

/ Descriptions

SOT-23

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

/ Features

2.500V; 0.4%,0.8%; 1.0mA 100mA; ;
 $V_O = V_{ref} \pm 37V$; (:400 μ A); (:0.15)
 AEC-Q100
 Precise reference voltage to 2.500V;guaranteed 0.4%,0.8% reference voltage Tolerance; sink current capability,1.0mA 100mA;quick turn-on; adjustable Output voltage, $V_O = V_{ref} \pm 37V$;low operational cathode current,400 A typical; 0.15 typical output impedance, Qualified to AEC-Q100 Standards for High Reliability, HF Product.

/ Applications

Linear regulators, adjustable power supply, switching power supply, Meet the stringent requirements of automotive applications.

/ Equivalent Circuit



/ Pinning



PIN1 K PIN 2 R PIN 3 A

/ Marking

Marking	Q431R
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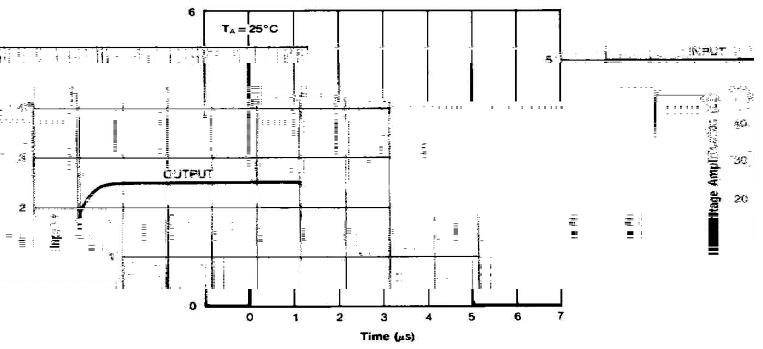
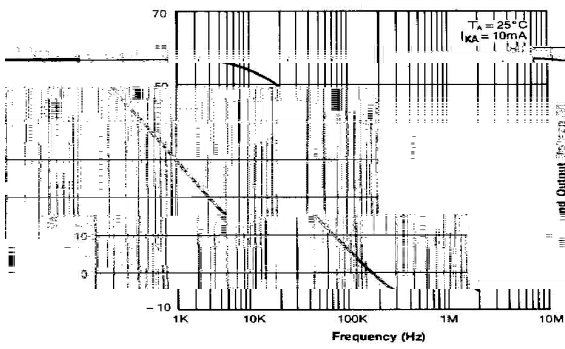
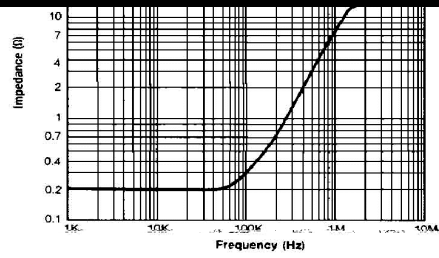
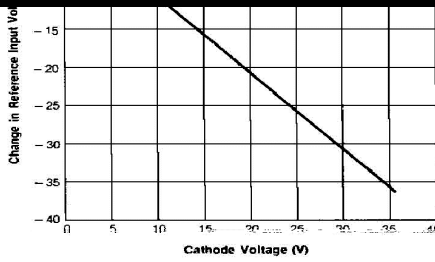
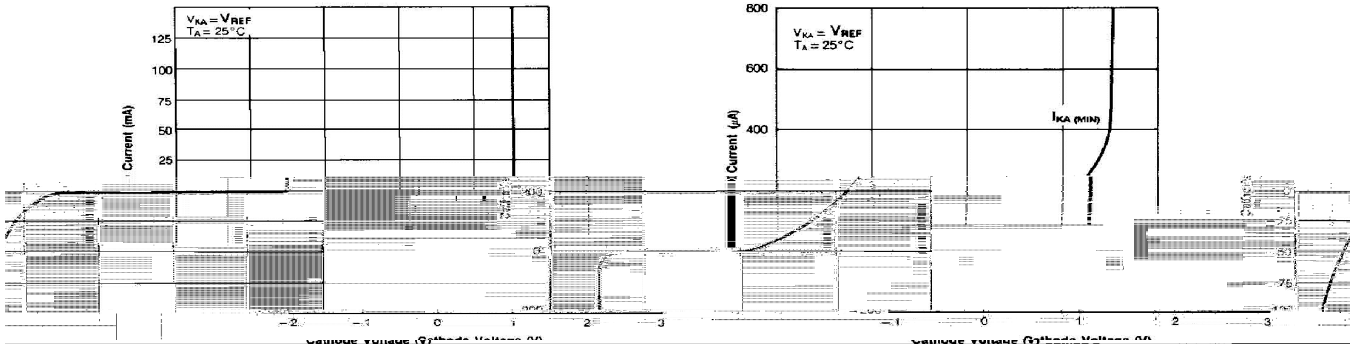
/ Absolute Maximum Ratings($T_a=25$)

