

**Small Signal Product**

**5% Tolerance Zener Diode**

**FEATURES**

- Wide zener voltage range selection: 2.0V to 75V
- VZ Tolerance selection of  $\pm 5\%$
- Designed for through-hole device type mounting
- Hermetically sealed glass
- Pb free and RoHS compliant
- High reliability glass passivation insuring parameter stability and protection against junction contamination



**DO-35**

Hermetically Sealed Glass



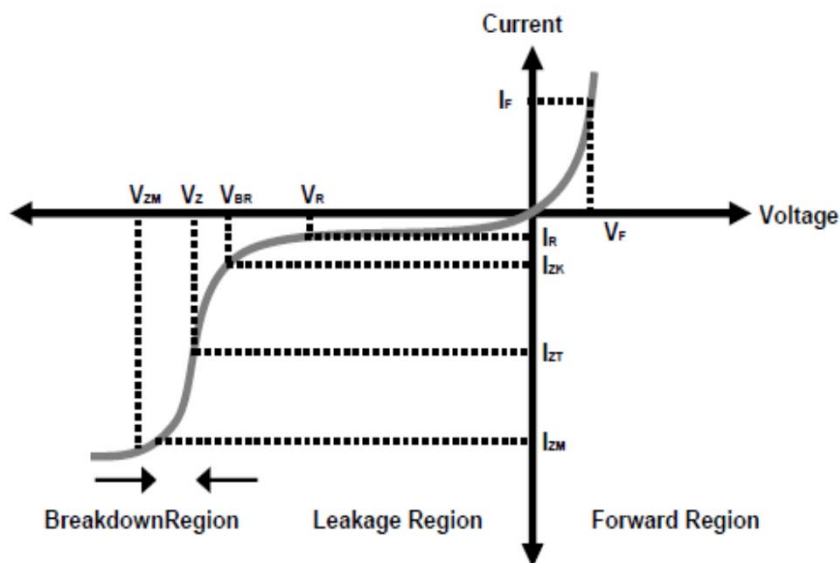
**MECHANICAL DATA**

- Case: DO-35
- High temperature soldering guaranteed: 260°C/10s
- Polarity: Cathode indicated by polarity band
- Weight : 109  $\pm$  4 mg (approximately)

| MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ unless otherwise noted) |                 |              |                    |
|-------------------------------------------------------------------------------------------------|-----------------|--------------|--------------------|
| PARAMETER                                                                                       | SYMBOL          | VALUE        | UNIT               |
| Power Dissipation                                                                               | $P_D$           | 500          | mW                 |
| Forward Voltage $I_F = 100 \text{ mA}$                                                          | $V_F$           | 1.5          | V                  |
| Thermal Resistance (Junction to Ambient) (Note 1)                                               | $R_{\theta JA}$ | 300          | $^\circ\text{C/W}$ |
| Junction and Storage Temperature Range                                                          | $T_J, T_{STG}$  | - 65 to +175 | $^\circ\text{C}$   |

Note 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  $I_{ZM}$

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**ELECTRICAL CHARACTERISTICS** (  $T_A = 25^\circ\text{C}$  unless otherwise noted )

