

MDE Semiconductor, Inc.

78-150 Calle Tampico, Unit 210, La Quinta, CA., USA 92253 Tel: 760-564-8656 • Fax: 760-564-2414
1-800-831-4881 Email: sales@mdesemiconductor.com Web: www.mdesemiconductor.com

BZW04 SERIES

GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSOR VOLTAGE-6.8 TO 376 Volts 400 Watt Peak Pulse Power

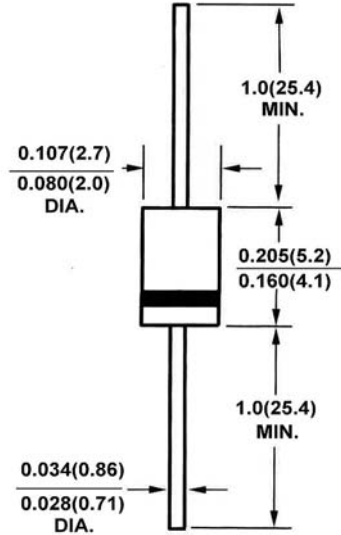
FEATURES

- Plastic package has Underwriters Laboratory Flammability Classification 94 V-O
- Glass passivated chip junction in DO-41 package
- 400W surge capability at 1ms
- Excellent clamping capability
- Low zener impedance
- Low incremental surge resistance
- Excellent clamping capability
- Fast response time: typically less than 1.0 ps from 0 volts to BV min
- Typical IR less than 1μA above 10V
- High temperature soldering guaranteed: 300°C/10 seconds/ .375", (9.5mm) lead length, 5lbs., (2.3kg) tension

MECHANICAL DATA

Case: JEDEC DO-41 Molded plastic
 Terminals: Axial leads, solderable per MIL-STD-750, Method 2026
 Polarity: Color band denoted positive end (cathode) except Bipolar
 Mounting Position: Any
 Weight: 0.012 ounces, 0.3 grams

DO-204AL (DO-41 Plastic)



Dimensions in inches (millimeters)

DEVICES FOR BIPOLAR APPLICATIONS

For Bidirectional use C or CA Suffix for types BZW-04-5V8 thru types BZW04-376 (e.g. BZW04-5V8B, BZW04-376B)
 Electrical characteristics apply in both directions.

MAXIMUM RATINGS AND CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

Single phase, half wave, 60Hz, resistive or inductive load.

For Capacitive load, derate current by 20%

| RATING | SYMBOL | VALUE | UNITS |
|--|-----------------------------------|-------------|-------|
| Peak Pulse Power Dissipation at TA = 25 °C, TP = 1ms (NOTE 1) | P _{PPM} | Minimum 400 | Watts |
| Peak Pulse Current of on 10/1000 μs waveform (Note 1) | I _{ppm} | SEE TABLE 1 | Amps |
| Steady State Power Dissipation at TL = 75°C lengths .375", 9.5mm (Note 2) | P _{M(AV)} | 1.0 | Watts |
| Peak Forward Surge Current, 8.3ms Single Half Sine-wave Superimposed on Rated Load, (JEDEC Method)(Note 3) | I _{FSM} | 40 | Amps |
| Operatings and Storage Temperature Range | T _J , T _{STG} | -55 +175 | °C |

NOTES:

1. Non-repetitive current pulse, per Fig.3 and derated above Ta=25 °C per Fig.2.
2. Mounted on Copper Pad area of 1.6x1.6" (40x40mm) per Fig.5.
3. 8.3ms single half sine-wave, or equivalent square wave, Duty cycle=4 pulses per minutes maximum.

