

May 1, 2000

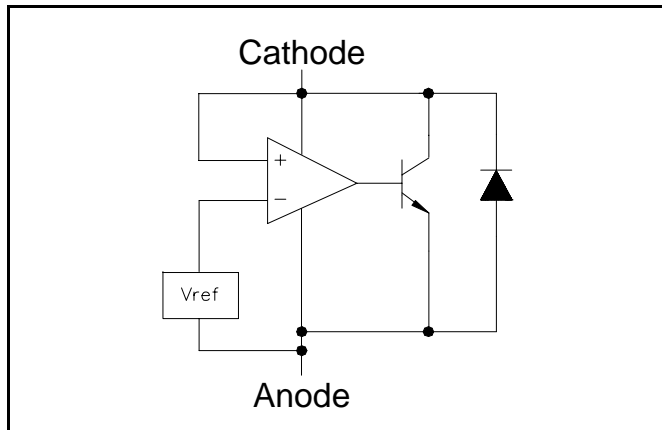
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## DESCRIPTION

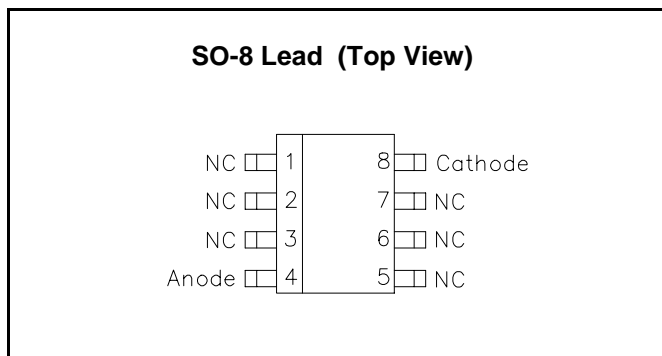
The SC1004(A) is a two terminal precision voltage reference with thermal stability guaranteed over temperature. The SC1004(A) has a typical dynamic output impedance of 0.2Ω. Active output circuitry provides a very sharp turn on characteristic - the minimum operating current is 20μA, with a maximum of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

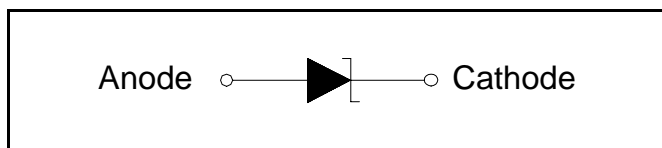
## BLOCK DIAGRAM



## 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 <sup>(1)</sup>		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

