Elektronische Bauelemente

TLM431A-C

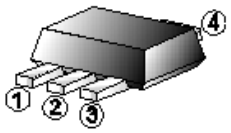
Adjustable Accurate Reference Source

RoHS Compliant Product
A suffix of "-C" specifies halogen or lead -free

DESCRIPTION

The TLM431A-C is a three-terminal adjustable shunt regulator offering excellent temperature stability. This device has a typical dynamic output impedance of 0.2Ω. The device can be used as a replacement for zener diodes in many applications.

SOT-89



FEATURES

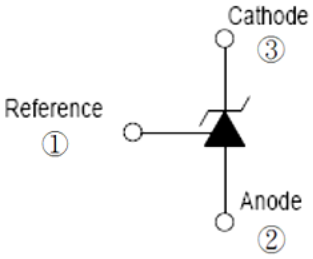
- The Output Voltage Can be Adjusted to 36V
- Low Dynamic Output Impedance, Its Typical Value is 0.2Ω
- Trapping Current Capability is 1~100mA
- Low Output Noise Voltage
- Fast On-state Response
- The Typical Value of The Equivalent Temperature Factor in the Whole Temperature Scope is 50 ppm/°C
- The Effective Temperature Compensation in the Working Range of Full Temperature

APPLICATIONS

- Shunt Regulator
- High-Current Shunt Regulator
- Precision Current Limiter

MARKING

CJ431



CLASSIFICATION OF V_{ref}

Rank	0.5%
Range	2.488-2.512

PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-89	1K	7 inch

ORDER INFORMATION

Part Number	Type
TLM431A-C	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS (Operating temperature range applies unless otherwise specified)

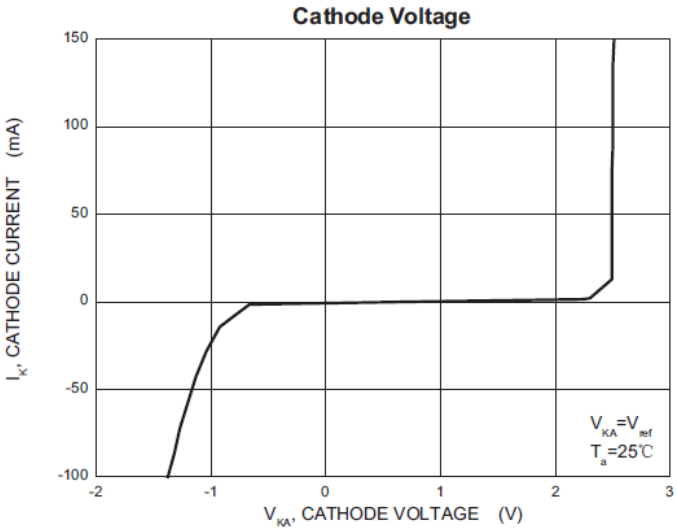
Parameter	Symbol	Ratings	Unit
Cathode Voltage	V_{KA}	36	V
Cathode Current Range (Continuous)	I_{KA}	-100~150	mA
Reference Input Current Range	I_{ref}	0.05~10	mA
Power Dissipation	P_D	500	mW
Thermal Resistance from Junction-Ambient	$R_{\theta JA}$	250	°C/W
Operating Junction Temperature Range	T_J	-40~125	°C
Storage Temperature Range	T_{STG}	-65~150	

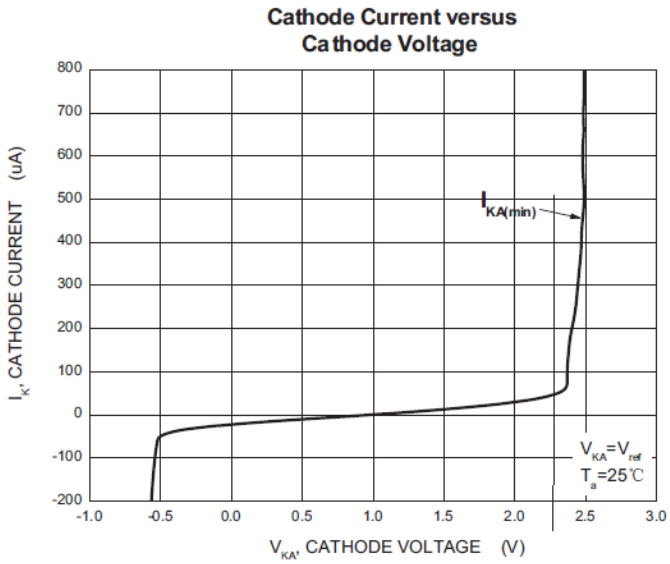
ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise specified)

