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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.

FEATURES

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

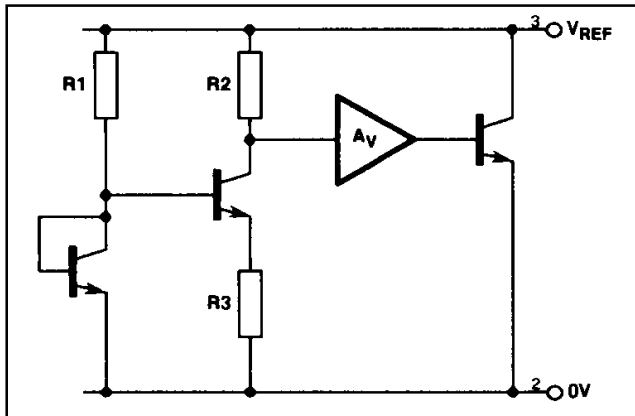


Fig.2 SR12D circuit diagram

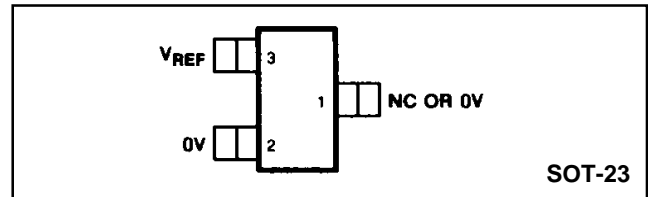


Fig. 1 Pin connections (top view)

ABSOLUTE MAXIMUM RATINGS

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

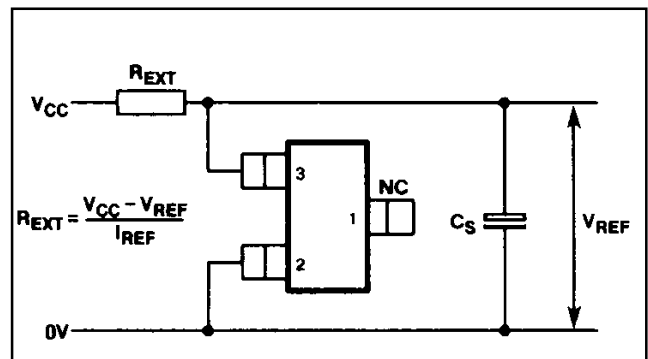


Fig.3 SR12D external connections.

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):

$T_{amb} = +25^\circ\text{C}$, $I_{REF} = 150\mu\text{A}$, $C_s = 1\mu\text{F}$

Characteristic	Symbol	Value			Units	Conditions
		Min.	Typ.	Max.		
Output voltage	V_{REF}	1.193	1.230	1.267	V	$I_{REF} = 150\mu\text{A}$ to 2.5mA
Slope resistance (see note 1)	R_{REF}		1.5	2.5	Ω	
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/ $^\circ\text{C}$	
			40	120	ppm/ $^\circ\text{C}$	0 $^\circ\text{C}$ to +70 $^\circ\text{C}$
RMS noise voltage	E_N		10		μV	-40 $^\circ\text{C}$ to + 85 $^\circ\text{C}$
Turn on time	t_{ON}		7		ms	} $I_{REF} = 5\text{mA}$
Turn off time	t_{OFF}		24		ms	
Turn on time	t_{ON}		0.4		ms	
Turn off time	t_{OFF}		1.8		ms	

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:

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

ΔT = temperature change in °C

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

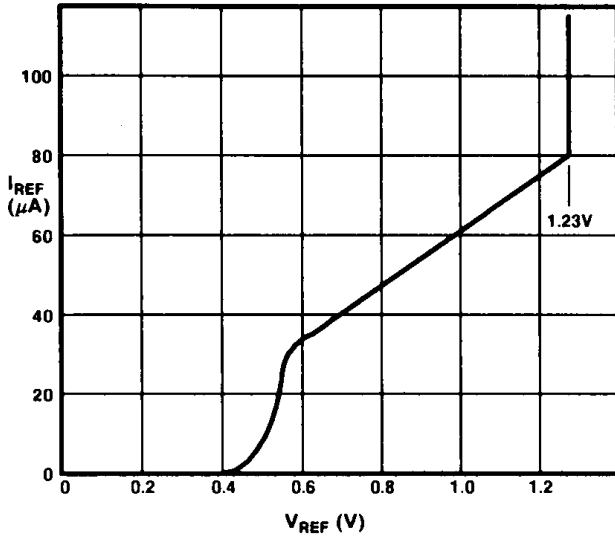


Fig.4 Typical reference characteristic

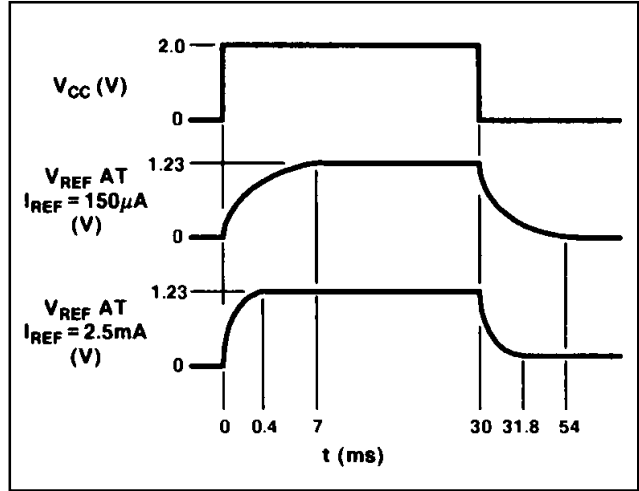


Fig.5 SR12D typical response time (not to scale)

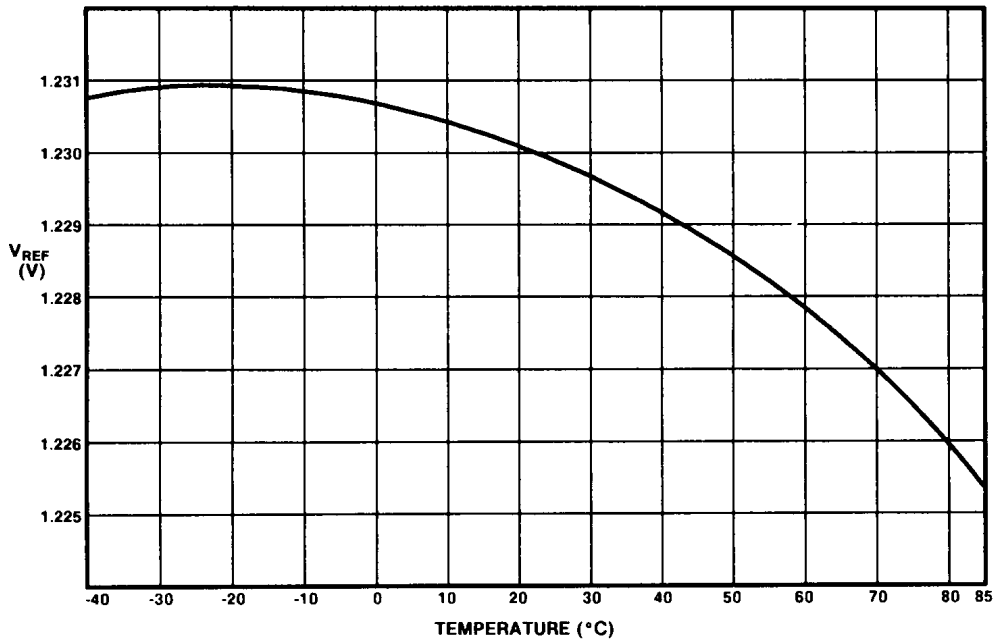


Fig.6 Typical temperature characteristic of SR12D at $I_{REF} = 150\mu\text{A}$

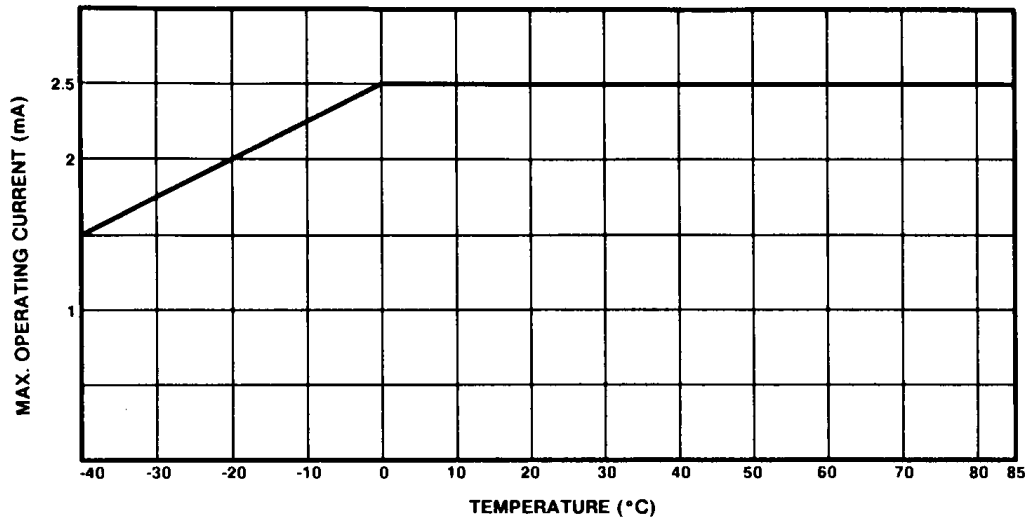


Fig.7 Derating curve



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