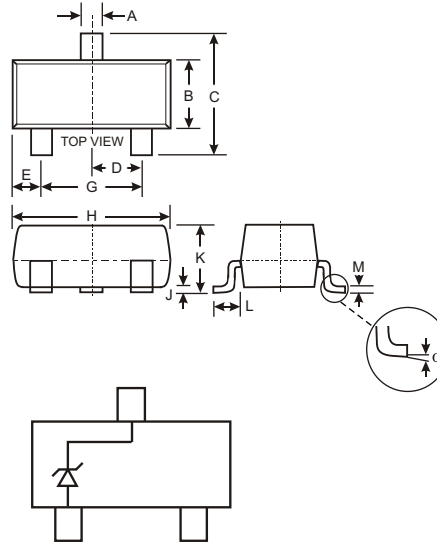


### Features

Planar Die Construction  
350mW Power Dissipation  
Zener Voltages from 2.4V - 39V  
Ideally Suited for Automated Assembly Processes  
**Lead Free/RoHS Compliant (Note 4)**  
**Qualified to AEC-Q101 Standards for High Reliability**

### Mechanical Data

Case: SOT-23  
Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0  
Moisture Sensitivity: Level 1 per J-STD-020C  
Terminals: Solderable per MIL-STD-202, Method 208  
Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).  
Polarity: See Diagram  
Marking: Marking Code & Date Code (See Page 4)  
Weight: 0.008 grams (approximate)



| SOT-23               |       |       |
|----------------------|-------|-------|
| Dim                  | Min   | Max   |
| A                    | 0.37  | 0.51  |
| B                    | 1.20  | 1.40  |
| C                    | 2.30  | 2.50  |
| D                    | 0.89  | 1.03  |
| E                    | 0.45  | 0.60  |
| G                    | 1.78  | 2.05  |
| H                    | 2.80  | 3.00  |
| J                    | 0.013 | 0.10  |
| K                    | 0.903 | 1.10  |
| L                    | 0.45  | 0.61  |
| M                    | 0.085 | 0.180 |
|                      | 0     | 8     |
| All Dimensions in mm |       |       |

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

| Characteristic                                       | Symbol                            | Value       | Unit |
|------------------------------------------------------|-----------------------------------|-------------|------|
| Forward Voltage @ I <sub>F</sub> = 10mA              | V <sub>F</sub>                    | 0.9         | V    |
| Power Dissipation (Note 1)                           | P <sub>d</sub>                    | 300         | mW   |
| Power Dissipation (Note 3)                           | P <sub>d</sub>                    | 350         | mW   |
| Thermal Resistance, Junction to Ambient Air (Note 1) | R <sub>JA</sub>                   | 417         | °C/W |
| Thermal Resistance, Junction to Ambient Air (Note 3) | R <sub>JA</sub>                   | 357         | °C/W |
| Operating and Storage Temperature Range              | T <sub>J</sub> , T <sub>STG</sub> | -65 to +150 | °C   |

- Notes:
1. Device mounted on FR-4 PC board with recommended pad layout, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
  2. Short duration test pulse used to minimize self-heating effect.
  3. Valid provided the terminals are kept at ambient temperature.
  4. No purposefully added lead.

