

BZT55B2V4A-Q1 Thru BZT55B39A-Q1**List**

List.....	1
Package outline.....	2
Features.....	2
Mechanical data.....	2
Maximum ratings	2
Electrical characteristics.....	3
Rating and characteristic curves.....	4
Pinning information.....	5
Suggested solder pad layout.....	5
Packing information.....	6
Reel packing.....	7
Suggested thermal profiles for soldering processes.....	7
High reliability test capabilities.....	8

BZT55B2V4A-Q1 Thru BZT55B39A-Q1

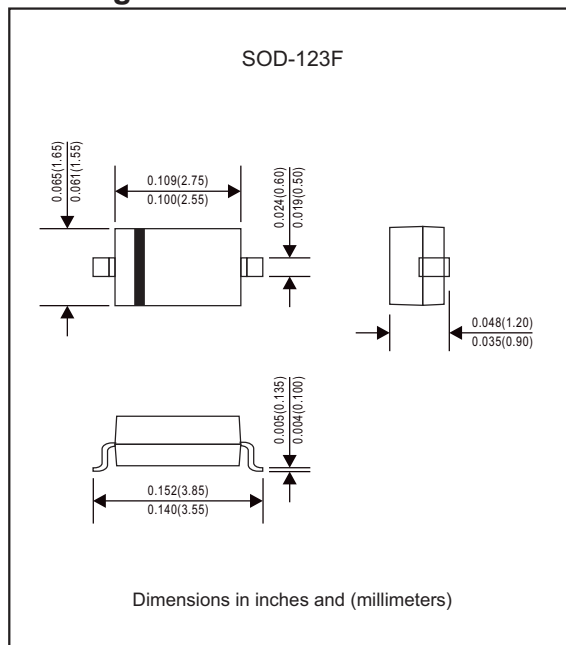
**500mW Surface Mount
Zener Diodes 2.4V-39V**

Features

- Silicon epitaxial planar chip structure.
- Zener breakdown voltage range, 2.4V to 39V ex.BZT55B2V4A-Q1
- Small package size for high density applications.
- Ideally suited for automated assembly processes.
- Pb-Free package is available.
- Qualified to AEC-Q101 standards for high reliability.
- Suffix "-H" indicates Halogen-free parts, ex.BZT55B2V4A-Q1-H.

Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-123F
- Terminals :Plated terminals, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.010 gram

Package outline**Maximum ratings** (at $T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Forward voltage	@IF = 10mA	V_F			0.9	V
Total power dissipation	at $T_A=25^\circ\text{C}$ Mounted on FR-5 board, note1	P_D			500	mW
Thermal resistance	Junction to ambient	$R_{\theta JA}$		250		$^\circ\text{C/W}$
Operating junction temperature range		T_J	-55		+150	$^\circ\text{C}$
Storage temperature range		T_{STG}	-55		+150	$^\circ\text{C}$

