

## 1500 WATT TVS COMPONENT



### DESCRIPTION

The SMCJ-S Series are multi-line transient voltage suppressor arrays that provides board level protection for standard TTL and MOS bus line applications against the damaging effects of ESD, tertiary lightning and switching transients.

The SMCJ-S Series has a peak pulse power rating of 1500 Watts for an 10/1000μs waveshape. This device series meets the IEC 61000-4-2, IEC 61000-4-4 and IEC 61000-4-5 requirements.

### FEATURES

- IEC Compatibility 61000-4-2 (ESD):  $\pm 30\text{kV}$  Air,  $\pm 30\text{kV}$  Contact
- IEC Compatibility 61000-4-4 (EFT)
- IEC Compatibility 61000-4-5 (Surge)
- Glass Passivated Chip
- 1500 Watts Peak Pulse Power per Line ( $t_p = 10/1000\mu\text{s}$ )
- Low Leakage Current:  $< 1\mu\text{A}$  (Min.  $V_{BR} > 12\text{V}$ )
- Unidirectional & Bidirectional Configurations
- Available in Multiple Voltages
- Excellent Clamping Capability
- Very Fast Response Time
- Low Incremental Surge Resistance
- Low Profile Package
- RoHS & Halogen-free Compliant

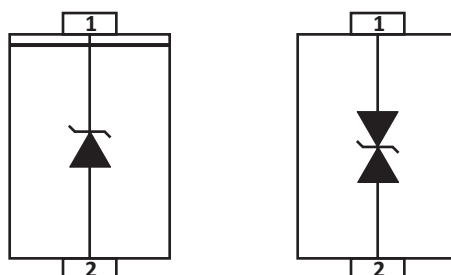
### APPLICATIONS

- Communications Equipment
- Industrial Control Equipment
- Power Supply Protection
- Lightning Protection

### MECHANICAL CHARACTERISTICS

- Molded JEDEC DO-214AB Package
- Approximate Weight: 0.21 grams
- Lead-Free Matte-Tin Plating
- Solder Reflow Temperature:  $260^\circ\text{C}$  Max,  $\leq 10$  seconds
- 16mm Tape and Reel Per EIA Standard 481
- Terminal: Solderable per MIL-STD-750, Method 2026
- Flammability Rating UL 94V-0

### PIN CONFIGURATIONS



## TYPICAL DEVICE CHARACTERISTICS

## MAXIMUM RATINGS @ 25°C Unless Otherwise Specified

| PARAMETER                                                                             | SYMBOL          | VALUE      | UNITS |
|---------------------------------------------------------------------------------------|-----------------|------------|-------|
| Operating Temperature                                                                 | $T_J$           | -55 to 150 | °C    |
| Storage Temperature                                                                   | $T_{STG}$       | -55 to 150 | °C    |
| Peak Pulse Power ( $t_p = 10/1000\mu s$ ) - See Figure 1 and Note 1                   | $P_{PP}$        | 1500/2000* | Watts |
| Peak Power Dissipation on Infinite Heatsink at $T_L = 50^\circ C$                     | $P_D$           | 6.5        | Watts |
| Peak Forward Surge Current, 8.3ms single half sinewave - Unidirectional Only (Note 2) | $I_{FSM}$       | 200        | Amps  |
| Maximum Instantaneous Forward Voltage at 100A - Unidirectional Only                   | $V_F$           | 3.5/5.0    | V     |
| Typical Thermal Resistance, Junction to Lead                                          | $R_{\theta JL}$ | 15         | °C/W  |
| Typical Thermal Resistance, Junction to Ambient                                       | $R_{\theta JA}$ | 75         | °C/W  |

## NOTE

1. Non-repetitive current pulse per Figure 2 and derated above  $T_J = 25^\circ C$  per Figure 3. \*Denotes stacked die component.
2. Measured on 8.3ms single half sinewave or equivalent square wave, duty cycle = 4 pulses per minute maximum.

## ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

| PART<br>NUMBER<br>(Notes 1, 3) | DEVICE<br>MARKING |     | REVERSE<br>STAND-OFF<br>VOLTAGE<br><br>$V_{RWM}$<br>VOLTS | BREAKDOWN<br>VOLTAGE<br><br>$V_{(BR)} @ I_T$<br>VOLTS |       | TEST<br>CURRENT<br><br>$@ I_T$<br>mA | MAXIMUM<br>CLAMPING<br>VOLTAGE<br>(Fig. 2)<br><br>$@ I_P$<br>$V_C$<br>VOLTS | MAXIMUM<br>REVERSE<br>SURGE<br>CURRENT<br><br>$@ I_{PP}$<br>AMPS | MAXIMUM<br>REVERSE<br>LEAKAGE<br>CURRENT<br>(Note 2)<br><br>$@ V_{RWM}$<br>$I_R$<br>$\mu A$ |
|--------------------------------|-------------------|-----|-----------------------------------------------------------|-------------------------------------------------------|-------|--------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
|                                | UNI               | BI  |                                                           | MIN                                                   | MAX   |                                      |                                                                             |                                                                  |                                                                                             |
| SMCJ5.0A-S                     | GDE               | BDE | 5.0                                                       | 6.40                                                  | 7.00  | 10                                   | 9.2                                                                         | 163.0                                                            | 600                                                                                         |
| SMCJ6.0A-S                     | GDG               | BDG | 6.0                                                       | 6.67                                                  | 7.37  | 10                                   | 10.3                                                                        | 145.7                                                            | 500                                                                                         |
| SMCJ6.5A-S                     | GDK               | BDK | 6.5                                                       | 7.22                                                  | 7.98  | 10                                   | 11.2                                                                        | 134.0                                                            | 300                                                                                         |
| SMCJ7.0A-S                     | GDM               | BDM | 7.0                                                       | 7.78                                                  | 8.60  | 10                                   | 12.0                                                                        | 125.0                                                            | 200                                                                                         |
| SMCJ7.5A-S                     | GDP               | BDP | 7.5                                                       | 8.33                                                  | 9.21  | 1                                    | 12.9                                                                        | 116.3                                                            | 100                                                                                         |
| SMCJ8.0A-S                     | GDR               | BDR | 8.0                                                       | 8.89                                                  | 9.83  | 1                                    | 13.6                                                                        | 110.3                                                            | 50                                                                                          |
| SMCJ8.5A-S                     | GDT               | BDT | 8.5                                                       | 9.44                                                  | 10.40 | 1                                    | 14.4                                                                        | 104.2                                                            | 20                                                                                          |
| SMCJ9.0A-S                     | GDV               | BDV | 9.0                                                       | 10.00                                                 | 11.10 | 1                                    | 15.4                                                                        | 97.4                                                             | 10                                                                                          |
| SMCJ10A-S                      | GDX               | BDX | 10.0                                                      | 11.10                                                 | 12.30 | 1                                    | 17.0                                                                        | 88.3                                                             | 5                                                                                           |
| SMCJ11A-S                      | GDZ               | BDZ | 11.0                                                      | 12.20                                                 | 13.50 | 1                                    | 18.2                                                                        | 82.5                                                             | 1                                                                                           |
| SMCJ12A-S                      | GEE               | BEE | 12.0                                                      | 13.30                                                 | 14.70 | 1                                    | 19.9                                                                        | 75.4                                                             | 1                                                                                           |
| SMCJ13A-S                      | GEG               | BEG | 13.0                                                      | 14.40                                                 | 15.90 | 1                                    | 21.5                                                                        | 69.8                                                             | 1                                                                                           |
| SMCJ14A-S                      | GEK               | BEK | 14.0                                                      | 15.60                                                 | 17.20 | 1                                    | 23.2                                                                        | 64.7                                                             | 1                                                                                           |
| SMCJ15A-S                      | GEM               | BEM | 15.0                                                      | 16.70                                                 | 18.50 | 1                                    | 24.4                                                                        | 61.5                                                             | 1                                                                                           |
| SMCJ16A-S                      | GEP               | BEP | 16.0                                                      | 17.80                                                 | 19.70 | 1                                    | 26.0                                                                        | 57.7                                                             | 1                                                                                           |
| SMCJ17A-S                      | GER               | BER | 17.0                                                      | 18.90                                                 | 20.90 | 1                                    | 27.6                                                                        | 54.4                                                             | 1                                                                                           |
| SMCJ18A-S                      | GET               | BET | 18.0                                                      | 20.00                                                 | 22.10 | 1                                    | 29.2                                                                        | 51.4                                                             | 1                                                                                           |
| SMCJ20A-S                      | GEV               | BEV | 20.0                                                      | 22.20                                                 | 24.50 | 1                                    | 32.4                                                                        | 46.3                                                             | 1                                                                                           |
| SMCJ22A-S                      | GEX               | BEX | 22.0                                                      | 24.40                                                 | 26.90 | 1                                    | 35.5                                                                        | 42.3                                                             | 1                                                                                           |
| SMCJ24A-S                      | GEZ               | BEZ | 24.0                                                      | 26.70                                                 | 29.50 | 1                                    | 38.9                                                                        | 38.6                                                             | 1                                                                                           |

