

BZD84C-Q1 SERIES

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BZD84C-Q1 SERIES

**350mW Surface Mount Dual Zener
Voltage Regulator Diodes 2.4V-75V**

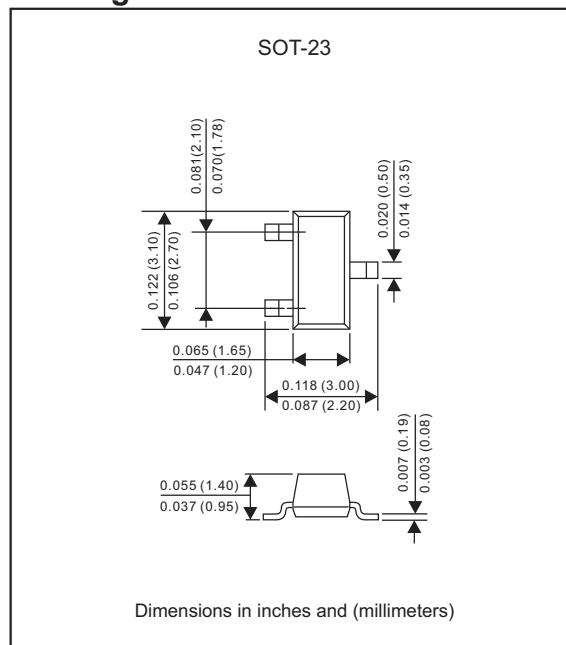
Features

- Planar die construction
- 350mW power dissipation rating
- Dual zeners in common anode configuration
- Ideally suited for automated assembly process
- Lead-free parts meet RoHS requirements
- Qualified to AEC-Q101 standards for high reliability
- Suffix "-H" indicates Halogen-free parts, ex.BZD84C2V4-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 and Electrical characteristics (at $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Conditions	Symbol	MIN.	TYP.	MAX.	Unit
Power dissipation	Alumina = 0.4 X 0.3 X 0.024 in. 99.5% alumina.	P_D			350	mW
Thermal resistance	Junction to ambient	$R_{\theta JA}$		417		$^{\circ}\text{C}/\text{W}$
Operating junction temperature range		T_J	-65		+150	$^{\circ}\text{C}$
Storage temperature range		T_{STG}	-65		+150	$^{\circ}\text{C}$
Forward voltage	@ $I_F=10\text{mA}$	V_F			0.9	V

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

Part No.	Marking code	Zener voltage			Zener impedance		Leakage current	
		V _Z @ I _{ZT} (Volts)			I _{ZT}	Z _{ZT} @ I _{ZT}	I _R	V _R
		Min.	Nom.	Max.	mA	(Ω)Max	(μA)Max	Volts
BZD84C2V4-Q1	7H	2.2	2.4	2.6	5.0	100	50	1.0
BZD84C2V7-Q1	7J	2.5	2.7	2.9	5.0	100	20	1.0
BZD84C3V0-Q1	MR	2.8	3.0	3.2	5.0	95	10	1.0
BZD84C3V3-Q1	MX	3.1	3.3	3.5	5.0	95	5	1.0
