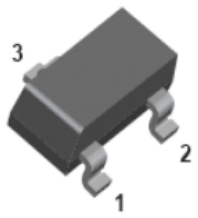
SOT-23 Plastic-Encapsulate Adjustable Reference Sourcer

Features

- Programmable Precise Output Voltage from 2.5Vto 36V
- Very Accurate Reference Voltage: 0.15% Typical
- High Stability under Capacitive Load
- Low Equivalent Full-range Temperature Coeffi-cient with 20PPM/ ℃ Typical
- Low Dynamic Output Resistance: 0.2Ω Typical
- Sink Current Capacity from 1mA to 100 mA
- Low Output Noise
- Wide Operating Range of -40 to 125 ℃
- ESD protected up to 3KV



1.FERENCE
2.THODE
3.ANODE

SOT-23

Ordering Information

Part No	Marking	Package	Packing	Reel	Box	Carton
HD431	HD431	SOT-23	Tape&Reel	3000 PCS	45,000 PCS	180,000 PCS

Maximum Ratings@Ta=25℃

Full operating ambient temperature range applies unless otherwise specified

Symbol	Parameter	Value	Unit
V_{KA}	Cathode to Anode voltage	40	V
I_{KA}	Cathode current range, Continuous	-10 to +150	mA
I_{ref}	Reference input current range	10	mA
P_D	Power dissipation	230	mW
T_j	Operating junction temperature	-40~125	℃
T_{stg}	Storage temperature	-65~150	℃

Electrical Characteristics @ Ta=25℃ 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	2.48	2.5	2.52	V
Deviation of reference voltage over full temperature range (Fig. 1)	$\Delta V_{ref} / \Delta T$	$V_{KA}=V_{ref}$, I_{KA}=10mA	-	8	17	mV
Ratio of change in reference input voltage to change in Cathode to Anode voltage (Fig. 2)	$\Delta V_{ref} / \Delta V_Z$	I_{KA}=10mA,$V_{KA}=V_{REF}$~10V	-	-1	-2.7	mV/V
		I_{KA}=10mA ,V_{KA}=10V~36V	-	-0.5	-2	mV/V
Reference Input Current (Fig. 2)	I_{REF}	I_{KA}=10mA,R1=10kΩ, R2=∞	-	2	4	μA
Deviation of reference input current over full temperature range (Fig. 2)	$\Delta I_{ref} / \Delta T$	I_{KA}=10mA, R1=10kΩ, R2=∞	-	0.4	1.2	μA
Minimum Cathode current for regulation (Fig. 1)	$I_{KA(min)}$	$V_{KA}=V_{ref}$	-	0.4	1	mA
Off-state Cathode current (Fig. 3)	$I_{KA(off)}$	V_{KA}=36V,V_{ref}=0V	-	0.05	1	μA
Dynamic impedance	Z_{KA}	$V_{KA}=V_{ref}$, I_{KA}=1~100mA, f≤1.0kHz	-	0.2	0.5	Ω

Rank	0.4%	0.8%
Range	2.49-2.51	2.48-2.52

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

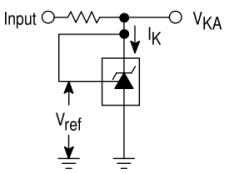


Figure 2. Test Circuit for $V_{KA} > V_{ref}$

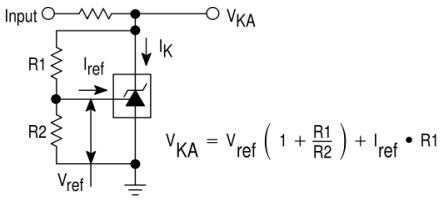
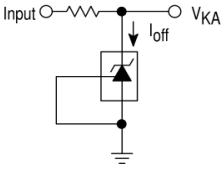
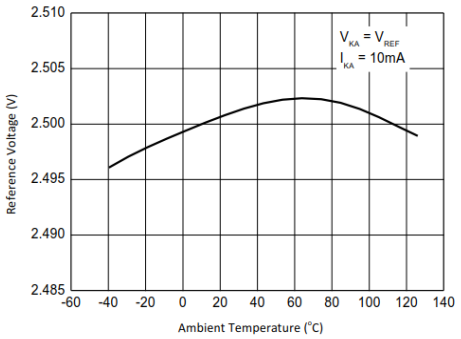


