



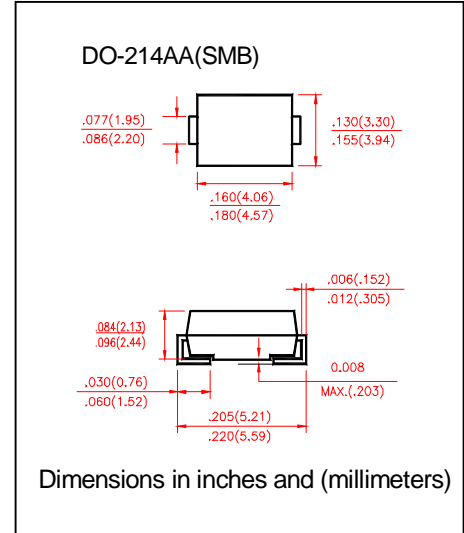
## SURFACE MOUNT GALSS PASSIVATED ZENER DIODE

**MZ1.5PB11V-34.1 THRU MZ1.5PB200V-1.9**

**Zener Voltage            11 to 200 Volts**  
**Steady state Power        1.5 Watts**

### FEATURES

- For surface mounted applications in order to Optimize board space
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Low inductance
- Typical  $I_r$  less than  $1 \mu A$  above 11V
- High temperature soldering:  
260°C/10 seconds at terminals
- Plastic package has Underwriters Laboratory Flammability Classification 94V-O



### MECHANICAL DATA

- Cass: JEDEC DO-214AA, molded plastic over passivated junction
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes positive end (cathode)
- Standard Packaging: 12mm tape (EIA-481)
- Weight: 0.003 ounces, 0.93 gram

### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

- Ratings at 25°C ambient temperature unless otherwise specified

|   | Symbols        | Value      | Unit                    |
|---|----------------|------------|-------------------------|
| DC Power Dissipation @ $T_L=75^\circ C$ , Measure at Zero Lead Length (Note 1 Fig.1) Derate above $75^\circ C$      | $P_D$          | 1.5<br>15  | Watts<br>mw/ $^\circ C$ |
| Peak forward Surge Current 8.3ms single half sine/square wave Superimposed on rated load (JEDEC Method) (Notes 1.2) | $I_{FSM}$      | 10         | Amps                    |
| Operating junction and Storage Temperature Range  | $T_J, T_{STG}$ | -55to~+150 | $^\circ C$              |

#### Notes :

1. Mounted on  $5.0mm^2$  (.013mm thick) land areas
2. Measured on 8.3ms, single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum.



