

# SR25D

## 2.5V PRECISION VOLTAGE REFERENCE

The SR25D is a monolithic integrated circuit using the bandgap principle to provide a precise reference voltage of 2.5V.

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 60  $\mu$ A
- Low temperature Coefficient

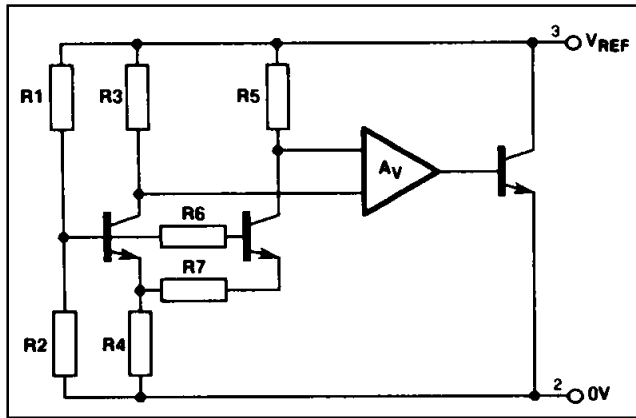


Fig.2 SR25D circuit diagram

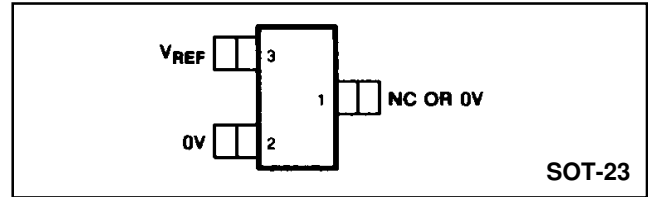


Fig. 1 Pin connections (top view)

### ABSOLUTE MAXIMUM RATINGS

Reference current	5mA
Operating temperature range	-40°C to + 85°C
Storage temperature range	-55°C to +125°C

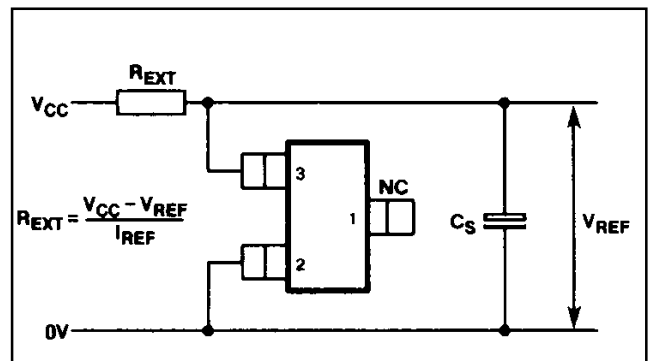


Fig.3 SR25D external connections.

NOTE: In order to achieve optimum operation, an electrolytic stabilising capacitor,  $C_S$ , (see Fig. 9) 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	Notes
		Min.	Typ.	Max.			
Output voltage	$V_{REF}$	2.425	2.50	2.575	V	$I_{REF} = 150\mu\text{A}$ to 5mA	1
Slope resistance	$R_{REF}$		1.2	2.0	$\Omega$		3
Turn-on (knee) current	$I_{ON}$		60	80	$\mu\text{A}$		3
Recommended operating current range	$I_{REF}$	0.08		5	mA	-40°C to + 85°C	3
Temperature coefficient	$TCV_{REF}$		40	150	ppm/°C		2&3
RMS noise voltage	$E_N$		18		$\mu\text{V}$		3
Turn on time	$t_{ON}$		12.5		ms	$I_{REF} = 5\text{mA}$	3
Turn off time	$t_{OFF}$		45		ms		3
Turn on time	$t_{ON}$		0.4		ms		3
Turn off time	$t_{OFF}$		1.5		ms		3

## 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:

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

$\Delta T$  = temperature change in °C

$\Delta V_{REF}$  = change in reference voltage over temperature change  $\Delta T$ .

## 3. Guaranteed but not tested

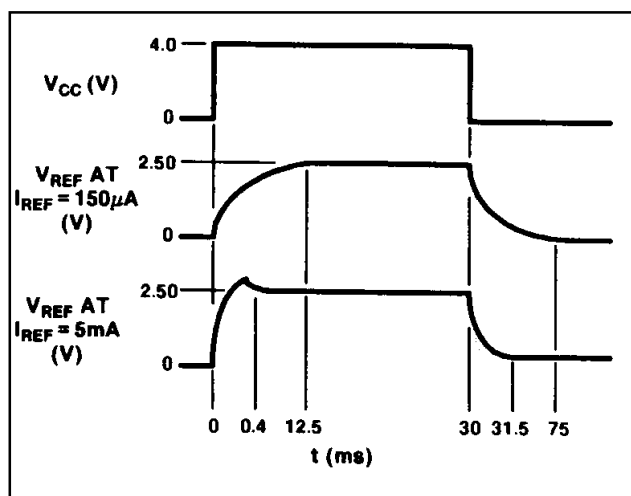


Fig.5 SR25D typical response time (not to scale)

