

ZXRE4041

SOT23 MICROPower 1.225V VOLTAGE REFERENCE

Description

The ZXRE4041 is a bandgap circuit designed to achieve a precision micropower voltage reference of 1.225 volts. The device is available in the small outline SOT23 surface mount package which is ideal for applications where space saving is important.

SOT23 tolerance is available to 0.5% C grade for precision applications. Excellent performance is maintained over the 30 μ A to 12mA operating current range with a typical temperature coefficient of only 20ppm/ $^{\circ}$ C. The device has been designed to be highly tolerant of capacitive loads so maintaining excellent stability.

This device offers a SOT23 pin for pin compatible alternative to LM4041 voltage references.

Features

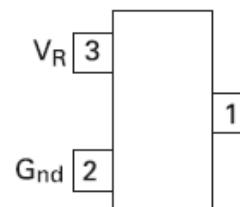
- High performance alternative to LM4041
- Small outline SOT23
- 30 μ A knee current
- 20ppm/ $^{\circ}$ C typical temperature coefficient
- Unconditionally stable
- 0.5%, 1%, and 2% tolerance
- Green molding compound (No Br, Sb)

Applications

- Battery powered equipment
- Precision power supplies
- Portable instrumentation
- Portable communication devices
- Notebook and palm top computers
- Data acquisition systems
- A/D and D/A converters
- Test equipment

Pin Assignments

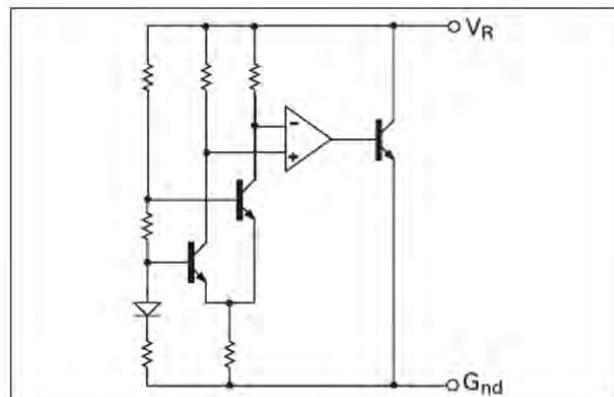
SOT23 Package Suffix - F



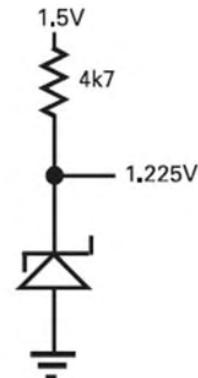
(Top view)

Pin 1 floating or connected to pin 2

Schematic Diagram



Application Circuit



Absolute Maximum Ratings (Voltages to GND Unless Otherwise Stated)

Parameter	Symbol	Rating	Unit
Reverse Current	V_Z	30	mA
Forward Current		10	mA
Operating Temperature	T_{OMP}	-40 to 125	°C
Storage Temperature	T_{STG}	-55 to 125	°C
Power Dissipation ($T_{AMB} = 25^\circ\text{C}$)	P_D	330	mW

Electrical Characteristics (Test conditions: $T_{AMB} = 25^\circ\text{C}$, unless otherwise specified.)

Symbol	Parameter	Condition	Min.	Typ.	Max.	Tol. (%)	Unit
V_R	Reverse breakdown voltage	$I_R = 100\mu\text{A}$	1.219 1.213	1.225 1.225	1.231 1.237	C/0.5 D/1	V
I_{MIN}	Minimum operating current				30		μA
I_R	Recommended operating current		0.03		12		mA
$T_C^{(*)}$	Average reverse breakdown voltage temperature coefficient	$I_{R(min)} \text{ to } I_{R(max)}$		20	100		ppm/°C
$R_S^{(†)}$	Reverse Breakdown Change with Current Voltage	$I_R = 30\mu\text{A} \text{ to } 1\mu\text{A}$ $I_R = 1\text{mA} \text{ to } 12\text{mA}$			1 10		mV
Z_R	Reverse dynamic impedance	$I_R = 1\text{mA}$ $f = 100\text{Hz}$ $I_{AC} = 0.1I_R$		0.2	0.6		Ω
E_N	Wideband noise voltage	$I_R = 8\mu\text{A} \text{ to } 100\mu\text{A}$ $f = 10\text{Hz} \text{ to } 10\text{kHz}$		60			μV(rms)