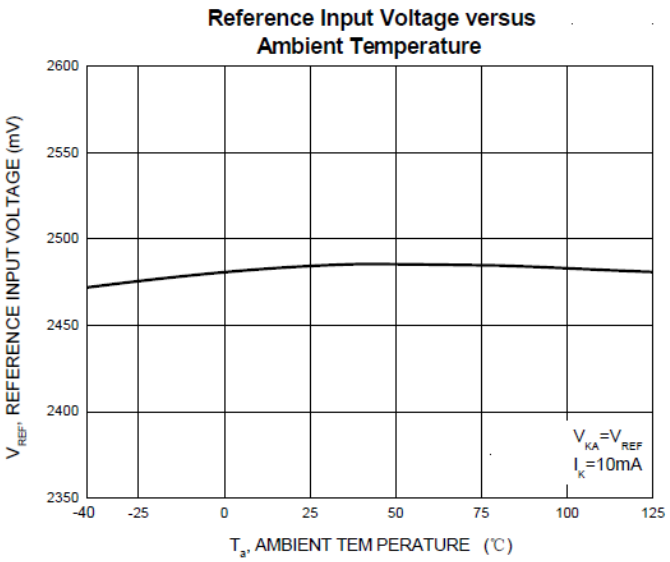
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Reference Input Voltage	V_{ref}	2.488	2.5	2.512	V	$V_{KA}=V_{ref}$, I_{KA}=10mA
Deviation of Reference Input Voltage Over Temperature [1]	$\triangle V_{ref}/\triangle T$	-	4.5	17	mV	$V_{KA}=V_{ref}$, I_{KA}=10mA $T_{MIN}\leqq T_A\leqq T_{MAX}$
Ratio of Change in Reference Input Voltage to the Change in Cathode Voltage	$\triangle V_{ref}/\triangle V_{KA}$	-	-1	-2.7	mV/V	I_{KA}=10mA, $\triangle V_{KA}$=10V~V_{ref}
		-	-0.5	-2		I_{KA}=10mA, $\triangle V_{KA}$=10V~36V
Reference Input Current	I_{ref}	-	1.5	4	μA	I_{KA}=10mA, R_1=10kΩ, R_2=∞
Deviation of Reference Input Current Over Full Temperature Range	$\triangle I_{ref}/\triangle T$	-	0.4	1.2	μA	I_{KA}=10mA, R_1=10kΩ, R_2=∞ T_A= -25~85°C
Minimum Cathode Current for Regulation	$I_{KA(min)}$	-	0.45	1	mA	$V_{KA}=V_{ref}$
Off-State Cathode Current	$I_{KA(OFF)}$	-	0.05	1	μA	V_{KA}=36V, V_{ref}=0
Dynamic Impedance	Z_{KA}	-	0.15	0.5	Ω	$V_{KA}=V_{ref}$, I_{KA}=1~100mA, f≦1kHz

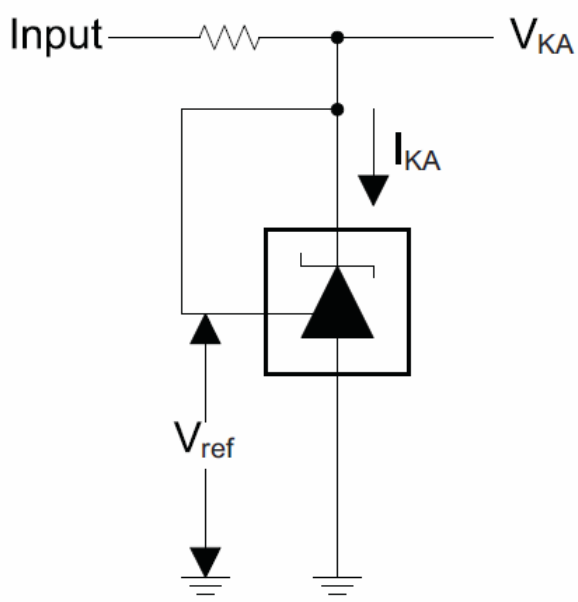
Note:
1. T_{MIN}= -25°C, T_{MAX}=85°C.

