



New Product

BZD27 Series

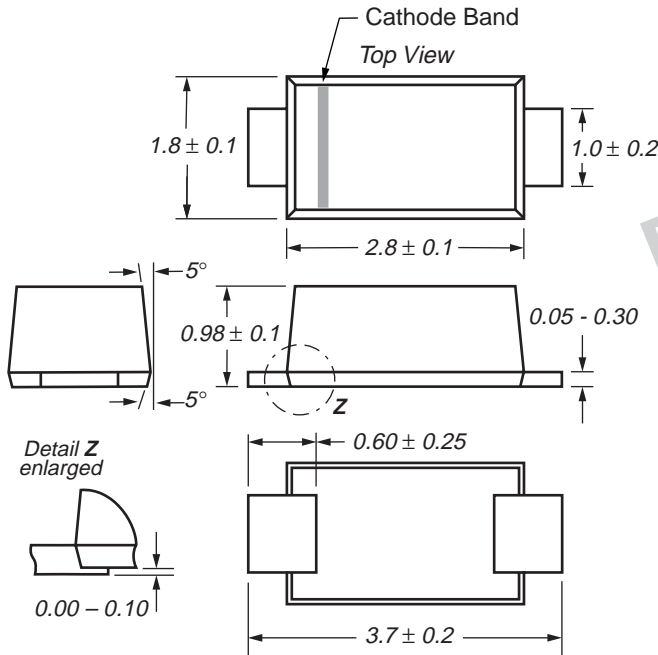
Vishay Semiconductors
formerly General Semiconductor

Zener Diodes

V_Z Range 3.6 to 200V
TVS V_{WM} Range 6.2 to 160V
Power Dissipation 2.3W

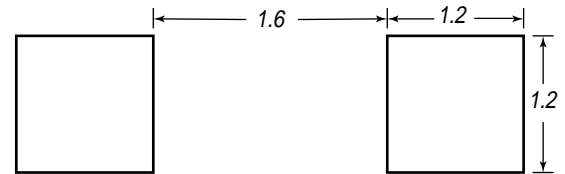


DO-219AB (SMF)



Patented

Mounting Pad Layout



Dimensions in millimeters

Mechanical Data

Case: JEDEC DO-219 Plastic Case

Weight: approx. 0.01g

Packaging codes-options:

G1-10K per 13" reel (8mm tape), 50K/box

G2-3K per 7" reel (8mm tape), 30K/box

Features

- Silicon Planar Power Zener Diodes.
- Low profile surface-mount package.
- Zener and TVS specification.

Maximum Ratings and Thermal Characteristics (T_A = 25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|--|------------------|--------------------|------|
| Power Dissipation at T _L = 105°C | P _{tot} | 2.3 | W |
| Power Dissipation at T _A = 25°C | P _{tot} | 0.8 ⁽¹⁾ | W |
| Non-repetitive peak pulse power dissipation with 100µs square pulse ⁽²⁾ | P _{ZSM} | 300 | W |
| Non-repetitive peak pulse power dissipation with 10/1000µs waveform (BZ027-C7V5 to -C200) ⁽²⁾ | P _{RSM} | 150 | W |
| Thermal Resistance Junction to Ambient Air ⁽¹⁾ | R _{θJA} | 188 | °C/W |
| Thermal Resistance Junction to Lead | R _{θJL} | 30 | °C/W |
| Maximum Junction Temperature | T _j | 175 | °C |
| Storage Temperature Range | T _s | -65 to +175 | °C |

Notes: (1) Mounted on epoxy-glass PCB with 3 x 3mm Cu pads (≥ 40µm thick)

(2) T_J = 25°C prior to surge

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Electrical Characteristics

Total Series (T_J = 25°C unless otherwise noted)

| Parameter | Symbol | Conditions | Minimum | Maximum | Unit |
|-----------------|----------------|-----------------------|---------|---------|------|
| Forward voltage | V _F | I _F = 0.2A | – | 1.2 | V |

