

BZX384C2V4 THRU BZX384C75**List**

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BZX384C2V4 THRU BZX384C75

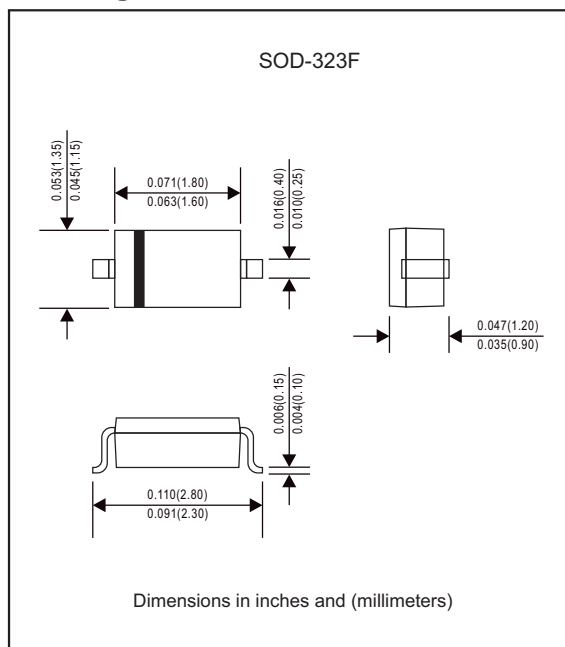
**200mW Surface Mount Zener
Diodes : 2.4V-75V**

Features

- Silicon planar Zener diodes.
- High demand voltage range (2.4V-75V).
- This is a Pb-Free device.
- Lead-free parts meet environmental standards of MIL-STD-19500 /228
- Suffix "-H" indicates Halogen-free part, ex. BZX384C2V4-H.

Mechanical data

- Epoxy:UL94-VO rated flame retardant
- Case : Molded plastic, SOD-323FL
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.004 gram

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

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Forward Voltage	@ $I_F = 10\text{mA}$ @ $I_F = 100\text{mA}$	V_F			0.9 1.1	mW
Power Dissipation	Mounted on FR-4 board.	P_D			200	mW
Thermal Resistance from Junction to Ambient		$R_{\theta JA}$			625	mW
Operating junction temperature range		T_J	-55		+150	$^{\circ}\text{C}$
Storage temperature range		T_{STG}	-55		+150	$^{\circ}\text{C}$

