

**SURFACE MOUNT ZENER DIODE**

**REVERSE VOLTAGE – 2.4 to 75 Volts  
POWER DISSIPATION – 0.2 Watts**

**FEATURES**

- Wide Zener Voltage Range Selection, 2.4V to 75V
- VZ Tolerance Selection of  $\pm 5\%$  (C Series)
- Flat Lead SOD-323F Plastic Package
- Surface Device Type Mounting
- Green EMC
- Matte Tin(Sn) Lead Finish
- RoHS compliant
- Band Indicates Cathode

**MECHANICAL DATA**

- Case: SOD-323F Plastic

**SOD-323F**

| SOD-323F |      |      |
|----------|------|------|
| DIM.     | MIN. | MAX. |
| A        | 1.60 | 1.80 |
| B        | 2.30 | 2.70 |
| C        | 1.15 | 1.35 |
| D        | 0.25 | 0.40 |
| E        | 0.80 | 1.00 |
| F        | 0.05 | 0.25 |

All Dimensions in millimeter

**Maximum Ratings & Thermal Characteristics @ T<sub>A</sub> = 25°C unless otherwise specified**

| Characteristic              | Symbol | Value       | Unit |
|-----------------------------|--------|-------------|------|
| Power Dissipation           | PD     | 200         | mW   |
| Storage Temperature Range   | TSTG   | -65 to +150 | °C   |
| Operating Temperature Range | TOPR   | -65 to +150 | °C   |

**Device Marking :**

| Device P/N | Marking         | Pin Diagram | Equivalent Circuit Diagram |
|------------|-----------------|-------------|----------------------------|
| MM3ZxxxCWF | See below table |             |                            |

**Electrical Characteristics @ T<sub>A</sub> = 25°C unless otherwise specified**

| Symbol          | Parameter                                 |
|-----------------|---|
| V <sub>Z</sub>  | Reverse Zener Voltage @ I <sub>ZT</sub>   |
| I <sub>ZT</sub> | Reverse Current                           |
| Z <sub>ZT</sub> | Maximum Zener Impedance @ I <sub>ZT</sub> |
| I <sub>ZK</sub> | Reverse Current                           |
| Z <sub>ZK</sub> | Maximum Zener Impedance @ I <sub>ZK</sub> |
| I <sub>R</sub>  | Reverse Leakage Current @ V <sub>R</sub>  |
| V <sub>R</sub>  | Reverse Voltage                           |
| I <sub>F</sub>  | Forward Current                           |
| V <sub>F</sub>  | Forward Voltage @ I <sub>F</sub>          |

