

May 1, 2000

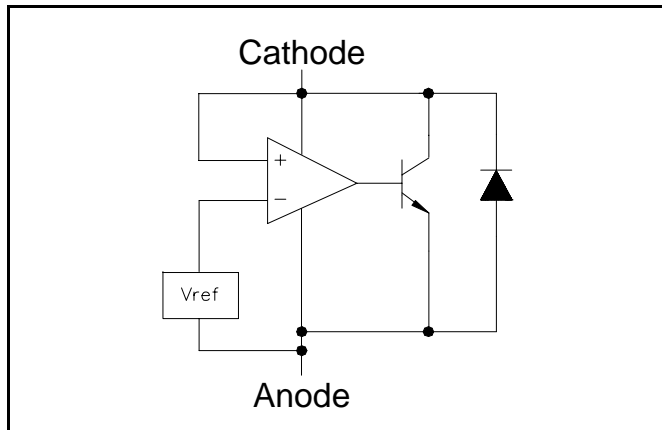
TEL:805-498-2111 FAX:805-498-3804 WEB:http://www.semtech.com

DESCRIPTION

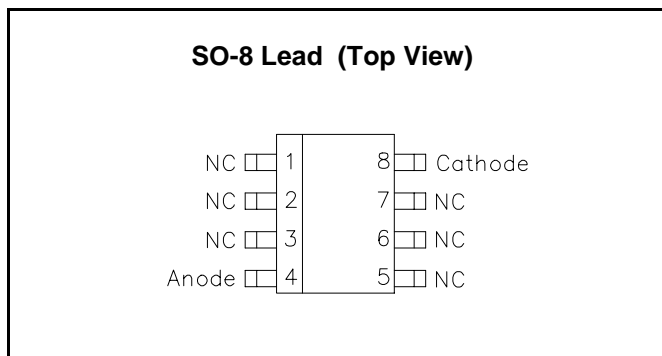
The SC1004(A) is a two terminal precision voltage reference with thermal stability guaranteed over temperature. The SC1004(A) has a typical dynamic output impedance of 0.2Ω. Active output circuitry provides a very sharp turn on characteristic - the minimum operating current is 20μA, with a maximum of 20mA.

Coming with an initial tolerance of ± 0.8% (0.32% for SC1004A), and with two available voltage options (1.235V and 2.5V) in a small SO-8 package, the SC1004(A) is ideally suited for very low power circuitry such as temperature sensors and portable meters.

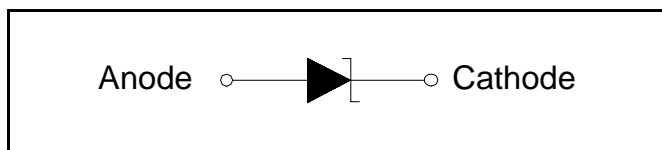
BLOCK DIAGRAM



PIN CONFIGURATION



SYMBOL DIAGRAM



FEATURES

- Trimmed bandgap design (0.8%, 0.32% for SC1004A version)
- Wide operating current range 20μA to 20mA
- Low dynamic impedance (0.2Ω)
- SO-8 package

APPLICATIONS

- Micropower circuitry
- Portable meters
- Battery powered systems
- Temperature sensors

ORDERING INFORMATION

VOLTAGE ⁽¹⁾		INITIAL ACCURACY
1.235 V	2.5 V	
SC1004CS8-1.2.TR	SC1004CS8-2.5.TR	±0.8%
SC1004ACS8-1.2.TR	-	±0.32%

Notes:

(1) Only available in tape and reel packaging. A reel contains 2500 devices.