When used as voltage regulator diodes (T_J = 25°C unless otherwise noted)

| Type | Marking Code | Working Voltage | | | Differential Resistance | | Temperature Coefficient | | Test Current I _{ZT} (mA) | Reverse Current at Reverse Voltage | |
|-------------|--------------|-----------------|---|------|---|------|--|-------|--------------------------------------|------------------------------------|--------------------|
| | | Min. | V _Z (V) @ I _Z Nom. | Max. | r _{dif} (Ω) @ I _Z Typ. | Max. | α _Z @ I _Z (%/°C) Min. | Max. | | I _R (μA) Max | V _R (V) |
| BZD27-C3V6P | D0 | 3.4 | 3.6 | 3.8 | 4 | 8 | -0.14 | -0.04 | 100 | 100 | 1 |
| BZD27-C3V9P | D1 | 3.7 | 3.9 | 4.1 | 4 | 8 | -0.14 | -0.04 | 100 | 50 | 1 |
| BZD27-C4V3P | D2 | 4.0 | 4.3 | 4.6 | 4 | 7 | -0.12 | -0.02 | 100 | 25 | 1 |
| BZD27-C4V7P | D3 | 4.4 | 4.7 | 5.0 | 3 | 7 | -0.10 | 0.00 | 100 | 10 | 1 |
| BZD27-C5V1P | D4 | 4.8 | 5.1 | 5.4 | 3 | 6 | -0.08 | 0.02 | 100 | 5 | 1 |
| BZD27-C5V6P | D5 | 5.2 | 5.6 | 6.0 | 2 | 4 | -0.04 | 0.04 | 100 | 10 | 2 |
| BZD27-C6V2P | D6 | 5.8 | 6.2 | 6.6 | 2 | 3 | -0.01 | 0.06 | 100 | 5 | 2 |
| BZD27-C6V8P | D7 | 6.4 | 6.8 | 7.2 | 1 | 3 | 0.00 | 0.07 | 100 | 10 | 3 |
| BZD27-C7V5P | D8 | 7.0 | 7.5 | 7.9 | 1 | 2 | 0.00 | 0.07 | 100 | 50 | 3 |
| BZD27-C8V2P | D9 | 7.7 | 8.2 | 8.7 | 1 | 2 | 0.03 | 0.08 | 100 | 10 | 3 |
| BZD27-C9V1P | E0 | 8.5 | 9.1 | 9.6 | 2 | 4 | 0.03 | 0.08 | 50 | 10 | 5 |
| BZD27-C10P | E1 | 9.4 | 10 | 10.6 | 2 | 4 | 0.05 | 0.09 | 50 | 7 | 7.5 |
| BZD27-C11P | E2 | 10.4 | 11 | 11.6 | 4 | 7 | 0.05 | 0.10 | 50 | 4 | 8.2 |
| BZD27-C12P | E3 | 11.4 | 12 | 12.7 | 4 | 7 | 0.05 | 0.10 | 50 | 3 | 9.1 |
| BZD27-C13P | E4 | 12.4 | 13 | 14.1 | 5 | 10 | 0.05 | 0.10 | 50 | 2 | 10 |
| BZD27-C15P | E5 | 13.8 | 15 | 15.6 | 5 | 10 | 0.05 | 0.10 | 50 | 1 | 11 |
| BZD27-C16P | E6 | 15.3 | 16 | 17.1 | 6 | 15 | 0.06 | 0.11 | 25 | 1 | 12 |
| BZD27-C18P | E7 | 16.8 | 18 | 19.1 | 6 | 15 | 0.06 | 0.11 | 25 | 1 | 13 |
| BZD27-C20P | E8 | 18.8 | 20 | 21.2 | 6 | 15 | 0.06 | 0.11 | 25 | 1 | 15 |
| BZD27-C22P | E9 | 20.8 | 22 | 23.3 | 6 | 15 | 0.06 | 0.11 | 25 | 1 | 16 |
| BZD27-C24P | F0 | 22.8 | 24 | 25.6 | 7 | 15 | 0.06 | 0.11 | 25 | 1 | 18 |
| BZD27-C27P | F1 | 25.1 | 27 | 28.9 | 7 | 15 | 0.06 | 0.11 | 25 | 1 | 20 |
| BZD27-C30P | F2 | 28 | 30 | 32 | 8 | 15 | 0.06 | 0.11 | 25 | 1 | 22 |
| BZD27-C33P | F3 | 31 | 33 | 35 | 8 | 15 | 0.06 | 0.11 | 25 | 1 | 24 |
| BZD27-C36P | F4 | 34 | 36 | 38 | 21 | 40 | 0.06 | 0.11 | 10 | 1 | 27 |
| BZD27-C39P | F5 | 37 | 39 | 41 | 21 | 40 | 0.06 | 0.11 | 10 | 1 | 30 |
| BZD27-C43P | F6 | 40 | 43 | 46 | 24 | 45 | 0.07 | 0.12 | 10 | 1 | 33 |
| BZD27-C47P | F7 | 44 | 47 | 50 | 24 | 45 | 0.07 | 0.12 | 10 | 1 | 36 |