BZD84C3V6-Q1	MY	3.4	3.6	3.8	5.0	90	5	1.0
BZD84C3V9-Q1	MZ	3.7	3.9	4.1	5.0	90	3	1.0
BZD84C4V3-Q1	NA	4.0	4.3	4.6	5.0	90	3	1.0
BZD84C4V7-Q1	NB	4.4	4.7	5.0	5.0	80	3	2.0
BZD84C5V1-Q1	NC	4.8	5.1	5.4	5.0	60	2	2.0
BZD84C5V6-Q1	ND	5.2	5.6	6.0	5.0	40	1	2.0
BZD84C6V2-Q1	NE	5.8	6.2	6.6	5.0	10	3	4.0
BZD84C6V8-Q1	NF	6.4	6.8	7.2	5.0	15	2	4.0
BZD84C7V5-Q1	NH	7.0	7.5	7.9	5.0	15	1	5.0
BZD84C8V2-Q1	NJ	7.7	8.2	8.7	5.0	15	0.7	5.0
BZD84C9V1-Q1	NK	8.5	9.1	9.6	5.0	15	0.5	6.0
BZD84C10-Q1	NM	9.4	10	10.6	5.0	20	0.2	7.0
BZD84C11-Q1	NN	10.4	11	11.6	5.0	20	0.1	8.0
BZD84C12-Q1	NP	11.4	12	12.7	5.0	25	0.1	8.0
BZD84C13-Q1	NX	12.4	13	14.1	5.0	30	0.1	8.0
BZD84C15-Q1	NY	14.3	15	15.8	5.0	30	0.05	10.5
BZD84C16-Q1	NZ	15.3	16	17.1	5.0	40	0.05	11.2
BZD84C18-Q1	PA	16.8	18	19.1	5.0	45	0.05	12.6
BZD84C20-Q1	PB	18.8	20	21.2	5.0	55	0.05	14.0
BZD84C22-Q1	PC	20.8	22	23.3	5.0	55	0.05	15.4
BZD84C24-Q1	PD	22.8	24	25.6	5.0	70	0.05	16.8
BZD84C27-Q1	PE	25.1	27	28.9	5.0	80	0.05	18.9
BZD84C30-Q1	PF	28.0	30	32.0	5.0	80	0.05	21.0
BZD84C33-Q1	PH	31.0	33	35.0	5.0	80	0.05	23.1
BZD84C36-Q1	PJ	34.0	36	38.0	5.0	90	0.05	25.2
BZD84C39-Q1	PM	37.0	39	41.0	5.0	130	0.05	27.3
BZD84C43-Q1	PN	40.0	43	46.0	5.0	150	0.05	30.1
BZD84C47-Q1	PP	44.0	47	50.0	5.0	170	0.05	32.9
BZD84C51-Q1	7K	48.0	51	54.0	5.0	180	0.05	35.7
BZD84C56-Q1	7M	52.0	56	60.0	5.0	200	0.05	39.2
BZD84C62-Q1	7N	58.0	62	66.0	5.0	215	0.05	43.4
BZD84C68-Q1	7P	64.0	68	72.0	5.0	240	0.05	47.6
BZD84C75-Q1	7R	70.0	75	79.0	5.0	255	0.05	52.5

