

## Voltage Regulator Diodes

### FEATURES

- Silicon zener diodes
- Low profile surface-mount package
- Zener and surge current specification
- Low leakage current
- Excellent stability
- Moisture sensitivity level: level 1, per J-STD-020
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition



**Sub SMA**

### MECHANICAL DATA

**Case:** Sub SMA

Molding compound, UL flammability classification rating 94V-0

Base P/N with suffix "G" on packing code - green compound (halogen-free)

**Terminal:** Matte tin plated leads, solderable per JESD22-B102

Meet JESD 201 class 1A whisker test

**Polarity:** Indicated by cathode band

**Weight:** 0.019g (approximately)

### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

| PARAMETER                                                                              | SYMBOL                | VALUE       | UNIT                 |
|----------------------------------------------------------------------------------------|-----------------------|-------------|----------------------|
| Forward voltage @ $I_F=0.2\text{A}$                                                    | $V_F$                 | 1.2         | Volts                |
| Power dissipation at $T_L=80^{\circ}\text{C}$<br>$T_A=25^{\circ}\text{C}$ (Note 1)     | $P_{\text{tot}}$      | 2.3<br>0.8  | Watts                |
| Non-repetitive peak pulse power dissipation<br>100 $\mu\text{s}$ square pulse (Note 2) | $P_{\text{ZSM}}$      | 300         | Watts                |
| Thermal resistance junction to ambient (Note 1)                                        | $R_{\theta\text{JA}}$ | 180         | $^{\circ}\text{C/W}$ |
| Thermal resistance junction to lead                                                    | $R_{\theta\text{JL}}$ | 30          | $^{\circ}\text{C/W}$ |
| Operating and storage temperature range                                                | $T_J, T_{\text{STG}}$ | -55 to +175 | $^{\circ}\text{C}$   |

Note 1: Mounted on Cu-Pad size 5mm x 5mm

Note 2:  $T_J=25^{\circ}\text{C}$  prior to surge

| ORDERING INFORMATION  |              |                     |         |                                       |
|-----------------------|--------------|---------------------|---------|---------------------------------------|
| PART NO.              | PACKING CODE | GREEN COMPOUND CODE | PACKAGE | PACKING                               |
| BZD17CxxP<br>(Note 1) | RU           | Suffix "G"          | Sub SMA | 1,800 / 7" Plastic reel (8mm tape)    |
|                       | RV           |                     | Sub SMA | 3,000 / 7" Plastic reel (8mm tape)    |
|                       | RT           |                     | Sub SMA | 7,500 / 13" Paper reel (8mm tape)     |
|                       | MT           |                     | Sub SMA | 7,500 / 13" Plastic reel (8mm tape)   |
|                       | RQ           |                     | Sub SMA | 10,000 / 13" Paper reel (8mm tape)    |
|                       | MQ           |                     | Sub SMA | 10,000 / 13" Plastic reel (8mm tape)  |
|                       | R3           |                     | Sub SMA | 1,800 / 7" Plastic reel (12mm tape)   |
|                       | RF           |                     | Sub SMA | 3,000 / 7" Plastic reel (12mm tape)   |
|                       | R2           |                     | Sub SMA | 7,500 / 13" Paper reel (12mm tape)    |
|                       | M2           |                     | Sub SMA | 7,500 / 13" Plastic reel (12mm tape)  |
|                       | RH           |                     | Sub SMA | 10,000 / 13" Paper reel (12mm tape)   |
|                       | MH           |                     | Sub SMA | 10,000 / 13" Plastic reel (12mm tape) |

Note 1: "xx" defines voltage from 11V (BZD17C11P) to 220V (BZD17C220P)

| EXAMPLE       |           |              |                     |                |
|---------------|-----------|--------------|---------------------|----------------|
| PREFERRED P/N | PART NO.  | PACKING CODE | GREEN COMPOUND CODE | DESCRIPTION    |
| BZD17C11P RU  | BZD17C11P | RU           |                     |                |
| BZD17C11P RUG | BZD17C11P | RU           | G                   | Green compound |

