Micro Commercial Components

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# MMSZ4678 THRU MMSZ4716

## 500mW Silicon Zener Diodes

## Features

- Zener Voltage 1.8V-39V
- Very Sharp Reverse Characteristic
- VZ – tolerance ± 5%
- High Reliability
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

## Mechanical Data

- Halogen free available upon request by adding suffix "-HF"
- Polarity: Cathode indicated by polarity band
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)

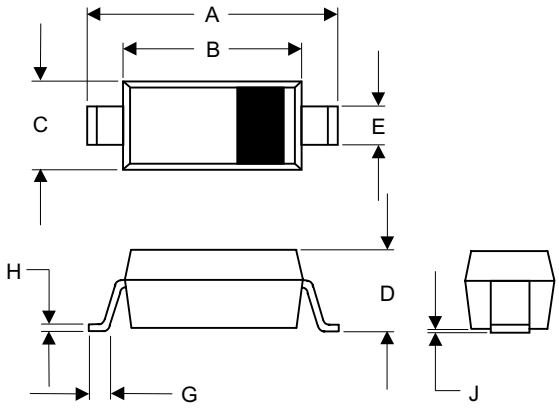
## Maximum Ratings

| | Symbol | Value | Units |
|---|---|---|---|
| Max. Steady State Power Dissipation at $T_L$<75°C, Lead Length=3/8" | $P_D$ | 500 | mW |
| Junction Temperature | $T_J$ | 150 | ℃ |
| Storage Temperature Range | $T_{STG}$ | -55 to 150 | ℃ |
| Thermal Resistance( Junction to Ambient) | $R_{thJA}$ | 340 | K/W |

## Electrical Characteristics @ 25◦C Unless Otherwise Specified

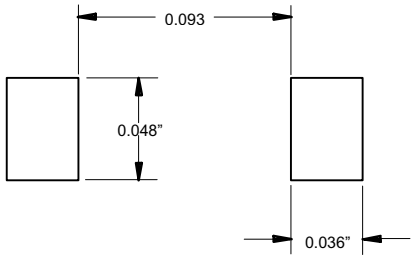
| | Symbol | Maximum | Unit |
|---|---|---|---|
| Max. Forward Voltage @ $I_F$=10mA | $V_F$ | 0.95 | V |

SOD-123




| DIM | INCHES | | MM | | NOTE |
|---|---|---|---|---|---|
| | MIN | MAX | MIN | MAX | |
| A | .140 | .152 | 3.55 | 3.85 | |
| B | .100 | .112 | 2.55 | 2.85 | |
| C | .055 | .071 | 1.40 | 1.80 | |
| D | ----- | .053 | ----- | 1.35 | |
| E | .012 | .031 | 0.30 | .78 | |
| G | .006 | ----- | 0.15 | ----- | |
| H | ----- | .01 | ----- | .25 | |
| J | ----- | .006 | ----- | .15 | |

