# DATA SHEET

## GQZJ2.0~GQZJ56

## SURFACE MOUNT ZENER DIODES

**VOLTAGE** 2.0 to 56 Volts **POWER** 500 mWatts

### FEATURES

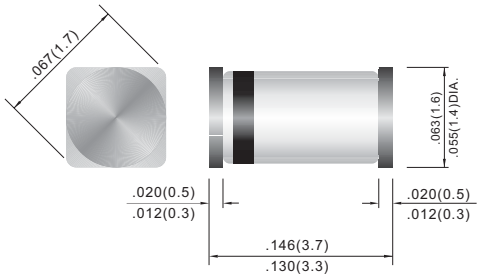
- Planar Die construction
- 500mW Power Dissipation
- Ideally Suited for Automated Assembly Processes

### MECHANICAL DATA

- Case: Molded Glass QUARDRO-MELF
- Terminals: Solderable per MIL-STD-202, Method 208
- Polarity: See Diagram Below
- Approx. Weight: 0.008 grams
- Mounting Position: Any
- Packing information

  T/R - 2.5K per 7" plastic Reel

**QUADRO-MELF** Unit : inch (mm)




### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

| Parameter | Symbol | Value | Units |
|---|---|---|---|
| Power Dissipation at Tamb = 25 °C | $P_{TOT}$ | 500 | mW |
| Junction Temperature | $T_J$ | 175 | °C |
| Storage Temperature Range | $T_S$ | -65 to +175 | °C |
| Valid provided that leads at a distance of 10mm from case are kept at ambient temperature. | | | |

| Parameter | Symbol | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Thermal Resistance Junction to Ambient Air | RthA | -- | -- | 0.3 | K/mW |
| Forward Voltage at IF = 100mA | VF | -- | -- | 1 | V |
| Valid provided that leads at a distance of 10mm from case are kept at ambient temperature. | | | | | |

