



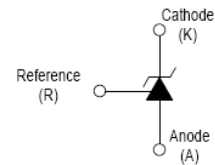
## CJ431K Adjustable Reference Source

### CJ431K Adjustable Accurate Reference Source

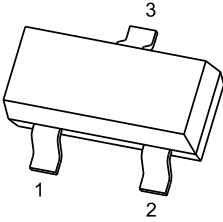
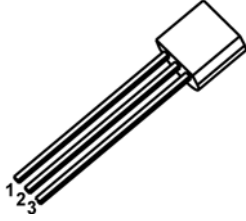
#### FEATURES

- The output voltage can be adjusted to 36V
- Low dynamic output impedance ,its typical value is  $0.2\Omega$
- Trapping current capability is 1 to 100mA
- The typical value of the equivalent temperature factor in the whole temperature scope is  $50 \text{ ppm}/^\circ\text{C}$
- The effective temperature compensation in the working range of full temperature
- Low output noise voltage
- Fast on-state response
- ESD protected up to 3KV

#### Equivalent Circuit



#### PIN CONNENCTIONS and MARKING

<b>CJ431K</b>		<b>SOT -23</b>	1.REFERENCE 2.CATHODE 3. ANODE
<b>CJ431K</b>		<b>TO-92</b>	1.REFERENCE 2.ANODE 3.CATHODE

## ORDERING INFORMATION

Part Number	MARKING <sup>(1)</sup>	Package	Packing Method	Pack Quantity
CJ431K	431K •	SOT-23	Reel	3000pcs/Reel
CJ431K	CJ <sup>(2)</sup> TL431K • XXX	TO-92	Bulk	1000pcs/Bag
CJ431K-TA	CJ <sup>(2)</sup> TL431K • XXX	TO-92	Tape	2000pcs/Box

Notes:(1).Solid dot=Green molding compound device,if none,the normal device.

(2).XXX=Code

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

Parameter	Symbol	Value		Units
		SOT-23	TO-92	
Cathode Voltage	$V_{KA}$	37		V
Cathode Current Range (Continuous)	$I_{KA}$	-100~+150		mA
Reference Input Current Range	$I_{ref}$	0.05~+10		mA
Power Dissipation	$P_D$	300	770	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	417	162	°C/W
Operating Junction Temperature	$T_J$	-40~ +125		°C
Storage Temperature Range	$T_{stg}$	-65~+150		°C

## ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

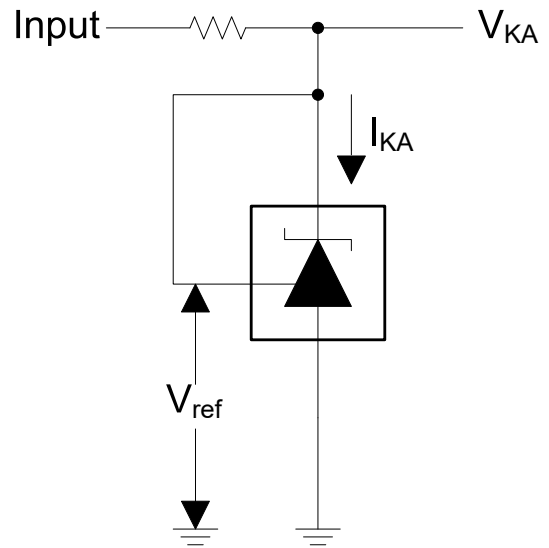
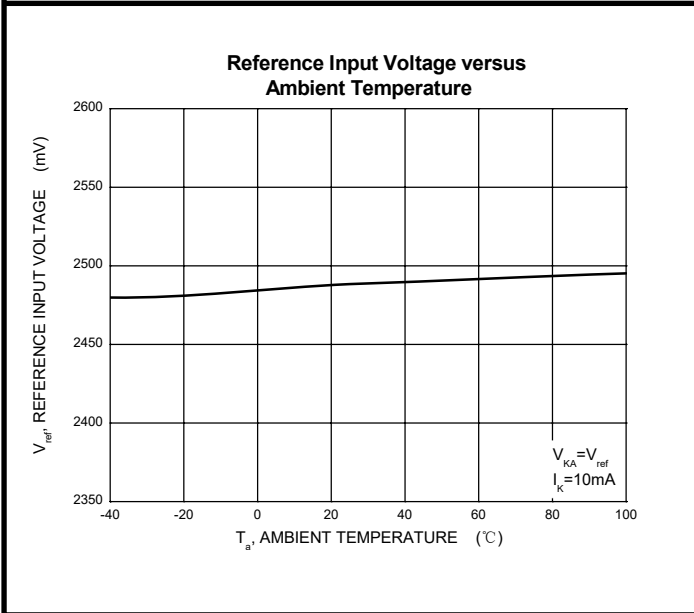
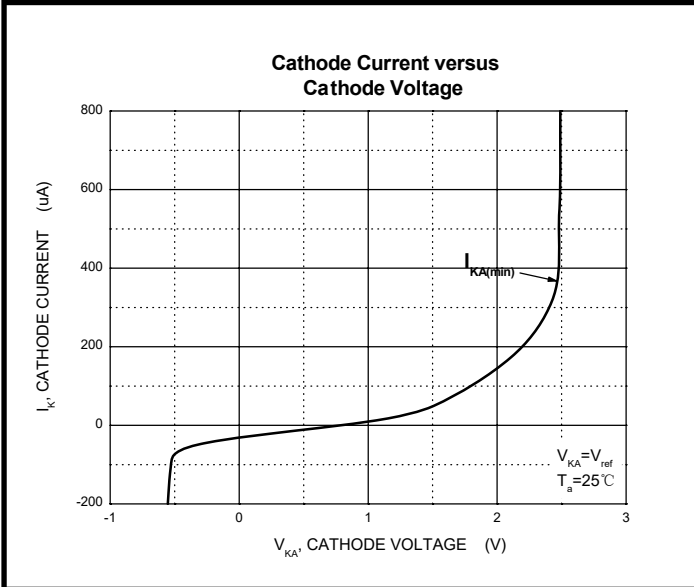
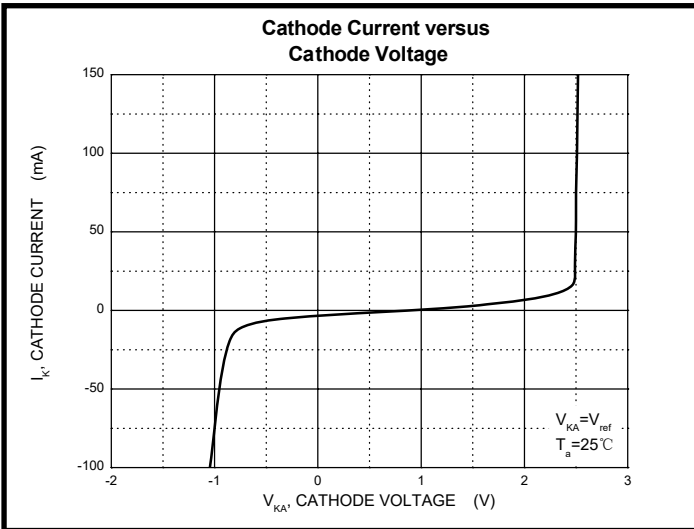
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reference input voltage	$V_{ref}$	$V_{KA}=V_{REF}, I_{KA}=10mA$	2.470	2.495	2.520	V
Deviation of reference input voltage over temperature (note)	$V_{ref(dev)}$	$V_{KA}=V_{REF}, I_{KA}=10mA$ $T_{min} \leq T_a \leq T_{max}$		4.5	17	mV
Ratio of change in reference Input voltage to the change in cathode voltage	$\Delta V_{ref} / \Delta V_{KA}$	$I_{KA}=10mA$	$\Delta V_{KA}=10V \sim V_{REF}$	-1.0	-2.7	mV/V
			$\Delta V_{KA}=36V \sim 10V$	-0.5	-2.0	mV/V
Reference input current	$I_{ref}$	$I_{KA}=10mA, R_1=10k\Omega$ $R_2=\infty$		1.5	4	$\mu A$
Deviation of reference input current over full temperature range	$I_{ref(dev)}$	$I_{KA}=10mA, R_1=10k\Omega$ $R_2=\infty$ $T_A=-25$ to $125^\circ C$		0.4	1.2	$\mu A$
Minimum cathode current for regulation	$I_{KA(min)}$	$V_{KA}=V_{REF}$		0.45	1.0	mA
Off-state cathode current	$I_{KA(OFF)}$	$V_{KA}=40V, V_{REF}=0$		0.05	0.5	$\mu A$
Dynamic impedance	$Z_{KA}$	$V_{KA}=V_{REF}, I_{KA}=1$ to $100mA$ $f \leq 1.0kHz$		0.15	0.5	$\Omega$

