

Cathode-Anode Reverse Breakdown V _{KA}	20V
Anode-Cathode Forward Current, (<10ms) I _{AK}	1A
Operating Cathode Current I _{KA}	80mA
Reference Input Current I _{REF}	1mA

Continuous Power Dissipation at 25°C P_D

TO-92.....	775mW
SOT-23.....	200 mW
SOIC-8.....	750mW
Junction Temperature T_J	150 °C
Storage Temperature T_{STG}	-65°C to 150 °C
Lead Temperature (Soldering 10 sec.) T_L	300°C

Stresses greater than those listed under ABSOLUTE MAXIMUM RATINGS may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

RECOMMENDED CONDITIONS

PARAMETER	SYMBOL	RATING	UNIT
Cathode Voltage	V_{KA}	V_{REF} to 18	V
Cathode Current	I_K	10	mA

TYPICAL THERMAL RESISTANCES

PACKAGE	0 _{JA}	0 _{JC}	TYPICAL DERATING
TO-92	160°C/W	80°C/W	6.3mW/°C
SOT-23	575°C/W	150°C/W	1.7 mW/°C
SOIC-8	175°C/W	45°C/W	5.7mW/°C

Typical deratings of the thermal resistances are given for ambient temperature $>25^{\circ}\text{C}$.

ELECTRICAL CHARACTERISTICS

Electrical characteristics are guaranteed over the full junction temperature range (0°C to 105°C). Ambient temperature must be derated based upon power dissipation and package thermal characteristics. Unless otherwise specified, test conditions are: $V_{KA} = V_{REF}$ and $I_K = 10mA$.

PARAMETER	SYMBOL	TEST CIRCUIT	CONDITIONS	MIN	TYP	MAX	MIN	TYP	MAX	UNITS
				SPX432A			SPX432			
Output Voltage	V _{REF}	3a		1.2338	1.240	1.2462	1.2276	1.240	1.2524	V
Temperature Deviation	V _{REF}	3a	0 < T _J < 105°C		12	20		12	20	mV
Line Regulation	V _{REF}	3b	V _{KA} = 1.25V to 15V		19	37		19	37	mV
Load Regulation	V _{REF}	3a	I _K = 1mA to 80mA		12	30		12	30	mV
Reference Input Current	I _{REF}	3b			3	6		3	6	μA
Reference Input Current Temperature Coefficient	I _{REF}	3b	0 < T _J < 105°C,		0.3	0.6		0.3	0.6	μA
Minimum Cathode Current for Regulation	I _{K(MIN)}	3a			0.6	1		0.6	1	mA
Off State Leakage	I _{K(MIN)}	3c	V _{REF} = 0V, V _{KA} = 18V		0.04	500		0.04	500	nA

CALCULATION AVERAGE TEMPERATURE COEFFICIENT (TC)

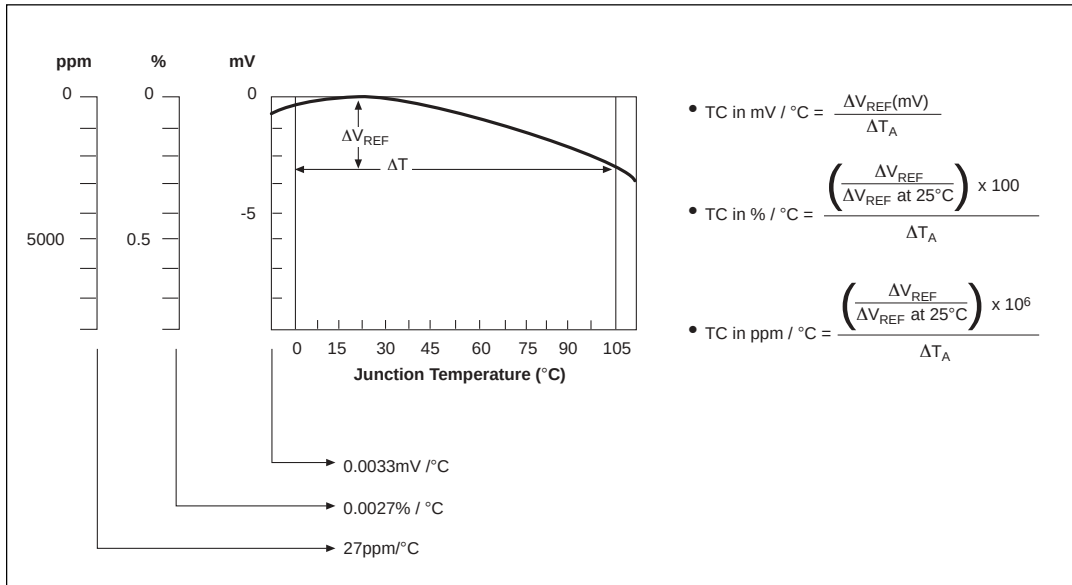


Figure 1. V_{REF} VS Temperature.

