

## ZENER DIODES

### Features

- ◆ For surface mounted applications in order to optimize board space
- ◆ Low profile package
- ◆ Built-in strain relief
- ◆ Glass passivated junction
- ◆ Low inductance
- ◆ Typical  $I_R$  less than 5.0 $\mu$ A above 11V
- ◆ High temperature soldering guaranteed:  
260°C / 10 seconds at terminals
- ◆ Plastic package has Underwriters Laboratory Flammability Classification 94V-0

### DO-214AC/SMA



Dimensions in inches and (millimeters)

**Standard packing :** 12mm tape(E1A-481)

### Maximum Ratings And Electrical Characteristics

| Ratings at 25°C ambient temperature unless otherwise specified.                                                   |                |              |                |
|-------------------------------------------------------------------------------------------------------------------|----------------|--------------|----------------|
| Catalog Number                                                                                                    | SYMBOLS        | VALUE        | UNITS          |
| Peak Power Dissipation at $T_A=50^{\circ}\text{C}$ ,<br>Derate above 50 °C (Note 1)                               | $P_D$          | 1.0<br>6.67  | Watts<br>mW/°C |
| Peak Forward Surge Current, 8.3 ms Single Half<br>Sine-wave Superimposed on Rated Load<br>(JEDEC method) (Note 2) | $I_{FSM}$      | 10.0         | A              |
| Forward Voltage                                                                                                   | $V_F$          | 1.2          | V              |
| Operating and Storage Temperature Range                                                                           | $T_J, T_{STG}$ | -55 to + 150 | °C             |

- Notes: 1. Mounted on 5.0mm<sup>2</sup> (0.013mm thick) land areas.  
2. Measured on 8.3ms Single Half Sine-wave or Equivalent Square Wave,  
Duty Cycle=4 Pulses Per Minute Maximum.



