



# TSMDA05CM thru TSMDA24CM

## STANDARD CAPACITANCE TVS ARRAY

### APPLICATIONS

- ✓ RS-232, RS-422 & RS-423 Data Lines
- ✓ Microprocessor Based Equipment
- ✓ Control & Monitoring Equipment
- ✓ Portable Electronics

### IEC COMPATIBILITY (EN61000-4)

- ✓ 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- ✓ 61000-4-4 (EFT): 40A - 5/50ns
- ✓ 61000-4-5 (Surge): 12A, 8/20µs - Level 1(Line-Gnd) & Level 2(Line-Line)

### FEATURES

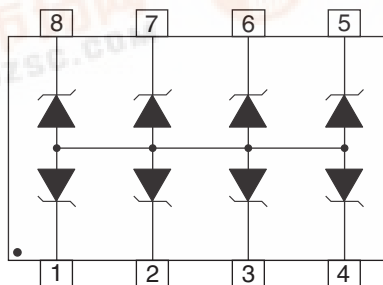
- ✓ 500 Watts Peak Pulse Power per Line (tp=8/20µs)
- ✓ Bidirectional Configurations
- ✓ Monolithic Design
- ✓ Available in Voltage Types Ranging From: 5V to 24V
- ✓ Protects 4 - 7 Lines
- ✓ ESD Protection > 40 kilovolts
- ✓ RoHS Compliant in Lead-Free Versions

### MECHANICAL CHARACTERISTICS

- ✓ Molded JEDEC MSOP-8 Package
- ✓ Weight 24 milligrams (Approximate)
- ✓ Available in Tin-Lead or Lead-Free Pure-Tin Plating(Annealed)
- ✓ Solder Reflow Temperature:
  - Tin-Lead - Sn/Pb, 85/15: 240-245°C
  - Pure-Tin - Sn, 100: 260-270°C
- ✓ Flammability rating UL 94V-0
- ✓ 12mm Tape and Reel Per EIA Standard 481
- ✓ Marking: Logo, Marking Code, Date Code & Pin One Defined By Dot on Top of Package



### PIN CONFIGURATION



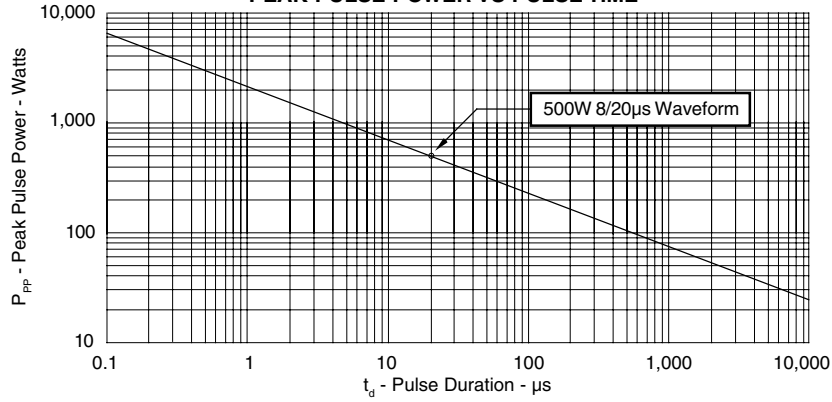
**DEVICE CHARACTERISTICS**

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power ( $t_p = 8/20\mu s$ ) - See Figure 1	$P_{PP}$	500	Watts
Operating Temperature	$T_J$	-55°C to 150°C	°C
Storage Temperature	$T_{STG}$	-55°C to 150°C	°C

