



**THE DATASHEET OF  
MMBZ5236BW**

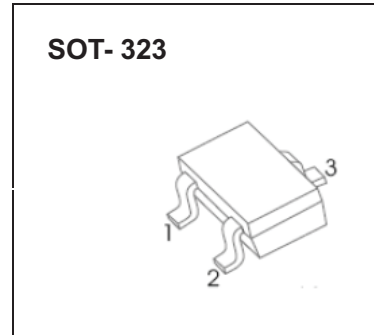
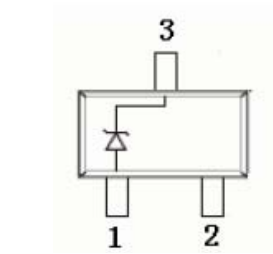


ZENER DIODE

**FEATURES:**

- Planar Die Construction
- 200mW Power Dissipation on FR-4 PCB
- General purpose, Medium Current
- Ideally Suited for Automated Assembly
- P/N suffix V means AEC-Q101 qualified, e.g:MMBZ5221BWV
- P/N suffix V means Halogen-free

Marking: see table on page2 The first code



**Maximum Ratings(T<sub>a</sub>= 25°C unless otherwise specified)**

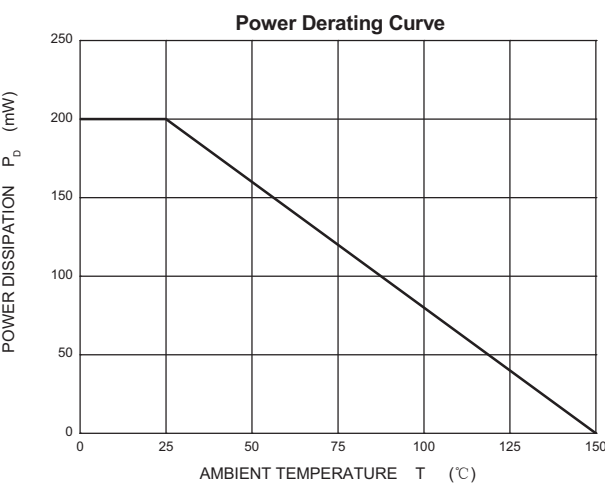
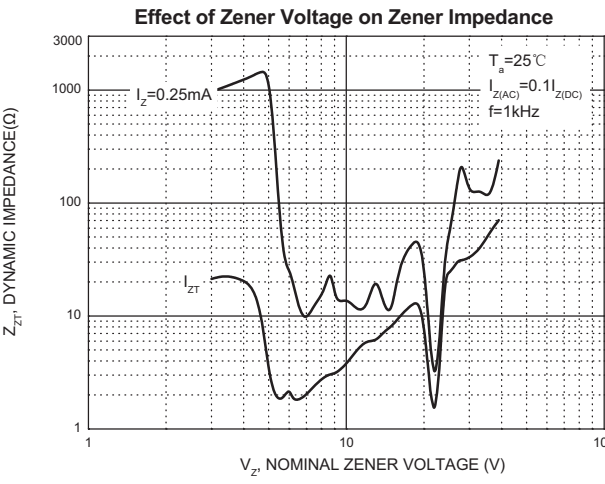
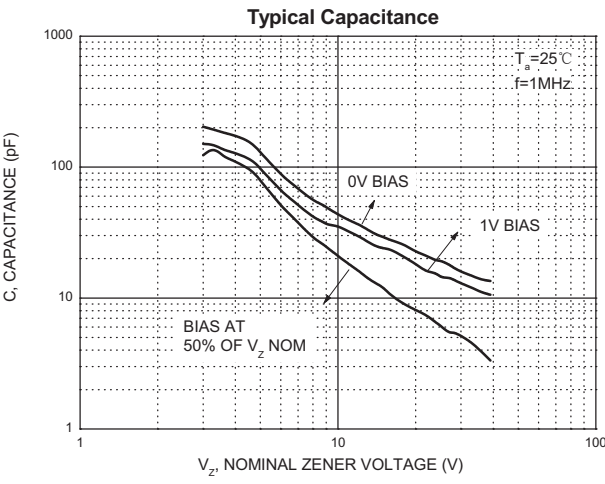
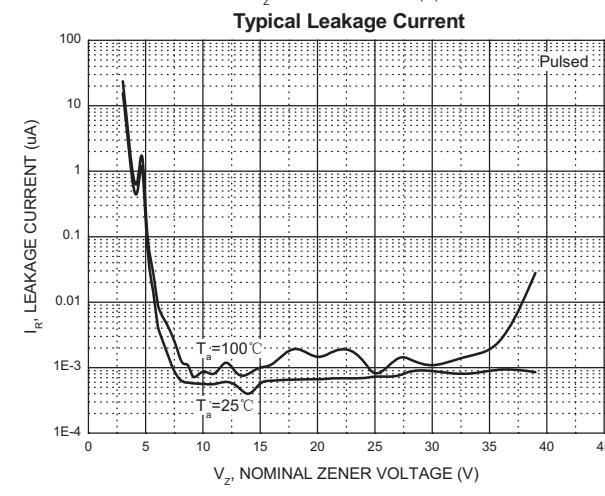