TEST CIRCUITS

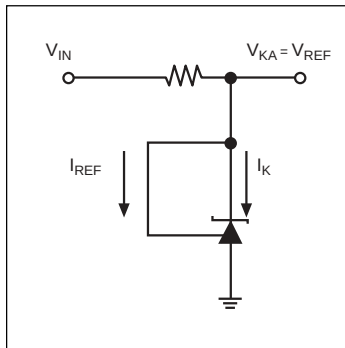


Figure 2. Test Circuit for $V_{KA} = V_{REF}$

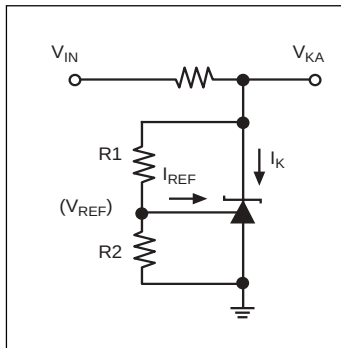


Figure 3. Test Circuit for $V_{KA} > V_{REF}$

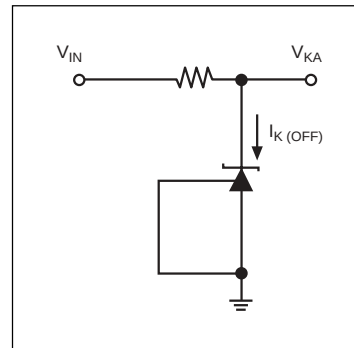
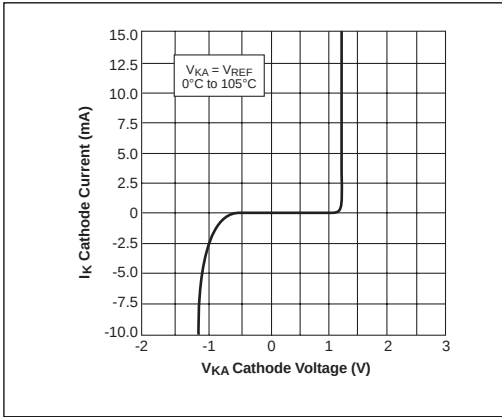
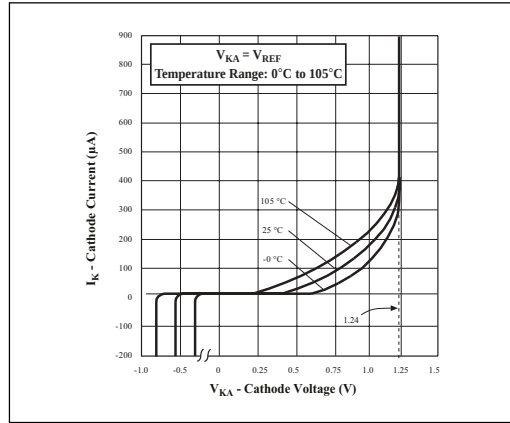


Figure 4. Test Circuit for I_{KOFF}

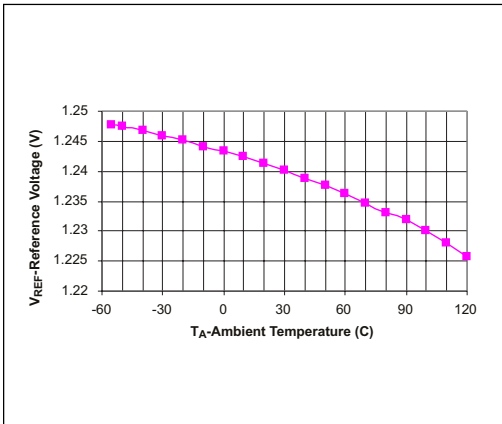
TYPICAL PERFORMANCE CHARACTERISTICS



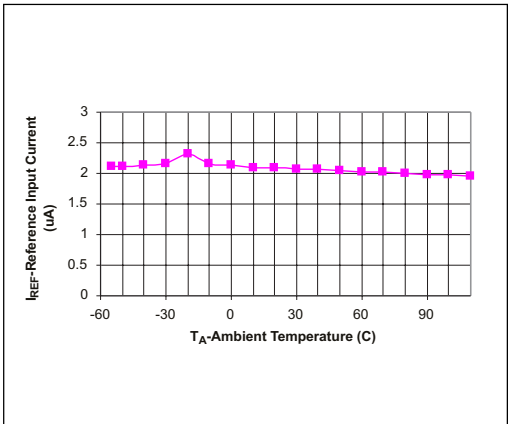
High Current Operating Characteristics.



