

**1.3 W Surface Mount Glass Passivated Zener Diode**

|   |   |                                   |  |
|---|---|-----------------------------------|--|
| <b>DO-214AC (SMA)</b><br><br>  | <b>Voltage</b><br>6.2 to 240 V  | <b>Power Dissipation</b><br>1.3 W |  |
|   |   |                                   |  |
|   | <b>FEATURE</b> <ul style="list-style-type: none"> <li>• Low profile package</li> <li>• Ideal for automated placement</li> <li>• Low leakage current</li> <li>• High surge current and zener capability</li> <li>• Low differential resistance</li> <li>• Low forward voltage drop</li> <li>• Solder dip 260 °C, 10s</li> <li>• AEC-Q101 qualified</li> <li>• Component in accordance to RoHS 2011/65/EU and WEEE 2002/96/EC</li> <li>• Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C</li> </ul> |                                   | <br><br><br><b>RoHS COMPLIANT</b> |
|   | <b>MECHANICAL DATA</b> <ul style="list-style-type: none"> <li>• <b>Case:</b> DO-214AC (SMA). Epoxy meets UL 94V-0 flammability rating.</li> <li>• <b>Polarity:</b> Color band denotes cathode end.</li> <li>• <b>Terminals:</b> Matte tin plated leads, solderable per MIL-STD-750 Method 2026, J-STD-002 and JESD22-B102. Consumer grade, meets JESD 201 class 1A whisker test.</li> <li>• <b>HE3 suffix</b> for high reliability grade, meets JESD 201 class 2 whisker test.</li> </ul>                     |                                   |  |
| <b>TYPICAL APPLICATIONS</b><br>Used for basic regulation functions in most electronic applications, Zener diodes offer a cheaper alternative to IC solutions. |   |                                   |  |

**Maximun Ratings and Electrical Characteristics at 25 °C**

|                |  |                  |
|----------------|--|------------------|
| $P_{tot}$      | Power dissipation at $T_{amb} = 25\text{ °C}$<br>$R_{th\ j-a} = 100\text{ °C/W}$                 | 1.3 W            |
| $P_{tot}$      | Power dissipation at $T_{amb} = 25\text{ °C}$<br>$R_{th\ j-a} = 25\text{ °C/W}$                  | 3.25 W           |
| $T_j$          | Operating temperature range  | - 65 to + 150 °C |
| $T_{stg}$      | Storage temperature range  | - 65 to + 150 °C |
| $V_F$          | Max. forward voltage drop at $I_F = 0.5\text{ A}$  | 1.0 V            |
| $R_{th\ j-sp}$ | Max. thermal resistance junction to solder point   | 20 °C/W          |
| $R_{th\ j-a}$  | Max. thermal resistance junction to ambient<br>FR4 PCB standard foot print                       | 200 °C/W         |
|                | Max. thermal resistance junction to ambient<br>FR4 PCB mounting pad for cathode 1cm <sup>2</sup> | 140 °C/W         |