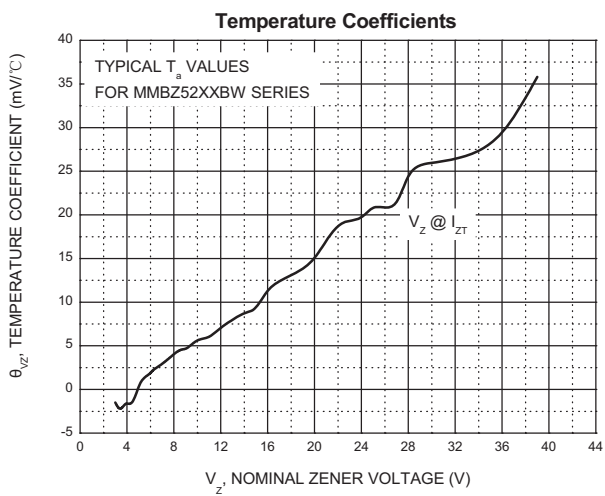
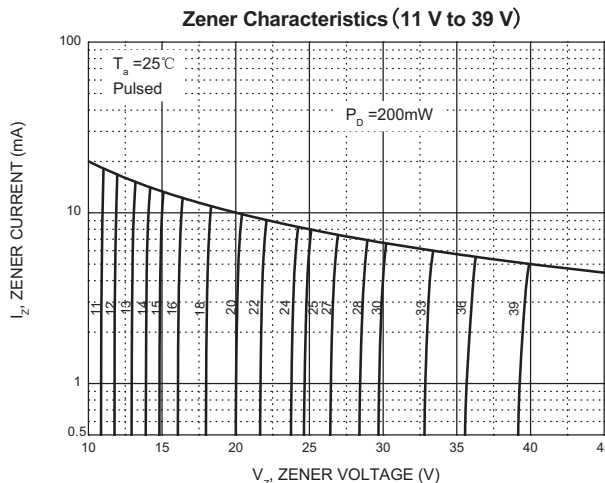
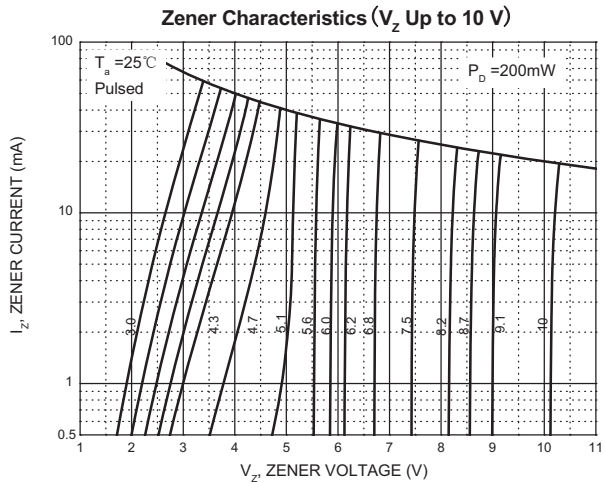
| Characteristic                              | Symbol           | Value      | Unit |
|---|------------------|------------|------|
| Forward Voltage @ I <sub>F</sub> = 10mA     | V <sub>F</sub>   | 0.9        | V    |
| Power Dissipation                           | P <sub>D</sub>   | 200        | mW   |
| Thermal Resistance, Junction to Ambient Air | R <sub>θJA</sub> | 625        | °C/W |
| Junction Temperature                        | T <sub>j</sub>   | -55 ~ +150 | °C   |
| Storage Temperature Range                   | T <sub>stg</sub> | -55 ~ +150 | °C   |

