

SEMTECH**ADJUSTABLE MICROPOWER
VOLTAGE REFERENCE DIODE****SC385B**

TEL: 805-498-2111 FAX: 805-498-3804

FEATURES

- Adjustable output voltage - 1.235V to 5.3V
- Operating current - 10 μ A to 20mA
- 1% initial tolerance
- 1 Ω dynamic impedance
- Low temperature coefficient

APPLICATIONS

- Micropower circuitry
- Portable meters
- Battery powered systems
- Temperature detection devices

DESCRIPTION

The SC385B is a micropower, 3 terminal, adjustable band-gap voltage reference diode. The SC385 operates from 1.235 to 5.3 volts over a 10 μ A to 20mA current range. The circuit exhibits low dynamic impedance and very good temperature stability over the entire range of operation.

Low power consumption makes the part useful for micropower circuitry. Additional applications can be found in meters, temperature measurement and general purpose battery powered circuits where battery life is important. The SC385 is also available in 2 lead non-adjustable versions to be used as a simple diode.

DEVICE SELECTION GUIDE

SC385B-XX

→ OUTPUT VOLTAGE

1.2 = 1.235 volts

2.5 = 2.5 volts

ADJ = adjustable

→ PACKAGE TYPE

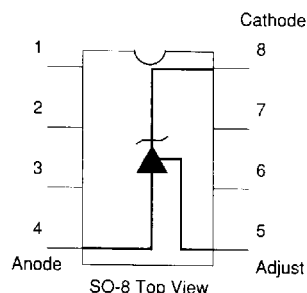
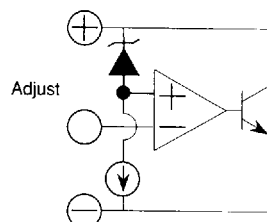
S = SO-8

**ABSOLUTE
MAXIMUM RATINGS**

SC385 Operating Temperature	0° to 70°C
Junction Temperature	100°C
Soldering Temp. 10 sec	260°C
Storage Temperature	-55 to 150°C
Maximum Reverse Current	30mA
Maximum Forward Current	10mA

THERMAL RESISTANCES

	SO-8
θ_{JA} , Junction to ambient	165°C/W

BLOCK DIAGRAM

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ELECTRICAL CHARACTERISTICS**SC385B**

Parameter	Conditions	MIN	TYP	MAX	UNITS
Reference Voltage					V
SC385B-ADJ	$20\mu\text{A} < I_R < 20\text{mA}$	1.223	1.235	1.247	
SC385B-1.2	$20\mu\text{A} < I_R < 20\text{mA}$	1.223	1.235	1.247	
SC385B-2.5	$20\mu\text{A} < I_R < 20\text{mA}$	2.462	2.50	2.538	
Reference Voltage Change with Current	$I_{\text{MIN}} < I_R < 1\text{mA}$		0.2	1	mV
	$1\text{mA} < I_R < 20\text{mA}$		4	10	mV
Dynamic Output Impedance	$I_R = 100\mu\text{A}$, $f = 100\text{Hz}$ $I_{\text{AC}} = 0.1 I_R$, $V_R = V_{\text{REF}}$ $V_R = 5.0\text{V}$				
			0.3		Ω
			0.7		Ω
Reference Voltage Change with Output Voltage	$I_R = 100\mu\text{A}$		1	3	mV
Feedback Current			13	20	nA
Minimum Operating Current	$V_R = V_{\text{REF}}$ $V_R = 5.0\text{V}$		6	9	μA
			30	45	μA
Output Wideband Noise	$I_R = 100\mu\text{A}$, $10\text{Hz} < f < 10\text{kHz}$ $V_{\text{OUT}} = V_{\text{REF}}$ $V_{\text{OUT}} = 5.0\text{V}$				μV_{rms}
			50		
			170		
Average Temperature Coefficient	$I_R = 100\mu\text{A}$		50	150	ppm/ $^{\circ}\text{C}$
Long Term Stability	$I_R = 100\mu\text{A}$, $T = 1000\text{Hr}$ $T_R = 25^{\circ}\text{C} \pm 0.1^{\circ}\text{C}$		20		ppm