ABSOLUTE MAXIMUM RATINGS

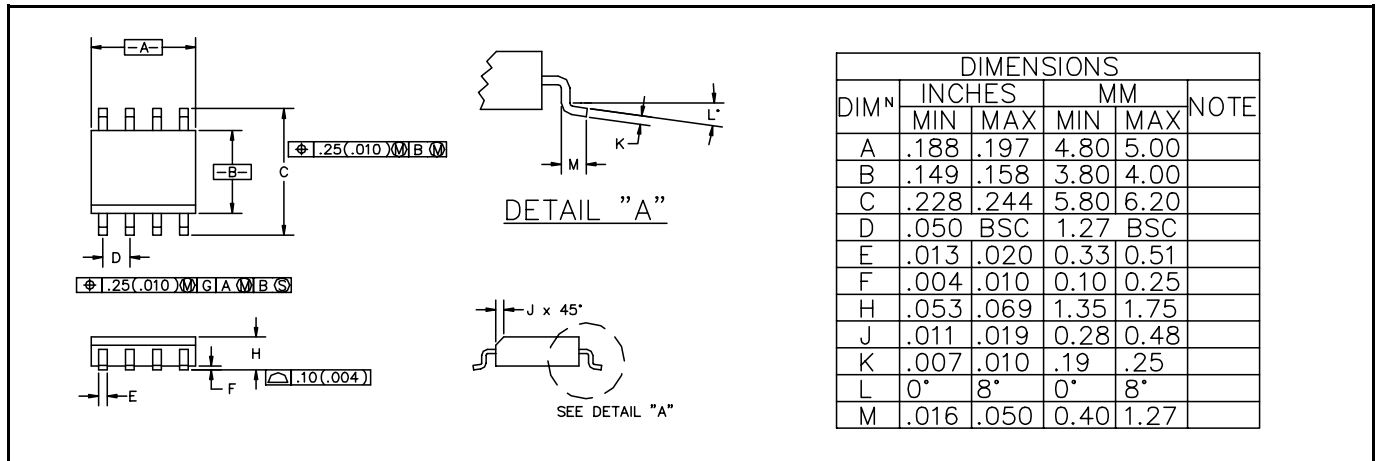
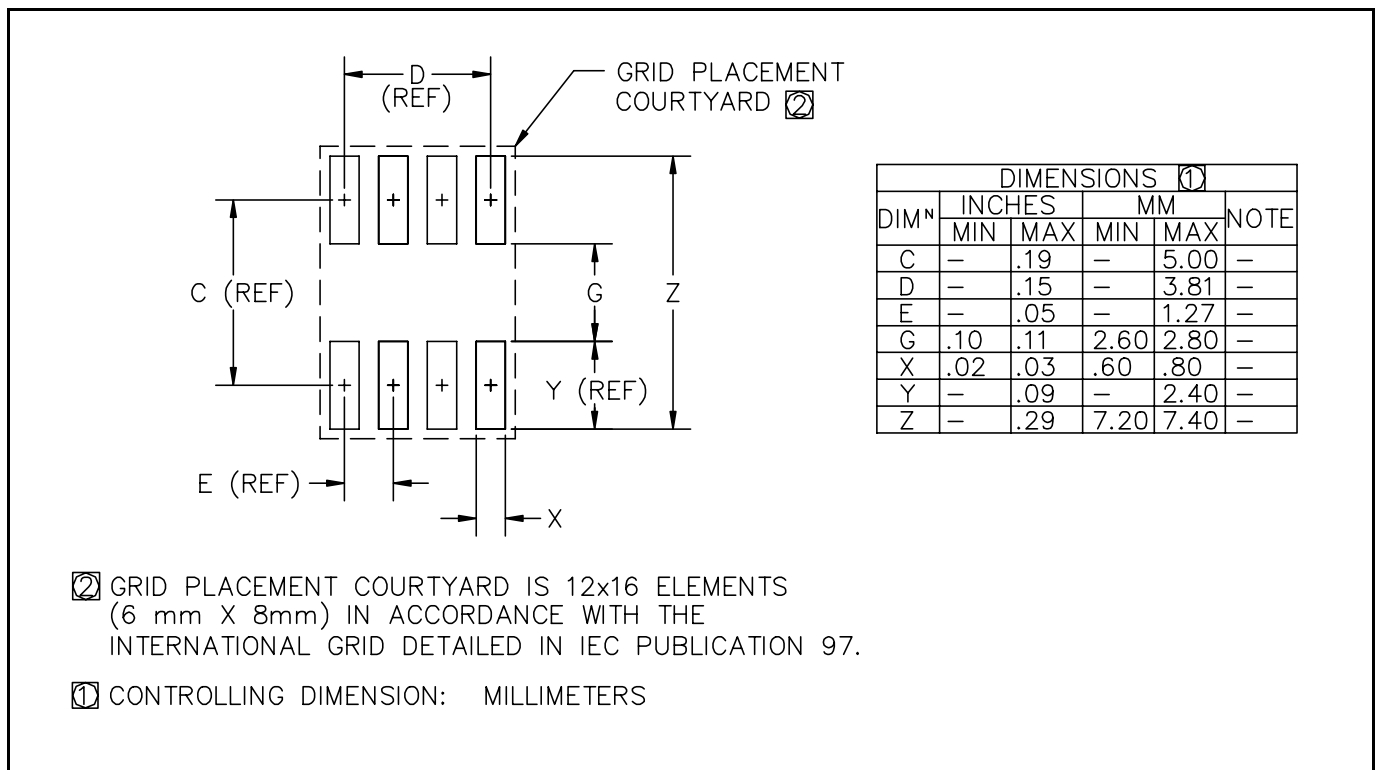
Parameter	Symbol	Maximum	Units
Reverse Current		20	mA
Operating Temperature Range	T _A	-40 to +85	°C
Operating Junction Temperature Range	T _J	-40 to +150	°C
Storage Temperature Range	T _{STG}	-65 to +150	°C
Lead Temperature (Soldering) 10 seconds	T _{LEAD}	300	°C

