

Transient Voltage Suppressors DO-214AB/SMC Package

1.5SMC Series

MERITEK

FEATURE

- Peak Power Dissipation: 1500W
- Fast response time. I_R less than $1\mu A$ above 12V. Duty cycle: 0.01%
- Excellent clamping capability, Low inductance
- Glass passivated junction
- High Temperature soldering: 260°C, 10 seconds
- Flammability Classification 94V-O.
- UL/cUL safety approved: certification No: E223045



MAXIMUM RATINGS AND CHARACTERISTICS

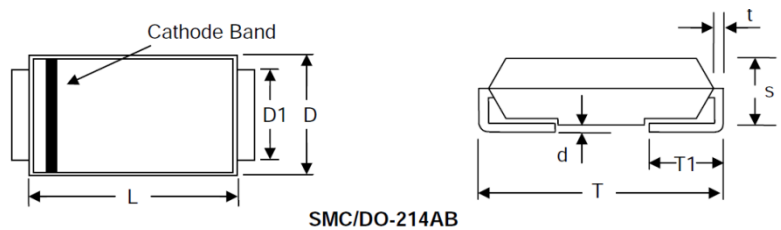
| Parameter | Symbol | Value | Unit |
|--|----------------|--------------|------------|
| Peak Pulse Power Dissipation on 10/1000 μs waveform. (Note 1, Fig. 1) | P_{PPM} | Minimum 1500 | Watts |
| Peak Pulse Current on 10/1000 μs waveform. (Note 1, Fig. 3) | I_{PPM} | See Table | Amps |
| Steady State Power Dissipation at $T_L = 75^\circ C$, Lead length .375" (9.5mm). (Fig. 5) | $P_{M(AV)}$ | 6.5 | Watts |
| Peak Forward Surge Current, 8.3ms Single Half Sine-wave Superimposed on Rated Load | I_{FSM} | 200 | Amps |
| Operating junction and Storage Temperature Range. | T_J, T_{STG} | -65 to +150 | $^\circ C$ |

Ratings at 25°C ambient temperature unless otherwise specified.

1. Non-repetitive current pulse, per Fig. 3 and derated above $T_A = 25^\circ C$ per Fig. 2.
2. Mounted on 8.0mm \times 8.0mm copper pads to each terminal.
3. 8.3ms single half sine-wave, or equivalent square wave, Duty cycle = 4 pulses per minute maximum.

DIMENSIONS

| Item | SMC/DO-214AB (mm) | |
|------|-------------------|-------|
| | Min. | Max. |
| L | 6.60 | 7.11 |
| D | 5.59 | 6.22 |
| D1 | 2.90 | 3.20 |
| T | 7.75 | 8.13 |
| T1 | 0.76 | 1.52 |
| d | - | 0.203 |
| s | 2.06 | 2.62 |
| t | 0.152 | 0.305 |



SPECIFICATIONS

| Part Number | | Device Marking Code | | Reverse Stand-Off Voltage | Breakdown Voltage Min. @ I_T | Breakdown Voltage Max. @ I_T | Test Current | Maximum Clamping Voltage @ I_{PP} | Peak Pulse Current | Reverse Leakage @ V_{RWM} |
|-------------|-------------|---------------------|------|---------------------------|--------------------------------|--------------------------------|--------------|-------------------------------------|--------------------|-----------------------------|
| Uni-Polar | Bi-Polar | Uni | Bi | $V_{RWM}(V)$ | $V_{BRMIN}(V)$ | $V_{BRMAX}(V)$ | $I_T(mA)$ | $V_C(V)$ | $I_{PP}(A)$ | $I_R(\mu A)$ |
| 1.5SMC6.8A | 1.5SMC6.8CA | 6V8A | 6V8C | 5.8 | 6.45 | 7.14 | 10 | 10.5 | 144.8 | 1000 |
| 1.5SMC7.5A | 1.5SMC7.5CA | 7V5A | 7V5C | 6.4 | 7.13 | 7.88 | 10 | 11.3 | 134.5 | 500 |
| 1.5SMC8.2A | 1.5SMC8.2CA | 8V2A | 8V2C | 7.02 | 7.79 | 8.61 | 10 | 12.1 | 125.6 | 200 |
| 1.5SMC9.1A | 1.5SMC9.1CA | 9V1A | 9V1C | 7.78 | 8.65 | 9.50 | 1 | 13.4 | 113.4 | 50 |
| 1.5SMC10A | 1.5SMC10CA | 10A | 10C | 8.55 | 9.50 | 10.50 | 1 | 14.5 | 104.8 | 10 |
| 1.5SMC11A | 1.5SMC11CA | 11A | 11C | 9.40 | 10.50 | 11.60 | 1 | 15.6 | 97.4 | 5 |
| 1.5SMC12A | 1.5SMC12CA | 12A | 12C | 10.20 | 11.40 | 12.60 | 1 | 16.7 | 91.0 | 5 |
| 1.5SMC13A | 1.5SMC13CA | 13A | 13C | 11.10 | 12.40 | 13.70 | 1 | 18.2 | 83.5 | 1 |
| 1.5SMC15A | 1.5SMC15CA | 15A | 15C | 12.80 | 14.30 | 15.80 | 1 | 21.2 | 71.7 | 1 |

