

PRECISION 1.25 VOLT MICROPPOWER VOLTAGE REFERENCE

DESCRIPTION

The ZRA125 uses a bandgap circuit design to achieve a precision micropower voltage reference of 1.25 volts. The device is available in small outline surface mount packages, ideal for applications where space saving is important.

The ZRA125 design provides a stable voltage without an external capacitor and is stable with capacitive loads. The ZRA125 is recommended for operation between 50 μ A and 5mA and so is ideally suited to low power and battery powered applications.

Excellent performance is maintained to a suggested absolute maximum of 25mA, however the rugged design and 20 volt processing allows the reference to withstand transient effects and currents up to 200mA. Superior switching capability allows the device to reach stable operating conditions in only a few microseconds.

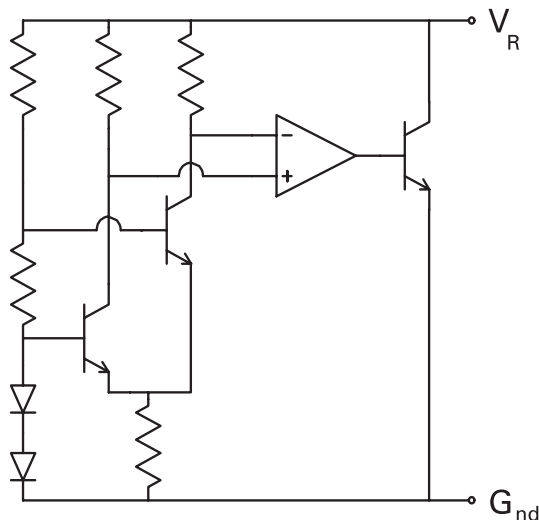
FEATURES

- No stabilizing capacitor required
- Typical T_C 30ppm/ $^{\circ}$ C
- Typical slope resistance 0.65 Ω
- $\pm$ 3% and 2% tolerance
- Industrial temperature range
- Operating current 50 μ A to 5mA
- Transient response, stable in less than 10 μ s
- Small outline SOT23 package

APPLICATIONS

- Battery powered and portable equipment
- Metering and measurement systems
- Instrumentation
- Data acquisition systems
- Precision power supplies
- Test equipment

SCHEMATIC DIAGRAM



ZRA125

ABSOLUTE MAXIMUM RATINGS

Reverse current	25mA
Forward current	25mA
Operating temperature	-40 to 85°C
Storage temperature	-55 to 150°C

POWER DISSIPATION ($T_{amb} = 25^{\circ}\text{C}$)

SOT23	330mW
-------	-------

ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

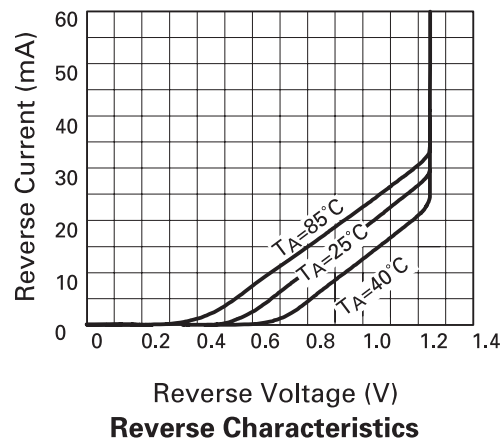
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	TOL %	UNITS
V_R	Reverse breakdown voltage	$I_R = 150\mu\text{A}$	1.225 1.21	1.25 1.25	1.275 1.29	2 3	V V
I_{MIN}	Minimum operating current			30	50		μA
I_R	Recommended operating current		0.05		5		mA
$T_C^{(1)}$	Average reverse breakdown voltage temp. co.	$I_R(\text{min})$ to $I_R(\text{max})$		30	90		ppm/ $^{\circ}\text{C}$
$R_S^{(2)}$	Slope resistance			0.65	2		Ω
Z_R	Reverse dynamic impedance	$I_R = 1\text{mA}$ $f = 100\text{Hz}$ $I_{AC} = 0.1I_R$		0.5	1		Ω
E_N	Wideband Noise Voltage	$I_R = 150\mu\text{A}$ $f = 100\text{Hz}$ to 10kHz		40			$\mu\text{V}(\text{rms})$