CHARACTERISTIC CURVE



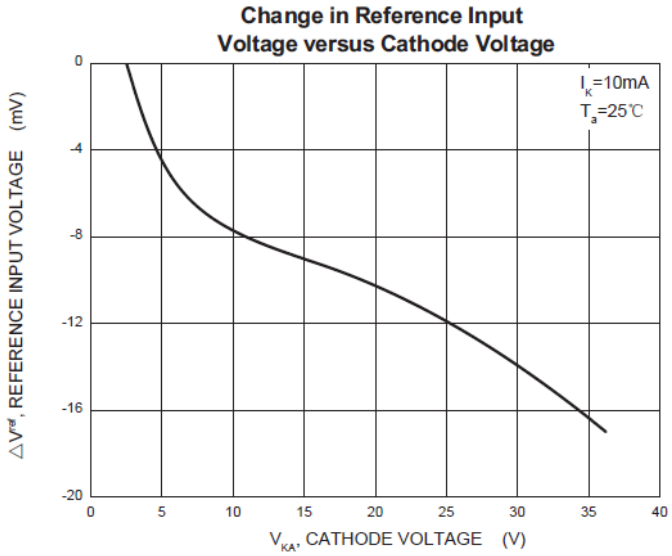


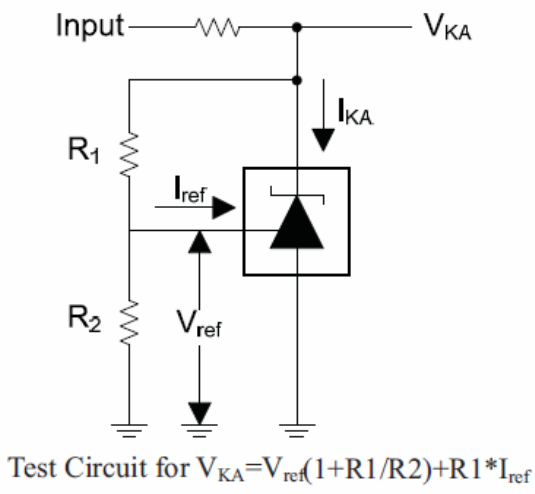




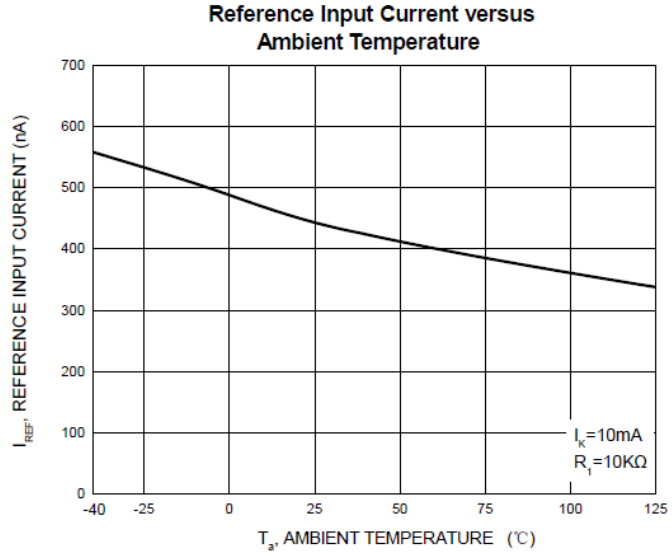
Test Circuit for $V_{KA}=V_{ref}$

