PRECISION 2.45 VOLT VOLTAGE REFERENCE

ZR458

ISSUE 2 — FEBRUARY 1998

DEVICE DESCRIPTION

The ZR458 uses a bandgap circuit design to achieve a precision voltage reference of 2.45 volts.

The ZR458 design provides a stable voltage without an external capacitor and is stable with capacitive loads. The ZR458 is recommended for operation between 2mA and 120mA.

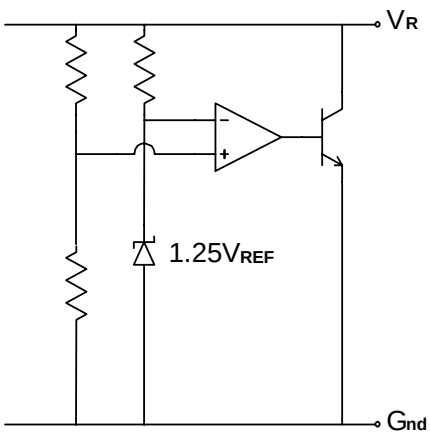
FEATURES

- TO92 style package
- No stabilising capacitor required
- Typical T_C 15ppm/°C
- Typical slope resistance 0.26Ω
- 1% tolerance
- Industrial temperature range (Military temperature range available on request)
- Operating current 2mA to 120mA
- Alternative package options and tolerances available

APPLICATIONS

- Battery powered and portable equipment.
- Metering and measurement systems.
- Instrumentation.
- Test equipment.
- Data acquisition systems.

SCHEMATIC DIAGRAM



ZR458

ABSOLUTE MAXIMUM RATING

Reverse Current	200mA
Forward Current	25mA
Operating Temperature	-40 to 85°C
Storage Temperature	-55 to 125°C

Power Dissipation (T_{amb}=25°C)

E-Line, 2 pin (TO92)	500mW

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=5mA	2.43	2.45	2.47	1	V
I_{MIN}	Minimum Operating Current				2		mA
I_R	Recommended Operating Current		2		120		mA
T_C †	Average Reverse Breakdown Voltage Temp. Co. ZR458	$I_{R(min)}$ to $I_{R(max)}$		30	100		ppm/°C
	ZR458A			15	50		
R_S §	Slope Resistance			0.26	0.5		Ω
Z_R	Reverse Dynamic Impedance	I_R = 5mA f = 100Hz I_{AC}= 0.1 I_R		0.28	1		Ω
E_N	Wideband Noise Voltage	I_R = 5mA f = 10Hz to 10kHz		65			µV(rms)

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

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

§ $$R_S = \frac{V_R \, Change(I_R(min) \text{ to } I_R(max))}{I_R(max) - I_R(min)}$$

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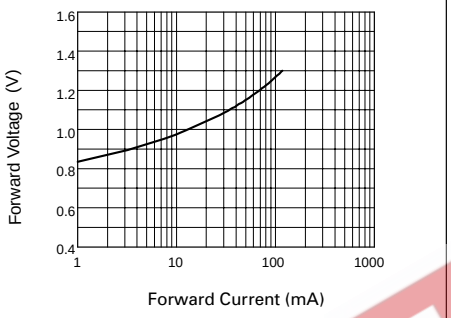
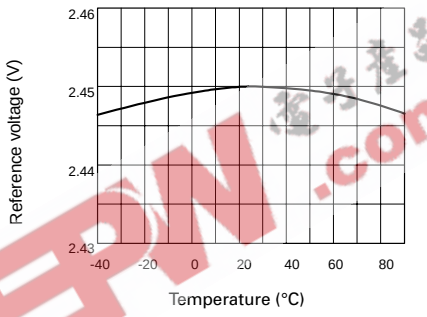
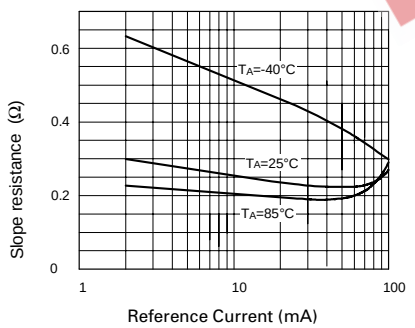
TYPICAL CHARACTERISTICS



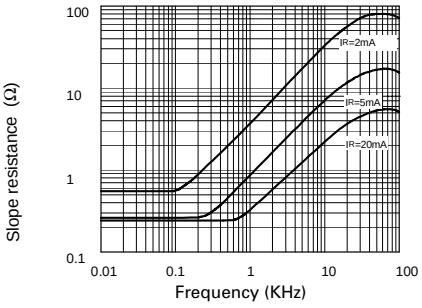
Forward Characteristics



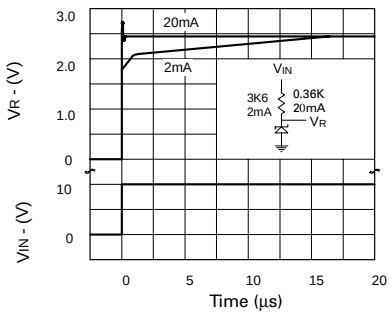
Temperature Drift



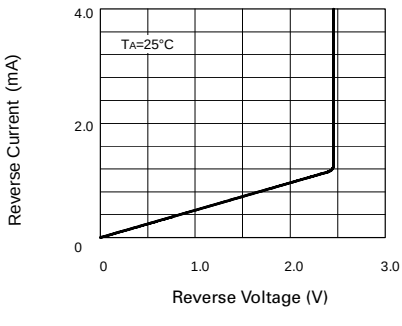
Slope Resistance v Current



Slope Resistance v Frequency



Transient Response



Reverse Characteristics

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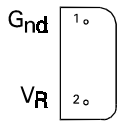
CONNECTION DIAGRAMS

E-Line, 2 pin, Package Suffix – Y



Bottom View

ORDERING INFORMATION

Part No	Tol%	T_C Option	Package	Partmark
ZR458	1	100ppm/ °C max	E-Line †	ZR458
ZR458A	1	50ppm/ °C max	E-Line †	ZR458A

† E-Line, 2 pin