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RATINGS AND CHARACTERISTIC CURVES BZW04 SERIES

Ratings and

Characteristic Curves ($T_A=25^\circ\text{C}$ unless otherwise noted)

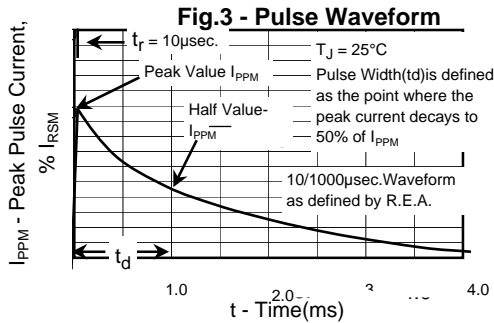
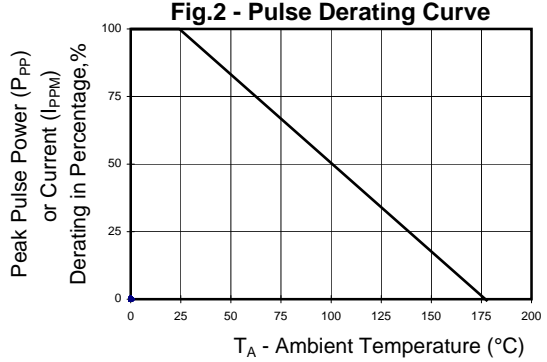
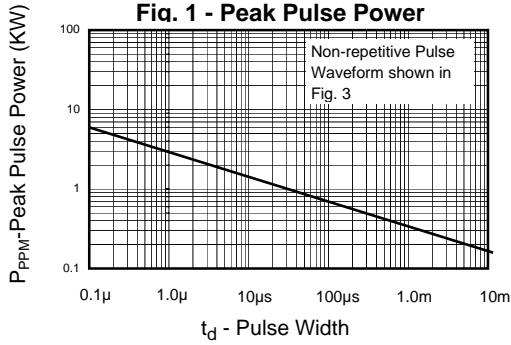


Fig. 4 - Typ. Junction Capacitance Uni-Directional

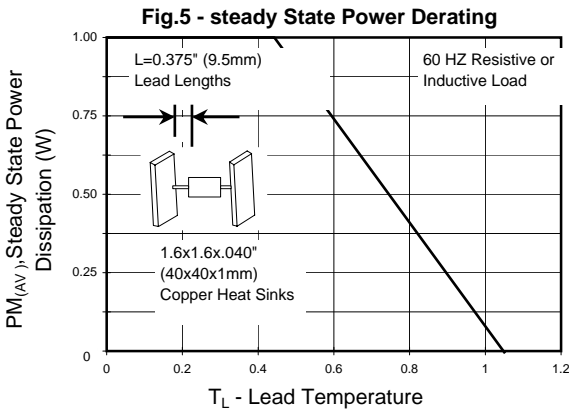
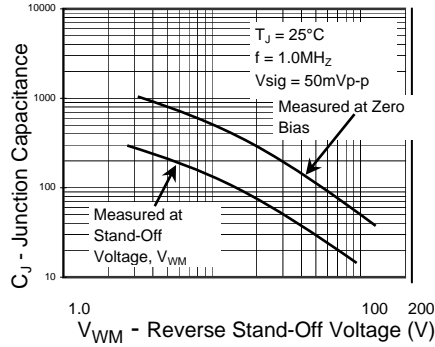


Fig. 6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

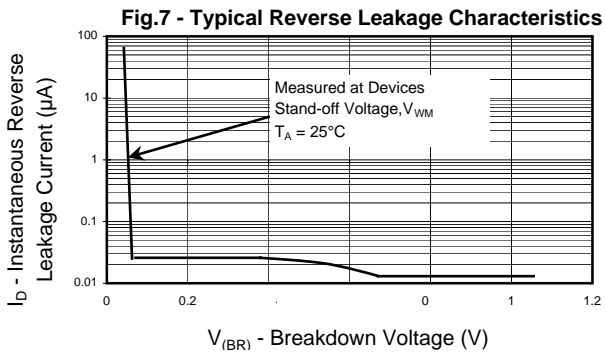
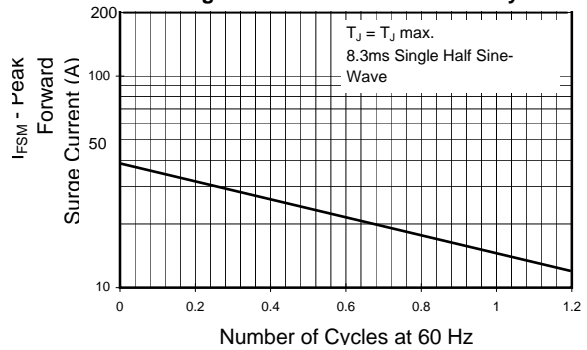
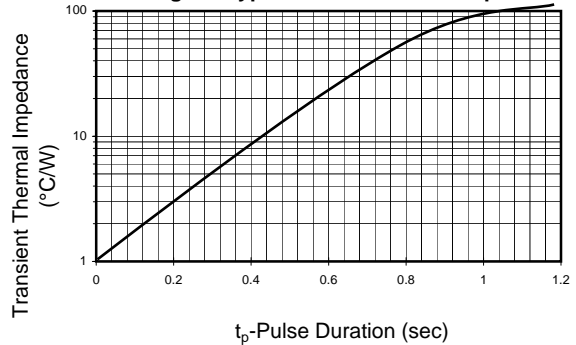


