

SOT-23 Encapsulate Adjustable Reference Source

Device Description

The TL432 is a three-terminal Shunt Voltage Reference providing a highly accurate 1.24V. The TL432 thermal stability and wide operating current, makes it suitable for all variety of applications that are looking for a low cost solution with high performance.

FEATURES

- Low dynamic output impedance
- The effective temperature compensation in the working range of full temperature
- Low output noise voltage
- Fast on-state response
- Sink current capability of 0.1mA to 100mA

Applications

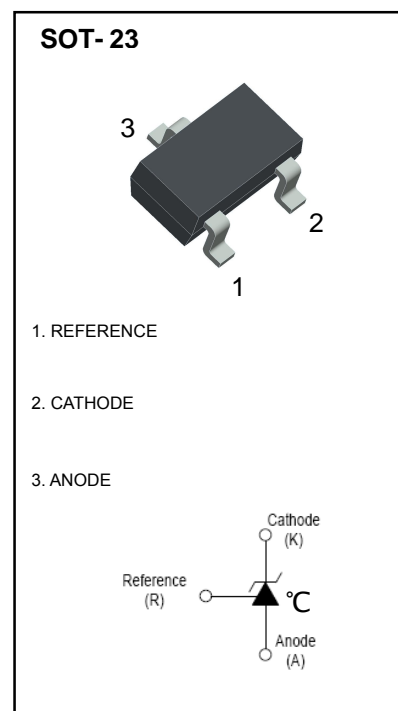
- Shunt Regulator
- High-Current Shunt Regulator
- Precision Current Limiter

Marking

- 432

Limiting Values (Absolute Maximum Rating)

Parameter	Symbol	Value	Units
Cathode Voltage	V_{KA}	18	V
Cathode Current Range (continuous)	I_{KA}	100	mA
Reference Input Current Range	I_{ref}	6	μ A
Power Dissipation	P_D	350	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	$^{\circ}$ C/W
Operating Temperature	T_{opr}	0~+70	$^{\circ}$ C
Junction Temperature	T_J	150	$^{\circ}$ C
Storage Temperature	T_{stg}	-65~+150	$^{\circ}$ C



Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reference input voltage (Fig 1)	V_{ref}	$V_{\text{KA}}=V_{\text{REF}}, I_{\text{KA}}=10\text{mA}$	1.2214		1.2586	V
Deviation of reference voltage over full temperature range (Fig 1)	$\Delta V_{\text{ref(DEV)}}$	$V_{\text{KA}}=V_{\text{REF}}, I_{\text{KA}}=10\text{mA}$ $0^\circ\text{C}\leq T_a\leq 70^\circ\text{C}$			16	mV
Ratio of change in reference input voltage to the change in cathode voltage (Fig 2)	$\Delta V_{\text{ref}}/\Delta V_{\text{KA}}$	$I_{\text{KA}}=10\text{mA}$, $\Delta V_{\text{KA}}=1.25\text{V}\sim 15\text{V}$			2.4	mV/V
Deviation of reference input current over full temperature range (Fig 2)	$\Delta I_{\text{ref}}/\Delta T$	$I_{\text{KA}}=10\text{mA}$, $R_1=10\text{k}\Omega$, $R_2=\infty$, $0^\circ\text{C}\leq T_a\leq 70^\circ\text{C}$			0.6	μA
Minimum cathode current for regulation (Fig 1)	$I_{\text{KA(min)}}$	$V_{\text{KA}}=V_{\text{REF}}$			0.1	mA
Off-state cathode current(Fig 3)	I_{off}	$V_{\text{KA}}=15\text{V}, V_{\text{REF}}=0$			0.5	μA
Dynamic impedance	Z_{KA}	$V_{\text{KA}}=V_{\text{REF}}, I_{\text{KA}}=0.1\sim 20\text{mA}$, $f\leq 1.0\text{kHz}$			0.5	Ω

