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SR12D

1.2V PRECISION VOLTAGE REFERENCE

The SR12D is a monolithic integrated circuit using the bandgap principle to provide a precise reference voltage of 1.23V.

This reference device is packaged in a standard SOT-23 small outline package, making it ideal for all surface mount applications.

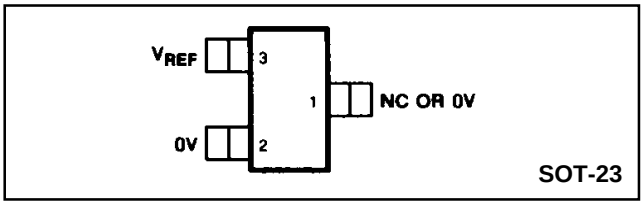

Fig. 1 Pin connections (top view)

FEATURES

- Standard SOT-23 Surface Mount Package
- Low Knee Current - Typically 80 µA
- Low temperature Coefficient

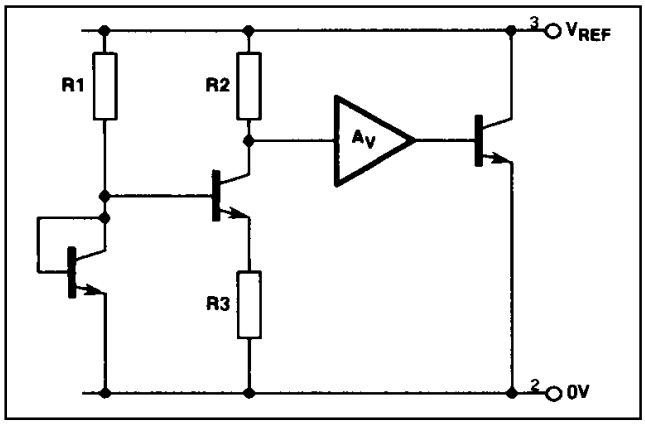

Fig.2 SR12D circuit diagram

ABSOLUTE MAXIMUM RATINGS

Reference current	2.5mA
Operating temperature range	-40°C to + 85°C
Storage temperature range	-55°C to +125°C

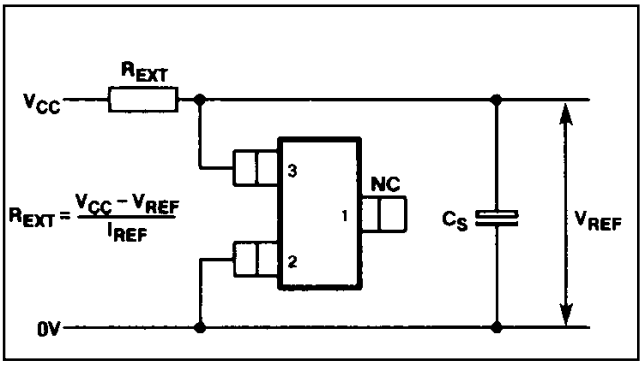

Fig.3 SR12D external connections.

NOTE: In order to achieve optimum operation, an electrolytic stabilising capacitor ($C_S \geq 1\mu F$) should be connected between V_{REF} and 0V as shown in Fig. 3.

ELECTRICAL CHARACTERISTICS

These characteristics are guaranteed over the following conditions (unless otherwise stated):

T_{amb} = +25°C, I_{REF} = 150µA, C_S = 1µF

Characteristic	Symbol	Value			Units	Conditions
		Min.	Typ.	Max.		
Output voltage	V_{REF}	1.193	1.230	1.267	V	
Slope resistance (see note 1)	R_{REF}		1.5	2.5	Ω	I_{REF} = 150µA to 2.5mA
Turn-on (knee) current	I_{ON}		80	90	µA	
Recommended operating current range	I_{REF}	0.09		2.5	mA	
Temperature coefficient (see note 2)	TCV_{REF}		40	125	ppm/°C	0°C to +70°C
			40	120	ppm/°C	-40°C to + 85°C
RMS noise voltage	E_N		10		µV	1Hz to 25kHz
Turn on time	t_{ON}		7		ms	
Turn off time	t_{OFF}		24		ms	
Turn on time	t_{ON}		0.4		ms	I_{REF} = 5mA
Turn off time	t_{OFF}		1.8		ms	I_{REF} = 5mA

NOTES

1. Slope Resistance (R_{REF})

The slope resistance is defined as

$$R_{REF} = \frac{\text{Change in } V_{REF} \text{ over specified current range}}{\text{The change in reference current}}$$

2. Reference Voltage Temperature Coefficient (TCV_{REF})

This is the normalised reference voltage change over temperature , divided by the change in temperature. It is expressed in ppm/°C as follows:

$$TCV_{REF} = \frac{\Delta V_{REF} \times 10^6}{V_{REF} \times \Delta T} \text{ ppm/°C}$$

ΔT = temperature change in °C

ΔV_{REF} = change in reference voltage over temperature change ΔT.

