

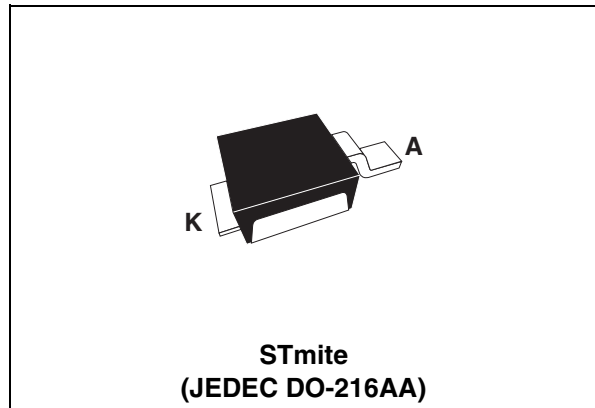
FEATURES

- High Peak pulse power:
200 W (10/1000 μ s)
1000 W (8/20 μ s)
- Stand-off voltage range 5 to 24V
- Unidirectional types
- Low clamping factor V_{CL}/V_{BR}
- Fast response time
- 1.0mm overall component height

DESCRIPTION

The SM2T series are Transil diodes designed specifically for portable equipment and miniaturized electronics devices subject to ESD transient over-voltages.

Fully compatible with pick and place equipment and inspectable soldering joints.


Table 1: Order Codes

| Part Number | Marking |
|-------------|---------|
| SM2T6V8A | MUA |
| SM2T14A | MUE |
| SM2T18A | MUG |
| SM2T27A | MUJ |

Table 2: Absolute Ratings ($T_{amb} = 25^{\circ}\text{C}$)

| Symbol | Parameter | Value | Unit |
|--------------------|---|--|--------------------|
| P_{PP} | Peak pulse power dissipation (see note 1) | T_j initial = T_{amb} 200 | W |
| P | Power dissipation on infinite heatsink | $T_{amb} = 100^{\circ}\text{C}$ 2.5 | W |
| I_{FSM} | Non repetitive surge peak forward current | $t_p = 10$ ms T_j initial = T_{amb} 25 | A |
| T_{stg} T_j | Storage temperature range Maximum junction temperature | -65 to 175 150 | $^{\circ}\text{C}$ |
| T_L | Maximum lead temperature for soldering during 10 s. | 260 | $^{\circ}\text{C}$ |

Note 1: 10/1000 μ s pulse waveform.

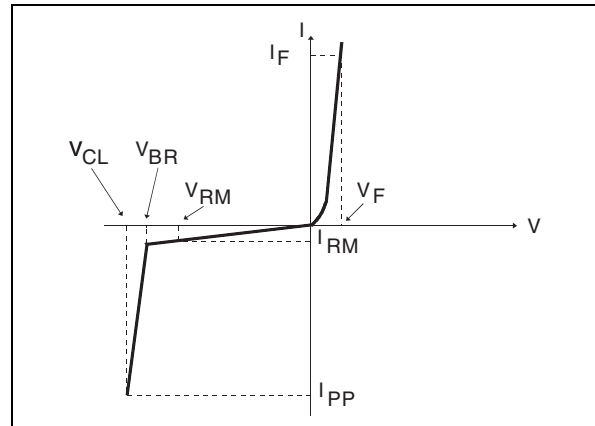
Table 3: Thermal Resistances

| Symbol | Parameter | Value | Unit |
|---------------|--|-------|-----------------------------|
| $R_{th(j-t)}$ | Junction to tab | 20 | $^{\circ}\text{C}/\text{W}$ |
| $R_{th(j-a)}$ | Junction to ambient on PCB with recommended pad layout | 250 | $^{\circ}\text{C}/\text{W}$ |

