6.0V (Absolute Max.: 6.5V)
- Output Voltage Range : 2.0V ~ 5.0V (±1.0%)^(*)
1.2V ~ 1.95V (±20mV)^(*)
- Output Current : 200mA
- Dropout Voltage : 150mV@100mA, V_{OUT}=2.8V
- Low Power Supply : 13μA@V_{OUT}=2.8V
- Ripple Rejection (PSRR) : 50dB@1kHz, V_{OUT}=2.8V
- Function : ON/OFF
C_L Discharge
- Protection : Current limit
- Output Capacitor : Capacitor-less Compatible
- Package : SOT-25, SSOT-24, USP-4,
USPN-4, WLP-4-01

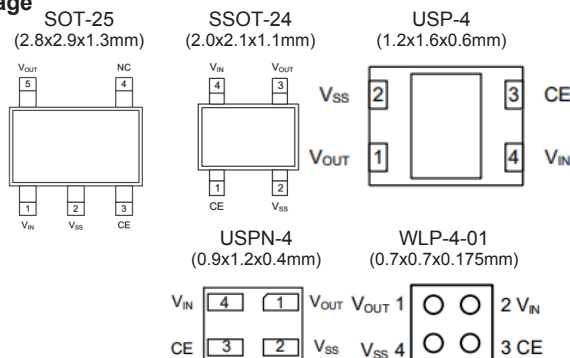
Operating Ambient Temp. : -40°C ~ 85°C

^(*) WLP-4-01 : 2.0V ~ 5.0V (±2.0%), 1.2V ~ 1.95V (±30mV)

Typical Application Circuit



Package



Ordering Information

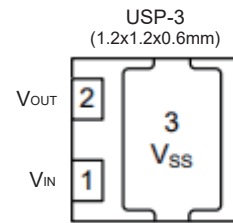
XC6501①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Without CE Pull-down, Without C _L Discharge
		B	Without CE Pull-down, With C _L Discharge
		C	With CE Pull-down, Without C _L Discharge
		D	With CE Pull-down, With C _L Discharge
②③	Output Voltage	12 ~ 50	e.g. 2.8V → ②=2, ③=8
④	Output Voltage Type [Accuracy]	1 ^(*)	0.1V increments e.g. 1.80V → ②=1, ③=8, ④=1
		A ^(*)	0.05V increments e.g. 1.85V → ②=1, ③=8, ④=A
		2 ^(*)	0.1V increments e.g. 1.80V → ②=1, ③=8, ④=2
		B ^(*)	0.05V increments e.g. 1.85V → ②=1, ③=8, ④=B
⑤⑥⑦	Package (Order Unit)	GR-G	USP-4 (3,000pcs/Reel)
		7R-G	USPN-4 (5,000pcs/Reel)
		NR-G	SSOT-24 (3,000pcs/Reel)
		OR-G	WLP-4-01 (5,000pcs/Reel)
	MR-G	SOT-25 (3,000pcs/Reel)	

^(*) WLP-4-01 only., ^(*) WLP-4-01 is excluded.

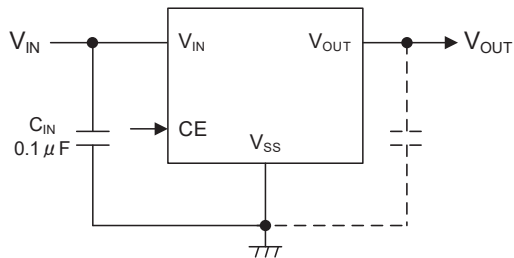
XC6501P : No "C_L Cap", 200mA 3-pin Voltage Regulator**High Speed / Low Noise / C_L Capacitor-Less Compatible / 3-pin Voltage Regulator****Features**

Input Voltage	: 1.4V ~ 6.0V (Absolute Max.:6.5V)
Output Voltage Range	: 1.2V ~ 5.0V
Accuracy	: ±1.0%
Output Current	: 200mA
Dropout Voltage	: 150mV@100mA, V _{OUT} =2.8V
Low Power Supply	: 13μA@V _{OUT} =2.8V
Ripple Rejection (PSRR)	: 50dB@1kHz, V _{OUT} =2.8V
Protection	: Current limit
Output Capacitor	: Capacitor-less Compatible
Package	: USP-3
Operating Ambient Temp.	: -40°C ~ 85°C

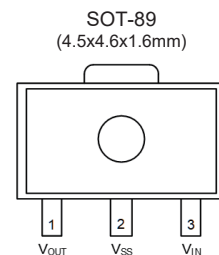
Package**Ordering Information**

XC6501①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	P	3 pins, Without CE pin
②③	Output Voltage	12 ~ 50	e.g. 2.8V → ②=2, ③=8
④	Output Voltage Type [Accuracy]	1 ^(*)	0.1V increments e.g. 1.80V → ②③④=181
		A ^(*)	0.05V increments e.g. 1.85V → ②③④=18A
		2 ^(*)	0.1V increments e.g. 1.80V → ②③④=182
		B ^(*)	0.05V increments e.g. 1.85V → ②③④=18B
⑤⑥-⑦	Package (Order Unit)	HR-G	USP-3 (3,000pcs/Reel)

Typical Application Circuit**XC6706** : 20V 200mA High Speed, 3-pin Voltage Regulator**Seamless GO / 105°C / 3-pin Voltage Regulator****Features**

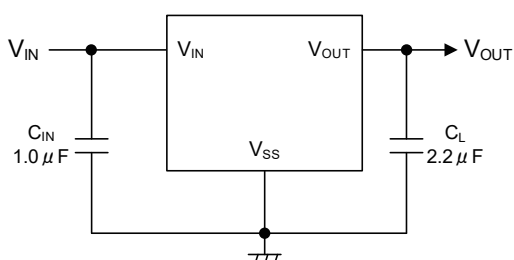
Input Voltage	: 3.5V ~ 20.0V (Absolute Max.: 24.0V)
Output Voltage Range	: 2.5V, 2.8V, 3.0V, 3.3V, 4.0V, 5.0V
Accuracy	: ±1.5%
Output Current	: 200mA
Ripple Rejection (PSRR)	: 50dB@1kHz
Supply Current	: 1.2μA
Dropout Voltage	: 470mV@100mA, V _{OUT} =3.3V
Function	: Seamless GO (Green Operation) Soft-start
Protection	: Current Limit Thermal Shutdown
Package	: SOT-89
Operating Ambient Temp.	: -40°C ~ 105°C

Package**Ordering Information**

XC6706①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	C	-
②③	Output Voltage	25, 28, 30, 33, 40, 50 ^(*)	Output Voltage {x.xV} 25→2.5V, 28→2.8V, 30→3.0V, 33→3.3V 40→4.0V, 50→5.0V
④	Fixed No.	1	-
⑤⑥-⑦	Package (Order Unit)	PR-G	SOT-89 (1,000pcs/Reel)

^(*) Output Voltages can be set internally from 2.5V to 5.5V (0.1V Increments).
For other voltages, please contact your local Torex sales office or distribution.

Typical Application Circuit

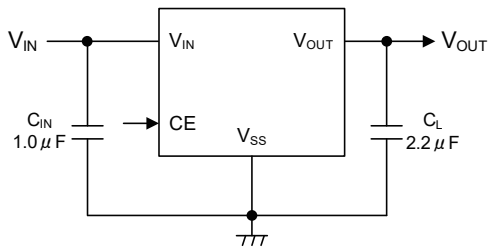
XC6705 : 20V 200mA High Speed Voltage Regulator

■Seamless GO / 105°C / ON_OFF

Features

- Input Voltage : 3.5V ~ 20.0V (Absolute Max.: 24.0V)
- Output Voltage Range : 2.5V ~ 5.5V (0.1V increments)
- Accuracy : ±1.5%
- Output Current : 200mA
- Ripple Rejection (PSRR) : 50dB@1kHz
- Supply Current : 1.2μA
- Dropout Voltage : 470mV@100mA, V_{OUT}=3.3V
- Function : ON/OFF
Seamless GO (Green Operation)
C_L Discharge
Soft-start
- Protection : Current Limit
Thermal Shutdown
- Package : SOT-25, USP-4
- Operating Ambient Temp. : -40°C ~ 105°C

Typical Application Circuit



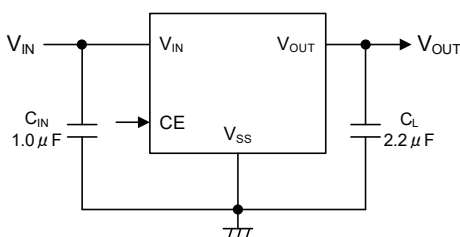
XC6702 : 36V 300mA Low Power, High Speed Voltage Regulator

■Low Noise / High Speed

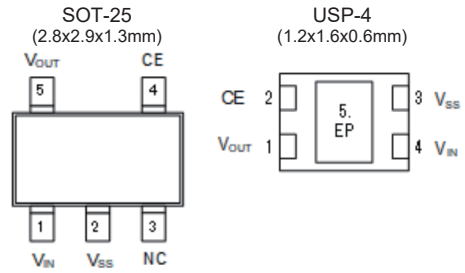
Features

- Input Voltage : 4.5V ~ 36.0V (Absolute Max.: 42.0V)
- Surge Voltage : 46.0V (Applied Time ≤ 400ms)
- Output Voltage Range : 1.8V ~ 18.0V (±1.0%)
V_{OUT} < 6.0V (0.1V increments)
V_{OUT} ≥ 6.0V (0.5V increments)
- Output Current : 300mA
- Ripple Rejection (PSRR) : 65dB@1kHz
- Supply Current : 40μA
- Dropout Voltage : 350mV@100mA, V_{OUT}=5.0V
- Function : Soft-start, ON/OFF
- Protection : Current Limit
Thermal Shutdown
- Package : USP-6C, SOT-89-5, SOP-8FD
- Operating Ambient Temp. : -40°C ~ 105°C

Typical Application Circuit



Package



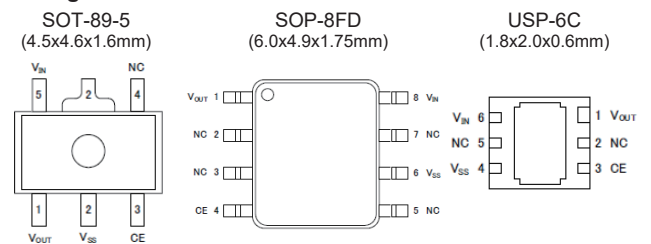
Ordering Information

XC6705①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	With C _L Discharge
		B	Without C _L Discharge
②③	Output Voltage	25 ~ 55	e.g. 2.8V → ②2, ③8
④	Fixed No.	1	-
⑤⑥⑦	Package (Order Unit)	GR-G	USP-4 (3,000pcs/Reel)
		MR-G	SOT-25 (3,000pcs/Reel) ^(*)

^(*) SOT-25 : Cu Wire

Package



Ordering Information

XC6702①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	D	Current Limit, Thermal Shutdown, Soft-start, ON/OFF
②③	Output Voltage ^(*)	18 ~ J0 ^(**)	For the voltage within 1.8V~9.5V: e.g. 5.0V → ②=5, ③=0
			For the voltage within 10.0V~18.0V: e.g. 10.0V → ②=A, ③=0 12.5V → ②=C, ③=5, 18.0V → ②=J, ③=0
④	Output Voltage Accuracy	1	±1.0%
⑤⑥⑦	Package (Order Unit)	ER-G	USP-6C (3,000pcs/Reel)
		PR-G	SOT-89-5 (1,000pcs/Reel)
		QR-G	SOP-8FD (1,000pcs/Reel)

^(*) Output Voltage increments are as follows:

V_{OUT} < 6.0V : 0.1V increments

V_{OUT} ≥ 6.0V : 0.5V increments

^(**) For 10.0V to 18.0V, A to J excluding I are used in "②".

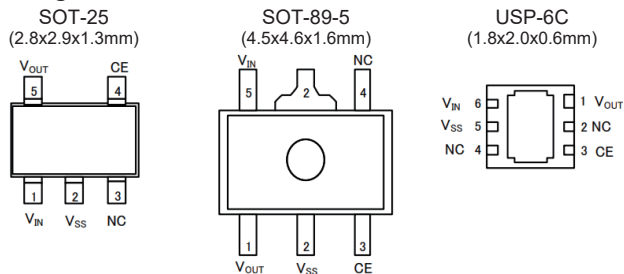
XC6701A/B : 28V 150mA High Speed Voltage Regulator

High Speed / Low Power Consumption

Features

- Input Voltage : 2.0V ~ 28.0V (Absolute Max.: 30.0V)
- Output Voltage Range : 1.8V ~ 18.0V (0.1V increments)
- Accuracy : ±2.0%
- Output Current : 150mA
- Ripple Rejection (PSRR) : 50dB@1kHz
- Supply Current : 50µA (V_{OUT}=5.0V)
- Dropout Voltage : 300mV@20mA
- Function : ON/OFF
- Protection : Current Limit
Thermal Shutdown
- Package : SOT-25, SOT-89-5, USP-6C
- Operating Ambient Temp. : -40°C ~ 85°C (B Type)
-40°C ~ 105°C (A Type)

Package

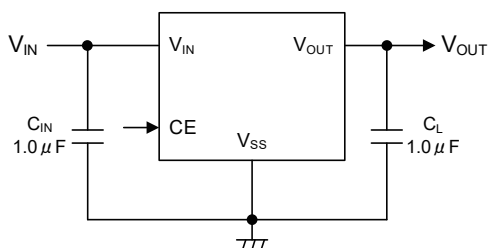


Ordering Information

XC6701①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	-40°C ≤ Topr ≤ 105°C
		B	-40°C ≤ Topr ≤ 85°C
②③	Output Voltage (r ⁽¹⁾)	18 ~ J0	1.8V ~ 9.9V ; e.g. 2.5V ⇒ 25, 5.0V ⇒ 50 10.0V ~ 18.0V ; e.g. 11.6V ⇒ B6, 15.2V ⇒ F2, 18.0V ⇒ J0
		④	Output Voltage Accuracy
⑤⑥-⑦	Package (Order Unit)	MR-G	SOT-25 (3,000pcs/Reel)
		PR-G	SOT-89-5 (1,000pcs/Reel)
		ER-G	USP-6C (3,000pcs/Reel)

Typical Application Circuit



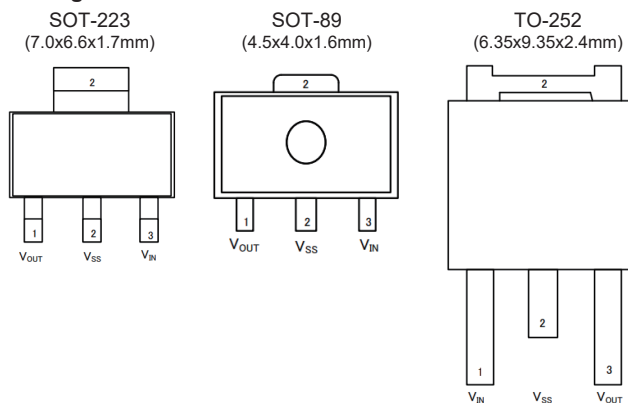
XC6701D : 28V 150mA High Speed, 3-pin Voltage Regulator

High Speed / Low Power Consumption / 3-pin Voltage Regulator

Features

- Input Voltage : 2.0V ~ 28.0V (Absolute Max.: 30.0V)
- Output Voltage Range : 1.8V ~ 18.0V (0.1V increments)
- Accuracy : ±2.0%
- Output Current : 150mA
- Ripple Rejection (PSRR) : 50dB@1kHz
- Supply Current : 50µA (V_{OUT}=5.0V)
- Dropout Voltage : 300mV@20mA
- Protection : Current Limit
Thermal Shutdown
- Package : SOT-89, SOT-223, TO-252
- Operating Ambient Temp. : -40°C ~ 85°C

