



**THE DATASHEET OF  
MMBZ5245BW-7-F**



## Features

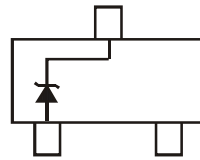
- Small Surface Mount Package
- Ideally Suited for Automated Assembly Processes
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## 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

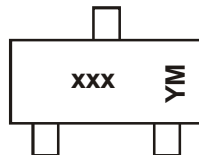
## Ordering Information (Note 4)

| 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](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**

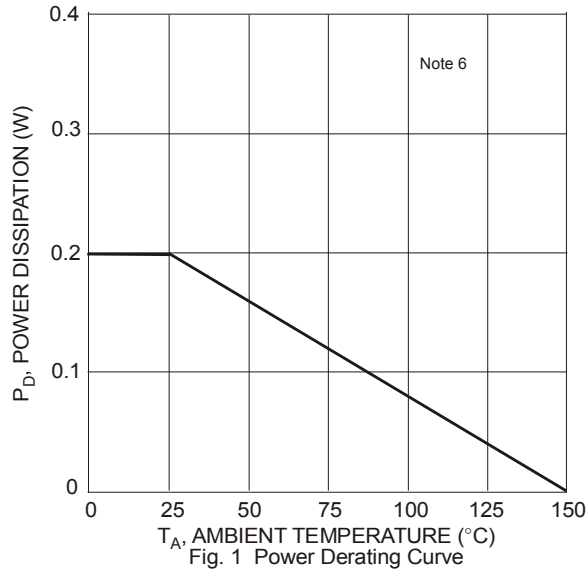
| Characteristic                                       | Symbol          | Value       | Unit               |
|--|-----------------|-------------|--------------------|
| Power Dissipation (Note 6)                           | $P_D$           | 200         | mW                 |
| Thermal Resistance, Junction 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.)

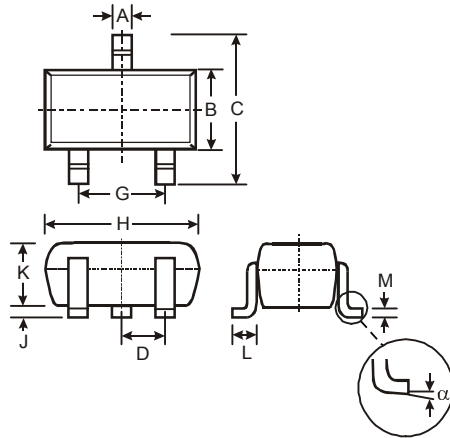
| Type Number | Marking Code | Zener Voltage Range (Note 7) |         |         | Test Current | Maximum Zener Impedance (Note 8) |                   | Maximum Reverse Leakage Current (Note 7) |       |
|-------------|--------------|------------------------------|---------|---------|--------------|----------------------------------|-------------------|--|-------|
|             |              | $V_Z @ I_{ZT}$               |         |         |              | $I_{ZT}$                         | $Z_{ZT} @ I_{ZT}$ | $Z_{ZK} @ I_{ZK} = 0.25\text{mA}$        | $I_R$ |
|             |              | Nom (V)                      | Min (V) | Max (V) | mA           | $\Omega$                         |                   | $\mu\text{A}$                            | 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**

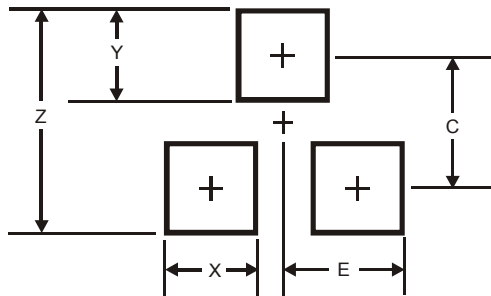
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



| 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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