SM2T

Table 4: Electrical Characteristics ($T_{amb} = 25^{\circ}\text{C}$)

| Symbol | Parameter |
|------------|---------------------------------|
| V_{RM} | Stand-off voltage |
| V_{BR} | Breakdown voltage |
| V_{CL} | Clamping voltage |
| I_{RM} | Leakage current @ V_{RM} |
| I_{PP} | Peak pulse current |
| αT | Voltage temperature coefficient |
| V_F | Forward voltage drop |



| Types | I_{RM} @ V_{RM} | | V_{BR} @ I_R | | V_{CL} @ I_{PP} | | αT | C |
|----------|---------------------|----|------------------|----|---------------------|------|----------------------------|-------------|
| | max | | min | | max note1 | | max | typ @ 0V |
| | μA | V | V | mA | V | A | $10^{-4}/^{\circ}\text{C}$ | pF |
| SM2T6V8A | 50 | 5 | 6.4 | 10 | 9.2 | 19.6 | 5.7 | 1600 |
| SM2T14A | 1 | 12 | 13.3 | 1 | 19.9 | 9 | 8.3 | 650 |
| SM2T18A | 1 | 16 | 17.1 | 1 | 26 | 7 | 8.8 | 500 |
| SM2T27A | 1 | 24 | 25.7 | 1 | 28.9 | 4.6 | 9.6 | 350 |

Note 1: 10/1000 μs pulse waveform.

Figure 1: Peak pulse power versus exponential pulse duration

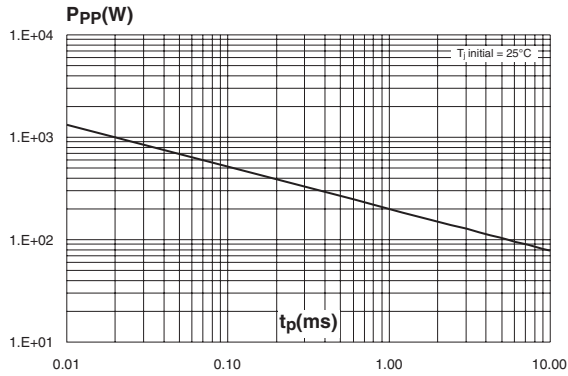


Figure 2: Relative variation of peak pulse power versus initial junction temperature

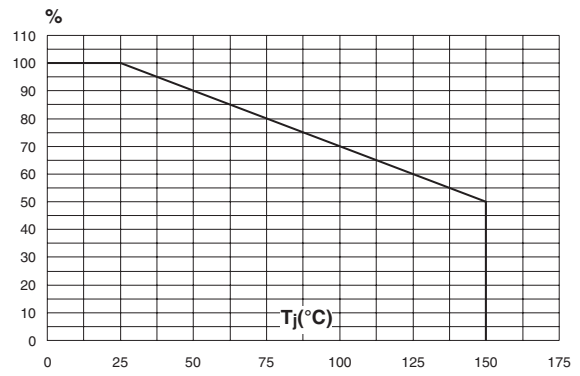


Figure 3: Average power dissipation versus ambient temperature

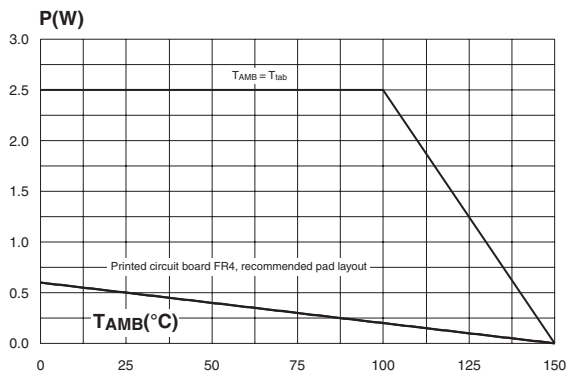


Figure 4: Variation of thermal impedance junction to ambient versus pulse duration

