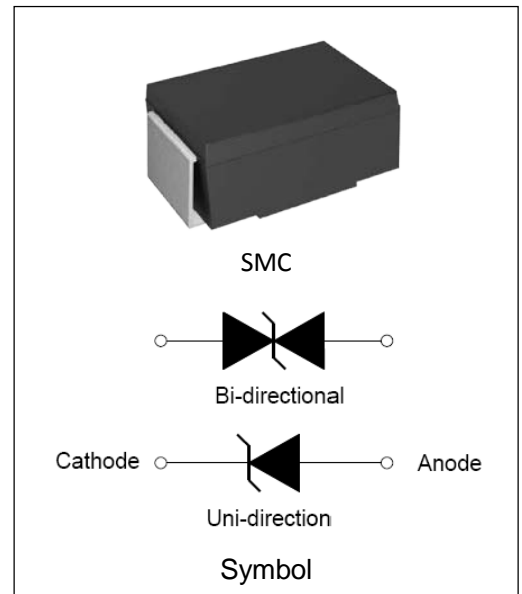


DESCRIPTION:

TVS diodes can be used in a wide range of applications which like consumer electronic products, automotive industries, munitions, telecommunications, aerospace industries, and intelligent control systems.

FEATURES:

- ✧ Glass passivated or planar junction
- ✧ Excellent clamping capability
- ✧ Repetition rate (duty cycle): 0.01%
- ✧ Typical I_R less than 1μA above 10V.
- ✧ Low profile package and low inductance
- ✧ 1500W Peak Pulse power capability at 10×1000μs waveform.
- ✧ Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- ✧ High temperature soldering: 260°C/10s at terminals.
- ✧ Plastic package has Underwriters Laboratory Flammability 94V-0.
- ✧ For surface mounted applications in order to optimize board space



ABSOLUTE MAXIMUM RATINGS (T_A=25°C, RH=45%-75%, unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|--------------------|-------------|------|
| Storage temperature range | T _{stg} | -55 to +150 | °C |
| Operating junction temperature range | T _j | -55 to +150 | °C |
| Steady state power dissipation at T _L =75°C | P _{M(AV)} | 8.0 | W |
| Peak pulse power dissipation on 10/1000μs waveform | P _{PP} | 1500 | W |
| Maximum Instantaneous Forward Voltage at 60A for Unidirectional | V _F | 5.0 | V |

ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$)

