

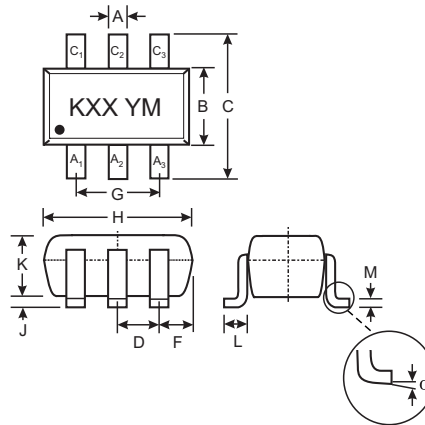


Features

- Three Isolated Zeners in Ultra-Small Surface Mount Package
- Ideally Suited for Automated Assembly Processes
- **Lead Free/RoHS Compliant (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

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: Marking Code (See Table on 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 | — | 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 @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|--|-----------------|-------------|--------------------|
| Forward Voltage (Note 2) @ $I_F = 10\text{mA}$ | V_F | 0.9 | V |
| Power Dissipation (Note 1) | P_d | 200 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 1) | $R_{\theta JA}$ | 625 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_j, T_{STG} | -65 to +150 | $^\circ\text{C}$ |

- 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. No purposefully added lead.

Electrical Characteristics @ T_A = 25°C unless otherwise specified

| Type Number | Marking Code | Zener Voltage Range (Note 2) | | | | Maximum Zener Impedance (Note 4) | | Maximum Reverse Leakage Current (Note 2) | |
|-------------|--------------|----------------------------------|---------|---------|-----------------|-----------------------------------|---|--|------------------|
| | | V _Z @ I _{ZT} | | | I _{ZT} | Z _{ZT} @ I _{ZT} | Z _{ZK} @ I _{ZK} = 0.25mA | I _R | @ V _R |
| | | Nom (V) | Min (V) | Max (V) | mA | Ω | | μA | V |
| MMBZ5221BTS | KSB | 2.4 | 2.28 | 2.52 | 20 | 30 | 1200 | 100 | 1.0 |
| MMBZ5223BTS | KSC | 2.7 | 2.57 | 2.84 | 20 | 30 | 1300 | 75 | 1.0 |
| MMBZ5225BTS | KSD | 3.0 | 2.85 | 3.15 | 20 | 30 | 1600 | 50 | 1.0 |
| MMBZ5226BTS | KSE | 3.3 | 3.14 | 3.47 | 20 | 28 | 1600 | 25 | 1.0 |
| MMBZ5227BTS | KSF | 3.6 | 3.42 | 3.78 | 20 | 24 | 1700 | 15 | 1.0 |
| MMBZ5228BTS | KSG | 3.9 | 3.71 | 4.10 | 20 | 23 | 1900 | 10 | 1.0 |