Note: $T_{MIN}=-25^\circ C, T_{MAX}=+85^\circ C$

## CLASSIFICATION OF Vref

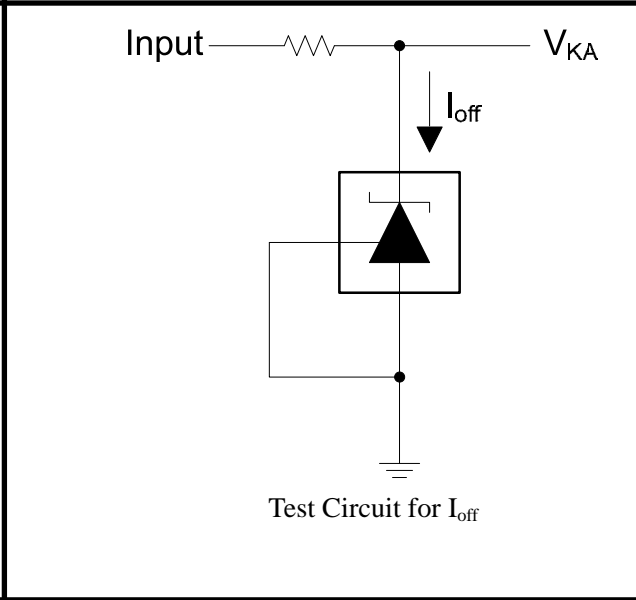
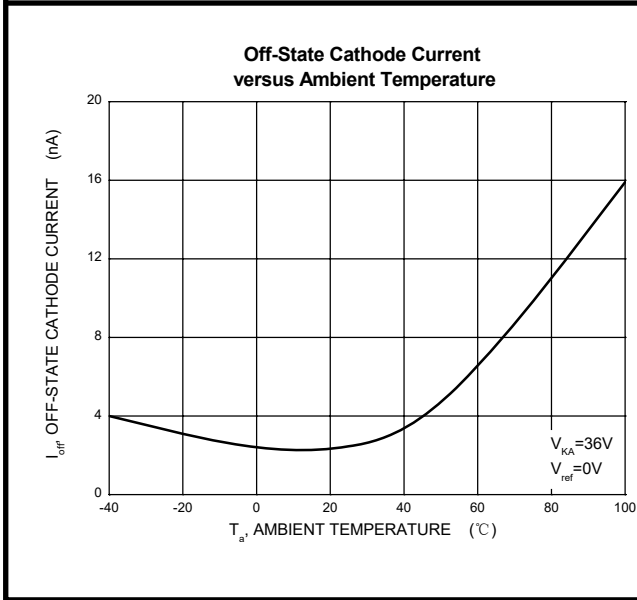
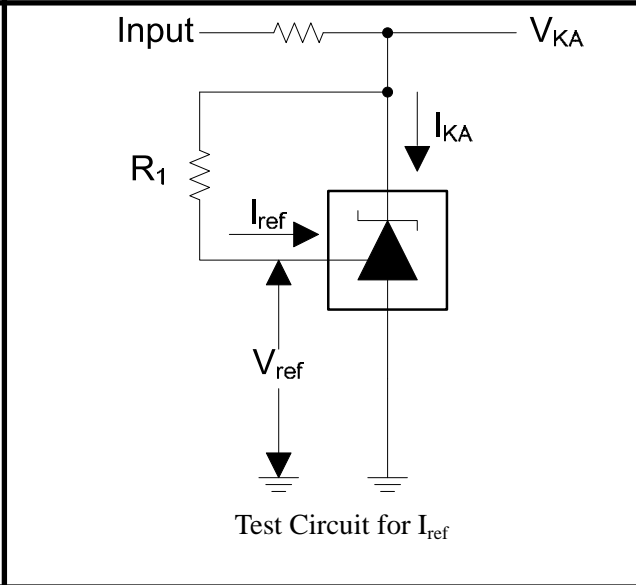
