

# SMD Transient Voltage Suppressor

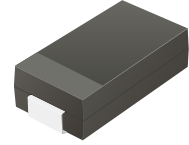


## 3.0SMCJ5.0(C)A-HF Thru. 3.0SMCJ170(C)A-HF

Working Peak Reverse Voltage: 5.0 to 170 V

Power Dissipation: 3000 W

RoHS Device  
Halogen Free

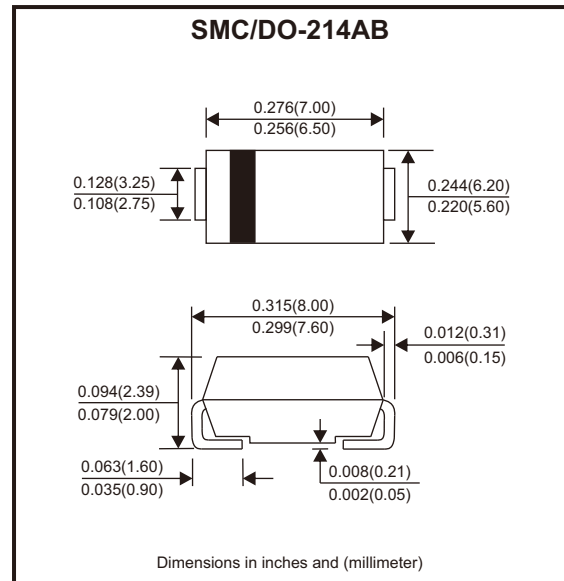


### Features

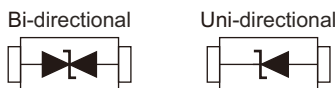
- For surface mounted applications in order to optimize board space.
- Low profile package.
- Built-in strain relief.
- Glass passivated chip junction.
- 3000W peak pulse power capability at 10x1000μs waveform, repetition rate (duty cycles): 0.01%.
- Excellent clamping capability.
- Low incremental surge resistance.
- Matte tin lead-free plated.

### Mechanical Data

- Case: SMC molded plastic.
- Terminals: Solderable per MIL-STD-750, method 2026.



### Circuit Diagram



### Maximum Ratings and Electrical Characteristics (TA = 25°C unless otherwise noted)

| Characteristics   | Symbol                            | Value       | Units |
|---|-----------------------------------|-------------|-------|
| Peak pulse power dissipation at TA = 25°C by 10 x 1000μs waveform (Fig.1) (Note 1, 2) | P <sub>PPM</sub>                  | 3000        | W     |
| Power dissipation on infinite heat sink at TA = 50°C                                  | P <sub>M(AV)</sub>                | 6.5         | W     |
| Peak forward surge current, 8.3ms single half sine wave (Note 3)                      | I <sub>FSM</sub>                  | 300         | A     |
| Maximum instantaneous forward voltage at 100A for unidirectional only                 | V <sub>F</sub>                    | 3.5         | V     |
| Operating junction and storage temperature range                                      | T <sub>J</sub> , T <sub>STG</sub> | -65 to +150 | °C    |
| Typical thermal resistance junction to lead   | R <sub>θJL</sub>                  | 15          | °C/W  |
| Typical thermal resistance junction to ambient  | R <sub>θJA</sub>                  | 75          | °C/W  |

- Notes: 1. Non-repetitive current pulse. per Fig 3 and derated above Ta= 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. Mounted on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle = 4 per minute maximum.

