

**VSIP® TVS ARRAY**
**APPLICATIONS**

- ✓ RS-232 and RS-423 Data Lines
- ✓ Telecommunications T/R Protection: ISDN, ADSL, V.34/V.90, HDLC, T1/E1 & T3/E3
- ✓ Low & High Speed Data Lines: Ethernet & Token Ring
- ✓ I/O Port Protection

**IEC COMPATIBILITY (EN61000-4)**

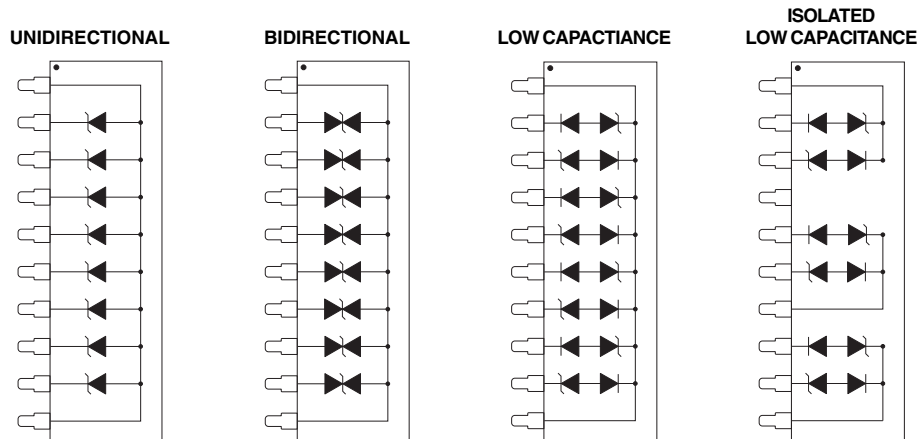
- ✓ 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- ✓ 61000-4-4 (EFT): 40A - 5/50ns
- ✓ 61000-4-5 (Surge): 24A, 8/20 $\mu$ s - Level 2(Line-Gnd) & Level 3(Line-Line)

**FEATURES**

- ✓ Series A: 800 Watts Peak Pulse Power per Line (tp=8/20 $\mu$ s)
- ✓ Series B: 3,400 Watts Peak Pulse Power per Line (tp=8/20 $\mu$ s)
- ✓ ESD Protection > 40 kilovolts
- ✓ High Surge Capability & Low Capacitance Option
- ✓ Protects 8 to 9 Bidirectional Data Lines
- ✓ Available in Several Voltages Types Ranging from 5V to 36V
- ✓ ROHS Compliant

**MECHANICAL CHARACTERISTICS**

- ✓ Molded Plastic VSIP® Package
- ✓ Available in Lead-Free Pure-Tin Plating (Annealed)
- ✓ Solder Reflow Temperature:  
Pure-Tin - Sn, 100: 260-270°C
- ✓ Consult Factory for Leaded Device Availability
- ✓ Weight 1.5 grams (Approximate)
- ✓ Flammability Rating UL 94V-0
- ✓ Marking: Logo, Part Number, Date Code & Pin One Defined By Dot on Top of Package


**10 PIN VSIP**
**PIN CONFIGURATIONS**


## DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Series A Peak Pulse Power ( $t_p = 8/20\mu s$ ) - See Figure 1	$P_{PP}$	800	Watts
Series B Peak Pulse Power ( $t_p = 8/20\mu s$ ) - See Figure 1	$P_{PP}$	3400	Watts
Operating Temperature	$T_L$	-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									
RATED STAND-OFF VOLTAGE (See Notes 1-3)	MINIMUM BREAKDOWN VOLTAGE	SERIES A				SERIES B			
		MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM LEAKAGE CURRENT	MAXIMUM PEAK PULSE CURRENT (See Fig. 2)	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM LEAKAGE CURRENT	MAXIMUM PEAK PULSE CURRENT (See Fig. 2)
		@ $I_p = 1A$ $V_C$ VOLTS	@ $I_p = 10A$ $V_C$ VOLTS	@ $V_{WM}$ $I_D$ $\mu A$	$I_{PP}$ AMPS	@ $I_p = 1A$ $V_C$ VOLTS	@ $I_p = 10A$ $V_C$ VOLTS	@ $V_{WM}$ $I_D$ $\mu A$	$I_{PP}$ AMPS
5.0	6.0	9.8	12.5	100	45	8.6	9.1	300	300
8.0	8.5	13.4	16.6	10	40	10.9	12.0	200	258
12.0	13.3	19.5	22.7	1	34	17.0	18.8	2	184
15.0	16.7	24.4	28.5	1	27	21.4	23.6	2	147
24.0	26.7	39.1	45.6	1	22	34.2	37.8	2	111
28.0	31.1	-	-	-	-	39.8	40.0	2	93
33.0	36.7	-	-	-	-	47.0	51.9	2	83
36.0	40.0	-	-	-	-	51.2	56.6	2	68

**Note 1:** For voltage types not shown on the product data sheet, consult the factory.

**Note 2:** The low capacitance configuration values for each bidirectional line pair is as follows:

Series "A" C = 25pF                      Series "B" C = 100pF

**Note 3:** Forward voltage (*unidirectional configurations only*):

Series "A":  $V_F = 1.5V @ 200mA$                       Series "B":  $V_F = 1.5V 200mA$