Package

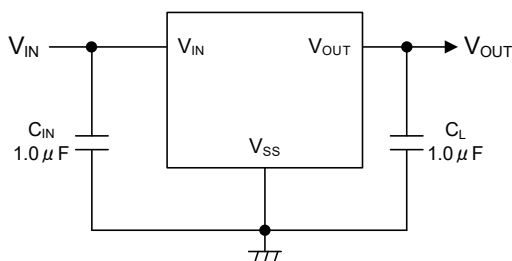


Ordering Information

XC6701①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	D	3 pins, Without CE pin
②③	Output Voltage	18 ~ J0	1.8V ~ 9.9V ; e.g. 2.5V ⇒ 25, 5.0V ⇒ 50 10.0V ~ 18.0V ; e.g. 11.6V ⇒ B6, 15.2V ⇒ F2, 18.0V ⇒ J0
		④	Output Voltage Accuracy
⑤⑥-⑦	Package (Order Unit)	FR-G	SOT-223 (1,000pcs/Reel)
		JR-G	TO-252 (2,500pcs/Reel)
		PR-G	SOT-89 (1,000pcs/Reel)

Typical Application Circuit



1. Inductor Built-in "Micro DC/DC"
 2. Step-Down DC/DC
 3. Step-Up DC/DC
 4. Step-Up&Down DC/DC
 5. Charge Pump
 6. LED Driver
 7. Multi Channel DC/DC
 8. Voltage Detectors
 9. Voltage Regulators Single Type
 10. Voltage Regulator With reset function

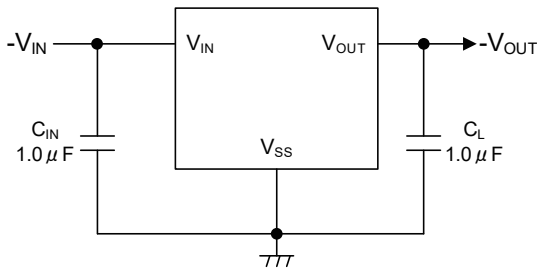
XC6902 : -16V, 200mA Negative Voltage Regulator

■-16V Input / 3pin LDO

Features

- Input Voltage : -2.4V ~ -16V (Absolute Max.: -18.0V)
- Output Voltage Range : -0.9V ~ -12V
- Accuracy : ±1.5%
- Output Current : 200mA
- Supply Current : 100µA
- Dropout Voltage : 400mV@100mA
- Protection : Current Limit
Thermal Shutdown
- Package : SOT-23, SOT-89, USP-6C
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



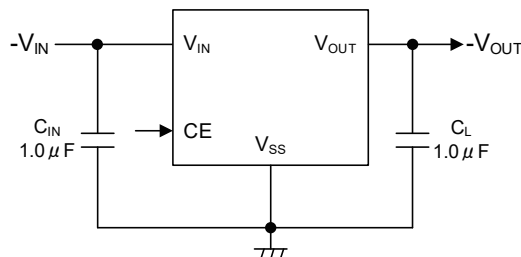
XC6901 : -12.4V 200mA Negative Voltage Regulator

■-12.4V Input / CE Function

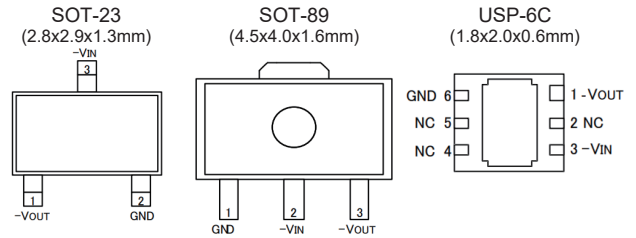
Features

- Input Voltage : -2.4V ~ -12.4V (Absolute Max.: -18.0V)
- Output Voltage Range : -0.9V ~ -12.0V
- Accuracy : ±1.5%
- Output Current : 200mA
- CE "H" Level Voltage : 1.2V ~ 3.6V (Active "H")
- Supply Current : 100µA
- Dropout Voltage : 400mV@100mA
- Function : ON/OFF, CL Discharge
- Protection : Current Limit
Thermal Shutdown
- Package : SOT-25, SOT-89-5, USP-6C
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package

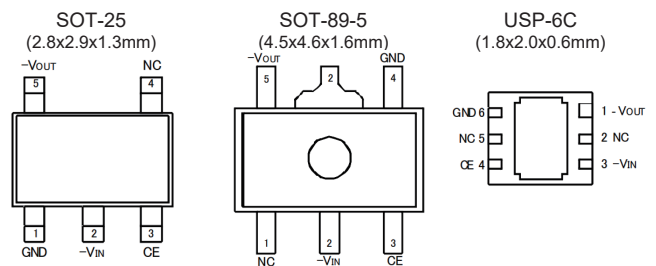


Ordering Information

XC6902①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	N	Soft-start, Thermal Shutdown
②③	Output Voltage	09 ~ C0	e.g. -2.8V → ②=2, ③=8, -12V → ②=C, ③=0 0.05V increments (-0.9V ~ -4.95V) 0.1V increments (-5.0 ~ -12V)
④	Output Voltage Type	1	0.1V increments e.g. -1.2V → ②=1, ③=2, ④=1
		B	0.05V increments e.g. -1.25V → ②=1, ③=2, ④=B
⑤⑥⑦	Package (Order Unit)	ER-G	USP-6C (3,000pcs/Reel)
		MR-G	SOT-23 (3,000pcs/Reel)
		PR-G	SOT-89 (1,000pcs/Reel)

Package



Ordering Information

XC6901①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type (*)	D	CE Pull-down, CL Discharge
②③	Output Voltage	09~C0	-0.9V~-12V e.g. -0.9V → ②=0, ③=9, -12V → ②=C, ③=0 A:10, B:11, C:12
④	Output Type	1	0.1V Increments e.g. -1.2V → ②=1, ③=2, ④=1
		B	0.05V Increments for -0.95V~-4.95V e.g. -1.25V → ②=1, ③=2, ④=B
⑤⑥⑦	Package (Order Unit)	ER-G	USP-6C (3,000pcs/Reel)
		MR-G	SOT-25 (3,000pcs/Reel)
		PR-G	SOT-89-5 (1,000pcs/Reel)

(*) For the Type without CL Discharge, please contact your local Torex sales office or representative.

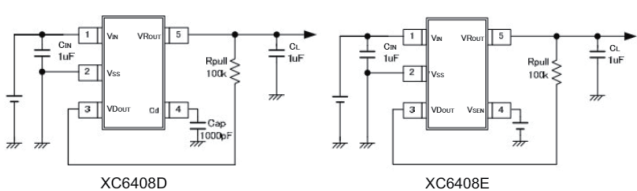
XC6408 : 28V 150mA Voltage Regulator + Voltage Detector

■LDO + Reset Function

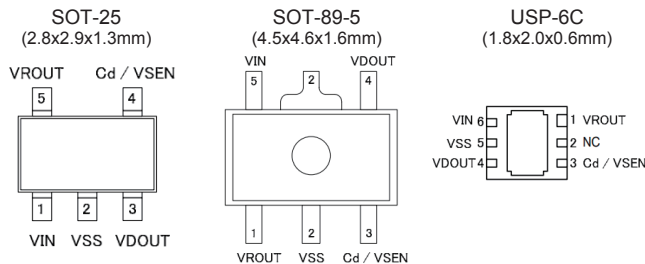
Features

- Input Voltage : 2.0V ~ 28.0V (Absolute Max.: 30.0V)
- Output Voltage Range : 2.0V ~ 18.0V (0.1V increments)
- Output Current : 150mA ($V_{IN}=V_{R_{OUT}}+3.0V$)
- Dropout Voltage : 175mV@20mA ($V_{R_{OUT}}=12V$)
- Detect Voltage Range : 2.0V ~ 16.0V (0.1V increments)
- Accuracy (Regulator) : $\pm 2.0\%$
- (Detector) $\pm 2.5\%$
- Supply Current : XC6408D 9.5 μ A ($V_{R_{OUT}}=12V, V_{DF}=11V$)
XC6408E 8 μ A ($V_{R_{OUT}}=12V, V_{DF}=11V$)
- Package : SOT-89-5, SOT-25, USP-6C
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC6408D①②③④⑤⑥ : $V_{R_{OUT}}$ pin voltage detection, release delay capacitor
XC6408E①②③④⑤⑥ : V_{SEN} pin for external voltage detection, auto power ON/OFF function

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	V_{DOOUT} Output Configuration	N	Open Drain
②③	Output Voltage Detect Voltage	-	Sequential number relating to $V_{R_{OUT}}$ and V_{DF} $V_{R_{OUT}}$ Output Voltage Range: 2.0V~18.0V V_{DF} Detect Voltage Range: 2.0V~16.0V * $V_{R_{OUT}}, V_{DF}$: 0.1V increments
④⑤⑥	Package (Order Unit)	ER-G	USP-6C (3,000pcs/Reel)
		MR-G	SOT-25 (3,000pcs/Reel)
		PR-G	SOT-89-5 (1,000pcs/Reel)

●DESIGNATOR②③ (No. 01~20 is standard voltage)

②③	$V_{R_{OUT}}$	V_{DF}	②③	$V_{R_{OUT}}$	V_{DF}	②③	$V_{R_{OUT}}$	V_{DF}	②③	$V_{R_{OUT}}$	V_{DF}
01	2.50	2.10	06	5.00	4.20	11	2.50	2.70	16	3.30	4.20
02	3.00	2.50	07	8.00	6.80	12	2.50	2.80	17	5.00	5.60
03	3.30	2.70	08	9.00	5.00	13	3.00	4.10	18	5.00	6.80
04	3.30	2.80	09	9.00	7.50	14	3.00	4.20	19	9.00	10.00
05	5.00	4.10	10	12.00	10.00	15	3.30	4.10	20	12.00	15.00

11. Multi Chip Module

XCM414 : Voltage Regulator with Integrated Bridge Diode

■for Wireless Power Receiver Applications

Features

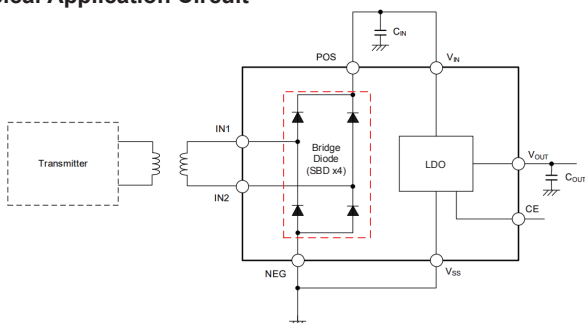
Schottky Barrier Diode (SBD)

- Forward Voltage : 0.33V ($I_F=10mA$)
- Reverse Current : 2 μ A ($V_R=40V$)

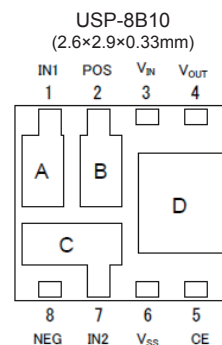
Voltage Regulator (VR)

- Input Voltage : 2.0V ~ 26.0V (Absolute Max.: 28.0V)
- Output Voltage Range : 2.0V ~ 12.0V(0.1V increments)
- Output Accuracy : $\pm 2.0\%$
- Supply Current : 5 μ A
- Ripple Rejection (PSRR) : 30dB@1kHz
- Protection : Current Limit, Thermal Shutdown
- Package : USP-8B10
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XCM414①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B	-
②③④	Output Voltage	020 ~ 120	2.0V ~ 12.0V (0.1V increments) e.g. 033 \Rightarrow 3.3V, 105 \Rightarrow 10.5V
⑤⑥⑦	Package (Order Unit)	D2-G	USP-8B10 (5,000 pcs/Reel)

1. Inductor Built-in "micro DC/DC"
2. Step-Down DC/DC
3. Step-Up DC/DC
4. Step-Up&Down DC/DC
5. Charge Pump
6. LED Driver
7. Multi Channel DC/DC
8. Voltage Detectors
9. Voltage Regulators Single Type
10. Voltage Regulator With reset function

XC8112/XC8113 : 2ch Load SW with Ideal Diode Function

UNDER DEVELOPMENT

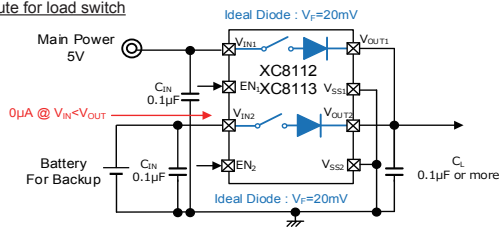
■Ideal Diode Function

Features

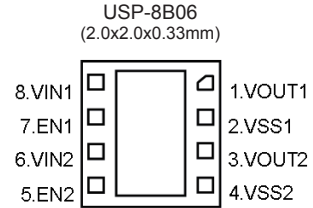
- Input Voltage : 1.5V ~ 6.0V (Absolute Max.:6.6V)
- Output Current : XC8112 : 2ch x 500mA ($V_{IN}>1.7V$)
XC8113 : 2ch x 1000mA ($V_{IN}>2.0V$)
- Stand-by Current : 0.65μA/ch
- Supply Current : 3.6μA/ch
- Reverse Bias Current : 0.8μA/ch
- Forward Voltage : 20mV
- Current Limit : 850mA (XC8112), 1700mA (XC8113)
- Short Current : 50mA
- Function : Ideal diode function
- Protection : Reverse Protection
: Inrush Current Protection
: Current limit
: Thermal Shutdown
- Standard : IEC 62368-1:2018 Certified
- Package : USP-8B06
- Operating Ambient Temp. : -40°C ~ 105°C

Typical Application Circuit

Diode / substitute for load switch



Package



Ordering Information

XC8112①②③④⑤⑥-⑦ : 500mA
XC8113①②③④⑤⑥-⑦ : 1000mA

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	CE pin logic	A	CE Active "H"
②	Function	A	Ideal Diode function Equipped
③④	Internal Standard Number	01	-
⑤⑥-⑦	Package (Order Unit)	ER-G	USP-8B06

XC8111 : Load SW with Ideal Diode Function (1.0A IEC 62368-1:2018 Certified)

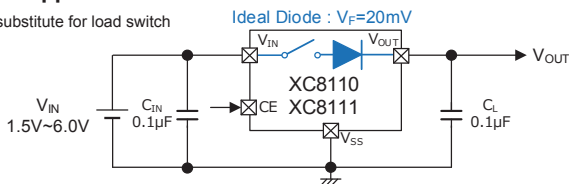
■Ideal Diode Function / No Input Current under Reverse bias / Small Solution / IEC 62368-1 Certified

Features

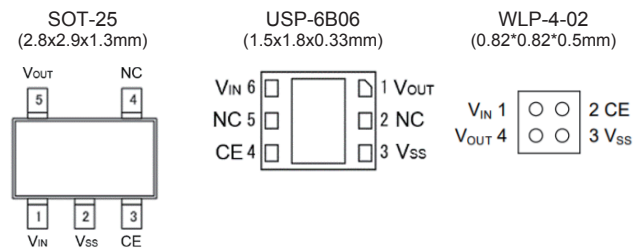
- Input Voltage : 1.5V ~ 6.0V (Absolute Max.: 6.6V)
- Output Current : 1A ($V_{IN}>2.0V$)
- Stand-by Current : 0.65μA
- Supply Current : 3.6μA (at Forward Bias)
0μA (at Reverse Bias)
- Reverse Bias Current : 0.8μA
- Forward Voltage : 20mV
- Current Limit : 1700mA
- Short Current : 50mA
- Function : Ideal Diode Function
- Protection : Reverse Protection
: Inrush Current Protection
: Current Limit
: Thermal Shutdown
- Standard : IEC 62368-1:2018 Certified
- Package : WLP-4-02, SOT-25, USP-6B06
- Operating Ambient Temp. : -40°C ~ 105°C

Typical Application Circuit

Diode / substitute for load switch



Package



Ordering Information

XC8111①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	CE pin Logic	A	Active "H"
②	Function	A	Ideal Diode Function Equipped
③④	Fixed No.	01	-
⑤⑥-⑦	Package (Order Unit)	0R-G	WLP-4-02 (5,000pcs/Reel)
		MR-G ^(*)	SOT-25 (3,000pcs/Reel)
		8R-G	USP-6B06 (5,000pcs/Reel)

(*) SOT-25 uses Cu bonding wires.

