

Features

- Output Voltage from V_{REF} to 36V
- Single Supply: 2.0V to 36V
- Average temperature coefficient is 50PPM/°C
- Low Output Noise
- Fast response speed
- Wide Operating Range of -40 to +125°C
- Small Package:
GS431 Available in SOT23-3 package

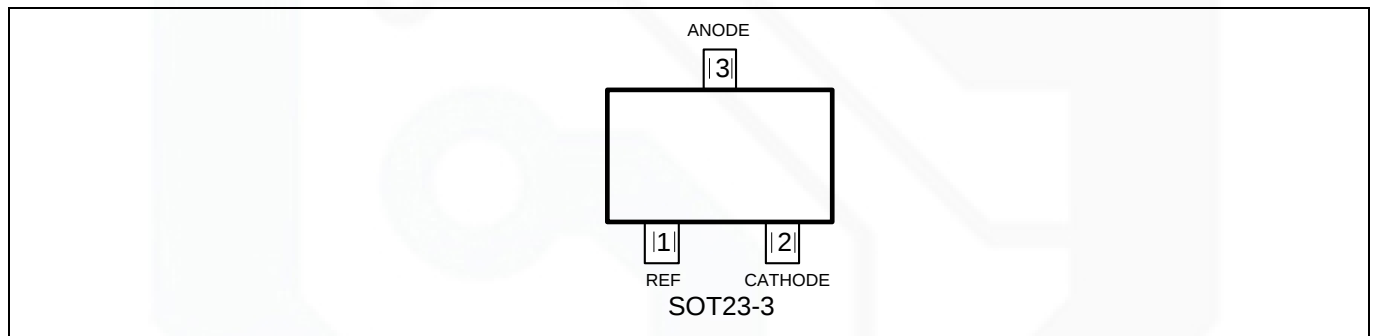
General Description

GS431C is a three-terminal adjustable precision reference chip. In many applications, it can replace the Zener diode. Full operating temperature range (-40°C~125°C) with temperature compensation, adjustable output voltage, fast response, low output noise. GS431C is available in SOT23-3 package.

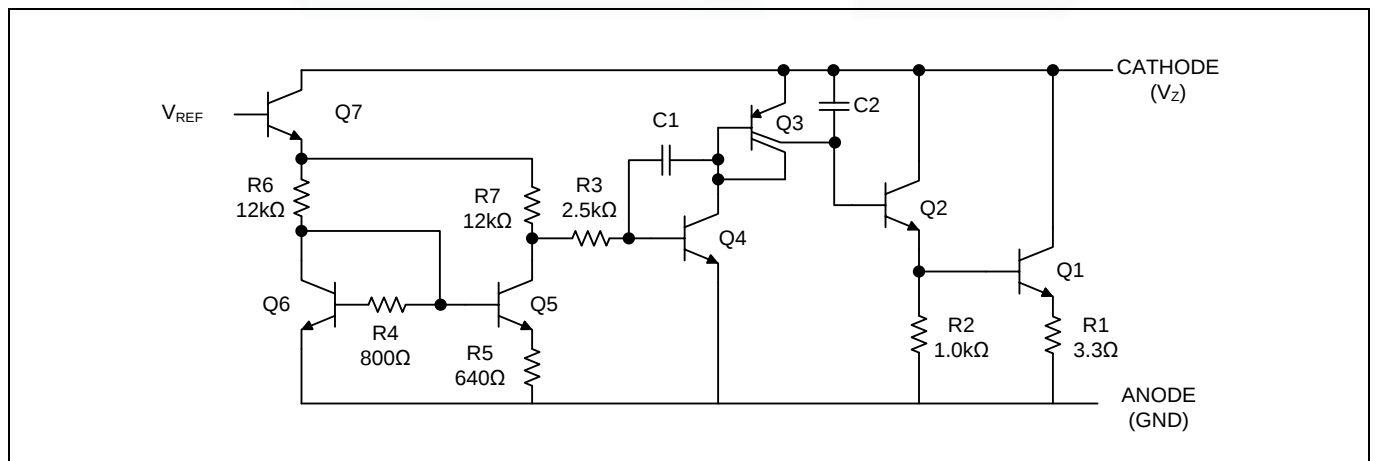
Applications

- Charger
- Voltage Adapter
- Switching Power Supply
- Graphic Card
- Precision Voltage Reference

