# DATA SHEET

## GQZ2.0~GQZ56

## SURFACE MOUNT ZENER DIODES

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

### FEATURES

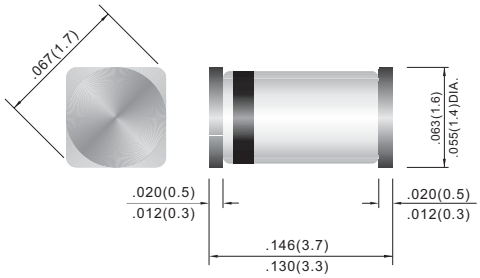
- Planar Die construction
- 500mW Power Dissipation
- Ideally Suited for Automated Assembly Processes

### MECHANICAL DATA

- Case: Molded Glass QUADRO-MEIF
- 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 | $V_Z$ @ $I_{ZT}$ | | IZ (mA) | VR (V) | IR(uA) MAX | Izt (mA) | $Z_{ZT}(\Omega)$ MAX | $I_{ZK}$ (mA) | $Z_{ZK}(\Omega)$ MAX |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Min. V | Max. V | | | | | | | |
| GQZ 2.0 | A | 1.88 | 2.10 | 20 | 0.5 | 120 | 20 | 140 | 1 | 2000 |
| | B | 2.02 | 2.20 | | | | | | | |
| GQZ 2.2 | A | 2.12 | 2.30 | 20 | 0.7 | 120 | 20 | 120 | 1 | 2000 |
| | B | 2.22 | 2.41 | | | | | | | |
| GQZ 2.4 | A | 2.33 | 2.52 | 20 | 1.0 | 120 | 20 | 100 | 1 | 2000 |
| | B | 2.43 | 2.63 | | | | | | | |
| GQZ 2.7 | A | 2.54 | 2.75 | 20 | 1.0 | 120 | 20 | 100 | 1 | 1000 |
| | B | 2.69 | 2.91 | | | | | | | |
| GQZ 3.0 | A | 2.85 | 3.07 | 20 | 1.0 | 50 | 20 | 80 | 1 | 1000 |
| | B | 3.01 | 3.22 | | | | | | | |
| GQZ 3.3 | A | 3.16 | 3.38 | 20 | 1.0 | 20 | 20 | 70 | 1 | 1000 |
| | B | 3.32 | 3.53 | | | | | | | |
| GQZ 3.6 | A | 3.455 | 3.695 | 20 | 1.0 | 10 | 20 | 60 | 1 | 1000 |
| | B | 3.60 | 3.845 | | | | | | | |
| GQZ 3.9 | A | 3.74 | 4.01 | 20 | 1.0 | 5 | 20 | 50 | 1 | 1000 |
| | B | 3.89 | 4.16 | | | | | | | |
| GQZ 4.3 | A | 4.04 | 4.29 | 20 | 1.0 | 5 | 20 | 40 | 1 | 1000 |
| | B | 4.17 | 4.43 | | | | | | | |
| | C | 4.30 | 4.57 | | | | | | | |
| GQZ 4.7 | A | 4.44 | 4.68 | 20 | 1.0 | 5 | 20 | 25 | 1 | 900 |
| | B | 4.55 | 4.80 | | | | | | | |
| | C | 4.68 | 4.93 | | | | | | | |
| GQZ 5.1 | A | 4.81 | 5.07 | 20 | 1.5 | 5 | 20 | 20 | 1 | 800 |
| | B | 4.94 | 5.20 | | | | | | | |
| | C | 5.09 | 5.37 | | | | | | | |
| GQZ 5.6 | A | 5.28 | 5.55 | 20 | 2.5 | 5 | 20 | 13 | 1 | 500 |
| | B | 5.45 | 5.73 | | | | | | | |
| | C | 5.61 | 5.91 | | | | | | | |
| GQZ 6.2 | A | 5.78 | 6.09 | 20 | 3.0 | 5 | 20 | 10 | 1 | 300 |
| | B | 5.96 | 6.27 | | | | | | | |
| | C | 6.12 | 6.44 | | | | | | | |
| GQZ 6.8 | A | 6.29 | 6.63 | 20 | 3.5 | 2 | 20 | 8 | 0.5 | 150 |
| | B | 6.49 | 6.83 | | | | | | | |
| | C | 6.66 | 7.01 | | | | | | | |
| GQZ 7.5 | A | 6.85 | 7.22 | 20 | 4.0 | 0.5 | 20 | 8 | 0.5 | 120 |
