

BZX84C2V4W THRU BZX84C39W**List**

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BZX84C2V4W THRU BZX84C39W

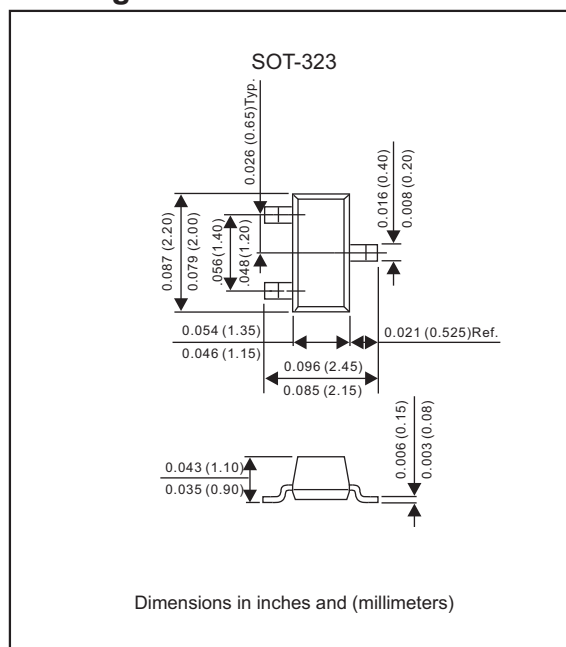
**200mW Surface Mount
Zener Diodes - 2.4V-39V**

Features

- Planar die construction
- 200mW power dissipation
- Zener voltages from 2.4V ~ 39V
- Ultra-small surface mount package power dissipation
- Lead free parts meet RoHS requirements
- Suffix "-H" indicates Halogen-free part, ex. BZX84C2V4W-H

Mechanical data

- Epoxy: UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-323
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.006 gram

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

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 10 \text{ mA}$	V_F			0.9	V
Power dissipation	$T_A=25^\circ\text{C}$ (note 1)	P_D			200	mW
Thermal resistance	Junction to ambient	$R_{\theta JA}$		625		$^\circ\text{C/W}$
Operating junction temperature range		T_J	-55		+150	$^\circ\text{C}$
Storage temperature range		T_{STG}	-55		+150	$^\circ\text{C}$