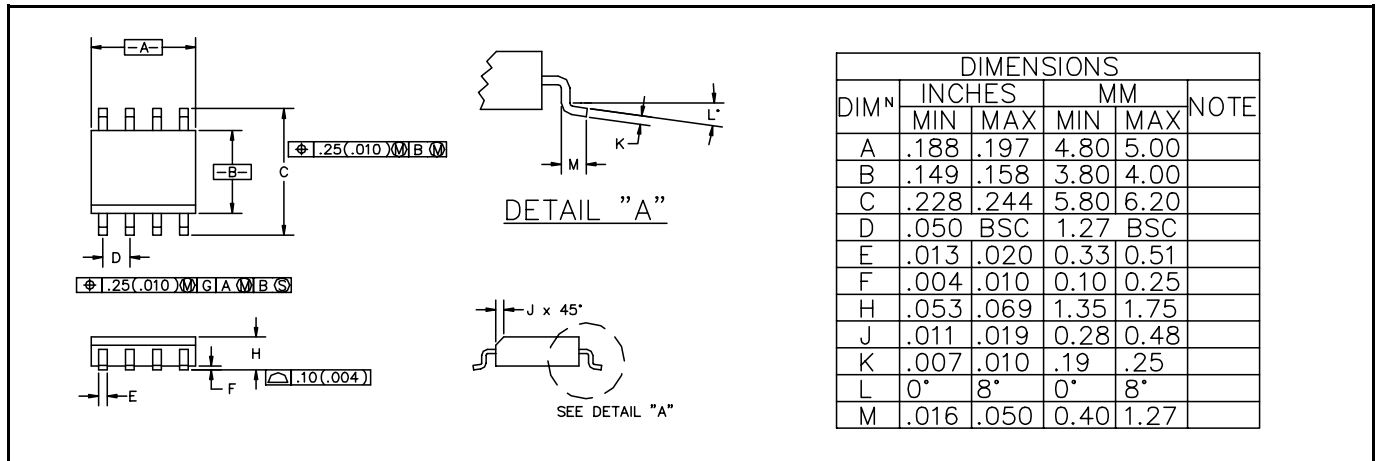
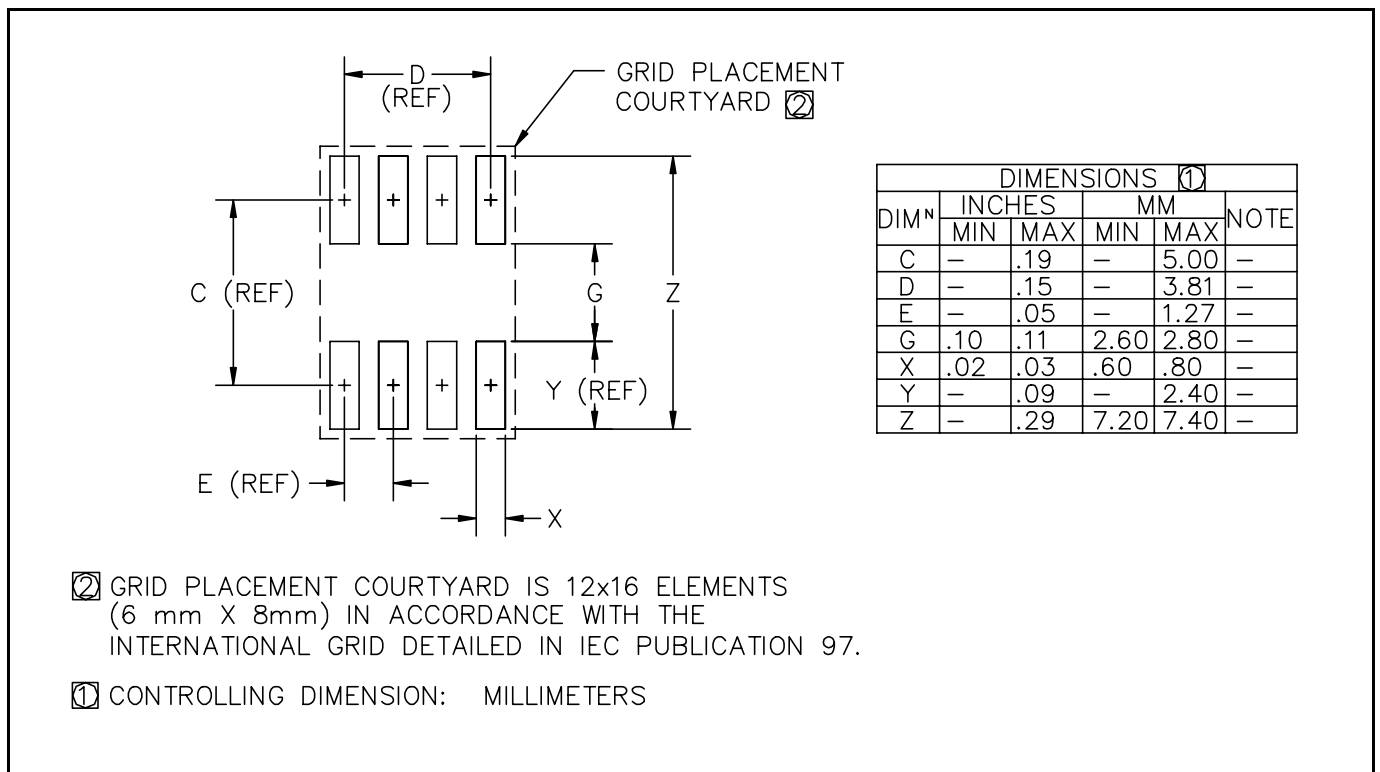
Parameter	Symbol	Maximum	Units
Reverse Current		20	mA
Operating Temperature Range	T <sub>A</sub>	-40 to +85	°C
Operating Junction Temperature Range	T <sub>J</sub>	-40 to +150	°C
Storage Temperature Range	T <sub>STG</sub>	-65 to +150	°C
Lead Temperature (Soldering) 10 seconds	T <sub>LEAD</sub>	300	°C

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**ELECTRICAL CHARACTERISTICS**

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

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**OUTLINE DRAWING - SO-8**

**LAND PATTERN - SO-8**


ECN00-1051