



## BZW04-5V8(B) / 376(B) SERIES

### Transient Voltage Suppressor Diodes



Voltage Range  
5.8 to 376 Volts  
400 Watts Peak Power

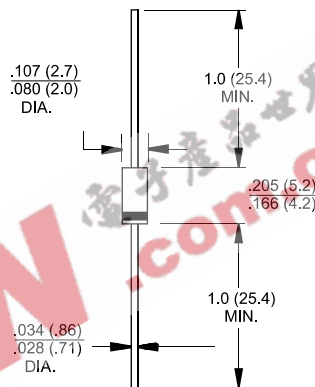
#### Features

- ✧ UL Recognized File # E-96005
- ✧ Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- ✧ Exceeds environmental standards of MIL-STD-19500
- ✧ 400W surge capability at 10 x 1000 us waveform, duty cycle: 0.01%
- ✧ Excellent clamping capability
- ✧ Low zener impedance
- ✧ Fast response time: Typically less than 1.0ps from 0 volts to VBR for unidirectional and 5.0 ns for bidirectional
- ✧ Typical  $I_R$  less than 1uA above 10V
- ✧ High temperature soldering guaranteed: 260°C / 10 seconds / .375", (9.5mm) lead length / 5lbs., (2.3kg) tension

#### Mechanical Data

- ✧ Case: Molded plastic
- ✧ Lead: Axial leads, solderable per MIL-STD-202, Method 208
- ✧ Polarity: Color band denotes cathode except bipolar
- ✧ Weight: 0.34gram

#### DO-41



Dimensions in inches and (millimeters)

### Maximum Ratings and Electrical Characteristics ( $T_A = 25^\circ\text{C}$ )

Type Number	Symbol	Value	Units
Peak Pulse Power Dissipation at $T_A=25^\circ\text{C}$ , $T_p=1\text{ms}$ (Note)	$P_{PP}$	Minimum 400	Watts
Steady State Power Dissipation at $T_L=75^\circ\text{C}$ Lead Lengths .375", 9.5mm (Note 2)	$P_D$	1.7	Watts
Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method) (Note 3)	$I_{FSM}$	30	Amps
Operating and Storage Temperature Range	$T_J, T_{STG}$	-65 to + 175	$^\circ\text{C}$

Notes: For a surge greater than the maximum values, the diode will fall in short-circuit.

### Thermal Resistances

Type Number	Symbol	Value	Units
Junction to leads	$R_{\theta JL}$	60	$^\circ\text{C/W}$
Junction to ambient on printed circuit. L lead=10mm	$R_{\theta JA}$	100	$^\circ\text{C/W}$



## RATINGS AND CHARACTERISTIC CURVES (BZW04-5V8(B)/376(B)SERIES)

FIG.1- PEAK PULSE POWER VERSUS EXPONENTIAL PULSE DURATION

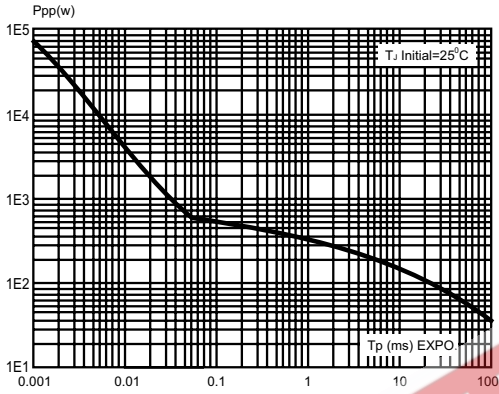


FIG.2- PEAK PULSE POWER DISSIPATION VERSUS INITIAL JUNCTION TEMPERATURE (PRINTED CIRCUIT BOARD)

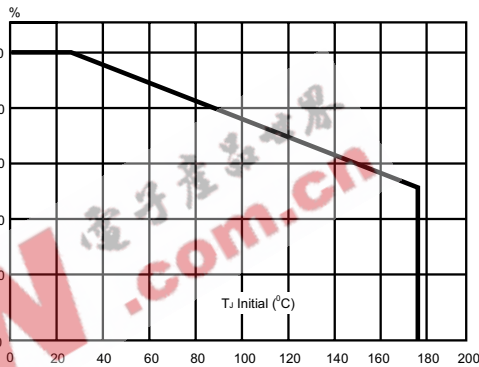


FIG.3- PULSE WAVEFORM

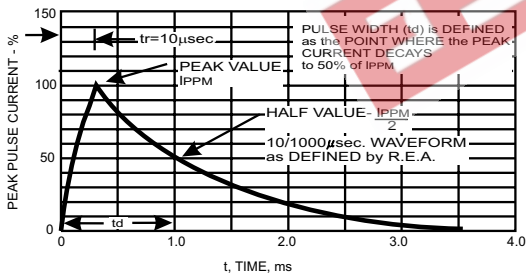


FIG.4- CLAMPING VOLTAGE VERSUS PEAK PULSE CURRENT.

