# SMDJ-H Series

## General Information

The SMDJ-H series is designed to protect voltage sensitive components from high voltage, high energy transients. They have excellent clamping capability, high surge capability, low zener impedance and fast response time. The SMD-H series is supplied in YINT Semiconductor's exclusive, cost-effective, highly reliable and is ideally suited for use in communication systems, automotive, numerical controls, process controls, medical equipment, business machines, power supplies and many other industrial/consumer Applications.




Molded plastic
glass passivated junction.

## Features

- Case: DO-214AB/SMC
- For surface mounted applications in order to optimize board space.
- Polarity: Color band denoted positive end (cathode) except Bidirectional.
- Typical failure mode is short from over-specified voltage or current
- High Temperature soldering:260°C/10 seconds at terminals.
- Terminal: Solder plated, solderable per MIL-STD-750,Method 2026.

## Applications

TVS devices are ideal for the protection of I/O Interfaces, $V_{CC}$ bus and other vulnerable circuits used in Telecom, Computer, Industrial and Consumer electronic applications

## Electrical Characteristics (@ TA = 25° C Unless Otherwise Noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Minimum Peak Pulse Power Dissipation (T = 1 ms) (note1 note 2) | $P_{PK}$ | 3000 | Watts |
| Peak Forward Surge Current<br>8.3 ms Single Half Sine Wave Superimposed on Rated Load<br>(JEDEC Method) (Note 3) | $I_{FSM}$ | 300 | Amps |
| Steady State Power Dissipation @ TL = 75 °C | $P_{M(AV)}$ | 6.5 | Watts |
| Maximum Instantaneous Forward Voltage @ $I_{PP}$ = 50 A<br>(For Unidirectional Units Only)(note4 Note 5) | $V_F$ | 3.5/5 | Volts |
| Operating Temperature Range | $T_J$ | -55 to +150 | °C |
| Storage Temperature Range | $T_{STG}$ | -55 to +150 | °C |

1. Non-repetitive current pulse, per Pulse Waveform graph and derated above $T_A$ = 25 °C per Pulse Derating Curve.
2. Thermal Resistance Junction to Lead.
3. 8.3 ms Single Half-Sine Wave duty cycle = 4 pulses maximum per minute (unidirectional units only).
4. Single Phase, Half Wave, 60 Hz, resistive or inductive load. For capacitive load, derate current by 20 %.
5. $V_F$<3.5V for $V_{BR}$< 200V and $V_F$ <5.0V for $V_{BR}$> 201V.



