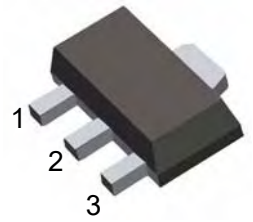
TL431

Adjustable Accurate Reference

RoHS COMPLIANT

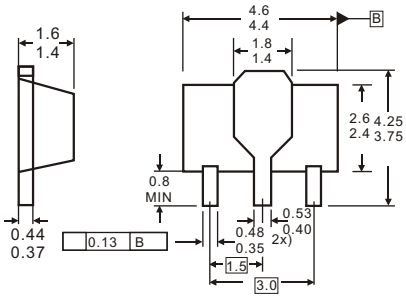


1.REFERENCE

2.ANODE

3.CATHODE

SOT-89



Dimensions in inches and (millimeters)

Features

- ✧ The output voltage can be adjusted to 36V
- ✧ Low dynamic output impedance ,its typical value is 0.2Ω
- ✧ Trapping current capability is 1 to 100mA
- ✧ The typical value of the equivalent temperature factor in the whole temperature scope is 50 ppm/℃
- ✧ The effective temperature compensation in the working range of full temperature
- ✧ Low output noise voltage
- ✧ Fast on -state respons

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

Parameter	SYMBOL	VALUE	UNITS
Cathode Voltage	V_{KA}	37	V
Cathode Current Range (Continuous)	I_{KA}	-100-+150	mA
Reference Input Current Range	Iref	0.05-+10	mA
Power Dissipation	P_D	500	mW
Operating temperature	Topr	0-70	℃
Storage temperature Range	Tstg	-65-+150℃	℃

ELECTRICAL CHARACTERISTICS (Tamb=25℃ unless otherwise specified)

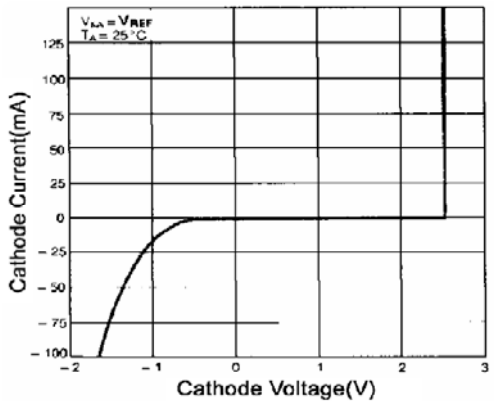
Parameter	Symbol	Test conditions		MIN	TYP	MAX	UNIT
Reference Input Voltage	V_{ref}	$V_{KA}=V_{REF}$, I_{KA}=10mA		2.450	2.5	2.550	V
Deviation of reference input Voltage Over temperature (note)	$\triangle V_{ref}/\triangle T$	$V_{KA}=V_{REF}$, I_{KA}=10mA Tmin≤Ta≤Tmax			4.5	17	mV
Ratio Of Change in Reference Input Voltage to the change in Cathode Voltage	$\triangle V_{ref}/\triangle V_{KA}$	I_{KA}=10mA	$\triangle V_{KA}$ =10V~V_{REF}		-1.0	-2.7	m V/V
			$\triangle V_{KA}$ =36V~ 10V		-0.5	-2.0	m V/V
Reference Input Current	I_{ref}	I_{KA}= 10mA,R_1=10KΩ R_2=∞			1.5	4	μA
Deviation Of Reference Input Current Over Full Temperature Range	$\triangle I_{ref}/\triangle T$	I_{KA}=10mA, R_1=10KΩ R_2=∞ T_A=full Temperature			0.4	1.2	μA
Minimum cathode current for regulation	I_{KA}(min)	$V_{KA}=V_{REF}$			0.45	1.0	mA
Off-state cathode Current	$I_{KA(OFF)}$	V_{KA}=36V ,V_{REF}=0			0.05	1.0	μA
Dynamic Impedance	Z_{KA}	$V_{KA}=V_{REF}$, I_{KA}=1 to 100mA f≤1.0KHz			0.15	0.5	Ω

