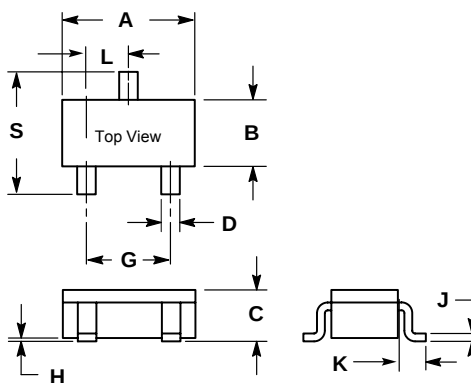
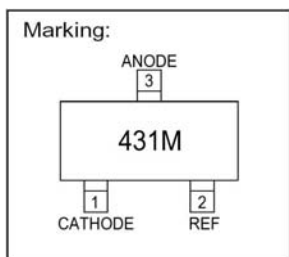


Description

The TL431M series are three-terminal adjustable regulators with guaranteed thermal stability over applicable temperature ranges. The output voltage may be set to any value between V_{REF} (approximately 2.495V) and 36V with two external resistors. It provides very wide applications, including shunt regulator, series regulator, switching regulator, voltage reference and others.



SC-59		
Dim	Min	Max
A	2.70	3.10
B	1.40	1.60
C	1.00	1.30
D	0.35	0.50
G	1.70	2.10
H	0.00	0.10
J	0.10	0.26
K	0.20	0.60
L	0.85	1.15
S	2.40	2.80
All Dimension in mm		

Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

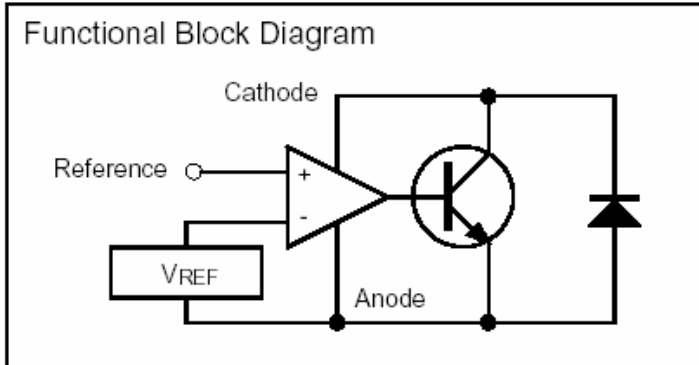
Parameter	Symbol	Ratings	Unit
Cathode Voltage	V_{KA}	37	V
Cathode Current Range (Continuous)	I_{KA}	-100~+150	mA
Reference Input Current Range	I_{REF}	-0.05~+10	mA
Total Power Dissipation	P_D	225	mW
Operating Junction and Storage Temperature Range	T_j, T_{stg}	-65~+150	$^\circ\text{C}$