## Ratings And Characteristic Curves

| Type      | Marking | Zener Voltage Range <sup>(1)</sup>    |         |         |                 | Dynamic Impedance                     | Reverse Current |                   | Admissible Zener Current |
|-----------|---------|---------------------------------------|---------|---------|-----------------|---------------------------------------|-----------------|-------------------|--------------------------|
|           |         | V <sub>ZT</sub> (at I <sub>ZT</sub> ) |         |         | I <sub>ZT</sub> | Z <sub>ZT</sub> (at I <sub>ZT</sub> ) | I <sub>R</sub>  | at V <sub>R</sub> |                          |
|           |         | Min (V)                               | Nom (V) | Max (V) | (mA)            | Max (Ω)                               | Max (μA)        | (V)               | I <sub>ZM</sub> (mA)     |
| 1SMA4728A | 728A    | 3.10                                  | 3.3     | 3.50    | 75              | 10                                    | 100             | 1                 | 285                      |
| 1SMA4729A | 729A    | 3.40                                  | 3.6     | 3.80    | 69              | 10                                    | 100             | 1                 | 263                      |
| 1SMA4730A | 730A    | 3.70                                  | 3.9     | 4.10    | 64              | 9.0                                   | 50              | 1                 | 243                      |
| 1SMA4731A | 731A    | 4.06                                  | 4.3     | 4.56    | 58              | 9.0                                   | 25              | 1                 | 219                      |
| 1SMA4732A | 732A    | 4.50                                  | 4.7     | 4.93    | 53              | 8.0                                   | 10              | 1                 | 203                      |
| 1SMA4733A | 733A    | 4.84                                  | 5.1     | 5.36    | 49              | 7.0                                   | 10              | 1                 | 186                      |
| 1SMA4734A | 734A    | 5.32                                  | 5.6     | 5.92    | 45              | 5.0                                   | 10              | 2                 | 170                      |
| 1SMA4735A | 735A    | 5.86                                  | 6.2     | 6.51    | 41              | 2.0                                   | 10              | 3                 | 154                      |
| 1SMA4736A | 736A    | 6.46                                  | 6.8     | 7.18    | 37              | 3.5                                   | 10              | 4                 | 140                      |
| 1SMA4737A | 737A    | 7.12                                  | 7.5     | 7.88    | 34              | 4.0                                   | 10              | 5                 | 127                      |
| 1SMA4738A | 738A    | 7.79                                  | 8.2     | 8.67    | 31              | 4.5                                   | 10              | 6                 | 116                      |
| 1SMA4739A | 739A    | 8.60                                  | 9.1     | 9.59    | 28              | 5.0                                   | 10              | 7                 | 104                      |
| 1SMA4740A | 740A    | 9.50                                  | 10      | 10.5    | 25              | 7.0                                   | 10              | 7                 | 95                       |
| 1SMA4741A | 741A    | 10.4                                  | 11      | 11.6    | 23              | 8.0                                   | 5               | 8                 | 86                       |
| 1SMA4742A | 742A    | 11.4                                  | 12      | 12.6    | 21              | 9.0                                   | 5               | 9                 | 79                       |
| 1SMA4743A | 743A    | 12.4                                  | 13      | 14.1    | 19              | 10                                    | 5               | 10                | 71                       |
| 1SMA4744A | 744A    | 13.8                                  | 15      | 15.8    | 17              | 14                                    | 5               | 11                | 63                       |
| 1SMA4745A | 745A    | 15.2                                  | 16      | 17.1    | 16              | 16                                    | 5               | 12                | 58                       |
| 1SMA4746A | 746A    | 16.8                                  | 18      | 19.2    | 14              | 20                                    | 5               | 13                | 52                       |
| 1SMA4747A | 747A    | 19.0                                  | 20      | 21.2    | 13              | 22                                    | 5               | 15                | 47                       |
| 1SMA4748A | 748A    | 20.8                                  | 22      | 23.3    | 12              | 23                                    | 5               | 17                | 43                       |
| 1SMA4749A | 749A    | 22.8                                  | 24      | 26.0    | 11              | 25                                    | 5               | 18                | 38                       |
| 1SMA4750A | 750A    | 25.3                                  | 27      | 28.9    | 9.5             | 35                                    | 5               | 21                | 35                       |