## RATINGS AND CHARACTERISTICS CURVES

(TA=25°C unless otherwise noted)

FIG. 1 TYPICAL FORWARD CHARACTERISTICS

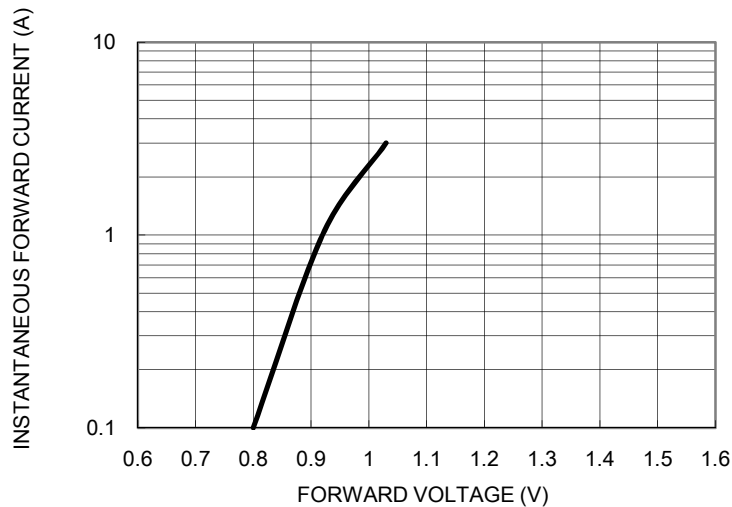


FIG. 2 TYP. DIODE CAPACITANCE vs REVERSE VOLTAGE

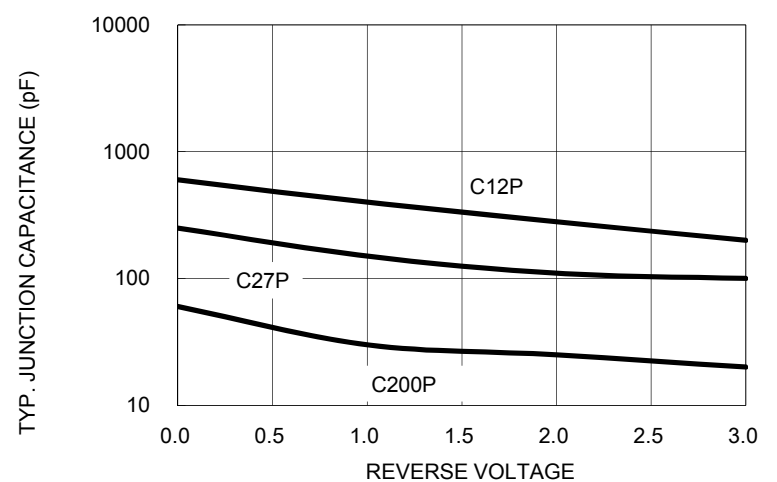
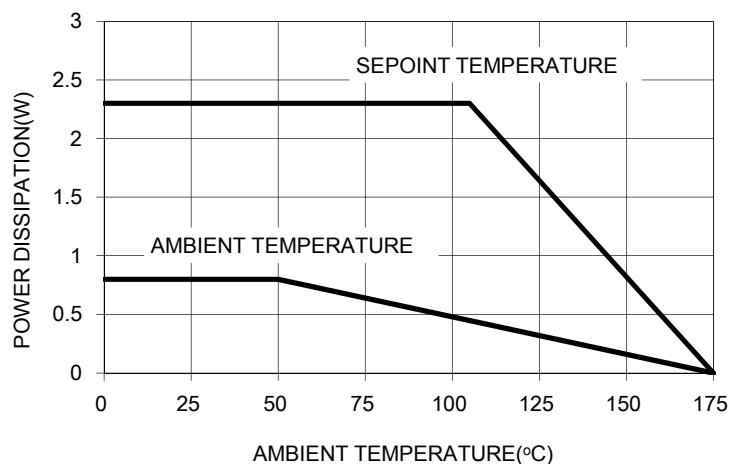


