Ordering number: EN 2173B

Monolithic Linear IC

SANYO No.2173B

L5431

High-Precision Variable Shunt Voltage Regulator

The L5431 is a high-precision variable shunt voltage regulator IC whose output voltage can be set to a value from approximately 2.5V to 36V by using external resistors. Because of low output resistance and fast pulse response, the L5431 can be most suitably used as high-precision voltage reference, high-speed comparator, or zener diode.

Features

(1) Excellent temperature characteristic of Vref: 50ppm/°C(typ)
(2) Output voltage settable: Approximately 2.5V to 36V
(3) Output flow-in current range: 1mA to 100mA
(4) Low dynamic resistance: 0.15ohm(typ)
(5) Fast response
(6) Low output noise voltage
(7) Small-sized TO-92

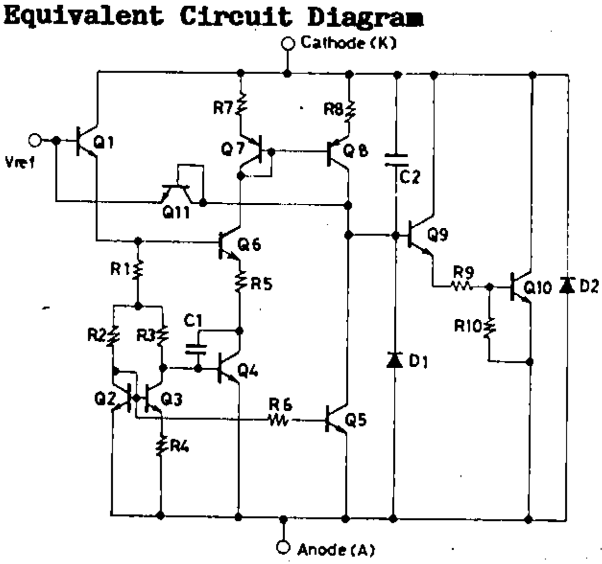
Maximum Ratings at Ta=25°C

				unit
Maximum Voltage Applied across Cathode and Anode	V_{KA} max	Referenced to anode	37	V
Cathode Current	I_K max		-100 to +150	mA
Reference Voltage Pin Input Current	Iref		-0.05 to +10	mA
Allowable Power Dissipation	Pd max	Ta≦25°C	750	mW
Operating Temperature	Topr		-20 to +85	°C
Storage Temperature	Tstg		-65 to +150	°C

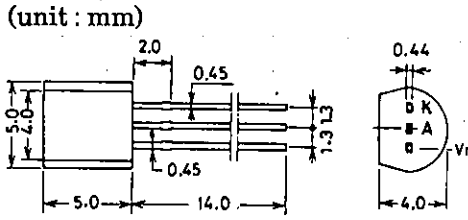
Recommended Operating Conditions at Ta=25°C

				unit
Voltage Applied across Cathode and Anode	V_{KA}		Vref to 36	V
Cathode Current	I_K	Stabilized state	1 to 100	mA

Equivalent Circuit Diagram



Package Dimensions 3101
(unit : mm)



JEDEC: TO-92
EIAJ : SC-43
SANYO: NP

K: Cathode
A: Anode
Vref: Reference voltage

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Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	min	typ	max	unit	Test Circuit
Reference Voltage	Vref	V_{KA}=Vref, I_K=10mA	2440	2495	2550	mV	Fig.1
Reference Voltage Change with Temperature (Note1)	ΔVref(Ta)	V_{KA}=Vref, I_K=10mA, Ta=0 to +70°C		8	17	mV	Fig.1
Vref Change Ratio to V_{KA}	$\frac{\Delta Vref}{\Delta V_{KA}}$	I_K=10mA, ΔV_{KA}=10V to Vref		-1.4	-2.7	mV/V	Fig.2
		I_K=10mA, ΔV_{KA}=36V to 10V		-1.0	-2.0	mV/V	Fig.2
Reference Voltage Pin Input Current Change with Temperature (Note1)	ΔIref(Ta)	I_K=10mA, R1=10kohms R2=∞, Ta=0 to +70°C		2	4	uA	Fig.2
Minimum Cathode Current	I_{KMIN}	V_{KA}=Vref, regulation available		0.4	1	mA	Fig.1
OFF-State Cathode Current	I_{Koff}	V_{KA}=36V, Vref=0		0.1	1	uA	Fig.3
Dynamic Resistance (Note2)	$\lvert Z_{KA}\rvert$	V_{KA}=Vref, f≦1kHz, I_K=1 to 100mA		0.15	0.5	ohm	Fig.1

Input Voltage

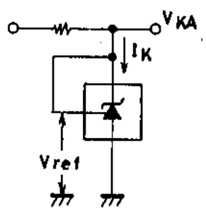


Fig.1

Input Voltage

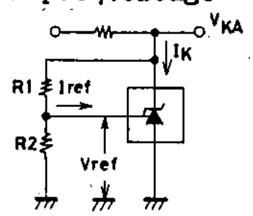


Fig.2

Input Voltage

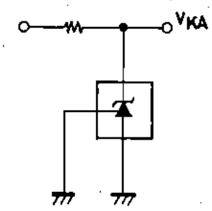
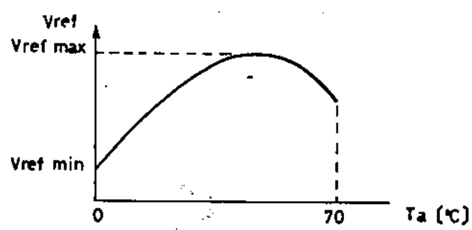


Fig.3

Note1: ΔVref(Ta) is defined by using Vref max and Vref min as follows:

$$\Delta Vref(Ta) = Vref\ max - Vref\ min$$



Note2: The dynamic resistance is defined as follows:

$$\lvert \Delta Z_{KA} \rvert = \frac{\Delta V_{KA}}{\Delta I_K}$$