

## LOW FORWARD VOLTAGE TVS: Transky™

### FEATURES AND BENEFITS

- High peak pulse power: 400W (8/20μs)
- Stand-off voltage 16V
- Low forward voltage: 0.48V @ 0.85A @ 25°C
- Low clamping factor  $V_{CL}/V_{BR}$
- Fast response time
- Very thin package (1.0mm overall component height)

### DESCRIPTION

The Transky™ is designed specifically for portable equipments and miniaturized electronics devices subject to ESD transient overvoltages.

The Transky™ combines the performance of a Transil™ or TVS (Transient Voltage Suppressor) and low forward voltage Schottky diode in a monolithic structure.

### COMPLIES WITH FOLLOWING STANDARDS

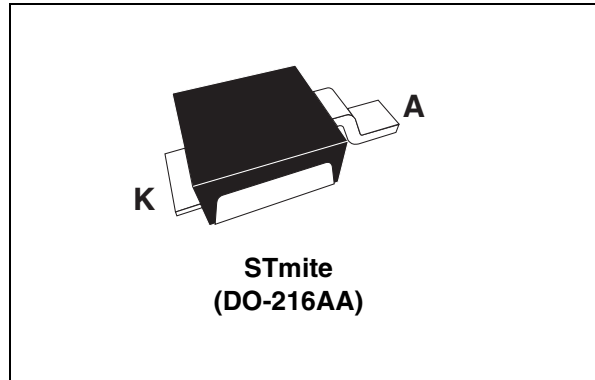
IEC 61000-4-2 Level 4:

15kV (Air discharge)

8kV (Contact discharge)

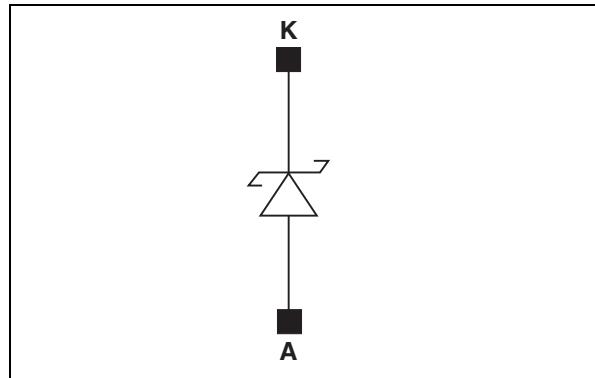
MIL Standard 883E-Method 3015-7: class 3C

Human Body Model (HBM)



**Table 1: Order Code**

Part Number	Marking
SMTY18AM	Y18



**Table 2: Absolute Ratings** (limiting values)

Symbol	Parameter		Value	Unit
$V_{PP}$	IEC 61000-4-2 standard	Air discharge	15	kV
		Contact discharge	8	
$P_{PP}$	Peak pulse power dissipation (see note 1)	$T_j \text{ initial} = T_{amb}$	400	W
$I_{FSM}$	Non repetitive surge peak forward current	$T_p = 10 \text{ ms}$ $T_j = \text{initial} = T_{amb}$	25	A
$T_{stg}$	Storage temperature range		-65 to + 175	°C
$T_j$	Maximum operating junction temperature		150	°C

**Note 1:** 8/20μs pulse waveform

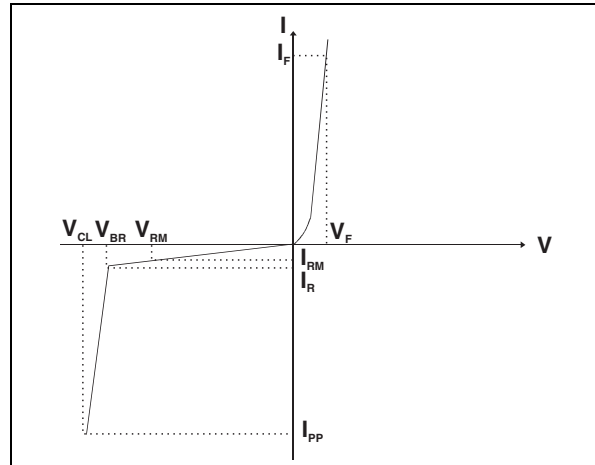
## SMTY18AM

**Table 3: Thermal Resistances**

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction to ambient on PCB with recommended pad layout	250	°C/W