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

| Part Number (Bi) | Part Number (Uni) | MARKING | | Reverse Stand off Voltage $V_R$ (Volts) | Breakdown Voltage $V_{BR}$ (Volts)@$I_T$ | | Test Current $I_T$(mA) | Maximum Reverse Leakage $I_R$ @ $V_R$(μA) | Maximum Peak Pulse Current Ipp(A) | Maximum Clamping Voltage $V_C$ @$I_{pp}$(V) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | BI | UNI | | Min .V | Max .V | | | | |
| SMDJ5.0CA-H | SMDJ5.0A-H | DDEH | RDEH | 5.0 | 6.40 | 7.00 | 10 | 800 | 326.1 | 9.2 |
| SMDJ6.0CA-H | SMDJ6.0A-H | DDGH | RDGH | 6.0 | 6.67 | 7.37 | 10 | 800 | 291.3 | 10.3 |
| SMDJ 6.5CA-H | SMDJ 6.5A-H | DDKH | RDKH | 6.5 | 7.22 | 7.98 | 10 | 500 | 267.9 | 11.2 |
| SMDJ7.0 CA-H | SMDJ7.0 A-H | DDMH | PDMH | 7.0 | 7.78 | 8.60 | 10 | 200 | 250.0 | 12.0 |
| SMDJ 7.5CA-H | SMDJ 7.5A-H | DDPH | PDPH | 7.5 | 8.33 | 9.21 | 1 | 100 | 232.6 | 12.9 |
| SMDJ 8.0CA-H | SMDJ 8.0A-H | DDRH | PDRH | 8.0 | 8.89 | 9.83 | 1 | 50 | 220.6 | 13.6 |
| SMDJ8.5 CA-H | SMDJ8.5 A-H | DDTH | PDTH | 8.5 | 9.44 | 10.40 | 1 | 20 | 208.3 | 14.4 |
| SMDJ9.0 CA-H | SMDJ9.0 A-H | DDVH | PDVH | 9.0 | 10.00 | 11.10 | 1 | 10 | 194.8 | 15.4 |
| SMDJ10CA-H | SMDJ10A-H | DDXH | PDXH | 10.0 | 11.10 | 12.30 | 1 | 5 | 176.5 | 17.0 |
| SMDJ11CA-H | SMDJ11A-H | DDZH | PDZH | 11.0 | 12.20 | 13.50 | 1 | 2 | 164.8 | 18.2 |
| SMDJ12CA-H | SMDJ12A-H | DEEH | PEEH | 12.0 | 13.30 | 14.70 | 1 | 2 | 150.8 | 19.9 |
| SMDJ13CA-H | SMDJ13A-H | DEGH | PEGH | 13.0 | 14.40 | 15.90 | 1 | 2 | 139.5 | 21.5 |
| SMDJ14CA-H | SMDJ14A-H | DEKH | PEKH | 14.0 | 15.60 | 17.20 | 1 | 2 | 129.3 | 23.2 |
| SMDJ15CA-H | SMDJ15A-H | DEMH | PEMH | 15.0 | 16.70 | 18.50 | 1 | 2 | 123.0 | 24.4 |
| SMDJ16CA-H | SMDJ16A-H | DEPH | PEPH | 16.0 | 17.80 | 19.70 | 1 | 2 | 115.4 | 26.0 |
| SMDJ17CA-H | SMDJ17A-H | DERH | PERH | 17.0 | 18.90 | 20.90 | 1 | 2 | 108.7 | 27.6 |
| SMDJ18CA-H | SMDJ18A-H | DETH | PETH | 18.0 | 20.00 | 22.10 | 1 | 2 | 102.7 | 29.2 |
| SMDJ20CA-H | SMDJ20A-H | DEVH | PEVH | 20.0 | 22.20 | 24.50 | 1 | 2 | 92.6 | 32.4 |
| SMDJ22CA-H | SMDJ22A-H | DEXH | PEXH | 22.0 | 24.40 | 26.90 | 1 | 2 | 84.5 | 35.5 |
| SMDJ24CA-H | SMDJ24A-H | DEZH | PEZH | 24.0 | 26.70 | 29.50 | 1 | 2 | 77.1 | 38.9 |
| SMDJ26CA-H | SMDJ26A-H | DFEH | PFEH | 26.0 | 28.90 | 31.90 | 1 | 2 | 71.3 | 42.1 |
| SMDJ28CA-H | SMDJ28A-H | DFGH | PFGH | 28.0 | 31.10 | 34.40 | 1 | 2 | 66.1 | 45.4 |
| SMDJ30CA-H | SMDJ30A-H | DFKH | PFKH | 30.0 | 33.30 | 36.80 | 1 | 2 | 62.0 | 48.4 |
| SMDJ33CA-H | SMDJ33A-H | DFMH | PFMH | 33.0 | 36.70 | 40.60 | 1 | 2 | 56.3 | 53.3 |
| SMDJ36CA-H | SMDJ36A-H | DFPH | PFPH | 36.0 | 40.00 | 44.20 | 1 | 2 | 51.6 | 58.1 |
| SMDJ40CA-H | SMDJ40A-H | DFRH | PFRH | 40.0 | 44.40 | 49.10 | 1 | 2 | 46.5 | 64.5 |
| SMDJ43CA-H | SMDJ43A-H | DFTH | PFTH | 43.0 | 47.80 | 52.80 | 1 | 2 | 43.2 | 69.4 |
| SMDJ45CA-H | SMDJ45A-H | DFVH | PFVH | 45.0 | 50.00 | 55.30 | 1 | 2 | 41.3 | 72.7 |
| SMDJ48CA-H | SMDJ48A-H | DFXH | PFXH | 48.0 | 53.30 | 58.90 | 1 | 2 | 38.8 | 77.4 |
| SMDJ51CA-H | SMDJ51A-H | DFZH | PFZH | 51.0 | 56.70 | 62.70 | 1 | 2 | 36.4 | 82.4 |
| SMDJ54CA-H | SMDJ54A-H | DGEH | RGEH | 54.0 | 60.00 | 66.30 | 1 | 2 | 34.4 | 87.1 |
| SMDJ58CA-H | SMDJ58A-H | DGGH | PGGH | 58.0 | 64.40 | 71.20 | 1 | 2 | 32.1 | 93.6 |
| SMDJ60CA-H | SMDJ60A-H | DGKH | PGKH | 60.0 | 66.70 | 73.70 | 1 | 2 | 31.0 | 96.8 |
| SMDJ64CA-H | SMDJ64A-H | DGMH | PGMH | 64.0 | 71.10 | 78.60 | 1 | 2 | 29.1 | 103.0 |
| SMDJ70CA-H | SMDJ70A-H | DGPH | PGPH | 70.0 | 77.80 | 86.00 | 1 | 2 | 26.5 | 113.0 |

