

/ Descriptions

SOT-23

Precision adjustable shunt regulator in a SOT-23 Plastic Package.

/ Features

2.495V; 0.5%,1% 2%; 1.0mA 100mA; ;
 $V_O=V_{ref}$ 36V; (:50 μ A); (:0.15 Ω)

Precise reference voltage to 2.495V;guaranteed 0.5%,1% or 2% reference voltage Tolerance; sink current capability,1.0mA 100mA;quick turn-on; adjustable Output voltage, $V_O=V_{ref}$ 36V;low operational cathode current,50 A typical; 0.15 typical output impedance.

/ Applications

Linear regulators, adjustable power supply, switching power supply.

/ Equivalent Circuit



/ Pinning



PIN1 R PIN 2 K PIN 3 A

/ h_{FE} Classifications & Marking

Marking	H431
---------	------

/ Absolute Maximum Ratings(Ta=25)

Parameter	Symbol	Rating	Unit
Cathode to Anode Voltage	V_{KA}	37	V
Cathode Current Range, Continuous	I_K	-100 +100	mA
Reference Input Current Range, Continuous	I_{REF}	0.05 +10	mA
Power Dissipation	P_D	370	mW
Operating Ambient Temperature	T_{amb}	-40 125	
Junction Temperature	T_J	150	
Storage Temperature Range	T_{stg}	-65 150	

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reference Input Voltage	V_{REF}	$V_{KA}=V_{REF}$ $I_K=10mA(A=0.5\%)$	2.483	2.495	2.507	V
		$V_{KA}=V_{REF}$ $I_K=10mA(B=1\%)$	2.470	2.495	2.520	V
		$V_{KA}=V_{REF}$ $I_K=10mA(2\%)$	2.445	2.495	2.545	V
Deviation of Reference Input Voltage Over-Temperature	V_{REF} / T	$V_{KA}=V_{REF}$ $I_K=10mA$ $T_A=-40 \ 125$		4.5	25	mV
Ratio of Change in Reference Input Voltage to the Change in Cathode Voltage	V_{REF} / V_{KA}	$I_K=10mA$, $V_{KA}=10V \text{ to } V_{REF}$		-1	-2.7	mV/V
		$I_K=10mA$, $V_{KA}=36V \text{ to } 10V$		-0.5	-2.0	mV/V
Reference Input Current	I_{REF}	$I_K=10mA$ $R_1=10K$ $R_2=open$		0.8	1.0	A
Deviation of Reference Input Current Over Full Temperature Range	I_{REF} / T	$I_K=10mA$ $R_1=10K$ $R_2=open$ $T_A=-40 \ 125$		0.4	1.2	A
Minimum Cathode Current for Regulation	$I_{K(min)}$	$V_{KA}=V_{REF}$		0.05	0.08	mA
Off-state cathode current	$I_{K(off)}$	$V_{KA}=36V$ $V_{REF}=0V$		0.05	1.0	A
Dynamic Impedance	$ Z_{KA} $	$V_{KA}=V_{REF}$ $f \ 1.0KHz$ $I_K=1mA \text{ to } 100mA$		0.15	0.5	

