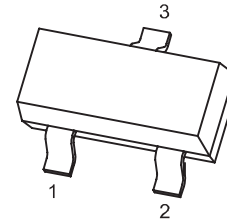


## Adjustable Reference Source

Adjustable Accurate Reference Source

### Features:

- The output voltage can be adjusted to 44V
- Low dynamic output impedance, its typical value is  $0.2\Omega$
- Trapping current capability is 1 to 100mA
- Low output noise voltage
- Fast on -state response
- The effective temperature compensation in the working range of full temperature
- The typical value of the equivalent temperature factor in the whole temperature scope is  $50 \text{ ppm}/^\circ\text{C}$



**SOT-23**

- 1.CATHODE
- 2.REFERENCE
- 3. ANODE

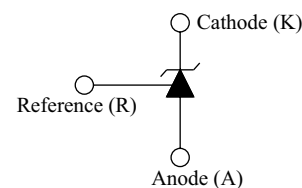
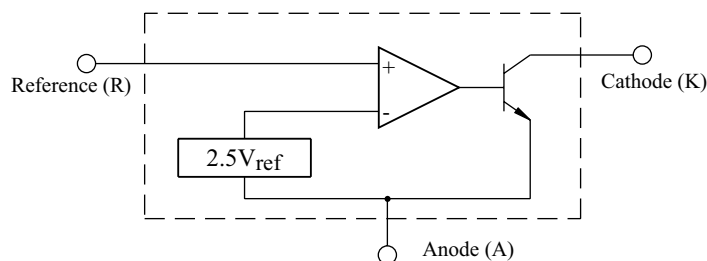
### Application:

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

### Description:

The KW431B is a three-terminal adjustable shunt regulator offering excellent temperature stability . This device has a typical dynamic output impedance of  $0.2\Omega$ . The device can be used as a replacement for zener diodes in many applications.

### BLOCK DIAGRAM



**ORDERING INFORMATION**

Part Number	MARKING	Package	Packing Method	Pack Quantity
KW431B	431B	SOT-23	Reel	3000pcs/Reel

