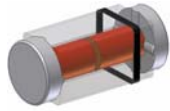


## Small Signal Diode



### Features

- Wide zener voltage range selection : 2.4V to 75V
- $V_Z$  Tolerance Selection of  $\pm 5\%$
- Moisture sensitivity level 1
- Matte Tin(Sn) lead finish with Nickel(Ni) underplate
- Pb free version and RoHS compliant
- All External Surfaces are Corrosion Resistant and Leads are Readily Solderable

### Mechanical Data

- Case : QUADRO Mini-MELF Package (JEDEC DO-213)
- High temperature soldering guaranteed :  $270^\circ\text{C}/10\text{s}$
- Polarity : Indicated by cathode band
- Weight :  $29 \pm 2.5 \text{ mg}$

### Ordering Information

| Part No.    | Package | Packing           |
|-------------|---------|-------------------|
| BZT55Cxx L0 | QMMELF  | 10Kpcs / 13" Reel |
| BZT55Cxx L1 | QMMELF  | 2.5Kpcs / 7" Reel |

### Maximum Ratings and Electrical Characteristics

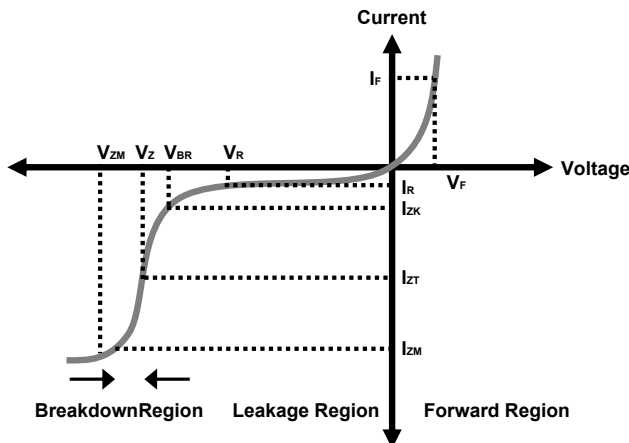
Rating at  $25^\circ\text{C}$  ambient temperature unless otherwise specified.

#### Maximum Ratings

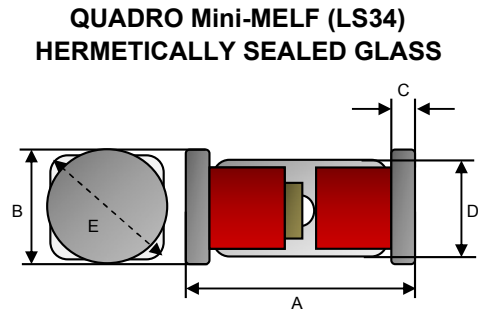
| Type Number                              | Symbol          | Value        | Units                     |
|------------------------------------------|-----------------|--------------|---------------------------|
| Power Dissipation                        | $P_D$           | 500          | mW                        |
| Forward Voltage                          | $V_F$           | 1.0          | V                         |
| Thermal Resistance (Junction to Ambient) | $R_{\theta JA}$ | 500          | $^\circ\text{C}/\text{W}$ |
| Junction and Storage Temperature Range   | $T_J, T_{STG}$  | -65 to + 175 | $^\circ\text{C}$          |

Notes:1. Valid provided that electrodes are kept at ambient temperature

### Zener I vs. V Characteristics



- $V_{BR}$  : Voltage at  $I_{ZK}$
- $I_{ZK}$  : Test current for voltage  $V_{BR}$
- $Z_{ZK}$  : Dynamic impedance at  $I_{ZK}$
- $I_{ZT}$  : Test current for voltage  $V_Z$
- $V_Z$  : Voltage at current  $I_{ZT}$
- $Z_{ZT}$  : Dynamic impedance at  $I_{ZT}$
- $I_{ZM}$  : Maximum steady state current
- $V_{ZM}$  : Voltage at  $I_{ZM}$



| Dimensions | Unit (mm) |      | Unit (inch) |       |
|------------|-----------|------|-------------|-------|
|            | Min       | Max  | Min         | Max   |
| A          | 3.30      | 3.70 | 0.130       | 0.146 |
| B          | 1.40      | 1.60 | 0.055       | 0.063 |
| C          | 0.25      | 0.40 | 0.010       | 0.016 |
| D          | 1.25      | 1.40 | 0.049       | 0.055 |
| E          | 1.80      |      | 0.071       |       |