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	160	
Storage Temperature Range	T_{stg}	-65 150	

/ Electrical Characteristics($T_a=25$)

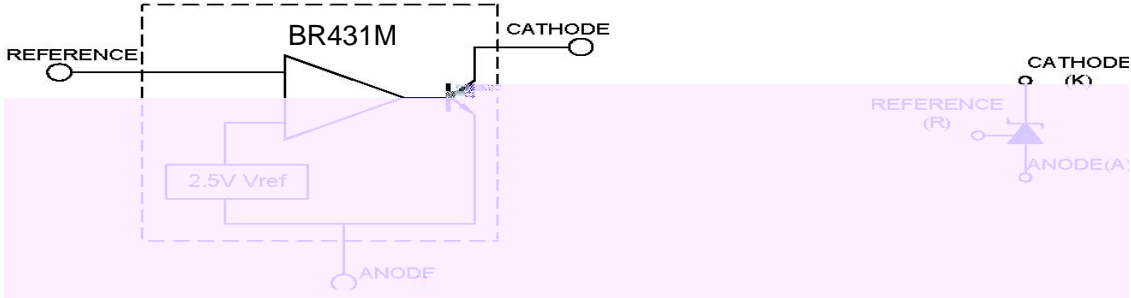
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reference Input voltage	V_{REF}	$V_{KA}=V_{REF}$ $I_K=10mA(A=0.4\%)$	2.490	2.500	2.510	V
		$V_{KA}=V_{REF}$ $I_K=10mA(B=0.8\%)$	2.480	2.500	2.520	V
Deviation of Reference Input Voltage Over-Temperature	V_{REF}/T	$V_{KA}=V_{REF}$ $I_K=10mA$ $T_A=-25$ 85		4.5	17	mV
Ratio of Change in Reference Input Voltage to the Change in Cathode Voltage	V_{REF}/V_{KA}	$I_K=10mA$ $V_{KA}=10V$ to V_{REF}		-1	-2.7	mV/V
		$I_K=10mA$ $V_{KA}=36V$ to 10V		-0.45	-2.0	mV/V
Reference Input current	I_{REF}	$I_K=10mA$ $R_1=10$ $R_2=open$		1.0	4.0	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	$I_{K(min)}$	$V_{KA}=V_{REF}$		0.4	1	mA
Off-state cathode current	$I_{K(off)}$	$V_{KA}=36V$ $V_{REF}=0V$		0.05	1.0	A
Dynamic impedance	$ Z_{KA} $	$V_{KA}=V_{REF}$ $I_K=1mA$ to 100mA f 1.0KHz		0.15	0.5	

/ Electrical Characteristic Curve

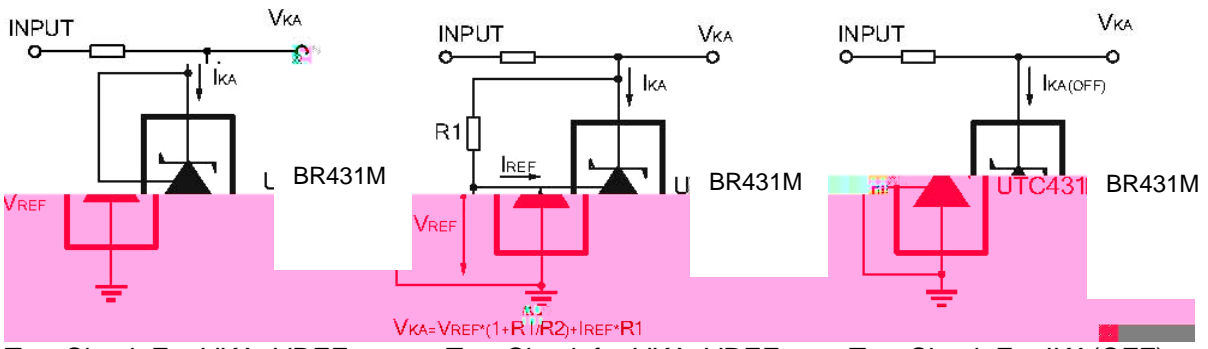


& Test circuits&Typical Application

BLOCK DIAGRAM:



TEST CIRCUITS:

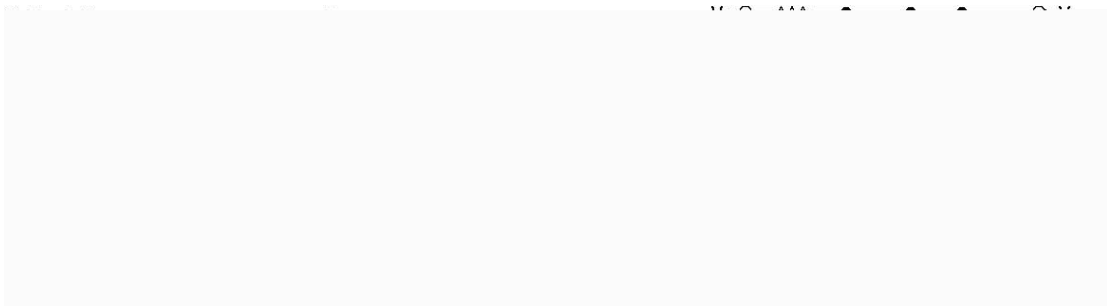


Test Circuit For $V_{KA}=V_{REF}$

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

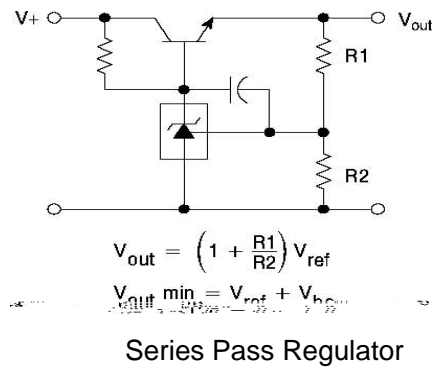
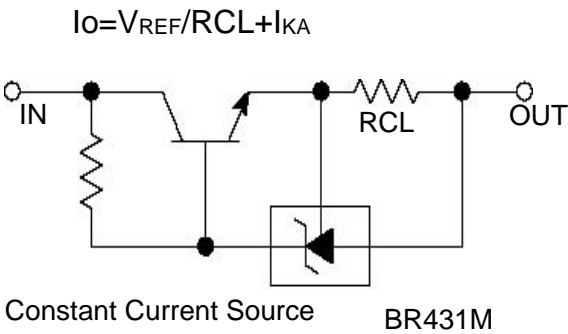
Test Circuit For $I_{KA}(OFF)$

TYPICAL APPLICATION:



Shutdown Regulator

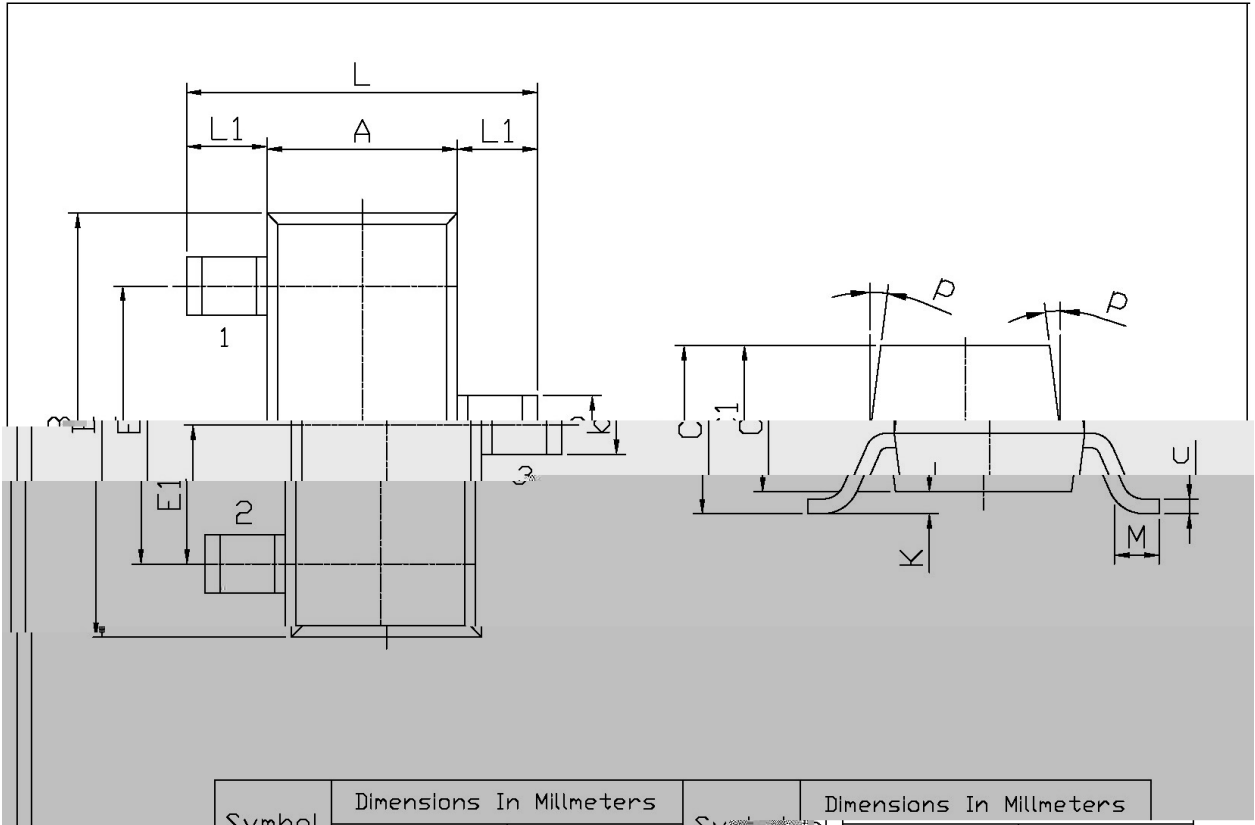
Higher-current Shunt



/ Package Dimensions

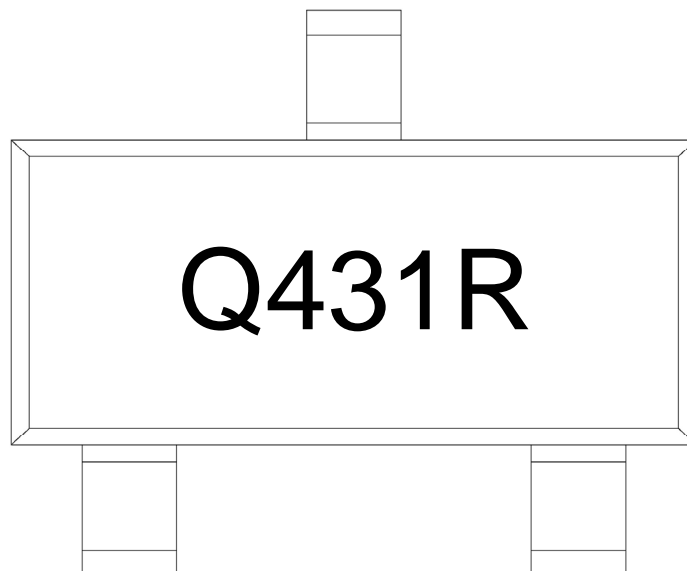
SOT-23

单位: mm



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	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	c	0.05	0.20
B	2.70	3.10	U	0	0.90
E	1.70	2.10	M	0.20MIN	
E1	0.85	1.05	P	7°	
e	0.35	0.55			

/ Marking Instructions



Q

431

R: BR431M R K

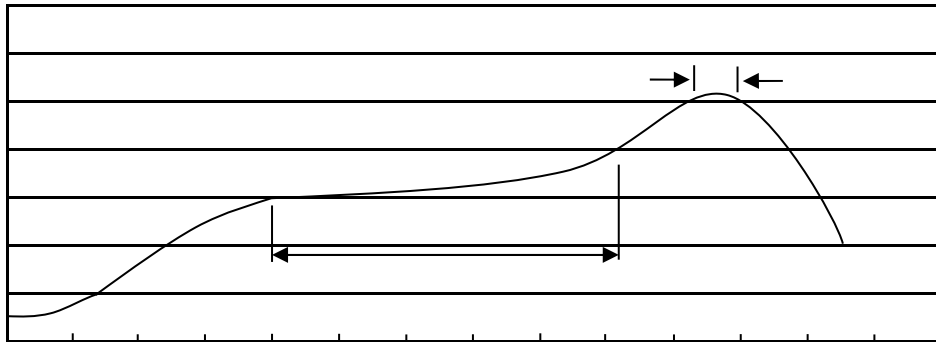
Note:

Q: Automobile halogen-free product Code

431: Product Type

R: It represents the opposite arrangement of R and K to BR431M

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



Note:

- 1 150 200 60 120sec; 1.Preheating:150~200 , Time:60~120sec.
- 2 255±5 5±0.5sec; 2.Peak Temp.:255±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	Units					Dimension		(unit mm ³)

/ Notices