

## Features

- Ultra-Small Leadless Surface Mount Package
- Ideally Suited for Automated Assembly Processes
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

- Case: X1-DFN1006-2
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Marking Information
- Terminals: Finish — NiPdAu Over Copper Leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.001 grams (Approximate)



Bottom View

## Ordering Information (Note 3)

| Part Number        | Case         | Packaging          |
|--------------------|--------------|--------------------|
| (Type Number)-7*   | X1-DFN1006-2 | 3,000/Tape & Reel  |
| (Type Number)-7B** | X1-DFN1006-2 | 10,000/Tape & Reel |

\*Add "-7" to the appropriate type number in Electrical Characteristics Table. Example: 6.2V Zener = BZT52C6V2LP-7.

\*\*Add "-7B" to the appropriate type number in Electrical Characteristics Table. Example: 6.2V Zener = BZT52C6V2LP-7B.

- Notes:
1. No purposefully added lead.
  2. Diodes Inc.'s "Green" policy can be found on our website at <http://www.diodes.com>.
  3. For packaging details, go to our website at <http://www.diodes.com>.

## Marking Information

BZT52CxxLP-7B



Top View  
Bar Denotes  
Cathode Side

BZT52CxxLP-7



Top View  
Dot Denotes  
Cathode Side

xx = Product Type Marking Code

**Maximum Ratings** @T<sub>A</sub> = 25°C unless otherwise specified

| Characteristic           | Symbol         | Value | Unit |
|--------------------------|----------------|-------|------|
| Forward Voltage (Note 4) | V <sub>F</sub> | 0.9   | V    |

**Thermal Characteristics**

| Characteristic                                                             | Symbol                            | Value       | Unit |
|----------------------------------------------------------------------------|-----------------------------------|-------------|------|
| Power Dissipation (Note 5) T <sub>A</sub> = 25°C                           | P <sub>D</sub>                    | 250         | mW   |
| Thermal Resistance, Junction to Ambient Air (Note 5) T <sub>A</sub> = 25°C | R <sub>θJA</sub>                  | 500         | °C/W |
| Operating and Storage Temperature Range                                    | T <sub>J</sub> , T <sub>STG</sub> | -65 to +150 | °C   |

