

May 1, 2000

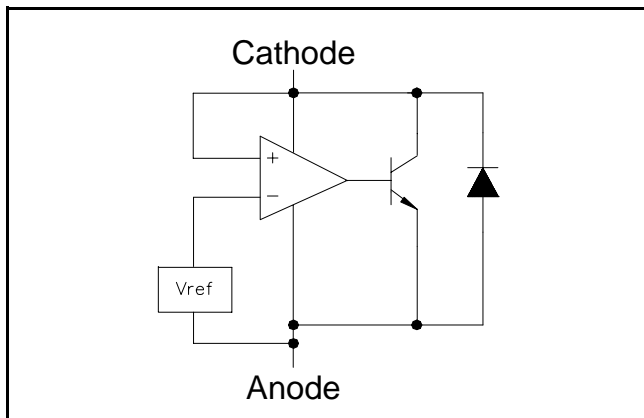
 TEL:805-498-2111 FAX:805-498-3804 WEB:<http://www.semtech.com>

DESCRIPTION

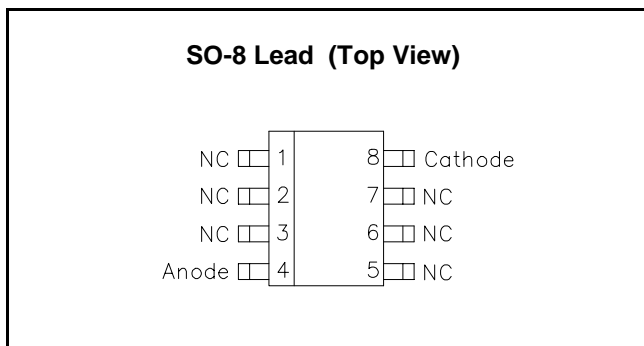
The SC1004(A) is a two terminal precision voltage reference with thermal stability guaranteed over temperature. The SC1004(A) has a typical dynamic output impedance of 0.2Ω . Active output circuitry provides a very sharp turn on characteristic - the minimum operating current is $20\mu\text{A}$, with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

Coming with an initial tolerance of $\pm 0.8\%$ (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.

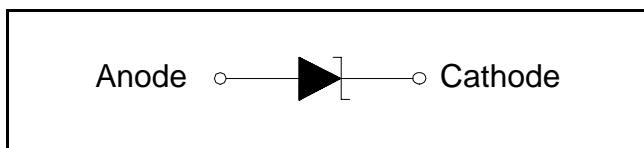
BLOCK DIAGRAM



PIN CONFIGURATION



SYMBOL DIAGRAM



FEATURES

- Trimmed bandgap design (0.8% , 0.32% for SC1004A version)
- Wide operating current range $20\mu\text{A}$ 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	$\pm 0.8\%$
SC1004ACS8-1.2.TR	-	$\pm 0.32\%$

Notes:

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

ABSOLUTE MAXIMUM RATINGS

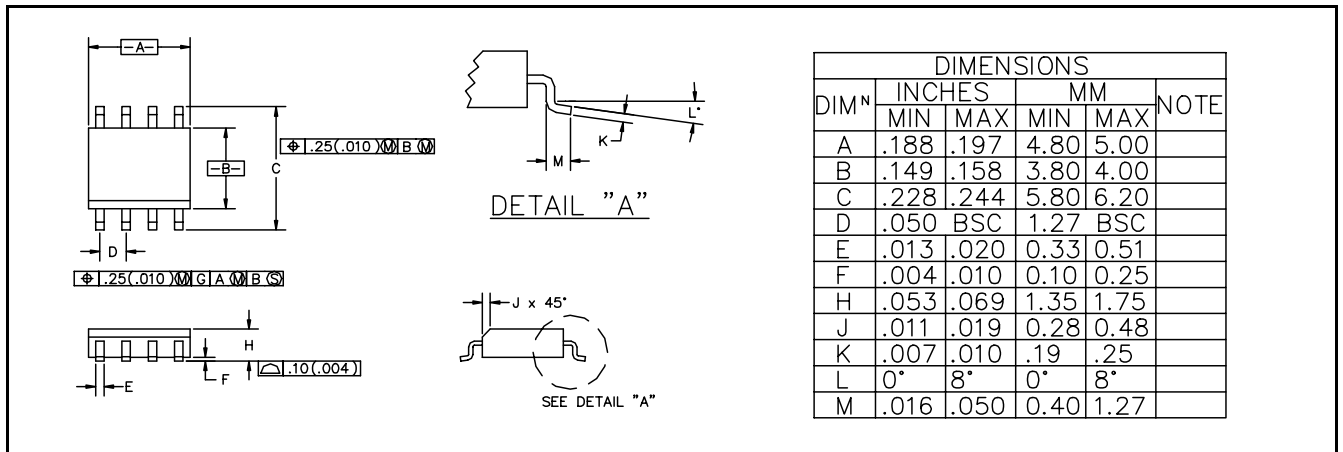
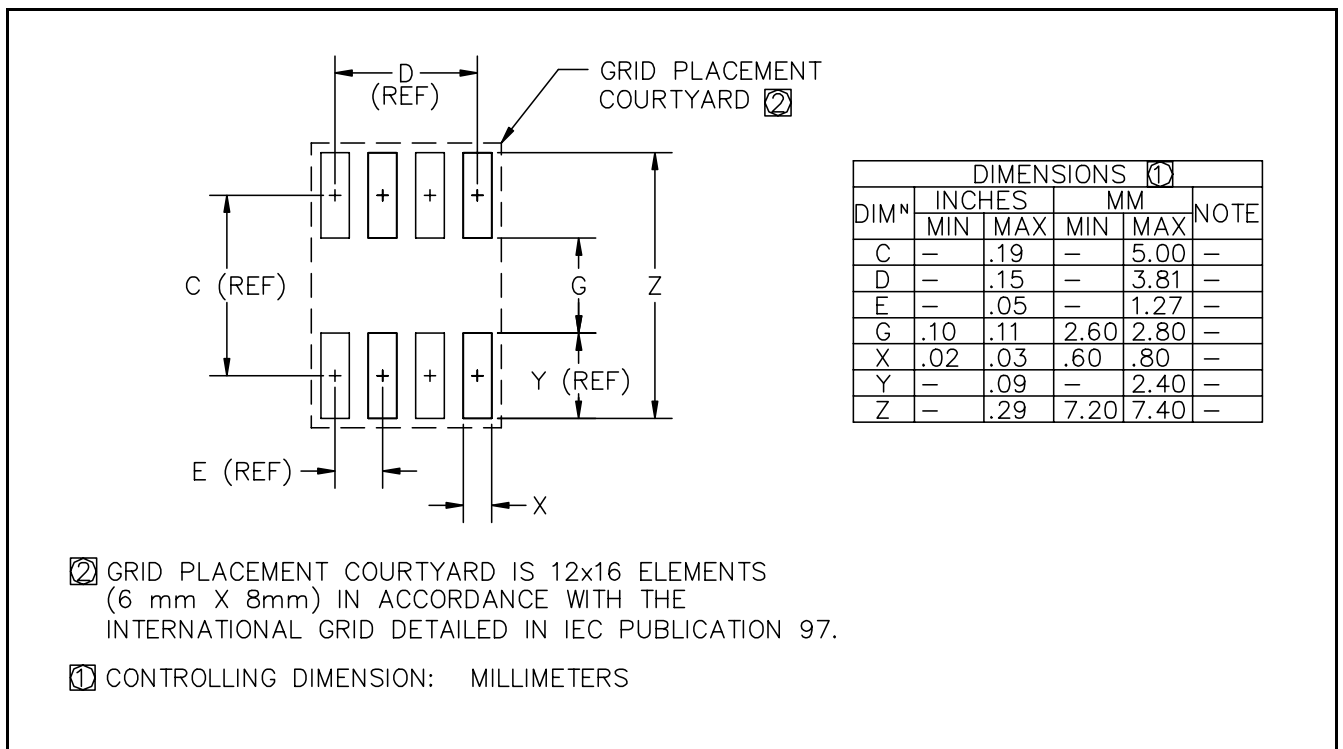
Parameter	Symbol	Maximum	Units
Reverse Current		20	mA
Operating Temperature Range	T_A	-40 to +85	$^{\circ}\text{C}$
Operating Junction Temperature Range	T_J	-40 to +150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-65 to +150	$^{\circ}\text{C}$
Lead Temperature (Soldering) 10 seconds	T_{LEAD}	300	$^{\circ}\text{C}$

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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