CLASSIFICATION OF V_{ref}

Rank	1%	1.5%
Range	1.2276~1.2524	1.2214~1.2586

Figure 1. Test Circuit for $V_{\text{KA}} = V_{\text{ref}}$

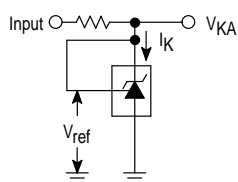


Figure 2. Test Circuit for $V_{\text{KA}} > V_{\text{ref}}$

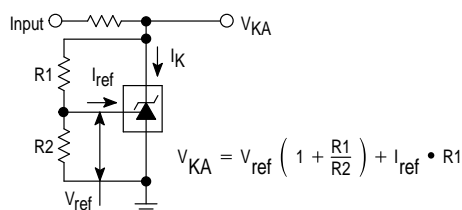
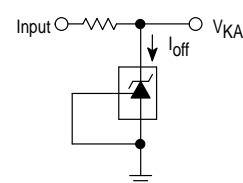
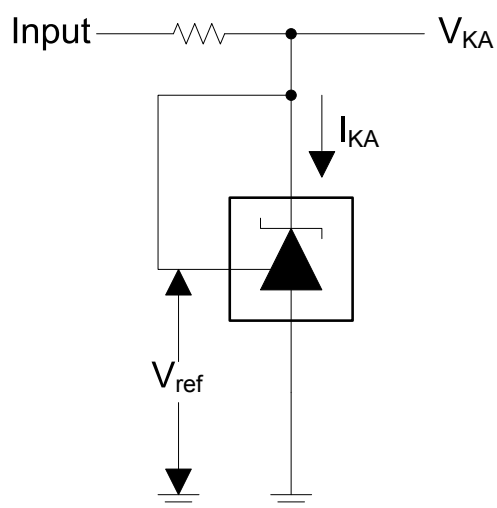
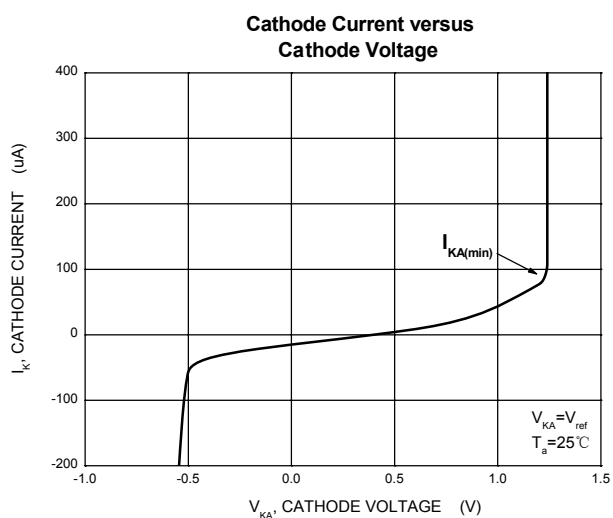
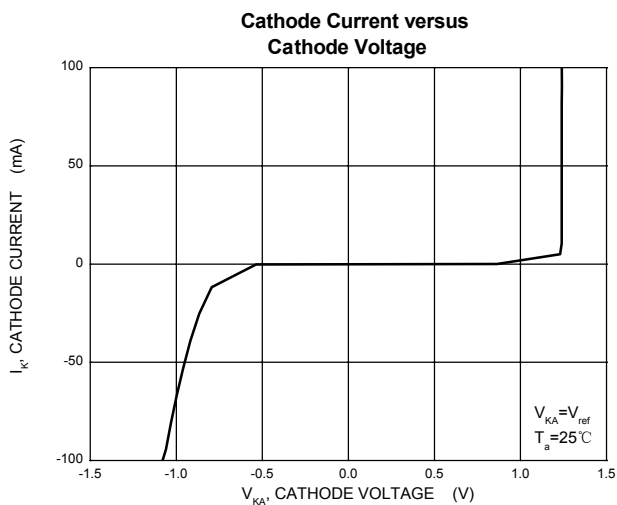