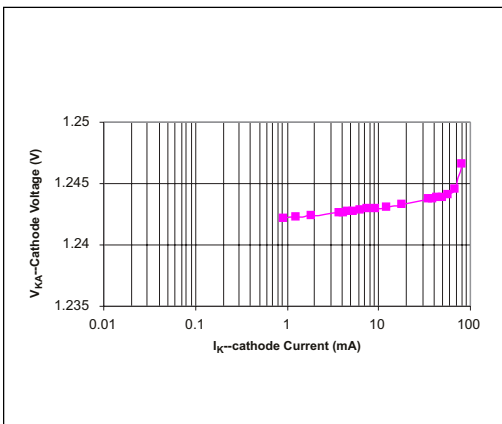
Low Current Operating Characteristics.



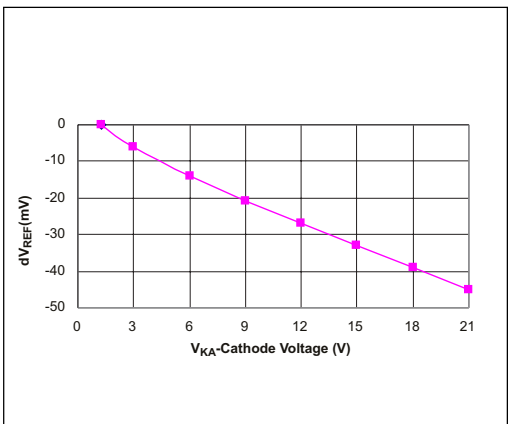
$V_{KA} = V_{REF}$, $I_{KA} = 10\text{mA}$.



Reference Input Current VS Temperature; $I_{KA} = 10\text{mA}$.

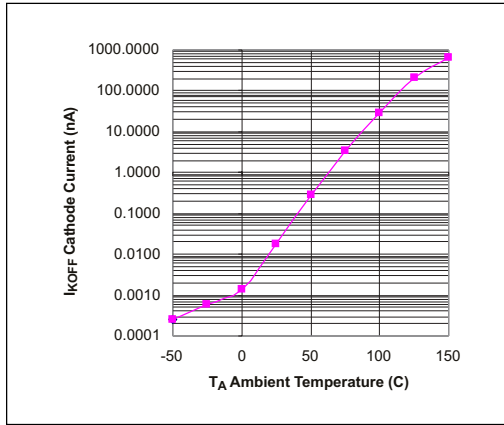


$V_{KA} = V_{REF}$, Sweeping I_{KA} , 25°C .

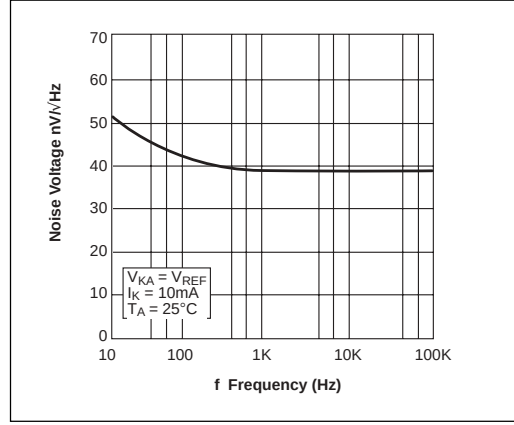


Reference Voltage Line Regulation; $I_{KA} = 10\text{mA}$, Sweeping V_{KA} , 25°C .

