

# 1SMB5921~1SMB5942

## SURFACE MOUNT SILICON ZENER DIODE

**VOLTAGE** 6.8 to 51 Volt **POWER** 1.5 Watt

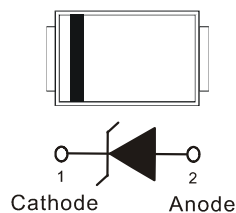
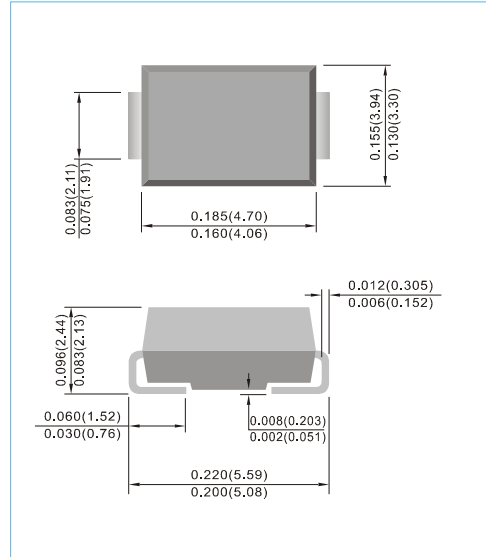
**SMB / DO-214AA** Unit : inch(mm)

### FEATURES

- For surface mounted applications in order to optimize board space.
- Low inductance
- Typical  $I_R$  less than 1 $\mu$ A above 12V
- Plastic package has Underwriters Laboratory Flammability Classification 94V-O
- High temperature soldering : 260°C /10 seconds at terminals
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### MECHANICAL DATA

- Case: JEDEC DO-214AA, Molded plastic over passivated junction.
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode end
- Standard Packaging: 12mm tape (EIA-481)
- Weight: 0.0032 ounce, 0.092 gram



## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter                                                                             | Symbol         | Value        | Units |
|---------------------------------------------------------------------------------------|----------------|--------------|-------|
| Peak Pulse Power Dissipation on $T_L=75^\circ\text{C}$ (Notes A)<br>Derate above 75°C | $P_D$          | 1.5          | Watts |
| Peak Forward Surge Current 8.3ms single half sine-wave<br>superimposed on rated load  | $I_{FSM}$      | 10           | Amps  |
| Operating Junction and Storage Temperature Range                                      | $T_J, T_{STG}$ | -55 to + 150 | °C    |

### NOTES :

A.Mounted on 5mm<sup>2</sup> (0.013mm thick) land areas.

B.Measured on 8.3ms, and single half sine-wave or equivalent square wave ,duty cycle=4 pulses per minute maximum.