Characteristics at $T_a=25^\circ\text{C}$

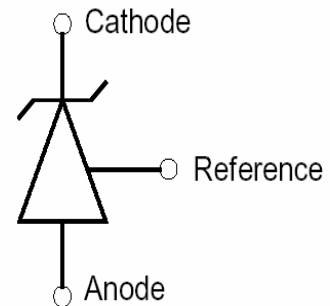
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Cathode Voltage	V_{KA}	V_{REF}	—	36	V	
Cathode Current	I_{KA}	1	—	100	mA	
Reference Input Voltage	V_{REF}	2.445	2.495	2.545	V	$V_{KA}=V_{REF}, I_{K}=10\text{mA}$
TL431MC		2.470	2.495	2.520		
TL431MB		2.483	2.495	2.507		
TL431MA						
Deviation of Reference Input Voltage Over Temperature (Note)	$\Delta V_{REF}/\Delta T$	—	4.5	17	mV	$V_{KA}=V_{REF}, I_{K}=10\text{mA}$ $T_{MIN} \leq T_A \leq T_{MAX}$
Ratio of Change in Reference Input Voltage to The Change in Cathode Voltage	$\Delta V_{REF}/\Delta V_{KA}$	—	-1.0	-2.7	mV/V	$I_{K}=10\text{mA}$ $\Delta V_{KA}=10\text{V}-V_{REF}$ $\Delta V_{KA}=36\text{V}-10\text{V}$
Reference Input Current	I_{REF}	—	1.5	4	μA	$I_{K}=10\text{mA}, R1=10\text{K}\Omega, R2=\infty$
Deviation of Reference Input Current Over Full Temperature Range	$\Delta I_{REF}/\Delta T$	—	0.4	1.2	μA	$I_{K}=10\text{mA}, R1=10\text{K}\Omega, R2=\infty$ $T_A=\text{Full Temperature}$
Min. Cathode Current For Regulation	$I_{KA}(\text{min})$	—	0.45	1.0	mA	$V_{KA}=V_{REF}$
Off-State Cathode Current	$I_{KA}(\text{off})$	—	0.05	1.0	μA	$V_{KA}=36\text{V}, V_{REF}=0$
Dynamic Impedance	$ Z_{KA} $	—	0.15	0.5	Ω	$V_{KA}=V_{REF}, I_{K}=1\sim 100\text{mA}$ $F \leq 1\text{KHz}$

Note: $T_{MIN}=0^\circ\text{C}$, $T_{MAX}=+70^\circ\text{C}$

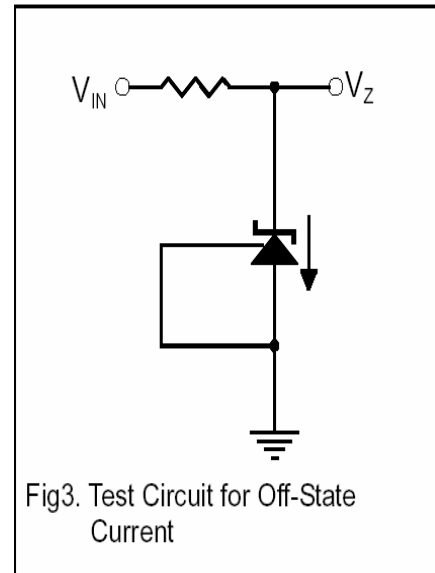
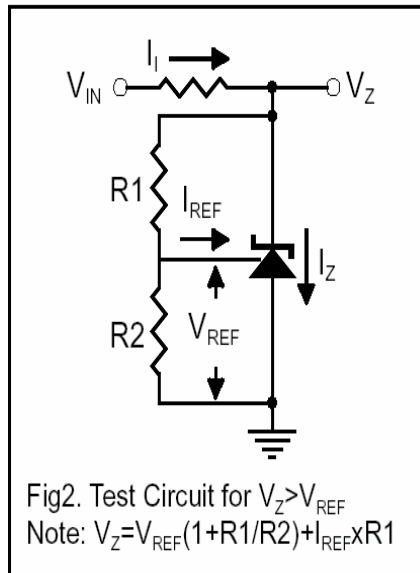
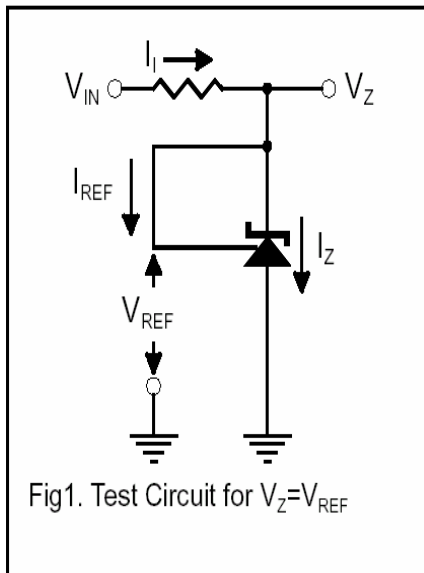
Functional Block Diagram & Symbol



Symbol:



Test Circuits



Characteristics Curve

