THE DATASHEET OF

ZRC330A03STOA

PRECISION 3.3 VOLT LOW
CURRENT VOLTAGE REFE

ISSUE 2 - FEBRUARY 1997

DEVICE DESCRIPTION

The ZRC330 uses a bandgap circuit desi
achieve a precision micropower vo
reference of 3.3 volts. The device is ava
in small outline surface mount packages,
for applications where space savi
important.

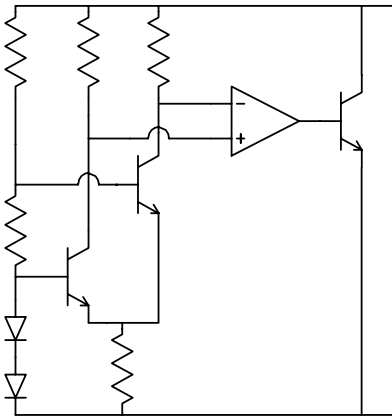
The ZRC330 design provides a stable vo
without an external capacitor and is stable
capacitive loads. The ZRC330 is recomme
for operation between 20μA and 5mA and
ideally suited to low power and ba
powered applications.

Excellent performance is maintained
suggested absolute maximum of 2
however the rugged design and 20
processing allows the reference to with
transient effects and currents up to 20
Superior switching capability allows the c
to reach stable operating conditions in c
few microseconds.

FEATURES

- Small outline SOT23, SO8 and TO92 style packages

SCHEMATIC DIAGRAM



ZRC330

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)

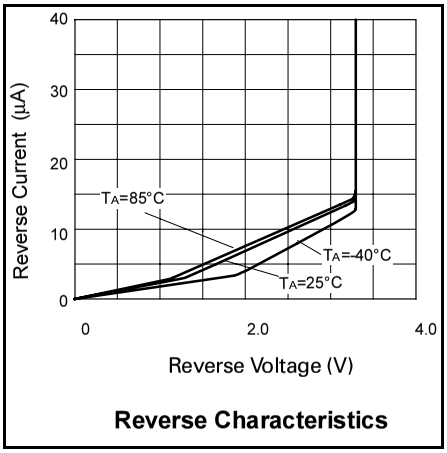
SOT23	330mW
E-Line, 3 pin (TO92)	500mW
E-Line, 2 pin (TO92)	500mW
SO8	625mW

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	3.27 3.234 3.2	3.3 3.3 3.3	3.33 3.366 3.4	1 2 3	V
I_{MIN}	Minimum Operating Current			15	20		µA
I_R	Recommended Operating Current		0.02		5		mA
T_C †	Average Reverse Breakdown Voltage Temp. Co.	$I_{R(min)}$ to $I_{R(max)}$		15	50		ppm/°C
R_S §	Slope Resistance			0.6	2		Ω
Z_R	Reverse Dynamic Impedance	I_R = 1mA f = 100Hz I_{AC}= 0.1 I_R		0.5	1.2		Ω
E_N	Wideband Noise Voltage	I_R = 150µA f = 10Hz to 10kHZ		43			µV(rms)

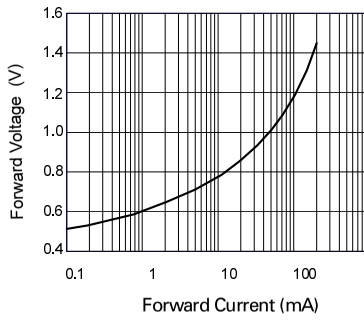
† $T_C = \dfrac{V_R\ Change x\ 1000000}{V_R\ x\ Temperature\ Change}$

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

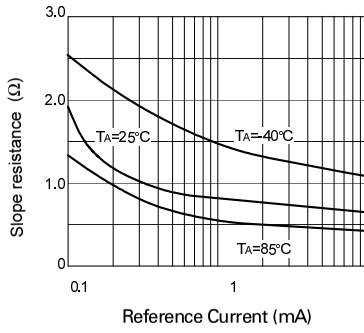


Reverse Characteristics

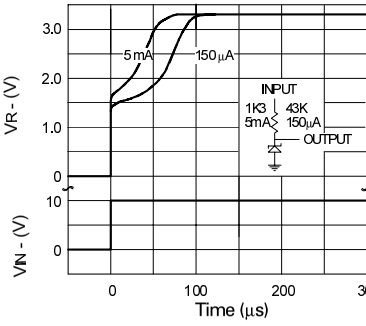
TYPICAL



Forward Characteristics



Slope Resistance v Current



Transient Response (Single Pulse)

