



# BZX84C2V4TS - BZX84C39TS



## TRIPLE SURFACE MOUNT ZENER DIODE ARRAY

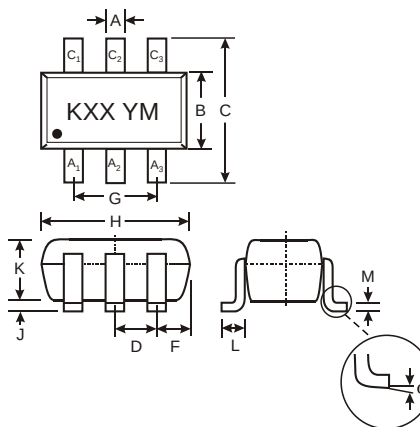
SPICE MODELS: BZX84C2V4TS BZX84C2V7TS BZX84C3V0TS BZX84C3V3TS BZX84C3V6TS BZX84C3V9TS BZX84C4V3TS BZX84C4V7TS BZX84C5V1TS BZX84C5V6TS BZX84C6V2TS BZX84C6V8TS BZX84C7V5TS BZX84C8V2TS BZX84C9V1TS BZX84C10TS BZX84C11TS BZX84C12TS BZX84C13TS BZX84C15TS BZX84C16TS BZX84C18TS BZX84C20TS BZX84C22TS BZX84C24TS BZX84C27TS BZX84C30TS BZX84C33TS BZX84C36TS BZX84C39TS

### Features

- Zener Voltages from 2.4 - 39V
- Three Isolated Diode Elements in a Single Ultra-Small Surface Mount Package
- Lead Free/RoHS Compliant (Note 5)

### Mechanical Data

- Case: SOT-363
- 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).
- Orientation: See Diagram
- Marking: Date Code and Marking Code (See Page 2)
- Weight: 0.006 grams (approximate)



| SOT-363              |              |      |
|----------------------|--------------|------|
| Dim                  | Min          | Max  |
| A                    | 0.10         | 0.30 |
| B                    | 1.15         | 1.35 |
| C                    | 2.00         | 2.20 |
| D                    | 0.65 Nominal |      |
| F                    | 0.30         | 0.40 |
| H                    | 1.80         | 2.20 |
| J                    | 3/4          | 0.10 |
| K                    | 0.90         | 1.00 |
| L                    | 0.25         | 0.40 |
| M                    | 0.10         | 0.25 |
| α                    | 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>                    | 200         | mW   |
| Thermal Resistance, Junction to Ambient Air (Note 1) | R <sub>θJA</sub>                  | 625         | °C/W |
| Operating and Storage Temperature Range              | T <sub>J</sub> , T <sub>STG</sub> | -65 to +150 | °C   |

### Ordering Information (Note 4)

| Device            | Packaging | Shipping         |
|-------------------|-----------|------------------|
| (Type Number)-7-F | SOT-363   | 3000/Tape & Reel |

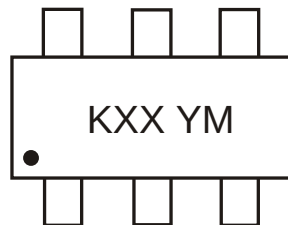
\* Add "-7-F" to the appropriate type number in Table 1 from Sheet 2 example: 6.2V Zener = BZX84C6V2TS-7-F.

- Notes:
1. Mounted on FR4 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. f = 1KHz.
  4. For Packaging Details, got to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.
  5. No purposefully added lead.

