

BZX84C2V4-Q1 THRU BZX84C75-Q1**List**

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BZX84C2V4-Q1 THRU BZX84C75-Q1

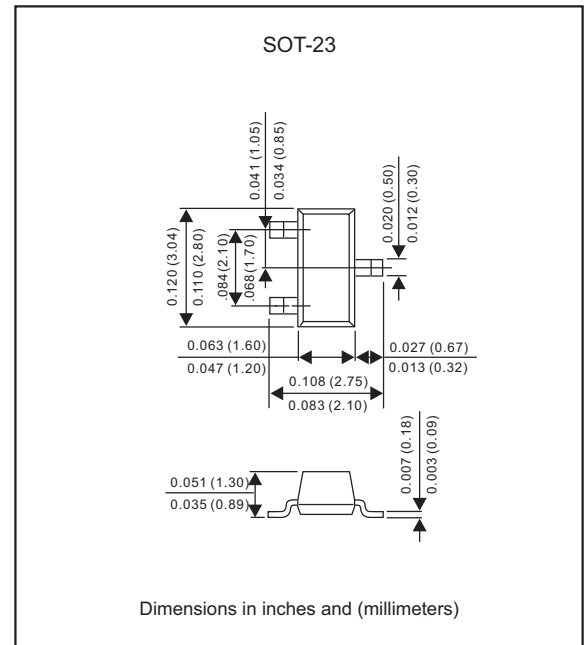
**300mW Surface Mount Zener
Diodes 2.4V-75V**

Features

- Silicon epitaxial planar chip structure
- Wide zener reverse voltage range 2.4V to 75V
- Small package size for high density applications
- Ideally suited for automated assembly processes
- Lead-free parts meet RoHS requirements
- Qualified to AEC-Q101 standards for high reliability
- Suffix "-H" indicates Halogen-free parts, ex. BZX84C2V4-Q1-H

Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-23
- Terminals :Plated terminals, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.008 gram

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

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Forward voltage at $I_F=10\text{mA}$	V_F			0.9	V
Power dissipation at $T_A=25^\circ\text{C}$ (Note 1)	P_D			300	mW
Thermal resistance junction to ambient	$R_{\theta JA}$			417	$^\circ\text{C/W}$
Operating junction temperature range	T_J	-55		+150	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55		+150	$^\circ\text{C}$

Note 1: Mounted on Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

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Electrical characteristics (at T_A=25°C unless otherwise noted)

