DAYA SEMICONDUCTOR

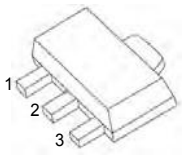
TL431U

SOT-89 Encapsulate Adjustable Reference Source

Adjustable Accurate Reference Source

SOT-89

1. REFERENCE
2. ANODE
3.CATHODE



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 response

MARKING:431

ABSOLUTE MAXIMUM RATINGS (Operating temperature range applies unlessotherwise specified)

Parameter	Symbol	Value	Unit
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
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	250	℃/W
Operating Ambient Temperature Range	T_{opr}	-25~+85	℃
Storage temperature Range	Tstg	-65-+150	℃
Operating JunctionTemperature	T_j	150	℃

ELECTRICAL CHARACTERISTICS (T_a=25 ℃ unless otherwise specified)

Parameter	Symbol	Test conditions		Min	Typ	Max	Unit
Reference input voltage	V_{ref}	$V_{KA}=V_{REF}$, I_{KA}=10mA		2.47	2.495	2.52	V
Deviation of reference Input voltage over temperature (note)	$\triangle V_{ref}/\triangle T$	$V_{KA}=V_{REF}$, I_{KA}=10mA $T_{MIN}\leq T_a\leq T_{MAX}$			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	mV/V
			$\triangle V_{KA}$ =36V~10V		-0.5	-2.0	mV/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=-25 to 85℃			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}=-25℃ ,T_{MAX}=+85℃

CLASSIFICATION of V_{ref}

Rank	0.5%	1%
Range	2.483-2.507	2.47-2.52

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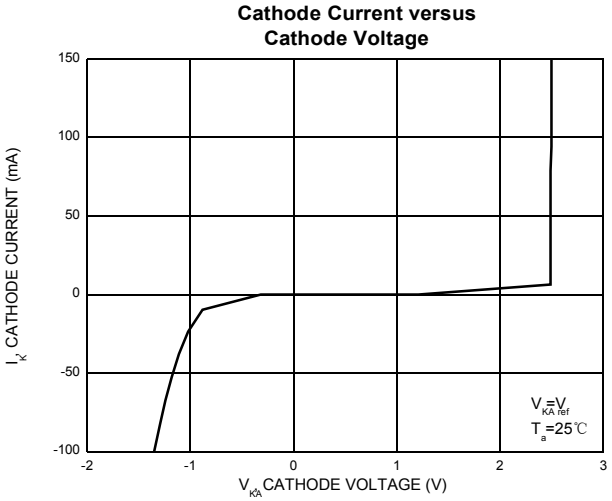
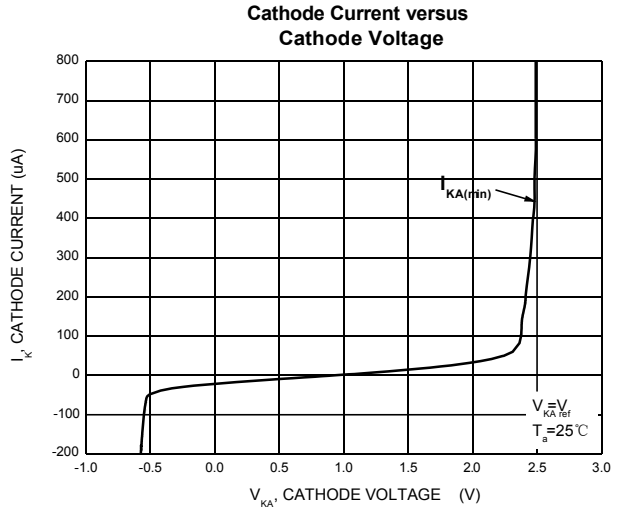
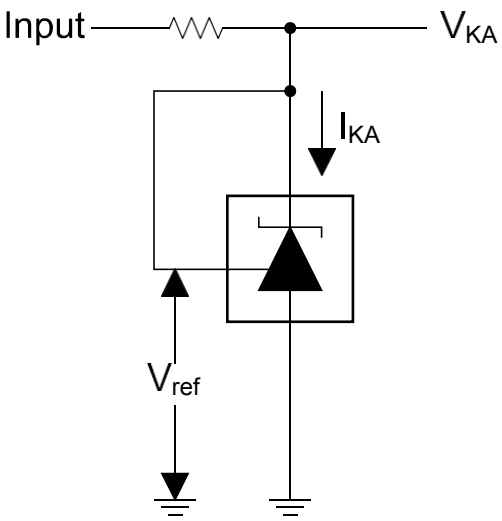
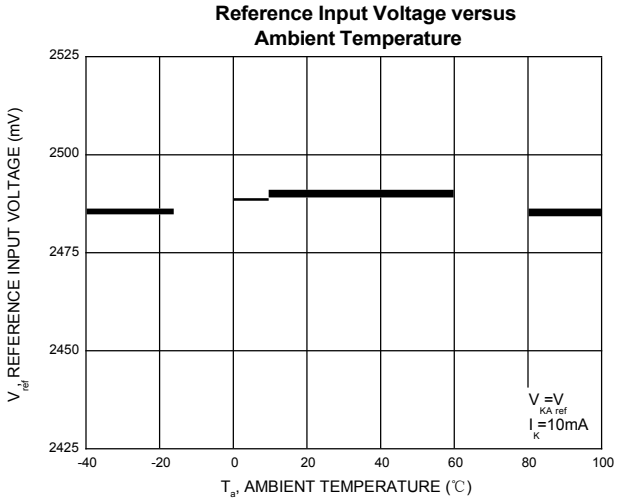
Typical Characteristics