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

| Type Number | Marking Code | Zener Voltage Range (Note 2)     |         |         |                 | Maximum Zener Impedance (Note 3)  |                                   |                 | Maximum Reverse Current (Note 2) |                | Temperature Coefficient of Zener Voltage @ I <sub>ZT</sub> = 5mA 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>ZK</sub> | I <sub>R</sub>                   | V <sub>R</sub> | Min                                                                    | Max  |
|             |              | Nom (V)                          | Min (V) | Max (V) | mA              | Ω                                 |                                   | mA              | μA                               | @ V            |                                                                        |      |
| BZX84C2V4TS | KRB          | 2.4                              | 2.2     | 2.6     | 5               | 100                               | 600                               | 0.5             | 50                               | 1.0            | -3.5                                                                   | 0    |
| BZX84C2V7TS | KRC          | 2.7                              | 2.5     | 2.9     | 5               | 100                               | 600                               | 1.0             | 20                               | 1.0            | -3.5                                                                   | 0    |
| BZX84C3V0TS | KRD          | 3.0                              | 2.8     | 3.2     | 5               | 95                                | 600                               | 1.0             | 10                               | 1.0            | -3.5                                                                   | 0    |
| BZX84C3V3TS | KRE          | 3.3                              | 3.1     | 3.5     | 5               | 95                                | 600                               | 1.0             | 5.0                              | 1.0            | -3.5                                                                   | 0    |
| BZX84C3V6TS | KRF          | 3.6                              | 3.4     | 3.8     | 5               | 90                                | 600                               | 1.0             | 5.0                              | 1.0            | -3.5                                                                   | 0    |
| BZX84C3V9TS | KRG          | 3.9                              | 3.7     | 4.1     | 5               | 90                                | 600                               | 1.0             | 3.0                              | 1.0            | -3.5                                                                   | 0    |
| BZX84C4V3TS | KRH          | 4.3                              | 4.0     | 4.6     | 5               | 90                                | 600                               | 1.0             | 3.0                              | 1.0            | -3.5                                                                   | 0    |
| BZX84C4V7TS | KR1          | 4.7                              | 4.4     | 5.0     | 5               | 80                                | 500                               | 1.0             | 3.0                              | 2.0            | -3.5                                                                   | 0.2  |
| BZX84C5V1TS | KR2          | 5.1                              | 4.8     | 5.4     | 5               | 60                                | 480                               | 1.0             | 2.0                              | 2.0            | -2.7                                                                   | 1.2  |
| BZX84C5V6TS | KR3          | 5.6                              | 5.2     | 6.0     | 5               | 40                                | 400                               | 1.0             | 1.0                              | 2.0            | -2.0                                                                   | 2.5  |
| BZX84C6V2TS | KR4          | 6.2                              | 5.8     | 6.6     | 5               | 10                                | 150                               | 1.0             | 3.0                              | 4.0            | 0.4                                                                    | 3.7  |
| BZX84C6V8TS | KR5          | 6.8                              | 6.4     | 7.2     | 5               | 15                                | 80                                | 1.0             | 2.0                              | 4.0            | 1.2                                                                    | 4.5  |
| BZX84C7V5TS | KR6          | 7.5                              | 7.0     | 7.9     | 5               | 15                                | 80                                | 1.0             | 1.0                              | 5.0            | 2.5                                                                    | 5.3  |
| BZX84C8V2TS | KR7          | 8.2                              | 7.7     | 8.7     | 5               | 15                                | 80                                | 1.0             | 0.7                              | 5.0            | 3.2                                                                    | 6.2  |