Rating and characteristic curves (BZD84C-Q1 SERIES)

Fig.1 TEMPERATURE COEFFICIENT

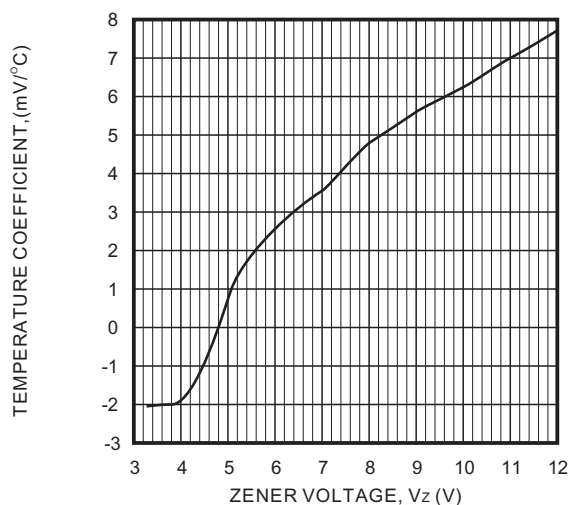


Fig.2 TEMPERATURE COEFFICIENT

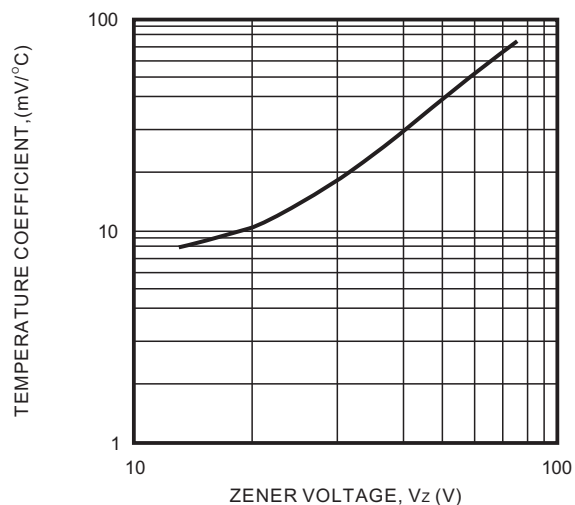


Fig.3 TYPICAL FORWARD VOLTAGE

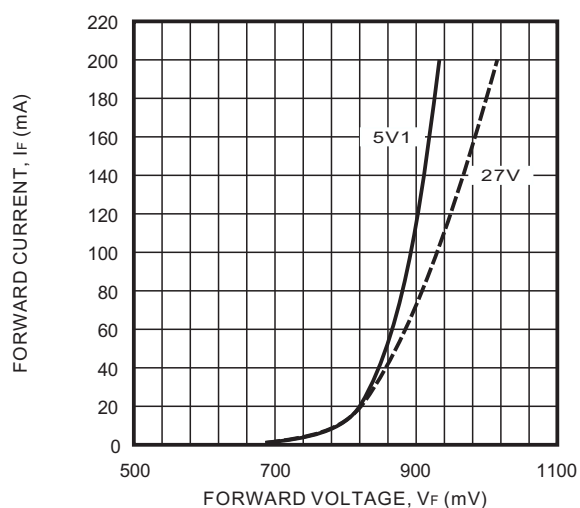
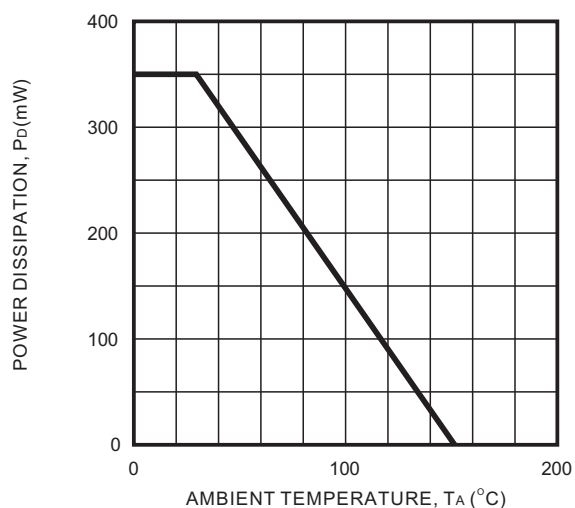
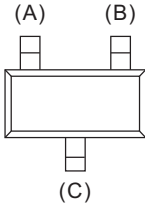
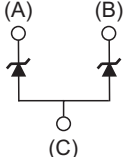


Fig.4 DERATING CURVE



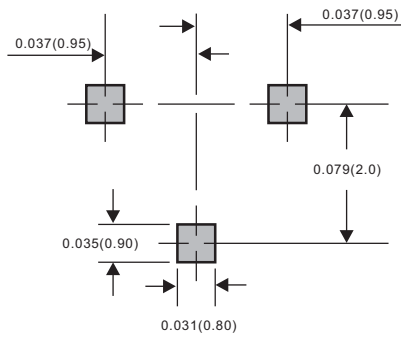
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Pinning information

