

# ZXRE125

## SOT23 MICROPOWER 1.22V VOLTAGE REFERENCE

### DESCRIPTION

The ZXRE125 is a bandgap circuit designed to achieve a precision micropower voltage reference of 1.22 volts. The device is available in the small outline SOT23 surface mount package which is ideal for applications where space saving is important.

SOT23 tolerance is available to 0.5% for precision applications. Excellent performance is maintained over the 30 $\mu$ A to 5mA operating current range with a

typical temperature coefficient of only 20ppm/ $^{\circ}$ C. The device has been designed to be highly tolerant of capacitive loads so maintaining excellent stability.

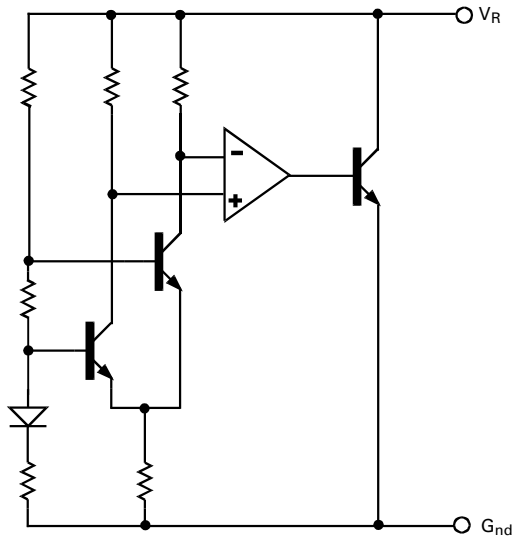
This device offers a SOT23 pin for pin compatible replacement of the ZRA124 and ZRA125 series of voltage references. SO8 and E-Line (TO92 style) packages can also be made available.

### FEATURES

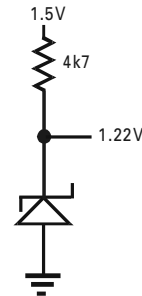
- High performance replacement for ZRA124 and ZRA125 references
- Small outline SOT23
- SO8 and E-Line alternatives available
- 30 $\mu$ A knee current
- 20ppm/ $^{\circ}$ C typical temperature coefficient
- Unconditionally stable
- 0.5%, 1%, 2% and 3% tolerance
- Contact Zetex marketing for availability of tighter tolerance devices

- Battery powered equipment
- Precision power supplies
- Portable instrumentation
- Portable communications devices
- Notebook and palmtop computers
- Data acquisition systems
- A/D and D/A converters
- Test equipment

### SCHEMATIC DIAGRAM



### APPLICATIONS CIRCUIT



Low quiescent reference from a 1.5V battery source.

### APPLICATIONS

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## ABSOLUTE MAXIMUM RATINGS

Reverse Current	30mA
Forward Current	10mA
Operating temperature.	-40 to 85°C
Storage temperature.	-55 to 125°C

Power Dissipation ( $T_{amb}=25^{\circ}\text{C}$ )	
SOT23	330mW
SO8	625mW
E-Line	500mW

