



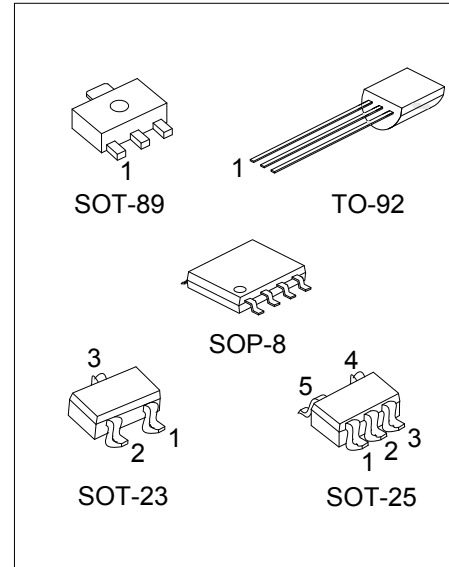
## TL432C

## LINEAR INTEGRATED CIRCUIT

### 1.24V PRECISION ADJUSTABLE SHUNT REFERENCE REGULATORS

#### DESCRIPTION

The UTC **TL432C** is a three-terminal adjustable shunt regulator highly accurate 1.24V bandgap reference with 1%, 2% 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 **TL432C** 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.



Lead-free: TL432CL  
Halogen-free: TL432CG

#### FEATURES

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

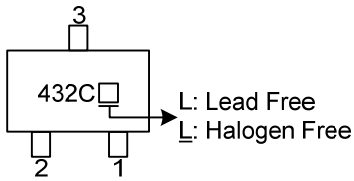
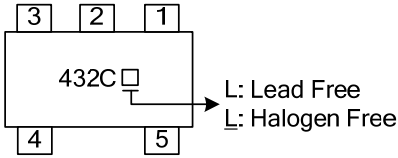
#### ORDERING INFORMATION

Ordering Number			Pin Assignment								Package	Packing
Normal	Lead Free	Halogen Free	1	2	3	4	5	6	7	8		
TL432C-AB3-R	TL432CL-AB3-R	TL432CG-AB3-R	R	A	K	-	-	-	-	-	SOT-89	Tape Reel
TL432C-AE3-R	TL432CL-AE3-R	TL432CG-AE3-R	K	R	A	-	-	-	-	-	SOT-23	Tape Reel
TL432C-AF5-R	TL432CL-AF5-R	TL432CG-AF5-R	X	X	K	R	A	-	-	-	SOT-25	Tape Reel
TL432C-T92-B	TL432CL-T92-B	TL432CG-T92-B	R	A	K	-	-	-	-	-	TO-92	Tape Box
TL432C-T92-K	TL432CL-T92-K	TL432CG-T92-K	R	A	K	-	-	-	-	-	TO-92	Bulk
TL432C-S08-R	TL432CL-S08-R	TL432CG-S08-R	K	A	A	X	X	A	A	R	SOP-8	Tape Reel

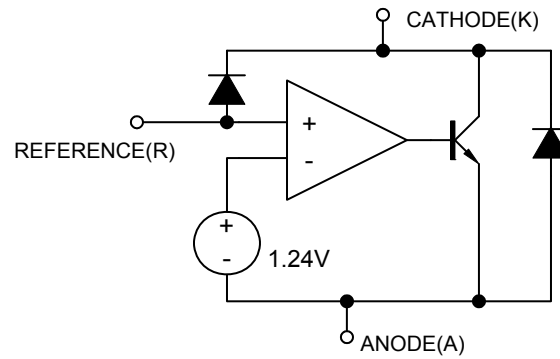
Note: Pin Code: C: Cathode A: Anode R: Reference X: No Connection

<p>TL432CL-AB3-R</p>	<p>(1) B: Tape Box, K: Bulk, R: Tape Reel</p> <p>(2) AB3: SOT-89, AE3: SOT-23, AF3: SOT-25, S08: SOP-8, T92: TO-92</p> <p>(3) G: Halogen Free, L: Lead Free, Blank: Pb/Sn</p>
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### MARKING INFORMATION

PACKAGE	MARKING
SOT-23	 <p>432C □</p> <p>L: Lead Free L: Halogen Free</p>
SOT-25	 <p>432C □</p> <p>L: Lead Free L: Halogen Free</p>

### BLOCK DIAGRAM



### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	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	$T_{OPR}$	0 ~ +70	°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

### ■ TYPICAL THERMAL DATA

PARAMETER	SYMBOL	RATING	UNIT
Thermal Resistance Junction to Ambient	TO-92	100	°C/W
	SOP-8	150	
	SOT-89	220	
	SOT-23	350	
	SOT-25	350	

### ■ 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
Reference Input Voltage	$V_{REF}$	$I_K=10\text{mA}$ , $V_K=V_{REF}$	1.228	1.240	1.252	V
			1.215	1.240	1.265	V
Line Regulation	$\Delta V_{REF}$	$V_K=1.24 \sim 15\text{V}$		10	26	mV
Load Regulation	$\Delta V_{REF}$	$I_K=5 \sim 50\text{mA}$		6	15	mV
Temperature Deviation	$\Delta V_{REF}$	$0 < T_J < 105^\circ\text{C}$		2	6	mV
Reference Input Current	$I_{REF}$			3	6	$\mu\text{A}$
Reference Input Current Temperature Coefficient	$\Delta I_{REF}$	$0 < T_J < 105^\circ\text{C}$		0.3	0.6	$\mu\text{A}$
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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