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| Part Number | Nominal Zener Voltage            |       |       | Maximum Zener Impedance           |      |                                   |      | Max. Reverse Leakage Current |                | Marking Code |
|-------------|----------------------------------|-------|-------|-----------------------------------|------|-----------------------------------|------|------------------------------|----------------|--------------|
|             | V <sub>Z</sub> @ I <sub>ZT</sub> |       |       | Z <sub>ZT</sub> @ I <sub>ZT</sub> |      | Z <sub>ZK</sub> @ I <sub>ZK</sub> |      | I <sub>R</sub>               | V <sub>R</sub> |              |
|             | Nom V                            | MinV  | Max V | Ω                                 | mA   | Ω                                 | mA   | μA                           | V              |              |
| 1SMB5921    | 6.8                              | 6.46  | 7.14  | 3                                 | 55.1 | 200                               | 1    | 5                            | 5.2            | 921B         |
| 1SMB5922    | 7.5                              | 7.13  | 7.88  | 3                                 | 50   | 400                               | 0.5  | 5                            | 6              | 922B         |
| 1SMB5923    | 8.2                              | 7.79  | 8.61  | 4                                 | 45.7 | 400                               | 0.5  | 5                            | 6.5            | 923B         |
| 1SMB5924    | 9.1                              | 8.65  | 9.56  | 4                                 | 41.2 | 500                               | 0.5  | 5                            | 7              | 924B         |
| 1SMB5925    | 10                               | 9.5   | 10.5  | 5                                 | 37.5 | 500                               | 0.25 | 5                            | 8              | 925B         |
| 1SMB5926    | 11                               | 10.45 | 11.55 | 6                                 | 34.1 | 550                               | 0.25 | 1                            | 8.4            | 926B         |
| 1SMB5927    | 12                               | 11.4  | 12.6  | 7                                 | 31.2 | 550                               | 0.25 | 1                            | 9.1            | 927B         |
| 1SMB5928    | 13                               | 12.35 | 13.65 | 7                                 | 28.8 | 550                               | 0.25 | 1                            | 9.9            | 928B         |
| 1SMB5929    | 15                               | 14.25 | 15.75 | 9                                 | 25   | 600                               | 0.25 | 1                            | 11.4           | 929B         |
| 1SMB5930    | 16                               | 15.2  | 16.8  | 10                                | 23.4 | 600                               | 0.25 | 1                            | 12.2           | 930B         |
| 1SMB5931    | 18                               | 17.1  | 18.9  | 12                                | 20.8 | 650                               | 0.25 | 1                            | 13.7           | 931B         |
| 1SMB5932    | 20                               | 19    | 21    | 14                                | 18.7 | 650                               | 0.25 | 1                            | 15.2           | 932B         |
| 1SMB5933    | 22                               | 20.9  | 23.1  | 18                                | 17   | 650                               | 0.25 | 1                            | 16.7           | 933B         |
| 1SMB5934    | 24                               | 22.8  | 25.2  | 19                                | 15.6 | 700                               | 0.25 | 1                            | 18.2           | 934B         |
| 1SMB5935    | 27                               | 25.65 | 28.35 | 23                                | 13.9 | 700                               | 0.25 | 1                            | 20.6           | 935B         |
| 1SMB5936    | 30                               | 28.5  | 31.5  | 26                                | 12.5 | 750                               | 0.25 | 1                            | 22.8           | 936B         |
| 1SMB5937    | 33                               | 31.35 | 34.65 | 33                                | 11.4 | 800                               | 0.25 | 1                            | 25.1           | 937B         |
| 1SMB5938    | 36                               | 34.2  | 37.8  | 38                                | 10.4 | 850                               | 0.25 | 1                            | 27.4           | 938B         |
| 1SMB5939    | 39                               | 37.05 | 40.95 | 45                                | 9.6  | 900                               | 0.25 | 1                            | 29.7           | 939B         |
| 1SMB5940    | 43                               | 40.85 | 45.15 | 53                                | 8.7  | 950                               | 0.25 | 1                            | 32.7           | 940B         |
| 1SMB5941    | 47                               | 44.65 | 49.35 | 67                                | 8    | 1000                              | 0.25 | 1                            | 35.8           | 941B         |
| 1SMB5942    | 51                               | 48.45 | 53.55 | 70                                | 7.3  | 1100                              | 0.25 | 1                            | 38.8           | 942B         |

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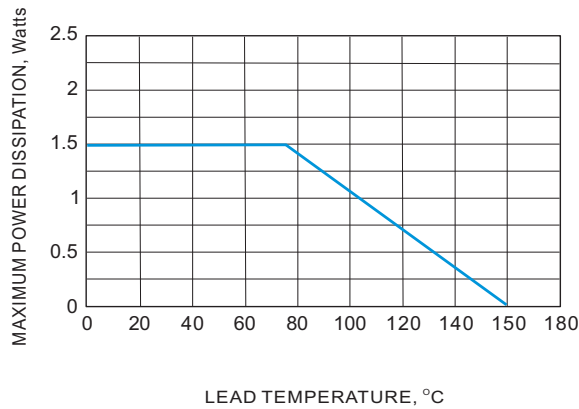