Note1. Device mounted on ceramic PCB; 7.6mm x 9.4mm x 0.87mm with pad area 25mm²

BZT55B2V4A-Q1 Thru BZT55B39A-Q1

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

Part No.	Marking code	Zener voltage		Test current	Zener impedance			Leakage current	
		$V_Z @ I_{ZT}$		I_{ZT}	$Z_{ZT} @ I_{ZT}$	$Z_{ZK} @ I_{ZK}$	I_{ZK}	I_R	V_R
		Min.(V)	Max.(V)	mA	Max.(Ω)	Max.(Ω)	mA	Max.(μA)	Volts
BZT55B2V4A-Q1	2WX	2.35	2.45	5	100	600	1.0	50.0	1.0
BZT55B2V7A-Q1	2W1	2.65	2.75	5	100	600	1.0	20.0	1.0
BZT55B3V0A-Q1	2W2	2.94	3.06	5	95	600	1.0	10.0	1.0
BZT55B3V3A-Q1	2W3	3.23	3.37	5	95	600	1.0	5.0	1.0
BZT55B3V6A-Q1	2W4	3.53	3.67	5	90	600	1.0	5.0	1.0
BZT55B3V9A-Q1	2W5	3.82	3.98	5	90	600	1.0	3.0	1.0
BZT55B4V3A-Q1	2W6	4.21	4.39	5	90	600	1.0	3.0	1.0
BZT55B4V7A-Q1	2W7	4.61	4.79	5	80	500	1.0	3.0	2.0
BZT55B5V1A-Q1	2W8	5.00	5.20	5	60	480	1.0	2.0	2.0
BZT55B5V6A-Q1	2W9	5.49	5.71	5	40	400	1.0	1.0	2.0
BZT55B6V2A-Q1	2WA	6.08	6.32	5	10	150	1.0	3.0	4.0
BZT55B6V8A-Q1	2WB	6.66	6.94	5	15	80	1.0	2.0	4.0
BZT55B7V5A-Q1	2WC	7.35	7.65	5	15	80	1.0	1.0	5.0
BZT55B8V2A-Q1	2WD	8.04	8.36	5	15	80	1.0	0.7	5.0
BZT55B9V1A-Q1	2WE	8.92	9.28	5	15	100	1.0	0.5	6.0
BZT55B10A-Q1	2WF	9.80	10.20	5	20	150	1.0	0.2	7.0
BZT55B11A-Q1	2WG	10.78	11.22	5	20	150	1.0	0.1	8.0
BZT55B12A-Q1	2WH	11.76	12.24	5	25	150	1.0	0.1	8.0
BZT55B13A-Q1	2WI	12.74	13.26	5	30	170	1.0	0.1	8.0
BZT55B15A-Q1	2WJ	14.70	15.30	5	30	200	1.0	0.1	10.5
BZT55B16A-Q1	2WK	15.68	16.32	5	40	200	1.0	0.1	11.2
BZT55B18A-Q1	2WL	17.64	18.36	5	45	225	1.0	0.1	12.6
BZT55B20A-Q1	2WM	19.60	20.40	5	55	225	1.0	0.1	14.0
BZT55B22A-Q1	2WN	21.56	22.44	5	55	250	1.0	0.1	15.4
BZT55B24A-Q1	2WO	23.52	24.48	5	70	250	1.0	0.1	16.8
BZT55B27A-Q1	2WP	26.46	27.54	2	80	300	0.5	0.1	18.9
BZT55B30A-Q1	2WQ	29.40	30.60	2	80	300	0.5	0.1	21.0
BZT55B33A-Q1	2WR	32.34	33.66	2	80	325	0.5	0.1	23.1
BZT55B36A-Q1	2WS	35.28	36.72	2	80	350	0.5	0.1	25.2
BZT55B39A-Q1	2WT	38.22	39.78	5	90	350	0.5	0.1	27.3

Note:

1. Tested with pulses, period = 5ms, pulse width = 300 μs .
2. The Device numbers listed have a standard tolerance on the nominal zener voltage of $\pm 2\%$.
3. The Zener impedance is derived from the 60-cycle ac voltage, which results when an ac current having an rms value equal to 10% DC Zener current (I_{ZT} or I_{ZK}) is superimposed to I_{ZT} or I_{ZK} .

Rating and characteristic curves (BZT55B2V4A-Q1 Thru BZT55B39A-Q1)

