

BZX84C2V4 THRU BZX84C75**List**

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BZX84C2V4 THRU BZX84C75

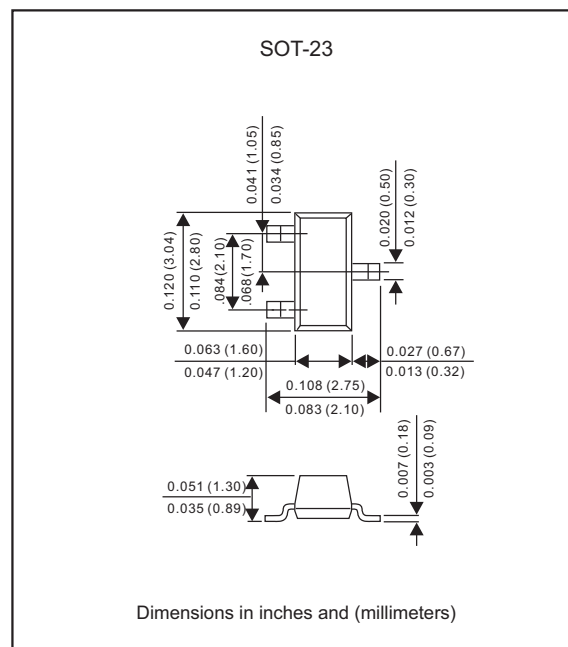
**300mW Surface Mount Zener
Diodes 2.4V-75V**

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
- Suffix "-H" indicates Halogen-free parts, ex. BZX84C2V4-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
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 @VR=0V f=1MHz
		V _Z @ I _{ZT} (Volts)			I _{ZT}	Z _{2T} @ 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.	pF
BZX84C2V4	Z11,C8	2.28	2.4	2.52	5.0	100	600	1	50	1.0	-3.5	0	450
BZX84C2V7	Z12,D8	2.57	2.7	2.84	5.0	100	600	1	20	1.0	-3.5	0	450
BZX84C3V0	Z13,E8	2.85	3.0	3.15	5.0	95	600	1	10	1.0	-3.5	0	450
BZX84C3V3	Z14,F8	3.14	3.3	3.47	5.0	95	600	1	5	1.0	-3.5	0	450
BZX84C3V6	Z15,H8	3.42	3.6	3.78	5.0	90	600	1	5	1.0	-3.5	0	450
BZX84C3V9	Z16,J8	3.71	3.9	4.1	5.0	90	600	1	3	1.0	-3.5	-2.5	450
BZX84C4V3	W9,K8	4.09	4.3	4.52	5.0	90	600	1	3	1.0	-3.5	0	450
BZX84C4V7	Z1,M8	4.47	4.7	4.94	5.0	80	500	1	3	2.0	-3.5	0.2	260
BZX84C5V1	Z2,N8	4.85	5.1	5.36	5.0	60	480	1	2	2.0	-2.7	1.2	225
BZX84C5V6	Z3,P8	5.32	5.6	5.88	5.0	40	400	1	1	2.0	-2.0	2.5	200
BZX84C6V2	Z4,R8	5.89	6.2	6.51	5.0	10	150	1	3	4.0	0.4	3.7	185
BZX84C6V8	Z5,X8	6.46	6.8	7.14	5.0	15	80	1	2	4.0	1.2	4.5	155
BZX84C7V5	Z6,Y8	7.13	7.5	7.88	5.0	15	80	1	1	5.0	2.5	5.3	140
BZX84C8V2	Z7,Z8	7.79	8.2	8.61	5.0	15	80	1	0.7	5.0	3.2	6.2	135
BZX84C9V1	Z8,A9	8.65	9.1	9.56	5.0	15	100	1	0.5	6.0	3.8	7.0	130
BZX84C10	Z9,B9	9.50	10	10.50	5.0	20	150	1	0.2	7.0	4.5	8.0	130
BZX84C11	Y1,C9	10.45	11	11.55	5.0	20	150	1	0.1	8.0	5.4	9.0	130
BZX84C12	Y2,D9	11.40	12	12.60	5.0	25	150	1	0.1	8.0	6.0	10	130
BZX84C13	Y3,E9	12.35	13	13.65	5.0	30	170	1	0.1	8.0	7.0	11	120
BZX84C15	Y4,F9	14.25	15	15.75	5.0	30	200	1	0.1	10.5	9.2	13	110
BZX84C16	Y5,H9	15.20	16	16.80	5.0	40	200	1	0.1	11.2	10.4	14	105
BZX84C18	Y6,J9	17.10	18	18.90	5.0	45	225	1	0.1	12.6	12.4	16	100
BZX84C20	Y7,K9	19.00	20	21.00	5.0	55	225	1	0.1	14.0	14.4	18	85
BZX84C22	Y8,M9	20.90	22	23.10	5.0	55	250	1	0.1	15.4	16.4	20	85
BZX84C24	Y9,N9	22.80	24	25.20	5.0	70	250	1	0.1	16.8	18.4	22	80
BZX84C27	Y10,P9	25.65	27	28.35	2.0	80	300	0.5	0.1	18.9	21.4	25.3	70
BZX84C30	Y11,R9	28.50	30	31.50	2.0	80	300	0.5	0.1	21.0	24.4	29.4	70
BZX84C33	Y12,X9	31.35	33	34.65	2.0	80	325	0.5	0.1	23.1	27.4	33.4	70
BZX84C36	Y13,Y9	34.20	36	37.80	2.0	90	350	0.5	0.1	25.2	30.4	37.4	70
BZX84C39	Y14,Z9	37.05	39	40.95	2.0	130	350	0.5	0.1	27.3	33.4	41.2	45
BZX84C43	Y15,A0	40.85	43	45.15	2.0	150	375	0.5	0.1	30.1	37.6	46.6	40
BZX84C47	Y16,B0	44.65	47	49.35	2.0	170	375	0.5	0.1	32.9	42.0	51.8	40
BZX84C51	Y17,C0	48.45	51	53.55	2.0	180	400	0.5	0.1	35.7	46.6	57.2	40
BZX84C56	Y18,D0	53.20	56	58.80	2.0	200	425	0.5	0.1	39.2	52.2	63.8	40
BZX84C62	Y19,E0	58.90	62	65.10	2.0	215	450	0.5	0.1	43.4	58.8	71.6	35
BZX84C68	Y20,F0	64.60	68	71.40	2.0	240	475	0.5	0.1	47.6	65.6	79.8	35
BZX84C75	Y21,H0	71.25	75	78.75	2.0	255	500	0.5	0.1	52.5	73.4	88.6	35