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

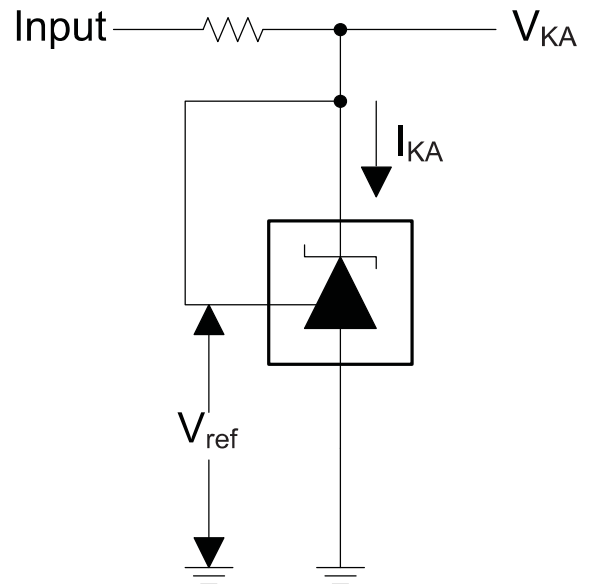
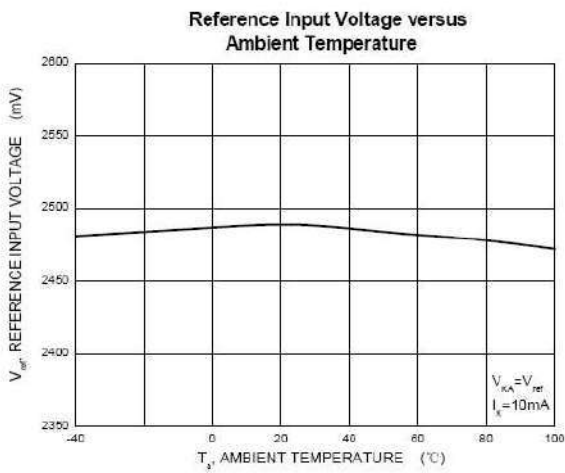
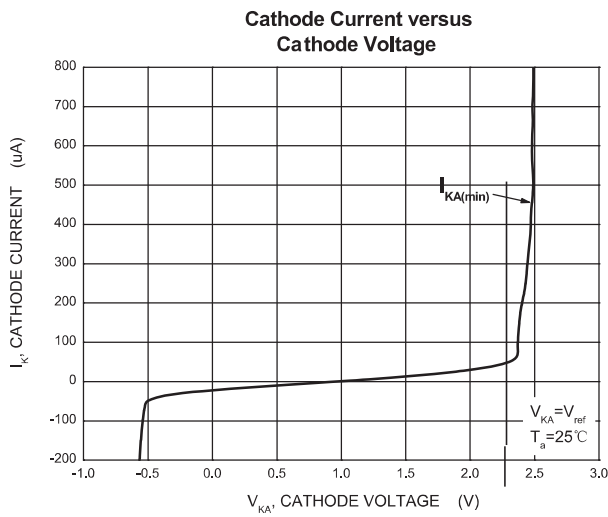
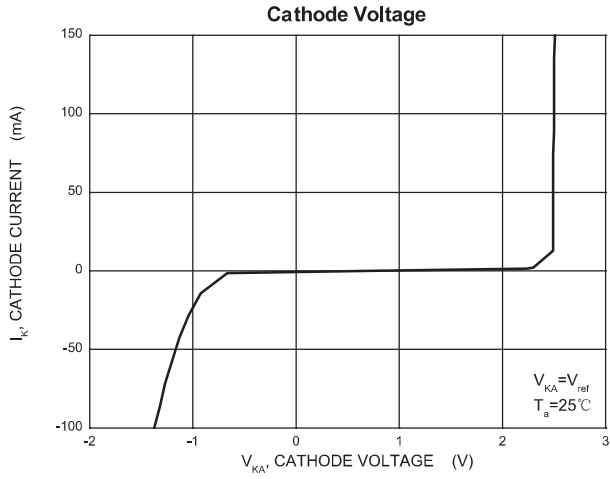
Parameter	Symbol	Value		Unit
			SOT-23	
Cathode Voltage	$V_{KA}$	44		V
Cathode Current Range (Continuous)	$I_{KA}$	-100~+150		mA
Reference Input Current Range	$I_{ref}$	0.05~+10		mA
Power Dissipation	$P_D$		300	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$		417	°C/W
Operating Temperature	$T_{opr}$	-40~+125		°C
Junction Temperature	$T_J$	150		°C
Storage Temperature Range	$T_{STG}$	-65~+150		°C

**ELECTRICAL CHARACTERISTICS** ( $T_a=25^{\circ}\text{C}$  unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reference input voltage	$V_{ref}$	$V_{KA}=V_{REF}, I_{KA}=10\text{mA}$	2.487	2.5	2.513	V
Deviation of reference Input voltage over temperature(note)	$\Delta V_{ref}/\Delta T$	$V_{KA}=V_{REF}, I_{KA}=10\text{mA}$ $T_{MIN} \leq T_a \leq T_{MAX}$		4.5	17	mV