Figure 3. Test Circuit for I_{off}

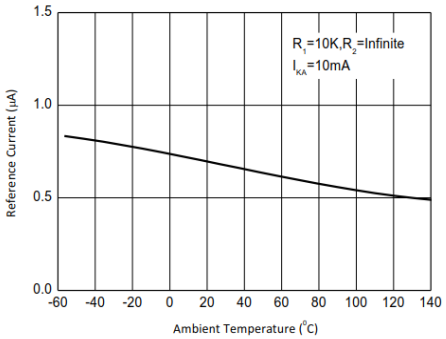


Typical Characteristics @ T_a=25℃ unless otherwise specified

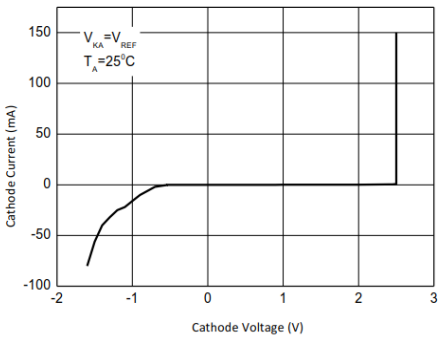
Reference Voltage vs. Ambient Temperature



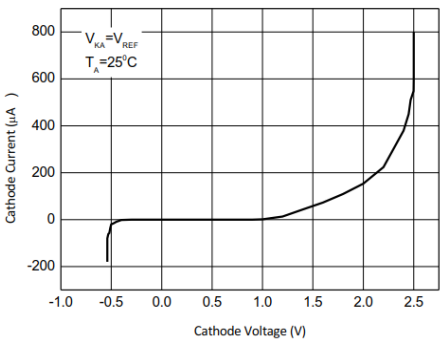
Reference Current vs. Ambient Temperature



