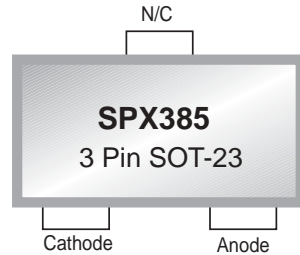


5V Micropower Voltage Reference

FEATURES

- Trimmed Bandgap 1%
- Wide Operating Current 50 μ A to 20mA
- Extended Temperature Range ... -40°C to +85°C
- Dynamic Impedance 1 Ω max
- Offered in Small SOT-23
- Low Cost Solution



APPLICATIONS

- | | |
|--|---|
| <ul style="list-style-type: none"> ■ Battery Operating Equipment ■ Adjustable Supplies ■ Switching Power Supplies ■ Error Amplifiers | <ul style="list-style-type: none"> ■ Single Supply Amplifier ■ Monitors / VCR / TV ■ Personal Computers ■ Power use meter |
|--|---|

DESCRIPTION

The SPX385-5.0 is a micropower 2-terminal band-gap voltage reference with a very wide operating current range from 50 μ A to 20mA that provides a stable voltage.

The SPX385-5.0 is available in a SOT-23 package with an operating temperature range of -40°C to 85°C. A 1.2 and 2.5 volt device are also available - SPX385-1.2, SPX385-2.5.

BLOCK DIAGRAM

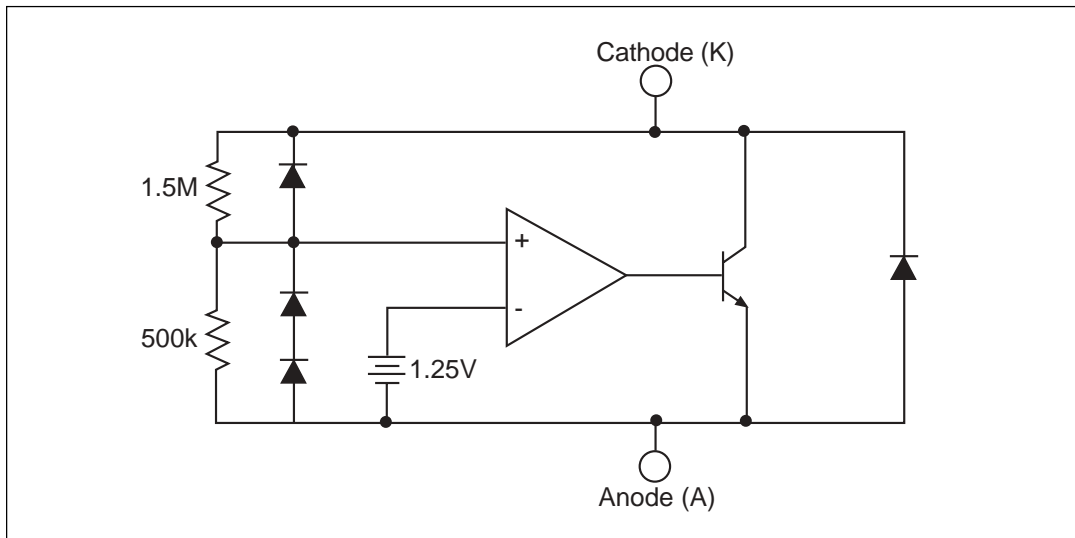


Figure 1: Block Diagram

ABSOLUTE MAXIMUM RATINGS

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.

Reverse Current (I_{KA})	30mA
Forward Current (I_{AK})	10mA
Operating Temperature Range (T_A)	-40 to +85°C
Junction Temperature (T_J)	150°C
Storage Temperature (T_{STG})	- 65 to 150°C
Lead Temperature (Soldering 10 sec.), T_L	300°C

ELECTRICAL CHARACTERISTICS

$I_{IN} = 100\mu A$, $T_A = 25^\circ C$, unless otherwise specified. The \blacklozenge denotes the specifications which apply over the full operating temperature range, unless otherwise specified.

