




|                                         |                                                                                                                                                                                                                                                                                                                                                                                 |                               |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| <b>DATA SHEET NO.</b>                   | R0430 - SMAJ12A000S0BE                                                                                                                                                                                                                                                                                                                                                          |                               |
| <b>DATE</b>                             | Apr. 30, 2024                                                                                                                                                                                                                                                                                                                                                                   |                               |
| <b>REVISION</b>                         | A2                                                                                                                                                                                                                                                                                                                                                                              | Updated With Most Recent Data |
| <b>DESCRIPTION AND MAIN PARAMETRICS</b> | <p>SMD Transient Voltage Suppressor (TVS) Diodes, SMA/DO-214AC series,<br/>2 Pads, Unidirectional Type, Stand-off Voltage 12V<br/>Peak Pulse Power: 400 Watts Min. , Peak Pulse Current: 20.1A<br/>Operating Temp. Range -65°C ~+150°C,<br/>Package in Tape/Reel, 5000pcs/Reel<br/>RoHS/RoHS III compliant, RoHS Annex III lead Exemption<br/>(Exempt per RoHS EU 2015/863)</p> |                               |
| <b>CUSTOMER</b>                         |                                                                                                                                                                                                                                                                                                                                                                                 |                               |
| <b>CUSTOMER PART NO.</b>                |                                                                                                                                                                                                                                                                                                                                                                                 |                               |
| <b>CROSS REF. PART NO.</b>              |                                                                                                                                                                                                                                                                                                                                                                                 |                               |
| <b>ORIGINAL MFG/PART NO</b>             | MDD Diodes/SMAJ12A                                                                                                                                                                                                                                                                                                                                                              |                               |
| <b>PART CODE</b>                        | SMAJ12A000S0BE                                                                                                                                                                                                                                                                                                                                                                  |                               |

|                         |                                                                                     |                                                                                       |
|-------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>VENDOR APPROVE</b>   |                                                                                     |                                                                                       |
| Issued/Checked/Approved |  |   |
|                         |                                                                                     |  |
| DATE: Apr. 30, 2024     |                                                                                     |                                                                                       |

|                         |  |
|-------------------------|--|
| <b>CUSTOMER APPROVE</b> |  |
|                         |  |
| DATE:                   |  |

## SMD TRANSIENT VOLTAGE SUPPRESSORS DIODES SMAJ SERIES

### MAIN FEATURE

- The Plastic Package Carries Underwriters Laboratory Flammability Classification 94V-0
- Low Profile Package
- Built-in Strain Relief
- High Temperature Soldering Guaranteed: 260°C/ 10 Seconds At Terminals
- Glass Passivated Chip Junction
- Low Inductance
- Excellent Clamping Capability
- 400W Peak Pulse Power Capability At 10/1000 $\mu$ s Waveform
- Repetition Rate (Duty Cycle): 0.01%
- Fast Response Time
- Repetition Rate (Duty Cycle): 0.01%
- Typical IR Less Than 1 $\mu$ a Above 10V
- Cross Competitors Parts and More.
- RoHS/RoHS III Compliant, RoHS Annex III Lead Exemption (Exempt per RoHS EU 2015/863)



### APPLICATION

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

### ELECTRICAL CHARACTERISTICS

- See Page 5 – Page 11

**SMD TRANSIENT VOLTAGE SUPPRESSORS DIODES SMAJ SERIES**

**HOW TO ORDER**

- Please follow up Part Code Guide and indicate pat code when you order or RFQ.

**PART CODE GUIDE**

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

|      |     |      |     |
|------|-----|------|-----|
| SMAJ | 12A | 000S | OBE |
| 1    | 2   | 3    | 4   |

1. SMAJ: SMD Transient Voltage Suppressor (TVs) Diodes, SMA /DO-214AC series,
2. 12A: Unidirectional Type, Stand-off Voltage: 12V
3. 000S: Internal Control Code or Special Parameters Code, Letter A~Z, a~z or digits 0~9
4. OBE: Marking Code For “BE” On The Case Surface, Different Marking For Different Specification.

**SMD TRANSIENT VOLTAGE SUPPRESSORS DIODES SMAJ SERIES**

**DIMENSION** (Unit: Inch/mm)

Image for reference

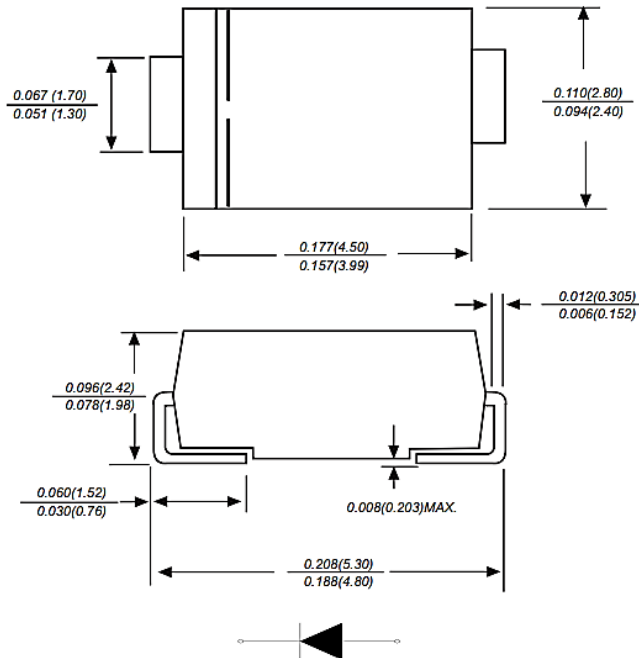


Marking:

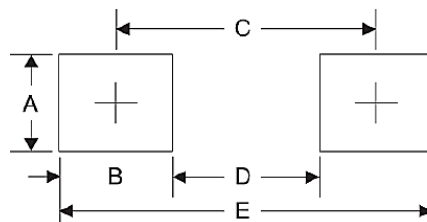
See Page 6~ Page 11

Marking Code List

SMA/DO-214AC



Recommend Pad Layout



| Symbol | Unit (Inch) | Unit (mm) |
|--------|-------------|-----------|
| A      | 0.066       | 1.680     |
| B      | 0.060       | 1.520     |
| C      | 0.154       | 3.900     |
| D      | 0.095       | 2.410     |
| E      | 0.215       | 5.450     |

**SMD TRANSIENT VOLTAGE SUPPRESSORS DIODES SMAJ SERIES**
**MECHANICAL DATA**

| CASE                                            | TERMINALS                                         | POLARITY                           | MOUNTING POSITION | MARKING                     | WEIGHT PER PIECE |
|-------------------------------------------------|---------------------------------------------------|------------------------------------|-------------------|-----------------------------|------------------|
| JEDEC<br>SMA/DO-214AC<br>Molded Plastic<br>Body | Solderable per<br>MIL-STD-<br>750, Method<br>2026 | Polarity symbol<br>marking on body | Any               | See<br>Marking Code<br>List | 0.070 grams      |

**MAX. RATING & CHARACTERISTICS** - Ratings at 25°C Ambient Temperature Unless Otherwise Specified.

| PARAMETER                                                                                                            | SYMBOLS    | VALUE                 | UNITS |
|----------------------------------------------------------------------------------------------------------------------|------------|-----------------------|-------|
| Peak Pulse Power Dissipation At 10/1000µs Waveform<br>(Note1, Note2, Fig.1)                                          | P ppm      | 400                   | W     |
| Peak Pulse Current On 10/1000 Us Waveform (Note 1, Fig 3)                                                            | I PPM      | See<br>Page 6~page 11 | A     |
| Steady State Power Dissipation At TA=50°C (Fig.5)-                                                                   | P M(AV)    | 3.3                   | W     |
| Peak Forward Surge Current, 8.3ms Single Half Sine-wave<br>Superimposed On Rated Load, (JEDEC Method) (Note3, Fig.6) | I FSM      | 40                    | A     |
| Operating Junction And Storage Temperature Range.                                                                    | T J, T stg | -65 ~ +150            | °C    |
| Typical Thermal Resistance Junction To Lead                                                                          | R θJL      | 30                    | °C/W  |
| Typical Thermal Resistance Junction To Ambient                                                                       | R θJA      | 120                   | °C/W  |

**Note**

1. Non-repetitive current pulse, per Fig 3 and derated above TA=25 °C per Fig 2
2. Mounted on 5.0\*5.0mm (0.03mm Thickness) copper pads to each terminal
3. 8.3ms single half sinewave or equivalent square wave, duty cycle=4 pulsed per minute Max.

**SMD TRANSIENT VOLTAGE SUPPRESSORS DIODES SMAJ SERIES**
**UNIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C**

Table 1

| Part Code             | Reverse Stand-off Voltage | Breakdown Voltage |             | Test Current | Reverse Leakage Max. | Max. Clamp Voltage | Peak Pulse Current | Marking Code |
|-----------------------|---------------------------|-------------------|-------------|--------------|----------------------|--------------------|--------------------|--------------|
|                       |                           | V BR @ I T        |             |              |                      |                    |                    |              |
|                       | V RMV                     | Min               | Max         | I T          | I R @ V RWM          | V C @ I PPM        | I PPM              |              |
|                       | V                         | V                 | V           | mA           | µA                   | V                  | A                  |              |
| SMAJ050A000SOAE       | 5                         | 6.4               | 7           | 10           | 800                  | 9.2                | 43.5               | AE           |
| SMAJ060A000SOAG       | 6                         | 6.67              | 7.37        | 10           | 800                  | 10.3               | 38.8               | AG           |
| SMAJ065A000SOAK       | 6.5                       | 7.22              | 7.98        | 10           | 500                  | 11.2               | 35.7               | AK           |
| SMAJ070A000SOAM       | 7                         | 7.78              | 8.6         | 10           | 200                  | 12                 | 33.3               | AM           |
| SMAJ075A000SOAP       | 7.5                       | 8.33              | 9.2         | 1            | 100                  | 12.9               | 31                 | AP           |
| SMAJ080A000SOAR       | 8                         | 8.89              | 9.83        | 1            | 50                   | 13.6               | 29.4               | AR           |
| SMAJ085A000SOAT       | 8.5                       | 9.44              | 10.4        | 1            | 20                   | 14.4               | 27.8               | AT           |
| SMAJ090A000SOAV       | 9                         | 10                | 11.1        | 1            | 10                   | 15.4               | 26                 | AV           |
| SMAJ10A000SOAX        | 10                        | 11.1              | 12.3        | 1            | 5                    | 17                 | 23.5               | AX           |
| SMAJ11A000SOAZ        | 11                        | 12.2              | 13.5        | 1            | 1                    | 18.2               | 22                 | AZ           |
| <b>SMAJ12A000SOBE</b> | <b>12</b>                 | <b>13.3</b>       | <b>14.7</b> | <b>1</b>     | <b>1</b>             | <b>19.9</b>        | <b>20.1</b>        | <b>BE</b>    |
| SMAJ13A000SOBG        | 13                        | 14.4              | 15.9        | 1            | 1                    | 21.5               | 18.6               | BG           |
| SMAJ14A000SOBK        | 14                        | 15.6              | 17.2        | 1            | 1                    | 23.2               | 17.2               | BK           |
| SMAJ15A000SOBM        | 15                        | 16.7              | 18.5        | 1            | 1                    | 24.4               | 16.4               | BM           |
| SMAJ16A000SOBP        | 16                        | 17.8              | 19.7        | 1            | 1                    | 26                 | 15.4               | BP           |
| SMAJ17A000SOBR        | 17                        | 18.9              | 20.9        | 1            | 1                    | 27.6               | 14.5               | BR           |
| SMAJ18A000SOBT        | 18                        | 20                | 22.1        | 1            | 1                    | 29.2               | 13.7               | BT           |
| SMAJ20A000SOBV        | 20                        | 22.2              | 24.5        | 1            | 1                    | 32.4               | 12.3               | BV           |
| SMAJ22A000SOBX        | 22                        | 24.4              | 26.9        | 1            | 1                    | 35.5               | 11.3               | BX           |
| SMAJ24A000SOBZ        | 24                        | 26.7              | 29.5        | 1            | 1                    | 38.9               | 10.3               | BZ           |