Transient Voltage Suppressors DO-214AB/SMC Package

1.5SMC Series

MERITEK

SPECIFICATIONS(CONTINUED)

| Part Number | | Device Marking Code | | Reverse Stand-Off Voltage | Breakdown Voltage Min.@I _T | Breakdown Voltage Max.@I _T | Test Current | Maximum Clamping Voltage @I _{PP} | Peak Pulse Current | Reverse Leakage @V _{RWM} |
|-------------|-------------|---------------------|------|---------------------------|---------------------------------------|---------------------------------------|---------------------|---|---------------------|-----------------------------------|
| Uni-Polar | Bi-Polar | Uni | Bi | V _{RWM} (V) | V _{BR MIN.} (V) | V _{BR MAX.} (V) | I _T (mA) | V _C (V) | I _{PP} (A) | I _R (μA) |
| 1.5SMC16A | 1.5SMC16CA | 16A | 16C | 13.60 | 15.20 | 16.80 | 1 | 22.5 | 67.6 | 1 |
| 1.5SMC18A | 1.5SMC18CA | 18A | 18C | 15.30 | 17.10 | 18.90 | 1 | 25.2 | 60.3 | 1 |
| 1.5SMC20A | 1.5SMC20CA | 20A | 20C | 17.10 | 19.00 | 21.00 | 1 | 27.7 | 54.9 | 1 |
| 1.5SMC22A | 1.5SMC22CA | 22A | 22C | 18.80 | 20.90 | 23.10 | 1 | 30.6 | 49.7 | 1 |
| 1.5SMC24A | 1.5SMC24CA | 24A | 24C | 20.50 | 22.80 | 25.20 | 1 | 33.2 | 45.8 | 1 |
| 1.5SMC27A | 1.5SMC27CA | 27A | 27C | 23.10 | 25.70 | 28.40 | 1 | 37.5 | 40.5 | 1 |
| 1.5SMC30A | 1.5SMC30CA | 30A | 30C | 25.60 | 28.50 | 31.50 | 1 | 41.4 | 36.7 | 1 |
| 1.5SMC33A | 1.5SMC33CA | 33A | 33C | 28.20 | 31.40 | 34.70 | 1 | 45.7 | 33.3 | 1 |
| 1.5SMC36A | 1.5SMC36CA | 36A | 36C | 30.80 | 34.20 | 37.80 | 1 | 49.9 | 30.5 | 1 |
| 1.5SMC39A | 1.5SMC39CA | 39A | 39C | 33.30 | 37.10 | 41.00 | 1 | 53.9 | 28.2 | 1 |
| 1.5SMC43A | 1.5SMC43CA | 43A | 43C | 36.80 | 40.90 | 45.20 | 1 | 59.3 | 25.6 | 1 |
| 1.5SMC47A | 1.5SMC47CA | 47A | 47C | 40.20 | 44.70 | 49.40 | 1 | 64.8 | 23.5 | 1 |
| 1.5SMC51A | 1.5SMC51CA | 51A | 51C | 43.60 | 48.50 | 53.60 | 1 | 70.1 | 21.7 | 1 |
| 1.5SMC56A | 1.5SMC56CA | 56A | 56C | 47.80 | 53.20 | 58.80 | 1 | 77.0 | 19.7 | 1 |
| 1.5SMC62A | 1.5SMC62CA | 62A | 62C | 53.00 | 58.90 | 65.10 | 1 | 85.0 | 17.9 | 1 |
| 1.5SMC68A | 1.5SMC68CA | 68A | 68C | 58.10 | 64.60 | 71.40 | 1 | 92.0 | 16.5 | 1 |