| Part Number | Marking code | $V_Z$ @ $I_{ZT}$ (Volt) |     |      | $I_{ZT}$<br>(mA) | $Z_{ZT}$ @ $I_{ZT}$ ( $\Omega$ )<br>Max | $I_{ZK}$<br>(mA) | $Z_{ZK}$ @ $I_{ZK}$ ( $\Omega$ )<br>Max | $I_R$ @ $V_R$ ( $\mu\text{A}$ )<br>Max | $V_R$<br>(V) |
|-------------|--------------|-------------------------|-----|------|------------------|-----------------------------------------|------------------|-----------------------------------------|----------------------------------------|--------------|
|             |              | Min                     | Nom | Max  |                  |                                         |                  |                                         |                                        |              |
| BZX79C2V0   | BZX79C2V0    | 1.88                    | 2.0 | 2.12 | 5                | 100                                     | 1.0              | 600                                     | 150                                    | 1.0          |
| BZX79C2V2   | BZX79C2V2    | 2.08                    | 2.2 | 2.33 | 5                | 100                                     | 1.0              | 600                                     | 150                                    | 1.0          |
| BZX79C2V4   | BZX79C2V4    | 2.28                    | 2.4 | 2.56 | 5                | 100                                     | 1.0              | 600                                     | 100                                    | 1.0          |
| BZX79C2V7   | BZX79C2V7    | 2.51                    | 2.7 | 2.89 | 5                | 100                                     | 1.0              | 600                                     | 75                                     | 1.0          |
| BZX79C3V0   | BZX79C3V0    | 2.8                     | 3.0 | 3.2  | 5                | 95                                      | 1.0              | 600                                     | 50                                     | 1.0          |
| BZX79C3V3   | BZX79C3V3    | 3.1                     | 3.3 | 3.5  | 5                | 95                                      | 1.0              | 600                                     | 25                                     | 1.0          |
| BZX79C3V6   | BZX79C3V6    | 3.4                     | 3.6 | 3.8  | 5                | 90                                      | 1.0              | 600                                     | 15                                     | 1.0          |
| BZX79C3V9   | BZX79C3V9    | 3.7                     | 3.9 | 4.1  | 5                | 90                                      | 1.0              | 600                                     | 10                                     | 1.0          |
| BZX79C4V3   | BZX79C4V3    | 4.0                     | 4.3 | 4.6  | 5                | 90                                      | 1.0              | 600                                     | 5                                      | 1.0          |
| BZX79C4V7   | BZX79C4V7    | 4.4                     | 4.7 | 5.0  | 5                | 80                                      | 1.0              | 500                                     | 3                                      | 2.0          |
| BZX79C5V1   | BZX79C5V1    | 4.8                     | 5.1 | 5.4  | 5                | 60                                      | 1.0              | 480                                     | 2                                      | 2.0          |
| BZX79C5V6   | BZX79C5V6    | 5.2                     | 5.6 | 6.0  | 5                | 40                                      | 1.0              | 400                                     | 1                                      | 2.0          |
| BZX79C6V2   | BZX79C6V2    | 5.8                     | 6.2 | 6.6  | 5                | 10                                      | 1.0              | 150                                     | 3                                      | 4.0          |
| BZX79C6V8   | BZX79C6V8    | 6.4                     | 6.8 | 7.2  | 5                | 15                                      | 1.0              | 80                                      | 2                                      | 4.0          |
| BZX79C7V5   | BZX79C7V5    | 7.0                     | 7.5 | 7.9  | 5                | 15                                      | 1.0              | 80                                      | 1                                      | 5.0          |
| BZX79C8V2   | BZX79C8V2    | 7.7                     | 8.2 | 8.7  | 5                | 15                                      | 1.0              | 80                                      | 0.7                                    | 5.0          |
| BZX79C9V1   | BZX79C9V1    | 8.5                     | 9.1 | 9.6  | 5                | 15                                      | 1.0              | 100                                     | 0.5                                    | 6.0          |
| BZX79C10    | BZX79C10     | 9.4                     | 10  | 10.6 | 5                | 20                                      | 1.0              | 150                                     | 0.2                                    | 7.0          |