| Part Number | CLASS | Vz @ Izt | | IZ (mA) | VR (V) | IR(uA) MAX | Izt (mA) | Zzt(Ω) MAX | Izk (mA) | Zzk(Ω) MAX |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Min. V | Max. V | | | | | | | |
| GQZJ 2.0 | A | 1.88 | 2.10 | 5 | 0.5 | 120 | 5 | 100 | 0.5 | 1000 |
| | B | 2.02 | 2.20 | | | | | | | |
| GQZJ 2.2 | A | 2.12 | 2.30 | 5 | 0.7 | 100 | 5 | 100 | 0.5 | 1000 |
| | B | 2.22 | 2.41 | | | | | | | |
| GQZJ 2.4 | A | 2.33 | 2.52 | 5 | 1.0 | 120 | 5 | 100 | 0.5 | 1000 |
| | B | 2.43 | 2.63 | | | | | | | |
| GQZJ 2.7 | A | 2.54 | 2.75 | 5 | 1.0 | 100 | 5 | 110 | 0.5 | 1000 |
| | B | 2.69 | 2.91 | | | | | | | |
| GQZJ 3.0 | A | 2.85 | 3.07 | 5 | 1.0 | 50 | 5 | 120 | 0.5 | 1000 |
| | B | 3.01 | 3.22 | | | | | | | |
| GQZJ 3.3 | A | 3.16 | 3.38 | 5 | 1.0 | 20 | 5 | 120 | 0.5 | 1000 |
| | B | 3.32 | 3.53 | | | | | | | |
| GQZJ 3.6 | A | 3.455 | 3.695 | 5 | 1.0 | 10 | 5 | 100 | 1 | 1000 |
| | B | 3.60 | 3.845 | | | | | | | |
| GQZJ 3.9 | A | 3.74 | 4.01 | 5 | 1.0 | 5 | 5 | 100 | 1 | 1000 |
| | B | 3.89 | 4.16 | | | | | | | |
| GQZJ 4.3 | A | 4.04 | 4.29 | 5 | 1.0 | 5 | 5 | 100 | 1 | 1000 |
| | B | 4.17 | 4.43 | | | | | | | |
| | C | 4.30 | 4.57 | | | | | | | |
| GQZJ 4.7 | A | 4.44 | 4.68 | 5 | 1.0 | 5 | 5 | 90 | 1 | 900 |
| | B | 4.55 | 4.80 | | | | | | | |
| | C | 4.68 | 4.93 | | | | | | | |
| GQZJ 5.1 | A | 4.81 | 5.07 | 5 | 1.5 | 5 | 5 | 80 | 1 | 800 |
| | B | 4.94 | 5.20 | | | | | | | |
| | C | 5.09 | 5.37 | | | | | | | |
| GQZJ 5.6 | A | 5.28 | 5.55 | 5 | 2.5 | 5 | 5 | 60 | 1 | 500 |
| | B | 5.45 | 5.73 | | | | | | | |
| | C | 5.61 | 5.91 | | | | | | | |
| GQZJ 6.2 | A | 5.78 | 6.09 | 5 | 3.0 | 5 | 5 | 60 | 1 | 300 |
| | B | 5.96 | 6.27 | | | | | | | |
| | C | 6.12 | 6.44 | | | | | | | |
| GQZJ 6.8 | A | 6.29 | 6.63 | 5 | 3.5 | 2 | 5 | 20 | 0.5 | 150 |
| | B | 6.49 | 6.83 | | | | | | | |
| | C | 6.66 | 7.01 | | | | | | | |
| GQZJ 7.5 | A | 6.85 | 7.22 | 5 | 4.0 | 0.5 | 5 | 20 | 0.5 | 120 |
| | B | 7.07 | 7.45 | | | | | | | |
| | C | 7.29 | 7.67 | | | | | | | |
| GQZJ 8.2 | A | 7.53 | 7.92 | 5 | 5.0 | 0.5 | 5 | 20 | 0.5 | 120 |
| | B | 7.78 | 8.19 | | | | | | | |
| | C | 8.03 | 8.45 | | | | | | | |
| GQZJ 9.1 | A | 8.29 | 8.73 | 5 | 6.0 | 0.5 | 5 | 25 | 0.5 | 120 |
| | B | 8.57 | 9.01 | | | | | | | |
| | C | 8.83 | 9.30 | | | | | | | |
| GQZJ 10 | A | 9.12 | 9.59 | 5 | 7.0 | 0.2 | 5 | 30 | 0.5 | 120 |
| | B | 9.41 | 9.90 | | | | | | | |
| | C | 9.70 | 10.20 | | | | | | | |
| | D | 9.94 | 10.44 | | | | | | | |
| GQZJ 11 | A | 10.18 | 10.71 | 5 | 8.0 | 0.2 | 5 | 30 | 0.5 | 120 |
| | B | 10.50 | 11.05 | | | | | | | |
| | C | 10.82 | 11.38 | | | | | | | |

