LM385S8-1.2/LM385S8-2.5

Micropower Voltage Reference

FEATURES

- 15μA to 20mA Operating Range—1.2V Version
- 20μA to 20mA Operating Range—2.5V Version
- *Guaranteed* 1Ω Dynamic Impedance
- Very Low Power Consumption

APPLICATIONS

- Portable Meter References
- Portable Test Instruments
- Battery Operated Systems
- Panel Meters
- Current Loop Instrumentation

DESCRIPTION

The LM385 series are two terminal band gap reference diodes that have been designed for applications which require precision performance with micropower operation. The devices provide guaranteed operating specifications at currents as low as 15μA. Some additional features are: maximum dynamic impedance of 1Ω, low noise and excellent stability over time and temperature. The advanced design, processing and testing techniques make Linear's LM385 series a superior choice over previous designs. A circuit for cold junction compensation of a thermocouple is shown below.

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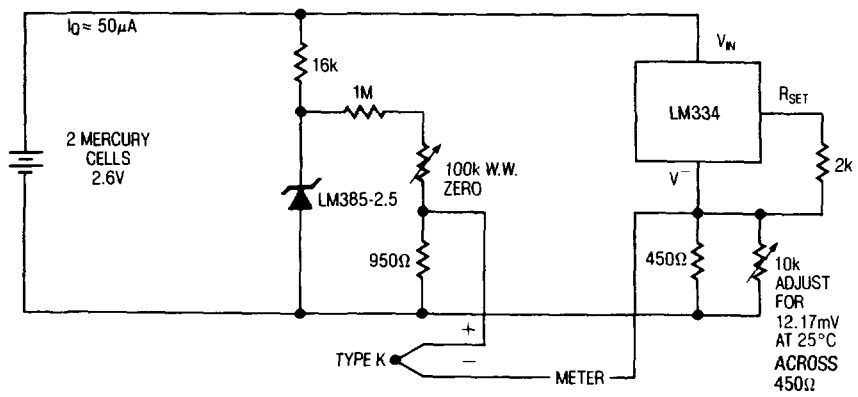
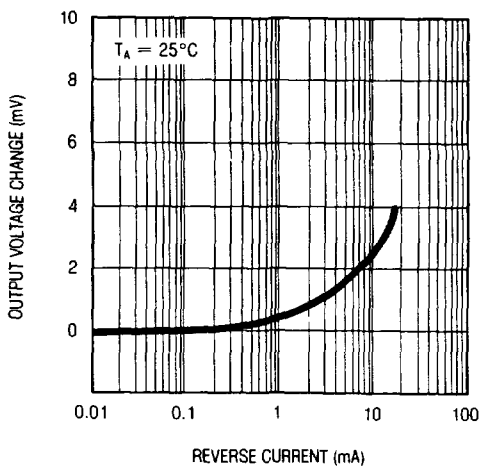
Thermocouple Cold Junction Compensator



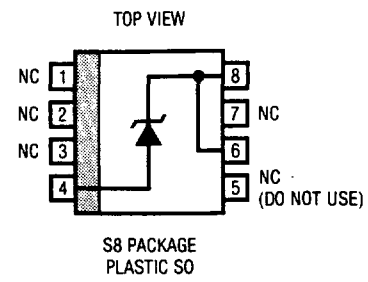
Reverse Voltage Change with Current (LM385-1.2)



ABSOLUTE MAXIMUM RATINGS

Reverse Breakdown Current 30mA
Forward Current 10mA
Operating Temperature Range ..... 0°C to 70°C
Storage Temperature Range ..... –65°C to 150°C
Lead Temperature (Soldering, 10 sec.)..... 300°C

PACKAGE/ORDER INFORMATION



S8 PACKAGE
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ORDER PART NUMBER
LM385S8-1.2 LM385S8-2.5
PART MARKING
3851 (1.2V VERSION) 3852 (2.5V VERSION)

ELECTRICAL CHARACTERISTICS (See Note 1)

SYMBOL	PARAMETER	CONDITIONS		LM385-1.2 MIN	LM385-1.2 TYP	LM385-1.2 MAX	LM385-2.5 MIN	LM385-2.5 TYP	LM385-2.5 MAX	UNITS
V_Z	Reverse Breakdown Voltage	$T_A = 25°C$, $20\mu A \le I_R \le 20mA$		1.205	1.235	1.260	2.425	2.5	2.575	V
$\frac{\Delta V_Z}{\Delta Temp}$	Average Temperature Coefficient	$I_{MIN} \le I_R \le 20mA$ (Note 2)			20			20		ppm/°C
I_{min}	Minimum Operating Current	$T_{min} \le T_A \le T_{max}$	●		8	15		8	20	μA
$\frac{\Delta V_Z}{\Delta I_R}$	Reverse Breakdown Voltage Change with Current	$I_{min} \le I_R \le 1mA$								
		$T_A = 25°C$				1			2	mV
		$T_{min} \le T_A \le T_{max}$	●			1.5			2.5	mV
		$1mA \le I_R \le 20mA$								
		$T_A = 25°C$				20			20	mV
		$T_{min} \le T_A \le T_{max}$	●			25			25	mV
r_Z	Reverse Dynamic Impedance	$I_R = 100\mu A$								
		$T_A = 25°C$			0.4	1		0.4	1	Ω
		$T_{min} \le T_A \le T_{max}$	●			1.5			1.5	Ω
e_n	Wide Band Noise (RMS)	$10Hz \le f \le 10kHz$, $I_R = 100\mu A$			60			120		μV
$\frac{\Delta V_Z}{\Delta Time}$	Long Term Stability	$T_A = 25°C \pm 0.1°C$, $I_R = 100\mu A$			20			20		ppm/kHr

The ● denotes the specifications which apply over full operating temperature range.

Note 1: All specifications are for $T_A = 25°C$ unless otherwise noted. $T_{min} = 0°C$ and $T_{max} = +70°C$.

Note 2: For guaranteed TC and very low initial tolerance, consult LT1034CS8 data sheet. The LT1034CS8 is a low cost, pin for pin substitution device.