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| Type            | Device Marking Code | Nominal Zener Voltage Vz@IzT Volts (Note 1) | Test Current IzT mA | Max Zener Impedance (Note 2) |                |        | Max Reverse Leakage Current |       | Maximum DC Zener Current IzM mAdc |
|-----------------|---------------------|---|---------------------|------------------------------|----------------|--------|-----------------------------|-------|-----------------------------------|
|                 |                     |   |                     | ZzT@IzT Ohms                 | Zzk @ Zzk Ohms | Zzk mA | IR @ VR $\mu$ A Volts       |       |                                   |
| MZ1.0PB11V-34.1 | 11V-34.1            | 11  | 34.1                | 5.5                          | 550            | 0.25   | 1                           | 8.4   | 136                               |
| MZ1.0PB12V-31.2 | 12V-31.2            | 12  | 31.2                | 6.5                          | 550            | 0.25   | 1                           | 9.1   | 125                               |
| MZ1.0PB13V-28.8 | 13V-28.8            | 13  | 28.8                | 7                            | 550            | 0.25   | 1                           | 9.9   | 115                               |
| MZ1.0PB15V-25   | 15V-25              | 15  | 25                  | 9                            | 600            | 0.25   | 1                           | 11.4  | 100                               |
| MZ1.0PB16V-23.4 | 16V-23.4            | 16  | 23.4                | 10                           | 600            | 0.25   | 1                           | 12.2  | 93                                |
| MZ1.0PB18V-20.8 | 18V-20.8            | 18  | 20.8                | 12                           | 650            | 0.25   | 1                           | 13.7  | 83                                |
| MZ1.0PB20V-18.7 | 20V-18.7            | 20  | 18.7                | 14                           | 650            | 0.25   | 1                           | 15.2  | 75                                |
| MZ1.0PB22V-17   | 22V-17              | 22  | 17                  | 17.5                         | 650            | 0.25   | 1                           | 16.7  | 68                                |
| MZ1.0PB24V-15.6 | 24V-15.6            | 24  | 15.6                | 19                           | 700            | 0.25   | 1                           | 18.2  | 62                                |
| MZ1.0PB27V-13.9 | 27V-13.9            | 27  | 13.9                | 23                           | 700            | 0.25   | 1                           | 20.6  | 55                                |
| MZ1.0PB30V-12.5 | 30V-12.5            | 30  | 12.5                | 26                           | 750            | 0.25   | 1                           | 22.8  | 50                                |
| MZ1.0PB33V-11.4 | 33V-11.4            | 33  | 11.4                | 33                           | 800            | 0.25   | 1                           | 25.1  | 45                                |
| MZ1.0PB36V-10.4 | 36V-10.4            | 36  | 10.4                | 38                           | 850            | 0.25   | 1                           | 27.4  | 41                                |
| MZ1.0PB39V-9.6  | 39V-9.6             | 39  | 9.6                 | 45                           | 900            | 0.25   | 1                           | 29.7  | 38                                |
| MZ1.0PB43V-8.7  | 43V-8.7             | 43  | 8.7                 | 53                           | 950            | 0.25   | 1                           | 32.7  | 34                                |
| MZ1.0PB47V-8.0  | 47V-8.0             | 47  | 8                   | 67                           | 1000           | 0.25   | 1                           | 35.8  | 31                                |
| MZ1.0PB51V-7.3  | 51V-7.3             | 51  | 7.3                 | 70                           | 1100           | 0.25   | 1                           | 38.8  | 29                                |
| MZ1.0PB56V-6.7  | 56V-6.7             | 56  | 6.7                 | 86                           | 1300           | 0.25   | 1                           | 42.6  | 26                                |
| MZ1.0PB62V-6.0  | 62V-6.0             | 62  | 6                   | 100                          | 1500           | 0.25   | 1                           | 47.1  | 24                                |
| MZ1.0PB68V-5.5  | 68V-5.5             | 68  | 5.5                 | 120                          | 1700           | 0.25   | 1                           | 51.7  | 22                                |
| MZ1.0PB75V-5.0  | 75V-5.0             | 75  | 5                   | 140                          | 2000           | 0.25   | 1                           | 56    | 20                                |
| MZ1.0PB82V-4.6  | 82V-4.6             | 82  | 4.6                 | 160                          | 2500           | 0.25   | 1                           | 62.2  | 18                                |
| MZ1.0PB91V-4.1  | 91V-4.1             | 91  | 4.1                 | 200                          | 3000           | 0.25   | 1                           | 69.2  | 16                                |
| MZ1.0PB100V-3.7 | 100V-3.7            | 100   | 3.7                 | 250                          | 3100           | 0.25   | 1                           | 76    | 15                                |
| MZ1.0PB110V-3.4 | 110V-3.4            | 110   | 3.4                 | 300                          | 4000           | 0.25   | 1                           | 83.6  | 13                                |
| MZ1.0PB120V-3.1 | 120V-3.1            | 120   | 3.1                 | 380                          | 4500           | 0.25   | 1                           | 91.2  | 12                                |
| MZ1.0PB130V-2.9 | 130V-2.9            | 130   | 2.9                 | 450                          | 5000           | 0.25   | 1                           | 98.8  | 11                                |
| MZ1.0PB150V-2.5 | 150V-2.5            | 150   | 2.5                 | 600                          | 6000           | 0.25   | 1                           | 114   | 10                                |
| MZ1.0PB160V-2.3 | 160V-2.3            | 160   | 2.3                 | 700                          | 6500           | 0.25   | 1                           | 121.6 | 9                                 |
| MZ1.0PB180V-2.1 | 180V-2.1            | 180   | 2.1                 | 900                          | 7000           | 0.25   | 1                           | 136.8 | 8                                 |
| MZ1.0PB200V-1.9 | 200V-1.9            | 200   | 1.9                 | 1200                         | 8000           | 0.25   | 1                           | 152   | 7                                 |

Notes:-

TOLERANCE AND VOLTAGE DESIGNATION Tolerance designation-The type numbers listed indicate a tolerance of  $\pm 5\%$



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## RATING AND CHARACTERISTIC CURVES MZ1.5PB11V-34.1 THRU MZ1.5PB200V-1.9