Note : 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 THRU BZX84C75)

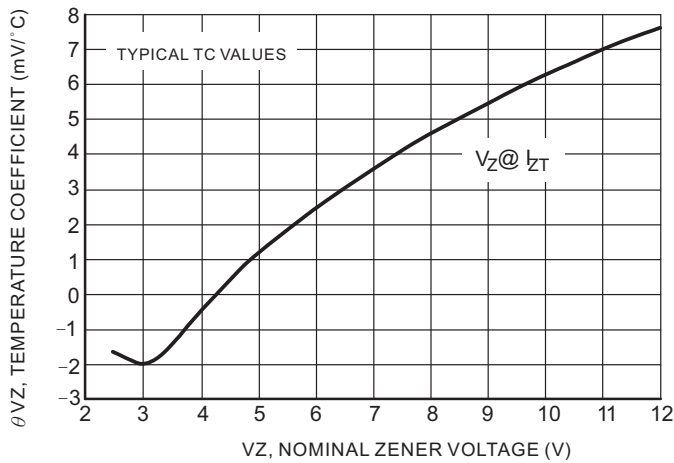


Figure 1. Temperature Coefficients
(Temperature Range -55°C to +150°C)

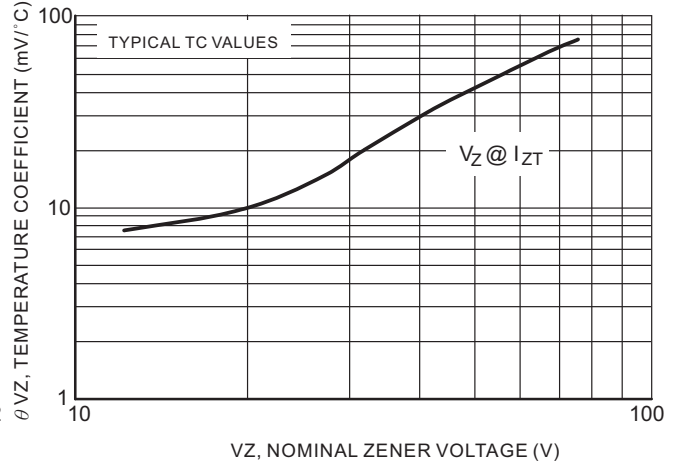


Figure 2. Temperature Coefficients
(Temperature Range -55°C to +150°C)