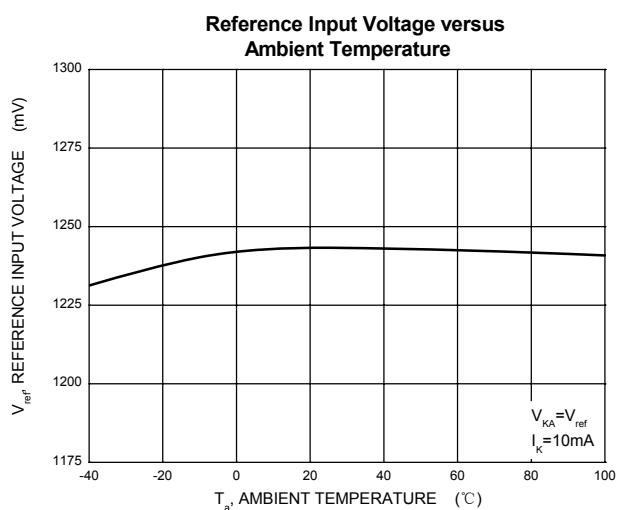
Figure 3. Test Circuit for I_{off}



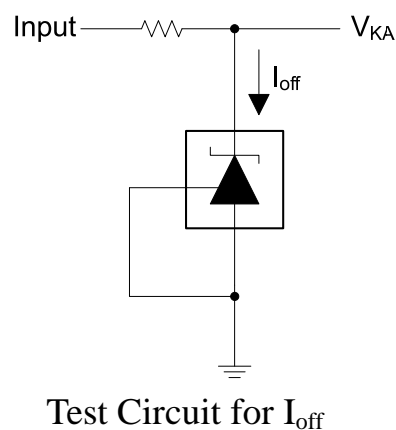
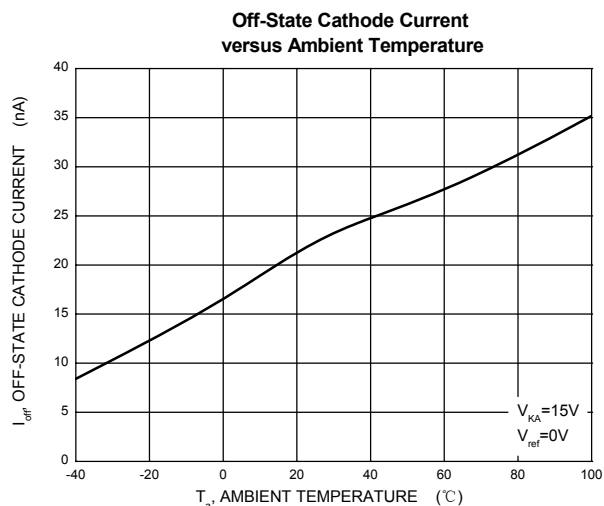
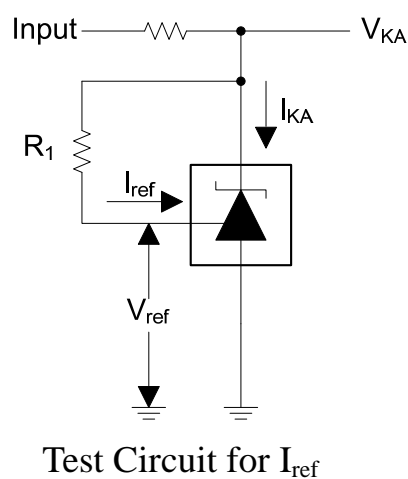
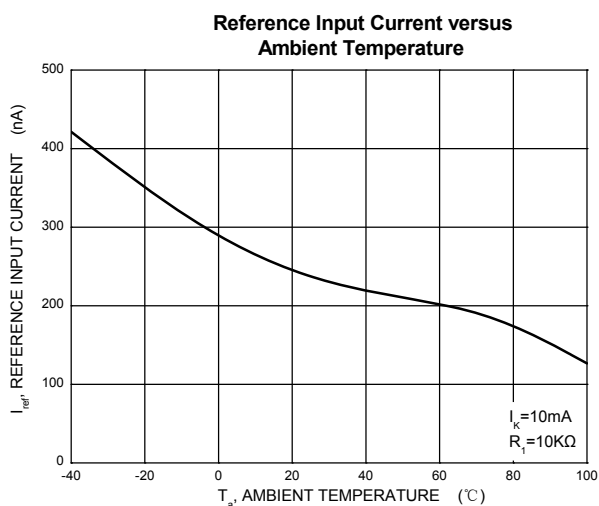
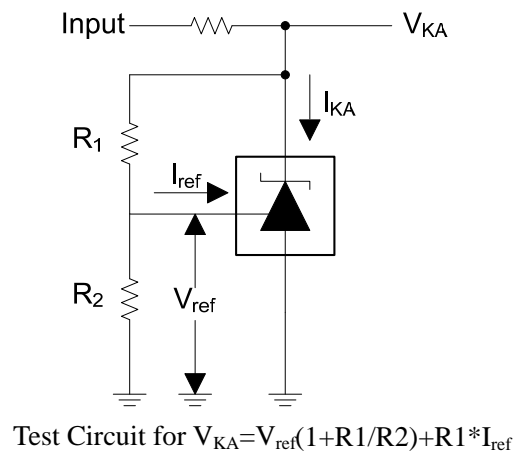
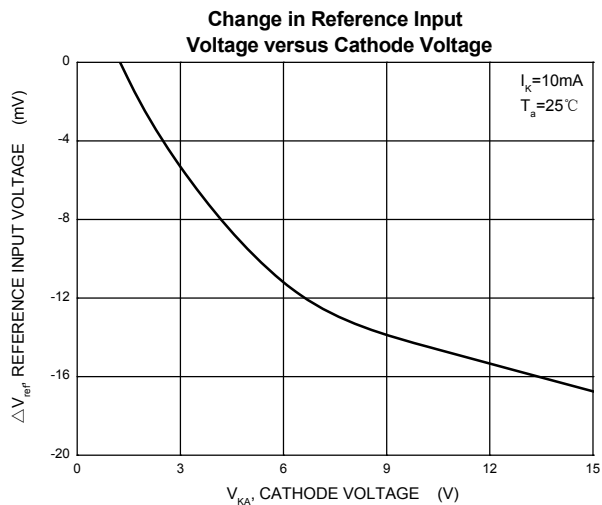
Typical Characteristics