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## Electrical Characteristics (3.0SMCJ5.0(C)A-HF Thru. 3.0SMCJ170(C)A-HF)

| Part No.          | Reverse stand-off voltage | Breakdown voltage<br>V <sub>BR</sub> @ I <sub>T</sub> |         | Test current        | Max. clamp voltage<br>V <sub>C</sub> @ I <sub>PP</sub> | Max. peak pulse current | Max. reverse leakage<br>I <sub>R</sub> @ V <sub>R</sub> | Device Marking Code |     |
|-------------------|---------------------------|---|---------|---------------------|--|-------------------------|---|---------------------|-----|
|                   | V <sub>RWM</sub> (V)      | Min (V)   | Max (V) | I <sub>T</sub> (mA) | (V)  | I <sub>PP</sub> (A)     | (μA)  | UNI                 | BI  |
| 3.0SMCJ5.0(C)A-HF | 5.0                       | 6.40  | 7.00    | 10                  | 9.2  | 326.1                   | 800   | RDE                 | DDE |
| 3.0SMCJ6.0(C)A-HF | 6.0                       | 6.67  | 7.37    | 10                  | 10.3   | 291.3                   | 800   | RDG                 | DDG |
| 3.0SMCJ6.5(C)A-HF | 6.5                       | 7.22  | 7.98    | 10                  | 11.2   | 267.9                   | 500   | RDK                 | DDK |
| 3.0SMCJ7.0(C)A-HF | 7.0                       | 7.78  | 8.60    | 10                  | 12.0   | 250.0                   | 200   | PDM                 | DDM |
| 3.0SMCJ7.5(C)A-HF | 7.5                       | 8.33  | 9.21    | 1                   | 12.9   | 232.6                   | 100   | PDP                 | DDP |
| 3.0SMCJ8.0(C)A-HF | 8.0                       | 8.89  | 9.83    | 1                   | 13.6   | 220.6                   | 50  | PDR                 | DDR |
| 3.0SMCJ8.5(C)A-HF | 8.5                       | 9.44  | 10.40   | 1                   | 14.4   | 208.3                   | 20  | PDT                 | DDT |
| 3.0SMCJ9.0(C)A-HF | 9.0                       | 10.00   | 11.10   | 1                   | 15.4   | 194.8                   | 10  | PDV                 | DDV |
| 3.0SMCJ10(C)A-HF  | 10.0                      | 11.10   | 12.30   | 1                   | 17.0   | 176.5                   | 5   | PDX                 | DDX |
| 3.0SMCJ11(C)A-HF  | 11.0                      | 12.20   | 13.50   | 1                   | 18.2   | 164.8                   | 2   | PDZ                 | DDZ |
| 3.0SMCJ12(C)A-HF  | 12.0                      | 13.30   | 14.70   | 1                   | 19.9   | 150.8                   | 2   | PEE                 | DEE |
| 3.0SMCJ13(C)A-HF  | 13.0                      | 14.40   | 15.90   | 1                   | 21.5   | 139.5                   | 2   | PEG                 | DEG |
| 3.0SMCJ14(C)A-HF  | 14.0                      | 15.60   | 17.20   | 1                   | 23.2   | 129.3                   | 2   | PEK                 | DEK |
| 3.0SMCJ15(C)A-HF  | 15.0                      | 16.70   | 18.50   | 1                   | 24.4   | 123.0                   | 2   | PEM                 | DEM |
| 3.0SMCJ16(C)A-HF  | 16.0                      | 17.80   | 19.70   | 1                   | 26.0   | 115.4                   | 2   | PEP                 | DEP |
| 3.0SMCJ17(C)A-HF  | 17.0                      | 18.90   | 20.90   | 1                   | 27.6   | 108.7                   | 2   | PER                 | DER |
| 3.0SMCJ18(C)A-HF  | 18.0                      | 20.00   | 22.10   | 1                   | 29.2   | 102.7                   | 2   | PET                 | DET |
| 3.0SMCJ20(C)A-HF  | 20.0                      | 22.20   | 24.50   | 1                   | 32.4   | 92.6                    | 2   | PEV                 | DEV |
| 3.0SMCJ22(C)A-HF  | 22.0                      | 24.40   | 26.90   | 1                   | 35.5   | 84.5                    | 2   | PEX                 | DEX |
| 3.0SMCJ24(C)A-HF  | 24.0                      | 26.70   | 29.50   | 1                   | 38.9   | 77.1                    | 2   | PEZ                 | DEZ |
| 3.0SMCJ26(C)A-HF  | 26.0                      | 28.90   | 31.90   | 1                   | 42.1   | 71.3                    | 2   | PFE                 | DFE |
