



# Frontier Electronics Corp.

667 E. COCHRAN STREET, SIMI VALLEY, CA 93065

TEL: (805) 522-9998 FAX: (805) 522-9989

E-mail: [frontiersales@frontierusa.com](mailto:frontiersales@frontierusa.com)

Web: <http://www.frontierusa.com>

## SILICON Z-DIODES AND TRANSIENT VOLTAGE SUPPRESSORS

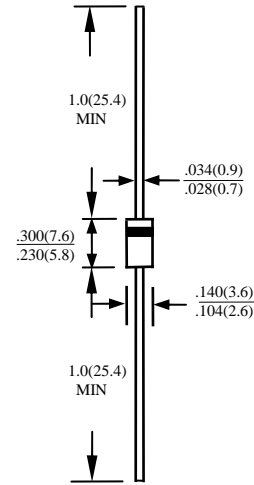
### BZT03C6V2 THRU BZT03C270

#### FEATURES

- PLASTIC PACKAGE HAS UNDERWRITERS LABORATORY FLAMMABILITY CLASSIFICATION 94V-0
- EXCELLENT CLAMPING CAPABILITY
- LOW ZENER IMPEDANCE
- FAST RESPONSE TIME: TYPICALLY LESS THAN 1.0 ps FROM 0 VOLTS TO BV MIN
- HIGH TEMPERATURE SOLDERING GUARANTEED: 260°C/10S / .375" (9.5mm) LEAD LENGTH/5LBS., (2.3KG) TENSION

#### MECHANICAL DATA

- CASE: MOLDED PLASTIC, DO15, DIMENSIONS IN INCHES AND (MILLIMETERS)
- TERMINALS: AXIAL LEADS, SOLDERABLE PER MIL-STD-202, METHOD 208
- POLARITY: COLOR BAND DENOTES CATHODE EXCEPT BIPOLAR
- WEIGHT: 0.4 GRAMS



#### ABSOLUTE MAXIMUM RATINGS

T<sub>j</sub> = 25°C

| RATINGS                                     | TEST CONDITIONS                              | SYMBOL           | VALUE         | UNITS |
|---|--|------------------|---------------|-------|
| POWER DISSIPATION                           | l=10mm ; T <sub>L</sub> =25°C                | P <sub>V</sub>   | 3.25          | W     |
|   | T <sub>amb</sub> =25°C                       |                  | 1.30          | W     |
| REPETITIVE PEAK REVERSE POWER DISSIPATION   |  | P <sub>ZRM</sub> | 10            | W     |
| NON REPETITIVE PEAK SURGE POWER DISSIPATION | T <sub>p</sub> =100us ; T <sub>j</sub> =25°C | P <sub>ZSM</sub> | 600           | W     |
| JUNCTION TEMPERATURE                        |  | T <sub>J</sub>   | 175           | °C    |
| STORAGE TEMPERATURE RANGE                   |  | T <sub>STG</sub> | - 55 TO + 175 | °C    |

#### MAXIMUM THERMAL RESISTANCE

T<sub>j</sub> = 25°C

| RATINGS          | TEST CONDITIONS                   | SYMBOL            | VALUE | UNITS |
|------------------|-----------------------------------|-------------------|-------|-------|
| JUNCTION AMBIENT | l=10mm ; T <sub>L</sub> =CONSTANT | R <sub>thJA</sub> | 46    | K/W   |
|                  | ON PC BOARD WITH SPACING 25mm     |                   | 100   |       |

#### ELECTRICAL CHARACTERISTICS

T<sub>j</sub> = 25°C

| RATINGS         | TEST CONDITIONS      | SYMBOL         | VALUE | UNITS |
|-----------------|----------------------|----------------|-------|-------|
| FORWARD VOLTAGE | I <sub>F</sub> =0.5A | V <sub>F</sub> | 1.2   | V     |

