

**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 A to 12mA operating current range with a typical temperature coefficient of only 20ppm/°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

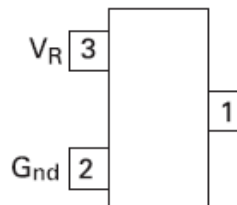
- High performance alternative to LM4041
- Small outline SOT23
- 30μA knee current
- 20ppm/°C typical temperature coefficient
- Unconditionally stable
- 0.5%, 1%, and 2% tolerance
- Green molding compound (No Br, Sb)

## 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

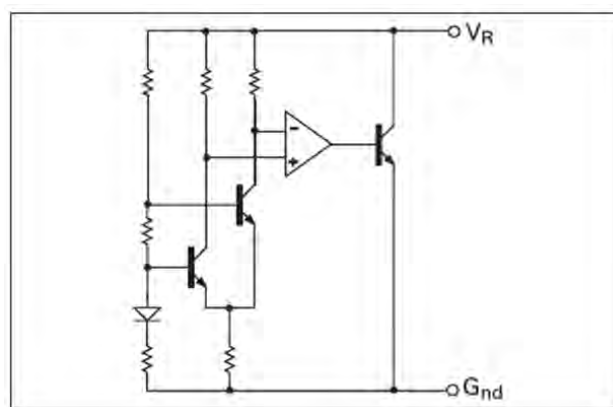
SOT23 Package Suffix – F



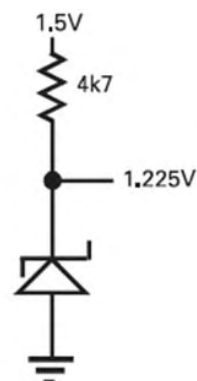
(Top view)

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.)

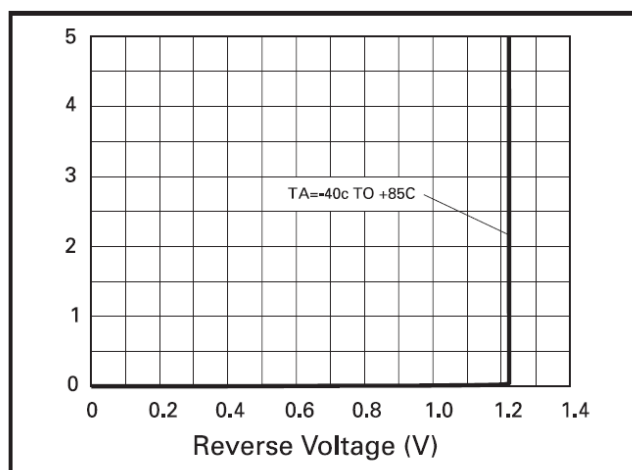
Symbol	Parameter	Condition	Min.	Typ.	Max.	Tol. (%)	Unit
$V_R$	Reverse breakdown voltage	$I_R = 100\mu\text{A}$	1.219 1.213	1.225 1.225	1.231 1.237	C/0.5 D/1	V
$I_{MIN}$	Minimum operating current				30		$\mu\text{A}$
$I_R$	Recommended operating current		0.03		12		mA
$T_C^{(*)}$	Average reverse breakdown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

Notes:

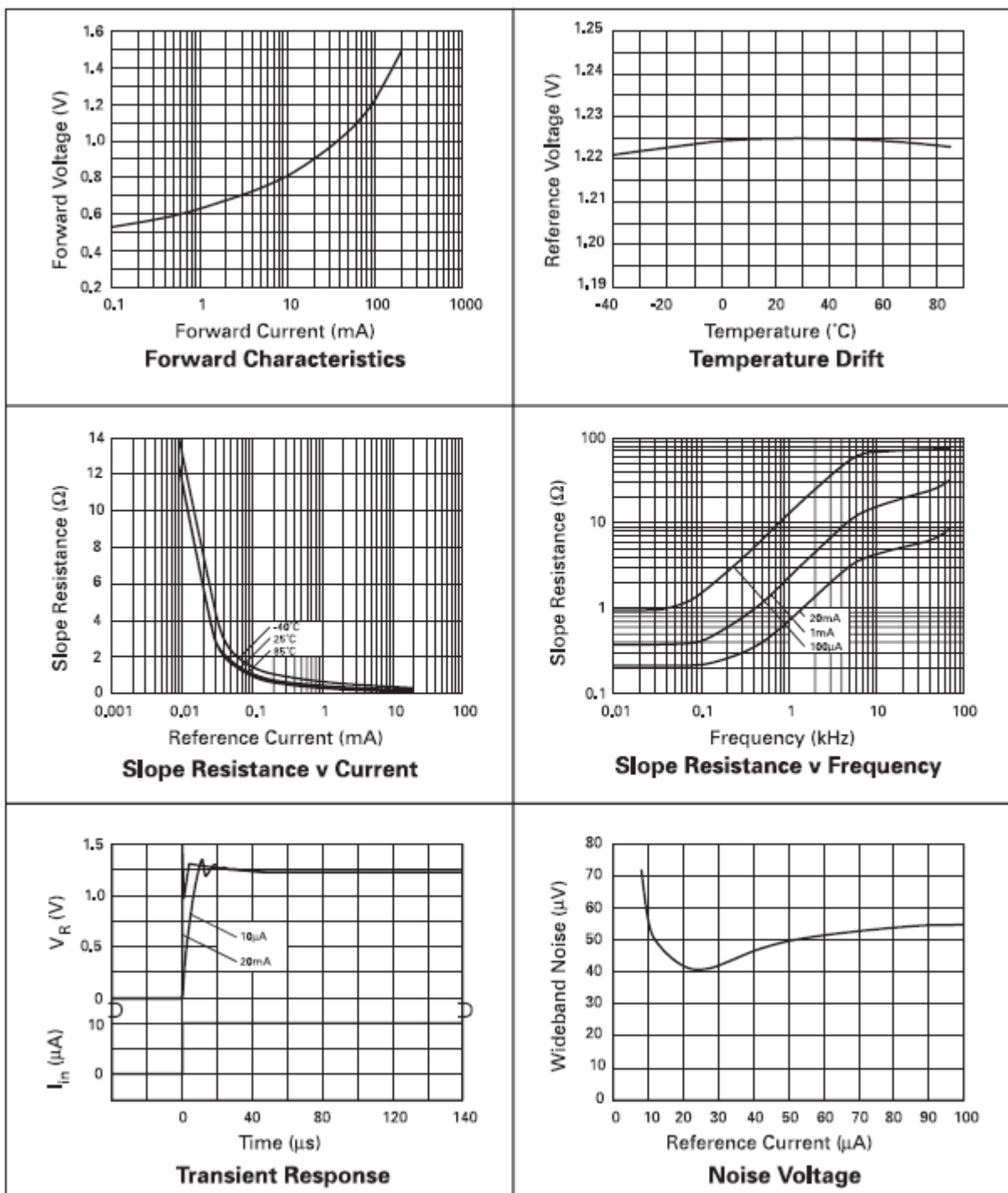
$$(*) T_C = \frac{(V_{R(MAX)} - V_{R(MIN)}) \times 1000000}{V_R \times (T_{(MAX)} - T_{(MIN)})}$$

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

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

**REVERSE CHARACTERISTICS**


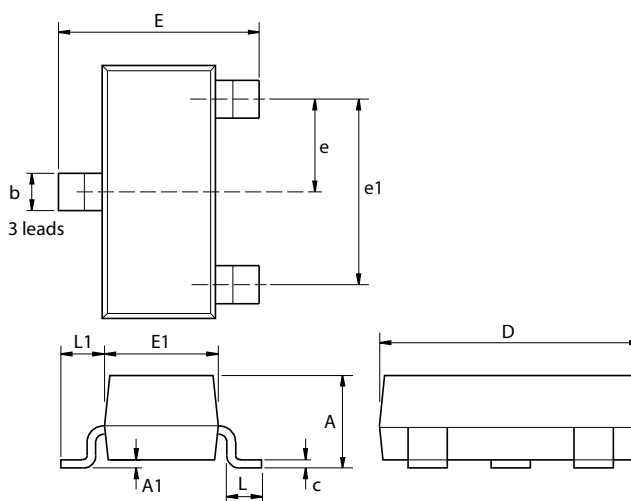
## Typical Characteristics



**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 closet 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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