



## SMCGLCE6.5 thru SMCGLCE170A, e3 SMCJLCE6.5 thru SMCJLCE170A, e3

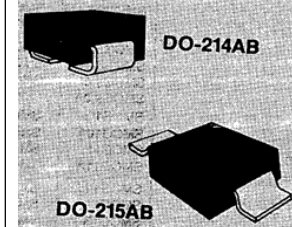
### 1500 WATT LOW CAPACITANCE SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

#### DESCRIPTION

This surface mount Transient Voltage Suppressor (TVS) product family includes a rectifier diode element in series and opposite direction to achieve low capacitance below 100 pF. They are also available as RoHS Compliant with an e3 suffix. The low TVS capacitance may be used for protecting higher frequency applications in inductive switching environments or electrical systems involving secondary lightning effects per IEC61000-4-5 as well as RTCA/DO-160D or ARINC 429 for airborne avionics. They also protect from ESD and EFT per IEC61000-4-2 and IEC61000-4-4. If bipolar transient capability is required, two of these low capacitance TVS devices may be used in parallel and opposite directions (anti-parallel) for complete ac protection (Figure 6).

**IMPORTANT:** For the most current data, consult MICROSEMI's website: <http://www.microsemi.com>

#### APPEARANCE



#### FEATURES

- Available in standoff voltage range of 6.5 to 200 V
- Low capacitance of 100 pF or less
- Molding compound flammability rating: UL94V-0
- Two different terminations available in C-bend (modified J-Bend with DO-214AB) or Gull-wing (DO-215AB)
- Options for screening in accordance with MIL-PRF-19500 for JAN, JANTX, JANTXV, and JANS are available by adding MQ, MX, MV, or MSP prefixes respectively to part numbers
- Optional 100% screening for avionics grade is available by adding MA prefix to part number for 100% temperature cycle -55°C to 125°C (10X) as well as surge (3X) and 24 hours HTRB with post test  $V_{BR}$  &  $I_R$
- RoHS Compliant devices available by adding an "e3" suffix

#### MAXIMUM RATINGS

- 1500 Watts of Peak Pulse Power dissipation at 25°C with repetition rate of 0.01% or less\*
  - Clamping Factor: 1.4 @ Full Rated power  
1.30 @ 50% Rated power
  - $t_{clamping}$  (0 volts to  $V_{(BR)}$  min): Less than  $5 \times 10^{-9}$  seconds
  - Operating and Storage temperatures: -65 to +150°C
  - Steady State power dissipation: 5.0W @  $T_L = 50^\circ\text{C}$
  - THERMAL RESISTANCE: 20°C/W (typical junction to lead (tab) at mounting plane)
- \* When pulse testing, do not pulse in opposite direction (see "Schematic Applications" section herein and Figures 5 & 6 for further protection in both directions)

#### APPLICATIONS / BENEFITS

- 1500 Watts of Peak Pulse Power at 10/1000  $\mu\text{s}$
- Protection for aircraft fast data rate lines per select level waveforms in RTCA/DO-160D & ARINC 429
- Low capacitance for high speed data line interfaces
- IEC61000-4-2 ESD 15 kV (air), 8 kV (contact)
- IEC61000-4-5 (Lightning) as further detailed in LCE6.5 thru LCE170A data sheet
- T1/E1 Line Cards
- Base Stations
- WAN Interfaces
- XDSL Interfaces
- CSU/DSU Equipment

#### MECHANICAL AND PACKAGING

- CASE: Molded, surface mountable
- TERMINALS: Gull-wing or C-bend (modified J-bend) tin-lead or RoHS compliant annealed matte-tin plating solderable per MIL-STD-750, method 2026
- POLARITY: Cathode indicated by band
- MARKING: Part number without prefix (e.g. LCE6.5A, LCE6.5Ae3, LCE33, LCE33Ae3, etc.)
- TAPE & REEL option: Standard per EIA-481-B with 16 mm tape, 750 per 7 inch reel or 2500 per 13 inch reel (add "TR" suffix to part number)