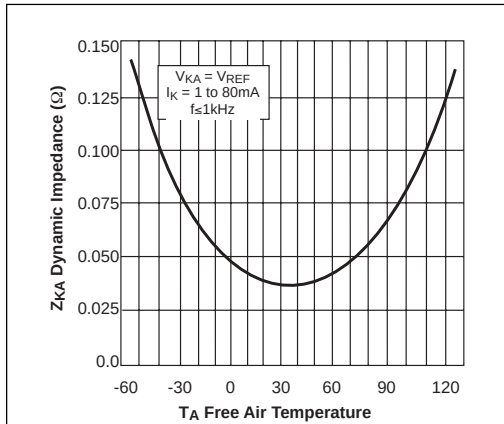
TYPICAL PERFORMANCE CHARACTERISTICS



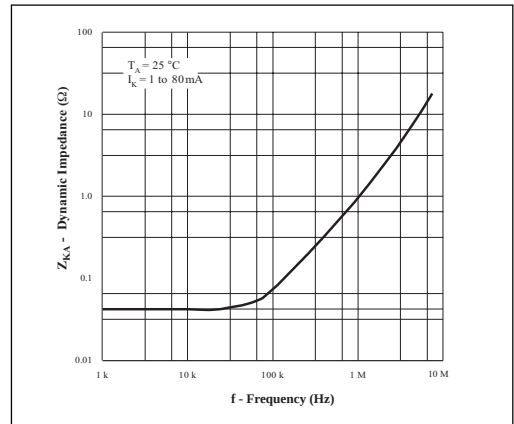
Off State Leakage; $V_{KA} = 18V$, $V_{REF} = 0V$.



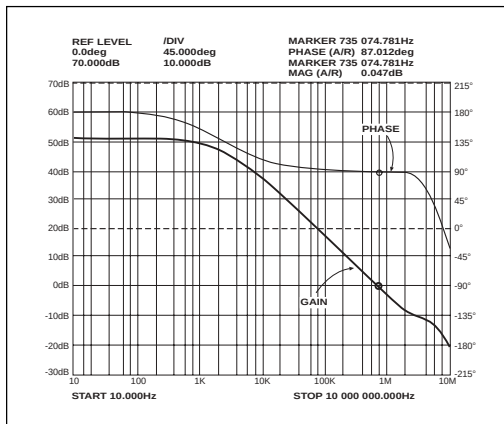
Noise Voltage VS Frequency.



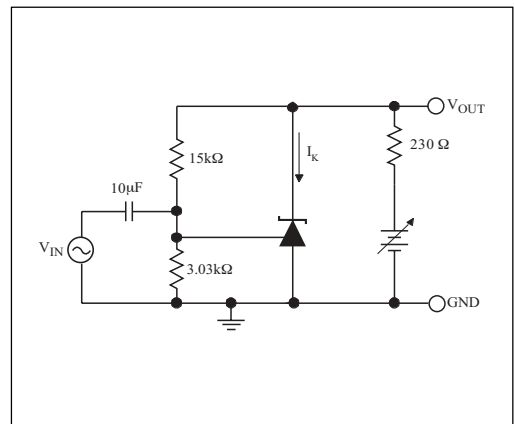
Low Frequency Dynamic Output Impedance VS $T_{AMBIENT}$



Dynamic Output Impedance $T_A = 25^\circ C$, $I_{KA} = 1$ to 80mA.

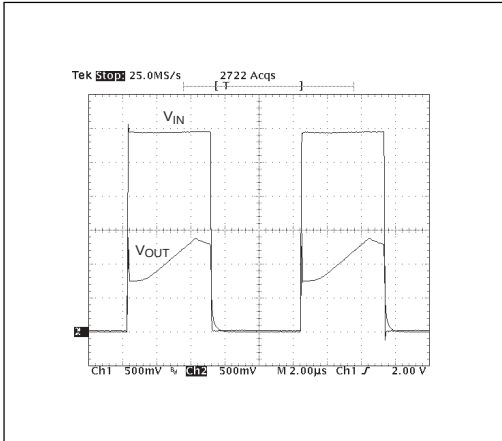


Small Signal Gain and Phase VS Frequency; $I_K = 10mA$, $T_A = 25^\circ C$.

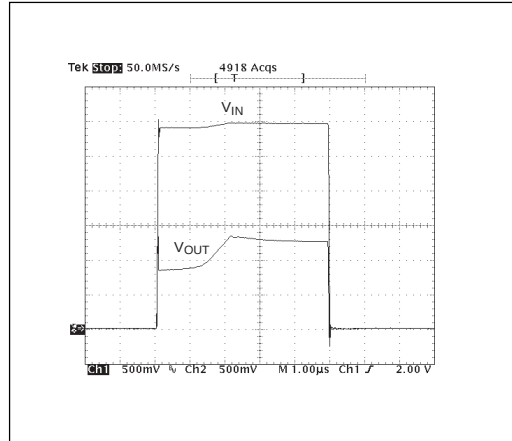


Test Circuit for Gain and Phase Frequency Response.