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



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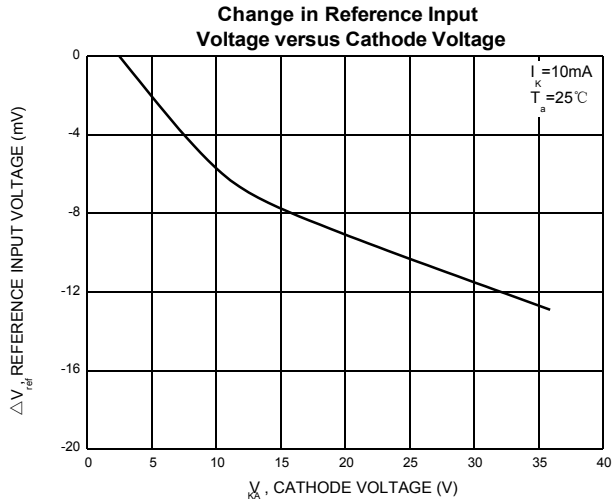
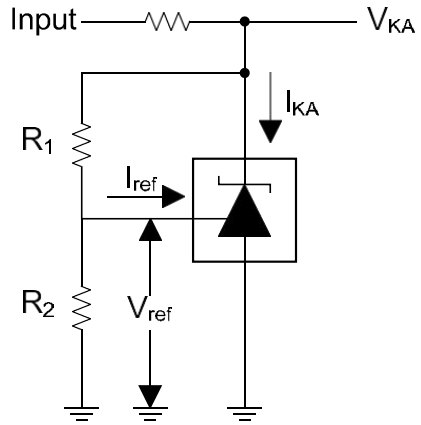
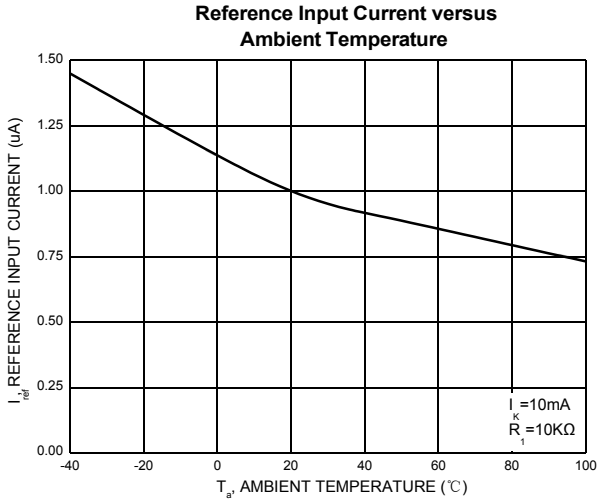
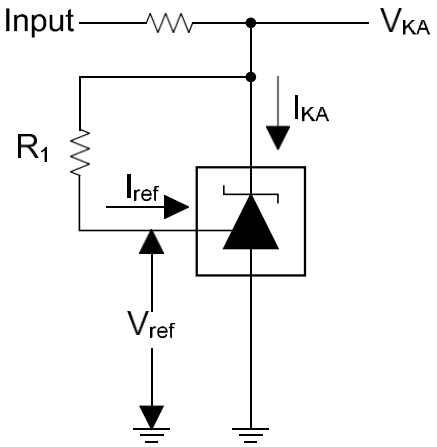
Typical Characteristics



