



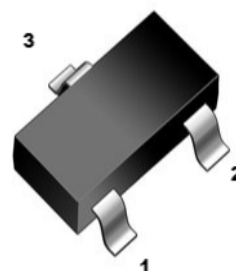
1. Features

- Programmable output Voltage to 36 V
- Low dynamic output impedance
- Sink current capability of 1 to 100 mA
- Low output noise voltage
- Fast turn on response

2. Mechanical Data

- Case:Molded Plastic,SOT-23 .
- Epoxy:UL 94V-0 rate flame retardant.
- Terminals:Plated Leads Solderable per MIL-STD-750,Method-2026.
- Marking:431
- Mounting Position : Any.

SOT-23



1 Reference
2 Cathode
3 Anode

3. Maximum Ratings

Electrical Characteristics Rating at 25°C ambient temperature unless otherwise specified.

Characteristic	Symbol	Value	Unit
Cathode Voltage	V_{KA}	37	V
Cathode Current Range (Continuous)	I_{KA}	- 100 to + 150	mA
Reference Input Current Range	I_{REF}	- 0.05 to + 10	mA
Power Dissipation	P_D	350	mW
Operating Temperature Range	T_{opr}	- 25 to + 85	°C
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	- 65 to + 150	°C

4. Electrical Characteristics (TA=25°C unless otherwise noted)

Characteristics	Symbol	Min	TYP	Max	Unit
Recommended Operating Conditions					
Cathode Voltage	V_{KA}	V_{REF}	-	36	V
Cathode Current	I_{KA}	1	-	100	mA
Reference Input Voltage at $V_{KA} = V_{REF}$, $I_{KA} = 10$ mA	V_{REF}	2.483	2.495	2.507	V
Reference Input Voltage at $V_{KA} = V_{REF}$, $I_{KA} = 10$ mA	V_{REF}	2.47	2.495	2.52	V
Reference Input Voltage at $V_{KA} = V_{REF}$, $I_{KA} = 10$ mA	V_{REF}	2.445	2.495	2.545	V
Deviation of Reference Input Voltage Over Temperature at $V_{KA} = V_{REF}$, $I_{KA} = 10$ mA, $-25^{\circ}\text{C} \leq T_a \leq +85^{\circ}\text{C}$	$\Delta V_{REF} / \Delta T$	-	4.5	17	mV
Ratio of Change in Reference Input Voltage to the Change in Cathode Voltage at $I_{KA} = 10$ mA	$\Delta V_{REF} / \Delta V_{KA}$	-	-1.0 -0.5	-2.7 -2	mV/V
Reference Input Current at $I_{KA} = 10$ mA, $R1 = 10$ K Ω , $R2 = \infty$	I_{REF}	-	1.5	4	μA
Deviation of Reference Input Current Over Full Temperature at $I_{KA} = 10$ mA, $R1 = 10$ K Ω , $R2 = \infty$, $-25^{\circ}\text{C} \leq T_a \leq +85^{\circ}\text{C}$	$\Delta I_{REF} / \Delta T$	-	0.4	1.2	μA
Minimum Cathode Current for Regulation at $V_{KA} = V_{REF}$	$I_{KA(min)}$	-	0.45	1	mA
Off-Stage Cathode Current at $V_{KA} = 36$ V, $V_{REF} = 0$	$I_{KA(OFF)}$	-	0.05	1	μA
Dynamic Impedance at $V_{KA} = V_{REF}$, $I_{KA} = 1$ to 100 mA, $f \leq 1$ KHz	Z_{KA}	-	0.15	0.5	Ω



