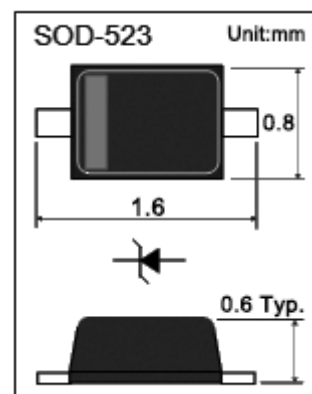


## Zener Diodes / DATA SHEET

### BZX584B Series

- ◇ Constant Voltage control
  - ◇ Wide Voltage Range Selection 2.4V to 75V
  - ◇ **SOD523 Thin** SMD package
  - ◇ RoHS compliant / Green EMC
  - ◇ Matte Tin (Sn) Lead finish
  - ◇ Cathode Band / Device marking
- Refer to table list



### Maximum Ratings (Ta = 25 °C)

| Symbol    | Parameter                 | Value       | Units |
|-----------|---------------------------|-------------|-------|
| $P_D$     | Power Dissipation         | 200         | mW    |
| $T_J$     | Junction Temperature      | 150         | °C    |
| $T_{STG}$ | Storage Temperature       | -55 to +150 | °C    |
| $I_{ZM}$  | Maximum Regulator Current | $P_D/V_Z$   | mA    |

### Electrical Characteristics (Ta = 25 °C)

| Type<br>Number | Device<br>Marking | V <sub>z</sub> (V) <sup>*1</sup> |        |        | I <sub>zT</sub> | Z <sub>zT</sub> @I <sub>zT</sub> | Z <sub>zK</sub> @I <sub>zK</sub> | I <sub>zk</sub><br>(mA) | I <sub>R</sub><br>(uA) | V <sub>R</sub><br>(V) |
|----------------|-------------------|----------------------------------|--------|--------|-----------------|----------------------------------|----------------------------------|-------------------------|------------------------|-----------------------|
|                |                   | Nom(V)                           | Min(V) | Max(V) | mA              | Ω                                |                                  |                         |                        |                       |
| BZX584B2V4     | Z1.               | 2.4                              | 2.35   | 2.45   | 5               | 100                              | 600                              | 1.0                     | 50                     | 1.0                   |
| BZX584B2V7     | Z2.               | 2.7                              | 2.65   | 2.75   | 5               | 100                              | 600                              | 1.0                     | 20                     | 1.0                   |
| BZX584B3V0     | Z3.               | 3.0                              | 2.94   | 3.06   | 5               | 95                               | 600                              | 1.0                     | 10                     | 1.0                   |
| BZX584B3V3     | Z4.               | 3.3                              | 3.23   | 3.37   | 5               | 95                               | 600                              | 1.0                     | 5                      | 1.0                   |
| BZX584B3V6     | Z5.               | 3.6                              | 3.53   | 3.67   | 5               | 90                               | 600                              | 1.0                     | 5                      | 1.0                   |
| BZX584B3V9     | Z6.               | 3.9                              | 3.82   | 3.98   | 5               | 90                               | 600                              | 1.0                     | 3                      | 1.0                   |
| BZX584B4V3     | Z7.               | 4.3                              | 4.21   | 4.39   | 5               | 90                               | 600                              | 1.0                     | 3                      | 1.0                   |
| BZX584B4V7     | X1.               | 4.7                              | 4.61   | 4.79   | 5               | 80                               | 500                              | 1.0                     | 3                      | 2.0                   |
| BZX584B5V1     | 222               | 5.1                              | 5.00   | 5.20   | 5               | 60                               | 480                              | 1.0                     | 2                      | 2.0                   |
| BZX584B5V6     | 223               | 5.6                              | 5.49   | 5.71   | 5               | 40                               | 400                              | 1.0                     | 1                      | 2.0                   |
| BZX584B6V2     | 224               | 6.2                              | 6.08   | 6.32   | 5               | 10                               | 150                              | 1.0                     | 3                      | 4.0                   |

