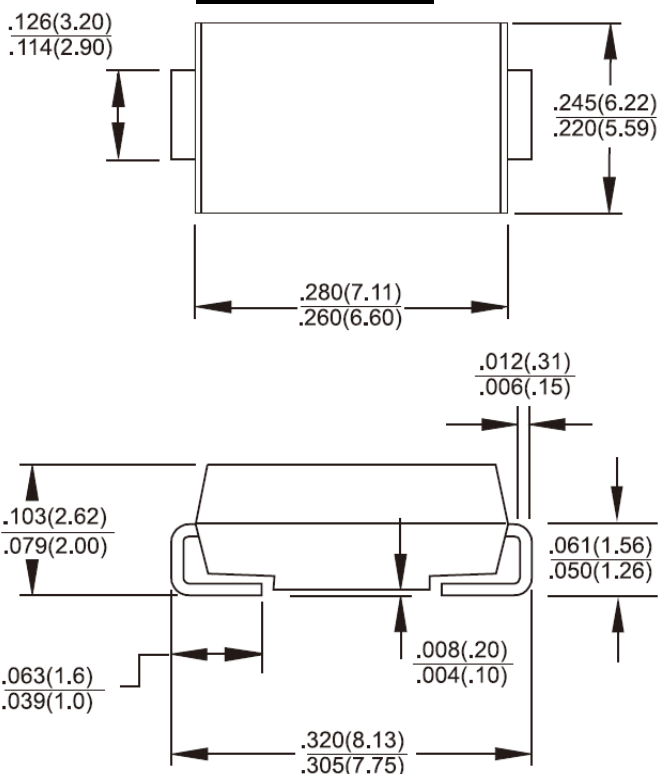




## 1.5SMC SERIES

### 1500 Watts Surface Mount Transient Voltage Suppressor

#### SMC/DO-214AC



#### Features

- ✧ For surface mounted application in order to optimize board space
- ✧ Low profile package
- ✧ Built-in strain relief
- ✧ Glass passivated junction
- ✧ Excellent clamping capability
- ✧ Fast response time: Typically less than 1.0ps from 0 volt to BV min
- ✧ Typical  $I_R$  less than 1uA above 10V
- ✧ High temperature soldering guaranteed: 260°C / 10 seconds at terminals
- ✧ Plastic material used carries Underwriters Laboratory Flammability Classification 94V-0
- ✧ 1500 watts peak pulse power capability with a 10 / 1000 us waveform
- ✧ Green compound with suffix "G" on packing code & prefix "G" on datecode

#### Mechanical Data

- ✧ Case: Molded plastic
- ✧ Terminals: Solder plated
- ✧ Polarity: Indicated by cathode band
- ✧ Standard packaging: 16mm tape (EIA STD RS-481)
- ✧ Weight: 0.21 gram

#### Dimensions in inches and (millimeters)

##### Marking Diagram



- XXX = Specific Device Code
- G = Green Compound
- Y = Year
- M = Work Month

#### Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified

| Type Number                                                                                                                     | Symbol          | Value       | Unit                      |
|---------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------|---------------------------|
| Peak Power Dissipation at $T_A=25^\circ\text{C}$ , $T_p=1\text{ms}$ (Note 1)                                                    | $P_{PK}$        | 1500        | Watts                     |
| Power Dissipation on Infinite Heatsink, $T_A=50^\circ\text{C}$                                                                  | $P_D$           | 6.5         | Watts                     |
| Peak Forward Surge Current, 8.3ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method)(Note 2) - Unidirectional Only | $I_{FSM}$       | 200         | Amps                      |
| Thermal Resistance Junction to Ambient Air                                                                                      | $R_{\theta JA}$ | 50          | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance Junction to Leads                                                                                            | $R_{\theta JL}$ | 15          | $^\circ\text{C}/\text{W}$ |
| Operating and Storage Temperature Range                                                                                         | $T_J, T_{STG}$  | -55 to +150 | $^\circ\text{C}$          |

