

## 500mW, 2.4V - 36V Surface Mount Zener Diode

### FEATURES

- Wide Zener voltage range selection: 2.4V to 36V
- $V_Z$  Tolerance Selection of  $\pm 5\%$
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant

### APPLICATIONS

- Low voltage stabilizers or voltage references
- Adapters
- Lighting application
- On-board DC/DC converter

### MECHANICAL DATA

- Case: 0805 (Ceramics)
- Molding compound meets UL 94HB flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Polarity: Indicated by cathode band
- Weight: 5.99mg (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$V_Z$	2.4 - 36	V
Test current $I_{ZT}$	5	mA
$P_D$	500	mW
$V_F$ at $I_F = 10\text{mA}$	1.5	V
$T_{J\text{ MAX}}$	150	$^{\circ}\text{C}$
Package	0805 (Ceramics)	
Configuration	Single die	


**0805 (Ceramics)**


### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Forward voltage @ $I_F = 10\text{mA}$	$V_F$	1.5	V
Total power dissipation	$P_D$	500	mW
Junction temperature range	$T_J$	-55 to +150	$^{\circ}\text{C}$
Storage temperature range	$T_{STG}$	-55 to +150	$^{\circ}\text{C}$

### THERMAL PERFORMANCE

PARAMETER	SYMBOL	LIMIT	UNIT
Junction-to-ambient thermal resistance	$R_{\theta JA}$	300	$^{\circ}\text{C/W}$

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

PART NUMBER	MARKING CODE	ZENER VOLTAGE			TEST CURRENT	REGULAR IMPEDANCE		TEST CURRENT	LEAKAGE CURRENT	
		$V_Z @ I_{ZT}^{(1)}$			$I_{ZT}$	$Z_{ZT} @ I_{ZT}$	$Z_{ZK} @ I_{ZK}$	$I_{ZK}$	$V_Z @ I_{ZT}$	
		V			mA	$\Omega$	$\Omega$	mA	$\mu\text{A}$	V
		Min	Nom	Max		Max	Max		Max	
BZY55C2V4	2V4	2.28	2.40	2.52	5	85	600	1	50	1.0
BZY55C2V7	2V7	2.57	2.70	2.84	5	85	600	1	10	1.0
BZY55C3V0	3.0	2.85	3.00	3.15	5	85	600	1	4	1.0
BZY55C3V3	3V3	3.14	3.30	3.47	5	85	600	1	2	1.0
BZY55C3V6	3V6	3.42	3.60	3.78	5	85	600	1	2	1.0
BZY55C3V9	3V9	3.71	3.90	4.10	5	85	600	1	2	1.0
BZY55C4V3	4V3	4.09	4.30	4.52	5	80	600	1	1	1.0
BZY55C4V7	4V7	4.47	4.70	4.94	5	70	600	1	0.5	1.0
BZY55C5V1	5V1	4.85	5.10	5.36	5	50	550	1	0.1	1.0
BZY55C5V6	5V6	5.32	5.60	5.88	5	30	450	1	0.1	1.0
BZY55C6V2	6V2	5.89	6.20	6.51	5	10	200	1	0.1	2.0
BZY55C6V8	6V8	6.46	6.80	7.14	5	8	150	1	0.1	3.0
BZY55C7V5	7V5	7.13	7.50	7.88	5	7	50	1	0.1	5.0
BZY55C8V2	8V2	7.79	8.20	8.61	5	7	50	1	0.1	6.2
BZY55C9V1	9V1	8.65	9.10	9.56	5	10	50	1	0.1	6.8
BZY55C10	10	9.50	10.00	10.50	5	15	70	1	0.1	7.5
BZY55C11	11	10.45	11.00	11.55	5	20	70	1	0.1	8.2
BZY55C12	12	11.40	12.00	12.60	5	20	90	1	0.1	9.1
BZY55C13	13	12.35	13.00	13.65	5	26	110	1	0.1	10
BZY55C15	15	14.25	15.00	15.75	5	30	110	1	0.1	11
BZY55C16	16	15.20	16.00	16.80	5	40	170	1	0.1	12
BZY55C18	18	17.10	18.00	18.90	5	50	170	1	0.1	13
BZY55C20	20	19.00	20.00	21.00	5	55	220	1	0.1	15
BZY55C22	22	20.90	22.00	23.10	5	55	220	1	0.1	16
BZY55C24	24	22.80	24.00	25.20	5	80	220	1	0.1	18
BZY55C27	27	25.65	27.00	28.35	5	80	220	1	0.1	20
BZY55C30	30	28.50	30.00	31.50	5	80	220	1	0.1	22
BZY55C33	33	31.35	33.00	34.65	5	80	220	1	0.1	24
BZY55C36	36	34.20	36.00	37.80	5	80	220	1	0.1	27