Pin	Simplified outline	Symbol
PinA cathode PinB cathode PinC anode		

Suggested solder pad layout

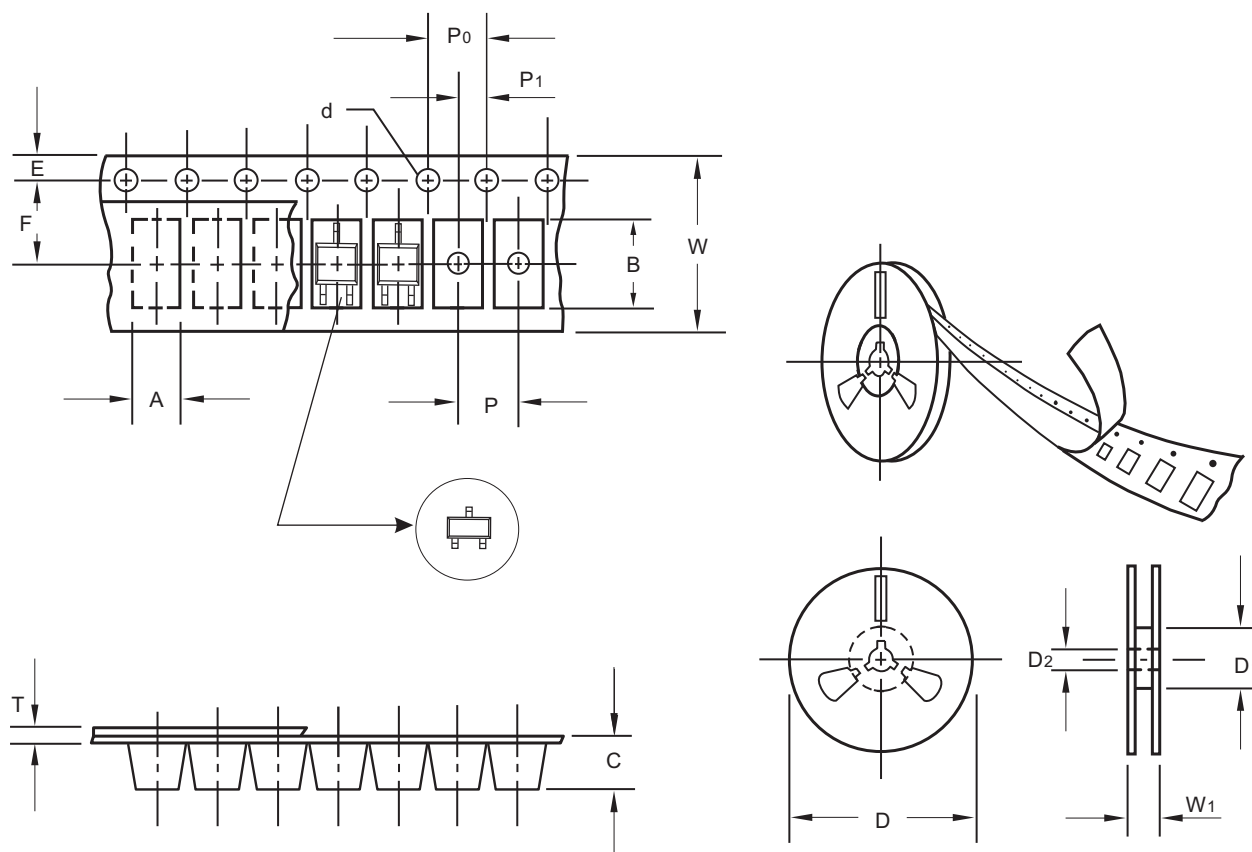
SOT-23



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	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.

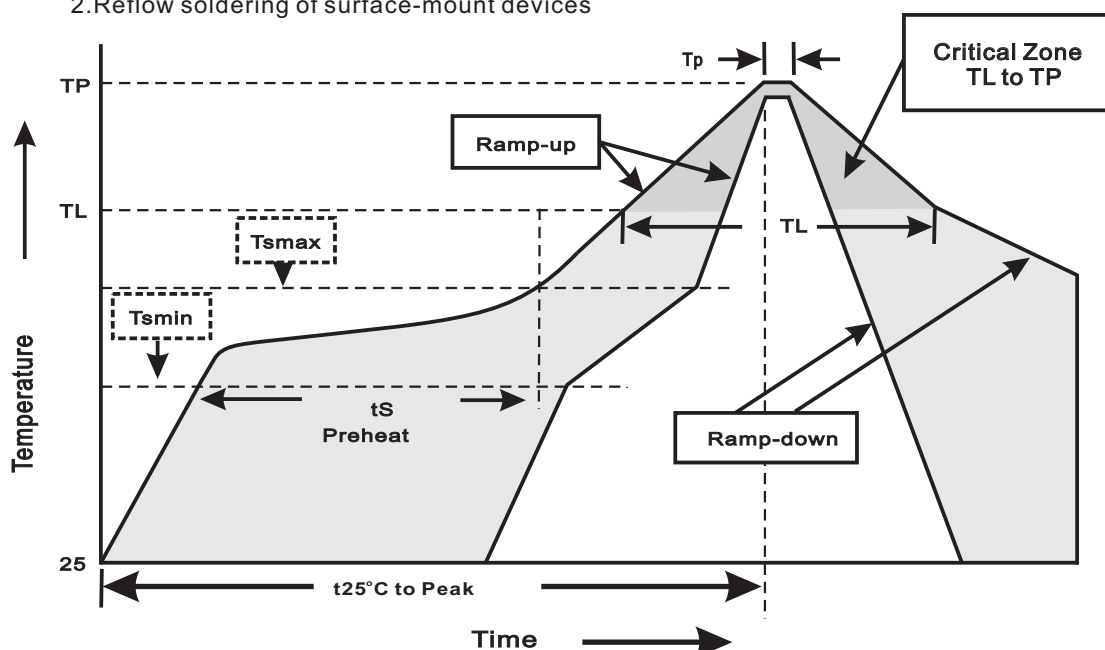
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Reel packing

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 _{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

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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