

# SMT SERIES

# GW

## 200 WATT SURFACE MOUNT ESD PROTECTION DIODES

### FEATURES

- \* For surface mount application
- \* Built-in strain relief
- \* Excellent clamping capability
- \* Low profile package
- \* Fast response time: Typically less than 1.0ps from 0 volt to BV min.
- \* Typical  $I_R$  less than 1 $\mu$ A above 10V
- \* ESD-protection acc. IEC 61000-4-2
  - ± 8 kV contact discharge
  - ± 15 kV air discharge

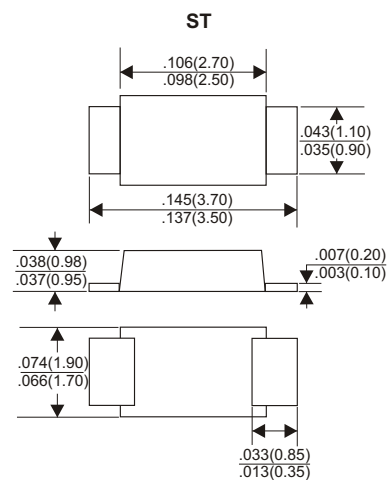
### MECHANICAL DATA

- \* Case: Molded plastic
- \* Epoxy: UL 94V-0 rate flame retardant
- \* Lead: Solderable per MIL-STD-202, method 208 guaranteed
- \* Polarity: Color band denotes cathode end except Bidirectional
- \* Mounting position: Any

### VOLTAGE RANGE

5.0 to 220 Volts

200 Watts Peak Power



Dimensions in inches and (millimeters)

### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating 25°C ambient temperature unless otherwise specified.  
Single phase half wave, 60Hz, resistive or inductive load.  
For capacitive load, derate current by 20%.

| RATINGS                                                                                                         | SYMBOL         | VALUE                       | UNITS          |
|-----------------------------------------------------------------------------------------------------------------|----------------|-----------------------------|----------------|
| Peak Power Dissipation with a 10/1000 $\mu$ s waveform<br>a 8/20 $\mu$ s waveform                               | $P_{PK}$       | Minimum 200<br>Minimum 1000 | Watts<br>Watts |
| Peak Forward Surge Current at 8.3ms Single Half Sine-Wave<br>superimposed on rated load (JEDEC method) (NOTE 1) | $I_{FSM}$      | 20                          | Amps           |
| Maximum Instantaneous Forward Voltage at 25.0A for<br>Unidirectional only                                       | $V_F$          | 3.5                         | Volts          |
| Operating and Storage Temperature Range                                                                         | $T_J, T_{STG}$ | -55 to +150                 | °C             |

#### NOTES:

1. 8.3ms single half sine-wave, duty cycle = 4 pulses per minute maximum.

### DEVICES FOR BIPOLAR APPLICATIONS

1. For Bidirectional use C Suffix for types SMT5.0A thru SMT220A.
2. Electrical characteristics apply in both directions.

