

FLZ2V2 - FLZ39V Zener Diodes

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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" x 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.

Typical Performance Characteristics

Figure 1. Zener current vs. Zener Voltage

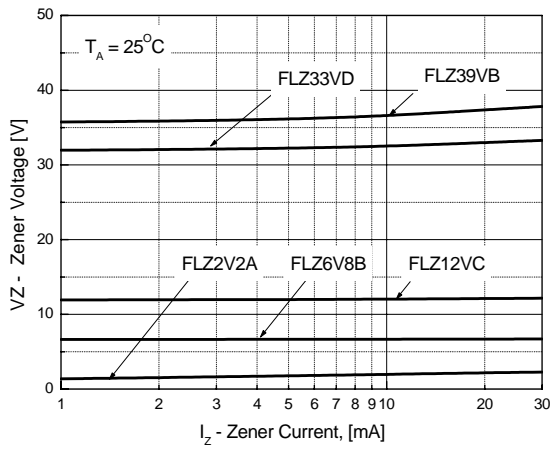


Figure 2. Zener current vs. Zener Impedance

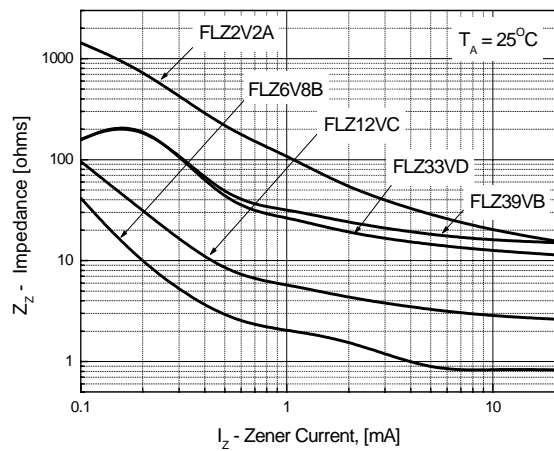


Figure 3. FLZ2V2A
Zener current vs. Zener Voltage

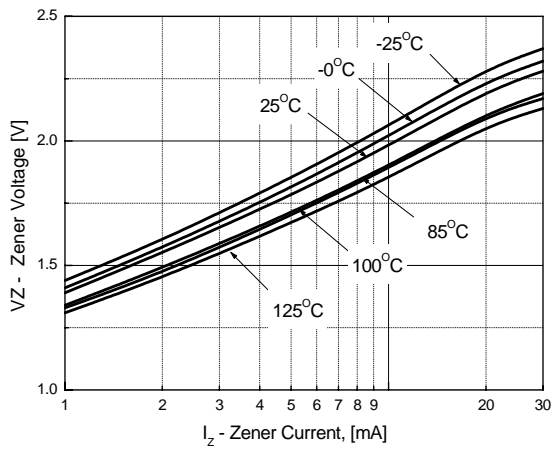


Figure 4. FLZ6V8B
Zener current vs. Zener Voltage

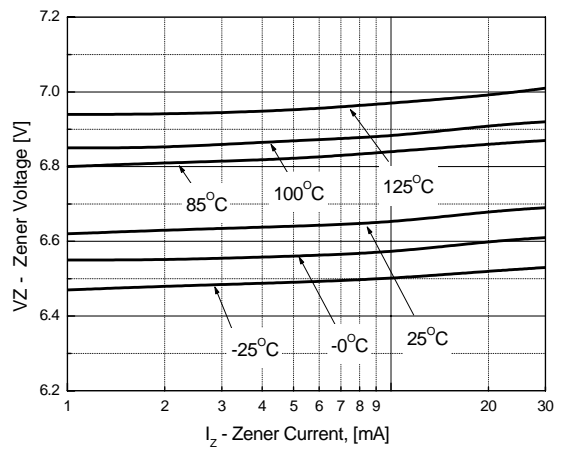


Figure 5. FLZ12VC
Zener current vs. Zener Voltage

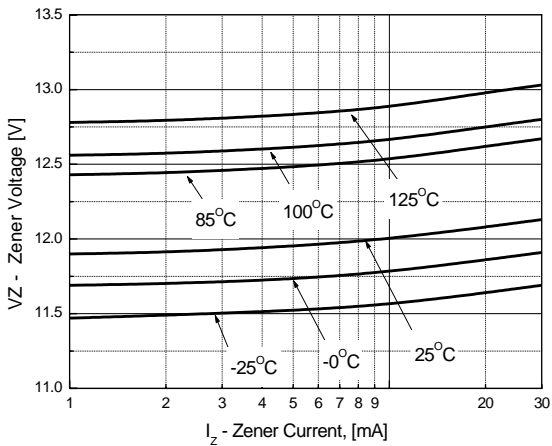
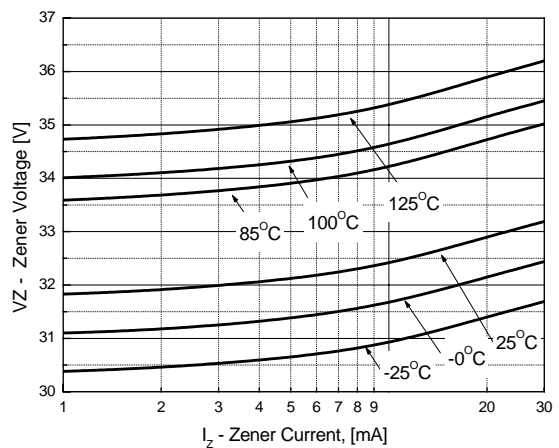
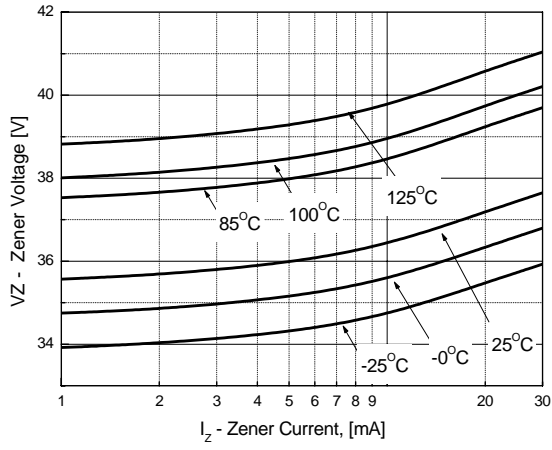


Figure 6. FLZ33VD
Zener current vs. Zener Voltage



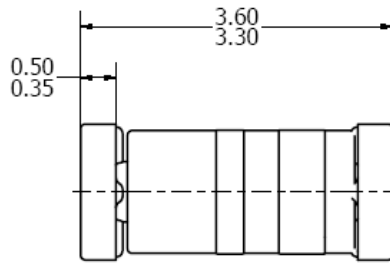
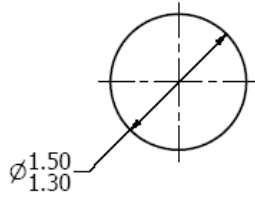
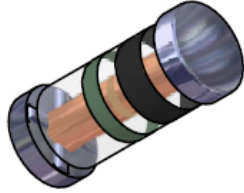
Typical Performance Characteristics

Figure 9. FLZ39VB
Zener current vs. Zener Voltage



Mechanical Dimensions

SOD-80



Dimensions in Millimeters

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| | | | | |
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