## TYPICAL DEVICE CHARACTERISTICS

## ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

| PART<br>NUMBER<br>(Notes 1, 3) | DEVICE<br>MARKING |     | REVERSE<br>STAND-OFF<br>VOLTAGE<br><br>$V_{RWM}$<br>VOLTS | BREAKDOWN<br>VOLTAGE<br><br>$V_{(BR)}$ @ $I_T$<br>VOLTS |        | TEST<br>CURRENT<br><br>@ $I_T$<br>mA | MAXIMUM<br>CLAMPING<br>VOLTAGE<br>(Fig. 2)<br><br>@ $I_P$<br>$V_C$<br>VOLTS | MAXIMUM<br>REVERSE<br>SURGE<br>CURRENT<br><br>@ $I_{PP}$<br>AMPS | MAXIMUM<br>REVERSE<br>LEAKAGE<br>CURRENT<br>(Note 2)<br>@ $V_{RWM}$<br>$I_R$<br>$\mu A$ |
|--------------------------------|-------------------|-----|-----------------------------------------------------------|---------------------------------------------------------|--------|--------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|                                | UNI               | BI  |                                                           | MIN                                                     | MAX    |                                      |                                                                             |                                                                  |                                                                                         |
| SMCJ26A-S                      | GFE               | BFE | 26.0                                                      | 28.90                                                   | 31.90  | 1                                    | 42.1                                                                        | 35.7                                                             | 1                                                                                       |
| SMCJ28A-S                      | GFG               | BFG | 28.0                                                      | 31.10                                                   | 34.40  | 1                                    | 45.4                                                                        | 33.1                                                             | 1                                                                                       |
| SMCJ30A-S                      | GFK               | BFK | 30.0                                                      | 33.30                                                   | 36.80  | 1                                    | 48.4                                                                        | 31.0                                                             | 1                                                                                       |
| SMCJ33A-S                      | GFM               | BFM | 33.0                                                      | 36.70                                                   | 40.60  | 1                                    | 53.3                                                                        | 28.2                                                             | 1                                                                                       |
| SMCJ36A-S                      | GFP               | BFP | 36.0                                                      | 40.00                                                   | 44.20  | 1                                    | 58.1                                                                        | 25.9                                                             | 1                                                                                       |
| SMCJ40A-S                      | GFR               | BFR | 40.0                                                      | 44.40                                                   | 49.10  | 1                                    | 64.5                                                                        | 23.3                                                             | 1                                                                                       |
| SMCJ43A-S                      | GFT               | BFT | 43.0                                                      | 47.80                                                   | 52.80  | 1                                    | 69.4                                                                        | 21.7                                                             | 1                                                                                       |
| SMCJ45A-S                      | GFV               | BFV | 45.0                                                      | 50.0                                                    | 55.30  | 1                                    | 72.7                                                                        | 20.6                                                             | 1                                                                                       |
| SMCJ48A-S                      | GFX               | BFX | 48.0                                                      | 53.30                                                   | 58.90  | 1                                    | 77.4                                                                        | 19.4                                                             | 1                                                                                       |
| SMCJ51A-S                      | GFZ               | BFZ | 51.0                                                      | 56.70                                                   | 62.70  | 1                                    | 82.4                                                                        | 18.2                                                             | 1                                                                                       |
| SMCJ54A-S                      | GGE               | BGE | 54.0                                                      | 60.00                                                   | 66.30  | 1                                    | 87.1                                                                        | 17.3                                                             | 1                                                                                       |
| SMCJ58A-S                      | GGG               | BGG | 58.0                                                      | 64.40                                                   | 71.20  | 1                                    | 93.6                                                                        | 16.1                                                             | 1                                                                                       |
| SMCJ60A-S                      | GGK               | BGK | 60.0                                                      | 66.70                                                   | 73.70  | 1                                    | 96.8                                                                        | 15.5                                                             | 1                                                                                       |
| SMCJ64A-S                      | GGM               | BGM | 64.0                                                      | 71.10                                                   | 78.60  | 1                                    | 103.0                                                                       | 14.6                                                             | 1                                                                                       |