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

Symbol	Parameter
$V_{BR}$	Breakdown voltage
$I_{RM}$	Leakage current @ $V_{RM}$
$V_{RM}$	Stand-off voltage
$V_{CL}$	Clamping voltage
$R_d$	Dynamic impedance
$I_{PP}$	Peak pulse current
C	Capacitance



$I_{RM} \text{ max @ } V_{RM}$ Note 2		$V_{CL} \text{ max @ } I_{PP}$ Note 3		$V_F \text{ max @ } 0.85\text{A}$ Note 4	$\alpha T \text{ max}$	C typ @ 0V
mA	V	V	A	V	$10^{-4}/^{\circ}\text{C}$	pF
4	16	20	1	0.48	8.8	500

**Note 2:**  $T_{amb} = 85^{\circ}\text{C}$

**Note 3:** 8/20 $\mu\text{s}$  pulse waveform

**Note 4:** Pulse test  $t_p = 500\mu\text{s}$ ,  $d < 2\%$

Figure 1: Peak pulse power versus exponential pulse duration

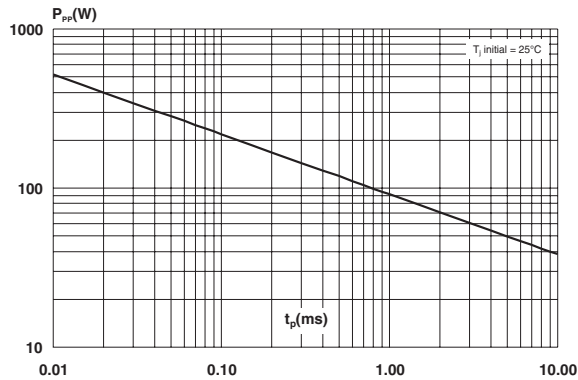


Figure 2: Relative variation of peak pulse power versus initial junction temperature

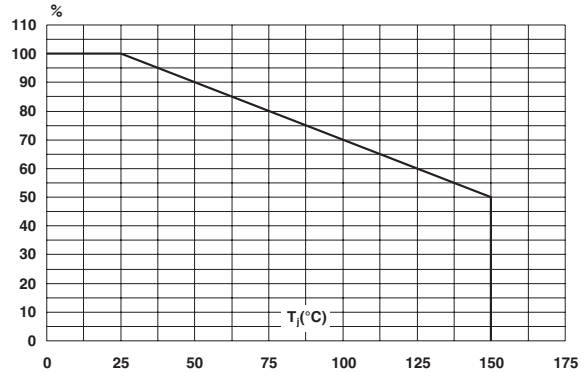


Figure 3: Average power dissipation versus ambient temperature

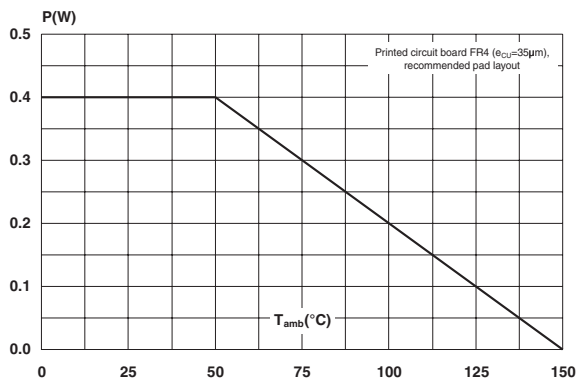


Figure 4: Variation of thermal impedance junction to ambient versus pulse duration (Epoxy FR4,  $e_{Cu} = 35\mu\text{m}$ )

