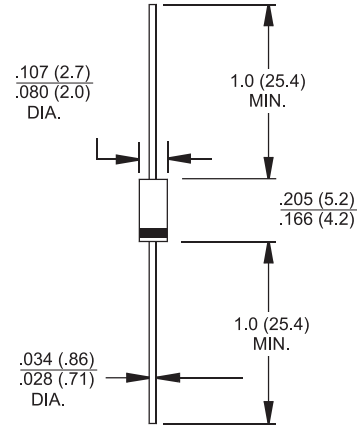




## Features

- ✧ 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,
- ✧ Excellent clamping capability
- ✧ Low impedance surge resistance
- ✧ Very fast response time V
- ✧ 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

Dimensions in inches and (millimeters)

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

## 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 1)                          | $P_{PP}$        | Minimum 400  | Watts              |
| Steady State Power Dissipation at $T_L=75^\circ\text{C}$<br>Lead Lengths .375", 9.5mm (Note 2)              | $P_D$           | 1.0          | Watts              |
| Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method) (Note 3) | $I_{FSM}$       | 40           | Amps               |
| Junction to leads                                                                                           | $R_{\theta JL}$ | 60           | $^\circ\text{C/W}$ |
| Junction to ambient on printed circuit.<br>L lead=10mm                                                      | $R_{\theta JA}$ | 100          | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range                                                                     | $T_J, T_{STG}$  | -65 to + 175 | $^\circ\text{C}$   |

- Notes:
1. Non-repetitive current pulse, per derated above  $T_A=25^\circ\text{C}$ .
  2. Mounted on copper pad area of 0.2 x 0.2" (5 x 5mm).
  3. Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum.