Fig. 8 - Typ. Transient Thermal Impedance



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400 Watt TVS

| BZW04 | | REVERSE STAND- OFF VOLTAGE $V_{RWM}(V)$ | BREAKDOWN VOLTAGE $V_{BR}(V)$ MIN. @ I_T | BREAKDOWN VOLTAGE $V_{BR}(V)$ MAX. @ I_T | TEST CURRENT I_T (mA) | MAXIMUM CLAMPING VOLTAGE @ I_{pp} $V_c(V)$ | PEAK PULSE CURRENT I_{pp} (A) | REVERSE LEAKAGE @ V_{RWM} $I_R(\mu A)$ |
|------------|-------------|---|---|---|-------------------------------|---|--|---|
| UNI- POLAR | BI-POLAR | | | | | | | |
| BZW 04P5V8 | BZW 04P5V8B | 5.80 | 6.45 | 7.48 | 10.0 | 10.5 | 38.00 | 900 |
| BZW 04-5V8 | BZW 04-5V8B | 5.90 | 6.45 | 7.14 | 10.0 | 10.5 | 38.00 | 900 |
| BZW 04P6V4 | BZW 04P6V4B | 6.40 | 7.13 | 8.25 | 10.0 | 11.3 | 35.00 | 500 |
| BZW 04-6V4 | BZW 04-6V4B | 6.40 | 7.13 | 7.88 | 10.0 | 11.3 | 35.00 | 500 |
| BZW 04P7V0 | BZW 04P7V0B | 7.02 | 7.79 | 9.02 | 1.0 | 12.1 | 33.00 | 200 |
| BZW 04-7V0 | BZW 04-7V0B | 7.02 | 7.79 | 8.61 | 1.0 | 12.1 | 33.00 | 200 |
| BZW 04P7V8 | BZW 04P7V8B | 7.78 | 8.65 | 10.00 | 1.0 | 13.4 | 30.00 | 50 |
| BZW 04-7V8 | BZW 04-7V8B | 7.78 | 8.65 | 9.55 | 1.0 | 13.4 | 30.00 | 50 |
| BZW 04P8V5 | BZW 04P8V5B | 8.55 | 9.50 | 11.00 | 1.0 | 14.5 | 28.00 | 10.0 |
| BZW04-8V5 | BZW04-8V5B | 8.55 | 9.50 | 10.50 | 1.0 | 14.5 | 28.00 | 10.0 |
| BZW 04P9V4 | BZW 04P9V4B | 9.40 | 10.50 | 12.10 | 1.0 | 15.6 | 25.70 | 5.0 |
| BZW 04-9V4 | BZW 04-9V4B | 9.40 | 10.50 | 11.60 | 1.0 | 15.6 | 25.70 | 5.0 |
| BZW 04P10 | BZW 04P10B | 10.20 | 11.40 | 13.20 | 1.0 | 16.7 | 24.00 | 5.0 |
| BZW 04-10 | BZW 04-10B | 10.20 | 11.40 | 12.60 | 1.0 | 16.7 | 24.00 | 5.0 |
| BZW 04P11 | BZW 04P11B | 11.10 | 12.40 | 14.30 | 1.0 | 18.2 | 22.00 | 5.0 |
| BZW 04-11 | BZW 04-11B | 11.10 | 12.40 | 13.70 | 1.0 | 18.2 | 22.00 | 5.0 |
| BZW 04P13 | BZW 04P13B | 12.80 | 14.30 | 16.50 | 1.0 | 21.2 | 19.00 | 5.0 |
| BZW 04-13 | BZW 04-13B | 12.80 | 14.30 | 15.80 | 1.0 | 21.2 | 19.00 | 5.0 |
| BZW 04P14 | BZW 04P14B | 13.60 | 15.20 | 17.60 | 1.0 | 22.5 | 17.80 | 5.0 |