| BZX79C11    | BZX79C11     | 10.4                    | 11  | 11.6 | 5                | 20                                      | 1.0              | 150                                     | 0.1                                    | 8.0          |
| BZX79C12    | BZX79C12     | 11.4                    | 12  | 12.7 | 5                | 25                                      | 1.0              | 150                                     | 0.1                                    | 8.0          |
| BZX79C13    | BZX79C13     | 12.4                    | 13  | 14.1 | 5                | 30                                      | 1.0              | 170                                     | 0.1                                    | 8            |
| BZX79C15    | BZX79C15     | 13.8                    | 15  | 15.6 | 5                | 30                                      | 1.0              | 200                                     | 0.05                                   | 10.5         |
| BZX79C16    | BZX79C16     | 15.3                    | 16  | 17.1 | 5                | 40                                      | 1.0              | 200                                     | 0.05                                   | 11.2         |
| BZX79C18    | BZX79C18     | 16.8                    | 18  | 19.1 | 5                | 45                                      | 1.0              | 225                                     | 0.05                                   | 12.6         |
| BZX79C20    | BZX79C20     | 18.8                    | 20  | 21.2 | 5                | 55                                      | 1.0              | 225                                     | 0.05                                   | 14.0         |
| BZX79C22    | BZX79C22     | 20.8                    | 22  | 23.3 | 5                | 55                                      | 1.0              | 250                                     | 0.05                                   | 15.4         |
| BZX79C24    | BZX79C24     | 22.8                    | 24  | 25.6 | 5                | 70                                      | 1.0              | 250                                     | 0.05                                   | 16.8         |
| BZX79C27    | BZX79C27     | 25.1                    | 27  | 28.9 | 2                | 80                                      | 0.5              | 300                                     | 0.05                                   | 18.9         |
| BZX79C30    | BZX79C30     | 28.0                    | 30  | 32.0 | 2                | 80                                      | 0.5              | 300                                     | 0.05                                   | 21.0         |
| BZX79C33    | BZX79C33     | 31.0                    | 33  | 35.0 | 2                | 80                                      | 0.5              | 325                                     | 0.05                                   | 23.1         |
| BZX79C36    | BZX79C36     | 34.0                    | 36  | 38.0 | 2                | 90                                      | 0.5              | 350                                     | 0.05                                   | 25.2         |
| BZX79C39    | BZX79C39     | 37.0                    | 39  | 41.0 | 2                | 130                                     | 0.5              | 350                                     | 0.05                                   | 27.3         |
| BZX79C43    | BZX79C43     | 40.0                    | 43  | 46.0 | 2                | 150                                     | 0.5              | 375                                     | 0.05                                   | 30.1         |
| BZX79C47    | BZX79C47     | 44.0                    | 47  | 50.0 | 2                | 170                                     | 0.5              | 375                                     | 0.05                                   | 32.9         |
| BZX79C51    | BZX79C51     | 48.0                    | 51  | 54.0 | 2                | 180                                     | 0.5              | 400                                     | 0.05                                   | 35.7         |
| BZX79C56    | BZX79C56     | 52.0                    | 56  | 60.0 | 2                | 200                                     | 0.5              | 425                                     | 0.05                                   | 39.2         |
| BZX79C62    | BZX79C62     | 58.0                    | 62  | 66.0 | 2.5              | 215                                     | 0.5              | 1000                                    | 0.05                                   | 43.4         |
| BZX79C68    | BZX79C68     | 64.0                    | 68  | 72.0 | 2.5              | 240                                     | 0.5              | 1000                                    | 0.05                                   | 47.6         |
| BZX79C75    | BZX79C75     | 70.0                    | 75  | 80.0 | 2.5              | 255                                     | 0.5              | 1000                                    | 0.05                                   | 52.5         |

