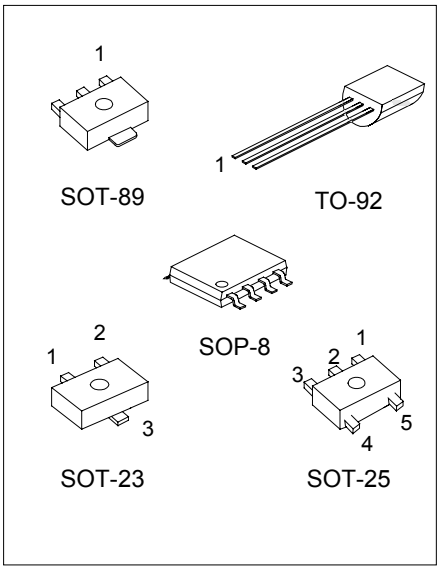
1.25V PRECISION ADJUSTABLE SHUNT REFERENCE / AMPLIFIER

DESCRIPTION

The UTC TL432 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 UTC TL432 offers a wide operating voltage range of up to 12V 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 quarantees 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.

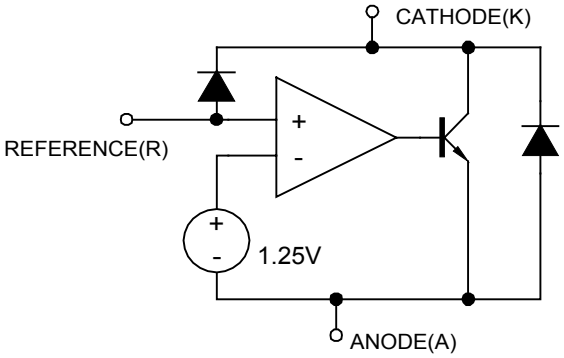


SOP-8 1: Cathode; 2,3,6,7: Anode
8: Ref. ; 4,5: N.C.
TO-92 1: Ref. ; 2: Anode ; 3: Cathode
SOT-89 1: Ref. ; 2: Anode ; 3: Cathode
SOT-23 1: Cathode; 2: Ref. ; 3: Anode
SOT-25 1,2: NC; 3: Cathode; 4: Ref.; 5: Anode

FEATURES

*Temperature-Compensated:50ppm/°C
*Internal amplifier with 50mA capability
*Nominal temperature range extended to 105°C
*Low frequency dynamic output impedance:<150mohm
*Low Output Noise

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Cathode-Anode Reverse Breakdown	V_{KA}	12	V
Anode-Cathode Forward Current	I_{AK}	1	A
Operating Cathode Current	I_{KA}	50	mA
Reference Input Current	I_{REF}	1	mA
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-65 ~ +150	°C
Lead Temperature, Soldering 10 Seconds	T_L	300	°C

Note: Stresses greater than those listed under ABSOLUTE MAXIMUM RATINGS may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated-in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Cathode Voltage	V_{KA}	V_{REF}		12	V
Cathode Current	I_K	5	10		mA

TYPICAL THERMAL RESISTANCES

PACKAGE	θ_{JA}	θ_{JC}	TYPICAL DERATING
TO-92	160°C/W	80°C/W	6.3mW/°C
SOP-8	-175°C/W	-45°C/W	5.7mW/°C
SOT-89	110°C/W	8°C/W	9.1mW/°C
SOT-23 / SOT-25	575°C/W	150°C/W	1.7mW/°C

ELECTRICAL CHARACTERISTICS

Electrical characteristics are guaranteed over full junction temperature range (0~105°C). Ambient temperature must be derated based on power dissipation and package thermal characteristics. The conditions are $V_{KA}=V_{REF}$ and I_K=10mA unless otherwise stated.

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{REF}	I_K=10mA,Tj=25°C, $V_K=V_{REF}$				V
TL432 1%			1.237	1.250	1.263	
TL432 2%			1.225	1.250	1.275	
Line Regulation	V_{REF}	V_K=1.25 to 15V		10	15	mV
Load Regulation	V_{REF}	I_K=5 to 50mA		6	15	mV
Temperature Deviation	V_{REF}	0<Tj<105°C		2	6	mV
Reference Input Current	I_{REF}			3	6	μA
Reference Input Current Temperature Coefficient	I_{REF}	0<Tj<105°C		0.3	0.6	μA
Minimum Cathode Current for Regulation	$I_{K(MIN)}$			4	5	mA
Off State Leakage	$I_{K(MIN)}$	V_{REF}=0V,V_{KA}=15V			500	nA

NOTE: Temperature deviation is defined as the maximum deviation of the reference over the given temperature range and does not imply an incremental deviation at any given temperature.