

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

FEATURES

- Wide Zener voltage range selection: 2.4V to 36V
- V_Z Tolerance Selection of $\pm 2\%$
- 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
- 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
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}	$I_R @ V_R$	
		V			mA	Ω	Ω	mA	μA	V
		Min	Nom	Max		Max.	Max.		Max.	
BZY55B2V4	2V4	2.35	2.40	2.45	5	85	600	1	50	1.0
BZY55B2V7	2V7	2.65	2.70	2.75	5	85	600	1	10	1.0
BZY55B3V0	3	2.94	3.00	3.06	5	85	600	1	4	1.0
BZY55B3V3	3V3	3.23	3.30	3.37	5	85	600	1	2	1.0
BZY55B3V6	3V6	3.53	3.60	3.67	5	85	600	1	2	1.0
BZY55B3V9	3V9	3.82	3.90	3.98	5	85	600	1	2	1.0
BZY55B4V3	4V3	4.21	4.30	4.39	5	80	600	1	1	1.0
BZY55B4V7	4V7	4.61	4.70	4.79	5	70	600	1	0.5	1.0
BZY55B5V1	5V1	5.00	5.10	5.20	5	50	550	1	0.1	1.0
BZY55B5V6	5V6	5.49	5.60	5.71	5	30	450	1	0.1	1.0
BZY55B6V2	6V2	6.08	6.20	6.32	5	10	200	1	0.1	2.0
BZY55B6V8	6V8	6.66	6.80	6.94	5	8	150	1	0.1	3.0
BZY55B7V5	7V5	7.35	7.50	7.65	5	7	50	1	0.1	5.0
BZY55B8V2	8V2	8.04	8.20	8.36	5	7	50	1	0.1	6.2
BZY55B9V1	9V1	8.92	9.10	9.28	5	10	50	1	0.1	6.8
BZY55B10	10	9.80	10.00	10.20	5	15	70	1	0.1	7.5
BZY55B11	11	10.78	11.00	11.22	5	20	70	1	0.1	8.2
BZY55B12	12	11.76	12.00	12.24	5	20	90	1	0.1	9.1
BZY55B13	13	12.74	13.00	13.26	5	26	110	1	0.1	10.0
BZY55B15	15	14.70	15.00	15.30	5	30	110	1	0.1	11.0
BZY55B16	16	15.68	16.00	16.32	5	40	170	1	0.1	12.0
BZY55B18	18	17.64	18.00	18.36	5	50	170	1	0.1	13.0
BZY55B20	20	19.60	20.00	20.40	5	55	220	1	0.1	15.0
BZY55B22	22	21.56	22.00	22.44	5	55	220	1	0.1	16.0
BZY55B24	24	23.52	24.00	24.48	5	80	220	1	0.1	18.0
BZY55B27	27	26.46	27.00	27.54	5	80	220	1	0.1	20.0
BZY55B30	30	29.40	30.00	30.60	5	80	220	1	0.1	22.0
BZY55B33	33	32.34	33.00	33.66	5	80	220	1	0.1	24.0
BZY55B36	36	35.28	36.00	36.72	5	80	220	1	0.1	27.0

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

ORDERING CODE⁽¹⁾	PACKAGE	PACKING
BZY55Bx RGB	0805 (Ceramics)	10,000 / 13" Tape & Reel

Notes

1. "x" defines voltage from 2.4V (BZY55B2V4) to 36V (BZY55B36)