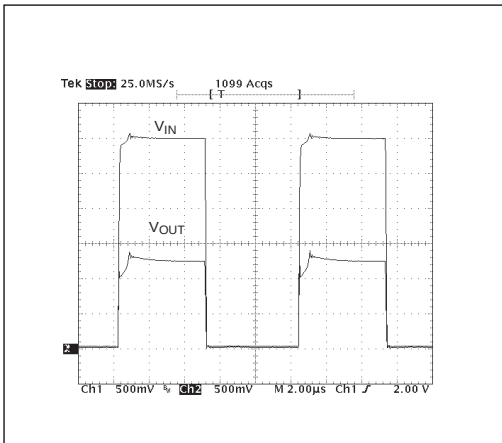
TYPICAL PERFORMANCE CHARACTERISTICS



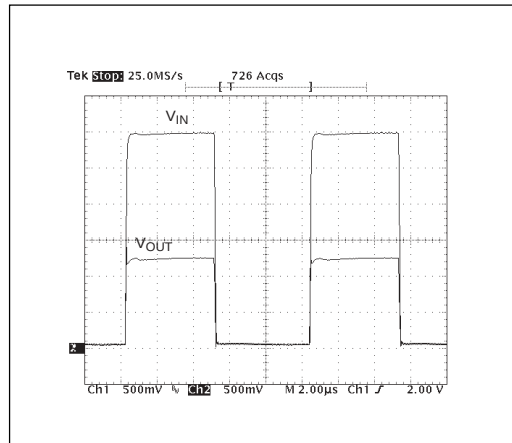
$I_{KA} = 0 \text{ to } 1\text{mA}$.



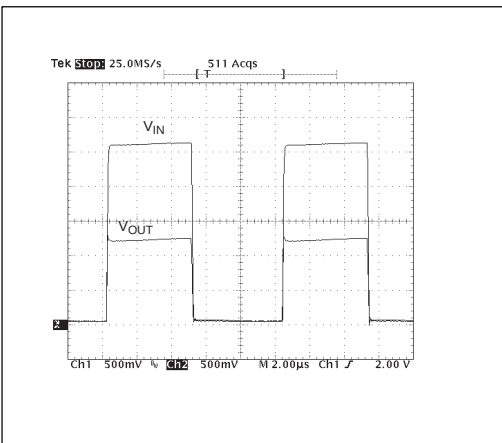
$I_{KA} = 0 \text{ to } 10\text{mA}$.



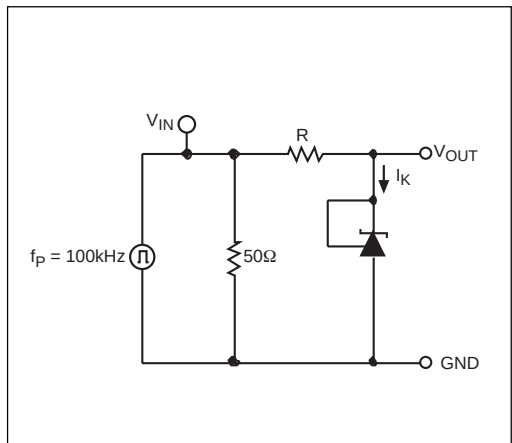
$I_{KA} = 0 \text{ to } 50\text{mA}$.



$I_{KA} = 0 \text{ to } 80\text{mA}$.

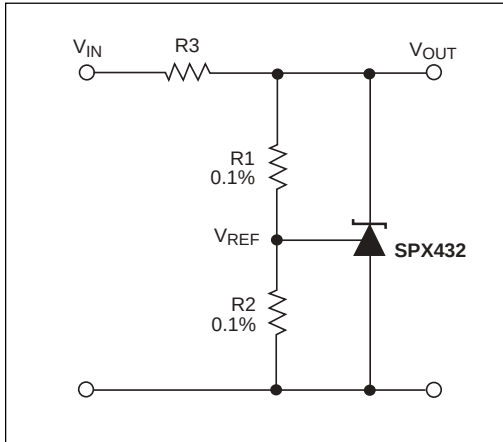


$I_{KA} = 0 \text{ to } 100\text{mA}$.

