**3SMC5.0CA THRU 3SMC170CA**

**SURFACE MOUNT BI-DIRECTIONAL GLASS PASSIVATED JUNCTION SILICON TRANSIENT VOLTAGE SUPPRESSOR 3000 WATTS, 5.0 THRU 170 VOLTS**

Specified by
**STAND-OFF VOLTAGE**

**SMC CASE**

- This series is UL listed, UL file number E130224

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**Semiconductor Corp.**

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR 3SMC5.0CA Series types are Surface Mount Bi-Directional Glass Passivated Junction Transient Voltage Suppressors designed to protect voltage sensitive components from high voltage transients.

**THIS DEVICE IS MANUFACTURED WITH A GLASS PASSIVATED CHIP FOR OPTIMUM RELIABILITY.**

Note: For Uni-directional devices, please refer to the 3SMC5.0A Series data sheet.

**MARKING CODE: SEE MARKING CODE ON ELECTRICAL CHARACTERISTIC TABLE**

| **MAXIMUM RATINGS:** ($T_A$=25°C unless otherwise noted) | **SYMBOL** | | **UNITS** |
|---|---|---|---|
| Peak Power Dissipation (Note 1) | $P_{DM}$ | 3000 | W |
| Peak Forward Surge Current (JEDEC Method) | $I_{FSM}$ | 200 | A |
| Operating and Storage Junction Temperature | $T_J$, Tstg | -65 to +150 | °C |

**ELECTRICAL CHARACTERISTICS:** ($T_A$=25°C unless otherwise noted)

| TYPE | REVERSE STAND-OFF VOLTAGE | BREAKDOWN VOLTAGE ($V_{BR}$ @ $I_T$) | | TEST CURRENT | MAXIMUM REVERSE LEAKAGE | MAXIMUM CLAMPING VOLTAGE | PEAK PULSE CURRENT (Note 1) | MARKING CODE |
|---|---|---|---|---|---|---|---|---|
| | $V_{RWM}$ | MIN | MAX | $I_T$ | $I_R$ @ $V_{RWM}$ | $V_C$ @ $I_{PP}$ | $I_{PP}$ | |
| | V | V | V | mA | µA | V | A | |
| 3SMC5.0CA | 5.0 | 6.40 | 7.25 | 10 | 2000 | 9.2 | 326.0 | CIDE |
| 3SMC6.0CA | 6.0 | 6.67 | 7.67 | 10 | 2000 | 10.3 | 291.3 | CIDG |
| 3SMC6.5CA | 6.5 | 7.22 | 8.30 | 10 | 1000 | 11.2 | 267.9 | CIDK |
| 3SMC7.0CA | 7.0 | 7.78 | 8.95 | 10 | 400 | 12.0 | 250.0 | CIDM |
| 3SMC7.5CA | 7.5 | 8.33 | 9.58 | 1.0 | 200 | 12.9 | 232.6 | CIDP |
| 3SMC8.0CA | 8.0 | 8.89 | 10.23 | 1.0 | 100 | 13.6 | 220.6 | CIDR |
| 3SMC8.5CA | 8.5 | 9.44 | 10.82 | 1.0 | 50 | 14.4 | 208.4 | CIDT |
| 3SMC9.0CA | 9.0 | 10.0 | 11.5 | 1.0 | 20 | 15.4 | 194.8 | CIDV |
| 3SMC10CA | 10 | 11.1 | 12.8 | 1.0 | 5.0 | 17.0 | 176.4 | CIDX |
| 3SMC11CA | 11 | 12.2 | 14.0 | 1.0 | 5.0 | 18.2 | 184.8 | CIDZ |
| 3SMC12CA | 12 | 13.3 | 15.3 | 1.0 | 5.0 | 19.9 | 150.6 | CIEE |
| 3SMC13CA | 13 | 14.4 | 16.5 | 1.0 | 5.0 | 21.5 | 139.4 | CIEG |
| 3SMC14CA | 14 | 15.6 | 17.9 | 1.0 | 5.0 | 23.2 | 129.4 | CIEK |
| 3SMC15CA | 15 | 16.7 | 19.2 | 1.0 | 5.0 | 24.4 | 123.0 | CIEM |
| 3SMC16CA | 16 | 17.8 | 20.5 | 1.0 | 5.0 | 26.0 | 115.4 | CIEP |
| 3SMC17CA | 17 | 18.9 | 21.7 | 1.0 | 5.0 | 27.6 | 106.6 | CIER |
| 3SMC18CA | 18 | 20.0 | 23.3 | 1.0 | 5.0 | 29.2 | 102.8 | CIET |
| 3SMC20CA | 20 | 22.2 | 25.5 | 1.0 | 5.0 | 32.4 | 92.6 | CIEV |
| 3SMC22CA | 22 | 24.4 | 28.0 | 1.0 | 5.0 | 35.5 | 84.4 | CIEX |
| 3SMC24CA | 24 | 26.7 | 30.7 | 1.0 | 5.0 | 38.9 | 77.2 | CIEZ |
| 3SMC26CA | 26 | 28.9 | 33.2 | 1.0 | 5.0 | 42.1 | 71.2 | CIFE |
| 3SMC28CA | 28 | 31.1 | 35.8 | 1.0 | 5.0 | 45.4 | 66.0 | CIFG |
| 3SMC30CA | 30 | 33.3 | 38.3 | 1.0 | 5.0 | 48.4 | 62.0 | CIFK |

