YENYO

# SMDJ-A SERIES

Surface Mount Transient Voltage Suppressor

**Working Voltage 5.0 to 220 V**
**Peak Pulse Power 3000W**

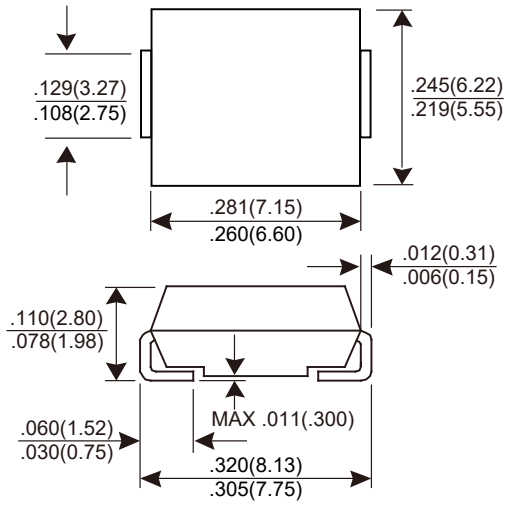
## Features

- ✶ High reliability application and automotive grade AEC-Q101 qualified
- ✶ 3000W peak pulse power capability at 10/1000μs waveform, repetition rate (duty cycles):0.01%
- ✶ Low leakage
- ✶ Excellent clamping capability
- ✶ Very fast response time
- ✶ RoHS compliant
- ✶ IEC-61000-4-2 ESD 30kV(Air), 30kV(Contact)
- ✶ ESD protection of data lines in accordance with IEC 61000-4-2
- ✶ $V_{BR}@T_J=V_{BR}@25°C \times (1+\alpha T \times (T_J - 25))$ (αT: Temperature Coefficient, typical value is 0.1%)

## Mechanical Data

- ✶ Case: Molded plastic, SMC/DO-214AB
- ✶ Epoxy: UL 94V-0 rate flame retardant
- ✶ Terminals: Solderable per MIL-STD-750, method 2026
- ✶ Polarity: Color band denotes cathode end

**SMC/DO-214AB**




Dimensions in inches and (millimeters)

## MAXIMUM RATINGS AND THERMAL CHARACTERISTICS

$T_A$ = 25°C unless otherwise noted

| PARAMETER | SYMBOL | VALUE | UNIT |
|---|---|---|---|
| Peak power dissipation with a 10/1000μs waveform (Note 1,2) | $P_{PPM}$ | 3000 | W |
| Peak forward surge current, 8.3 ms single half sine-wave (Note 3) | $I_{FSM}$ | 300 | A |
| Power dissipation on infinite heatsink at $T_L$=75°C | $P_D$ | 6.5 | W |
| Maximum instantaneous forward voltage at 100A for unidirectional only | $V_F$ | 3.5 | V |
| Typical thermal resistance junction to ambient | $R_{\theta JA}$ | 75 | °C/W |
| Typical thermal resistance junction to lead | $R_{\theta JL}$ | 15 | °C/W |
| Operating junction and storage temperature range | $T_J$ , $T_{STG}$ | -65 to +150 | °C |

Notes : (1) Non-repetitive current pulse, per Fig. 3 and derated above $T_A$=25°C per Fig. 2
(2) Mounted on copper pad area of 0.31" x 0.31" (8.0 x 8.0mm) to each terminal
(3) Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum

