XC31P Series

Temperature Controlled Voltage Regulators

◆CMOS
◆Output Voltage Range : 1.5V~5.5V
◆Accuracy : ±5%
◆Output Voltage Temperature Coefficient : Typ. -3000ppm/°C
◆Detectable Temperature Range : -20°C~60°C
◆No-Load Supply Current : Typ. 1.0μA

■Applications

- Temperature compensation power supply
- Battery-powered equipment
- LCD based systems
- Cameras, Video Recorders, and OA systems

■General Description

The XC31P series is a group of temperature sensitive, positive voltage output, three-pin regulators, that provide voltage in response to sensed ambient temperatures. This function is very useful for correcting temperature characteristics of LCD devices etc. It can also be used as a temperature sensor.

The XC31P consists of a temperature sensor, a voltage correction circuit, a high-precision voltage reference source, an error correction circuit, and a current limited output driver.

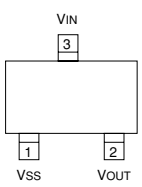
Laser trimming increases output voltage accuracy and provides output stability against the variations in input voltage and output current. CMOS production technology reduces power consumption.

SOT-23 (150mW) and SOT-89 (500mW) packages are available.

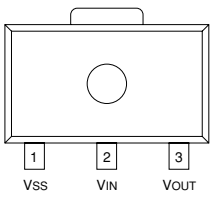
■Features

Set-up output voltage range : 1.5V ~ 5.5V in 0.1V increments.
Highly accurate : Set-up voltage ±5%
Output voltage temperature coefficients : Typ. -3000ppm/°C
Detectable temperature range : -20°C ~ 60°C
Maximum output current : 50mA (within maximum power dissipation)
Low power consumption : Typ. 1.0μA at V_{OUT}= 1.54V
Maximum input voltage : Max. 7V (max)
Ultra small package : SOT-23 (150mW) mini-mold
: SOT-89 (500mW) power mini-mold

■Pin Configuration



SOT-23
(TOP VIEW)



SOT-89
(TOP VIEW)

■Pin Assignment

PIN NUMBER		PIN NAME	FUNCTION
SOT-23	SOT-89		
3	2	V_{IN}	Supply voltage input
1	1	V_{SS}	Ground
2	3	V_{OUT}	Regulated voltage output

■Product Classification

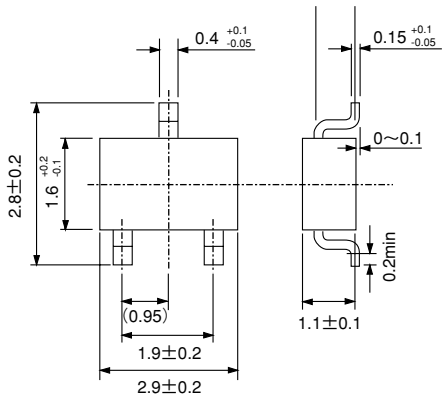
●Ordering Information

XC31Pxxxxxxx
abcdefgh

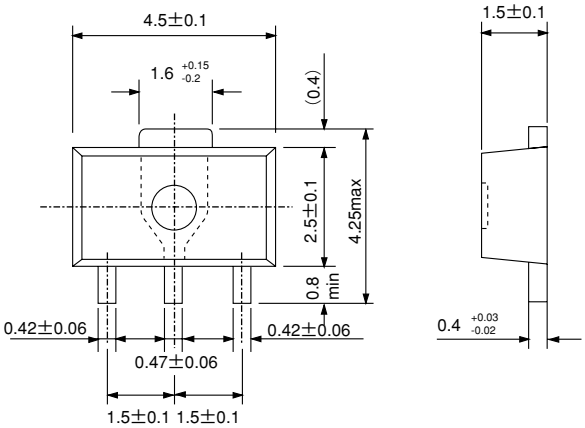
DESIGNATOR	DESCRIPTION	DESIGNATOR	DESCRIPTION
a	Polarity of Output Voltage P=Positive	f	Revision Character A ~
b	Temperature Coefficient P=Positive N=Negative	g	Package Type M=SOT-23 P=SOT-89
c	Indicates the following two digits (d) are control reference numbers. S	h	Device Orientation R=Embossed Tape (Standard Feed) L=Embossed Tape (Reverse Feed)
d e	Control Reference 00 ~		

■Packaging Information

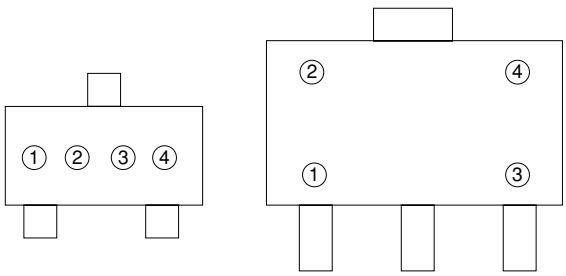
●SOT-23



●SOT-89



■Marking



SOT-23
(TOP VIEW)

SOT-89
(TOP VIEW)

① "A",which denotes the XC31P Series.
② Represents first digit of serial number.
③ Represents second digit of serial number.
④ Denotes lot number.

Based on internal standards.

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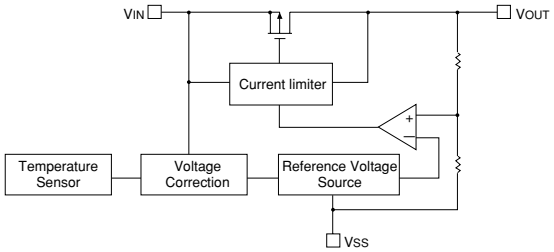
■Block Diagram



■Absolute Maximum Ratings

Ta=25℃

PARAMETER		SYMBOL	RATINGS	UNITS
Input Voltage		VIN	9	V
Output Current		IOUT	50	mA
Output Voltage		VOUT	VSS−0.3 ~ VIN+0.3	V
Power Dissipation	SOT-23	Pd	150	mW
	SOT-89		500	
Operating Ambient Temperature		Topr	−30 ~ +80	℃
Storage Temperature		Tstg	−40 ~ +125	℃

Note:IOUT must be less than Pd/(VIN-VOUT)

■Electrical Characteristics

XC31PNSOOAM

Ta=25°C,CL=0.1μF

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Output Voltage	VOUT 1	IOUT=10μA,VIN=5.0V	1.44	1.5	1.64	V
Load Stability	ΔVOUT	VIN=5.0V 1μA ≤ IOUT ≤ 10μA		30		mV
Input Stability	VOUT 2	IOUT=10μA,CL=0.1μF 3.0V ≤ VIN ≤ 7.0V	1.39		1.69	V
Detectable Temperature Range	TD		-20		60	°C
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta Ta \cdot V_{OUT}1}$	IOUT=10μA −20°C ≤ Ta ≤ 60°C		-3328		ppm/°C
Input Voltage	VIN				7	V
Supply Current	ISS	VIN=5.0V		1.0	3.0	μA