Notes: (1) Non-repetitive 10x1,000µs pulse

R4 (3-March 2008)

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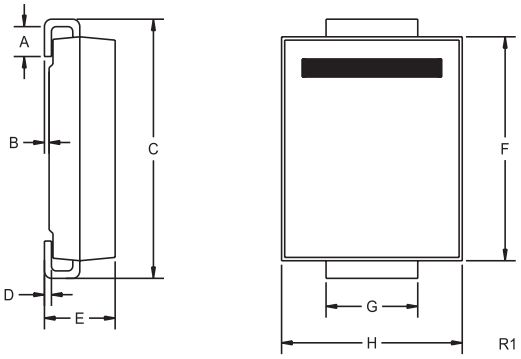
**SURFACE MOUNT BI-DIRECTIONAL GLASS PASSIVATED JUNCTION SILICON TRANSIENT VOLTAGE SUPPRESSOR 3000 WATTS, 5.0 THRU 170 VOLTS**

## ELECTRICAL CHARACTERISTICS - Continued:

| TYPE | REVERSE STAND-OFF VOLTAGE | BREAKDOWN VOLTAGE ($V_{BR}$ @ $I_T$) | | TEST CURRENT | MAXIMUM REVERSE LEAKAGE | MAXIMUM CLAMPING VOLTAGE | PEAK PULSE CURRENT (Note 1) | MARKING CODE |
|---|---|---|---|---|---|---|---|---|
| | $V_{RWM}$ | MIN | MAX | $I_T$ | $I_R$ @ $V_{RWM}$ | $V_C$ @ $I_{PP}$ | $I_{PP}$ | |
| | V | V | V | mA | μA | V | A | |
| 3SMC33CA | 33 | 36.7 | 42.2 | 1.0 | 5.0 | 53.3 | 56.2 | CIFM |
| 3SMC36CA | 36 | 40.0 | 46.0 | 1.0 | 5.0 | 58.1 | 51.6 | CIFP |
| 3SMC40CA | 40 | 44.4 | 51.1 | 1.0 | 5.0 | 64.5 | 46.4 | CIFR |
| 3SMC43CA | 43 | 47.8 | 54.9 | 1.0 | 5.0 | 69.4 | 43.2 | CIFT |
| 3SMC45CA | 45 | 50.0 | 57.5 | 1.0 | 5.0 | 72.7 | 41.2 | CIFV |
| 3SMC48CA | 48 | 53.3 | 61.3 | 1.0 | 5.0 | 77.4 | 38.8 | CIFX |
| 3SMC51CA | 51 | 56.7 | 65.2 | 1.0 | 5.0 | 82.4 | 36.4 | CIFZ |
| 3SMC54CA | 54 | 60.0 | 69.0 | 1.0 | 5.0 | 87.1 | 34.4 | CIGE |
| 3SMC58CA | 58 | 64.4 | 74.1 | 1.0 | 5.0 | 93.6 | 32.0 | CIGG |
| 3SMC60CA | 60 | 66.7 | 76.7 | 1.0 | 5.0 | 96.8 | 31.0 | CIGK |
| 3SMC64CA | 64 | 71.1 | 81.8 | 1.0 | 5.0 | 103 | 29.2 | CIGM |
| 3SMC70CA | 70 | 77.8 | 89.5 | 1.0 | 5.0 | 113 | 26.6 | CIGP |
| 3SMC75CA | 75 | 83.3 | 95.8 | 1.0 | 5.0 | 121 | 24.8 | CIGR |
| 3SMC78CA | 78 | 86.7 | 99.7 | 1.0 | 5.0 | 126 | 22.8 | CIGT |
| 3SMC85CA | 85 | 94.4 | 108.2 | 1.0 | 5.0 | 137 | 20.8 | CIGV |
| 3SMC90CA | 90 | 100.0 | 115.5 | 1.0 | 5.0 | 146 | 20.6 | CIGX |
| 3SMC100CA | 100 | 111.0 | 128.0 | 1.0 | 5.0 | 162 | 18.6 | CIGZ |
| 3SMC110CA | 110 | 122.0 | 140.5 | 1.0 | 5.0 | 177 | 16.8 | CIHE |
| 3SMC120CA | 120 | 133.0 | 153.0 | 1.0 | 5.0 | 193 | 15.6 | CIHG |
| 3SMC130CA | 130 | 144.0 | 165.5 | 1.0 | 5.0 | 209 | 14.4 | CIHK |
| 3SMC150CA | 150 | 167.0 | 192.5 | 1.0 | 5.0 | 243 | 12.4 | CIHM |
| 3SMC160CA | 160 | 178.0 | 205.0 | 1.0 | 5.0 | 259 | 11.6 | CIHP |
| 3SMC170CA | 170 | 189.0 | 217.5 | 1.0 | 5.0 | 275 | 11.0 | CIHR |