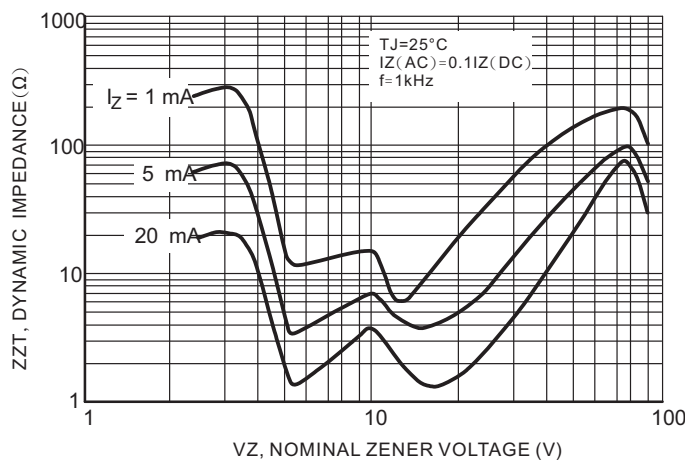


Figure 3. Effect of Zener Voltage on Zener Impedance

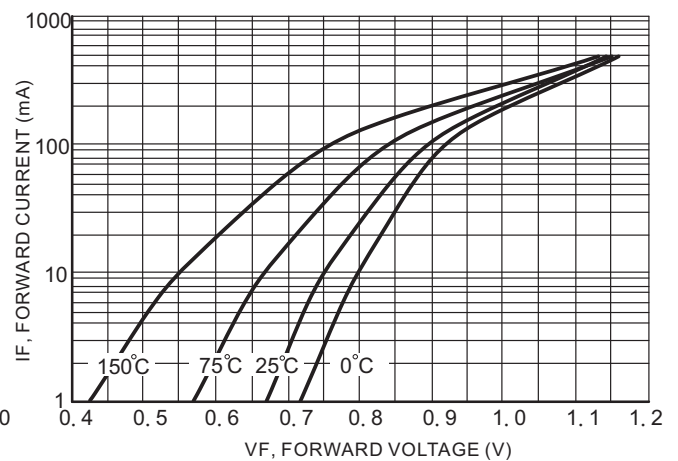


Figure 4. Typical Forward Voltage

Rating and characteristic curves (BZX84C2V4 THRU BZX84C75)