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

FIG.1- PEAK PULSE POWER RATING CURVE

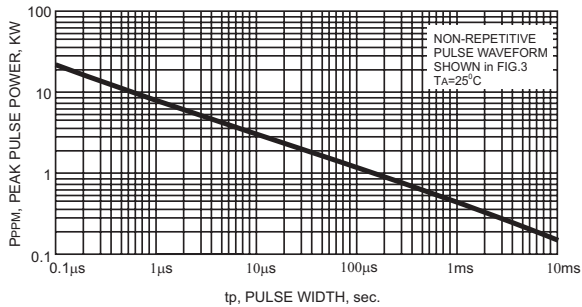


FIG.2- PULSE DERATING CURVE

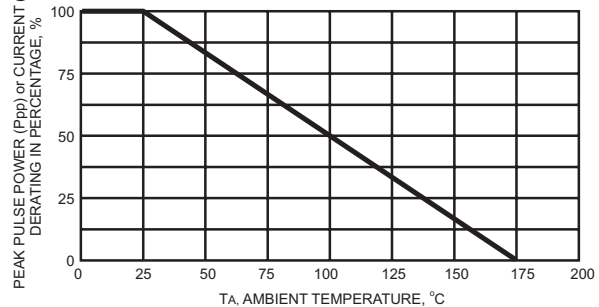


FIG.3- CLAMPING POWER PULSE WAVEFORM

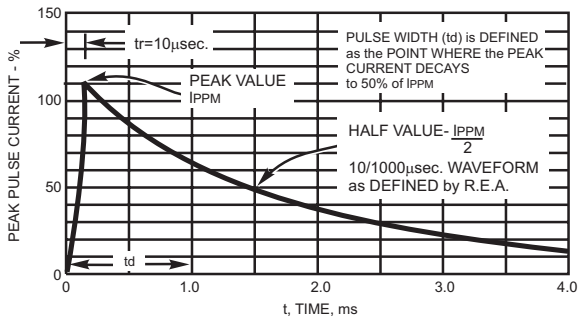


FIG.4- STEADY STATE POWER DERATING CURVE

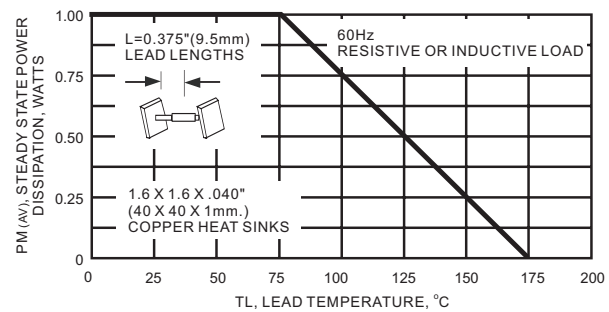


FIG.5- MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL ONLY

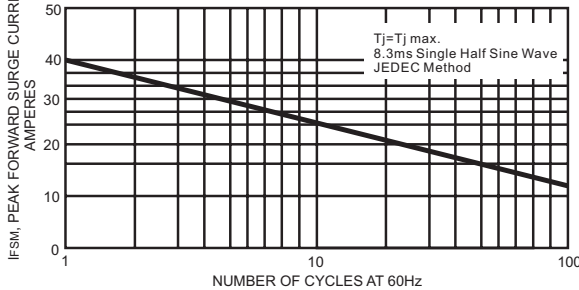


FIG.7- TYPICAL JUNCTION CAPACITANCE UNIDIRECTIONAL

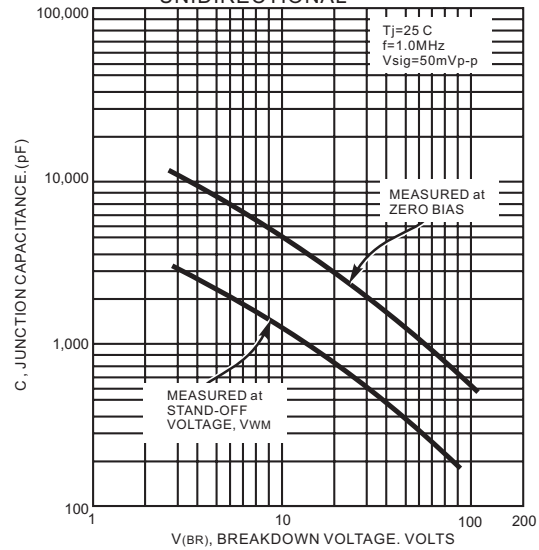
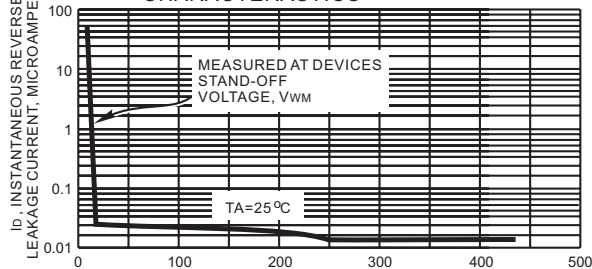