## SMC - CASE - MECHANICAL OUTLINE



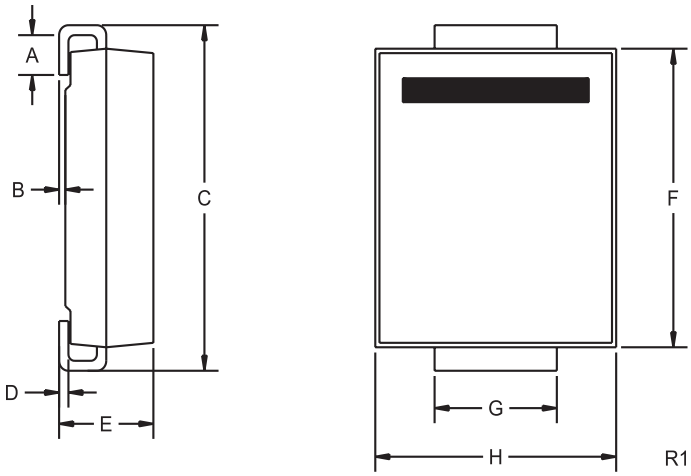

| DIMENSIONS | | | | |
|---|---|---|---|---|
| | INCHES | | MILLIMETERS | |
| SYMBOL | MIN | MAX | MIN | MAX |
| A | 0.030 | 0.060 | 0.76 | 1.52 |
| B | 0.004 | 0.008 | 0.10 | 0.20 |
| C | 0.305 | 0.320 | 7.75 | 8.13 |
| D | 0.006 | 0.012 | 0.15 | 0.31 |
| E | 0.079 | 0.103 | 2.00 | 2.62 |
| F | 0.260 | 0.280 | 6.60 | 7.11 |
| G | 0.108 | 0.124 | 2.75 | 3.15 |
| H | 0.220 | 0.245 | 5.59 | 6.22 |

SMC (REV: R1)

R4 (3-March 2008)

# Package Details - SMC

## Mechanical Drawing




| DIMENSIONS | | | | |
|---|---|---|---|---|
| | INCHES | | MILLIMETERS | |
| SYMBOL | MIN | MAX | MIN | MAX |
| A | 0.030 | 0.060 | 0.76 | 1.52 |
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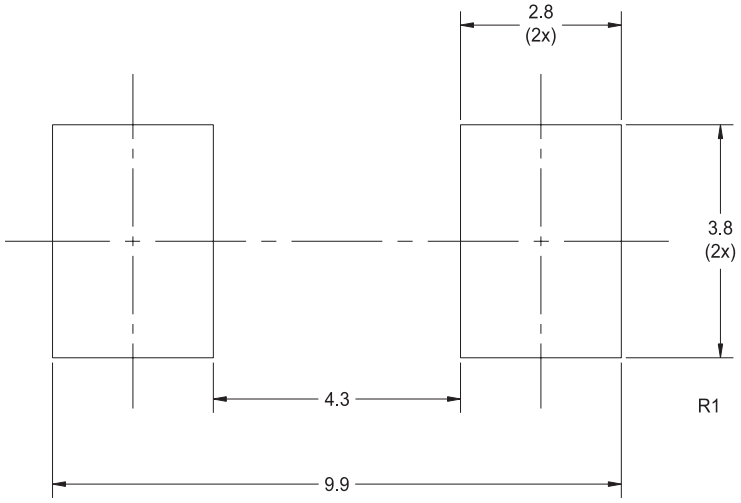
| H | 0.220 | 0.245 | 5.59 | 6.22 |