Ratio of change in reference Input voltage to the change in cathode voltage	$\Delta V_{ref}/\Delta V_{KA}$	$I_{KA}=10\text{mA}$	$\Delta V_{KA}$ =10V~ $V_{REF}$	-1.0	-2.7	mV/V
			$\Delta V_{KA}$ =44V~10V	-0.5	-2.0	mV/V
Reference input current	$I_{ref}$	$I_{KA}=10\text{mA}, R_1=10\text{k}\Omega$ $R_2=\infty$		1.5	4	$\mu\text{A}$
Deviation of reference input current over full temperature range	$\Delta I_{ref}/\Delta T$	$I_{KA}=10\text{mA}, R_1=10\text{k}\Omega$ $R_2=\infty$ $T_A=-40\text{to}+125^{\circ}\text{C}$		0.4	1.2	$\mu\text{A}$
Minimum cathode current for regulation	$I_{KA}(\text{min})$	$V_{KA}=V_{REF}$		0.45	1.0	mA
Off-state cathode current	$I_{KA}(\text{OFF})$	$V_{KA}=44\text{V}, V_{REF}=0$		0.05	1.0	$\mu\text{A}$
Dynamic impedance	$Z_{KA}$	$V_{KA}=V_{REF}, I_{KA}=1\text{ to }100\text{mA}$ $f \leq 1.0\text{kHz}$		0.15	0.5	$\Omega$

