

TL432 Adjustable Accurate Reference Source

DEVICE DESCRIPTION

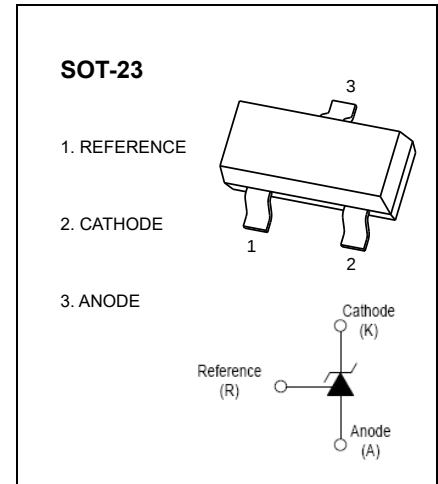
The TL432 is a three-terminal Shunt Voltage Reference providing a highly accurate 1.24V. The TL432 thermal stability and wide operating current, makes it suitable for all variety of applications that are looking for a low cost solution with high performance.

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

APPLICATION

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



ABSOLUTE MAXIMUM RATINGS (Operating temperature range applies unless otherwise specified)

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	μA
Power Dissipation	P_D	350	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	$^{\circ}C/W$
Operating Junction Temperature Range	T_J	-40~+125	$^{\circ}C$
Storage Temperature Range	T_{stg}	-65~+150	$^{\circ}C$

ELECTRICAL CHARACTERISTICS (T_a=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reference input voltage (Fig 1)	V _{ref}	V _{KA} =V _{REF} , I _{KA} =10mA	1.2214		1.2586	V
Deviation of reference voltage over full temperature range (Fig 1)	ΔV _{ref(DEV)}	V _{KA} =V _{REF} , I _{KA} =10mA 0°C≤T _a ≤70°C			16	mV
Ratio of change in reference input voltage to the change in cathode voltage (Fig 2)	ΔV _{ref} /ΔV _{KA}	I _{KA} =10mA, ΔV _{KA} =1.25V~15V			2.4	mV/V
Deviation of reference input current over full temperature range (Fig 2)	ΔI _{ref} /ΔT	I _{KA} =10mA, R ₁ =10kΩ, R ₂ =∞, 0°C≤T _a ≤70°C			0.6	μA
Minimum cathode current for regulation (Fig 1)	I _{KA(min)}	V _{KA} =V _{REF}			0.1	mA
Off-state cathode current(Fig 3)	I _{off}	V _{KA} =15V, V _{REF} =0			0.5	μA
Dynamic impedance	Z _{KA}	V _{KA} =V _{REF} , I _{KA} =0.1 ~20mA, f≤1.0kHz			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_{KA} = V_{ref}