CHARACTERISTICS CURVES

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

Fig.1 Typical Forward Characteristics

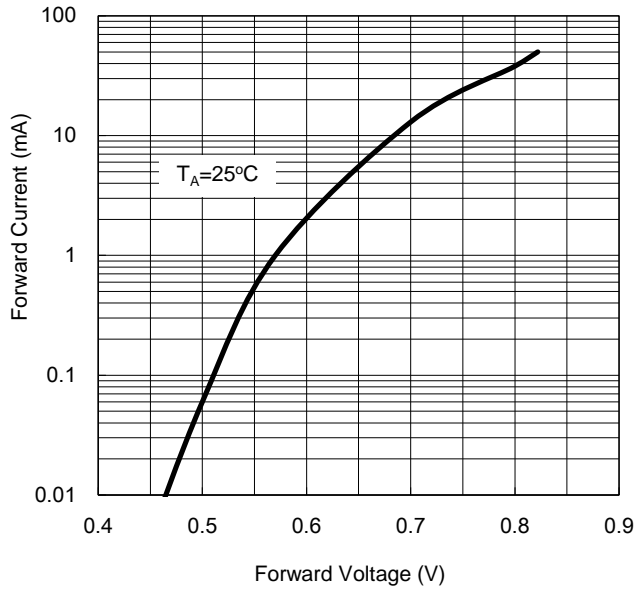


Fig.2 Zener Breakdown Characteristics

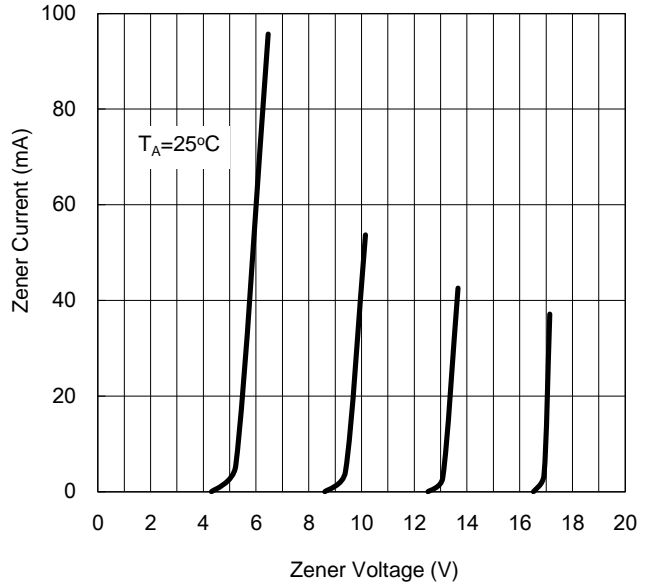


Fig.3 Zener Breakdown

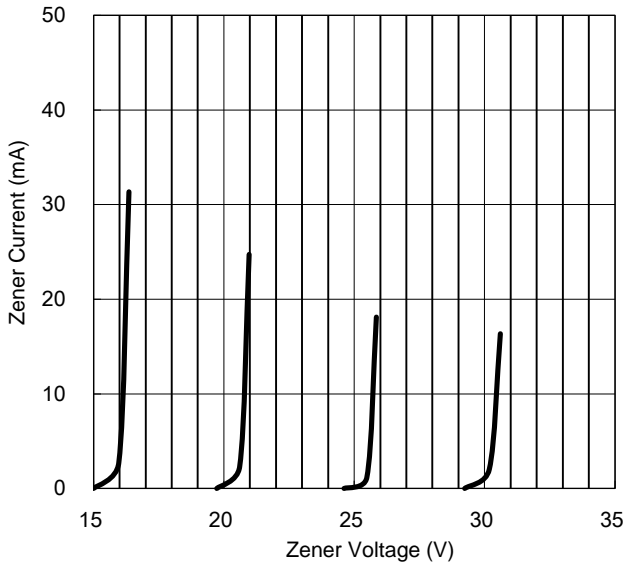
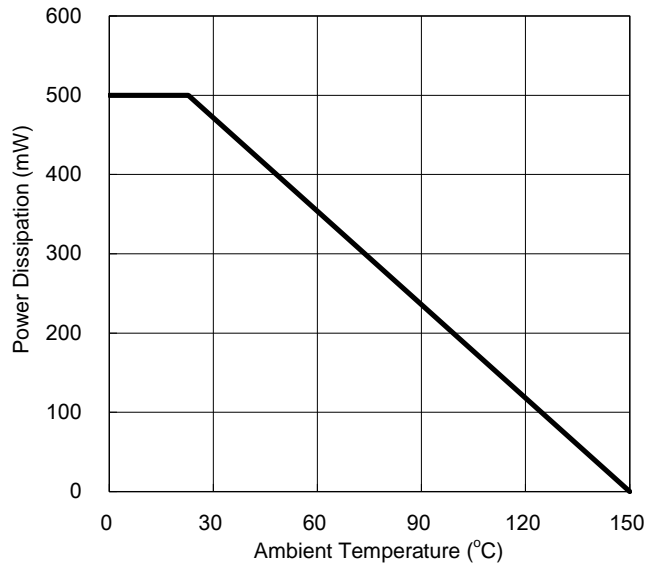


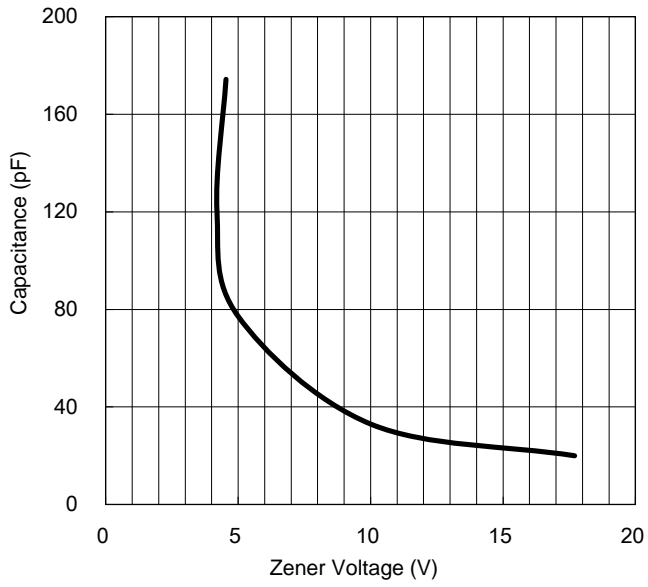
Fig.4 Admissible Power Dissipation Curve