**SMD TRANSIENT VOLTAGE SUPPRESSORS DIODES SMAJ SERIES**
**UNIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C**

Table 2

| Part Code       | Reverse Stand-off Voltage | Breakdown Voltage |      | Test Current | Reverse Leakage Max. | Max. Clamp Voltage | Peak Pulse Current | Marking Code |
|-----------------|---------------------------|-------------------|------|--------------|----------------------|--------------------|--------------------|--------------|
|                 |                           | V BR @ I T        |      |              |                      |                    |                    |              |
|                 | V RMV                     | Min               | Max  | I T          | I R @ V RWM          | V C @ I PPM        | I PPM              |              |
|                 | V                         | V                 | V    | mA           | µA                   | V                  | A                  |              |
| SMAJ26A000SOCE  | 26                        | 28.9              | 31.9 | 1            | 1                    | 42.1               | 9.5                | CE           |
| SMAJ28A000SOCG  | 28                        | 31.1              | 34.4 | 1            | 1                    | 45.4               | 8.8                | CG           |
| SMAJ30A000SOCK  | 30                        | 33.3              | 36.8 | 1            | 1                    | 48.4               | 8.3                | CK           |
| SMAJ33A000SOCM  | 33                        | 36.7              | 40.6 | 1            | 1                    | 53.3               | 7.5                | CM           |
| SMAJ36A000SOCP  | 36                        | 40                | 44.2 | 1            | 1                    | 58.1               | 6.9                | CP           |
| SMAJ40A000SOCR  | 40                        | 44.4              | 49.1 | 1            | 1                    | 64.5               | 6.2                | CR           |
| SMAJ43A000SOCT  | 43                        | 47.8              | 52.8 | 1            | 1                    | 69.4               | 5.8                | CT           |
| SMAJ45A000SOCV  | 45                        | 50                | 55.3 | 1            | 1                    | 72.7               | 5.5                | CV           |
| SMAJ48A000SOCX  | 48                        | 53.3              | 58.9 | 1            | 1                    | 77.4               | 5.2                | CX           |
| SMAJ51A000SOCZ  | 51                        | 56.7              | 62.7 | 1            | 1                    | 82.4               | 4.9                | CZ           |
| SMAJ54A000SORE  | 54                        | 60                | 66.3 | 1            | 1                    | 87.1               | 4.6                | RE           |
| SMAJ58A000SORG  | 58                        | 64.4              | 71.2 | 1            | 1                    | 93.6               | 4.3                | RG           |
| SMAJ60A000SORK  | 60                        | 66.7              | 73.7 | 1            | 1                    | 96.8               | 4.1                | RK           |
| SMAJ64A000SORM  | 64                        | 71.1              | 78.6 | 1            | 1                    | 103                | 3.9                | RM           |
| SMAJ70A000SORP  | 70                        | 77.8              | 86   | 1            | 1                    | 113                | 3.5                | RP           |
| SMAJ75A000SORR  | 75                        | 83.3              | 92.1 | 1            | 1                    | 121                | 3.3                | RR           |
| SMAJ78A000SORT  | 78                        | 86.7              | 95.8 | 1            | 1                    | 126                | 3.2                | RT           |
| SMAJ85A000SORV  | 85                        | 94.4              | 104  | 1            | 1                    | 137                | 2.9                | RV           |
| SMAJ90A000SORX  | 90                        | 100               | 111  | 1            | 1                    | 146                | 2.7                | RX           |
| SMAJ100A000SORZ | 100                       | 111               | 123  | 1            | 1                    | 162                | 2.5                | RZ           |