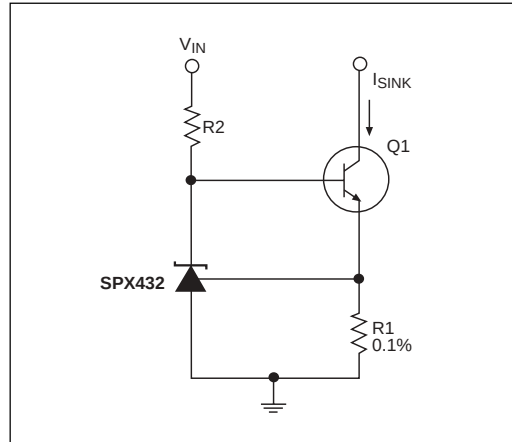


Test Circuit for Pulse Response.

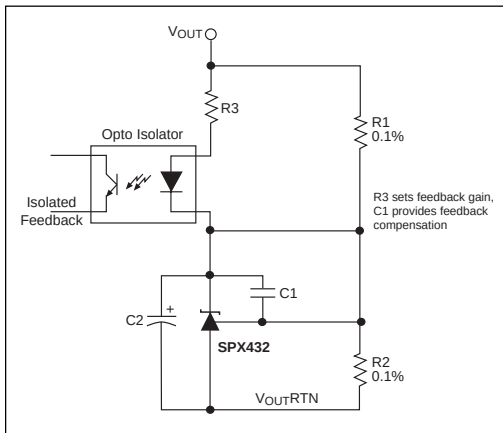
TYPICAL PERFORMANCE CHARACTERISTICS



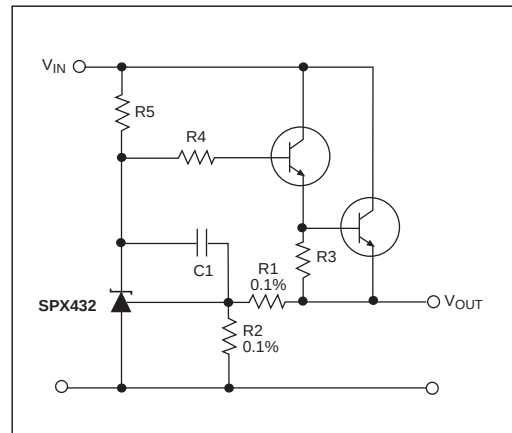
Shunt Regulator, $V_{OUT} = (1+R1/R2)V_{REF}$.



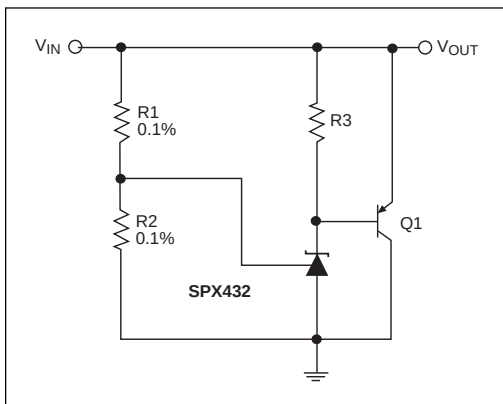
Constant Current Sink $I_{SINK} = V_{REF}/R1$.



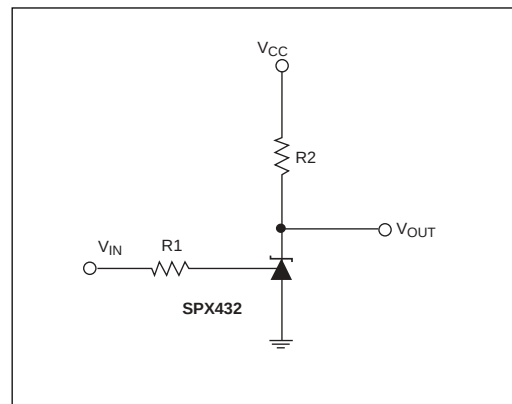
Reference Amplifier for Isolated Feedback in Off-Line DC-DC Converters.



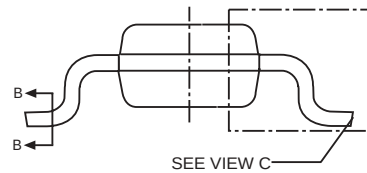
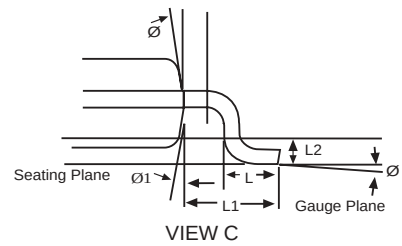
Precision High Current Series Regulator, $V_{OUT} = (1+R1/R2)V_{REF}$.