BZX384C2V4 THRU BZX384C75**Electrical characteristics** (at $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Part No.	Marking code	Zener voltage			Test current		Leakage current		Dynamic resistance		Temperature coefficient of Zener Voltage	
		V _Z @ I _{ZT1}			I _{ZT1}	I _{ZT2}	I _R	V _R	Z _{zT} at I _{ZT1}	Z _{zK} at I _{ZT2}	αV _Z at I _{ZT1} 10 ⁻⁴ /°C	
		Min.(V)	Nom.(V)	Max.(V)	mA		Max.(μA)	Volts	Typ.(Ω)	Typ.(Ω)	Min.	Max.
BZX384C2V4	W1	2.2	2.4	2.6	5	1	50.0	1.0	70(≤100)	275	- 9	- 4
BZX384C2V7	W2	2.5	2.7	2.9	5	1	20.0	1.0	75(≤100)	300(≤600)	- 9	- 4
BZX384C3V0	W3	2.8	3.0	3.2	5	1	10.0	1.0	80(≤95)	325(≤600)	- 9	- 3
BZX384C3V3	W4	3.1	3.3	3.5	5	1	5.0	1.0	85(≤95)	350(≤600)	- 8	- 3
BZX384C3V6	W5	3.4	3.6	3.8	5	1	5.0	1.0	85(≤90)	375(≤600)	- 8	- 3
BZX384C3V9	W6	3.7	3.9	4.1	5	1	3.0	1.0	85(≤90)	400(≤600)	- 7	- 3
BZX384C4V3	W7	4.0	4.3	4.6	5	1	3.0	1.0	80(≤90)	410(≤600)	- 6	- 1
BZX384C4V7	W8	4.4	4.7	5.0	5	1	3.0	2.0	50(≤80)	425(≤500)	- 5	2
BZX384C5V1	W9	4.8	5.1	5.4	5	1	2.0	2.0	40(≤60)	400(≤480)	- 3	4
BZX384C5V6	WA	5.2	5.6	6.0	5	1	1.0	2.0	15(≤40)	80(≤400)	- 2	6
BZX384C6V2	WB	5.8	6.2	6.6	5	1	3.0	4.0	6(≤10)	40(≤150)	- 1	7
BZX384C6V8	WC	6.4	6.8	7.2	5	1	2.0	4.0	6(≤15)	30(≤80)	2	7
BZX384C7V5	WD	7.0	7.5	7.9	5	1	1.0	5.0	6(≤15)	30(≤80)	3	7
BZX384C8V2	WE	7.7	8.2	8.7	5	1	0.7	5.0	6(≤15)	40(≤80)	4	7
BZX384C9V1	WF	8.5	9.1	9.6	5	1	0.5	6.0	6(≤15)	40(≤100)	5	8
BZX384C10	WG	9.4	10	10.6	5	1	0.2	7.0	8(≤20)	50(≤150)	5	8
BZX384C11	WH	10.4	11	11.6	5	1	0.1	8.0	10(≤20)	50(≤150)	5	9
BZX384C12	WI	11.4	12	12.7	5	1	0.1	8.0	10(≤25)	50(≤150)	6	9
BZX384C13	WK	12.4	13	14.1	5	1	0.1	8.0	10(≤30)	50(≤170)	7	9
BZX384C15	WL	13.8	15	15.6	5	1	0.05	10.5	10(≤30)	50(≤200)	7	9
BZX384C16	WM	15.3	16	17.1	5	1	0.05	11.2	10(≤40)	50(≤200)	8	9.5
BZX384C18	WN	16.8	18	19.1	5	1	0.05	12.6	10(≤45)	50(≤225)	8	9.5
BZX384C20	WO	18.8	20	21.2	5	1	0.05	14.0	15(≤55)	60(≤250)	8	10
BZX384C22	WP	20.8	22	23.2	5	1	0.05	15.4	20(≤55)	60(≤250)	8	10
BZX384C24	WR	22.8	24	25.6	5	1	0.05	16.8	25(≤70)	60(≤250)	8	10
BZX384C27	WS	25.1	27	28.9	2	0.5	0.05	18.9	25(≤80)	65(≤300)	8	10
BZX384C30	WT	28	30	32	2	0.5	0.05	21.0	30(≤80)	70(≤300)	8	10
BZX384C33	WU	31	33	35	2	0.5	0.05	23.1	35(≤80)	75(≤325)	8	10
BZX384C36	WW	34	36	38	2	0.5	0.05	25.2	35(≤90)	80(≤350)	8	10
BZX384C39	WX	37	39	41	2	0.5	0.05	27.3	40(≤130)	80(≤350)	10	12
BZX384C43	WY	40	43	46	2	0.5	0.05	30.1	45(≤150)	85(≤375)	10	12
BZX384C47	WZ	44	47	50	2	0.5	0.05	32.9	50(≤170)	85(≤375)	10	12
BZX384C51	X1	48	51	54	2	0.5	0.05	35.7	60(≤180)	85(≤400)	8	10
BZX384C56	X2	52	56	60	2	0.5	0.05	39.2	70(≤200)	100(≤425)	10	12
BZX384C62	X3	58	62	66	2	0.5	0.05	43.4	80(≤215)	100(≤450)	10	12
BZX384C68	X4	64	68	72	2	0.5	0.05	47.6	90(≤240)	150(≤475)	10	12
BZX384C75	X5	70	75	79	2	0.5	0.05	52.5	95(≤255)	170(≤500)	10	12

Rating and characteristic curves (BZX384C2V4 THRU BZX384C75)

