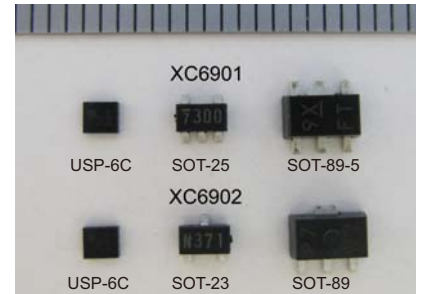


High Speed Negative Voltage Regulators

XC6901/XC6902 Series

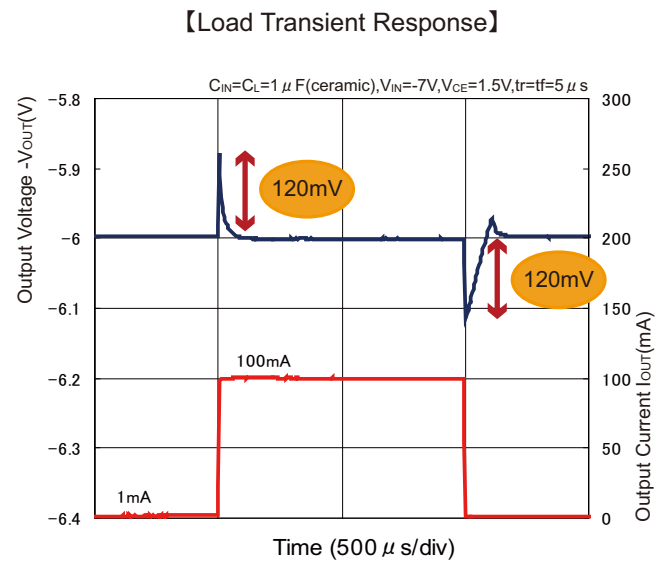
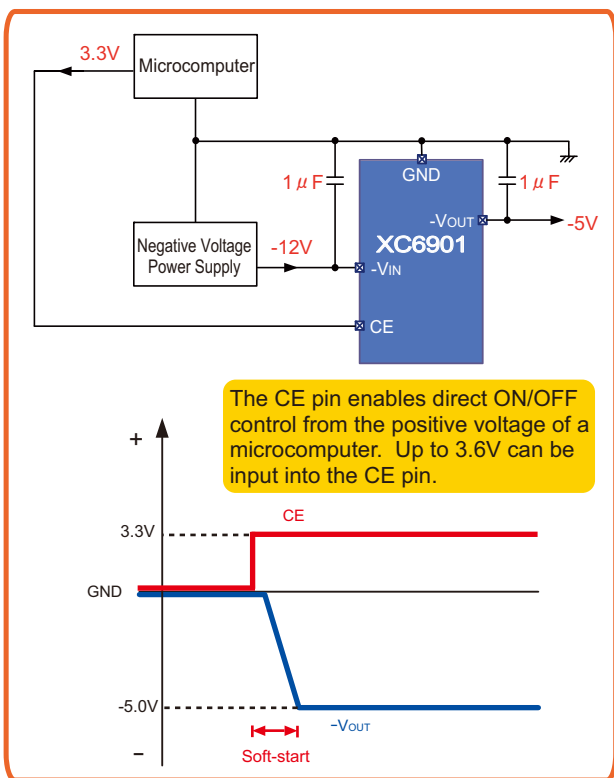


The XC6901/XC6902 series of high speed negative voltage regulators have an output current of 200mA, are compatible with low ESR capacitors, and have an output accuracy of $\pm 1.5\%$. The XC6901 series has a CE pin that enables direct positive voltage control from a microcomputer. Soft-start and CL discharge functions are included. The XC6902 series are 3-pin regulators that enable the output voltage to be set in steps of 0.1V within the range -0.9V to -12V. These regulators can be used as a power supply for CCD systems and as a negative-voltage bias power supply for LCD modules and other devices.



POINT 1 The XC6901 enables direct ON/OFF control from a microcomputer

POINT 2 Negative voltage with same high-speed response as positive voltage



High speed transient response as fast as a positive voltage high speed LDO. Rise and fall are held to a small change of 120mV.