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

| Type Number | Marking Code | Zener Voltage Range (Note 5)     |         |         |                 | Maximum Zener Impedance (Note 6)  |                                   |      | Maximum Reverse Current (Note 5) |                | Typical Temperature Coefficient @ I <sub>ZT</sub> mV/ °C |      |
|-------------|--------------|----------------------------------|---------|---------|-----------------|-----------------------------------|-----------------------------------|------|----------------------------------|----------------|----------------------------------------------------------|------|
|             |              | V <sub>Z</sub> @ I <sub>ZT</sub> |         |         | I <sub>ZT</sub> | Z <sub>ZT</sub> @ I <sub>ZT</sub> | Z <sub>ZK</sub> @ I <sub>ZK</sub> |      | I <sub>R</sub>                   | V <sub>R</sub> | Min                                                      | Max  |
|             |              | Nom (V)                          | Min (V) | Max (V) | (mA)            | ( Ω )                             | ( Ω )                             | (mA) | ( A )                            | (V)            |                                                          |      |
| BZX84C2V4   | KZB          | 2.4                              | 2.2     | 2.6     | 5.0             | 100                               | 600                               | 1.0  | 50                               | 1.0            | -3.5                                                     | 0    |
| BZX84C2V7   | KZC          | 2.7                              | 2.5     | 2.9     | 5.0             | 100                               | 600                               | 1.0  | 20                               | 1.0            | -3.5                                                     | 0    |
| BZX84C3V0   | KZD          | 3.0                              | 2.8     | 3.2     | 5.0             | 95                                | 600                               | 1.0  | 10                               | 1.0            | -3.5                                                     | 0    |
| BZX84C3V3   | KZE          | 3.3                              | 3.1     | 3.5     | 5.0             | 95                                | 600                               | 1.0  | 5.0                              | 1.0            | -3.5                                                     | 0    |
| BZX84C3V6   | KZF          | 3.6                              | 3.4     | 3.8     | 5.0             | 90                                | 600                               | 1.0  | 5.0                              | 1.0            | -3.5                                                     | 0    |
| BZX84C3V9   | KZG          | 3.9                              | 3.7     | 4.1     | 5.0             | 90                                | 600                               | 1.0  | 3.0                              | 1.0            | -3.5                                                     | 0    |
| BZX84C4V3   | KZH          | 4.3                              | 4.0     | 4.6     | 5.0             | 90                                | 600                               | 1.0  | 3.0                              | 1.0            | -3.5                                                     | 0    |
| BZX84C4V7   | KZ1          | 4.7                              | 4.4     | 5.0     | 5.0             | 80                                | 500                               | 1.0  | 3.0                              | 2.0            | -3.5                                                     | 0.2  |
| BZX84C5V1   | KZ2          | 5.1                              | 4.8     | 5.4     | 5.0             | 60                                | 480                               | 1.0  | 2.0                              | 2.0            | -2.7                                                     | 1.2  |
| BZX84C5V6   | KZ3          | 5.6                              | 5.2     | 6.0     | 5.0             | 40                                | 400                               | 1.0  | 1.0                              | 2.0            | -2.0                                                     | 2.5  |
| BZX84C6V2   | KZ4          | 6.2                              | 5.8     | 6.6     | 5.0             | 10                                | 150                               | 1.0  | 3.0                              | 4.0            | 0.4                                                      | 3.7  |
| BZX84C6V8   | KZ5          | 6.8                              | 6.4     | 7.2     | 5.0             | 15                                | 80                                | 1.0  | 2.0                              | 4.0            | 1.2                                                      | 4.5  |
| BZX84C7V5   | KZ6          | 7.5                              | 7.0     | 7.9     | 5.0             | 15                                | 80                                | 1.0  | 1.0                              | 5.0            | 2.5                                                      | 5.3  |
