



# THE DATASHEET OF SM2T18A



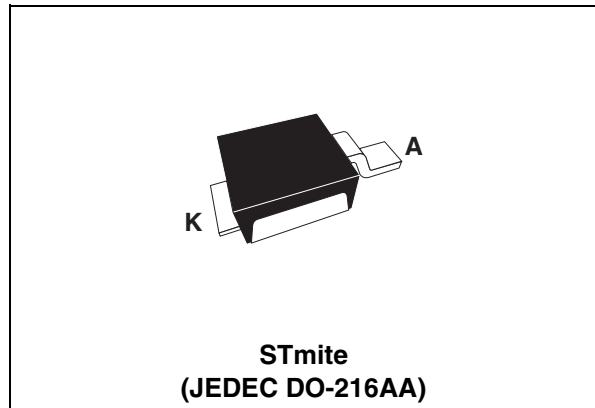
**FEATURES**

- High Peak pulse power:  
200 W (10/1000  $\mu$ s )  
1000 W ( 8/20  $\mu$ 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)	$T_j \text{ initial} = T_{amb}$ 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	$t_p = 10 \text{ ms}$ $T_j \text{ initial} = T_{amb}$ 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 $\mu$ s pulse waveform.

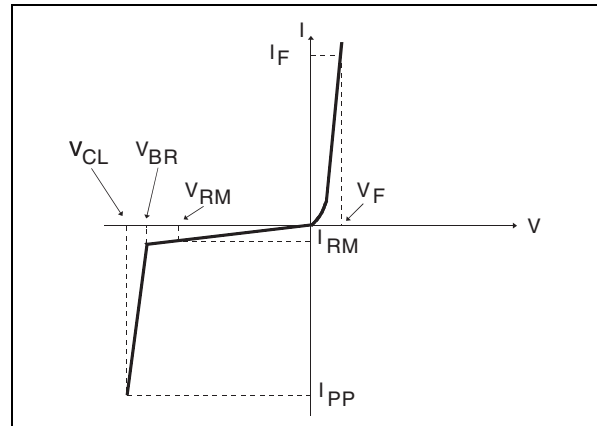
**Table 3: Thermal Resistances**

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** ( $T_{amb} = 25^{\circ}\text{C}$ )

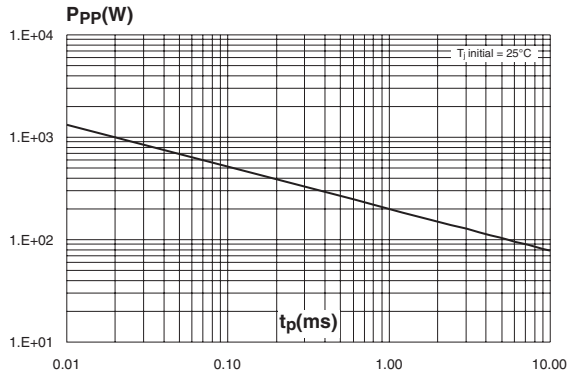
Symbol	Parameter
$V_{RM}$	Stand-off voltage
$V_{BR}$	Breakdown voltage
$V_{CL}$	Clamping voltage
$I_{RM}$	Leakage current @ $V_{RM}$
$I_{PP}$	Peak pulse current
$\alpha T$	Voltage temperature coefficient
$V_F$	Forward voltage drop



