



TL432

Preliminary

LINEAR INTEGRATED CIRCUIT

**1.25V PRECISION
ADJUSTABLE SHUNT
REFERENCE REGULATORS**

■ DESCRIPTION

The UTC **TL432** is a three-terminal adjustable shunt regulator highly accurate 1.25V band gap reference with 0.5%, 1% 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 ~ 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

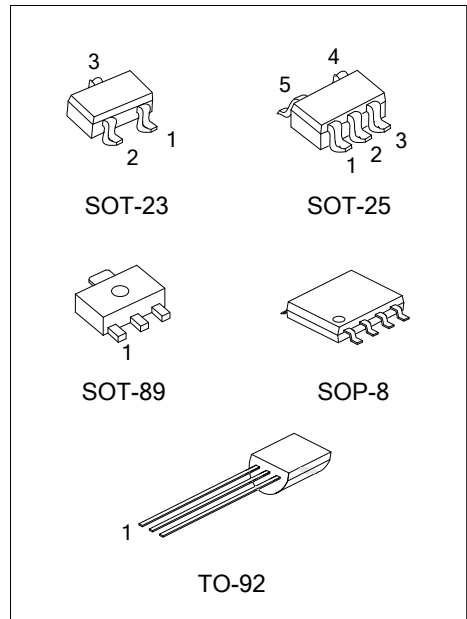
- *Temperature-Compensated:50ppm/°C
- *Internal amplifier with 50mA capability
- *Nominal temperature range extended to 105°C
- *Low frequency dynamic output impedance:<150Ω
- *Low output noise

■ ORDERING INFORMATION

Ordering Number			Pin Assignment								Package	Packing
Normal	Lead Free	Halogen Free	1	2	3	4	5	6	7	8		
TL432-AE3-R	TL432L-AE3-R	TL432G-AE3-R	K	R	A	-	-	-	-	-	SOT-23	Tape Reel
TL432-AB3-R	TL432L-AB3-R	TL432G-AB3-R	R	A	K	-	-	-	-	-	SOT-89	Tape Reel
TL432-AF5-R	TL432L-AF5-R	TL432G-AF5-R	X	X	K	R	A	-	-	-	SOT-25	Tape Reel
TL432-T92-B	TL432L-T92-B	TL432G-T92-B	R	A	K	-	-	-	-	-	TO-92	Tape Box
TL432-T92-K	TL432L-T92-K	TL432G-T92-K	R	A	K	-	-	-	-	-	TO-92	Bulk
TL432-S08-R	TL432L-S08-R	TL432G-S08-R	K	A	A	X	X	A	A	R	SOP-8	Tape Reel

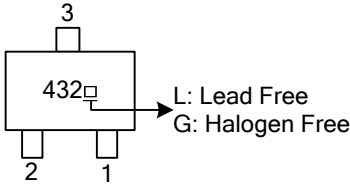
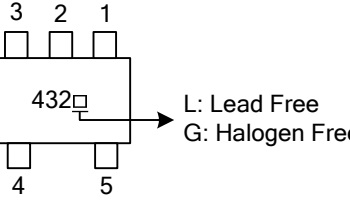
Note: Pin Code: C: Cathode A: Anode R: Reference X: No Connection

<p>TL432L-AE3-R</p> <p>(1)Packing Type (2)Package Type (3)Lead Plating</p>	<p>(1) B: Tape Box, K: Bulk, R: Tape Reel (2) AE3: SOT-23, AB3: SOT-89, AF5: SOT-25, T92: TO-92 S08:SOP-8, (3) G: Halogen Free, L: Lead Free Plating, Blank: Pb/Sn</p>
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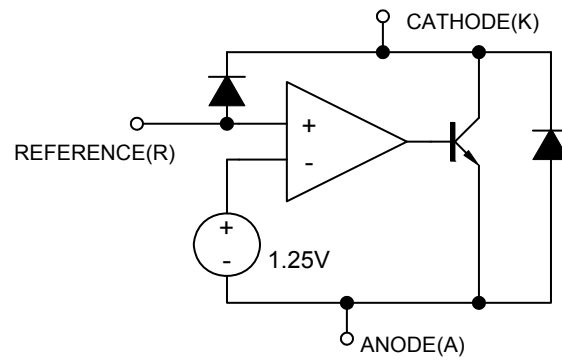


Lead-free: TL432L
Halogen-free: TL432G

■ MARKING INFORMATION

PACKAGE	MARKING
SOT-23	 <p>The diagram shows a SOT-23 package with three pins labeled 1, 2, and 3. Pin 1 is at the bottom right, pin 2 is at the bottom left, and pin 3 is at the top. The marking '432□' is located on the top surface of the package. An arrow points from the square symbol in the marking to the text 'L: Lead Free' and 'G: Halogen Free'.</p>
SOT-25	 <p>The diagram shows a SOT-25 package with five pins labeled 1, 2, 3, 4, and 5. Pins 1, 2, and 3 are on the top edge, and pins 4 and 5 are on the bottom edge. The marking '432□' is located on the top surface of the package. An arrow points from the square symbol in the marking to the text 'L: Lead Free' and 'G: Halogen Free'.</p>

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Cathode-Anode Reverse Breakdown	V_{KA}	15	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	T_J	+125	°C
Operating Temperature	T_{OPR}	-20 ~ +85	°C
Storage Temperature	T_{STG}	-40 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Cathode Voltage	V_{KA}	V_{REF}		15	V
Cathode Current	I_K	5	10		mA

■ THERMAL DATA

PARAMETER	PACKAGE	SYMBOL	RATING	UNIT
Junction to Ambient	SC-59/SOT-25	θ_{JA}	350	°C/W
	TO-92		100	°C/W
	SOP-8		150	°C/W
	SOT-89		220	°C/W

■ ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$, $V_{KA}=V_{REF}$, $I_K=10\text{mA}$, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Refer Input Voltage	V_{REF}	$I_K=10\text{mA}$, $V_K=V_{REF}$	0.5%	1.243	1.250	1.256	V
			1%	1.237	1.250	1.263	V
			2%	1.225	1.250	1.275	V
Line Regulation	ΔV_{REF}	$V_K=1.25 \sim 15\text{V}$		10	26	mV	
Load Regulation	ΔV_{REF}	$I_K=5 \sim 50\text{mA}$		6	15	mV	
Temperature Deviation	ΔV_{REF}	$0 < T_J < 105^\circ\text{C}$		2	6	mV	
Reference Input Current	I_{REF}			3	6	μA	
Reference Input Current Temperature Coefficient	ΔI_{REF}	$0 < T_J < 105^\circ\text{C}$		0.3	0.6	μA	
Minimum Cathode Current for Regulation	$I_{K(MIN)}$			0.6	1	mA	
Off State Leakage	$I_{KA(OFF)}$	$V_{REF}=0\text{V}$, $V_{KA}=15\text{V}$			500	nA	

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