# SMDJ-A SERIES

**Electrical Characteristics($T_A$=25°C unless otherwise noted)**

| Part Number (Uni) | Part Number (Bi) | Device Marking Code | | Breakdown Voltage $V_{BR}$@$I_T$ | | | Maximum Reverse Leakage $I_R$@$V_{RWM}$ (μA) | Working Peak Reverse Voltage $V_{RWM}$ (V) | Maximum Reverse Surge Current $I_{PP}$ (A) | Maximum Clamping Voltage $V_C$@$I_{PP}$ (V) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Uni | Bi | Min (V) | Max (V) | $I_T$ (mA) | | | | |
| SMDJ5.0A-A | SMDJ5.0CA-A | RDEA | DDEA | 6.40 | 7.00 | 10 | 800 | 5.0 | 326.09 | 9.2 |
| SMDJ6.0A-A | SMDJ6.0CA-A | RDGA | DDGA | 6.67 | 7.37 | 10 | 800 | 6.0 | 291.26 | 10.3 |
| SMDJ6.5A-A | SMDJ6.5CA-A | RDKA | DDKA | 7.22 | 7.98 | 10 | 500 | 6.5 | 267.86 | 11.2 |
| SMDJ7.0A-A | SMDJ7.0CA-A | PDMA | DDMA | 7.78 | 8.60 | 10 | 200 | 7.0 | 250.00 | 12.0 |
| SMDJ7.5A-A | SMDJ7.5CA-A | PDPA | DDPA | 8.33 | 9.21 | 1 | 100 | 7.5 | 232.56 | 12.9 |
| SMDJ8.0A-A | SMDJ8.0CA-A | PDRA | DDRA | 8.89 | 9.83 | 1 | 50 | 8.0 | 220.59 | 13.6 |
| SMDJ8.5A-A | SMDJ8.5CA-A | PDTA | DDTA | 9.44 | 10.4 | 1 | 20 | 8.5 | 208.33 | 14.4 |
| SMDJ9.0A-A | SMDJ9.0CA-A | PDVA | DDVA | 10.0 | 11.1 | 1 | 10 | 9.0 | 194.81 | 15.4 |
| SMDJ10A-A | SMDJ10CA-A | PDXA | DDXA | 11.1 | 12.3 | 1 | 5 | 10 | 176.47 | 17.0 |
| SMDJ11A-A | SMDJ11CA-A | PDZA | DDZA | 12.2 | 13.5 | 1 | 2 | 11 | 164.84 | 18.2 |
| SMDJ12A-A | SMDJ12CA-A | PEEA | DEEA | 13.3 | 14.7 | 1 | 2 | 12 | 150.75 | 19.9 |
| SMDJ13A-A | SMDJ13CA-A | PEGA | DEGA | 14.4 | 15.9 | 1 | 2 | 13 | 139.53 | 21.5 |
| SMDJ14A-A | SMDJ14CA-A | PEKA | DEKA | 15.6 | 17.2 | 1 | 2 | 14 | 129.31 | 23.2 |
| SMDJ15A-A | SMDJ15CA-A | PEMA | DEMA | 16.7 | 18.5 | 1 | 2 | 15 | 122.95 | 24.4 |
| SMDJ16A-A | SMDJ16CA-A | PEPA | DEPA | 17.8 | 19.7 | 1 | 2 | 16 | 115.38 | 26.0 |
| SMDJ17A-A | SMDJ17CA-A | PERA | DERA | 18.9 | 20.9 | 1 | 2 | 17 | 108.70 | 27.6 |
| SMDJ18A-A | SMDJ18CA-A | PETA | DETA | 20.0 | 22.1 | 1 | 2 | 18 | 102.74 | 29.2 |
| SMDJ20A-A | SMDJ20CA-A | PEVA | DEVA | 22.2 | 24.5 | 1 | 2 | 20 | 92.59 | 32.4 |
| SMDJ22A-A | SMDJ22CA-A | PEXA | DEXA | 24.4 | 26.9 | 1 | 2 | 22 | 84.51 | 35.5 |
| SMDJ24A-A | SMDJ24CA-A | PEZA | DEZA | 26.7 | 29.5 | 1 | 2 | 24 | 77.12 | 38.9 |
| SMDJ26A-A | SMDJ26CA-A | PFEA | DFEA | 28.9 | 31.9 | 1 | 2 | 26 | 71.26 | 42.1 |
