

|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                   |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| SPECIFICATION SHEET NO.          | S0929- SMDJ190CALS001                                                                                                                                                                                                                                                                                                                                                                                                        |                                                   |
| ORIGINAL MFG/PART NO.            |  <b>LGE</b> LGE Diodes/SMDJ190CA-L                                                                                                                                                                                                                                                                                                          |                                                   |
| NEXTGEN PART CODE                | SMDJ190CALS001                                                                                                                                                                                                                                                                                                                                                                                                               | Indicate This Code For <a href="#">RFQ</a> /Order |
| DATE                             | Sep. 29, 2025                                                                                                                                                                                                                                                                                                                                                                                                                |                                                   |
| REVISION                         | A4                                                                                                                                                                                                                                                                                                                                                                                                                           | Updated With Most Recent Data                     |
| DESCRIPTION AND MAIN PARAMETRICS | SMD Transient Voltage Suppressor (TVs) Diodes, SMDJ Series<br>Case SMC/DO-214AB, 2 Pads,<br>Bidirectional Type, Reverse Stand-off Voltage (VR) 190V ,<br>Peak Pulse Power: 3000 Watts, Reverse Surge Current: 9.75A Max.<br>Operating Junction Temp. Range -55°C ~+150°C<br>Package in Tape/Reel, 3000pcs/Reel<br>RoHS/RoHS III compliant, RoHS Annex III lead Exemption (Exempt per RoHS EU 2015/863) and Halogen Free (HF) |                                                   |
| CUSTOMER                         |                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                   |
| CUSTOMER PART NUMBER             |                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                   |
| CROSS REF. PART NUMBER           |                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                   |
| MEMO                             |                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                   |

|                               |                                                                                     |                                                                                      |                                                                                       |
|-------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| VENDOR APPROVE                |                                                                                     |                                                                                      |                                                                                       |
| Issued/Checked/Approved       |  |  |  |
| Effective Date: Sep. 29, 2025 |                                                                                     |                                                                                      |                                                                                       |

|                  |  |
|------------------|--|
| CUSTOMER APPROVE |  |
|                  |  |
| Date:            |  |

## MAIN FEATURE

- Glass Passivated Chip
- 3000W Peak Pulse Power Capability With a 10/1000  $\mu$ s Waveform, Repetitive Rate (Duty Cycle):0.01 %
- Uni-Directional and Bi-directional Polarity Option
- Low Leakage
- 5% VBR Voltage Tolerance
- Excellent Clamping Capability
- Very Fast Response Time
- Short Lead Time
- Cross Competitors Parts and More.
- RoHS/RoHS III compliant, RoHS Annex III lead Exemption (Exempt per RoHS EU 2015/863) and Halogen Free (HF)



*Image shown is a representation only.  
Exact specifications should be obtained  
from the product dimension.*



## APPLICATION

- I/O Interface
- AC/DC Power Supply
- Low Frequency Signal Transmission Line (RS232, RS485, etc.)

## ELECTRICAL CHARACTERISTICS

- See Page 6 ~Page 17 For Different Part Code
- All Parameters are Subject To NextGen Components' Final Confirmation

## HOW TO ORDER

- Please Follow Up Part Code Guide And Indicate NextGen Part Code SMDJ190CALS001 For RFQ and Order.

## PART CODE GUIDE

**RFQ**  
[Request For Quotation](#)

| CODE  | NAME                           | KEY SPECIFICATION OPTION                                                                                   |
|-------|--------------------------------|------------------------------------------------------------------------------------------------------------|
| SMDJ  | Product Series Code            | SMD Transient Voltage Suppressors (TVs) Diodes, Case SMC/DO-214AB, 2 Pads,                                 |
| 190CA | Mode code                      | 190CA: Working Peak Reverse Voltage 190V, Bidirectional Polarity Type<br>Reverse Surge Current: 9.75A Max. |
| LS    | Internal Control Code          | Letter or Digits (A~Z, a~z or 0~9)                                                                         |
| 001   | Parameters Code                | Letter or Digits (A~Z, a~z or 0~9)                                                                         |
| XX    | Special/Custom Parameters Code | Letter or Digits (A~Z, a~z or 1~9) for Special Parametric;<br>Blank: N/A                                   |

DIMENSION- Unit: Inch [mm], Case SMC/DO-214AB Outline

Top View



Side View



Recommend Pad Layout



| SYMBOL      | A    | B    | C     | D    | E     |
|-------------|------|------|-------|------|-------|
| Unit (Inch) | 0.17 | 0.16 | 0.311 | 0.15 | 0.472 |
| Unit (mm)   | 4.30 | 4.10 | 7.90  | 3.80 | 12.0  |

**MECHANICAL DATA**

| CASE                                         | EXPOXY                              | LEAD                                             | POLARITY                                            | MOUNTING POSITION | MARKING                     |
|----------------------------------------------|-------------------------------------|--------------------------------------------------|-----------------------------------------------------|-------------------|-----------------------------|
| JEDEC<br>SMC/DO-214AB<br>Molded Plastic Body | UL 94V-0 Rate<br>Flame<br>Retardant | Solderable<br>per MIL-STD<br>750, Method<br>2026 | Color Band Denotes<br>Cathode End Except<br>Bipolar | Any               | See<br>Marking<br>Code List |

**MAX. RATING & CHARACTERISTICS** - Ratings at 25°C ambient temperature unless otherwise specified.

| PARAMETER                                                                           | SYMBOLS                           | VALUE                  | UNITS |
|-------------------------------------------------------------------------------------|-----------------------------------|------------------------|-------|
| Peak Power Dissipation with 10/1000μs Waveform<br>See Note 1                        | P <sub>pp</sub>                   | 3000                   | W     |
| Peak Pulse Current with a 10/1000μs waveform<br>See Note 1                          | I <sub>pp</sub>                   | See<br>Page 6~ Page 17 | A     |
| Power Dissipation On Infinite Heatsink at T <sub>L</sub> = 75 °C                    | P <sub>D</sub>                    | 6.5                    | W     |
| Peak Forward Surge Current 8.3ms Single Half<br>Sine- Wave Unidirectional Type Only | I <sub>FSM</sub>                  | 300                    | A     |
| Maximum instantaneous forward voltage at 100A for<br>Unidirectional Type Only       | V <sub>F</sub>                    | 3.5/5.0                | V     |
| Operating Junction And Storage Temperature Range                                    | T <sub>J</sub> , T <sub>STG</sub> | -55 ~ +150             | °C    |