Fig.1 TYPICAL FORWARD CHARACTERISTICS

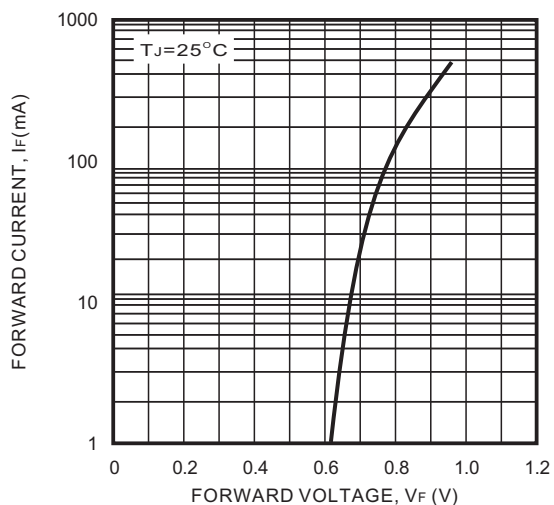


Fig.2 DERATING CURVE

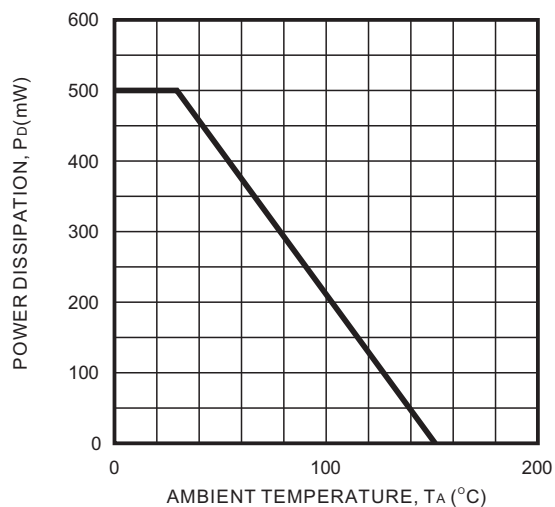


Fig.3 ZENER VOLTAGE CHARACTERISTICS

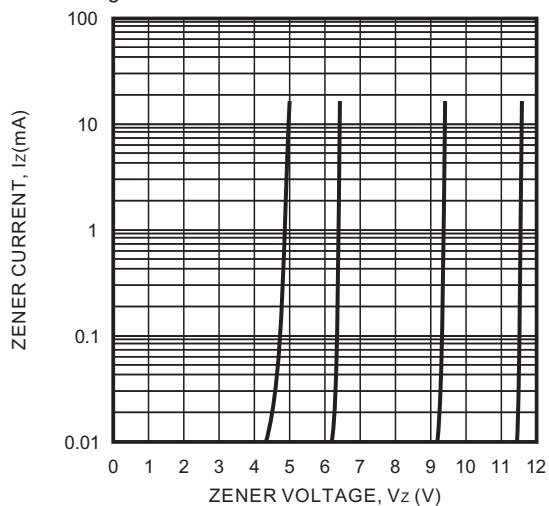


Fig.4 ZENER VOLTAGE CHARACTERISTICS

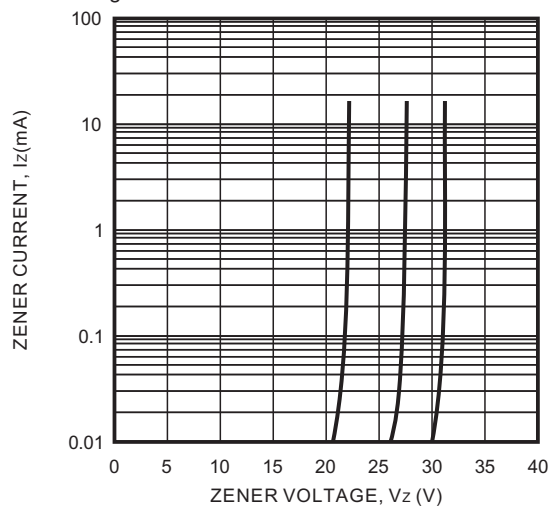


Fig.5 TYPICAL CAPACITANCE

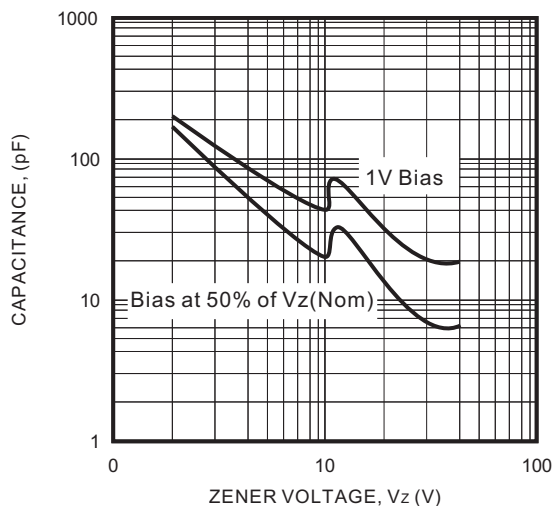
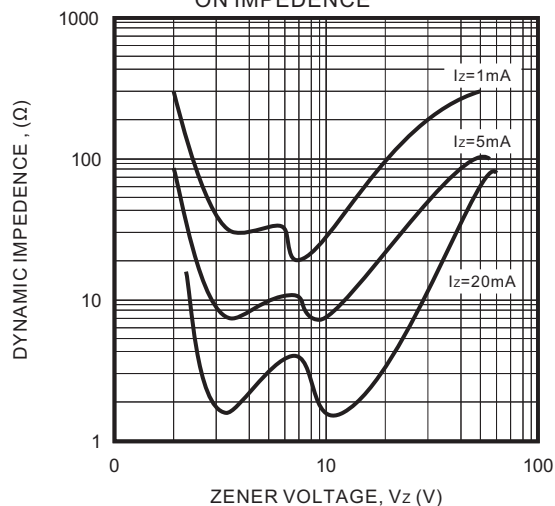