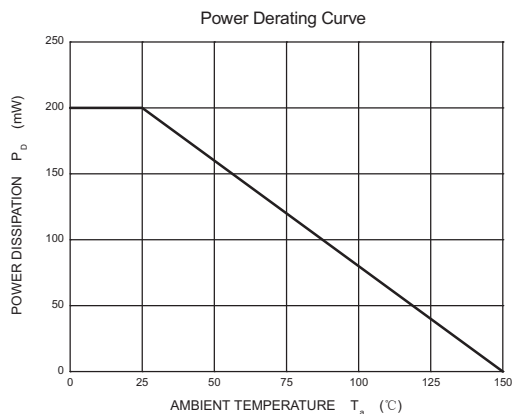
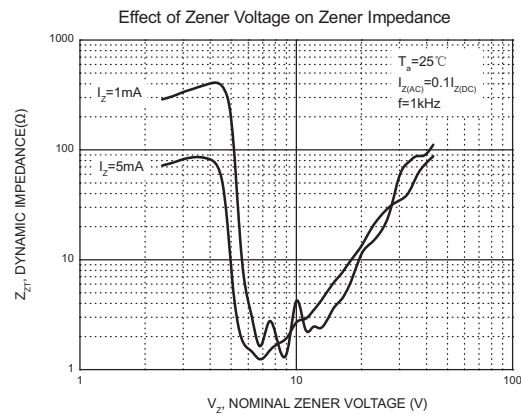
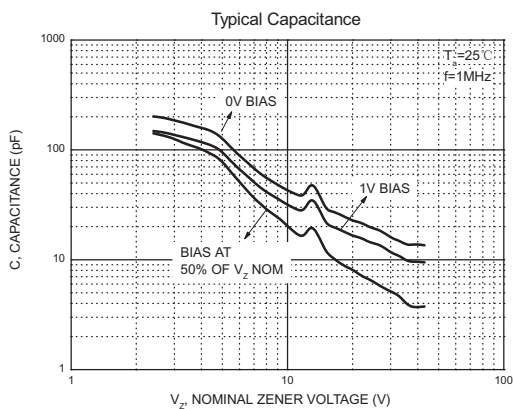
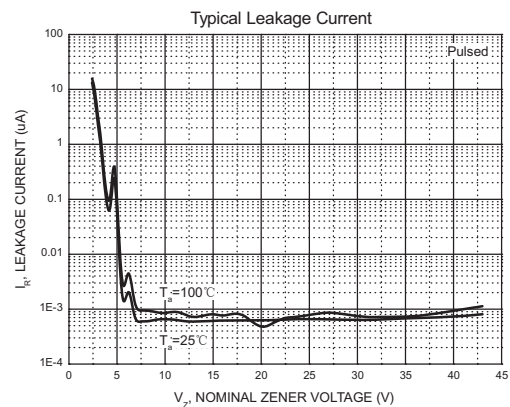
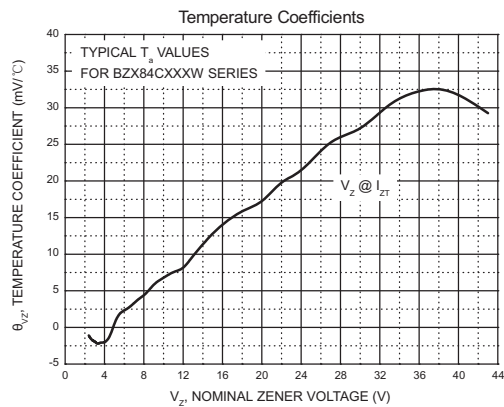
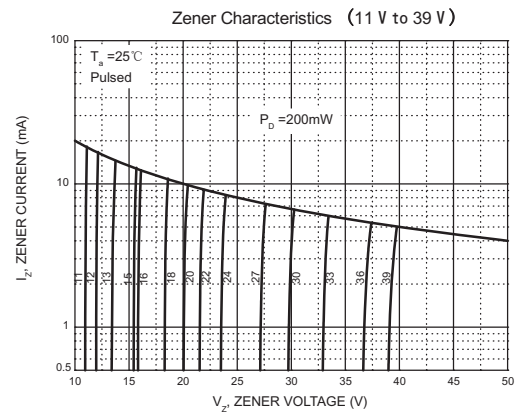
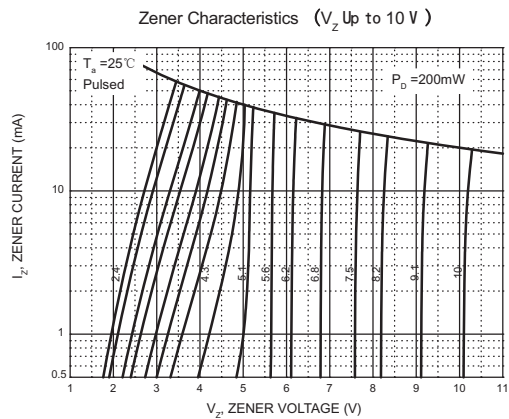
Note 1: Valid provided that device terminals are kept at ambient temperature.