**Note**

1. Non-repetitive Current Pulse Per Fig.5 And Derated Above T<sub>A</sub>= 25 °C Per Fig.1
2. Measured On 8.3 ms Single Half Sine-wave Or Equivalent Square Wave, Duty Cycle = 4 Pulses Per Minute Max.
3. V<sub>F</sub><3.5V for devices of V<sub>BR</sub><200V and V<sub>F</sub><5.0V for devices of V<sub>BR</sub>>201V

**UNIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C**

| Part Code      | Working Peak Reverse Voltage | Breakdown Voltage |      | Test Current | Max. Reverse Leakage | Max. Reverse Surge Current | Max. Clamping Voltage | Marking Code |
|----------------|------------------------------|-------------------|------|--------------|----------------------|----------------------------|-----------------------|--------------|
|                |                              | VBR @ IT          |      |              |                      |                            |                       |              |
|                | VRWM                         | Min.              | Max. | IT           | IR @ VRWM            | IPP                        | Vc @ IPP              |              |
|                | V                            | V                 | V    | mA           | µA                   | A                          | V                     |              |
| SMDJ050L00S001 | 5                            | 6.4               | 7.3  | 10           | 800                  | 312.5                      | 9.6                   | RDD          |
| SMDJ050AL0S001 | 5                            | 6.4               | 7    | 10           | 800                  | 326.09                     | 9.2                   | RDE          |
| SMDJ060L00S001 | 6                            | 6.67              | 8.15 | 10           | 800                  | 263.16                     | 11.4                  | RDF          |
| SMDJ060AL0S001 | 6                            | 6.67              | 7.37 | 10           | 800                  | 291.26                     | 10.3                  | RDG          |
| SMDJ065L00S001 | 6.5                          | 7.22              | 8.82 | 10           | 500                  | 243.90                     | 12.3                  | RDH          |
| SMDJ065AL0S001 | 6.5                          | 7.22              | 7.98 | 10           | 500                  | 267.86                     | 11.2                  | RDK          |
| SMDJ070L00S001 | 7                            | 7.78              | 9.51 | 10           | 200                  | 225.56                     | 13.3                  | RDL          |
| SMDJ070AL0S001 | 7                            | 7.78              | 8.6  | 10           | 200                  | 250.00                     | 12                    | PDM          |
| SMDJ075L00S001 | 7.5                          | 8.33              | 10.2 | 1            | 100                  | 209.79                     | 14.3                  | PDN          |
| SMDJ075AL0S001 | 7.5                          | 8.33              | 9.21 | 1            | 100                  | 232.56                     | 12.9                  | PDP          |
| SMDJ080L00S001 | 8                            | 8.89              | 10.9 | 1            | 50                   | 200.00                     | 15                    | PDQ          |
| SMDJ080AL0S001 | 8                            | 8.89              | 9.83 | 1            | 50                   | 220.59                     | 13.6                  | PDR          |
| SMDJ085L00S001 | 8.5                          | 9.44              | 11.5 | 1            | 20                   | 188.68                     | 15.9                  | PDS          |
| SMDJ085AL0S001 | 8.5                          | 9.44              | 10.4 | 1            | 20                   | 208.33                     | 14.4                  | PDT          |
| SMDJ090L00S001 | 9                            | 10                | 12.2 | 1            | 10                   | 177.51                     | 16.9                  | PDU          |
| SMDJ090AL0S001 | 9                            | 10                | 11.1 | 1            | 10                   | 194.81                     | 15.4                  | PDV          |
| SMDJ10L000S001 | 10                           | 11.1              | 13.6 | 1            | 5                    | 159.57                     | 18.8                  | PDW          |
| SMDJ10AL00S001 | 10                           | 11.1              | 12.3 | 1            | 5                    | 176.47                     | 17                    | PDX          |
| SMDJ11L000S001 | 11                           | 12.2              | 14.9 | 1            | 2                    | 149.25                     | 20.1                  | PDY          |
| SMDJ11AL00S001 | 11                           | 12.2              | 13.5 | 1            | 2                    | 164.84                     | 18.2                  | PDZ          |

**UNIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C**

| Part Code      | Working Peak Reverse Voltage | Breakdown Voltage |       | Test Current | Max. Reverse Leakage | Max. Reverse Surge Current | Max. Clamping Voltage | Marking Code |
|----------------|------------------------------|-------------------|-------|--------------|----------------------|----------------------------|-----------------------|--------------|
|                |                              | VBR @ IT          |       |              |                      |                            |                       |              |
|                | VRWM                         | Min.              | Max.  | IT           | IR @ VRWM            | IPP                        | VC @ IPP              |              |
|                | V                            | V                 | V     | mA           | µA                   | A                          | V                     |              |
| SMDJ12L000S001 | 12                           | 13.3              | 16.3  | 1            | 2                    | 136.36                     | 22                    | PED          |
| SMDJ12AL00S001 | 12                           | 13.3              | 14.7  | 1            | 2                    | 150.75                     | 19.9                  | PEE          |
| SMDJ13L000S001 | 13                           | 14.4              | 17.6  | 1            | 2                    | 126.05                     | 23.8                  | PEF          |
| SMDJ13AL00S001 | 13                           | 14.4              | 15.9  | 1            | 2                    | 139.53                     | 21.5                  | PEG          |
| SMDJ14L000S001 | 14                           | 15.6              | 19.1  | 1            | 2                    | 116.28                     | 25.8                  | PEH          |
| SMDJ14AL00S001 | 14                           | 15.6              | 17.2  | 1            | 2                    | 129.31                     | 23.2                  | PEK          |
| SMDJ15L000S001 | 15                           | 16.7              | 20.4  | 1            | 2                    | 111.52                     | 26.9                  | PEL          |
| SMDJ15AL00S001 | 15                           | 16.7              | 18.5  | 1            | 2                    | 122.95                     | 24.4                  | PEM          |
| SMDJ16L000S001 | 16                           | 17.8              | 21.8  | 1            | 2                    | 104.17                     | 28.8                  | PEN          |
| SMDJ16AL00S001 | 16                           | 17.8              | 19.7  | 1            | 2                    | 115.38                     | 26                    | PEP          |
| SMDJ17L000S001 | 17                           | 18.9              | 23.1  | 1            | 2                    | 98.36                      | 30.5                  | PEQ          |
| SMDJ17AL00S001 | 17                           | 18.9              | 20.9  | 1            | 2                    | 108.70                     | 27.6                  | PER          |
| SMDJ18L000S001 | 18                           | 20                | 24.4  | 1            | 2                    | 93.17                      | 32.2                  | PES          |
| SMDJ18AL00S001 | 18                           | 20                | 22.1  | 1            | 2                    | 102.74                     | 29.2                  | PET          |
| SMDJ19L000S001 | 19                           | 21.13             | 25.76 | 1            | 2                    | 88.21                      | 34.0                  | PEA          |
| SMDJ19AL00S001 | 19                           | 21.1              | 23.3  | 1            | 2                    | 97.47                      | 30.8                  | PEB          |
| SMDJ20L000S001 | 20                           | 22.2              | 27.1  | 1            | 2                    | 83.80                      | 35.8                  | PEU          |
| SMDJ20AL00S001 | 20                           | 22.2              | 24.5  | 1            | 2                    | 92.59                      | 32.4                  | PEV          |
| SMDJ22L000S001 | 22                           | 24.4              | 29.8  | 1            | 2                    | 76.14                      | 39.4                  | PEW          |
| SMDJ22AL00S001 | 22                           | 24.4              | 26.9  | 1            | 2                    | 84.51                      | 35.5                  | PEX          |

**UNIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C**

| Part Code      | Working Peak Reverse Voltage | Breakdown Voltage |      | Test Current | Max. Reverse Leakage | Max. Reverse Surge Current | Max. Clamping Voltage | Marking Code |
|----------------|------------------------------|-------------------|------|--------------|----------------------|----------------------------|-----------------------|--------------|
|                |                              | VBR @ IT          |      |              |                      |                            |                       |              |
|                | VRWM                         | Min.              | Max. | IT           | IR @ VRWM            | IPP                        | VC @ IPP              |              |
|                | V                            | V                 | V    | mA           | µA                   | A                          | V                     |              |
| SMDJ24L000S001 | 24                           | 26.7              | 32.6 | 1            | 2                    | 69.77                      | 43                    | PEY          |
| SMDJ24AL00S001 | 24                           | 26.7              | 29.5 | 1            | 2                    | 77.12                      | 38.9                  | PEZ          |
| SMDJ26L000S001 | 26                           | 28.9              | 35.3 | 1            | 2                    | 64.38                      | 46.6                  | PFD          |
| SMDJ26AL00S001 | 26                           | 28.9              | 31.9 | 1            | 2                    | 71.26                      | 42.1                  | PFE          |
| SMDJ28L000S001 | 28                           | 31.1              | 38   | 1            | 2                    | 60.00                      | 50                    | PFF          |
| SMDJ28AL00S001 | 28                           | 31.1              | 34.4 | 1            | 2                    | 66.08                      | 45.4                  | PFG          |
| SMDJ30L000S001 | 30                           | 33.3              | 40.7 | 1            | 2                    | 56.07                      | 53.5                  | PFH          |
| SMDJ30AL00S001 | 30                           | 33.3              | 36.8 | 1            | 2                    | 61.98                      | 48.4                  | PFK          |
| SMDJ33L000S001 | 33                           | 36.7              | 44.9 | 1            | 2                    | 50.85                      | 59                    | PFL          |
| SMDJ33AL00S001 | 33                           | 36.7              | 40.6 | 1            | 2                    | 56.29                      | 53.3                  | PFM          |
| SMDJ36L000S001 | 36                           | 40                | 48.9 | 1            | 2                    | 46.66                      | 64.3                  | PFN          |
| SMDJ36AL00S001 | 36                           | 40                | 44.2 | 1            | 2                    | 51.64                      | 58.1                  | PFP          |
| SMDJ40L000S001 | 40                           | 44.4              | 54.3 | 1            | 2                    | 42.02                      | 71.4                  | PFQ          |
| SMDJ40AL00S001 | 40                           | 44.4              | 49.1 | 1            | 2                    | 46.51                      | 64.5                  | PFR          |
| SMDJ43L000S001 | 43                           | 47.8              | 58.4 | 1            | 2                    | 39.11                      | 76.7                  | PFS          |
| SMDJ43AL00S001 | 43                           | 47.8              | 52.8 | 1            | 2                    | 43.23                      | 69.4                  | PFT          |
| SMDJ45L000S001 | 45                           | 50                | 61.1 | 1            | 2                    | 37.36                      | 80.3                  | PFU          |
| SMDJ45AL00S001 | 45                           | 50                | 55.3 | 1            | 2                    | 41.27                      | 72.7                  | PFV          |
| SMDJ48L000S001 | 48                           | 53.3              | 65.1 | 1            | 2                    | 35.09                      | 85.5                  | PFW          |
| SMDJ48AL00S001 | 48                           | 53.3              | 58.9 | 1            | 2                    | 38.76                      | 77.4                  | PFX          |

**UNIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C**

| Part Code      | Working Peak Reverse Voltage | Breakdown Voltage |       | Test Current | Max. Reverse Leakage | Max. Reverse Surge Current | Max. Clamping Voltage | Marking Code |
|----------------|------------------------------|-------------------|-------|--------------|----------------------|----------------------------|-----------------------|--------------|
|                |                              | VBR @ IT          |       |              |                      |                            |                       |              |
|                | VRWM                         | Min.              | Max.  | IT           | IR @ VRWM            | IPP                        | VC @ IPP              |              |
|                | V                            | V                 | V     | mA           | µA                   | A                          | V                     |              |
| SMDJ51L000S001 | 51                           | 56.7              | 69.3  | 1            | 2                    | 32.93                      | 91.1                  | PFY          |
| SMDJ51AL00S001 | 51                           | 56.7              | 62.7  | 1            | 2                    | 36.41                      | 82.4                  | PFZ          |
| SMDJ54L000S001 | 54                           | 60                | 73.3  | 1            | 2                    | 31.15                      | 96.3                  | RGD          |
| SMDJ54AL00S001 | 54                           | 60                | 66.3  | 1            | 2                    | 34.44                      | 87.1                  | RGE          |
| SMDJ58L000S001 | 58                           | 64.4              | 78.7  | 1            | 2                    | 29.13                      | 103                   | RGF          |
| SMDJ58AL00S001 | 58                           | 64.4              | 71.2  | 1            | 2                    | 32.05                      | 93.6                  | PGG          |
| SMDJ60L000S001 | 60                           | 66.7              | 81.5  | 1            | 2                    | 28.04                      | 107                   | RGH          |
| SMDJ60AL00S001 | 60                           | 66.7              | 73.7  | 1            | 2                    | 30.99                      | 96.8                  | PGK          |
| SMDJ64L000S001 | 64                           | 71.1              | 86.9  | 1            | 2                    | 26.32                      | 114                   | PGL          |
| SMDJ64AL00S001 | 64                           | 71.1              | 78.6  | 1            | 2                    | 29.13                      | 103                   | PGM          |
| SMDJ70L000S001 | 70                           | 77.8              | 95.1  | 1            | 2                    | 24                         | 125                   | PGN          |
| SMDJ70AL00S001 | 70                           | 77.8              | 86    | 1            | 2                    | 26.55                      | 113                   | PGP          |
| SMDJ75L000S001 | 75                           | 83.3              | 102   | 1            | 2                    | 22.39                      | 134                   | PGQ          |
| SMDJ75AL00S001 | 75                           | 83.3              | 92.1  | 1            | 2                    | 24.79                      | 121                   | PGR          |
| SMDJ78L000S001 | 78                           | 86.7              | 106   | 1            | 2                    | 21.58                      | 139                   | PGS          |
| SMDJ78AL00S001 | 78                           | 86.7              | 95.8  | 1            | 2                    | 23.81                      | 126                   | PGT          |
| SMDJ80L000S001 | 80                           | 88.96             | 108.8 | 1            | 2                    | 20.95                      | 143.2                 | PGA          |
| SMDJ80AL00S001 | 80                           | 88.8              | 97.6  | 1            | 2                    | 23.15                      | 129.6                 | PGB          |
| SMDJ85L000S001 | 85                           | 94.4              | 115   | 1            | 2                    | 19.87                      | 151                   | PGU          |
| SMDJ85AL00S001 | 85                           | 94.4              | 104   | 1            | 2                    | 21.9                       | 137                   | PGV          |

**UNIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C**

| Part Code      | Working Peak Reverse Voltage | Breakdown Voltage |       | Test Current | Max. Reverse Leakage | Max. Reverse Surge Current | Max. Clamping Voltage | Marking Code |
|----------------|------------------------------|-------------------|-------|--------------|----------------------|----------------------------|-----------------------|--------------|
|                |                              | VBR @ IT          |       |              |                      |                            |                       |              |
|                | VRWM                         | Min.              | Max.  | IT           | IR @ VRWM            | IPP                        | VC @ IPP              |              |
|                | V                            | V                 | V     | mA           | µA                   | A                          | V                     |              |
| SMDJ90L000S001 | 90                           | 100               | 122   | 1            | 2                    | 18.75                      | 160                   | PGW          |
| SMDJ90AL00S001 | 90                           | 100               | 111   | 1            | 2                    | 20.55                      | 146                   | PGX          |
| SMDJ100L00S001 | 100                          | 111               | 136   | 1            | 2                    | 16.76                      | 179                   | PGY          |
| SMDJ100AL0S001 | 100                          | 111               | 123   | 1            | 2                    | 18.52                      | 162                   | PGZ          |
| SMDJ110L00S001 | 110                          | 122               | 149   | 1            | 2                    | 15.31                      | 196                   | PHD          |
| SMDJ110AL0S001 | 110                          | 122               | 135   | 1            | 2                    | 16.95                      | 177                   | PHE          |
| SMDJ120L00S001 | 120                          | 133               | 163   | 1            | 2                    | 14.02                      | 214                   | PHF          |
| SMDJ120AL0S001 | 120                          | 133               | 147   | 1            | 2                    | 14.54                      | 193                   | PHG          |
| SMDJ130L00S001 | 130                          | 144               | 176   | 1            | 2                    | 12.99                      | 231                   | PHH          |
| SMDJ130AL0S001 | 130                          | 144               | 159   | 1            | 2                    | 14.35                      | 209                   | PHK          |
| SMDJ140L00S001 | 140                          | 155.68            | 190.4 | 1            | 2                    | 11.97                      | 250.6                 | PHA          |
| SMDJ140AL0S001 | 140                          | 155               | 171   | 1            | 2                    | 13.23                      | 226.8                 | PHB          |
| SMDJ150L00S001 | 150                          | 167               | 204   | 1            | 2                    | 11.19                      | 268                   | PHL          |
| SMDJ150AL0S001 | 150                          | 167               | 185   | 1            | 2                    | 12.35                      | 243                   | PHM          |
| SMDJ160L00S001 | 160                          | 178               | 218   | 1            | 2                    | 10.45                      | 287                   | PHN          |
| SMDJ160AL0S001 | 160                          | 178               | 197   | 1            | 2                    | 11.58                      | 259                   | PHP          |
| SMDJ170L00S001 | 170                          | 189               | 231   | 1            | 2                    | 9.87                       | 304                   | PHQ          |
| SMDJ170AL0S001 | 170                          | 189               | 209   | 1            | 2                    | 10.91                      | 275                   | PHR          |
| SMDJ180L00S001 | 180                          | 200.16            | 244.8 | 1            | 2                    | 9.31                       | 322.2                 | PHS          |
| SMDJ180AL0S001 | 180                          | 200               | 220   | 1            | 2                    | 10.29                      | 291.6                 | PHT          |

### UNIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C

[illegible]

**BIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C**

| Part Code      | Working Peak Reverse Voltage | Breakdown Voltage |      | Test Current | Max. Reverse Leakage | Max. Reverse Surge Current | Max. Clamping Voltage | Marking Code |
|----------------|------------------------------|-------------------|------|--------------|----------------------|----------------------------|-----------------------|--------------|
|                |                              | VBR @ IT          |      |              |                      |                            |                       |              |
|                | VRWM                         | Min.              | Max. | IT           | IR @ VRWM            | IPP                        | Vc @ IPP              |              |
|                | V                            | V                 | V    | mA           | µA                   | A                          | V                     |              |
| SMDJ050CLOS001 | 5                            | 6.4               | 7.3  | 10           | 800                  | 312.5                      | 9.6                   | DDD          |
| SMDJ050CALS001 | 5                            | 6.4               | 7    | 10           | 800                  | 326.09                     | 9.2                   | DDE          |
| SMDJ060CLOS001 | 6                            | 6.67              | 8.15 | 10           | 800                  | 263.16                     | 11.4                  | DDF          |
| SMDJ060CALS001 | 6                            | 6.67              | 7.37 | 10           | 800                  | 291.26                     | 10.3                  | DDG          |
| SMDJ065CLOS001 | 6.5                          | 7.22              | 8.82 | 10           | 500                  | 243.90                     | 12.3                  | DDH          |
| SMDJ065CALS001 | 6.5                          | 7.22              | 7.98 | 10           | 500                  | 267.86                     | 11.2                  | DDK          |
| SMDJ070CLOS001 | 7                            | 7.78              | 9.51 | 10           | 200                  | 225.56                     | 13.3                  | DDL          |
| SMDJ070CALS001 | 7                            | 7.78              | 8.6  | 10           | 200                  | 250.00                     | 12                    | DDM          |
| SMDJ075CLOS001 | 7.5                          | 8.33              | 10.2 | 1            | 100                  | 209.79                     | 14.3                  | DDN          |
| SMDJ075CALS001 | 7.5                          | 8.33              | 9.21 | 1            | 100                  | 232.56                     | 12.9                  | DDP          |
| SMDJ080CLOS001 | 8                            | 8.89              | 10.9 | 1            | 50                   | 200.00                     | 15                    | DDQ          |
| SMDJ080CALS001 | 8                            | 8.89              | 9.83 | 1            | 50                   | 220.59                     | 13.6                  | DDR          |
| SMDJ085CLOS001 | 8.5                          | 9.44              | 11.5 | 1            | 20                   | 188.68                     | 15.9                  | DDS          |
| SMDJ085CALS001 | 8.5                          | 9.44              | 10.4 | 1            | 20                   | 208.33                     | 14.4                  | DDT          |
| SMDJ090CLOS001 | 9                            | 10                | 12.2 | 1            | 10                   | 177.51                     | 16.9                  | DDU          |
| SMDJ090CALS001 | 9                            | 10                | 11.1 | 1            | 10                   | 194.81                     | 15.4                  | DDV          |
| SMDJ10CLOS001  | 10                           | 11.1              | 13.6 | 1            | 5                    | 159.57                     | 18.8                  | DDW          |
| SMDJ10CALS001  | 10                           | 11.1              | 12.3 | 1            | 5                    | 176.47                     | 17                    | DDX          |
| SMDJ11CLOS001  | 11                           | 12.2              | 14.9 | 1            | 2                    | 149.25                     | 20.1                  | DDY          |
| SMDJ11CALS001  | 11                           | 12.2              | 13.5 | 1            | 2                    | 164.84                     | 18.2                  | DDZ          |

**BIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C**

| Part Code      | Working Peak Reverse Voltage | Breakdown Voltage |       | Test Current | Max. Reverse Leakage | Max. Reverse Surge Current | Max. Clamping Voltage | Marking Code |
|----------------|------------------------------|-------------------|-------|--------------|----------------------|----------------------------|-----------------------|--------------|
|                |                              | VBR @ IT          |       |              |                      |                            |                       |              |
|                | VRWM                         | Min.              | Max.  | IT           | IR @ VRWM            | IPP                        | VC @ IPP              |              |
|                | V                            | V                 | V     | mA           | µA                   | A                          | V                     |              |
| SMDJ12CL00S001 | 12                           | 13.3              | 16.3  | 1            | 2                    | 136.36                     | 22                    | DED          |
| SMDJ12CAL0S001 | 12                           | 13.3              | 14.7  | 1            | 2                    | 150.75                     | 19.9                  | DEE          |
| SMDJ13CL00S001 | 13                           | 14.4              | 17.6  | 1            | 2                    | 126.05                     | 23.8                  | DEF          |
| SMDJ13CAL0S001 | 13                           | 14.4              | 15.9  | 1            | 2                    | 139.53                     | 21.5                  | DEG          |
| SMDJ14CL00S001 | 14                           | 15.6              | 19.1  | 1            | 2                    | 116.28                     | 25.8                  | DEH          |
| SMDJ14CAL0S001 | 14                           | 15.6              | 17.2  | 1            | 2                    | 129.31                     | 23.2                  | DEK          |
| SMDJ15CL00S001 | 15                           | 16.7              | 20.4  | 1            | 2                    | 111.52                     | 26.9                  | DEL          |
| SMDJ15CAL0S001 | 15                           | 16.7              | 18.5  | 1            | 2                    | 122.95                     | 24.4                  | DEM          |
| SMDJ16CL00S001 | 16                           | 17.8              | 21.8  | 1            | 2                    | 104.17                     | 28.8                  | DEN          |
| SMDJ16CAL0S001 | 16                           | 17.8              | 19.7  | 1            | 2                    | 115.38                     | 26                    | DEP          |
| SMDJ17CL00S001 | 17                           | 18.9              | 23.1  | 1            | 2                    | 98.36                      | 30.5                  | DEQ          |
| SMDJ17CAL0S001 | 17                           | 18.9              | 20.9  | 1            | 2                    | 108.70                     | 27.6                  | DER          |
| SMDJ18CL00S001 | 18                           | 20                | 24.4  | 1            | 2                    | 93.17                      | 32.2                  | DES          |
| SMDJ18CAL0S001 | 18                           | 20                | 22.1  | 1            | 2                    | 102.74                     | 29.2                  | DET          |
| SMDJ19CL00S001 | 19                           | 21.13             | 25.76 | 1            | 2                    | 88.21                      | 34.0                  | DEA          |
| SMDJ19CAL0S001 | 19                           | 21.1              | 23.3  | 1            | 2                    | 97.47                      | 30.8                  | DEB          |
| SMDJ20CL00S001 | 20                           | 22.2              | 27.1  | 1            | 2                    | 83.80                      | 35.8                  | DEU          |
| SMDJ20CAL0S001 | 20                           | 22.2              | 24.5  | 1            | 2                    | 92.59                      | 32.4                  | DEV          |
| SMDJ22CL00S001 | 22                           | 24.4              | 29.8  | 1            | 2                    | 76.14                      | 39.4                  | DEW          |
| SMDJ22CAL0S001 | 22                           | 24.4              | 26.9  | 1            | 2                    | 84.51                      | 35.5                  | DEX          |

**BIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C**

| Part Code      | Working Peak Reverse Voltage | Breakdown Voltage |      | Test Current | Max. Reverse Leakage | Max. Reverse Surge Current | Max. Clamping Voltage | Marking Code |
|----------------|------------------------------|-------------------|------|--------------|----------------------|----------------------------|-----------------------|--------------|
|                |                              | VBR @ IT          |      |              |                      |                            |                       |              |
|                | VRWM                         | Min.              | Max. | IT           | IR @ VRWM            | IPP                        | VC @ IPP              |              |
|                | V                            | V                 | V    | mA           | µA                   | A                          | V                     |              |
| SMDJ24CL00S001 | 24                           | 26.7              | 32.6 | 1            | 2                    | 69.77                      | 43                    | DEY          |
| SMDJ24CAL0S001 | 24                           | 26.7              | 29.5 | 1            | 2                    | 77.12                      | 38.9                  | DEZ          |
| SMDJ26CL00S001 | 26                           | 28.9              | 35.3 | 1            | 2                    | 64.38                      | 46.6                  | DFD          |
| SMDJ26CAL0S001 | 26                           | 28.9              | 31.9 | 1            | 2                    | 71.26                      | 42.1                  | DFE          |
| SMDJ28CL00S001 | 28                           | 31.1              | 38   | 1            | 2                    | 60.00                      | 50                    | DFF          |
| SMDJ28CAL0S001 | 28                           | 31.1              | 34.4 | 1            | 2                    | 66.08                      | 45.4                  | DFG          |
| SMDJ30CL00S001 | 30                           | 33.3              | 40.7 | 1            | 2                    | 56.07                      | 53.5                  | DFH          |
| SMDJ30CAL0S001 | 30                           | 33.3              | 36.8 | 1            | 2                    | 61.98                      | 48.4                  | DFK          |
| SMDJ33CL00S001 | 33                           | 36.7              | 44.9 | 1            | 2                    | 50.85                      | 59                    | DFL          |
| SMDJ33CAL0S001 | 33                           | 36.7              | 40.6 | 1            | 2                    | 56.29                      | 53.3                  | DFM          |
| SMDJ36CL00S001 | 36                           | 40                | 48.9 | 1            | 2                    | 46.66                      | 64.3                  | DFN          |
| SMDJ36CAL0S001 | 36                           | 40                | 44.2 | 1            | 2                    | 51.64                      | 58.1                  | DFP          |
| SMDJ40CL00S001 | 40                           | 44.4              | 54.3 | 1            | 2                    | 42.02                      | 71.4                  | DFQ          |
| SMDJ40CAL0S001 | 40                           | 44.4              | 49.1 | 1            | 2                    | 46.51                      | 64.5                  | DFR          |
| SMDJ43CL00S001 | 43                           | 47.8              | 58.4 | 1            | 2                    | 39.11                      | 76.7                  | DFS          |
| SMDJ43CAL0S001 | 43                           | 47.8              | 52.8 | 1            | 2                    | 43.23                      | 69.4                  | DFT          |
| SMDJ45CL00S001 | 45                           | 50                | 61.1 | 1            | 2                    | 37.36                      | 80.3                  | DFU          |
| SMDJ45CAL0S001 | 45                           | 50                | 55.3 | 1            | 2                    | 41.27                      | 72.7                  | DFV          |
| SMDJ48CL00S001 | 48                           | 53.3              | 65.1 | 1            | 2                    | 35.09                      | 85.5                  | DFW          |
| SMDJ48CAL0S001 | 48                           | 53.3              | 58.9 | 1            | 2                    | 38.76                      | 77.4                  | DFX          |

**BIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C**

| Part Code      | Working Peak Reverse Voltage | Breakdown Voltage |       | Test Current | Max. Reverse Leakage | Max. Reverse Surge Current | Max. Clamping Voltage | Marking Code |
|----------------|------------------------------|-------------------|-------|--------------|----------------------|----------------------------|-----------------------|--------------|
|                |                              | VBR @ IT          |       |              |                      |                            |                       |              |
|                | VRWM                         | Min.              | Max.  | IT           | IR @ VRWM            | IPP                        | Vc @ IPP              |              |
|                | V                            | V                 | V     | mA           | µA                   | A                          | V                     |              |
| SMDJ51CL00S001 | 51                           | 56.7              | 69.3  | 1            | 2                    | 32.93                      | 91.1                  | DFY          |
| SMDJ51CAL0S001 | 51                           | 56.7              | 62.7  | 1            | 2                    | 36.41                      | 82.4                  | DFZ          |
| SMDJ54CL00S001 | 54                           | 60                | 73.3  | 1            | 2                    | 31.15                      | 96.3                  | DGD          |
| SMDJ54CAL0S001 | 54                           | 60                | 66.3  | 1            | 2                    | 34.44                      | 87.1                  | DGE          |
| SMDJ58CL00S001 | 58                           | 64.4              | 78.7  | 1            | 2                    | 29.13                      | 103                   | DGF          |
| SMDJ58CAL0S001 | 58                           | 64.4              | 71.2  | 1            | 2                    | 32.05                      | 93.6                  | DGG          |
| SMDJ60CL00S001 | 60                           | 66.7              | 81.5  | 1            | 2                    | 28.04                      | 107                   | DGH          |
| SMDJ60CAL0S001 | 60                           | 66.7              | 73.7  | 1            | 2                    | 30.99                      | 96.8                  | DGK          |
| SMDJ64CL00S001 | 64                           | 71.1              | 86.9  | 1            | 2                    | 26.32                      | 114                   | DGL          |
| SMDJ64CAL0S001 | 64                           | 71.1              | 78.6  | 1            | 2                    | 29.13                      | 103                   | DGM          |
| SMDJ70CL00S001 | 70                           | 77.8              | 95.1  | 1            | 2                    | 24                         | 125                   | DGN          |
| SMDJ70CAL0S001 | 70                           | 77.8              | 86    | 1            | 2                    | 26.55                      | 113                   | DGP          |
| SMDJ75CL00S001 | 75                           | 83.3              | 102   | 1            | 2                    | 22.39                      | 134                   | DGQ          |
| SMDJ75CAL0S001 | 75                           | 83.3              | 92.1  | 1            | 2                    | 24.79                      | 121                   | DGR          |
| SMDJ78CL00S001 | 78                           | 86.7              | 106   | 1            | 2                    | 21.58                      | 139                   | DGS          |
| SMDJ78CAL0S001 | 78                           | 86.7              | 95.8  | 1            | 2                    | 23.81                      | 126                   | DGT          |
| SMDJ80CL00S001 | 80                           | 88.96             | 108.8 | 1            | 2                    | 20.95                      | 143.2                 | DGA          |
| SMDJ80CAL0S001 | 80                           | 88.8              | 97.6  | 1            | 2                    | 23.15                      | 129.6                 | DGB          |
| SMDJ85CL00S001 | 85                           | 94.4              | 115   | 1            | 2                    | 19.87                      | 151                   | DGU          |
| SMDJ85CAL0S001 | 85                           | 94.4              | 104   | 1            | 2                    | 21.9                       | 137                   | DGV          |

**BIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C**

| Part Code      | Working Peak Reverse Voltage | Breakdown Voltage |       | Test Current | Max. Reverse Leakage | Max. Reverse Surge Current | Max. Clamping Voltage | Marking Code |
|----------------|------------------------------|-------------------|-------|--------------|----------------------|----------------------------|-----------------------|--------------|
|                |                              | VBR @ IT          |       |              |                      |                            |                       |              |
|                | VRWM                         | Min.              | Max.  | IT           | IR @ VRWM            | IPP                        | VC @ IPP              |              |
|                | V                            | V                 | V     | mA           | µA                   | A                          | V                     |              |
| SMDJ90CL00S001 | 90                           | 100               | 122   | 1            | 2                    | 18.75                      | 160                   | DGW          |
| SMDJ90CAL0S001 | 90                           | 100               | 111   | 1            | 2                    | 20.55                      | 146                   | DGX          |
| SMDJ100CL0S001 | 100                          | 111               | 136   | 1            | 2                    | 16.76                      | 179                   | DGY          |
| SMDJ100CALS001 | 100                          | 111               | 123   | 1            | 2                    | 18.52                      | 162                   | DGZ          |
| SMDJ110CL0S001 | 110                          | 122               | 149   | 1            | 2                    | 15.31                      | 196                   | DHD          |
| SMDJ110CALS001 | 110                          | 122               | 135   | 1            | 2                    | 16.95                      | 177                   | DHE          |
| SMDJ120CL0S001 | 120                          | 133               | 163   | 1            | 2                    | 14.02                      | 214                   | DHF          |
| SMDJ120CALS001 | 120                          | 133               | 147   | 1            | 2                    | 14.54                      | 193                   | DHG          |
| SMDJ130CL0S001 | 130                          | 144               | 176   | 1            | 2                    | 12.99                      | 231                   | DHH          |
| SMDJ130CALS001 | 130                          | 144               | 159   | 1            | 2                    | 14.35                      | 209                   | DHK          |
| SMDJ140CL0S001 | 140                          | 155.68            | 190.4 | 1            | 2                    | 11.97                      | 250.6                 | DHA          |
| SMDJ140CALS001 | 140                          | 155               | 171   | 1            | 2                    | 13.23                      | 226.8                 | DHB          |
| SMDJ150CL0S001 | 150                          | 167               | 204   | 1            | 2                    | 11.19                      | 268                   | DHL          |
| SMDJ150CALS001 | 150                          | 167               | 185   | 1            | 2                    | 12.35                      | 243                   | DHM          |
| SMDJ160CL0S001 | 160                          | 178               | 218   | 1            | 2                    | 10.45                      | 287                   | DHN          |
| SMDJ160CALS001 | 160                          | 178               | 197   | 1            | 2                    | 11.58                      | 259                   | DHP          |
| SMDJ170CL0S001 | 170                          | 189               | 231   | 1            | 2                    | 9.87                       | 304                   | DHQ          |
| SMDJ170CALS001 | 170                          | 189               | 209   | 1            | 2                    | 10.91                      | 275                   | DHR          |
| SMDJ180CL0S001 | 180                          | 200.16            | 244.8 | 1            | 2                    | 9.31                       | 322.2                 | DHS          |
| SMDJ180CALS001 | 180                          | 200               | 220   | 1            | 2                    | 10.29                      | 291.6                 | DHT          |

**BIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C**

| Part Code                      | Working Peak Reverse Voltage | Breakdown Voltage |       | Test Current | Max. Reverse Leakage | Max. Reverse Surge Current | Max. Clamping Voltage | Marking Code |
|--------------------------------|------------------------------|-------------------|-------|--------------|----------------------|----------------------------|-----------------------|--------------|
|                                |                              | VBR @ IT          |       |              |                      |                            |                       |              |
|                                | VRWM                         | Min.              | Max.  | IT           | IR @ VRWM            | IPP                        | VC @ IPP              |              |
|                                | V                            | V                 | V     | mA           | µA                   | A                          | V                     |              |
| SMDJ190CLOS001                 | 190                          | 211.28            | 258.4 | 1            | 2                    | 8.82                       | 340.1                 | DHU          |
| <a href="#">SMDJ190CALS001</a> | 190                          | 211               | 232   | 1            | 2                    | 9.75                       | 307.8                 | DHV          |
| SMDJ200CALS001                 | 200                          | 224               | 247   | 1            | 2                    | 9.26                       | 324                   | DHW          |
| SMDJ220CALS001                 | 220                          | 246               | 272   | 1            | 2                    | 8.43                       | 356                   | DHX          |
| SMDJ250CALS001                 | 250                          | 279               | 309   | 1            | 2                    | 7.41                       | 405                   | DHZ          |
| SMDJ300CALS001                 | 300                          | 335               | 371   | 1            | 2                    | 6.17                       | 486                   | DJE          |
| SMDJ350CALS001                 | 350                          | 391               | 432   | 1            | 2                    | 5.29                       | 567                   | DJG          |
| SMDJ400CALS001                 | 400                          | 447               | 494   | 1            | 2                    | 4.63                       | 648                   | DJK          |
| SMDJ440CALS001                 | 440                          | 492               | 543   | 1            | 2                    | 4.21                       | 713                   | DJM          |
|                                |                              |                   |       |              |                      |                            |                       |              |
|                                |                              |                   |       |              |                      |                            |                       |              |
|                                |                              |                   |       |              |                      |                            |                       |              |
|                                |                              |                   |       |              |                      |                            |                       |              |
|                                |                              |                   |       |              |                      |                            |                       |              |
|                                |                              |                   |       |              |                      |                            |                       |              |
|                                |                              |                   |       |              |                      |                            |                       |              |

**Note:**

- Suffix 'A ' denotes 5% tolerance device. Without 'A' denotes 10% tolerance device
- Add suffix 'C 'or ' CA ' after part number to specify Bi-directional devices
- For Bi-Directional devices having VR of 10 volts and under, the IR limit is double

RATINGS AND CHARACTERISTICS CURVES- For Reference Only, Ta=25°C Unless Otherwise Specified.

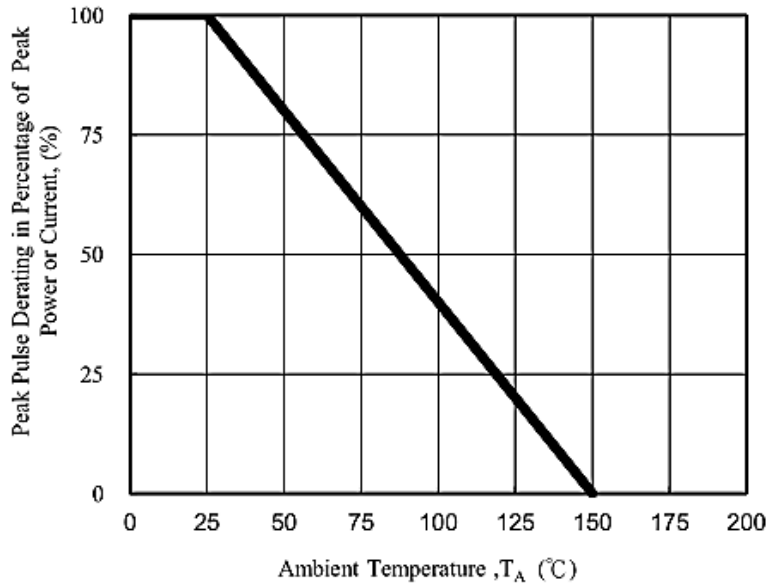


Fig. 1 - Pulse Derating Curve



Fig. 2 - Maximum Non-Repetitive  
Surge Current

RATINGS AND CHARACTERISTICS CURVES- For Reference Only,  $T_a=25^{\circ}\text{C}$  Unless Otherwise Specified.



Fig. 3 - Steady State Power Derating Curve



Fig. 4 - Peak Pulse Power Rating Curve

RATINGS AND CHARACTERISTICS CURVES- For Reference Only,  $T_a=25^\circ\text{C}$  Unless Otherwise Specified.