| | B | 7.07 | 7.45 | | | | | | | |
| | C | 7.29 | 7.67 | | | | | | | |
| GQZ 8.2 | A | 7.53 | 7.92 | 20 | 5.0 | 0.5 | 20 | 8 | 0.5 | 120 |
| | B | 7.78 | 8.19 | | | | | | | |
| | C | 8.03 | 8.45 | | | | | | | |
| GQZ 9.1 | A | 8.29 | 8.73 | 20 | 6.0 | 0.5 | 20 | 8 | 0.5 | 120 |
| | B | 8.57 | 9.01 | | | | | | | |
| | C | 8.83 | 9.30 | | | | | | | |
| GQZ 10 | A | 9.12 | 9.59 | 20 | 7.0 | 0.2 | 20 | 8 | 0.5 | 120 |
| | B | 9.41 | 9.90 | | | | | | | |
| | C | 9.70 | 10.20 | | | | | | | |
| | D | 9.94 | 10.44 | | | | | | | |
| GQZ 11 | A | 10.18 | 10.71 | 10 | 8.0 | 0.2 | 10 | 10 | 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 | | | | | | | |
| GQZ 12 | A | 11.13 | 11.71 | 10 | 9.0 | 0.2 | 10 | 12 | 0.5 | 110 |
| | B | 11.44 | 12.03 | | | | | | | |
| | C | 11.74 | 12.35 | | | | | | | |
| GQZ 13 | A | 12.11 | 12.75 | 10 | 10 | 0.2 | 10 | 14 | 0.5 | 110 |
| | B | 12.55 | 13.21 | | | | | | | |
| | C | 12.99 | 13.66 | | | | | | | |
| GQZ 15 | A | 13.44 | 14.13 | 10 | 11 | 0.2 | 10 | 16 | 0.5 | 110 |
| | B | 13.89 | 14.62 | | | | | | | |
| | C | 14.35 | 15.09 | | | | | | | |
| GQZ 16 | A | 14.80 | 15.57 | 10 | 12 | 0.2 | 10 | 18 | 0.5 | 150 |
| | B | 15.25 | 16.04 | | | | | | | |
| | C | 15.69 | 16.51 | | | | | | | |
| GQZ 18 | A | 16.22 | 17.06 | 10 | 13 | 0.2 | 10 | 23 | 0.5 | 150 |
| | B | 16.82 | 17.70 | | | | | | | |
| | C | 17.42 | 18.33 | | | | | | | |
| GQZ 20 | A | 18.02 | 18.96 | 10 | 15 | 0.2 | 10 | 28 | 0.5 | 200 |
| | B | 18.63 | 19.59 | | | | | | | |
| | C | 19.23 | 20.22 | | | | | | | |
| | D | 19.72 | 20.72 | | | | | | | |
| GQZ 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 | | | | | | | |
| GQZ 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 | | | | | | | |
| GQZ 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 | | | | | | | |
| GQZ 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 | | | | | | | |
| GQZ 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 | | | | | | | |
| GQZ 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 | | | | | | | |
| GQZ 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 | | | | | | | |
| GQZ 43 | | 40.00 | 45.00 | 5 | 33 | 0.2 | 5 | 90 | -- | |
| GQZ 47 | | 44.00 | 49.00 | 5 | 36 | 0.2 | 5 | 90 | -- | |
| GQZ 51 | | 48.00 | 54.00 | 5 | 39 | 0.2 | 5 | 110 | -- | |
| GQZ 56 | | 53.00 | 60.00 | 5 | 43 | 0.2 | 5 | 110 | -- | |