## ELECTRICAL CHARACTERISTICS $T_a=25^{\circ}\text{C}$ unless otherwise specified

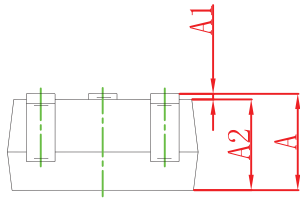
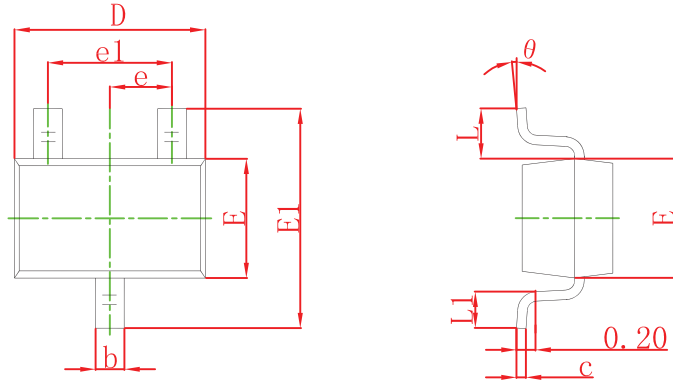
| Type Number | Marking Code | Zener Voltage Range (Note 1) |         |         | Test Current | Maximum Zener Impedance (Note 2) |                                   | Maximum Reverse Leakage Current (Note 1) |         |
|-------------|--------------|------------------------------|---------|---------|--------------|----------------------------------|-----------------------------------|--|---------|
|             |              | $V_z @ I_{zT}$               |         |         | $I_{zT}$     | $Z_{zT} @ I_{zT}$                | $Z_{zK} @ I_{zK} = 0.25\text{mA}$ | $I_R$                                    | @ $V_R$ |
|             |              | 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     |
| MMBZ5222BW  | KC2          | 2.5                          | 2.38    | 2.63    | 20           | 30                               | 1250                              | 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          | 6.0                          | 5.70    | 6.30    | 20           | 7                                | 1600                              | 5.0                                      | 3.5     |
| MMBZ5234BW  | KE4          | 6.2                          | 5.89    | 6.51    | 20           | 7                                | 1000                              | 5.0                                      | 4.0     |
| MMBZ5235BW  | KE5          | 6.8                          | 6.46    | 7.14    | 20           | 5                                | 750                               | 3.0                                      | 5.0     |
| MMBZ5236BW  | KF1          | 7.5                          | 7.13    | 7.88    | 20           | 6                                | 500                               | 3.0                                      | 6.0     |
| MMBZ5237BW  | KF2          | 8.2                          | 7.79    | 8.61    | 20           | 8                                | 500                               | 3.0                                      | 6.5     |
| MMBZ5238BW  | KF3          | 8.7                          | 8.27    | 9.14    | 20           | 8                                | 600                               | 3.0                                      | 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     |
| MMBZ5244BW  | KH4          | 14                           | 13.30   | 14.70   | 9.0          | 15                               | 600                               | 0.1                                      | 10      |
| 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      |
| MMBA5247BW  | KJ2          | 17                           | 16.15   | 17.85   | 7.4          | 19                               | 600                               | 0.1                                      | 13      |
| MMBZ5248BW  | KJ3          | 18                           | 17.10   | 18.90   | 7.0          | 21                               | 600                               | 0.1                                      | 14      |
| MMBZ5249BW  | KJ4          | 19                           | 18.05   | 19.95   | 6.6          | 23                               | 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      |
| MMBZ5253BW  | KK3          | 25                           | 23.75   | 26.25   | 5.0          | 35                               | 600                               | 0.1                                      | 19      |
| 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: 1. Short duration test pulse used to minimize self-heating effect.  
2.  $f = 1\text{KHz}$ .