| Part Number | CLASS | $V_Z$ @ $I_{ZT}$ | | IZ (mA) | VR (V) | IR(uA) MAX | Izt (mA) | $Z_{ZT}$(Ω) MAX | $I_{ZK}$ (mA) | $Z_{ZK}$(Ω) MAX |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Min. V | Max. V | | | | | | | |
| GQZJ 12 | A | 11.13 | 11.71 | 5 | 9.0 | 0.2 | 5 | 30 | 0.5 | 110 |
| | B | 11.44 | 12.03 | | | | | | | |
| | C | 11.74 | 12.35 | | | | | | | |
| GQZJ 13 | A | 12.11 | 12.75 | 5 | 10 | 0.2 | 5 | 35 | 0.5 | 110 |
| | B | 12.55 | 13.21 | | | | | | | |
| | C | 12.99 | 13.66 | | | | | | | |
| GQZJ 15 | A | 13.44 | 14.13 | 5 | 11 | 0.2 | 5 | 40 | 0.5 | 110 |
| | B | 13.89 | 14.62 | | | | | | | |
| | C | 14.35 | 15.09 | | | | | | | |
| GQZJ 16 | A | 14.80 | 15.57 | 5 | 12 | 0.2 | 5 | 40 | 0.5 | 150 |
| | B | 15.25 | 16.04 | | | | | | | |
| | C | 15.69 | 16.51 | | | | | | | |
| GQZJ 18 | A | 16.22 | 17.06 | 5 | 13 | 0.2 | 5 | 45 | 0.5 | 150 |
| | B | 16.82 | 17.70 | | | | | | | |
| | C | 17.42 | 18.33 | | | | | | | |
| GQZJ 20 | A | 18.02 | 18.96 | 5 | 15 | 0.2 | 5 | 55 | 0.5 | 200 |
| | B | 18.63 | 19.59 | | | | | | | |
| | C | 19.23 | 20.22 | | | | | | | |
| | D | 19.72 | 20.72 | | | | | | | |
| GQZJ 22 | A | 20.15 | 21.20 | 5 | 17 | 0.2 | 5 | 30 | 0.5 | 200 |
| | B | 20.64 | 21.71 | | | | | | | |
| | C | 21.08 | 22.17 | | | | | | | |
| | D | 21.52 | 22.63 | | | | | | | |
| GQZJ 24 | A | 22.05 | 23.18 | 5 | 19 | 0.2 | 5 | 35 | 0.5 | 200 |
| | B | 22.61 | 23.77 | | | | | | | |
| | C | 23.12 | 24.31 | | | | | | | |
| | D | 23.63 | 24.85 | | | | | | | |
| GQZJ 27 | A | 24.26 | 25.52 | 5 | 21 | 0.2 | 5 | 45 | 0.5 | 250 |
| | B | 24.97 | 26.26 | | | | | | | |
| | C | 25.63 | 26.95 | | | | | | | |
| | D | 26.29 | 27.64 | | | | | | | |
| GQZJ 30 | A | 26.99 | 28.39 | 5 | 23 | 0.2 | 5 | 55 | 0.5 | 250 |
| | B | 27.70 | 29.13 | | | | | | | |
| | C | 28.36 | 29.82 | | | | | | | |
| | D | 29.02 | 30.51 | | | | | | | |
| GQZJ 33 | A | 29.68 | 31.22 | 5 | 25 | 0.2 | 5 | 65 | 0.5 | 250 |
| | B | 30.32 | 31.88 | | | | | | | |
| | C | 30.90 | 32.50 | | | | | | | |
| | D | 31.49 | 33.11 | | | | | | | |
| GQZJ 36 | A | 32.14 | 33.79 | 5 | 27 | 0.2 | 5 | 75 | 0.5 | 250 |
| | B | 32.79 | 34.49 | | | | | | | |
| | C | 33.40 | 35.13 | | | | | | | |
| | D | 34.01 | 35.77 | | | | | | | |
| GQZJ 39 | A | 34.68 | 36.47 | 5 | 30 | 0.2 | 5 | 85 | 0.5 | 250 |
| | B | 35.36 | 37.19 | | | | | | | |
| | C | 36.00 | 37.85 | | | | | | | |
| | D | 36.63 | 38.52 | | | | | | | |
| GQZJ 43 | | 40.00 | 45.00 | 5 | 33 | 0.2 | 5 | 90 | -- | -- |
| GQZJ 47 | | 44.00 | 49.00 | 5 | 36 | 0.2 | 5 | 90 | -- | -- |
| GQZJ 51 | | 48.00 | 54.00 | 5 | 39 | 0.2 | 5 | 110 | -- | -- |
| GQZJ 56 | | 53.00 | 60.00 | 5 | 43 | 0.2 | 5 | 110 | -- | -- |

