

# MSKSEMI

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Product data sheet

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◆ **DEVICE DESCRIPTION**

The TL432/TL432R is a three-terminal adjustable shunt regulator highly accurate 1.25V bandgap reference with a 0.5% tolerance. The device offers thermal stability, wide operating current (50mA) and an extended temperature range of 0 to 105°C for operation in power supply applications. The TL432/TL432R offers a wide operating voltage range of up to 18V and is an excellent choice for voltage reference requirements in an isolated feedback circuit for 3.0V to 3.3V switching mode power supplies. The tight tolerance guarantees a lower design cost for the power supply manufacturer by virtually eliminating the need for an extra power supply manufacturing process of the power supply.

◆ **Features**

- Wide Programmable Output Voltage from 1.25V to 18V.
- Low Dynamic Output Resistance: 0.05Ω Typical.
- High Sink Current Capacity from 55uA-100mA.
- Low Equivalent Full-Range Temperature Coefficient : 20PPM/°C Typical.
- Wide Operating Range of -40 to 125°C.



◆ **Absolute Maximum Ratings (Ta=25°C)**

Symbol	Parameter	Value	Unit
V <sub>KA</sub>	Cathode Voltage	18	V
I <sub>KA</sub>	Cathode Current Range (Continuous)	100	mA
I <sub>ref</sub>	Reference Input Current Range	6	μA
P <sub>D</sub>	Power Dissipation	350	mW
R <sub>θJA</sub>	Thermal Resistance From Junction To Ambient	357	°C/W
T <sub>J</sub> , T <sub>stg</sub>	Operation Junction And Storage Temperature Range	-40~+125	°C

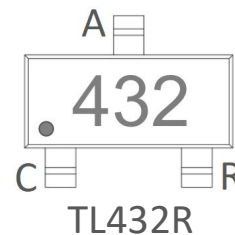
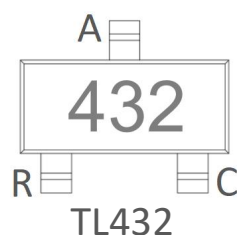
◆ **Electrical Characteristics (Ta=25°C unless otherwise specified)**

Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
V <sub>ref</sub>	Reference input voltage	V <sub>KA</sub> =V <sub>REF</sub> , I <sub>KA</sub> =10mA	1.225		1.275	V
ΔV <sub>ref</sub> /ΔT	Deviation of reference input voltage over temperature (note)	V <sub>KA</sub> =V <sub>REF</sub> , I <sub>KA</sub> =10mA, T <sub>MIN</sub> ≤Ta≤T <sub>MAX</sub>		4.5	16	mV
ΔV <sub>ref</sub> /ΔV <sub>KA</sub>	Ratio of change in reference input voltage to the change in cathode voltage	I <sub>KA</sub> =10mA, ΔV <sub>KA</sub> = 1.25V~18V			2.4	mV/V
I <sub>ref</sub>	Reference input current	I <sub>KA</sub> =10mA, R1=10KΩ, R2=∞			0.5	μA
ΔI <sub>ref</sub> /ΔT	Deviation of reference input current over full temperature range	I <sub>KA</sub> =10mA, R1=10KΩ, R2=∞, T <sub>A</sub> =0 to 70°C			0.6	μA
I <sub>KA(min)</sub>	Minimum cathode current for regulation	V <sub>KA</sub> =V <sub>REF</sub>			0.1	mA
I <sub>KA(OFF)</sub>	Off-state cathode current	V <sub>KA</sub> =36V, V <sub>REF</sub> =0			0.5	μA
Z <sub>KA</sub>	Dynamic impedance	V <sub>KA</sub> =V <sub>REF</sub> , I <sub>KA</sub> =1~100mA, f≤1.0KHz			0.5	Ω