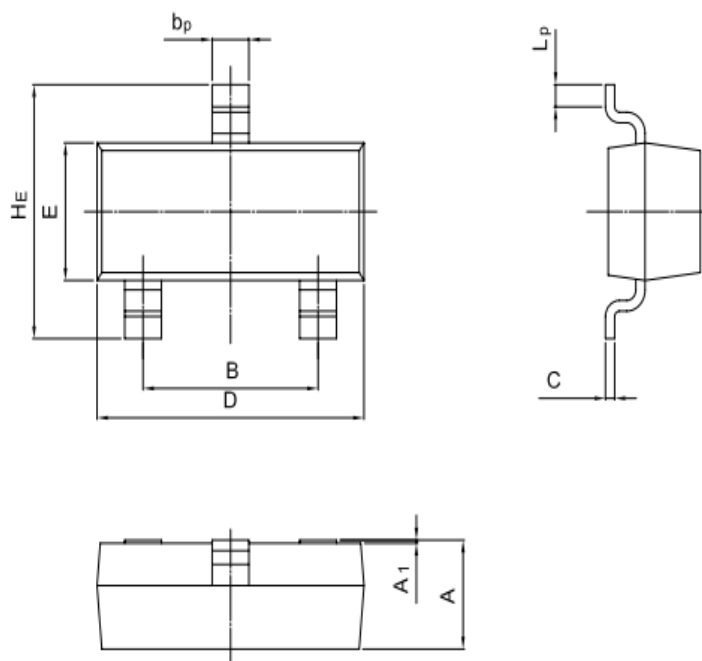
Test Circuit for $V_{KA} = V_{ref}$



Typical Characteristics

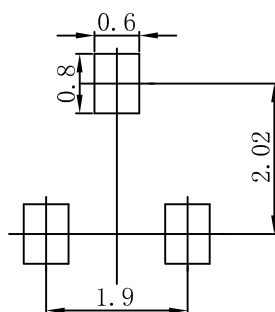


SOT-23 Package Outline Dimensions



UNIT	A	B	bp	C	D	E	HE	A ₁	L _p
mm	1.40 0.95	2.04 1.78	0.50 0.35	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20