SUGGESTED SOLDER PAD LAYOUT



# MMSZ4678 thru MMSZ4716

## Electrical Characteristics ($T_L$= 30°C Unless Otherwise Noted, VF=0.95V Max @ IF=10mA for all types)

| Device | Zener Voltage Vz(Volts) | | | @$I_{ZT}$ | Leakage Current $I_R$ @$V_R$ | | Device Marking |
|---|---|---|---|---|---|---|---|
| | Min | Nom | Max | u A | u A | Volts | |
| MMSZ4678 | 1.71 | 1.8 | 1.89 | 50 | 7.5 | 1.0 | CC |
| MMSZ4679 | 1.90 | 2.0 | 2.10 | 50 | 5.0 | 1.0 | CD |
| MMSZ4680 | 2.09 | 2.2 | 2.31 | 50 | 4.0 | 1.0 | CE |
| MMSZ4681 | 2.28 | 2.40 | 2.52 | 50 | 2.0 | 1.0 | CF |
| MMSZ4682 | 2.565 | 2.7 | 2.835 | 50 | 1.0 | 1.0 | CH |
| MMSZ4683 | 2.85 | 3.0 | 3.15 | 50 | 0.8 | 1.0 | CJ |
| MMSZ4684 | 3.135 | 3.3 | 3.465 | 50 | 7.5 | 1.5 | CK |
| MMSZ4685 | 3.42 | 3.6 | 3.78 | 50 | 7.5 | 2.0 | CM |
| MMSZ4686 | 3.705 | 3.9 | 4.095 | 50 | 5.0 | 2.0 | CN |
| MMSZ4687 | 4.085 | 4.3 | 4.515 | 50 | 4.0 | 2.0 | CP |
| MMSZ4688 | 4.465 | 4.7 | 4.935 | 50 | 10 | 3.0 | CT |
| MMSZ4689 | 4.845 | 5.1 | 5.355 | 50 | 10 | 3.0 | CU |
| MMSZ4690 | 5.32 | 5.6 | 5.88 | 50 | 10 | 4.0 | CV |
| MMSZ4691 | 5.89 | 6.2 | 6.51 | 50 | 10 | 5.0 | CA |
| MMSZ4692 | 6.46 | 6.8 | 7.14 | 50 | 10 | 5.1 | CX |
| MMSZ4693 | 7.125 | 7.5 | 7.875 | 50 | 10 | 5.7 | CY |
| MMSZ4694 | 7.79 | 8.2 | 8.61 | 50 | 1 | 6.2 | CZ |
| MMSZ4695 | 8.265 | 8.7 | 9.135 | 50 | 1 | 6.6 | DC |
| MMSZ4696 | 8.645 | 9.1 | 9.555 | 50 | 1 | 6.9 | DD |
| MMSZ4697 | 9.50 | 10 | 10.5 | 50 | 1 | 7.6 | DE |
| MMSZ4698 | 10.45 | 11 | 11.55 | 50 | 0.05 | 8.4 | DF |
| MMSZ4699 | 11.40 | 12 | 12.6 | 50 | 0.05 | 9.1 | DH |
| MMSZ4700 | 12.35 | 13 | 13.65 | 50 | 0.05 | 9.8 | DJ |
| MMSZ4701 | 13.30 | 14 | 14.7 | 50 | 0.05 | 10.6 | DK |
| MMSZ4702 | 14.25 | 15 | 15.75 | 50 | 0.05 | 11.4 | DM |
| MMSZ4703 | 15.20 | 16 | 16.8 | 50 | 0.05 | 12.1 | DN |
| MMSZ4704 | 16.15 | 17 | 17.85 | 50 | 0.05 | 12.9 | DP |
| MMSZ4705 | 17.10 | 18 | 18.9 | 50 | 0.05 | 13.6 | DT |
| MMSZ4706 | 18.05 | 19 | 19.95 | 50 | 0.05 | 14.4 | DU |
| MMSZ4707 | 19.00 | 20 | 21 | 50 | 0.01 | 15.2 | DV |
| MMSZ4708 | 20.9 | 22 | 23.1 | 50 | 0.01 | 16.7 | DA |
| MMSZ4709 | 22.8 | 24 | 25.2 | 50 | 0.01 | 18.2 | DX |
| MMSZ4710 | 23.75 | 25 | 26.25 | 50 | 0.01 | 19.0 | DY |
| MMSZ4711 | 25.65 | 27 | 28.35 | 50 | 0.01 | 20.4 | EA |
| MMSZ4712 | 26.6 | 28 | 29.4 | 50 | 0.01 | 21.2 | EC |
| MMSZ4713 | 28.5 | 30 | 31.5 | 50 | 0.01 | 22.8 | ED |
| MMSZ4714 | 31.35 | 33 | 34.65 | 50 | 0.01 | 25.0 | EE |
| MMSZ4715 | 34.2 | 36 | 37.8 | 50 | 0.01 | 27.3 | EF |
| MMSZ4716 | 37.05 | 39 | 40.95 | 50 | 0.01 | 29.6 | EH |