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

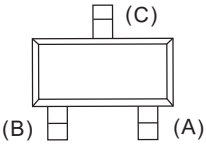
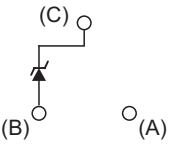
Part No.	Marking code	Zener voltage (note 1)			Zener impedance (note 2)				Leakage current		Temperature coefficient of Zener voltage $I_{ZT} = 5\text{mA}$ (mV/ $^{\circ}\text{C}$)	
		$V_Z @ I_{ZT}$ (Volts)			I_{ZT}	$Z_{ZT} @ I_{ZT}$	$Z_{ZK} @ I_{ZK}$	I_{ZK}	I_R	V_R		
		Min.	Nom.	Max.	mA	Max(Ω)	Max(Ω)	mA	Max(μA)	Volts	Min	Max
BZX84C2V4W	KRB,EA	2.2	2.4	2.6	5.0	100	600	1	50	1.0	-3.5	0
BZX84C2V7W	KRC,EB	2.5	2.7	2.9	5.0	100	600	1	20	1.0	-3.5	0
BZX84C3V0W	KRD,EC	2.8	3.0	3.2	5.0	95	600	1	20	1.0	-3.5	0
BZX84C3V3W	KRE,ED	3.1	3.3	3.5	5.0	95	600	1	5	1.0	-3.5	0
BZX84C3V6W	KRF,EE	3.4	3.6	3.8	5.0	90	600	1	5	1.0	-3.5	0
BZX84C3V9W	KRG,EF	3.7	3.9	4.1	5.0	90	600	1	3	1.0	-3.5	0
BZX84C4V3W	KRH,EH	4.0	4.3	4.6	5.0	90	600	1	3	1.0	-3.5	0
BZX84C4V7W	KR1,EJ	4.4	4.7	5.0	5.0	80	600	1	3	2.0	-3.5	0.2
BZX84C5V1W	KR2,EK	4.8	5.1	5.4	5.0	60	500	1	2	2.0	-2.7	1.2
BZX84C5V6W	KR3,EM	5.2	5.6	6.0	5.0	40	480	1	1	2.0	-2.0	2.5
BZX84C6V2W	KR4,EN	5.8	6.2	6.6	5.0	10	400	1	3	4.0	0.4	3.7
BZX84C6V8W	KR5,EP	6.4	6.8	7.2	5.0	15	150	1	2	4.0	1.2	4.5
BZX84C7V5W	KR6,ER	7.0	7.5	7.9	5.0	15	80	1	1	5.0	2.5	5.3
BZX84C8V2W	KR7,EX	7.7	8.2	8.7	5.0	15	80	1	0.7	5.0	3.2	6.2
BZX84C9V1W	KR8,EY	8.5	9.1	9.6	5.0	15	80	1	0.5	6.0	3.8	7.0
BZX84C10W	KR9,EZ	9.4	10	10.6	5.0	20	100	1	0.2	7.0	4.5	8.0
BZX84C11W	KP1,FA	10.4	11	11.6	5.0	20	150	1	0.1	8.0	5.4	9.0
BZX84C12W	KP2,FB	11.4	12	12.7	5.0	25	150	1	0.1	8.0	6.0	10.0
BZX84C13W	KP3,FC	12.4	13	14.1	5.0	30	150	1	0.1	8.0	7.0	11.0
BZX84C15W	KP4,FD	13.8	15	15.6	5.0	30	170	1	0.1	10.5	9.2	13.0
BZX84C16W	KP5,FE	15.3	16	17.1	5.0	40	200	1	0.1	11.2	10.4	14.0
BZX84C18W	KP6,FF	16.8	18	19.1	5.0	45	200	1	0.1	12.6	12.4	16.0
BZX84C20W	KP7,FH	18.8	20	21.2	5.0	55	225	1	0.1	14.0	14.4	18.0
BZX84C22W	KP8,FJ	20.8	22	23.3	5.0	55	225	1	0.1	15.4	16.4	20.0
BZX84C24W	KP9,FK	22.8	24	25.6	5.0	70	250	1	0.1	16.8	18.4	22.0
BZX84C27W	KPA,FM	25.1	27	28.9	2.0	80	250	0.5	0.1	18.9	21.4	25.3
BZX84C30W	KPB,FN	28.0	30	32.0	2.0	80	300	0.5	0.1	21.0	24.4	29.4
BZX84C33W	KPC,FP	31.0	33	35.0	2.0	80	300	0.5	0.1	23.1	27.4	33.4
BZX84C36W	KPD,FR	34.0	36	38.0	2.0	90	325	0.5	0.1	25.2	30.4	37.4
BZX84C39W	KPE,FX	37.0	39	41.0	2.0	130	350	0.5	0.1	27.3	33.4	41.2

Notes 1: Tested with pulses, 300 μs pulse width, 2% duty cycle.
2: $f = 1\text{kHz}$.