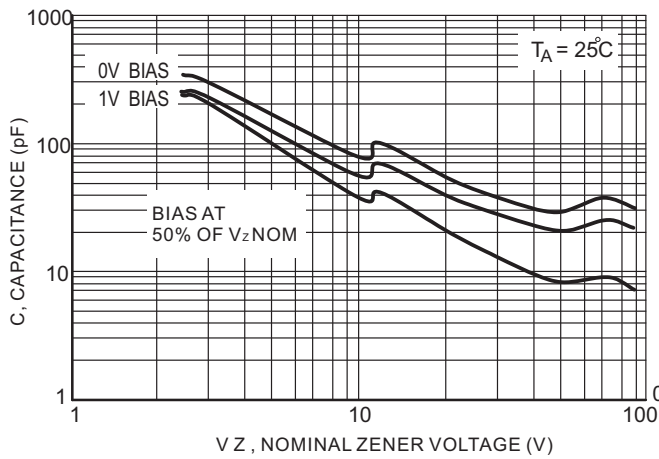


Figure 5. Typical Capacitance

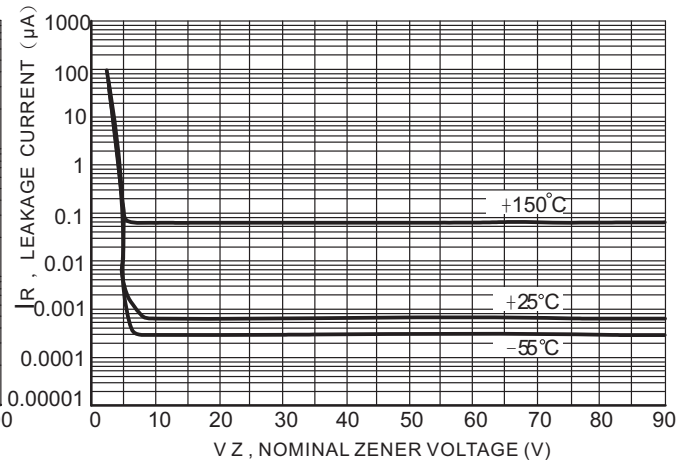


Figure 6. Typical Leakage Current

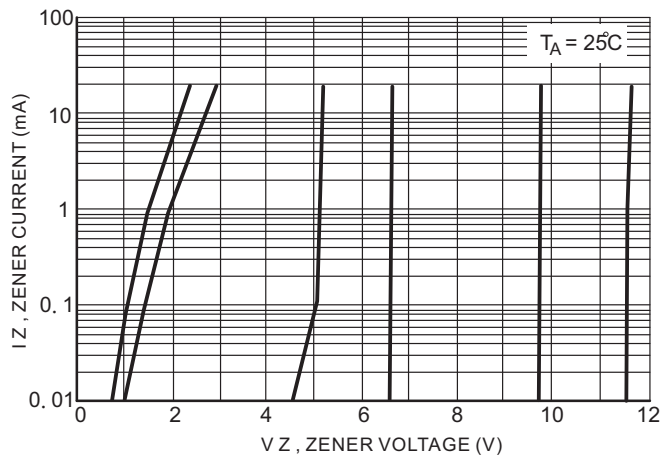


Figure 7. Zener Voltage versus Zener Current
(V_Z Up to 12 V)

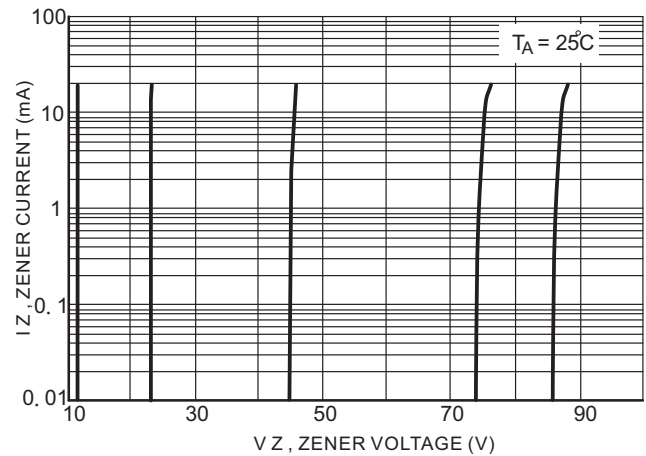
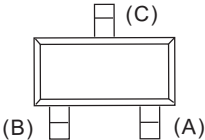
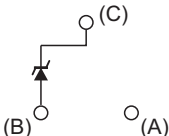
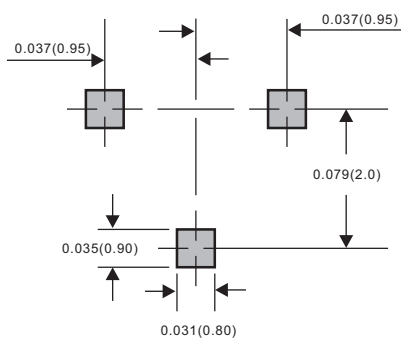


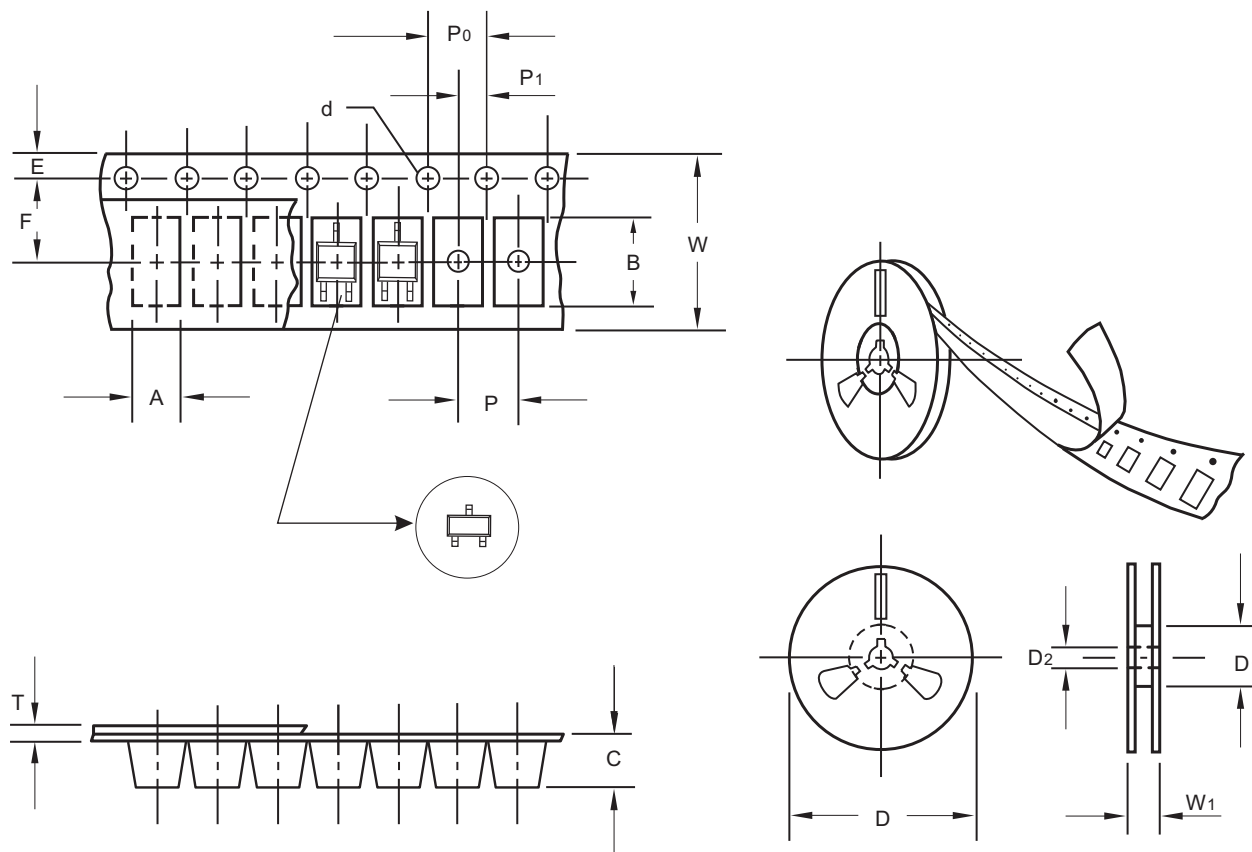
Figure 8. Zener Voltage versus Zener Current
(12V to 91V)