Note:T_{MIN}=0℃ ,T_{MAX}=+70℃

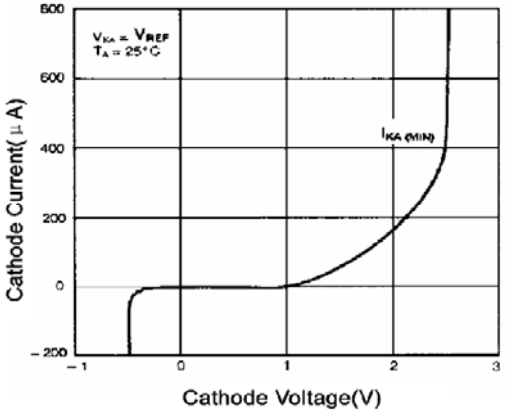
CLASSIFICATION OF V_{ref}

Rank	0.5%	1%	2%
Range	2.487-2.512	2.475-2.525	2.450-2.550

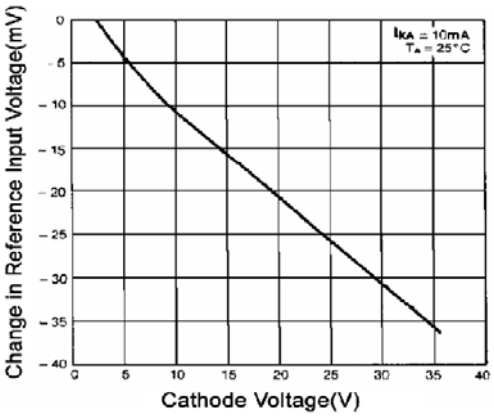
Typical Characteristics



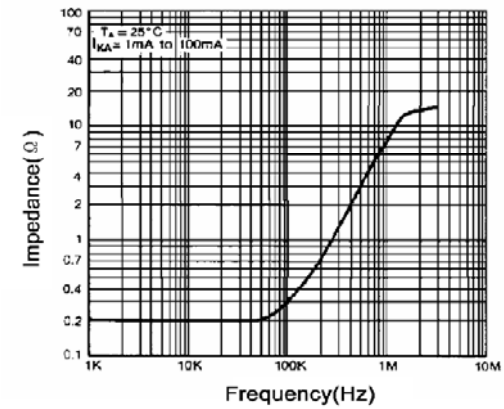
Cathode Current vs. Cathode Voltage



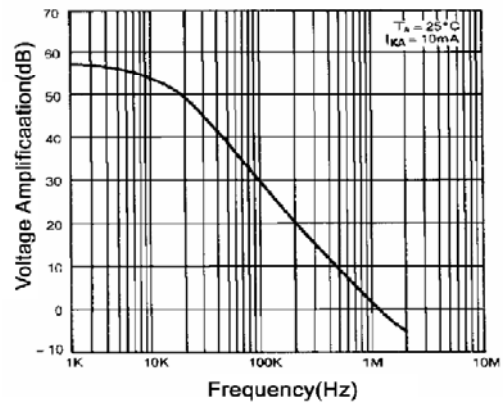
Cathode Current vs. Cathode Voltage



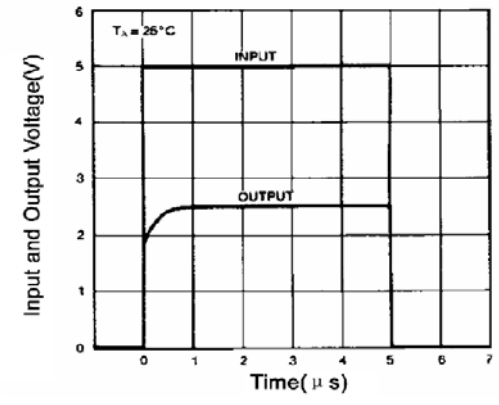
Change in Reference Input Voltage vs. Cathode Voltage



Dynamic Impedance Frequency



Small Signal Voltage Amplification vs. Frequency



Pulse Response

Device	Package	Shipping
TL431	SOT-89	1000/Tape&Reel