| 3.0SMCJ28(C)A-HF  | 28.0                      | 31.10   | 34.40   | 1                   | 45.4   | 66.1                    | 2   | PFG                 | DFG |
| 3.0SMCJ30(C)A-HF  | 30.0                      | 33.30   | 36.80   | 1                   | 48.4   | 62.0                    | 2   | PFK                 | DFK |
| 3.0SMCJ33(C)A-HF  | 33.0                      | 36.70   | 40.60   | 1                   | 53.3   | 56.3                    | 2   | PFM                 | DFM |
| 3.0SMCJ36(C)A-HF  | 36.0                      | 40.00   | 44.20   | 1                   | 58.1   | 51.6                    | 2   | PFP                 | DFP |
| 3.0SMCJ40(C)A-HF  | 40.0                      | 44.40   | 49.10   | 1                   | 64.5   | 46.5                    | 2   | PFR                 | DFR |
| 3.0SMCJ43(C)A-HF  | 43.0                      | 47.80   | 52.80   | 1                   | 69.4   | 43.2                    | 2   | PFT                 | DFT |
| 3.0SMCJ45(C)A-HF  | 45.0                      | 50.00   | 55.30   | 1                   | 72.7   | 41.3                    | 2   | PFV                 | DFV |
| 3.0SMCJ48(C)A-HF  | 48.0                      | 53.30   | 58.90   | 1                   | 77.4   | 38.8                    | 2   | PFX                 | DFX |
| 3.0SMCJ51(C)A-HF  | 51.0                      | 56.70   | 62.70   | 1                   | 82.4   | 36.4                    | 2   | PFZ                 | DFZ |
| 3.0SMCJ54(C)A-HF  | 54.0                      | 60.00   | 66.30   | 1                   | 87.1   | 34.4                    | 2   | RGE                 | DGE |
| 3.0SMCJ58(C)A-HF  | 58.0                      | 64.40   | 71.20   | 1                   | 93.6   | 32.1                    | 2   | PGG                 | DGG |
| 3.0SMCJ60(C)A-HF  | 60.0                      | 66.70   | 73.70   | 1                   | 96.8   | 31.0                    | 2   | PGK                 | DGK |
| 3.0SMCJ64(C)A-HF  | 64.0                      | 71.10   | 78.60   | 1                   | 103.0  | 29.1                    | 2   | PGM                 | DGM |
| 3.0SMCJ70(C)A-HF  | 70.0                      | 77.80   | 86.00   | 1                   | 113.0  | 26.5                    | 2   | PGP                 | DGP |
| 3.0SMCJ75(C)A-HF  | 75.0                      | 83.30   | 92.10   | 1                   | 121.0  | 24.8                    | 2   | PGR                 | DGR |
| 3.0SMCJ78(C)A-HF  | 78.0                      | 86.70   | 95.80   | 1                   | 126.0  | 23.8                    | 2   | PGT                 | DGT |
| 3.0SMCJ85(C)A-HF  | 85.0                      | 94.40   | 104     | 1                   | 137.0  | 21.9                    | 2   | PGV                 | DGV |
| 3.0SMCJ90(C)A-HF  | 90.0                      | 100   | 111     | 1                   | 146.0  | 20.5                    | 2   | PGX                 | DGX |
| 3.0SMCJ100(C)A-HF | 100                       | 111   | 123     | 1                   | 162.0  | 18.5                    | 2   | PGZ                 | DGZ |
| 3.0SMCJ110(C)A-HF | 110                       | 122   | 135     | 1                   | 177.0  | 16.9                    | 2   | PHE                 | DHE |
| 3.0SMCJ120(C)A-HF | 120                       | 133   | 147     | 1                   | 193.0  | 15.5                    | 2   | PHG                 | DHG |
| 3.0SMCJ130(C)A-HF | 130                       | 144   | 159     | 1                   | 209.0  | 14.4                    | 2   | PHK                 | DHK |
| 3.0SMCJ150(C)A-HF | 150                       | 167   | 185     | 1                   | 243.0  | 12.3                    | 2   | PHM                 | DHM |
| 3.0SMCJ160(C)A-HF | 160                       | 178   | 197     | 1                   | 259.0  | 11.6                    | 2   | PHP                 | DHP |
| 3.0SMCJ170(C)A-HF | 170                       | 189   | 209     | 1                   | 275.0  | 10.9                    | 2   | PHR                 | DHR |

