

**SOT-23 Encapsulate Adjustable Reference Source**

**CJ432** Adjustable Accurate Reference Source

**DEVICE DESCRIPTION**

The CJ432 is a three-terminal Shunt Voltage Reference providing a highly accuracy 1.24V. The CJ432 thermal stability and wide operating current, makes is suitable for all variety of applications that are looking for a low cost solution with high performance.

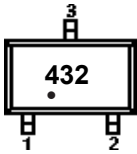
**FEATURES**

- 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 to100mA

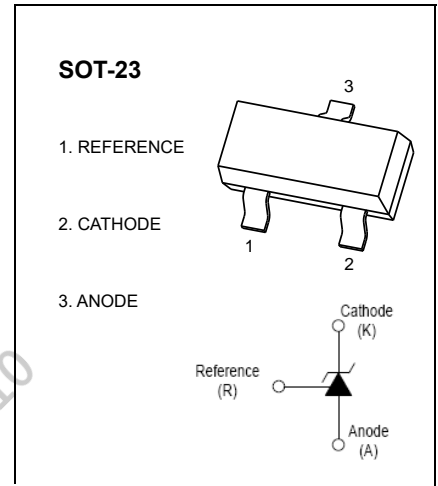
**APPLICATION**

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

**MARKING**



432= Device code.  
Solid dot = Green molding compound device, if none, the normal device.



**ABSOLUTE MAXIMUM RATINGS (Operating temperature rangeapplies 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	$I_{ref}$	3	mA
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

$T_a=25^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reference input voltage (Fig 1)	$V_{\text{ref}}$	$V_{\text{KA}}=V_{\text{REF}}, I_{\text{KA}}=10\text{mA}$	1.2214		1.2586	V
Deviation of reference voltage over full temperature range (Fig 1)	$V_{\text{ref(dev)}}$	$V_{\text{KA}}=V_{\text{REF}}, I_{\text{KA}}=10\text{mA}$ $0^\circ\text{C}\leq T_a\leq 70^\circ\text{C}$		10	16	mV
Ratio of change in reference input voltage to the change in cathode voltage (Fig 2)	$\Delta V_{\text{ref}}/\Delta V_{\text{KA}}$	$I_{\text{KA}}=10\text{mA}$ , $\Delta V_{\text{KA}}=1.25\text{V}\sim 15\text{V}$		1.0	2.4	mV/V
Reference input current	$I_{\text{ref}}$	$I_{\text{KA}}=10\text{mA}$ , $R_1=10\text{k}\Omega$ , $R_2=\infty$		0.25	0.5	$\mu\text{A}$
Deviation of reference input current over full temperature range (Fig 2)	$I_{\text{ref(dev)}}$	$I_{\text{KA}}=10\text{mA}$ , $R_1=10\text{k}\Omega$ , $R_2=\infty$ , $0^\circ\text{C}\leq T_a\leq 70^\circ\text{C}$		0.1	0.6	$\mu\text{A}$
Minimum cathode current for regulation (Fig 1)	$I_{\text{KA(min)}}$	$V_{\text{KA}}=V_{\text{REF}}$		0.06	0.1	mA
Off-state cathode current(Fig 3)	$I_{\text{off}}$	$V_{\text{KA}}=15\text{V}, V_{\text{REF}}=0$		0.05	0.5	$\mu\text{A}$
Dynamic impedance	$Z_{\text{KA}}$	$V_{\text{KA}}=V_{\text{REF}}, I_{\text{KA}}=0.1\sim 20\text{mA}$ , $f\leq 1.0\text{kHz}$		0.2	0.5	$\Omega$