## RATING AND CHARACTERISTIC CURVES (SMT SERIES)

FIG.1-PEAK PULSE POWER DERATING CURVE

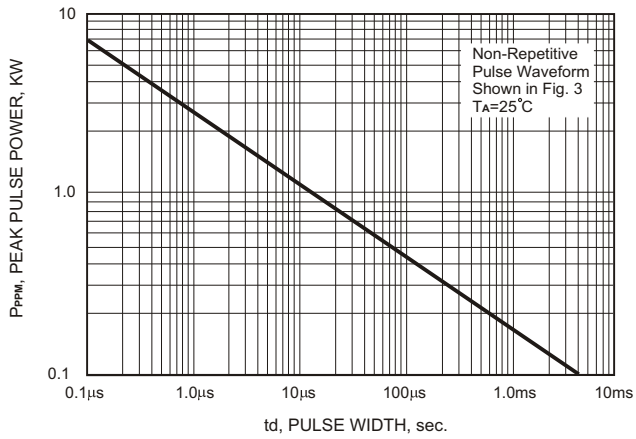


FIG.2-PULSE DERATING CURVE

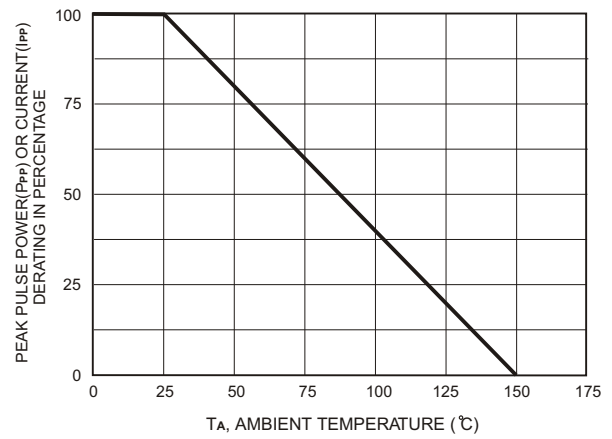


FIG.3-PULSE WAVE FORM

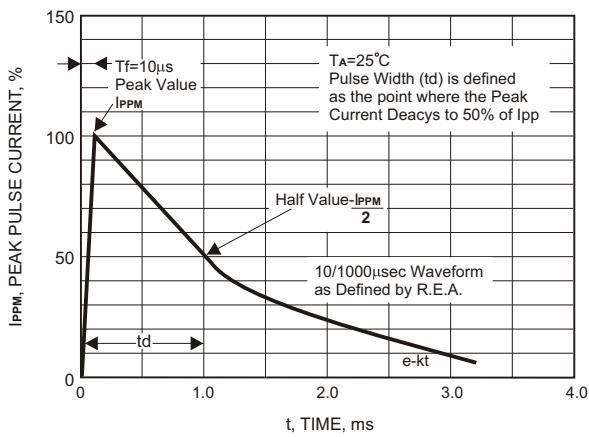


FIG.4-TYPICAL JUNCTION CAPACITANCE

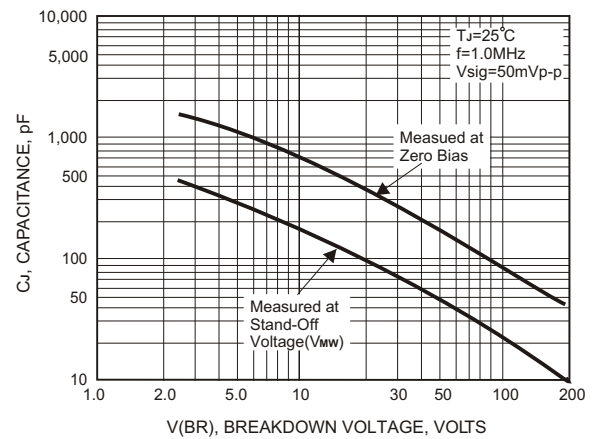


FIG.5-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

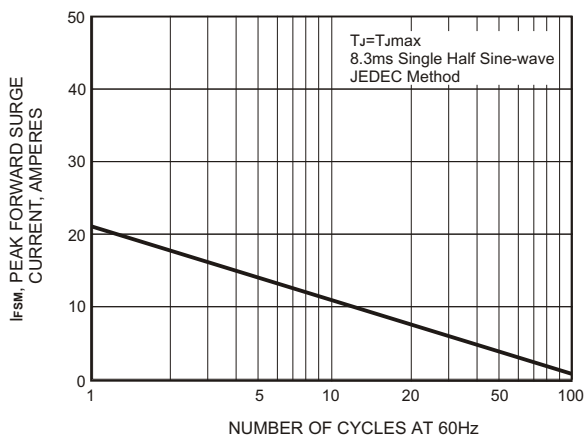
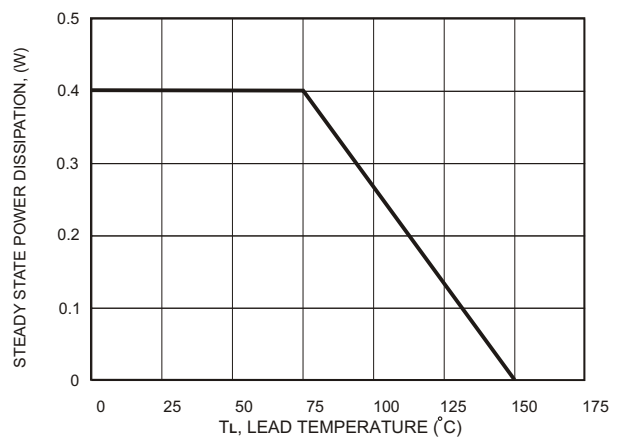