**SMD TRANSIENT VOLTAGE SUPPRESSORS DIODES SMAJ SERIES**

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

Table 3

| Part Code      | Reverse Stand-off Voltage | Breakdown Voltage |     | Test Current | Reverse Leakage Max. | Max. Clamp Voltage | Peak Pulse Current | Marking Code |
|----------------|---------------------------|-------------------|-----|--------------|----------------------|--------------------|--------------------|--------------|
|                |                           | V BR @ I T        |     |              |                      |                    |                    |              |
|                | V RMV                     | Min               | Max | I T          | I R @ V RWM          | V C @ I PPM        | I PPM              |              |
| V              | V                         | V                 | mA  | µA           | V                    | A                  |                    |              |
| SMAJ110A00S0SE | 110                       | 122               | 135 | 1            | 1                    | 177                | 2.3                | SE           |
| SMAJ120A00S0SG | 120                       | 133               | 147 | 1            | 1                    | 193                | 2.1                | SG           |
| SMAJ130A00S0SK | 130                       | 144               | 159 | 1            | 1                    | 209                | 1.9                | SK           |
| SMAJ150A00S0SM | 150                       | 167               | 185 | 1            | 1                    | 243                | 1.6                | SM           |
| SMAJ160A00S0SP | 160                       | 178               | 197 | 1            | 1                    | 259                | 1.5                | SP           |
| SMAJ170A00S0SR | 170                       | 189               | 209 | 1            | 1                    | 275                | 1.5                | SR           |
| SMAJ180A00S0ST | 180                       | 201               | 222 | 1            | 1                    | 292                | 1.4                | ST           |
| SMAJ190A00S0SU | 190                       | 211               | 232 | 1            | 1                    | 308                | 1.3                | SU           |
| SMAJ200A00S0SV | 200                       | 224               | 247 | 1            | 1                    | 324                | 1.2                | SV           |
| SMAJ210A00S0SW | 210                       | 237               | 263 | 1            | 1                    | 340                | 1.2                | SW           |
| SMAJ220A00S0GE | 220                       | 246               | 272 | 1            | 1                    | 356                | 1.1                | GE           |
| SMAJ250A00S0SZ | 250                       | 279               | 309 | 1            | 1                    | 405                | 1.0                | SZ           |
| SMAJ300A00S0TE | 300                       | 335               | 371 | 1            | 1                    | 486                | 0.8                | TE           |
| SMAJ350A00S0TG | 350                       | 391               | 432 | 1            | 1                    | 567                | 0.7                | TG           |
| SMAJ400A00S0TK | 400                       | 447               | 494 | 1            | 1                    | 648                | 0.6                | TK           |
| SMAJ440A00S0TM | 440                       | 492               | 543 | 1            | 1                    | 713                | 0.6                | TM           |
|                |                           |                   |     |              |                      |                    |                    |              |
|                |                           |                   |     |              |                      |                    |                    |              |
|                |                           |                   |     |              |                      |                    |                    |              |
|                |                           |                   |     |              |                      |                    |                    |              |



**SMD TRANSIENT VOLTAGE SUPPRESSORS DIODES SMAJ SERIES**
**BIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C**

Table 4

| Part Code      | Reverse Stand-off Voltage | Breakdown Voltage |      | Test Current | Reverse Leakage Max. | Max. Clamp Voltage | Peak Pulse Current | Marking Code |
|----------------|---------------------------|-------------------|------|--------------|----------------------|--------------------|--------------------|--------------|
|                |                           | V BR @ I T        |      |              |                      |                    |                    |              |
|                | V RMV                     | Min               | Max  | I T          | I R @ V RWM          | V C @ I PPM        | I PPM              |              |
|                | V                         | V                 | V    | mA           | µA                   | V                  | A                  |              |
| SMAJ050CA0S0WE | 5                         | 6.4               | 7    | 10           | 800                  | 9.2                | 43.5               | WE           |
| SMAJ060CA0S0WG | 6                         | 6.67              | 7.37 | 10           | 800                  | 10.3               | 38.8               | WG           |
| SMAJ065CA0S0WK | 6.5                       | 7.22              | 7.98 | 10           | 500                  | 11.2               | 35.7               | WK           |
| SMAJ070CA0S0WM | 7                         | 7.78              | 8.6  | 10           | 200                  | 12                 | 33.3               | WM           |
| SMAJ075CA0S0WP | 7.5                       | 8.33              | 9.2  | 1            | 100                  | 12.9               | 31                 | WP           |
| SMAJ080CA0S0WR | 8                         | 8.89              | 9.83 | 1            | 50                   | 13.6               | 29.4               | WR           |
| SMAJ085CA0S0WT | 8.5                       | 9.44              | 10.4 | 1            | 20                   | 14.4               | 27.8               | WT           |
| SMAJ090CA0S0WV | 9                         | 10                | 11.1 | 1            | 10                   | 15.4               | 26                 | WV           |
| SMAJ10CA00S0WX | 10                        | 11.1              | 12.3 | 1            | 5                    | 17                 | 23.5               | WX           |
| SMAJ11CA00S0WZ | 11                        | 12.2              | 13.5 | 1            | 1                    | 18.2               | 22                 | WZ           |
| SMAJ12CA00S0XE | 12                        | 13.3              | 14.7 | 1            | 1                    | 19.9               | 20.1               | XE           |
| SMAJ13CA00S0XG | 13                        | 14.4              | 15.9 | 1            | 1                    | 21.5               | 18.6               | XG           |
| SMAJ14CA00S0XK | 14                        | 15.6              | 17.2 | 1            | 1                    | 23.2               | 17.2               | XK           |
| SMAJ15CA00S0XM | 15                        | 16.7              | 18.5 | 1            | 1                    | 24.4               | 16.4               | XM           |
| SMAJ16CA00S0XP | 16                        | 17.8              | 19.7 | 1            | 1                    | 26                 | 15.4               | XP           |
| SMAJ17CA00S0XR | 17                        | 18.9              | 20.9 | 1            | 1                    | 27.6               | 14.5               | XR           |
| SMAJ18CA00S0XT | 18                        | 20                | 22.1 | 1            | 1                    | 29.2               | 13.7               | XT           |
| SMAJ20CA00S0XV | 20                        | 22.2              | 24.5 | 1            | 1                    | 32.4               | 12.3               | XV           |
| SMAJ22CA00S0XX | 22                        | 24.4              | 26.9 | 1            | 1                    | 35.5               | 11.3               | XX           |
| SMAJ24CA00S0XZ | 24                        | 26.7              | 29.5 | 1            | 1                    | 38.9               | 10.3               | XZ           |