Fig.6 EFFECT OF ZENER VOLTAGE ON IMPEDENCE

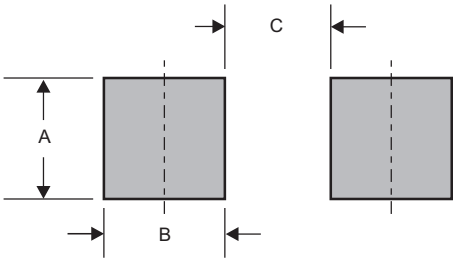


BZT55B2V4A-Q1 Thru BZT55B39A-Q1

Pinning information

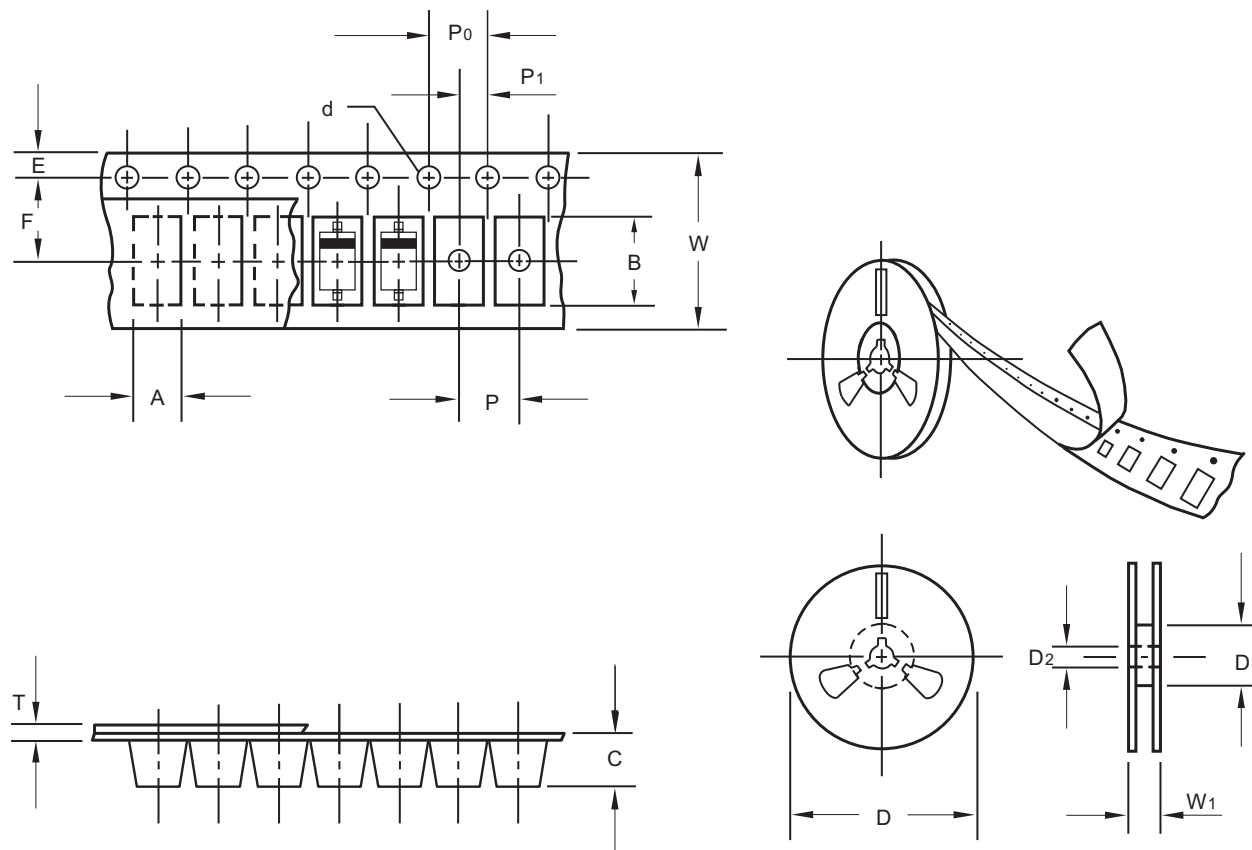
Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-123F	0.048 (1.22)	0.036 (0.91)	0.093 (2.36)