## TYPICAL CHARACTERISTICS

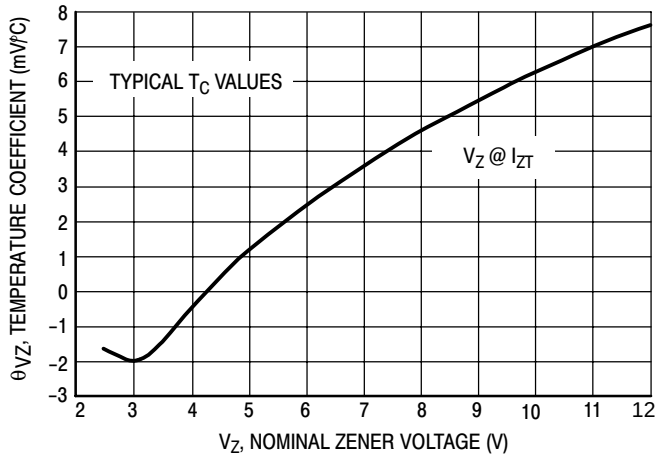



**Figure 1. Temperature Coefficients (Temperature Range −55°C to +150°C)**

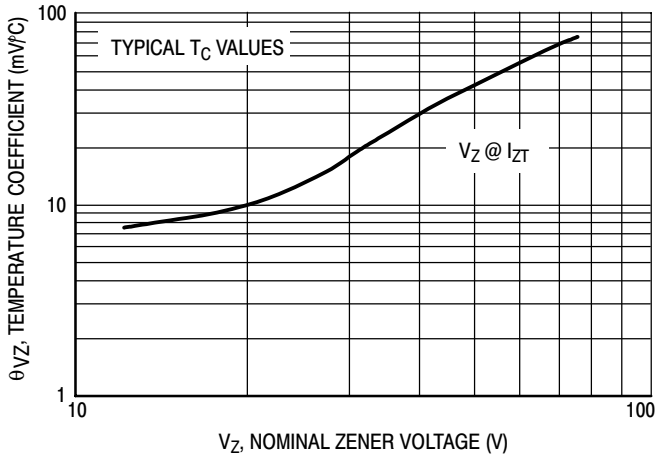



**Figure 2. Temperature Coefficients (Temperature Range −55°C to +150°C)**

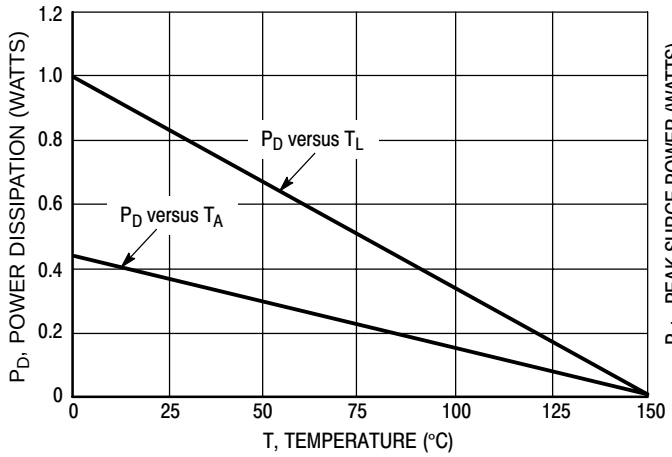



**Figure 3. Steady State Power Derating**

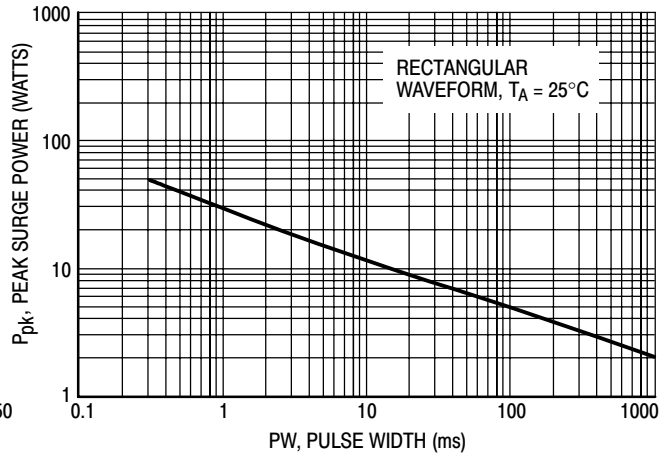



**Figure 4. Maximum Nonrepetitive Surge Power**

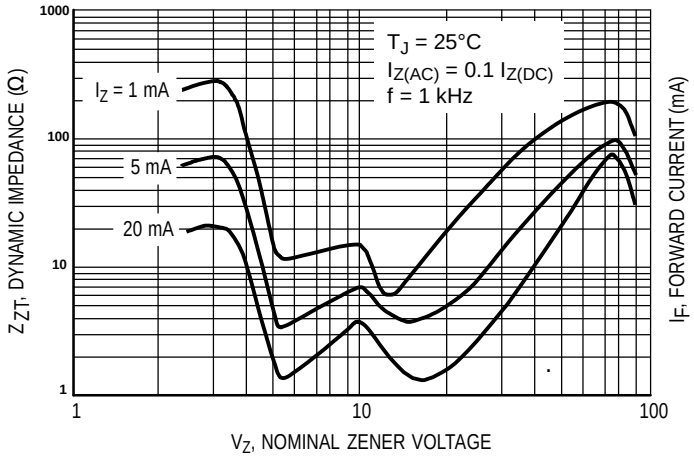



**Figure 5. Effect of Zener Voltage on Zener Impedance**

# MMSZ4678 thru MMSZ4716

## TYPICAL CHARACTERISTICS

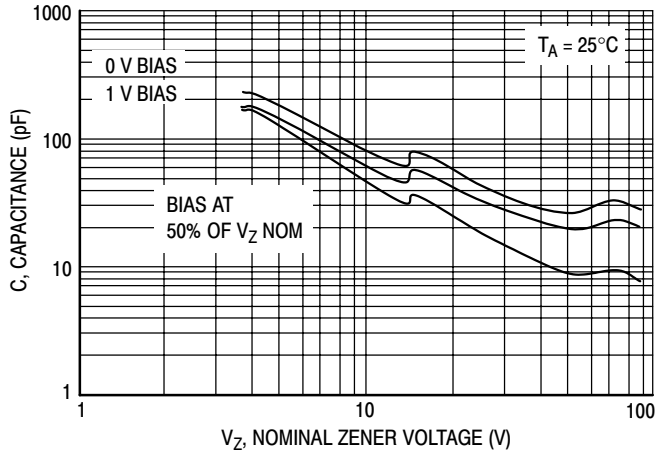