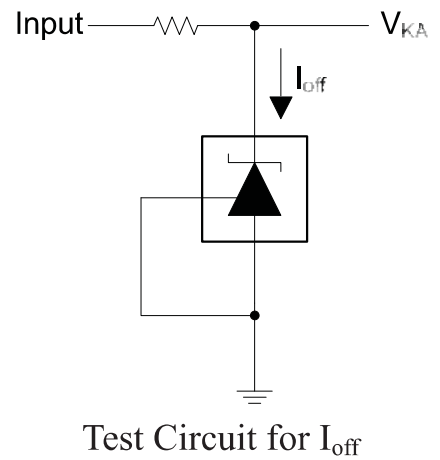
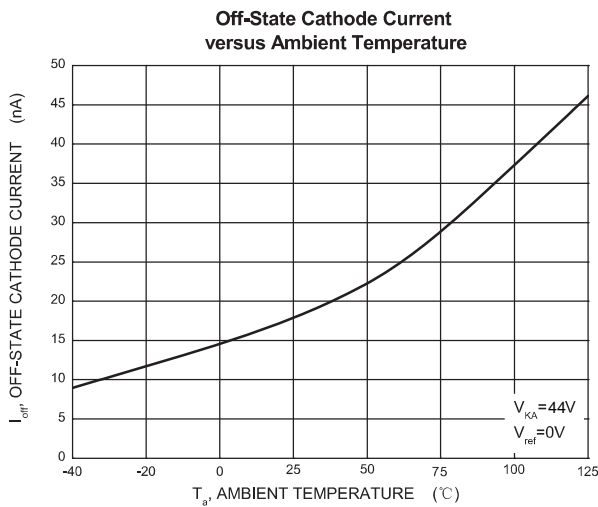
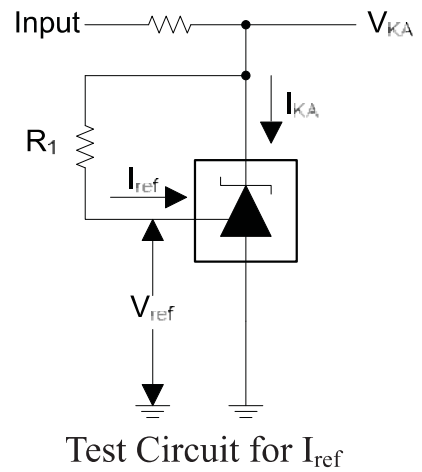
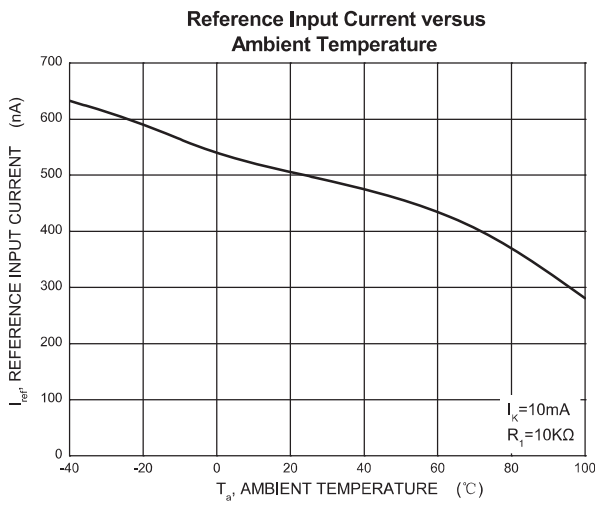
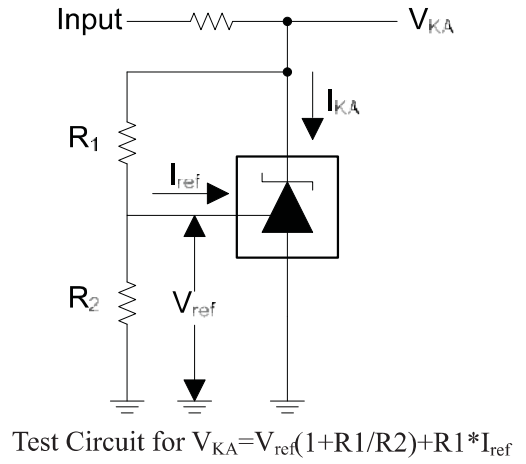
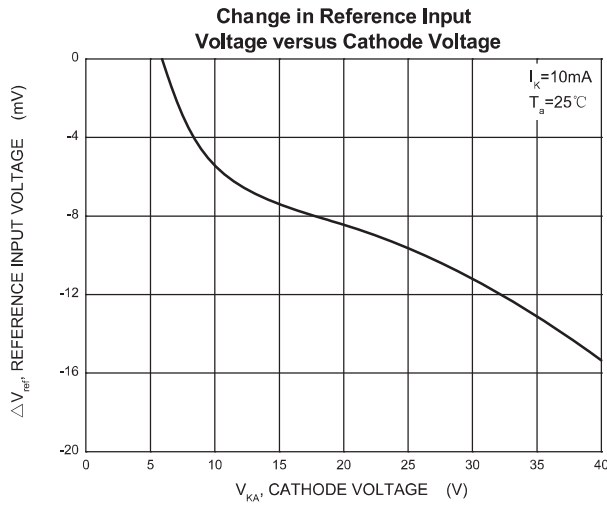
Note:  $T_{MIN}=-40^{\circ}\text{C}$  ,  $T_{MAX}=+125^{\circ}\text{C}$