Fig.1 Steady State Power Derating

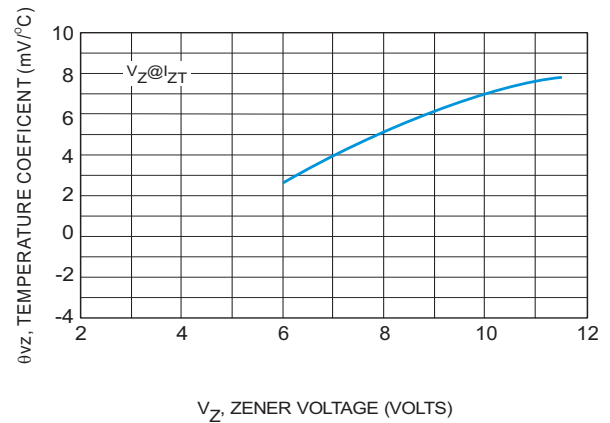


Fig.2 Zener Voltage - to 12 volts

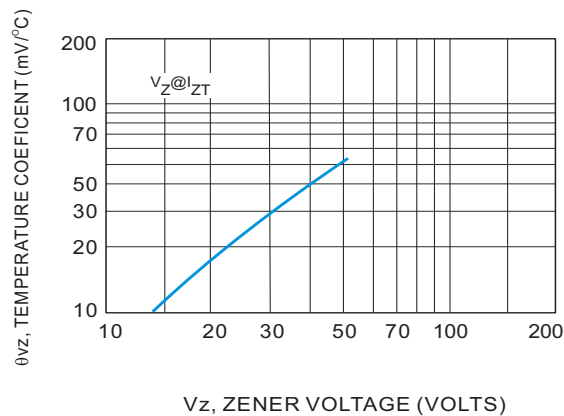


Fig.3 Zener Voltage - 14 to 200 Volts

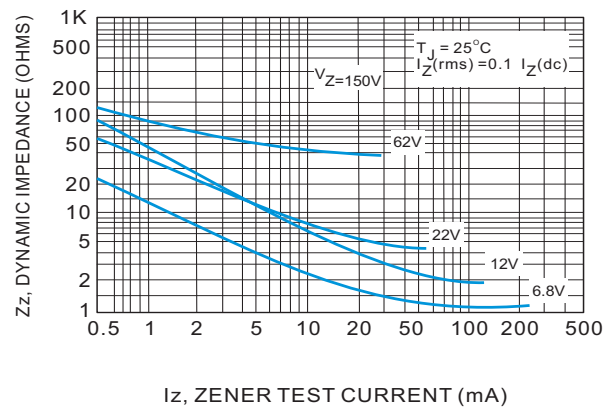


Fig.4 Effect of Zener Current

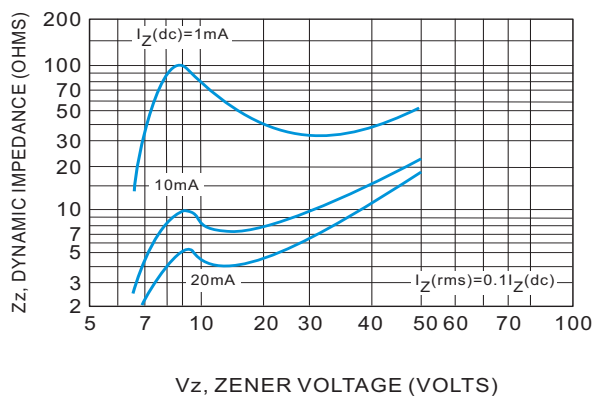


Fig.5 Effect of Zener Voltage

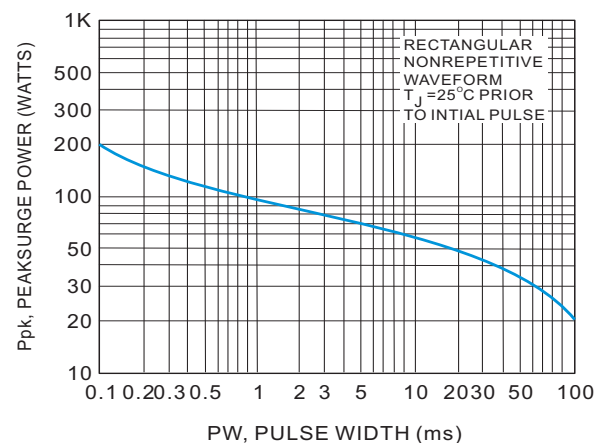


Fig.6 Maximum Surge Power

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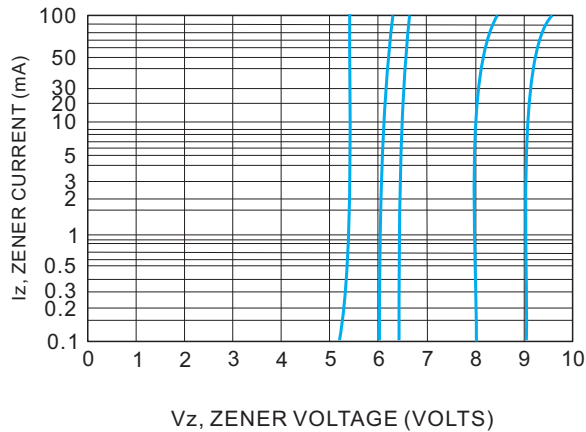


Fig.7  $V_z = 6.8$  thru 10 Volts

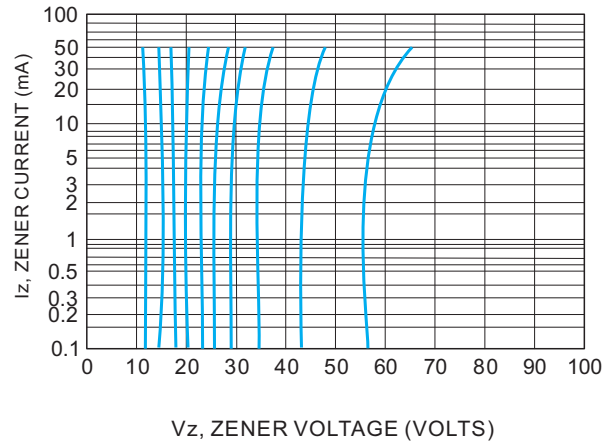


Fig.8  $V_z = 12$  thru 82 Volts