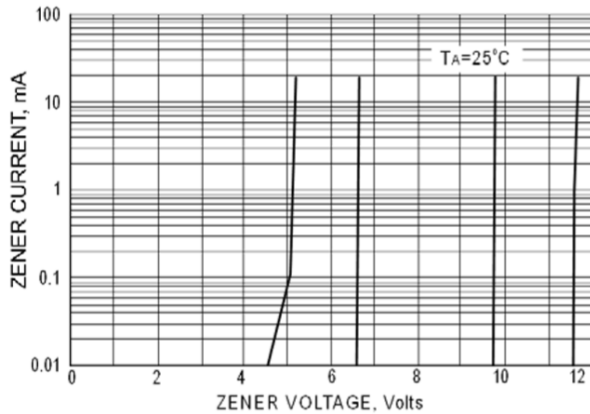
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**Electrical Characteristics (Ta = 25 °C)**

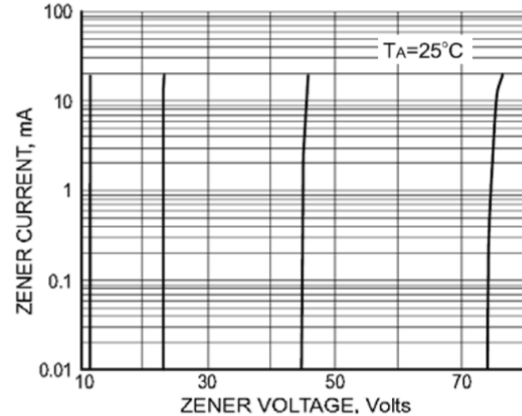
| Type<br><br>Number | Device<br><br>Marking | V <sub>z</sub> (V) <sup>*1</sup> |        |        | I <sub>zT</sub> | Z <sub>zT</sub> @I <sub>zT</sub> | Z <sub>zK</sub> @I <sub>zK</sub> | I <sub>zk</sub> | I <sub>R</sub> | V <sub>R</sub> |
|--------------------|-----------------------|----------------------------------|--------|--------|-----------------|----------------------------------|----------------------------------|-----------------|----------------|----------------|
|                    |                       | Nom(V)                           | Min(V) | Max(V) | mA              | Ω                                |                                  | (mA)            | (uA)           | (V)            |
| BZX584B6V8         | 2Z5                   | 6.8                              | 6.66   | 6.94   | 5               | 15                               | 80                               | 1.0             | 2              | 4.0            |
| BZX584B7V5         | 2Z6                   | 7.5                              | 7.35   | 7.65   | 5               | 15                               | 80                               | 1.0             | 1              | 5.0            |
| BZX584B8V2         | 2Z7                   | 8.2                              | 8.04   | 8.36   | 5               | 15                               | 80                               | 1.0             | 0.7            | 5.0            |
| BZX584B9V1         | 2Z8                   | 9.1                              | 8.92   | 9.28   | 5               | 15                               | 100                              | 1.0             | 0.5            | 6.0            |
| BZX584B10          | 2Z9                   | 10                               | 9.80   | 10.20  | 5               | 20                               | 150                              | 1.0             | 0.2            | 7.0            |
| BZX584B11          | 2Y1                   | 11                               | 10.78  | 11.22  | 5               | 20                               | 150                              | 1.0             | 0.1            | 8.0            |
| BZX584B12          | 2Y2                   | 12                               | 11.76  | 12.24  | 5               | 25                               | 150                              | 1.0             | 0.1            | 8.0            |
| BZX584B13          | 2Y3                   | 13                               | 12.74  | 13.26  | 5               | 30                               | 170                              | 1.0             | 0.1            | 8.0            |
| BZX584B15          | 2Y4                   | 15                               | 14.70  | 15.30  | 5               | 30                               | 200                              | 1.0             | 0.1            | 10.5           |
| BZX584B16          | 2Y5                   | 16                               | 15.68  | 16.32  | 5               | 40                               | 200                              | 1.0             | 0.1            | 11.2           |
| BZX584B18          | 2Y6                   | 18                               | 17.64  | 18.36  | 5               | 45                               | 225                              | 1.0             | 0.1            | 12.6           |