5. Rating And Characteristic Curves

Fig.1 Cathode Voltage

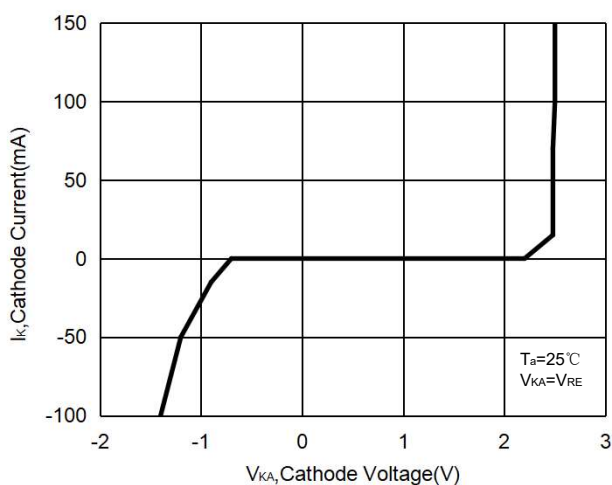


Fig.2 Cathode Current versus Cathode Voltage

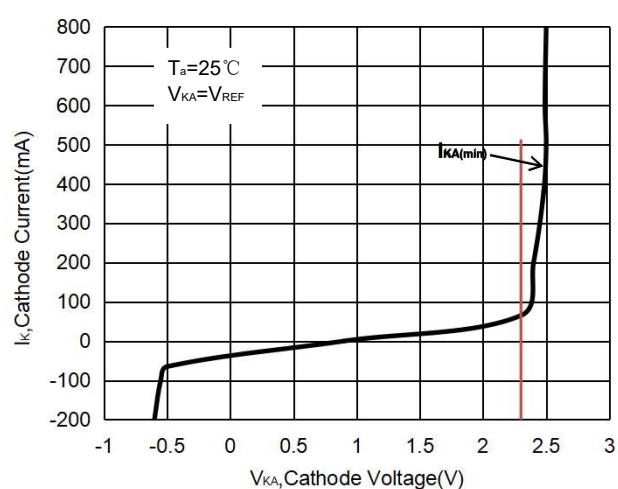
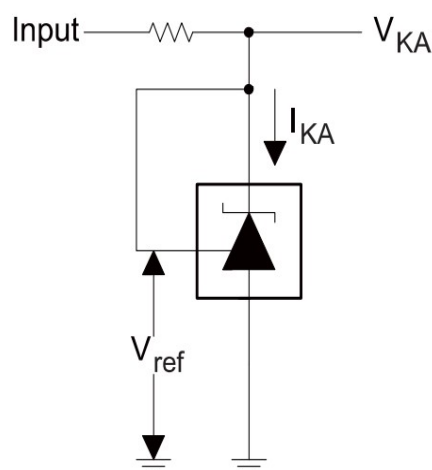
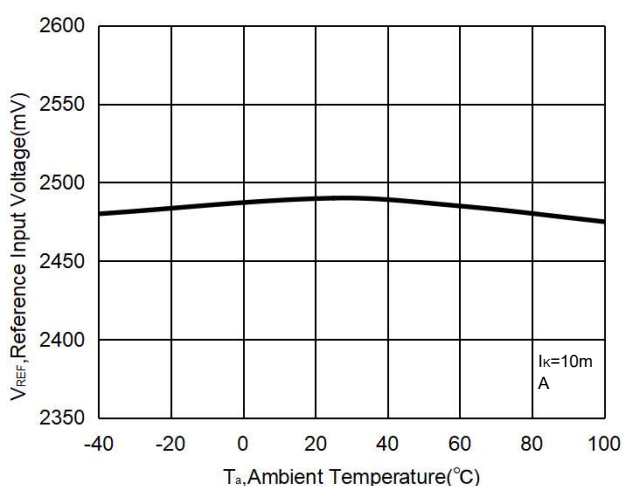
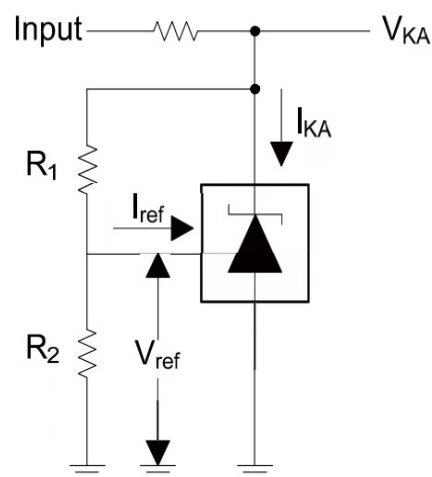
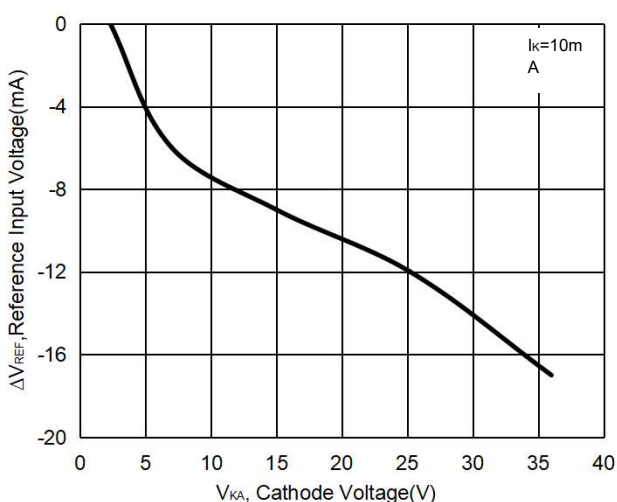