Part No.	Marking code	Zener voltage			Zener impedance				Leakage current		θV _Z (mV/k) @ I _{ZT}		C @ V _R =0V f=1MHz
		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	(Ω)Max	(Ω)Max	mA	(μA)Max	Volts	Min.	Max.	
BZX84C2V4-Q1	C8	2.28	2.4	2.52	5.0	100	600	1	50	1.0	-3.5	0	450
BZX84C2V7-Q1	D8	2.57	2.7	2.84	5.0	100	600	1	20	1.0	-3.5	0	450
BZX84C3V0-Q1	E8	2.85	3.0	3.15	5.0	95	600	1	10	1.0	-3.5	0	450
BZX84C3V3-Q1	F8	3.14	3.3	3.47	5.0	95	600	1	5	1.0	-3.5	0	450
BZX84C3V6-Q1	H8	3.42	3.6	3.78	5.0	90	600	1	5	1.0	-3.5	0	450
BZX84C3V9-Q1	J8	3.71	3.9	4.1	5.0	90	600	1	3	1.0	-3.5	-2.5	450
BZX84C4V3-Q1	K8	4.09	4.3	4.52	5.0	90	600	1	3	1.0	-3.5	0	450
BZX84C4V7-Q1	M8	4.47	4.7	4.94	5.0	80	500	1	3	2.0	-3.5	0.2	260
BZX84C5V1-Q1	N8	4.85	5.1	5.36	5.0	60	480	1	2	2.0	-2.7	1.2	225
BZX84C5V6-Q1	P8	5.32	5.6	5.88	5.0	40	400	1	1	2.0	-2.0	2.5	200
BZX84C6V2-Q1	R8	5.89	6.2	6.51	5.0	10	150	1	3	4.0	0.4	3.7	185
BZX84C6V8-Q1	X8	6.46	6.8	7.14	5.0	15	80	1	2	4.0	1.2	4.5	155
BZX84C7V5-Q1	Y8	7.13	7.5	7.88	5.0	15	80	1	1	5.0	2.5	5.3	140
BZX84C8V2-Q1	Z8	7.79	8.2	8.61	5.0	15	80	1	0.7	5.0	3.2	6.2	135
BZX84C9V1-Q1	A9	8.65	9.1	9.56	5.0	15	100	1	0.5	6.0	3.8	7.0	130
BZX84C10-Q1	B9	9.50	10	10.50	5.0	20	150	1	0.2	7.0	4.5	8.0	130
BZX84C11-Q1	C9	10.45	11	11.55	5.0	20	150	1	0.1	8.0	5.4	9.0	130
BZX84C12-Q1	D9	11.40	12	12.60	5.0	25	150	1	0.1	8.0	6.0	10	130
BZX84C13-Q1	E9	12.35	13	13.65	5.0	30	170	1	0.1	8.0	7.0	11	120
BZX84C15-Q1	F9	14.25	15	15.75	5.0	30	200	1	0.1	10.5	9.2	13	110
BZX84C16-Q1	H9	15.20	16	16.80	5.0	40	200	1	0.1	11.2	10.4	14	105
BZX84C18-Q1	J9	17.10	18	18.90	5.0	45	225	1	0.1	12.6	12.4	16	100
BZX84C20-Q1	K9	19.00	20	21.00	5.0	55	225	1	0.1	14.0	14.4	18	85
BZX84C22-Q1	M9	20.90	22	23.10	5.0	55	250	1	0.1	15.4	16.4	20	85
BZX84C24-Q1	N9	22.80	24	25.20	5.0	70	250	1	0.1	16.8	18.4	22	80
BZX84C27-Q1	P9	25.65	27	28.35	2.0	80	300	0.5	0.1	18.9	21.4	25.3	70
BZX84C30-Q1	R9	28.50	30	31.50	2.0	80	300	0.5	0.1	21.0	24.4	29.4	70
BZX84C33-Q1	X9	31.35	33	34.65	2.0	80	325	0.5	0.1	23.1	27.4	33.4	70
BZX84C36-Q1	Y9	34.20	36	37.80	2.0	90	350	0.5	0.1	25.2	30.4	37.4	70
BZX84C39-Q1	Z9	37.05	39	40.95	2.0	130	350	0.5	0.1	27.3	33.4	41.2	45
BZX84C43-Q1	A0	40.85	43	45.15	2.0	150	375	0.5	0.1	30.1	37.6	46.6	40
BZX84C47-Q1	B0	44.65	47	49.35	2.0	170	375	0.5	0.1	32.9	42.0	51.8	40
BZX84C51-Q1	C0	48.45	51	53.55	2.0	180	400	0.5	0.1	35.7	46.6	57.2	40
BZX84C56-Q1	D0	53.20	56	58.80	2.0	200	425	0.5	0.1	39.2	52.2	63.8	40
BZX84C62-Q1	E0	58.90	62	65.10	2.0	215	450	0.5	0.1	43.4	58.8	71.6	35
BZX84C68-Q1	F0	64.60	68	71.40	2.0	240	475	0.5	0.1	47.6	65.6	79.8	35
BZX84C75-Q1	H0	71.25	75	78.75	2.0	255	500	0.5	0.1	52.5	73.4	88.6	35

Notes 1: 5% tolerance of Zener voltage

2: Zener voltage is measured with a pulse test current I_Z at an ambient temperature of 25°C

Rating and characteristic curves (BZX84C2V4-Q1 THRU BZX84C75-Q1)