| 1SMA4751A | 751A    | 28.2                                  | 30      | 32.0    | 8.5             | 40                                    | 5               | 23                | 31                       |
| 1SMA4752A | 752A    | 31.3                                  | 33      | 34.9    | 7.5             | 45                                    | 5               | 25                | 28                       |
| 1SMA4753A | 753A    | 34.2                                  | 36      | 37.9    | 7.0             | 50                                    | 5               | 27                | 26                       |
| 1SMA4754A | 754A    | 37.2                                  | 39      | 41.5    | 6.5             | 60                                    | 5               | 30                | 24                       |
| 1SMA4755A | 755A    | 40.9                                  | 43      | 45.6    | 6.0             | 70                                    | 1               | 32                | 22                       |
| 1SMA4756A | 756A    | 44.9                                  | 47      | 49.8    | 5.5             | 80                                    | 1               | 35                | 20                       |
| 1SMA4757A | 757A    | 48.6                                  | 51      | 54.0    | 5.0             | 95                                    | 1               | 38                | 18                       |
| 1SMA4758A | 758A    | 53.6                                  | 56      | 58.8    | 4.5             | 110                                   | 1               | 42                | 17                       |
| 1SMA4759A | 759A    | 58.9                                  | 62      | 65.6    | 4.0             | 125                                   | 1               | 47                | 15                       |
| 1SMA4760A | 760A    | 64.6                                  | 68      | 71.7    | 3.7             | 150                                   | 1               | 52                | 14                       |
| 1SMA4761A | 761A    | 71.2                                  | 75      | 78.8    | 3.3             | 175                                   | 1               | 56                | 12                       |
| 1SMA4762A | 762A    | 77.9                                  | 82      | 87.0    | 3.0             | 200                                   | 1               | 62                | 11                       |
| 1SMA4763A | 763A    | 86.0                                  | 91      | 96.0    | 2.8             | 250                                   | 1               | 69                | 10                       |
| 1SMA4764A | 764A    | 95.0                                  | 100     | 105     | 2.5             | 350                                   | 1               | 76                | 9.5                      |
| 1SMA4765A | 765A    | 104                                   | 110     | 116     | 2.3             | 450                                   | 1               | 84                | 8.6                      |
| 1SMA4766A | 766A    | 114                                   | 120     | 127     | 2.0             | 550                                   | 1               | 91                | 7.8                      |
| 1SMA4767A | 767A    | 125                                   | 135     | 142     | 1.9             | 700                                   | 1               | 100               | 7.0                      |
| 1SMA4768A | 768A    | 140                                   | 150     | 157     | 1.7             | 900                                   | 1               | 110               | 6.3                      |
| 1SMA4769A | 769A    | 155                                   | 165     | 172     | 1.6             | 1100                                  | 1               | 120               | 5.8                      |
| 1SMA4770A | 770A    | 170                                   | 180     | 191     | 1.4             | 1200                                  | 1               | 135               | 5.2                      |
| 1SMA4771A | 771A    | 189                                   | 200     | 211     | 1.2             | 1400                                  | 1               | 150               | 4.7                      |
| 1SMA4772A | 772A    | 209                                   | 220     | 231     | 1.0             | 1600                                  | 1               | 165               | 4.3                      |
| 1SMA4773A | 773A    | 229                                   | 240     | 251     | 1.0             | 1800                                  | 1               | 180               | 3.9                      |
| 1SMA4774A | 774A    | 249                                   | 260     | 271     | 1.0             | 2000                                  | 1               | 190               | 3.7                      |
| 1SMA4775A | 775A    | 269                                   | 280     | 291     | 1.0             | 2100                                  | 1               | 205               | 3.4                      |
| 1SMA4776A | 776A    | 289                                   | 300     | 315     | 1.0             | 2300                                  | 1               | 230               | 3.1                      |
| 1SMA4777A | 777A    | 313                                   | 330     | 346     | 1.0             | 2500                                  | 1               | 250               | 2.8                      |

