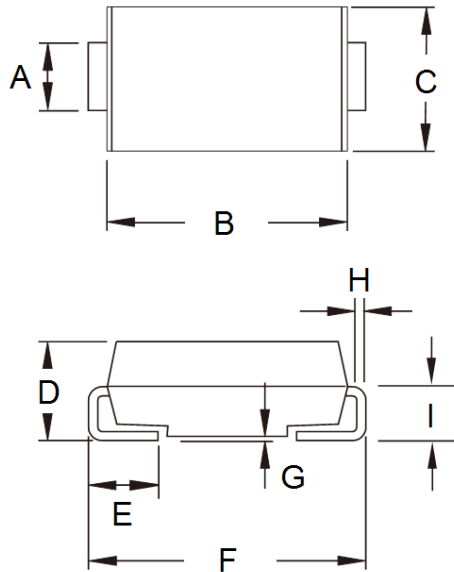



RoHS
COMPLIANCE


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



| DIM. | Unit(mm) | | Unit(inch) | |
|------|----------|------|------------|-------|
| | Min | Max | Min | Max |
| A | 2.90 | 3.20 | 0.114 | 0.126 |
| B | 6.60 | 7.11 | 0.260 | 0.280 |
| C | 5.59 | 6.22 | 0.220 | 0.245 |
| D | 2.00 | 2.62 | 0.079 | 0.103 |
| E | 1.00 | 1.60 | 0.039 | 0.063 |
| F | 7.75 | 8.13 | 0.305 | 0.320 |
| G | 0.10 | 0.20 | 0.004 | 0.008 |
| H | 0.15 | 0.31 | 0.006 | 0.012 |
| I | 1.26 | 1.56 | 0.050 | 0.061 |

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

Marking Diagram



- P/N = Specific Device Code
- G = Green Compound
- YW = Date Code

Ordering Information (example)

| Part No. | Package | Packing | Packing code | Green Compound Packing code |
|-----------|---------|---------------|--------------|-----------------------------|
| 1.5SMC6.8 | SMC | 850 / 7" REEL | R7 | R7G |

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 |
| Maximum Instantaneous Forward Voltage at 100A for Unidirectional Only (Note 3) | V_F | 3.5 / 5.0 | Volts |
| Thermal Resistance Junction to Ambient Air | $R_{\theta JA}$ | 50 | °C/W |
| Thermal Resistance Junction to Leads | $R_{\theta JL}$ | 15 | °C/W |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +150 | °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

 Note 3: $V_F=3.5\text{V}$ on 1.5SMC6.8 thru 1.5SMC91 Devices and $V_F=5.0\text{V}$ on 1.5SMC100 thru 1.5SMC200 Devices