11. Multi Chip Module
12. Load Switch
13. Push Button Controllers
14. Lithium-ion Battery Charge IC
15. LTO Battery Charge IC
16. LTO Battery Voltage Monitor IC
17. Automotive IC
18. Discrete
19. Package

XC8110 : Load SW with Ideal Diode Function (0.5A IEC 62368-1:2018 Certified)

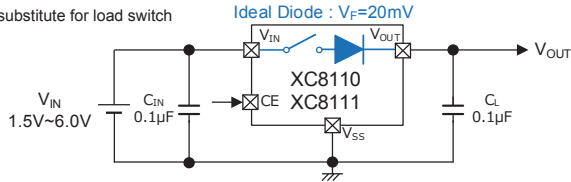
■Ideal Diode Function / No Input Current under Reverse bias / Small Solution / IEC 62368-1 Certified

Features

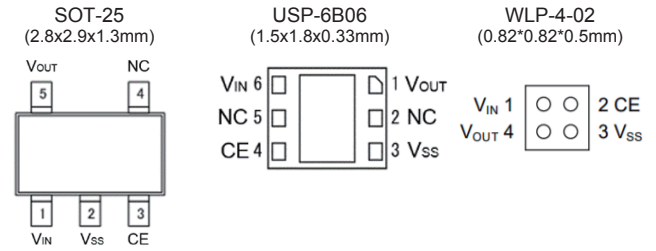
Input Voltage	: 1.5V ~ 6.0V (Absolute Max.: 6.6V)
Output Current	: 500mA (V _{IN} > 1.7V)
Stand-by Current	: 0.65μA
Supply Current	: 3.6μA (at Forward Bias) 0μA (at Reverse Bias)
Reverse Bias Current	: 0.8μA
Forward Voltage	: 20mV
Current Limit	: 850mA
Short Current	: 50mA
Function	: Ideal Diode Function
Protection	: Reverse Protection Inrush Current Protection Current Limit Thermal Shutdown
Standard	: IEC 62368-1:2018 Certified
Package	: WLP-4-02, SOT-25, USP-6B06
Operating Ambient Temp.	: -40°C ~ 105°C

Typical Application Circuit

Diode / substitute for load switch



Package



Ordering Information

XC8110①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	CE pin Logic	A	Active "H"
②	Function	A	Ideal Diode Function Equipped
③④	Fixed No.	01	-
⑤⑥-⑦	Package (Order Unit)	0R-G	WLP-4-02 (5,000pcs/Reel)
		MR-G ^(*)	SOT-25 (3,000pcs/Reel)
		8R-G	USP-6B06 (5,000pcs/Reel)

^(*) SOT-25 uses Cu bonding wires.

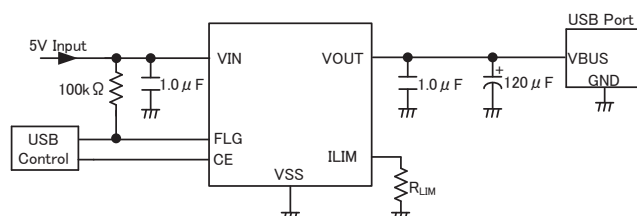
XC8109 : 85mΩ Load SW with Adjustable Current Limit (I_{LM}=75mA~1.3A)

■Ultra-Low R_{ON} / Reverse Current Prevention / Adjustable Current Limit

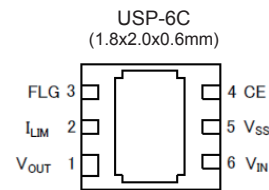
Features

Input Voltage	: 2.5V ~ 5.5V (Absolute Max.:6.0V)
Output Current	: 0.9A
ON Resistance	: 85mΩ@V _{IN} =5.0V
Supply Current	: 40μA@V _{IN} =5.0V
Flag Delay Time	: 7.5ms@Current Limit 4.0ms@Reverse Current Prevention
Function	: Flag function CE Pin Input Logic Selectable Soft-start UVLO
Protection	: Current Limit Adjustable 75mA ~ 1.3A Reverse Current Prevention Thermal Shutdown
Current Limit Response Time	: 2μs *Reference value
Package	: USP-6C
Operating Ambient Temp.	: -40°C ~ 105°C

Typical Application Circuit



Package



Ordering Information

XC8109①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	CE Logic	A	Active "H"
		B	Active "L"
②	Protection Type	C	Auto-recovery ^(*)
		D	Latch-off ^(**)
③④	Output Current	10	0.9A (Adjustable current limit range: 75mA~1300mA)
⑤⑥-⑦	Package (Order Unit)	ER-G	USP-6C (3,000pcs/Reel)

^(*) Current Limit, Reverse Current Prevention and Thermal Shutdown are Auto-recovery.
^(**) Current Limit and Reverse Current Prevention are Latching. Thermal Shutdown is Auto-recovery.

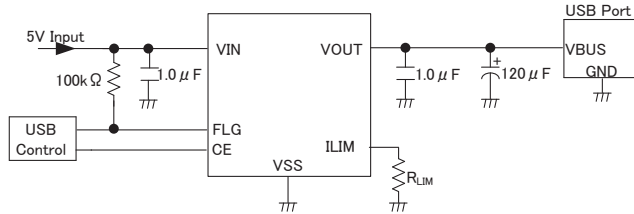
XC8108 : 85mΩ Load SW with Adjustable Current Limit ($I_{LIM}=0.9A\sim 2.4A$)

■Ultra-Low R_{ON} / Reverse Current Prevention / Adjustable Current Limit

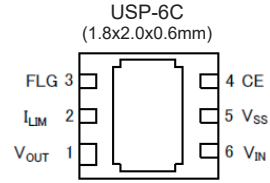
Features

- Input Voltage : 2.5V ~ 5.5V (Absolute Max.:6.0V)
- Output Current : 2A
- ON Resistance : 85mΩ@ $V_{IN}=5.0V$
- Supply Current : 40μA@ $V_{IN}=5.0V$
- Flag Delay Time : 7.5ms@Current Limit
4.0ms@Reverse Current Prevention
- Function : Flag function
CE Pin Input Logic Selectable
Soft-start
UVLO
- Protection : Current Limit Adjustable 0.9A ~ 2.4A
Reverse Current Prevention
Thermal Shutdown
- Current Limit Response Time : 2μs *Reference value
- Package : USP-6C
- Operating Ambient Temp. : -40°C ~ 105°C

Typical Application Circuit



Package



Ordering Information

XC8108①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	CE Logic	A	Active "H"
		B	Active "L"
②	Protection Type	C	Auto-recovery ^(*)
		D	Latch-off ^(*)
③④	Output Current	20	2.0A (Adjustable current limit range: 900mA~2400mA)
⑤⑥-⑦	Package (Order Unit)	ER-G	USP-6C (3,000pcs/Reel)

^(*) Current Limit, Reverse Current Prevention and Thermal Shutdown are Auto-recovery.
^(**) Current Limit and Reverse Current Prevention are Latching. Thermal Shutdown is Auto-recovery.

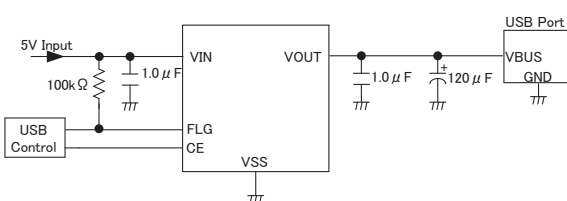
XC8107 : 85mΩ Load SW with Adjustable Current Limit ($I_{LIM}=0.9A\sim 2.4A$)

■Ultra-Low R_{ON} / Reverse Current Prevention

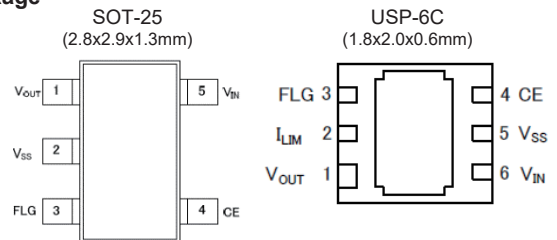
Features

- Input Voltage : 2.5V ~ 5.5V (Absolute Max.:6.0V)
- Output Current : 2A
- ON Resistance : 85mΩ@ $V_{IN}=5.0V$ *USP-6C
100mΩ@ $V_{IN}=5.0V$ *SOT-25 (A/B Type)
95mΩ@ $V_{IN}=5.0V$ *SOT-25 (X,Y Type)
- Supply Current : 40μA@ $V_{IN}=5.0V$
- Flag Delay Time : 7.5ms * At over-current detection
4.0ms * At reverse voltage detection
- Function : Flag function
CE Pin Input Logic Selectable
Soft-start
UVLO
- Protection : Reverse Current Prevention
Thermal Shutdown
- Current Limit Response Time : 2μs *Reference value
- Package : USP-6C, SOT-25 (Au wire or Cu wire)
- Operating Ambient Temp. : -40°C ~ 105°C

Typical Application Circuit



Package



Ordering Information

XC8107①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL		DESCRIPTION
		Au Wire	Cu Wire	
①	CE Logic	A	X	Active "H"
		B	Y	Active "L"
②	Protection Type	C		Auto-recovery
		D		Latch-off
③④	Output Current	05		0.5A
		10		1A
		15		1.5A
		20		2.0A
⑤⑥-⑦	Package (Order Unit)	MR-G		SOT-25 (3,000pcs/Reel)
		ER-G		USP-6C (3,000pcs/Reel) ^(*)

^(*) USP-6C package is available for the A/B Type.

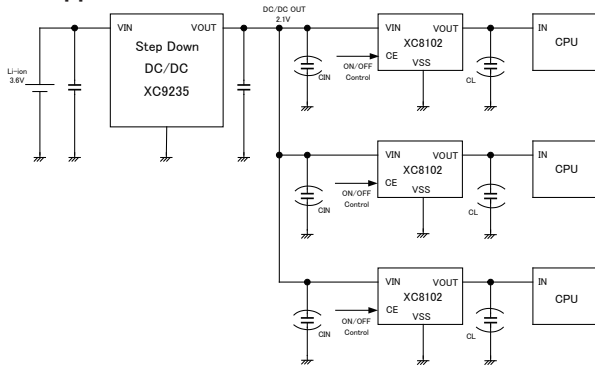
XC8102 : 400mA Line SW

Low Power Consumption

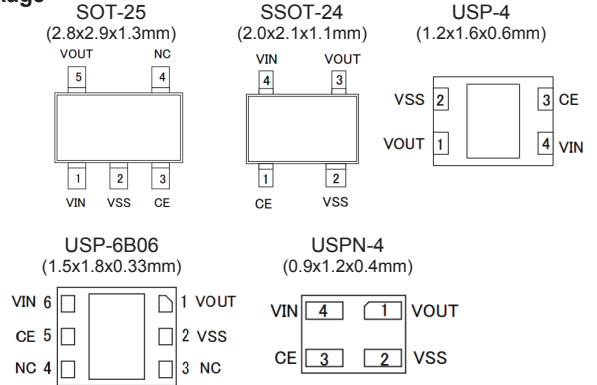
Features

- Input Voltage : 1.2V ~ 6.0V (Absolute Max.: 6.5V)
- On Resistance : 0.28Ω@VIN=6.0V, 0.52Ω@VIN=1.8V
0.31Ω@VIN=4.0V, 0.60Ω@VIN=1.5V
0.35Ω@VIN=2.9V, 0.80Ω@VIN=1.2V
- Power Consumption : 3.0μA@VIN=1.2V, 3.6μA@VIN=2.9V
4.0μA@VIN=6.0V
- Function : ON/OFF (Active "H")
CL Discharge
- Protection : Current limit 400mA (1.8V ≤ VIN ≤ 6.0V)
Short Current 30mA
- Package : USP-4, SSOT-24, SOT-25, USPN-4, USP-6B06
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC8102①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	CE pin logic	A	Active "H"
②	CL Discharge	A	With CL Discharge
③④	Fixed No.	01	-
⑤⑥-⑦	Package (Order Unit)	GR-G	USP-4 (3,000pcs/Reel)
		MR-G	SOT-25 (3,000pcs/Reel)
		NR-G	SSOT-24 (3,000pcs/Reel)
		7R-G	USPN-4 (5,000pcs/Reel)
		8R-G	USP-6B06 (5,000pcs/Reel)

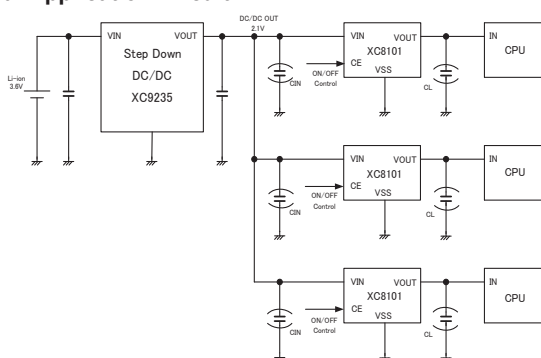
XC8101 : 200mA Line SW

Low Power Consumption

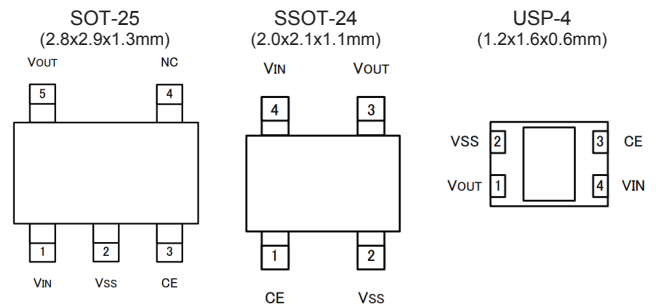
Features

- Input Voltage : 1.8V ~ 6.0V (Absolute Max.: 6.5V)
- Output Current : 200mA (300mA Limit)
- On Resistance : 0.75Ω@ VIN=2.9V
1.15Ω@ VIN=1.8V
- Power Consumption : 3.0μA@ VIN=1.8V
- Protection : Current limit 300mA
Short Current 30mA
- Function : ON/OFF (Active "H")
CL Discharge
- Package : USP-4, SSOT-24, SOT-25
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC8101①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	CE pin logic	A	Active "H"
②	CL Discharge	A	With CL Discharge
③④	Fixed No.	01	-
⑤⑥-⑦	Package (Order Unit)	GR-G	USP-4 (3,000pcs/Reel)
		MR-G	SOT-25 (3,000pcs/Reel)
		NR-G	SSOT-24 (3,000pcs/Reel)