(1)  $V_{ZT}$  is tested with pulses (20 ms)

FIG.1- POWER TEMPERATURE DERATING CURVE



FIG.2- TYPICAL FORWARD CHARACTERISTICS

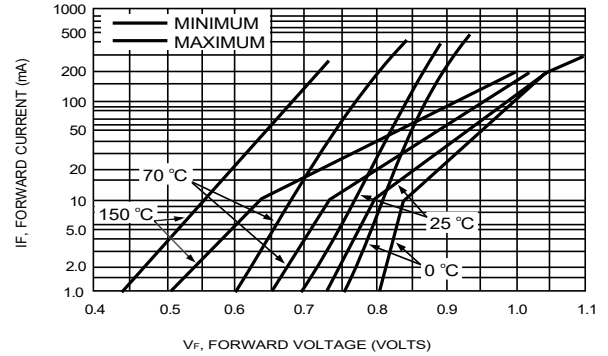


FIG.3- EFFECT OF ZENER CURRENT ON ZENER IMPEDANCE

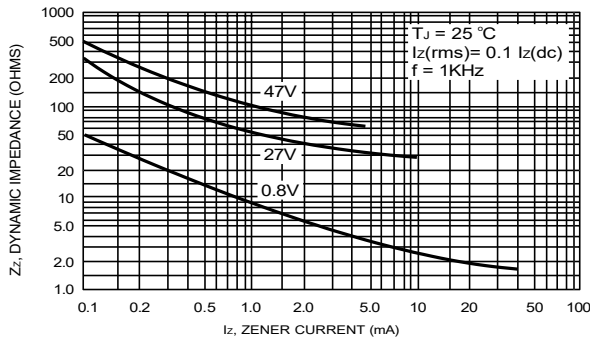


FIG.4- EFFECT OF ZENER VOLTAGE ON ZENER IMPEDANCE

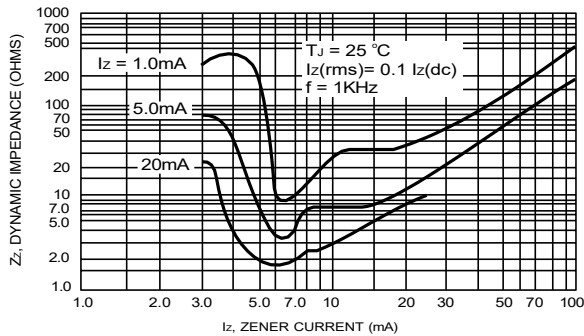


FIG.5- TYPICAL LEAKAGE CURRENT

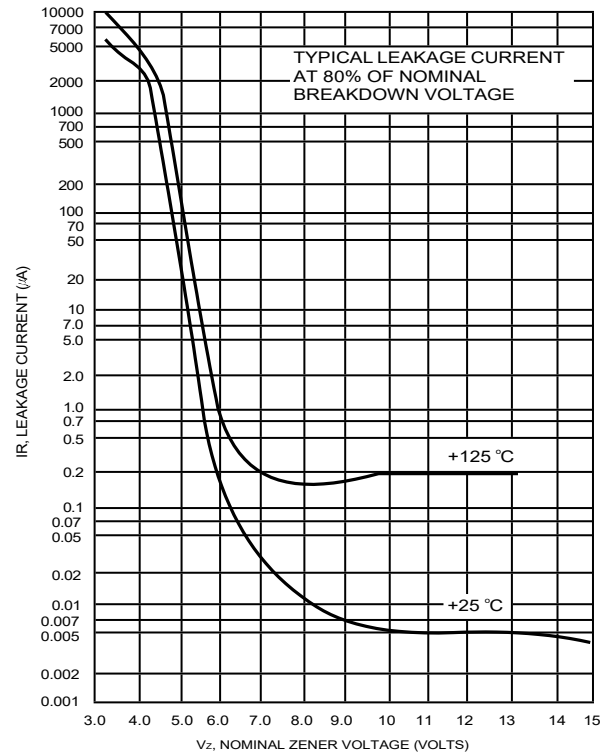


FIG.6- TYPICAL CAPACITANCE versus  $V_Z$

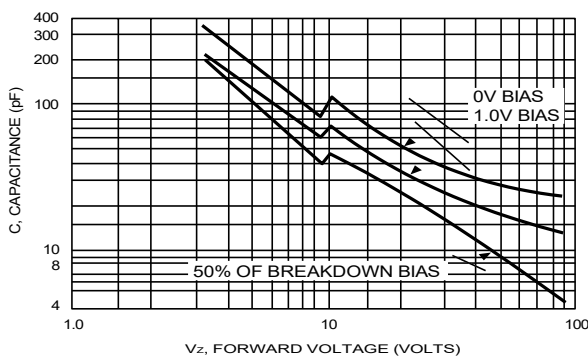
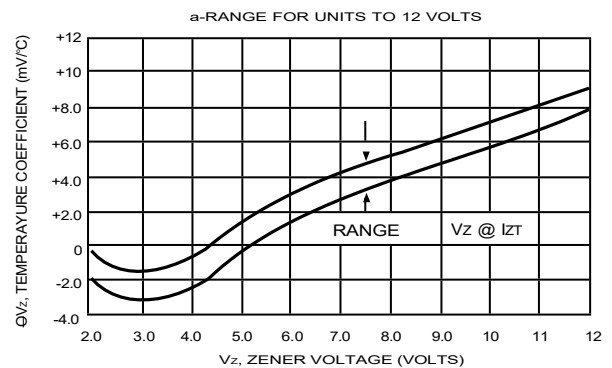