## Electrical Characteristics

T<sub>A</sub> = 25°C unless otherwise noted

| Device     | Device marking | Zener Voltage                    |     |       |                 | Maximum Zener Impedance           |                 |                                   | Maximum Reverse Current         |      |
|------------|----------------|----------------------------------|-----|-------|-----------------|-----------------------------------|-----------------|-----------------------------------|---------------------------------|------|
|            |                | V <sub>Z</sub> @ I <sub>ZT</sub> |     |       | I <sub>ZT</sub> | Z <sub>KT</sub> @ I <sub>ZT</sub> | I <sub>ZK</sub> | Z <sub>ZK</sub> @ I <sub>ZK</sub> | I <sub>R</sub> @ V <sub>R</sub> |      |
|            |                | Min                              | Nom | Max   | mA              | Ω                                 | mA              | Ω                                 | uA                              | V    |
| MM3Z2V4CWF | Z0             | 2.28                             | 2.4 | 2.52  | 5               | 100                               | 1               | 564                               | 45                              | 1    |
| MM3Z2V7CWF | Z1             | 2.57                             | 2.7 | 2.84  | 5               | 100                               | 1               | 564                               | 18                              | 1    |
| MM3Z3V0CWF | Z2             | 2.85                             | 3.0 | 3.15  | 5               | 100                               | 1               | 564                               | 9                               | 1    |
| MM3Z3V3CWF | Z3             | 3.14                             | 3.3 | 3.47  | 5               | 95                                | 1               | 564                               | 4.5                             | 1    |
| MM3Z3V6CWF | Z4             | 3.42                             | 3.6 | 3.78  | 5               | 90                                | 1               | 564                               | 4.5                             | 1    |
| MM3Z3V9CWF | Z5             | 3.71                             | 3.9 | 4.10  | 5               | 90                                | 1               | 564                               | 2.7                             | 1    |
| MM3Z4V3CWF | Z6             | 4.09                             | 4.3 | 4.52  | 5               | 90                                | 1               | 564                               | 2.7                             | 1    |
| MM3Z4V7CWF | Z7             | 4.47                             | 4.7 | 4.94  | 5               | 80                                | 1               | 470                               | 2.7                             | 2    |
| MM3Z5V1CWF | Z8             | 4.85                             | 5.1 | 5.36  | 5               | 60                                | 1               | 451                               | 1.8                             | 2    |
| MM3Z5V6CWF | Z9             | 5.32                             | 5.6 | 5.88  | 5               | 40                                | 1               | 376                               | 0.9                             | 2    |
| MM3Z6V2CWF | ZA             | 5.89                             | 6.2 | 6.51  | 5               | 10                                | 1               | 141                               | 2.7                             | 4    |
| MM3Z6V8CWF | ZB             | 6.46                             | 6.8 | 7.14  | 5               | 15                                | 1               | 75                                | 1.8                             | 4    |
| MM3Z7V5CWF | ZC             | 7.11                             | 7.5 | 7.86  | 5               | 15                                | 1               | 75                                | 0.9                             | 5    |
| MM3Z8V2CWF | ZD             | 7.79                             | 8.2 | 8.61  | 5               | 15                                | 1               | 75                                | 0.63                            | 5    |
| MM3Z9V1CWF | ZE             | 8.65                             | 9.1 | 9.56  | 5               | 15                                | 1               | 94                                | 0.45                            | 6    |
| MM3Z10VCWF | ZF             | 9.50                             | 10  | 10.50 | 5               | 20                                | 1               | 141                               | 0.18                            | 7    |
| MM3Z11VCWF | ZG             | 10.45                            | 11  | 11.55 | 5               | 20                                | 1               | 141                               | 0.09                            | 8    |
| MM3Z12VCWF | ZH             | 11.40                            | 12  | 12.60 | 5               | 25                                | 1               | 141                               | 0.09                            | 8    |
| MM3Z13VCWF | ZJ             | 12.35                            | 13  | 13.65 | 5               | 30                                | 1               | 160                               | 0.09                            | 8    |
| MM3Z15VCWF | ZK             | 14.25                            | 15  | 15.75 | 5               | 30                                | 1               | 188                               | 0.045                           | 10.5 |
| MM3Z16VCWF | ZL             | 15.20                            | 16  | 16.80 | 5               | 40                                | 1               | 188                               | 0.045                           | 11.2 |
| MM3Z18VCWF | ZM             | 17.10                            | 18  | 18.90 | 5               | 45                                | 1               | 212                               | 0.045                           | 12.6 |
| MM3Z20VCWF | ZN             | 19.00                            | 20  | 21.00 | 5               | 55                                | 1               | 212                               | 0.045                           | 14.0 |
| MM3Z22VCWF | ZP             | 20.90                            | 22  | 23.10 | 5               | 55                                | 1               | 235                               | 0.045                           | 15.4 |
| MM3Z24VCWF | ZR             | 22.80                            | 24  | 25.20 | 5               | 70                                | 1               | 235                               | 0.045                           | 16.8 |
| MM3Z27VCWF | ZS             | 25.65                            | 27  | 28.35 | 2               | 80                                | 0.5             | 282                               | 0.045                           | 18.9 |
| MM3Z30VCWF | ZT             | 28.50                            | 30  | 31.50 | 2               | 80                                | 0.5             | 282                               | 0.045                           | 21.0 |
| MM3Z33VCWF | ZU             | 31.35                            | 33  | 34.65 | 2               | 80                                | 0.5             | 306                               | 0.045                           | 23.0 |
| MM3Z36VCWF | ZV             | 34.20                            | 36  | 37.80 | 2               | 90                                | 0.5             | 329                               | 0.045                           | 25.2 |
| MM3Z39VCWF | ZW             | 37.05                            | 39  | 40.95 | 2               | 130                               | 0.5             | 329                               | 0.045                           | 27.3 |
| MM3Z43VCWF | ZX             | 40.85                            | 43  | 45.15 | 2               | 150                               | 0.5             | 353                               | 0.045                           | 30.1 |
| MM3Z47VCWF | ZY             | 44.65                            | 47  | 49.35 | 2               | 170                               | 0.5             | 353                               | 0.045                           | 33.0 |
| MM3Z51VCWF | Z-             | 48.45                            | 51  | 53.55 | 2               | 180                               | 0.5             | 376                               | 0.045                           | 35.7 |
| MM3Z56VCWF | Z=             | 53.20                            | 56  | 58.80 | 2               | 200                               | 0.5             | 400                               | 0.045                           | 39.2 |
| MM3Z62VCWF | Z≡             | 58.90                            | 62  | 65.10 | 2               | 215                               | 0.5             | 423                               | 0.045                           | 43.4 |
| MM3Z68VCWF | Z>             | 64.60                            | 68  | 71.40 | 2               | 240                               | 0.5             | 447                               | 0.045                           | 47.6 |
| MM3Z75VCWF | Z<             | 71.25                            | 75  | 78.75 | 2               | 255                               | 0.5             | 470                               | 0.045                           | 52.5 |

