



**THE DATASHEET OF  
BZG03C10-M3-08**



## Zener Diodes



SMA (DO-214AC)

### ADDITIONAL RESOURCES


[3D Models](#)

| PRIMARY CHARACTERISTICS      |                 |      |
|------------------------------|-----------------|------|
| PARAMETER                    | VALUE           | UNIT |
| V <sub>Z</sub> range nom.    | 10 to 270       | V    |
| Test current I <sub>ZT</sub> | 2 to 50         | mA   |
| V <sub>BR</sub>              | 9.4 to 251      | V    |
| V <sub>WM</sub>              | 8.2 to 220      | V    |
| P <sub>PPM</sub>             | 300             | W    |
| T <sub>J</sub> max.          | 150             | °C   |
| V <sub>Z</sub> specification | Pulse current   |      |
| Circuit configuration        | Single          |      |
| Polarity                     | Uni-directional |      |

### FEATURES

- High reliability
- Voltage range 10 V to 270 V
- Fits onto 5 mm SMD footpads
- Wave and reflow solderable
- AEC-Q101 qualified available
- Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade
- Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
 COMPLIANT  
 HALOGEN  
**FREE**

### APPLICATIONS

- Voltage stabilization

| ORDERING INFORMATION |                  |                      |                        |
|----------------------|------------------|----------------------|------------------------|
| DEVICE NAME          | ORDERING CODE    | TAPED UNITS PER REEL | MINIMUM ORDER QUANTITY |
| BZG03C-M-series      | BZG03Cxxx-M3-08  | 1500 (7" reel)       | 6000/box               |
| BZG03C-M-series      | BZG03Cxxx-M3-18  | 6000 (13" reel)      | 6000/box               |
| BZG03C-M-series      | BZG03Cxxx-HM3-08 | 1500 (7" reel)       | 6000/box               |
| BZG03C-M-series      | BZG03Cxxx-HM3-18 | 6000 (13" reel)      | 6000/box               |

| PACKAGE        |        |                  |                                      |                              |
|----------------|--------|------------------|--------------------------------------|------------------------------|
| PACKAGE NAME   | WEIGHT | MOLDING COMPOUND | MOISTURE SENSITIVITY                 | SOLDERING CONDITIONS         |
| SMA (DO-214AC) | 73 mg  | UL 94 V-0        | MSL level 1<br>(according J-STD-020) | Peak temperature max. 260 °C |

| ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified) |   |                   |             |      |
|---|---|-------------------|-------------|------|
| PARAMETER   | TEST CONDITION  | SYMBOL            | VALUE       | UNIT |
| Power dissipation   | R <sub>thJA</sub> < 25 K/W  | P <sub>tot</sub>  | 3000        | mW   |
|   | R <sub>thJA</sub> < 100 K/W   | P <sub>tot</sub>  | 1250        | mW   |
| Non repetitive peak surge power   | t <sub>p</sub> = 100 μs sq.pulse, T <sub>J</sub> = 25 °C prior to surge | P <sub>ZSM</sub>  | 600         | W    |
| Junction to lead  |   | R <sub>thJL</sub> | 25          | K/W  |
| Junction to ambient air   | Mounted on epoxy-glass hard tissue, fig. 1a                             | R <sub>thJA</sub> | 150         | K/W  |
|   | Mounted on epoxy-glass hard tissue, fig. 1b                             | R <sub>thJA</sub> | 125         | K/W  |
|   | Mounted on Al-oxide-ceramic (Al <sub>2</sub> O <sub>3</sub> ), fig. 1b  | R <sub>thJA</sub> | 100         | K/W  |
| Junction temperature  |   | T <sub>J</sub>    | 150         | °C   |
| Storage temperature range   |   | T <sub>stg</sub>  | -65 to +150 | °C   |
| Operating temperature range   |   | T <sub>op</sub>   | -65 to +150 | °C   |
| Forward voltage (max.)  | I <sub>F</sub> = 0.5 A  | V <sub>F</sub>    | 1.2         | V    |