FIG.1- STEADY STATE POWER DERATING

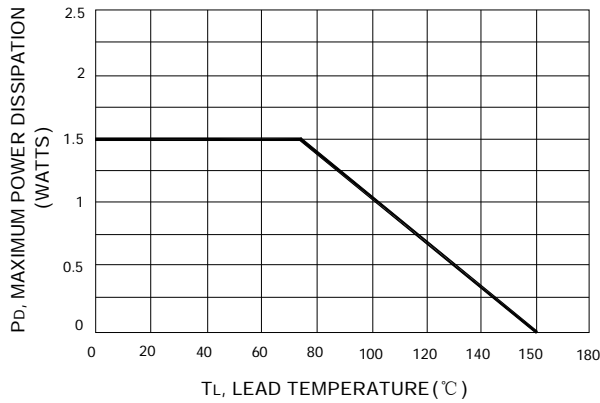


FIG.2- ZENER VOLTAGE-TO 12 VOLTS

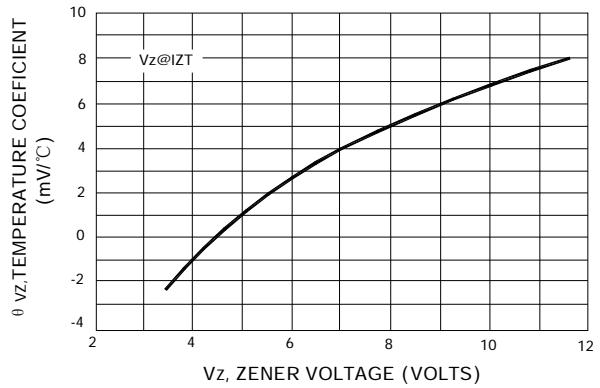


FIG.3- ZENER VOLTAGE-14 TO 200 VOLTS

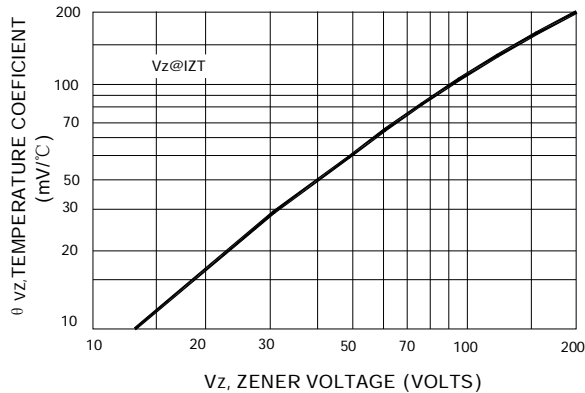


FIG.4- EFFECT OF ZENER CURRENT

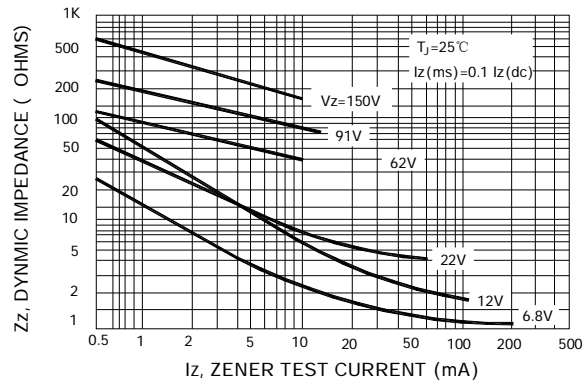
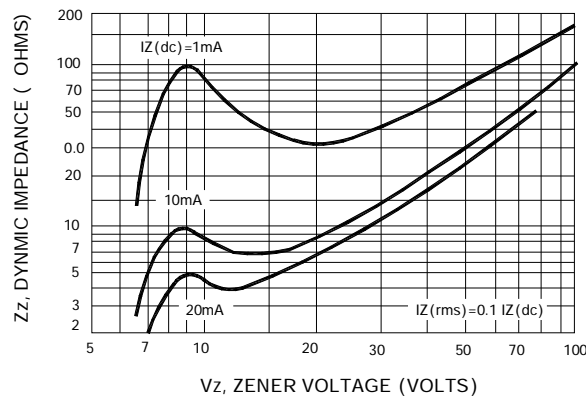


FIG.5- EFFECT OF ZENER VOLTAGE





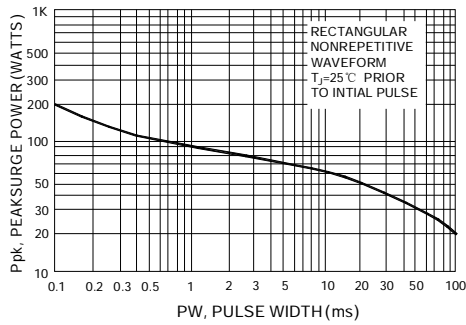
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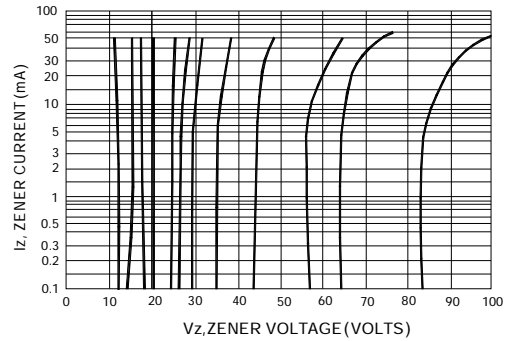
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FIG. 6- Maximum Surge Power



NOTE 6. ZENER VOLTAGE (V<sub>Z</sub>) MEASUREMENT  
Nominal zener voltage is measured with the device function in thermal equilibrium with ambient temperature at 25°C

FIG. 7- V<sub>Z</sub>=12 thru 82 Volts



NOTE 7. ZENER IMPEDANCE (Z<sub>Z</sub>) DERIVATION  
Z<sub>Zt</sub> and Z<sub>Zk</sub> are measured by dividing the ac voltage drop across the device by the current applied. The specified limits are for I<sub>Z</sub>(ac)=0.1 I<sub>Z</sub>(dc) with the ac frequency = 60Hz