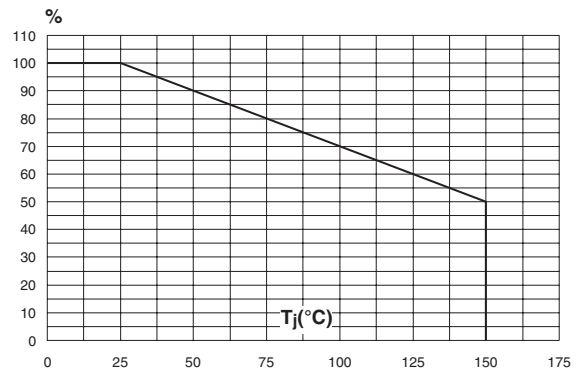
Types	$I_{RM}$ @ $V_{RM}$		$V_{BR}$ @ $I_R$		$V_{CL}$ @ $I_{PP}$		$\alpha T$	<b>C</b>
	max		min		max note1		max	typ @ 0V
	$\mu\text{A}$	V	V	mA	V	A	$10^{-4}/^{\circ}\text{C}$	pF
SM2T6V8A	50	5	6.4	10	9.2	19.6	5.7	1600
SM2T14A	1	12	13.3	1	19.9	9	8.3	650
SM2T18A	1	16	17.1	1	26	7	8.8	500
SM2T27A	1	24	25.7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

**Note 1:** 10/1000 $\mu\text{s}$  pulse waveform.

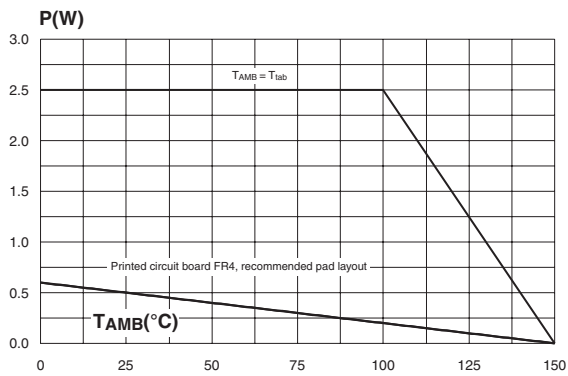
**Figure 1: Peak pulse power versus exponential pulse duration**



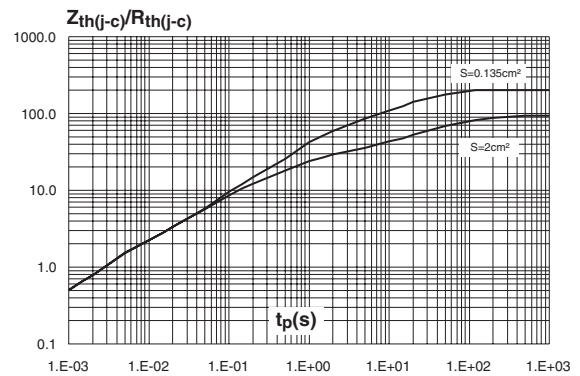
**Figure 2: Relative variation of peak pulse power versus initial junction temperature**



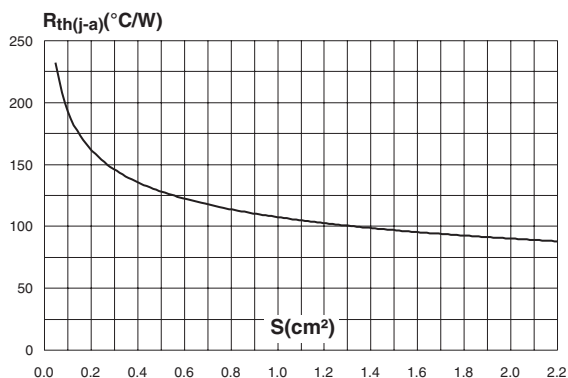
**Figure 3: Average power dissipation versus ambient temperature**



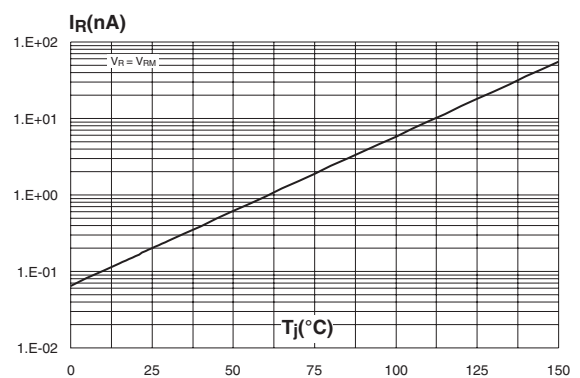
**Figure 4: Variation of thermal impedance junction to ambient versus pulse duration**



