



## Small Signal Zener Diodes



### FEATURES

- Silicon planar Zener diodes
- Standard Zener voltage tolerance is  $\pm 5\%$
- High temperature soldering guaranteed: 260 °C/4 x 10 s set terminals
- AEC-Q101 qualified available
- ESD capability according to AEC-Q101: Human body model > 8 kV Machine model > 800 V
- Base P/N-E3 - RoHS-compliant, commercial grade
- Base P/N-HE3 - RoHS-compliant, AEC-Q101 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### DESIGN SUPPORT TOOLS

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| PRIMARY CHARACTERISTICS      |                     |      |
|------------------------------|---------------------|------|
| PARAMETER                    | VALUE               | UNIT |
| V <sub>Z</sub> range nom.    | 2.4 to 43           | V    |
| Test current I <sub>ZT</sub> | 0.05                | mA   |
| V <sub>Z</sub> specification | Thermal equilibrium |      |
| Circuit configuration        | Single              |      |

| ORDERING INFORMATION |                                    |                                |                        |
|----------------------|------------------------------------|--------------------------------|------------------------|
| DEVICE NAME          | ORDERING CODE                      | TAPED UNITS PER REEL           | MINIMUM ORDER QUANTITY |
| MMSZ4681 to MMSZ4717 | MMSZ4681-E3-08 to MMSZ4717-E3-08   | 3000 (8 mm tape on 7" reel)    | 15 000/box             |
|                      | MMSZ4681-HE3-08 to MMSZ4717-HE3-08 |                                |                        |
|                      | MMSZ4681-E3-18 to MMSZ4717-E3-18   | 10 000 (8 mm tape on 13" reel) | 10 000/box             |
|                      | MMSZ4681-HE3-18 to MMSZ4717-HE3-18 |                                |                        |

| PACKAGE      |         |                                      |                                   |                          |
|--------------|---------|--------------------------------------|-----------------------------------|--------------------------|
| PACKAGE NAME | WEIGHT  | MOLDING COMPOUND FLAMMABILITY RATING | MOISTURE SENSITIVITY LEVEL        | SOLDERING CONDITIONS     |
| SOD-123      | 10.3 mg | UL 94 V-0                            | MSL level 1 (according J-STD-020) | 260 °C/10 s at terminals |

| ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified) |  |                   |             |      |
|---|--|-------------------|-------------|------|
| PARAMETER   | TEST CONDITION   | SYMBOL            | VALUE       | UNIT |
| Power dissipation   | T <sub>L</sub> = 75 °C, on FR - 4 or FR - 5 board with minimum recommended solder pad layout | P <sub>tot</sub>  | 500         | mW   |
| Zener current   | See table "Electrical Characteristics"   |                   |             |      |
| Thermal resistance junction to ambient air                                      | On FR - 4 or FR - 5 board with minimum recommended solder pad layout                         | R <sub>thJA</sub> | 340         | K/W  |
| Junction temperature  |  | T <sub>j</sub>    | 150         | °C   |
| Storage temperature range   |  | T <sub>stg</sub>  | -55 to +150 | °C   |
| Operating temperature range   |  | T <sub>op</sub>   | -55 to +150 | °C   |