High Current Shunt Regulator, $V_{OUT} = (1+R1/R2)V_{REF}$.

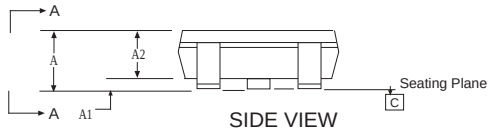
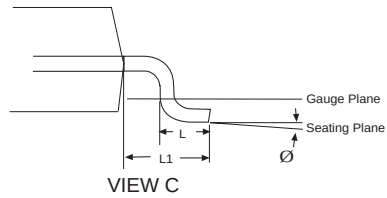
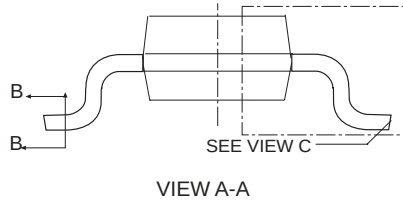
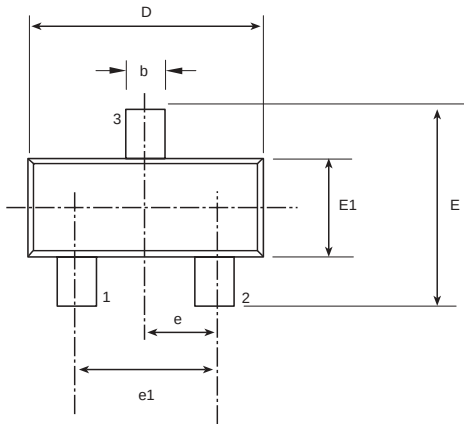


Single Supply Comparator with Temperature Compensated Threshold, V_{IN} threshold = 1.24V.



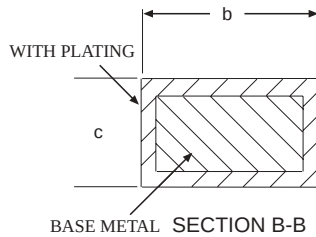
A schematic diagram of a rectangular specimen. The horizontal dimension is labeled b and the vertical dimension is labeled c . The specimen is divided into two regions by a vertical line. The region on the left is labeled "BASE METAL". The region on the right is filled with diagonal hatching. A crack is shown as a line with an arrow pointing to it, originating from the bottom left corner and extending into the hatched region.

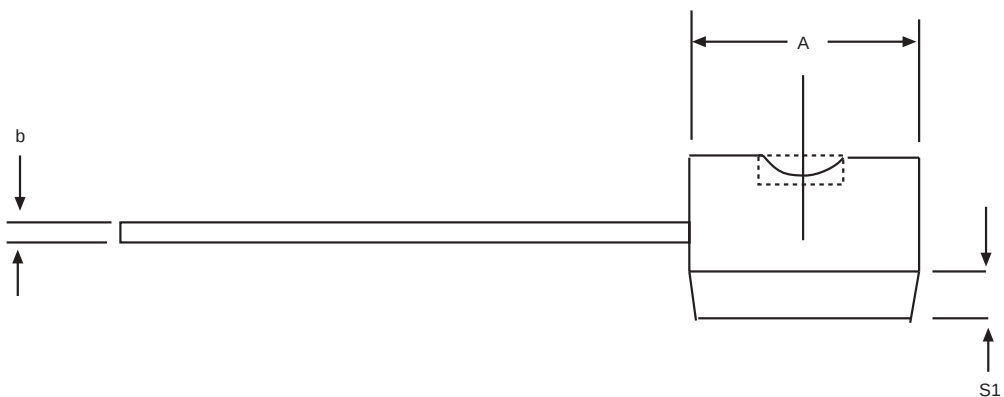
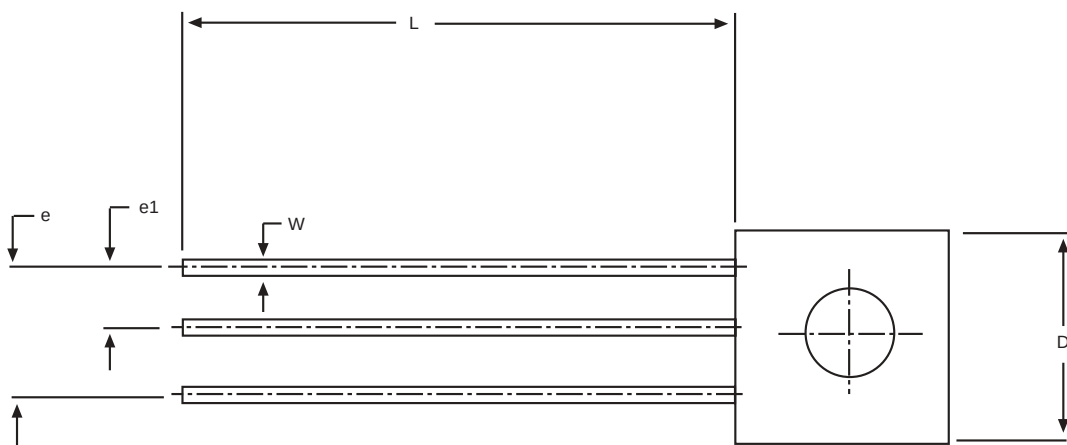
SECTION B-B
WITH PLATING