FIG.3 POWER DISSIPATION vs AMBIENT TEMPERATURE

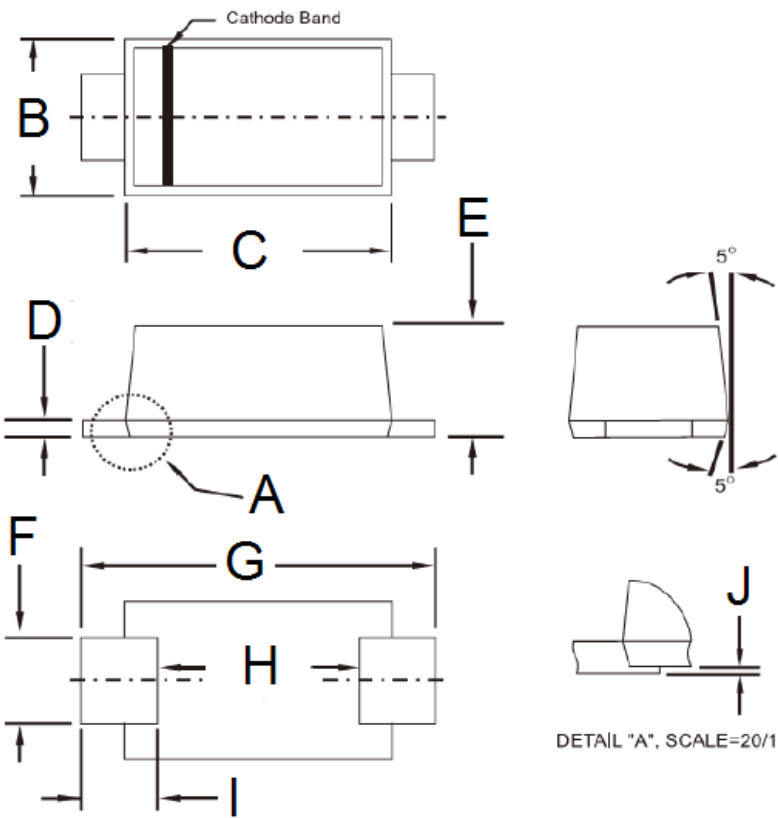


| Device     | Device<br>Marking<br>Code | Working Voltage<br>(Note 1) |      | Differential<br>Resistance |      | Temperature<br>Coefficient |      | Test<br>Current | Reverse Current@<br>Reverse Voltage |       |
|------------|---------------------------|-----------------------------|------|----------------------------|------|----------------------------|------|-----------------|-------------------------------------|-------|
|            |                           | $V_Z @ I_{ZT}$              |      | $r_{dif} @ I_Z$            |      | $\alpha_Z @ I_Z$           |      | $I_{ZT}$        | $I_R$                               | $V_R$ |
|            |                           | V                           |      | $\Omega$                   |      | $\%/^{\circ}\text{C}$      |      | mA              | $\mu\text{A}$                       | V     |
|            |                           | Min.                        | Max  | typ                        | Max. | Min.                       | Max  |                 | Max.                                |       |
| BZD17C11P  | J2                        | 10.4                        | 11.6 | 4                          | 7    | 0.05                       | 0.10 | 50              | 4.0                                 | 8.2   |
| BZD17C12P  | J3                        | 11.4                        | 12.7 | 4                          | 7    | 0.05                       | 0.10 | 50              | 3.0                                 | 9.1   |
| BZD17C13P  | J4                        | 12.4                        | 14.1 | 5                          | 10   | 0.05                       | 0.10 | 50              | 2.0                                 | 10    |
| BZD17C15P  | J5                        | 13.8                        | 15.6 | 5                          | 10   | 0.05                       | 0.10 | 25              | 1.0                                 | 11    |
| BZD17C16P  | J6                        | 15.3                        | 17.1 | 6                          | 15   | 0.06                       | 0.11 | 25              | 1.0                                 | 12    |
| BZD17C18P  | J7                        | 16.8                        | 19.1 | 6                          | 15   | 0.06                       | 0.11 | 25              | 1.0                                 | 13    |
| BZD17C24P  | K0                        | 22.8                        | 25.6 | 7                          | 15   | 0.06                       | 0.11 | 25              | 1.0                                 | 18    |
| BZD17C27P  | K1                        | 25.1                        | 28.9 | 7                          | 15   | 0.06                       | 0.11 | 25              | 1.0                                 | 20    |
| BZD17C33P  | K3                        | 31                          | 35   | 8                          | 15   | 0.06                       | 0.11 | 25              | 1.0                                 | 24    |
| BZD17C36P  | K4                        | 34                          | 38   | 21                         | 40   | 0.06                       | 0.11 | 10              | 1.0                                 | 27    |
| BZD17C39P  | K5                        | 37                          | 41   | 21                         | 40   | 0.06                       | 0.11 | 10              | 1.0                                 | 30    |