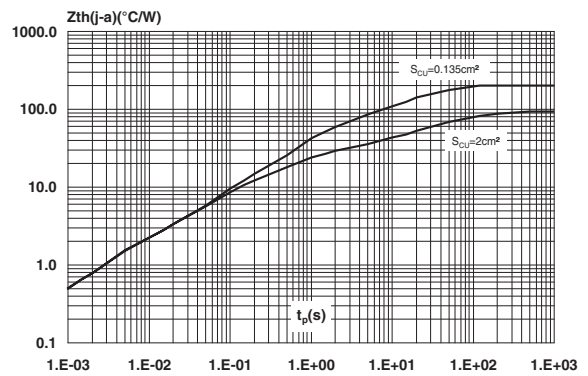


Figure 5: Thermal resistance junction to ambient versus copper surface under tab

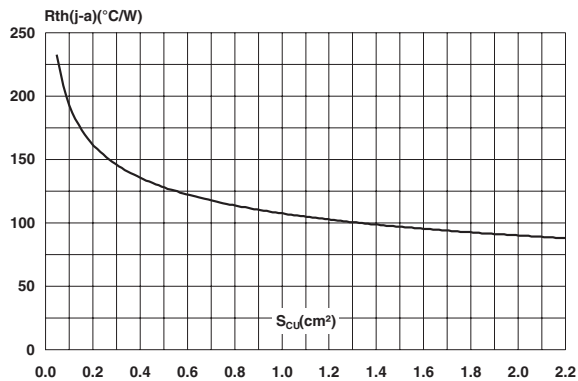
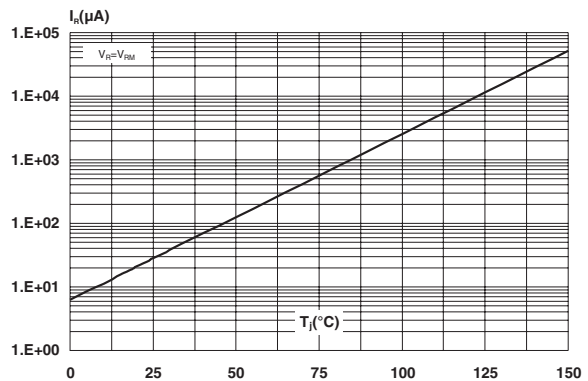
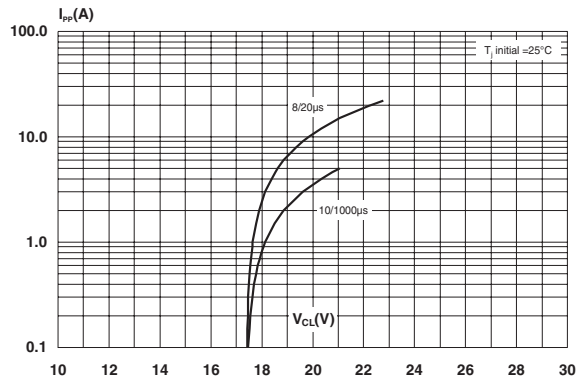


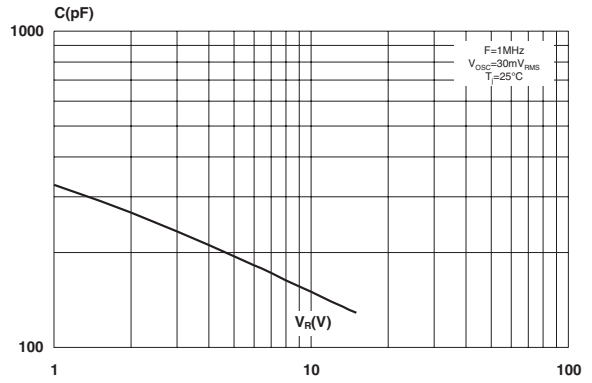
Figure 6: Reverse leakage current versus junction temperature (typical values)