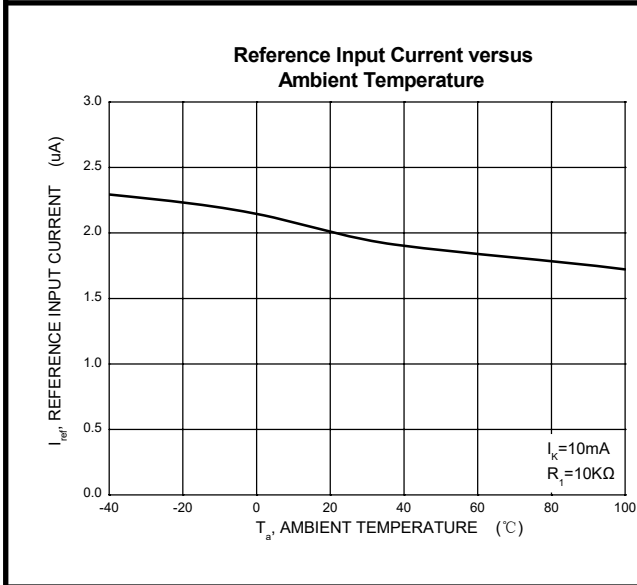
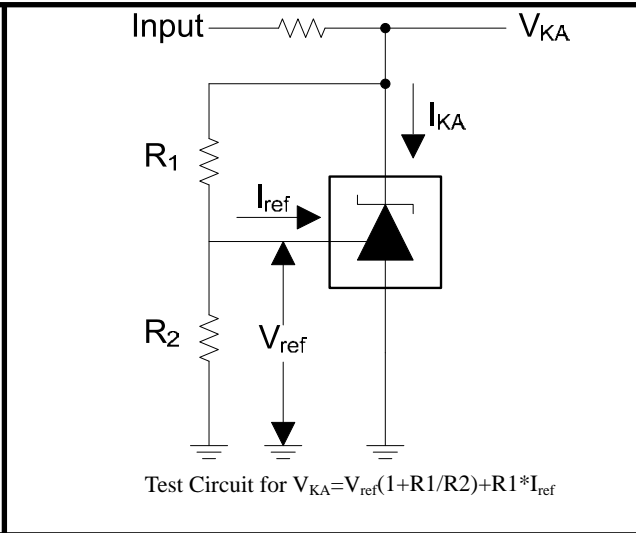
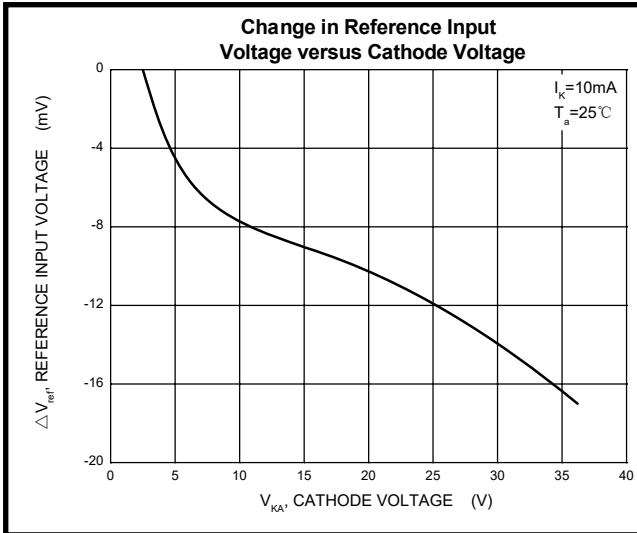
Rank	0.5%	1%
Range	2.483-2.507	2.47-2.52