NOTES:

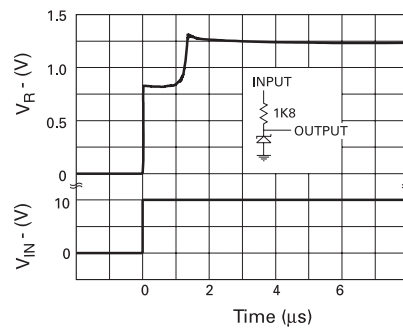
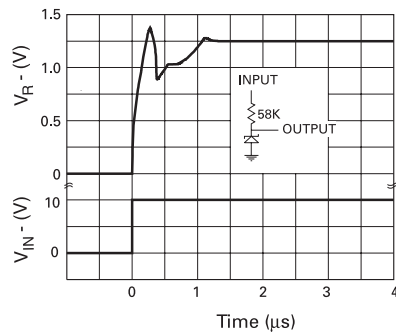
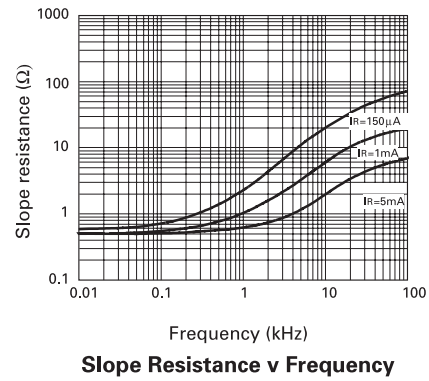
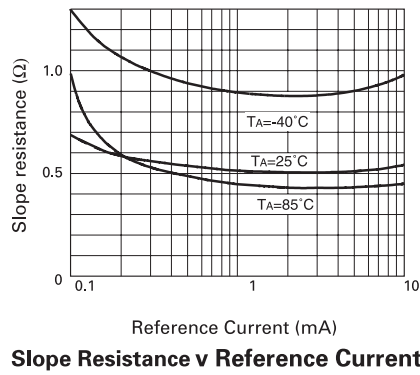
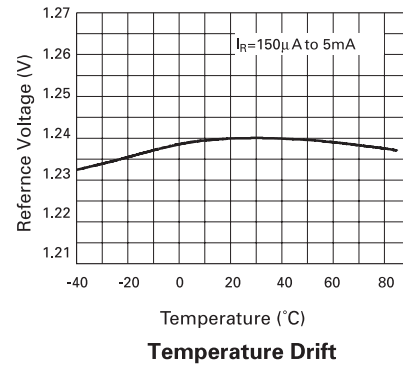
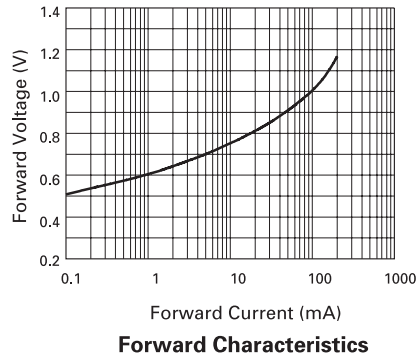
$$(1) \quad T_C = \frac{V_R \text{ change} \times 1000,000}{V_R \times \text{temperature change}}$$

T_C is a characterized parameter not measured on individual devices.

$$(2) \quad R_S = \frac{V_R \text{ change } (I_R(\text{min}) \text{ to } I_R(\text{max}))}{I_R(\text{max}) - I_R(\text{min})}$$



