

FLZ2V2 - FLZ39V

Zener Diodes



SOD-80 Glass case
Color Band Denotes Cathode

| Color Band Marking | | |
|--------------------|----------|----------|
| Tolerance | 1st Band | 2nd Band |
| A | Blue | Red |
| B | Blue | Green |
| C | Blue | Black |
| D | Blue | Gray |

Absolute Maximum Ratings T_a = 25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|------------------|------------------------------|--------------------------------|-------|
| P _D | Power Dissipation | 500 | mW |
| T _{STG} | Storage Temperature Range | -65 to +175 | °C |
| T _J | Maximum Junction Temperature | 175 | °C |
| I _{ZM} | Maximum Regulator Current | P _D /V _Z | mA |

* These ratings are limiting values above which the serviceability of the diode may be impaired.

Thermal Characteristics

| Symbol | Parameter | Value | Unit |
|------------------|---|-------|------|
| R _{θJA} | Thermal Resistance, Junction to Ambient | 300 | °C/W |

* Device mounted on FR-4 PCB with 3" × 4.5" X 0.06 with only signal trace

Electrical Characteristics T_{amb} = 25°C unless otherwise specified

| Symbol | Parameter/ Test condition | Min. | Typ. | Max. | Unit |
|----------------|---|------|------|------|------|
| V _F | Forward Voltage / I _F =200mA | -- | -- | 1.2 | V |

Package Marking and Ordering Information

| Device Marking | Device | Package | Reel Size | Tape Width | Quantity |
|-------------------------------------|--------------------------------|---------|-----------|------------|----------|
| Color Band Marking Per Tolerance | Refer to Product table list | SOD-80 | 7" | 8mm | 2,500 |

