

ALPHA SEMICONDUCTOR

Excellence in Analog Power Products

AS385-1.23

Micropower Voltage Reference

FEATURES

- Low output voltage 1.23 Volt
- Dynamic impedance..... 1Ω Max
- Low temperature coefficient..... 30ppm/°C Typ
- Operating current..... 10μA to 20mA
- Initial tolerance 1% & 2%
- Direct Pin Compatible to LM185/285/385, 1.23 Volt

APPLICATIONS

- Portable Meter Reference
- Portable Test Instruments
- Battery Operated Systems
- Panel Meter

PRODUCT DESCRIPTION

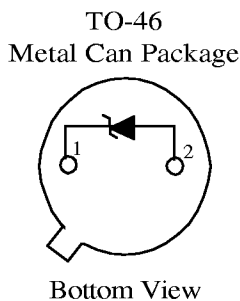
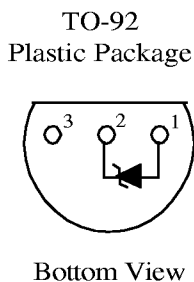
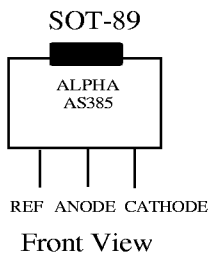
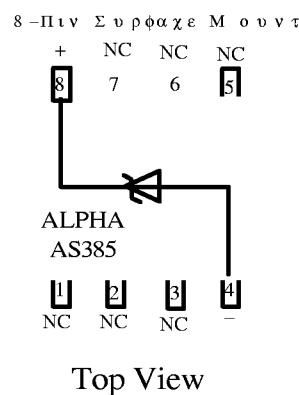
The ALPHA Semiconductor AS385-1.23 is a micropower 2-terminal band-gap voltage reference with a very wide operating current range from 10μA to 20mA that provides a stable voltage. The high stability of this device is primarily the result of the low temperature coefficient Thin Film Resistor process and Laser Trimming of the Output Voltage at the wafer level.

The AS385-1.23 is available in a TO-46 package with an operating temperature range of -55°C to +125°C, and TO-92, SO-8 and SOT-89 packages with an operating temperature range of -40°C to 85°C. The ALPHA Semiconductor 2.5 volt device is also available in an AS385-2.5.

ORDERING INFORMATION

Part Number	Max. Tempco ppm/C	Temp. Range	Package Type
AS385AT-1.2	50	MIL	TO-46
AS385BT-1.2	100	MIL	TO-46
AS385AN-1.2	50	IND	TO-92
AS385BN-1.2	50	IND	TO-92
AS385AS-1.2	50	IND	SO-8
AS385BS-1.2	50	IND	SO-8
AS385AM-1.2	50	IND	SOT-89
AS385BM-1.2	50	IND	SOT-89

PIN CONNECTIONS



ABSOLUTE MAXIMUM RATINGS

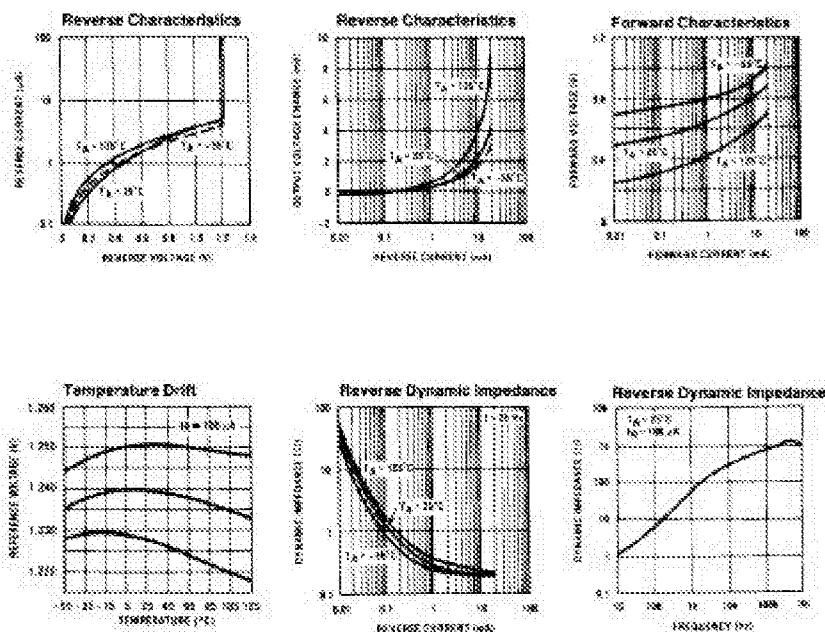
Reverse Current.....	30 mA
Forward Current.....	10mA
Operating Temperature Range	
TO-46 Package.....	-55 °C to +125°C
SO-8, SOT-89 and TO-92 Packages	-40 °C to +85°C
Storage Temperature	-55°C to +150°C

ELECTRICAL CHARACTERISTICS at $I_{in}=100\mu A$, $T_a=25^\circ C$, unless otherwise specified.