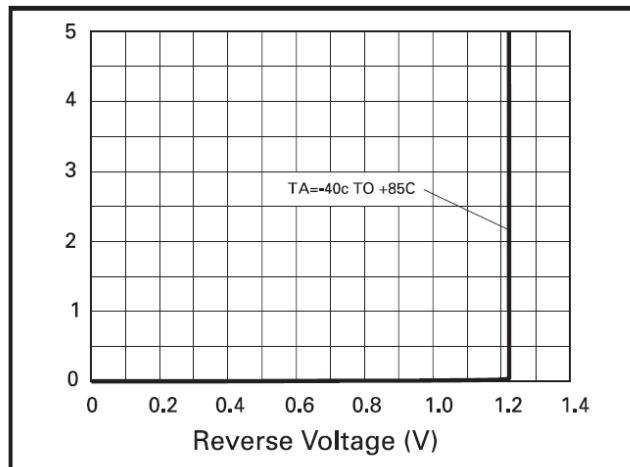
Notes:

$$(*) \quad T_C = \frac{(V_{R(MAX)} - V_{R(MIN)}) \times 1000000}{V_R \times (T_{(MAX)} - T_{(MIN)})}$$

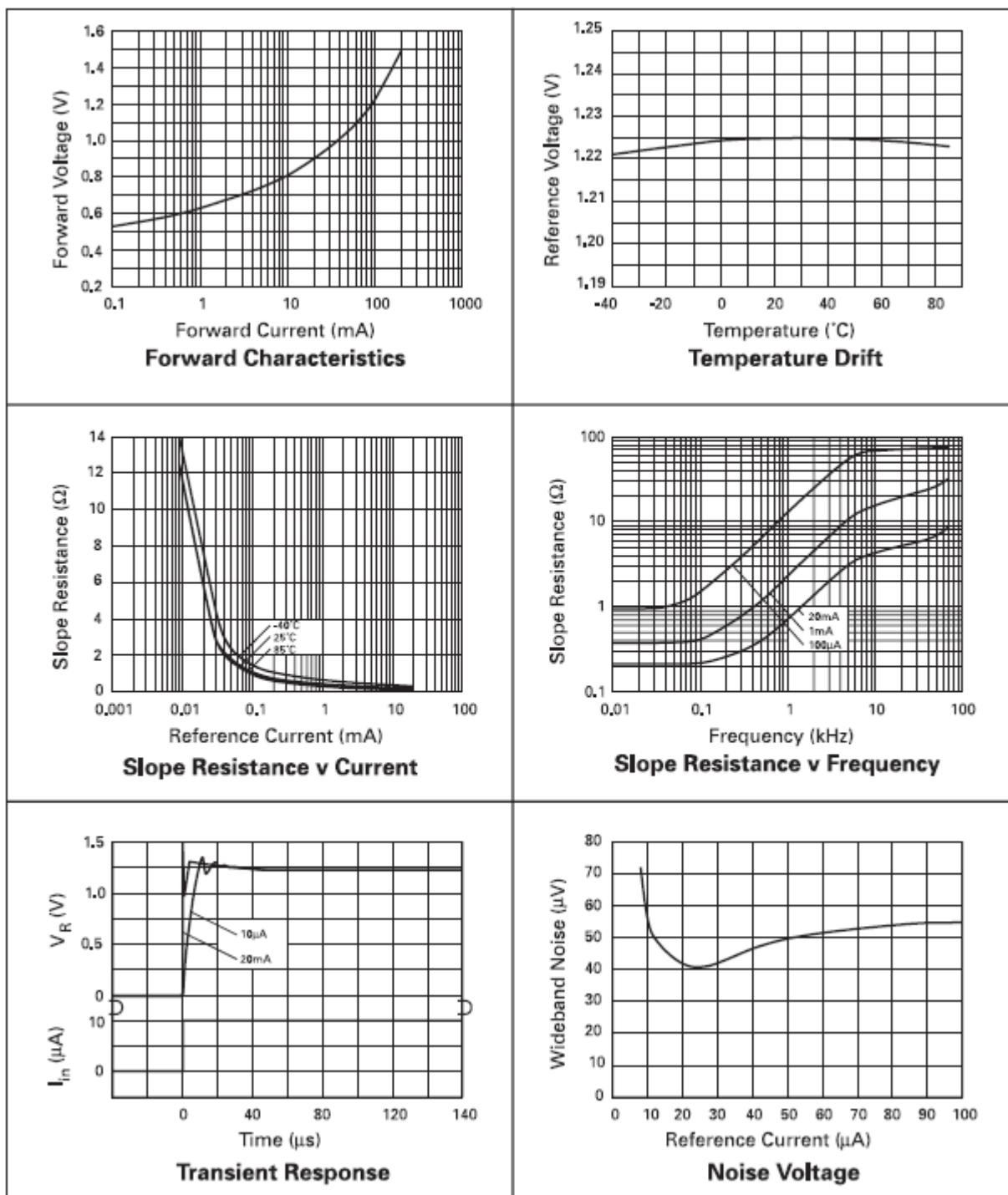
REVERSE CHARACTERISTICS

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

$$(†) \quad R_S = \frac{\Delta V_R}{\Delta I_R}$$



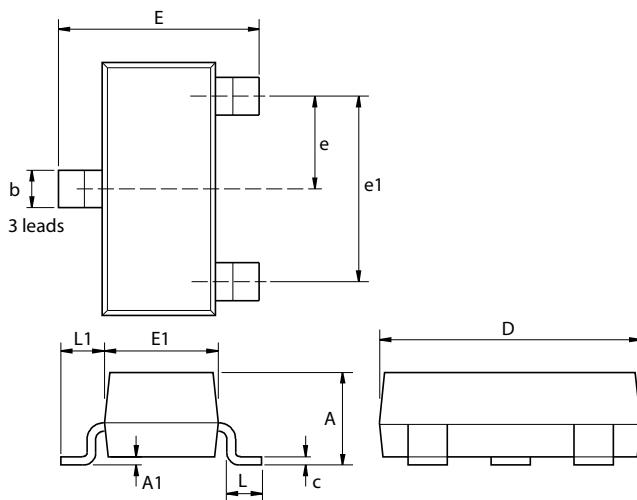
Typical Characteristics



Ordering Information*

Order Reference	Tol (%)	Device Mark	Grade	Status (*)	Reel Size (inches)	Quantity per reel	Tape Width (mm)
ZXRE4041CF	0.5	10J	C	Released	7	3000	8
ZXRE4041DF	1	10H	D	Released	7	3000	8

Notes: *All E-LINE variants of ZXRE4041 are obsolete and no longer available for sale. The closest alternative is the SOT23

Package Outline SOT23


Dim.	Millimeters		Inches		Dim.	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	-	1.12	-	0.044	e1	1.90 NOM		0.075 NOM	
A1	0.01	0.10	0.0004	0.004	E	2.10	2.64	0.083	0.104
b	0.30	0.50	0.012	0.020	E1	1.20	1.40	0.047	0.055
c	0.085	0.20	0.003	0.008	L	0.25	0.60	0.0098	0.0236
D	2.80	3.04	0.110	0.120	L1	0.45	0.62	0.018	0.024
e	0.95 NOM		0.037 NOM		-	-	-	-	-

Note: Controlling dimensions are in millimeters. Approximate dimensions are provided in inches

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