Pin Configuration



Functional Block Diagram



Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Cathode Voltage	V_Z	37	V
Cathode Current Range (Continuous)	I_I	-100 to 150	mA
Reference Input Current Range	I_{REF}	10	mA
Storage Temperature Range	T_{STG}	-65 ~+150	°C
ESD (Human Body Model)	ESD	2000	V

Note:

Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

Recommended Operating Conditions

Symbol	Parameter	Min	Max	Unit
V_Z	Cathode Voltage	V_{REF}	36	V
I_I	Cathode Current	1.0	100	mA
T_A	Operating Ambient Temperature Range	-40	125	°C

Package/Ordering Information

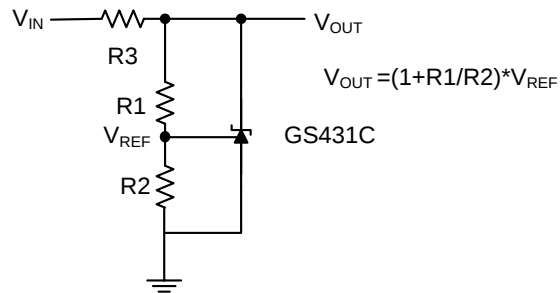
Model	Order Number	Package Description	Package Option	Marking Information
GS431C	GS431C-TR	SOT23-3	Tape and Reel,3000	431C

Electrical Characteristics

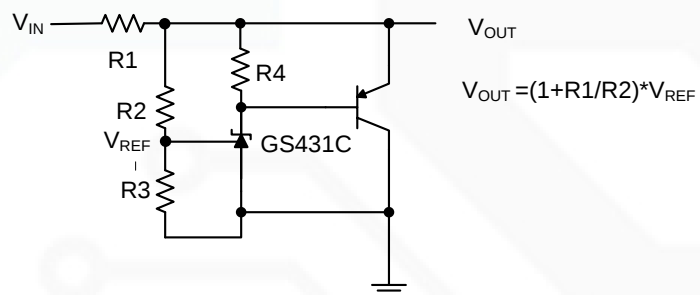
(@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Parameter		Symbol	Conditions	Typ	MAX	MIN	UNIT
Reference	0.4%	V_{REF}	$V_Z = V_{REF}, I_I = 10\text{mA}$	2.495	2.505	2.485	V
	1%			2.495	2.520	2.470	
Deviation of reference voltage over full Temperature Range		ΔV_{REF}	$V_Z = V_{REF}, I_Z = 10\text{mA}$	8	17		mV
Ratio of Change in Reference Voltage to the Change in Cathode Voltage		$\frac{\Delta V_{REF}}{\Delta V_Z}$	$I_Z = 10\text{mA}$	$\Delta V_Z = 10\text{V to } V_{REF}$	-1.4	-2.7	mV/V
				$\Delta V_Z = 36\text{V to } 10\text{V}$	-0.5	-2	
Reference Current		I_{REF}	$I_Z = 10\text{mA}, R_1 = 10\text{K}\Omega, R_2 = \infty$	0.3	4		μA
Deviation of Reference Current Over Full Temperature Range		ΔI_{REF}	$I_Z = 10\text{mA}, R_1 = 10\text{K}\Omega, R_2 = \infty$	0.4	1.2		
Minimum Cathode Current for Regulation		$I_Z(\text{Min})$	$V_Z = V_{REF}$	0.4	1		mA
Off-state Cathode Current		$I_Z(\text{Off})$	$V_Z = 36\text{V}, V_{REF} = 0$	0.3	1		μA
Dynamic impedance		R_Z	$V_Z = V_{REF}, I_I = 1 \text{ to } 100\text{mA}, f \leq 1.0\text{kHz}$		0.5		Ω

