PRECISION 1.25 VOLT MICROPOWER VOLTAGE REFERENCE

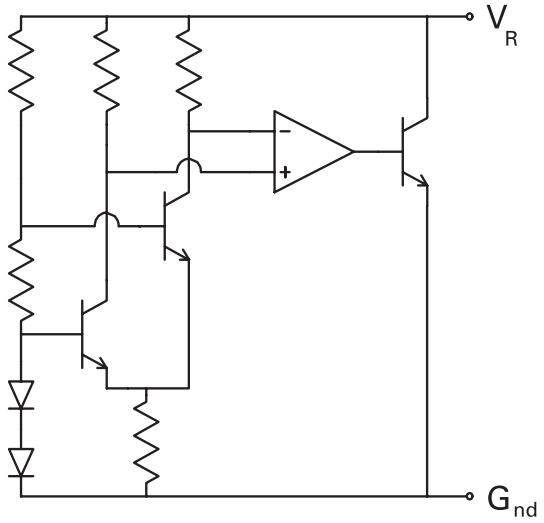
DESCRIPTION

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 50μA 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.

SCHEMATIC DIAGRAM



FEATURES

- No stabilizing capacitor required
- Typical T_C 30ppm/°C
- Typical slope resistance 0.65Ω
- ± 3% and 2% tolerance
- Industrial temperature range
- Operating current 50μA to 5mA
- Transient response, stable in less than 10μs
- Small outline SOT23 package

APPLICATIONS

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

ZRA125

ABSOLUTE MAXIMUM RATINGS

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

POWER DISSAPATION (T_{amb} = 25°C)

SOT23	330mW

ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated)

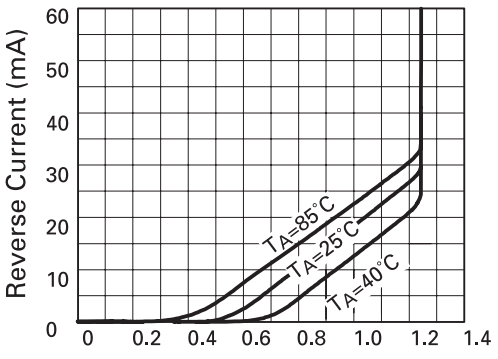
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	TOL %	UNITS
V_R	Reverse breakdown voltage	I_R = 150µA	1.225 1.21	1.25 1.25	1.275 1.29	2 3	V V
I_{MIN}	Minimum operating current			30	50		µA
I_R	Recommended operating current		0.05		5		mA
T_C (1)	Average reverse breakdown voltage temp. co.	I_R(min) to I_R(max)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

NOTES:

(1) $$T_C = \frac{V_R \text{ change } x \text{ 1,000,000}}{V_R \text{ X temperature change}}$$

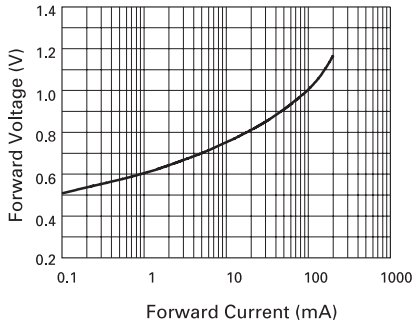
T_C is a characterized parameter not measured on individual devices.