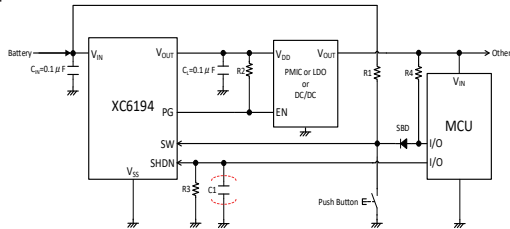
XC6194 : Push Button Smart Load SW (I_{OUT}=1A)

■1A Load SW with Shipping Function / Small Low-Profile Package

Features

- Input Voltage : 1.8V ~ 6.0V (Absolute Max.: 6.6V)
- Stand-by Current : 1nA / Turn-Off State
- Supply Current : 0.13μA / Turn-On State
- Output Current : 1A (V_{IN}=2.0V, T_a=25°C)
- Turn-On Delay Time : 0.2s, 1.0s, 3.0s, 5.0s
- Turn-Off Method : Type A • By inputting "H" to SHDN pin.
 • By inputting "L" during the t_{OFFD} to SW pin.
 Type B • By inputting "H" to SHDN pin.
- Turn-Off Delay Time : 3s, 5s, 10s, 15s
- Function : Power Good (PG pin)
 Shutdown (SHDN pin)
 Cl. Discharge, UVLO
- Protection : Inrush Current Protection
 Short Protection, Thermal Shutdown
- Package : USP-8B06
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



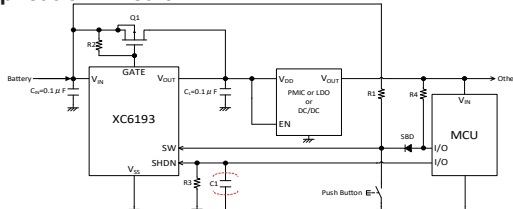
XC6193 : Push Button Smart Load SW (Ext FET)

■Load SW with Shipping Function / Small Low-Profile Package

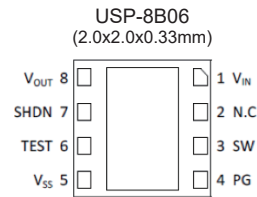
Features

- Input Voltage : 1.8V ~ 6.0V (Absolute Max.: 6.6V)
- Stand-by Current : 1nA / Turn-Off state
- Supply Current : 0.13μA / Turn-On state
- Output Current : Only Internal FET - 1A (V_{IN}=2.0V)
 External FET - Depend on FET
- Turn-On Delay Time : 0.2s, 1.0s, 3.0s, 5.0s
- Turn-Off Method : Type A • By inputting "H" to SHDN pin
 • By inputting "L" during the t_{OFFD} to SW pin.
 Type B • By inputting "H" to SHDN pin
- Turn-Off Delay Time : 3s, 5s, 10s, 15s
- Function : External Pch FET Control (GATE pin)
 Shutdown (SHDN pin)
 Cl. Discharge, UVLO
- Protection : Inrush Current Protection
 Short Protection, Thermal shutdown
- Package : USP-8B06
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



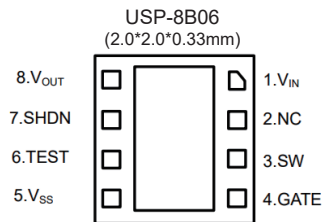
Ordering Information

XC6194①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Turn-on : By the SW pin Shut-down : By the SW pin or the SHDN pin
		B	Turn-on : By the SW pin Shut-down : By the SHDN pin
②	Turn-On delay time	A	0.2s.
		1	1s. (*)
		3	3s. (*)
		5	5s. (*)
		NN	No "Turn-Off function by SW pin". Applies to XC6194B only.
③④	Turn-Off delay time	03	3s. (*)
		05	5s.
		10	10s.
		15	15s. (*)
		ER-G	USP-8B06 (5,000pcs/Reel)

(*) For option products, please contact your local Torex sales office or representative.

Package



Ordering Information

XC6193①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Turn-on : By the SW pin Shut-down : By the SW pin or the SHDN pin
		B	Turn-on : By the SW pin Shut-down : By the SHDN pin
②	Turn-On delay time	A	0.2s.
		1	1s. (*)
		3	3s. (*)
		5	5s. (*)
		NN	No "Turn-Off function by SW pin" Applies to XC6193B only
③④	Turn-Off delay time	03	3s. (*)
		05	5s.
		10	10s.
		15	15s. (*)
		ER-G	USP-8B06 (5,000pcs/Reel)

(*) For option products, please contact your local Torex sales office or representative.

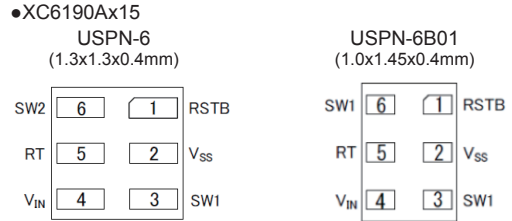
XC6190 : Push Button Reboot Controller

Ultra-Low Supply Current / Push Button Reboot Controller

Features

- Input Voltage : 1.75V ~ 6.0V (Absolute Max.: 7.0V)
- Supply Current : 0.01µA (Stand-by)
- Output Configuration : Nch Open drain
CMOS output
- RSTB Pin Sink Current : 30mA ($V_{RSTBL}=0.3V$)
- Reboot Delay Time(Type A) : 1s ~ 20s
(Adjustable by the external resistor)
*12.5s±5% (RT=200kΩ)
- Reboot Delay Time(Type B) : 7.5s±5% (TS=GND)
12.5s±5% (TS=VIN)
- Reboot Time : 0.4s±5%
- Package : USPN-6, USPN-6B01
- Operating Ambient Temp. : -40°C ~ 85°C

Package

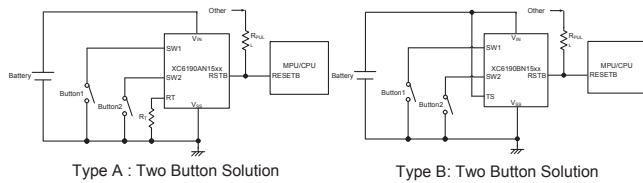


Ordering Information

XC6190①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Reboot delay time set by the External RT
		B	Reboot delay time internal fix
②	Output Configuration	N	Nch Open drain output
		C	CMOS output
③	Reboot delay time	1	Type A : 12.5s (External RT=200kΩ)
		2	Type B : 7.5s($V_{TS}=L$), 12.5s($V_{TS}=H$)
④	Reboot delay time accuracy	5	±5.0%
⑤⑥⑦	Package (Order Unit)	7R-G	USPN-6 (5,000pcs/Reel)
		8R-G	USPN-6B01 (5,000pcs/Reel)

Typical Application Circuit



Type A : Two Button Solution

Type B : Two Button Solution

14. Battery Chargers for single-cell Li-ion and Li-polymer Batteries

XC6810 : Ultra-compact Charger IC for Li-ion batteries compatible with wireless power transfer

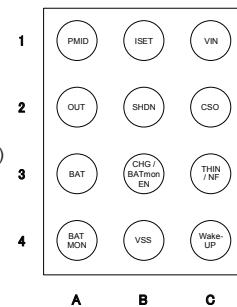
For Small Li-ion, Shutdown for Shipping / VIN Two-wire Communication / Charging & Battery Monitor

Features

- Input Voltage (Chargeable) : 3.5V ~ 28.0V (Absolute Max.: 30V)
- Charge Voltage : 3.80V ~ 4.40V (0.05V increments)
- Charge Current : 1mA ~ 25mA (Set by an external resistor)
- BAT Sink Current : 10nA (TYP. at Shutdown)
- Function : Shutdown, Wake-up
Battery Voltage Monitor or Low Notification
Current path with Input Current limit (110mA)
OUT line switch interlocked with UVLO (option)
Battery temperature monitor
Charge Enable Control
- Protection : Battery Over Discharge Protection
Output Short Protection
Thermal Control
Reverse Current Prevention
Safety Timer of Charging, UVLO
- Package : WLP-12-01
- Operating Ambient Temp. : -40°C ~ 85°C

Package

WLP-12-01
(1.17 x 1.57 x 0.33mm)



Ordering Information

XC6810①②③④⑤⑥⑦ : Standard Products

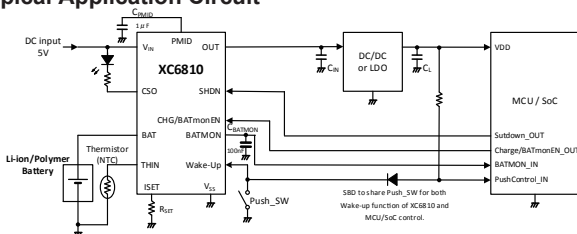
DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	4 Temperature Monitor
		B	3 Temperature Monitor
②③	Charge Voltage	41, 42, 43, 4D, 44	41 → 4.10V, 42 → 4.20V, 43 → 4.30V 4D → 4.35V, 44 → 4.40V
		④	Function
⑤⑥⑦	Package (Order Unit)	0R-G	WLP-12-01 (5,000pcs/Reel)

Selection Guide

Function	Charge Enable	CSO Output	OUT	Battery Monitor Output
C	No	Battery LED Indicator	Always ON (Current Path function)	0.2 x V _{BAT}
G		Battery Status Indicator		
H	Yes	Battery LED Indicator		
J		Battery Status Indicator		

(*) For custom products : Please see datasheet
(<https://www.torexsemi.com/file/xc6810/XC6810.pdf>).

Typical Application Circuit



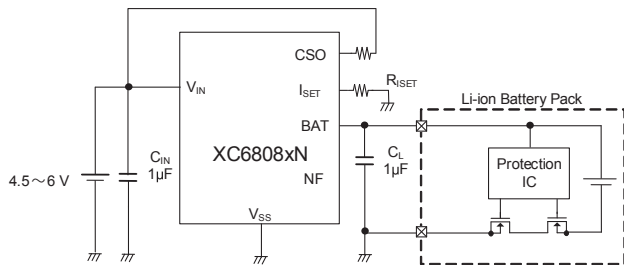
XC6808 : 5~40mA 4.20V/4.35V/4.40V Li-ion Charger IC

Small, Low-Profile Package

Features

- Operating Voltage : 4.5V ~ 6.0V (Absolute Max.: 6.5V)
- Charge Voltage : 4.20V, 4.35V, 4.40V
- Charge Current : 5mA ~ 40mA can be set by external resistance
- Battery Sink current : 0.1μA
- Supply Current : 100μA (VIN=5V, VBAT=3.5V)
- Protection : Thermistor Detection (Except for the XC6808xN)
Safety Timer
Charging Over-Voltage Monitor
Charging Over-Current Monitor
Recharge Function
UVLO
Thermal Shutdown (Latch Stop)
- Package : USP-6B07
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



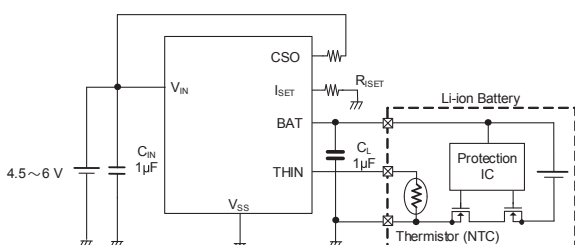
XC6804 : 200~800mA 4.20V Li-ion Charger IC

Small Package with High Heat Dissipation

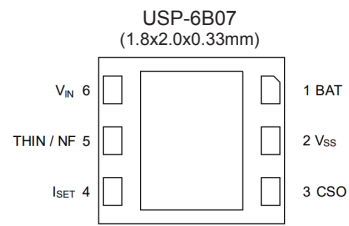
Features

- Operating Voltage : 4.5V ~ 6.0V (Absolute Max.: 6.5V)
- CV Charge Voltage : 4.20V, 4.05V (at high temperature)
- CC Charge Current : 200mA ~ 800mA Can be set by external resistance
- Supply Current : 100μA
- Function : Battery temperature monitor
Recharge function
- Protection : Battery temperature monitor
Safety timer
Dropout voltage monitor
Charging over-voltage monitor
Charging over-current monitor
UVLO
Thermal shutdown
- Package : SOP-8FD, USP-6EL
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package

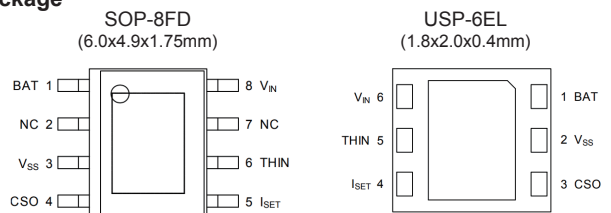


Ordering Information

XC6808①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Charge Status Output on Abnormal Mode	A	1kHz ON-OFF
		B	OFF *Semi-custom
②	Battery Temperature Monitor Function	2	2 Temperature Monitor *Semi-custom
		3	3 Temperature Monitor *Semi-custom
		4	4 Temperature Monitor
		N	No Temperature Monitor
③	CV Charge Voltage	C	4.20V
		D	4.35V
		E	4.40V
④	Main Charge Hold Time & Trickle Charge Function	1	Hold Time:5h, Trickle Charge: Enable *Semi-custom
		2	Hold Time:10h, Trickle Charge: Enable
		3	Hold Time:5h, Trickle Charge: Disable *Semi-custom
		4	Hold Time:10h, Trickle Charge: Disable *Semi-custom
⑤⑥⑦	Package (Order Unit)	8R-G	USP-6B07 (5,000pcs/Reel)

Package



Ordering Information

XC6804①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Charge Status Output on Abnormal Mode	A	1kHz ON-OFF
		B	OFF
②	Battery Temperature Monitor Function	2	2 Temperature Monitor
		3	3 Temperature Monitor
		4	4 Temperature Monitor
		E	Enable
③	Recharge Function	D	Disable
④	CV Charge Voltage	1	4.2V
⑤⑥⑦	Package (Order Unit)	QR-G	SOP-8FD (1,000pcs/Reel)
		4R-G	USP-6EL (3,000pcs/Reel)

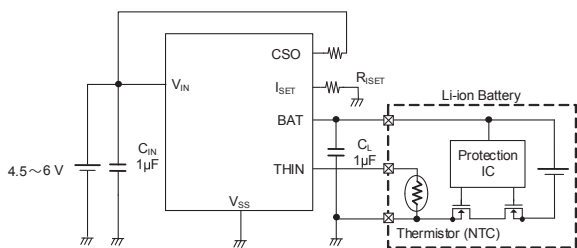
XC6803 : 5~40mA 4.20V Li-Ion Charger IC

■Small Package with High Heat Dissipation

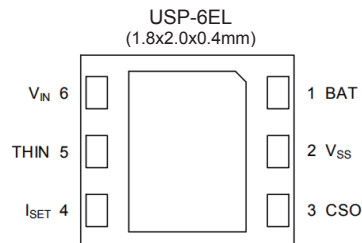
Features

- Operating Voltage : 4.5V ~ 6.0V (Absolute Max.: 6.5V)
- CV Charge Voltage : 4.20V, 4.05V (at high temperature)
- CC Charge Current : 40mA ~ 280mA Can be set by external resistance
- Supply Current : 100μA
- Function : Battery temperature monitor
Recharge function (XC6803xxE)
- Protection : Safety timer
Dropout voltage monitor
Charging over-voltage monitor
Charging over-current monitor
UVLO
Thermal shutdown
- Package : USP-6EL
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC6803①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Charge Status Output on Abnormal Mode	A	1kHz ON-OFF
		B	OFF
②	Battery Temperature Monitor Function	2	2 Temperature Monitor
		3	3 Temperature Monitor
		4	4 Temperature Monitor
③	Recharge Function	E	Enable
		D	Disable
④	CV Charge Voltage	1	4.2V
⑤⑥-⑦	Package (Order Unit)	4R-G	USP-6EL (3,000pcs/Reel)

