



**THE DATASHEET OF
MMBZ5227BW-7-F**



Features

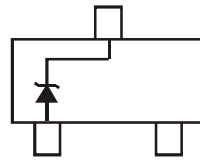
- Small Surface Mount Package
- Ideally Suited for Automated Assembly Processes
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Matte Tin Finish annealed over Alloy 42 leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208 ③
- Polarity: See Diagram
- Weight: 0.006 grams (approximate)



Top View



Device Schematic

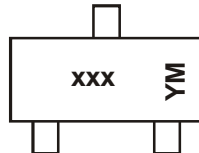
Ordering Information (Note 4)

| Device | Packaging | Shipping |
|--------------------|-----------|------------------|
| (Type Number)-7-F* | SOT323 | 3000/Tape & Reel |

* Add "-7-F" to the appropriate type number in Electrical Characteristics Table from Page 2. Example: 6.2V Zener = MMBZ5234BW-7-F.

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information (Note 5)



xxx = Product Type Marking Code
(See Electrical Characteristics Table)
YM = Date Code Marking
Y = Year (ex: B = 2014)
M = Month (ex: 9 = September)

Date Code Key

| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | U | V | W | X | Y | Z | A | B | C | D | E | F |

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

Note: 5. Product manufactured with date code 0627 (week 27, 2006) and newer are built with Green Molding Compound. Product manufactured prior to date code 0627 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|---------------------------------------|--------|-------|------|
| Forward Voltage @ $I_F = 10\text{mA}$ | V_F | 0.9 | V |

Thermal Characteristics

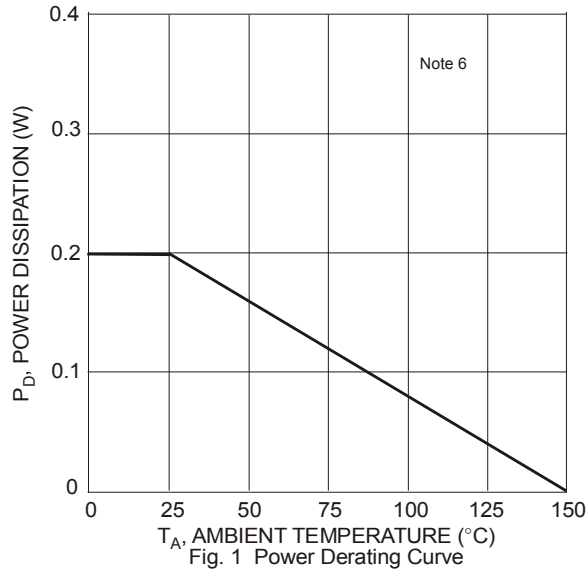
| Characteristic | Symbol | Value | Unit |
|--|-----------------|-------------|--------------------|
| Power Dissipation (Note 6) | P_D | 200 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 6) | $R_{\theta JA}$ | 625 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -65 to +150 | $^\circ\text{C}$ |