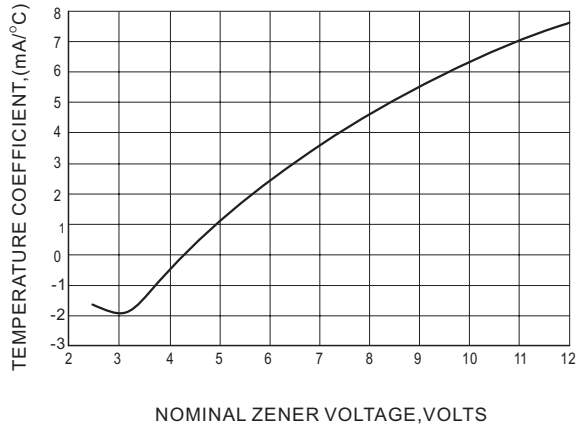



Fig.1 TEMPERATURE COEFFICENTS

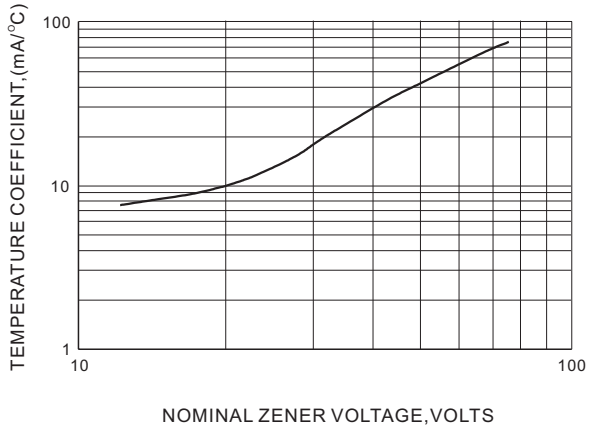



Fig.2 TEMPERATURE COEFFICENTS

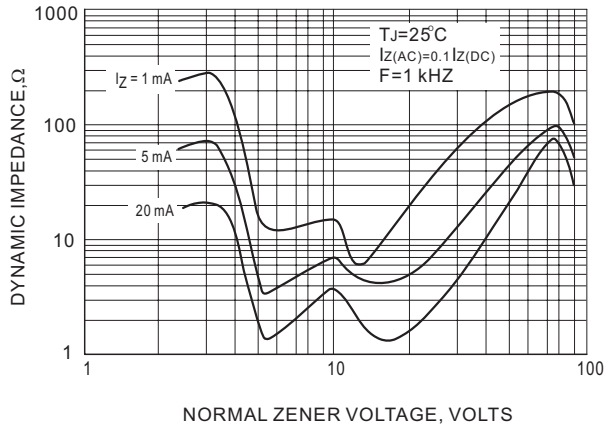



Fig.3 EFFECT OF ZENER VOLTAGE ON ZENER IMPEDANCE

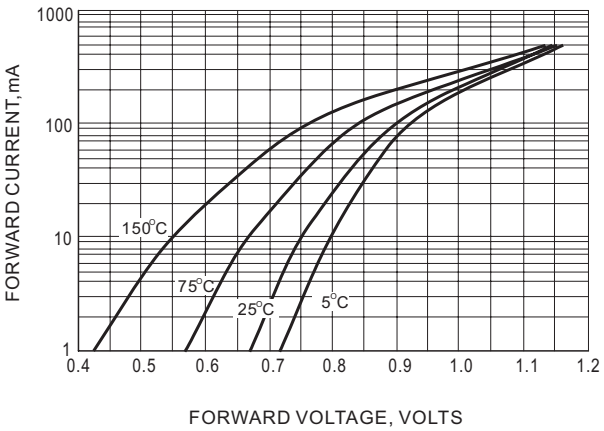



Fig.4 TYPICAL FORWARD VOLTAGE

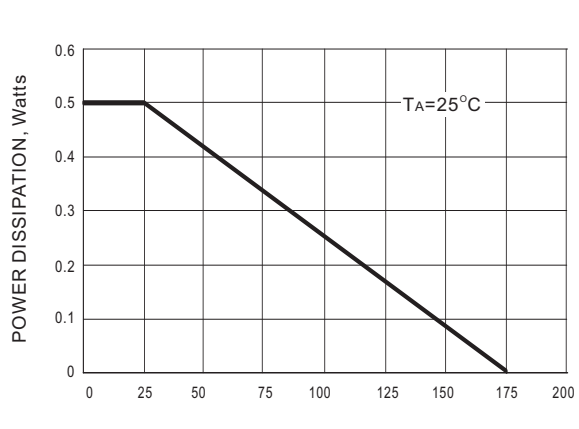