### NOTE 3. ZENER VOLTAGE ( $V_z$ ) MEASUREMENT

Nominal zener voltage is measured with the device function in thermal equilibrium with ambient temperature at 25°C

### NOTE 4. ZENER IMPEDANCE ( $Z_z$ ) DERIVATION

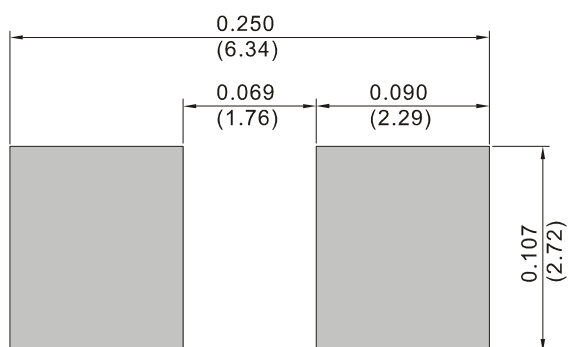
$Z_{zt}$  and  $Z_{zk}$  are measured by dividing the ac voltage drop across the device by the accurent applied. The specified limits are for  $I_z(ac) = 0.1 I_z, (dc)$  with the ac frequency = 60Hz

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### MOUNTING PAD LAYOUT

**SMB / DO-214AA**

Unit : inch(mm)



### ORDER INFORMATION

- Packing information

T/R - 3K per 13" plastic Reel

T/R - 0.8K per 7" plastic Reel

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