/ Electrical Characteristic Curve

Fig 1 Cathode Current
Vs Cathode Voltage

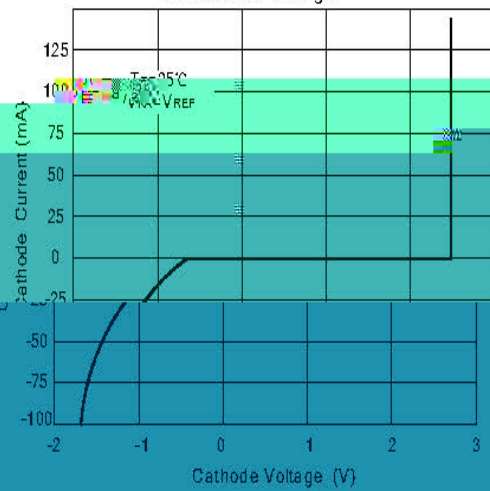


Fig 2 Cathode Current
Vs Cathode Voltage

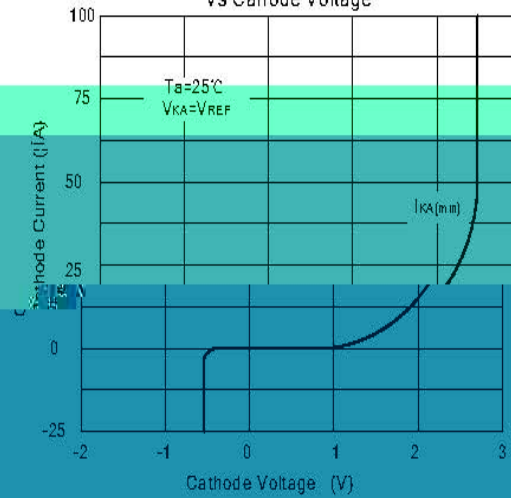


Fig 3 Change in Reference Input Voltage
Vs Cathode voltage

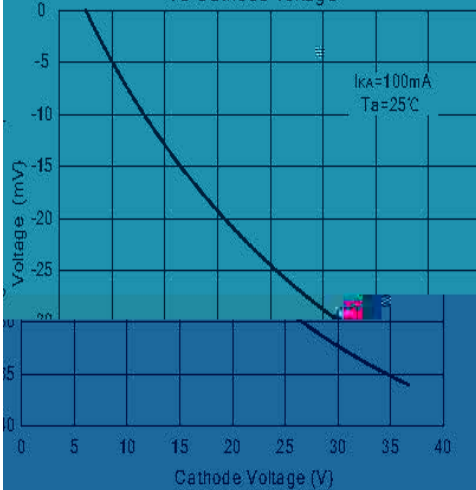


Fig 4 Pulse Response

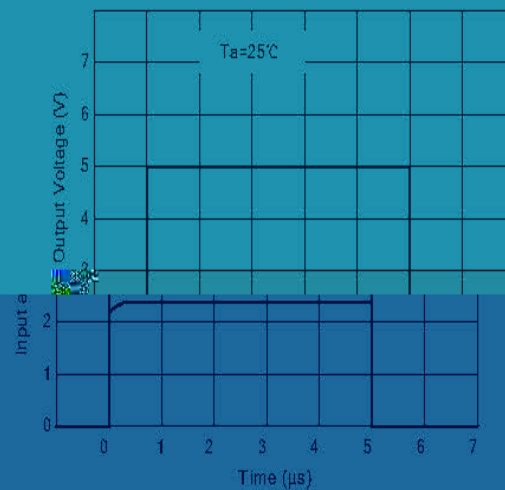


Fig 5 Dynamic Impedance
Vs Frequency

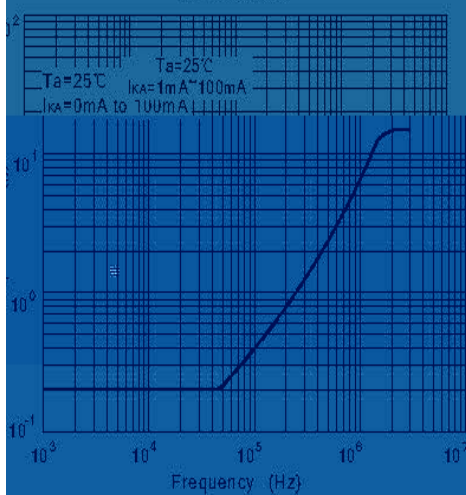