| BZX584B20          | 2Y7                   | 20                               | 19.60  | 20.40  | 5               | 55                               | 225                              | 1.0             | 0.1            | 14.0           |
| BZX584B22          | W8.                   | 22                               | 21.56  | 22.44  | 5               | 55                               | 250                              | 1.0             | 0.1            | 15.4           |
| BZX584B24          | W9.                   | 24                               | 23.52  | 24.48  | 5               | 70                               | 250                              | 1.0             | 0.1            | 16.8           |
| BZX584B27          | Y1.                   | 27                               | 26.46  | 27.54  | 2               | 80                               | 300                              | 0.5             | 0.1            | 18.9           |
| BZX584B30          | Y2.                   | 30                               | 29.40  | 30.60  | 2               | 80                               | 300                              | 0.5             | 0.1            | 21.0           |
| BZX584B33          | Y3.                   | 33                               | 32.34  | 33.66  | 2               | 80                               | 325                              | 0.5             | 0.1            | 23.1           |
| BZX584B36          | Y4.                   | 36                               | 35.28  | 36.72  | 2               | 90                               | 350                              | 0.5             | 0.1            | 25.2           |
| BZX584B39          | Y5.                   | 39                               | 38.22  | 39.78  | 2               | 130                              | 350                              | 0.5             | 0.1            | 27.3           |
| BZX584B43          | Y6.                   | 43                               | 42.14  | 43.86  | 2               | 130                              | 350                              | 0.5             | 0.1            | 29.4           |
| BZX584B47          | V1.                   | 47                               | 45.83  | 48.17  | 2               | 170                              | 1000                             | 0.25            | 0.1            | 36             |
| BZX584B51          | V2.                   | 51                               | 49.73  | 52.27  | 2               | 180                              | 1300                             | 0.25            | 0.1            | 39             |
| BZX584B56          | V3.                   | 56                               | 54.60  | 57.40  | 2               | 200                              | 1400                             | 0.25            | 0.1            | 43             |
| BZX584B62          | V4.                   | 62                               | 60.45  | 63.55  | 2               | 225                              | 1400                             | 0.25            | 0.1            | 47             |
| BZX584B68          | V5.                   | 68                               | 66.30  | 69.70  | 2               | 240                              | 1600                             | 0.25            | 0.1            | 52             |
| BZX584B75          | V6.                   | 75                               | 73.13  | 76.87  | 2               | 265                              | 1700                             | 0.25            | 0.1            | 56             |