| Part Number | | V_R | $I_R@V_R$ | $V_{BR}@I_T$ | | I_T | $V_C@I_{PP}$ | $I_{PP}^{\text{①}}$ |
|-------------|-----------|-------|---------------|--------------|--------|-------|--------------|---------------------|
| Uni-Polar | Bi-Polar | V | μA | min(V) | max(V) | mA | max(V) | A |
| SMCJ5.0A | SMCJ5.0CA | 5.0 | 300 | 6.40 | 7.00 | 10 | 9.2 | 163.0 |
| SMCJ6.0A | SMCJ6.0CA | 6.0 | 250 | 6.67 | 7.37 | 10 | 10.3 | 145.6 |
| SMCJ6.5A | SMCJ6.5CA | 6.5 | 150 | 7.22 | 7.98 | 10 | 11.2 | 134.0 |
| SMCJ7.0A | SMCJ7.0CA | 7.0 | 100 | 7.78 | 8.60 | 10 | 12.0 | 125.0 |
| SMCJ7.5A | SMCJ7.5CA | 7.5 | 50 | 8.33 | 9.21 | 1 | 12.9 | 116.3 |
| SMCJ8.0A | SMCJ8.0CA | 8.0 | 30 | 8.89 | 9.83 | 1 | 13.6 | 110.3 |
| SMCJ8.5A | SMCJ8.5CA | 8.5 | 20 | 9.44 | 10.40 | 1 | 14.4 | 104.2 |
| SMCJ9.0A | SMCJ9.0CA | 9.0 | 10 | 10.00 | 11.10 | 1 | 15.4 | 97.4 |
| SMCJ10A | SMCJ10CA | 10 | 5 | 11.10 | 12.30 | 1 | 17.0 | 88.2 |
| SMCJ11A | SMCJ11CA | 11 | 2 | 12.20 | 13.50 | 1 | 18.2 | 82.4 |
| SMCJ12A | SMCJ12CA | 12 | 1 | 13.30 | 14.70 | 1 | 19.9 | 75.4 |
| SMCJ13A | SMCJ13CA | 13 | 1 | 14.40 | 15.90 | 1 | 21.5 | 69.8 |
| SMCJ14A | SMCJ14CA | 14 | 1 | 15.60 | 17.20 | 1 | 23.2 | 64.7 |
| SMCJ15A | SMCJ15CA | 15 | 1 | 16.70 | 18.50 | 1 | 24.4 | 61.5 |
| SMCJ16A | SMCJ16CA | 16 | 1 | 17.80 | 19.70 | 1 | 26.0 | 57.7 |
| SMCJ17A | SMCJ17CA | 17 | 1 | 18.90 | 20.90 | 1 | 27.6 | 54.4 |
| SMCJ18A | SMCJ18CA | 18 | 1 | 20.00 | 22.10 | 1 | 29.2 | 51.4 |
| SMCJ20A | SMCJ20CA | 20 | 1 | 22.20 | 24.50 | 1 | 32.4 | 46.3 |
| SMCJ22A | SMCJ22CA | 22 | 1 | 24.40 | 26.90 | 1 | 35.5 | 42.3 |
| SMCJ24A | SMCJ24CA | 24 | 1 | 26.70 | 29.50 | 1 | 38.9 | 38.6 |
| SMCJ26A | SMCJ26CA | 26 | 1 | 28.90 | 31.90 | 1 | 42.1 | 35.6 |
| SMCJ28A | SMCJ28CA | 28 | 1 | 31.10 | 34.40 | 1 | 45.4 | 33.1 |
| SMCJ30A | SMCJ30CA | 30 | 1 | 33.30 | 36.80 | 1 | 48.4 | 31.0 |
| SMCJ33A | SMCJ33CA | 33 | 1 | 36.70 | 40.60 | 1 | 53.3 | 28.2 |
| SMCJ36A | SMCJ36CA | 36 | 1 | 40.00 | 44.20 | 1 | 58.1 | 25.8 |
| SMCJ40A | SMCJ40CA | 40 | 1 | 44.40 | 49.10 | 1 | 64.5 | 23.3 |
| SMCJ43A | SMCJ43CA | 43 | 1 | 47.80 | 52.80 | 1 | 69.4 | 21.6 |
| SMCJ45A | SMCJ45CA | 45 | 1 | 50.00 | 55.30 | 1 | 72.7 | 20.6 |
| SMCJ48A | SMCJ48CA | 48 | 1 | 53.30 | 58.90 | 1 | 77.4 | 19.4 |
| SMCJ51A | SMCJ51CA | 51 | 1 | 56.70 | 62.70 | 1 | 82.4 | 18.2 |

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$, continued)