SMC (REV: R1)

**Lead Code:**
Reference individual device datasheet.

**Part Marking:** 3-6 Character Alpha/Numeric Code

## Mounting Pad Geometry (Dimensions in mm)

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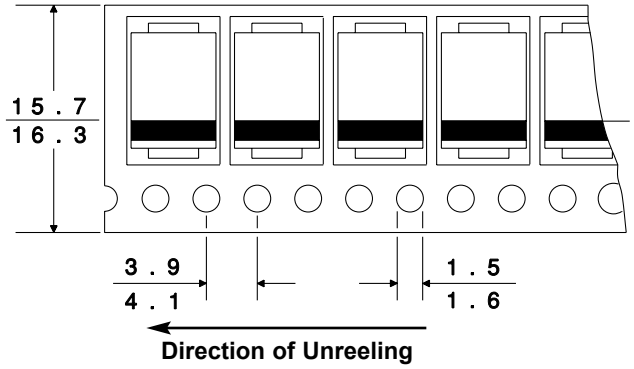
R1 (10-December 2002)

# Package Details - SMC

## Tape Dimensions and Orientation (Dimensions in mm.)

Tape Width: 16mm




* Devices are taped in accordance with Electronic Industries Association Standard EIA-481-2-A

## Packaging Base

13” Reel = 3,000 pcs. (add TR13 suffix to part number)
Bulk = 100 pcs. (add BK suffix to part number)

## Reel Labeling Information

**Each reel is labeled with the following information:**

Central Part Number, Customer Part Number, Purchase Order Number, Quantity, Lot Number, Date Code, Ship Date and Marking Code.

## Reel Packing Information

| Reel Size | Quantity Per Box | Number of Reels per Box | Box Dimensions | | Shipping Weight | |
|---|---|---|---|---|---|---|
| | | | INCH | CM | LB | KG |
| 13” | 39,000 | 13 | 14x14x8 | 36x36x20 | 22 | 10 |

## Ordering Information

- For devices taped and reeled on 13” reels, add TR13 suffix to part number.
- For devices bulk packed, add BK suffix to part number.
- All SMDs are available bulk packed, for prototype and manual placement applications.

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# Material Composition Specification

**SMC Case**

**Pb (lead)-free plating****

**Device average mass** . . . . . **232.5 mg**

**Fluctuation margin** . . . . . **+/-10%**

| Component | Material | Material | | Substance | CAS No. | Substance | | |
|---|---|---|---|---|---|---|---|---|
| | | (%wt) | (mg) | | | (%wt) | (mg) | (ppm) |
| active device | doped Si | 1.63% | 3.8 | Si | 7440-21-3 | 1.6% | 3.8 | 16,000 |
| leadframe | copper | 39.107% | 90.92 | Cu | 7440-50-8 | 39.107% | 90.92 | 391,070 |
| die attach | high temperature solder paste | 1.875% | 4.36 | Pb | 7439-92-1 | 1.735% | 4.033 | 17,350 |
| | | | | Sn | 7440-31-5 | 0.094% | 0.218 | 940 |
| | | | | Ag | 7440-22-4 | 0.047% | 0.109 | 470 |
| encapsulation* | EMC | 56.77% | 132 | silica | 7631-86-9 | 38.606% | 89.76 | 386,060 |
| | | | | epoxy resin | Proprietary | 17.032% | 39.6 | 170,320 |
| | | | | $Sb_2O_3$ | 1309-64-4 | 0.568% | 1.32 | 5,680 |
| | | | | TBBA | 79-94-7 | 0.568 % | 1.32 | 5,680 |
| | EMC GREEN | 56.77 % | 132 | silica | 7631-86-9 | 39.39% | 91.592 | 393,942 |
| | | | | epoxy resin | Proprietary | 17.38% | 40.408 | 173,798 |
| plating** | tin lead process | 0.661% | 1.419 | Sn | 7440-31-5 | 0.529% | 1.135 | 5,290 |
| | | | | Pb | 7439-92-1 | 0.132% | 0.335 | 1,320 |
| | 100% tin process | 0.661% | 1.419 | Sn | 7440-31-5 | 0.77% | 0.708 | 7,700 |

*EMC GREEN molding compound is Halogen-Free.

**Specify Lead-Free when ordering 100% tin (Pb-free) plating.