# RATING AND CHARACTERISTICS CURVES (MMBZ5221BW THRU MMBZ5259BW)

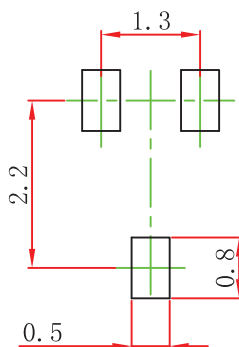


## SOT-323 Package Outline Dimensions



| Symbol   | Dimensions In Millimeters |       | Dimensions In Inches |       |
|----------|---------------------------|-------|----------------------|-------|
|          | Min                       | Max   | Min                  | Max   |
| A        | 0.900                     | 1.100 | 0.035                | 0.043 |
| A1       | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2       | 0.900                     | 1.000 | 0.035                | 0.039 |
| b        | 0.200                     | 0.400 | 0.008                | 0.016 |
| c        | 0.080                     | 0.150 | 0.003                | 0.006 |
| D        | 2.000                     | 2.200 | 0.079                | 0.087 |
| E        | 1.150                     | 1.350 | 0.045                | 0.053 |
| E1       | 2.150                     | 2.450 | 0.085                | 0.096 |
| e        | 0.650 TYP                 |       | 0.026 TYP            |       |
| e1       | 1.200                     | 1.400 | 0.047                | 0.055 |
| L        | 0.525 REF                 |       | 0.021 REF            |       |
| L1       | 0.260                     | 0.460 | 0.010                | 0.018 |
| $\theta$ | 0°                        | 8°    | 0°                   | 8°    |

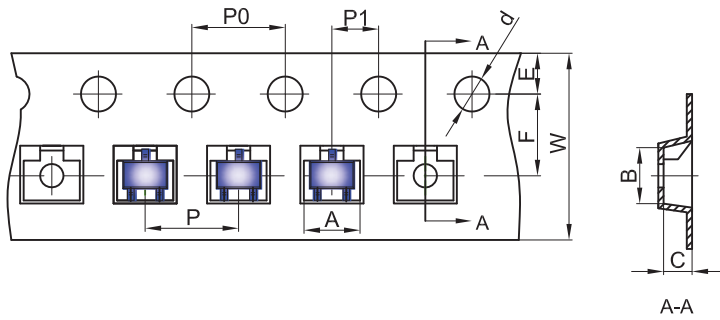
## SOT-323 Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance:  $\pm 0.05$  mm.
  3. The pad layout is for reference purposes only.