**When used as voltage regulator diodes** ($T_J = 25^\circ\text{C}$ unless otherwise noted)

| Type | Marking Code | Working Voltage | | | Differential Resistance | | Temperature Coefficient | | Test Current | Reverse Current at Reverse Voltage | |
|-------------|--------------|-------------------|------|------|--------------------------------|------|---------------------------|------|---------------|------------------------------------|-----------|
| | | V_Z (V) @ I_Z | | | r_{dif} (Ω) @ I_Z | | α_Z @ I_Z (%/°C) | | I_{ZT} (mA) | I_R (μA) Max | V_R (V) |
| | | Min. | Nom. | Max. | Typ. | Max. | Min. | Max. | | | |
| BZD27-C51P | F8 | 48 | 51 | 54 | 25 | 60 | 0.07 | 0.12 | 10 | 1 | 39 |
| BZD27-C56P | F9 | 52 | 56 | 60 | 25 | 60 | 0.07 | 0.12 | 10 | 1 | 43 |
| BZD27-C62P | G0 | 58 | 62 | 66 | 25 | 80 | 0.08 | 0.13 | 10 | 1 | 47 |
| BZD27-C68P | G1 | 64 | 68 | 72 | 25 | 80 | 0.08 | 0.13 | 10 | 1 | 51 |
| BZD27-C75P | G2 | 70 | 75 | 79 | 30 | 100 | 0.08 | 0.13 | 10 | 1 | 56 |
| BZD27-C82P | G3 | 77 | 82 | 87 | 30 | 100 | 0.08 | 0.13 | 10 | 1 | 62 |
| BZD27-C91P | G4 | 85 | 91 | 96 | 60 | 200 | 0.09 | 0.13 | 5 | 1 | 68 |
| BZD27-C100P | G5 | 94 | 100 | 106 | 60 | 200 | 0.09 | 0.13 | 5 | 1 | 75 |
| BZD27-C110P | G6 | 104 | 110 | 116 | 80 | 250 | 0.09 | 0.13 | 5 | 1 | 82 |
| BZD27-C120P | G7 | 114 | 120 | 127 | 80 | 250 | 0.09 | 0.13 | 5 | 1 | 91 |
| BZD27-C130P | G8 | 124 | 130 | 141 | 110 | 300 | 0.09 | 0.13 | 5 | 1 | 100 |
| BZD27-C150P | G9 | 138 | 150 | 156 | 130 | 300 | 0.09 | 0.13 | 5 | 1 | 110 |
| BZD27-C160P | H0 | 153 | 160 | 171 | 150 | 350 | 0.09 | 0.13 | 5 | 1 | 120 |
| BZD27-C180P | H1 | 168 | 180 | 191 | 180 | 400 | 0.09 | 0.13 | 5 | 1 | 130 |
| BZD27-C200P | H2 | 188 | 200 | 212 | 200 | 500 | 0.09 | 0.13 | 5 | 1 | 150 |

BZD27 Series

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When used as transient suppressor diodes (T_J = 25°C unless otherwise noted)