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

| Type Number | Marking Code | Zener Voltage Range<br>(Note 4)  |         |         |                       | Maximum Zener Impedance<br>f = 1kHz    |                                        |                       | Maximum Reverse Current<br>(Note 4) |                       | Typical Temperature Coefficient<br>@ I <sub>ZTC</sub><br>mV/°C |      | Test Current<br>I <sub>ZTC</sub> |
|-------------|--------------|----------------------------------|---------|---------|-----------------------|----------------------------------------|----------------------------------------|-----------------------|-------------------------------------|-----------------------|----------------------------------------------------------------|------|----------------------------------|
|             |              | V <sub>Z</sub> @ I <sub>ZT</sub> |         |         | I <sub>ZT</sub><br>mA | Z <sub>ZT</sub> @ I <sub>ZT</sub><br>Ω | Z <sub>ZK</sub> @ I <sub>ZK</sub><br>Ω | I <sub>ZK</sub><br>mA | I <sub>R</sub><br>uA                | @ V <sub>R</sub><br>V | Min                                                            | Max  |                                  |
|             |              | Nom (V)                          | Min (V) | Max (V) |                       |                                        |                                        |                       |                                     |                       |                                                                |      |                                  |
| BZT52C2V4LP | WX           | 2.4                              | 2.20    | 2.60    | 5                     | 100                                    | 600                                    | 1.0                   | 50                                  | 1.0                   | -3.5                                                           | 0    | 5                                |
| BZT52C2V7LP | W1           | 2.7                              | 2.5     | 2.9     | 5                     | 100                                    | 600                                    | 1.0                   | 20                                  | 1.0                   | -3.5                                                           | 0    | 5                                |
| BZT52C3V0LP | W2           | 3.0                              | 2.8     | 3.2     | 5                     | 95                                     | 600                                    | 1.0                   | 10                                  | 1.0                   | -3.5                                                           | 0    | 5                                |
| BZT52C3V3LP | W3           | 3.3                              | 3.1     | 3.5     | 5                     | 95                                     | 600                                    | 1.0                   | 5                                   | 1.0                   | -3.5                                                           | 0    | 5                                |
| BZT52C3V6LP | W4           | 3.6                              | 3.4     | 3.8     | 5                     | 90                                     | 600                                    | 1.0                   | 5                                   | 1.0                   | -3.5                                                           | 0    | 5                                |
| BZT52C3V9LP | W5           | 3.9                              | 3.7     | 4.1     | 5                     | 90                                     | 600                                    | 1.0                   | 3                                   | 1.0                   | -3.5                                                           | 0    | 5                                |
| BZT52C4V3LP | W6           | 4.3                              | 4.0     | 4.6     | 5                     | 90                                     | 600                                    | 1.0                   | 3                                   | 1.0                   | -3.5                                                           | 0    | 5                                |
| BZT52C4V7LP | W7           | 4.7                              | 4.4     | 5.0     | 5                     | 80                                     | 500                                    | 1.0                   | 3                                   | 2.0                   | -3.5                                                           | 0.2  | 5                                |
| BZT52C5V1LP | 9Y           | 5.1                              | 4.8     | 5.4     | 5                     | 60                                     | 480                                    | 1.0                   | 2.0                                 | 2.0                   | -2.7                                                           | 1.2  | 5                                |
| BZT52C5V6LP | 9A           | 5.6                              | 5.2     | 6.0     | 5                     | 40                                     | 400                                    | 1.0                   | 1.0                                 | 2.0                   | -2                                                             | 2.5  | 5                                |
| BZT52C6V2LP | 9B           | 6.2                              | 5.8     | 6.6     | 5                     | 10                                     | 150                                    | 1.0                   | 3.0                                 | 4.0                   | 0.4                                                            | 3.7  | 5                                |
| BZT52C6V8LP | 9C           | 6.8                              | 6.4     | 7.2     | 5                     | 15                                     | 80                                     | 1.0                   | 2.0                                 | 4.0                   | 1.2                                                            | 4.5  | 5                                |
| BZT52C7V5LP | 9D           | 7.5                              | 7.0     | 7.9     | 5                     | 15                                     | 80                                     | 1.0                   | 1.0                                 | 5.0                   | 2.5                                                            | 5.3  | 5                                |
| BZT52C8V2LP | 9E           | 8.2                              | 7.7     | 8.7     | 5                     | 15                                     | 80                                     | 1.0                   | 0.7                                 | 5.0                   | 3.2                                                            | 6.2  | 5                                |
| BZT52C9V1LP | 9F           | 9.1                              | 8.5     | 9.6     | 5                     | 15                                     | 100                                    | 1.0                   | 0.5                                 | 6.0                   | 3.8                                                            | 7.0  | 5                                |
| BZT52C10LP  | 9G           | 10                               | 9.4     | 10.6    | 5                     | 20                                     | 150                                    | 1.0                   | 0.2                                 | 7.0                   | 4.5                                                            | 8.0  | 5                                |
| BZT52C11LP  | 9H           | 11                               | 10.4    | 11.6    | 5                     | 20                                     | 150                                    | 1.0                   | 0.1                                 | 8.0                   | 5.4                                                            | 9.0  | 5                                |
| BZT52C12LP  | 9J           | 12                               | 11.4    | 12.7    | 5                     | 25                                     | 150                                    | 1.0                   | 0.1                                 | 8.0                   | 6.0                                                            | 10.0 | 5                                |
| BZT52C13LP  | 9K           | 13                               | 12.4    | 14.1    | 5                     | 30                                     | 170                                    | 1.0                   | 0.1                                 | 8.0                   | 7.0                                                            | 11.0 | 5                                |
| BZT52C15LP  | 9L           | 15                               | 13.8    | 15.6    | 5                     | 30                                     | 200                                    | 1.0                   | 0.1                                 | 10.5                  | 9.2                                                            | 13.0 | 5                                |
| BZT52C16LP  | 9M           | 16                               | 15.3    | 17.1    | 5                     | 40                                     | 200                                    | 1.0                   | 0.1                                 | 11.2                  | 10.4                                                           | 14.0 | 5                                |
| BZT52C18LP  | 9N           | 18                               | 16.8    | 19.1    | 5                     | 45                                     | 225                                    | 1.0                   | 0.1                                 | 12.6                  | 12.4                                                           | 16.0 | 5                                |
| BZT52C20LP  | 9P           | 20                               | 18.8    | 21.2    | 5                     | 55                                     | 225                                    | 1.0                   | 0.1                                 | 14.0                  | 14.4                                                           | 18.0 | 5                                |
| BZT52C22LP  | 9R           | 22                               | 20.8    | 23.3    | 5                     | 55                                     | 250                                    | 1.0                   | 0.1                                 | 15.4                  | 16.4                                                           | 20.0 | 5                                |
| BZT52C24LP  | 9S           | 24                               | 22.8    | 25.6    | 5                     | 70                                     | 250                                    | 1.0                   | 0.1                                 | 16.8                  | 18.4                                                           | 22.0 | 5                                |
| BZT52C36LP  | 9W           | 36                               | 34.0    | 38.0    | 2                     | 90                                     | 350                                    | 0.5                   | 0.1                                 | 25.2                  | 36.5                                                           | 45.5 | 5                                |
| BZT52C39LP  | 9X           | 39                               | 37.0    | 41.0    | 2                     | 130                                    | 350                                    | 0.5                   | 0.1                                 | 27.3                  | 36.8                                                           | 49.8 | 5                                |

Notes: 4. Short duration pulse test used to minimize self-heating effect.