**Figure 7. Typical Capacitance**

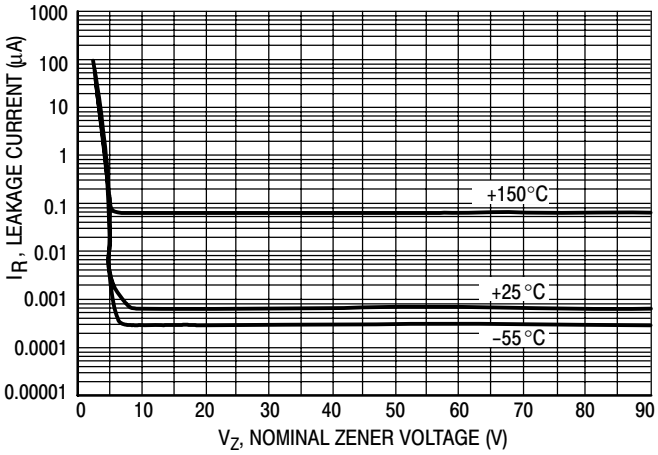



**Figure 8. Typical Leakage Current**

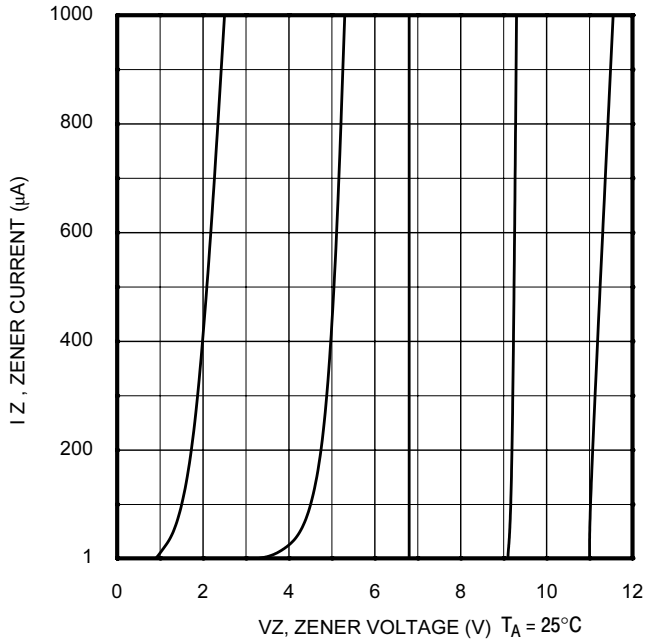



**Figure 9. Zener Voltage versus Zener Current (VZ Up to 12 V)**

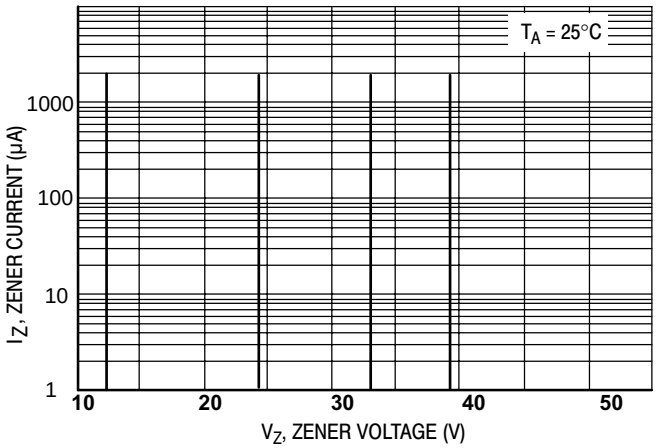



**Figure 10. Zener Voltage versus Zener Current (12 V to 39 V)**

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## Ordering Information :

| Device | Packing |
|---|---|
| Part Number-TP | Tape&Reel: 3Kpcs/Reel |

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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|---|
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