# Typical Characteristics

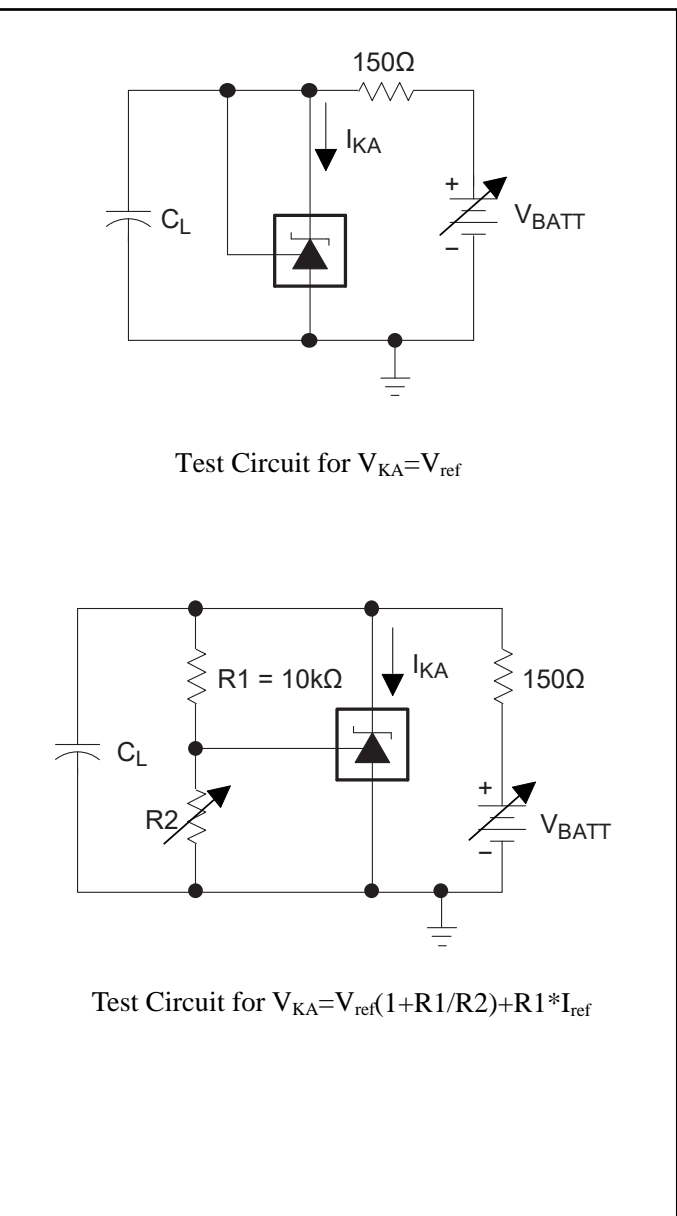
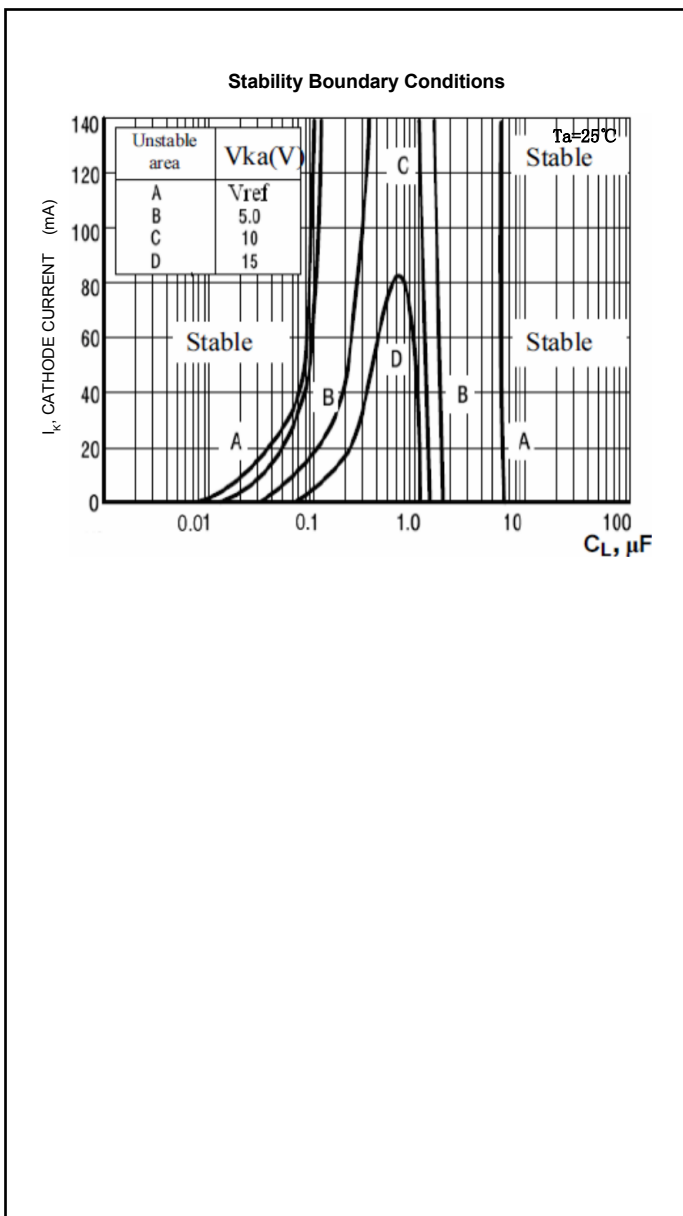