◆ **Classifications of V<sub>ref</sub>**

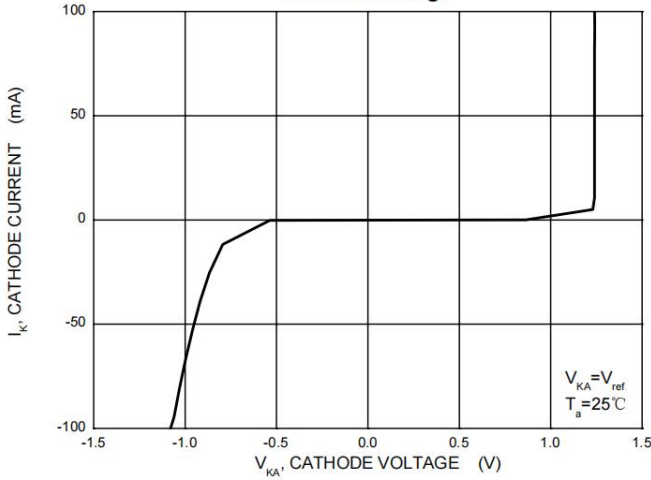
Rank	±0.5%	±1%
Range	1.244~1.256	1.238~1.262

◆ **Marking**

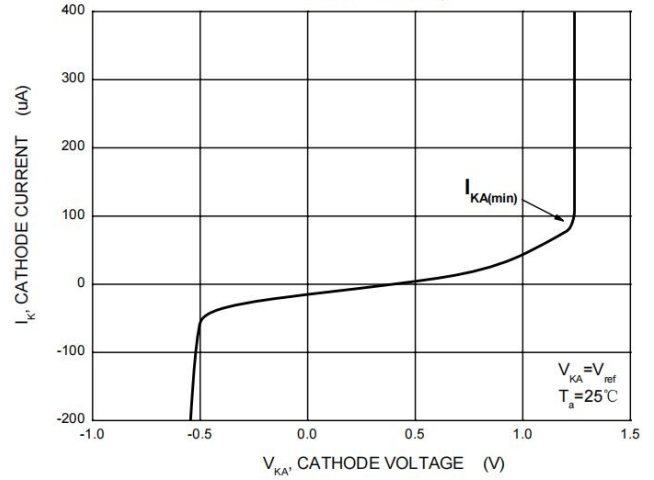


◆ Typical Characteristics

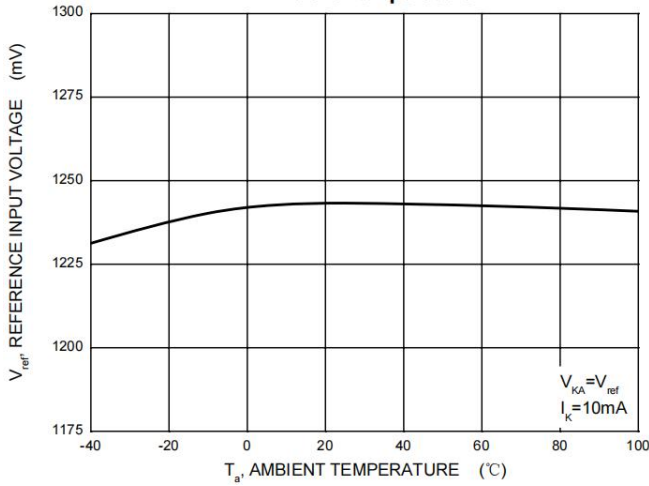
Cathode Current versus Cathode Voltage



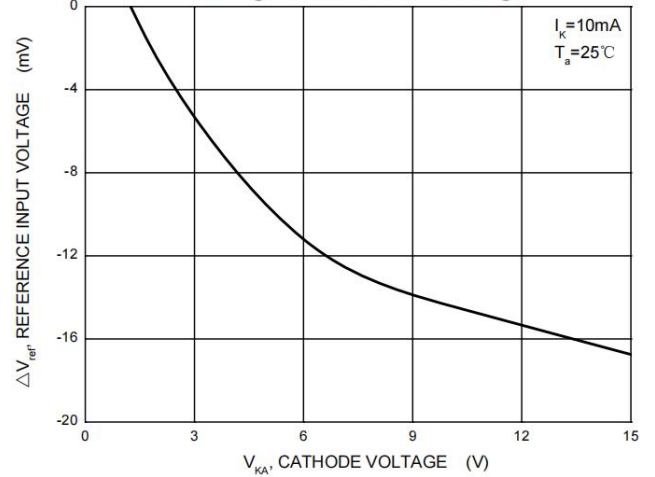
Cathode Current versus Cathode Voltage



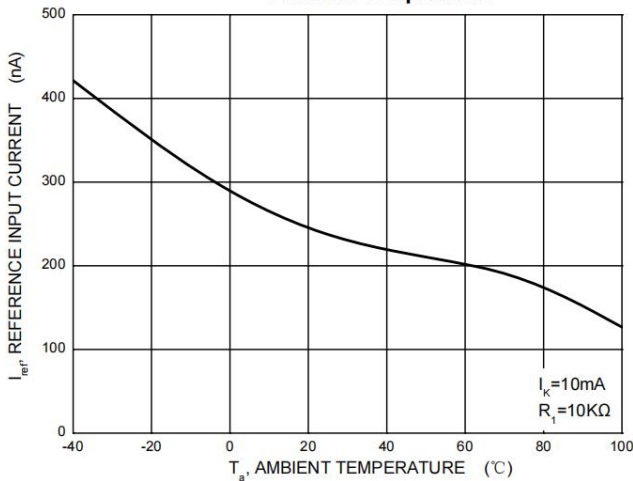
Reference Input Voltage versus Ambient Temperature



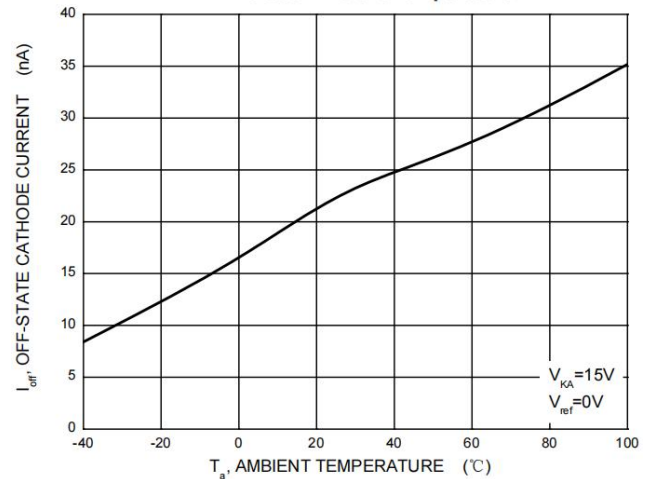
Change in Reference Input Voltage versus Cathode Voltage