| BZW 04-14 | BZW 04-14B | 13.60 | 15.20 | 16.80 | 1.0 | 22.5 | 17.80 | 5.0 |
| BZW 04P15 | BZW 04P15B | 15.30 | 17.10 | 19.80 | 1.0 | 25.2 | 16.00 | 5.0 |
| BZW 04-15 | BZW 04-15B | 15.30 | 17.10 | 18.90 | 1.0 | 25.2 | 16.00 | 5.0 |
| BZW 04P17 | BZW 04P17B | 17.10 | 19.00 | 22.00 | 1.0 | 27.7 | 14.50 | 5.0 |
| BZW 04-17 | BZW 04-17B | 17.10 | 19.00 | 21.00 | 1.0 | 27.7 | 14.50 | 5.0 |
| BZW 04P19 | BZW 04P19B | 18.80 | 20.90 | 24.20 | 1.0 | 30.6 | 13.00 | 5.0 |
| BZW 04-19 | BZW 04-19B | 18.80 | 20.90 | 23.10 | 1.0 | 30.6 | 13.00 | 5.0 |
| BZW 04P20 | BZW 04P20B | 20.50 | 22.80 | 26.40 | 1.0 | 33.2 | 12.00 | 5.0 |
| BZW 04-20 | BZW 04-20B | 20.50 | 22.80 | 25.20 | 1.0 | 33.2 | 12.00 | 5.0 |
| BZW 04P23 | BZW 04P23B | 23.10 | 25.70 | 29.70 | 1.0 | 37.5 | 10.70 | 5.0 |
| BZW 04-23 | BZW 04-23B | 23.10 | 25.70 | 28.40 | 1.0 | 37.5 | 10.70 | 5.0 |
| BZW 04P26 | BZW 04P26B | 26.50 | 28.50 | 33.00 | 1.0 | 41.5 | 9.60 | 5.0 |
| BZW 04-26 | BZW 04-26B | 26.50 | 28.50 | 31.50 | 1.0 | 41.5 | 9.60 | 5.0 |
| BZW 04 P28 | BZW 04P28B | 28.20 | 31.40 | 36.30 | 1.0 | 45.7 | 8.80 | 5.0 |
| BZW 04-28 | BZW 04-28B | 28.20 | 31.40 | 34.70 | 1.0 | 45.7 | 8.80 | 5.0 |
| BZW 04P31 | BZW 04P31B | 30.80 | 34.20 | 39.60 | 1.0 | 49.9 | 8.00 | 5.0 |
| BZW 04-31 | BZW 04-31B | 30.80 | 34.20 | 37.80 | 1.0 | 49.9 | 8.00 | 5.0 |
| BZW 04P33 | BZW 04P33B | 33.35 | 37.10 | 42.90 | 1.0 | 53.9 | 7.40 | 5.0 |
| BZW 04-33 | BZW 04-33B | 33.35 | 37.10 | 41.00 | 1.0 | 53.9 | 7.40 | 5.0 |
| BZW 04P37 | BZW 04P37B | 36.80 | 40.90 | 47.30 | 1.0 | 59.3 | 6.70 | 5.0 |
| BZW 04-37 | BZW 04-37B | 36.80 | 40.90 | 45.20 | 1.0 | 59.3 | 6.70 | 5.0 |
| BZW 04P40 | BZW 04P40B | 40.20 | 44.70 | 51.70 | 1.0 | 64.8 | 6.20 | 5.0 |
| BZW 04-40 | BZW 04-40B | 40.20 | 44.70 | 49.40 | 1.0 | 64.8 | 6.20 | 5.0 |
| BZW 04P44 | BZW 04P44B | 43.60 | 48.50 | 56.10 | 1.0 | 70.1 | 5.70 | 5.0 |
| BZW 04-44 | BZW 04-44B | 43.60 | 48.50 | 53.60 | 1.0 | 70.1 | 5.70 | 5.0 |