Note: For Bi-directional devices, use suffix CA.

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## Rating and Characteristic Curves (3.0SMCJ5.0(C)A-HF Thru. 3.0SMCJ170(C)A-HF)

Fig.1 - Peak Pulse Power Rating Curve

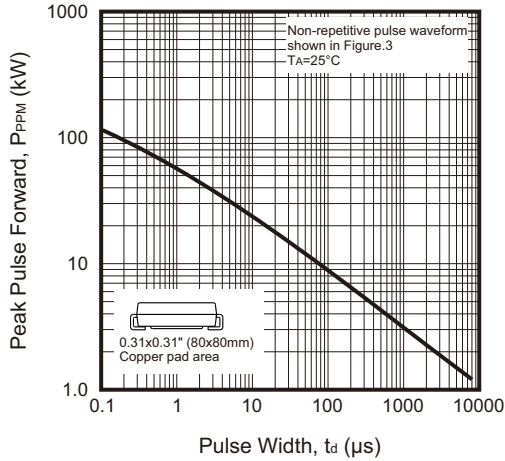


Fig.2 - Forward Current Derating Curve

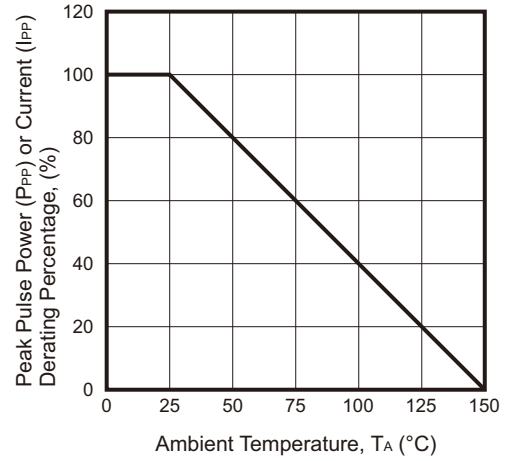