**Notes:**

1. The Zener Voltage ( $V_Z$ ) is tested under pulse condition of 10ms
2. The device numbers listed have a standard tolerance on the nominal Zener voltage of  $\pm 2\%$
3. For detailed information on price, availability and delivery of nominal Zener voltages between the voltages shown and tighter voltage tolerances, contact your nearest Taiwan Semiconductor representative
4. The Zener impedance is derived from the 60-cycle AC voltage, which results when an AC current having an RMS value equal to 10% of the dc Zener current ( $I_{ZT}$  or  $I_{ZK}$ ) is superimposed to  $I_{ZT}$  or  $I_{ZK}$

**ORDERING INFORMATION**

<b>ORDERING CODE<sup>(1)</sup></b>	<b>PACKAGE</b>	<b>PACKING</b>
BZY55Cx RBG	0805 (Ceramics)	10,000 / 13" Tape & Reel

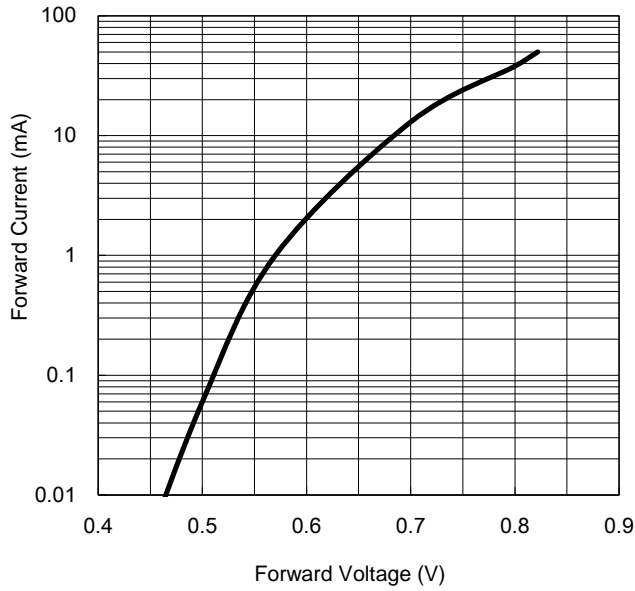
**Notes**

1. "x" defines voltage from 2.4V (BZY55C2V4) to 36V (BZY55C36)

