ZRA124

PRECISION 1.24 VOLT MICROPOWER VOLTAGE REFERENCE

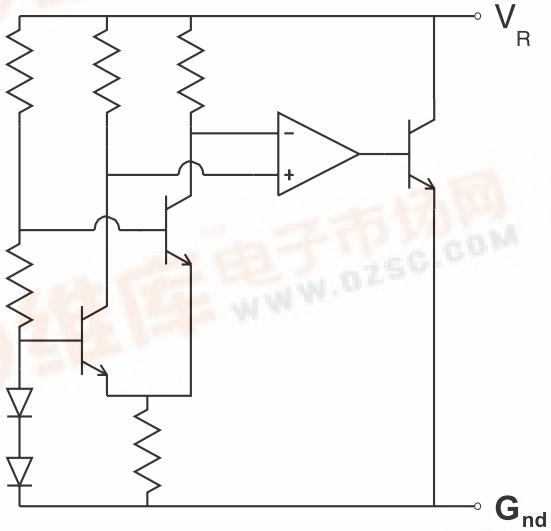
DEVICE DESCRIPTION

The ZRA124 uses a bandgap circuit design to achieve a precision micropower voltage reference of 1.24 volts. The device is available in a small outline surface mount packages, ideal for applications where space saving is important.

The ZRA124 design provides a stable voltage without an external capacitor and is stable with capacitive loads. The ZRA124 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 an 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

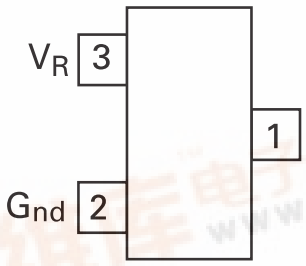


FEATURES

- Typical T_C 30ppm/°C
- Typical slope resistance 0.65Ω
- ± 1% tolerance
- Industrial temperature range
- Operating current 50μA to 5mA
- No stabilising capacitor required
- Transient response, stable in less than 10μs
- Small SOT23 package

APPLICATIONS

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



TOP VIEW
Pin 1 floating or connected to pin 2

ORDERING INFORMATION

DEVICE	TOL %	REEL SIZE	TAPE WIDTH	REEL QUANTITY	PART MARK
ZRA124F01TA	1	7”	8mm	3,000	12C

ZRA124

ABSOLUTE MAXIMUM RATING

Reverse current	25mA
Forward current	25mA
Operating temperature	-40 to 85°C
Storage temperature	-55 to 125°C

Power dissipation (T_{amb} = 25°C)

SOT23	330mW

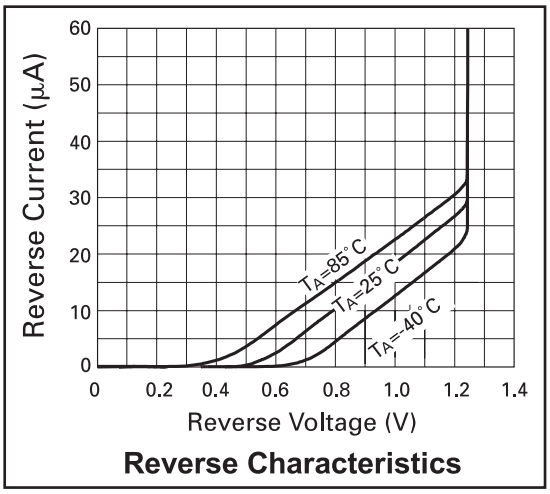
ELECTRICAL CHARACTERISTICS TEST CONDITIONS (Unless otherwise stated) T_{amb}=25°C

SYMBOL	PARAMETER	CONDITIONS	LIMITS			TOL %	UNITS
			MIN.	TYP.	MAX.		
V_R	Reverse breakdown voltage	I_R = 150µA	1.228	1.24	1.252	1	V
I_{MIN}	Minimum operating current			30	50		µA
I_R	Recomended 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 1_{AC} = 0.1IR		0.5	1		Ω
E_N	Wideband noise voltage	I_R = 150µA f = 100Hz to 10kHz		40			µV(rms)

NOTES:

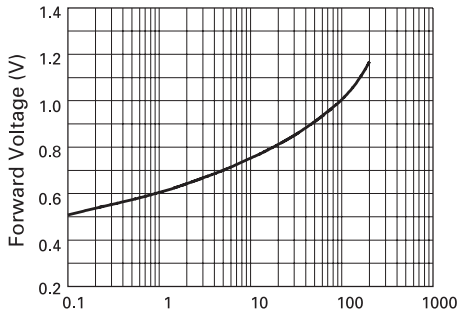
(1) $T_C = \dfrac{V_R \text{ Change } x\ 1000000}{V_R \ x \text{ Temperature Change}}$

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

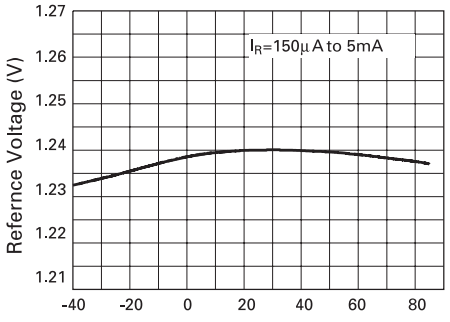


Reverse Characteristics

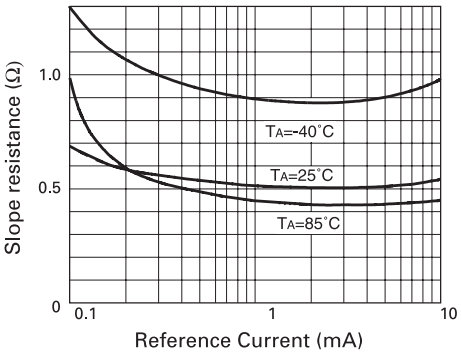
TYPICAL CHARACTERISTICS



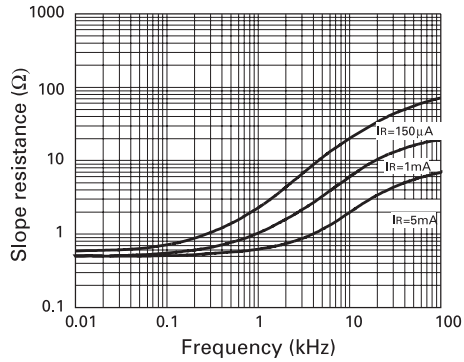
Forward Characteristics



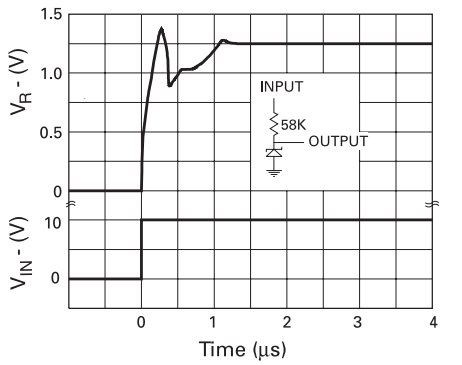
Temperature Drift



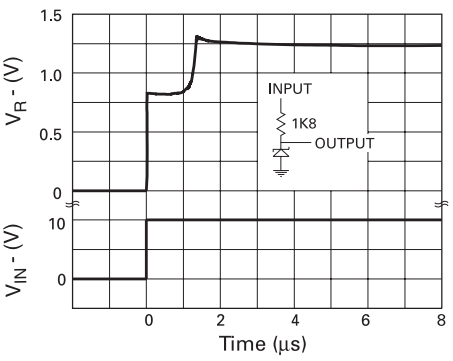
Slope Resistance v Reference Current



Slope Resistance v Frequency



Transient Response (I_R=150µA)



Transient Response (I_R=5mA)

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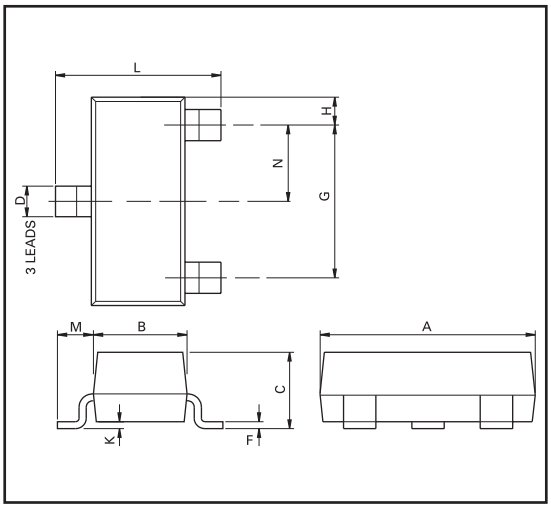
PACKAGE OUTLINE



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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