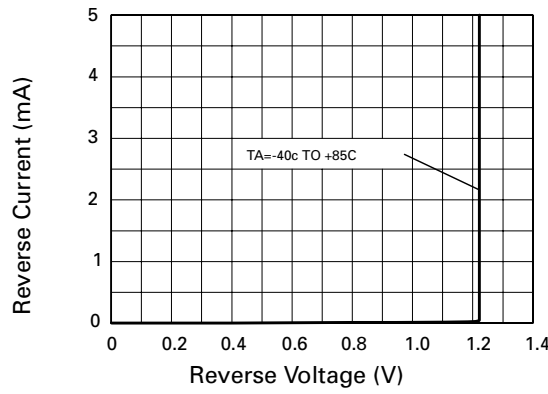
## ELECTRICAL CHARACTERISTICS

TEST CONDITIONS (Unless otherwise stated)  $T_{amb}=25^{\circ}\text{C}$

SYMBOL	PARAMETER	CONDITIONS	LIMITS			TOL. %	UNITS
			MIN	TYP	MAX		
$V_R$	Reverse Breakdown Voltage	$I_R=100\mu\text{A}$	1.214 1.208 1.196 1.183	1.22 1.22 1.22 1.22	1.226 1.232 1.244 1.257	0.5 ‡ 1 2 3	V
$I_{MIN}$	Minimum Knee Current				30		$\mu\text{A}$
$I_R$	Recommended Operating Current Range		0.03		5		mA
$T_C$ †	Average Reverse Breakdown Voltage Temperature Coefficient	$I_{R(min)}$ to $I_{R(max)}$		20	90		ppm/ $^{\circ}\text{C}$
$\frac{\Delta V_R}{\Delta I_R}$	Reverse Breakdown Voltage change with Current	$I_R=30\mu\text{A}$ to 1mA $I_R=1\text{mA}$ to 5mA			1 10		mV mV
$Z_R$	Reverse Dynamic Impedance	$I_R = 1\text{mA}$ $f = 100\text{Hz}$ $I_{AC}=0.1 I_R$		0.2	0.6		$\Omega$
$E_N$	Wideband Noise Voltage	$I_R=8\mu\text{A}$ to $100\mu\text{A}$ $f=10\text{Hz}$ to 10kHz		60			$\mu\text{V(rms)}$

$$\dagger T_C = \frac{(V_{R(max)} - V_{R(min)}) \times 1000000}{V_R \times (T_{(max)} - T_{(min)})}$$

Note:  $V_{R(max)} - V_{R(min)}$  is the maximum deviation in reference voltage measured over the full operating temperature range.  
‡ Note: 0.5% SOT23 only.