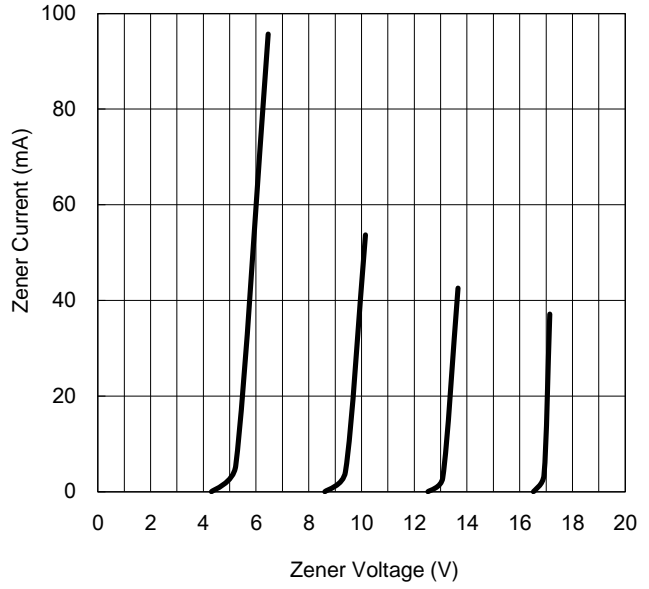
**CHARACTERISTICS CURVES**

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

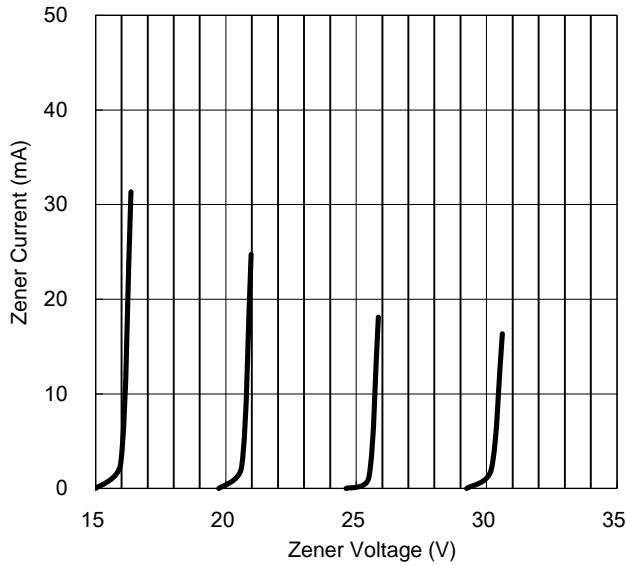
**Fig.1 Typical Forward Characteristics**



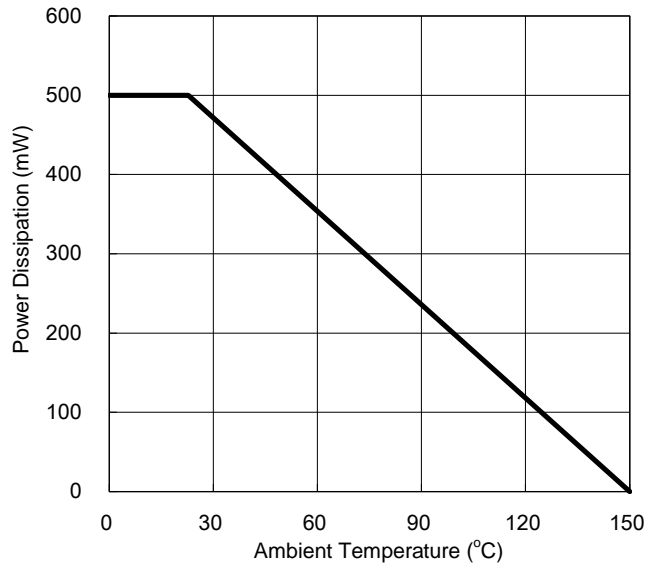
**Fig.2 Zener Breakdown Characteristics**



**Fig.3 Zener Breakdown**



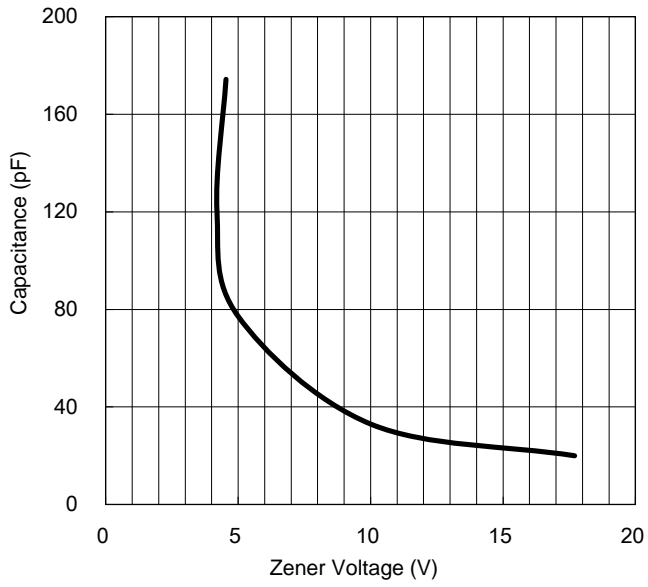
**Fig.4 Admissible Power Dissipation Curve**