FIG.6-STEADY STATE POWER DERATING CURVE



## 200 Watt Surface Mount TVS



| Part Number<br>(Uni) | Part Number<br>(Bi) | Device<br>Marking<br>Code |    | Reverse<br>Standoff<br>Voltage | Breakdown Voltage $V_{BR}$ @ $I_T$ |         |            | Maximum<br>Reverse<br>Leakage<br>@ $V_R$ | Maximum<br>Peak<br>Pulse<br>Current | Maximum<br>Clamping<br>Voltage<br>@ $I_{pp}$ |
|----------------------|---------------------|---------------------------|----|--------------------------------|------------------------------------|---------|------------|------------------------------------------|-------------------------------------|----------------------------------------------|
|                      |                     | Uni                       | Bi |                                | Min (V)                            | Max (V) | $I_T$ (mA) |                                          |                                     |                                              |
| SMT5.0A              | SMT5.0CA            | ZA                        | NA | 5.0                            | 6.40                               | 7.00    | 10         | 400                                      | 21.74                               | 9.2                                          |
| SMT6.0A              | SMT6.0CA            | ZC                        | NC | 6.0                            | 6.67                               | 7.37    | 10         | 400                                      | 19.42                               | 10.3                                         |
| SMT6.5A              | SMT6.5CA            | ZE                        | NE | 6.5                            | 7.22                               | 7.98    | 10         | 250                                      | 17.86                               | 11.2                                         |
| SMT7.0A              | SMT7.0CA            | ZG                        | NG | 7.0                            | 7.78                               | 8.60    | 10         | 100                                      | 16.67                               | 12.0                                         |
| SMT7.5A              | SMT7.5CA            | ZI                        | NI | 7.5                            | 8.33                               | 9.21    | 1          | 50                                       | 15.50                               | 12.9                                         |
| SMT8.0A              | SMT8.0CA            | ZK                        | NK | 8.0                            | 8.89                               | 9.83    | 1          | 25                                       | 14.71                               | 13.6                                         |
| SMT8.5A              | SMT8.5CA            | ZM                        | NM | 8.5                            | 9.44                               | 10.40   | 1          | 10                                       | 13.89                               | 14.4                                         |
| SMT9.0A              | SMT9.0CA            | ZO                        | NO | 9.0                            | 10.00                              | 11.10   | 1          | 5                                        | 12.99                               | 15.4                                         |
| SMT10A               | SMT10CA             | ZS                        | NS | 10.0                           | 11.10                              | 12.30   | 1          | 5                                        | 11.76                               | 17.0                                         |
| SMT11A               | SMT11CA             | ZU                        | NU | 11.0                           | 12.20                              | 13.50   | 1          | 5                                        | 10.99                               | 18.2                                         |
| SMT12A               | SMT12CA             | XA                        | LA | 12.0                           | 13.30                              | 14.70   | 1          | 5                                        | 10.05                               | 19.9                                         |
| SMT13A               | SMT13CA             | XC                        | LC | 13.0                           | 14.40                              | 15.90   | 1          | 5                                        | 9.30                                | 21.5                                         |
| SMT14A               | SMT14CA             | XE                        | LE | 14.0                           | 15.60                              | 17.20   | 1          | 5                                        | 8.62                                | 23.2                                         |
| SMT15A               | SMT15CA             | XG                        | LG | 15.0                           | 16.70                              | 18.50   | 1          | 5                                        | 8.20                                | 24.4                                         |
| SMT16A               | SMT16CA             | XI                        | LI | 16.0                           | 17.80                              | 19.70   | 1          | 5                                        | 7.69                                | 26.0                                         |
| SMT17A               | SMT17CA             | XK                        | LK | 17.0                           | 18.90                              | 20.90   | 1          | 5                                        | 7.25                                | 27.6                                         |
| SMT18A               | SMT18CA             | XM                        | LM | 18.0                           | 20.00                              | 22.10   | 1          | 5                                        | 6.85                                | 29.2                                         |
| SMT19A               | SMT19CA             | XO                        | LO | 19.0                           | 21.10                              | 23.30   | 1          | 5                                        | 6.54                                | 30.6                                         |
| SMT20A               | SMT20CA             | XS                        | LS | 20.0                           | 22.20                              | 24.50   | 1          | 5                                        | 6.17                                | 32.4                                         |
| SMT22A               | SMT22CA             | XU                        | LU | 22.0                           | 24.40                              | 26.90   | 1          | 5                                        | 5.63                                | 35.5                                         |
| SMT24A               | SMT24CA             | VA                        | JA | 24.0                           | 26.70                              | 29.50   | 1          | 5                                        | 5.14                                | 38.9                                         |
| SMT26A               | SMT26CA             | VC                        | JC | 26.0                           | 28.90                              | 31.90   | 1          | 5                                        | 4.75                                | 42.1                                         |