Rating and characteristic curves (BZX84C2V4W THRU BZX84C39W)

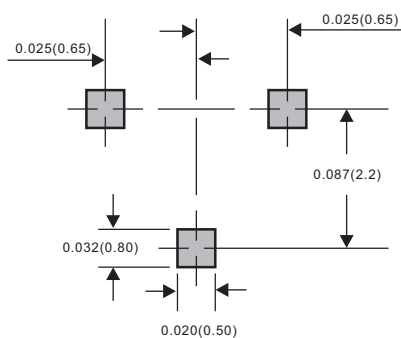


BZX84C2V4W THRU BZX84C39W**Pinning information**

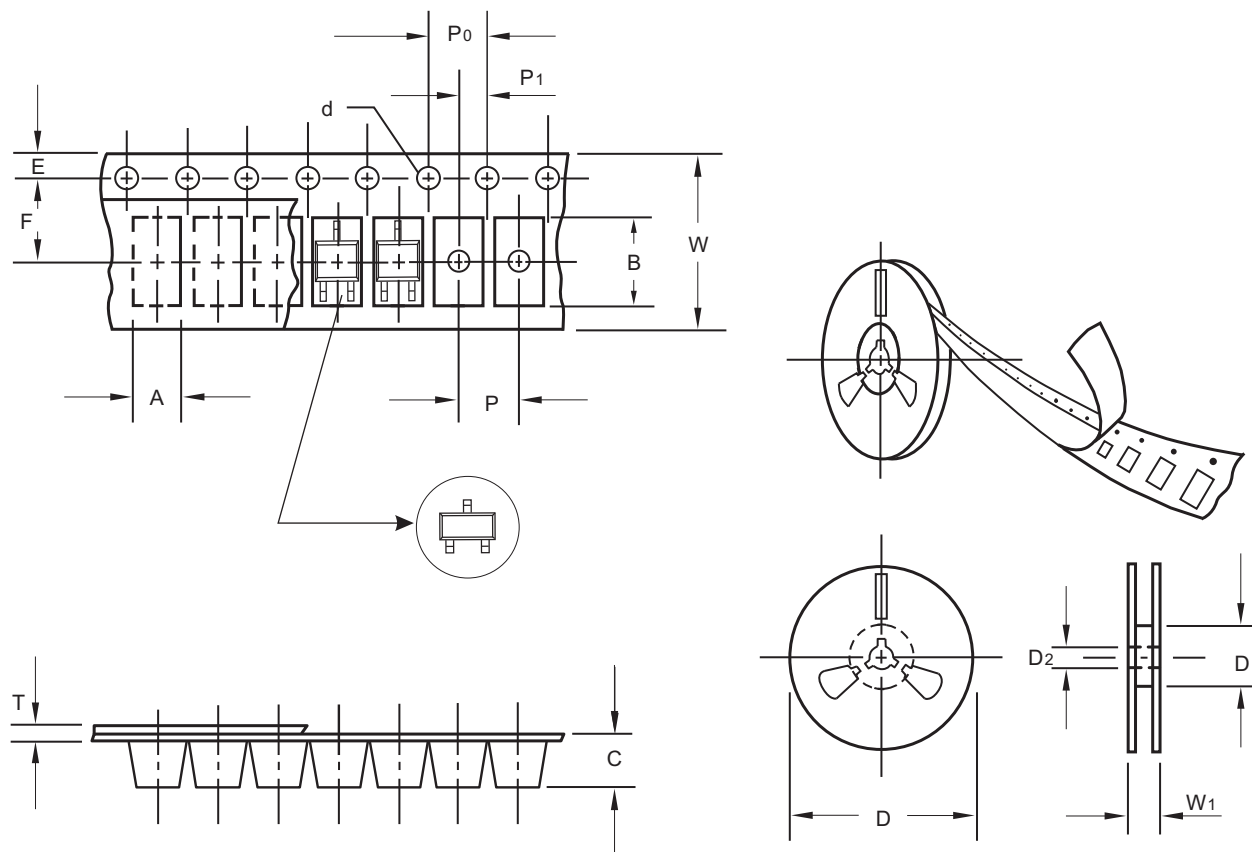
Pin	Simplified outline	Symbol
PinA no connection PinB anode PinC cathode		