**Small Signal Diode**
**Electrical Characteristics**

T<sub>a</sub> = 25°C unless otherwise noted

V<sub>F</sub> Forward Voltage = 1.0V Maximum @ I<sub>F</sub> = 10 mA for all part numbers

| Part Number | V <sub>Z</sub> @ I <sub>ZT</sub> (Volt) |       |       | I <sub>ZT</sub> (mA) | Z <sub>ZT</sub> @ I <sub>ZT</sub> (Ω)<br>Max | I <sub>ZK</sub> (mA) | Z <sub>ZK</sub> @ I <sub>ZK</sub> (Ω)<br>Max | I <sub>R</sub> @ V <sub>R</sub> (μA)<br>Max | V <sub>R</sub> (V) |
|-------------|-----------------------------------------|-------|-------|----------------------|----------------------------------------------|----------------------|----------------------------------------------|---------------------------------------------|--------------------|
|             | Nom                                     | Min   | Max   |                      |                                              |                      |                                              |                                             |                    |
| BZT55C2V4   | 2.4                                     | 2.28  | 2.52  | 5                    | 85                                           | 1                    | 600                                          | 50                                          | 1                  |
| BZT55C2V7   | 2.7                                     | 2.57  | 2.84  | 5                    | 85                                           | 1                    | 600                                          | 10                                          | 1                  |
| BZT55C3V0   | 3.0                                     | 2.85  | 3.15  | 5                    | 85                                           | 1                    | 600                                          | 4                                           | 1                  |
| BZT55C3V3   | 3.3                                     | 3.14  | 3.47  | 5                    | 85                                           | 1                    | 600                                          | 2                                           | 1                  |
| BZT55C3V6   | 3.6                                     | 3.42  | 3.78  | 5                    | 85                                           | 1                    | 600                                          | 2                                           | 1                  |
| BZT55C3V9   | 3.9                                     | 3.71  | 4.10  | 5                    | 85                                           | 1                    | 600                                          | 2                                           | 1                  |
| BZT55C4V3   | 4.3                                     | 4.09  | 4.52  | 5                    | 75                                           | 1                    | 600                                          | 1                                           | 1                  |
| BZT55C4V7   | 4.7                                     | 4.47  | 4.94  | 5                    | 60                                           | 1                    | 600                                          | 0.5                                         | 1                  |
| BZT55C5V1   | 5.1                                     | 4.85  | 5.36  | 5                    | 35                                           | 1                    | 550                                          | 0.1                                         | 1                  |
| BZT55C5V6   | 5.6                                     | 5.32  | 5.88  | 5                    | 25                                           | 1                    | 450                                          | 0.1                                         | 1                  |
| BZT55C6V2   | 6.2                                     | 5.89  | 6.51  | 5                    | 10                                           | 1                    | 200                                          | 0.1                                         | 2                  |
| BZT55C6V8   | 6.8                                     | 6.46  | 7.14  | 5                    | 8                                            | 1                    | 150                                          | 0.1                                         | 3                  |
| BZT55C7V5   | 7.5                                     | 7.13  | 7.88  | 5                    | 7                                            | 1                    | 50                                           | 0.1                                         | 5                  |
| BZT55C8V2   | 8.2                                     | 7.79  | 8.61  | 5                    | 7                                            | 1                    | 50                                           | 0.1                                         | 6.2                |
| BZT55C9V1   | 9.1                                     | 8.65  | 9.56  | 5                    | 10                                           | 1                    | 50                                           | 0.1                                         | 6.8                |
| BZT55C10    | 10                                      | 9.50  | 10.50 | 5                    | 15                                           | 1                    | 70                                           | 0.1                                         | 7.5                |
| BZT55C11    | 11                                      | 10.45 | 11.55 | 5                    | 20                                           | 1                    | 70                                           | 0.1                                         | 8.2                |
| BZT55C12    | 12                                      | 11.40 | 12.60 | 5                    | 20                                           | 1                    | 90                                           | 0.1                                         | 9.1                |
| BZT55C13    | 13                                      | 12.35 | 13.65 | 5                    | 26                                           | 1                    | 110                                          | 0.1                                         | 10                 |
| BZT55C15    | 15                                      | 14.25 | 15.75 | 5                    | 30                                           | 1                    | 110                                          | 0.1                                         | 11                 |
| BZT55C16    | 16                                      | 15.20 | 16.80 | 5                    | 40                                           | 1                    | 170                                          | 0.1                                         | 12                 |
| BZT55C18    | 18                                      | 17.10 | 18.90 | 5                    | 50                                           | 1                    | 170                                          | 0.1                                         | 13                 |
| BZT55C20    | 20                                      | 19.00 | 21.00 | 5                    | 55                                           | 1                    | 220                                          | 0.1                                         | 15                 |
| BZT55C22    | 22                                      | 20.90 | 23.10 | 5                    | 55                                           | 1                    | 220                                          | 0.1                                         | 16                 |
| BZT55C24    | 24                                      | 22.80 | 25.20 | 5                    | 80                                           | 1                    | 220                                          | 0.1                                         | 18                 |
| BZT55C27    | 27                                      | 25.65 | 28.35 | 5                    | 80                                           | 1                    | 220                                          | 0.1                                         | 20                 |
| BZT55C30    | 30                                      | 28.50 | 31.50 | 5                    | 80                                           | 1                    | 220                                          | 0.1                                         | 22                 |
| BZT55C33    | 33                                      | 31.35 | 34.65 | 5                    | 80                                           | 1                    | 220                                          | 0.1                                         | 24                 |
| BZT55C36    | 36                                      | 34.20 | 37.80 | 5                    | 80                                           | 1                    | 220                                          | 0.1                                         | 27                 |
| BZT55C39    | 39                                      | 37.05 | 40.95 | 2.5                  | 90                                           | 0.5                  | 500                                          | 0.1                                         | 28                 |
| BZT55C43    | 43                                      | 40.85 | 45.15 | 2.5                  | 90                                           | 0.5                  | 600                                          | 0.1                                         | 32                 |
| BZT55C47    | 47                                      | 44.65 | 49.35 | 2.5                  | 110                                          | 0.5                  | 700                                          | 0.1                                         | 35                 |
| BZT55C51    | 51                                      | 48.45 | 53.55 | 2.5                  | 125                                          | 0.5                  | 700                                          | 0.1                                         | 38                 |
| BZT55C56    | 56                                      | 53.20 | 58.80 | 2.5                  | 135                                          | 0.5                  | 1000                                         | 0.1                                         | 42                 |
| BZT55C62    | 62                                      | 58.90 | 65.10 | 2.5                  | 150                                          | 0.5                  | 1000                                         | 0.1                                         | 47                 |
| BZT55C68    | 68                                      | 64.60 | 71.40 | 2.5                  | 160                                          | 0.5                  | 1000                                         | 0.1                                         | 51                 |
| BZT55C75    | 75                                      | 71.25 | 78.75 | 2.5                  | 170                                          | 0.5                  | 1000                                         | 0.1                                         | 56                 |