| SMCJ70A-S                      | GGP               | BGP | 70.0                                                      | 77.80                                                   | 86.00  | 1                                    | 113.0                                                                       | 13.3                                                             | 1                                                                                       |
| SMCJ75A-S                      | GGR               | BGR | 75.0                                                      | 83.30                                                   | 92.10  | 1                                    | 121.0                                                                       | 12.4                                                             | 1                                                                                       |
| SMCJ78A-S                      | GGT               | BGT | 78.0                                                      | 86.70                                                   | 95.80  | 1                                    | 126.0                                                                       | 11.9                                                             | 1                                                                                       |
| SMCJ85A-S                      | GGV               | BGV | 85.0                                                      | 94.40                                                   | 104.00 | 1                                    | 137.0                                                                       | 11.0                                                             | 1                                                                                       |
| SMCJ90A-S                      | GGX               | BGX | 90.0                                                      | 100.00                                                  | 111.00 | 1                                    | 146.0                                                                       | 10.3                                                             | 1                                                                                       |
| SMCJ100A-S                     | GGZ               | BGZ | 100.0                                                     | 111.00                                                  | 123.00 | 1                                    | 162.0                                                                       | 9.3                                                              | 1                                                                                       |
| SMCJ110A-S                     | GHE               | BHE | 110.0                                                     | 122.00                                                  | 135.00 | 1                                    | 177.0                                                                       | 8.5                                                              | 1                                                                                       |
| SMCJ120A-S                     | GHG               | BHG | 120.0                                                     | 133.00                                                  | 147.00 | 1                                    | 193.0                                                                       | 7.8                                                              | 1                                                                                       |
| SMCJ130A-S                     | GHK               | BHK | 130.0                                                     | 144.00                                                  | 159.00 | 1                                    | 209.0                                                                       | 7.2                                                              | 1                                                                                       |
| SMCJ150A-S                     | GHM               | BHM | 150.0                                                     | 167.00                                                  | 185.00 | 1                                    | 243.0                                                                       | 6.2                                                              | 1                                                                                       |
| SMCJ160A-S                     | GHP               | BHP | 160.0                                                     | 178.00                                                  | 197.00 | 1                                    | 259.0                                                                       | 5.8                                                              | 1                                                                                       |
| SMCJ170A-S                     | GHR               | BHR | 170.0                                                     | 189.00                                                  | 209.00 | 1                                    | 275.0                                                                       | 5.5                                                              | 1                                                                                       |
| SMCJ180A-S                     | GHT               | BHT | 180.0                                                     | 201.00                                                  | 220.00 | 1                                    | 292.0                                                                       | 5.1                                                              | 1                                                                                       |
| SMCJ200A-S                     | GHV               | BHV | 200.0                                                     | 224.00                                                  | 247.00 | 1                                    | 324.0                                                                       | 4.6                                                              | 1                                                                                       |
| SMCJ220A-S                     | GHX               | BHX | 220.0                                                     | 246.00                                                  | 272.00 | 1                                    | 356.0                                                                       | 4.2                                                              | 1                                                                                       |
| SMCJ250A-S                     | GHZ               | BHZ | 250.0                                                     | 279.00                                                  | 309.00 | 1                                    | 405.0                                                                       | 3.7                                                              | 1                                                                                       |