Note 1: Non-repetitive Current Pulse, Per Fig. 3 and Derated above  $T_A=25^\circ\text{C}$  Per Fig. 2

Note 2: Mounted on 8mm x 8mm copper pads to each terminal

#### Devices for Bipolar Applications

1. For Bidirectional Use C or CA Suffix for Types 1.5SMC6.8 through Types 1.5SMC200A
2. Electrical Characteristics Apply in Both Directions

## RATINGS AND CHARACTERISTIC CURVES (1.5SMC SERIES)

FIG. 1 PEAK PULSE POWER RATING CURVE

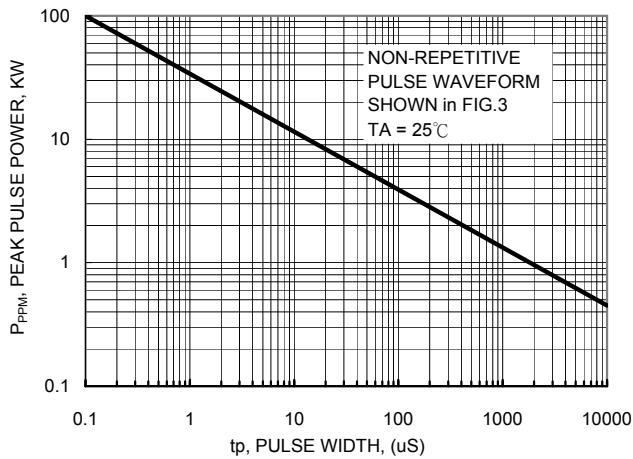


FIG.2 PULSE DERATING CURVE

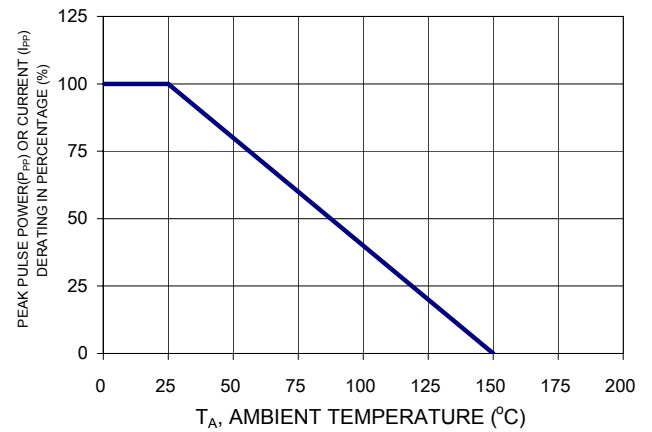


FIG. 3 CLAMPING POWER PULSE WAVEFORM

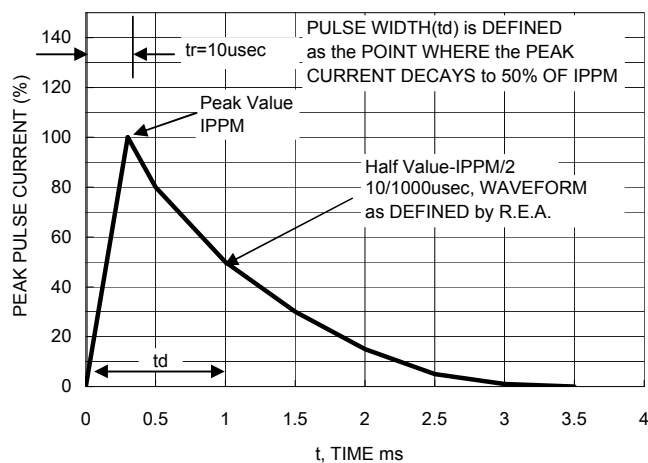


FIG. 4 MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL ONLY

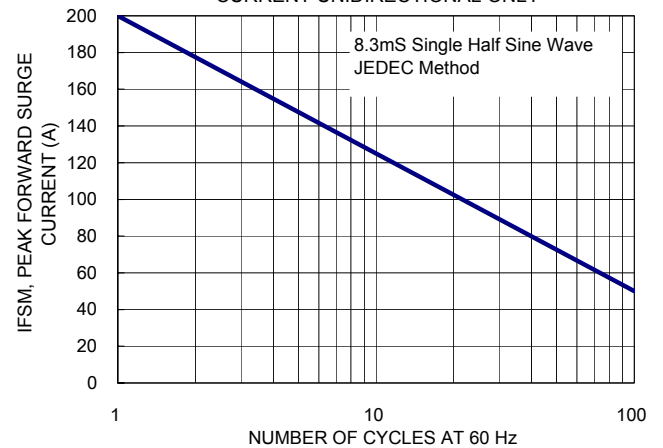
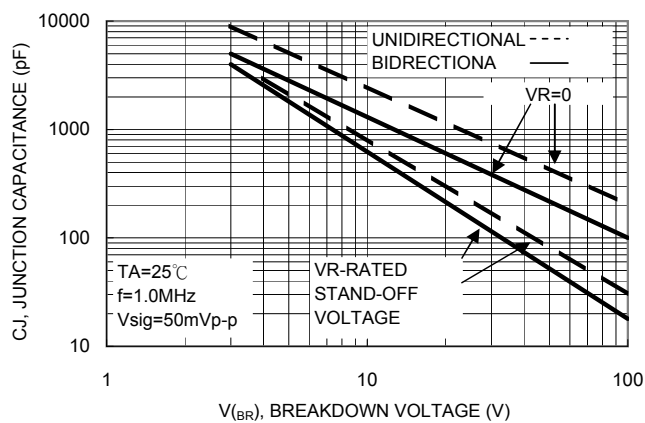