CHARACTERISTICS CURVES

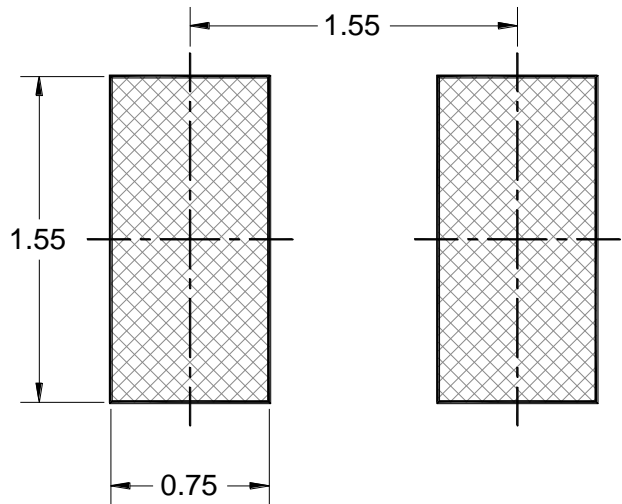
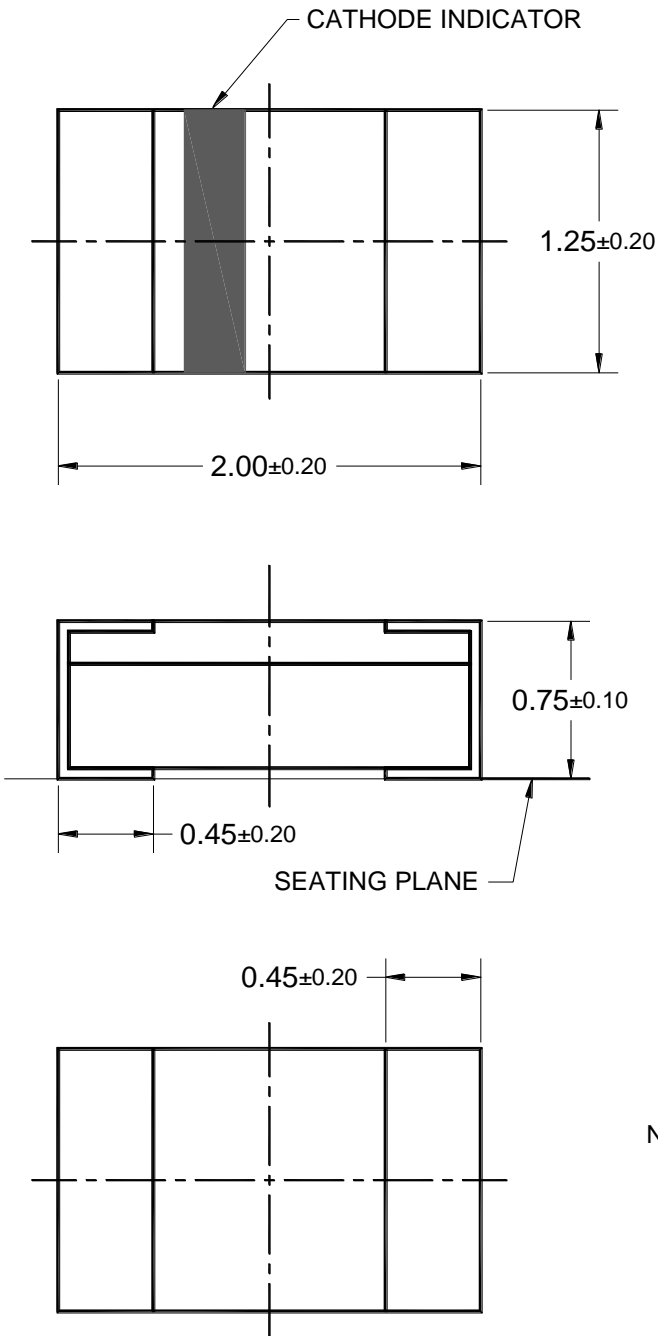
(T_A = 25°C unless otherwise noted)

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 x 1.25mm)
3. DWG NO. REF: HQ2SD07-0805-042 REV A.

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