## TYPICAL DEVICE CHARACTERISTICS

## ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

| PART<br>NUMBER<br>(Notes 1, 3) | DEVICE<br>MARKING |     | REVERSE<br>STAND-OFF<br>VOLTAGE<br><br>$V_{RWM}$<br>VOLTS | BREAKDOWN<br>VOLTAGE<br><br>$V_{(BR)}$ @ $I_T$<br>VOLTS |        | TEST<br>CURRENT<br><br>@ $I_T$<br>mA | MAXIMUM<br>CLAMPING<br>VOLTAGE<br>(Fig. 2)<br><br>@ $I_P$<br>$V_C$<br>VOLTS | MAXIMUM<br>REVERSE<br>SURGE<br>CURRENT<br><br>@ $I_{PP}$<br>AMPS | MAXIMUM<br>REVERSE<br>LEAKAGE<br>CURRENT<br>(Note 2)<br>@ $V_{RWM}$<br>$I_R$<br>$\mu A$ |
|--------------------------------|-------------------|-----|-----------------------------------------------------------|---------------------------------------------------------|--------|--------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|                                | UNI               | BI  |                                                           | MIN                                                     | MAX    |                                      |                                                                             |                                                                  |                                                                                         |
| SMCJ300A-S*                    | GJE               | BJE | 300.0                                                     | 335.00                                                  | 371.00 | 1                                    | 486.0                                                                       | 3.1                                                              | 1                                                                                       |
| SMCJ350A-S*                    | GJG               | BJG | 350.0                                                     | 391.00                                                  | 432.00 | 1                                    | 567.0                                                                       | 2.6                                                              | 1                                                                                       |
| SMCJ400A-S*                    | GJK               | BJK | 400.0                                                     | 447.00                                                  | 494.00 | 1                                    | 648.0                                                                       | 2.3                                                              | 1                                                                                       |
| SMCJ440A-S*                    | GJM               | BJM | 440.0                                                     | 492.00                                                  | 543.00 | 1                                    | 713.0                                                                       | 2.1                                                              | 1                                                                                       |

## NOTE

1. Add suffix 'CA-S' after part number to specify a bidirectional device. For example: SMCJ78CA-S.
2.  $V_R$  less than or equal to 10V, the  $I_R$  should be doubled - bidirectional only.
3. \* denotes stacked die component.