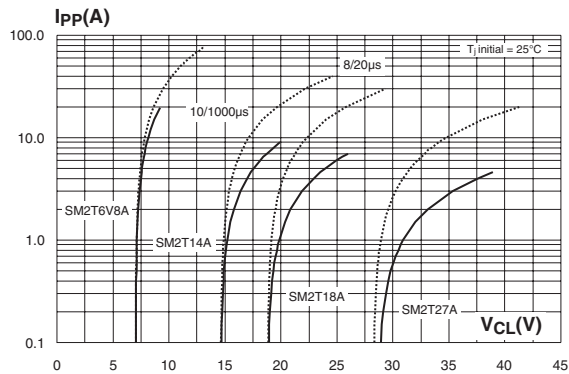
**Figure 5: Thermal resistance junction to ambient versus copper surface under tab**



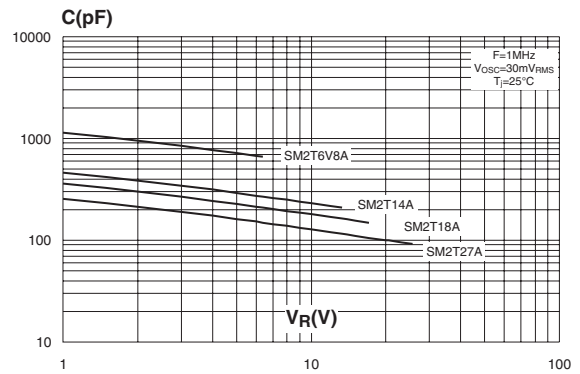
**Figure 6: Reverse leakage current versus junction temperature (typical values)**



**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)**

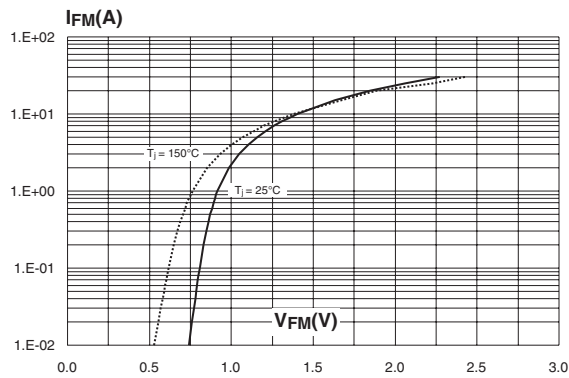


Figure 10: STmite Package Mechanical Data

REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.85	1.00	1.15	0.033	0.039	0.045
A1			0.10			0.004
b	0.40		0.65	0.016		0.025
b2	0.70		1.00	0.027		0.039
c	0.10		0.25	0.004		0.010
D	1.75	1.90	2.05	0.069	0.007	0.081
E	1.75	1.90	2.05	0.069	0.007	0.081
H	3.60	3.75	3.90	0.142	0.148	0.154
L	0.50	0.63	0.80	0.020	0.025	0.031
L2	1.20	1.35	1.50	0.047	0.053	0.059
L3		0.50 ref			0.019 ref	
R	0.07			0.003		
R1	0.07			0.003		

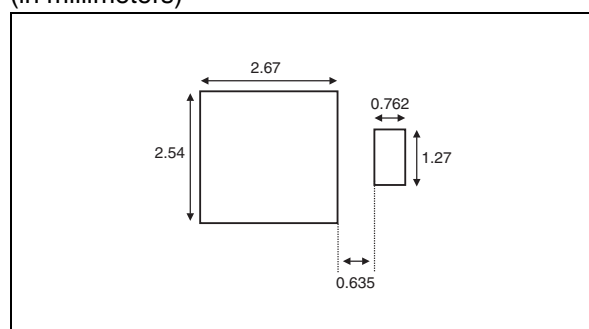
Figure 11: STmite Foot Print Dimensions  
(in millimeters)

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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