BZT55B2V4A-Q1 Thru BZT55B39A-Q1**Packing information**

unit:mm

Item	Symbol	Tolerance	SOD-123F
Carrier width	A	0.1	2.00
Carrier length	B	0.1	3.85
Carrier depth	C	0.1	1.10
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D ₁	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D ₁	min	62.00
Feed hole diameter	D ₂	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P ₀	0.1	4.00
Embossment center	P ₁	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W ₁	1.0	11.40

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

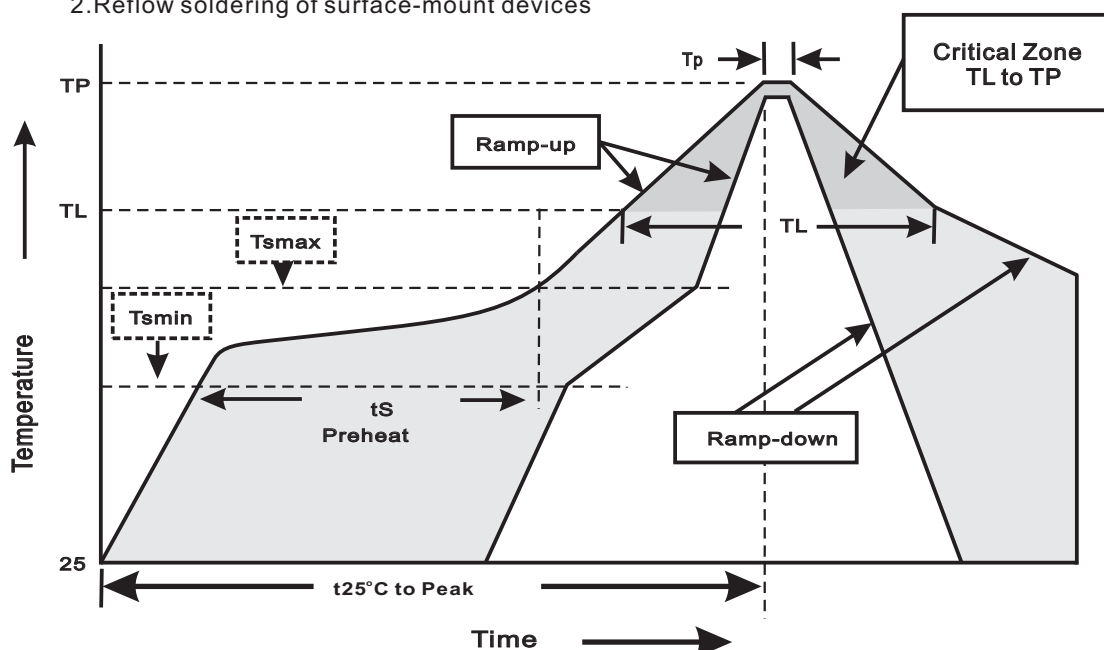
BZT55B2V4A-Q1 Thru BZT55B39A-Q1

Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SOD-123F	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	9.5

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T _L to T _P)	<3°C/sec
Preheat -Temperature Min(T _{smin}) -Temperature Max(T _{smax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smax} to T _L -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T _L) -Time(t _L)	217°C 60~260sec
Peak Temperature(T _P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t _P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes

BZT55B2V4A-Q1 Thru BZT55B39A-Q1**High reliability test capabilities**

Item Test	Conditions	Reference
1. MSL Preconditioning	24hr bake@125°C+168hrs@85°C /85%RH+3xIR@260°C+1flux immersion+alcohol+DI H2O rinse	JESD22-A113
2. High Temperature Reverse Bias	Vz=Vz Nom*80% (Tj=150°C)Test Duration:1000hrs	JESD22-A108
3. High Temperature Storage Life	Ta=125°C Test Duration: 1000hrs	JESD22 A-103
4. Temperature Cycle	-55°C (15min) to 150°C (15min)Test Cycles: 1000cycles	JESD22 A-104
5. Autoclave	P=2atm Ta=121°C RH=100% Test Duration:96hrs	JESD22 A-102
6. Solderability	245±5°C for 5sec	J-STD-002
7. Moisture Resistance	Ta=85°C/85% Relative humidity Test Duration:1000hrs	MIL-STD-750E METHOD 1021.2
8. Resistance To Solder Heat	260±5°C for 10sec	JESD22 B-106
9. High Temperature High Humidity Reverse Bias	Ta=85°C, 85%RH, with device reverse biased at 80% of rated breakdown voltage up to a maximum of 100V or limit of chamber Test Duration:1000hrs	JESD22-A101