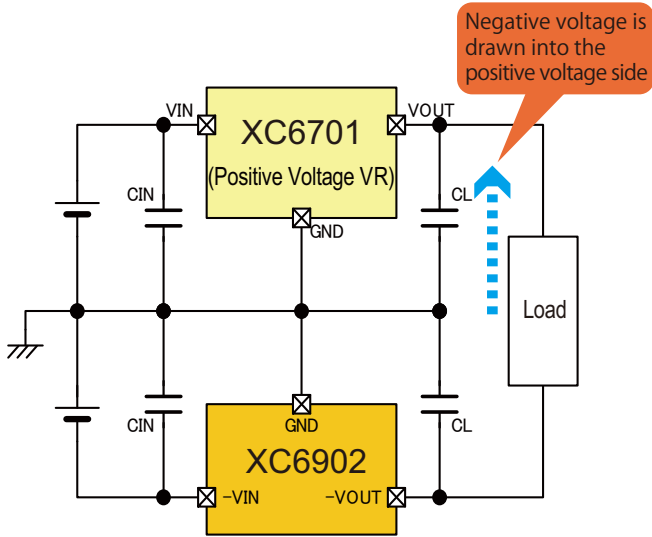
Features			
Input Voltage Range	XC6901 Series / -2.4V~-12.4V($V_{CE}=3.6V$)	Low Power Consumption	100 μ A
	XC6902 Series / -2.4V~-16.0V	High Ripple Rejection	50dB@1kHz
Output Voltage Range (Standard Voltage)	-1.2V, -2.5V, -2.6V, -3.0V, -3.3V	CE Function (XC6901)	CE Threshold Voltage + Over 1.2V
	-4.0V, -4.5V, -5.0V, -6.0V, -12.0V		CL High Speed Discharge, Soft-start
Output Voltage Accuracy	$\pm 1.5\%$ ($V_{OUT} < -2.0V$)	Protection Circuits	Current Limit (350mA, TYP.)
	$\pm 0.03V$ ($-V_{OUT} \geq -2.0V$)		Thermal Shutdown
Temperature Stability	$\pm 50ppm / ^\circ C$	Packages	XC6901 USP-6C, SOT-25, SOT-89-5
Dropout Voltage	400mV@ $I_{OUT}=100mA$ @ $V_{OUT} = -5V$		XC6902 USP-6C, SOT-23, SOT-89



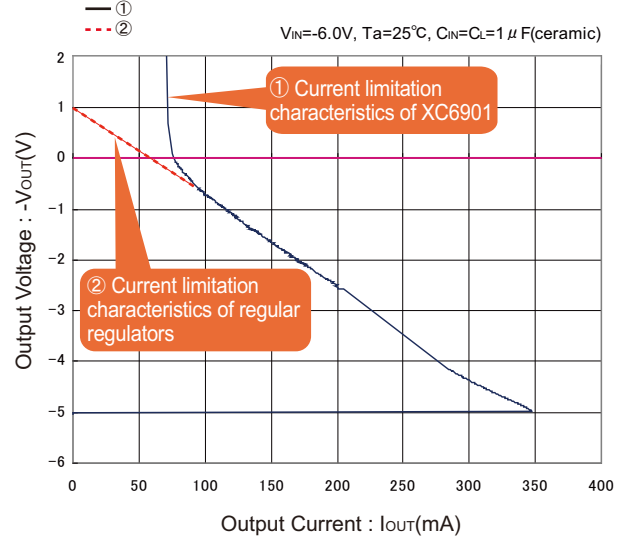
High Speed Negative Voltage Regulators **KC6901/KC6902 Series**



Positive/negative power supply solves power startup problems in mixed circuits



【Output Voltage vs. Output Current】



In cases where a mixed positive/negative power supply circuit combines a positive voltage regulator and a negative voltage regulator like that shown in the circuit example above, it may happen that the regulator output voltage cannot start when the power supply starts. This problem is due to the startup sequence (timing) of the positive/negative power supplies and the current limitation characteristics incorporated in the regulators. The problem occurs in regulators that have the current limitation characteristics indicated in ② of the above graph, and the cause of the problem is the fact that the positive power supply side starts first, and current continues to be drawn into the positive voltage side after the negative voltage side starts.

As shown in ① of the above graph, the XC6901/KC6902 series solves this problem by means of a circuit configuration where the current limitation characteristic does not have a stable point at 0mA. This circuit innovation solves power startup problems and enables the supply of good positive/negative power without affecting the positive/negative power startup sequence.



Comparison with the previous XC62KN product

KC6901/KC6902 Series

High Voltage
High Speed
Load Transient Response

Advantage

- Good transient response characteristics
- Wide usable range (see graph at right)
- Good temperature characteristics
- Compatible with low ESR capacitors
- Full set of protective functions (Foldback, TSD)
- Soft-start
- C_L Discharge (XC6901)

Disadvantage

- Higher supply current than XC62KN

KC62KN Series

Low Power
Consumption

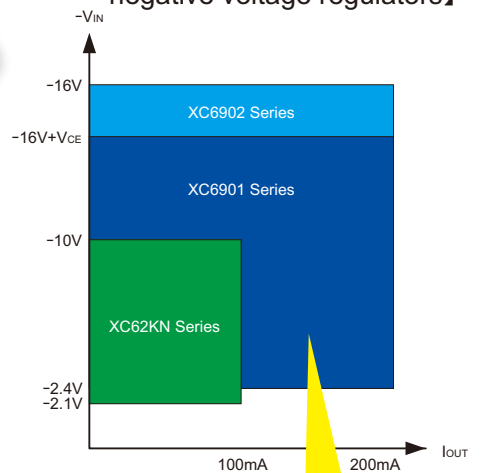
Advantage

- Low Power Consumption 3μA

Disadvantage

- Inferior transient response characteristics
- Not compatible with low ESR capacitors

【Comparison of operable ranges of negative voltage regulators】



The operating range of the XC6901 is -2.4V to -12.4V (V_{CE}=3.6V)