Notes : 1. The Zener Voltage ( $V_Z$ ) is tested under pulse condition of 10ms.

2. The device numbers listed have a standard tolerance on the nominal zener voltage of  $\pm 5\%$ .

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 ( $I_{ZT}$  or  $I_{ZK}$ ) is superimposed to  $I_{ZT}$  or  $I_{ZK}$ .

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**RATINGS AND CHARACTERISTICS CURVES**

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

Fig. 1 Power Dissipation VS. Ambient Temperature

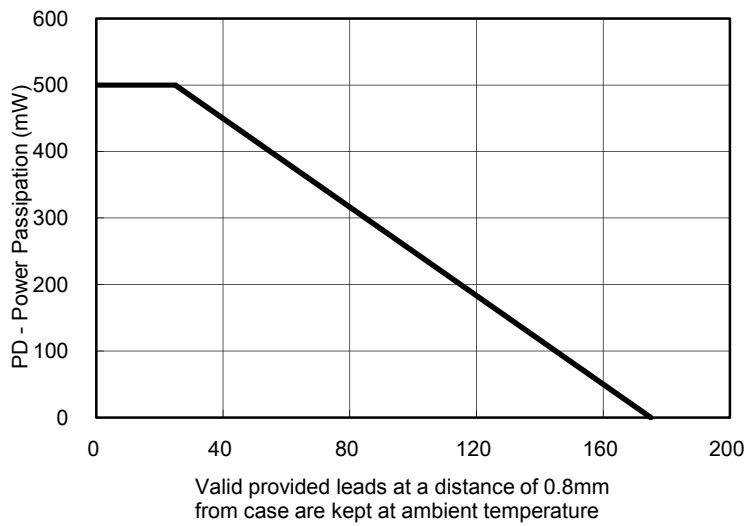


Fig. 2 Total Capacitance

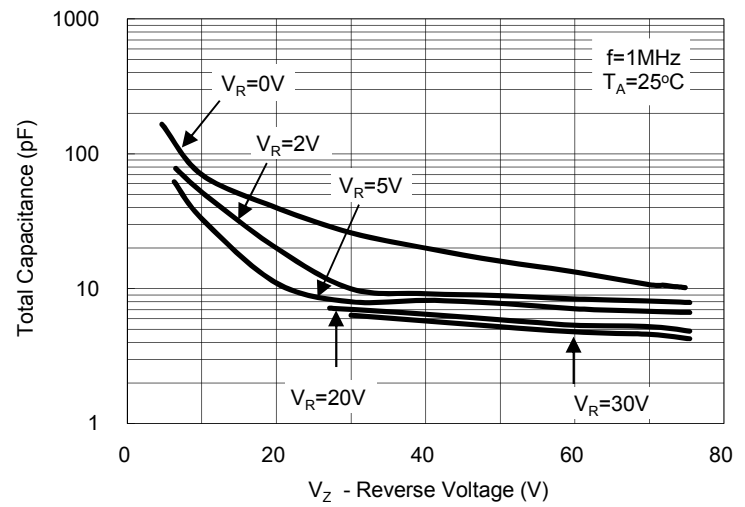


Fig. 3 Differential Impedance VS. Zener Voltage

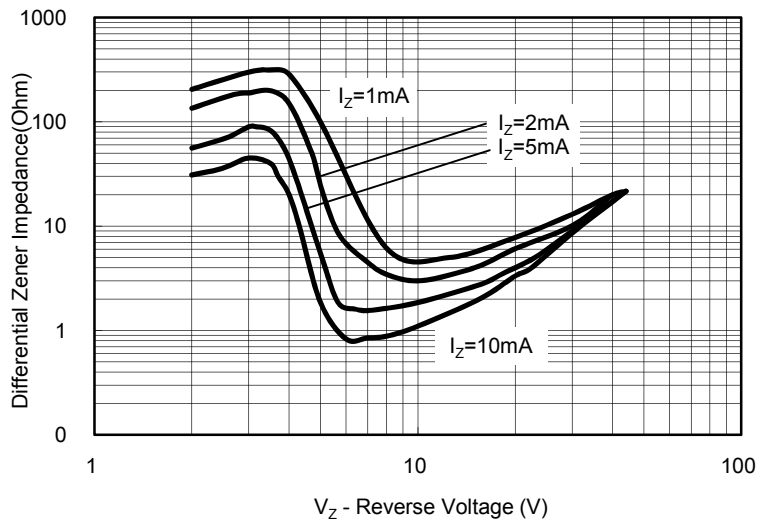


Fig. 4 Forward Current VS. Forward Voltage

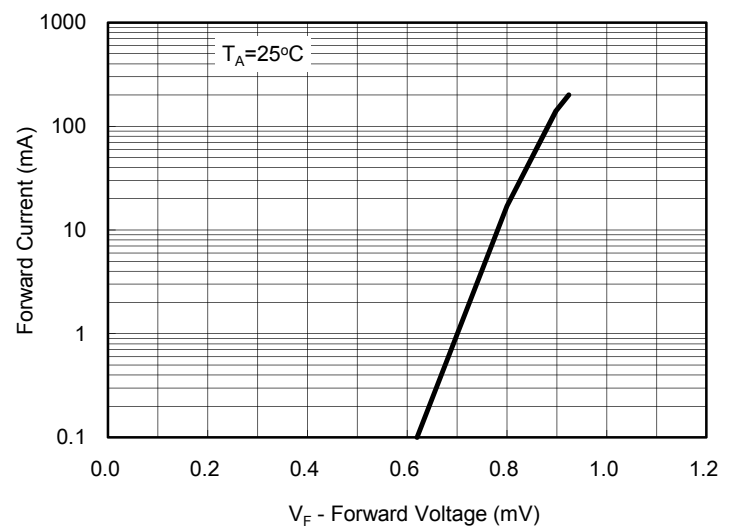


Fig. 5 Reverse Current VS. Reverse Voltage

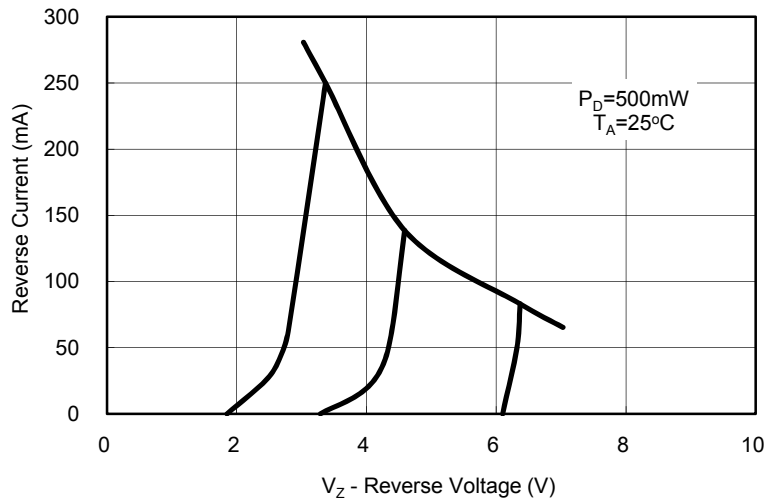
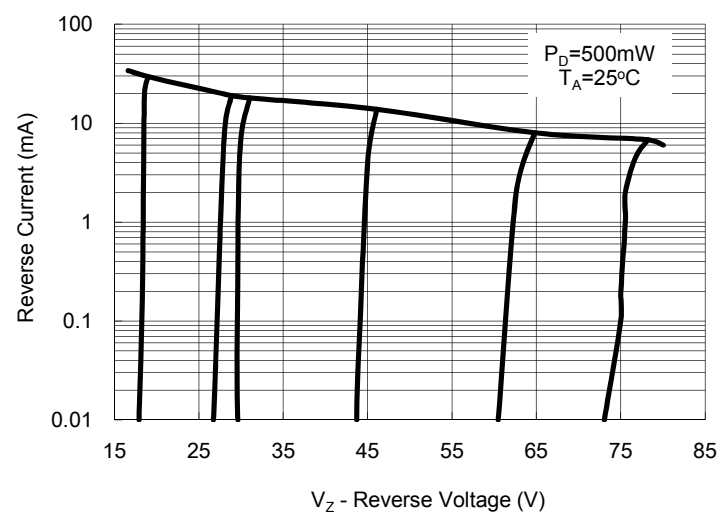


Fig. 6 Reverse Current VS. Reverse Voltage



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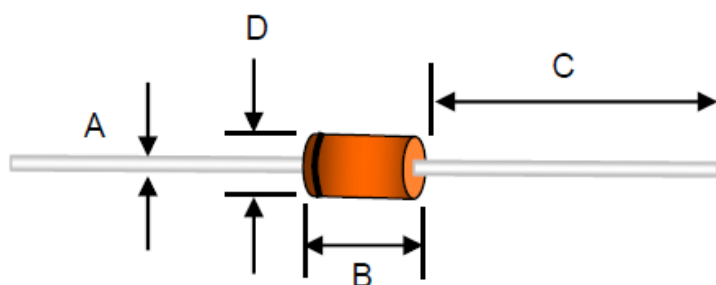
| ORDERING INFORMATION |                  |              |                     |         |                 |
|----------------------|------------------|--------------|---------------------|---------|-----------------|
| PART NO.             | MANUFACTURE CODE | PACKING CODE | GREEN COMPOUND CODE | PACKAGE | PACKING         |