# SOT-323 Tape and Reel

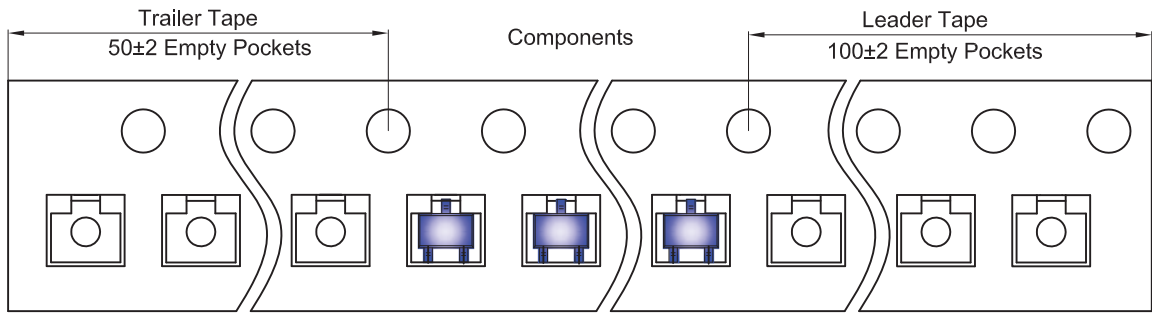
## SOT-323 Embossed Carrier Tape



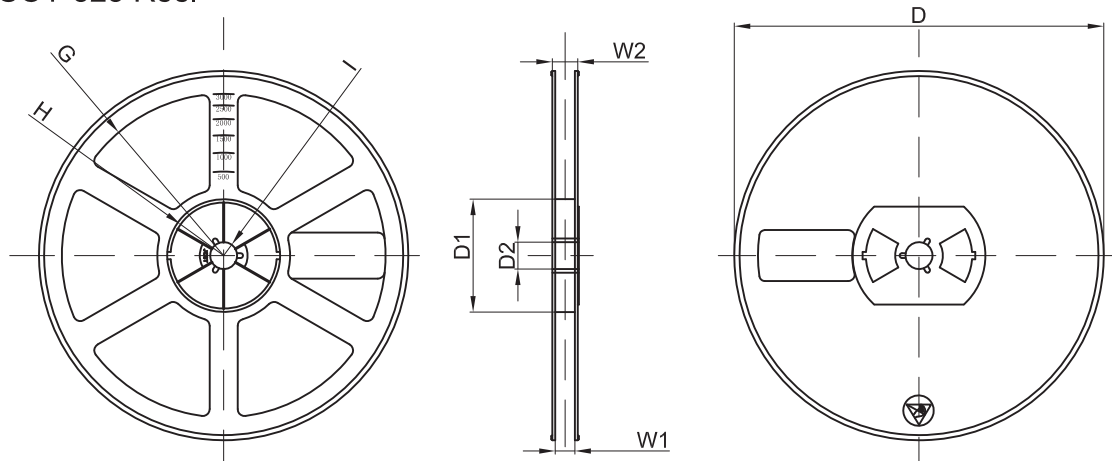
**Packaging Description:**  
 SOT-323 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

| Dimensions are in millimeter |      |      |      |       |      |      |      |      |      |      |
|------------------------------|------|------|------|-------|------|------|------|------|------|------|
| Pkg type                     | A    | B    | C    | d     | E    | F    | P0   | P    | P1   | W    |
| SOT-323                      | 2.25 | 2.55 | 1.19 | Ø1.55 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |

## SOT-323 Tape Leader and Trailer



## SOT-323 Reel



| Dimensions are in millimeter |         |       |       |        |        |       |      |       |
|------------------------------|---------|-------|-------|--------|--------|-------|------|-------|
| Reel Option                  | D       | D1    | D2    | G      | H      | I     | W1   | W2    |
| 7" Dia                       | Ø178.00 | 54.40 | 13.00 | R78.00 | R25.60 | R6.50 | 9.50 | 12.30 |

| REEL     | Reel Size | Box        | Box Size(mm) | Carton      | Carton Size(mm) | G.W.(kg) |
|----------|-----------|------------|--------------|-------------|-----------------|----------|
| 3000 pcs | 7 inch    | 45,000 pcs | 203×203×195  | 180,000 pcs | 438×438×220     |          |

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