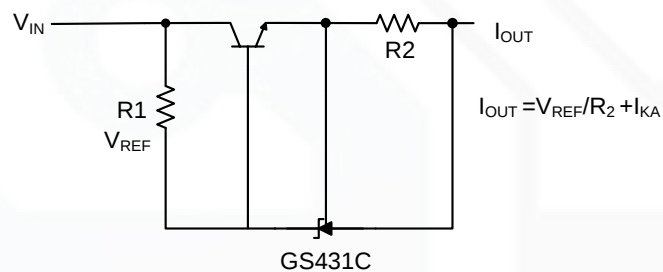
Typical Applications



Shunt Regulator

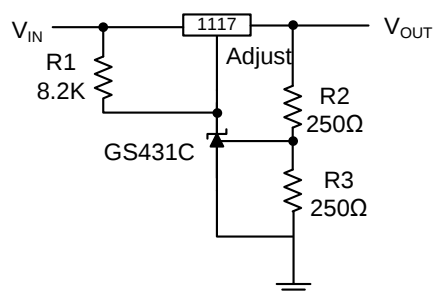


High Current Shunt Regulator

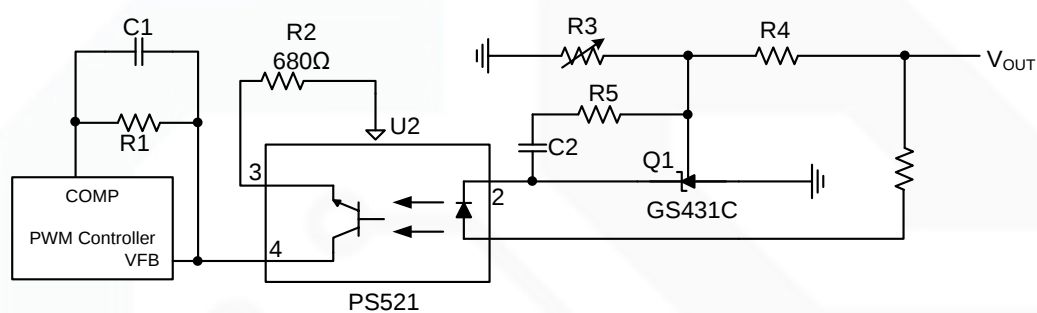


Current Source or Current Limit

Typical Applications



Precision 5V 1A Regulator

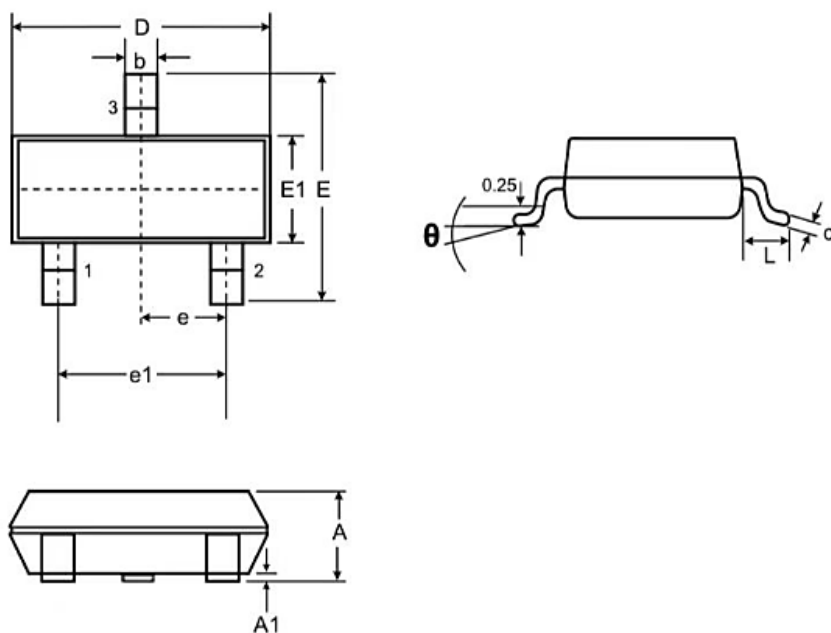


PWM Converter With Reference

Package Information

SOT23-3

Note: This package is a small-sized SOT23-3.



SYMBOL	DIMENSIONS IN MILLIMETERS	
	MIN	MAX
A	0.90	1.15
A1	0.00	0.10
b	0.30	0.50
c	0.07	0.15
D	2.80	3.04
E	2.25	2.64
E1	1.20	1.40
e	0.95BSC	
e1	1.80	2.00
L	0.55REF	
θ	0°	8°