

## BZX84Cx Zener Voltage Regulator Diodes in SOT-23

### 1 Features

- Total power dissipation: 250mW (max)
- Low I/O capacitance: 80pF (max)
- Low leakage current: 0.6μA (max)
- Tolerance: ±5%
- Temperature range: -55°C to +150°C
- Leaded package used for automatic optical inspection (AOI)

### 2 Applications

- Voltage regulation
- Over-voltage protection

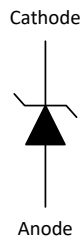
### 3 Description

The BZX84Cx is a family of voltage regulating diodes in a SOT-23 package. The diodes are available in Zener voltages ranging from 8.2V to 39V.

#### Package Information

PART NUMBER	PACKAGE <sup>(1)</sup>	PACKAGE SIZE <sup>(2)</sup>
BZX84Cx	DBZ (SOT-23, 3)	2.92mm × 2.37mm

- (1) For more information, see [Section 8](#).
- (2) The package size (length × width) is a nominal value and includes pins, where applicable.



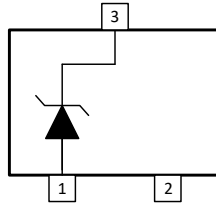
**Figure 3-1. Functional Block Diagram**



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## 4 Pin Configuration and Functions



**Figure 4-1. DBZ Package, 3-Pin SOT-23 (Top View)**

**Table 4-1. Pin Functions**

PIN		DESCRIPTION
NO.	NAME	
1	A	Anode
2	NC	No Connect
3	K	Cathode

## 5 Specifications

### 5.1 Absolute Maximum Ratings

over operating free-air temperature range (unless otherwise noted) <sup>(1)</sup>

		MIN	MAX	UNIT
$P_D$ <sup>(2) (3)</sup>	Total Power Dissipation		250	mW
$T_A$	Ambient Operating Temperature	-55	150	°C
$T_{stg}$	Storage Temperature	-65	155	°C

- (1) Operation outside the Absolute Maximum Ratings may cause permanent device damage. Absolute maximum ratings do not imply functional operation of the device at these or any other conditions beyond those listed under Recommended Operating Conditions. If briefly operating outside the Recommended Operating Conditions but within the Absolute Maximum Ratings, the device may not sustain damage, but it may not be fully functional. Operating the device in this manner may affect device reliability, functionality, performance, and shorten the device lifetime.
- (2) FR-4 printed circuit board, single sided copper, standard footprint
- (3) Measured at 25°C

### 5.2 Recommended Operating Conditions

over operating free-air temperature range (unless otherwise noted)

			MIN	NOM	MAX	UNIT
$V_F$	Forward Voltage	$I_F = 10\text{mA}$			0.9	V
$T_A$	Operating free-air temperature		-55		150	°C

### 5.3 Thermal Information

THERMAL METRIC <sup>(1)</sup>		BZX84Cx	UNIT
		DBZ (SOT-23)	
		3 PINS	
$R_{\theta JA}$	Junction-to-ambient thermal resistance	285.5	°C/W
$R_{\theta JC(top)}$	Junction-to-case (top) thermal resistance	197.5	°C/W
$R_{\theta JB}$	Junction-to-board thermal resistance	118.5	°C/W
$\Psi_{JT}$	Junction-to-top characterization parameter	90.6	°C/W
$\Psi_{JB}$	Junction-to-board characterization parameter	117.8	°C/W
$R_{\theta JC(bot)}$	Junction-to-case (bottom) thermal resistance	N/A	°C/W

- (1) For more information about traditional and new thermal metrics, see the [Semiconductor and IC Package Thermal Metrics](#) application report.

