## 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

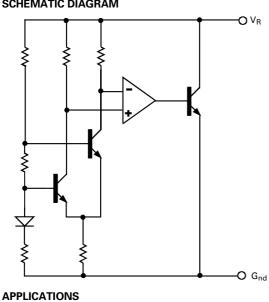
#### FEATURES

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

typical temperature coefficient of only 20ppm/°C. The device has been designed to be highly tolerant of capacitive loads so maintaining excellent stability.

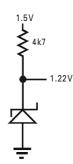
This device offers a SOT23 pin for pin compatible replacement of the ZRA124 and ZRA125 series of voltage references. SO8 and E-Line (TO92 style) packages can also be made available.

- 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



#### **APPLICATIONS CIRCUIT**

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Low quiescent reference from a 1.5V battery source.



SCHEMATIC DIAGRAM

# **ZXRE125**

### **ABSOLUTE MAXIMUM RATINGS**

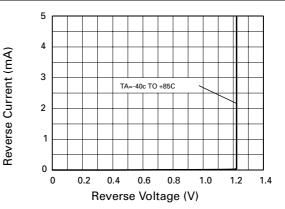
Reverse Current	30mA		ssipation (T <sub>amb</sub> =25°C)	
Forward Current	10mA	SOT23	330mW	
Operating temperature.	-40 to 85°C	SO8	625mW	
Storage temperature.	-55 to 125°C	E-Line	500mW	

## ELECTRICAL CHARACTERISTICS TEST CONDITIONS (Unless otherwise stated) Tamb=25°C

SYMBOL	PARAMETER	CONDITIONS	LIMITS			TOL. %	UNITS
			MIN	ТҮР	MAX		
V <sub>R</sub>	Reverse Breakdown Voltage	Ι <sub>R</sub> =100μΑ	1.214 1.208 1.196 1.183	1.22 1.22 1.22 1.22 1.22	1.226 1.232 1.244 1.257	0.5 ‡ 1 2 3	V
I <sub>MIN</sub>	Minimum Knee Current				30		μA
I <sub>R</sub>	Recommended Operating Current Range		0.03		5		mA
T <sub>C</sub> †	Average Reverse Breakdown Voltage Temperature Coefficient	l <sub>R(min)</sub> to I <sub>R(max)</sub>		20	90		ppm/°C
$\frac{\Delta V_{R}}{\Delta I_{R}}$	Reverse Breakdown Voltage change with Current	I <sub>R</sub> =30μA to 1mA I <sub>R</sub> =1mA to 5mA			1 10		mV mV
Z <sub>R</sub>	Reverse Dynamic Impedance	I <sub>R</sub> =1mA f =100Hz I <sub>AC</sub> =0.1 I <sub>R</sub>		0.2	0.6		Ω
E <sub>N</sub>	Wideband Noise Voltage	I <sub>R</sub> =8μΑ to 100μΑ f=10Hz to 10kHz		60			μV(rms)

 $t \quad T_{C} = \frac{(V_{R\,(max)} - V_{R\,(\min)}) \ x \ 100000}{V_{R} \ x \ (T_{(max)} - T_{(min)})}$ Note: V<sub>R(max)</sub> - V<sub>R(min)</sub> is the maximum deviation in reference voltage measured over the full operating temperature range.

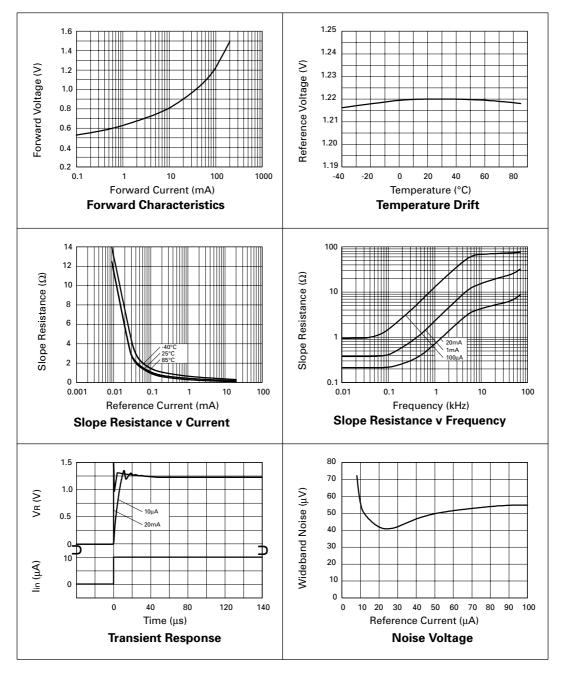
‡ Note: 0.5% SOT23 only.



## **Reverse Characteristics**



## **ZXRE125**



#### TYPICAL CHARACTERISTICS



## **ZXRE125**

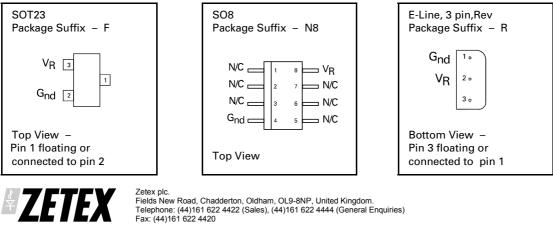
## **Ordering Information**

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	S08	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  $\mathsf{ZXRE125DFTA}$ 

#### **Connection Diagrams**



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