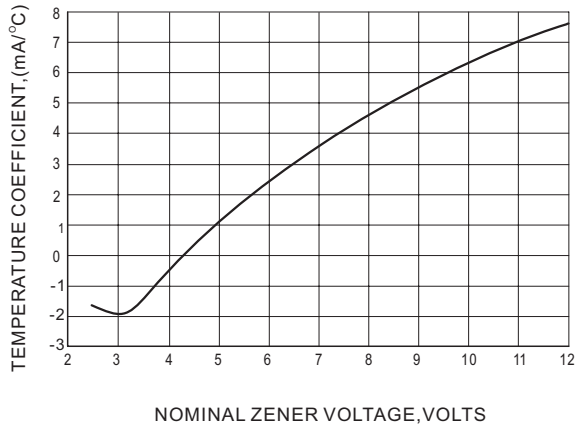



Fig.1 TEMPERATURE COEFFICENTS

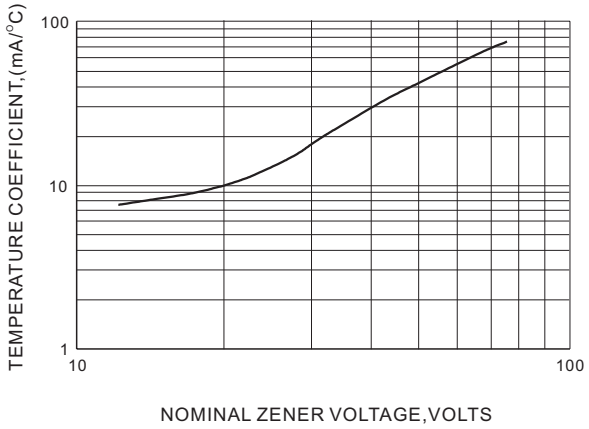



Fig.2 TEMPERATURE COEFFICENTS

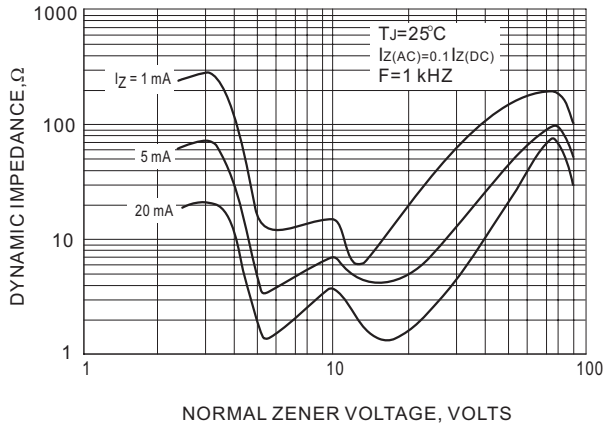



Fig.3 EFFECT OF ZENER VOLTAGE ON ZENER IMPEDANCE

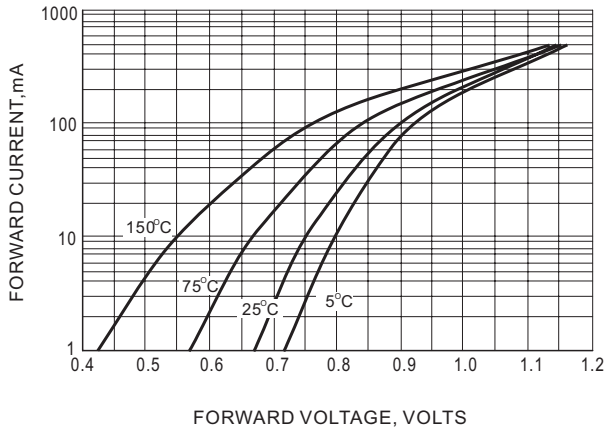



Fig.4 TYPICAL FORWARD VOLTAGE

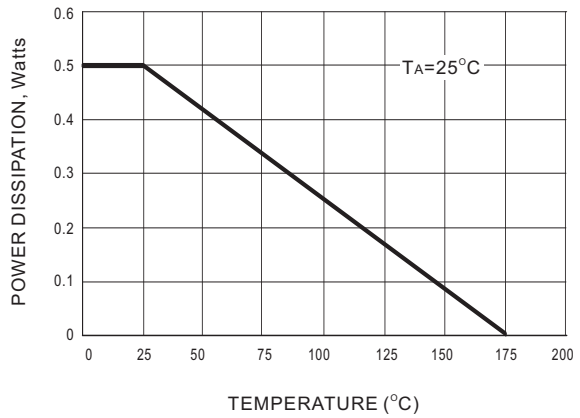



