# BZT03C…

## Silicon Z-Diodes and Transient Voltage Suppressors

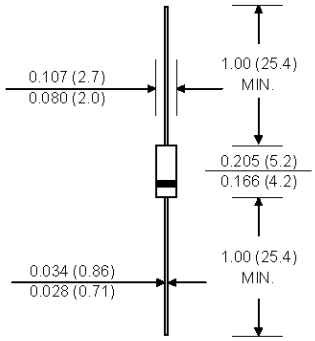
**Feature**

- High maximum operating temperature
- Low Leakage current
- Excellent stability

**Mechanical Data**

- Case: DO-41 molded plastic
- Epoxy: UL 94V-0 rate flame retardant
- Lead: Axial lead solderable per MIL-STD-202, method 208 guaranteed
- Polarity: Color band denotes cathode end
- Mounting position: Any

**DO - 41**




Dimensions in inches and ( millimeters )

**Absolute Maximum Ratings ($T_a$ = 25 °C unless otherwise specified)**

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Total Power Dissipation $T_{tp}$ = 25 °C, lead length 10 mm<br>$T_{amb}$ = 45 °C, PCB mounted | $P_{tot}$ | 3.25<br>1.3 | W |
| Non-repetitive Peak Reverse Power Dissipation<br>(10 / 1000 µs exponential pulse, $T_j$ = 25 °C prior to surge) | $P_{RSM}$ | 300 | W |
| Non-repetitive Peak Reverse Power Dissipation<br>(tp = 100 µs, square pulse, $T_j$ = 25 °C prior to surge) | $P_{ZSM}$ | 600 | W |
| Forward Voltage ($I_F$ = 0.5 A, $T_j$ = 25 °C ) | $V_F$ | 1.2 | V |
| Junction Temperature Range | $T_j$ | - 65 to + 175 | °C |
| Storage Temperature Range | $T_{stg}$ | - 65 to + 175 | °C |

**Thermal Characteristics**

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Thermal Resistance from Junction to Tie-point<br>(Lead length = 10 mm) | $R_{thj\text{-}tp}$ | 46 | K/W |
| Thermal Resistance from Junction to Ambient [1)] | $R_{thj\text{-}a}$ | 100 | K/W |

[1)] Device mounted on an epoxy-glass printed circuit board, 1.5 mm thick, thickness of Cu-layer ≥ 40 µm on an must space

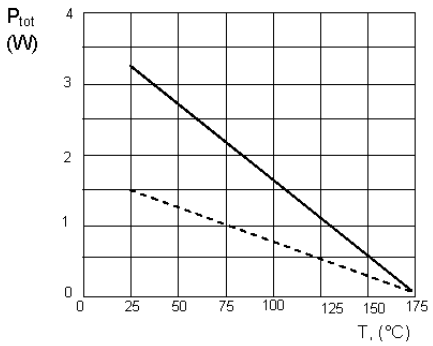
**Electrical Characteristics (Per type when used as voltage regulator Diodes, $T_j$ = 25 °C )**