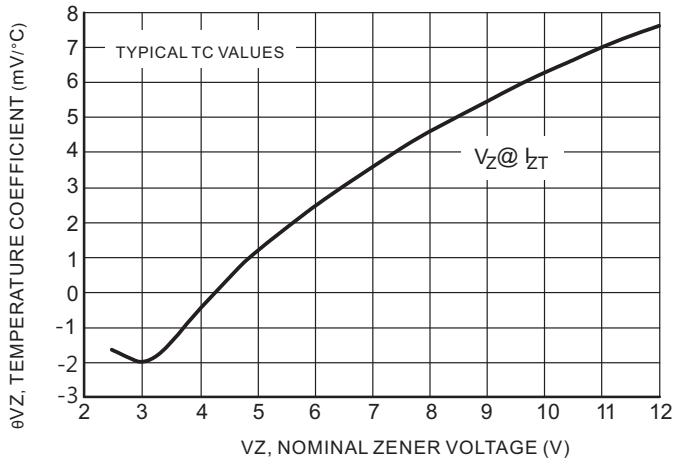


Figure 1. Temperature Coefficients
(Temperature Range -55°C to +150°C)

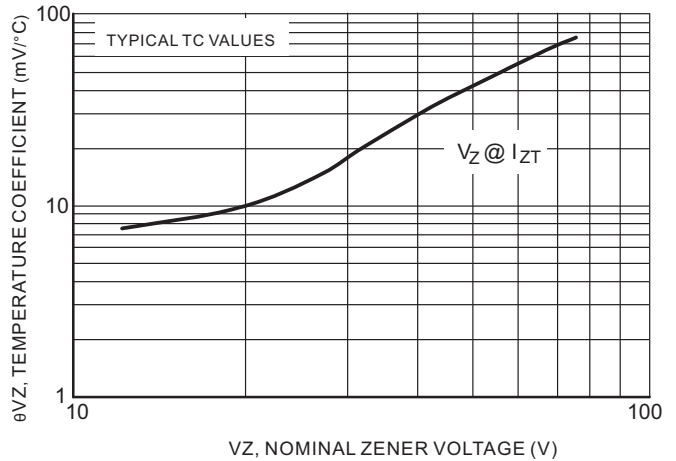


Figure 2. Temperature Coefficients
(Temperature Range -55°C to +150°C)

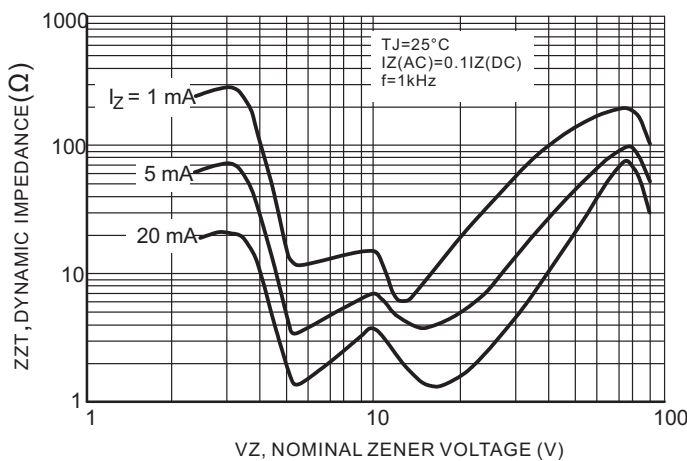


Figure 3. Effect of Zener Voltage on
Zener Impedance

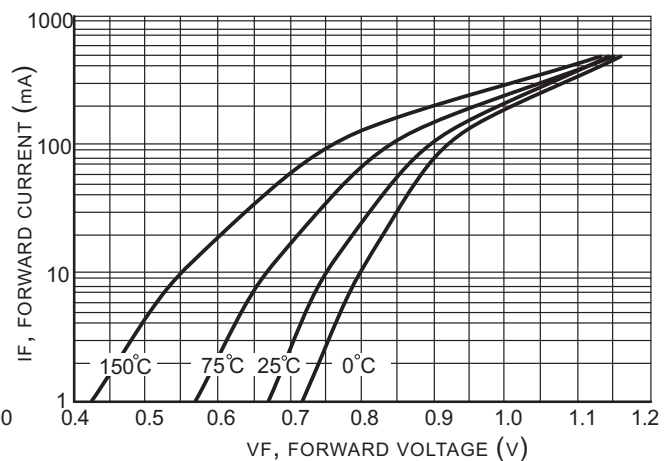


Figure 4. Typical Forward Voltage

Rating and characteristic curves (BZX84C2V4-Q1 THRU BZX84C75-Q1)