Fig.5 STEADY STATE POWER DERATING

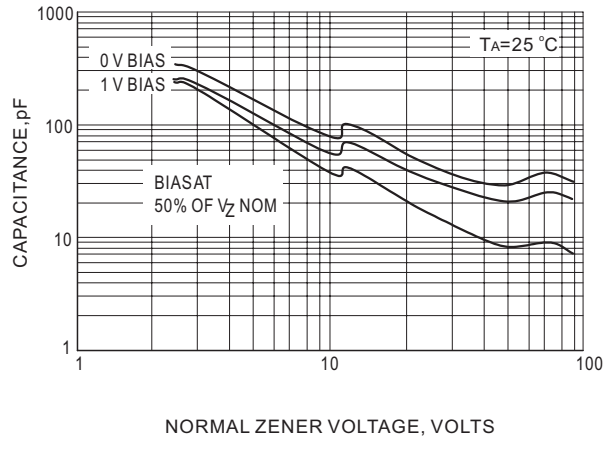



Fig.6 TYPICAL CAPACITANCE

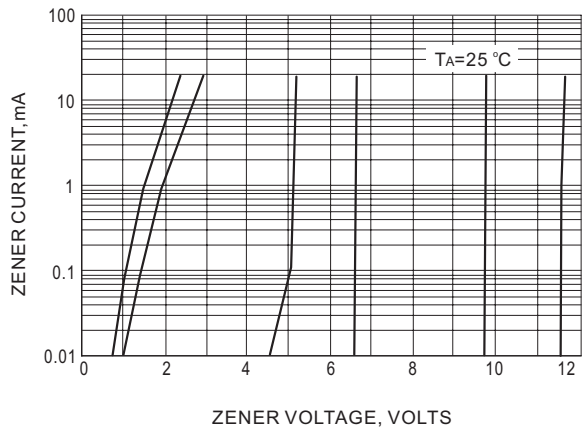



Fig.7 ZENER VOLTAGE VERSUS ZENER CURRENT

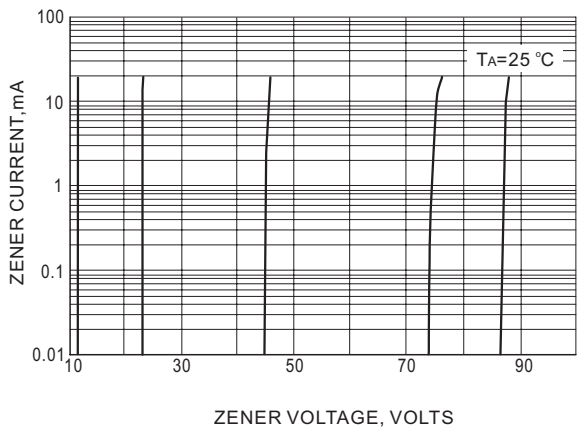



Fig.8 ZENER VOLTAGE VERSUS ZENER CURRENT

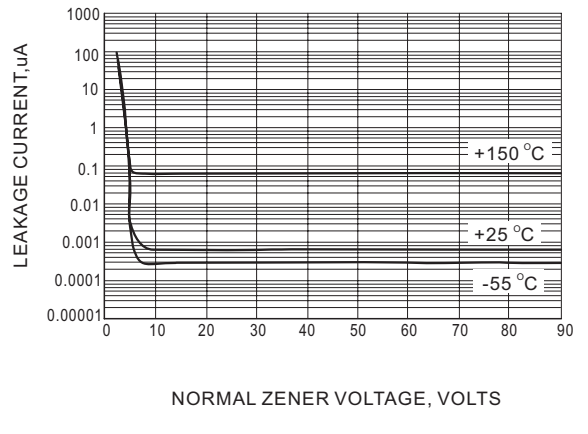



Fig.9 TYPICAL LEAKAGE CURRENT