## CLASSIFICATION OF $V_{\text{ref}}$

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

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

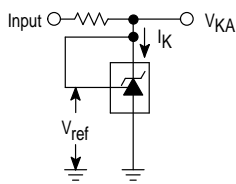


Figure 2. Test Circuit for  $V_{\text{KA}} > V_{\text{ref}}$

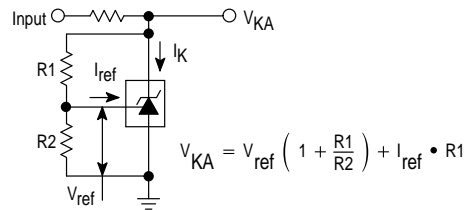
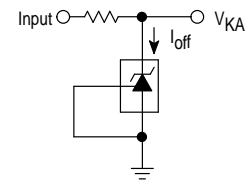
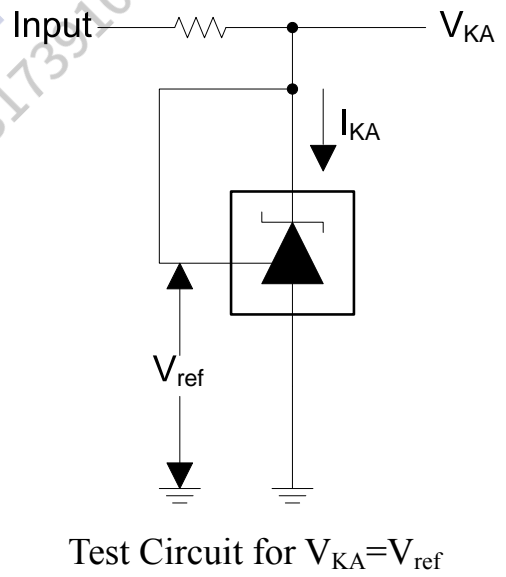
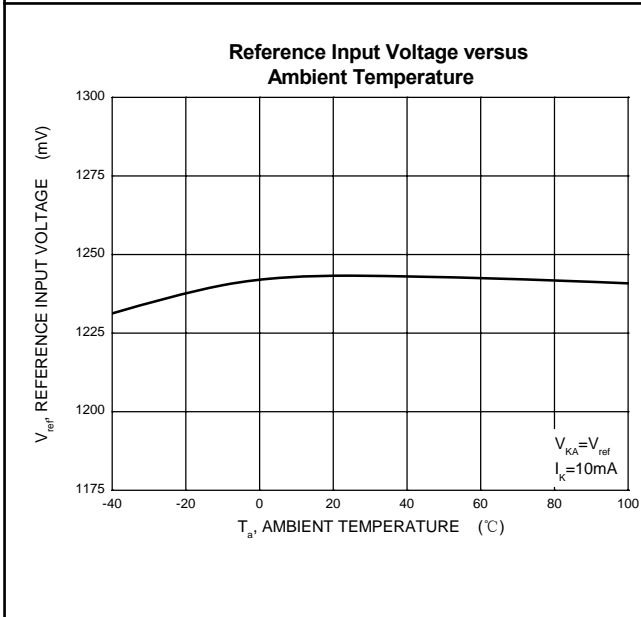
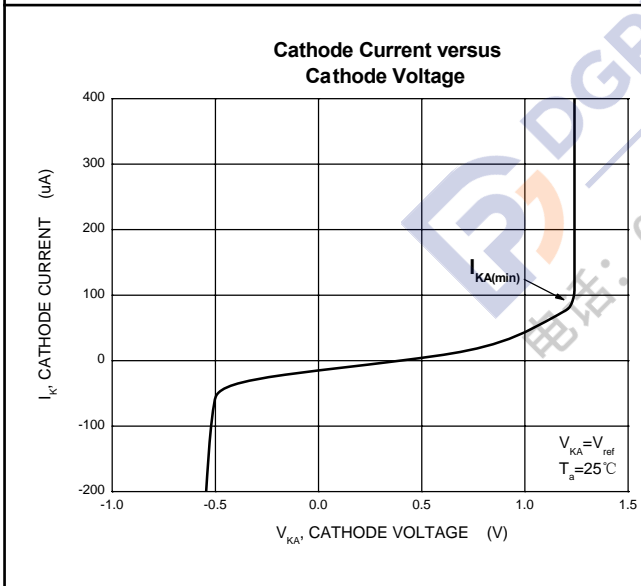
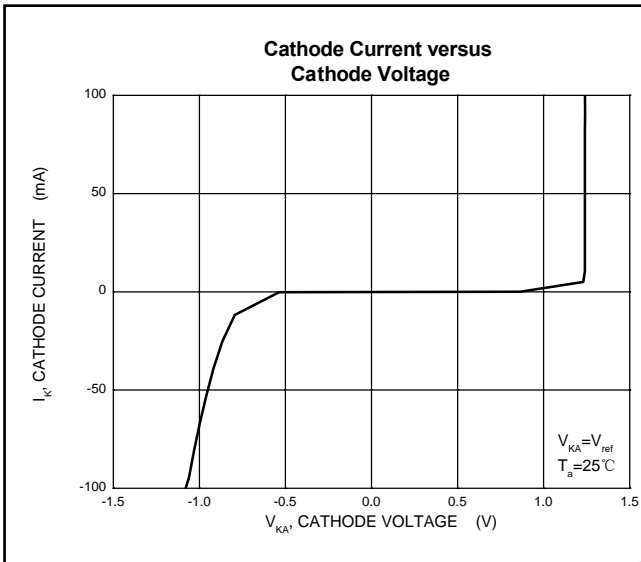