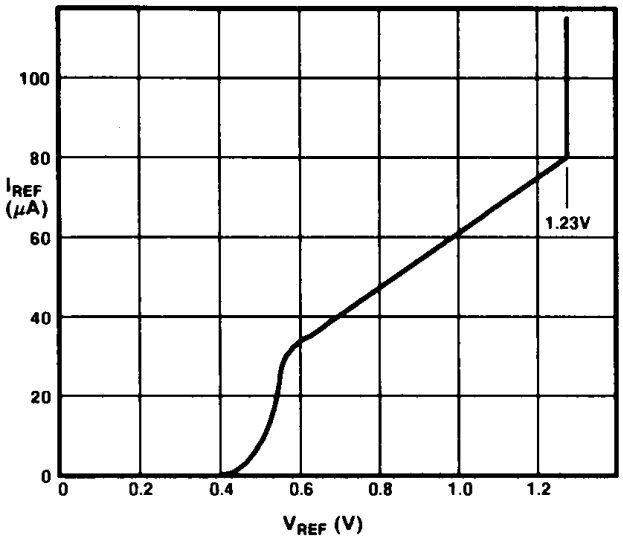

Fig.4 Typical reference characteristic

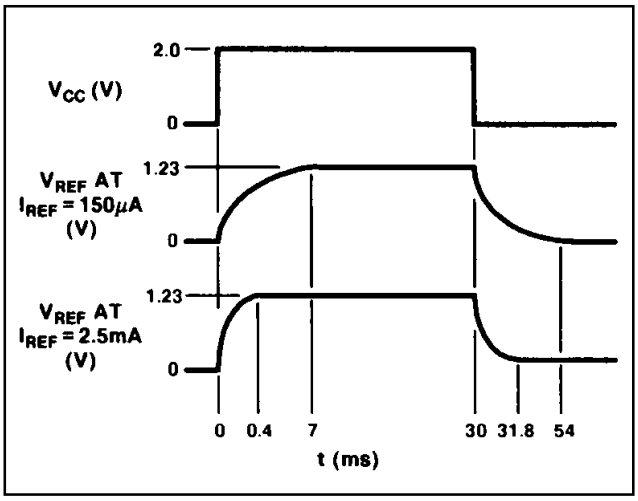

Fig.5 SR12D typical response time (not to scale)

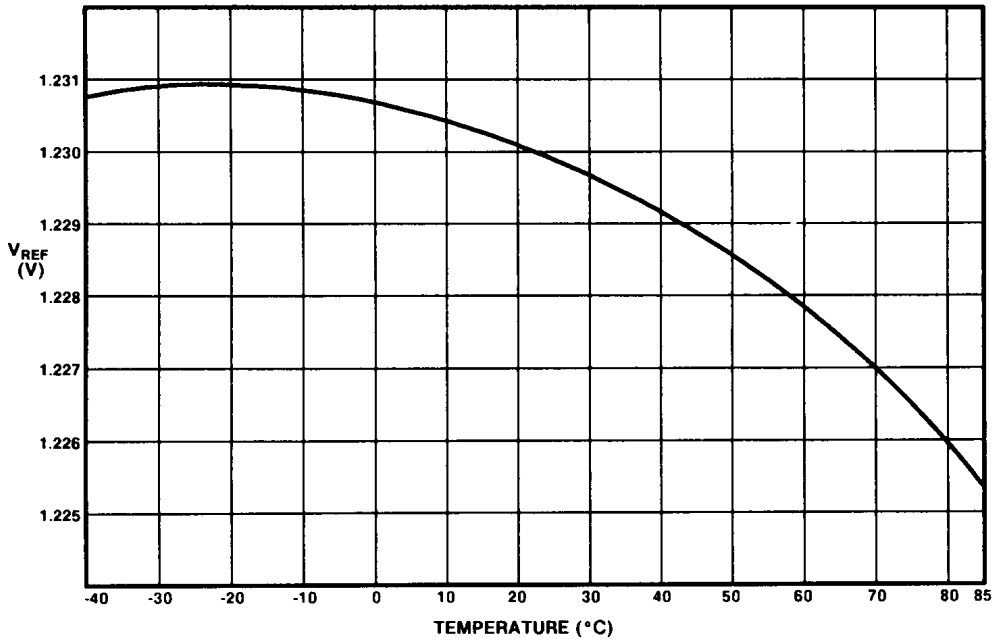

Fig.6 Typical temperature characteristic of SR12D at I_{REF} = 150µA

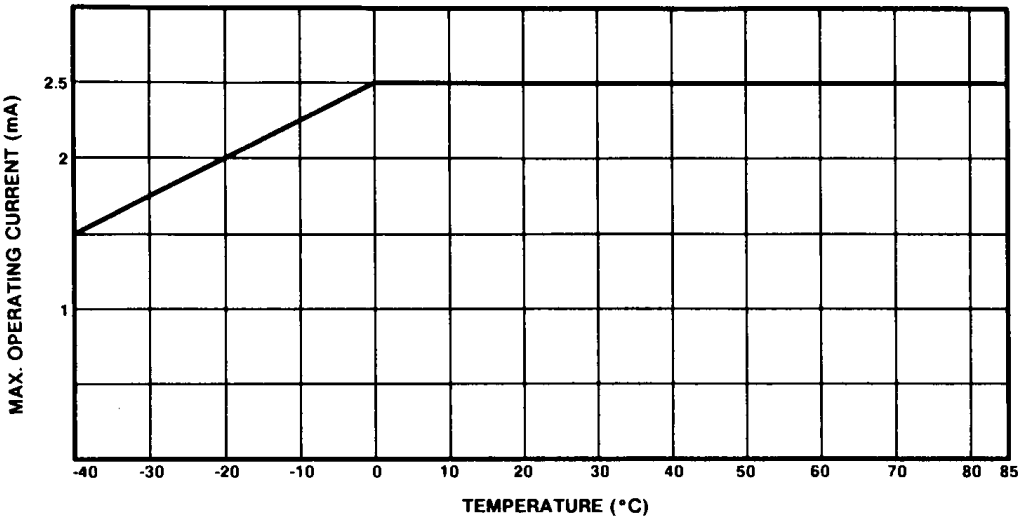

Fig.7 Derating curve

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