\*1 Pulse width = 10 ms

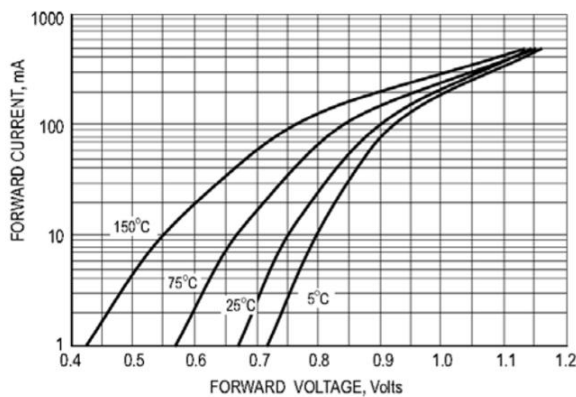
### Typical Characteristics



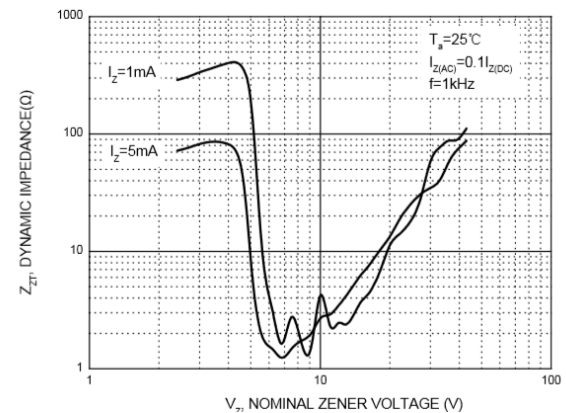
ZENER BREAKDOWN CHARACTERISTIC



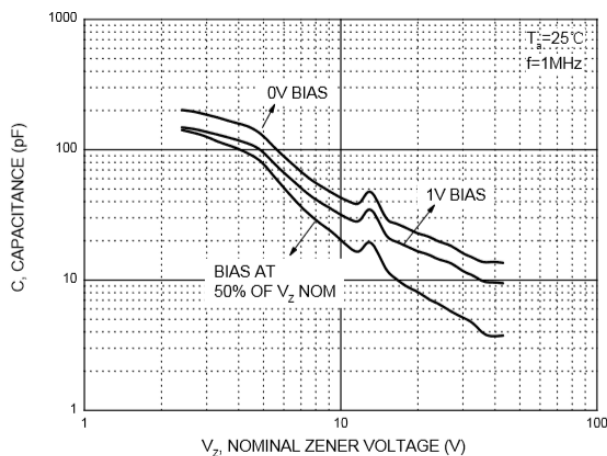
ZENER BREAKDOWN CHARACTERISTICS



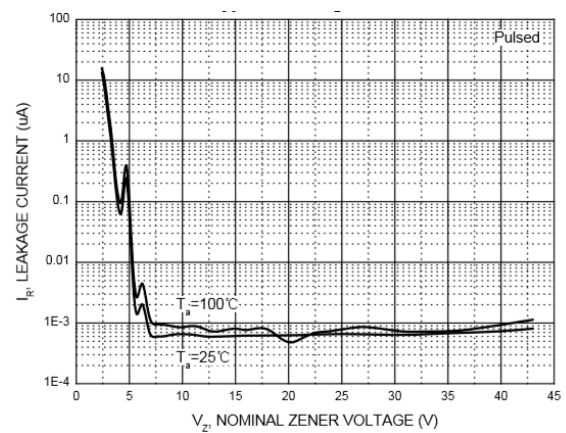
TYPICAL FORWARD VOLTAGE



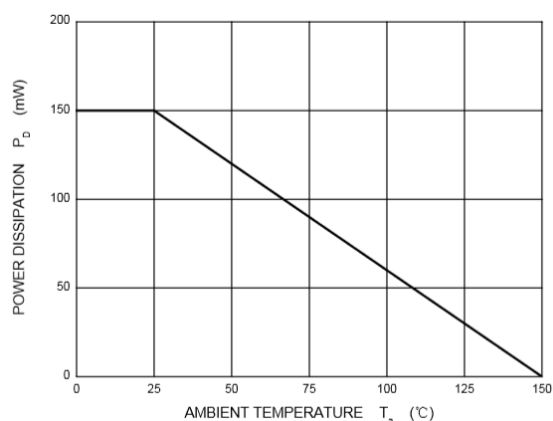
Effect of Zener Voltage on Zener Impedance



Typical Capacitance



Typical Leakage Current



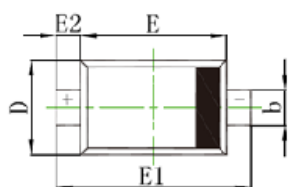
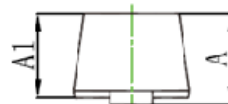
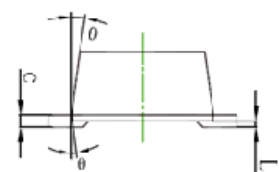
**Power Derating Curve**

### Ordering Information

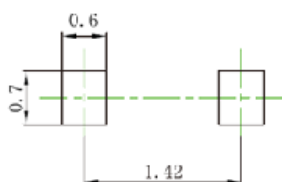
| Device         | Package | Shipping                        | Tape wide | Emboss pitch | Tape specification | Notes |
|----------------|---------|---------------------------------|-----------|--------------|--------------------|-------|
| BZX584B Series | SOD523  | Tape & Reel<br>8000pcs /7" Reel | 8 mm      | 4 mm         | Conductive         |       |

### Package Dimensions

Package outline : SOD-523



**SOD523 Package Outline**



**Lead Pattern Recommendation**

| Unit | A    | A1   | b    | c    | D    | E    | E1   | E2   | L    | θ    |
|------|------|------|------|------|------|------|------|------|------|------|
| Max. | 0.77 | 0.70 | 0.35 | 0.15 | 0.85 | 1.30 | 1.70 | 0.20 | 0.07 | 7°   |
| Min. | 0.51 | 0.50 | 0.25 | 0.08 | 0.75 | 1.10 | 1.50 | REF. | 0.01 | REF. |

Note:

1. Halogen free, EMC
2. Pb free solder
3. Lead thickness includes solder plating
4. Lead frame: Cu
5. Other Tolerance:  $\pm 0.05$
6. Dimensions are exclusive of Burrs, Mold Flash and Tie Bar extrusions
7. Unit: mm

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