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

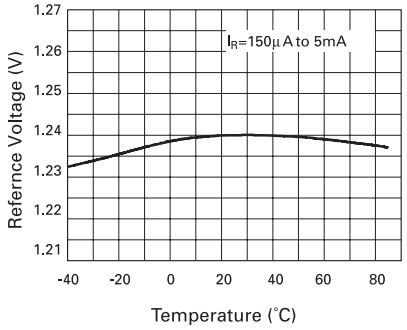


Reverse Characteristics

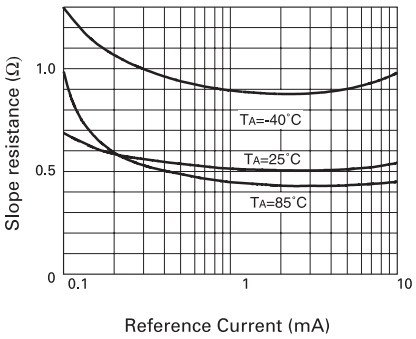
TYPICAL CHARACTERISTICS



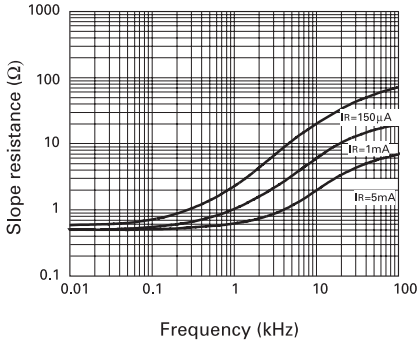
Forward Characteristics



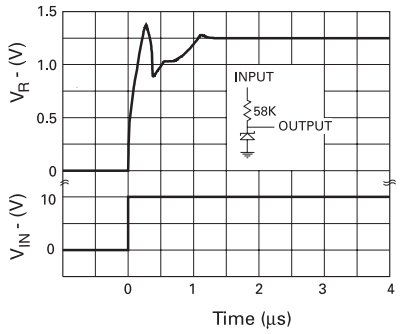
Temperature Drift



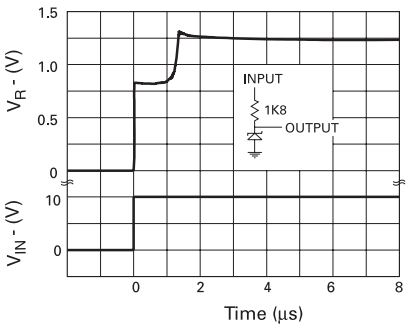
Slope Resistance v Reference Current



Slope Resistance v Frequency



Transient Response (I_R=150µA)

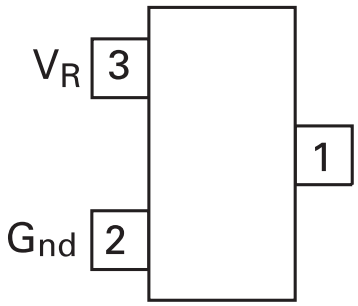


Transient Response (I_R=5mA)

ZRA125

CONNECTION DIAGRAM

Package Suffix - F

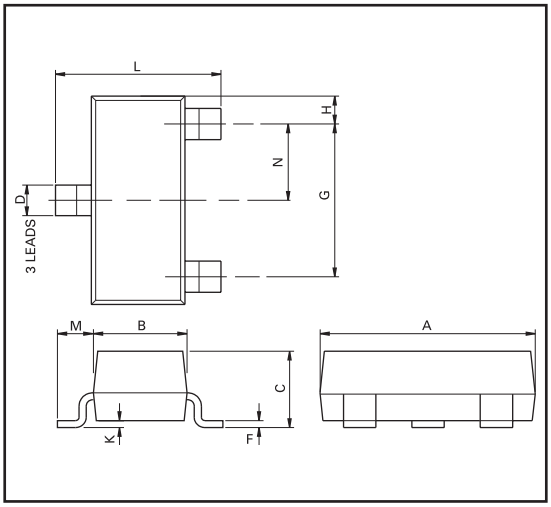


TOP VIEW
Pin 1 floating or connected to pin 2

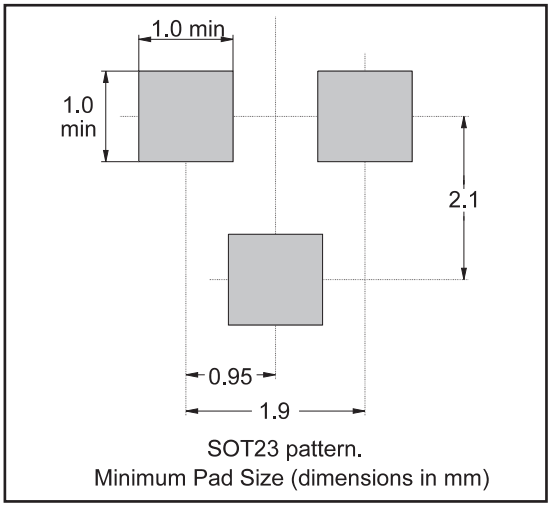
ORDERING INFORMATION

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

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		—	—		—	

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