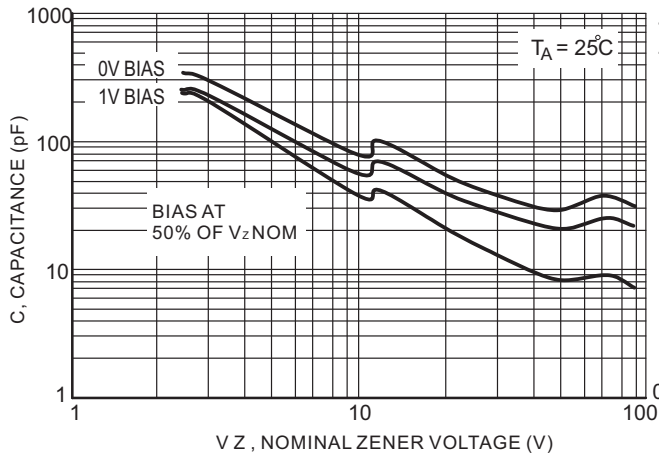


Figure 5. Typical Capacitance

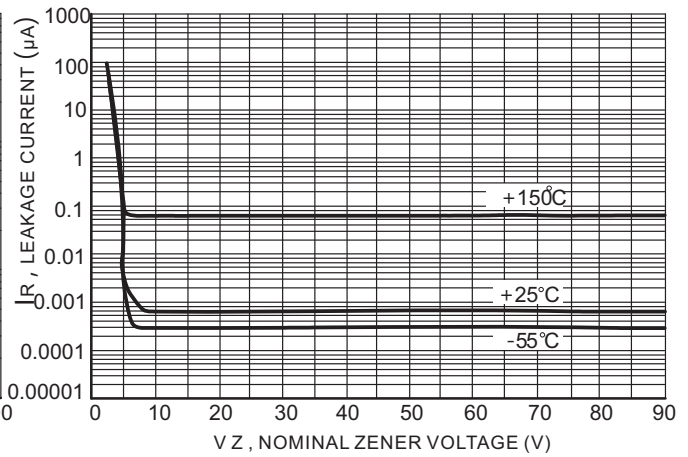


Figure 6. Typical Leakage Current

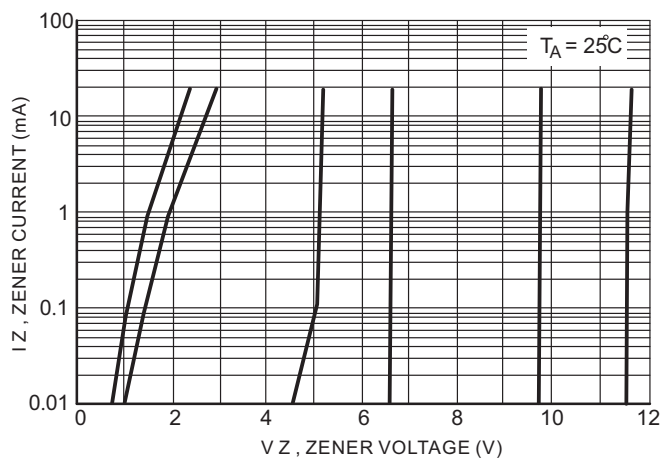


Figure 7. Zener Voltage versus Zener Current
(V_Z Up to 12 V)