15. Battery Chargers for LTO Batteries

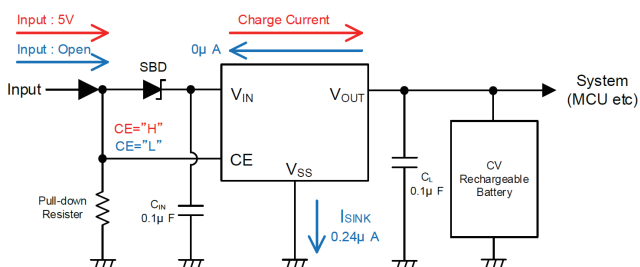
XC6242 : Charger IC for LTO Battery (Topr max=105°C)

■Charger IC for LTO Battery (Topr max=105°C)

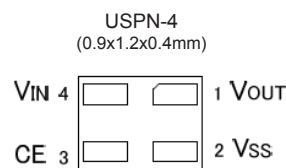
Features

- Operating Voltage : 1.5V ~ 6.0V (Absolute Max.: 6.5V)
- Output Voltage : 2.63V
MIN:2.50V, MAX:2.70V(@Tj=125°C)
- Output Current : 150mA (300mA Limit)
- Dropout Voltage : 450mV@100mA
- Supply Current : 0.8μA
- V_{OUT} Pin Sink Current : 0.24μA
- Protection : Current Limit
- Package : USPN-4
- Operating Ambient Temp. : -40°C ~ 105°C

Typical Application Circuit



Package



Ordering Information

XC6242①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Active "H"
②③④	Output Voltage	263	2.63V (±1.5%)
⑤⑥-⑦	Package (Order Unit)	7R-G	USPN-4 (5,000pcs/Reel)

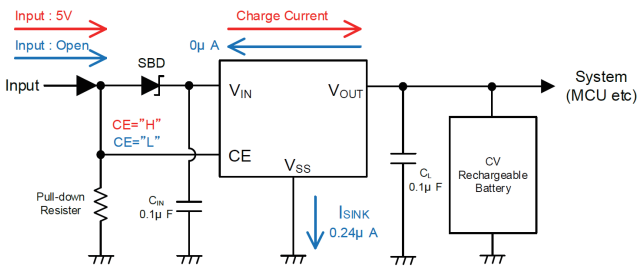
XC6240 : Charger IC for LTO Battery

■Charger IC for LTO Battery

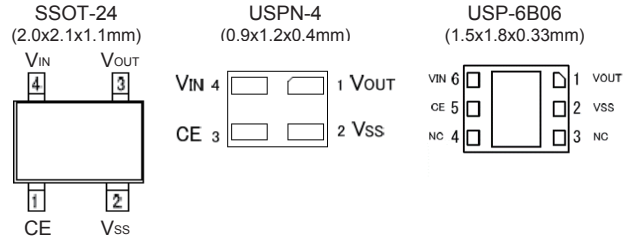
Features

- Operating Voltage : 1.5V ~ 6.0V (Absolute Max.: 6.5V)
- Output Voltage : 2.63V±1.5%
- Output Current : 150mA (300mA Limit)
- Dropout Voltage : 450mV@100mA
- Supply Current : 0.8µA
- V_{OUT} Pin Sink Current : 0.24µA
- Protection : Current Limit
- Package : SSOT-24, USPN-4, USP-6B06
- Operating Ambient Temp. : -40°C ~ 85°C

Typical Application Circuit



Package



Ordering Information

XC6240①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	Active "H"
②③④	Output Voltage	263	2.63V (±1.5%)
⑤⑥-⑦	Package (Order Unit)	NR-G	SSOT-24 (3,000pcs/Reel)
		7R-G	USPN-4 (5,000pcs/Reel)
		8R-G	USP-6B06 (5,000pcs/Reel)

16. Voltage Monitoring ICs for LTO Batteries

XC6142 : Voltage monitoring IC for LTO Battery (Under Development)

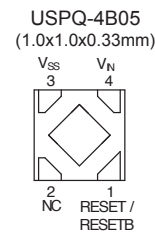
UNDER DEVELOPMENT

■Ultra-Low Power / High Accuracy / Release Voltage 2.45V

Features

- Operating Voltage : 1.1V ~ 6.0V (Absolute Max.: 7.0V)
- Detect Voltage Range : 1.6V ~ 2.1V (0.1V increments)
- Detection Voltage Accuracy : ±0.8%
- Temperature Characteristics: ±50ppm/°C
- Release Voltage : 2.450V
- Ultra-Low Power : 104nA
- Function : Undefined Operation Protection
- Output Configuration : CMOS, Nch Open drain
- Output Logic : "H" level or "L" level at detection
- Package : USPQ-4B05
- Operating ambient Temp. : -40°C ~ 105°C

Package



Ordering Information

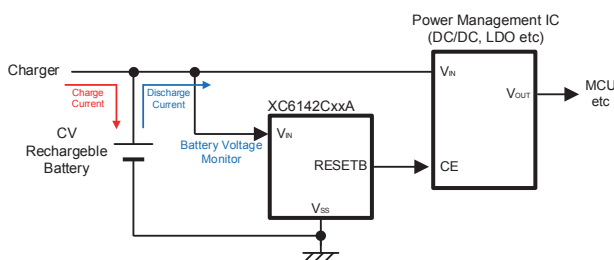
XC6142①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Output Configuration	C	CMOS output
		N	Nch Open drain output
②③	Detect Voltage	16 ~ 21	e.g. 1.6V → ②=1, ③=6
④	Type	A	Refer to Selection Guide
		C	
⑤⑥-⑦	Package (Order Unit)	9R-G	USPQ-4B05 (5,000pcs/Reel)

●Selection Guide

Type	RESET OUTPUT	OUTPUT PIN NAME	DESCRIPTION
A	Active "L"	RESETB	Output "L" level in detection state
C	Active "H"	RESET	Output "H" level in detection state

Typical Application Circuit



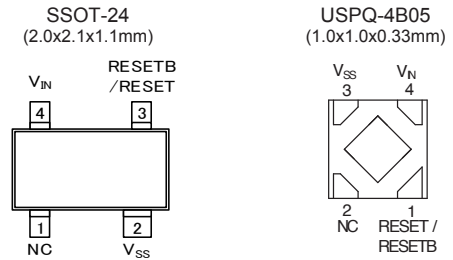
XC6140 : Voltage monitoring IC for LTO Battery

■Ultra-Low Power / High Accuracy / Release Voltage 2.475V

Features

- Operating Voltage : 1.1V ~ 6.0V (Absolute Max.: 7.0V)
- Detect Voltage Range : 1.6V ~ 2.2V (0.1V increments)
- Detection Voltage Accuracy: ±0.8%
- Temperature Characteristics: ±50ppm/°C
- Release Voltage : 2.475V
- Ultra-Low Power : 104nA
- Function : Undefined Operation Protection
- Output Configuration : CMOS, Nch Open drain
- Output Logic : "H" level or "L" level at detection
- Package : USPQ-4B05, SSOT-24
- Operating ambient Temp. : -40°C ~ 105°C

Package



Ordering Information

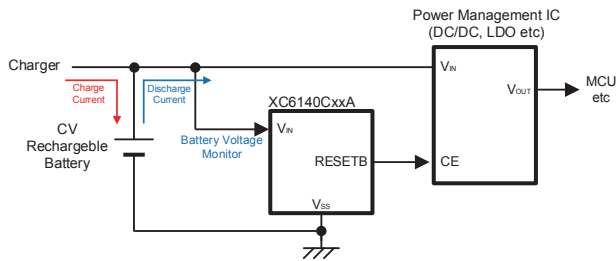
XC6140①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Output Configuration	C	CMOS output
		N	Nch Open drain output
②③	Detect Voltage	16 ~ 22	e.g. 1.6V → ②=1, ③=6
④	Type	A	Refer to Selection Guide
		C	
⑤⑥⑦	Package (Order Unit)	9R-G	USPQ-4B05 (5,000pcs/Reel)
		NR-G	SSOT-24 (3,000pcs/Reel)

●Selection Guide

Type	RESET OUTPUT	OUTPUT PIN NAME	DESCRIPTION
A	Active "L"	RESETB	Output "L" level in detection state
C	Active "H"	RESET	Output "H" level in detection state

Typical Application Circuit



17. ICs for Automotive (AEC-Q100 Compliant)

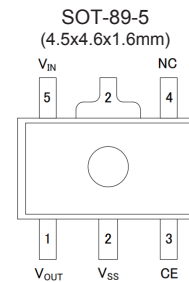
XD6702 : 36V 300mA Low Power, High Speed Voltage Regulator

■AEC-Q100 Grade2 / High Speed / Low Noise / Low Power Consumption

Features

- Input Voltage : 4.5V ~ 36.0V (Absolute Max.: 42.0V)
- Surge Voltage : 46.0V (Applied Time ≤ 400ms)
- Output Voltage Range : 1.8V ~ 18.0V (±1.0%)
 $V_{OUT} < 6.0V$, 0.1V increments
 $V_{OUT} \geq 6.0V$, 0.5V increments
- Output Current : 300mA
- Supply Current : 40µA
- Dropout Voltage : 350mV@100mA, $V_{OUT}=5.0V$
- Ripple Rejection (PSRR) : 65dB@1kHz
- Protection : Current Limit
Thermal Shutdown
- Function : Soft-Start, ON/OFF
- Package : SOT-89-5
- Operating Ambient Temp. : -40°C ~ 105°C

Package



Ordering Information

XD6702①②③④⑤⑥⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	D	Current Limit, Thermal Shutdown, Soft-start, ON/OFF Control
②③	Output Voltage (*)	18 ~ J0 ⁽²⁾	For the voltage within 1.8V~9.5V: e.g. 5.0V → ②=5, ③=0
			For the voltage within 10.0V~18.0V: e.g. 10.0V → ②=A, ③=0 12.5V → ②=C, ③=5, 18.0V → ②=J, ③=0
④	Output Voltage Accuracy	1	±1.0%
⑤⑥⑦	Package (Order Unit)	PR-Q	SOT-89-5 (1,000pcs/Reel)

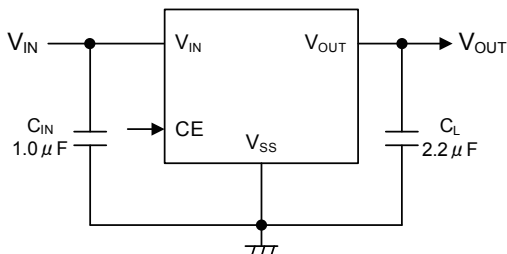
(*) Output voltage setting increments are as follows:

$V_{OUT} < 6.0V$ 0.1V increments settings

$V_{OUT} \geq 6.0V$ 0.5V increments settings

(2) For 10.0V to 18.0V, A to J excluding I are used in "②".

Typical Application Circuit



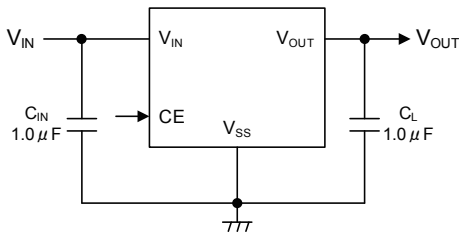
XD6239 : 125°C, 300mA High Speed Voltage Regulator

■AEC-Q100 Grade1 / 125°C / High Speed

Features

- Input Voltage : 2.0V ~ 6.0V (Absolute Max.:7.0V)
- Output Voltages : 1.2V ~ 3.4V (0.1V increments)
- Output Accuracy : ±1.0%
- Output Current : 300mA
- Ripple Rejection (PSRR) : 75dB@1kHz
- Supply Current : 100µA
- Dropout Voltage : 200mV@300mA (V_{OUT}=3.0V)
- Function : ON/OFF, C_L Discharge
Inrush Current Protection
- Protection : Current Limit
Thermal Shutdown
- Capacitor : C_{IN} =1.0µF, C_L=1.0µF
- Package : DFN1010-4C, SOT-25, SOT-89-5
- Operating Ambient Temp. : -40°C ~ 125°C

Typical Application Circuit



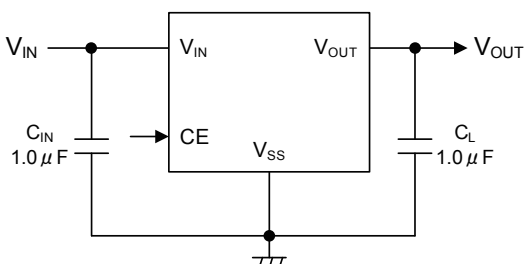
XD6216 : 28V 150mA Voltage Regulator

■AEC-Q100 Grade2 / Ultra Low Power

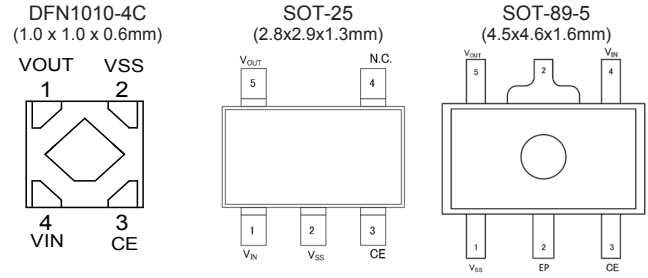
Features

- Input Voltage : 2.0V ~ 28.0V (Absolute Max.:30.0V)
- Output Voltage Range : 1.8V ~ 12.0V (0.1V increments)
- Output Accuracy : ±1.0%
- Output Current : 150mA (V_{IN}=V_{OUT}+3.0V)
- Ripple Rejection (PSRR) : 30dB@1kHz
- Supply Current : 5µA
- Dropout Voltage : 190mV@20mA (V_{OUT}=5.0V)
- Function : ON/OFF
- Protection : Current Limit
Thermal Shutdown
- Package : SOT-25, SOT-89-5
- Operating Ambient Temp. : -40°C ~ 105°C

Typical Application Circuit



Package

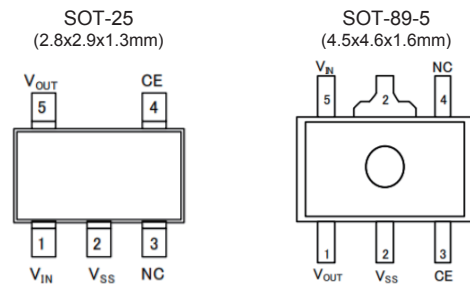


Ordering Information

XD6239①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	D	Without Inrush Current Protection
		H	With Inrush Current Protection
②③	Output Voltage	12 ~ 34	e.g. 2.5V → ②=2,③=5
④	Output Voltage Accuracy	1	±1.0%
⑤⑥-⑦	Package (Order Unit)	6R-Q	DFN1010-4C (5,000pcs/Reel)
		MR-Q	SOT-25 (3,000pcs/Reel)
		PR-Q	SOT-89-5 (1,000pcs/Reel)

Package



Ordering Information

XD6216①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B	-
②③	Output Voltage	18~C0	For the voltage within 1.8V~9.9V (0.1V increments); e.g. 2.5V ⇒ 25, 5.0V ⇒ 50 For the voltage within 10.0V~12.0V (0.1V increments); e.g. 10.6V ⇒ A6, 11.2V ⇒ B2, 12.0V ⇒ C0
④	Output Voltage Accuracy	1	±1.0%
⑤⑥-⑦	Package (Order Unit)	MR-Q	SOT-25 (3,000pcs/Reel)
		PR-Q	SOT-89-5 (1,000pcs/Reel)