Notes: 6. Mounted on FR4 PC Board with recommended pad layout which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Type Number | Marking Code | Zener Voltage Range (Note 7) | | | Test Current | Maximum Zener Impedance (Note 8) | | Maximum Reverse Leakage Current (Note 7) | |
|-------------|--------------|------------------------------|---------|---------|--------------|----------------------------------|-------------------|--|-------|
| | | $V_Z @ I_{ZT}$ | | | | I_{ZT} | $Z_{ZT} @ I_{ZT}$ | $Z_{ZK} @ I_{ZK} = 0.25\text{mA}$ | I_R |
| | | Nom (V) | Min (V) | Max (V) | mA | Ω | | μA | V |
| MMBZ5221BW | KC1 | 2.4 | 2.28 | 2.52 | 20 | 30 | 1200 | 100 | 1.0 |
| MMBZ5223BW | KC3 | 2.7 | 2.57 | 2.84 | 20 | 30 | 1300 | 75 | 1.0 |
| MMBZ5225BW | KC5 | 3.0 | 2.85 | 3.15 | 20 | 30 | 1600 | 50 | 1.0 |
| MMBZ5226BW | KG1 | 3.3 | 3.14 | 3.47 | 20 | 28 | 1600 | 25 | 1.0 |
| MMBZ5227BW | KG2 | 3.6 | 3.42 | 3.78 | 20 | 24 | 1700 | 15 | 1.0 |
| MMBZ5228BW | KG3 | 3.9 | 3.71 | 4.10 | 20 | 23 | 1900 | 10 | 1.0 |
| MMBZ5229BW | KG4 | 4.3 | 4.09 | 4.52 | 20 | 22 | 2000 | 5.0 | 1.0 |
| MMBZ5230BW | KG5 | 4.7 | 4.47 | 4.94 | 20 | 19 | 1900 | 5.0 | 2.0 |
| MMBZ5231BW | KE1 | 5.1 | 4.85 | 5.36 | 20 | 17 | 1600 | 5.0 | 2.0 |
| MMBZ5232BW | KE2 | 5.6 | 5.32 | 5.88 | 20 | 11 | 1600 | 5.0 | 3.0 |
| MMBZ5233BW | KE3 | 6 | 5.70 | 6.30 | 20 | 7.0 | 1600 | 5.0 | 3.5 |
| MMBZ5234BW | KE4 | 6.2 | 5.89 | 6.51 | 20 | 7.0 | 1000 | 5.0 | 4.0 |
| MMBZ5235BW | KE5 | 6.8 | 6.46 | 7.14 | 20 | 5.0 | 750 | 3.0 | 5.0 |
| MMBZ5236BW | KF1 | 7.5 | 7.13 | 7.88 | 20 | 6.0 | 500 | 3.0 | 6.0 |
| MMBZ5237BW | KF2 | 8.2 | 7.79 | 8.61 | 20 | 8.0 | 500 | 3.0 | 6.5 |
| MMBZ5238BW | KF3 | 8.7 | 8.27 | 9.14 | 20 | 8 | 600 | 3 | 6.5 |
| MMBZ5239BW | KF4 | 9.1 | 8.65 | 9.56 | 20 | 10 | 600 | 3.0 | 7.0 |
| MMBZ5240BW | KF5 | 10 | 9.50 | 10.50 | 20 | 17 | 600 | 3.0 | 8.0 |
| MMBZ5241BW | KH1 | 11 | 10.45 | 11.55 | 20 | 22 | 600 | 2.0 | 8.4 |
| MMBZ5242BW | KH2 | 12 | 11.40 | 12.60 | 20 | 30 | 600 | 1.0 | 9.1 |
| MMBZ5243BW | KH3 | 13 | 12.35 | 13.65 | 9.5 | 13 | 600 | 0.5 | 9.9 |
| MMBZ5245BW | KH5 | 15 | 14.25 | 15.75 | 8.5 | 16 | 600 | 0.1 | 11 |
| MMBZ5246BW | KJ1 | 16 | 15.20 | 16.80 | 7.8 | 17 | 600 | 0.1 | 12 |
| MMBZ5248BW | KJ3 | 18 | 17.10 | 18.90 | 7.0 | 21 | 600 | 0.1 | 14 |
| MMBZ5250BW | KJ5 | 20 | 19.00 | 21.00 | 6.2 | 25 | 600 | 0.1 | 15 |
| MMBZ5251BW | KK1 | 22 | 20.90 | 23.10 | 5.6 | 29 | 600 | 0.1 | 17 |
| MMBZ5252BW | KK2 | 24 | 22.80 | 25.20 | 5.2 | 33 | 600 | 0.1 | 18 |
| MMBZ5254BW | KK4 | 27 | 25.65 | 28.35 | 5.0 | 41 | 600 | 0.1 | 21 |
| MMBZ5255BW | KK5 | 28 | 26.60 | 29.40 | 4.5 | 44 | 600 | 0.1 | 21 |
| MMBZ5256BW | KM1 | 30 | 28.50 | 31.50 | 4.2 | 49 | 600 | 0.1 | 23 |
| MMBZ5257BW | KM2 | 33 | 31.35 | 34.65 | 3.8 | 58 | 700 | 0.1 | 25 |
| MMBZ5258BW | KM3 | 36 | 34.20 | 37.80 | 3.4 | 70 | 700 | 0.1 | 27 |
| MMBZ5259BW | KM4 | 39 | 37.05 | 40.95 | 3.2 | 80 | 800 | 0.1 | 30 |

Notes: 7. Short duration pulse test used to minimize self-heating effect.
8. $f = 1\text{KHz}$.



Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



| SOT323 | | | |
|----------------------|------|------|------|
| Dim | Min | Max | Typ |
| A | 0.25 | 0.40 | 0.30 |
| B | 1.15 | 1.35 | 1.30 |
| C | 2.00 | 2.20 | 2.10 |
| D | - | - | 0.65 |
| G | 1.20 | 1.40 | 1.30 |
| H | 1.80 | 2.20 | 2.15 |
| J | 0.0 | 0.10 | 0.05 |
| K | 0.90 | 1.00 | 1.00 |
| L | 0.25 | 0.40 | 0.30 |
| M | 0.10 | 0.18 | 0.11 |
| α | 0° | 8° | - |
| All Dimensions in mm | | | |

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for latest version.



| Dimensions | Value (in mm) |
|------------|---------------|
| Z | 2.8 |
| X | 0.7 |
| Y | 0.9 |
| C | 1.9 |
| E | 1.0 |

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