3 Pin SOT-23 JEDEC TO-236 (AB) Variation			
SYMBOL	MIN	NOM	MAX
A	0.89	-	1.12
A1	0.01	-	0.1
A2	0.88	0.95	1.02
b	0.3	-	0.5
c	0.08	-	0.2
D	2.8	2.9	3.04
e	0.95 BSC		
e1	1.90 BSC		
E	0.95	-	2.64
E1	1.2	1.3	1.4
L	0.4	0.5	0.6
L1	0.54 REF		
Ø	0°	-	8°

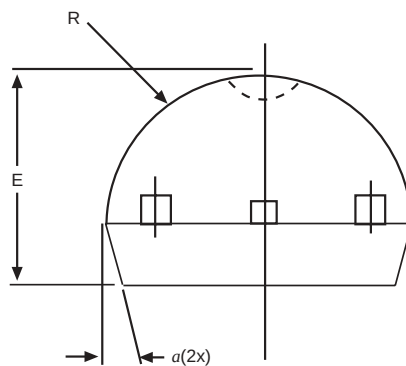
Note: Dimensions in (mm)

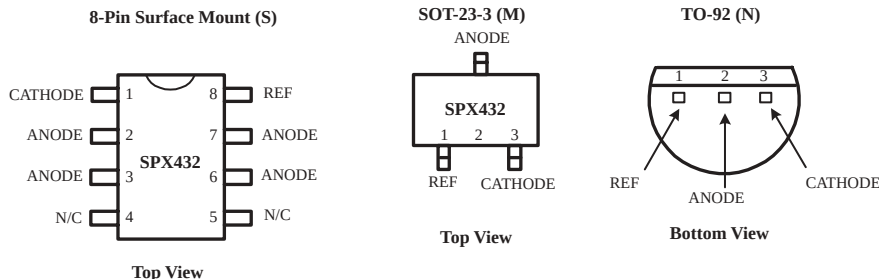




3 Pin TO-92			
SYMBOL	MIN	NOM	MAX
A	0.17	-	0.195
b	0.014	-	0.02
E	0.13	-	0.155
e	0.95	-	0.105
e1	0.045	-	0.055
L	0.5	-	0.61
R	0.085	-	0.095
S1	0.045	-	0.06
W	0.016	-	0.022
D	0.175	-	0.195
a	4°	-	6°

Note: Dimensions in (inches)





ORDERING INFORMATION

PART NUMBER	ACC	OUTPUT VOLTAGE	PACKAGES
SPX432AM	0.5%	1.24V	3-Pin SOT-23
SPX432AM/TR	0.5%	1.24V	3-Pin SOT-23
SPX432AS	0.5%	1.24V	8-Pin NSOIC
SPX432AS/TR	0.5%	1.24V	8-Pin NSOIC
SPX432AN	0.5%	1.24V	3-Pin TO-92
SPX432AN/TR	0.5%	1.24V	3-Pin TO-92
SPX432M	1.0%	1.24V	3-Pin SOT-23
SPX432M/TR	1.0%	1.24V	3-Pin SOT-23
SPX432S	1.0%	1.24V	8-Pin NSOIC
SPX432S/TR	1.0%	1.24V	8-Pin NSOIC
SPX432N	1.0%	1.24V	3-Pin TO-92
SPX432N/TR	1.0%	1.24V	3-Pin TO-92

Available in lead free packaging. To order add "-L" suffix to part number.

Example: SPX432AM/TR = standard; SPX432AM-L/TR = lead free

/TR = Tape and Reel

Pack quantity is 2,000 for TO-92 and 2500 for SOT-23 and NSOIC.

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ANALOG EXCELLENCE

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