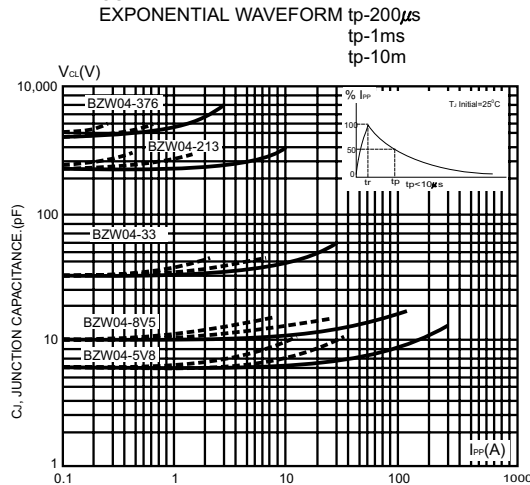
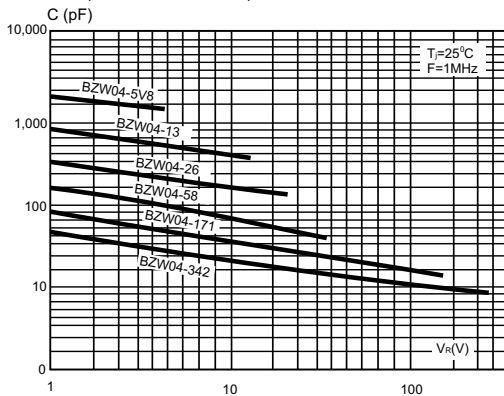


FIG.5- CHARACTERISTICS VERSUS REVERSE APPLIED VOLTAGE FOR UNIDIRECTIONAL TYPES (TYPICAL VALUES)





## RATINGS AND CHARACTERISTIC CURVES (BZW04-5V8(B)/376(B)SERIES)

FIG.6- CHARACTERISTICS VERSUS REVERSE APPLIED VOLTAGE FOR UNIDIRECTIONAL TYPES (TYPICAL VALUES)

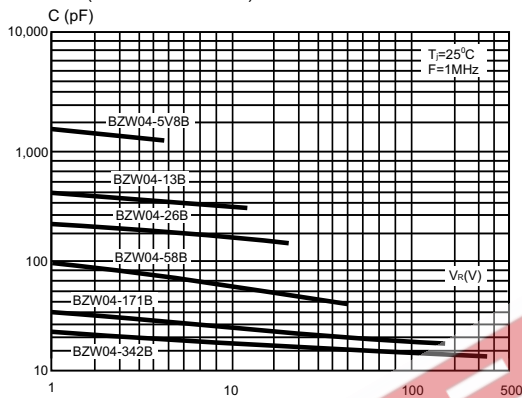


FIG.7- PEAK FORWARD VOLTAGE DROP VERSUS PEAK FORWARD CURRENT (TYPICAL VALUES FOR UNIDIRECTIONAL TYPES)

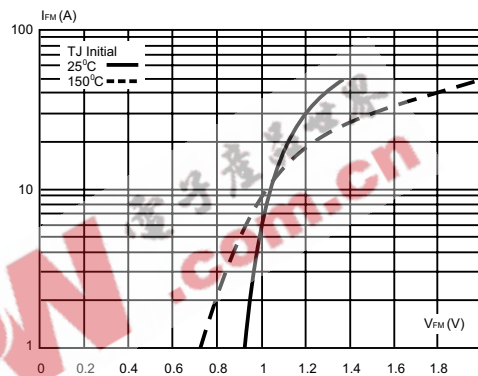


FIG.8- TRANSIENT THERMAL IMPEDANCE JUNCTION AMBIENT VERSUS PULSE DURATION (FOR FR4 PC BOARD WITH L LEAD=10mm)

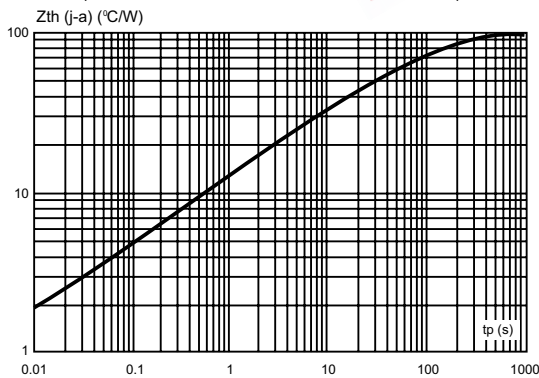
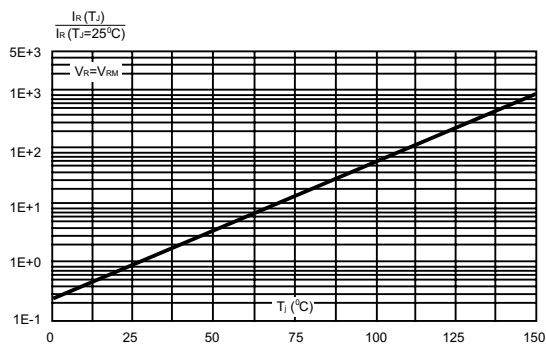