Electrical Characteristics T_A=25°C unless otherwise noted

| Product Group | Product Name | V _Z (V) @ I _{ZT} | | | Z _{ZT} (Ω) @ I _{ZT} | I _{ZT} (mA) | Z _{ZK} (Ω) @ I _{ZK} | I _{ZK} (mA) | I _R (μA) @ V _R | V _R (V) |
|---------------|--------------|--------------------------------------|------|------|---------------------------------------|----------------------|---------------------------------------|----------------------|--------------------------------------|--------------------|
| | | Min. | Typ. | Max. | Max. | - | Max. | - | Max | - |
| FLZ2V2 | FLZ2V2A | 2.13 | 2.21 | 2.29 | 35 | 20 | 400 | 1 | 55 | 0.7 |
| | FLZ2V2B | 2.23 | 2.32 | 2.40 | 35 | 20 | 400 | 1 | 55 | 0.7 |
| FLZ2V4 | FLZ2V4A | 2.34 | 2.42 | 2.50 | 35 | 20 | 400 | 1 | 84 | 1 |
| | FLZ2V4B | 2.45 | 2.53 | 2.61 | 35 | 20 | 400 | 1 | 84 | 1 |
| FLZ2V7 | FLZ2V7A | 2.55 | 2.64 | 2.73 | 35 | 20 | 450 | 1 | 70 | 1 |
| | FLZ2V7B | 2.70 | 2.80 | 2.90 | 35 | 20 | 450 | 1 | 70 | 1 |
| FLZ3V0 | FLZ3V0A | 2.86 | 2.96 | 3.05 | 35 | 20 | 450 | 1 | 35 | 1 |
| | FLZ3V0B | 3.02 | 3.12 | 3.21 | 35 | 20 | 450 | 1 | 35 | 1 |
| FLZ3V3 | FLZ3V3A | 3.17 | 3.27 | 3.36 | 35 | 20 | 450 | 1 | 14 | 1 |
| | FLZ3V3B | 3.33 | 3.43 | 3.52 | 35 | 20 | 450 | 1 | 14 | 1 |
| FLZ3V6 | FLZ3V6A | 3.48 | 3.57 | 3.66 | 48 | 20 | 850 | 1 | 2.8 | 1 |
| | FLZ3V6B | 3.64 | 3.73 | 3.81 | 48 | 20 | 850 | 1 | 2.8 | 1 |
| FLZ3V9 | FLZ3V9A | 3.78 | 3.88 | 3.97 | 40 | 20 | 850 | 1 | 1.4 | 1 |
| | FLZ3V9B | 3.93 | 4.03 | 4.12 | 40 | 20 | 850 | 1 | 1.4 | 1 |
| FLZ4V3 | FLZ4V3A | 4.07 | 4.15 | 4.23 | 32 | 20 | 850 | 1 | 0.47 | 1 |
| | FLZ4V3B | 4.22 | 4.30 | 4.38 | 32 | 20 | 850 | 1 | 0.47 | 1 |
| | FLZ4V3C | 4.35 | 4.44 | 4.52 | 32 | 20 | 850 | 1 | 0.47 | 1 |
| FLZ4V7 | FLZ4V7A | 4.48 | 4.56 | 4.64 | 21 | 20 | 770 | 1 | 0.19 | 1 |
| | FLZ4V7B | 4.60 | 4.68 | 4.75 | 21 | 20 | 770 | 1 | 0.19 | 1 |
| | FLZ4V7C | 4.73 | 4.81 | 4.89 | 21 | 20 | 770 | 1 | 0.19 | 1 |
| FLZ5V1 | FLZ5V1A | 4.86 | 4.94 | 5.02 | 17 | 20 | 685 | 1 | 0.19 | 1.5 |
| | FLZ5V1B | 4.99 | 5.08 | 5.16 | 17 | 20 | 685 | 1 | 0.19 | 1.5 |
| | FLZ5V1C | 5.13 | 5.23 | 5.33 | 17 | 20 | 685 | 1 | 0.19 | 1.5 |
| FLZ5V6 | FLZ5V6A | 5.31 | 5.41 | 5.50 | 10.5 | 20 | 425 | 1 | 0.75 | 2.5 |
| | FLZ5V6B | 5.48 | 5.58 | 5.68 | 10.5 | 20 | 425 | 1 | 0.75 | 2.5 |
| | FLZ5V6C | 5.66 | 5.76 | 5.86 | 10.5 | 20 | 425 | 1 | 0.75 | 2.5 |
| FLZ6V2 | FLZ6V2A | 5.83 | 5.94 | 6.04 | 8.5 | 20 | 255 | 1 | 3.3 | 3 |
| | FLZ6V2B | 6.01 | 6.12 | 6.22 | 8.5 | 20 | 255 | 1 | 3.3 | 3 |
| | FLZ6V2C | 6.18 | 6.28 | 6.38 | 8.5 | 20 | 255 | 1 | 3.3 | 3 |
| FLZ6V8 | FLZ6V8A | 6.33 | 6.45 | 6.57 | 6.6 | 20 | 123 | 0.5 | 1.1 | 3.5 |
| | FLZ6V8B | 6.54 | 6.66 | 6.77 | 6.6 | 20 | 123 | 0.5 | 1.1 | 3.5 |
| | FLZ6V8C | 6.72 | 6.83 | 6.93 | 6.6 | 20 | 123 | 0.5 | 1.1 | 3.5 |
| FLZ7V5 | FLZ7V5A | 6.90 | 7.04 | 7.17 | 6.6 | 20 | 95 | 0.5 | 0.3 | 4.0 |
| | FLZ7V5B | 7.13 | 7.26 | 7.39 | 6.6 | 20 | 95 | 0.5 | 0.3 | 4.0 |
| | FLZ7V5C | 7.35 | 7.49 | 7.62 | 6.6 | 20 | 95 | 0.5 | 0.3 | 4.0 |
| FLZ8V2 | FLZ8V2A | 7.58 | 7.73 | 7.88 | 6.6 | 20 | 95 | 0.5 | 0.3 | 5 |
| | FLZ8V2B | 7.84 | 7.99 | 8.13 | 6.6 | 20 | 95 | 0.5 | 0.3 | 5 |
| | FLZ8V2C | 8.09 | 8.24 | 8.39 | 6.6 | 20 | 95 | 0.5 | 0.3 | 5 |
| FLZ9V1 | FLZ9V1A | 8.34 | 8.51 | 8.68 | 6.6 | 20 | 95 | 0.5 | 0.3 | 6 |
| | FLZ9V1B | 8.63 | 8.80 | 8.97 | 6.6 | 20 | 95 | 0.5 | 0.3 | 6 |
| | FLZ9V1C | 8.91 | 9.09 | 9.27 | 6.6 | 20 | 95 | 0.5 | 0.3 | 6 |

Electrical Characteristics (Continued) $T_A=25^{\circ}\text{C}$ unless otherwise noted