For bidirectional type having V_{RWM} of 10 volts and less, the IR limit is double.

For Part No. which use the character "p", the VBR is $\pm 10\%$

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|--------------|-------------|---|---|---|-------------------------------|---|--|---|
| UNI- POLAR | BI-POLAR | | | | | | | |
| BZW 04P48 | BZW 04P48B | 47.80 | 53.20 | 61.60 | 1.0 | 77.0 | 5.20 | 5.0 |
| BZW 04-48 | BZW 04-48B | 47.80 | 53.20 | 58.80 | 1.0 | 77.0 | 5.20 | 5.0 |
| BZW 04P53 | BZW 04P53B | 53.00 | 58.90 | 68.20 | 1.0 | 85.0 | 4.70 | 5.0 |
| BZW 04-53 | BZW 04-53B | 53.00 | 58.90 | 65.10 | 1.0 | 85.0 | 4.70 | 5.0 |
| BZW 04P58 | BZW 04P58B | 58.10 | 64.60 | 74.80 | 1.0 | 92.0 | 4.30 | 5.0 |
| BZW 04-58 | BZW 04-58B | 58.10 | 64.60 | 71.40 | 1.0 | 92.0 | 4.30 | 5.0 |
| BZW 04P64 | BZW 04P64B | 64.10 | 71.30 | 82.50 | 1.0 | 103.0 | 3.90 | 5.0 |
| BZW 04-64 | BZW 04-64B | 64.10 | 71.30 | 78.80 | 1.0 | 103.0 | 3.90 | 5.0 |
| BZW 04P70 | BZW 04P70B | 70.10 | 77.90 | 90.20 | 1.0 | 113.0 | 3.50 | 5.0 |
| BZW 04-70 | BZW 04-70B | 70.10 | 77.90 | 86.10 | 1.0 | 113.0 | 3.50 | 5.0 |
| BZW 04P78 | BZW 04P78B | 78.00 | 86.50 | 100.00 | 1.0 | 125.0 | 3.20 | 5.0 |
| BZW 04-78 | BZW 04-78B | 78.00 | 86.50 | 95.50 | 1.0 | 125.0 | 3.20 | 5.0 |
| BZW 04P85 | BZW 04P85B | 85.80 | 95.00 | 110.00 | 1.0 | 137.0 | 2.90 | 5.0 |
| BZW 04-85 | BZW 04-85B | 85.50 | 95.00 | 105.00 | 1.0 | 137.0 | 2.90 | 5.0 |
| BZW 04P94 | BZW 04P94B | 94.00 | 105.00 | 121.00 | 1.0 | 152.0 | 2.60 | 5.0 |
| BZW 04-94 | BZW 04-94B | 94.00 | 105.00 | 116.00 | 1.0 | 152.0 | 2.60 | 5.0 |
| BZW 04P102 | BZW 04P102B | 102.00 | 114.00 | 132.00 | 1.0 | 165.0 | 2.40 | 5.0 |
| BZW 04-102 | BZW 04-102B | 102.00 | 114.00 | 126.00 | 1.0 | 165.0 | 2.40 | 5.0 |
| BZW 04P110 | BZW 04P110B | 111.00 | 124.00 | 143.00 | 1.0 | 179.0 | 2.20 | 5.0 |
| BZW 04-110 | BZW 04-110B | 111.00 | 124.00 | 137.00 | 1.0 | 179.0 | 2.20 | 5.0 |
| BZW 04P128 | BZW 04P128B | 128.00 | 143.00 | 165.00 | 1.0 | 207.0 | 2.00 | 5.0 |
| BZW 04-128 | BZW 04-128B | 128.00 | 143.00 | 158.00 | 1.0 | 207.0 | 2.00 | 5.0 |