Figure 3. Test Circuit for  $I_{\text{off}}$

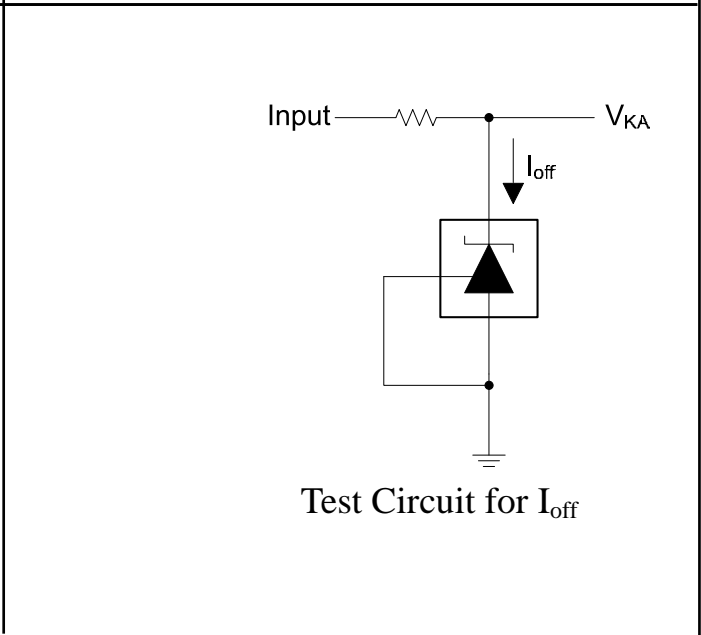
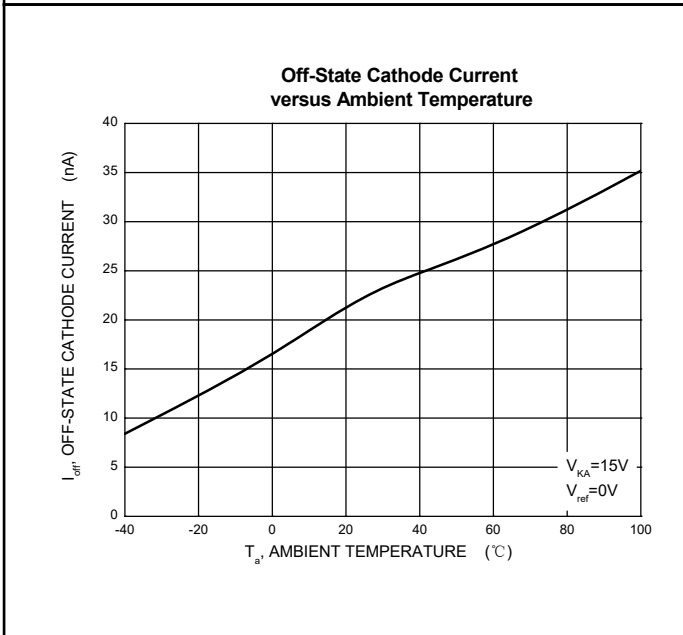
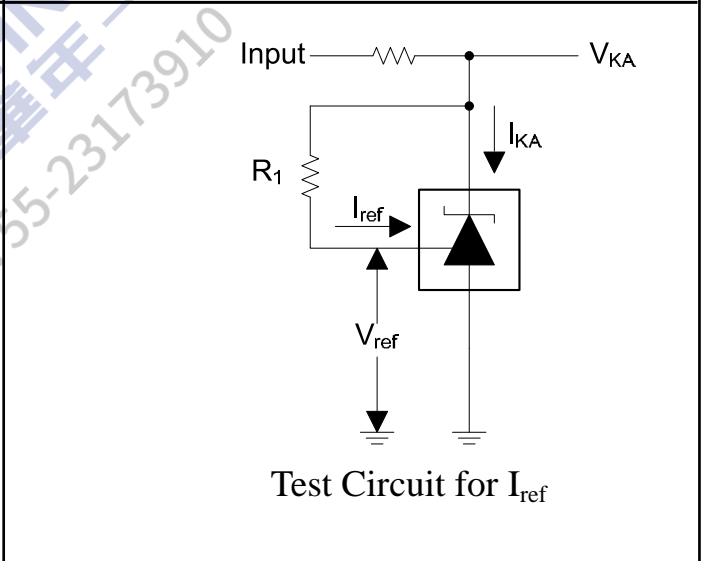
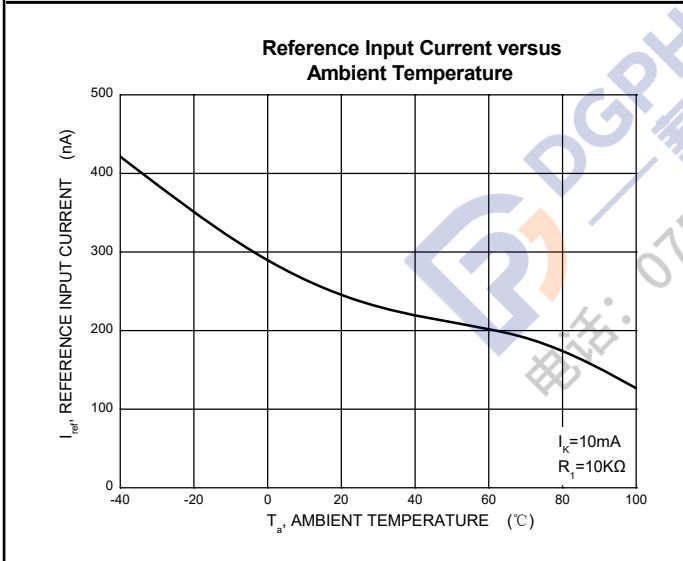
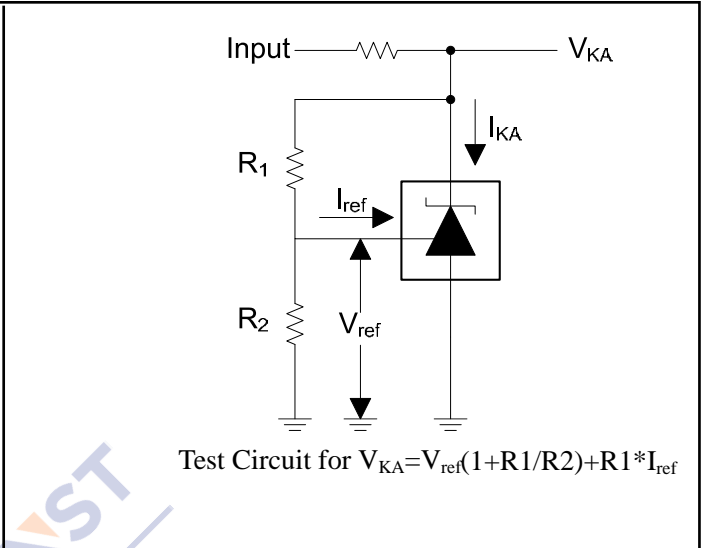