**SMD TRANSIENT VOLTAGE SUPPRESSORS DIODES SMAJ SERIES**
**BIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C**

Table 5

| Part Code       | Reverse Stand-off Voltage | Breakdown Voltage |      | Test Current | Reverse Leakage Max. | Max. Clamp Voltage | Peak Pulse Current | Marking Code |
|-----------------|---------------------------|-------------------|------|--------------|----------------------|--------------------|--------------------|--------------|
|                 |                           | V BR @ I T        |      |              |                      |                    |                    |              |
|                 | V RMV                     | Min               | Max  | I T          | I R @ V RWM          | V C @ I PPM        | I PPM              |              |
|                 | V                         | V                 | V    | mA           | µA                   | V                  | A                  |              |
| SMAJ26CA00S0YE  | 26                        | 28.9              | 31.9 | 1            | 1                    | 42.1               | 9.5                | YE           |
| SMAJ28CA00S0YG  | 28                        | 31.1              | 34.4 | 1            | 1                    | 45.4               | 8.8                | YG           |
| SMAJ30CA00S0YK  | 30                        | 33.3              | 36.8 | 1            | 1                    | 48.4               | 8.3                | YK           |
| SMAJ33CA00S0YM  | 33                        | 36.7              | 40.6 | 1            | 1                    | 53.3               | 7.5                | YM           |
| SMAJ36CA00S0YP  | 36                        | 40                | 44.2 | 1            | 1                    | 58.1               | 6.9                | YP           |
| SMAJ40CA00S0YR  | 40                        | 44.4              | 49.1 | 1            | 1                    | 64.5               | 6.2                | YR           |
| SMAJ43CA00S0YT  | 43                        | 47.8              | 52.8 | 1            | 1                    | 69.4               | 5.8                | YT           |
| SMAJ45CA00S0YV  | 45                        | 50                | 55.3 | 1            | 1                    | 72.7               | 5.5                | YV           |
| SMAJ48CA00S0YX  | 48                        | 53.3              | 58.9 | 1            | 1                    | 77.4               | 5.2                | YX           |
| SMAJ51CA00S0YZ  | 51                        | 56.7              | 62.7 | 1            | 1                    | 82.4               | 4.9                | YZ           |
| SMAJ54CA00S0ZE  | 54                        | 60                | 66.3 | 1            | 1                    | 87.1               | 4.6                | ZE           |
| SMAJ58CA00S0ZG  | 58                        | 64.4              | 71.2 | 1            | 1                    | 93.6               | 4.3                | ZG           |
| SMAJ60CA00S0ZK  | 60                        | 66.7              | 73.7 | 1            | 1                    | 96.8               | 4.1                | ZK           |
| SMAJ64CA00S0ZM  | 64                        | 71.1              | 78.6 | 1            | 1                    | 103                | 3.9                | ZM           |
| SMAJ70CA00S0ZP  | 70                        | 77.8              | 86   | 1            | 1                    | 113                | 3.5                | ZP           |
| SMAJ75CA00S0ZR  | 75                        | 83.3              | 92.1 | 1            | 1                    | 121                | 3.3                | ZR           |
| SMAJ78CA00S0ZT  | 78                        | 86.7              | 95.8 | 1            | 1                    | 126                | 3.2                | ZT           |
| SMAJ85CA00S0ZV  | 85                        | 94.4              | 104  | 1            | 1                    | 137                | 2.9                | ZV           |
| SMAJ90CA00S0ZX  | 90                        | 100               | 111  | 1            | 1                    | 146                | 2.7                | ZX           |
| SMAJ100CA00S0ZZ | 100                       | 111               | 123  | 1            | 1                    | 162                | 2.5                | ZZ           |