#### ELECTRICAL CHARACTERISTICS @ 25°C

| MICROSEMI Part Number   | MICROSEMI Part Number  | Reverse Stand-Off Voltage $V_{WM}$ | Breakdown Voltage $V_{BR}$ @ $I_{(BR)}$ |      |    | Maximum Reverse Leakage @ $V_{WM}$ $I_R$ $\mu\text{A}$ | Maximum Clamping Voltage @ $I_{PP}$ $V_C$ Volts | Maximum Peak Pulse Current $I_{PP}$ @ 10/1000 Amps | Maximum Capacitance @ 0 Volts, $f = 1$ MHz | $V_{WIB}$ Working Inverse Blocking Voltage Volts | $I_{IB}$ Inverse Blocking Leakage Current mA | $V_{PIB}$ Peak Inverse Blocking Voltage Volts |
|-------------------------|------------------------|------------------------------------|-----------------------------------------|------|----|--------------------------------------------------------|-------------------------------------------------|----------------------------------------------------|--------------------------------------------|--------------------------------------------------|----------------------------------------------|-----------------------------------------------|
| Gull-Wing "G" Bend Lead | Modified "J" Bend Lead | Volts                              | MIN                                     | MAX  | mA |                                                        |                                                 |                                                    | pF                                         |                                                  |                                              |                                               |
| SMCGLCE6.5              | SMCJLCE6.5             | 6.5                                | 7.22                                    | 8.82 | 10 | 1000                                                   | 12.3                                            | 100                                                | 75                                         | 75                                               | 1                                            | 100                                           |
| SMCGLCE6.5A             | SMCJLCE6.5A            | 6.5                                | 7.22                                    | 7.98 | 10 | 1000                                                   | 11.2                                            | 100                                                | 75                                         | 75                                               | 1                                            | 100                                           |
| SMCGLCE7.0              | SMCJLCE7.0             | 7.0                                | 7.78                                    | 9.51 | 10 | 500                                                    | 13.3                                            | 100                                                | 75                                         | 75                                               | 1                                            | 100                                           |
| SMCGLCE7.0A             | SMCJLCE7.0A            | 7.0                                | 7.78                                    | 8.60 | 10 | 500                                                    | 12.0                                            | 100                                                | 75                                         | 75                                               | 1                                            | 100                                           |
| SMCGLCE7.5              | SMCJLCE7.5             | 7.5                                | 8.33                                    | 10.2 | 10 | 250                                                    | 14.3                                            | 100                                                | 100                                        | 75                                               | 1                                            | 100                                           |
| SMCGLCE7.5A             | SMCJLCE7.5A            | 7.5                                | 8.33                                    | 9.21 | 10 | 250                                                    | 12.9                                            | 100                                                | 100                                        | 75                                               | 1                                            | 100                                           |
| SMCGLCE8.0              | SMCJLCE8.0             | 8.0                                | 8.89                                    | 10.9 | 1  | 100                                                    | 15.0                                            | 100                                                | 100                                        | 75                                               | 1                                            | 100                                           |
| SMCGLCE8.0A             | SMCJLCE8.0A            | 8.0                                | 8.89                                    | 9.83 | 1  | 100                                                    | 13.6                                            | 100                                                | 100                                        | 75                                               | 1                                            | 100                                           |
| SMCGLCE8.5              | SMCJLCE8.5             | 8.5                                | 9.44                                    | 11.5 | 1  | 50                                                     | 15.9                                            | 94                                                 | 100                                        | 75                                               | 1                                            | 100                                           |
| SMCGLCE8.5A             | SMCJLCE8.5A            | 8.5                                | 9.44                                    | 10.4 | 1  | 50                                                     | 14.4                                            | 100                                                | 100                                        | 75                                               | 1                                            | 100                                           |
| SMCGLCE9.0              | SMCJLCE9.0             | 9.0                                | 10.0                                    | 12.2 | 1  | 10                                                     | 16.9                                            | 89                                                 | 100                                        | 75                                               | 1                                            | 100                                           |
| SMCGLCE9.0A             | SMCJLCE9.0A            | 9.0                                | 10.0                                    | 11.1 | 1  | 10                                                     | 15.4                                            | 97                                                 | 100                                        | 75                                               | 1                                            | 100                                           |