| BZX84C9V1TS | KR8          | 9.1                              | 8.5     | 9.6     | 5               | 15                                | 100                               | 1.0             | 0.5                              | 6.0            | 3.8                                                                    | 7.0  |
| BZX84C10TS  | KR9          | 10.0                             | 9.4     | 10.6    | 5               | 20                                | 150                               | 1.0             | 0.2                              | 7.0            | 4.5                                                                    | 8.0  |
| BZX84C11TS  | KP1          | 11.0                             | 10.4    | 11.6    | 5               | 20                                | 150                               | 1.0             | 0.1                              | 8.0            | 5.4                                                                    | 9.0  |
| BZX84C12TS  | KP2          | 12.0                             | 11.4    | 12.7    | 5               | 25                                | 150                               | 1.0             | 0.1                              | 8.0            | 6.0                                                                    | 10.0 |
| BZX84C13TS  | KP3          | 13.0                             | 12.4    | 14.1    | 5               | 30                                | 170                               | 1.0             | 0.1                              | 8.0            | 7.0                                                                    | 11.0 |
| BZX84C15TS  | KP4          | 15.0                             | 13.8    | 15.6    | 5               | 30                                | 200                               | 1.0             | 0.1                              | 10.5           | 9.2                                                                    | 13.0 |
| BZX84C16TS  | KP5          | 16.0                             | 15.3    | 17.1    | 5               | 40                                | 200                               | 1.0             | 0.1                              | 11.2           | 10.4                                                                   | 14.0 |
| BZX84C18TS  | KP6          | 18.0                             | 16.8    | 19.1    | 5               | 45                                | 225                               | 1.0             | 0.1                              | 12.6           | 12.4                                                                   | 16.0 |
| BZX84C20TS  | KP7          | 20.0                             | 18.8    | 21.2    | 5               | 55                                | 225                               | 1.0             | 0.1                              | 14.0           | 14.4                                                                   | 18.0 |
| BZX84C22TS  | KP8          | 22.0                             | 20.8    | 23.3    | 5               | 55                                | 250                               | 1.0             | 0.1                              | 15.4           | 16.4                                                                   | 20.0 |
| BZX84C24TS  | KP9          | 24.0                             | 22.8    | 25.6    | 5               | 70                                | 250                               | 1.0             | 0.1                              | 16.8           | 18.4                                                                   | 22.0 |
| BZX84C27TS  | KPA          | 27.0                             | 25.1    | 28.9    | 2               | 80                                | 300                               | 0.5             | 0.1                              | 18.9           | 21.4                                                                   | 25.3 |
| BZX84C30TS  | KPB          | 30.0                             | 28.0    | 32.0    | 2               | 80                                | 300                               | 0.5             | 0.1                              | 21.0           | 24.4                                                                   | 29.4 |
| BZX84C33TS  | KPC          | 33.0                             | 31.0    | 35.0    | 2               | 80                                | 325                               | 0.5             | 0.1                              | 23.1           | 27.4                                                                   | 33.4 |
| BZX84C36TS  | KPD          | 36.0                             | 34.0    | 38.0    | 2               | 90                                | 350                               | 0.5             | 0.1                              | 25.2           | 30.4                                                                   | 37.4 |
| BZX84C39TS  | KPE          | 39.0                             | 37.0    | 41.0    | 2               | 130                               | 350                               | 0.5             | 0.1                              | 27.3           | 33.4                                                                   | 41.2 |