SOT-23 Suggested Pad Layout



Note:

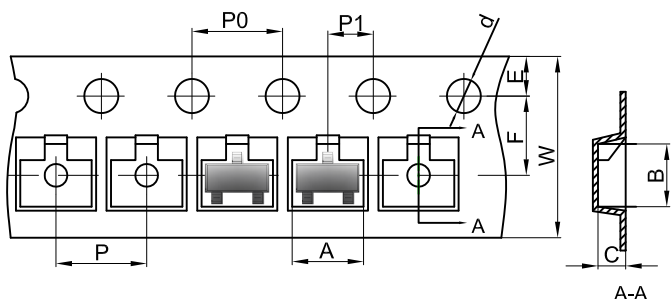
1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

NOTICE

JSHD reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. JSHD does not assume any liability arising out of the application or use of any product described herein.

Reel Taping Specifications For Surface Mount Devices-SOT-23

SOT-23 Embossed Carrier Tape

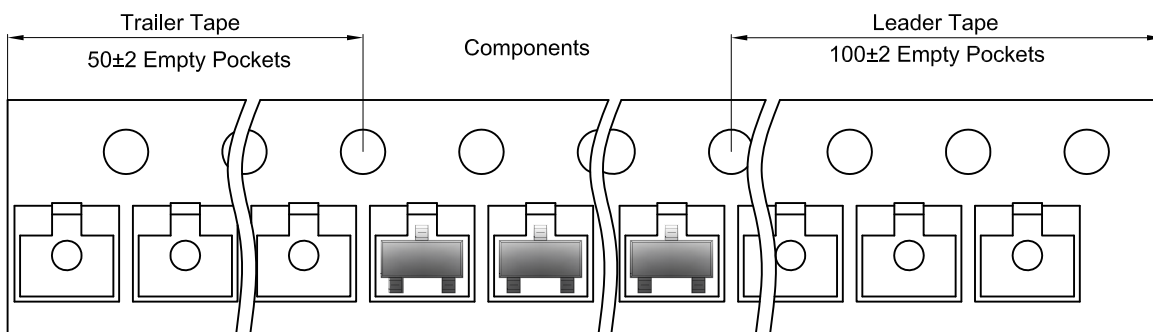


Packaging Description:

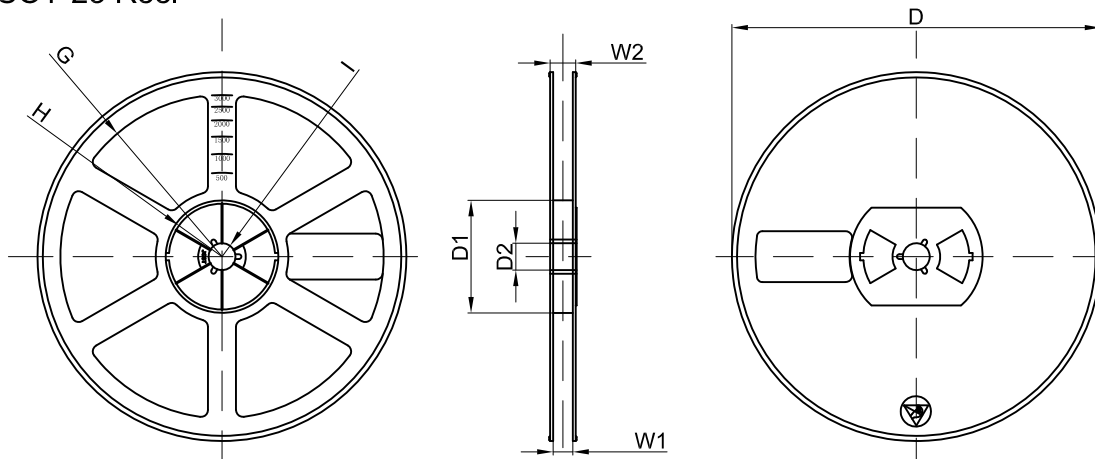
SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer



SOT-23 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	45,000 pcs	203×203×195	180,000 pcs	438×438×230	