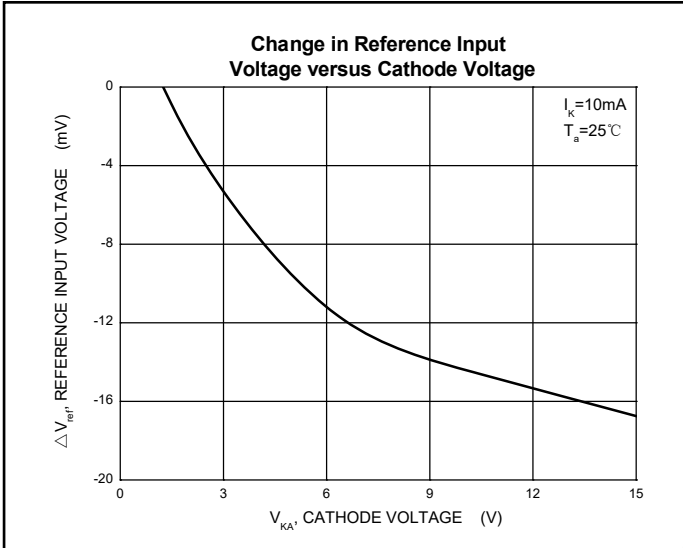


**NOTE:** It is strongly recommended to connect a capacitor (value more than  $0.1\mu\text{F}$ ) at the output pin to smooth the output. The capacitor should be placed as close as possible to the output pin, with the shortest path to GND.