FIG. 5 TYPICAL JUNCTION CAPACITANCE



**ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)**

| GENERAL<br>PART<br>NUMBER | Device<br>Marking<br>Code | Breakdown Voltage<br>VBR (V)<br>(Note 1) |       | Test<br>Current<br>IT<br>(mA) | Stand-Off<br>Voltage<br>V <sub>WM</sub><br>(V) | Maximum<br>Reverse Leakage<br>@ V <sub>WM</sub><br>ID (uA) | Maximum<br>Peak Pulse<br>Current IPPM<br>(A) (Note 2) | Maximum<br>Clamping Voltage<br>@ IPPM<br>Vc(V) | Maximum<br>Temperature<br>Coefficient<br>of VBR(%/°C) |
|---------------------------|---------------------------|------------------------------------------|-------|-------------------------------|------------------------------------------------|------------------------------------------------------------|-------------------------------------------------------|------------------------------------------------|-------------------------------------------------------|
|                           |                           | Min                                      | Max   |                               |                                                |                                                            |                                                       |                                                |                                                       |
| 1.5SMC6.8                 | DDJ                       | 6.12                                     | 7.48  | 10                            | 5.50                                           | 1000                                                       | 145                                                   | 10.8                                           | 0.057                                                 |
| 1.5SMC6.8A                | DEJ                       | 6.46                                     | 7.14  | 10                            | 5.80                                           | 1000                                                       | 150                                                   | 10.5                                           | 0.057                                                 |
| 1.5SMC7.5                 | DFJ                       | 6.75                                     | 8.25  | 10                            | 6.05                                           | 500                                                        | 134                                                   | 11.7                                           | 0.061                                                 |
| 1.5SMC7.5A                | DGJ                       | 7.13                                     | 7.88  | 10                            | 6.40                                           | 500                                                        | 139                                                   | 11.3                                           | 0.061                                                 |
| 1.5SMC8.2                 | DHJ                       | 7.38                                     | 9.02  | 10                            | 6.63                                           | 200                                                        | 126                                                   | 12.5                                           | 0.065                                                 |
| 1.5SMC8.2A                | DKJ                       | 7.79                                     | 8.61  | 10                            | 7.02                                           | 200                                                        | 130                                                   | 12.1                                           | 0.065                                                 |
| 1.5SMC9.1                 | DLJ                       | 8.19                                     | 10.00 | 1.0                           | 7.37                                           | 50                                                         | 114                                                   | 13.8                                           | 0.068                                                 |
| 1.5SMC9.1A                | DMJ                       | 8.65                                     | 9.55  | 1.0                           | 7.78                                           | 50                                                         | 117                                                   | 13.4                                           | 0.068                                                 |
| 1.5SMC10                  | DNJ                       | 9.00                                     | 11.00 | 1.0                           | 8.10                                           | 10                                                         | 105                                                   | 15.0                                           | 0.073                                                 |
| 1.5SMC10A                 | DPJ                       | 9.50                                     | 10.5  | 1.0                           | 8.55                                           | 10                                                         | 108                                                   | 14.5                                           | 0.073                                                 |
| 1.5SMC11                  | DQJ                       | 9.90                                     | 12.1  | 1.0                           | 8.92                                           | 5.0                                                        | 97                                                    | 16.2                                           | 0.075                                                 |
| 1.5SMC11A                 | DRJ                       | 10.5                                     | 11.6  | 1.0                           | 9.40                                           | 5.0                                                        | 100                                                   | 15.6                                           | 0.075                                                 |
| 1.5SMC12                  | DSJ                       | 10.8                                     | 13.2  | 1.0                           | 9.72                                           | 5.0                                                        | 91                                                    | 17.3                                           | 0.078                                                 |
| 1.5SMC12A                 | DTJ                       | 11.4                                     | 12.6  | 1.0                           | 10.2                                           | 5.0                                                        | 94                                                    | 16.7                                           | 0.078                                                 |
| 1.5SMC13                  | DUJ                       | 11.7                                     | 14.3  | 1.0                           | 10.5                                           | 5.0                                                        | 82                                                    | 19.0                                           | 0.081                                                 |
| 1.5SMC13A                 | DVJ                       | 12.4                                     | 13.7  | 1.0                           | 11.1                                           | 5.0                                                        | 86                                                    | 18.2                                           | 0.081                                                 |
| 1.5SMC15                  | DWJ                       | 13.5                                     | 16.5  | 1.0                           | 12.1                                           | 5.0                                                        | 71                                                    | 22.0                                           | 0.084                                                 |