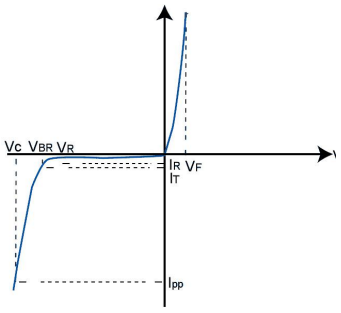


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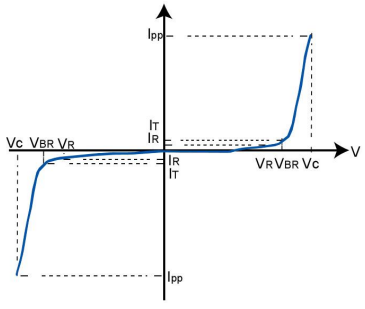
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SMDJ75CA-H | SMDJ75A-H | DGRH | PGRH | 75.0 | 83.30 | 92.10 | 1 | 2 | 24.8 | 121.0 |

| Part Number (Bi) | Part Number (Uni) | MARKING | | Reverse Stand off Voltage $V_R$ (Volts) | Breakdown Voltage $V_{BR}$ (Volts)@$I_T$ | | Test Current $I_T$(mA) | Maximum Reverse Leakage $I_R$ @ $V_R$(μA) | Maximum Peak Pulse Current Ipp(A) | Maximum Clamping Voltage $V_C$ @$I_{pp}$(V) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | BI | UNI | | Min .V | Max.V | | | | |
| SMDJ78CA-H | SMDJ78A-H | DGTH | PGTH | 78.0 | 86.70 | 95.80 | 1 | 2 | 23.8 | 126.0 |
| SMDJ85CA-H | SMDJ85A-H | DGVH | PGVH | 85.0 | 94.40 | 104.0 | 1 | 2 | 21.9 | 137.0 |
| SMDJ90CA-H | SMDJ90A-H | DGXH | PGXH | 90.0 | 100.0 | 111.0 | 1 | 2 | 20.5 | 146.0 |
| SMDJ100CA-H | SMDJ100A-H | DGZH | PGZH | 100.0 | 111.0 | 123.0 | 1 | 2 | 18.5 | 162.0 |
| SMDJ110CA-H | SMDJ110A-H | DHEH | PHEH | 110.0 | 122.0 | 135.0 | 1 | 2 | 16.9 | 177.0 |
| SMDJ120CA-H | SMDJ120A-H | DHGH | PHGH | 120.0 | 133.0 | 147.0 | 1 | 2 | 15.5 | 193.0 |
| SMDJ130CA-H | SMDJ130A-H | DHKH | PHKH | 130.0 | 144.0 | 159.0 | 1 | 2 | 14.4 | 209.0 |
| SMDJ150CA-H | SMDJ150A-H | DHMH | PHMH | 150.0 | 167.0 | 185.0 | 1 | 2 | 12.3 | 243.0 |
| SMDJ160CA-H | SMDJ160A-H | DHPH | PHPH | 160.0 | 178.0 | 197.0 | 1 | 2 | 11.6 | 259.0 |
| SMDJ170CA-H | SMDJ170A-H | DHRH | PHRH | 170.0 | 189.0 | 209.0 | 1 | 2 | 10.9 | 275.0 |
| SMDJ180CA-H | SMDJ180A-H | IHTH | HHTH | 180.0 | 201.0 | 222.0 | 1 | 2 | 10.3 | 292.0 |
| SMDJ190CA-H | SMDJ190A-H | IHVH | HHVH | 190.0 | 211.0 | 233.0 | 1 | 2 | 9.7 | 308.0 |
| SMDJ200CA-H | SMDJ200A-H | IHXH | HHXH | 200.0 | 224.0 | 247.0 | 1 | 2 | 9.3 | 324.0 |
| SMDJ210CA-H | SMDJ210A-H | IHZH | HHZH | 210.0 | 237.0 | 263.0 | 1 | 2 | 8.8 | 340.0 |
| SMDJ220CA-H | SMDJ220A-H | IIIEH | HIEH | 220.0 | 246.0 | 272.0 | 1 | 2 | 8.4 | 356.0 |