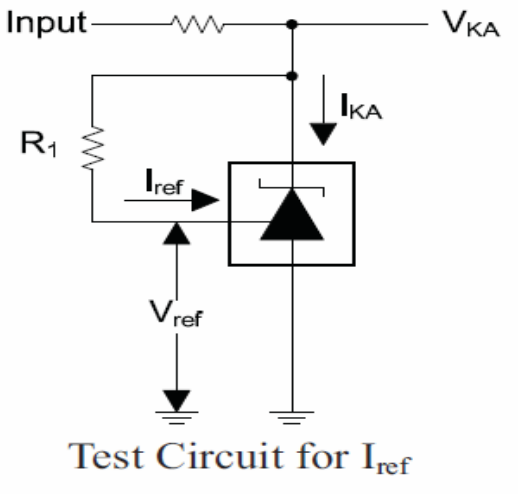
CHARACTERISTIC CURVE



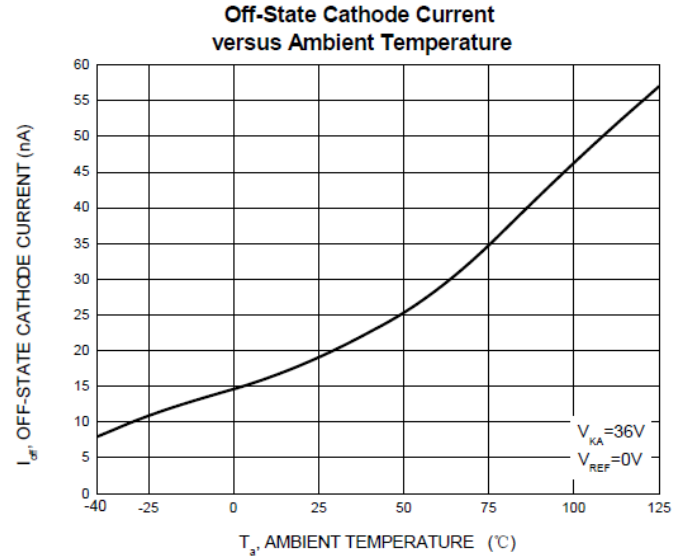


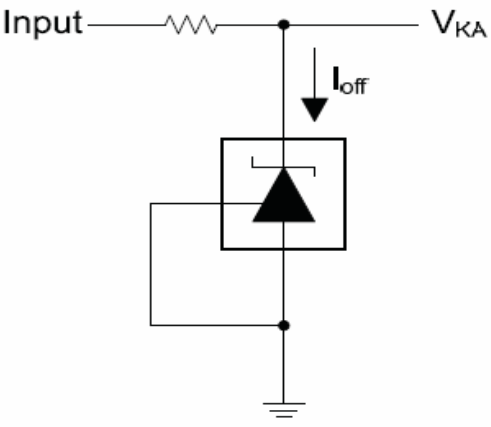
Test Circuit for $V_{KA}=V_{ref}(1+R1/R2)+R1*I_{ref}$