| Product Group | Product Name | V_Z (V) @ I_{ZT} | | | $Z_{ZT}(\Omega)$ @ I_{ZT} | I_{ZT} (mA) | $Z_{ZK}(\Omega)$ @ I_{ZK} | I_{ZK} (mA) | $I_R(\mu\text{A})$ @ V_R | V_R (V) |
|---------------|--------------|----------------------|-------|-------|--------------------------------|------------------|--------------------------------|------------------|-------------------------------|-----------|
| | | Min. | Typ. | Max. | Max. | - | Max. | - | Max | - |
| FLZ10V | FLZ10VA | 9.21 | 9.39 | 9.57 | 6.6 | 20 | 95 | 0.5 | 0.11 | 7 |
| | FLZ10VB | 9.50 | 9.69 | 9.88 | 6.6 | 20 | 95 | 0.5 | 0.11 | 7 |
| | FLZ10VC | 9.84 | 10.06 | 10.28 | 6.6 | 20 | 95 | 0.5 | 0.11 | 7 |
| FLZ11V | FLZ11VA | 10.2 | 10.41 | 10.61 | 8.5 | 10 | 95 | 0.5 | 0.133 | 8 |
| | FLZ11VB | 10.53 | 10.73 | 10.92 | 8.5 | 10 | 95 | 0.5 | 0.133 | 8 |
| | FLZ11VC | 10.85 | 11.04 | 11.23 | 8.5 | 10 | 95 | 0.5 | 0.133 | 8 |
| FLZ12V | FLZ12VA | 11.16 | 11.38 | 11.60 | 9.5 | 10 | 95 | 0.5 | 0.133 | 9 |
| | FLZ12VB | 11.53 | 11.71 | 11.89 | 9.5 | 10 | 95 | 0.5 | 0.133 | 9 |
| | FLZ12VC | 11.83 | 12.05 | 12.27 | 9.5 | 10 | 95 | 0.5 | 0.133 | 9 |
| FLZ13V | FLZ13VA | 12.21 | 12.45 | 12.68 | 11.4 | 10 | 95 | 0.5 | 0.133 | 10 |
| | FLZ13VB | 12.62 | 12.87 | 13.12 | 11.4 | 10 | 95 | 0.5 | 0.133 | 10 |
| | FLZ13VC | 13.07 | 13.33 | 15.38 | 11.4 | 10 | 95 | 0.5 | 0.133 | 10 |
| FLZ15V | FLZ15VA | 13.52 | 13.79 | 14.05 | 13.3 | 10 | 95 | 0.5 | 0.133 | 11 |
| | FLZ15VB | 13.99 | 14.26 | 14.52 | 13.3 | 10 | 95 | 0.5 | 0.133 | 11 |
| | FLZ15VC | 14.45 | 14.72 | 14.99 | 13.3 | 10 | 95 | 0.5 | 0.133 | 11 |
| FLZ16V | FLZ16VA | 14.90 | 15.19 | 15.47 | 15.2 | 10 | 132 | 0.5 | 0.133 | 12 |
| | FLZ16VB | 15.36 | 15.65 | 15.93 | 15.2 | 10 | 132 | 0.5 | 0.133 | 12 |
| | FLZ16VC | 15.83 | 16.14 | 16.45 | 15.2 | 10 | 132 | 0.5 | 0.133 | 12 |
| FLZ18V | FLZ18VA | 16.38 | 16.70 | 17.02 | 19.4 | 10 | 123 | 0.5 | 0.133 | 13 |
| | FLZ18VB | 16.96 | 17.29 | 17.61 | 19.4 | 10 | 123 | 0.5 | 0.133 | 13 |
| | FLZ18VC | 17.56 | 17.90 | 18.24 | 19.4 | 10 | 123 | 0.5 | 0.133 | 13 |
| FLZ20V | FLZ20VA | 18.17 | 18.52 | 18.86 | 23.5 | 10 | 170 | 0.5 | 0.133 | 15 |
| | FLZ20VB | 18.78 | 19.13 | 19.48 | 23.5 | 10 | 170 | 0.5 | 0.133 | 15 |
| | FLZ20VC | 19.42 | 19.80 | 20.18 | 23.5 | 10 | 170 | 0.5 | 0.133 | 15 |
| | FLZ20VD | 19.93 | 20.30 | 20.67 | 23.5 | 10 | 170 | 0.5 | 0.133 | 15 |
| FLZ22V | FLZ22VA | 20.28 | 20.66 | 21.03 | 25.6 | 5 | 170 | 0.5 | 0.133 | 17 |
| | FLZ22VB | 20.82 | 21.21 | 21.59 | 25.6 | 5 | 170 | 0.5 | 0.133 | 17 |
| | FLZ22VC | 21.29 | 21.66 | 22.02 | 25.6 | 5 | 170 | 0.5 | 0.133 | 17 |
| | FLZ22VD | 21.75 | 22.15 | 22.54 | 25.6 | 5 | 170 | 0.5 | 0.133 | 17 |
| FLZ24V | FLZ24VA | 22.32 | 22.69 | 23.06 | 29.0 | 5 | 170 | 0.5 | 0.133 | 19 |
| | FLZ24VB | 22.81 | 23.24 | 23.67 | 29.0 | 5 | 170 | 0.5 | 0.133 | 19 |
| | FLZ24VC | 23.35 | 23.78 | 24.21 | 29.0 | 5 | 170 | 0.5 | 0.133 | 19 |
| | FLZ24VD | 23.87 | 24.31 | 24.75 | 29.0 | 5 | 170 | 0.5 | 0.133 | 19 |
| FLZ27V | FLZ27VA | 24.33 | 24.89 | 25.45 | 38 | 5 | 210 | 0.5 | 0.133 | 21 |
| | FLZ27VB | 25.04 | 25.62 | 26.19 | 38 | 5 | 210 | 0.5 | 0.133 | 21 |
| | FLZ27VC | 25.69 | 26.29 | 26.88 | 38 | 5 | 210 | 0.5 | 0.133 | 21 |
| | FLZ27VD | 26.36 | 26.97 | 27.57 | 38 | 5 | 210 | 0.5 | 0.133 | 21 |
| FLZ30V | FLZ30VA | 27.07 | 27.69 | 28.31 | 46 | 5 | 210 | 0.5 | 0.133 | 23 |
| | FLZ30VB | 27.77 | 28.41 | 29.05 | 46 | 5 | 210 | 0.5 | 0.133 | 23 |
| | FLZ30VC | 28.44 | 29.09 | 29.74 | 46 | 5 | 210 | 0.5 | 0.133 | 23 |
| | FLZ30VD | 29.10 | 29.77 | 30.43 | 46 | 5 | 210 | 0.5 | 0.133 | 23 |