| 1.5SMC75A | 1.5SMC75CA | 75A | 75C | 64.10 | 71.30 | 78.80 | 1 | 103.0 | 14.8 | 1 |
| 1.5SMC82A | 1.5SMC82CA | 82A | 82C | 70.10 | 77.90 | 86.10 | 1 | 113.0 | 13.5 | 1 |
| 1.5SMC91A | 1.5SMC91CA | 91A | 91C | 77.80 | 86.50 | 95.50 | 1 | 125.0 | 12.2 | 1 |
| 1.5SM100A | 1.5SMC100CA | 68A | 100C | 85.50 | 95.00 | 105.00 | 1 | 137.0 | 11.1 | 1 |
| 1.5SMC110A | 1.5SMC110CA | 75A | 110C | 94.00 | 105.00 | 116.00 | 1 | 152.0 | 10.0 | 1 |
| 1.5SMC120A | 1.5SMC120CA | 120A | 120C | 102.00 | 114.00 | 126.00 | 1 | 165.0 | 9.2 | 1 |
| 1.5SMC130A | 1.5SMC130CA | 130A | 130C | 111.00 | 124.00 | 137.00 | 1 | 179.0 | 8.5 | 1 |
| 1.5SMC150A | 1.5SMC150CA | 150A | 150C | 128.00 | 143.00 | 158.00 | 1 | 207.0 | 7.3 | 1 |
| 1.5SMC160A | 1.5SMC160CA | 160A | 160C | 136.00 | 152.00 | 168.00 | 1 | 219.0 | 6.9 | 1 |
| 1.5SMC170A | 1.5SMC170CA | 170A | 170C | 145.00 | 162.00 | 179.00 | 1 | 234.0 | 6.5 | 1 |
| 1.5SMC180A | 1.5SMC180CA | 180A | 180C | 154.00 | 171.00 | 189.00 | 1 | 246.0 | 6.2 | 1 |
| 1.5SMC200A | 1.5SMC200CA | 200A | 200C | 171.00 | 190.00 | 210.00 | 1 | 274.0 | 5.5 | 1 |
| 1.5SMC220A | 1.5SMC220CA | 220A | 220C | 185.00 | 209.00 | 231.00 | 1 | 328.0 | 4.6 | 1 |
| 1.5SMC250A | 1.5SMC250CA | 250A | 250C | 214.00 | 237.00 | 263.00 | 1 | 344.0 | 4.4 | 1 |
| 1.5SMC300A | 1.5SMC300CA | 300A | 300C | 256.00 | 285.00 | 315.00 | 1 | 414.0 | 3.7 | 1 |
| 1.5SMC350A | 1.5SMC350CA | 350A | 350C | 300.00 | 332.00 | 368.00 | 1 | 482.0 | 3.2 | 1 |
| 1.5SMC400A | 1.5SMC400CA | 400A | 400C | 342.00 | 380.00 | 420.00 | 1 | 548.0 | 2.8 | 1 |
| 1.5SMC440A | 1.5SMC440CA | 440A | 440C | 376.00 | 418.00 | 462.00 | 1 | 602.0 | 2.5 | 1 |
| 1.5SMC480A | 1.5SMC480CA | 480A | 480C | 408.00 | 456.00 | 504.00 | 1 | 658.0 | 2.3 | 1 |
| 1.5SMC510A | 1.5SMC510CA | 510A | 510C | 434.00 | 485.00 | 535.00 | 1 | 698.0 | 2.1 | 1 |
| 1.5SMC530A | 1.5SMC530CA | 530A | 530C | 477.00 | 503.50 | 556.50 | 1 | 725.0 | 2.1 | 1 |
| 1.5SMC540A | 1.5SMC540CA | 540A | 540C | 486.00 | 513.00 | 567.00 | 1 | 740.0 | 2.0 | 1 |
| 1.5SMC550A | 1.5SMC550CA | 550A | 550C | 495.00 | 522.50 | 577.50 | 1 | 760.0 | 2.0 | 1 |