Fig.3 - Pulse Waveform

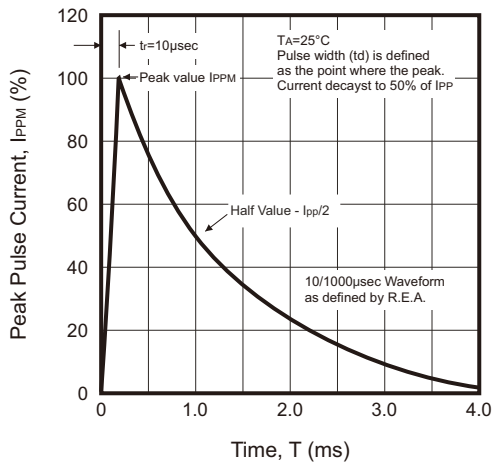


Fig.4 - Typical Junction Capacitance

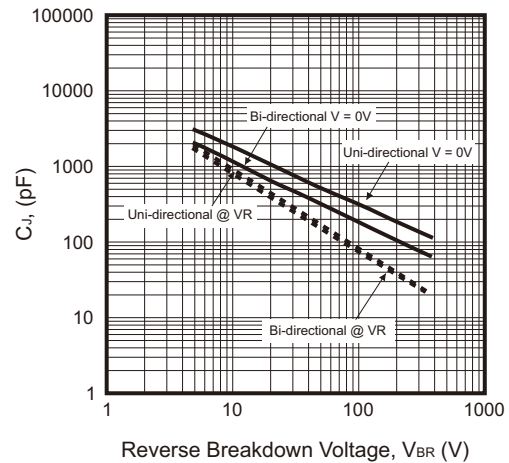


Fig.5 - Steady State Power Derating Curve

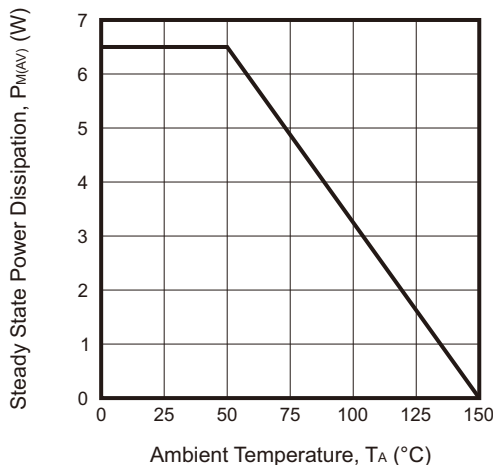
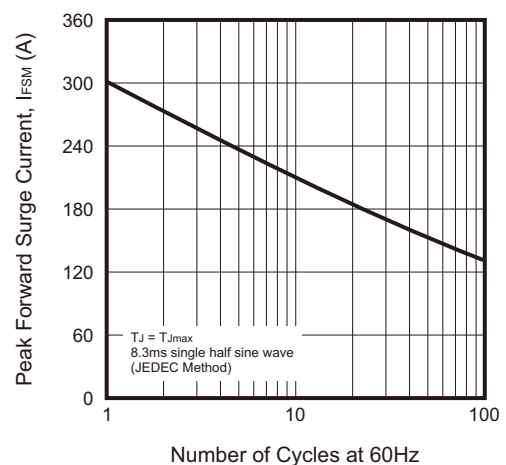
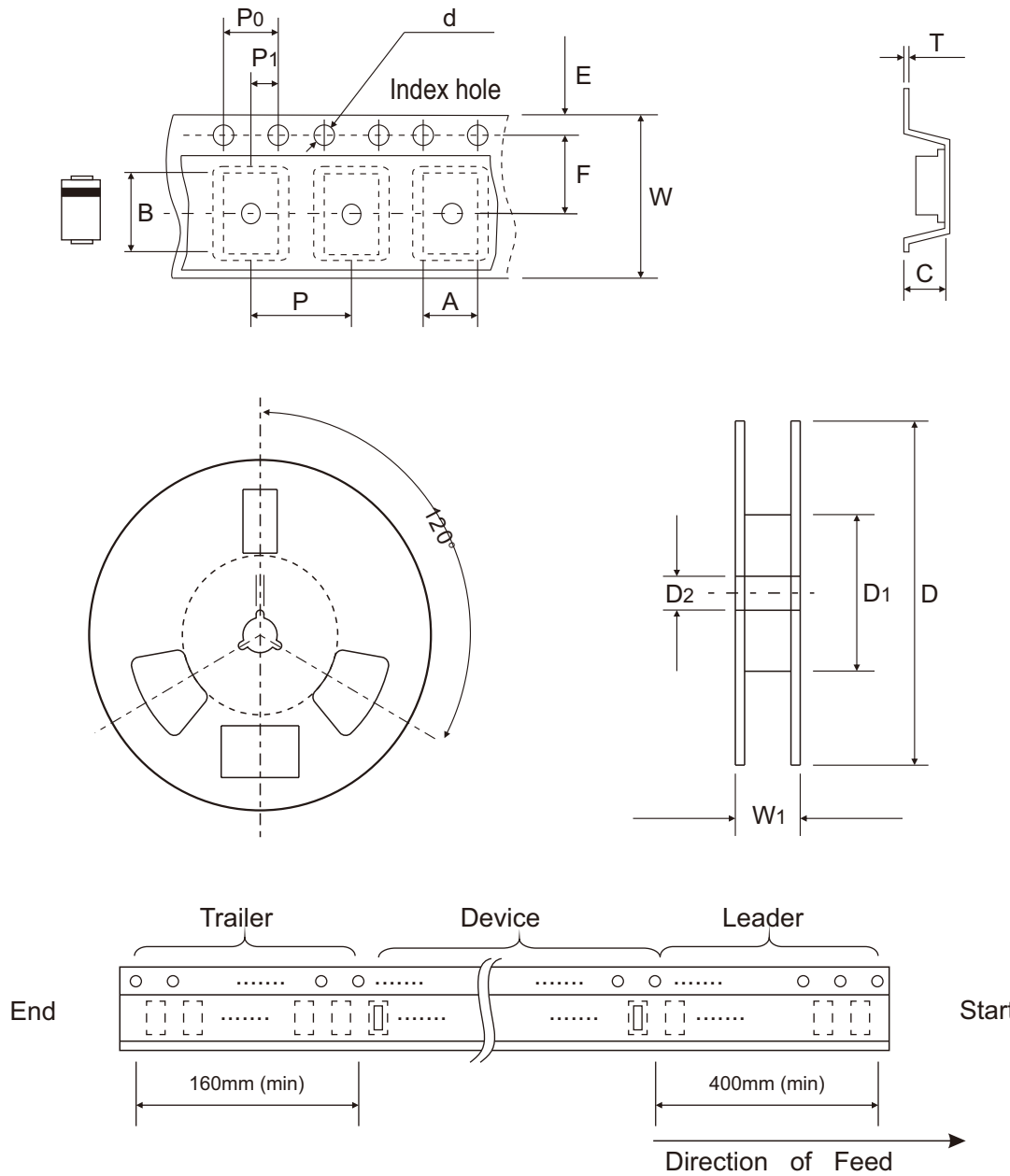