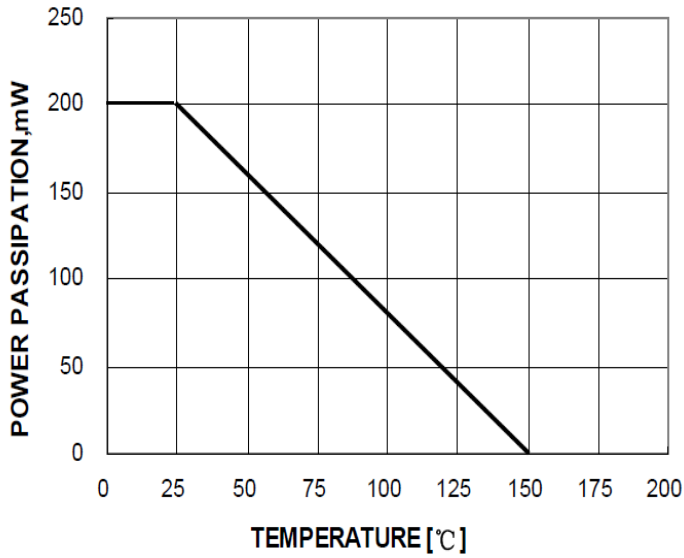
V<sub>F</sub> Forward Voltage = 1 V Maximum @ I<sub>F</sub> = 10 mA for all types