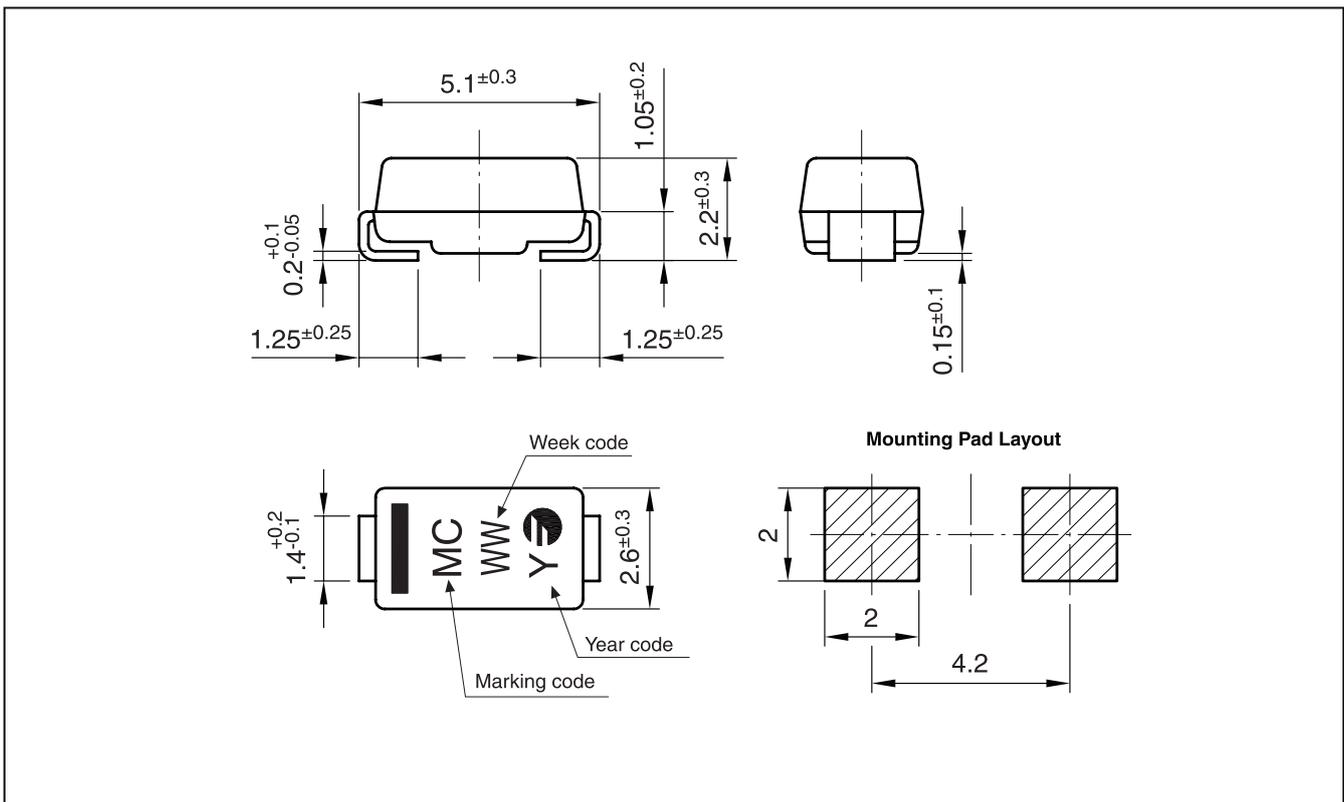
Other voltages upon request

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### Ordering information

| PREFERRED P/N    | PACKAGE CODE | DELIVERY MODE              | BASE QUANTITY | UNIT WEIGHT (g) |
|------------------|--------------|----------------------------|---------------|-----------------|
| Z1SMA51 TRTB     | TRTB         | 13" diameter tape and reel | 7,500         | 0.060           |
| Z1SMA51 TRTS     | TRTS         | 7" diameter tape and reel  | 1,500         | 0.060           |
| Z1SMA51 HE3 TRTB | TRTB         | 13" diameter tape and reel | 7,500         | 0.060           |

### Package Outline Dimensions: (mm) DO-214AC (SMA)



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**Ratings and Characteristics** (Ta 25 °C unless otherwise noted)