5. Device mounted on FR-4 PCB with minimum recommended pad layout, as shown in Diodes Incorporated's Suggested Pad Layout document, which can be found on our website at <http://www.diodes.com>.

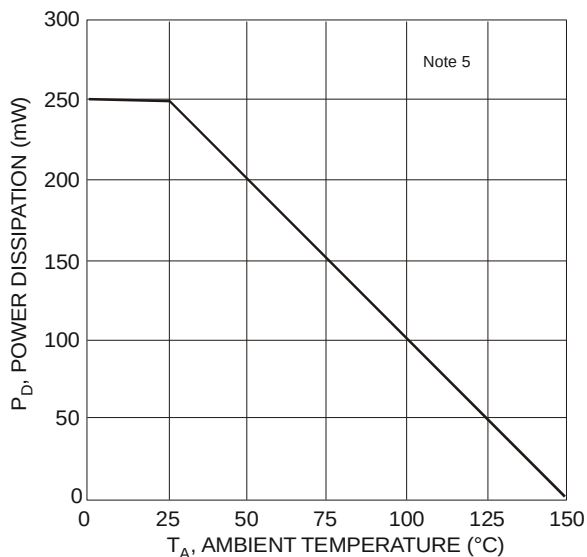


Fig. 1 Power Derating Curve

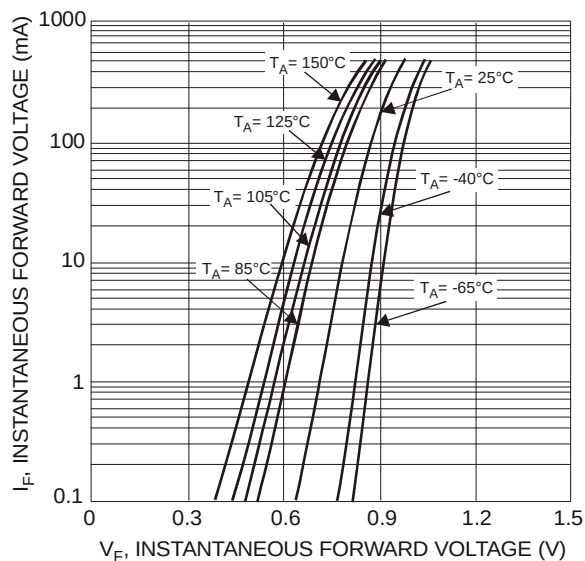


Fig. 2 Typical Forward Characteristics

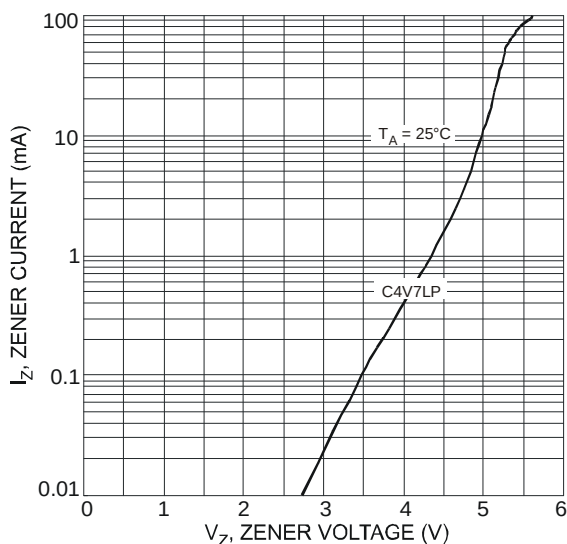


Fig. 3 Typical Reverse Characteristics

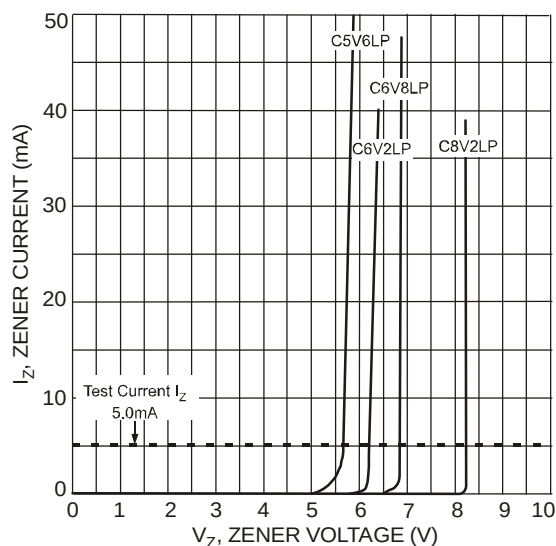


Fig. 4 Typical Zener Breakdown Characteristics

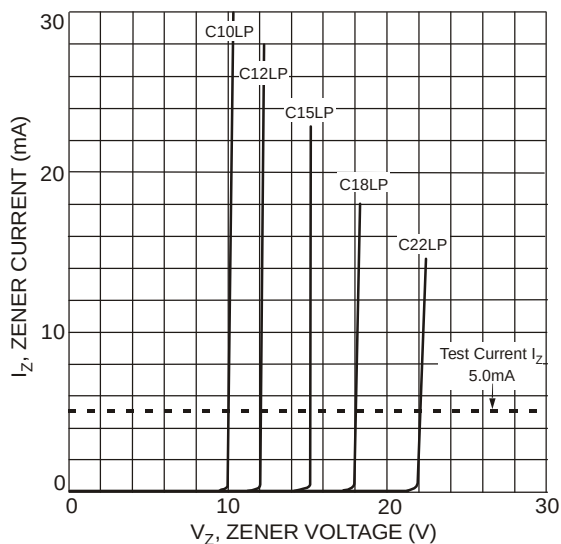


Fig. 5 Typical Zener Breakdown Characteristics

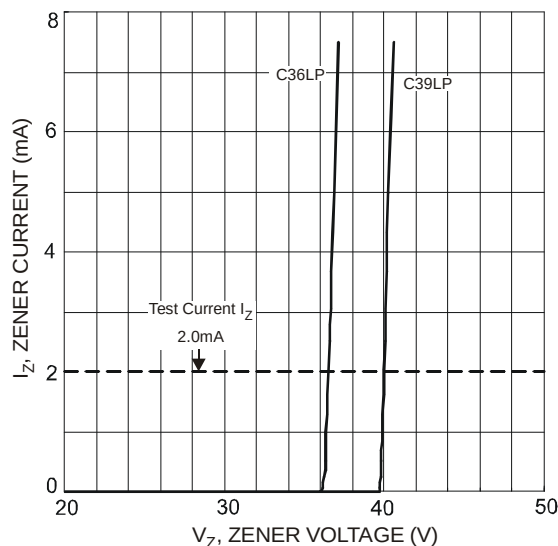
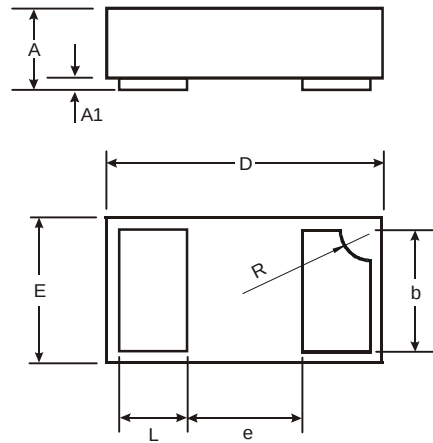


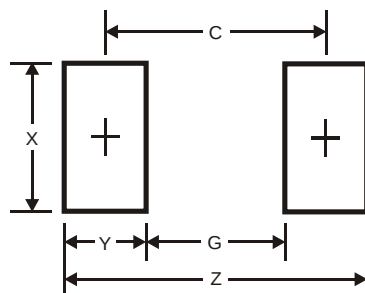
Fig. 6 Typical Zener Breakdown Characteristics

## Package Outline Dimensions



| X1-DFN1006-2         |      |       |      |
|----------------------|------|-------|------|
| Dim                  | Min  | Max   | Typ  |
| A                    | 0.47 | 0.53  | 0.50 |
| A1                   | 0    | 0.05  | 0.03 |
| b                    | 0.45 | 0.55  | 0.50 |
| D                    | 0.95 | 1.075 | 1.00 |
| E                    | 0.55 | 0.675 | 0.60 |
| e                    | -    | -     | 0.40 |
| L                    | 0.20 | 0.30  | 0.25 |
| R                    | 0.05 | 0.15  | 0.10 |
| All Dimensions in mm |      |       |      |

## Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| Z          | 1.1           |
| G          | 0.3           |
| X          | 0.7           |
| Y          | 0.4           |
| C          | 0.7           |

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