Fig. 5 - Pulse Waveform

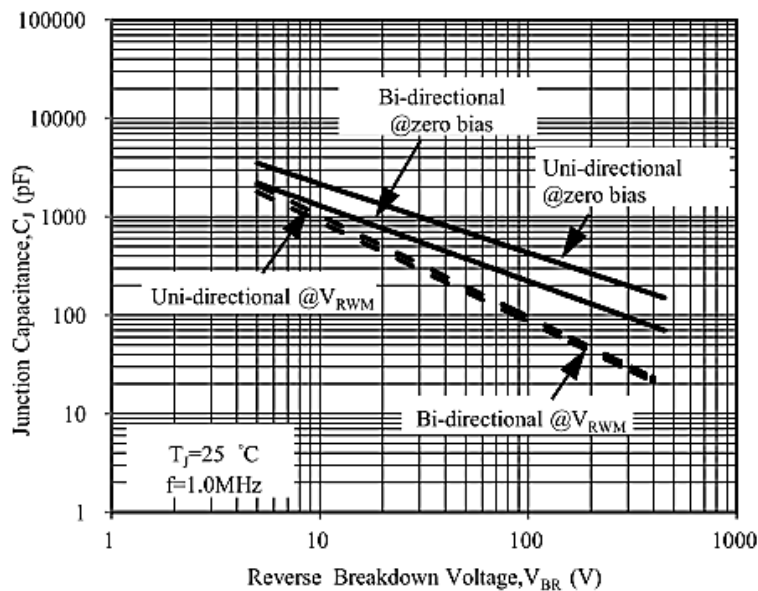
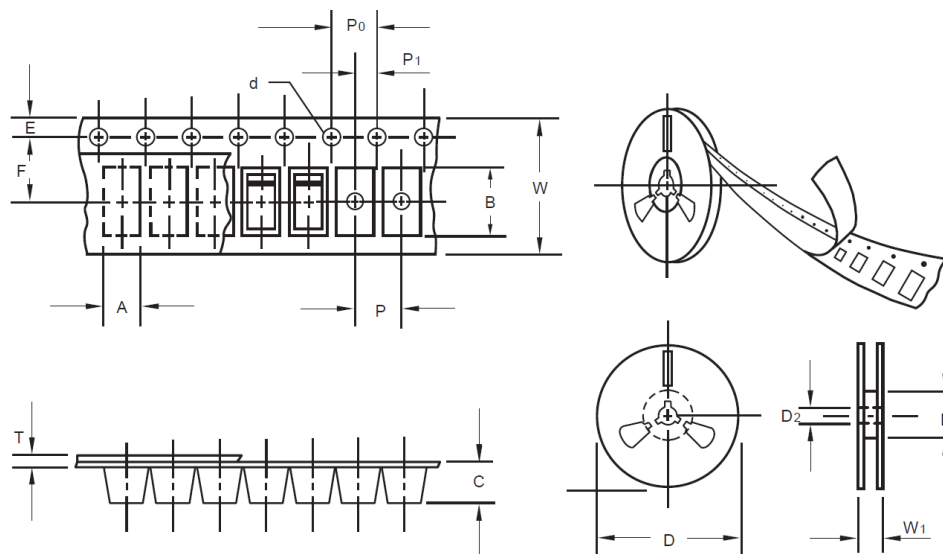


Fig. 6 - Typical Junction Capacitance

**RECOMMENDED SOLDERING PARAMETERS – FOR REFERENCE ONLY**


| PROFILE FEATURE                                      |                                  | PB-FREE ASSEMBLY  |
|------------------------------------------------------|----------------------------------|-------------------|
| Average Ramp-up Rate ( $T_L$ Max to $T_p$ )          |                                  | 3°C/second Max    |
| Preheat                                              | Temperature Min ( $T_s$ Min.)    | 150°C             |
|                                                      | Temperature Max ( $T_s$ Max.)    | 200°C             |
|                                                      | Time ( $t_s$ Min. to $t_s$ Max.) | 60 ~ 180 seconds  |
| Time maintained above                                | Temperature ( $T_L$ )            | 217°C             |
|                                                      | Time ( $t_L$ )                   | 60 ~ 150 seconds  |
| Peak/Classification Temperature ( $T_p$ )            |                                  | 260 °C            |
| Time within 5°C of actual Peak Temperature ( $t_p$ ) |                                  | 20 ~ 40 seconds   |
| Ramp-down Rate                                       |                                  | 6 °C /Second Max. |
| Time 25 °C to Peak Temperature                       |                                  | 8 Minutes Max.    |
| Suggest reflow times                                 |                                  | 3 Times Max.      |

TAPE/REEL - Unit: mm, All Devices are packed in accordance with EIA standard RS-481-A and specifications



| ITEM                     | SYMBOL | TOLERANCE | SMC/DO-214AB |
|--------------------------|--------|-----------|--------------|
| Carrier width            | A      | 0.1       | 6.15         |
| Carrier Length           | B      | 0.1       | 8.41         |
| Carrier Depth            | C      | 0.1       | 2.42         |
| Sprocket hole            | d      | 0.05      | 1.50         |
| 13"Reel outside diameter | D      | 2.0       | 330.0        |
| 13"Reel inner diameter   | D1     | Min.      | 50.00        |
| Feed hole diameter       | D2     | 0.5       | 13.00        |
| Sprocket hole position   | E      | 0.1       | 1.75         |
| Punch hole position      | F      | 0.1       | 7.50         |
| Punch hole pitch         | P      | 0.1       | 8.00         |
| Sprocket hole pitch      | P0     | 0.1       | 4.00         |
| Embossment center        | P1     | 0.1       | 2.00         |
| Overall tape thickness   | T      | 0.1       | 0.25         |
| Tape width               | W      | 0.3       | 16.00        |
| Reel width               | W1     | 1.0       | 16.50        |
| Qty./Reel (pcs)          | 3000   |           |              |

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## IMPORTANT NOTES AND DISCLAIMER

1. **ROHS COMPLIANCE:** The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU RoHS Directive (EU) 2015/863 EC (RoHS3). RoHS Test Report for this product can be obtained at Download Center.
2. **REACH COMPLIANCE:** REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, REACH Test Report for this product can be obtained at Download Center.
3. All Product parametric performance is indicated in the Electrical Characteristics for the listed herein test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
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8. *NextGen* requires that customers first obtain an RMA (Returned Merchandise Authorization) number prior to returning any products. Returns must be made within 30 days of the date of invoice, be in the original packaging, unused and like-new condition. At the time of quoting or purchasing, a product may say that it is Non-Cancelable/ Non-Returnable (NCNR). These products are not returnable and not refundable.