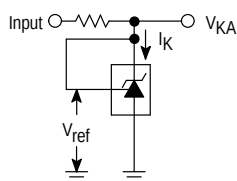


Figure 2. Test Circuit for V_{KA} > V_{ref}

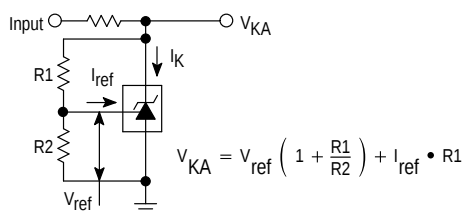
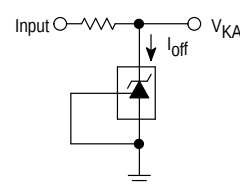
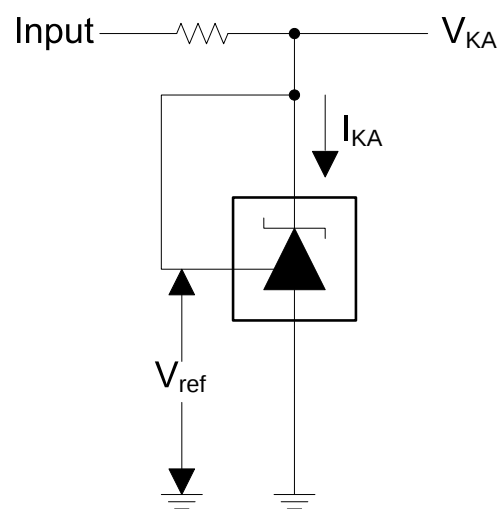
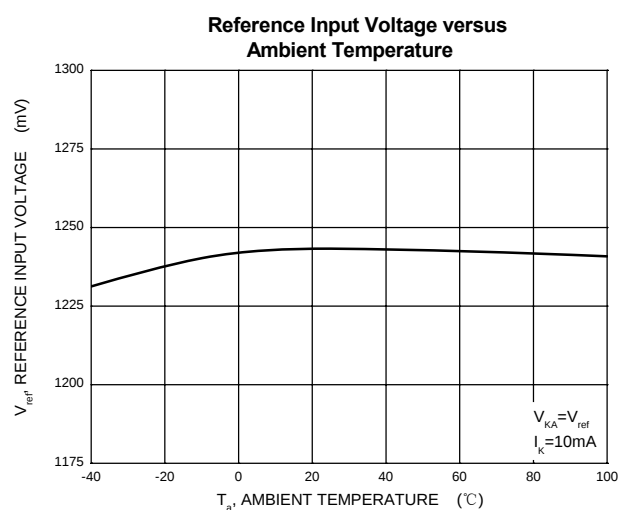
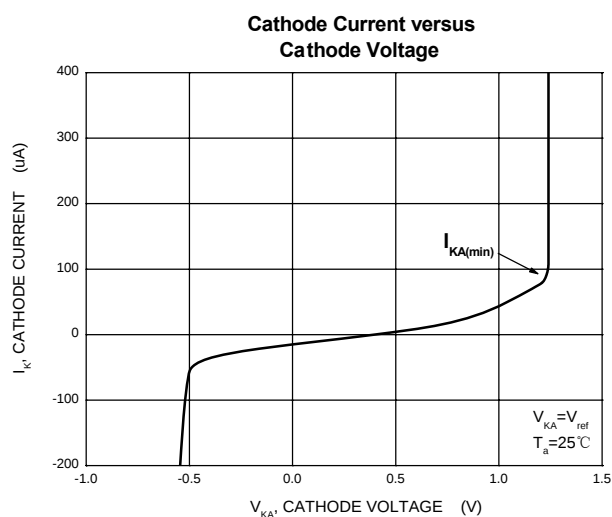
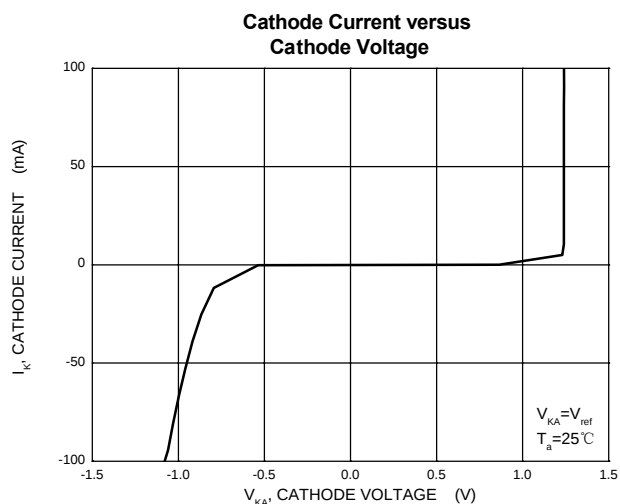