Fig.1 FORWARD CHARACTERISTICS

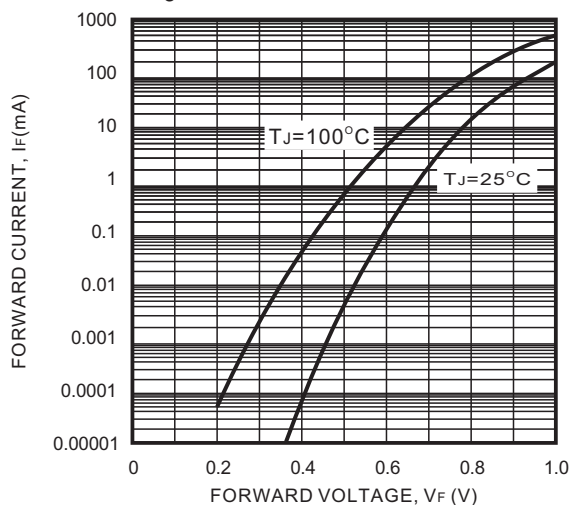


Fig.2 DERATING CURVE

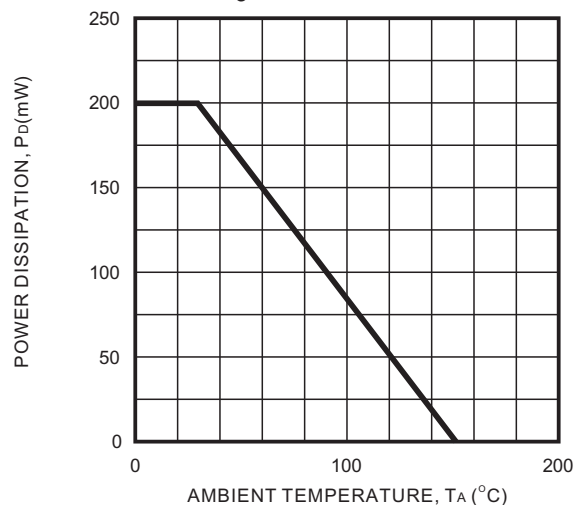


Fig.3 DYNAMIC RESISTANCE V.S. ZENER CURRENT

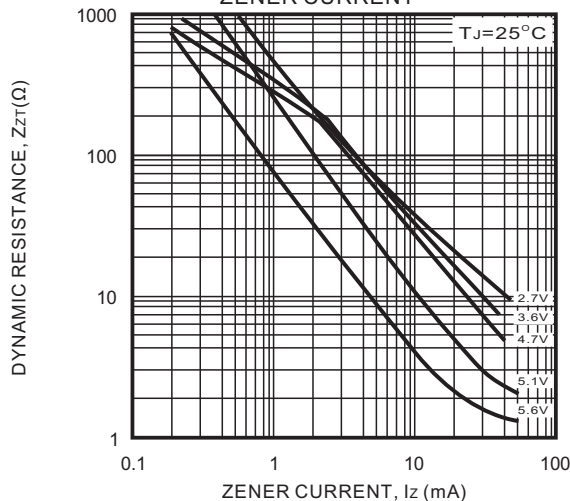


Fig.4 DYNAMIC RESISTANCE V.S. ZENER CURRENT

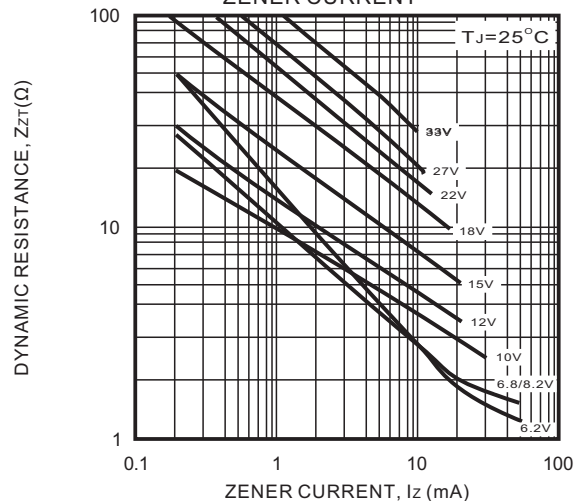


Fig.5 DYNAMIC RESISTANCE V.S. ZENER CURRENT

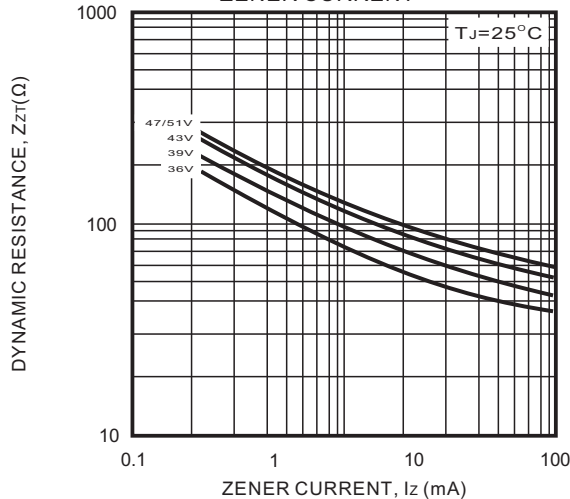
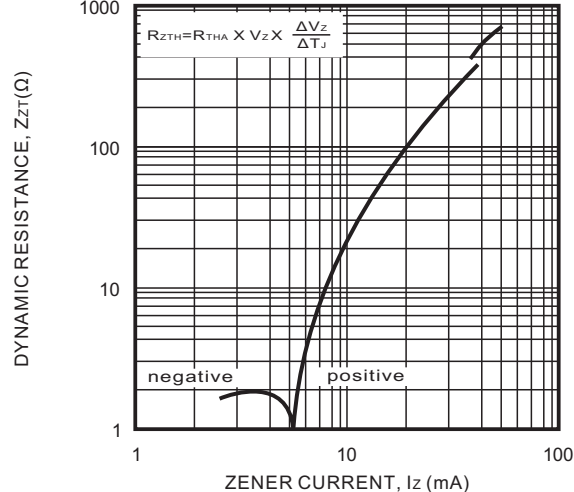


Fig.6 THERMAL DIFFERENTIAL RESISTANCE V.S. ZENER VOLTAGE



Rating and characteristic curves (BZX384C2V4 THRU BZX384C75)