FIG.6- TYPICAL REVERSE LEAKAGE CHARACTERISTICS



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

| Device    |            | Breakdown Voltage $V_{BR}$ @ $I_R$ (V) <sup>(1)</sup> |      | Test Current $I_T$ (mA) | Stand-off Voltage $V_{WM}$ (Volts) | Maximum Reverse Leakage @ $V_{WM}$ $I_o$ ( $\mu$ A) <sup>(3)</sup> | Maximum Peak Pulse Current $I_{PPM}$ (Amps) | Maximum Clamping Voltage @ $I_{PPM}$ $V_c$ (Volts) | Maximum Temperature Coefficient of $V_{(BR)}$ (% / °C) |
|-----------|------------|-------------------------------------------------------|------|-------------------------|------------------------------------|--------------------------------------------------------------------|---------------------------------------------|----------------------------------------------------|--------------------------------------------------------|
|           |            | Min.                                                  | Max. |                         |                                    |                                                                    |                                             |                                                    |                                                        |
| BZW04-5V8 | BZW04-5V8B | 6.45                                                  | 7.14 | 10.0                    | 5.80                               | 1000                                                               | 38.0                                        | 10.5                                               | 0.057                                                  |
| BZW04-6V4 | BZW04-6V4B | 7.13                                                  | 7.88 | 10.0                    | 6.40                               | 500                                                                | 35.4                                        | 11.3                                               | 0.061                                                  |
| BZW04-7V0 | BZW04-7V0B | 7.79                                                  | 8.61 | 10.0                    | 7.02                               | 200                                                                | 33.0                                        | 12.1                                               | 0.065                                                  |
| BZW04-7V8 | BZW04-7V8B | 8.65                                                  | 9.55 | 1.0                     | 7.78                               | 50                                                                 | 30.0                                        | 13.4                                               | 0.068                                                  |
| BZW04-8V5 | BZW04-8V5B | 9.5                                                   | 10.5 | 1.0                     | 8.55                               | 10                                                                 | 27.6                                        | 14.5                                               | 0.073                                                  |
| BZW04-9V4 | BZW04-9V4B | 10.5                                                  | 11.6 | 1.0                     | 9.40                               | 5.0                                                                | 25.7                                        | 15.6                                               | 0.075                                                  |
| BZW04-10  | BZW04-10B  | 11.4                                                  | 12.6 | 1.0                     | 10.2                               | 5.0                                                                | 24.0                                        | 16.7                                               | 0.078                                                  |
| BZW04-11  | BZW04-11B  | 12.4                                                  | 13.7 | 1.0                     | 11.1                               | 5.0                                                                | 22.0                                        | 18.2                                               | 0.081                                                  |
| BZW04-13  | BZW04-13B  | 14.3                                                  | 15.8 | 1.0                     | 12.8                               | 5.0                                                                | 19.0                                        | 21.2                                               | 0.084                                                  |
| BZW04-14  | BZW04-14B  | 15.2                                                  | 16.8 | 1.0                     | 13.6                               | 1.0                                                                | 17.8                                        | 22.5                                               | 0.083                                                  |
| BZW04-15  | BZW04-15B  | 17.1                                                  | 18.9 | 1.0                     | 15.3                               | 1.0                                                                | 16.0                                        | 25.2                                               | 0.088                                                  |
| BZW04-17  | BZW04-17B  | 19                                                    | 21   | 1.0                     | 17.1                               | 1.0                                                                | 14.5                                        | 27.7                                               | 0.090                                                  |
| BZW04-19  | BZW04-19B  | 20.9                                                  | 23.1 | 1.0                     | 18.8                               | 1.0                                                                | 13.0                                        | 30.6                                               | 0.092                                                  |
| BZW04-20  | BZW04-20B  | 22.8                                                  | 25.2 | 1.0                     | 20.5                               | 1.0                                                                | 12.0                                        | 33.2                                               | 0.094                                                  |
| BZW04-23  | BZW04-23B  | 25.7                                                  | 28.4 | 1.0                     | 23.1                               | 1.0                                                                | 10.7                                        | 37.5                                               | 0.096                                                  |
| BZW04-26  | BZW04-26B  | 28.5                                                  | 31.5 | 1.0                     | 25.6                               | 1.0                                                                | 9.6                                         | 41.5                                               | 0.097                                                  |
| BZW04-28  | BZW04-28B  | 31.4                                                  | 34.7 | 1.0                     | 28.2                               | 1.0                                                                | 8.8                                         | 45.7                                               | 0.098                                                  |
| BZW04-31  | BZW04-31B  | 34.2                                                  | 37.8 | 1.0                     | 30.8                               | 1.0                                                                | 8.0                                         | 49.9                                               | 0.099                                                  |
| BZW04-33  | BZW04-33B  | 37.1                                                  | 41   | 1.0                     | 33.3                               | 1.0                                                                | 7.4                                         | 53.9                                               | 0.100                                                  |
| BZW04-37  | BZW04-37B  | 40.9                                                  | 45.2 | 1.0                     | 36.8                               | 1.0                                                                | 6.7                                         | 59.3                                               | 0.101                                                  |
| BZW04-40  | BZW04-40B  | 44.7                                                  | 49.4 | 1.0                     | 40.2                               | 1.0                                                                | 6.2                                         | 64.8                                               | 0.101                                                  |
| BZW04-44  | BZW04-44B  | 48.5                                                  | 53.6 | 1.0                     | 43.6                               | 1.0                                                                | 5.7                                         | 70.1                                               | 0.102                                                  |
| BZW04-48  | BZW04-48B  | 53.2                                                  | 58.8 | 1.0                     | 47.8                               | 1.0                                                                | 5.2                                         | 77                                                 | 0.103                                                  |
| BZW04-53  | BZW04-53B  | 58.9                                                  | 65.1 | 1.0                     | 53.0                               | 1.0                                                                | 4.7                                         | 85                                                 | 0.104                                                  |
| BZW04-58  | BZW04-58B  | 64.6                                                  | 71.4 | 1.0                     | 58.1                               | 1.0                                                                | 4.3                                         | 92                                                 | 0.104                                                  |
| BZW04-64  | BZW04-64B  | 71.3                                                  | 78.8 | 1.0                     | 64.1                               | 1.0                                                                | 3.9                                         | 103                                                | 0.105                                                  |
| BZW04-70  | BZW04-70B  | 77.9                                                  | 86.1 | 1.0                     | 70.1                               | 1.0                                                                | 3.5                                         | 113                                                | 0.105                                                  |
| BZW04-78  | BZW04-78B  | 86.5                                                  | 95.5 | 1.0                     | 78.0                               | 1.0                                                                | 3.2                                         | 125                                                | 0.105                                                  |
| BZW04-85  | BZW04-85B  | 95                                                    | 105  | 1.0                     | 85.5                               | 1.0                                                                | 2.9                                         | 137                                                | 0.106                                                  |
| BZW04-94  | BZW04-94B  | 105                                                   | 116  | 1.0                     | 94.0                               | 1.0                                                                | 2.6                                         | 152                                                | 0.107                                                  |