Notes: 2. Short duration test pulse used to minimize self-heating effect.  
 3. f = 1KHz.

**Marking Information**


KXX = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year ex: N = 2002  
 M = Month ex: 9 = September

Date Code Key

| Year |  | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------|--|------|------|------|------|------|------|------|------|
| Code |  | 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   |

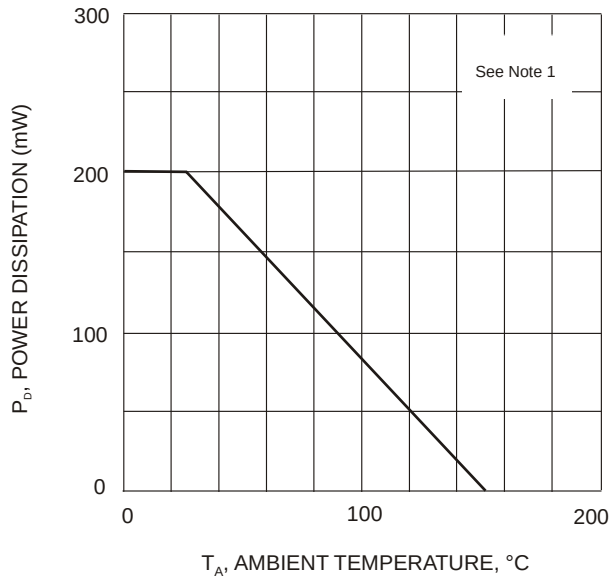


Fig. 1. Power Derating Curve

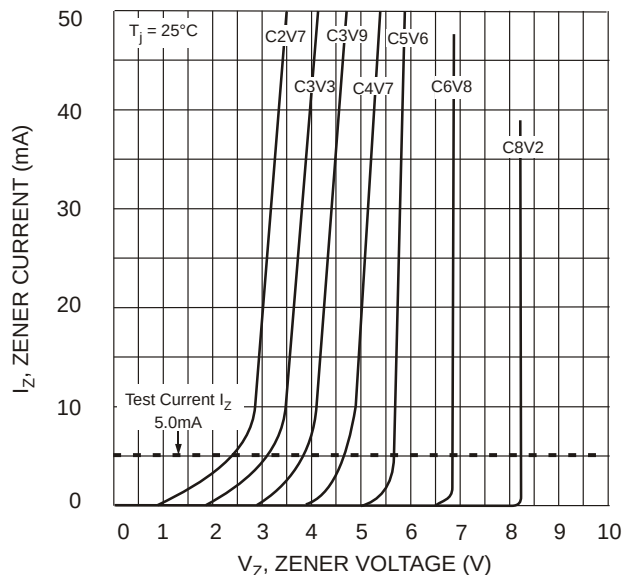


Fig. 2. Zener Breakdown Characteristics

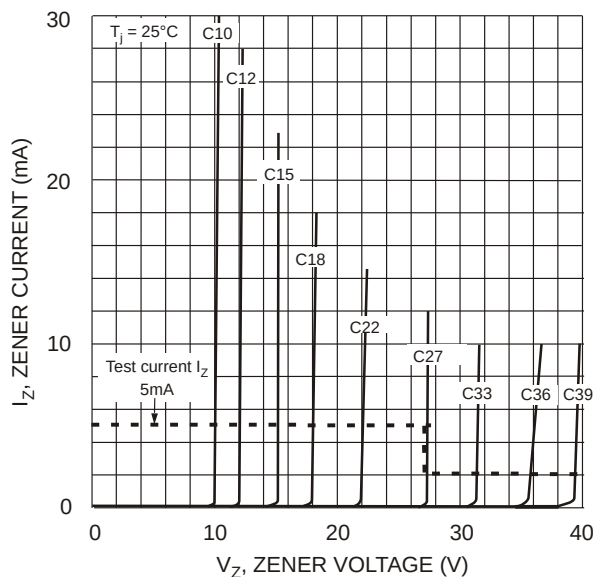


Fig. 3. Zener Breakdown Characteristics

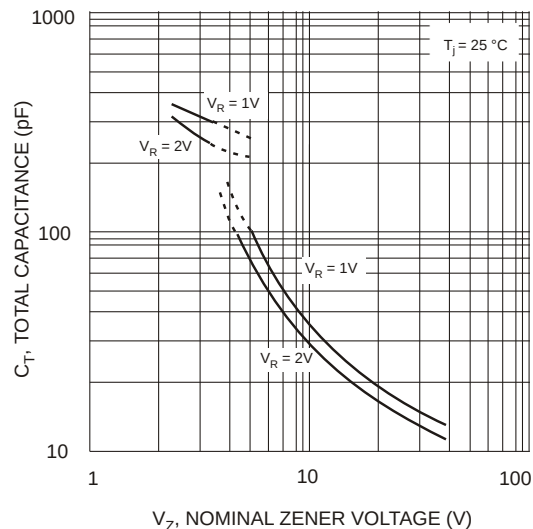


Fig. 4. Total Capacitance vs Nominal Zener Voltage

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