Fig.7 THERMAL DIFFERENTIAL RESISTANCE V.S. ZENER VOLTAGE

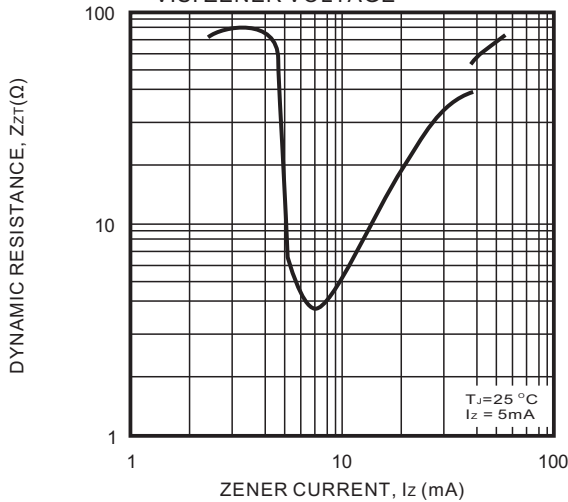


Fig.8 TEMPERATURE DEPENDENCE OF ZENER VOLTAGE V.S. ZENER VOLTAGE

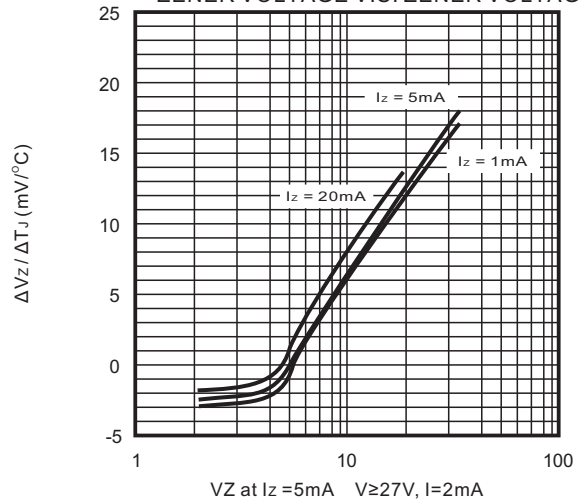


Fig.9 CHANGE OF ZENER VOLTAGE V.S. JUNCTION TEMPERATURE