Figure 3. Test Circuit for I_{off}



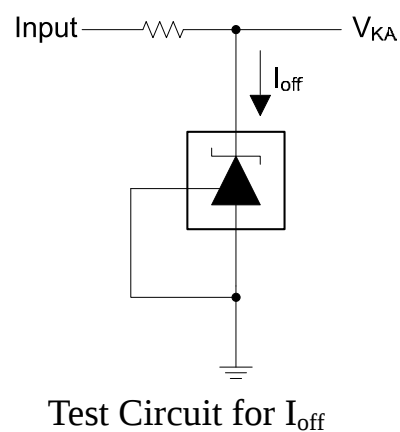
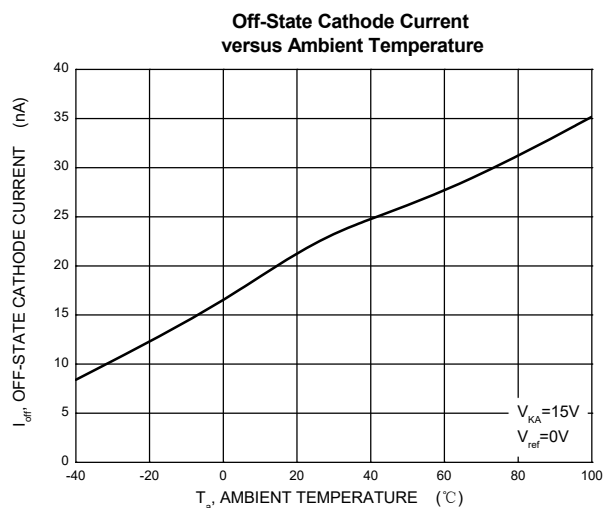
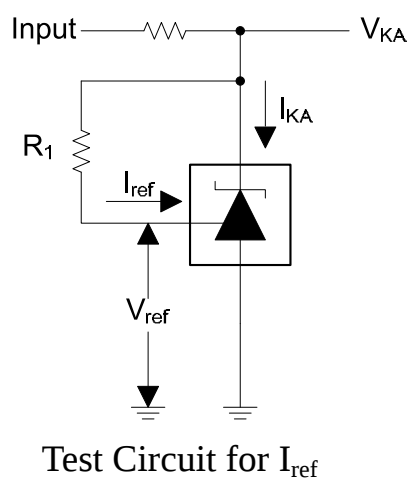
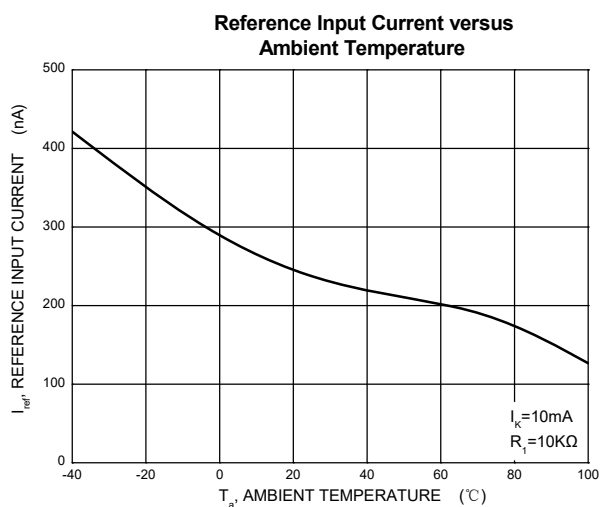
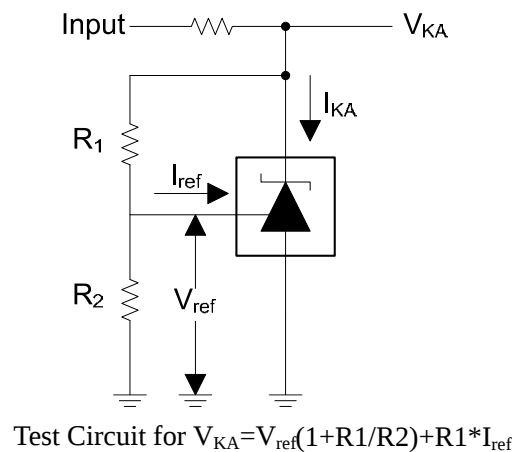
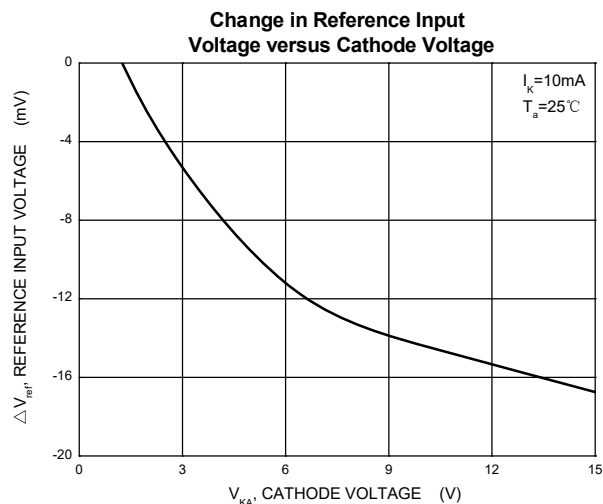
NOTE: It is strongly recommended to connect a capacitor(value more than 0.1μF) at the output pin to smooth the output. The capacitor should be placed as close as possible to the output pin, with the shortest path to GND.