| TYPE NUMBER | VZ   |      |      | Rzj and |      | TK <sub>VZ</sub> at |      | I <sub>Z</sub> | IR at VR |     |
|-------------|------|------|------|---------|------|---------------------|------|----------------|----------|-----|
|             | V    |      |      | Ω       | Ω    | % /K                | % /K | mA             | uA       | V   |
|             | MIN. | TYP. | MAX. | TYP.    | MAX. | MIN.                | MAX. |                | MAX.     |     |
| BZT03C6V2   | 5.8  | 6.2  | 6.6  | 1       | 2    | 0                   | 0.07 | 100            | 1500     | 4.7 |
| BZT03C6V8   | 6.4  | 6.8  | 7.2  | 1       | 2    | 0                   | 0.07 | 100            | 1000     | 5.1 |
| BZT03C7V5   | 7.0  | 7.5  | 7.9  | 1       | 2    | 0                   | 0.07 | 100            | 750      | 5.6 |
| BZT03C8V2   | 7.7  | 8.2  | 8.7  | 1       | 2    | 0.03                | 0.08 | 100            | 600      | 6.2 |
| BZT03C9V1   | 8.5  | 9.1  | 9.6  | 2       | 4    | 0.03                | 0.08 | 50             | 20       | 6.8 |
| BZT03C10    | 9.4  | 10   | 10.6 | 2       | 4    | 0.05                | 0.09 | 50             | 10       | 7.5 |
| BZT03C11    | 10.4 | 10   | 11.6 | 4       | 7    | 0.05                | 0.10 | 50             | 4        | 8.2 |
| BZT03C12    | 11.4 | 12   | 12.7 | 4       | 7    | 0.05                | 0.10 | 50             | 3        | 9.1 |
| BZT03C13    | 12.4 | 13   | 14.1 | 5       | 10   | 0.05                | 0.10 | 50             | 2        | 10  |
| BZT03C15    | 13.8 | 15   | 15.6 | 5       | 10   | 0.05                | 0.10 | 50             | 1        | 11  |
| BZT03C16    | 15.3 | 16   | 17.1 | 6       | 15   | 0.06                | 0.11 | 25             | 1        | 12  |
| BZT03C18    | 16.8 | 18   | 19.1 | 6       | 15   | 0.06                | 0.11 | 25             | 1        | 13  |
| BZT03C20    | 18.8 | 20   | 21.2 | 6       | 15   | 0.06                | 0.11 | 25             | 1        | 15  |
| BZT03C22    | 20.8 | 22   | 23.3 | 6       | 15   | 0.06                | 0.11 | 25             | 1        | 16  |
| BZT03C24    | 22.8 | 24   | 25.6 | 7       | 15   | 0.06                | 0.11 | 25             | 1        | 18  |
| BZT03C27    | 25.1 | 27   | 28.9 | 7       | 15   | 0.06                | 0.11 | 25             | 1        | 20  |
| BZT03C30    | 28   | 30   | 32   | 8       | 15   | 0.06                | 0.11 | 25             | 1        | 22  |
| BZT03C33    | 31   | 33   | 35   | 8       | 15   | 0.06                | 0.11 | 25             | 1        | 24  |
| BZT03C36    | 34   | 36   | 38   | 21      | 40   | 0.06                | 0.11 | 10             | 1        | 27  |
| BZT03C39    | 37   | 39   | 41   | 21      | 40   | 0.06                | 0.11 | 10             | 1        | 30  |
| BZT03C43    | 40   | 43   | 46   | 24      | 45   | 0.07                | 0.12 | 10             | 1        | 33  |
| BZT03C47    | 44   | 47   | 50   | 24      | 45   | 0.07                | 0.12 | 10             | 1        | 36  |
| BZT03C51    | 48   | 51   | 54   | 25      | 60   | 0.07                | 0.12 | 10             | 1        | 39  |
| BZT03C56    | 52   | 56   | 60   | 25      | 60   | 0.07                | 0.12 | 10             | 1        | 43  |
| BZT03C62    | 58   | 62   | 66   | 25      | 80   | 0.08                | 0.13 | 10             | 1        | 47  |
| BZT03C68    | 64   | 68   | 72   | 25      | 80   | 0.08                | 0.13 | 10             | 1        | 51  |
| BZT03C75    | 70   | 75   | 79   | 30      | 100  | 0.08                | 0.13 | 10             | 1        | 56  |
| BZT03C82    | 77   | 82   | 87   | 30      | 100  | 0.08                | 0.13 | 10             | 1        | 62  |
| BZT03C91    | 85   | 91   | 96   | 60      | 200  | 0.09                | 0.13 | 5              | 1        | 68  |
| BZT03C100   | 94   | 100  | 106  | 60      | 200  | 0.09                | 0.13 | 5              | 1        | 75  |
| BZT03C110   | 104  | 110  | 116  | 80      | 250  | 0.09                | 0.13 | 5              | 1        | 82  |
| BZT03C120   | 114  | 120  | 127  | 80      | 250  | 0.09                | 0.13 | 5              | 1        | 91  |
| BZT03C130   | 124  | 130  | 141  | 110     | 300  | 0.09                | 0.13 | 5              | 1        | 100 |
| BZT03C150   | 138  | 150  | 156  | 130     | 300  | 0.09                | 0.13 | 5              | 1        | 110 |
| BZT03C160   | 153  | 160  | 171  | 150     | 350  | 0.09                | 0.13 | 5              | 1        | 120 |
| BZT03C180   | 168  | 180  | 191  | 180     | 400  | 0.09                | 0.13 | 5              | 1        | 130 |
| BZT03C200   | 188  | 200  | 212  | 200     | 500  | 0.09                | 0.13 | 5              | 1        | 150 |
| BZT03C220   | 208  | 220  | 233  | 350     | 750  | 0.09                | 0.13 | 2              | 1        | 160 |
| BZT03C240   | 228  | 240  | 256  | 400     | 850  | 0.09                | 0.13 | 2              | 1        | 180 |
| BZT03C270   | 251  | 270  | 289  | 450     | 1000 | 0.09                | 0.13 | 2              | 1        | 200 |