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

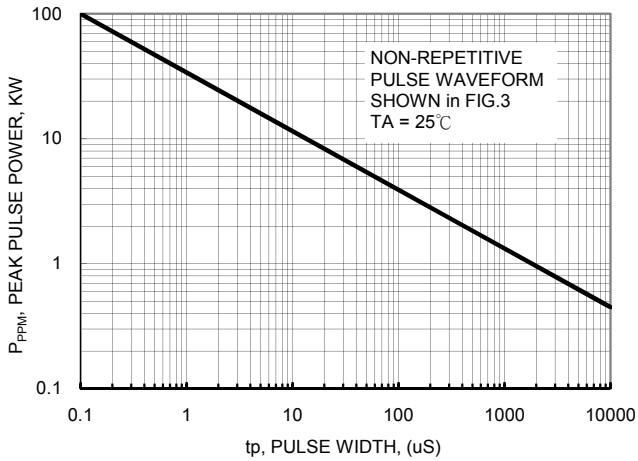


FIG.2 PULSE DERATING CURVE

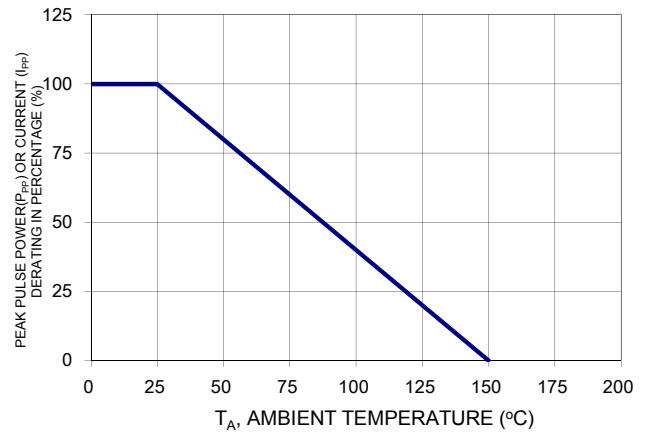


FIG. 3 CLAMPING POWER PULSE WAVEFORM

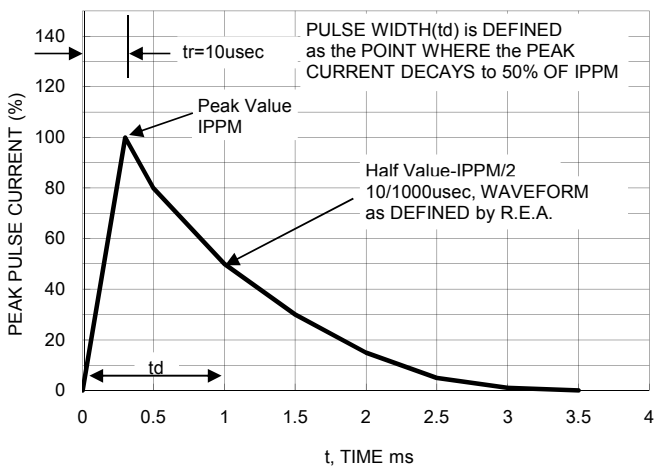


FIG. 4 MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL ONLY

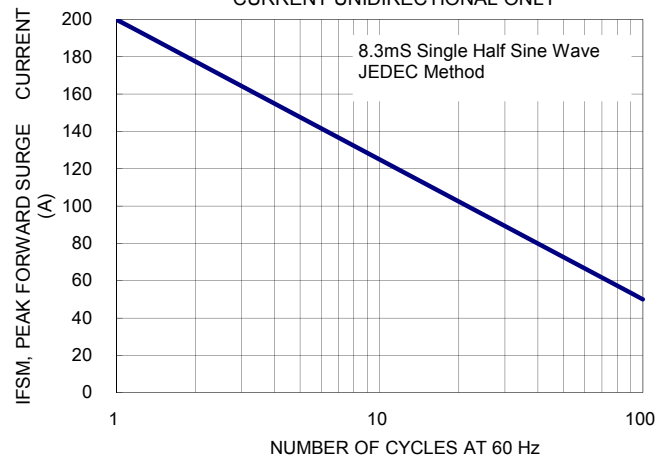
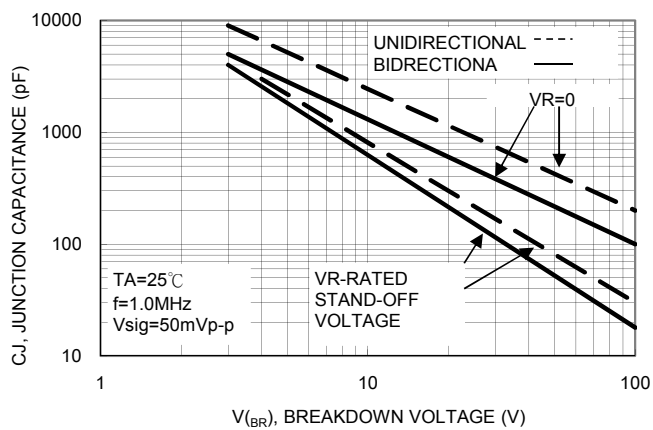


FIG. 5 TYPICAL JUNCTION CAPACITANCE



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

| GENERAL PART NUMBER | Device Marking Code | Breakdown Voltage VBR (V) (Note 1) | | Test Current IT (mA) | Stand-Off Voltage V _{WM} (V) | Maximum Reverse Leakage @ V _{WM} ID (uA) | Maximum Peak Pulse Current IPPM (A) (Note 2) | Maximum Clamping Voltage @ IPPM Vc(V) | Maximum Temperature Coefficient 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 PART NUMBER | Device Marking Code | Breakdown Voltage VBR (V) (Note 1) | | Test Current IT (mA) | Stand-Off Voltage V _{WM} (V) | Maximum Reverse Leakage @ V _{WM} ID (uA) | Maximum Peak Pulse Current IPPM (A) (Note 2) | Maximum Clamping Voltage @ IPPM Vc(V) | Maximum Temperature Coefficient 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 |