BZX84C2V4 THRU BZX84C75**Pinning information**

Pin	Simplified outline	Symbol
PinA no connection PinB anode PinC cathode		

Suggested solder pad layout**SOT-23**

Dimensions in inches and (millimeters)

BZX84C2V4 THRU BZX84C75**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

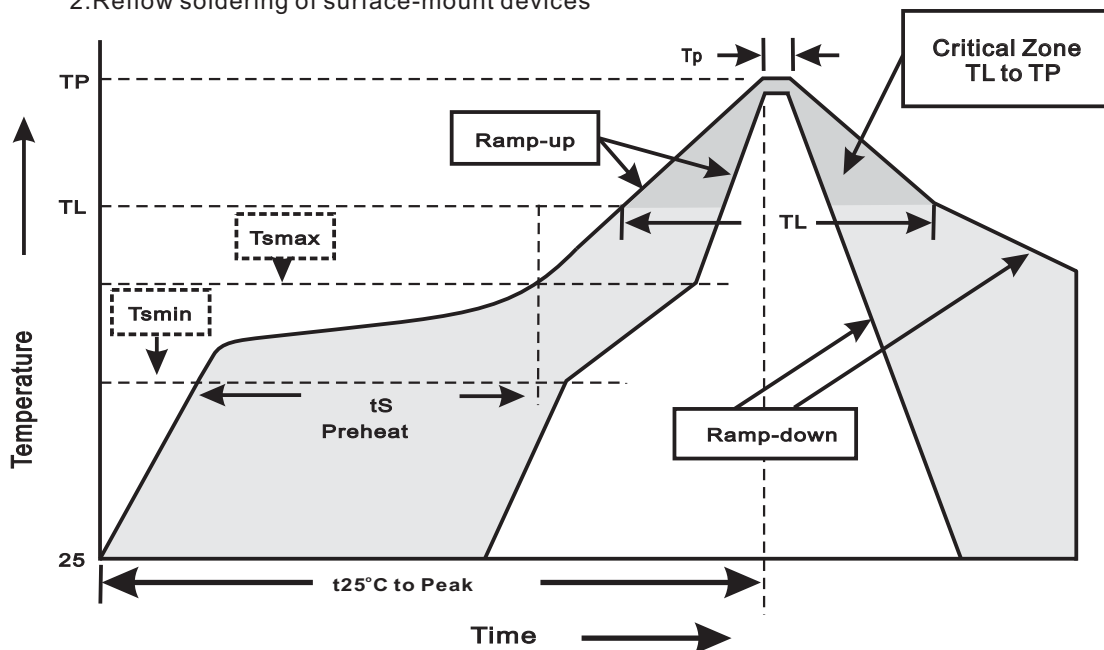
Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

BZX84C2V4 THRU BZX84C75**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 _{smmin}) -Temperature Max(T _{smmax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smmax} 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 THRU BZX84C75**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^{\circ}\text{C}$ for 10 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