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ELECTRICAL CHARACTERISTICS

$T_A = 25^\circ\text{C}$ unless otherwise specified.				-1.2			-2.5			
Parameter	Symbol	Condition		MIN	TYP	MAX	MIN	TYP	MAX	UNITS
Reverse Breakdown Voltage, SC1004	V_Z	$I_Z = 100\mu\text{A}$	$T_A = 25^\circ\text{C}$	1.225	1.235	1.245	2.480	2.500	2.520	V
			$T_A = 0$ to $+70^\circ\text{C}$	1.220	1.235	1.250	2.470	2.500	2.530	
			$T_A = -40$ to $+85^\circ\text{C}$	1.215	1.235	1.255	2.460	2.500	2.535	
Reverse Breakdown Voltage, SC1004A	V_Z	$I_Z = 100\mu\text{A}$	$T_A = 25^\circ\text{C}$	1.231	1.235	1.239	N/A	N/A	N/A	V
			$T_A = 0$ to $+70^\circ\text{C}$	1.225	1.235	1.245	N/A	N/A	N/A	
			$T_A = -40$ to $+85^\circ\text{C}$	1.220	1.235	1.245	N/A	N/A	N/A	
Average Temperature Coefficient	$\frac{\Delta V_Z}{\Delta T}$	$I_{Z(\text{min})} \leq I_Z \leq 20\text{mA}$			20			20		ppm/ $^\circ\text{C}$
Minimum Operating Current	$I_{Z(\text{min})}$		$T_A = -40$ to $+85^\circ\text{C}$		8	10		12	20	μA
Ratio of Change in V_Z to Change in I_Z	$\frac{\Delta V_Z}{\Delta I_Z}$	$I_{Z(\text{min})} \leq I_Z \leq 1\text{mA}$	$T_A = 25^\circ\text{C}$			1.0			1.0	mV
			$T_A = -40$ to $+85^\circ\text{C}$			1.5			1.5	
		$1\text{mA} \leq I_Z \leq 20\text{mA}$	$T_A = 25^\circ\text{C}$			10			10	
			$T_A = -40$ to $+85^\circ\text{C}$			20			20	
Reverse Dynamic Impedance	Z_R	$I_Z = 100\mu\text{A}$	$T_A = 25^\circ\text{C}$		0.2	0.6		0.2	0.6	Ω
			$T_A = -40$ to $+85^\circ\text{C}$			1.5			1.5	
Wideband Noise (RMS)	e_N	$I_Z = 100\mu\text{A}, 10\text{Hz} \leq f \leq 10\text{kHz}$			60			120		μV
Long Term Stability of Reverse Break-down Voltage	ΔV_Z	$t = 1000$ hours, $T = 25^\circ\text{C} \pm 0.1^\circ\text{C}$, $I_Z = 100\mu\text{A}$			20			20		ppm

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OUTLINE DRAWING - SO-8

LAND PATTERN - SO-8


ECN00-1051