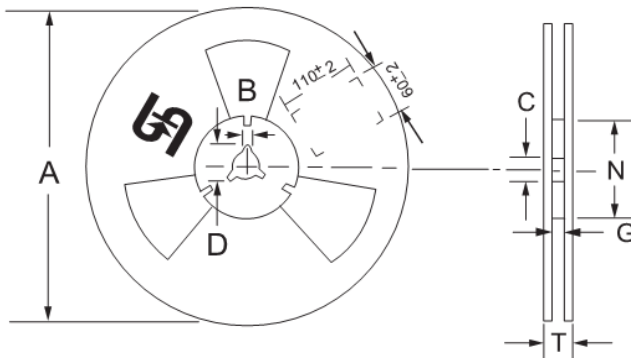
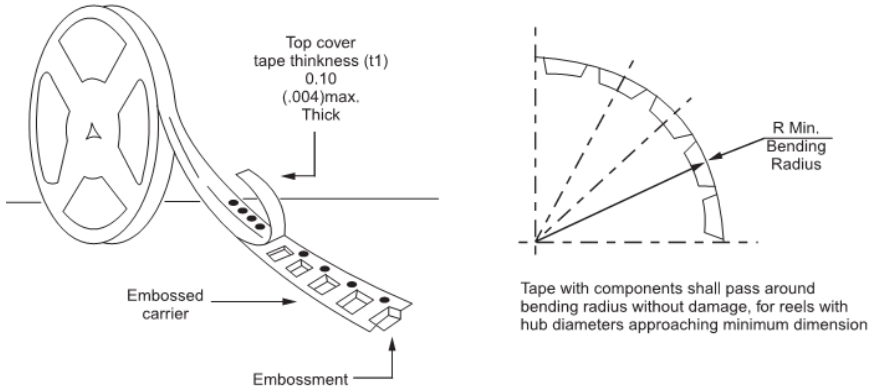
Notes:

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.

Ordering information

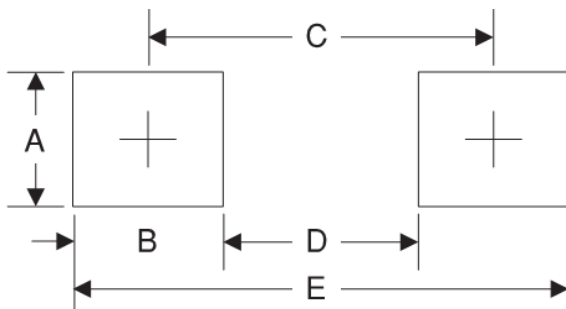
| Part No. | Package | Packing | Packing code | Green Compound Packing code |
|---------------------|---------|---------------|--------------|-----------------------------|
| 1.5SMCxxx (Note) | SMC | 850 / 7" REEL | R7 | R7G |
| | SMC | 3K / 13" REEL | R6 | R6G |

Note: "x" is Device Code from "6.8" thru "200".

Tape & Reel specification


| Reel Size | Tape Size | A | B | C | D | N | G | T |
|-----------|-----------|------|------|-----------|------|------|---------|------|
| 7" | 16mm | ±2.0 | ±0.4 | +0.5;-0.2 | min | ±1.0 | +0.8;-0 | max |
| | | 178 | 1.9 | 13 | 21 | 62 | 16.2 | 18.6 |
| Reel Size | Tape Size | A | B | C | D | N | G | T |
| 13" | 16mm | max | ±0.5 | ±0.5 | min | ±0.5 | +2.0;-0 | max |
| | | 330 | 2 | 13 | 20.2 | 75 | 16.4 | 22.4 |

Unit (mm)

Suggested PAD Layout


| Symbol | Unit(mm) |
|--------|----------|
| A | 3.3 |
| B | 2.5 |
| C | 6.8 |
| D | 4.4 |
| E | 9.3 |