| MMBZ5229BTS | KSH | 4.3 | 4.09 | 4.52 | 20 | 22 | 2000 | 5.0 | 1.0 |
| MMBZ5230BTS | KS1 | 4.7 | 4.47 | 4.94 | 20 | 19 | 1900 | 5.0 | 2.0 |
| MMBZ5231BTS | KS2 | 5.1 | 4.85 | 5.36 | 20 | 17 | 1600 | 5.0 | 2.0 |
| MMBZ5232BTS | KS3 | 5.6 | 5.32 | 5.88 | 20 | 11 | 1600 | 5.0 | 3.0 |
| MMBZ5233BTS | KRF | 6.0 | 5.70 | 6.30 | 20 | 7 | 1600 | 5.0 | 3.5 |
| MMBZ5234BTS | KS4 | 6.2 | 5.89 | 6.51 | 20 | 7 | 1000 | 5.0 | 4.0 |
| MMBZ5235BTS | KS5 | 6.8 | 6.46 | 7.14 | 20 | 5 | 750 | 3.0 | 5.0 |
| MMBZ5236BTS | KS6 | 7.5 | 7.13 | 7.88 | 20 | 6 | 500 | 3.0 | 6.0 |
| MMBZ5237BTS | KS7 | 8.2 | 7.79 | 8.61 | 20 | 8 | 500 | 3.0 | 6.5 |
| MMBZ5238BTS | KRG | 8.7 | 8.27 | 9.14 | 20 | 8 | 600 | 3.0 | 6.5 |
| MMBZ5239BTS | KS8 | 9.1 | 8.65 | 9.56 | 20 | 10 | 600 | 3.0 | 7.0 |
| MMBZ5240BTS | KS9 | 10 | 9.50 | 10.50 | 20 | 17 | 600 | 3.0 | 8.0 |
| MMBZ5241BTS | KR1 | 11 | 10.45 | 11.55 | 20 | 22 | 600 | 2.0 | 8.4 |
| MMBZ5242BTS | KR2 | 12 | 11.40 | 12.60 | 20 | 30 | 600 | 1.0 | 9.1 |
| MMBZ5243BTS | KR3 | 13 | 12.35 | 13.65 | 9.5 | 13 | 600 | 0.5 | 9.9 |
| MMBZ5245BTS | KR4 | 15 | 14.25 | 15.75 | 8.5 | 16 | 600 | 0.1 | 11 |
| MMBZ5246BTS | KR5 | 16 | 15.20 | 16.80 | 7.8 | 17 | 600 | 0.1 | 12 |
| MMBZ5248BTS | KR6 | 18 | 17.10 | 18.90 | 7.0 | 21 | 600 | 0.1 | 14 |
| MMBZ5250BTS | KR7 | 20 | 19.00 | 21.00 | 6.2 | 25 | 600 | 0.1 | 15 |
| MMBZ5251BTS | KR8 | 22 | 20.90 | 23.10 | 5.6 | 29 | 600 | 0.1 | 17 |
| MMBZ5252BTS | KR9 | 24 | 22.80 | 25.20 | 5.2 | 33 | 600 | 0.1 | 18 |
| MMBZ5254BTS | KRA | 27 | 25.65 | 28.35 | 5.0 | 41 | 600 | 0.1 | 21 |
| MMBZ5255BTS | KRH | 28 | 26.60 | 29.40 | 4.5 | 44 | 600 | 0.1 | 21 |
| MMBZ5256BTS | KRB | 30 | 28.50 | 31.50 | 4.2 | 49 | 600 | 0.1 | 23 |
| MMBZ5257BTS | KRC | 33 | 31.35 | 34.65 | 3.8 | 58 | 700 | 0.1 | 25 |
| MMBZ5258BTS | KRD | 36 | 34.20 | 37.80 | 3.4 | 70 | 700 | 0.1 | 27 |
| MMBZ5259BTS | KRE | 39 | 37.05 | 40.95 | 3.2 | 80 | 800 | 0.1 | 30 |