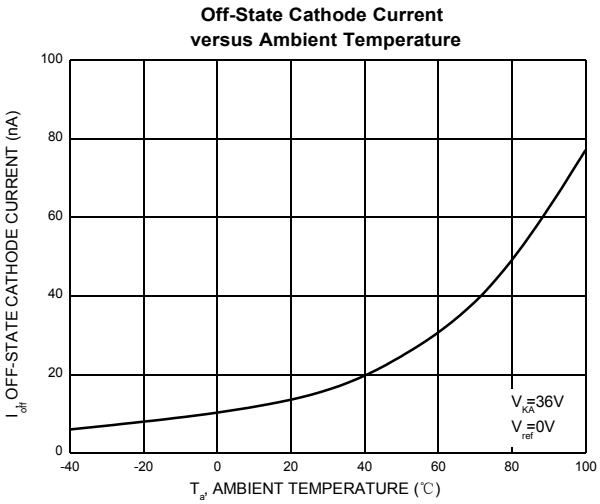


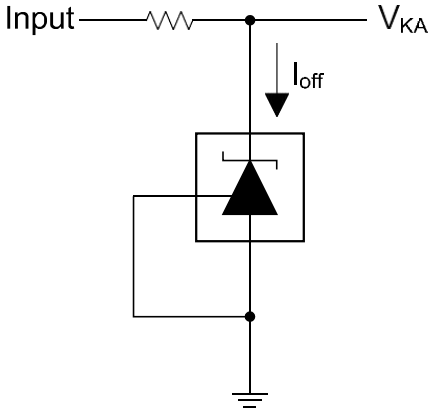
Test Circuit for $V_{KA}=V_{ref}(1+R1/R2)+R1*I_{ref}$





Test Circuit for I_{ref}





Test Circuit for I_{off}

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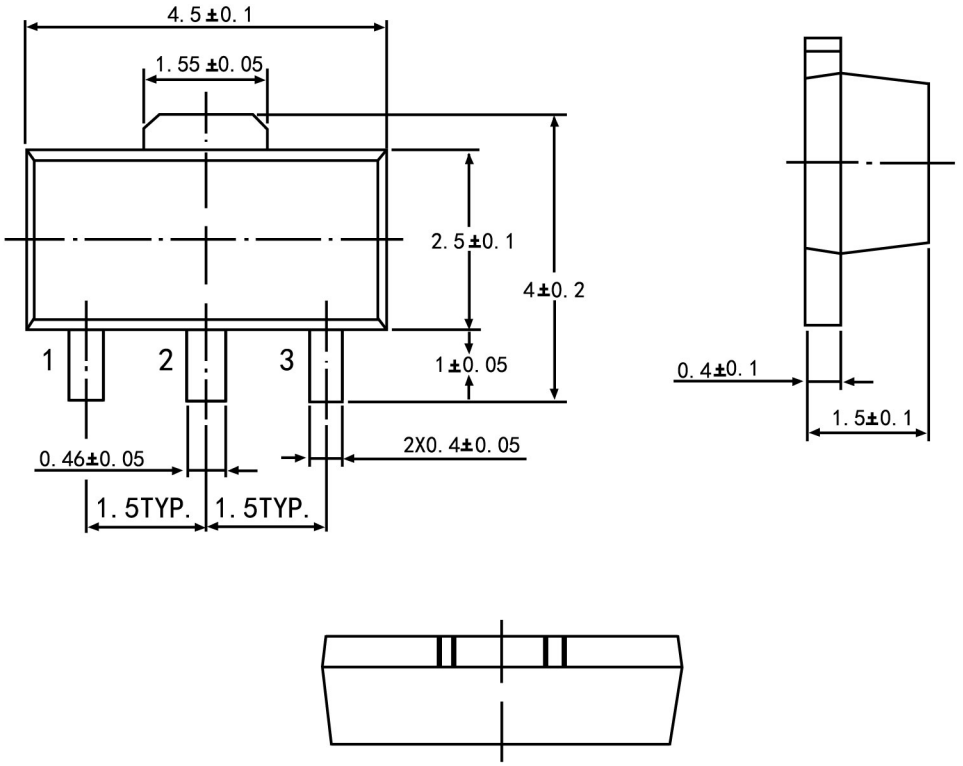
SOT-89 PACKAGE OUTLINE



Symbol	Dimension in Millimeters	
	Min	Max
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.44
D	4.40	4.60
D1	1.62	1.83
E	2.29	2.60
e	1.50 Typ	
H	3.94	4.25
H1	2.63	2.93
L	0.89	1.20
All Dimensions In mm		