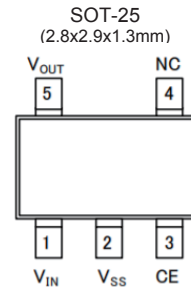
XD6506 : 150mA Low Power Voltage Regulator

■AEC-Q100 Grade2 / Ultra Low Power

Features

- Operating Input Voltage : 1.5V ~ 6.0V (Absolute Max.:7.0V)
- Output Current : 150mA
- Output Voltage(Standard) : 1.2V, 1.5V, 1.8V, 2.5V, 2.8V, 3.0V, 3.3V, 5.0V
- Output Voltage (Option) : 1.2V ~ 5.0V (0.1V increments)
- Output Accuracy : ±2.0%
- Supply Current : 0.8µA
- Dropout Voltage : 360mV@100mA (V_{out}=3.3V)
- Function : ON/OFF
- Protection : Current limit
- Package : SOT-25
- Operating Ambient Temp. : -40°C ~ 105°C

Package

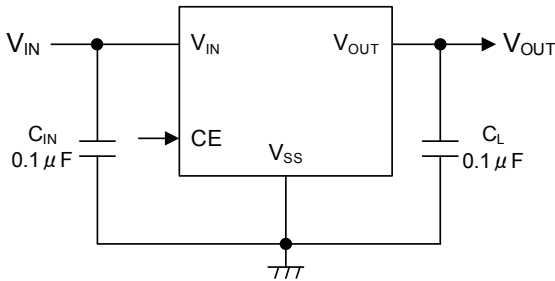


Ordering Information

XD6506①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	B	-
②③	Output Voltage	12, 15, 18, 25, 28, 30, 33, 50	e.g. 3.3V ⇒ 33, 5.0V ⇒ 50
④	Output Voltage Accuracy	2	±2.0% (V _{OUT} ≥ 1.5V), ±30mV (V _{OUT} < 1.5V)
⑤⑥-⑦	Package (Order Unit)	MR-Q	SOT-25 (3,000pcs/Reel)

Typical Application Circuit



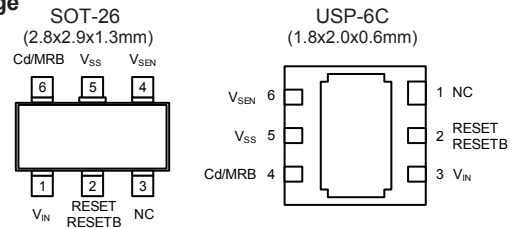
XD6133 : Voltage Detector with Sense Pin and Detect/Release delay adj.

■AEC-Q100 Grade1 / Delay time Adjustable / Separated Sense Pin

Features

- Operating Voltage : 1.6V ~ 6.0V (Absolute Max.:7.0V)
- Detect voltage(Standard) : 1.3V, 1.6V, 2.2V, 2.3V, 2.4V, 2.9V, 3.0V, 3.1V, 4.4V, 4.5V, 4.6V
- Detect voltage(Option) : 1.0V ~ 5.0V
- Detect Voltage Accuracy : ±1.2% (Ta=25°C), ±2.7% (Ta=-40~125°C)
- Temperature Characteristics : ±50ppm/°C
- Hysteresis width : V_{DF}×5.0%
- Supply Current : 1.28µA
- Function : Separated Sense Pin, Manual Reset, Release delay / Detection delay Adj
- Output Type : CMOS, Nch Open drain
- Output Logic : "H" level or "L" level at detection
- Package : USP-6C, SOT-26
- Operating Ambient Temp. : -40°C ~ 125°C

Package



Ordering Information

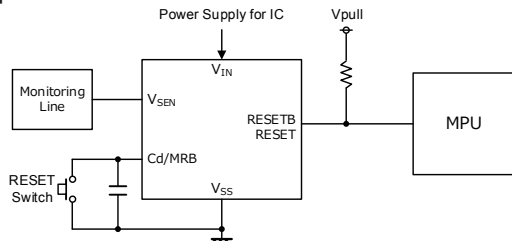
XD6133①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Output Configuration	C, N	CMOS output, Nch Open drain output
②③	Detect Voltage	13, 16, 22, 23, 24, 29, 30, 31, 44, 45, 46	e.g. 1.3V → ②=1, ③=3
④	Type	A~K	Refer to Selection Guide
⑤⑥-⑦	Package (Order Unit)	MR-Q, ER-Q	SOT-26 (3,000pcs/Reel), USP-6C (3,000pcs/Reel)

•Selection Guide

Type	RESET/RESETB OUTPUT	DELAY(Rp:Rn)	
A	Active "H" ("H" level at detection)	1:0	144kΩ:0Ω
B		1:0.125	144kΩ:18kΩ
C		1:1	144kΩ:144kΩ
D		2:1	288kΩ:144kΩ
E	Active "L" ("L" level at detection)	1:0	144kΩ:0Ω
F		1:0.125	144kΩ:18kΩ
H		1:1	144kΩ:144kΩ
K		2:1	288kΩ:144kΩ

Typical Application Circuit



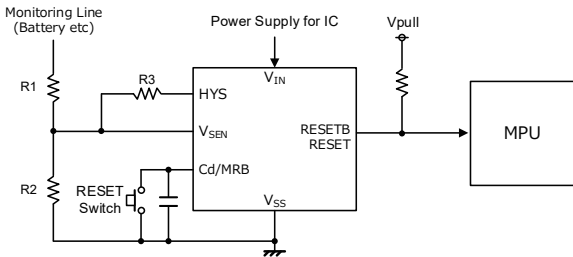
XD6132 : Voltage Detector with Sense Pin(Surge Protection), Hys adj. and delay adj.

■AEC-Q100 Grade1 / Delay time Adjustable / Surge Voltage Protection / HYS External Adjustment

Features

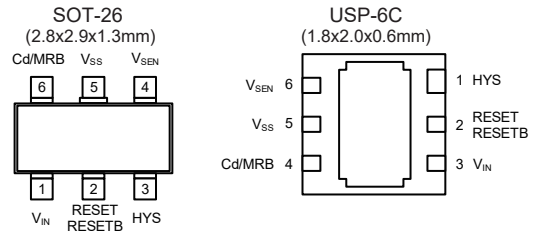
- Operating Voltage : 1.6V ~ 6.0V (Absolute Max.:7.0V)
- Detect Voltage (Standard) : 1.0V
- Detect Voltage (Option) : 0.8V ~ 2.0V
- Detect Voltage Accuracy : ±1.2% (Ta=25°C)
±2.7% (Ta=-40~125°C)
- Temperature Characteristics : ±50ppm/°C
- Hysteresis width : $V_{DF} \times 0.1\%$
- Supply Current : 1.28µA(At detection)
- Function : Separated Sense Pin/Surge Protection
Manual Reset
Adj Hysteresis Width
Release delay / Detection delay Adj
- Output Type : CMOS, Nch Open drain
- Output Logic : "H" level or "L" level at detection
- Package : USP-6C, SOT-26
- Operating Ambient Temp. : -40°C ~ 125°C

Typical Application Circuit



High voltage lines can be monitored and adjusted to any detect/release voltage by R1-3

Package



Ordering Information

XD6132①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Output Configuration	C	CMOS output
②③	Detect Voltage	10	e.g. 1.0V → ②=1, ③=0
④	Type	A~K	Refer to Selection Guide
⑤⑥-⑦	Package (Order Unit)	MR-Q	SOT-26 (3,000pcs/Reel)
		ER-Q	USP-6C (3,000pcs/Reel)

•Selection Guide

Type	RESET/RESETB OUTPUT	DELAY(Rp:Rn)	
A	Active "H" ("H" level at detection)	1:0	144kΩ:0Ω
B		1:0.125	144kΩ:18kΩ
C		1:1	144kΩ:144kΩ
D		2:1	288kΩ:144kΩ
E	Active "L" ("L" level at detection)	1:0	144kΩ:0Ω
F		1:0.125	144kΩ:18kΩ
H		1:1	144kΩ:144kΩ
K		2:1	288kΩ:144kΩ

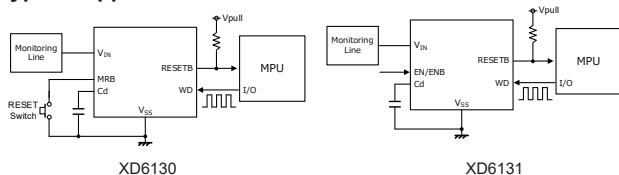
XD6130/XD6131 : Voltage Detector with Adjustable Watchdog Timer

■AEC-Q100 Grade1 / Watchdog Function ON_OFF / Manual Reset

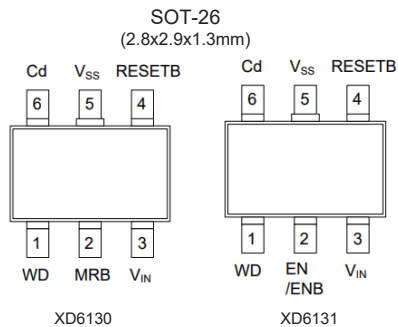
Features

- Operating Voltage : 1.5V ~ 6.0V (Absolute Max.: 7.0V)
- Detect Voltage (Standard) : 1.6V, 2.2V, 2.3V, 2.4V, 2.9V, 3.0V, 3.1V, 4.4V, 4.5V, 4.6V (±1.0%)
- Detect Voltage (Option) : 1.6V ~ 5.0V
- Temperature Characteristics : ±50ppm/°C
- Hysteresis Width : $V_{DFL} \times 5\%$
- Output Configuration : Nch Open drain
- Supply Current : 8.1µA : Detect
9.8µA : Release
2.5µA : Release (EN=L)
- Function : Manual Reset (XD6130)
Watchdog function ON/OFF (XD6131)
- WD Timeout Time : 100ms (Cd=0.1µF)
- Release Delay Time : 100ms (Cd=0.1µF) (at power on)
10ms (Cd=0.1µF) (After Watchdog Timeout)
- Package : SOT-26
- Operating Ambient Temp. : -40°C ~ 125°C

Typical Application Circuit



Package



Ordering Information

XD6130①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	MRB pin With pull-up resistor
②③	Detect Voltage	16 ~ 50	e.g. 1.6V → ②=1, ③=6
④	Detect Accuracy	1	±1.0%
⑤⑥-⑦	Package (Order Unit)	MR-Q	SOT-26 (3,000pcs/Reel)

XD6131①②③④⑤⑥-⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Type	A	EN pin With pull-up resistor
		B	ENB pin With pull-down resistor
②③	Detect Voltage	16 ~ 50	e.g. 1.6V → ②=1, ③=6
④	Detect Accuracy	1	±1.0%
⑤⑥-⑦	Package (Order Unit)	MR-Q	SOT-26 (3,000pcs/Reel)

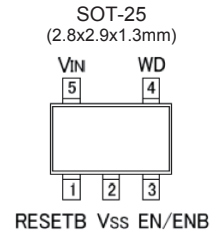
XD6121/XD6122/XD6123/XD6124 : Voltage Detector with Watchdog

■AEC-Q100 Grade3 / ON_OFF Control / Built-in Delay

Features

- Operating Voltage : 1.0V ~ 6.0V (Absolute Max.: 7.0V)
- Detect Voltage Range : 1.6V, 2.2V, 2.3V, 2.4V, 2.9V, 3.0V, 3.1V, (Standard) 4.4V, 4.5V, 4.6V
- Hysteresis Width : $V_{DFL} \times 5\%$
- Temperature Characteristics : $\pm 100\text{ppm}/^\circ\text{C}$
- Output Configuration : Nch Open Drain
- Watchdog Pin : Watchdog Input
- Function : Watchdog Function ON/OFF
- Release Delay Time : 400ms, 200ms, 100ms, 50ms, 3.13ms
- Watchdog Timeout Period : 1.6s, 800ms, 400ms, 200ms, 100ms, 50ms
- Package : SOT-25
- Operating Ambient Temp. : $-40^\circ\text{C} \sim 85^\circ\text{C}$

Package



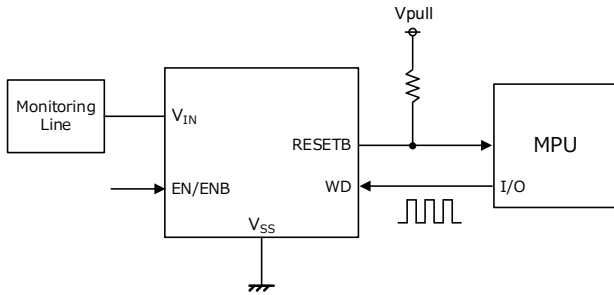
Ordering Information

- XD6121①②③④⑤⑥-⑦ : EN Pin, No Pull-Up Resistor
- XD6122①②③④⑤⑥-⑦ : EN Pin, Pull-Up Resistor
- XD6123①②③④⑤⑥-⑦ : ENB Pin, No Pull-Down Resistor
- XD6124①②③④⑤⑥-⑦ : ENB Pin, Pull-Down Resistor

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	Release Delay Time ^(*)	A	3.13ms
		C	50ms
		D	100ms
		E	200ms
		F	400ms
		②	Watchdog Timeout Period
3	100ms		
4	200ms		
5	400ms		
6	1.6s		
7	800ms		
③④	Detect Voltage		
⑤⑥-⑦	Package(Order Unit)	MR-Q	SOT-25 (3,000pcs/Reel)

^(*) Please set the release delay time shorter than or equal to the watchdog timeout period. ex.) XD61213F523MR or XD61213F623MR

Typical Application Circuit



11. Multi Chip Module

12. Load Switch

13. Push Button Controllers

14. Lithium-ion Battery Charge IC

15. LTO Battery Charge IC

16. LTO Battery Voltage Monitor IC

17. Automotive IC

18. Discrete

19. Package

N-channel MOSFET

Series Name	Package	V _{DSS} [V]	V _{GSS} [V]	I _D [A]	R _{DS(on)} (Max.) [Ω]				C _{iss} [pF]
					V _{GS} =1.5V	V _{GS} =2.5V	V _{GS} =4.5V	V _{GS} =10V	
XP222N03017R-G	SOT-723 (8,000pcs/Reel)	20	±8	0.3	-	1.8	1.3	-	18
XP231N02017R-G		30	±20	0.2	-	11	5	-	6.5
XP232N03017R-G				0.3	-	-	2.5	2	22
XP261N70027R-G		60	±20	0.15	-	-	5.5	5	18
XP222N03015R-G	SOT-523 (3,000pcs/Reel)	20	±8	0.3	-	1.8	1.3	-	18
XP231N02015R-G		30	±20	0.2	-	11	5	-	6.5
XP232N03015R-G				0.3	-	-	2.5	2	22
XP261N70025R-G		60	±20	0.15	-	-	5.5	5	18
XP222N03013R-G	SOT-323-3A (3,000pcs/Reel)	20	±8	0.3	-	1.8	1.3	-	18
XP224N06013R-G				0.6	-	0.85	0.7	-	60
XP223N10013R-G				1.0	10	0.35	0.3	-	99
XP231N02013R-G		30	±20	0.2	-	11	5	-	6.5
XP232N03013R-G				0.3	-	-	2.5	2	22
XP233N05013R-G				0.5	-	4	1.5	-	40
XP234N08013R-G				0.8	-	-	0.4	0.29	64
XP261N70023R-G		60	±20	0.15	-	-	5.5	5	18
XP262N70023R-G				0.3	-	-	2.1	1.6	30
XP222N0301TR-G	SOT-23(TO-236) (3,000pcs/Reel)	20	±8	0.3	-	1.8	1.3	-	18
XP224N0601TR-G				0.6	-	0.85	0.7	-	60
XP223N1001TR-G				1.0	10	0.35	0.3	-	99
XP225N2001TR-G				2.0	-	0.13	0.1	-	280
XP231N0201TR-G		30	±20	0.2	-	11	5	-	6.5
XP232N0301TR-G				0.3	-	-	2.5	2	22
XP233N0501TR-G				0.5	-	4	1.5	-	40
XP234N0801TR-G				0.8	-	-	0.4	0.29	64
XP235N2001TR-G				2.0	-	-	0.14	0.11	220
XP236N2001TR-G			±8	2.0	-	0.14	0.11	-	230
XP261N7002TR-G	60	±20	0.15	-	-	5.5	5	18	
XP262N7002TR-G			0.3	-	-	2.1	1.6	30	
XP264N0301TR-G			0.3	-	-	2.1	1.6	30	
XP263N1001TR-G			1.0	-	-	0.33	0.25	180	
XP151A13A0MR-G	SOT-23 (3,000pcs/Reel)	20	±8	1.0	0.25	0.14	0.1	-	220
XP151A12A2MR-G			±12	1.0	-	0.16	0.1	-	180
XP151A11B0MR-G		30	±20	1.0	-	-	0.17	0.12	150
XP161A1265PR-G	SOT-89 (1,000pcs/Reel)	20	±12	4.0	-	0.095	0.055	-	320
XP161A1355PR-G			±8	4.0	0.15	0.07	0.05	-	390
XP161A11A1PR-G		30	±20	4.0	-	-	0.105	0.065	270