Fig.5 STEADY STATE POWER DERATING

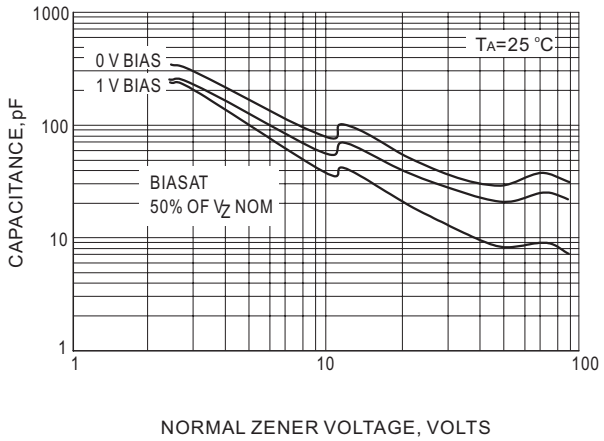



Fig.6 TYPICAL CAPACITANCE

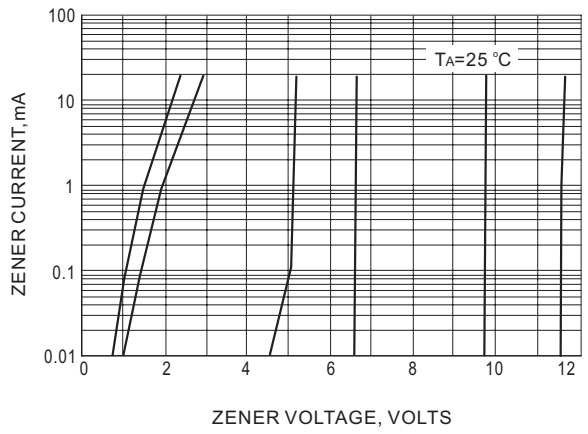



Fig.7 ZENER VOLTAGE VERSUS ZENER CURRENT

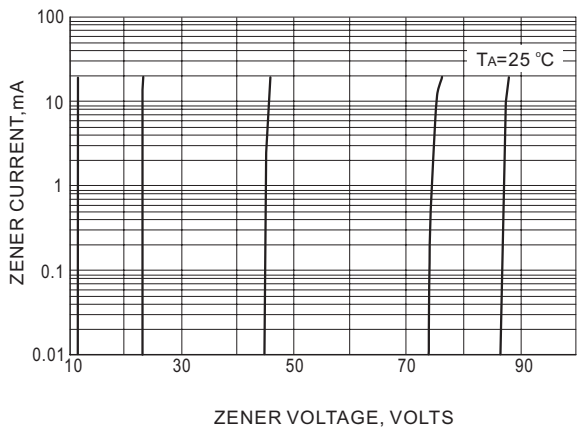



Fig.8 ZENER VOLTAGE VERSUS ZENER CURRENT

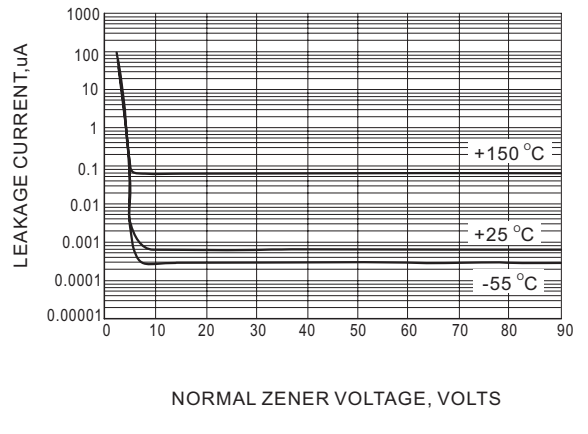



Fig.9 TYPICAL LEAKAGE CURRENT