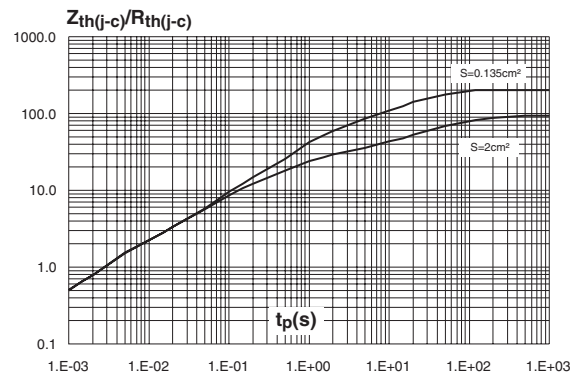


Figure 5: Thermal resistance junction to ambient versus copper surface under tab

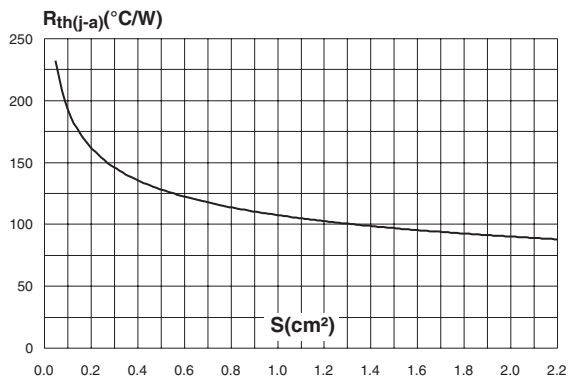


Figure 6: Reverse leakage current versus junction temperature (typical values)

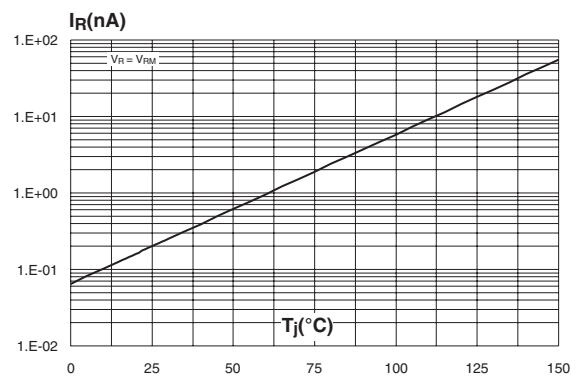


Figure 7: Clamping voltage versus peak pulse current (maximum values)

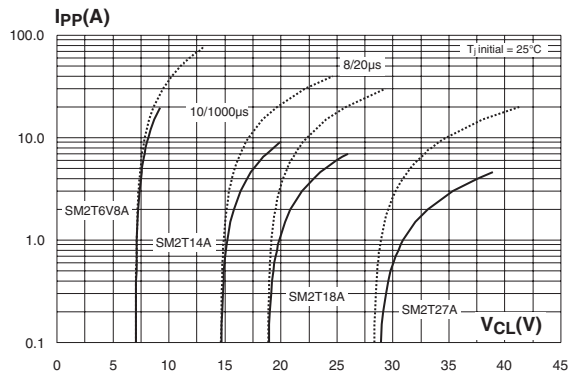


Figure 8: Junction capacitance versus reverse voltage applied (typical values)

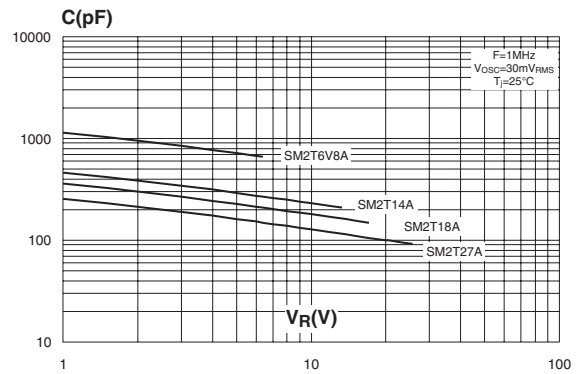


Fig. 9: Forward voltage drop versus forward current (typical values)