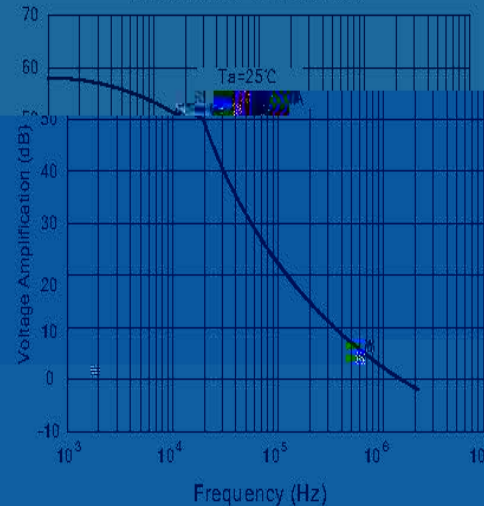
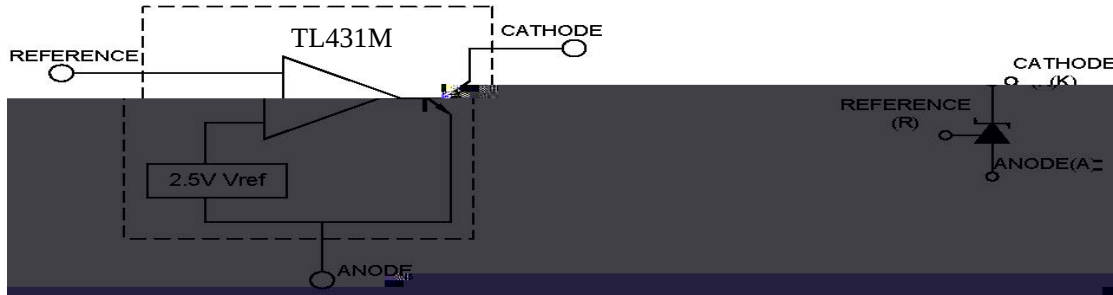


Fig 6 Small Signal Voltage
Amplification Vs Frequency

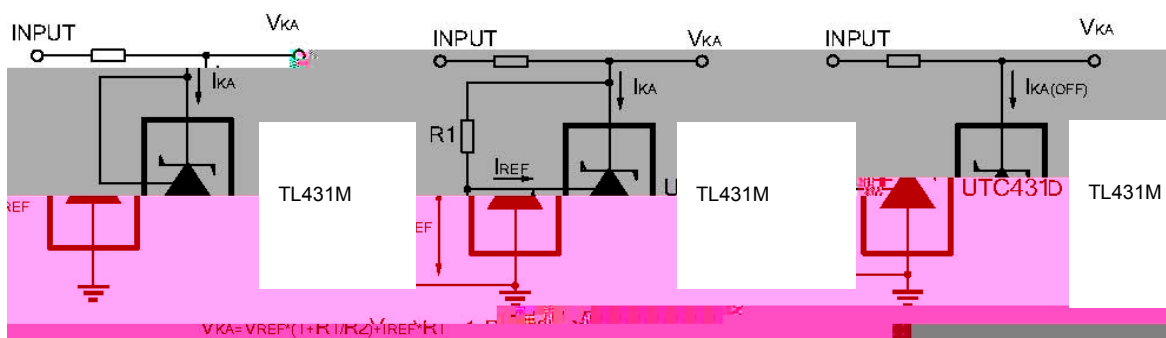


& Test circuits&Typical Application

BLOCK DIAGRAM:



TEST CIRCUITS:

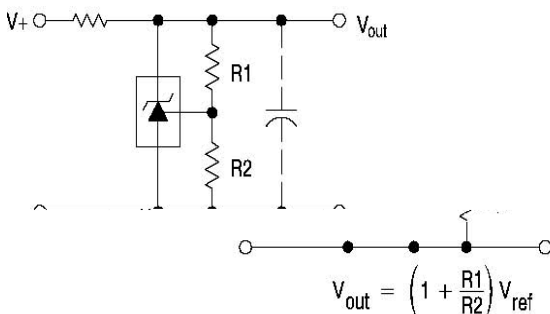


Test Circuit For VKA=VREF

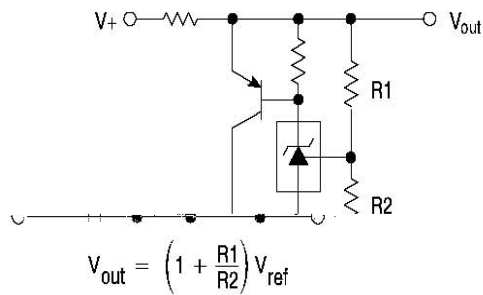
Test Circuit for VKA VREF

Test Circuit For IKA(OFF)