**SMD TRANSIENT VOLTAGE SUPPRESSORS DIODES SMAJ SERIES**

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

Table 6

| Part Code      | Reverse Stand-off Voltage | Breakdown Voltage |     | Test Current | Reverse Leakage Max. | Max. Clamp Voltage | Peak Pulse Current | Marking Code |
|----------------|---------------------------|-------------------|-----|--------------|----------------------|--------------------|--------------------|--------------|
|                |                           | V BR @ I T        |     |              |                      |                    |                    |              |
|                | V RMV                     | Min               | Max | I T          | I R @ V RWM          | V C @ I PPM        | I PPM              |              |
|                | V                         | V                 | V   | mA           | µA                   | V                  | A                  |              |
| SMAJ110CA0S0VE | 110                       | 122               | 135 | 1            | 1                    | 177                | 2.3                | VE           |
| SMAJ120CA0S0VG | 120                       | 133               | 147 | 1            | 1                    | 193                | 2.1                | VG           |
| SMAJ130CA0S0VK | 130                       | 144               | 159 | 1            | 1                    | 209                | 1.9                | VK           |
| SMAJ150CA0S0VM | 150                       | 167               | 185 | 1            | 1                    | 243                | 1.6                | VM           |
| SMAJ160CA0S0VP | 160                       | 178               | 197 | 1            | 1                    | 259                | 1.5                | VP           |
| SMAJ170CA0S0VR | 170                       | 189               | 209 | 1            | 1                    | 275                | 1.5                | VR           |
| SMAJ180CA0S0VT | 180                       | 201               | 222 | 1            | 1                    | 292                | 1.4                | VT           |
| SMAJ190CA0S0YU | 190                       | 211               | 232 | 1            | 1                    | 308                | 1.3                | YU           |
| SMAJ200CA0S0VV | 200                       | 224               | 247 | 1            | 1                    | 324                | 1.2                | VV           |
| SMAJ210CA0S0YW | 210                       | 237               | 263 | 1            | 1                    | 340                | 1.2                | YW           |
| SMAJ220CA0S0VX | 220                       | 246               | 272 | 1            | 1                    | 356                | 1.1                | VX           |
| SMAJ250CA0S0VZ | 250                       | 279               | 309 | 1            | 1                    | 405                | 1.0                | VZ           |
| SMAJ300CA0S0UE | 300                       | 335               | 371 | 1            | 1                    | 486                | 0.8                | UE           |
| SMAJ350CA0S0UG | 350                       | 391               | 432 | 1            | 1                    | 567                | 0.7                | UG           |
| SMAJ400CA0S0UK | 400                       | 447               | 494 | 1            | 1                    | 648                | 0.6                | UK           |
| SMAJ440CA0S0UM | 440                       | 492               | 543 | 1            | 1                    | 713                | 0.6                | UM           |
|                |                           |                   |     |              |                      |                    |                    |              |
|                |                           |                   |     |              |                      |                    |                    |              |
|                |                           |                   |     |              |                      |                    |                    |              |
|                |                           |                   |     |              |                      |                    |                    |              |

**SMD TRANSIENT VOLTAGE SUPPRESSORS DIODES SMAJ SERIES**

**RATINGS AND CHARACTERISTIC CURVES** (For Reference Only)

Figure 1. Peak Pulse Power Rating Curve



Figure 2. Pulse Derating Curve



**SMD TRANSIENT VOLTAGE SUPPRESSORS DIODES SMAJ SERIES**

**RATINGS AND CHARACTERISTIC CURVES** (For Reference Only)

Figure 3. Pulse Waveform

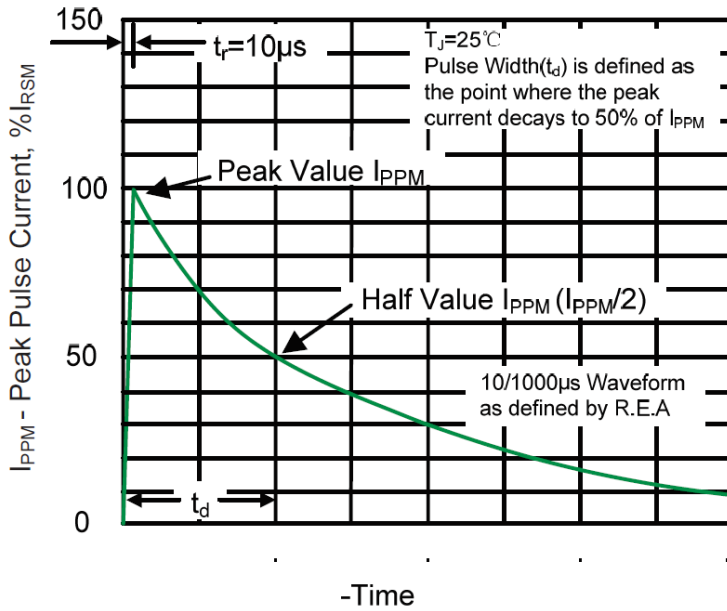
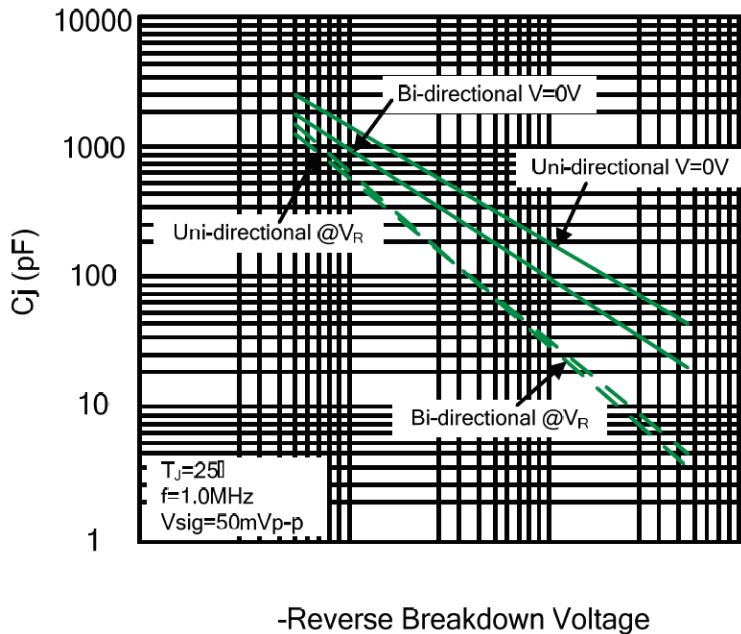