## I-V Curve Characteristics



Uni-directional



Bi-directional

| Symbol | Parameter |
|---|---|
| $I_{PP}$ | Maximum Reverse Peak Pulse Current |
| $V_C$ | Clamping Voltage @ $I_{PP}$ |
| $V_{RWM}$ | Working Peak Reverse Voltage |
| $I_R$ | Maximum Reverse Leakage Current @$V_{RWM}$ |
| $V_{BR}$ | Breakdown Voltage @ $I_T$ |
| $I_T$ | Test Current |



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## Rating & Characteristic Curves

Figure 1- Pulse Derating Curve

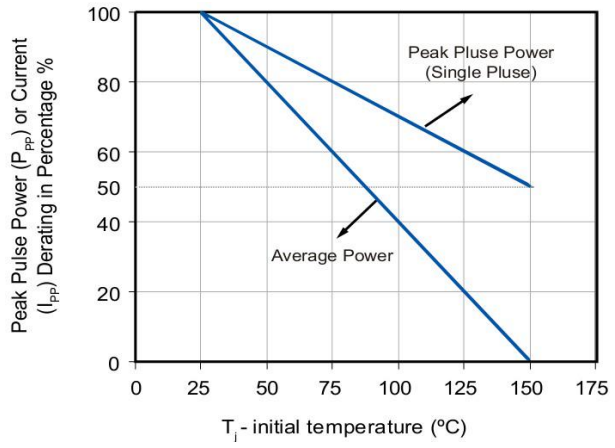



Figure 2- Maximum Non-Repetitive Surge Current

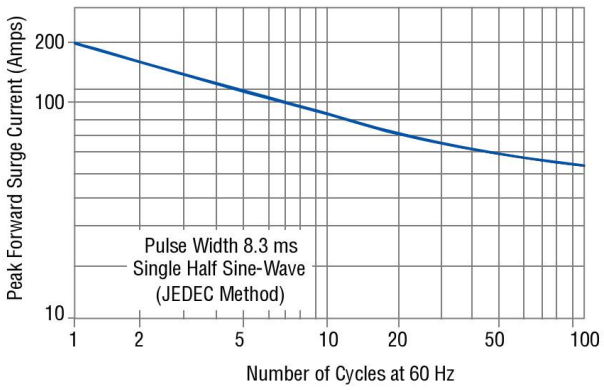



Figure 3- Typical Junction Capacitance

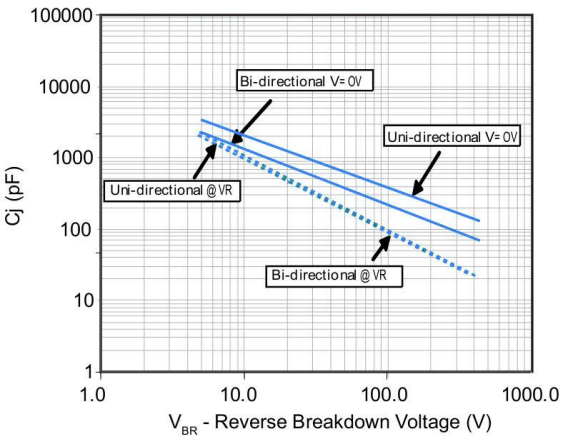



Figure 4- Pulse Waveform

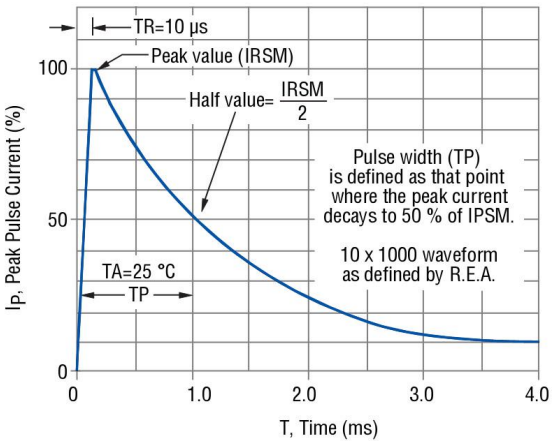



Figure 5- Steady State Power Derating Curve

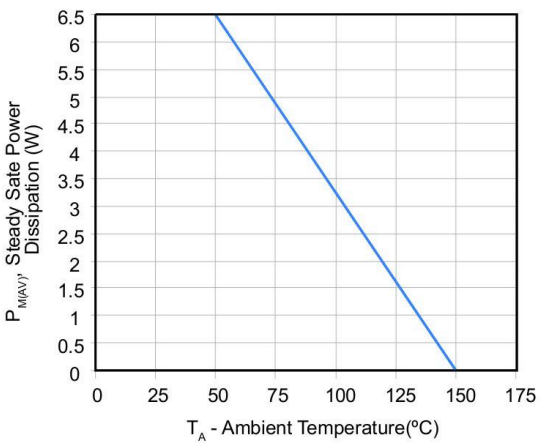
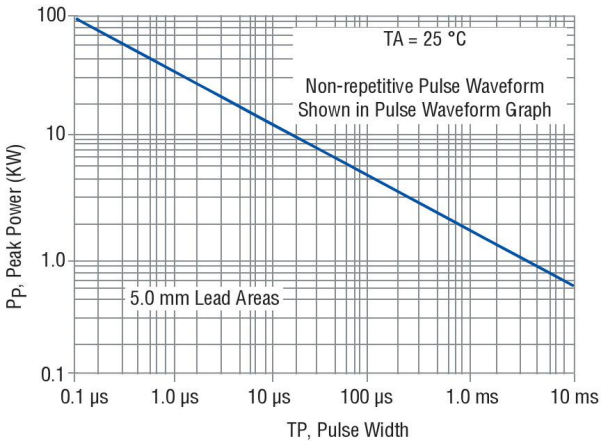