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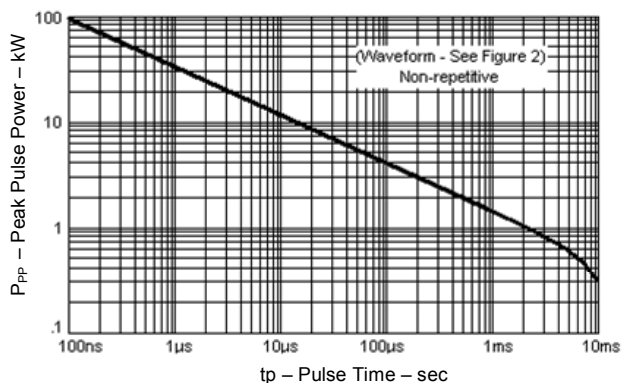
SCOTTSDALE DIVISION

**SMCGLCE6.5 thru SMCGLCE170A, e3  
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SURFACE MOUNT TRANSIENT  
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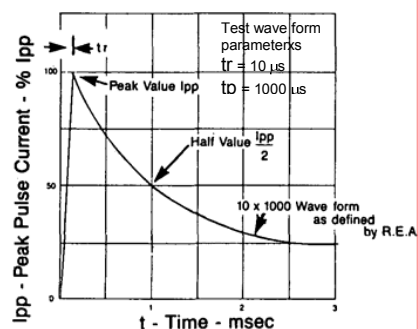
| MICROSEMI<br>Part Number      | MICROSEMI<br>Part Number     | Reverse<br>Stand-Off<br>Voltage<br>$V_{WM}$ | Breakdown Voltage<br>$V_{BR}$ @ $I_{(BR)}$ |      |    | Maximum<br>Reverse<br>Leakage<br>@ $V_{WM}$<br>$I_B$<br>$\mu A$ | Maximum<br>Clamping<br>Voltage<br>@ $I_{PP}$<br>$V_C$<br>Volts | Maximum<br>Peak Pulse<br>Current $I_{pp}$<br>@10/1000<br>Amps | Maximum<br>Capacitance<br>@ 0 Volts<br>pF | $V_{WIB}$<br>Working<br>Inverse<br>Blocking<br>Voltage<br>Volts | $I_{IB}$<br>Inverse<br>Blocking<br>Leakage<br>Current<br>mA | $V_{PIB}$<br>Peak<br>Inverse<br>Blocking<br>Voltage<br>Volts |
|-------------------------------|------------------------------|---------------------------------------------|--------------------------------------------|------|----|-----------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------|-------------------------------------------|-----------------------------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------|
| Gull-Wing<br>"G"<br>Bend Lead | Modified<br>"J"<br>Bend Lead | Volts                                       | Volts                                      |      |    |                                                                 |                                                                |                                                               |                                           |                                                                 |                                                             |                                                              |
|                               |                              |                                             | MIN                                        | MAX  | mA |                                                                 |                                                                |                                                               |                                           |                                                                 |                                                             |                                                              |
| SMCGLCE10                     | SMCJLCE10                    | 10                                          | 11.1                                       | 13.6 | 1  | 5                                                               | 18.8                                                           | 80                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE10A                    | SMCJLCE10A                   | 10                                          | 11.1                                       | 12.3 | 1  | 5                                                               | 17.0                                                           | 88                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE11                     | SMCJLCE11                    | 11                                          | 12.2                                       | 14.9 | 1  | 5                                                               | 20.1                                                           | 74                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE11A                    | SMCJLCE11A                   | 11                                          | 12.2                                       | 13.5 | 1  | 5                                                               | 18.2                                                           | 82                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE12                     | SMCJLCE12                    | 12                                          | 13.3                                       | 16.3 | 1  | 5                                                               | 22.0                                                           | 68                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE12A                    | SMCJLCE12A                   | 12                                          | 13.3                                       | 14.7 | 1  | 5                                                               | 19.9                                                           | 75                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE13                     | SMCJLCE13                    | 13                                          | 14.4                                       | 17.6 | 1  | 5                                                               | 23.8                                                           | 63                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE13A                    | SMCJLCE13A                   | 13                                          | 14.4                                       | 15.9 | 1  | 5                                                               | 21.5                                                           | 70                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE14                     | SMCJLCE14                    | 14                                          | 15.6                                       | 19.1 | 1  | 5                                                               | 25.8                                                           | 58                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE14A                    | SMCJLCE14A                   | 14                                          | 15.6                                       | 17.2 | 1  | 5                                                               | 23.2                                                           | 65                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE15                     | SMCJLCE15                    | 15                                          | 16.7                                       | 20.4 | 1  | 5                                                               | 26.9                                                           | 56                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE15A                    | SMCJLCE15A                   | 15                                          | 16.7                                       | 18.5 | 1  | 5                                                               | 24.4                                                           | 61                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE16                     | SMCJLCE16                    | 16                                          | 17.8                                       | 21.8 | 1  | 5                                                               | 28.8                                                           | 52                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE16A                    | SMCJLCE16A                   | 16                                          | 17.8                                       | 19.7 | 1  | 5                                                               | 26.0                                                           | 57                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE17                     | SMCJLCE17                    | 17                                          | 18.9                                       | 23.1 | 1  | 5                                                               | 30.5                                                           | 49                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE17A                    | SMCJLCE17A                   | 17                                          | 18.9                                       | 20.9 | 1  | 5                                                               | 27.6                                                           | 54                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE18                     | SMCJLCE18                    | 18                                          | 20.0                                       | 24.4 | 1  | 5                                                               | 32.2                                                           | 45                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE18A                    | SMCJLCE18A                   | 18                                          | 20.0                                       | 22.1 | 1  | 5                                                               | 29.2                                                           | 51                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE20                     | SMCJLCE20                    | 20                                          | 22.2                                       | 27.1 | 1  | 5                                                               | 35.8                                                           | 42                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE20A                    | SMCJLCE20A                   | 20                                          | 22.2                                       | 24.5 | 1  | 5                                                               | 32.4                                                           | 46                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE22                     | SMCJLCE22                    | 22                                          | 24.4                                       | 29.8 | 1  | 5                                                               | 39.4                                                           | 38                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE22A                    | SMCJLCE22A                   | 22                                          | 24.4                                       | 26.9 | 1  | 5                                                               | 35.5                                                           | 42                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE24                     | SMCJLCE24                    | 24                                          | 26.7                                       | 32.6 | 1  | 5                                                               | 43.0                                                           | 35                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE24A                    | SMCJLCE24A                   | 24                                          | 26.7                                       | 29.5 | 1  | 5                                                               | 38.9                                                           | 39                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE26                     | SMCJLCE26                    | 26                                          | 28.9                                       | 35.3 | 1  | 5                                                               | 46.6                                                           | 32                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE26A                    | SMCJLCE26A                   | 26                                          | 28.9                                       | 31.9 | 1  | 5                                                               | 42.1                                                           | 36                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE28                     | SMCJLCE28                    | 28                                          | 31.1                                       | 38.0 | 1  | 5                                                               | 50.1                                                           | 30                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE28A                    | SMCJLCE28A                   | 28                                          | 31.1                                       | 34.4 | 1  | 5                                                               | 45.5                                                           | 33                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE30                     | SMCJLCE30                    | 30                                          | 33.3                                       | 40.7 | 1  | 5                                                               | 53.5                                                           | 28                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE30A                    | SMCJLCE30A                   | 30                                          | 33.3                                       | 36.8 | 1  | 5                                                               | 48.4                                                           | 31                                                            | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE33                     | SMCJLCE33                    | 33                                          | 36.7                                       | 44.9 | 1  | 5                                                               | 59.0                                                           | 25.4                                                          | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE33A                    | SMCJLCE33A                   | 33                                          | 36.7                                       | 40.6 | 1  | 5                                                               | 53.3                                                           | 28.1                                                          | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE36                     | SMCJLCE36                    | 36                                          | 40.0                                       | 48.9 | 1  | 5                                                               | 64.3                                                           | 23.3                                                          | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE36A                    | SMCJLCE36A                   | 36                                          | 40.0                                       | 44.2 | 1  | 5                                                               | 58.1                                                           | 25.8                                                          | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE40                     | SMCJLCE40                    | 40                                          | 44.4                                       | 54.3 | 1  | 5                                                               | 71.4                                                           | 21.0                                                          | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE40A                    | SMCJLCE40A                   | 40                                          | 44.4                                       | 49.1 | 1  | 5                                                               | 64.5                                                           | 23.3                                                          | 100                                       | 75                                                              | 1                                                           | 100                                                          |
| SMCGLCE43                     | SMCJLCE43                    | 43                                          | 47.8                                       | 58.4 | 1  | 5                                                               | 76.7                                                           | 19.5                                                          | 100                                       | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE43A                    | SMCJLCE43A                   | 43                                          | 47.8                                       | 52.8 | 1  | 5                                                               | 69.4                                                           | 21.6                                                          | 100                                       | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE45                     | SMCJLCE45                    | 45                                          | 50.0                                       | 61.1 | 1  | 5                                                               | 80.3                                                           | 18.7                                                          | 100                                       | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE45A                    | SMCJLCE45A                   | 45                                          | 50.0                                       | 55.3 | 1  | 5                                                               | 72.7                                                           | 20.6                                                          | 100                                       | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE48                     | SMCJLCE48                    | 48                                          | 53.3                                       | 65.1 | 1  | 5                                                               | 85.5                                                           | 17.5                                                          | 100                                       | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE48A                    | SMCJLCE48A                   | 48                                          | 53.3                                       | 58.9 | 1  | 5                                                               | 77.4                                                           | 19.4                                                          | 100                                       | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE51                     | SMCJLCE51                    | 51                                          | 56.7                                       | 69.3 | 1  | 5                                                               | 91.1                                                           | 16.5                                                          | 100                                       | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE51A                    | SMCJLCE51A                   | 51                                          | 56.7                                       | 62.7 | 1  | 5                                                               | 82.4                                                           | 18.2                                                          | 100                                       | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE54                     | SMCJLCE54                    | 54                                          | 60.0                                       | 73.3 | 1  | 5                                                               | 96.3                                                           | 15.6                                                          | 100                                       | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE54A                    | SMCJLCE54A                   | 54                                          | 60.0                                       | 66.3 | 1  | 5                                                               | 87.1                                                           | 17.2                                                          | 100                                       | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE58                     | SMCJLCE58                    | 58                                          | 64.4                                       | 78.7 | 1  | 5                                                               | 103                                                            | 14.6                                                          | 100                                       | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE58A                    | SMCJLCE58A                   | 58                                          | 64.4                                       | 71.2 | 1  | 5                                                               | 93.6                                                           | 16.0                                                          | 100                                       | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE60                     | SMCJLCE60                    | 60                                          | 66.7                                       | 81.5 | 1  | 5                                                               | 107                                                            | 14.0                                                          | 90                                        | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE60A                    | SMCJLCE60A                   | 60                                          | 66.7                                       | 73.7 | 1  | 5                                                               | 96.8                                                           | 15.5                                                          | 90                                        | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE64                     | SMCJLCE64                    | 64                                          | 71.1                                       | 86.9 | 1  | 5                                                               | 114                                                            | 13.2                                                          | 90                                        | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE64A                    | SMCJLCE64A                   | 64                                          | 71.1                                       | 78.6 | 1  | 5                                                               | 103                                                            | 14.6                                                          | 90                                        | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE70                     | SMCJLCE70                    | 70                                          | 77.8                                       | 95.1 | 1  | 5                                                               | 125                                                            | 12.0                                                          | 90                                        | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE70A                    | SMCJLCE70A                   | 70                                          | 77.8                                       | 85.0 | 1  | 5                                                               | 113                                                            | 13.3                                                          | 90                                        | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE75                     | SMCJLCE75                    | 75                                          | 83.3                                       | 102  | 1  | 5                                                               | 134                                                            | 11.2                                                          | 90                                        | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE75A                    | SMCJLCE75A                   | 75                                          | 83.3                                       | 92.1 | 1  | 5                                                               | 121                                                            | 12.4                                                          | 90                                        | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE80                     | SMCJLCE80                    | 80                                          | 88.7                                       | 108  | 1  | 5                                                               | 142                                                            | 10.6                                                          | 90                                        | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE80A                    | SMCJLCE80A                   | 80                                          | 88.7                                       | 98.0 | 1  | 5                                                               | 129                                                            | 11.6                                                          | 90                                        | 150                                                             | 1                                                           | 200                                                          |
| SMCGLCE90                     | SMCJLCE90                    | 90                                          | 100                                        | 122  | 1  | 5                                                               | 160                                                            | 9.4                                                           | 90                                        | 300                                                             | 1                                                           | 200                                                          |