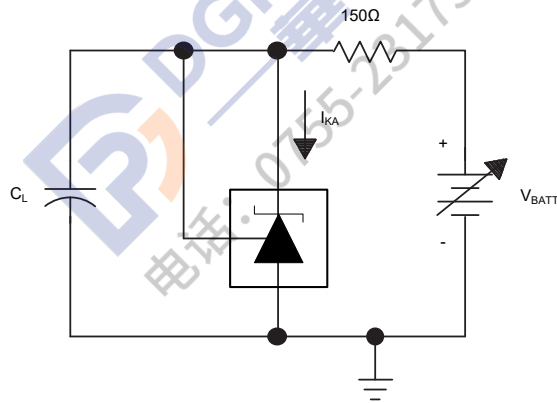
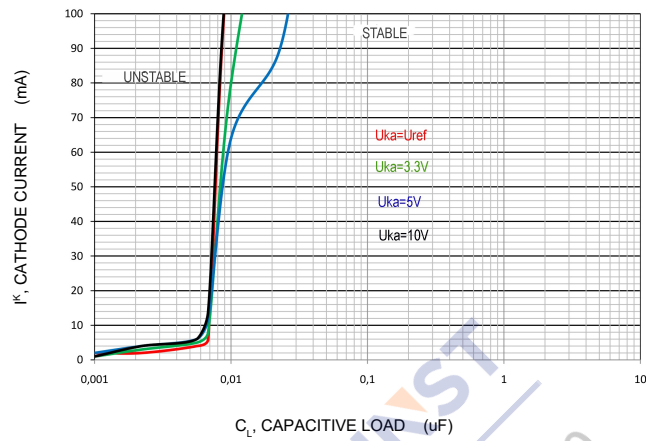
# Typical Characteristics



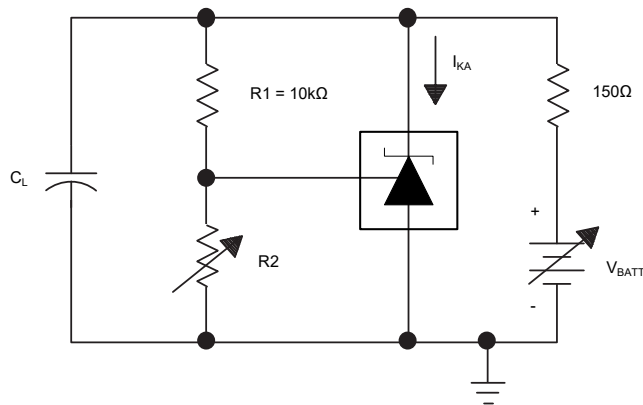
# Typical Characteristics



Stability Behavior with Capacitive Loads

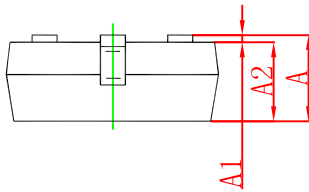
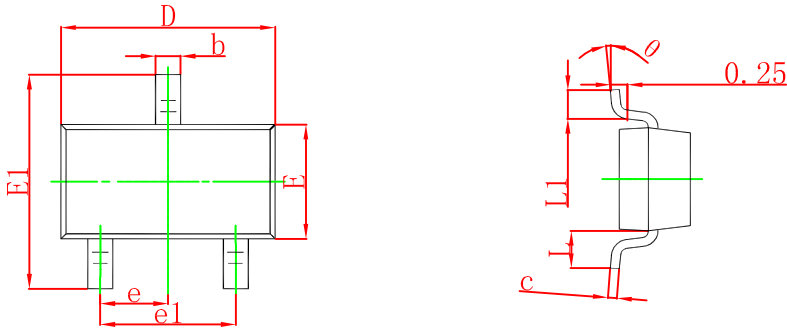


