



**THE DATASHEET OF  
1SMC12A TR13**



1SMC5.0A  
THRU  
1SMC170A



**SURFACE MOUNT SILICON  
UNI-DIRECTIONAL  
GLASS PASSIVATED JUNCTION  
TRANSIENT VOLTAGE SUPPRESSORS  
1500 WATT, 5.0 THRU 170 VOLT**



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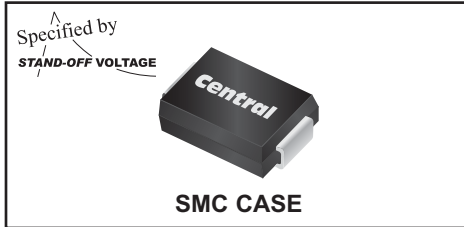
**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR 1SMC5.0A series devices are surface mount uni-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 bi-directional devices, please refer to the 1SMC5.0CA series data sheet.

**MARKING CODE: SEE ELECTRICAL CHARACTERISTICS TABLE**



**MAXIMUM RATINGS:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

Peak Power Dissipation (Note 1)  
Peak Forward Surge Current (JEDEC Method)  
Operating and Storage Junction Temperature

**SYMBOL**

$P_{PK}$  1500  
 $I_{FSM}$  200  
 $T_J, T_{stg}$  -65 to +150

**UNITS**


W  
A  
 $^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

| TYPE     | REVERSE STAND-OFF VOLTAGE | BREAKDOWN VOLTAGE |       | TEST CURRENT | MAXIMUM REVERSE LEAKAGE CURRENT $I_R$ @ $V_{RWM}$ | MAXIMUM CLAMPING VOLTAGE | PEAK PULSE CURRENT (Note 1) $I_{pp}$ | MARKING CODE |
|----------|---------------------------|-------------------|-------|--------------|---|--------------------------|--------------------------------------|--------------|
|          | $V_{RWM}$                 | $V_{BR} @ I_T$    |       | $I_T$        |   | $V_C @ I_{pp}$           |                                      |              |
|          | V                         | MIN V             | MAX V | mA           | $\mu\text{A}$                                     | V                        | A                                    |              |
| 1SMC5.0A | 5.0                       | 6.40              | 7.25  | 10           | 1000  | 9.2                      | 163                                  | CGDE         |
| 1SMC6.0A | 6.0                       | 6.67              | 7.67  | 10           | 1000  | 10.3                     | 145.6                                | CGDG         |
| 1SMC6.5A | 6.5                       | 7.22              | 8.30  | 10           | 500   | 11.2                     | 133.9                                | CGDK         |
| 1SMC7.0A | 7.0                       | 7.78              | 8.95  | 10           | 200   | 12                       | 125                                  | CGDM         |
| 1SMC7.5A | 7.5                       | 8.33              | 9.58  | 1.0          | 100   | 12.9                     | 116.3                                | CGDP         |
| 1SMC8.0A | 8.0                       | 8.89              | 10.23 | 1.0          | 50  | 13.6                     | 110.3                                | CGDR         |
| 1SMC8.5A | 8.5                       | 9.44              | 10.82 | 1.0          | 20  | 14.4                     | 104.2                                | CGDT         |
| 1SMC9.0A | 9.0                       | 10                | 11.5  | 1.0          | 10  | 15.4                     | 97.4                                 | CGDV         |
| 1SMC10A  | 10                        | 11.1              | 12.8  | 1.0          | 5.0   | 17                       | 88.2                                 | CGDX         |
| 1SMC11A  | 11                        | 12.2              | 14    | 1.0          | 5.0   | 18.2                     | 82.4                                 | CGDZ         |
| 1SMC12A  | 12                        | 13.3              | 15.3  | 1.0          | 5.0   | 19.9                     | 75.3                                 | CGEE         |
| 1SMC13A  | 13                        | 14.4              | 16.5  | 1.0          | 5.0   | 21.5                     | 69.7                                 | CGEG         |
| 1SMC14A  | 14                        | 15.6              | 17.9  | 1.0          | 5.0   | 23.2                     | 64.7                                 | CGEK         |
| 1SMC15A  | 15                        | 16.7              | 19.2  | 1.0          | 5.0   | 24.4                     | 61.5                                 | CGEM         |
| 1SMC16A  | 16                        | 17.8              | 20.5  | 1.0          | 5.0   | 26                       | 57.7                                 | CGEP         |
| 1SMC17A  | 17                        | 18.9              | 21.7  | 1.0          | 5.0   | 27.6                     | 53.3                                 | CGER         |
| 1SMC18A  | 18                        | 20                | 23.3  | 1.0          | 5.0   | 29.2                     | 51.4                                 | CGET         |
| 1SMC20A  | 20                        | 22.2              | 25.5  | 1.0          | 5.0   | 32.4                     | 46.3                                 | CGEV         |
| 1SMC22A  | 22                        | 24.4              | 28    | 1.0          | 5.0   | 35.5                     | 42.2                                 | CGEX         |
| 1SMC24A  | 24                        | 26.7              | 30.7  | 1.0          | 5.0   | 38.9                     | 38.6                                 | CGEZ         |
| 1SMC26A  | 26                        | 28.9              | 33.2  | 1.0          | 5.0   | 42.1                     | 35.6                                 | CGFE         |
| 1SMC28A  | 28                        | 31.1              | 35.8  | 1.0          | 5.0   | 45.4                     | 33                                   | CGFG         |
| 1SMC30A  | 30                        | 33.3              | 38.3  | 1.0          | 5.0   | 48.4                     | 31                                   | CGFK         |

Notes: (1) Non-repetitive 10x1,000 $\mu\text{s}$  pulse.