Figure 4. Typical Junction Capacitance



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Figure 5. Steady State Power Dissipation Derating curve

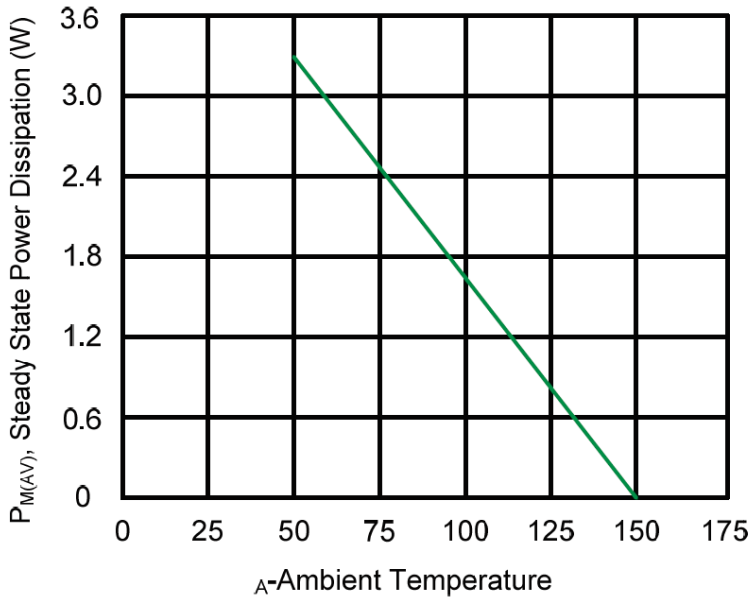
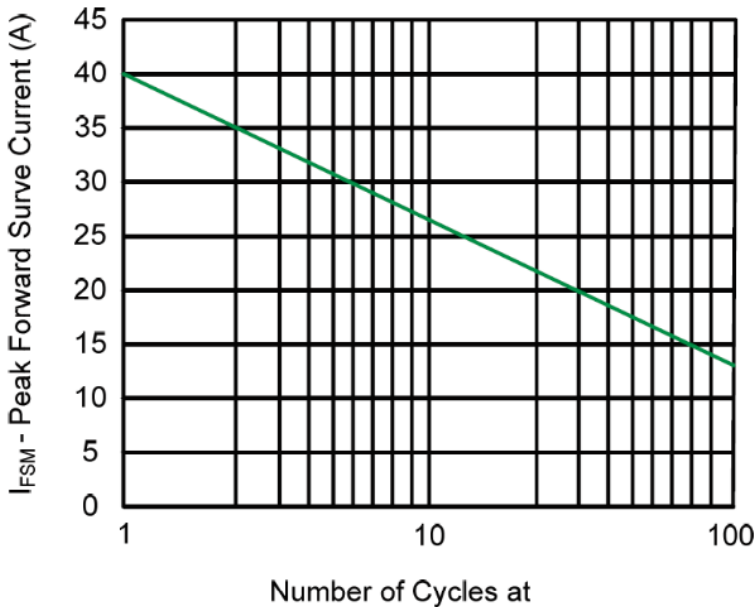


Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



**SMD TRANSIENT VOLTAGE SUPPRESSORS DIODES SMAJ SERIES**
**RELIABILITY**

| Number | Experiment Items                   | Experiment Method And Conditions                                                                               | Reference Documents             |
|--------|------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------|
| 1      | Solder Resistance Test             | Test 260°C± 5°C for 10 ± 2 sec.<br>Immerse body into solder 1/16" ± 1/32"                                      | MIL-STD-750D<br>METHOD-2031.2   |
| 2      | Solderability Test                 | 230°C ±5°C for 5 sec.                                                                                          | MIL-STD-750D<br>METHOD-2026.1 0 |
| 3      | Pull Test                          | 1 kg in axial lead direction for 10 sec.                                                                       | MIL-STD-750D<br>METHOD-2036.4   |
| 4      | Bend Test                          | 0.5Kg Weight Applied To Each Lead,<br>Bending Arcs 90 °C ± 5 °C For 3 Times                                    | MIL-STD-750D<br>METHOD-2036.4   |
| 5      | High Temperature Reverse Bias Test | TA=100°C for 1000 Hours at VR=80%<br>Rated VR                                                                  | MIL-STD-750D<br>METHOD-1038.4   |
| 6      | Forward Operation Life Test        | TA=25°C Rated Average Rectified<br>Current                                                                     | MIL-STD-750D<br>METHOD-1027.3   |
| 7      | Intermittent Operation Life Test   | On state: 5 min with rated IRMS Power<br>Off state: 5 min with Cool Forced Air.<br>On and off for 1000 cycles. | MIL-STD-750D<br>METHOD-1036.3   |
| 8      | Pressure Cooker Test               | 15 PSIG, TA=121°C, 4 hours                                                                                     | MIL-S-19500<br>APPENOIXC        |
| 9      | Temperature Cycling Test           | -55°C~+125°C; 30 Minutes For Dwelled<br>Time 5 minutes for transferred time.<br>Total: 10 cycles.              | MIL-STD-750D<br>METHOD-1051.7   |
| 10     | Thermal Shock Test                 | 0°C for 5 minutes., 100°C for 5minutes,<br>Total: 10 cycles                                                    | MIL-STD-750D<br>METHOD-1056.7   |
| 11     | Forward Surge Test                 | 8.3ms Single Sale Sine-wave One Surge.                                                                         | MIL-STD-750D<br>METHOD-4066.4   |
| 12     | Humidity Test                      | TA=65°C, RH=98% for 1000 hours.                                                                                | MIL-STD-750D<br>METHOD-1021.3   |
| 13     | High Temperature Storage life Test | 150°C for 1000 Hours                                                                                           | MIL-STD-750D<br>METHOD-1031.5   |