Suggested solder pad layout

SOT-323



Dimensions in inches and (millimeters)

BZX84C2V4W THRU BZX84C39W**Packing information**

unit:mm

Item	Symbol	Tolerance	SOT-323
Carrier width	A	0.1	2.25
Carrier length	B	0.1	2.55
Carrier depth	C	0.1	1.19
Sprocket hole	d	0.1	1.55
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	54.40
Feed hole diameter	D2	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	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W1	1.0	12.30

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

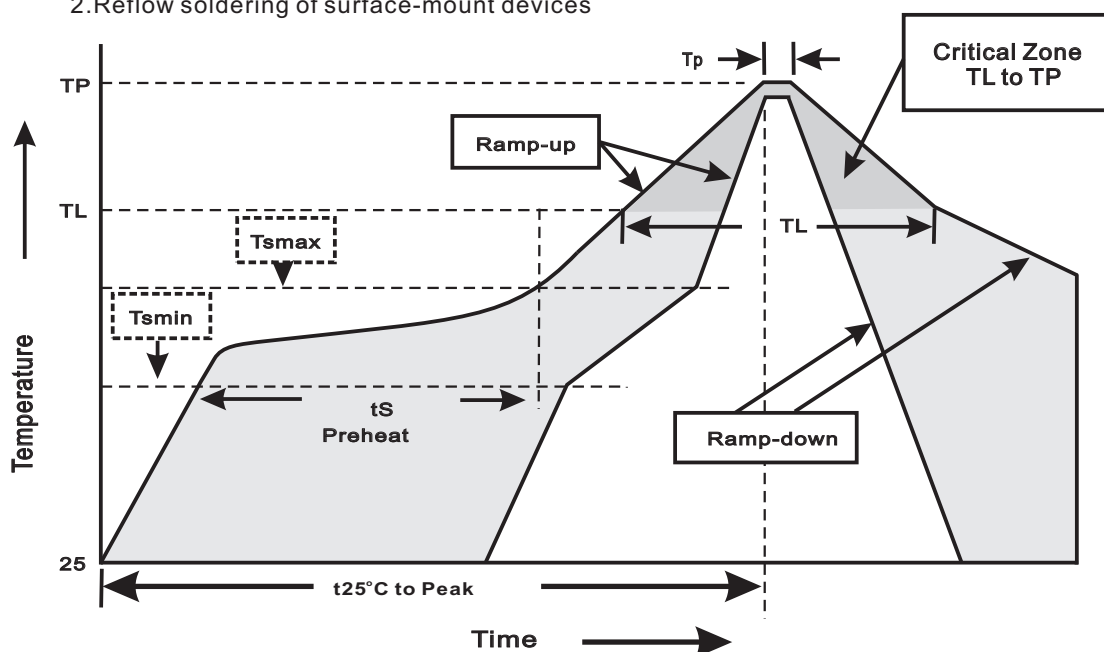
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Reel packing

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)
SOT-323	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

BZX84C2V4W THRU BZX84C39W**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^{\circ}\text{C}$ for 10 ± 2 sec.	MIL-STD-750D METHOD-2031
2. Solderability	at $245 \pm 5^{\circ}\text{C}$ for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	$V_z = V_{z\text{Nom}} * 80\%$ at $T_j = 150^{\circ}\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1038
4. Pressure Cooker	$15P_{\text{SIG}}$ at $T_A = 121^{\circ}\text{C}$ for 4 hrs.	JESD22-A102
5. Temperature Cycling	-55°C to $+125^{\circ}\text{C}$ dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
6. Humidity	at $T_A = 85^{\circ}\text{C}$, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
7. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031