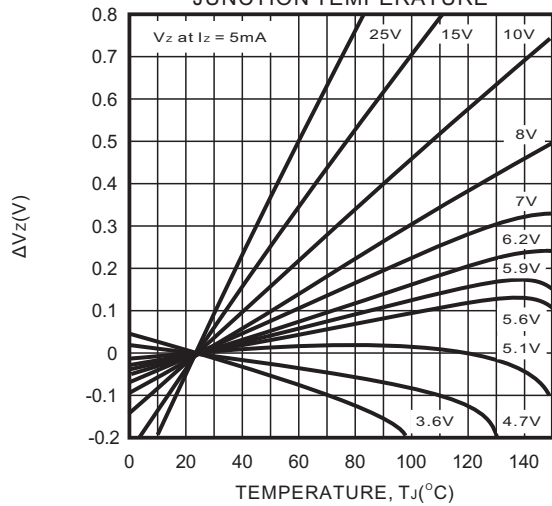


Fig.10 CHANGE OF ZENER VOLTAGE V.S. JUNCTION TEMPERATURE

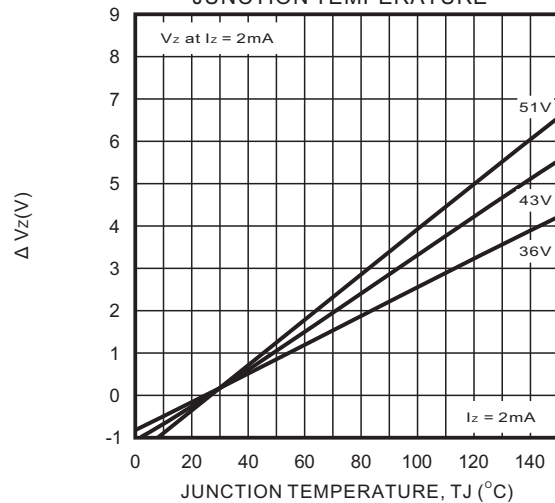


Fig.11 TEMPERATURE DEPENDENCE OF ZENER VOLTAGE V.S. ZENER VOLTAGE

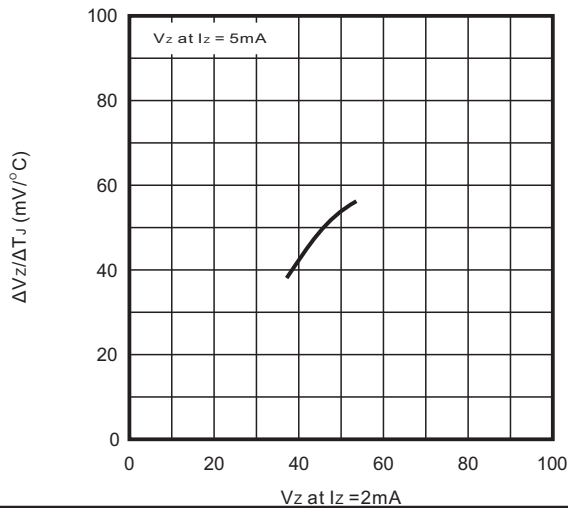
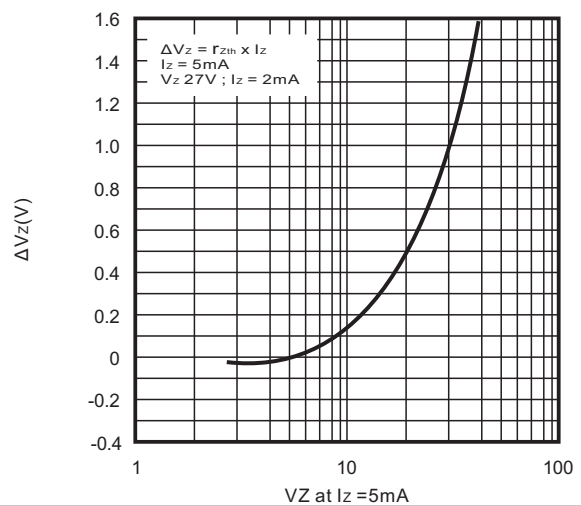