| 1.5SMC15A                 | DXJ                       | 14.3                                     | 15.8  | 1.0                           | 12.8                                           | 5.0                                                        | 74                                                    | 21.2                                           | 0.084                                                 |
| 1.5SMC16                  | DYJ                       | 14.4                                     | 17.6  | 1.0                           | 12.9                                           | 5.0                                                        | 67                                                    | 23.5                                           | 0.086                                                 |
| 1.5SMC16A                 | DZJ                       | 15.2                                     | 16.8  | 1.0                           | 13.6                                           | 5.0                                                        | 70                                                    | 22.5                                           | 0.086                                                 |
| 1.5SMC18                  | EDJ                       | 16.2                                     | 19.8  | 1.0                           | 14.5                                           | 5.0                                                        | 59                                                    | 26.5                                           | 0.088                                                 |
| 1.5SMC18A                 | EEJ                       | 17.1                                     | 18.9  | 1.0                           | 15.3                                           | 5.0                                                        | 60                                                    | 25.5                                           | 0.088                                                 |
| 1.5SMC20                  | EFJ                       | 18.0                                     | 22.0  | 1.0                           | 16.2                                           | 5.0                                                        | 54                                                    | 29.1                                           | 0.090                                                 |
| 1.5SMC20A                 | EGJ                       | 19.0                                     | 21.0  | 1.0                           | 17.1                                           | 5.0                                                        | 56                                                    | 27.7                                           | 0.090                                                 |
| 1.5SMC22                  | EHJ                       | 19.8                                     | 24.2  | 1.0                           | 17.8                                           | 5.0                                                        | 49                                                    | 31.9                                           | 0.092                                                 |
| 1.5SMC22A                 | EKJ                       | 20.9                                     | 23.1  | 1.0                           | 18.8                                           | 5.0                                                        | 51                                                    | 30.6                                           | 0.092                                                 |
| 1.5SMC24                  | ELJ                       | 21.6                                     | 26.4  | 1.0                           | 19.4                                           | 5.0                                                        | 45                                                    | 34.7                                           | 0.094                                                 |
| 1.5SMC24A                 | EMJ                       | 22.8                                     | 25.2  | 1.0                           | 20.5                                           | 5.0                                                        | 47                                                    | 33.2                                           | 0.094                                                 |
| 1.5SMC27                  | ENJ                       | 24.3                                     | 29.7  | 1.0                           | 21.8                                           | 5.0                                                        | 40                                                    | 39.1                                           | 0.096                                                 |
| 1.5SMC27A                 | EPJ                       | 25.7                                     | 28.4  | 1.0                           | 23.1                                           | 5.0                                                        | 42                                                    | 37.5                                           | 0.096                                                 |
| 1.5SMC30                  | EQJ                       | 27.0                                     | 33.0  | 1.0                           | 24.3                                           | 5.0                                                        | 36                                                    | 43.5                                           | 0.097                                                 |
| 1.5SMC30A                 | ERJ                       | 28.5                                     | 31.5  | 1.0                           | 25.6                                           | 5.0                                                        | 38                                                    | 41.4                                           | 0.097                                                 |
| 1.5SMC33                  | ESJ                       | 29.7                                     | 36.3  | 1.0                           | 26.8                                           | 5.0                                                        | 33                                                    | 47.7                                           | 0.098                                                 |
| 1.5SMC33A                 | ETJ                       | 31.4                                     | 34.7  | 1.0                           | 28.2                                           | 5.0                                                        | 34                                                    | 45.7                                           | 0.098                                                 |
| 1.5SMC36                  | EUJ                       | 32.4                                     | 39.6  | 1.0                           | 29.1                                           | 5.0                                                        | 30                                                    | 52.0                                           | 0.099                                                 |
| 1.5SMC36A                 | EVJ                       | 34.2                                     | 37.8  | 1.0                           | 30.8                                           | 5.0                                                        | 31                                                    | 49.9                                           | 0.099                                                 |