Figure 6- Pulse Rating Curve

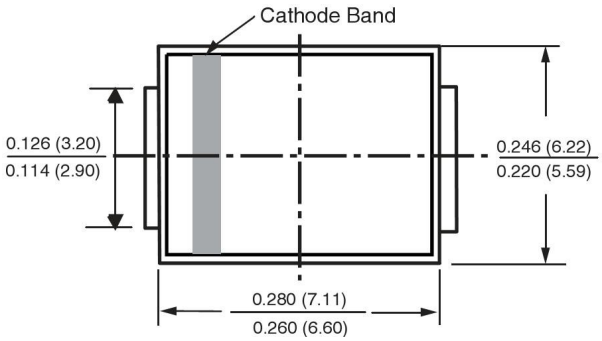




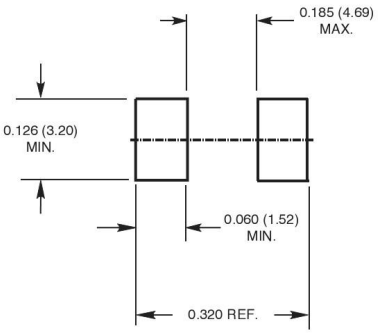

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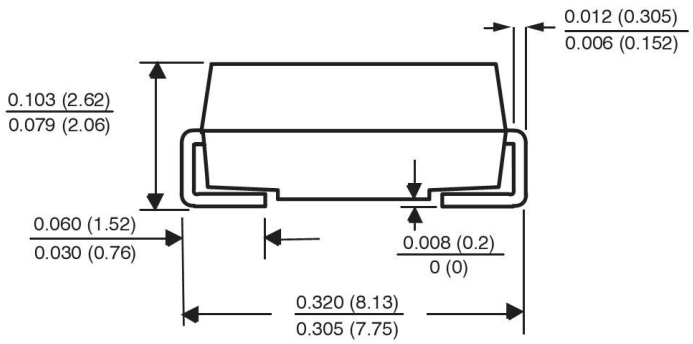
## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AB(SMC)




Mounting Pad Layout



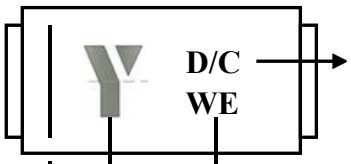




## Part Numbering System

**SMBJ XXX CA-H**

- CA-H → High reliability
  Types A：Uni-Polar
  CA: Bi-Polar
- XXX → Stand-off Voltage
  e.g. 6.5=6.5V 30=30.0V
- SMBJ → Peak pulse power
  e.g. SMA=400W SMB=600W
  SMC=1500W SMD=3000W
  P6SMB=600W

## Part Marking System




- D/C WE → Data code
- Product
- Yint logo
- Cathode Band (for Uni-directional products only)

## Disclaimer

Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.

Users should verify actual device performance in their specific applications.



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