Fig.12 CHANGE OF ZENER VOLTAGE TURN-ON UP TO THE POINT OF THERMAL EQUILIBRIUM V.S. ZENER VOLTAGE



Rating and characteristic curves (BZX384C2V4 THRU BZX384C75)

Fig.13 CHANGE OF ZENER VOLTAGE FROM TURN-ON
UP TO THE POINT OF THERMAL
EQUILIBRIUM V.S. ZENER VOLTAGE

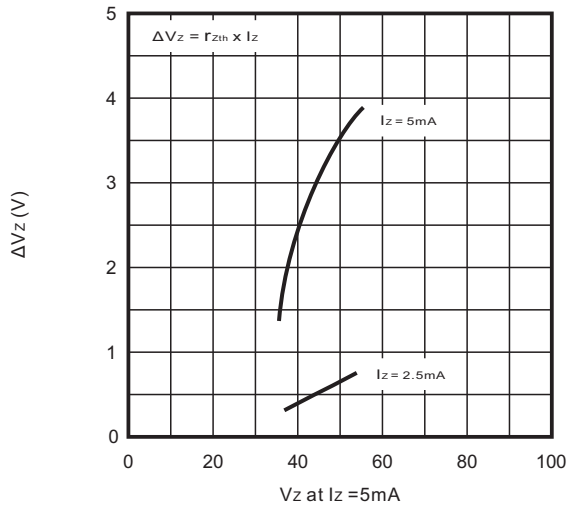


Fig.14 ZENER VOLTAGE CHARACTERISTICS

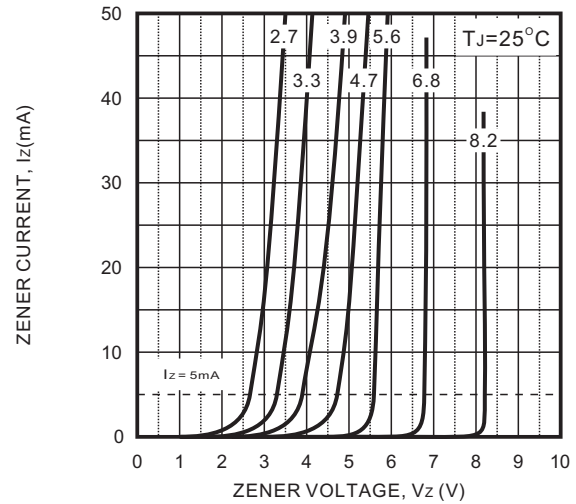


Fig.15 ZENER VOLTAGE CHARACTERISTICS

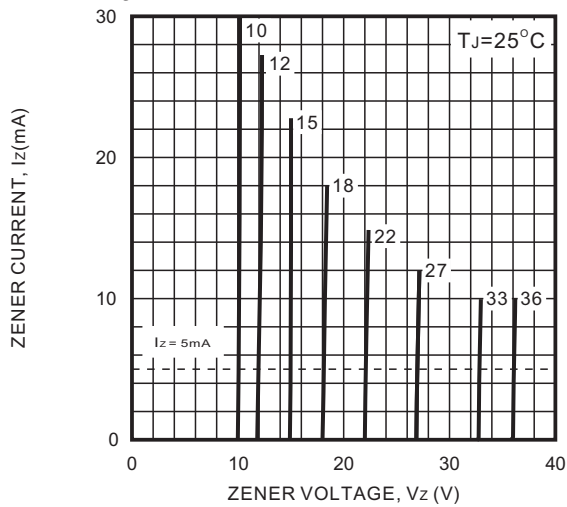
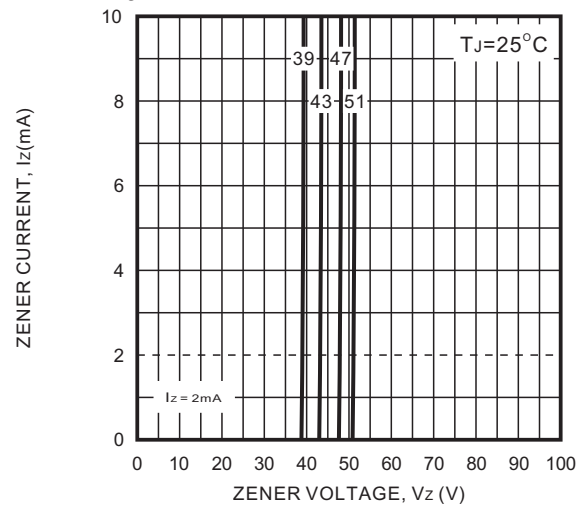
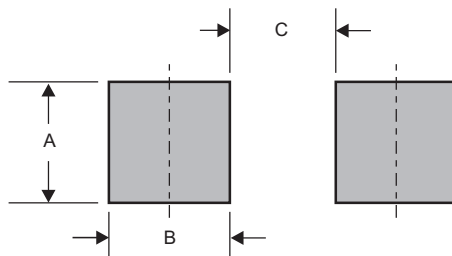