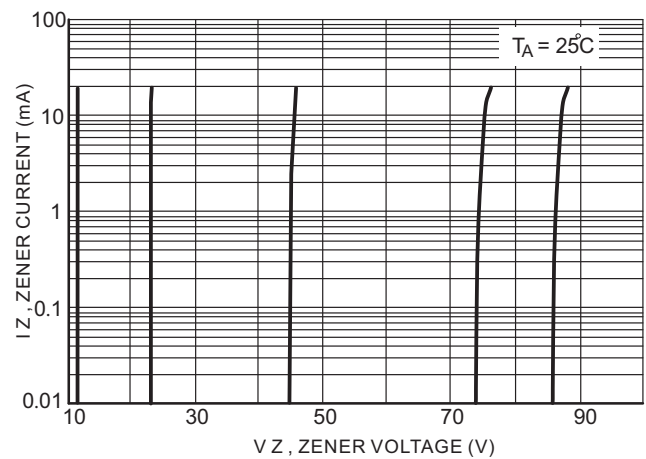
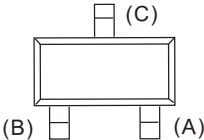
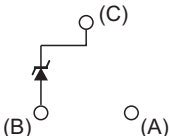
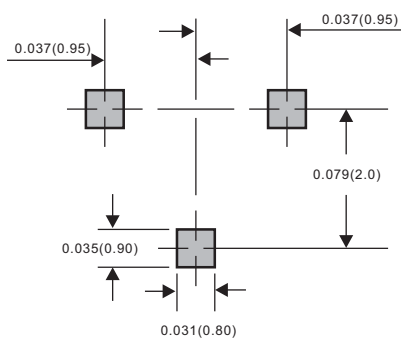


Figure 8. Zener Voltage versus Zener Current
(12V to 91V)

BZX84C2V4-Q1 THRU BZX84C75-Q1**Pinning information**

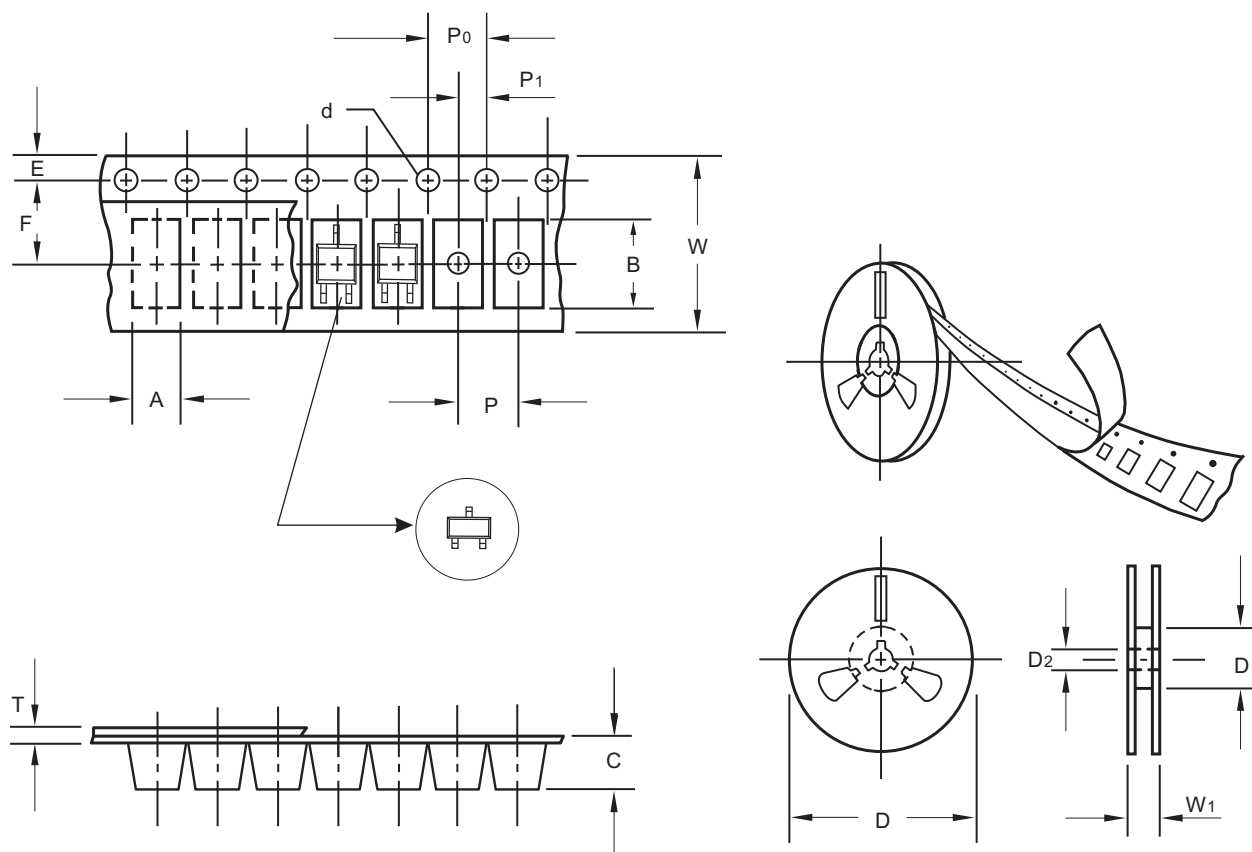
Pin	Simplified outline	Symbol
PinA no connection PinB anode PinC cathode		