Typical Characteristics

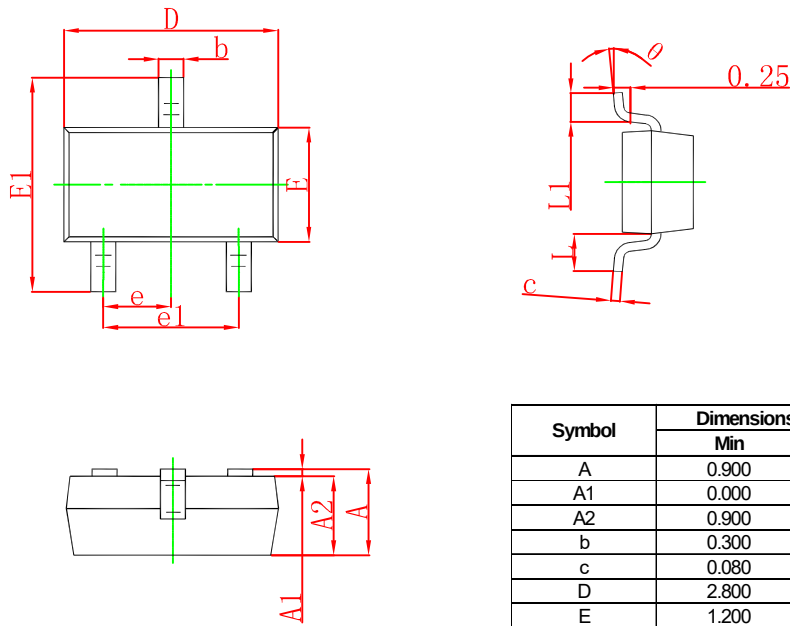


Test Circuit for $V_{KA} = V_{ref}$

Typical Characteristics

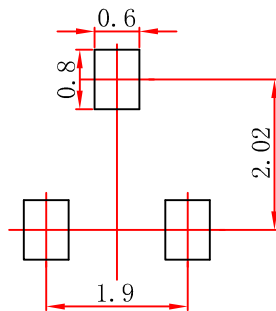


SOT-23 Package Outline Dimensions



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°

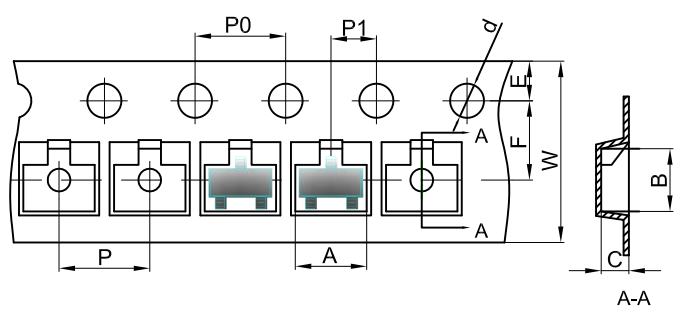
SOT-23 Suggested Pad Layout



Note:

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

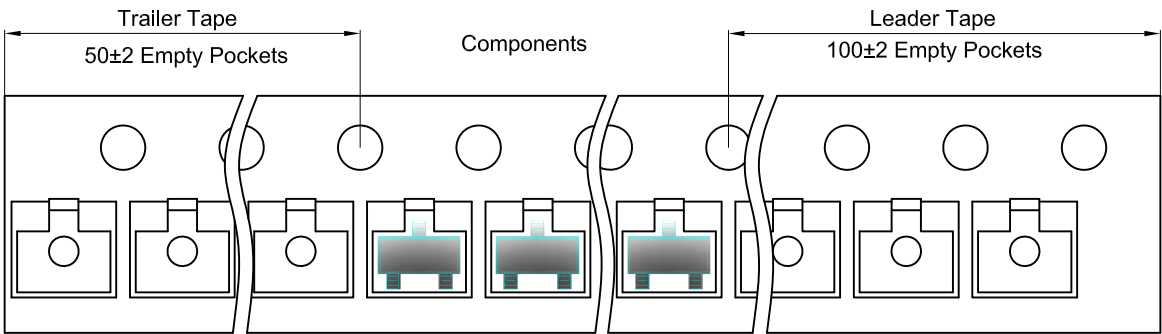
SOT-23 Embossed Carrier Tape



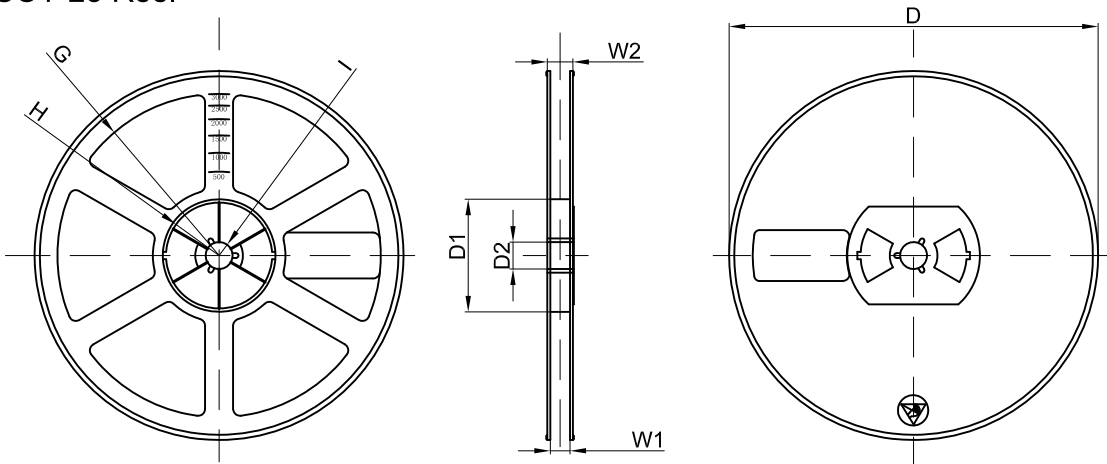
Packaging Description:
SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. 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	438×438×220	