| SMT28A               | SMT28CA             | VE                        | JE | 28.0                           | 31.10                              | 34.40   | 1          | 5                                        | 4.41                                | 45.4                                         |
| SMT30A               | SMT30CA             | VG                        | JG | 30.0                           | 33.30                              | 36.80   | 1          | 5                                        | 4.13                                | 48.4                                         |
| SMT33A               | SMT33CA             | VI                        | JI | 33.0                           | 36.70                              | 40.60   | 1          | 5                                        | 3.75                                | 53.3                                         |
| SMT36A               | SMT36CA             | VK                        | JK | 36.0                           | 40.00                              | 44.20   | 1          | 5                                        | 3.44                                | 58.1                                         |
| SMT40A               | SMT40CA             | VM                        | JM | 40.0                           | 44.40                              | 49.10   | 1          | 5                                        | 3.10                                | 64.5                                         |
| SMT43A               | SMT43CA             | VO                        | JO | 43.0                           | 47.80                              | 52.80   | 1          | 5                                        | 2.88                                | 69.4                                         |
| SMT45A               | SMT45CA             | VS                        | JS | 45.0                           | 50.00                              | 55.30   | 1          | 5                                        | 2.75                                | 72.7                                         |
| SMT48A               | SMT48CA             | VU                        | JU | 48.0                           | 53.30                              | 58.90   | 1          | 5                                        | 2.58                                | 77.4                                         |
| SMT51A               | SMT51CA             | TA                        | HA | 51.0                           | 56.70                              | 62.70   | 1          | 5                                        | 2.43                                | 82.4                                         |
| SMT54A               | SMT54CA             | TC                        | HC | 54.0                           | 60.00                              | 66.30   | 1          | 5                                        | 2.30                                | 87.1                                         |
| SMT58A               | SMT58CA             | TE                        | HE | 58.0                           | 64.40                              | 71.20   | 1          | 5                                        | 2.14                                | 93.6                                         |
| SMT60A               | SMT60CA             | TG                        | HG | 60.0                           | 66.70                              | 73.70   | 1          | 5                                        | 2.07                                | 96.8                                         |
| SMT64A               | SMT64CA             | TI                        | HI | 64.0                           | 71.10                              | 78.60   | 1          | 5                                        | 1.94                                | 103.0                                        |
| SMT70A               | SMT70CA             | TK                        | HK | 70.0                           | 77.80                              | 86.00   | 1          | 5                                        | 1.77                                | 113.0                                        |
| SMT75A               | SMT75CA             | TM                        | HM | 75.0                           | 83.30                              | 92.10   | 1          | 5                                        | 1.65                                | 121.0                                        |
| SMT78A               | SMT78CA             | TO                        | HO | 78.0                           | 86.70                              | 95.80   | 1          | 5                                        | 1.59                                | 126.0                                        |
| SMT80A               | SMT80CA             | TS                        | HS | 80.0                           | 88.80                              | 97.60   | 1          | 5                                        | 1.55                                | 129.0                                        |
| SMT85A               | SMT85CA             | TU                        | HU | 85.0                           | 94.40                              | 104.00  | 1          | 5                                        | 1.46                                | 137.0                                        |
| SMT90A               | SMT90CA             | RA                        | FA | 90.0                           | 100.00                             | 111.00  | 1          | 5                                        | 1.37                                | 146.0                                        |
| SMT100A              | SMT100CA            | RC                        | FC | 100.0                          | 111.00                             | 123.00  | 1          | 5                                        | 1.23                                | 162.0                                        |
| SMT110A              | SMT110CA            | RE                        | FE | 110.0                          | 122.00                             | 135.00  | 1          | 5                                        | 1.13                                | 177.0                                        |
| SMT120A              | SMT120CA            | RG                        | FG | 120.0                          | 133.00                             | 147.00  | 1          | 5                                        | 1.04                                | 193.0                                        |
| SMT130A              | SMT130CA            | RI                        | FI | 130.0                          | 144.00                             | 159.00  | 1          | 5                                        | 0.96                                | 209.0                                        |
| SMT140A              | SMT140CA            | RK                        | FK | 140.0                          | 155.00                             | 171.00  | 1          | 5                                        | 0.89                                | 224.0                                        |
| SMT150A              | SMT150CA            | RM                        | FM | 150.0                          | 167.00                             | 185.00  | 1          | 5                                        | 0.82                                | 243.0                                        |
| SMT160A              | SMT160CA            | RO                        | FO | 160.0                          | 178.00                             | 197.00  | 1          | 5                                        | 0.77                                | 259.0                                        |