| Part Number | | V_R | $I_R@V_R$ | $V_{BR}@I_T$ | | I_T | $V_C@I_{PP}$ | $I_{PP}^{①}$ |
|-------------|-----------|-------|---------------|--------------|--------|-------|--------------|--------------|
| Uni-Polar | Bi-Polar | V | μA | min(V) | max(V) | mA | max(V) | A |
| SMCJ54A | SMCJ54CA | 54 | 1 | 60.00 | 66.30 | 1 | 87.1 | 17.2 |
| SMCJ58A | SMCJ58CA | 58 | 1 | 64.40 | 71.20 | 1 | 93.6 | 16.1 |
| SMCJ60A | SMCJ60CA | 60 | 1 | 66.70 | 73.70 | 1 | 96.8 | 15.5 |
| SMCJ64A | SMCJ64CA | 64 | 1 | 71.10 | 78.60 | 1 | 103.0 | 14.6 |
| SMCJ70A | SMCJ70CA | 70 | 1 | 77.80 | 86.00 | 1 | 113.0 | 13.3 |
| SMCJ75A | SMCJ75CA | 75 | 1 | 83.30 | 92.10 | 1 | 121.0 | 12.4 |
| SMCJ78A | SMCJ78CA | 78 | 1 | 86.70 | 95.80 | 1 | 126.0 | 11.9 |
| SMCJ85A | SMCJ85CA | 85 | 1 | 94.40 | 104.0 | 1 | 137.0 | 11.0 |
| SMCJ90A | SMCJ90CA | 90 | 1 | 100.0 | 111.0 | 1 | 146.0 | 10.3 |
| SMCJ100A | SMCJ100CA | 100 | 1 | 111.0 | 123.0 | 1 | 162.0 | 9.3 |
| SMCJ110A | SMCJ110CA | 110 | 1 | 122.0 | 135.0 | 1 | 177.0 | 8.5 |
| SMCJ120A | SMCJ120CA | 120 | 1 | 133.0 | 147.0 | 1 | 193.0 | 7.8 |
| SMCJ130A | SMCJ130CA | 130 | 1 | 144.0 | 159.0 | 1 | 209.0 | 7.2 |
| SMCJ150A | SMCJ150CA | 150 | 1 | 167.0 | 185.0 | 1 | 243.0 | 6.2 |
| SMCJ160A | SMCJ160CA | 160 | 1 | 178.0 | 197.0 | 1 | 259.0 | 5.8 |
| SMCJ170A | SMCJ170CA | 170 | 1 | 189.0 | 209.0 | 1 | 275.0 | 5.5 |
| SMCJ180A | SMCJ180CA | 180 | 1 | 201.0 | 222.0 | 1 | 292.0 | 5.2 |
| SMCJ190A | SMCJ190CA | 190 | 1 | 211.0 | 234.0 | 1 | 307.0 | 4.9 |
| SMCJ200A | SMCJ200CA | 200 | 1 | 224.0 | 247.0 | 1 | 324.0 | 4.7 |
| SMCJ210A | SMCJ210CA | 210 | 1 | 233.0 | 258.0 | 1 | 337.0 | 4.5 |
| SMCJ220A | SMCJ220CA | 220 | 1 | 246.0 | 272.0 | 1 | 356.0 | 4.2 |
| SMCJ250A | SMCJ250CA | 250 | 1 | 279.0 | 309.0 | 1 | 405.0 | 3.7 |
| SMCJ300A | SMCJ300CA | 300 | 1 | 335.0 | 371.0 | 1 | 486.0 | 3.1 |
| SMCJ350A | SMCJ350CA | 350 | 1 | 391.0 | 432.0 | 1 | 567.0 | 2.7 |
| SMCJ400A | SMCJ400CA | 400 | 1 | 447.0 | 494.0 | 1 | 648.0 | 2.3 |
| SMCJ440A | SMCJ440CA | 440 | 1 | 492.0 | 543.0 | 1 | 713.0 | 2.1 |

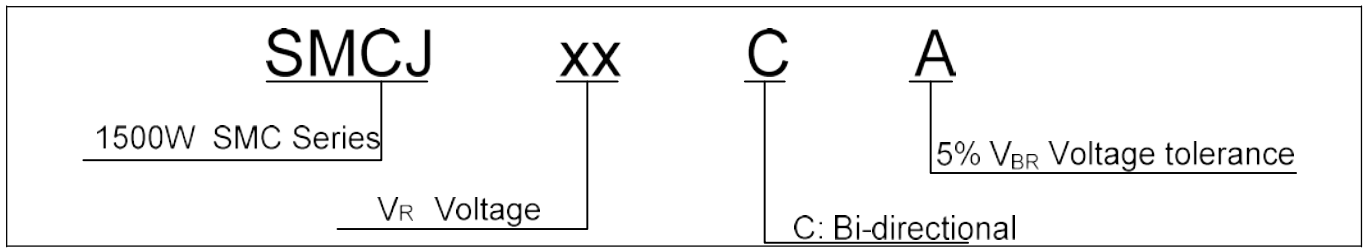
 ① Surge waveform: 10/1000 μs
 V_R : Stand-off Voltage -- Maximum voltage that can be applied V_{BR} :