Fig.16 ZENER VOLTAGE CHARACTERISTICS



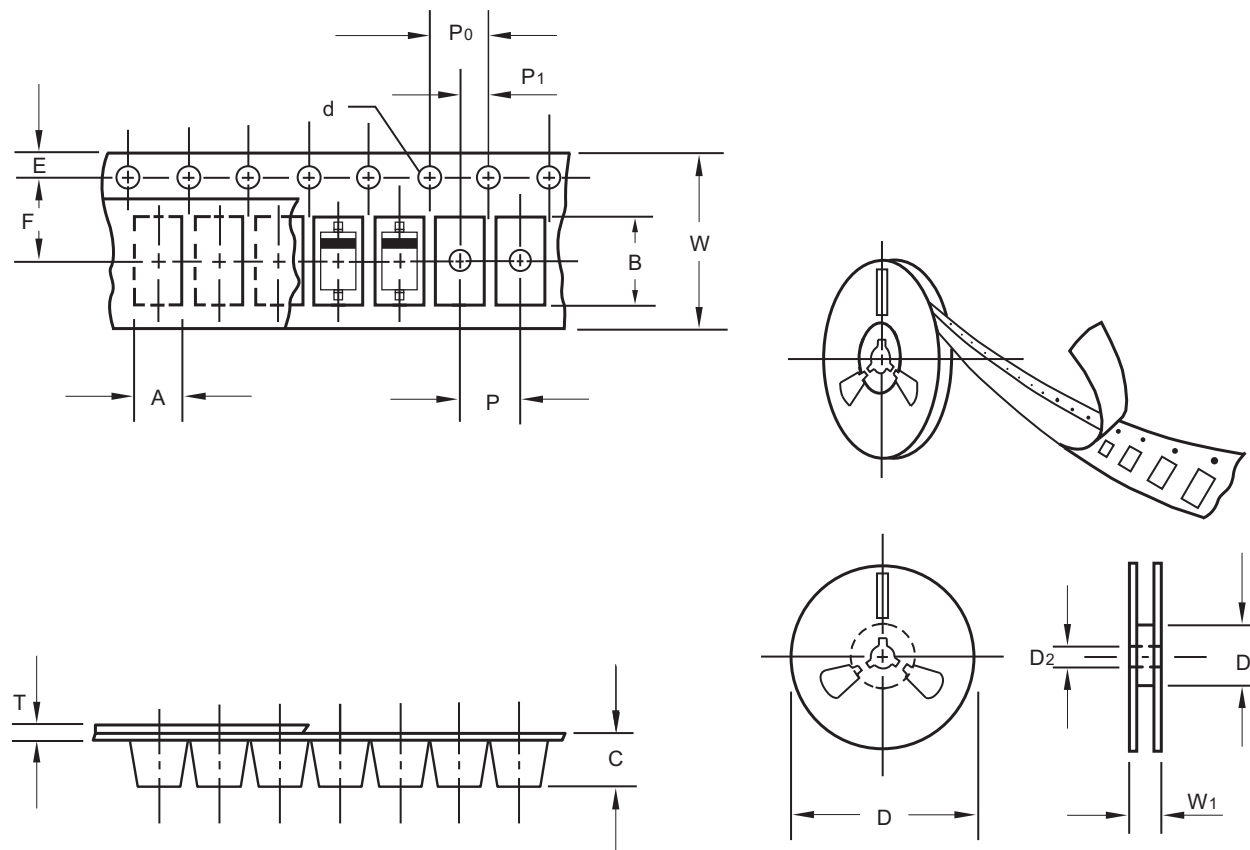
BZX384C2V4 THRU BZX384C75**Pinning information**