| SMCGLCE90A                    | SMCJLCE90A                   | 90                                          | 100                                        | 111  | 1  | 5                                                               | 146                                                            | 10.3                                                          | 90                                        | 300                                                             | 1                                                           | 200                                                          |
| SMCGLCE100                    | SMCJLCE100                   | 100                                         | 111                                        | 136  | 1  | 5                                                               | 179                                                            | 8.4                                                           | 90                                        | 300                                                             | 1                                                           | 200                                                          |
| SMCGLCE100A                   | SMCJLCE100A                  | 100                                         | 111                                        | 123  | 1  | 5                                                               | 162                                                            | 9.3                                                           | 90                                        | 300                                                             | 1                                                           | 200                                                          |
| SMCGLCE110                    | SMCJLCE110                   | 110                                         | 122                                        | 149  | 1  | 5                                                               | 196                                                            | 7.7                                                           | 90                                        | 300                                                             | 1                                                           | 400                                                          |
| SMCGLCE110A                   | SMCJLCE110A                  | 110                                         | 122                                        | 135  | 1  | 5                                                               | 178                                                            | 8.4                                                           | 90                                        | 300                                                             | 1                                                           | 400                                                          |
| SMCGLCE120                    | SMCJLCE120                   | 120                                         | 133                                        | 163  | 1  | 5                                                               | 214                                                            | 7.0                                                           | 90                                        | 300                                                             | 1                                                           | 400                                                          |
| SMCGLCE120A                   | SMCJLCE120A                  | 120                                         | 133                                        | 147  | 1  | 5                                                               | 193                                                            | 7.8                                                           | 90                                        | 300                                                             | 1                                                           | 400                                                          |
| SMCGLCE130                    | SMCJLCE130                   | 130                                         | 144                                        | 176  | 1  | 5                                                               | 231                                                            | 6.5                                                           | 90                                        | 300                                                             | 1                                                           | 400                                                          |
| SMCGLCE130A                   | SMCJLCE130A                  | 130                                         | 144                                        | 159  | 1  | 5                                                               | 209                                                            | 7.2                                                           | 90                                        | 300                                                             | 1                                                           | 400                                                          |
| SMCGLCE150                    | SMCJLCE150                   | 150                                         | 167                                        | 204  | 1  | 5                                                               | 268                                                            | 5.6                                                           | 90                                        | 300                                                             | 1                                                           | 400                                                          |
| SMCGLCE150A                   | SMCJLCE150A                  | 150                                         | 167                                        | 185  | 1  | 5                                                               | 243                                                            | 6.2                                                           | 90                                        | 300                                                             | 1                                                           | 400                                                          |
| SMCGLCE160                    | SMCJLCE160                   | 160                                         | 178                                        | 218  | 1  | 5                                                               | 287                                                            | 5.2                                                           | 90                                        | 300                                                             | 1                                                           | 400                                                          |
| SMCGLCE160A                   | SMCJLCE160A                  | 160                                         | 178                                        | 197  | 1  | 5                                                               | 259                                                            | 5.8                                                           | 90                                        | 300                                                             | 1                                                           | 400                                                          |
| SMCGLCE170                    | SMCJLCE170                   | 170                                         | 189                                        | 231  | 1  | 5                                                               | 304                                                            | 4.9                                                           | 90                                        | 300                                                             | 1                                                           | 400                                                          |
| SMCGLCE170A                   | SMCJLCE170A                  | 170                                         | 189                                        | 209  | 1  | 5                                                               | 275                                                            | 5.4                                                           | 90                                        | 300                                                             | 1                                                           | 400                                                          |