| SMDJ28A-A | SMDJ28CA-A | PFGA | DFGA | 31.1 | 34.4 | 1 | 2 | 28 | 66.08 | 45.4 |
| SMDJ30A-A | SMDJ30CA-A | PFKA | DFKA | 33.3 | 36.8 | 1 | 2 | 30 | 61.98 | 48.4 |
| SMDJ33A-A | SMDJ33CA-A | PFMA | DFMA | 36.7 | 40.6 | 1 | 2 | 33 | 56.29 | 53.3 |
| SMDJ36A-A | SMDJ36CA-A | PFPA | DFPA | 40.0 | 44.2 | 1 | 2 | 36 | 51.64 | 58.1 |
| SMDJ40A-A | SMDJ40CA-A | PFRA | DFRA | 44.4 | 49.1 | 1 | 2 | 40 | 46.51 | 64.5 |
| SMDJ43A-A | SMDJ43CA-A | PFTA | DFTA | 47.8 | 52.8 | 1 | 2 | 43 | 43.23 | 69.4 |
| SMDJ45A-A | SMDJ45CA-A | PFVA | DFVA | 50.0 | 55.3 | 1 | 2 | 45 | 41.27 | 72.7 |
| SMDJ48A-A | SMDJ48CA-A | PFXA | DFXA | 53.3 | 58.9 | 1 | 2 | 48 | 38.76 | 77.4 |
| SMDJ51A-A | SMDJ51CA-A | PFZA | DFZA | 56.7 | 62.7 | 1 | 2 | 51 | 36.41 | 82.4 |
| SMDJ54A-A | SMDJ54CA-A | RGEA | DGEA | 60.0 | 66.3 | 1 | 2 | 54 | 34.44 | 87.1 |
| SMDJ58A-A | SMDJ58CA-A | PGGA | DGGA | 64.4 | 71.2 | 1 | 2 | 58 | 32.05 | 93.6 |
| SMDJ60A-A | SMDJ60CA-A | PGKA | DGKA | 66.7 | 73.7 | 1 | 2 | 60 | 30.99 | 96.8 |
| SMDJ64A-A | SMDJ64CA-A | PGMA | DGMA | 71.1 | 78.6 | 1 | 2 | 64 | 29.13 | 103.0 |
| SMDJ70A-A | SMDJ70CA-A | PGPA | DGPA | 77.8 | 86.0 | 1 | 2 | 70 | 26.55 | 113.0 |
| SMDJ75A-A | SMDJ75CA-A | PGRA | DGRA | 83.3 | 92.1 | 1 | 2 | 75 | 24.79 | 121.0 |
| SMDJ78A-A | SMDJ78CA-A | PGTA | DGTA | 86.7 | 95.8 | 1 | 2 | 78 | 23.81 | 126.0 |
| SMDJ85A-A | SMDJ85CA-A | PGVA | DGVA | 94.4 | 104 | 1 | 2 | 85 | 21.90 | 137.0 |
| SMDJ90A-A | SMDJ90CA-A | PGXA | DGXA | 100 | 111 | 1 | 2 | 90 | 20.55 | 146.0 |
| SMDJ100A-A | SMDJ100CA-A | PGZA | DGZA | 111 | 123 | 1 | 2 | 100 | 18.52 | 162.0 |
| SMDJ110A-A | SMDJ110CA-A | PHEA | DHEA | 122 | 135 | 1 | 2 | 110 | 16.95 | 177.0 |
| SMDJ120A-A | SMDJ120CA-A | PHGA | DHGA | 133 | 147 | 1 | 2 | 120 | 15.54 | 193.0 |
| SMDJ130A-A | SMDJ130CA-A | PHKA | DHKA | 144 | 159 | 1 | 2 | 130 | 14.35 | 209.0 |
| SMDJ150A-A | SMDJ150CA-A | PHMA | DHMA | 167 | 185 | 1 | 2 | 150 | 12.35 | 243.0 |
| SMDJ160A-A | SMDJ160CA-A | PHPA | DHPA | 178 | 197 | 1 | 2 | 160 | 11.58 | 259.0 |
| SMDJ170A-A | SMDJ170CA-A | PHRA | DHRA | 189 | 209 | 1 | 2 | 170 | 10.91 | 275.0 |
| SMDJ180A-A | SMDJ180CA-A | PHTA | DHTA | 200 | 220 | 1 | 2 | 180 | 10.29 | 291.6 |
| SMDJ200A-A | SMDJ200CA-A | PHWA | DHWA | 224 | 247 | 1 | 2 | 200 | 9.26 | 324.0 |
| SMDJ220A-A | SMDJ220CA-A | PHXA | DHXA | 246 | 272 | 1 | 2 | 220 | 8.43 | 356.0 |