| Type | Working Voltage | | Differental Resistance | Reverse Current | | Temperature Coefficient |
|---|---|---|---|---|---|---|
| | $V_Z$ (V) | at $I_Z$ (mA) | Max. $R_{diff}$ (Ω) at $I_Z$ | Max. $I_R$ (µA) | at $V_R$ (V) | $S_Z$ (%/K) at $I_Z$ |
| BZT03C7V5 | 7…7.9 | 100 | 2 | 750 | 5.6 | 0.00…0.07 |
| BZT03C8V2 | 7.7…8.7 | 100 | 2 | 600 | 6.2 | 0.03…0.08 |
| BZT03C9V1 | 8.5…9.6 | 50 | 4 | 20 | 6.8 | 0.03…0.08 |
| BZT03C10 | 9.4…10.6 | 50 | 4 | 7 | 7.5 | 0.05…0.09 |
| BZT03C11 | 10.4…11.6 | 50 | 7 | 4 | 8.2 | 0.05…0.1 |
| BZT03C12 | 11.4…12.7 | 50 | 7 | 3 | 9.1 | 0.05…0.1 |
| BZT03C13 | 12.4…14.1 | 50 | 10 | 2 | 10 | 0.05…0.1 |
| BZT03C15 | 13.8…15.6 | 50 | 10 | 1 | 11 | 0.05…0.1 |
| BZT03C16 | 15.3…17.1 | 25 | 15 | 1 | 12 | 0.05…0.11 |
| BZT03C18 | 16.8…19.1 | 25 | 15 | 1 | 13 | 0.06…0.11 |
| BZT03C20 | 18.8…21.2 | 25 | 15 | 1 | 15 | 0.06…0.11 |
| BZT03C22 | 20.8…23.3 | 25 | 15 | 1 | 16 | 0.06…0.11 |
| BZT03C24 | 22.8…25.6 | 25 | 15 | 1 | 18 | 0.06…0.11 |
| BZT03C27 | 25.1…28.9 | 25 | 15 | 1 | 20 | 0.06…0.11 |
| BZT03C30 | 28…32 | 25 | 15 | 1 | 22 | 0.06…0.11 |
| BZT03C33 | 31…35 | 25 | 15 | 1 | 24 | 0.06…0.11 |
| BZT03C36 | 34…38 | 10 | 40 | 1 | 27 | 0.06…0.11 |
| BZT03C39 | 37…41 | 10 | 40 | 1 | 30 | 0.06…0.11 |
| BZT03C43 | 40…46 | 10 | 45 | 1 | 33 | 0.07…0.12 |
| BZT03C47 | 44…50 | 10 | 45 | 1 | 36 | 0.07…0.12 |
| BZT03C51 | 48…54 | 10 | 60 | 1 | 39 | 0.07…0.12 |
| BZT03C56 | 52…60 | 10 | 60 | 1 | 43 | 0.07…0.12 |
| BZT03C62 | 58…66 | 10 | 80 | 1 | 47 | 0.08…0.13 |
| BZT03C68 | 64…72 | 10 | 80 | 1 | 51 | 0.08…0.13 |
| BZT03C75 | 70…79 | 10 | 100 | 1 | 56 | 0.08…0.13 |
| BZT03C82 | 77…87 | 10 | 100 | 1 | 62 | 0.08…0.13 |
| BZT03C91 | 85…96 | 5 | 200 | 1 | 68 | 0.09…0.13 |
| BZT03C100 | 94…106 | 5 | 200 | 1 | 75 | 0.09…0.13 |
| BZT03C110 | 104…116 | 5 | 250 | 1 | 82 | 0.09…0.13 |
| BZT03C120 | 114…127 | 5 | 250 | 1 | 91 | 0.09…0.13 |
| BZT03C130 | 124…141 | 5 | 300 | 1 | 100 | 0.09…0.13 |
| BZT03C150 | 138…156 | 5 | 300 | 1 | 110 | 0.09…0.13 |
| BZT03C160 | 153…171 | 5 | 350 | 1 | 120 | 0.09…0.13 |
| BZT03C180 | 168…191 | 5 | 400 | 1 | 130 | 0.09…0.13 |
| BZT03C200 | 188…212 | 5 | 500 | 1 | 150 | 0.09…0.13 |
| BZT03C220 | 208…233 | 2 | 750 | 1 | 160 | 0.09…0.13 |
| BZT03C240 | 228…256 | 2 | 850 | 1 | 180 | 0.09…0.13 |
| BZT03C270 | 251…289 | 2 | 1000 | 1 | 200 | 0.09…0.13 |