Test Circuit for  $V_{KA} = V_{ref}$

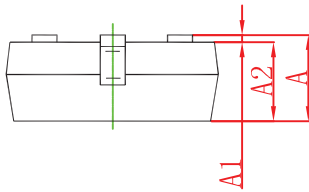
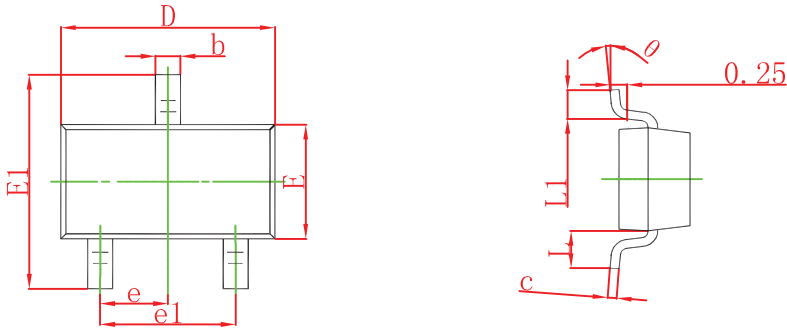
# Typical Characteristics



# Typical Characteristics

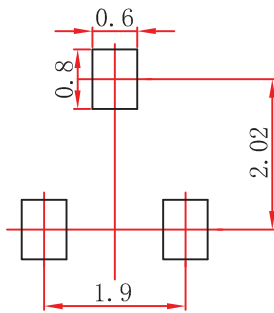


## SOT-23 Package Outline Dimensions



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
v	0°	8°	0°	8°

## SOT-23 Suggested Pad Layout

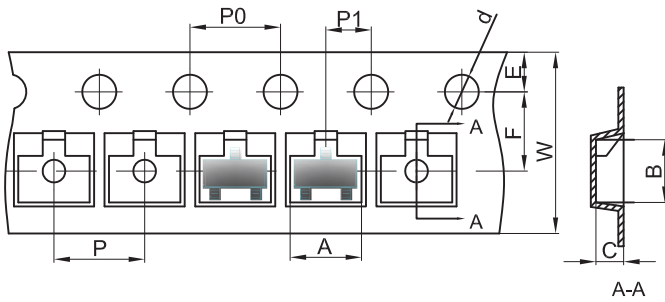


### Note:

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

# SOT-23 Tape and Reel

## SOT-23 Embossed Carrier Tape



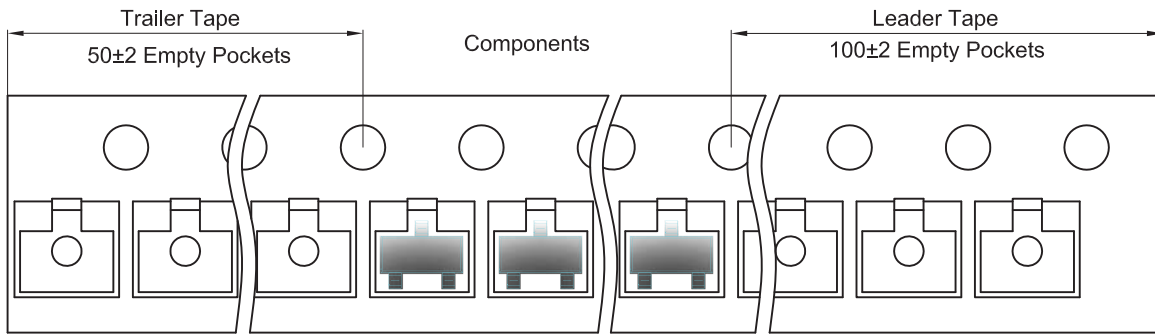
### Packaging Description:

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).