Suffix "A" denotes 5% tolerance device.
Add suffix "CA" after part number to specify Bi-directional devices.
For Bi-directional type having $V_{RWM}$ of 10 volts and less, the $I_R$ limit is double.

# RATINGS AND CHARACTERISTICS CURVES SMDJ-A SERIES

Fig.1 - Peak Pulse Power Rating Curve

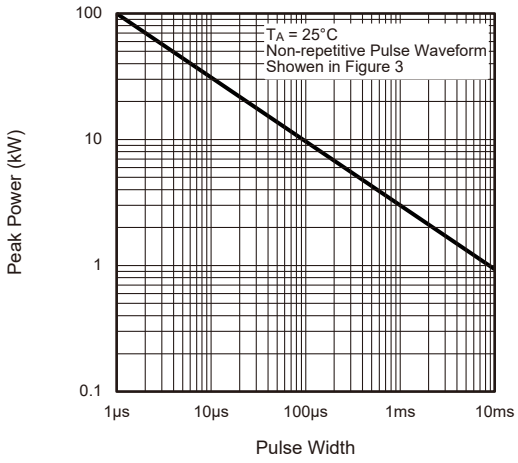



Fig.2 - Pulse Derating Curve

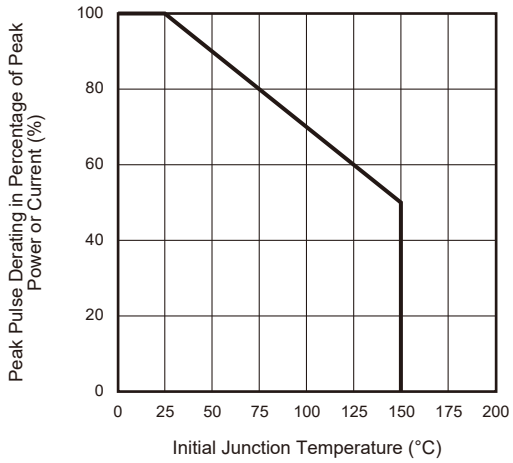



Fig.3 - Pulse Waveform

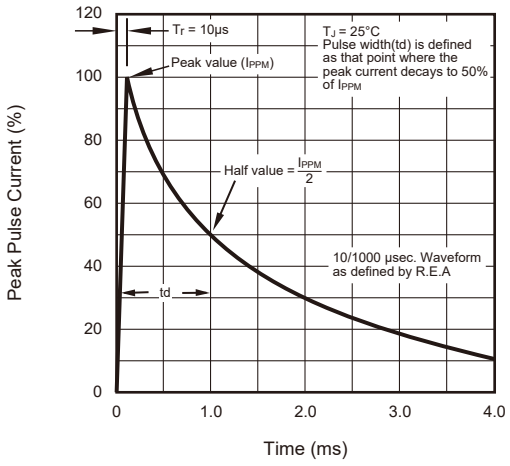



Fig.4 - Typical Junction Capacitance

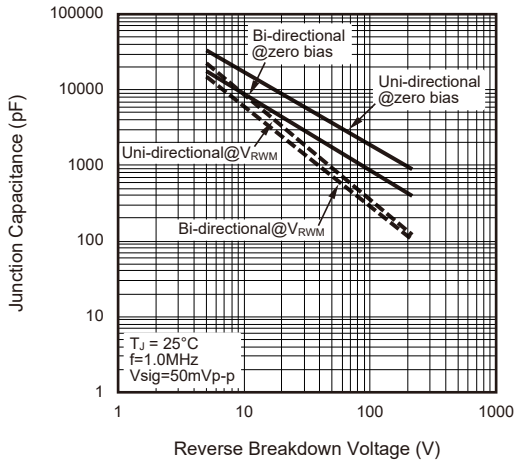



Fig.5 - Steady State Power Derating Curve

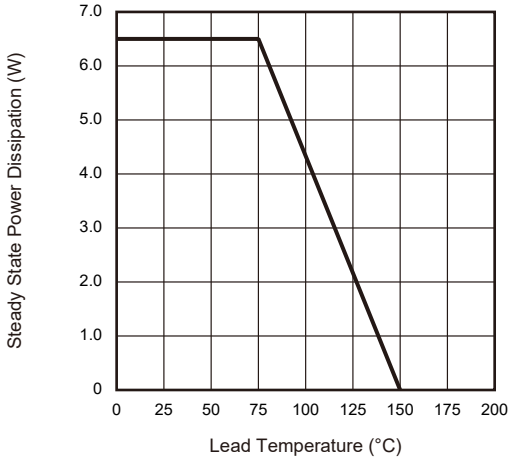



Fig.6 - Maximum Non-Repetitive Surge Current