RATING AND CHARACTERISTIC CURVES

Figure 1. Peak Pulse Power Rating Curve

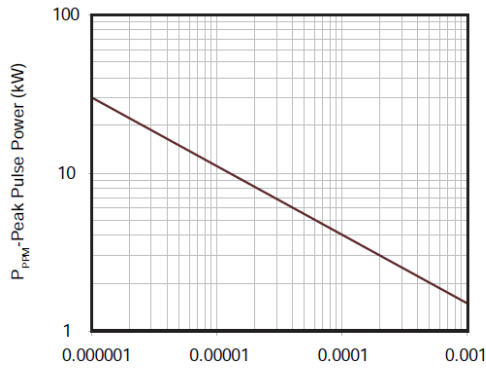


Figure 2. Pulse Derating Curve

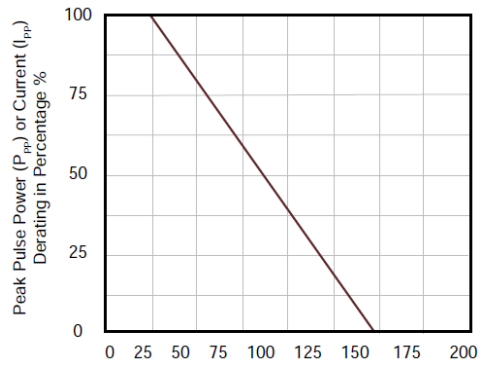


Figure 3. Pulse Waveform

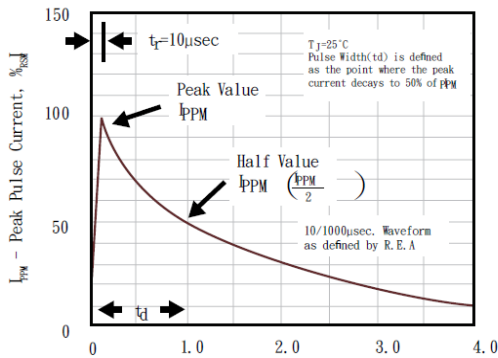


Figure 4. Typical Junction Capacitance

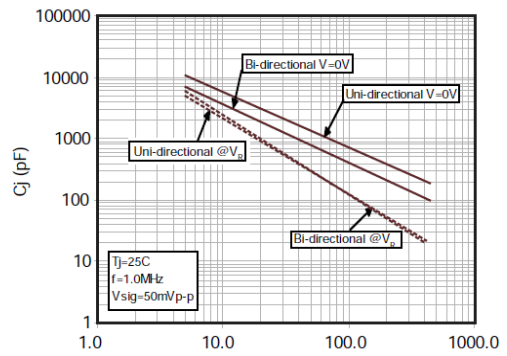


Figure 5. Steady Power Dissipation Derating Curve

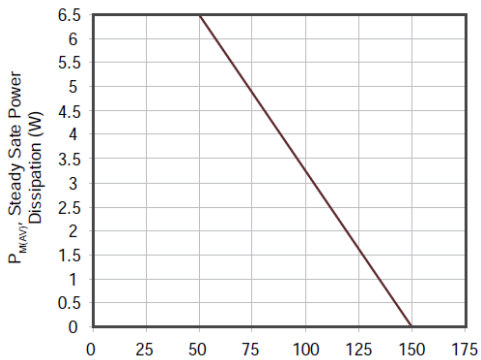
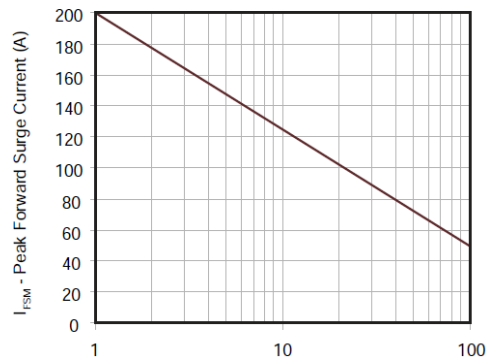


Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



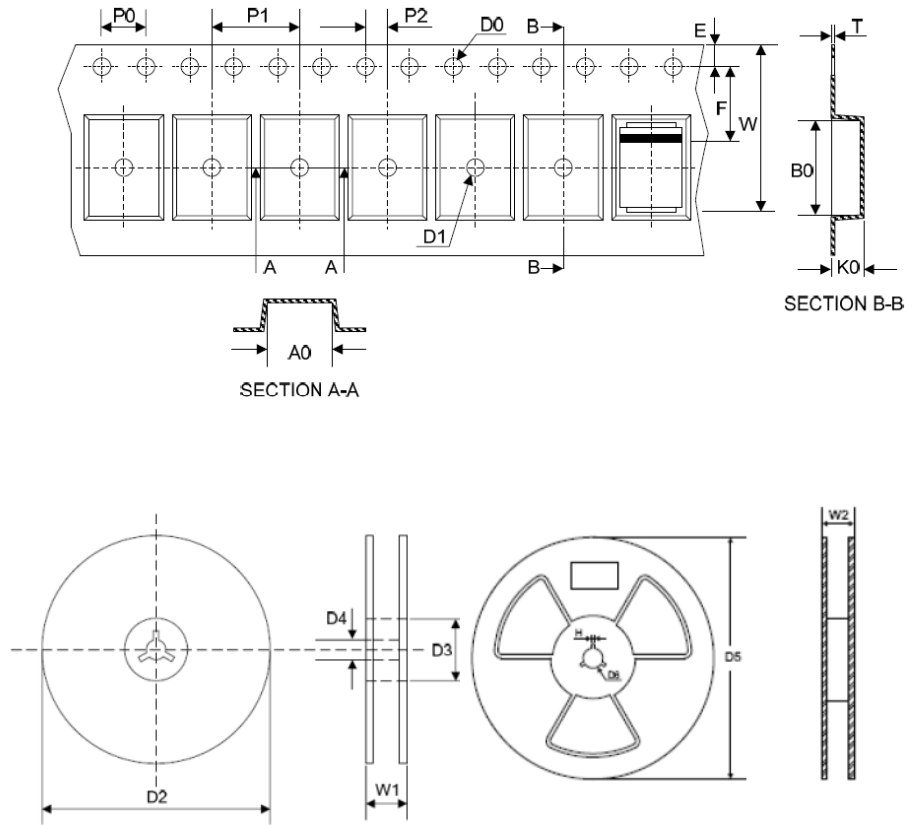
Transient Voltage Suppressors DO-214AB/SMC Package

1.5SMC Series

MERITEK

PACKAGING SPECIFICATION

| Tape | |
|----------|---------------|
| Symbol | Dimension(mm) |
| W | 16.00±0.20 |
| P0 | 4.00±0.10 |
| P1 | 8.00±0.10 |
| P2 | 2.00±0.10 |
| D0 | Φ1.5±0.10 |
| D1 | Φ1.5±0.10 |
| E | 1.75±0.10 |
| F | 7.50±0.10 |
| A0 | 6.27±0.10 |
| B0 | 8.30±0.10 |
| K0 | 3.15±0.15 |
| T | 0.30±0.05 |
| D2 | Φ178.0±2.0 |
| D3 | Φ50.0Min. |
| D4 | Φ13.0±0.5 |
| W1 | 20.0±2.0 |
| Quantity | 500PCS |
| Reel | |
| Symbol | Dimension(mm) |
| D5 | Φ330.0±2.0 |
| D6 | Φ13.5±0.5 |
| H | 2.5±1.0 |
| W2 | 20.0±2.0 |
| Quantity | 3000PCS |



RECOMMENDED SOLDERING PROFILES

| Reflow Condition | | |
|---|-------------------------------|--------------------------|
| Pre Heat | Temp. Min $T_{s(min)}$ | 150°C |
| | Tempe. Max $T_{s(max)}$ | 200°C |
| | Time (min. to max.) (t_s) | 60-180 seconds |
| Average ramp up rate (Liquidus Temperature) (T_A) to peak | | 3°C/second max. |
| $T_{s(max)}$ to T_A (Ramp-up rate) | | 3°C/second max. |
| Reflow | Temp. (T_A) (Liquidus) | 217°C |
| | Time (min. to max.) (t_s) | 60-150 seconds |
| Peak Temperature (T_P) | | 260 ^{+/-0.5} °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 Temp. (T_P) | | 8 minutes max. |