| BZX84C8V2   | KZ7          | 8.2                              | 7.7     | 8.7     | 5.0             | 15                                | 80                                | 1.0  | 0.7                              | 5.0            | 3.2                                                      | 6.2  |
| BZX84C9V1   | KZ8          | 9.1                              | 8.5     | 9.6     | 5.0             | 15                                | 100                               | 1.0  | 0.5                              | 6.0            | 3.8                                                      | 7.0  |
| BZX84C10    | KZ9          | 10                               | 9.4     | 10.6    | 5.0             | 20                                | 150                               | 1.0  | 0.2                              | 7.0            | 4.5                                                      | 8.0  |
| BZX84C11    | KY1          | 11                               | 10.4    | 11.6    | 5.0             | 20                                | 150                               | 1.0  | 0.1                              | 8.0            | 5.4                                                      | 9.0  |
| BZX84C12    | KY2          | 12                               | 11.4    | 12.7    | 5.0             | 25                                | 150                               | 1.0  | 0.1                              | 8.0            | 6.0                                                      | 10.0 |
| BZX84C13    | KY3          | 13                               | 12.4    | 14.1    | 5.0             | 30                                | 170                               | 1.0  | 0.1                              | 8.0            | 7.0                                                      | 11.0 |
| BZX84C15    | KY4          | 15                               | 13.8    | 15.6    | 5.0             | 30                                | 200                               | 1.0  | 0.1                              | 10.5           | 9.2                                                      | 13.0 |
| BZX84C16    | KY5          | 16                               | 15.3    | 17.1    | 5.0             | 40                                | 200                               | 1.0  | 0.1                              | 11.2           | 10.4                                                     | 14.0 |
| BZX84C18    | KY6          | 18                               | 16.8    | 19.1    | 5.0             | 45                                | 225                               | 1.0  | 0.1                              | 12.6           | 12.4                                                     | 16.0 |
| BZX84C20    | KY7          | 20                               | 18.8    | 21.2    | 5.0             | 55                                | 225                               | 1.0  | 0.1                              | 14.0           | 14.4                                                     | 18.0 |
| BZX84C22    | KY8          | 22                               | 20.8    | 23.3    | 5.0             | 55                                | 250                               | 1.0  | 0.1                              | 15.4           | 16.4                                                     | 20.0 |
| BZX84C24    | KY9          | 24                               | 22.8    | 25.6    | 5.0             | 70                                | 250                               | 1.0  | 0.1                              | 16.8           | 18.4                                                     | 22.0 |
| BZX84C27    | KYA          | 27                               | 25.1    | 28.9    | 2.0             | 80                                | 300                               | 0.5  | 0.1                              | 18.9           | 21.4                                                     | 25.3 |
| BZX84C30    | KYB          | 30                               | 28.0    | 32.0    | 2.0             | 80                                | 300                               | 0.5  | 0.1                              | 21.0           | 24.4                                                     | 29.4 |
| BZX84C33    | KYC          | 33                               | 31.0    | 35.0    | 2.0             | 80                                | 325                               | 0.5  | 0.1                              | 23.1           | 27.4                                                     | 33.4 |
| BZX84C36    | KYD          | 36                               | 34.0    | 38.0    | 2.0             | 90                                | 350                               | 0.5  | 0.1                              | 25.2           | 30.4                                                     | 37.4 |
| BZX84C39    | KYE          | 39                               | 37.0    | 41.0    | 2.0             | 130                               | 350                               | 0.5  | 0.1                              | 27.3           | 33.4                                                     | 41.2 |