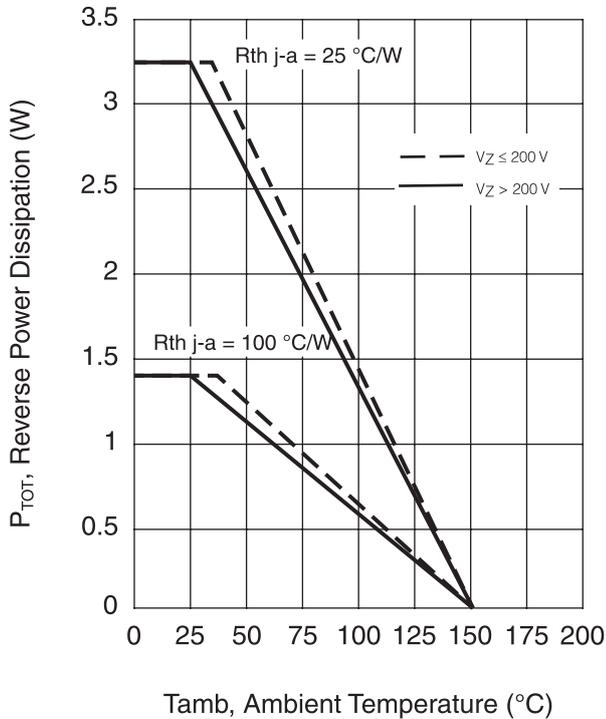
| Type     | Marking Code | Zener (1)<br>Voltage Range<br>V <sub>Z</sub> at I <sub>ZT</sub> | Maximum<br>Zener<br>Impedance<br>Z <sub>ZT</sub> at I <sub>ZT</sub> | Typical<br>Temperature<br>Coefficient<br>at I <sub>ZT</sub> | Test<br>Current<br>I <sub>ZT</sub> | Max Reverse<br>Leakage Current |                         | Max Regulator<br>Current<br>at 45 °C<br>I <sub>ZM</sub> |
|----------|--------------|---|---|---|------------------------------------|--------------------------------|-------------------------|---|
|          |              | (V)   | (Ω)   | (% / °C)  | (mA)                               | I <sub>R</sub><br>(μA)         | @ V <sub>R</sub><br>(V) | (mA)  |
| Z1SMA6V2 | EC           | 5.8-6.6   | 2   | +0.025  | 100                                | 10                             | 3                       | 161   |
| Z1SMA6V8 | EE           | 6.4-7.2   | 2.5   | +0.035  | 100                                | 10                             | 4                       | 147   |
| Z1SMA7V5 | ED           | 7.0-7.9   | 3   | +0.035  | 100                                | 10                             | 5                       | 133   |
| Z1SMA8V2 | EF           | 7.7-8.7   | 3.5   | +0.055  | 100                                | 10                             | 6                       | 122   |
| Z1SMA9V1 | EG           | 8.5-9.6   | 4   | +0.055  | 50                                 | 10                             | 7                       | 110   |
| Z1SMA10  | EH           | 9.4-10.6  | 4   | +0.070  | 50                                 | 1                              | 7.5                     | 105   |
| Z1SMA11  | EK           | 10.4-11.6   | 7   | +0.075  | 50                                 | 1                              | 8.2                     | 97  |
| Z1SMA12  | EL           | 11.4-12.7   | 7   | +0.075  | 50                                 | 1                              | 9.1                     | 88  |
| Z1SMA13  | EM           | 12.4-14.1   | 10  | +0.075  | 50                                 | 1                              | 10                      | 79  |
| Z1SMA15  | EN           | 13.8-15.6   | 10  | +0.075  | 50                                 | 1                              | 11                      | 71  |
| Z1SMA16  | EP           | 15.3-17.1   | 15  | +0.085  | 25                                 | 1                              | 12                      | 66  |
| Z1SMA18  | EQ           | 16.8-19.1   | 15  | +0.085  | 25                                 | 1                              | 13                      | 62  |
| Z1SMA20  | ER           | 18.8-21.2   | 15  | +0.085  | 25                                 | 1                              | 15                      | 56  |
| Z1SMA22  | ES           | 20.8-23.3   | 15  | +0.085  | 25                                 | 1                              | 16                      | 52  |
| Z1SMA24  | ET           | 22.8-25.6   | 15  | +0.085  | 25                                 | 1                              | 18                      | 47  |
| Z1SMA27  | EU           | 25.1-28.9   | 15  | +0.085  | 25                                 | 1                              | 20                      | 41  |
| Z1SMA30  | EV           | 28-32   | 15  | +0.085  | 25                                 | 1                              | 22                      | 36  |
| Z1SMA33  | EW           | 31-35   | 15  | +0.085  | 25                                 | 1                              | 24                      | 33  |
| Z1SMA36  | EX           | 34-38   | 40  | +0.085  | 10                                 | 1                              | 27                      | 30  |
| Z1SMA39  | EY           | 37-41   | 40  | +0.085  | 10                                 | 1                              | 30                      | 28  |
| Z1SMA43  | EZ           | 40-46   | 45  | +0.095  | 10                                 | 1                              | 33                      | 26  |
| Z1SMA47  | FD           | 44-50   | 45  | +0.095  | 10                                 | 1                              | 36                      | 23  |
| Z1SMA51  | FF           | 48-54   | 60  | +0.095  | 10                                 | 1                              | 39                      | 21  |
| Z1SMA56  | FG           | 52-60   | 60  | +0.095  | 10                                 | 1                              | 43                      | 19  |
| Z1SMA62  | FH           | 58-66   | 80  | +0.105  | 10                                 | 1                              | 47                      | 16  |
| Z1SMA68  | FK           | 64-72   | 80  | +0.105  | 10                                 | 1                              | 51                      | 15  |
| Z1SMA75  | FL           | 70-80   | 100   | +0.105  | 10                                 | 1                              | 56                      | 14  |
| Z1SMA82  | FM           | 77-87   | 100   | +0.105  | 10                                 | 1                              | 62                      | 12  |
| Z1SMA91  | FN           | 85-96   | 200   | +0.110  | 5                                  | 1                              | 68                      | 10  |
| Z1SMA100 | FP           | 94-106  | 200   | +0.110  | 5                                  | 1                              | 75                      | 9.4   |
| Z1SMA110 | FQ           | 104-116   | 250   | +0.110  | 5                                  | 1                              | 82                      | 8.6   |
| Z1SMA120 | FR           | 114-127   | 250   | +0.110  | 5                                  | 1                              | 91                      | 7.8   |
| Z1SMA130 | FS           | 124-141   | 300   | +0.110  | 5                                  | 1                              | 100                     | 7.0   |
| Z1SMA150 | FT           | 138-156   | 300   | +0.110  | 5                                  | 1                              | 110                     | 6.4   |
| Z1SMA160 | FU           | 158-171   | 350   | +0.110  | 5                                  | 1                              | 120                     | 5.8   |
| Z1SMA180 | FV           | 168-191   | 500   | +0.110  | 5                                  | 1                              | 130                     | 5.2   |
| Z1SMA200 | FW           | 188-212   | 500   | +0.110  | 5                                  | 1                              | 150                     | 4.7   |
| Z1SMA220 | FE           | 208-233   | 2500  | +0.110  | 1                                  | 1                              | 160                     | 4.5   |
| Z1SMA240 | FZ           | 228-256   | 2550  | +0.110  | 1                                  | 1                              | 180                     | 4.2   |