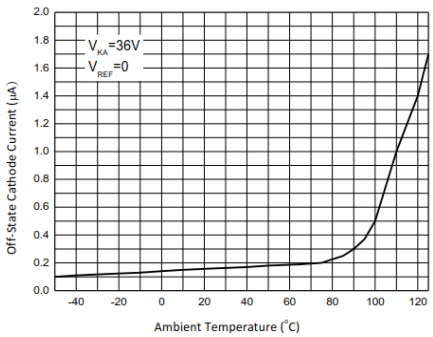
Cathode Current vs. Cathode Voltage



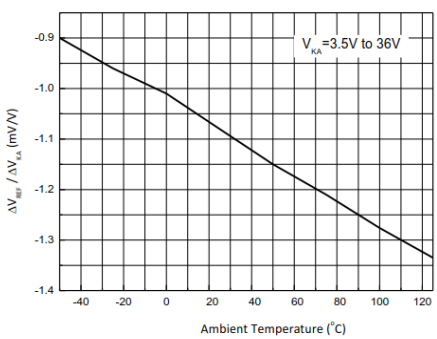
Cathode Current vs. Cathode Voltage



Off-State Cathode Current vs. Ambient Temperature



Ratio of Delta Reference Voltage to the Ratio of Delta Cathode Voltage



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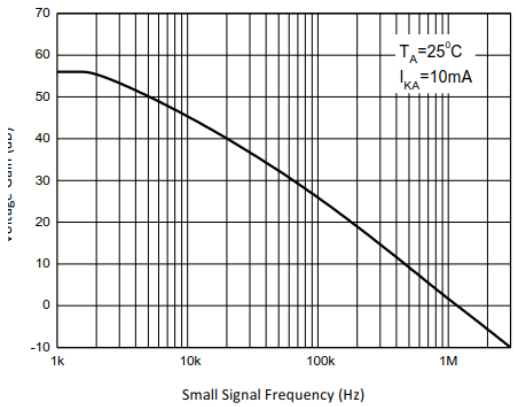
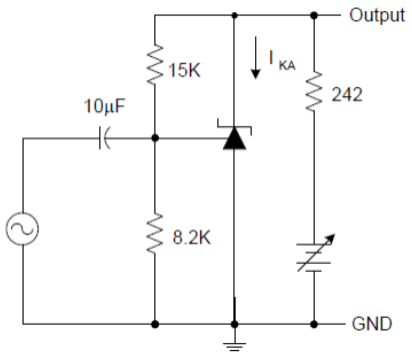
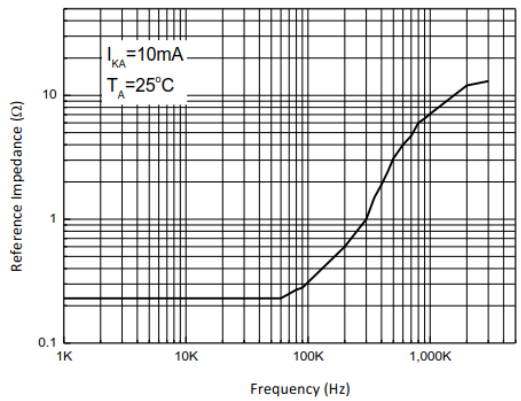
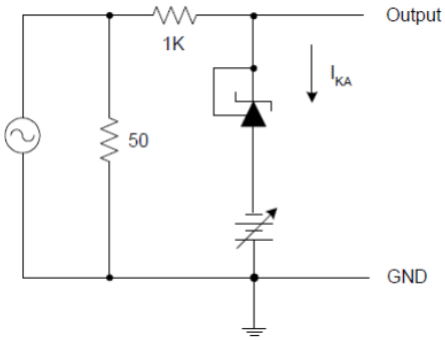
Small Signal Voltage Gain vs. Frequency



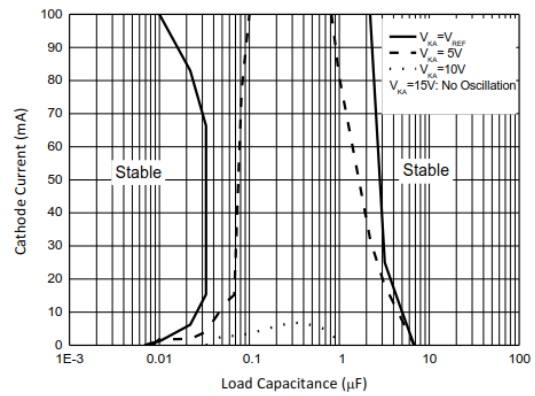


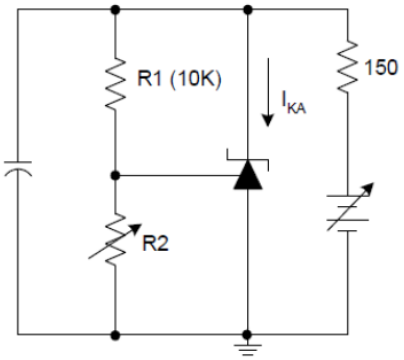
Reference Impedance vs. Frequency





Stability Boundary Conditions vs. Load Capacitance





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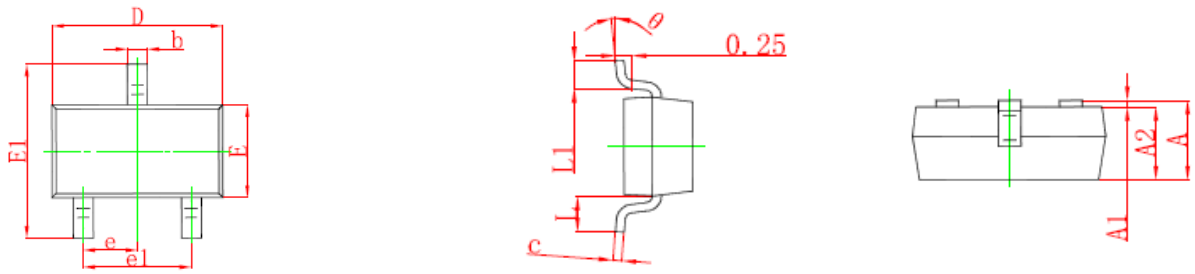
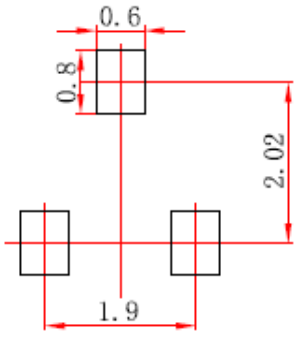
Package Outline Dimensions



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°

Suggested Pad Layout



Note: 1.The Pad Layout is for reference purposes only.