Fig.3 Reference Input Voltage versus Ambient Temperature



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

Fig.4 Change in Reference Input Voltage versus Cathode Voltage



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



Fig.5 Reference Input Current versus Ambient Temperature

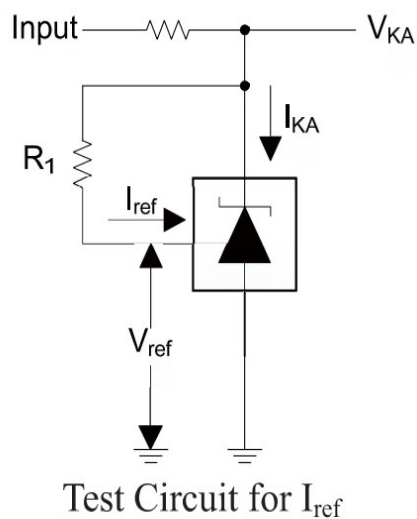
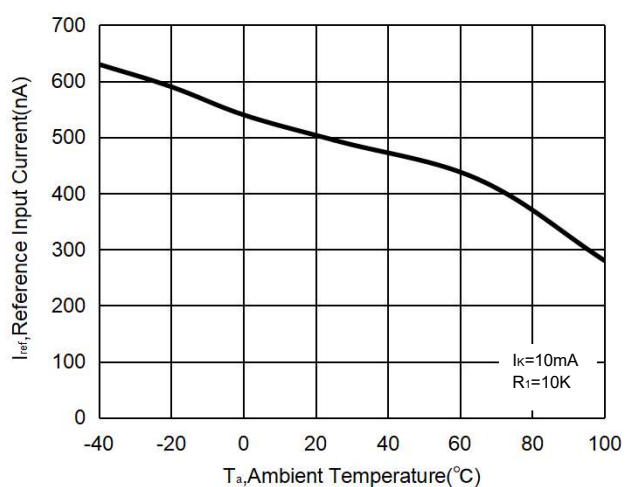
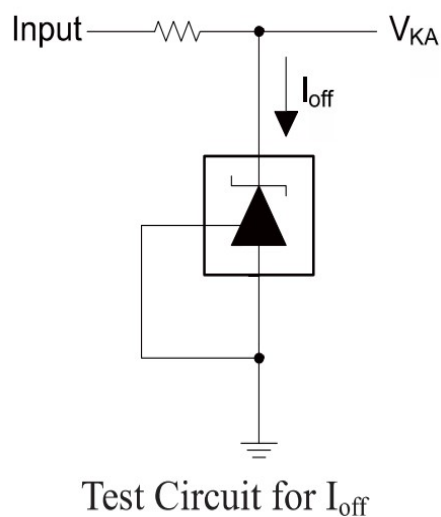
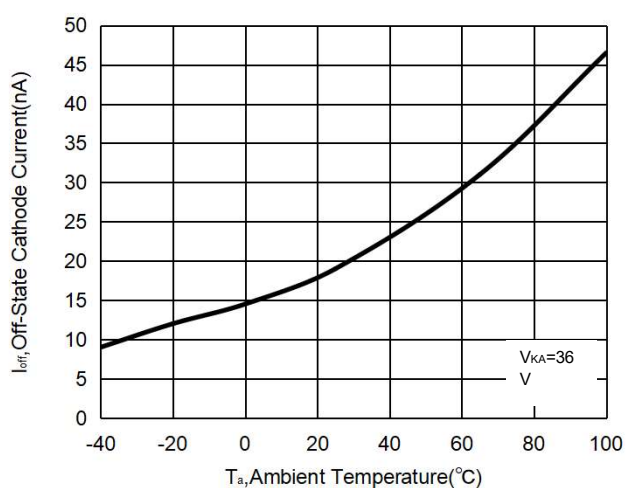
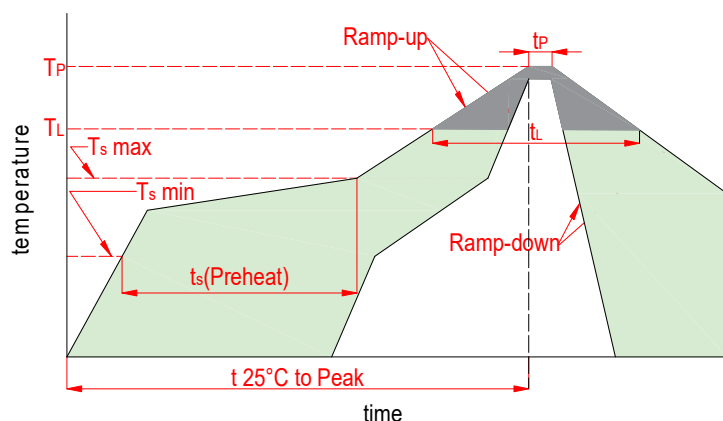