| ELECTRICAL CHARACTERISTICS (T <sub>amb</sub> = 25 °C, unless otherwise specified) |                                    |      |      |                  |                                  |     |                                    |      |  |      |
|---|------------------------------------|------|------|------------------|----------------------------------|-----|------------------------------------|------|--|------|
| PART NUMBER   | ZENER VOLTAGE RANGE                |      |      | TEST CURRENT     | REVERSE LEAKAGE CURRENT          |     | DYNAMIC RESISTANCE                 |      | TEMPERATURE COEFFICIENT OF ZENER VOLTAGE |      |
|   | V <sub>Z</sub> at I <sub>ZT1</sub> |      |      | I <sub>ZT1</sub> | I <sub>R</sub> at V <sub>R</sub> |     | Z <sub>Z</sub> at I <sub>ZT1</sub> |      | TK <sub>VZ</sub> at I <sub>ZT1</sub>     |      |
|   | V                                  |      |      | mA               | μA                               | V   | Ω                                  |      | % / K                                    |      |
|   | MIN.                               | NOM. | MAX. |                  | MAX.                             |     | TYP.                               | MAX. | MIN.                                     | MAX. |
| BZG03C10-M  | 9.4                                | 10   | 10.6 | 50               | 10                               | 7.5 | 2                                  | 4    | 0.05                                     | 0.09 |
| BZG03C11-M  | 10.4                               | 11   | 11.6 | 50               | 4                                | 8.2 | 4                                  | 7    | 0.05                                     | 0.1  |
| BZG03C12-M  | 11.4                               | 12   | 12.7 | 50               | 3                                | 9.1 | 4                                  | 7    | 0.05                                     | 0.1  |
| BZG03C13-M  | 12.4                               | 13   | 14.1 | 50               | 2                                | 10  | 5                                  | 10   | 0.05                                     | 0.1  |
| BZG03C15-M  | 13.8                               | 15   | 15.6 | 50               | 1                                | 11  | 5                                  | 10   | 0.05                                     | 0.1  |
| BZG03C16-M  | 15.3                               | 16   | 17.1 | 25               | 1                                | 12  | 6                                  | 15   | 0.06                                     | 0.11 |
| BZG03C18-M  | 16.8                               | 18   | 19.1 | 25               | 1                                | 13  | 6                                  | 15   | 0.06                                     | 0.11 |
| BZG03C20-M  | 18.8                               | 20   | 21.2 | 25               | 1                                | 15  | 6                                  | 15   | 0.06                                     | 0.11 |
| BZG03C22-M  | 20.8                               | 22   | 23.3 | 25               | 1                                | 16  | 6                                  | 15   | 0.06                                     | 0.11 |
| BZG03C24-M  | 22.8                               | 24   | 25.6 | 25               | 1                                | 18  | 7                                  | 15   | 0.06                                     | 0.11 |
| BZG03C27-M  | 25.1                               | 27   | 28.9 | 25               | 1                                | 20  | 7                                  | 15   | 0.06                                     | 0.11 |
| BZG03C30-M  | 28                                 | 30   | 32   | 25               | 1                                | 22  | 8                                  | 15   | 0.06                                     | 0.11 |
| BZG03C33-M  | 31                                 | 33   | 35   | 25               | 1                                | 24  | 8                                  | 15   | 0.06                                     | 0.11 |
| BZG03C36-M  | 34                                 | 36   | 38   | 10               | 1                                | 27  | 21                                 | 40   | 0.06                                     | 0.11 |
| BZG03C39-M  | 37                                 | 39   | 41   | 10               | 1                                | 30  | 21                                 | 40   | 0.06                                     | 0.11 |
| BZG03C43-M  | 40                                 | 43   | 46   | 10               | 1                                | 33  | 24                                 | 45   | 0.07                                     | 0.12 |
| BZG03C47-M  | 44                                 | 47   | 50   | 10               | 1                                | 36  | 24                                 | 45   | 0.07                                     | 0.12 |
| BZG03C51-M  | 48                                 | 51   | 54   | 10               | 1                                | 39  | 25                                 | 60   | 0.07                                     | 0.12 |
| BZG03C56-M  | 52                                 | 56   | 60   | 10               | 1                                | 43  | 25                                 | 60   | 0.07                                     | 0.12 |
| BZG03C62-M  | 58                                 | 62   | 66   | 10               | 1                                | 47  | 25                                 | 80   | 0.08                                     | 0.13 |
| BZG03C68-M  | 64                                 | 68   | 72   | 10               | 1                                | 51  | 25                                 | 80   | 0.08                                     | 0.13 |
| BZG03C75-M  | 70                                 | 75   | 79   | 10               | 1                                | 56  | 30                                 | 100  | 0.08                                     | 0.13 |
| BZG03C82-M  | 77                                 | 82   | 87   | 10               | 1                                | 62  | 30                                 | 100  | 0.08                                     | 0.13 |
| BZG03C91-M  | 85                                 | 91   | 96   | 5                | 1                                | 68  | 60                                 | 200  | 0.09                                     | 0.13 |
| BZG03C100-M   | 94                                 | 100  | 106  | 5                | 1                                | 75  | 60                                 | 200  | 0.09                                     | 0.13 |
| BZG03C110-M   | 104                                | 110  | 116  | 5                | 1                                | 82  | 80                                 | 250  | 0.09                                     | 0.13 |
| BZG03C120-M   | 114                                | 120  | 127  | 5                | 1                                | 91  | 80                                 | 250  | 0.09                                     | 0.13 |
| BZG03C130-M   | 124                                | 130  | 141  | 5                | 1                                | 100 | 110                                | 300  | 0.09                                     | 0.13 |
| BZG03C150-M   | 138                                | 150  | 156  | 5                | 1                                | 110 | 130                                | 300  | 0.09                                     | 0.13 |
| BZG03C160-M   | 158                                | 160  | 171  | 5                | 1                                | 120 | 150                                | 350  | 0.09                                     | 0.13 |
| BZG03C180-M   | 168                                | 180  | 191  | 5                | 1                                | 130 | 180                                | 400  | 0.09                                     | 0.13 |
| BZG03C200-M   | 188                                | 200  | 212  | 5                | 1                                | 150 | 200                                | 500  | 0.09                                     | 0.13 |
| BZG03C220-M   | 208                                | 220  | 233  | 2                | 1                                | 160 | 350                                | 750  | 0.09                                     | 0.13 |
| BZG03C240-M   | 228                                | 240  | 256  | 2                | 1                                | 180 | 400                                | 850  | 0.09                                     | 0.13 |
| BZG03C270-M   | 251                                | 270  | 289  | 2                | 1                                | 200 | 450                                | 1000 | 0.09                                     | 0.13 |