| BZW 04P136 | BZW 04P136B | 136.00 | 152.00 | 176.00 | 1.0 | 219.0 | 1.80 | 5.0 |
| BZW 04-136 | BZW 04-136B | 136.00 | 152.00 | 168.00 | 1.0 | 219.0 | 1.80 | 5.0 |
| BZW 04P145 | BZW 04P145B | 145.00 | 161.00 | 187.00 | 1.0 | 234.0 | 1.70 | 5.0 |
| BZW 04-145 | BZW 04-145B | 145.00 | 161.00 | 179.00 | 1.0 | 234.0 | 1.70 | 5.0 |
| BZW 04P154 | BZW 04P154B | 154.00 | 171.00 | 198.00 | 1.0 | 246.0 | 1.60 | 5.0 |
| BZW 04-154 | BZW 04-154B | 154.00 | 171.00 | 189.00 | 1.0 | 246.0 | 1.60 | 5.0 |
| BZW 04P171 | BZW 04P171B | 171.00 | 190.00 | 220.00 | 1.0 | 274.0 | 1.50 | 5.0 |
| BZW 04-171 | BZW 04-171B | 171.00 | 190.00 | 210.00 | 1.0 | 274.0 | 1.50 | 5.0 |
| BZW 04P188 | BZW 04P188B | 188.00 | 209.00 | 242.00 | 1.0 | 301.0 | 1.40 | 5.0 |
| BZW 04-188 | BZW 04-188B | 188.00 | 209.00 | 231.00 | 1.0 | 301.0 | 1.40 | 5.0 |
| BZW 04P213 | BZW 04P213B | 213.00 | 237.00 | 275.00 | 1.0 | 344.0 | 1.50 | 5.0 |
| BZW 04-213 | BZW 04-213B | 213.00 | 237.00 | 263.00 | 1.0 | 344.0 | 1.50 | 5.0 |
| BZW 04P239 | BZW 04P239B | 239.00 | 266.00 | 308.00 | 1.0 | 384.0 | 1.50 | 5.0 |
| BZW 04-239 | BZW 04-239B | 239.00 | 266.00 | 294.00 | 1.0 | 384.0 | 1.50 | 5.0 |
| BZW 04P256 | BZW 04P256B | 256.00 | 285.00 | 330.00 | 1.0 | 414.0 | 1.20 | 5.0 |
| BZW 04-256 | BZW 04-256B | 256.00 | 285.00 | 315.00 | 1.0 | 414.0 | 1.20 | 5.0 |
| BZW 04P273 | BZW 04P273B | 273.00 | 304.00 | 352.00 | 1.0 | 438.0 | 1.20 | 5.0 |
| BZW 04-273 | BZW 04-273B | 273.00 | 304.00 | 336.00 | 1.0 | 438.0 | 1.20 | 5.0 |
| BZW 04P299 | BZW 04P299B | 299.00 | 332.00 | 385.00 | 1.0 | 482.0 | 0.90 | 5.0 |
| BZW 04-299 | BZW 04-299B | 299.00 | 332.00 | 368.00 | 1.0 | 482.0 | 0.90 | 5.0 |
| BZW 04P342 | BZW 04P342B | 342.00 | 380.00 | 440.00 | 1.0 | 548.0 | 0.90 | 5.0 |
| BZW 04-342 | BZW 04-342B | 342.00 | 380.00 | 420.00 | 1.0 | 548.0 | 0.90 | 5.0 |
| BZW 04P376 | BZW 04P376B | 376.00 | 418.00 | 484.00 | 1.0 | 603.0 | 0.80 | 5.0 |
| BZW 04-376 | BZW 04-376B | 376.00 | 418.00 | 462.00 | 1.0 | 603.0 | 0.80 | 5.0 |

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