| 1.5SMC39                  | EWJ                       | 35.1                                     | 42.9  | 1.0                           | 31.6                                           | 5.0                                                        | 27                                                    | 56.4                                           | 0.100                                                 |
| 1.5SMC39A                 | EXJ                       | 37.1                                     | 41.0  | 1.0                           | 33.3                                           | 5.0                                                        | 29                                                    | 53.9                                           | 0.100                                                 |
| 1.5SMC43                  | EYJ                       | 38.7                                     | 47.3  | 1.0                           | 34.8                                           | 5.0                                                        | 25                                                    | 61.9                                           | 0.101                                                 |
| 1.5SMC43A                 | EZJ                       | 40.9                                     | 45.2  | 1.0                           | 36.8                                           | 5.0                                                        | 26                                                    | 59.3                                           | 0.101                                                 |
| 1.5SMC47                  | FDJ                       | 42.3                                     | 51.7  | 1.0                           | 38.1                                           | 5.0                                                        | 23                                                    | 67.8                                           | 0.101                                                 |
| 1.5SMC47A                 | FEJ                       | 44.7                                     | 49.4  | 1.0                           | 40.2                                           | 5.0                                                        | 24                                                    | 64.8                                           | 0.101                                                 |
| 1.5SMC51                  | FFJ                       | 45.9                                     | 56.1  | 1.0                           | 41.3                                           | 5.0                                                        | 21                                                    | 73.5                                           | 0.102                                                 |
| 1.5SMC51A                 | FGJ                       | 48.5                                     | 53.6  | 1.0                           | 43.6                                           | 5.0                                                        | 22                                                    | 70.1                                           | 0.102                                                 |
| 1.5SMC56                  | FHJ                       | 50.4                                     | 61.6  | 1.0                           | 45.4                                           | 5.0                                                        | 19                                                    | 80.5                                           | 0.103                                                 |
| 1.5SMC56A                 | FKJ                       | 53.2                                     | 58.8  | 1.0                           | 47.8                                           | 5.0                                                        | 20                                                    | 77.0                                           | 0.103                                                 |
| 1.5SMC62                  | FLJ                       | 55.8                                     | 68.2  | 1.0                           | 50.2                                           | 5.0                                                        | 17                                                    | 89.0                                           | 0.104                                                 |
| 1.5SMC62A                 | FMJ                       | 58.9                                     | 65.1  | 1.0                           | 53.0                                           | 5.0                                                        | 18                                                    | 85.0                                           | 0.104                                                 |
| 1.5SMC68                  | FNJ                       | 61.2                                     | 74.8  | 1.0                           | 55.1                                           | 5.0                                                        | 16                                                    | 98.0                                           | 0.104                                                 |
| 1.5SMC68A                 | FPJ                       | 64.6                                     | 71.4  | 1.0                           | 58.1                                           | 5.0                                                        | 17                                                    | 92.0                                           | 0.104                                                 |
| 1.5SMC75                  | FQJ                       | 67.5                                     | 82.5  | 1.0                           | 60.7                                           | 5.0                                                        | 14                                                    | 108                                            | 0.105                                                 |
| 1.5SMC75A                 | FRJ                       | 71.3                                     | 78.8  | 1.0                           | 64.1                                           | 5.0                                                        | 15                                                    | 103                                            | 0.105                                                 |
| 1.5SMC82                  | FSJ                       | 73.8                                     | 90.2  | 1.0                           | 66.4                                           | 5.0                                                        | 13                                                    | 118                                            | 0.105                                                 |
| 1.5SMC82A                 | FTJ                       | 77.9                                     | 86.1  | 1.0                           | 70.1                                           | 5.0                                                        | 13.9                                                  | 113                                            | 0.105                                                 |
| 1.5SMC91                  | FUJ                       | 81.9                                     | 100   | 1.0                           | 73.7                                           | 5.0                                                        | 12                                                    | 131                                            | 0.106                                                 |
| 1.5SMC91A                 | FVJ                       | 86.5                                     | 95.5  | 1.0                           | 77.8                                           | 5.0                                                        | 12.6                                                  | 125                                            | 0.106                                                 |

**ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)**

| GENERAL<br>PART<br>NUMBER | Device<br>Marking<br>Code | Breakdown Voltage<br>VBR (V)<br>(Note 1) |     | Test<br>Current<br>IT<br>(mA) | Stand-Off<br>Voltage<br>V <sub>WM</sub><br>(V) | Maximum<br>Reverse Leakage<br>@ V <sub>WM</sub><br>ID (uA) | Maximum<br>Peak Pulse<br>Current IPPM<br>(A) (Note 2) | Maximum<br>Clamping Voltage<br>@ IPPM<br>Vc(V) | Maximum<br>Temperature<br>Coefficient<br>of VBR(%/°C) |
|---------------------------|---------------------------|------------------------------------------|-----|-------------------------------|------------------------------------------------|------------------------------------------------------------|-------------------------------------------------------|------------------------------------------------|-------------------------------------------------------|
|                           |                           | Min                                      | Max |                               |                                                |                                                            |                                                       |                                                |                                                       |
| 1.5SMC100                 | FWJ                       | 90                                       | 110 | 1.0                           | 81.0                                           | 5.0                                                        | 10.9                                                  | 144                                            | 0.106                                                 |
| 1.5SMC100A                | FXJ                       | 95                                       | 105 | 1.0                           | 85.5                                           | 5.0                                                        | 11.4                                                  | 137                                            | 0.106                                                 |
| 1.5SMC110                 | FYJ                       | 99                                       | 121 | 1.0                           | 89.2                                           | 5.0                                                        | 9.9                                                   | 158                                            | 0.107                                                 |
| 1.5SMC110A                | FZJ                       | 105                                      | 116 | 1.0                           | 94.0                                           | 5.0                                                        | 10.3                                                  | 152                                            | 0.107                                                 |
| 1.5SMC120                 | GDJ                       | 108                                      | 132 | 1.0                           | 97.2                                           | 5.0                                                        | 9.1                                                   | 173                                            | 0.107                                                 |
| 1.5SMC120A                | GEJ                       | 114                                      | 126 | 1.0                           | 102.0                                          | 5.0                                                        | 9.5                                                   | 165                                            | 0.107                                                 |
| 1.5SMC130                 | GFJ                       | 117                                      | 143 | 1.0                           | 105.0                                          | 5.0                                                        | 8.4                                                   | 187                                            | 0.107                                                 |
| 1.5SMC130A                | GGJ                       | 124                                      | 137 | 1.0                           | 111.0                                          | 5.0                                                        | 8.7                                                   | 179                                            | 0.107                                                 |
| 1.5SMC150                 | GHJ                       | 135                                      | 165 | 1.0                           | 121.0                                          | 5.0                                                        | 7.3                                                   | 215                                            | 0.108                                                 |
| 1.5SMC150A                | GKJ                       | 143                                      | 158 | 1.0                           | 128.0                                          | 5.0                                                        | 7.6                                                   | 207                                            | 0.108                                                 |
| 1.5SMC160                 | GLJ                       | 144                                      | 176 | 1.0                           | 130.0                                          | 5.0                                                        | 6.8                                                   | 230                                            | 0.108                                                 |
| 1.5SMC160A                | GMJ                       | 152                                      | 168 | 1.0                           | 136.0                                          | 5.0                                                        | 7.1                                                   | 219                                            | 0.108                                                 |
| 1.5SMC170                 | GNJ                       | 153                                      | 187 | 1.0                           | 138.0                                          | 5.0                                                        | 6.4                                                   | 244                                            | 0.108                                                 |
| 1.5SMC170A                | GPJ                       | 162                                      | 179 | 1.0                           | 145.0                                          | 5.0                                                        | 6.7                                                   | 234                                            | 0.108                                                 |
| 1.5SMC180                 | GQJ                       | 162                                      | 198 | 1.0                           | 146.0                                          | 5.0                                                        | 6.1                                                   | 258                                            | 0.108                                                 |
| 1.5SMC180A                | GRJ                       | 171                                      | 189 | 1.0                           | 154.0                                          | 5.0                                                        | 6.4                                                   | 246                                            | 0.108                                                 |
| 1.5SMC200                 | GSJ                       | 180                                      | 220 | 1.0                           | 162.0                                          | 5.0                                                        | 5.4                                                   | 287                                            | 0.108                                                 |
| 1.5SMC200A                | GTJ                       | 190                                      | 210 | 1.0                           | 171.0                                          | 5.0                                                        | 5.7                                                   | 274                                            | 0.108                                                 |

**Notes:**

1. VBR measure after IT applied for 300us, IT=square wave pulse or equivalent.
2. Surge current waveform per Figure. 3 and derate per Figure. 2.
3. For bipolar types having VWM of 10 volts and under, the ID limit is doubled.
4. For bidirectional use C or CA suffix for types 1.5SMC6.8 through 1.5SMC200A
5. All terms and symbols are consistent with ANSI/IEEE C62.35.