(1) Tested with pulses.  
Pulse test: t<sub>p</sub> ≤ 50 ms; δ < 2%

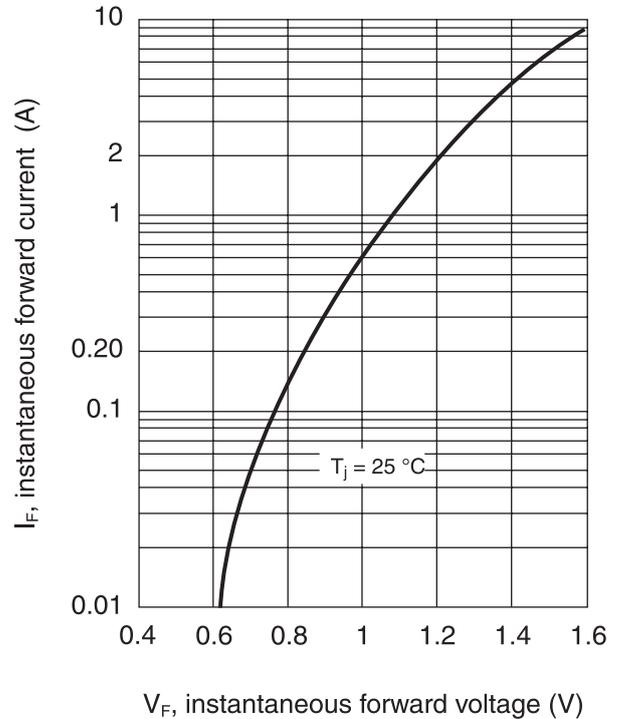
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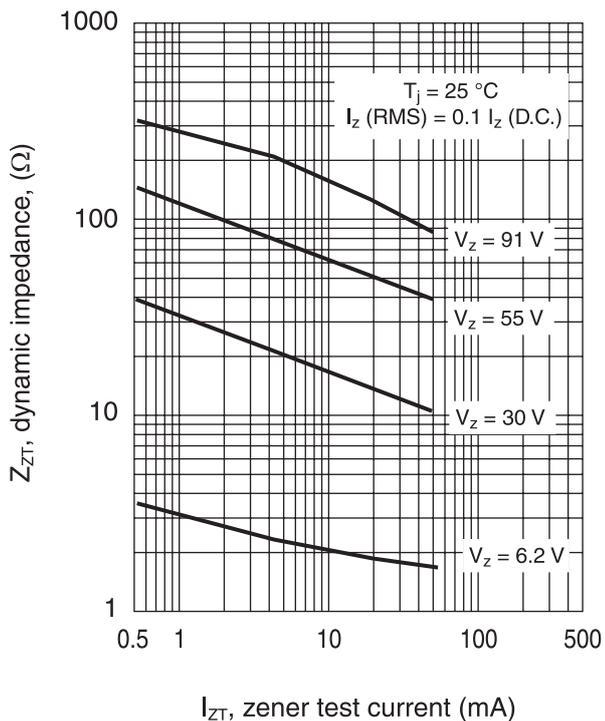
MAXIMUM CONTINUOUS POWER DISSIPATION