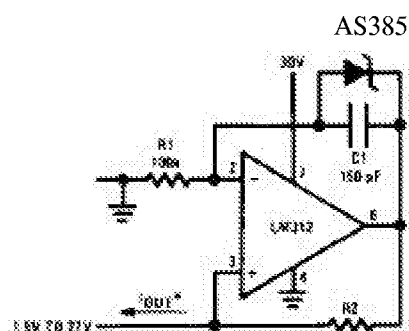
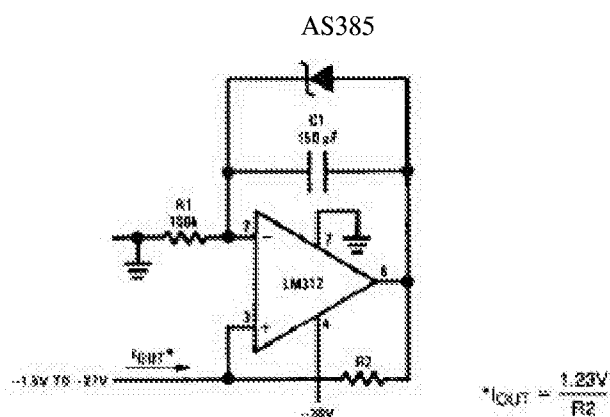
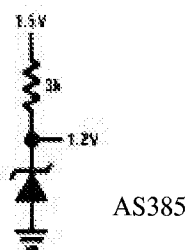
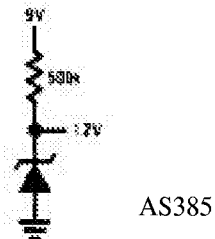
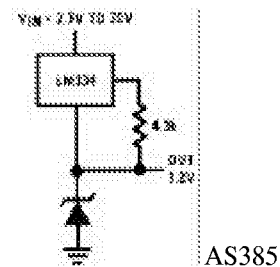
PARAMETER	CONDITIONS	AS385AT-1.2			AS385BT-1.2			AS385AN-1.2 AS385AS-1.2			AS385BN-1.2 AS385BS-1.2			UNIT
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Reference Voltage		1.237	1.23	1.263	1.225	1.23	1.275	1.223	1.23	1.247	1.205	1.23	1.260	V
Dynamic Output Impedance	$f=20\text{Hz}$ $I_R = 100\mu A$		0.6	1.0		0.6	1.0		0.6	1.0		0.6	1.0	Ω
Reference Voltage Change With I_R .	$10\mu A \leq I_R \leq 20\text{mA}$		10	20		10	20		10	20		10	20	mV
Temperature Coeff.	Note 1 Design Limits		30	50 150		30	50 150		30	50 150		30	50 150	ppm/°C ppm/°C
Minimum Operating Current			8	10		8	10		8	10		8	10	μA
Output Wideband Noise	$10\text{Hz} \leq f \leq 10\text{kHz}$		60			60			60			60		μV_{rms}
Operating Temperature		-55		+125	-55		+125	-40		+85	-40		+85	°C

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

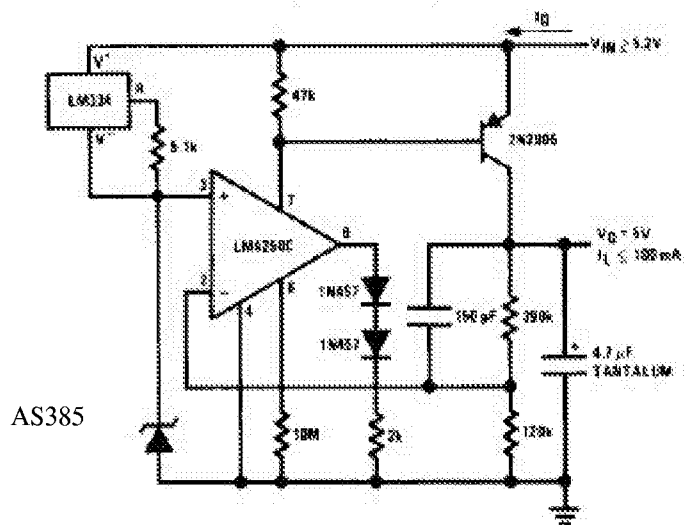
TYPICAL PERFORMANCE CHARACTERISTICS



APPLICATIONS

Precision 1 μ A to 1 mA Current SourcesReference from
1.5V BatteryMicropower Reference
from 9V BatteryWide Input Range
Reference

Micropower* 5V Regulator

 $\tau_{\text{off}} \approx 30 \mu\text{s}$