| BZX79Cxxx<br>(Note1) | (Note 2)         | R0           | G                   | DO-35   | 10K / 14" Reel  |
|                      |                  | A0           |                     |         | 5K / Box (Ammo) |

Note 1: "xxx" defines voltage from 2.0V (BZX79C2V0) to 75V (BZX79C75)

Note 2: Manufacture special control, if empty means no special control requirement.

| EXAMPLE         |          |                  |              |                     |                |
|-----------------|----------|------------------|--------------|---------------------|----------------|
| PREFERRED P/N   | PART NO. | MANUFACTURE CODE | PACKING CODE | GREEN COMPOUND CODE | DESCRIPTION    |
| BZX79C75 R0G    | BZX79C75 |                  | R0           | G                   | Green compound |
| BZX79C75-L0 R0G | BZX79C75 | L0               | R0           | G                   | Green compound |

## PACKAGE OUTLINE DIMENSION



| DIM. | Unit (mm) |       | Unit (inch) |       |
|------|-----------|-------|-------------|-------|
|      | Min       | Max   | Min         | Max   |
| A    | 0.34      | 0.60  | 0.013       | 0.024 |
| B    | 2.90      | 5.08  | 0.114       | 0.200 |
| C    | 25.40     | 38.10 | 1.000       | 1.500 |
| D    | 1.30      | 2.28  | 0.051       | 0.090 |

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