**SMD TRANSIENT VOLTAGE SUPPRESSORS DIODES SMAJ SERIES**

**SUGGESTED REFLOW PROFILE** (For Reference Only)

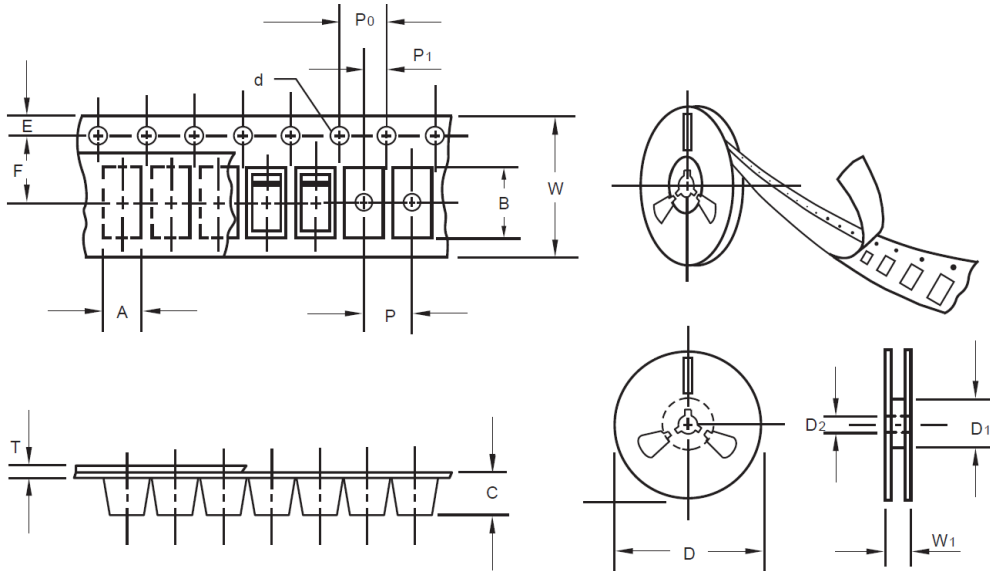


| Profile Feature                                 |                           | Pb-Free Assembly  |
|-------------------------------------------------|---------------------------|-------------------|
| Average Ramp-up Rate (Ts Max to Tp)             |                           | 3°C/second Max    |
| Preheat                                         | Temperature Min (Ts Min.) | 150°C             |
|                                                 | Temperature Max (Ts Max.) | 200°C             |
|                                                 | Time (ts Min. to ts Max.) | 60 ~ 180 seconds  |
| Time maintained above                           | Temperature (Tl)          | 217°C             |
|                                                 | Time (tl)                 | 60 ~ 150 seconds  |
| Peak/Classification Temperature (Tp)            |                           | 260 °C            |
| Time within 5°C of actual Peak Temperature (tp) |                           | 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.      |



**SMD TRANSIENT VOLTAGE SUPPRESSORS DIODES SMAJ SERIES**
**TAPE/REEL** (Unit: mm) (For Reference Only)

All Devices are packed in accordance with EIA standard RS-481-A and specifications.



| Item                     | Symbol | Tolerance | SMA/DO-214AC |
|--------------------------|--------|-----------|--------------|
| Carrier width            | A      | 0.1       | 2.8          |
| Carrier Length           | B      | 0.1       | 5.33         |
| Carrier Depth            | C      | 0.1       | 2.36         |
| Sprocket hole            | d      | 0.05      | 1.50         |
| 13"Reel outside diameter | D      | 2.0       | 330.0        |
| 13"Reel inner diameter   | D1     | -         | 50.0Min.     |
| Feed hole diameter       | D2     | 0.5       | 13.00        |
| Sprocket hole position   | E      | 0.1       | 1.75         |
| Punch hole position      | F      | 0.1       | 5.50         |
| Punch hole pitch         | P      | 0.1       | 4.00         |
| Sprocket hole pitch      | P0     | 0.1       | 4.00         |
| Embossment center        | P1     | 0.1       | 2.0          |
| Overall tape thickness   | T      | 0.1       | 0.28         |
| Tape width               | W      | 0.3       | 12.00        |
| Reel width               | W1     | 1.0       | 18.0         |
| Qty./Reel (pcs)          | 5000   |           |              |

## SMD TRANSIENT VOLTAGE SUPPRESSORS DIODES SMAJ SERIES

### 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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