PARAMETER	MIN.	TYP.	MAX		UNIT	CONDITIONS
Reference Voltage	4.90 4.95	5.00 5.00	5.10 5.05	\blacklozenge	V	2% 1%
Dynamic Output Impedance		0.6	1.0	\blacklozenge \blacklozenge	Ω	$F = 20\text{Hz}$ $I_R = 100\mu A$
Reference Voltage Change with I_R		10	20	\blacklozenge	mV	$20\mu A \leq I_R \leq 20\text{mA}$
Temperature Coefficient		30	50	\blacklozenge	ppm/ $^\circ C$	Note 1
Minimum Operating Current	30		50	\blacklozenge	μA	
Output Wideband Noise		120		\blacklozenge	μV_{rms}	$10\text{Hz} \leq f \leq 10\text{kHz}$
Long Term Stability		60		\blacklozenge	ppm	$T = 1000\text{Hr};$ $T_A = 25^\circ C \pm 0.1^\circ C$
Operating Temperature	-40		+85		$^\circ C$	

Note 1. Three-point measurement guarantees the error band over the specified temperature range.

*CALCULATING AVERAGE TEMPERATURE COEFFICIENT (TC)

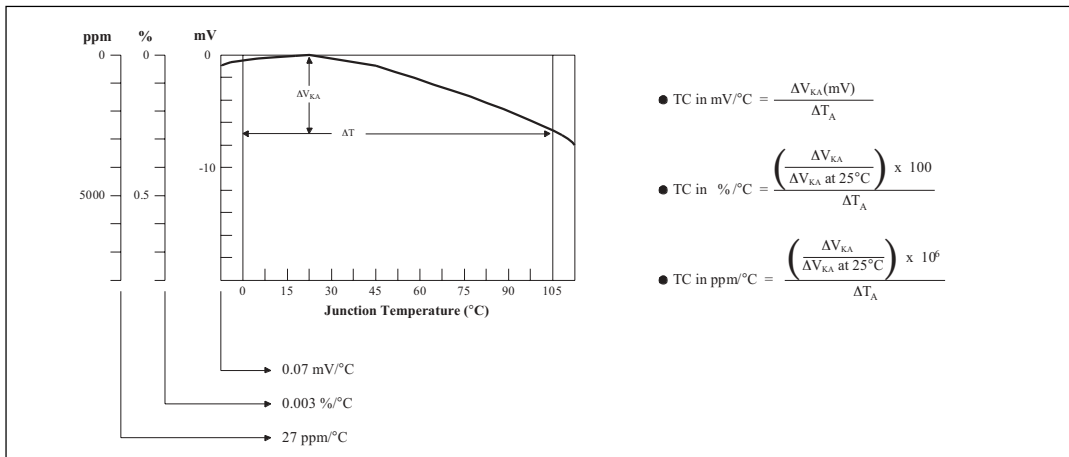


Figure 2. V_{KA} vs. Temperature

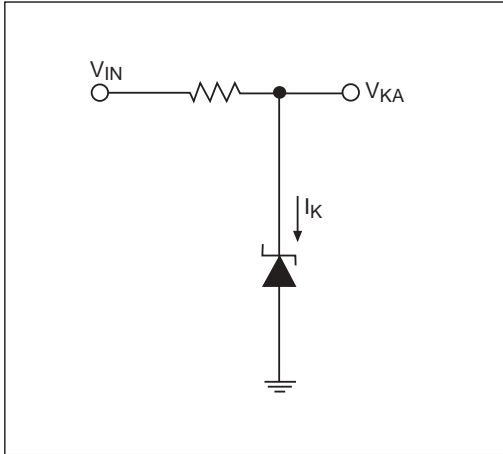


Figure 1. Improving Regulation of Adjustable Regulators