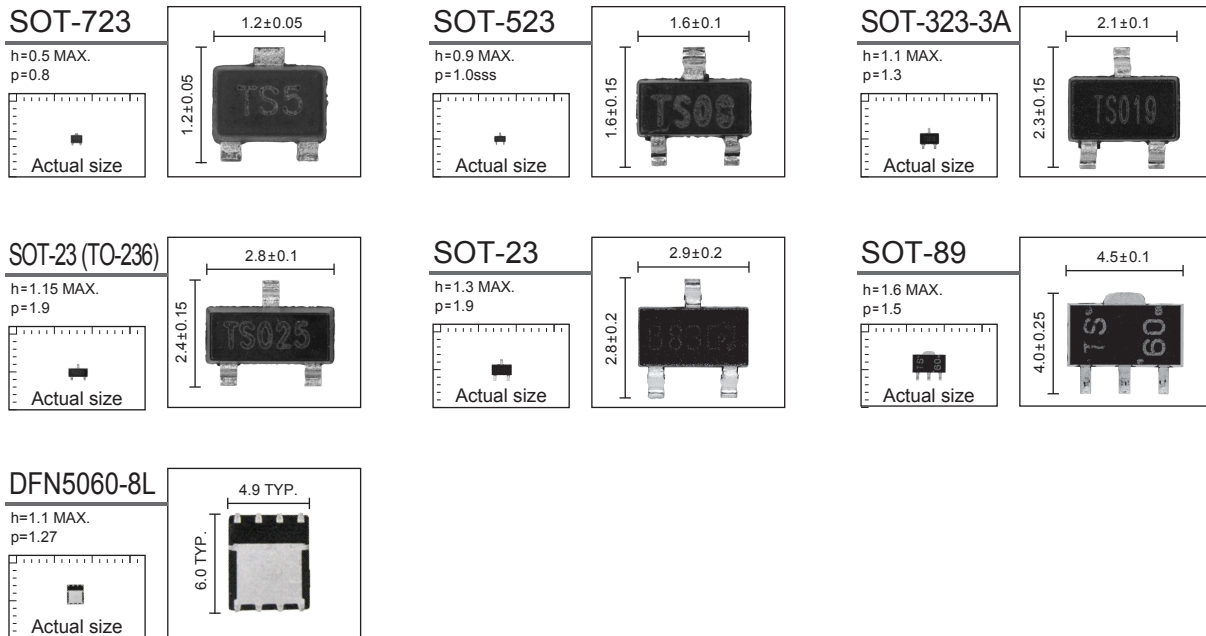
N-Channel Single MOSFET : 10A or more

Product	Package	V _{DSS} [V]	V _{GSS} [V]	I _D [A]	R _{DS(on)} (Max.)				C _{iss} [pF]
					V _{GS} =1.5V	V _{GS} =2.5V	V _{GS} =6.0V	V _{GS} =10V	
NEW XPJ102N09N8R	DFN5060-8L (3,000pcs/Reel)	100	±20	61	-	-	15.6mΩ	9.4mΩ	1370
NEW XPJ101N04N8R		100	±20	122	-	-	6.5mΩ	4.4mΩ	3010

P-channel MOSFET

Series Name	Package	V _{DSS} [V]	V _{GSS} [V]	I _D [A]	R _{DS(on)} (Max.) [Ω]				C _{iss} [pF]
					V _{GS} =-1.5V	V _{GS} =-2.5V	V _{GS} =-4.5V	V _{GS} =-10V	
XP231P02017R-G	SOT-723 (8,000pcs/Reel)	-30	±8	-0.2	-	8	5	-	34
XP231P02015R-G	SOT-523 (3,000pcs/Reel)	-30	±8	-0.2	-	8	5	-	34
XP221P05013R-G	SOT-323-3A (3,000pcs/Reel)	-20	±8	-0.5	-	1.9	1.3	-	60
XP222P08013R-G				-0.8	-	0.65	0.56	-	118
XP231P02013R-G		-30	±8	-0.2	-	8	5	-	34
XP232P05013R-G				-0.45	-	2.15	1.25	-	56
XP221P0501TR-G	SOT-23(TO-236) (3,000pcs/Reel)	-20	±8	-0.5	-	1.9	1.3	-	60
XP222P0801TR-G				-0.8	-	0.65	0.56	-	118
XP223P1501TR-G				-1.5	-	0.23	0.17	-	165
XP231P0201TR-G		-30	±8	-0.2	-	8	5	-	34
XP232P0501TR-G				-0.45	-	2.15	1.25	-	56
XP233P1501TR-G				±20	-1.5	-	-	0.33	0.19
XP152A12C0MR-G	SOT-23 (3,000pcs/Reel)	-20	±12	-0.7	-	0.5	0.3	-	180
XP152A11E5MR-G		-30	±20	-0.7	-	-	0.45	0.25	160
XP202A0003MR-G	SOT-89 (1,000pcs/Reel)	-20	±12	-3.0	-	-	0.095	0.067	435
XP162A12A6PR-G				-2.5	-	0.3	0.17	-	310
XP162A11C0PR-G		-30	±20	-2.5	-	-	0.28	0.15	280
XP202A0003PR-G				-5.0	-	-	0.1	0.059	450

Package



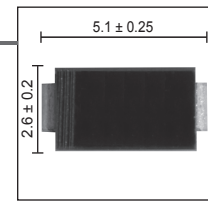
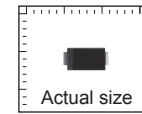
Schottky Barrier Diode

Series Name	Package	VR [V]	IF [A]	VF [V]	IR [mA]	Ct [pF]
XBS013S16R-G	SOD-723 (3,000pcs/Reel)	30	0.1	0.71	0.002	6
XBS053V15R-G	SOD-523 (8,000pcs/Reel)	20	0.5	0.40	0.1	12
XBS013S15R-G		30	0.1	0.71	0.002	6
XBS024S15R-G		40	0.2	0.53	0.002	5
XBS053V13R-G	SOD-323A (3,000pcs/Reel)	20	0.5	0.40	0.1	12
XBS104S13R-G		40	1.0	0.49	0.2	35
XBS104S14R-G	SOD-123A (3,000pcs/Reel)	40	1.0	0.49	0.2	35
XBS104V14R-G				0.37	2	150
XBS203V19R-G	SMA-XG (2,000pcs/Reel)	30	2.0	0.35	3	280
XBS303V19R-G			3.0	0.36	3	385
XBS204S19R-G		40	2.0	0.49	0.2	180
XBS204V19R-G				0.46	0.1	75
XBS304S19R-G		60	2.0	0.47	0.3	180
XBS206S19R-G				0.62	0.3	120
XBS306S19R-G		3.0	0.59	0.3	195	

Package

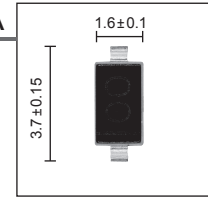
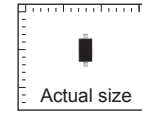
SMA-XG

h=2.3 MAX.



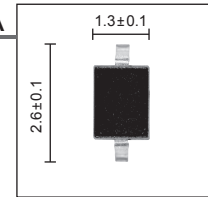
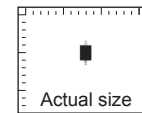
SOD-123A

h=1.25 MAX.



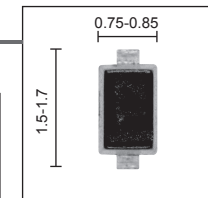
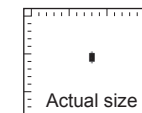
SOD-323A

h=1.0 MAX.



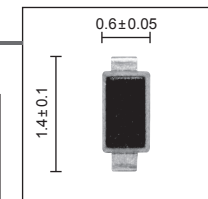
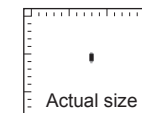
SOD-523

h=0.77 MAX.



SOD-723

h=0.65 MAX.



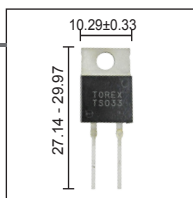
SiC Schottky Barrier Diodes

Series Name	Package	VR [V]	IF [A]	VF [V]	IR [mA]	Ct [pF]
NEW XBSC11A108CS	TO-220AC (1,000pcs/20Tubes)	850	10	1.5	0.002	400

Package

TO-220AC

h=4.75 MAX.



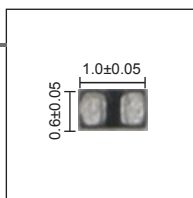
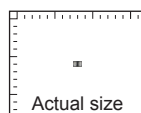
Transient Voltage Suppressor (TVS)

Series Name	Package	Use	Protection Line	V _{RWM} (MAX) [V]	V _{BR} (MIN) [V]	IR (MAX) [μA]	C _j [pF]	ESD Tolerance (IEC61000-4-2)	Inner Structure
XBP06V0U25R-G	FBP1006-2A (10,000pcs/Reel)	USB3.0	1	5.0	6.0	1.0	0.35	Air : ±15kV Contact : ±15kV	
XBP06V0U2MR-G	SOT-23 (3,000pcs/Reel)	USB2.0	2	5.0	6.0	1.0	0.8	Air : ±15kV Contact : ±15kV	

Package

FBP1006-2A

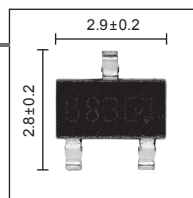
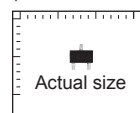
h = 0.55 MAX.



SOT-23

h=1.3 MAX.

p=1.9



Lineup

External Dimensions Drawing

Product Model No.

h=Hight (mm)
p=Pin Pitch (mm)

Product Magnified View Photograph (Unit: mm)

Product Actual Size Photograph

CL-2025

h=1.04 MAX.
p=0.55

Actual size

CL-2025-02

h=1.04 MAX.
p=0.55

Actual size

CL-2025-03

h=1.04 MAX.
p=0.55

Actual size

DFN1010-4C

h=0.6 MAX.
p=0.65

Actual size

DFN1515-6A

h=0.375±0.05
p=0.5

Actual size

HSOP-8N

h=1.7 MAX
p=1.27

Actual size

LGA-4B01

h=0.3 MAX.
p=0.4

Actual size

LGA-6B01

h=0.3 MAX.
p=0.4

Actual size

LGA-8B01

h=0.3 MAX.
*p=0.4/0.485

Actual size

MSOP-8A

h=1.22 MAX.
p=0.65

Actual size

MSOP-10

h=1.16 MAX.
p=0.5

Actual size

SOP-8FD

h=1.55±0.2
p=1.27

Actual size

SOT-223

h=1.8 MAX.
p=2.3

Actual size

SOT-23

h=1.3 MAX.
p=1.9

Actual size

SOT-25

h=1.3 MAX.
p=0.95

Actual size

SOT-26

h=1.3 MAX.
p=0.95

Actual size

SOT-26W

h=1.3 MAX.
p=0.95

Actual size

SOT-89

h=1.6 MAX.
p=1.5

Actual size

SOT-89-5

h=1.5 MAX.
p=1.5

Actual size

SSOT-24

h=1.1 MAX.
p=1.3

Actual size

11. Multi Chip Module

12. Load Switch

13. Push Button Controllers

14. Lithium-ion Battery Charge IC

15. LTO Battery Charge IC

16. LTO Battery Voltage Monitor IC

17. Automotive IC

18. Discrete

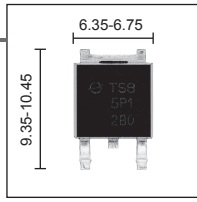
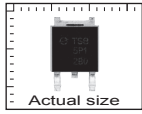
19. Package

Lineup

External Dimensions Drawing

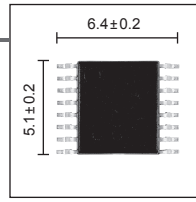
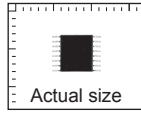
TO-252

h=2.4 MAX.
p=2.29



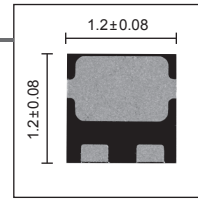
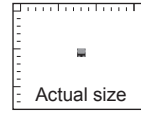
TSSOP-16

h=1.4 MAX.
p=0.65



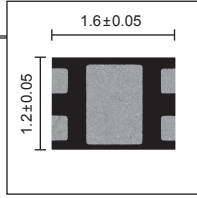
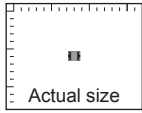
USP-3

h=0.6 MAX.
p=0.6



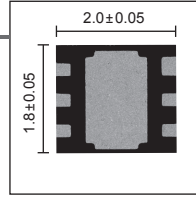
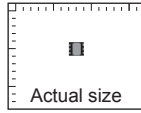
USP-4/USP-4D

h=0.6 MAX.
p=0.6



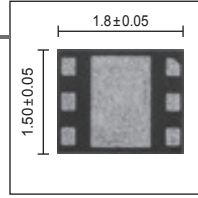
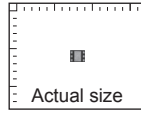
USP-6B/USP-6C

h=0.6 MAX. * (0.7 MAX)
p=0.5



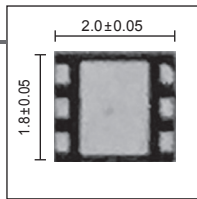
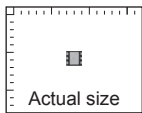
USP-6B06

h=0.33 MAX.
p=0.5



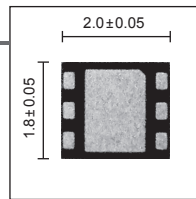
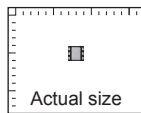
USP-6B07

h=0.33 MAX.
p=0.55



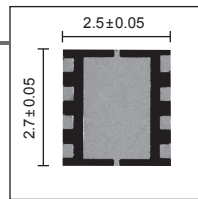
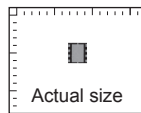
USP-6EL

h=0.4 MAX.
p=0.55



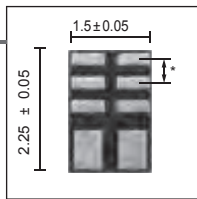
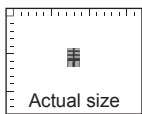
USP-8