| TYPE<br>NUMBER | CLAMPING AT      |           | STAND-OFF AT |            |
|----------------|------------------|-----------|--------------|------------|
|                | $V_{(CLR)}^{1)}$ | $I_{RSM}$ | $I_R$        | $V_R^{2)}$ |
|                | V                | A         | uA           | V          |
|                | MAX.             |           | MAX.         |            |
| BZT03C6V2      | 9.3              | 34.0      | 3000         | 5.1        |
| BZT03C6V8      | 10.2             | 31.0      | 2000         | 5.6        |
| BZT03C7V5      | 11.3             | 26.5      | 1500         | 6.2        |
| BZT03C8V2      | 12.3             | 24.4      | 1200         | 6.8        |
| BZT03C9V1      | 13.3             | 22.7      | 50           | 7.5        |
| BZT03C10       | 14.8             | 20.3      | 20           | 8.2        |
| BZT03C11       | 15.7             | 19.1      | 5            | 9.1        |
| BZT03C12       | 17.0             | 17.7      | 5            | 10         |
| BZT03C13       | 18.9             | 15.9      | 5            | 11         |
| BZT03C15       | 20.9             | 14.4      | 5            | 12         |
| BZT03C16       | 22.9             | 13.1      | 5            | 13         |
| BZT03C18       | 25.6             | 11.7      | 5            | 15         |
| BZT03C20       | 28.4             | 10.6      | 5            | 16         |
| BZT03C22       | 31.0             | 9.7       | 5            | 18         |
| BZT03C24       | 33.8             | 8.9       | 5            | 20         |
| BZT03C27       | 38.1             | 7.9       | 5            | 22         |
| BZT03C30       | 42.2             | 7.1       | 5            | 24         |
| BZT03C33       | 46.2             | 6.5       | 5            | 27         |
| BZT03C36       | 50.1             | 6.0       | 5            | 30         |
| BZT03C39       | 54.1             | 5.5       | 5            | 33         |
| BZT03C43       | 60.7             | 4.9       | 5            | 36         |
| BZT03C47       | 65.5             | 4.6       | 5            | 39         |
| BZT03C51       | 70.8             | 4.2       | 5            | 43         |
| BZT03C56       | 78.6             | 3.8       | 5            | 47         |
| BZT03C62       | 86.5             | 3.5       | 5            | 51         |
| BZT03C68       | 94.4             | 3.2       | 5            | 56         |
| BZT03C75       | 103.5            | 2.9       | 5            | 62         |
| BZT03C82       | 114              | 2.6       | 5            | 68         |
| BZT03C91       | 126              | 2.4       | 5            | 75         |
| BZT03C100      | 139              | 2.2       | 5            | 82         |
| BZT03C110      | 152              | 2.0       | 5            | 91         |
| BZT03C120      | 167              | 1.8       | 5            | 100        |
| BZT03C130      | 185              | 1.6       | 5            | 110        |
| BZT03C150      | 204              | 1.5       | 5            | 120        |
| BZT03C160      | 224              | 1.3       | 5            | 130        |
| BZT03C180      | 249              | 1.2       | 5            | 150        |
| BZT03C200      | 276              | 1.1       | 5            | 160        |
| BZT03C220      | 305              | 1.0       | 5            | 180        |
| BZT03C240      | 336              | 0.9       | 5            | 200        |
| BZT03C270      | 380              | 0.8       | 5            | 220        |