## TYPICAL DEVICE CHARACTERISTICS

FIGURE 1  
PEAK PULSE POWER VS PULSE TIME

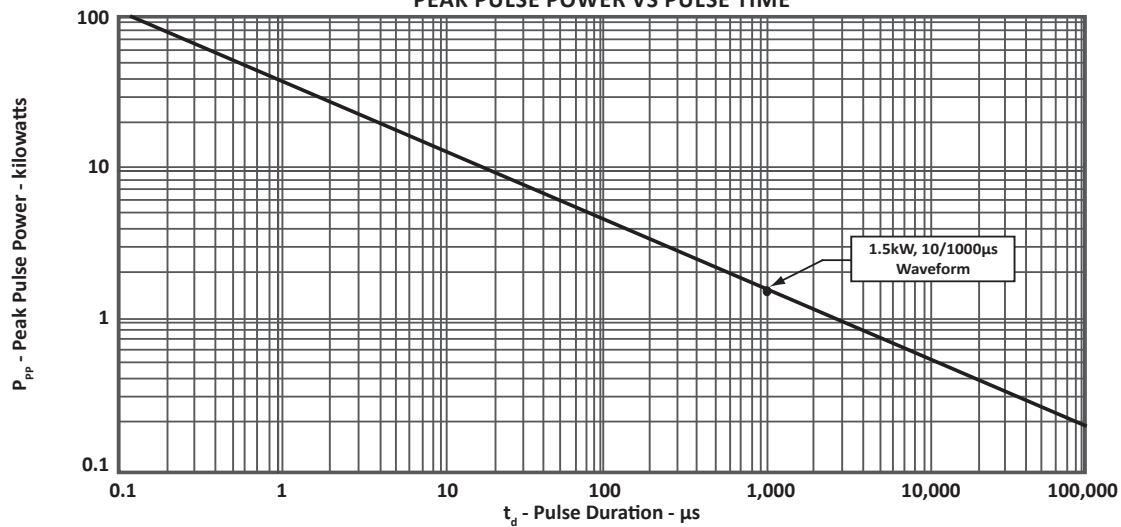


FIGURE 2  
PULSE WAVEFORM

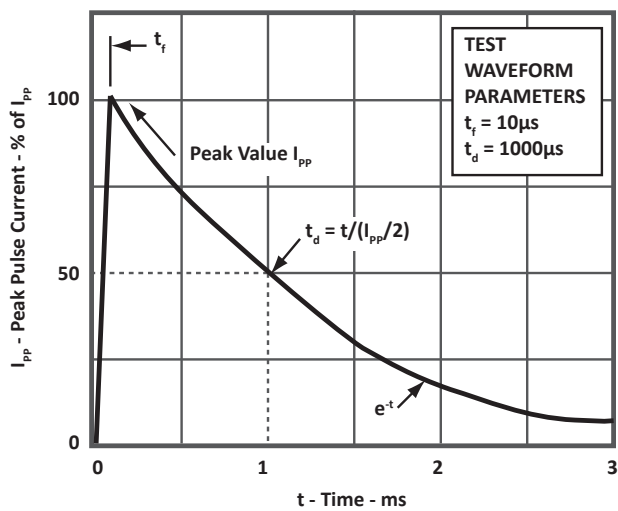
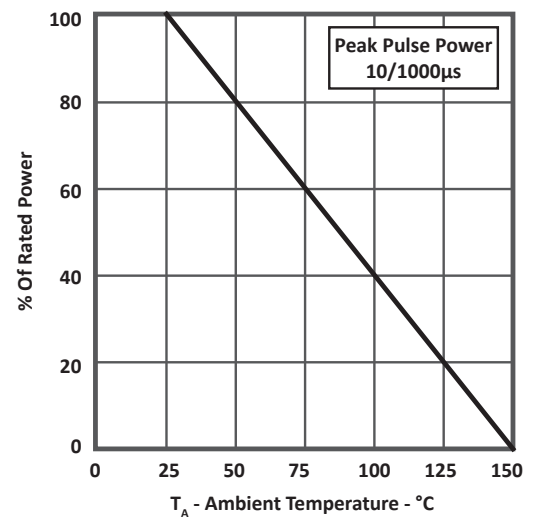