Breakdown Voltage

 V_C : Clamping Voltage -- Peak voltage measured across the suppressor at a specified I_{PP} I_R :

Reverse Leakage Current

ORDERING INFORMATION



RATINGS AND V-I CHARACTERISTICS CURVES ($T_A=25^\circ\text{C}$, unless otherwise noted)

FIG.1: V- I curve characteristics (Uni-directional)

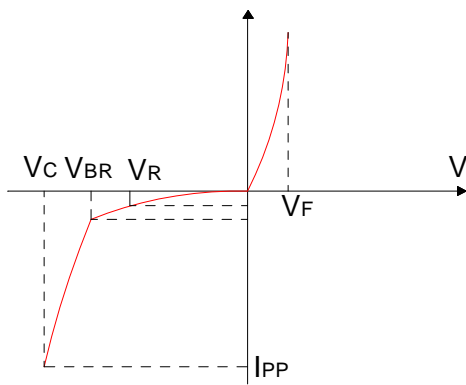


FIG.2: V- I curve characteristics (Bi-directional)

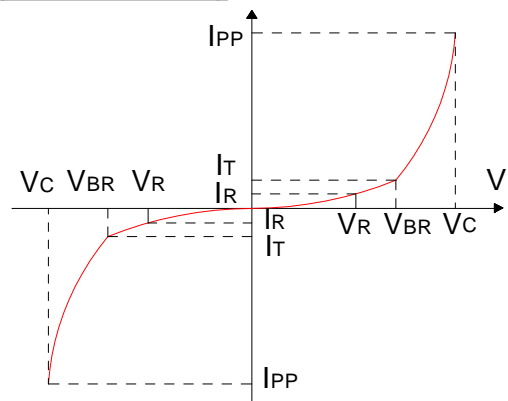


FIG.3: Pulse waveform

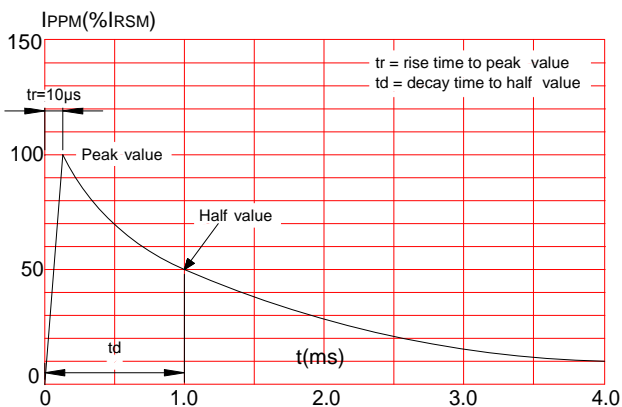
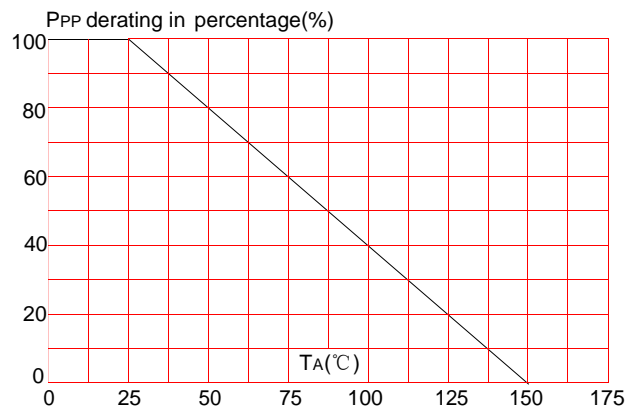
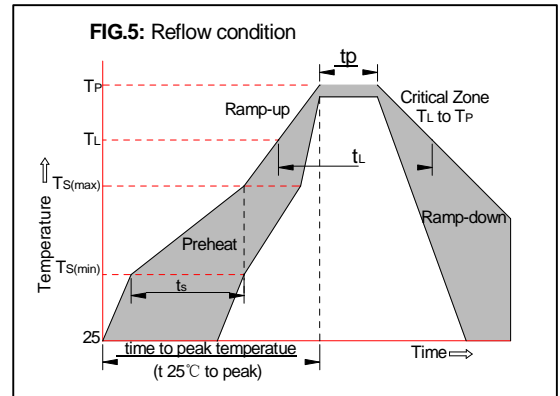