Fig.6 - Maximum Non-Repetitive Peak Forward Surge Current



## Reel Taping Specification



| DO-214AB<br>(SMC) | SYMBOL | A             | B             | C             | d             | D              | D1            | D2            |
|-------------------|--------|---------------|---------------|---------------|---------------|----------------|---------------|---------------|
|                   | (mm)   | 6.22 ± 0.10   | 8.31 ± 0.10   | 2.49 ± 0.10   | 1.55 ± 0.05   | 330 ± 2.00     | 100.00 ± 1.00 | 13.00 ± 0.20  |
|                   | (inch) | 0.245 ± 0.004 | 0.327 ± 0.004 | 0.098 ± 0.004 | 0.061 ± 0.002 | 12.992 ± 0.079 | 3.937 ± 0.039 | 0.512 ± 0.008 |

| DO-214AB<br>(SMC) | SYMBOL | E             | F             | P             | P0            | P1            | T             | W             | W1                       |
|-------------------|--------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------------------|
|                   | (mm)   | 1.75 ± 0.10   | 7.50 ± 0.10   | 8.00 ± 0.10   | 4.00 ± 0.10   | 2.00 ± 0.05   | 0.28 ± 0.02   | 16.00 ± 0.30  | 21.00 + 2.00<br>- 1.00   |
|                   | (inch) | 0.069 ± 0.004 | 0.295 ± 0.004 | 0.315 ± 0.004 | 0.157 ± 0.004 | 0.079 ± 0.002 | 0.011 ± 0.001 | 0.630 ± 0.012 | 0.827 + 0.079<br>- 0.039 |

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