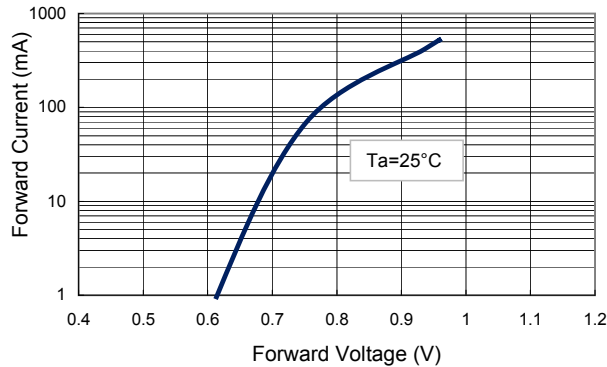
**Notes:**

1. The Zener Voltage (V<sub>Z</sub>) is tested under pulse condition of 10ms.
2. The device numbers listed have a standard tolerance on the nominal zener voltage of **±5%**.
3. For detailed information on price, availability and delivery of nominal zener voltages between the voltages shown and tighter voltage tolerances, contact your nearest **Taiwan semiconductor** representative.
4. The zener impedance is derived from the 60-cycle ac voltage, which results when an ac current having an rms value equal to 10% of the DC zener current (I<sub>ZT</sub> or I<sub>ZK</sub>) is superimposed to I<sub>ZT</sub> or I<sub>ZK</sub>.