FIG.7- TEMPERATURE COEFFICIENTS



The cruve graph is for reference only

FIG.7- TEMPERATURE COEFFICIENTS

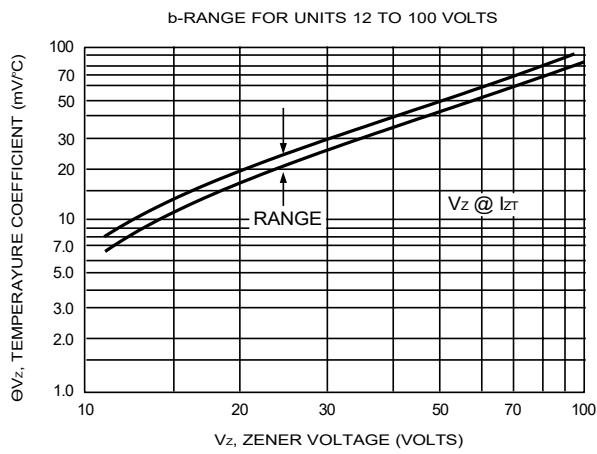


FIG.8- EFFECT OF ZENER CURRENT

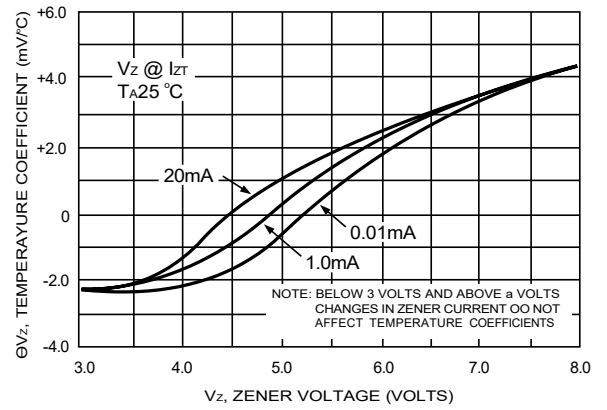
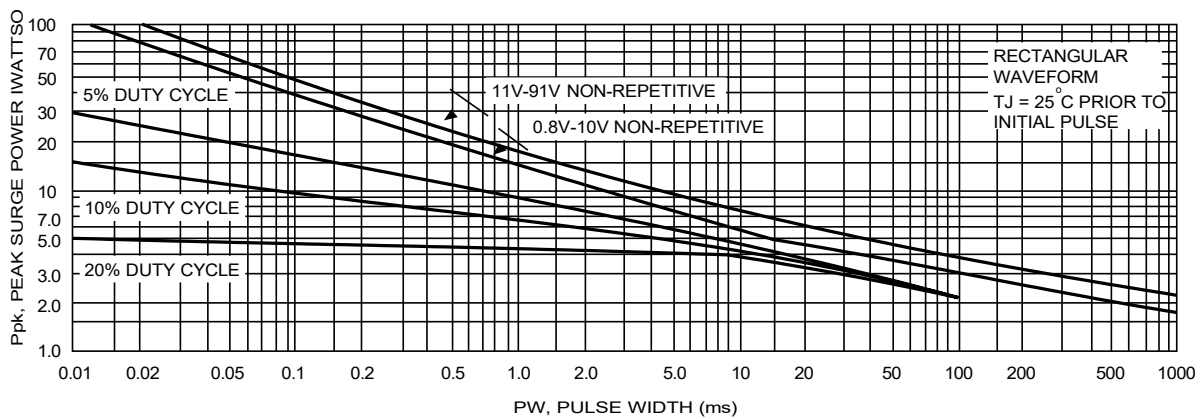


FIG.9- MAXIMUM SURGE POWER



The cruve graph is for reference only