| ELECTRICAL CHARACTERISTICS (T <sub>amb</sub> = 25 °C, unless otherwise specified) |              |                                    |      |      |                  |                                  |      |
|---|--------------|------------------------------------|------|------|------------------|----------------------------------|------|
| PART NUMBER   | MARKING CODE | ZENER VOLTAGE RANGE <sup>(1)</sup> |      |      | TEST CURRENT     | REVERSE CURRENT                  |      |
|   |              | V <sub>Z</sub> at I <sub>ZT1</sub> |      |      | I <sub>ZT1</sub> | I <sub>R</sub> at V <sub>R</sub> |      |
|   |              | V                                  |      |      | mA               | µA                               | V    |
|   |              | MIN.                               | NOM. | MAX. |                  | MAX.                             |      |
| MMSZ4681  | CF           | 2.28                               | 2.4  | 2.52 | 0.05             | 2                                | 1    |
| MMSZ4682  | CH           | 2.57                               | 2.7  | 2.84 | 0.05             | 1                                | 1    |
| MMSZ4683  | CJ           | 2.85                               | 3    | 3.15 | 0.05             | 0.8                              | 1    |
| MMSZ4684  | CK           | 3.14                               | 3.3  | 3.47 | 0.05             | 7.5                              | 1.5  |
| MMSZ4685  | CM           | 3.42                               | 3.6  | 3.78 | 0.05             | 7.5                              | 2    |
| MMSZ4686  | CN           | 3.71                               | 3.9  | 4.1  | 0.05             | 5                                | 2    |
| MMSZ4687  | CP           | 4.09                               | 4.3  | 4.52 | 0.05             | 4                                | 2    |
| MMSZ4688  | CT           | 4.47                               | 4.7  | 4.94 | 0.05             | 10                               | 3    |
| MMSZ4689  | CU           | 4.85                               | 5.1  | 5.36 | 0.05             | 10                               | 3    |
| MMSZ4690  | CV           | 5.32                               | 5.6  | 5.88 | 0.05             | 10                               | 4    |
| MMSZ4691  | CA           | 5.89                               | 6.2  | 6.51 | 0.05             | 10                               | 5    |
| MMSZ4692  | CX           | 6.46                               | 6.8  | 7.14 | 0.05             | 10                               | 5.1  |
| MMSZ4693  | CY           | 7.13                               | 7.5  | 7.88 | 0.05             | 10                               | 5.7  |
| MMSZ4694  | CZ           | 7.79                               | 8.2  | 8.61 | 0.05             | 1                                | 6.2  |
| MMSZ4695  | DC           | 8.27                               | 8.7  | 9.14 | 0.05             | 1                                | 6.6  |
| MMSZ4696  | DD           | 8.65                               | 9.1  | 9.56 | 0.05             | 1                                | 6.9  |
| MMSZ4697  | DE           | 9.5                                | 10   | 10.5 | 0.05             | 1                                | 7.6  |
| MMSZ4698  | DF           | 10.5                               | 11   | 11.6 | 0.05             | 0.05                             | 8.4  |
| MMSZ4699  | DH           | 11.4                               | 12   | 12.6 | 0.05             | 0.05                             | 9.1  |
| MMSZ4700  | DJ           | 12.4                               | 13   | 13.7 | 0.05             | 0.05                             | 9.8  |
| MMSZ4701  | DK           | 13.3                               | 14   | 14.7 | 0.05             | 0.05                             | 10.6 |
| MMSZ4702  | DM           | 14.3                               | 15   | 15.8 | 0.05             | 0.05                             | 11.4 |
| MMSZ4703  | DN           | 15.2                               | 16   | 16.8 | 0.05             | 0.05                             | 12.1 |
| MMSZ4704  | DP           | 16.2                               | 17   | 17.9 | 0.05             | 0.05                             | 12.9 |
| MMSZ4705  | DT           | 17.1                               | 18   | 18.9 | 0.05             | 0.05                             | 13.6 |
| MMSZ4706  | DU           | 18.1                               | 19   | 20   | 0.05             | 0.05                             | 14.4 |
| MMSZ4707  | DV           | 19                                 | 20   | 21   | 0.05             | 0.01                             | 15.2 |
| MMSZ4708  | DA           | 20.9                               | 22   | 23.1 | 0.05             | 0.01                             | 16.7 |
| MMSZ4709  | DZ           | 22.8                               | 24   | 25.2 | 0.05             | 0.01                             | 18.2 |
| MMSZ4710  | DY           | 23.8                               | 25   | 26.3 | 0.05             | 0.01                             | 19   |
| MMSZ4711  | EA           | 25.7                               | 27   | 28.4 | 0.05             | 0.01                             | 20.4 |
| MMSZ4712  | EC           | 26.6                               | 28   | 29.4 | 0.05             | 0.01                             | 21.2 |
| MMSZ4713  | ED           | 28.5                               | 30   | 31.5 | 0.05             | 0.01                             | 22.8 |
| MMSZ4714  | EE           | 31.4                               | 33   | 34.7 | 0.05             | 0.01                             | 25   |
| MMSZ4715  | EF           | 34.2                               | 36   | 37.8 | 0.05             | 0.01                             | 27.3 |
| MMSZ4716  | EH           | 37.1                               | 39   | 41   | 0.05             | 0.01                             | 29.6 |
| MMSZ4717  | EJ           | 40.9                               | 43   | 45.2 | 0.05             | 0.01                             | 32.6 |

Notes

- Maximum V<sub>F</sub> = 0.9 V at I<sub>F</sub> = 10 mA
- <sup>(1)</sup> Measured with device junction in thermal equilibrium



## PACKAGE DIMENSIONS in millimeters (inches): SOD-123



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