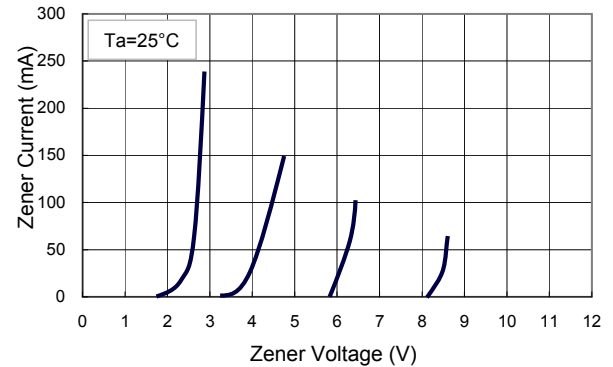
## Small Signal Diode

### Rating and Sharacteristic Curves

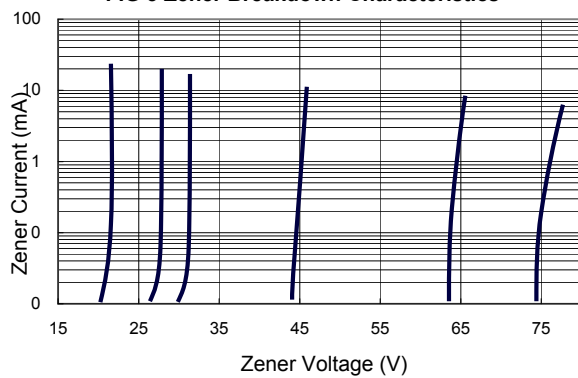
**FIG 1 Typical Forward Characteristics**



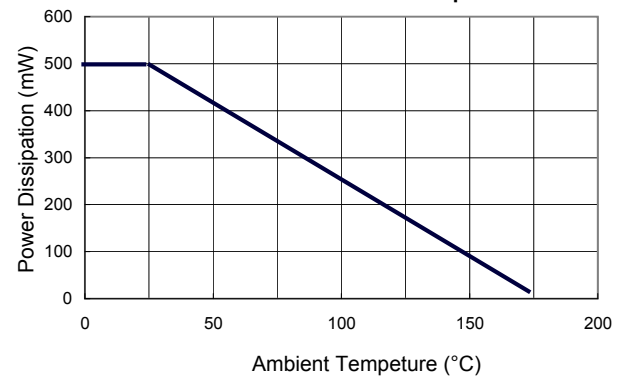
**FIG 2 Zener Breakdown Characteristics**



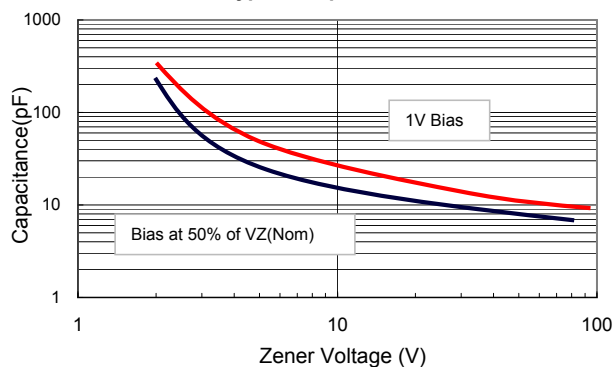
**FIG 3 Zener Breakdown Characteristics**



**FIG 4 Admissible Power Dissipation Curve**



**FIG 5 Typical Capacitance**



**FIG 6 Effect of Zener Voltage on Impedance**