**Electrical Characteristics (Per type when used as transient voltage suppressors, $T_j$ = 25 °C )**

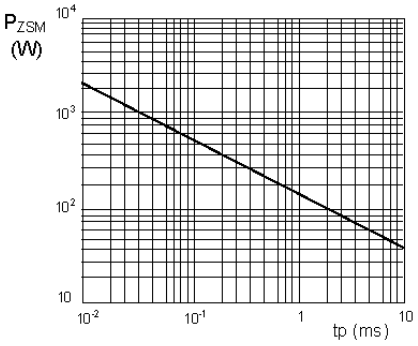
| Type | Reverse Breakdown Voltage | | Clamping Voltage | | Reverse Current | | Temperature Coefficient |
|---|---|---|---|---|---|---|---|
| | Min. $V_{(BR)R}$ (V) | at $I_{test}$ (mA) | Max. $V_{(CL)R}$ (V) | at $I_{RSM}$ (A) | Max. $I_R$ (µA) | at $V_R$ (V) | $S_Z$ (%/K) at $I_{test}$ |
| BZT03C7V5 | 7 | 100 | 11.3 | 26.5 | 1500 | 6.2 | 0.00…0.07 |
| BZT03C8V2 | 7.7 | 100 | 12.3 | 24.4 | 1200 | 6.8 | 0.03…0.08 |
| BZT03C9V1 | 8.5 | 50 | 13.3 | 22.7 | 100 | 7.5 | 0.03…0.08 |
| BZT03C10 | 9.4 | 50 | 14.8 | 20.3 | 20 | 8.2 | 0.05…0.09 |
| BZT03C11 | 10.4 | 50 | 15.7 | 19.1 | 5 | 9.1 | 0.05…0.1 |
| BZT03C12 | 11.4 | 50 | 17 | 17.7 | 5 | 10 | 0.05…0.1 |
| BZT03C13 | 12.4 | 50 | 18.9 | 15.9 | 5 | 11 | 0.05…0.1 |
| BZT03C15 | 13.8 | 50 | 20.9 | 14.4 | 5 | 12 | 0.05…0.1 |
| BZT03C16 | 15.3 | 25 | 22.9 | 13.1 | 5 | 13 | 0.06…0.11 |
| BZT03C18 | 16.8 | 25 | 25.6 | 11.7 | 5 | 15 | 0.06…0.11 |
| BZT03C20 | 18.8 | 25 | 28.9 | 10.6 | 5 | 16 | 0.06…0.11 |
| BZT03C22 | 20.8 | 25 | 31 | 9.7 | 5 | 18 | 0.06…0.11 |
| BZT03C24 | 22.8 | 25 | 33.8 | 8.9 | 5 | 20 | 0.06…0.11 |
| BZT03C27 | 25.1 | 25 | 38.1 | 7.9 | 5 | 22 | 0.06…0.11 |
| BZT03C30 | 28 | 25 | 42.2 | 7.1 | 5 | 24 | 0.06…0.11 |
| BZT03C33 | 31 | 25 | 46.2 | 6.5 | 5 | 27 | 0.06…0.11 |
| BZT03C36 | 34 | 10 | 50.1 | 6 | 5 | 30 | 0.06…0.11 |
| BZT03C39 | 37 | 10 | 54.1 | 5.5 | 5 | 33 | 0.06…0.11 |
| BZT03C43 | 40 | 10 | 60.7 | 4.9 | 5 | 36 | 0.07…0.12 |
| BZT03C47 | 44 | 10 | 65.5 | 4.6 | 5 | 39 | 0.07…0.12 |
| BZT03C51 | 48 | 10 | 70.8 | 4.2 | 5 | 43 | 0.07…0.12 |
| BZT03C56 | 52 | 10 | 78.6 | 3.8 | 5 | 47 | 0.07…0.12 |
| BZT03C62 | 58 | 10 | 86.5 | 3.5 | 5 | 51 | 0.08…0.13 |
| BZT03C68 | 64 | 10 | 94.4 | 3.2 | 5 | 56 | 0.08…0.13 |
| BZT03C75 | 70 | 10 | 103.5 | 2.9 | 5 | 62 | 0.08…0.13 |
| BZT03C82 | 77 | 10 | 114 | 2.6 | 5 | 68 | 0.08…0.13 |
| BZT03C91 | 85 | 5 | 126 | 2.4 | 5 | 75 | 0.09…0.13 |
| BZT03C100 | 94 | 5 | 139 | 2.2 | 5 | 82 | 0.09…0.13 |
| BZT03C110 | 104 | 5 | 152 | 2 | 5 | 91 | 0.09…0.13 |
| BZT03C120 | 114 | 5 | 167 | 1.8 | 5 | 100 | 0.09…0.13 |
| BZT03C130 | 124 | 5 | 185 | 1.6 | 5 | 110 | 0.09…0.13 |
| BZT03C150 | 138 | 5 | 204 | 1.5 | 5 | 120 | 0.09…0.13 |
| BZT03C160 | 153 | 5 | 224 | 1.3 | 5 | 130 | 0.09…0.13 |
| BZT03C180 | 168 | 5 | 249 | 1.2 | 5 | 150 | 0.09…0.13 |
| BZT03C200 | 188 | 5 | 276 | 1.1 | 5 | 160 | 0.09…0.13 |
| BZT03C220 | 208 | 2 | 305 | 1 | 5 | 180 | 0.09…0.13 |
| BZT03C240 | 228 | 2 | 336 | 0.9 | 5 | 200 | 0.09…0.13 |
| BZT03C270 | 251 | 2 | 380 | 0.8 | 5 | 220 | 0.09…0.13 |

**FIG.1 - Maximum total power dissipation as a function of temperature.**




Solid line: tie-point temperature; lead length = 10 mm
Dotted line: ambient temperature; PCB mounted

**FIG.2 - Maximum non-repetitive peak reverse power dissipation as a function of pulse duration (square pulse).**




Tj= 25 °C prior to surge.

**FIG. 3 - Forward current as a function of forward voltage; typical values.**

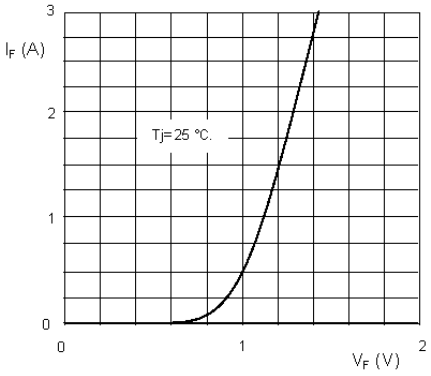
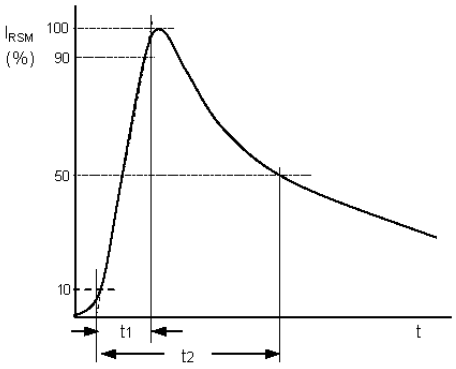



**FIG.4 - Non-Repetitive peak reverse current pulse definition**




t1 = 10 µs
t2 = 1000 µs