FIGURE 3  
POWER DERATING CURVE



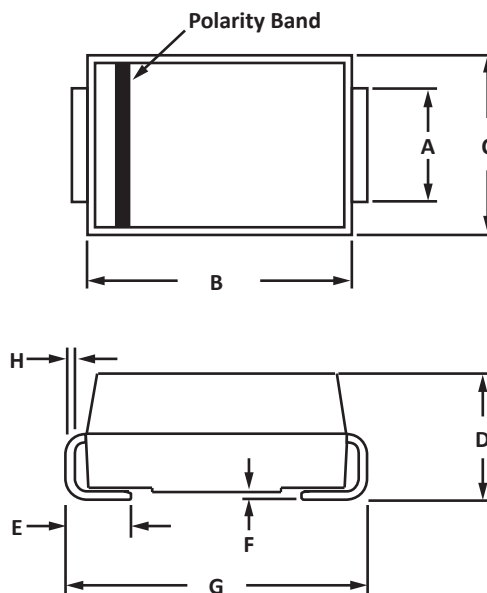
## PACKAGE INFORMATION

## OUTLINE DIMENSIONS

| DIM | MILLIMETERS |       | INCHES |       |
|-----|-------------|-------|--------|-------|
|     | 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   | 2.06        | 2.62  | 0.079  | 0.103 |
| E   | 0.76        | 1.52  | 0.030  | 0.060 |
| F   | -           | 0.203 | -      | 0.008 |
| G   | 7.75        | 8.13  | 0.305  | 0.320 |
| H   | 0.152       | 0.305 | 0.006  | 0.012 |

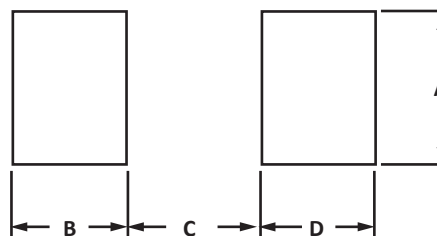
## NOTES

1. Dimensions are exclusive of mold flash and metal burrs.
2. Controlling dimensions in millimeters.

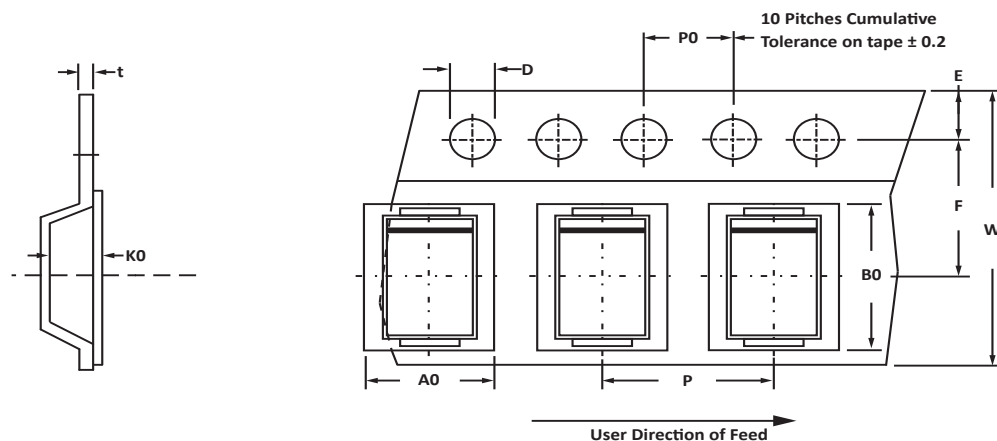


## PAD LAYOUT DIMENSIONS

| DIM | MILLIMETERS |      | INCHES |       |
|-----|-------------|------|--------|-------|
|     | MIN         | MAX  | MIN    | MAX   |
| A   | 3.30        | -    | 0.129  | -     |
| B   | 2.40        | -    | 0.094  | -     |
| C   | -           | 4.20 | -      | 0.165 |
| D   | 2.40        | -    | 0.094  | -     |