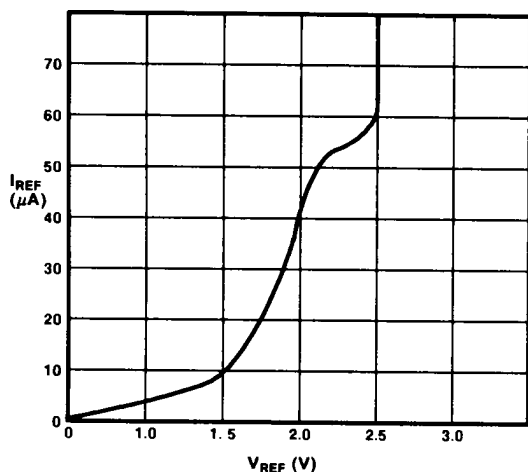


Fig.4 Typical reference characteristic

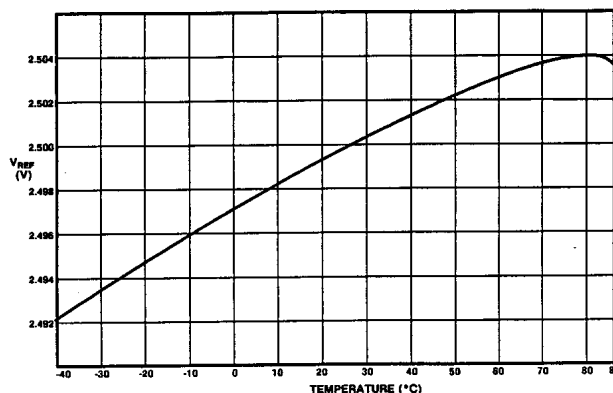


Fig.6 Typical temperature characteristic of SR25D at  $I_{REF} = 150\mu\text{A}$

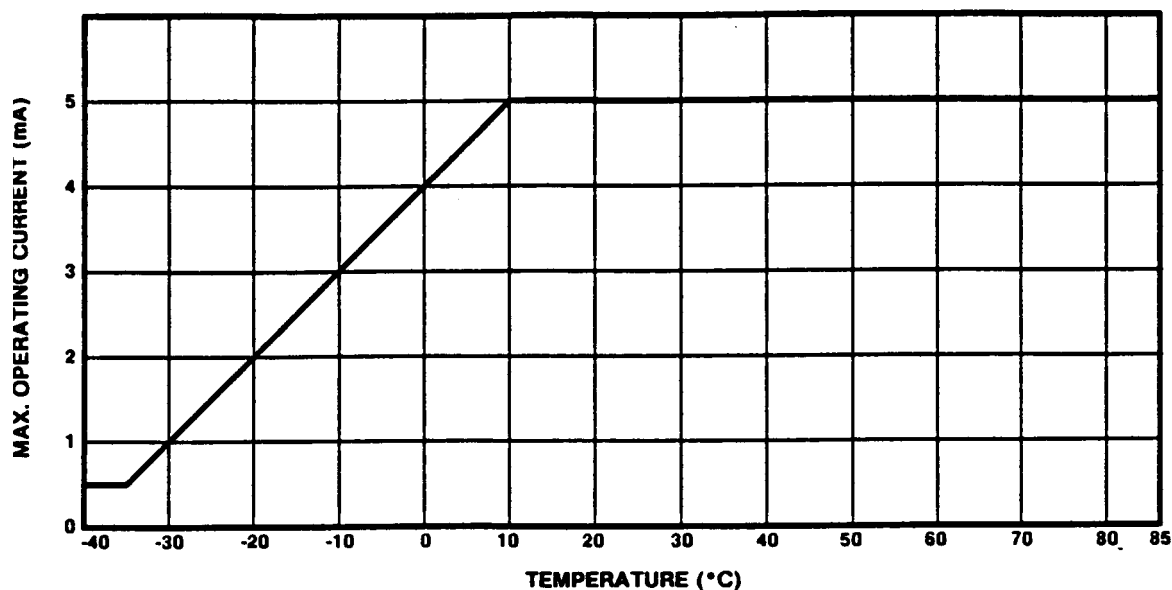