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



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



**Figure 9: Forward voltage drop versus forward current (typical values)**

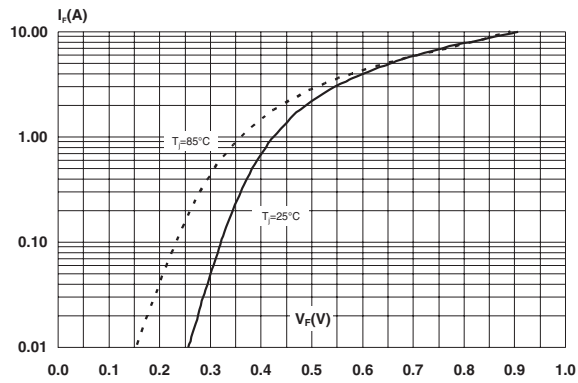


Figure 10: STmite Package Mechanical Data

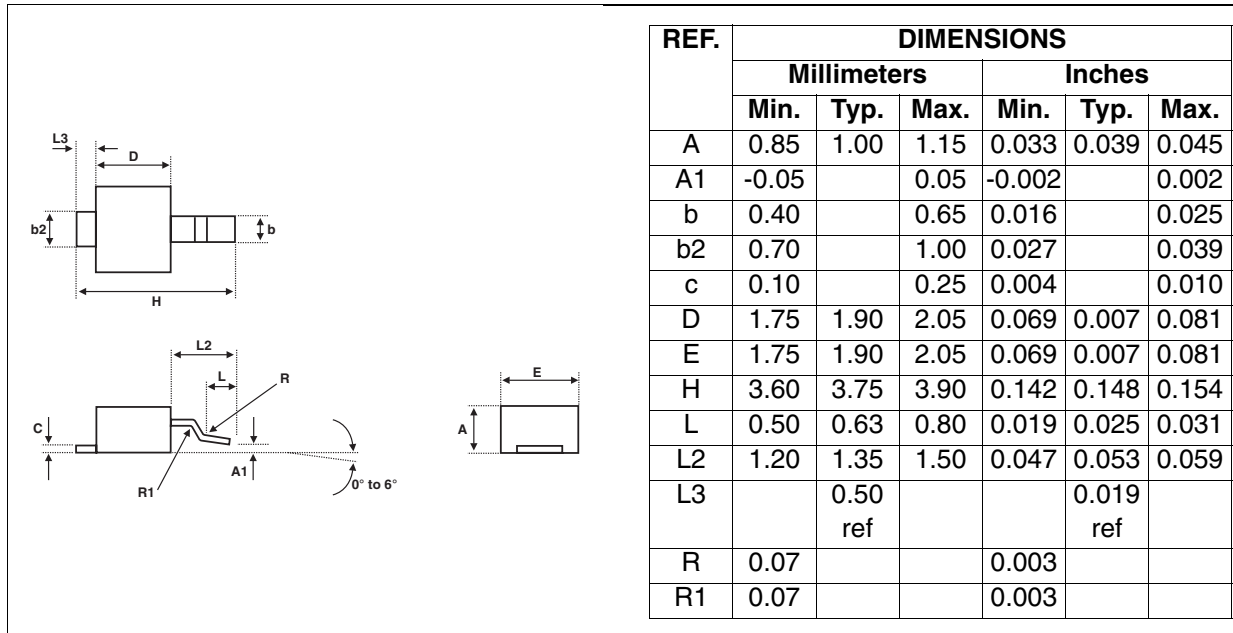


Figure 11: Foot Print Dimensions (in millimeters)

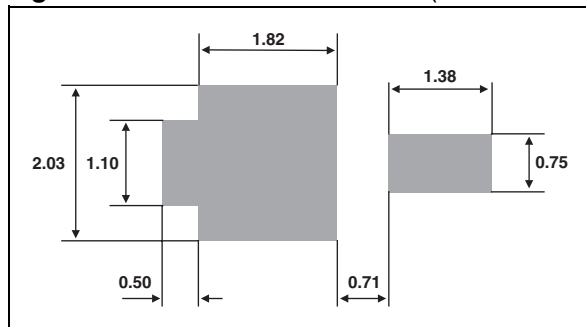


Table 5: Ordering Information

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
SMTY18AM	Y18	STmite	15.5 mg	12000	Tape & reel

Table 6: Revision History

Date	Revision	Description of Changes
09-Jul-2004	1	First issue
13-Sep-2004	2	STmite package dimensions reference A1 change: from blank (min) to -0.05mm and from 0.10 (max) to 0.05mm.

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics.  
All other names are the property of their respective owners

© 2004 STMicroelectronics - All rights reserved

**STMicroelectronics group of companies**

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan -  
Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America  
[www.st.com](http://www.st.com)