Test Circuit for Curve  $U_{ka} = U_{ref}$



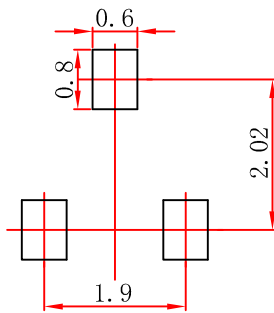
Test Circuit for Curve  $U_{ka} = 3.3\text{V}$ ,  $U_{ka} = 5\text{V}$  and  $U_{ka} = 10\text{V}$

## 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

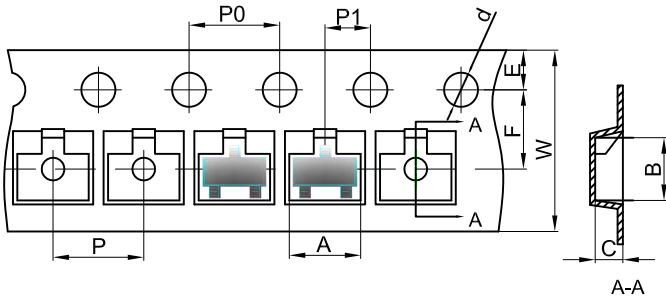


**Note:**

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

# SOT-23 Tape and Reel

## SOT-23 Embossed Carrier Tape



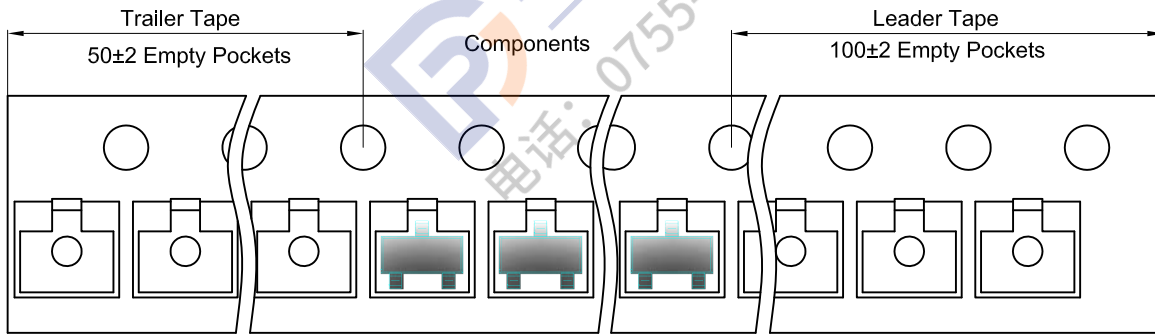
### Packaging Description:

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).

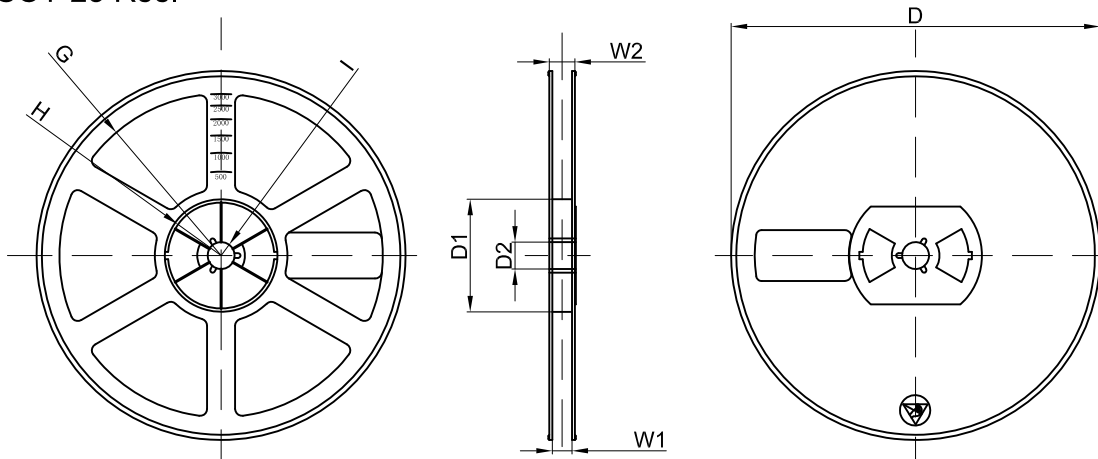
Dimensions are in millimeter

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	

# DISCLAIMER

## IMPORTANT NOTICE, PLEASE READ CAREFULLY

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