Fig.6 Off-State Cathode Current versus Ambient Temperature



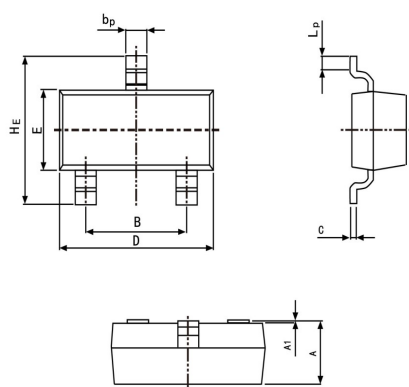


6. Soldering Parameters



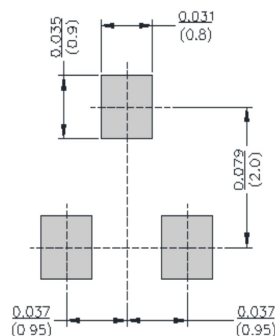
Reflow Condition		Lead-free
Pre Heat	Temp. min(T_s (min))	150℃
	Temp. max(T_s (min))	200℃
	Time(min to max)(t_s)	60~120s
Aver. ramp up rate(Liquidus Temp.)(T_L)to peak		3℃/s max
T_s (max) to T_L -Ramp-up Rate		3℃/s max
Reflow	Temp.(T_L)(Liquidus)	217℃
	Temp.(t_L)(Liquidus)	60~150s
Peak Temp.(T_P)		260 ^{+0/-5} ℃
Time within actual peak Temp.(t_p)		30s max
Ramp-down Rate		6℃/s max
Time 25℃ to peak Tempe.(T_P)		8 minutes max
Do not exceed		260℃

7. Dimensions

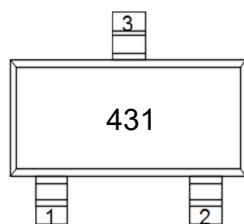


Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.035	0.045	0.90	1.15
B	0.070	0.081	1.78	2.05
bp	0.012	0.020	0.30	0.51
C	0.003	0.007	0.08	0.18
D	0.110	0.118	2.80	3.00
E	0.047	0.055	1.20	1.40
HE	0.087	0.110	2.20	2.80
A1	0.000	0.004	0.00	0.10
LP	0.008	0.020	0.20	0.50

Mounting PAD Layout



8. Part Marking System



9. Package Information

Package	Part Number	Marking Code	Quantity(pcs)
SOT-23	MMTL431M	431	3000



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