**Typical Characteristics**

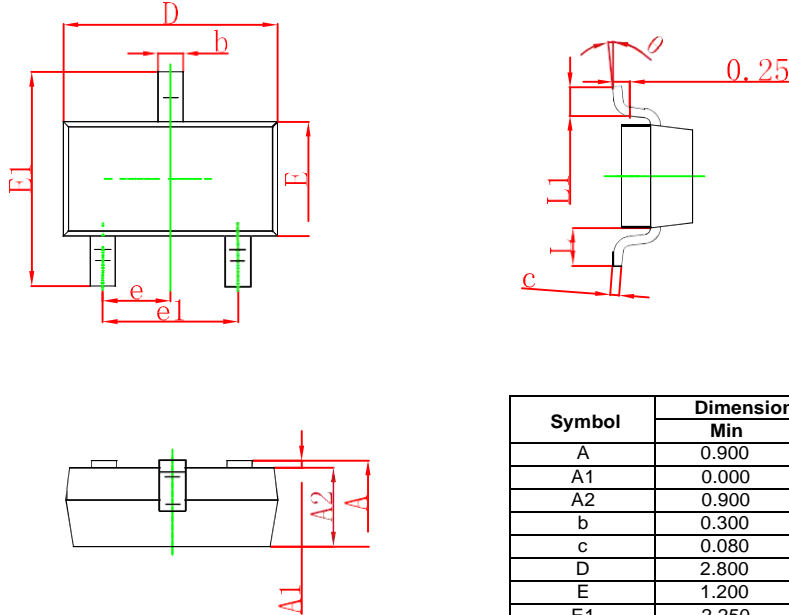


Test Circuit for  $V_{KA} = V_{ref}$

**Typical Characteristics**

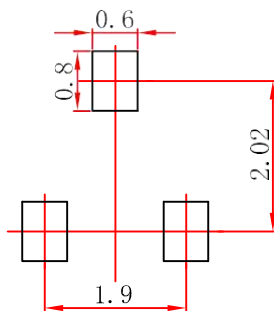


**SOT-23 Package Outline Dimensions**



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**

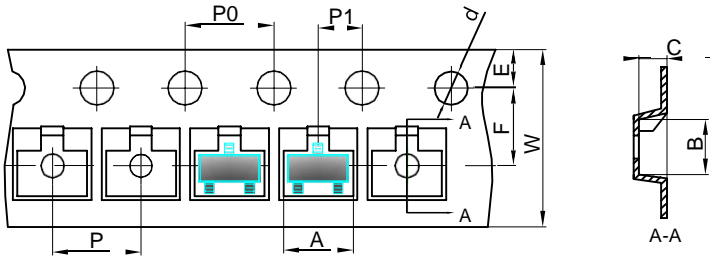


- Note:
1. Controlling dimension: In millimeters.
  2. General tolerance: ± 0.05mm.
  3. The pad layout is for reference purposes only.

**SOT-23 Tape and Reel**

**SOT-23 Tape and reel**

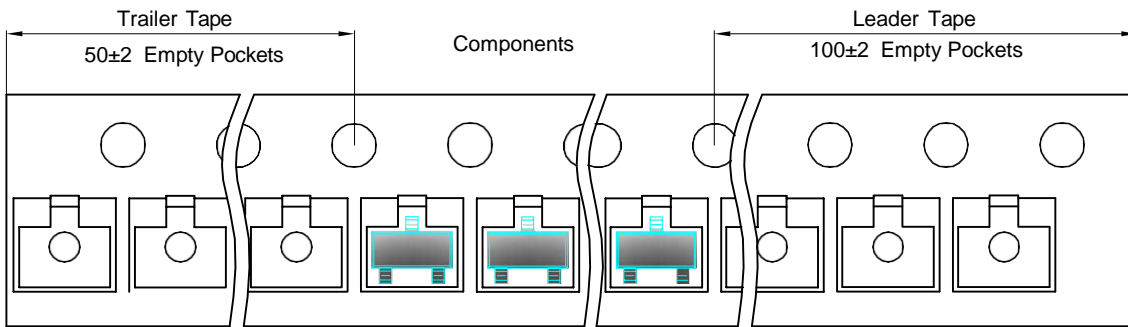
SOT-23 Embossed Carrier Tape



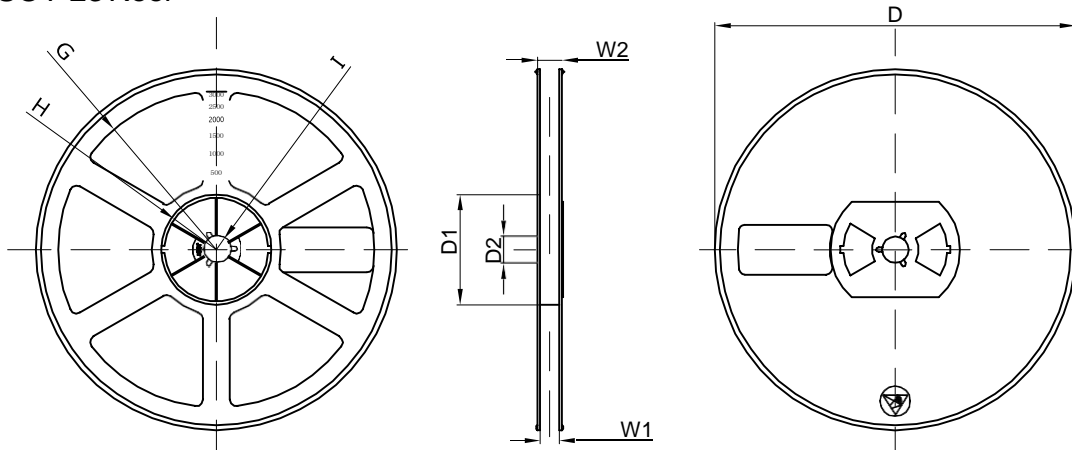
**Packaging Description:**  
 SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed 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	30,000 pcs	203x203x195	120,000 pcs	438x438x220	