<sup>1)</sup> 10/1000 EXP. FALLING PULSE  $T_p = 1000\mu s$  DOWN TO 50%

# RATINGS AND CHARACTERISTIC CURVE BZT03C6V2 THRU BZT03C270

CHARACTERISTICS (  $T_r = 25^\circ\text{C}$  unless otherwise specified )

FIG. 1 – EPOXY GLASS HARD TISSUE,  
BOARD THICKNESS 1.5mm,  
 $R_{thJA} \leq 100\text{K/W}$

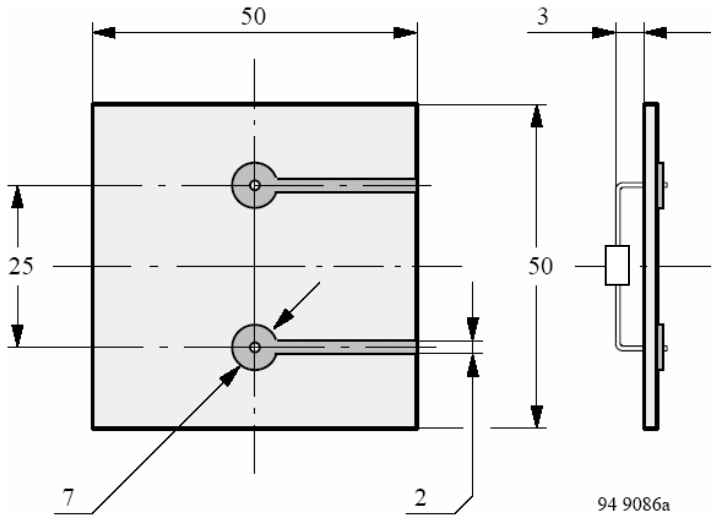


FIG. 2 – FORWARD CURRENT VS. FORWARD VOLTAGE

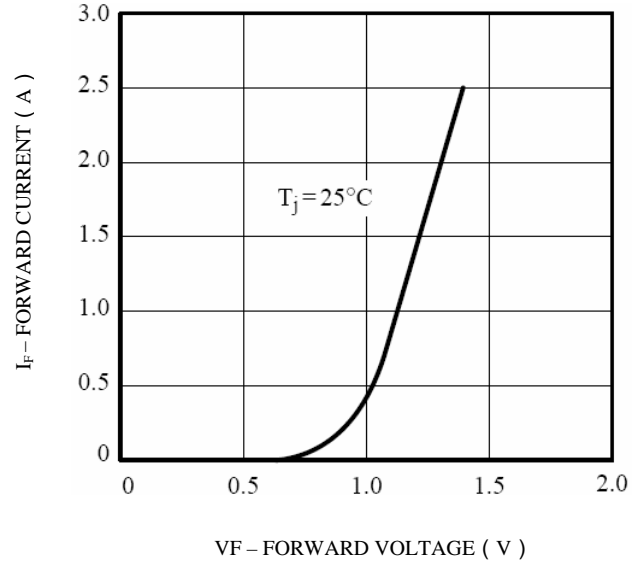
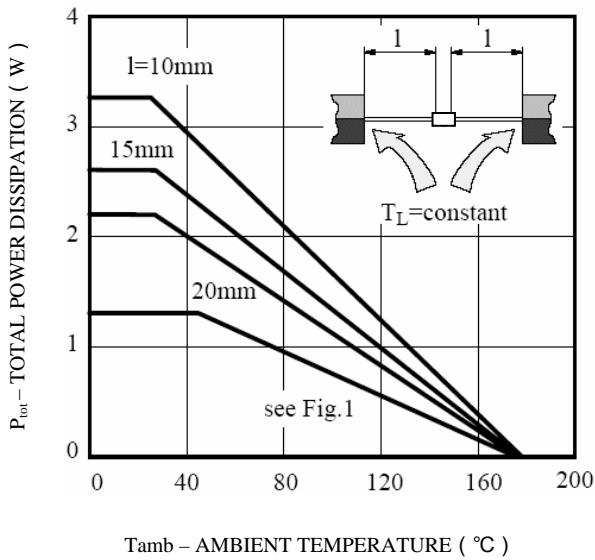


FIG. 3 – TOTAL POWER DISSIPATION VS. AMBIENT TEMPERATURE



REPETITIVE SURGE POWER DISSIPATION VS. PULSE LENGTH