| Type | Rev. Breakdown Voltage | Temperature Coefficient | | Test Current | Clamping Voltage | | Reverse Current at Stand-Off Voltage | |
|-------------|--|--|------|------------------------|-------------------------|--|--------------------------------------|------------------------|
| | V _{(BR)R} (V) at I _{test} Min. | α _Z @ I _{test} (%/°C) Min. | Max. | I _{test} (mA) | V _c (V) Max. | at I _{RSM} (A) ⁽¹⁾ | I _R (μA) Max. | at V _{WM} (V) |
| BZD27-C7V5P | 7.0 | 0.00 | 0.07 | 100 | 11.3 | 13.3 | 1500 | 6.2 |
| BZD27-C8V2P | 7.7 | 0.03 | 0.08 | 100 | 12.3 | 12.2 | 1200 | 6.8 |
| BZD27-C9V1P | 8.5 | 0.03 | 0.08 | 50 | 13.3 | 11.3 | 100 | 7.5 |
| BZD27-C10P | 9.4 | 0.05 | 0.09 | 50 | 14.8 | 10.1 | 20 | 8.2 |
| BZD27-C11P | 10.4 | 0.05 | 0.10 | 50 | 15.7 | 9.6 | 5 | 9.1 |
| BZD27-C12P | 11.4 | 0.05 | 0.10 | 50 | 17.0 | 8.8 | 5 | 10 |
| BZD27-C13P | 12.4 | 0.05 | 0.10 | 50 | 18.9 | 7.9 | 5 | 11 |
| BZD27-C15P | 13.8 | 0.05 | 0.10 | 50 | 20.9 | 7.2 | 5 | 12 |
| BZD27-C16P | 15.3 | 0.06 | 0.11 | 25 | 22.9 | 6.6 | 5 | 13 |
| BZD27-C18P | 16.8 | 0.06 | 0.11 | 25 | 25.6 | 5.9 | 5 | 15 |
| BZD27-C20P | 18.8 | 0.06 | 0.11 | 25 | 28.4 | 5.3 | 5 | 16 |
| BZD27-C22P | 20.8 | 0.06 | 0.11 | 25 | 31.0 | 4.8 | 5 | 18 |
| BZD27-C24P | 22.8 | 0.06 | 0.11 | 25 | 33.8 | 4.4 | 5 | 20 |
| BZD27-C27P | 25.1 | 0.06 | 0.11 | 25 | 38.1 | 3.9 | 5 | 22 |
| BZD27-C30P | 28 | 0.06 | 0.11 | 25 | 42.2 | 3.6 | 5 | 24 |
| BZD27-C33P | 31 | 0.06 | 0.11 | 25 | 46.2 | 3.2 | 5 | 27 |
| BZD27-C36P | 34 | 0.06 | 0.11 | 10 | 50.1 | 3.0 | 5 | 30 |
| BZD27-C39P | 37 | 0.06 | 0.11 | 10 | 54.1 | 2.8 | 5 | 33 |
| BZD27-C43P | 40 | 0.07 | 0.12 | 10 | 60.7 | 2.5 | 5 | 36 |
| BZD27-C47P | 44 | 0.07 | 0.12 | 10 | 65.5 | 2.3 | 5 | 39 |
| BZD27-C51P | 48 | 0.07 | 0.12 | 10 | 70.8 | 2.1 | 5 | 43 |
| BZD27-C56P | 52 | 0.07 | 0.12 | 10 | 78.6 | 1.9 | 5 | 47 |
| BZD27-C62P | 58 | 0.08 | 0.13 | 10 | 86.5 | 1.7 | 5 | 51 |
| BZD27-C68P | 64 | 0.08 | 0.13 | 10 | 94.4 | 1.6 | 5 | 56 |
| BZD27-C75P | 70 | 0.08 | 0.13 | 10 | 103.5 | 1.5 | 5 | 62 |
| BZD27-C82P | 77 | 0.08 | 0.13 | 10 | 114 | 1.3 | 5 | 68 |
| BZD27-C91P | 85 | 0.09 | 0.13 | 5 | 126 | 1.2 | 5 | 75 |
| BZD27-C100P | 94 | 0.09 | 0.13 | 5 | 139 | 1.1 | 5 | 82 |
| BZD27-C110P | 104 | 0.09 | 0.13 | 5 | 152 | 1.0 | 5 | 91 |
| BZD27-C120P | 114 | 0.09 | 0.13 | 5 | 167 | 0.90 | 5 | 100 |
| BZD27-C130P | 124 | 0.09 | 0.13 | 5 | 185 | 0.81 | 5 | 110 |
| BZD27-C150P | 138 | 0.09 | 0.13 | 5 | 204 | 0.73 | 5 | 120 |
| BZD27-C160P | 153 | 0.09 | 0.13 | 5 | 224 | 0.67 | 5 | 130 |
| BZD27-C180P | 168 | 0.09 | 0.13 | 5 | 249 | 0.60 | 5 | 150 |
| BZD27-C200P | 188 | 0.09 | 0.13 | 5 | 276 | 0.54 | 5 | 160 |

Note: (1) Non-repetitive peak reverse current in accordance with "IEC 60-1, Section 8" (10/1000 μs pulse); see Fig. 8.