TEL: 805-498-2111 FAX: 805-498-3804

FEATURES

- Wide Operating Current Range 60μA to 150mA
- Low Dynamic Output Impedance 0.25Ω Typ.
- Low Temperature Coefficient ≤40 ppm/°C
- Trimmed Bandgap Design ±0.25%
- Direct Replacement for TL431

APPLICATIONS

- Linear Regulators
- Adjustable Supplies
- Switching Power Supplies
- Battery Operated Computers
- Instrumentation
- Computer Disk Drives

DESCRIPTION

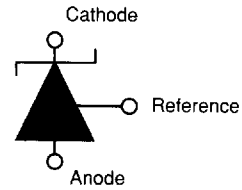
The SC431 is a three terminal adjustable shunt regulator. The SC431's thermal stability is guaranteed over the temperature range. The output voltage may be adjusted to any value between Vref and 36 volts with two external resistors. The SC431 has a typical dynamic output impedance of 0.25Ω. Active output circuitry provides a very sharp turn on characteristic, making the SC431 an excellent replacement for Zener diodes.

DEVICE SELECTION GUIDE

SC431CX

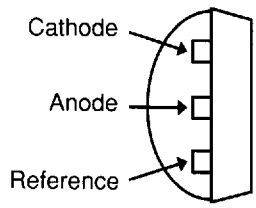
PACKAGE
Z = TO-92
S8 = PLASTIC SO-8
SK = SOT-23
SP = SOT 89

SYMBOL

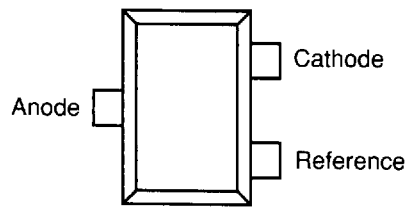


PIN CONFIGURATIONS (top view):

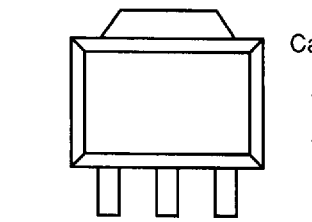
TO-92



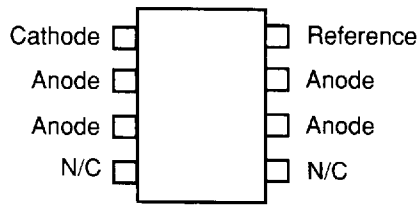
SOT-23



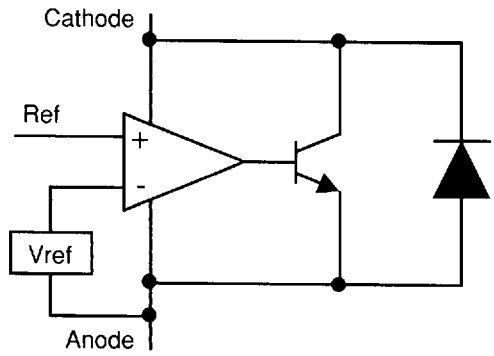
SOT-89



S0-8



BLOCK DIAGRAM



THERMAL RESISTANCES and recommended operating conditions

Package	Degrees C/W	Symbol	Cathode Voltage	Cathode Current
TO-92	160° C/W	θ_{JA}	V_{KA} = Vref to 20 volts	I_K = 10mA
SO-8	175°C/W	θ_{JA}	V_{KA} = Vref to 20 volts	I_K = 10mA
SOT-89	110° C/W	θ_{JA}	V_{KA} = Vref to 20 volts	I_K = 10mA
SOT-23	410° C/W	θ_{JA}	V_{KA} = Vref to 20 volts	I_K = 10mA

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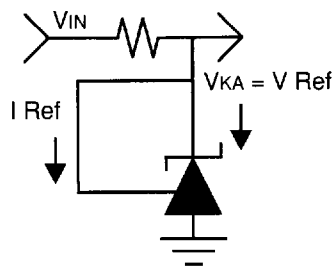
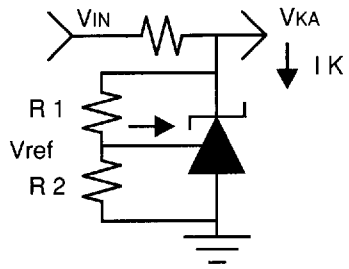
ELECTRICAL CHARACTERISTICS

			SC431 0.5%			SC431 1.0%			SC431 2.0%			
Parameter	**Symbol**	**Conditions**	**MIN**	**TYP**	**MAX**	**MIN**	**TYP**	**MAX**	**MIN**	**TYP**	**MAX**	**UNITS**
Reference Voltage	V_{ref} V_{ref}	T_A = 25°C Over Temp	2.487	2.5 2.5	2.513	2.475	2.5 2.5	2.525	2.45	2.5 2.5	2.55	V
ΔV_{ref} Temp	$\Delta V_{ref}/\Delta T$	$T_{min} \le T_A \le T_{max}$			60			60			60	ppm/°C
Ref Input Current	I_{ref}			0.01	0.1		0.01	0.1		0.01	0.1	µA
I_{ref} Temp	ΔI_{ref}	Over Temp		0.4	1.2		0.4	1.2		0.4	1.2	µA
Leakage	I_K (off)	V_{ref} = 0V, V_{KA} = 36		0.04	1		0.04	1		0.04	1	µA
Dyn. Out. Impedance	Z_{KA}	f ≤ 1KHz, I_K = 10µA to 20mA		0.25	0.6		0.25	0.6		0.25	0.6	Ω
Cathode Current	I_{max}			20			20			20		mA
Minimum Operating Current	IR_{min}				60			60			60	µA

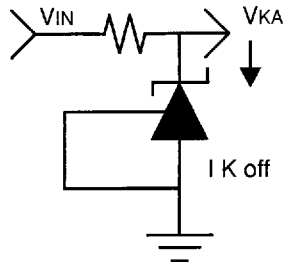
TEST CIRCUITS



Test Circuit 1



Test Circuit 2



Test Circuit 3

ORDERING INFORMATION

SOT Package Marking Information

Since the SOT packages can only have 3 characters for marking, a code must be used for the part identification and specifications. Three fields are defined below to explain the various combinations of product markings.

Field 1	Field 2	Field 3
E = Adj. Reference	A = 1.25 volts	0 = ±0.25%
D = Diode Reference	B = 2.5 volts	1 = ±0.5%
T = Low Tempco Diode Ref.	C = 3.3 volts	2 = ±1.0%
	D = 2.55 volts	3 = ±2.0%
	E = 5 volts	4 = ±3.0%
	F = 10 volts	5 = ±5.0%

Example: adjustable voltage reference @ 2.5 volts and ±0.5% initial tolerance is represented by the 3 character (field) marking scheme "E|B|1."