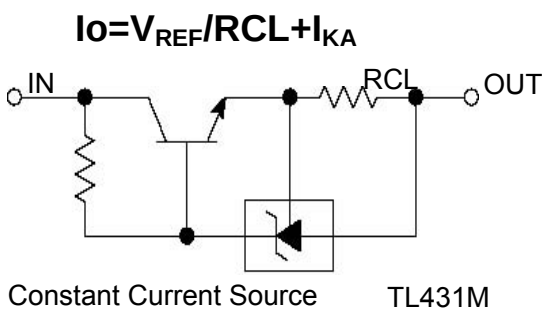
TYPICAL APPLICATION:



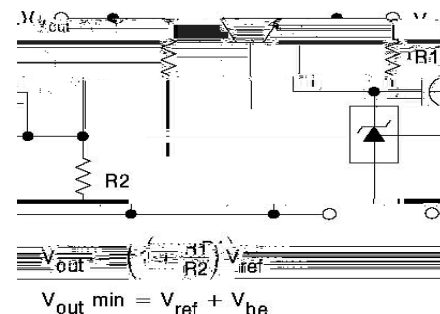
Shutdown Regulator



Higher-current Shunt



Constant Current Source TL431M

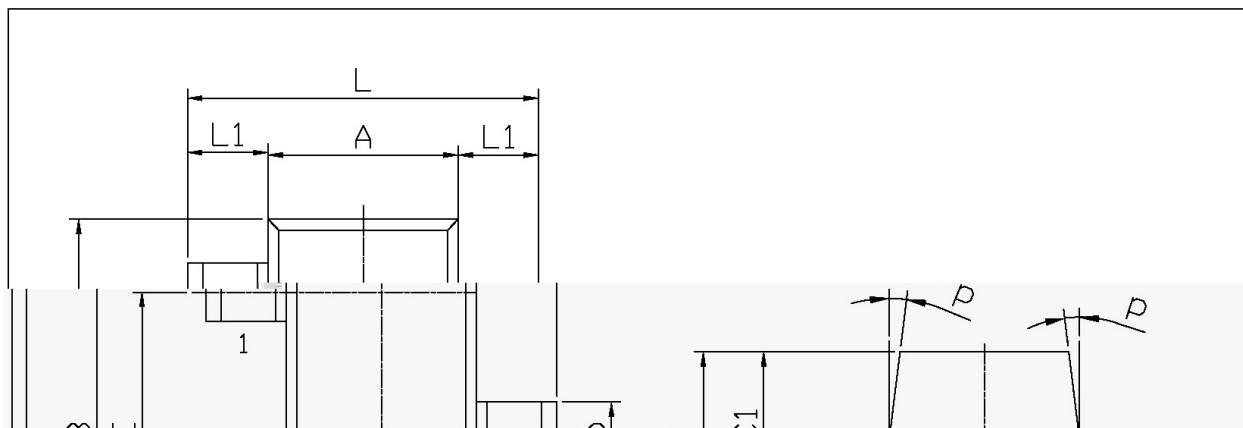


Series Pass Regulator

/ Package Dimensions

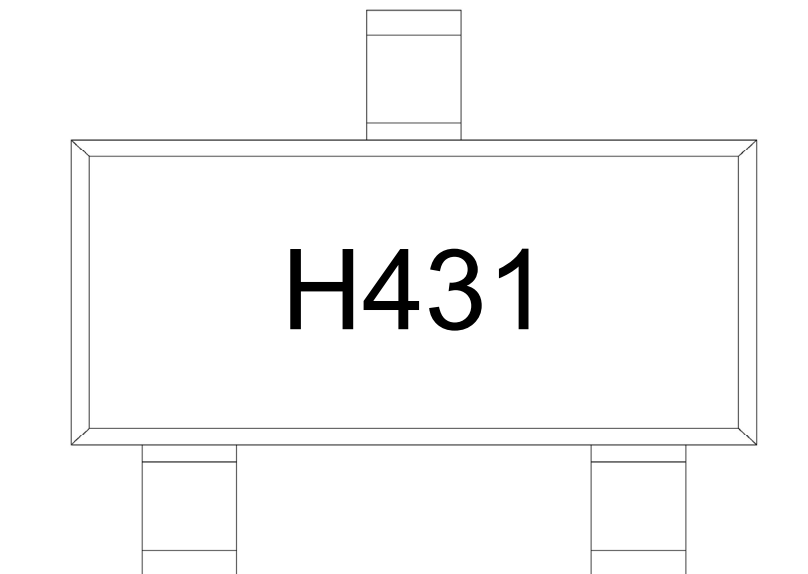
SOT-23

单位: mm



	MIN.	MAX.		MIN.	MAX.
L	2.2	2.7	C	1.30Max	
L1	0.45	0.65	C1	0.90	1.20
A	1.15	1.50	1	0.05	0.20
B	2.70	3.10	K	0	0.10
E	1.70	2.10	M	0.20MIN	
E1	0.85	1.05	D ₁	7°	
b	0.35	0.55			

/ Marking Instructions



H

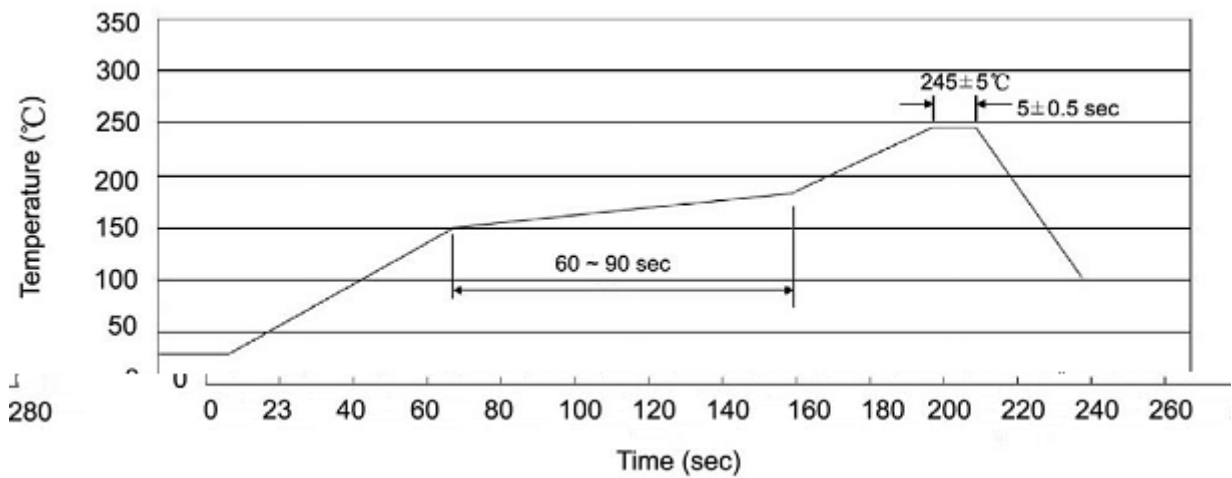
431

Note:

H: Company Code.

431: Product Type.

() / Temperature Profile for IR Reflow Soldering(Pb-Free)



Note:

- | | | | | | |
|---|-------|-----|----|-----------|---|
| 1 | 25 | 150 | 60 | 90sec; | 1.Preheating:25~150 , Time:60~90sec. |
| 2 | 245±5 | | | 5±0.5sec; | 2.Peak Temp.:245±5 , Duration:5±0.5sec. |
| 3 | | 2 | 10 | /sec. | 3. Cooling Speed: 2~10 /sec. |

/ Resistance to Soldering Heat Test Conditions

260±5 10±1 sec. Temp.:260±5 Time:10±1 sec

/ Packaging SPEC.

/ REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm ³)		
	只 卷盘	卷盘 盒	只 盒	盒 箱	只 箱		盒	箱

/ Notices