2.All Dimensions are in mm.

3.General tolerance:±0.05 mm.

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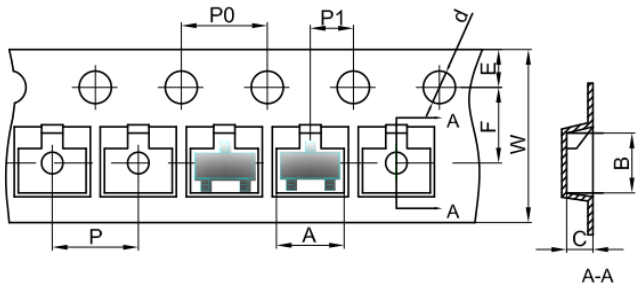
SOT-23 Tape and Reel

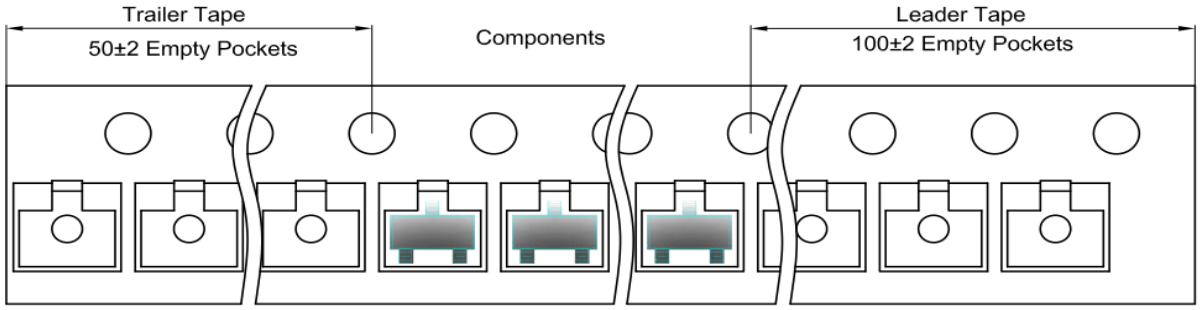
SOT-23 Embossed Carrier Tape



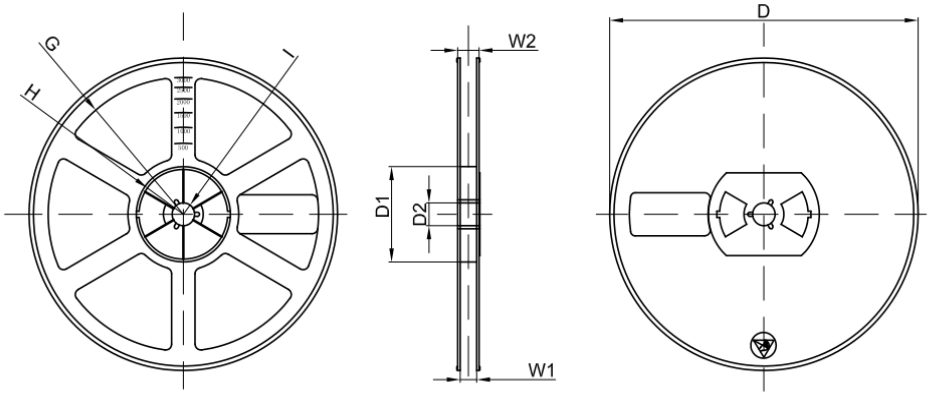
Packaging Description:
SOT-23 parts are shipped in tape.The carrier tape is made from a dissipative(carbon filled) polycarbonate resin.The cover tape is a multilayer film(Heat Activated Adhesive in nature) primarily composed of polyester film,adhesive layer,sealant,and anti-static sprayed agent.These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