FIG.9- RELATIVE VARIATION OF LEAKAGE CURRENT VERSUS JUNCTION TEMPERATURE



ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

Device		I <sub>RM</sub> @ V <sub>RM</sub>		V <sub>BR</sub> @ I <sub>R</sub>		V <sub>CL</sub> @ I <sub>PP</sub>		V <sub>CL</sub> @ I <sub>PP</sub>		αT	C
		max		min		max		max		max	typ
				note1		10/1000uS		8/20uS		note2	note3
Unidirectional	Bidirectional	uA	V	V	mA	V	A	V	A	10 <sup>-4</sup> /°C	(pF)
BZW04-5V8	BZW04-5V8B	1000	5.8	6.45	10	10.5	38.0	13.4	174	5.7	3500
BZW04-6V4	BZW04-6V4B	500	6.4	7.13	10	11.3	35.4	14.5	160	6.1	3100
BZW04-8V5	BZW04-8V5B	10	8.5	9.5	1	14.5	27.6	18.6	124	7.3	2000
BZW04-10	BZW04-10B	5	10.2	11.4	1	16.7	24.0	21.7	106	7.8	1550
BZW04-13	BZW04-13B	5	12.8	14.3	1	21.2	19.0	27.2	85	8.4	1200
BZW04-15	BZW04-15B	1	15.3	17.1	1	25.2	16.0	32.5	71	8.8	975
BZW04-19	BZW04-19B	1	18.8	20.9	1	30.6	13.0	39.3	59	9.2	800
BZW04-20	BZW04-20B	1	20.5	22.8	1	33.2	12.0	42.8	54	9.4	725
BZW04-23	BZW04-23B	1	23.1	25.7	1	37.5	10.7	48.3	48	9.6	625
BZW04-26	BZW04-26B	1	25.6	28.5	1	41.5	9.6	53.5	43	9.7	575
BZW04-28	BZW04-28B	1	28.2	31.4	1	45.7	8.8	59.0	39	9.8	510
BZW04-31	BZW04-31B	1	30.8	34.2	1	49.9	8.0	64.3	36	9.6	480
BZW04-33	BZW04-33B	1	33.3	37.1	1	53.9	7.4	69.7	33	10.0	450
BZW04-40	BZW04-40B	1	40.2	44.7	1	64.8	6.2	84	27	10.1	370
BZW04-48	BZW04-48B	1	47.8	53.2	1	77.0	5.2	100	23	10.3	320
BZW04-58	BZW04-58B	1	58.1	64.6	1	92	4.3	121	19	10.4	270
BZW04-70	BZW04-70B	1	70.1	77.9	1	113	3.5	146	16	10.5	230
BZW04-85	BZW04-85B	1	85.5	95	1	137	2.9	178	13	10.6	200
BZW04-102	BZW04-102B	1	102	114	1	165	2.4	212	11	10.7	170
BZW04-128	BZW04-128B	1	128	143	1	207	2.0	265	9	10.8	145
BZW04-154	BZW04-154B	1	154	171	1	246	1.6	317	7	10.8	125
BZW04-171	BZW04-171B	1	171	190	1	274	1.5	353	7	10.8	120
BZW04-188	BZW04-188B	1	188	209	1	328	1.4	388	6.0	10.8	110
BZW04-213	BZW04-213B	1	231	237	1	344	1.5	442	5.2	11.0	100
BZW04-256	BZW04-256B	1	256	285	1	414	1.2	529	4.3	11.0	90
BZW04-273	BZW04-273B	1	273	304	1	438	1.2	564	4.0	11.0	85
BZW04-299	BZW04-299B	1	299	332	1	482	0.9	618	3.7	11.0	80
BZW04-342	BZW04-342B	1	342	380	1	548	0.9	706	3.2	11.0	75
BZW04-376	BZW04-376B	1	376	418	1	603	0.8	776	3.0	11.0	70

Notes: 1. Pulse test: tp < 50 ms.

2.  $\Delta V_{BR} = \alpha T \cdot (T_{amb} - 25) \cdot V_{BR}(25^\circ C)$

3. V<sub>R</sub>=0V, F=1MHz, For bidirectional types, capacitance value is divided by 2