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Suggested solder pad layout

Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-323F	0.033 (0.83)	0.025 (0.63)	0.063 (1.60)

BZX384C2V4 THRU BZX384C75**Packing information**

unit:mm

Item	Symbol	Tolerance	SOD-323F
Carrier width	A	0.1	1.46
Carrier length	B	0.1	2.95
Carrier depth	C	0.1	1.25
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

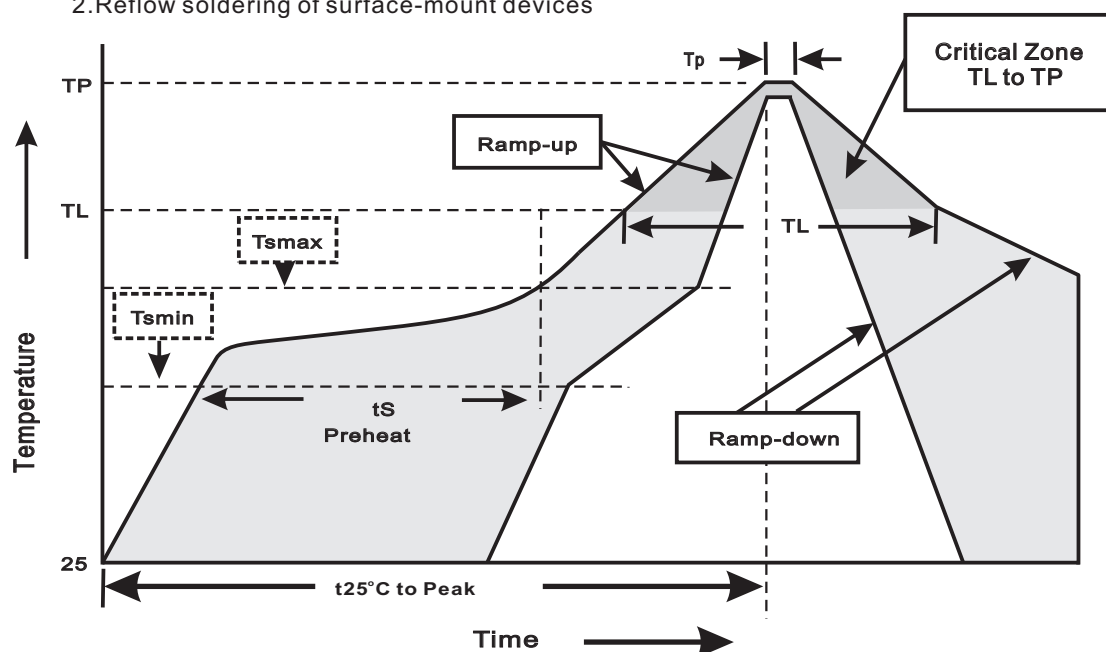
Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

BZX384C2V4 THRU BZX384C75**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-323F	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	8.0

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

BZX384C2V4 THRU BZX384C75**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^{\circ}\text{C}$ for 10 ± 2 sec. immerse body into solder $1/16'' \pm 1/32''$	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	$V_R = 80\%$ rate at $T_J = 150^{\circ}\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1038
4. Pressure Cooker	$15P_{SIG}$ 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. Thermal Shock	0°C for 5 min. rise to 100°C for 5 min. total 10 cycles.	MIL-STD-750D METHOD-1056
7. Humidity	at $T_A = 85^{\circ}\text{C}$, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
8. High Temperature Storage Life	at 150°C for 1000 hrs.	MIL-STD-750D METHOD-1031