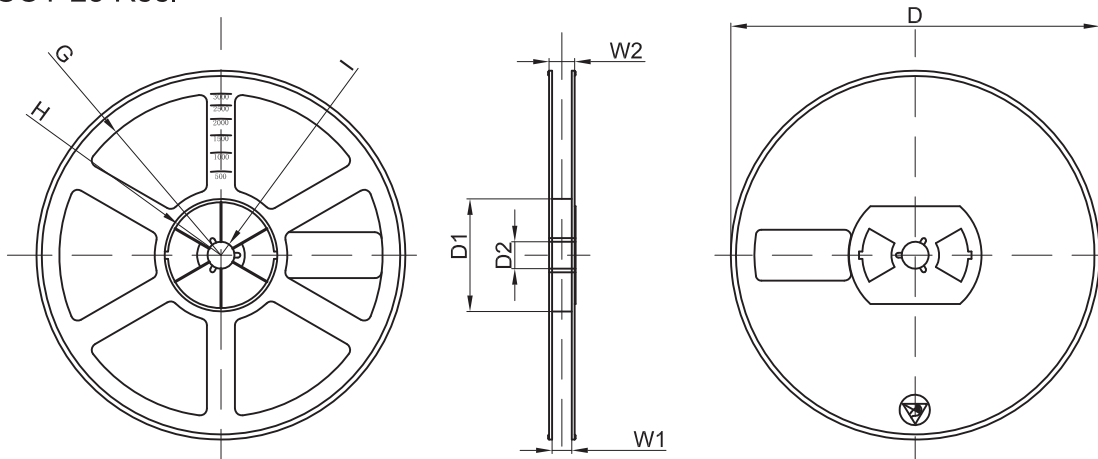
Dimensions are in millimeter

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

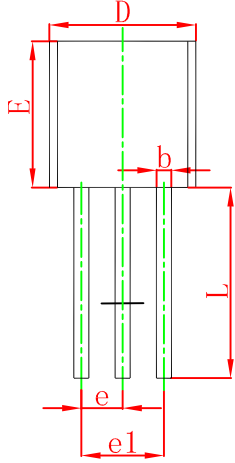
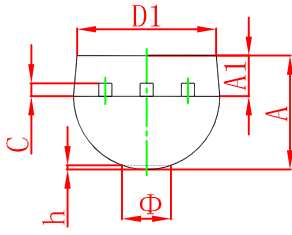


Dimensions are in millimeter

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

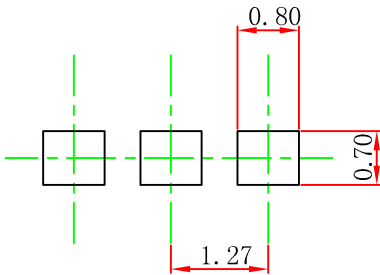
REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	45,000 pcs	203×203×195	180,000 pcs	438×438×220	

## TO-92 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.300	3.700	0.130	0.146
A1	1.100	1.400	0.043	0.055
b	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.300	4.700	0.169	0.185
D1	3.430		0.135	
E	4.300	4.700	0.169	0.185
e	1.270 TYP		0.050 TYP	
e1	2.440	2.640	0.096	0.104
L	14.100	14.500	0.555	0.571
Φ		1.600		0.063
h	0.000	0.380	0.000	0.015