### Notes:

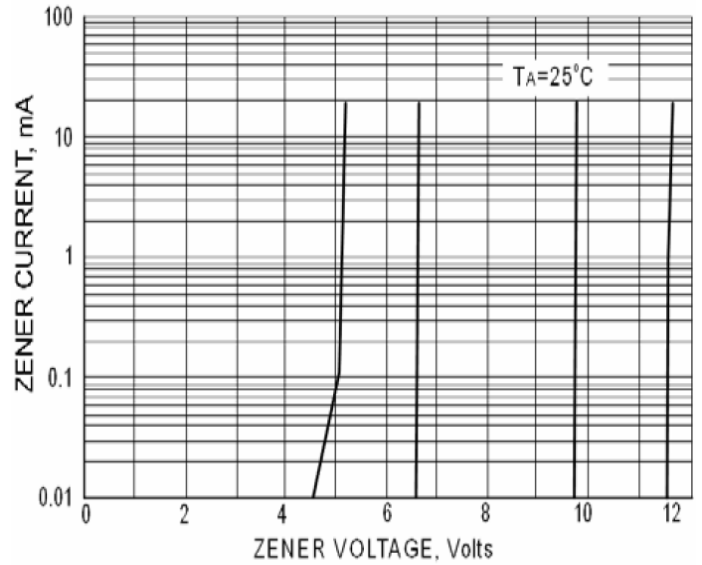
- The Zener Voltage (V<sub>Z</sub>) is tested under pulse condition of 10mS.
- The device numbers listed have a standard tolerance on the nominal zener voltage of ±5%.
- For detailed information on price, availability and delivery of nominal zener voltages between the voltages shown and tighter voltage tolerances, contact your nearest Liteon Semiconductor Corp. representative.
- The zener impedance is derived from the 60-cycle ac voltage, which results when an ac current having an rms value equal to 10% of the dc zener current (I<sub>ZT</sub> or I<sub>ZK</sub>) is superimposed to I<sub>ZT</sub> or I<sub>ZK</sub>.

**MM3Z2V4CWF THRU MM3Z75VCWF**  
**Typical Characteristics**

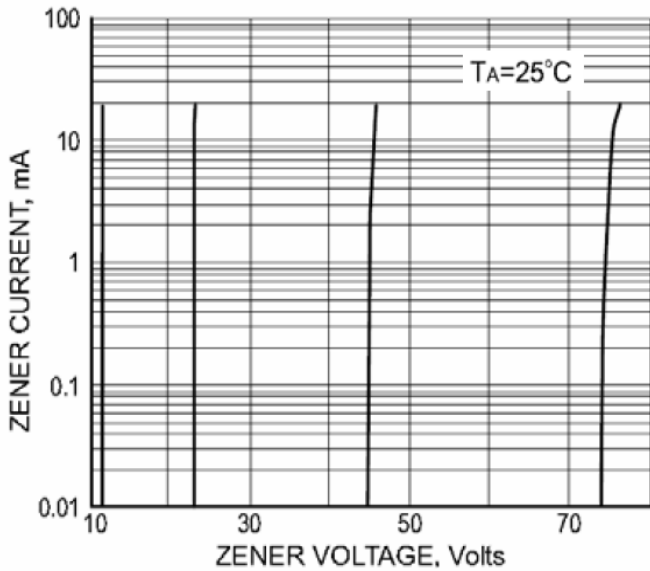
**Fig.1 Power Derating Curve**



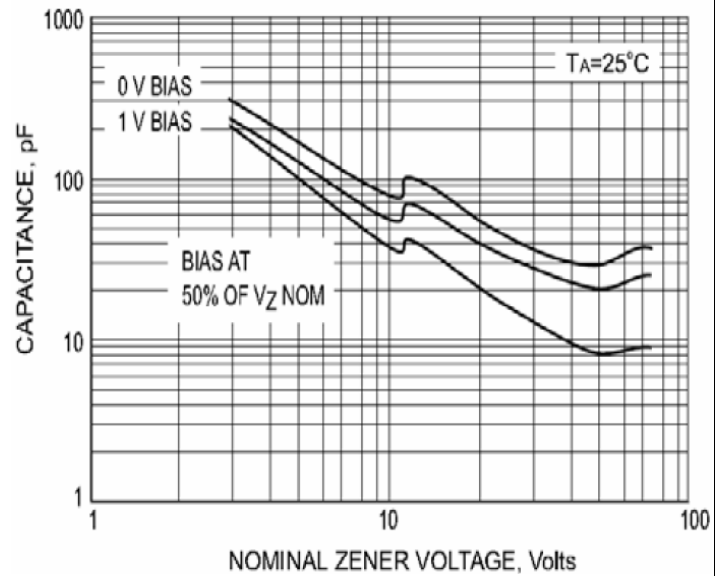
**Fig.2 Typical Zener Breakdown Characteristics**