Suggested solder pad layout**SOT-23**

Dimensions in inches and (millimeters)

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Packing information



unit:mm

Item	Symbol	Tolerance	SOT-23
Carrier width	A	0.1	3.15
Carrier length	B	0.1	2.77
Carrier depth	C	0.1	1.22
Sprocket hole	d	0.1	1.50
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	62.00
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	11.40

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

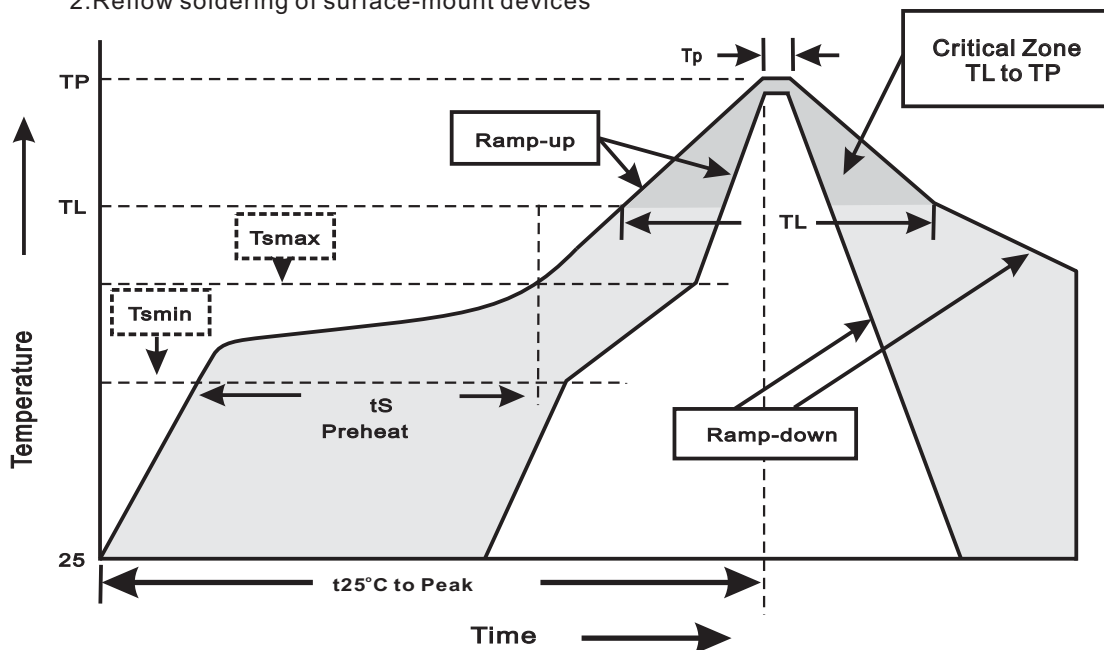
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Reel packing

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-23	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	11.6

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

BZX84C2V4-Q1 THRU BZX84C75-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% (Tjmax=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