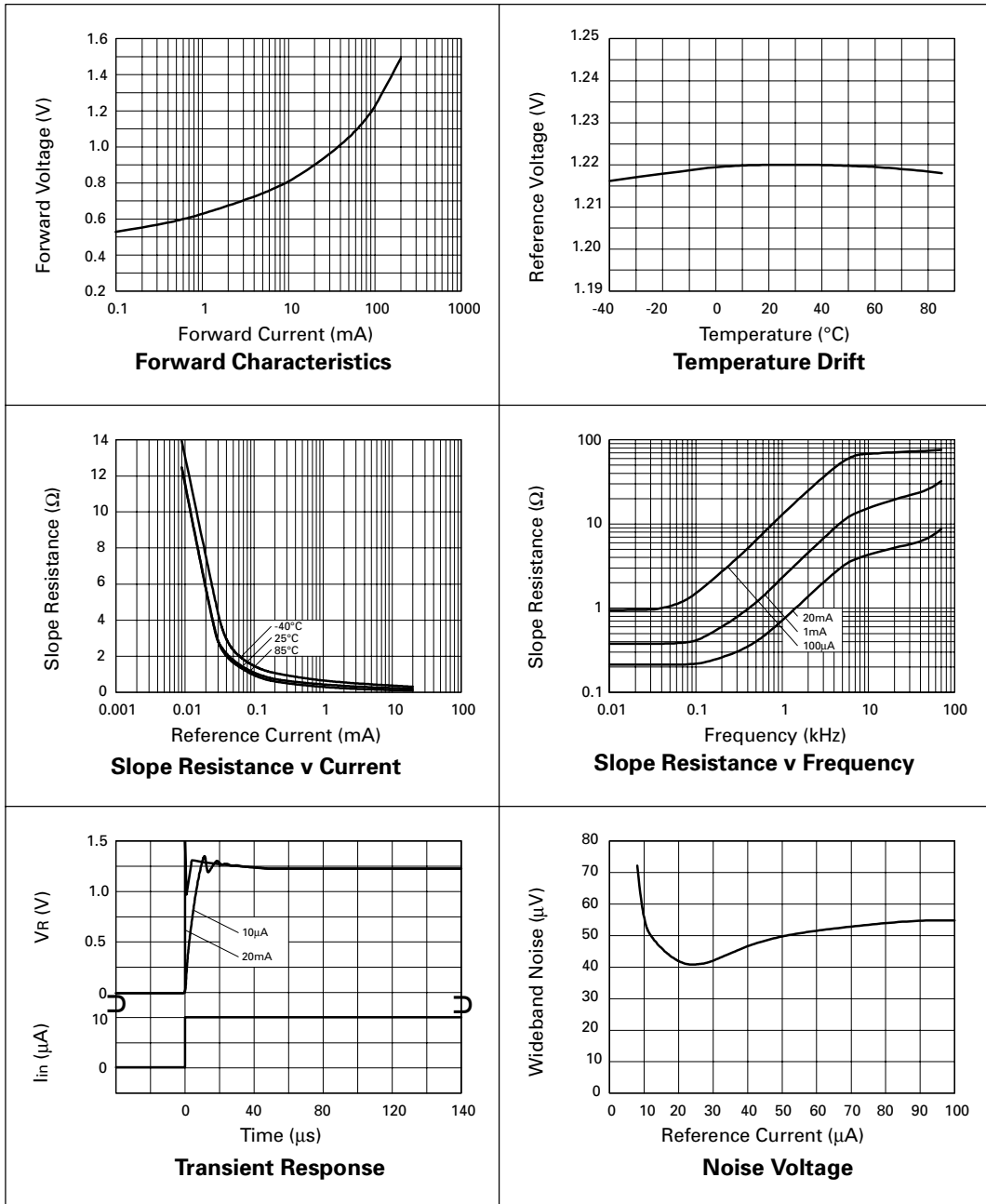


Reverse Characteristics



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## TYPICAL CHARACTERISTICS



# ZXRE125

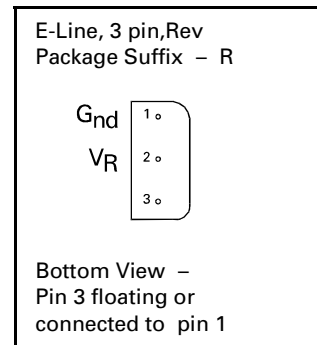
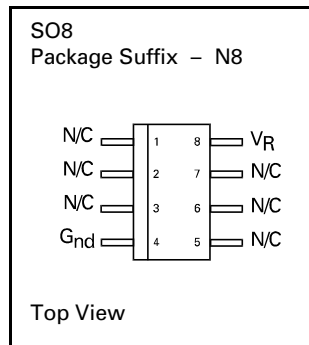
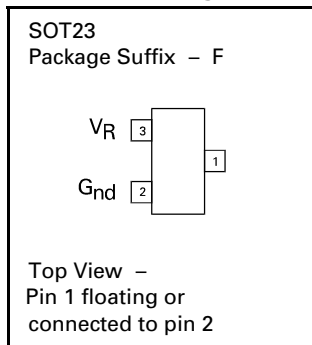
## Ordering Information

Device	TOL%	Package	Partmarking
ZXRE125CF	0.5	SOT23	12J
ZXRE125DF	1	SOT23	12H
ZXRE125EF	2	SOT23	12G
ZXRE125FF	3	SOT23	12F
ZXRE125DN8	1	SO8	ZXRE125D
ZXRE125EN8	2	SO8	ZXRE125E
ZXRE125FN8	3	SO8	ZXRE125F
ZXRE125DR	1	E-Line	ZXRE125D
ZXRE125ER	2	E-Line	ZXRE125E
ZXRE125FR	3	E-Line	ZXRE125F

### NOTE:

For tape and reel options add suffix TA to the part number  
eg ZXRE125DFTA

## Connection Diagrams



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