Notes: 5. Short duration test pulse used to minimize self-heating effect.  
 6. f = 1KHz.

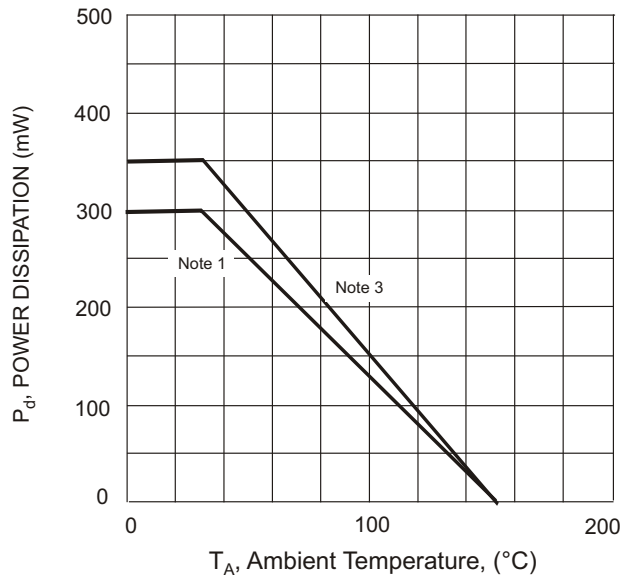


Fig. 1 Power Derating Curve

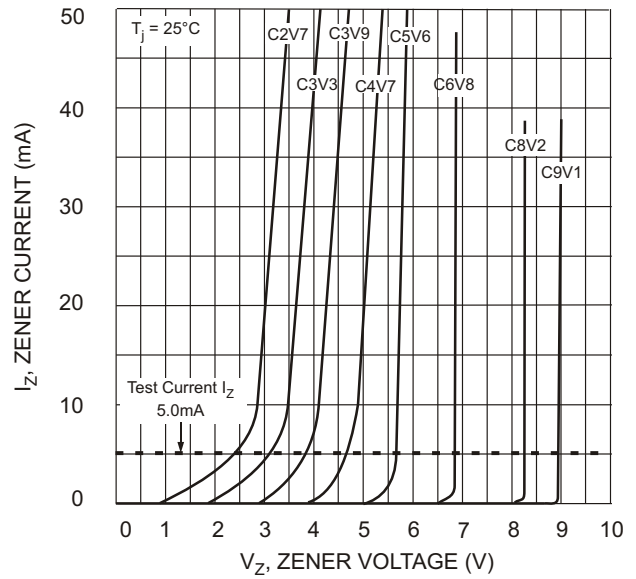


Fig. 2 Zener Breakdown Characteristics

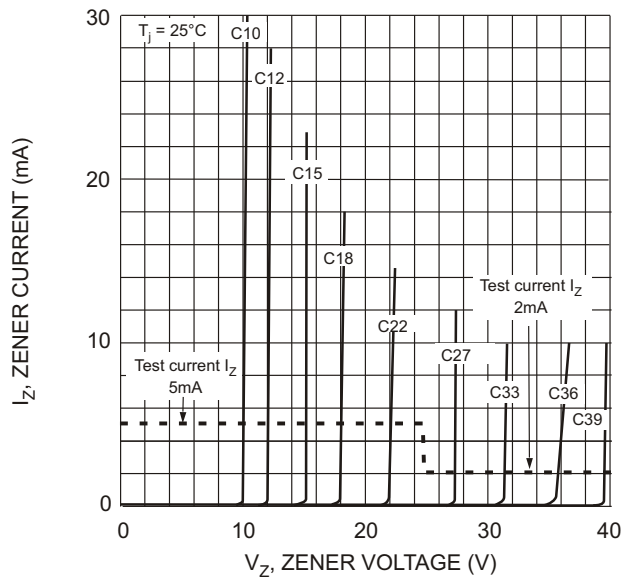


Fig. 3 Zener Breakdown Characteristics

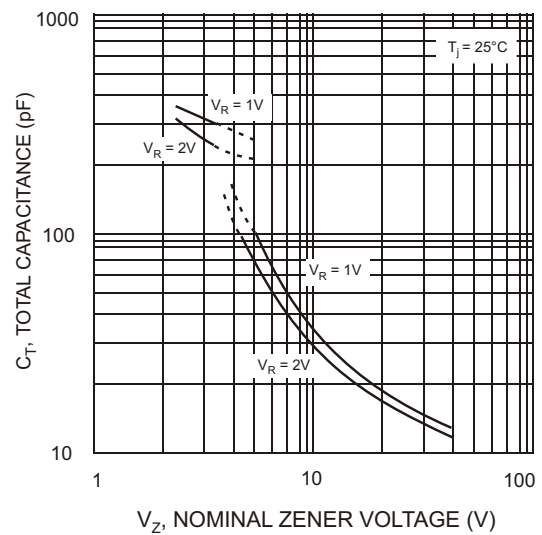


Fig. 4 Total Capacitance vs Nominal Zener Voltage

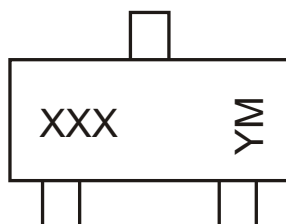
## Ordering Information (Note 7)

| Device            | Packaging | Shipping         |
|-------------------|-----------|------------------|
| (Type Number)-7-F | SOT-23    | 3000/Tape & Reel |

\* Add "-7-F" to the appropriate type number in Table 1 (on Page 2). Example: 6.2V Zener = BZX84C6V2-7-F.

Notes: 7. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



XXX = Product Type Marking Code (See Page 2)

YM = Date Code Marking

Y = Year ex: N = 2002

M = Month ex: 9 = September

### Date Code Key

| Year | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | J    | K    | L    | M    | N    | P    | R    | S    | T    | U    | V    | W    |

| Month | Jan | Feb | March | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code  | 1   | 2   | 3     | 4   | 5   | 6   | 7   | 8   | 9   | O   | N   | D   |

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