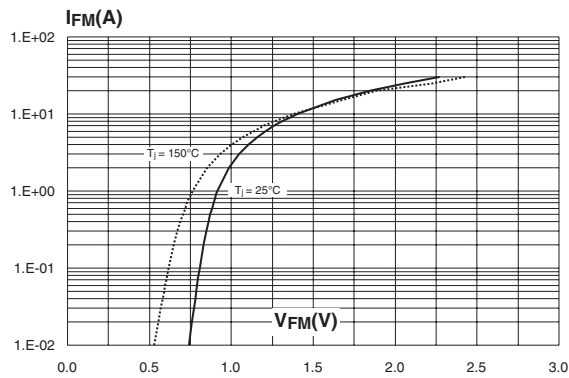


Figure 10: STmite Package Mechanical Data

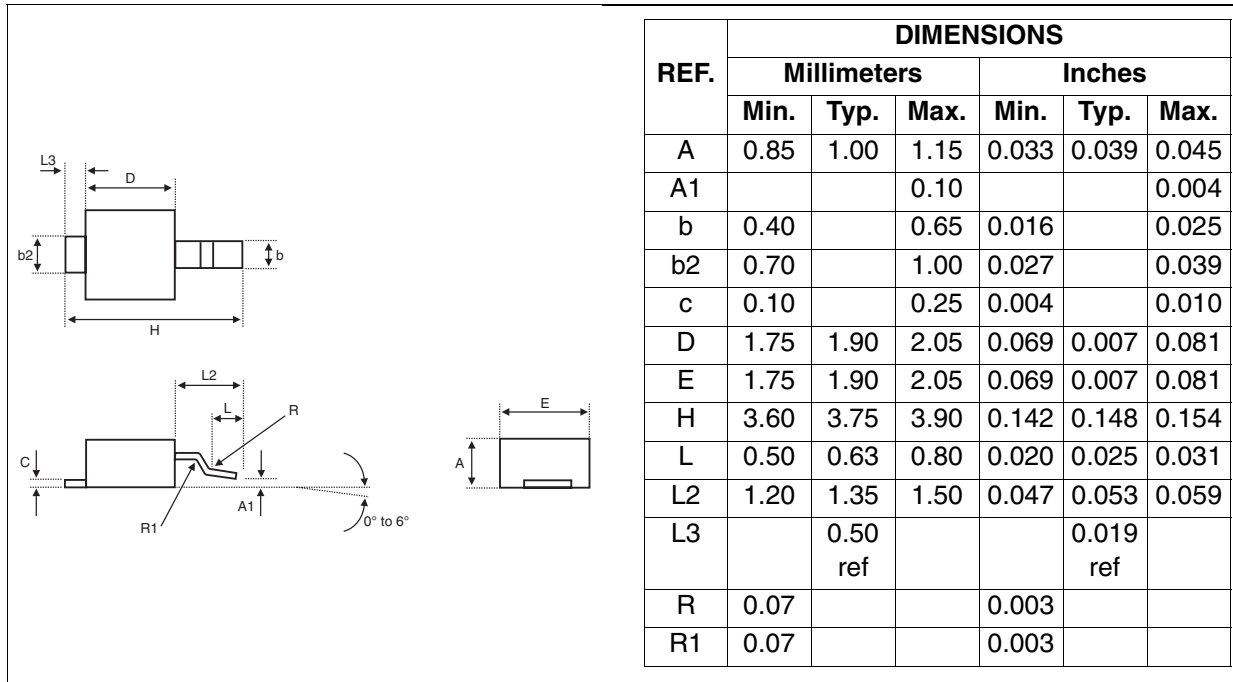


Figure 11: STmite Foot Print Dimensions (in millimeters)

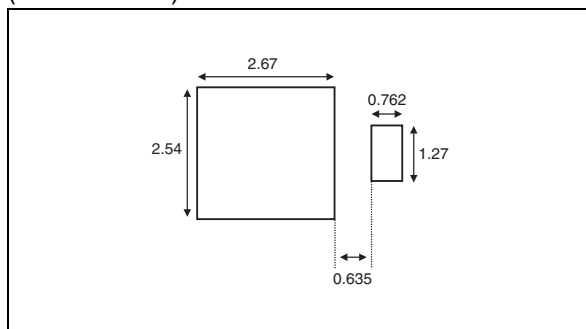


Table 5: Ordering Information

| Part Number | Marking | Package | Weight | Base qty | Delivery mode |
|-------------|---------|---------|---------|----------|---------------|
| SM2T6V8A | MUA | STmite | 15.5 mg | 12000 | Tape & reel |
| SM2T14A | MUE | | | | |
| SM2T18A | MUG | | | | |
| SM2T27A | MUJ | | | | |

Table 6: Revision History

| Date | Revision | Description of Changes |
|-------------|----------|---|
| April-2002 | 1A | Last update. |
| Aug-2004 | 2 | STmite package dimensions update. |
| 14-Jan-2005 | 3 | Minor layout update. No content change. |

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