**CHARACTERISTICS CURVES**

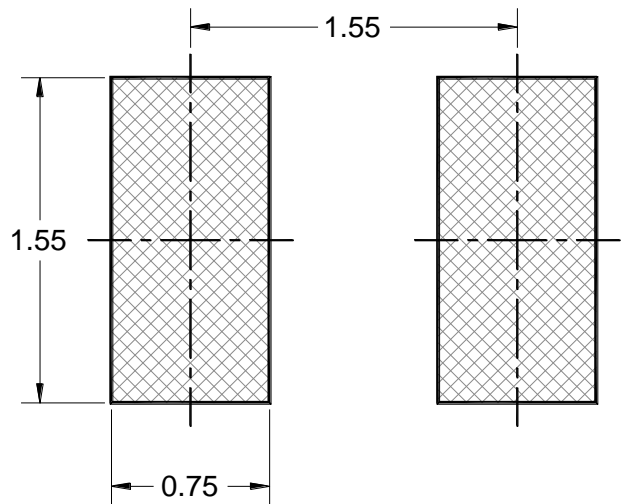
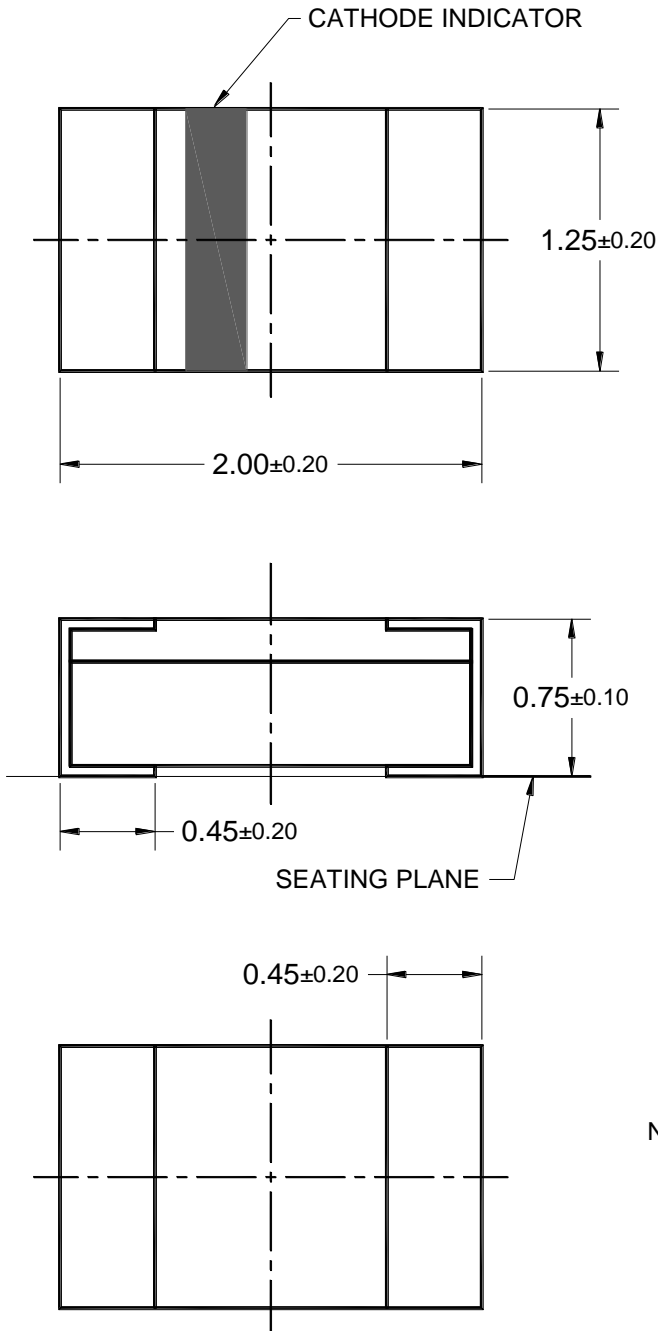
(T<sub>A</sub> = 25°C unless otherwise noted)

**Fig.5 Typical Capacitance**



**PACKAGE OUTLINE DIMENSIONS**

**0805 (Ceramics)**



**SUGGESTED PAD LAYOUT**

**NOTES: UNLESS OTHERWISE SPECIFIED**

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. PACKAGE SIZE CODE REFERENCE:  
EIA (inch) NAME: 0805 (0.079in x 0.049in)  
IEC (metric) NAME: 2012 (2.0mm x1.25mm)
3. DWG NO. REF: HQ2SD07-0805-042 REV A.

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