**BASIC CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)



Fig. 1 - Boards for  $R_{thJA}$  Definition (Copper Overlay 35  $\mu$ )



Fig. 3 - Forward Current vs. Forward Voltage

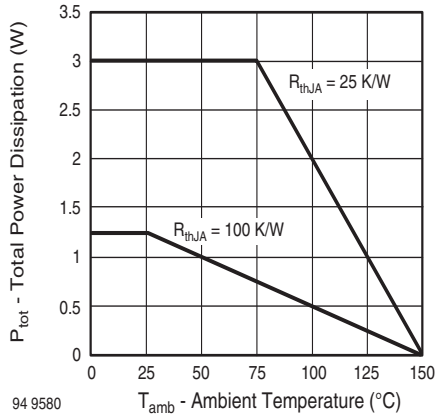


Fig. 2 - Total Power Dissipation vs. Ambient Temperature

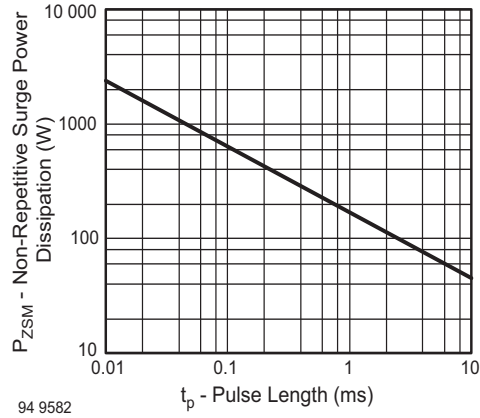


Fig. 4 - Non Repetitive Surge Power Dissipation vs. Pulse Length

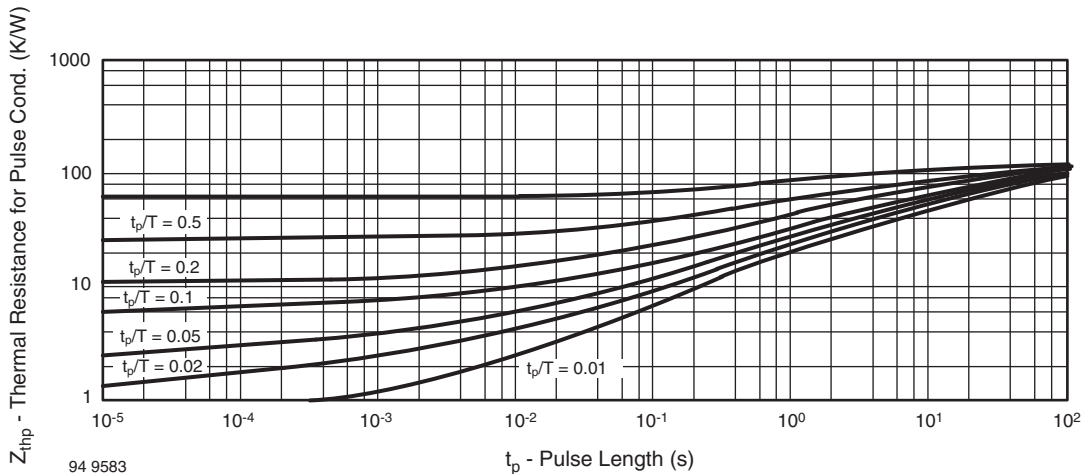


Fig. 5 - Thermal Response



**PACKAGE DIMENSIONS** in millimeters (inches): **SMA (DO-214AC)**



Document no.: S8-V-3848.01-003 (4)  
Created - Date: 18. February 1997  
Rev. 8 - Date: 10. November 2006  
19628



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