# 200 Watt Surface Mount TVS



| Part Number<br>(Uni) | Part Number<br>(Bi) | Device<br>Marking<br>Code |    | Reverse<br>Standoff<br>Voltage | Breakdown Voltage $V_{BR}$ @ $I_T$ |         |            | Maximum<br>Reverse<br>Leakage<br>@ $V_R$ | Maximum<br>Peak<br>Pulse<br>Current | Maximum<br>Clamping<br>Voltage<br>@ $I_{pp}$ |
|----------------------|---------------------|---------------------------|----|--------------------------------|------------------------------------|---------|------------|------------------------------------------|-------------------------------------|----------------------------------------------|
|                      |                     | Uni                       | Bi |                                | Min (V)                            | Max (V) | $I_T$ (mA) |                                          |                                     |                                              |
| SMT170A              | SMT170CA            | RS                        | FS | 170.0                          | 189.00                             | 209.00  | 1          | 5                                        | 0.73                                | 275.0                                        |
| SMT180A              | SMT180CA            | RU                        | FU | 180.0                          | 200.00                             | 220.00  | 1          | 5                                        | 0.68                                | 292.0                                        |
| SMT190A              | SMT190CA            | PA                        | DA | 190.0                          | 211.00                             | 232.00  | 1          | 5                                        | 0.65                                | 308.0                                        |
| SMT200A              | SMT200CA            | PC                        | DC | 200.0                          | 224.00                             | 247.00  | 1          | 5                                        | 0.62                                | 324.0                                        |
| SMT220A              | SMT220CA            | PE                        | DE | 220.0                          | 246.00                             | 272.00  | 1          | 5                                        | 0.56                                | 356.0                                        |