ZRC330

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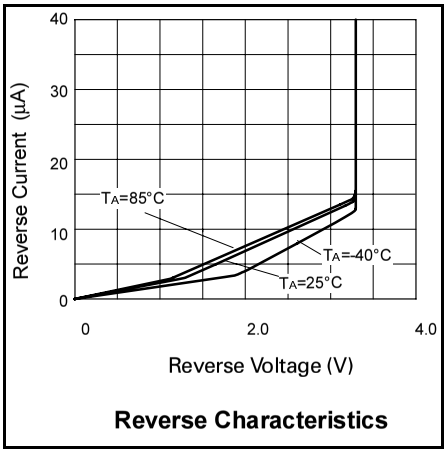
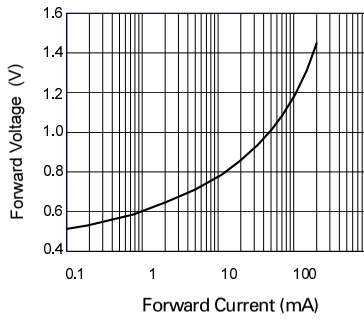
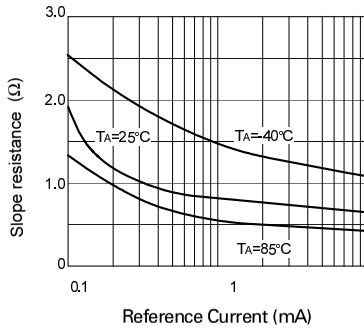


Reverse Characteristics

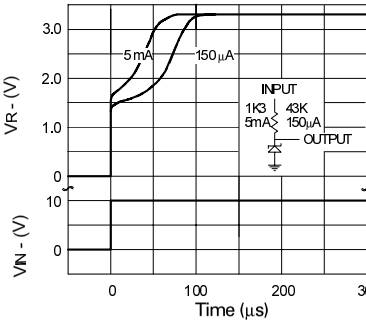
TYPICAL



Forward Characteristics



Slope Resistance v Current

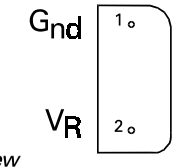


Transient Response (Single Pulse)

ZRC330

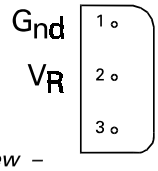
CONNECTION DIAGRAMS

E-Line, 2 pin Package Suffix – Y



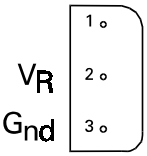
Bottom View

E-Line, 3 pin,Rev Package Suffix – R



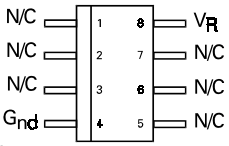
Bottom View –
Pin 3 floating or connected to pin 1

E-Line, 3 pin Package Suffix – A



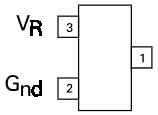
Bottom View –
Pin 1 floating or connected to pin 3

SO8 Package Suffix – N8



Top View

SOT23 Package Suffix – F



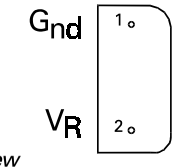
Top View –
Pin 1 floating or connected to pin 2

Part No	Tol%	Package	Partn
ZRC330A03	3	E-Line •	ZRC3
ZRC330A02	2	E-Line •	ZRC3
ZRC330A01	1	E-Line •	ZRC3
ZRC330F03	3	SOT23	33A
ZRC330F02	2	SOT23	33B
ZRC330F01	1	SOT23	33C
ZRC330N803	3	SO8	ZRC3
ZRC330N802	2	SO8	ZRC3
ZRC330N801	1	SO8	ZRC3

ZRC330

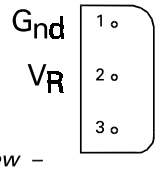
CONNECTION DIAGRAMS

E-Line, 2 pin Package Suffix – Y



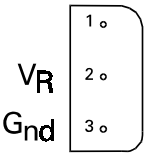
Bottom View

E-Line, 3 pin,Rev Package Suffix – R



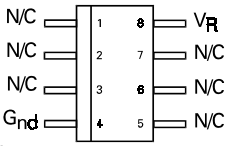
Bottom View –
Pin 3 floating or connected to pin 1

E-Line, 3 pin Package Suffix – A



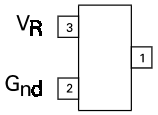
Bottom View –
Pin 1 floating or connected to pin 3

SO8 Package Suffix – N8



Top View

SOT23 Package Suffix – F



Top View –
Pin 1 floating or connected to pin 2

Part No	Tol%	Package	Partn
ZRC330A03	3	E-Line •	ZRC3
ZRC330A02	2	E-Line •	ZRC3
ZRC330A01	1	E-Line •	ZRC3
ZRC330F03	3	SOT23	33A
ZRC330F02	2	SOT23	33B
ZRC330F01	1	SOT23	33C
ZRC330N803	3	SO8	ZRC3
ZRC330N802	2	SO8	ZRC3
ZRC330N801	1	SO8	ZRC3

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- Cost Control Management
- Shortage Management
- Alternative Solution
- Excess Inventory Management