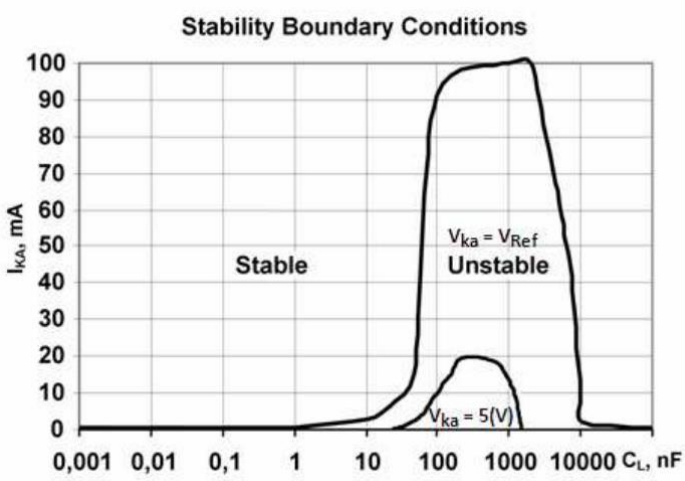
Test Circuit for I_{ref}

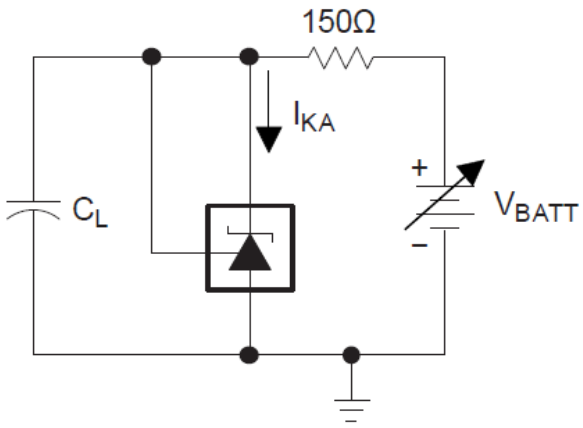




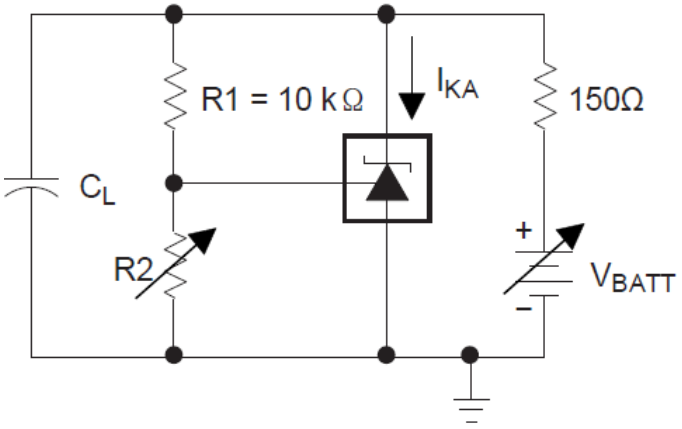
Test Circuit for I_{off}

CHARACTERISTIC CURVE





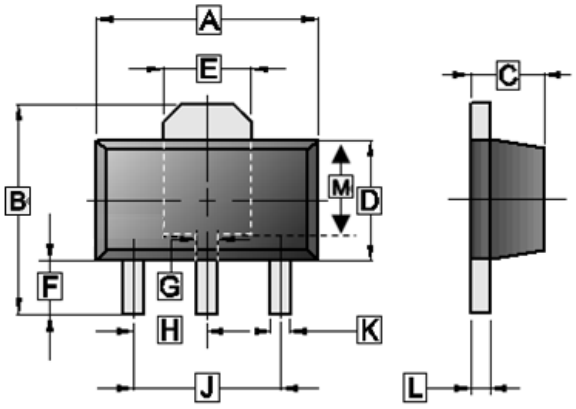
Test Circuit for $V_{KA}=V_{ref}$



Test Circuit for $V_{KA}=V_{ref}(1+R1/R2)+R1*I_{ref}$

PACKAGE OUTLINE DIMENSIONS

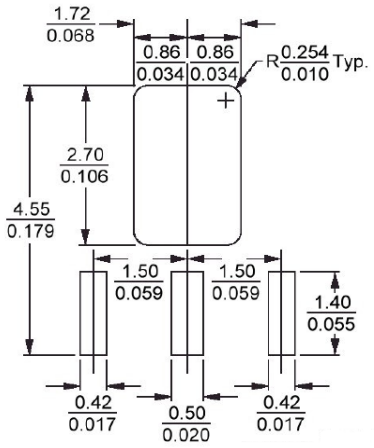
SOT-89



REF.	Millimeter	
	Min.	Max.
A	4.40	4.60
B	3.94	4.25
C	1.40	1.60
D	2.25	2.60
E	1.55 TYP.	
F	0.89	1.20
G	0.40	0.58
H	1.50 TYP.	
J	3.00 TYP.	
K	0.32	0.52
L	0.35	0.44
M	1.75 REF.	

MOUNTING PAD LAYOUT

SOT-89



*Dimensions in millimeters