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

| Device    |            | Breakdown Voltage $V_{BR}$ @ $I_R$ (V) <sup>(1)</sup> |      | Test Current $I_T$ (mA) | Stand-off Voltage $V_{WM}$ (Volts) | Maximum Reverse Leakage @ $V_{WM}$ $I_o$ ( $\mu$ A) <sup>(3)</sup> | Maximum Peak Pulse Current $I_{PPM}$ (Amps) | Maximum Clamping Voltage @ $I_{PPM}$ $V_c$ (Volts) | Maximum Temperature Coefficient of $V_{(BR)}$ (% / °C) |
|-----------|------------|-------------------------------------------------------|------|-------------------------|------------------------------------|--------------------------------------------------------------------|---------------------------------------------|----------------------------------------------------|--------------------------------------------------------|
|           |            | Min.                                                  | Max. |                         |                                    |                                                                    |                                             |                                                    |                                                        |
| BZW04-102 | BZW04-102B | 114                                                   | 126  | 1.0                     | 102                                | 1.0                                                                | 2.4                                         | 165                                                | 0.107                                                  |
| BZW04-110 | BZW04-110B | 124                                                   | 137  | 1.0                     | 111                                | 1.0                                                                | 2.2                                         | 179                                                | 0.107                                                  |
| BZW04-128 | BZW04-128B | 143                                                   | 158  | 1.0                     | 128                                | 1.0                                                                | 2.0                                         | 207                                                | 0.108                                                  |
| BZW04-136 | BZW04-136B | 152                                                   | 168  | 1.0                     | 136                                | 1.0                                                                | 1.8                                         | 219                                                | 0.108                                                  |
| BZW04-145 | BZW04-145B | 161                                                   | 179  | 1.0                     | 145                                | 1.0                                                                | 1.7                                         | 234                                                | 0.108                                                  |
| BZW04-154 | BZW04-154B | 171                                                   | 189  | 1.0                     | 154                                | 1.0                                                                | 1.6                                         | 246                                                | 0.108                                                  |
| BZW04-171 | BZW04-171B | 190                                                   | 210  | 1.0                     | 171                                | 1.0                                                                | 1.5                                         | 274                                                | 0.108                                                  |
| BZW04-188 | BZW04-188B | 209                                                   | 231  | 1.0                     | 188                                | 1.0                                                                | 1.4                                         | 301                                                | 0.108                                                  |
| BZW04-213 | BZW04-213B | 237                                                   | 263  | 1.0                     | 213                                | 1.0                                                                | 1.2                                         | 344                                                | 0.110                                                  |
| BZW04-239 | BZW04-239B | 266                                                   | 294  | 1.0                     | 239                                | 1.0                                                                | 1.1                                         | 384                                                | 0.110                                                  |
| BZW04-256 | BZW04-256B | 285                                                   | 315  | 1.0                     | 256                                | 1.0                                                                | 1.0                                         | 414                                                | 0.110                                                  |
| BZW04-273 | BZW04-273B | 304                                                   | 336  | 1.0                     | 273                                | 1.0                                                                | 0.90                                        | 438                                                | 0.110                                                  |
| BZW04-299 | BZW04-299B | 332                                                   | 368  | 1.0                     | 299                                | 1.0                                                                | 0.80                                        | 482                                                | 0.110                                                  |
| BZW04-342 | BZW04-342B | 380                                                   | 420  | 1.0                     | 342                                | 1.0                                                                | 0.75                                        | 548                                                | 0.110                                                  |
| BZW04-376 | BZW04-376B | 418                                                   | 462  | 1.0                     | 376                                | 1.0                                                                | 0.67                                        | 603                                                | 0.110                                                  |

Notes: 1. Pulse test:  $t_p < 50$  ms.

2. All terms and symbols are consistent with ANSI/IEEE C62.35.

3. For bidirectional types having  $V_{WM}$  of 10 Volts and less, the  $I_D$  limit is doubled.