Notes: 4. Short duration test pulse used to minimize self-heating effect.
5. f = 1KHz.

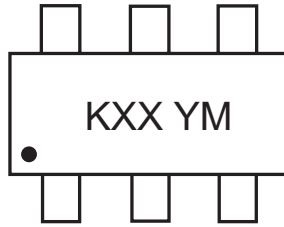
Ordering Information (Note 5)

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

* Add "-7-F" to the appropriate type number in Electrical Characteristics Table above, example: 6.2V Zener = MMBZ5234BTS-7-F.

Notes: 6. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

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 |

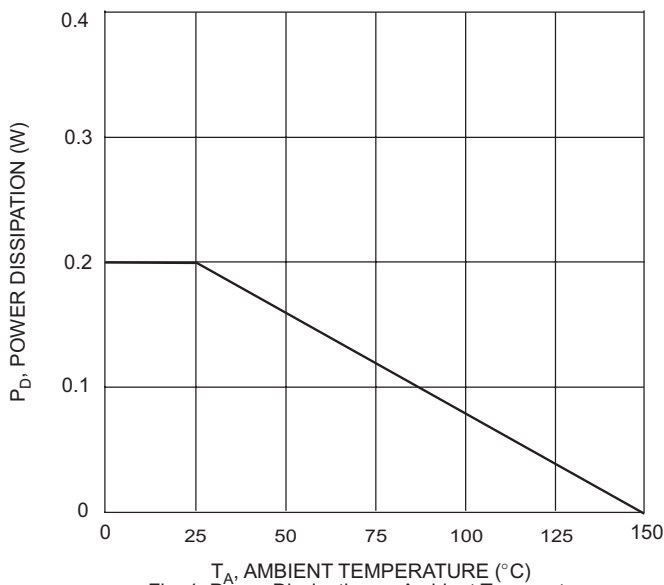


Fig. 1 Power Dissipation vs Ambient Temperature

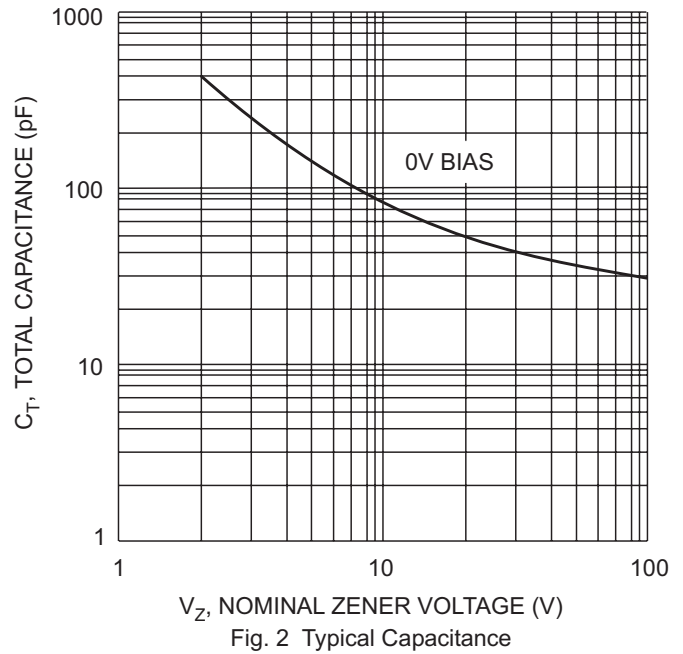


Fig. 2 Typical Capacitance

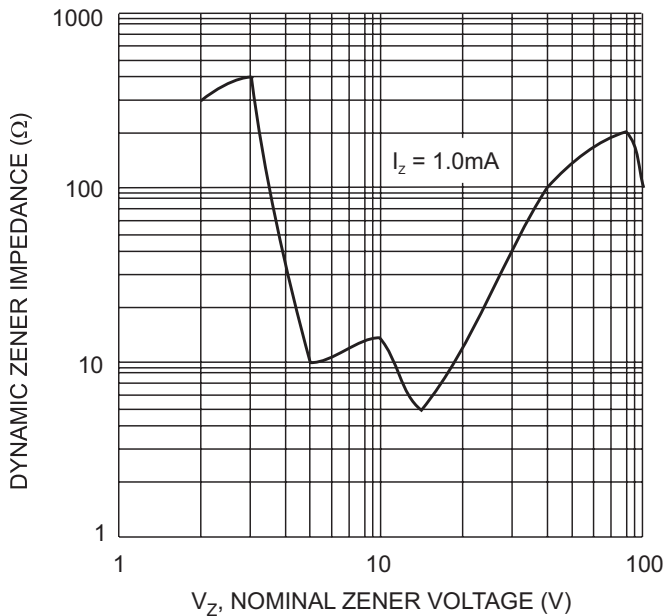


Fig. 3 Zener Voltage vs. Zener Impedance

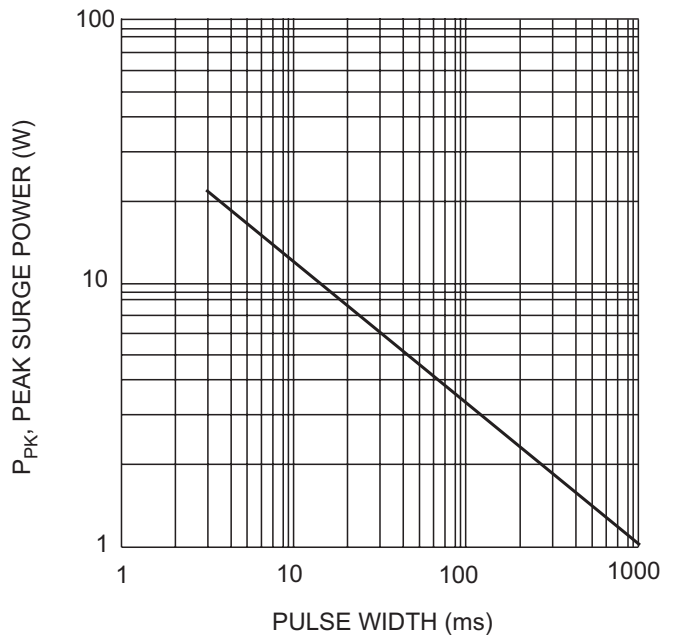


Fig. 4 Maximum Non-repetitive Surge Power

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