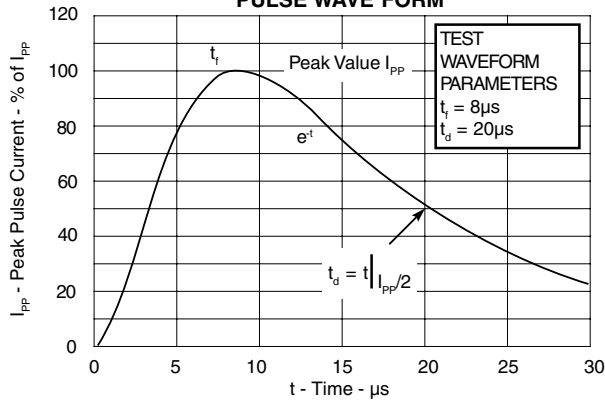
ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified							
PART NUMBER	DEVICE MARKING CODE	RATED STAND-OFF VOLTAGE	MINIMUM BREAKDOWN VOLTAGE	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM LEAKAGE CURRENT	MAXIMUM CAPACITANCE PER LINE
		$V_{WM}$ VOLTS	@ 1mA $V_{(BR)}$ VOLTS	@ $I_p = 1A$ $V_C$ VOLTS	@ 8/20 $\mu s$ $V_C @ I_{PP}$	@ $V_{WM}$ $I_D$ $\mu A$	@ 0V, 1 MHz C pF
TSM DA05CM	REJ	5.0	6.0	9.8	19.0V @ 30A	100	350
TSM DA08CM	REK	8.0	8.5	13.4	23.7V @ 24A	10	300
TSM DA12CM	REL	12.0	13.4	19.0	29.2V @ 20A	1	150
TSM DA15CM	REM	15.0	16.7	24.0	31.1V @ 18A	1	100
TSM DA24CM	REN	24.0	26.7	43.0	45.0V @ 13A	1	63

GRAPHS

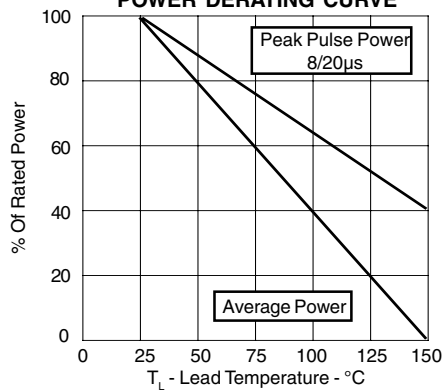
**FIGURE 1  
 PEAK PULSE POWER VS PULSE TIME**



**FIGURE 2  
 PULSE WAVE FORM**



**FIGURE 3  
 POWER DERATING CURVE**



# TSMDA05CM thru TSMDA24CM

## PACKAGE OUTLINE & DIMENSIONS

PACKAGE OUTLINE		MSOP-8			
DIM	MILLIMETERS		INCHES		
	MIN	MAX	MIN	MAX	
A	0.65 BSC	0.65 BSC	0.026 BSC	0.026 BSC	
B	2.90	3.10	0.114	0.122	
C	4.80	5.00	0.189	0.197	
D	2.90	3.10	0.114	0.122	
E	-	1.10	-	0.044	
F	0.05	0.25	0.002	0.010	
G	0.16	0.32	0.006	0.013	
J	-	0.95	-	0.037	
K	0°	6°	0°	6°	
M	0.09	0.24	0.004	0.009	
N	0.45	0.55	0.018	0.022	

MOUNTING PAD	
	<p><b>NOTES</b></p> <ol style="list-style-type: none"> <li>- T = Seating Plane and Datum Surface.</li> <li>Dimensions "A" and "B" are Datum.</li> <li>Dimensions "A" and "B" do not include mold protrusions.</li> <li>Dimension "A" does not include mold flash, protrusions or gate burrs.</li> <li>Dimension "B" does not include dambar protrusions.</li> </ol> <p><b>TAPE &amp; REEL/BULK ORDERING NOMENCLATURE</b></p> <ol style="list-style-type: none"> <li>Surface mount product is taped and reeled in accordance with EIA-481.</li> <li>Suffix-T13 = 13 Inch Reel - 4,000 pieces per 12mm tape, i.e., TSMDA05CM-T13.</li> <li>Suffix - LF = Lead-Free, Pure-Tin Plating, i.e., TSMDA05CM-LF-T13.</li> <li>No Suffix = Product Shipped in Tubes of 102 pcs per Tube.</li> </ol> <p><b>Outline &amp; Dimensions: Rev 0 - 10/03, 06046</b></p>

COPYRIGHT © ProTek Devices 2005

SPECIFICATIONS: ProTek reserves the right to change the electrical and or mechanical characteristics described herein without notice (except JEDEC).

DESIGN CHANGES: ProTek reserves the right to discontinue product lines without notice, and that the final judgement concerning selection and specifications is the buyer's and that in furnishing engineering and technical assistance, ProTek assumes no responsibility with respect to the selection or specifications of such products.

### ProTek Devices

2929 South Fair Lane, Tempe, AZ 85282

Tel: 602-431-8101 Fax: 602-431-2288

E-Mail: [sales@protekdevices.com](mailto:sales@protekdevices.com)

Web Site: [www.protekdevices.com](http://www.protekdevices.com)