| Product Group | Product Name | V _Z (V) @ I _{ZT} | | | Z _{ZT} (Ω) @ I _{ZT} | I _{ZT} (mA) | Z _{ZK} (Ω) @ I _{ZK} | I _{ZK} (mA) | I _R (μA) @ V _R | V _R (V) |
|---------------|--------------|--------------------------------------|-------|-------|--|-------------------------|--|-------------------------|---|--------------------|
| | | Min. | Typ. | Max. | Max. | - | Max. | - | Max | - |
| FLZ33V | FLZ33VA | 29.76 | 30.45 | 31.14 | 55 | 5 | 210 | 0.5 | 0.133 | 25 |
| | FLZ33VB | 30.40 | 31.10 | 31.80 | 55 | 5 | 210 | 0.5 | 0.133 | 25 |
| | FLZ33VC | 30.99 | 31.70 | 32.41 | 55 | 5 | 210 | 0.5 | 0.133 | 25 |
| | FLZ33VD | 31.57 | 32.30 | 33.03 | 55 | 5 | 210 | 0.5 | 0.133 | 25 |
| FLZ36V | FLZ36VA | 32.30 | 32.96 | 33.62 | 63 | 5 | 210 | 0.5 | 0.133 | 27 |
| | FLZ36VB | 32.95 | 33.63 | 34.30 | 63 | 5 | 210 | 0.5 | 0.133 | 27 |
| | FLZ36VC | 33.58 | 34.27 | 34.95 | 63 | 5 | 210 | 0.5 | 0.133 | 27 |
| | FLZ36VD | 34.19 | 34.89 | 35.59 | 63 | 5 | 210 | 0.5 | 0.133 | 27 |
| FLZ39V | FLZ39VA | 34.86 | 35.57 | 36.28 | 72 | 5 | 210 | 0.5 | 0.133 | 30 |
| | FLZ39VB | 35.53 | 36.26 | 36.99 | 72 | 5 | 210 | 0.5 | 0.133 | 30 |
| | FLZ39VC | 36.18 | 36.92 | 37.66 | 72 | 5 | 210 | 0.5 | 0.133 | 30 |
| | FLZ39VD | 36.82 | 37.58 | 38.33 | 72 | 5 | 210 | 0.5 | 0.133 | 30 |

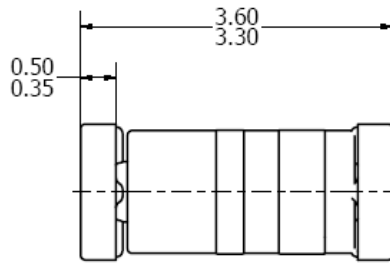
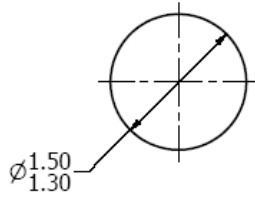
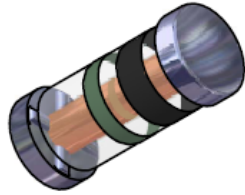
Note :

1. Zener Voltage(V_Z)

The zener voltage is measured with the device junction in the thermal equilibrium at the lead temperature (TL) at at 30°C ± 1°C and 3/8" lead length.

Mechanical Dimensions

SOD-80



Dimensions in Millimeters

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| | | | | |
|--------------------------------------|---------------------|---------------|---------------------|-----------------|
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PRODUCT STATUS DEFINITIONS

Definition of Terms

| Datasheet Identification | Product Status | Definition |
|--------------------------|------------------------|---|
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