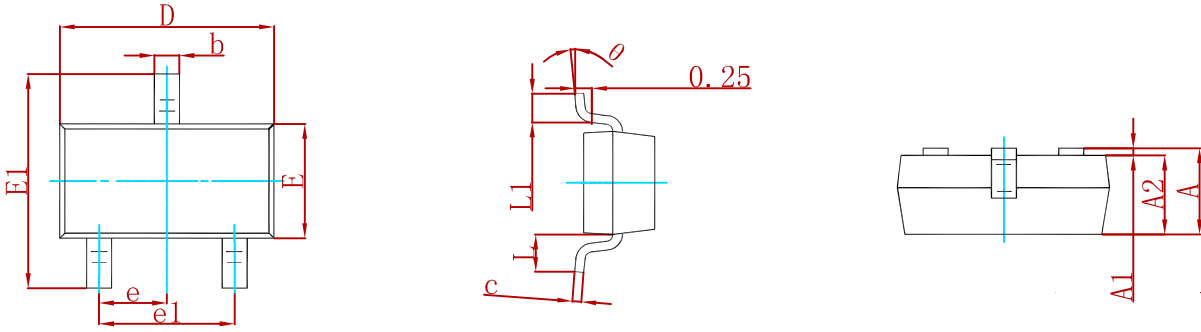
Reference Input Current versus Ambient Temperature



Off-State Cathode Current versus Ambient Temperature

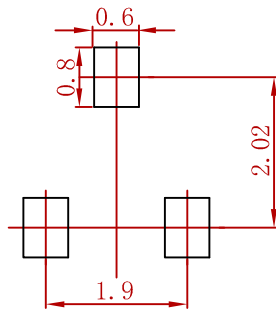


**PACKAGE MECHANICAL DATA**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

**Suggested Pad Layout**



- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance: ± 0.05mm.
  3. The pad layout is for reference purposes only.

**REEL SPECIFICATION**

P/N	PKG	QTY
TL432/TL432R	SOT-23	3000

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