| BZD17C43P  | K6                        | 40                          | 46   | 24                         | 45   | 0.07                       | 0.12 | 10              | 1.0                                 | 33    |
| BZD17C47P  | K7                        | 44                          | 50   | 24                         | 45   | 0.07                       | 0.12 | 10              | 1.0                                 | 36    |
| BZD17C51P  | K8                        | 48                          | 54   | 25                         | 60   | 0.07                       | 0.12 | 10              | 1.0                                 | 39    |
| BZD17C62P  | L0                        | 58                          | 66   | 25                         | 80   | 0.08                       | 0.13 | 10              | 1.0                                 | 47    |
| BZD17C68P  | L1                        | 64                          | 72   | 25                         | 80   | 0.08                       | 0.13 | 10              | 1.0                                 | 51    |
| BZD17C75P  | L2                        | 70                          | 79   | 30                         | 100  | 0.08                       | 0.13 | 10              | 1.0                                 | 56    |
| BZD17C100P | L5                        | 94                          | 106  | 60                         | 200  | 0.09                       | 0.13 | 4               | 1.0                                 | 75    |
| BZD17C120P | L7                        | 114                         | 127  | 150                        | 300  | 0.09                       | 0.13 | 4               | 1.0                                 | 91    |
| BZD17C180P | M1                        | 168                         | 191  | 280                        | 450  | 0.09                       | 0.13 | 4               | 1.0                                 | 130   |
| BZD17C200P | M2                        | 188                         | 212  | 350                        | 750  | 0.09                       | 0.13 | 4               | 1.0                                 | 150   |
| BZD17C220P | M3                        | 208                         | 233  | 430                        | 900  | 0.09                       | 0.13 | 4               | 1.0                                 | 160   |

Notes: 1. Pulse test:  $t_p \leq 5\text{ms}$ .

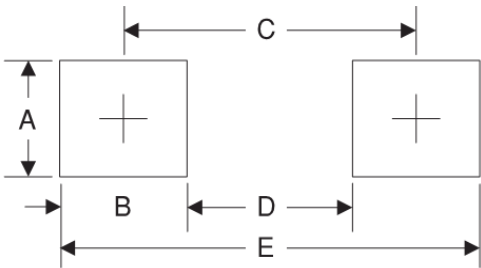
PACKAGE OUTLINE DIMENSIONS

Sub SMA



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min       | Max  | Min         | Max   |
| B    | 1.70      | 1.90 | 0.067       | 0.075 |
| C    | 2.70      | 2.90 | 0.106       | 0.114 |
| D    | 0.16      | 0.30 | 0.006       | 0.012 |
| E    | 1.23      | 1.43 | 0.048       | 0.056 |
| F    | 0.80      | 1.20 | 0.031       | 0.047 |
| G    | 3.40      | 3.80 | 0.134       | 0.150 |
| H    | 2.45      | 2.60 | 0.096       | 0.102 |
| I    | 0.35      | 0.85 | 0.014       | 0.033 |
| J    | 0.00      | 0.10 | 0.000       | 0.004 |

SUGGESTED PAD LAYOUT



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A      | 1.4       | 0.055       |
| B      | 1.2       | 0.047       |
| C      | 3.1       | 0.122       |
| D      | 1.9       | 0.075       |
| E      | 4.3       | 0.169       |

MARKING DIAGRAM



P/N = Marking Code  
G = Green Compound  
YW = Date Code  
F = Factory Code

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