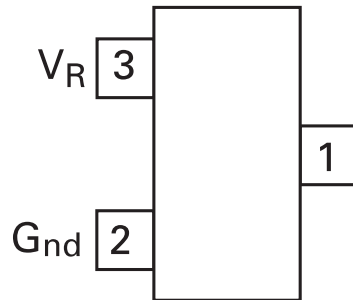
TYPICAL CHARACTERISTICS



ZRA125

CONNECTION DIAGRAM

Package Suffix - F



TOP VIEW

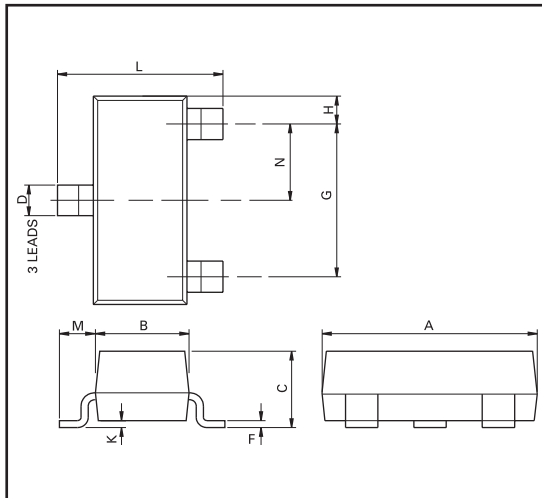
Pin 1 floating or connected to pin 2

ORDERING INFORMATION

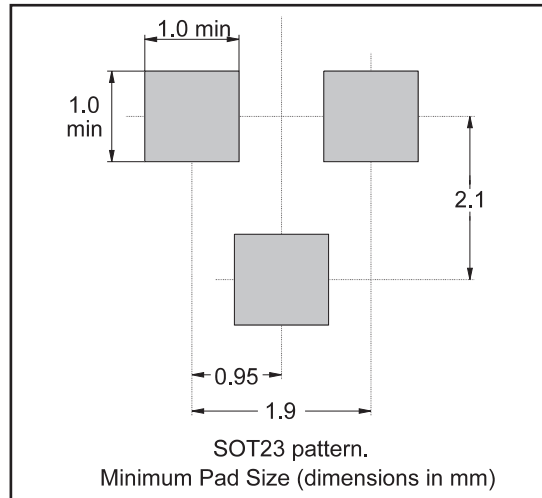
Part Number	Tol %	Package	Part Mark	Reel Size	Quantity per reel
ZRA125F02TA	2	SOT23	12B	7"	3,000
ZRA125F03TA	3	SOT23	12A	7"	3,000

ZRA125

PACKAGE OUTLINE



PAD LAYOUT DETAILS



Controlling dimensions are in millimeters. Approximate conversions are given in inches

PACKAGE DIMENSIONS

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Max	Max
A	2.67	3.05	0.105	0.120	H	0.33	0.51	0.013	0.020
B	1.20	1.40	0.047	0.055	K	0.01	0.10	0.0004	0.004
C	—	1.10	—	0.043	L	2.10	2.50	0.083	0.0985
D	0.37	0.53	0.015	0.021	M	0.45	0.64	0.018	0.025
F	0.085	0.15	0.0034	0.0059	N	0.95 NOM		0.0375 NOM	
G	1.90 NOM		0.075 NOM		—	—		—	

© Zetex plc 2004

Europe	Americas	Asia Pacific	Corporate Headquarters
Zetex GmbH Streitfeldstraße 19 D-81673 München Germany	Zetex Inc 700 Veterans Memorial Hwy Hauppauge, NY 11788 USA	Zetex (Asia) Ltd 3701-04 Metroplaza Tower 1 Hing Fong Road, Kwai Fong Hong Kong	Zetex plc Fields New Road, Chadderton Oldham, OL9 8NP United Kingdom
Telephone: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 49 europe.sales@zetex.com	Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 usa.sales@zetex.com	Telephone: (852) 26100 611 Fax: (852) 24250 494 asia.sales@zetex.com	Telephone (44) 161 622 4444 Fax: (44) 161 622 4446 hq@zetex.com

These offices are supported by agents and distributors in major countries world-wide.

This publication is issued to provide outline information only which (unless agreed by the Company in writing) may not be used, applied or reproduced for any purpose or form part of any order or contract or be regarded as a representation relating to the products or services concerned. The Company reserves the right to alter without notice the specification, design, price or conditions of supply of any product or service.

For the latest product information, log on to www.zetex.com

ISSUE 3 - MARCH 2004