R7 (22-August 2016)

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**ELECTRICAL CHARACTERISTICS - Continued:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

| TYPE     | REVERSE STAND-OFF VOLTAGE | BREAKDOWN VOLTAGE |       | TEST CURRENT | MAXIMUM REVERSE LEAKAGE CURRENT | MAXIMUM CLAMPING VOLTAGE | PEAK PULSE CURRENT (Note 1) | MARKING CODE |
|----------|---------------------------|-------------------|-------|--------------|---------------------------------|--------------------------|-----------------------------|--------------|
|          | $V_{RWM}$                 | $V_{BR} @ I_T$    |       | $I_T$        | $I_R @ V_{RWM}$                 | $V_C @ I_{PP}$           | $I_{PP}$                    |              |
|          | V                         | MIN V             | MAX V | mA           | $\mu\text{A}$                   | V                        | A                           |              |
| 1SMC33A  | 33                        | 36.7              | 42.2  | 1.0          | 5.0                             | 53.3                     | 28.1                        | CGFM         |
| 1SMC36A  | 36                        | 40                | 46    | 1.0          | 5.0                             | 58.1                     | 25.8                        | CGFP         |
| 1SMC40A  | 40                        | 44.4              | 51.1  | 1.0          | 5.0                             | 64.5                     | 23.2                        | CGFR         |
| 1SMC43A  | 43                        | 47.8              | 54.9  | 1.0          | 5.0                             | 69.4                     | 21.6                        | CGFT         |
| 1SMC45A  | 45                        | 50                | 57.5  | 1.0          | 5.0                             | 72.7                     | 20.6                        | CGFV         |
| 1SMC48A  | 48                        | 53.3              | 61.3  | 1.0          | 5.0                             | 77.4                     | 19.4                        | CGFX         |
| 1SMC51A  | 51                        | 56.7              | 65.2  | 1.0          | 5.0                             | 82.4                     | 18.2                        | CGFZ         |
| 1SMC54A  | 54                        | 60                | 69    | 1.0          | 5.0                             | 87.1                     | 17.2                        | CGGE         |
| 1SMC58A  | 58                        | 64.4              | 74.1  | 1.0          | 5.0                             | 93.6                     | 16                          | CGGG         |
| 1SMC60A  | 60                        | 66.7              | 76.7  | 1.0          | 5.0                             | 96.8                     | 15.5                        | CGGK         |
| 1SMC64A  | 64                        | 71.1              | 81.8  | 1.0          | 5.0                             | 103                      | 14.6                        | CGGM         |
| 1SMC70A  | 70                        | 77.8              | 89.5  | 1.0          | 5.0                             | 113                      | 13.3                        | CGGP         |
| 1SMC75A  | 75                        | 83.3              | 95.8  | 1.0          | 5.0                             | 121                      | 12.4                        | CGGR         |
| 1SMC78A  | 78                        | 86.7              | 99.7  | 1.0          | 5.0                             | 126                      | 11.4                        | CGGT         |
| 1SMC85A  | 85                        | 94.4              | 108.2 | 1.0          | 5.0                             | 137                      | 10.4                        | CGGV         |
| 1SMC90A  | 90                        | 100               | 115.5 | 1.0          | 5.0                             | 146                      | 10.3                        | CGGX         |
| 1SMC100A | 100                       | 111               | 128   | 1.0          | 5.0                             | 162                      | 9.3                         | CGGZ         |
| 1SMC110A | 110                       | 122               | 140.5 | 1.0          | 5.0                             | 177                      | 8.4                         | CGHE         |
| 1SMC120A | 120                       | 133               | 153   | 1.0          | 5.0                             | 193                      | 7.9                         | CGHG         |
| 1SMC130A | 130                       | 144               | 165.5 | 1.0          | 5.0                             | 209                      | 7.2                         | CGHK         |
| 1SMC150A | 150                       | 167               | 192.5 | 1.0          | 5.0                             | 243                      | 6.2                         | CGHM         |
| 1SMC160A | 160                       | 178               | 205   | 1.0          | 5.0                             | 259                      | 5.8                         | CGHP         |
| 1SMC170A | 170                       | 189               | 217.5 | 1.0          | 5.0                             | 275                      | 5.5                         | CGHR         |

**SMC CASE - MECHANICAL OUTLINE**



| SYMBOL | DIMENSIONS |       |             |      |
|--------|------------|-------|-------------|------|
|        | INCHES     |       | MILLIMETERS |      |
|        | MIN        | MAX   | MIN         | MAX  |
| A      | 0.030      | 0.060 | 0.76        | 1.52 |
| B      | 0.002      | 0.008 | 0.05        | 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      | 0.128 | 2.75        | 3.25 |
| H      | 0.220      | 0.245 | 5.59        | 6.22 |

SMC (REV: R2)

R7 (22-August 2016)

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### TYPICAL ELECTRICAL CHARACTERISTICS



R7 (22-August 2016)

## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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### PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

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### DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2<sup>nd</sup> day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

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### REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix " TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix " PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

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### CONTACT US

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- ✓ Shortage Management
- ✓ Alternative Solution
- ✓ Excess Inventory Management