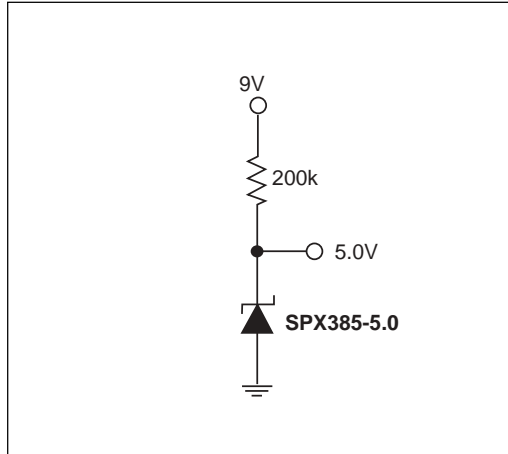


Figure 2. Micropower Reference from 9V Battery

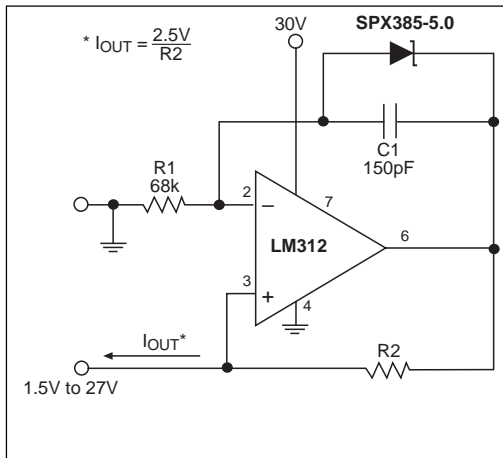


Figure 3. Precision $I_{\mu A}$ to 1mA Current Source

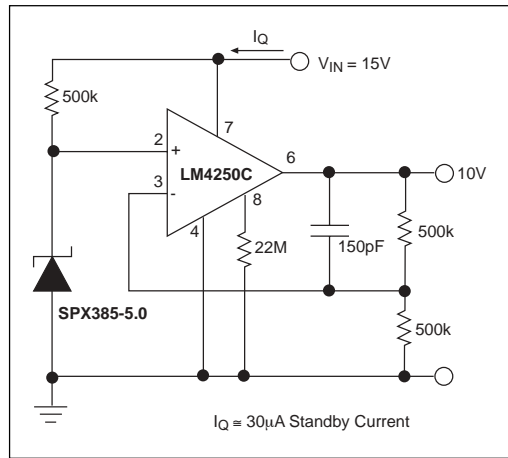
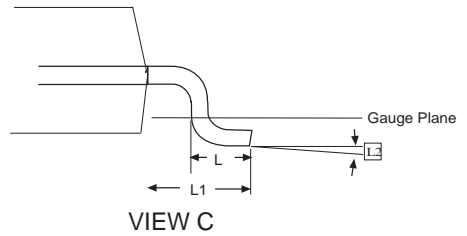
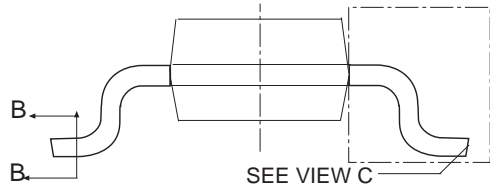
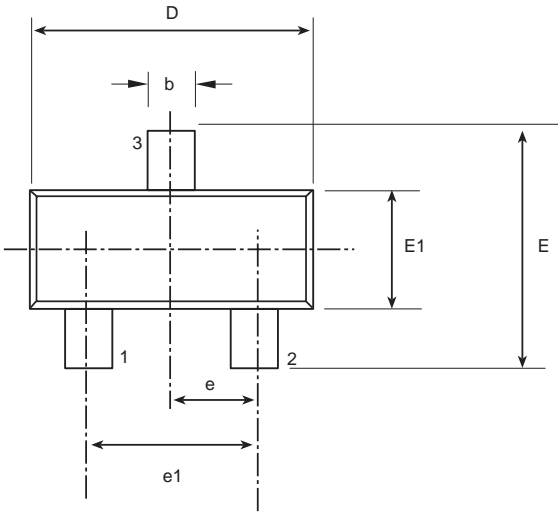
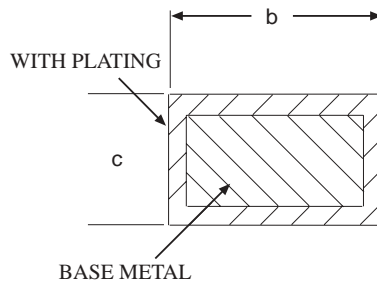
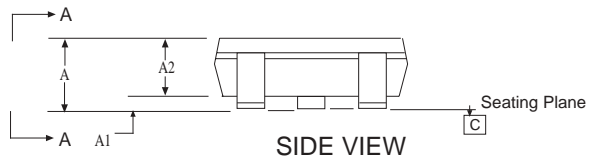


Figure 4. Precision Micropower 10V Reference



Dimensions in (mm)	3 PIN SOT-23 JEDEC TO-236 (AB) Variation		
	MIN	NOM	MAX
A	0.89	-	1.12
A1	0.01	-	0.10
A2	0.88	.95	1.02
b	0.30	-	0.50
c	0.08	-	0.20
D	2.80	2.90	3.04
e	0.95 BSC		
e1	1.90 BSC		
E	2.10	-	2.64
E1	1.20	1.30	1.40
L	0.30	0.45	0.60
L1	0.54 REF		
∅	0°	-	8°



3 PIN SOT-23

Part Number	Accuracy	Output Voltage	Package Type
SPX385AM-5.0	1.0%	5.0V	3-Pin SOT-23
SPX385BM-5.0	2.0%	5.0V	3-Pin SOT-23



ANALOG EXCELLENCE

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