FIG.4: Pulse derating curve

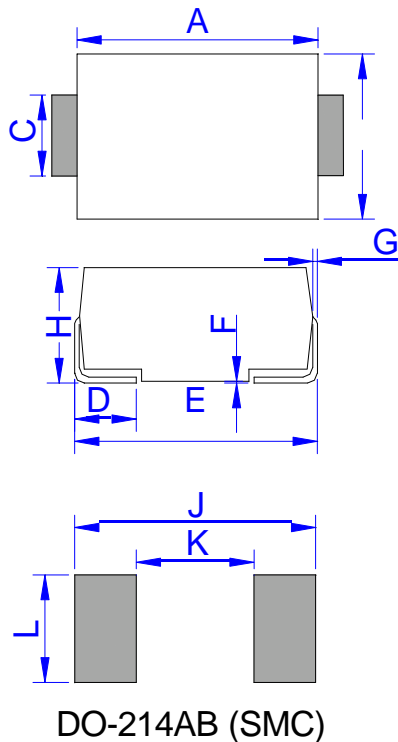


SOLDERING PARAMETERS

| | | |
|---|-----------------------------------|---------------------------------|
| Reflow Condition | | Pb-Free assembly (see FIG.5) |
| Pre Heat | -Temperature Min ($T_{s(min)}$) | +150°C |
| | -Temperature Max($T_{s(max)}$) | +200°C |
| | -Time (Min to Max) (t_s) | 60-180 secs. |
| Average ramp up rate (Liquid us Temp (T_L) to peak) | | 3°C/sec. Max |
| $T_{s(max)}$ to T_L - Ramp-up Rate | | 3°C/sec. Max |
| Reflow | -Temperature(T_L)(Liquid us) | +217°C |
| | -Temperature(t_L) | 60-150 secs. |
| Peak Temp (T_P) | | +260(+0/-5)°C |
| Time within 5°C of actual Peak Temp (t_p) | | 30 secs. Max |
| Ramp-down Rate | | 6°C/sec. Max |
| Time 25°C to Peak Temp (T_P) | | 8 min. Max |
| Do not exceed | | +260°C |



PACKAGE MECHANICAL DATA



| Ref. | Dimensions | | | |
|------|-------------|-------|--------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 6.60 | 7.11 | 0.260 | 0.280 |
| B | 5.59 | 6.20 | 0.220 | 0.244 |
| C | 2.75 | 3.20 | 0.108 | 0.126 |
| D | 0.76 | 1.52 | 0.030 | 0.060 |
| E | 7.74 | 8.13 | 0.305 | 0.320 |
| F | 0.051 | 0.203 | 0.002 | 0.008 |
| G | 0.15 | 0.31 | 0.006 | 0.012 |
| H | 2.15 | 2.62 | 0.085 | 0.103 |
| J | 8.12 | | 0.320 | |
| K | | 4.69 | | 0.185 |
| L | 3.07 | | 0.121 | |

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