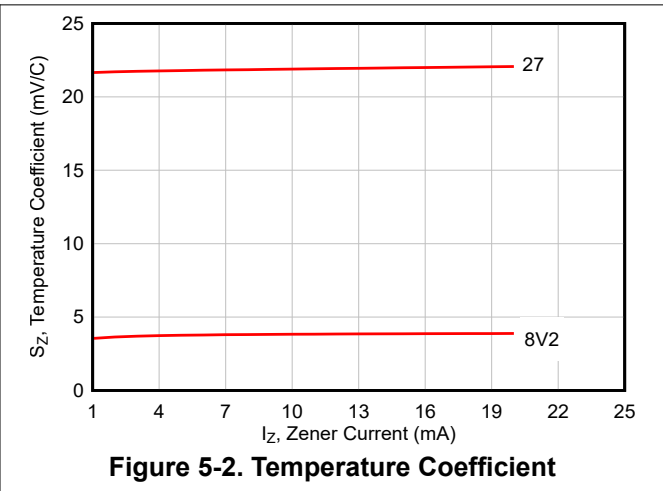
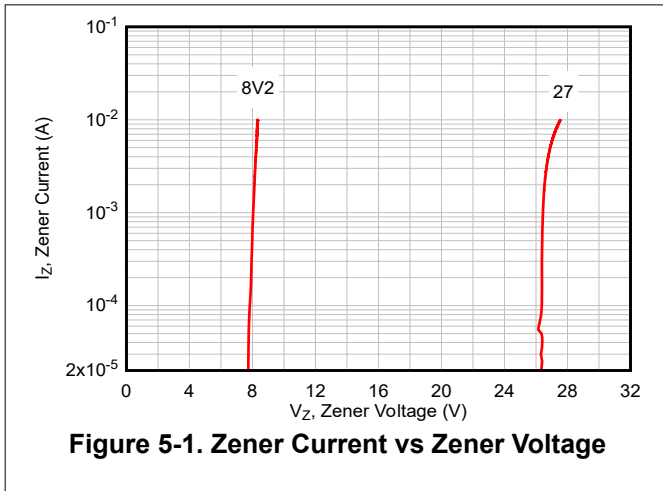
### 5.4 Electrical Characteristics

At  $T_A = 25^\circ\text{C}$  (unless otherwise noted)

Part Number	Zener Voltage $V_Z$ (V) at $I_Z$				Zener Impedance $Z_{ZT}$ ( $\Omega$ )		Reverse Leakage Current $I_R$ ( $\mu\text{A}$ )		Temperature Coefficient $S_Z$ (mV/C) at $I_Z$		Capacitance $C_D$ (pF) <sup>(1)</sup>
	MIN	TYP	MAX	$I_Z$ (mA)	MAX	$I_Z$ (mA)	MAX	$V_R$ (V)	MAX	$I_Z$ (mA)	MAX
BZX84C8V2	7.79	8.2	8.61	5	15	5	0.6	5.75	6.2	5	80
BZX84C15V	14.25	15	15.75	5	30	5	0.03	10.5	13	5	50
BZX84C27V	25.65	27	28.35	2	80	2	0.03	18.9	25.3	2	35
BZX84C39V	37.05	39	40.95	2	130	2	0.03	27.3	41.2	2	25

- (1)  $f = 1\text{MHz}$ ,  $V_R = 0$

## 5.5 Typical Characteristics



## 6 Device and Documentation Support

### 6.1 Documentation Support

#### 6.1.1 Related Documentation

For related documentation, see the following:

- Texas Instruments, [Diodes Packaging and Layout Guide](#)
- Texas Instruments, [Diodes Layout Guide User's Guide](#)
- Texas Instruments, [Generic Evaluation Module User's Guide](#)

### 6.2 Receiving Notification of Documentation Updates

To receive notification of documentation updates, navigate to the device product folder on [ti.com](https://www.ti.com). Click on *Notifications* to register and receive a weekly digest of any product information that has changed. For change details, review the revision history included in any revised document.

### 6.3 Support Resources

TI E2E™ support forums are an engineer's go-to source for fast, verified answers and design help — straight from the experts. Search existing answers or ask your own question to get the quick design help you need.

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### 6.4 Trademarks

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### 6.5 Electrostatic Discharge Caution



This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

### 6.6 Glossary

[TI Glossary](#) This glossary lists and explains terms, acronyms, and definitions.

## 7 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

DATE	REVISION	NOTES
December 2024	*	Initial Release

## 8 Mechanical, Packaging, and Orderable Information

The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

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