## TO-92 Suggested Pad Layout

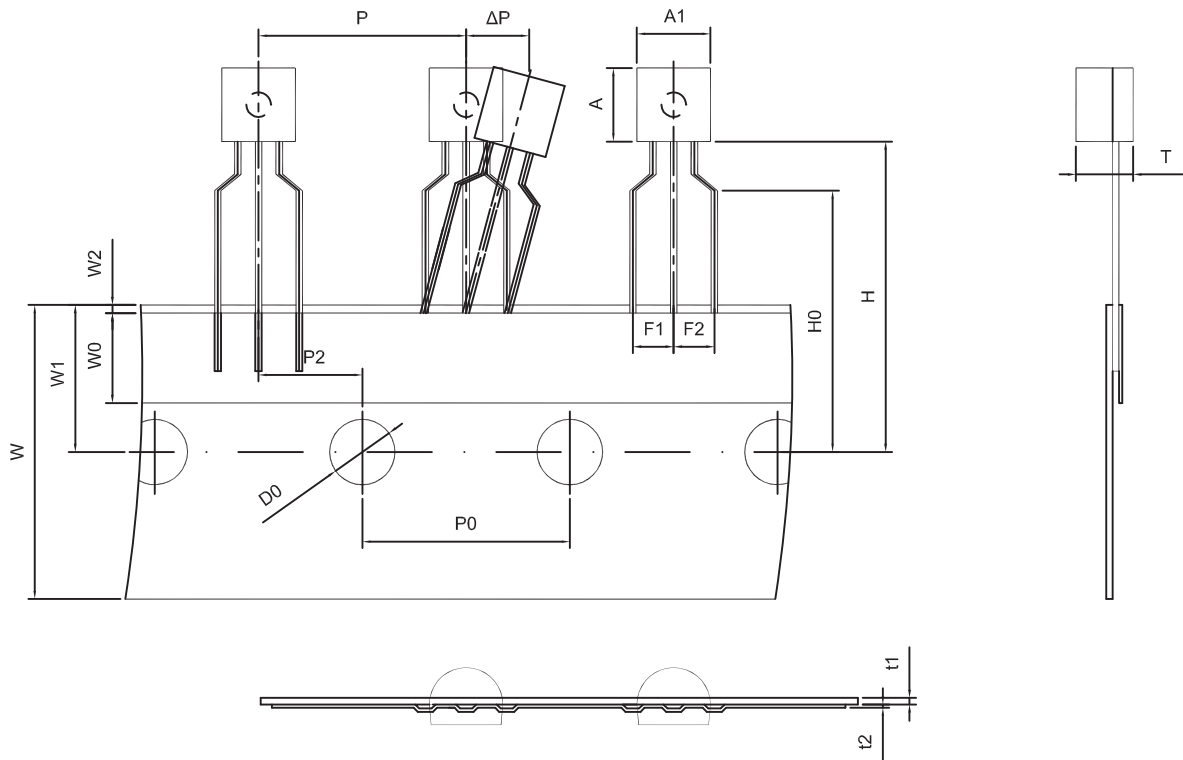


### Note:

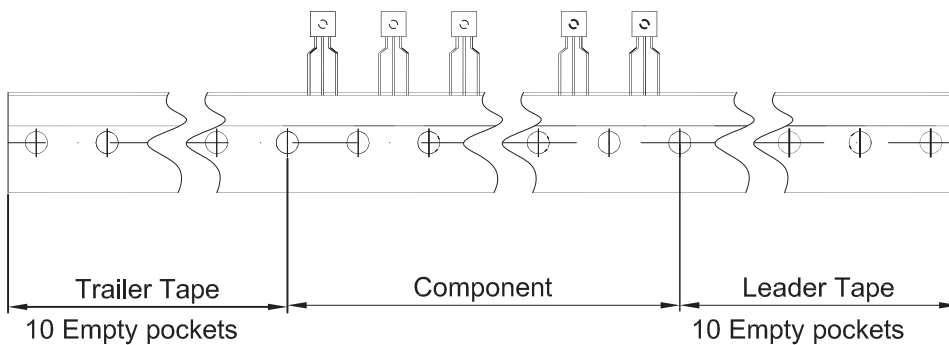
1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.



TO-92 PACKAGE TAPEING DIMENSION



Dimiensions are in millimeter								
A1	A	T	P	P0	P2	F1	F2	W
4.5	4.5	3.5	12.7	12.7	6.35	2.5	2.5	18.0
W0	W1	W2	H	H0	D0	t1	t2	ΔP
6.0	9.0	1.0 MAX.	19.0	16.0	4.0	0.4	0.2	0



Package	Box	Box Size(mm)	Carton	Carton Size(mm)
TO-92	2000 pcs	333×162×43	20,000 pcs	350×340×250

# DISCLAIMER

## **IMPORTANT NOTICE, PLEASE READ CAREFULLY**

The information in this data sheet is intended to describe the operation and characteristics of our products. JSCJ has the right to make any modification, enhancement, improvement, correction or other changes to any content in this data sheet, including but not limited to specification parameters, circuit design and application information, without prior notice.

Any person who purchases or uses JSCJ products for design shall: 1. Select products suitable for circuit application and design; 2. Design, verify and test the rationality of circuit design; 3. Procedures to ensure that the design complies with relevant laws and regulations and the requirements of such laws and regulations. JSCJ makes no warranty or representation as to the accuracy or completeness of the information contained in this data sheet and assumes no responsibility for the application or use of any of the products described in this data sheet.

Without the written consent of JSCJ, this product shall not be used in occasions requiring high quality or high reliability, including but not limited to the following occasions: medical equipment, automotive electronics, military facilities and aerospace. JSCJ shall not be responsible for casualties or property losses caused by abnormal use or application of this product.

Official Website: [www.jscj-elec.com](http://www.jscj-elec.com)

Copyright © JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.