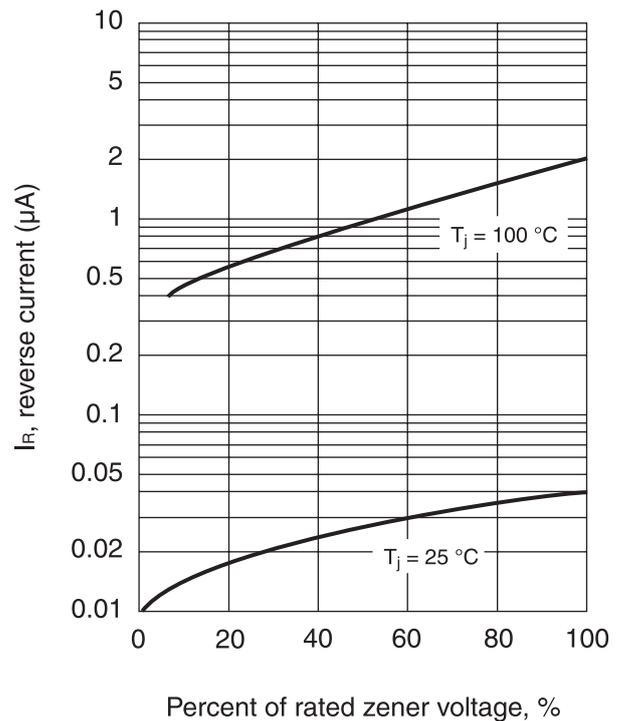
TYPICAL FORWARD CHARACTERISTIC



TYPICAL ZENER IMPEDANCE

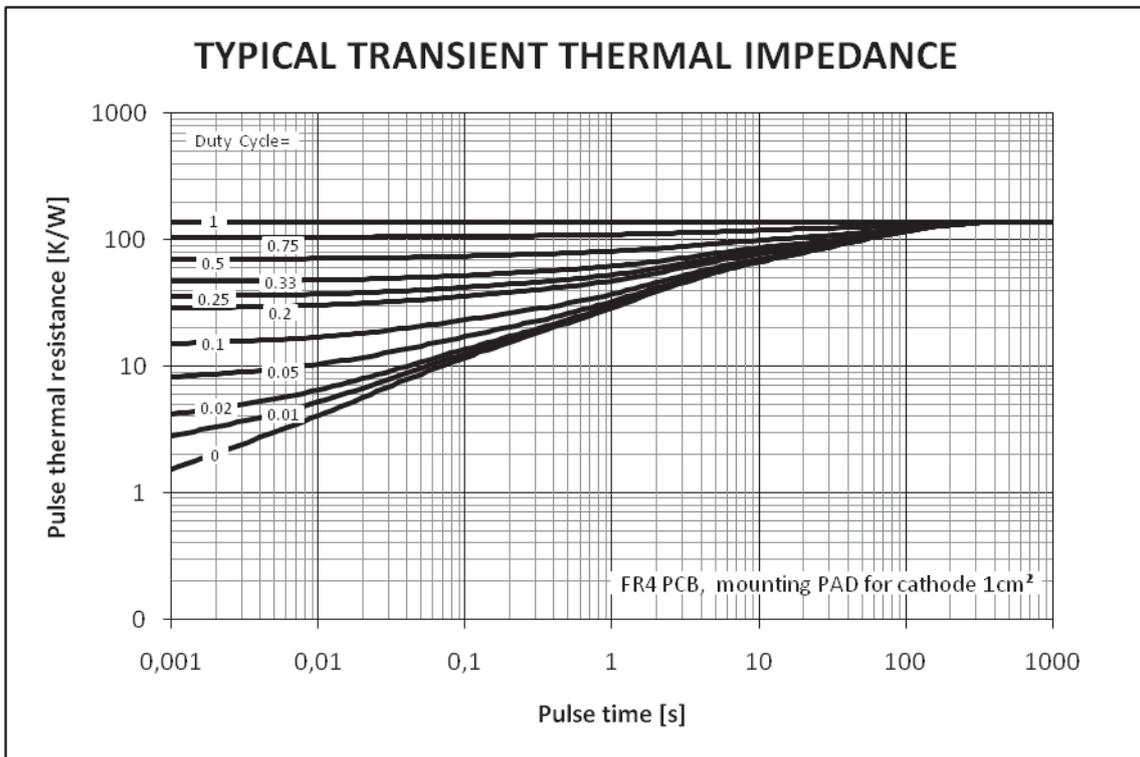
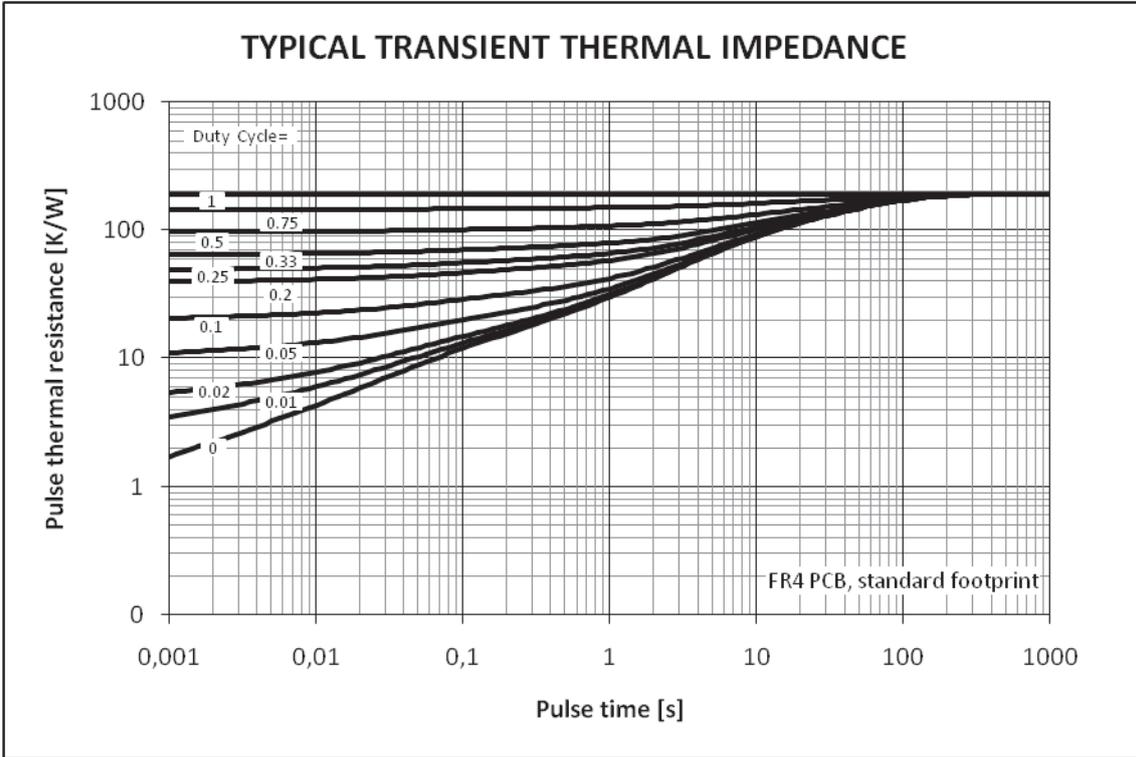


TYPICAL REVERSE CHARACTERISTIC



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**1.3 W Surface Mount Glass Passivated Zener Diode****Revision History**

| DATE        | REVISION | DESCRIPTION OF CHANGES                               |
|-------------|----------|--|
| 15-Apr-2013 | 0        | Original Data Sheet                                  |
| 30-May-2014 | 1        | Update of Maximum Continuous Power Dissipation Curve |
| 22-Apr-2016 | 2        | Transient Thermal Impedance                          |
| 14-Feb-2018 | 3        | Remove Tolerance Series $\pm 5\%$                    |

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