h=0.6 MAX.
p=0.65



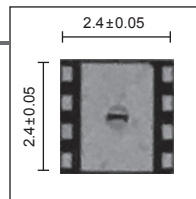
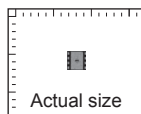
USP-8B04

h=0.70 ± 0.05
*p=0.43



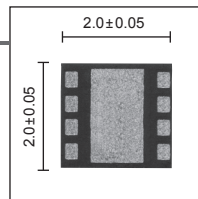
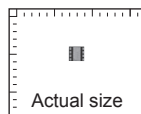
USP-8B05

h=0.33±0.3
p=0.6



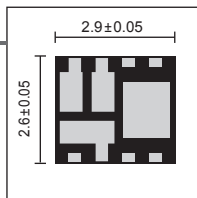
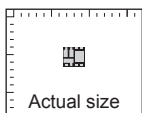
USP-8B06

h=0.33 MAX.
p=0.5



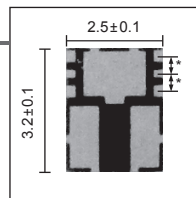
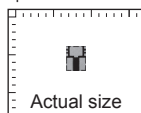
USP-8B10

h=0.33 MAX.
p=0.65



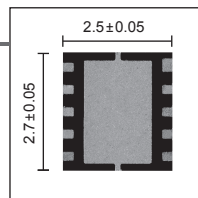
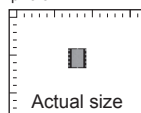
USP-9B01

h=1.0±0.05
*p=0.45



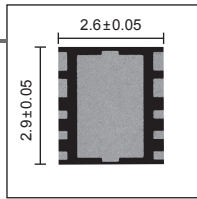
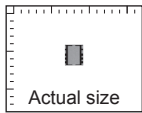
USP-10

h=0.6 MAX.
p=0.5



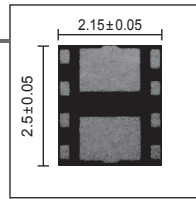
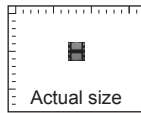
USP-10B

h=0.6 MAX.
p=0.65/0.5



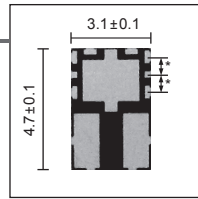
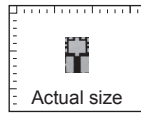
USP-10B03

h=1.0±0.05
p=0.65



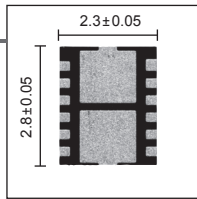
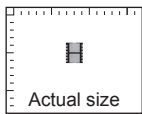
USP-11B01

h=1.35 MAX.
*p=0.675



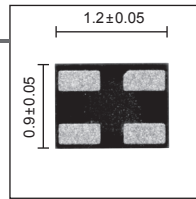
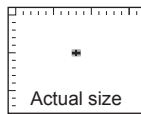
USP-12B01

h=0.6 MAX.
p=0.4



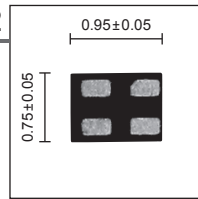
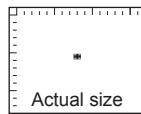
USPN-4

h=0.4 MAX.
p=0.55



USPN-4B02

h=0.4 MAX.
p=0.4



11. Multi Chip Module
12. Load Switch

13. Push Button
Controllers

14. Lithium-ion Battery
Charge IC

15. LTO Battery
Charge IC

16. LTO Battery Voltage
Monitor IC

17. Automotive IC

18. Discrete

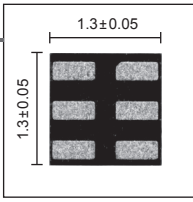
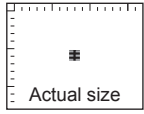
19. Package

Lineup

External Dimensions Drawing

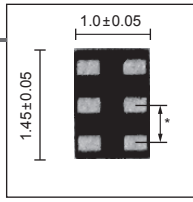
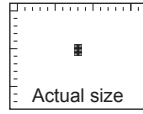
USPN-6

h=0.4 MAX.
p=0.45



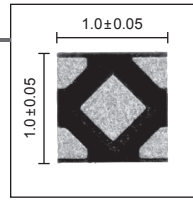
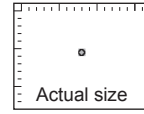
USPN-6B01

h=0.4 MAX.
*p=0.5



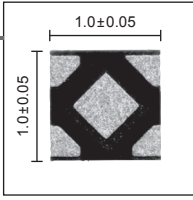
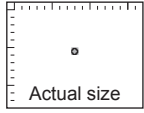
USPQ-4B03

h=0.4 MAX.
p=0.65



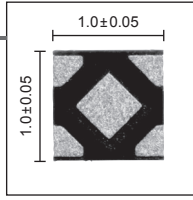
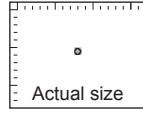
USPQ-4B04

h=0.6 MAX.
p=0.65



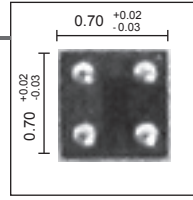
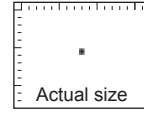
USPQ-4B05

h=0.33 MAX.
p=0.65



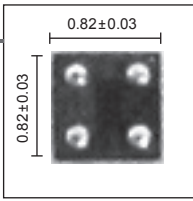
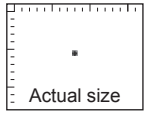
WLP-4-01

h=0.2 MAX.
p=0.4



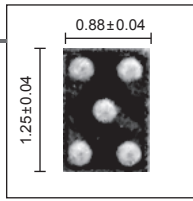
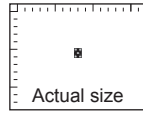
WLP-4-02

h=0.5 MAX.
p=0.35



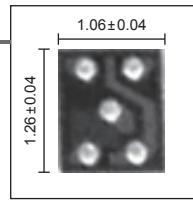
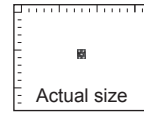
WLP-5-02

h=0.4 MAX.
p=0.5



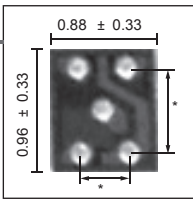
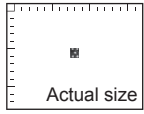
WLP-5-03

h=0.4 MAX.
p=0.5/0.625



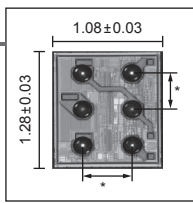
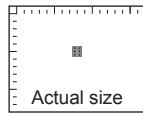
WLP-5-08

h=0.33 MAX.
*p = 0.5/0.625



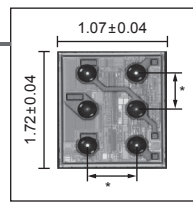
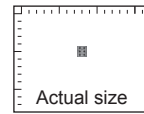
WLP-6-01

h=0.4 MAX.
*p=0.4/0.5



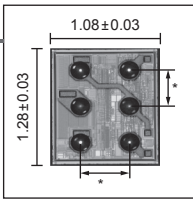
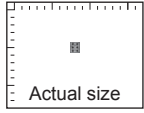
WLP-6-03

h=0.33 MAX.
*p=0.6



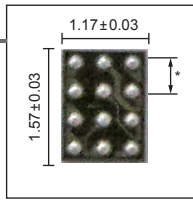
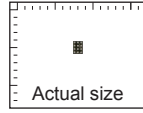
WLP-6-05

h=0.4 MAX.
*p=0.4/0.5



WLP-12-01

h=0.33 MAX.
*p=0.4



11. Multi Chip Module

12. Load Switch

13. Push Button Controllers

14. Lithium-ion Battery Charge IC

15. LTO Battery Charge IC

16. LTO Battery Voltage Monitor IC

17. Automotive IC

18. Discrete

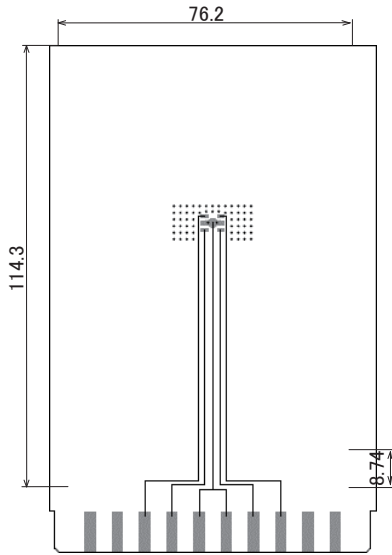
19. Package

Package Power Dissipation / Thermal Characteristic

Package	Thermal Resistance θ_{ja} [°C/W]			Power Dissipation ($T_{jmax} = 125^{\circ}\text{C}$)					
	JESD71-5	4-layer High Heat Dissipation Board	40x40mm 2-layer Board	JESD71-5		4-layer High Heat Dissipation Board		40x40mm 2-layer Board	
				Ta=25°C	Ta=85°C	Ta=25°C	Ta=85°C	Ta=25°C	Ta=85°C
CL-2025	-	-	100.0	-	-	-	-	1000	400
CL-2025-02	-	-	100.0	-	-	-	-	1000	400
CL-2025-03	-	-	125.0	-	-	-	-	800	320
DFN1010-4C	-	-	150.6	-	-	830	332	-	-
DFN1515-6A	-	-	125.0	-	-	-	-	800	320
DFN3030-10B	51.3	-	-	1950	780	-	-	-	-
LGA-4B01	-	-	166.7	-	-	-	-	600	240
LGA-6B01	131.6	-	-	760	304	-	-	-	-
LGA-8B01	-	-	100.0	-	-	-	-	1000	400
MSOP-10	-	-	200.0	-	-	-	-	500	200
SOT-223	-	-	66.7	-	-	-	-	1500	600
SOP-8FD	40.0	-	66.7	2500	1000	-	-	1500	600
SOT-23	138.9	-	200.0	720	288	-	-	500	200
SOT-25	131.6	-	166.7	760	304	-	-	600	240
SOT-26	-	-	166.7	-	-	-	-	600	240
SOT-26W	122.0	-	166.7	820	328	-	-	600	240
SOT-89	-	-	100.0	-	-	-	-	1000	400
SOT-89-5	57.1	-	76.9	1750	700	-	-	1300	520
SSOT-24	147.1	-	200.0	680	272	-	-	500	200
TO-252	-	-	55.6	-	-	-	-	1800	720
USP-3	-	-	100.0	-	-	-	-	1000	400
USP-4	-	-	100.0	-	-	-	-	1000	400
USP-4D	-	-	153.8	-	-	-	-	650	260
USP-6B	-	-	100.0	-	-	-	-	1000	400
USP-6B06	-	-	111.1	-	-	-	-	900	360
USP-6C	80.0	-	100.0	1250	500	-	-	1000	400
USP-6EL, USP-6B07	-	-	100.0	-	-	-	-	1000	400
USP-8	-	-	83.3	-	-	-	-	1200	480
USP-8B04	-	-	100.0	-	-	1000	400	-	-
USP-8B06	80.6	55.6	-	1240	496	1800	720	-	-
USP-8B10	-	71.4	-	-	-	1400	560	-	-
USP-9B01	-	-	83.3	-	-	-	-	1200	480
USP-10B	-	-	100.0	-	-	-	-	1000	400
USP-10B03	-	-	200.0	-	-	-	-	500	200
USP-12B01 (1ch)	-	-	125.0	-	-	-	-	800	320
USP-12B01 (2ch)	-	-	166.7	-	-	-	-	600	240
USPN-4	-	-	166.7	-	-	-	-	600	240
USPN-4B02	-	-	181.8	-	-	-	-	550	220
USPN-6, USPN-6B01	-	-	166.7	-	-	-	-	600	240
USPQ-4B03/04/05	-	-	181.8	-	-	-	-	550	220
WLP-4-01, WLP-4-02	-	-	151.5	-	-	-	-	660	264
WLP-5-02	-	-	133.3	-	-	-	-	750	300
WLP-5-03	-	-	133.3	-	-	-	-	750	300
WLP-5-08	200.0	-	-	500	200	-	-	-	-
WLP-6-01	-	-	142.9	-	-	-	-	700	280
WLP-6-03	119.0	-	-	840	336	-	-	-	-
WLP-6-05	-	-	142.9	-	-	-	-	700	280
WLP-12-01	112.4	-	-	890	356	-	-	-	-

11. Multi Chip Module
 12. Load Switch
 13. Push Button Controllers
 14. Lithium-ion Battery Charge IC
 15. LTO Battery Charge IC
 16. LTO Battery Voltage Monitor IC
 17. Automotive IC
 18. Discrete
 19. Package

●JESD71-5 Board



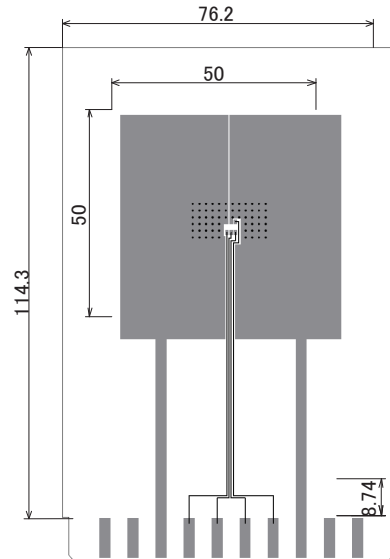
Measurement Condition

Condition : Mount on a board
 Ambient : Natural convection
 Soldering : Lead (Pb) free

Board : The board using 4 copper layer.
 (76.2mm×114.3mm Area: about 8700mm²)
 1st layer : No copper foil
 2nd layer : 70mm×70mm_Connected to heat-sink
 3th layer : 70mm×70mm_Connected to heat-sink
 4th layer : No copper foil

Material : Glass Epoxy (FR-4)
 Thickness : 1.6mm
 Through-hole : φ0.2mm x 60pcs

●4-layer High Heat Dissipation Board



Measurement Condition

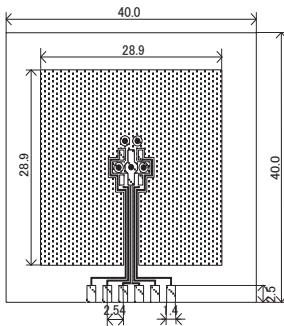
Condition : Mount on a board
 Ambient : Natural convection
 Soldering : Lead (Pb) free

Board : 76.2mm×114.3mm(8700mm² in one side)
 Dimensions : 1st inner layer : 50mm×50mm_with heat sink
 2nd inner layer : 70mm×70mm_with heat sink
 3rd inner layer : 70mm×70mm_with heat sink
 4th inner layer : 50mm×50mm_with heat sink

Each heat sink back metal is connected to the Inner layers respectively.

Material : Glass Epoxy (FR-4)
 Thickness : 1.6mm
 Through-hole : 60 x 0.2

●40x40mm 2-layer Board



Measurement Condition

Condition : Mount on a board
 Ambient : Natural convection
 Soldering : Lead (Pb) free

Board : Dimensions 40mm×40mm (1600mm² in one side)
 Copper (Cu) traces occupy 50% of the board area
 In top and back faces
 Package heat-sink is tied to the copper traces

Material : Glass Epoxy (FR-4)
 Thickness : 1.6mm
 Through-hole : 4 x 0.8 Diameter

Notes

1. The product and product specifications contained herein are subject to change without notice to improve performance characteristics. Consult us, or our representatives before use, to confirm that the information in this datasheet is up to date.
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