Fig.7 Derating curve

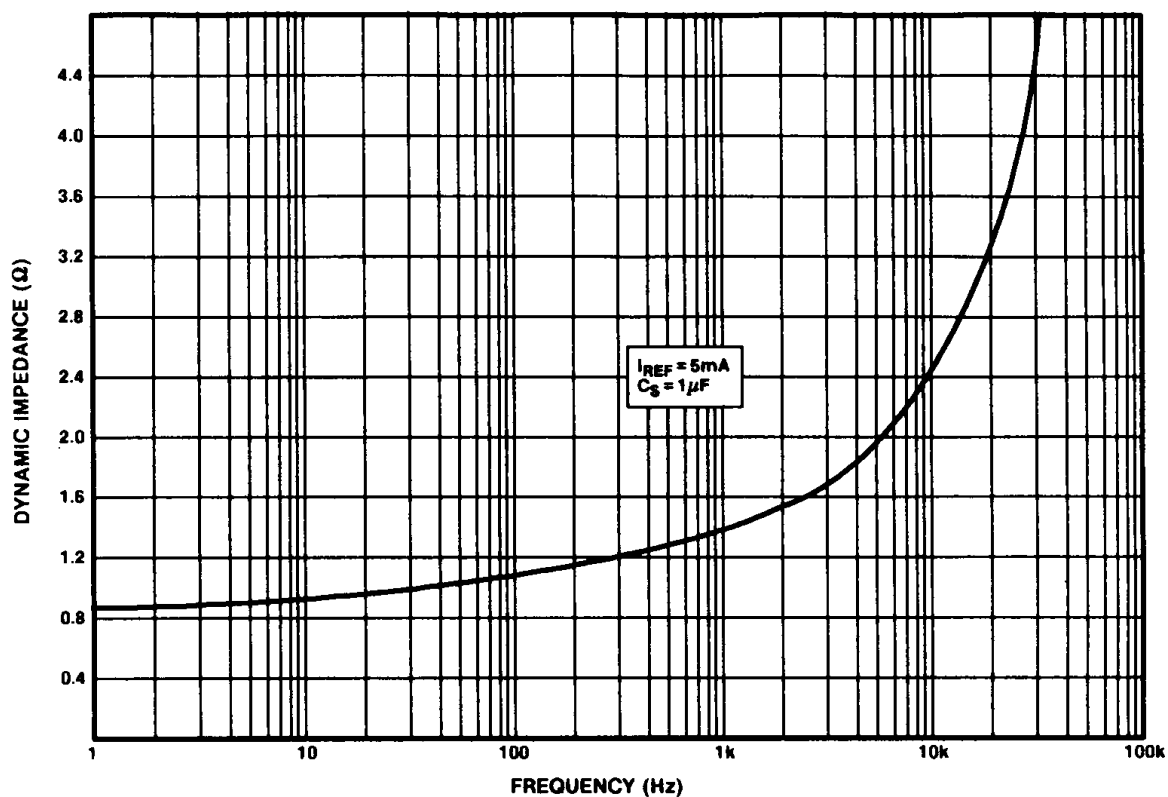


Fig.8 Typical dynamic impedance of SR25D

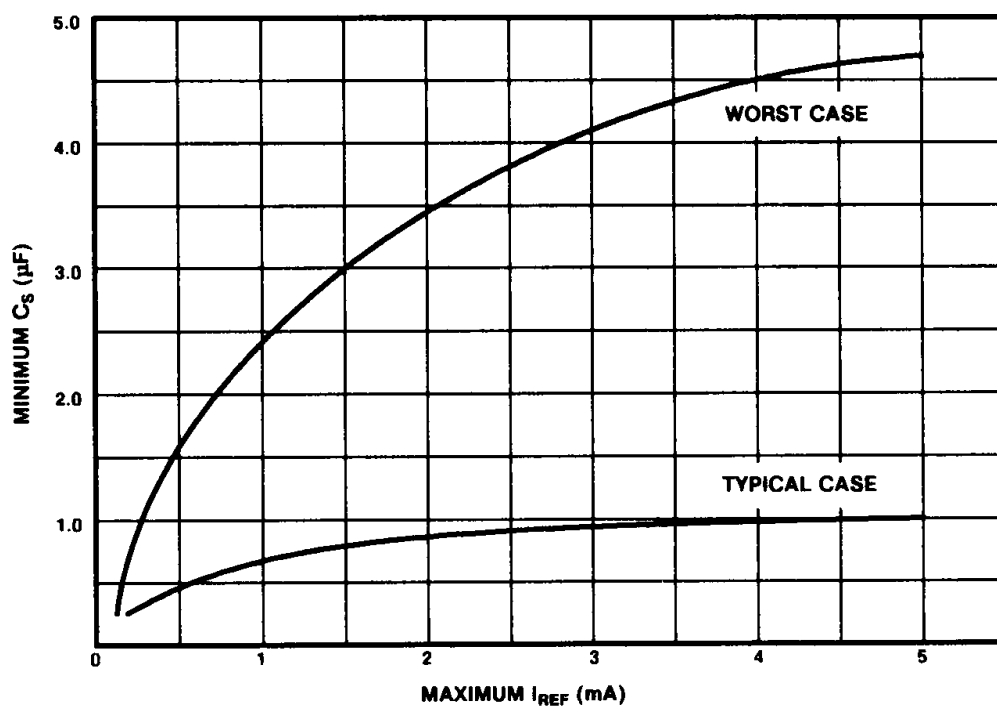


Fig.9 Stabilising capacitor required for optimum operation



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