## TAPE AND REEL



## SPECIFICATIONS

| REEL DIA.   | TAPE WIDTH | A0              | B0              | K0              | D               | E               | F              | W                | P0              | P               | tmax            |
|-------------|------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|------------------|-----------------|-----------------|-----------------|
| 330mm (13") | 16mm       | $6.15 \pm 0.10$ | $8.30 \pm 0.10$ | $2.48 \pm 0.10$ | $1.55 \pm 0.10$ | $1.75 \pm 0.20$ | $7.5 \pm 0.10$ | $16.00 \pm 0.30$ | $4.00 \pm 0.20$ | $8.00 \pm 0.10$ | $0.30 \pm 0.10$ |

## NOTES

- Dimensions are in millimeters.
- Surface mount product is taped and reeled in accordance with EIA-481.
- Marking on Part - marking code (see page 2), date code, logo and cathode defined by polarity band.

## ORDERING INFORMATION

| BASE PART NUMBER<br>(Voltage = xx) | LEADFREE SUFFIX | TAPE SUFFIX | QTY/REEL | REEL SIZE | TUBE QTY |
|------------------------------------|-----------------|-------------|----------|-----------|----------|
| SMCJxxA-S                          | N/A             | -T13        | 3,000    | 13"       | N/A      |
| SMCJxxCA-S                         | N/A             | -T13        | 3,000    | 13"       | N/A      |

## COMPANY INFORMATION

---

### COMPANY PROFILE

In business more than 30 years, ProTek Devices™ is a privately held semiconductor company. The company offers a product line of overvoltage protection that include Transient Voltage Suppressor (TVS) Arrays, Steering Diode Array Hybrids, High-power Components and Modules, as well as Steering Diodes, EMI Filter/TVS Arrays and Thyristor Surge Suppressors. These components deliver circuit protection in electronic systems from numerous overvoltage events. They include lightning; electrostatic discharge (ESD); nuclear electromagnetic pulses (NEMP); inductive switching; and electromagnetic interference (EMI) / radio frequency interference (RFI). ProTek Devices is an ISO 9001 certified company.

### CONTACT US

#### Corporate Headquarters

2929 South Fair Lane  
Tempe, Arizona 85282  
USA

#### By Telephone

General: 602-431-8101  
Sales: & Marketing: 602-414-5109  
Customer Service: 602-414-5114  
Product Technical Support: 602-414-5107

#### By Fax

General: 602-431-2288

#### By E-mail:

Asia Sales: [asiasales@protekdevices.com](mailto:asiasales@protekdevices.com)  
Europe Sales: [europesales@protekdevices.com](mailto:europesales@protekdevices.com)  
U.S. Sales: [ussales@protekdevices.com](mailto:ussales@protekdevices.com)  
Distributor Sales: [distysales@protekdevices.com](mailto:distysales@protekdevices.com)  
Customer Service: [service@protekdevices.com](mailto:service@protekdevices.com)  
Technical Support: [support@protekdevices.com](mailto:support@protekdevices.com)

#### Web

[www.protekdevices.com](http://www.protekdevices.com)

COPYRIGHT © ProTek Devices 2025 - This literature is subject to all applicable copyright laws and is not for resale in any manner.

SPECIFICATIONS: ProTek reserves the right to change the electrical and or mechanical characteristics described herein without notice.

DESIGN CHANGES: ProTek reserves the right to discontinue product lines without notice and that the final judgement concerning selection and specifications is the buyer's and that in furnishing engineering and technical assistance. ProTek assumes no responsibility with respect to the selection or specifications of such products. ProTek makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ProTek assume any liability arising out of the application or use of any product or circuit and specifically disclaims any and all liability without limitation special, consequential or incidental damages.

LIFE SUPPORT POLICY: ProTek Devices products are not authorized for use in life support systems without written consent from the factory.