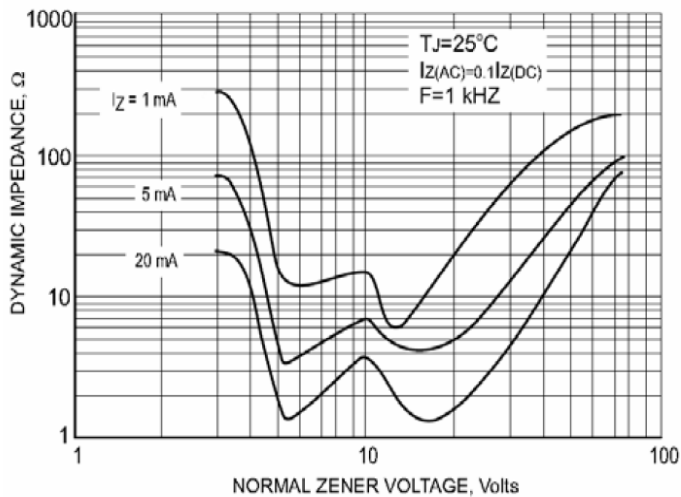
**Fig.3 Typical Zener Breakdown Characteristics**



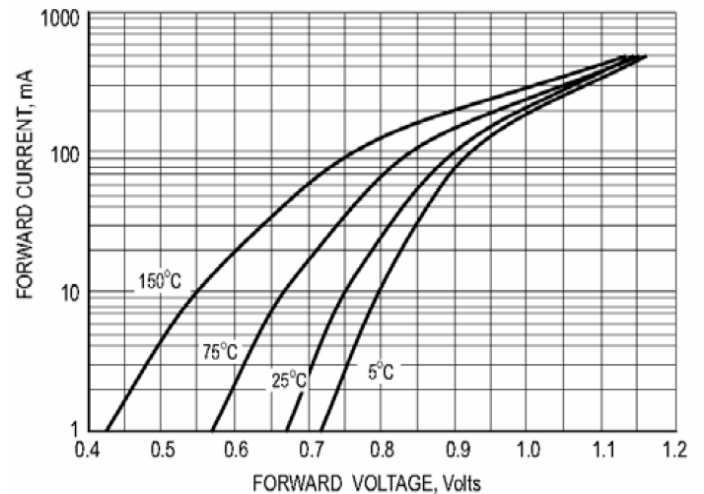
**Fig.4 Typical Total Capacitance vs. Nominal Zener Voltage**



**Fig.5 EFFECT OF ZENER VOLTAGE ON ZENER IMPEDANCE**

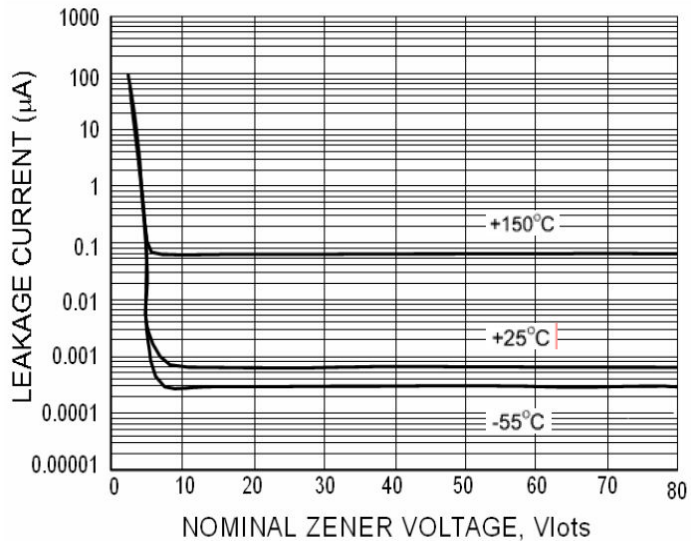


**Fig.6 TYPICAL FORWARD VOLTAGE**



MM3Z2V4CWF THRU MM3Z75VCWF  
Typical Characteristics

Fig.7 TYPICAL LEAKGE CURRENT



## **Important Notice and Disclaimer**

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