NOTE 1: TVS are normally selected according to the reverse "Stand Off Voltage" ( $V_{WM}$ ) which should be equal to or greater than the dc or continuous peak operating voltage level.

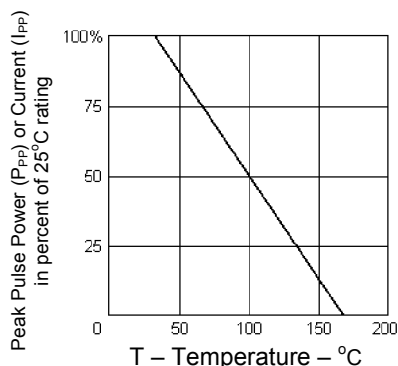
## GRAPHS



**FIGURE 1 PEAK PULSE POWER vs. PULSE TIME**



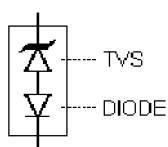
**FIGURE 2 PULSE WAVEFORM**



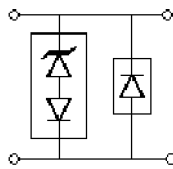
**FIGURE 3 DERATING CURVE**

## SCHEMATIC APPLICATIONS

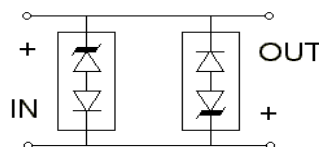
The TVS low capacitance device configuration is shown in Figure 4. As a further option for unidirectional applications, an additional low capacitance rectifier diode may be used in parallel in the same polarity direction as the TVS as shown in Figure 5. In applications where random high voltage transients occur, this will prevent reverse transients from damaging the internal low capacitance rectifier diode and also provide a low voltage conducting direction. The added rectifier diode should be of similar low capacitance and also have a higher reverse voltage rating than the TVS clamping voltage  $V_C$ . The Microsemi recommended rectifier part number for the application in Figure 5 is the "SMBJLCR80" or "SMBGLCR80" depending on the terminal configuration desired. If using two (2) low capacitance TVS devices in anti-parallel for bidirectional applications, this added protective feature for both directions (including the reverse of each rectifier diode) is inherently provided in Figure 6. The unidirectional and bidirectional configurations in Figure 5 and 6 will both result in twice the capacitance of Figure 4.



**FIGURE 4**  
TVS with internal low capacitance rectifier diode



**FIGURE 5**  
Optional Unidirectional configuration (TVS and separate rectifier diode in parallel)



**FIGURE 6**  
Optional Bidirectional configuration (two TVS devices in anti-parallel)

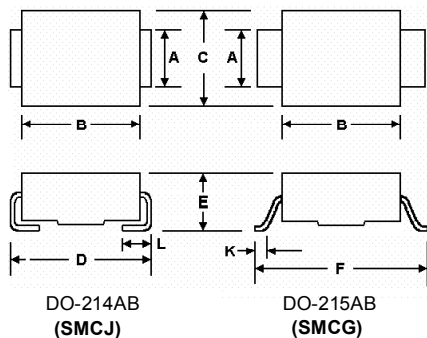


**SMCGLCE6.5 thru SMCGLCE170A, e3**  
**SMCJLCE6.5 thru SMCJLCE170A, e3**

**1500 WATT LOW CAPACITANCE  
 SURFACE MOUNT TRANSIENT  
 VOLTAGE SUPPRESSOR**

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## PACKAGE DIMENSIONS



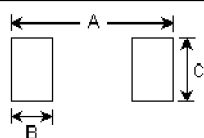
**DIMENSIONS IN INCHES**

|            | A    | B    | C    | D    | E    | F    | K    | L    |
|------------|------|------|------|------|------|------|------|------|
| <b>MIN</b> | .115 | .260 | .220 | .305 | .077 | .380 | .025 | .30  |
| <b>MAX</b> | .121 | .280 | .245 | .320 | .104 | .400 | .040 | .060 |

**DIMENSIONS IN MILLIMETERS**

|            | A    | B    | C    | D    | E    | F     | K     | L     |
|------------|------|------|------|------|------|-------|-------|-------|
| <b>MIN</b> | 2.92 | 6.60 | 5.59 | 7.75 | 1.95 | 9.65  | 0.635 | 0.760 |
| <b>MAX</b> | 3.07 | 7.11 | 6.22 | 8.13 | 2.65 | 10.16 | 1.016 | 1.520 |

## PAD LAYOUT



**SMCJ**

|          | INCHES | mm   |
|----------|--------|------|
| <b>A</b> | .390   | 9.90 |
| <b>B</b> | .110   | 2.79 |
| <b>C</b> | .150   | 3.81 |

**SMCG**

|          | INCHES | mm    |
|----------|--------|-------|
| <b>A</b> | 0.510  | 12.95 |
| <b>B</b> | 0.110  | 2.79  |
| <b>C</b> | 0.150  | 3.81  |

SMCGLCE/SMCJLCE