### STANDARD PRODUCT ORDERING BY PART NUMBER

Unidirectional - VS10Pxx (A Series), VSB10Pxx (B Series)

Bidirectional - VS10PxxC (A Series), VSB10PxxC(B Series)

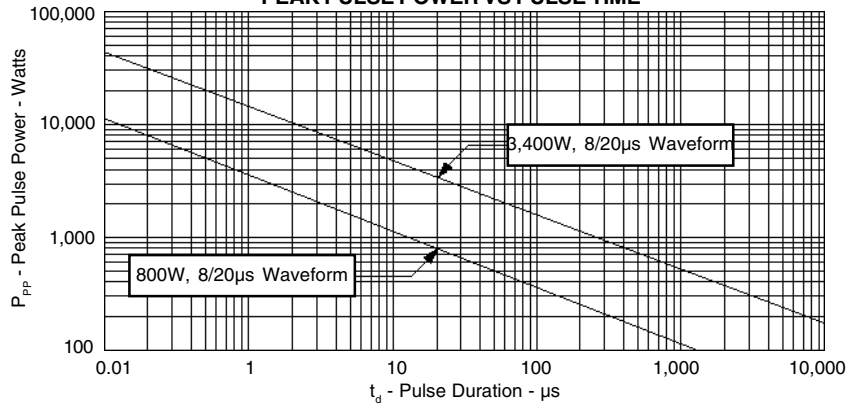
Low Capacitance - VS10PxxLC (A Series), VSB10PxxLC (B Series)

Isolated Low Capacitance- VS10PxxLCI (A Series), VSB10PxxLCI (B Series)

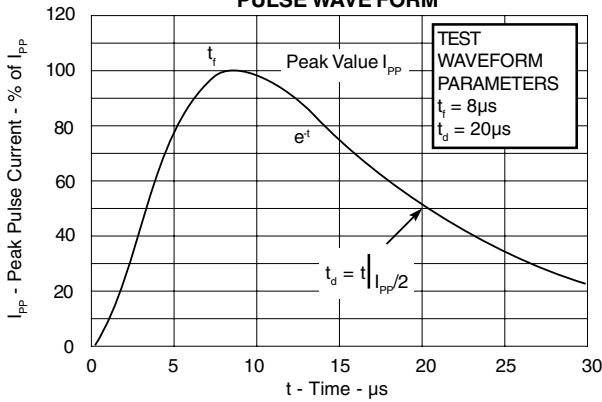
xx = Selected Voltage

**GRAPHS**

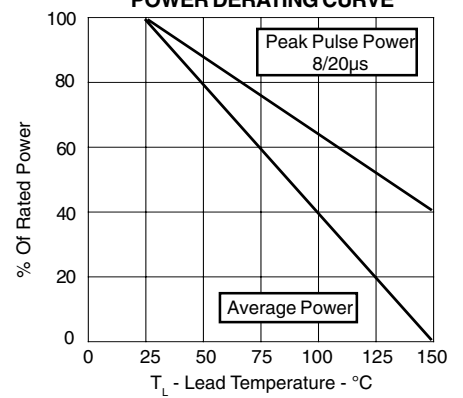
**FIGURE 1**  
**PEAK PULSE POWER VS PULSE TIME**



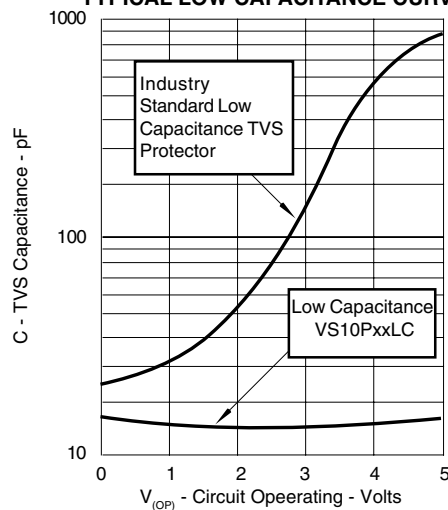
**FIGURE 2**  
**PULSE WAVE FORM**



**FIGURE 3**  
**POWER DERATING CURVE**

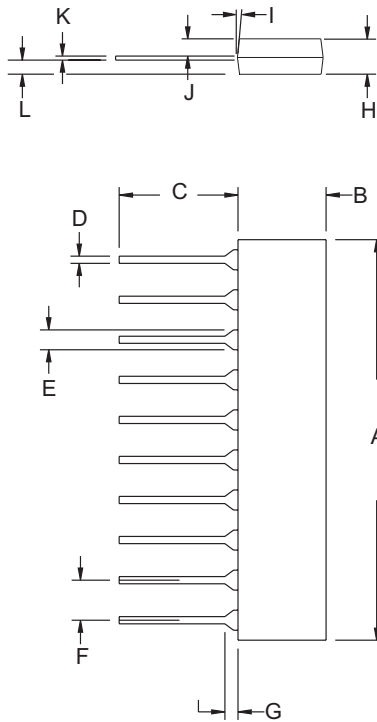


**FIGURE 4**  
**TYPICAL LOW CAPACITANCE CURVE**



**10 PIN VSIP PACKAGE OUTLINE & DIMENSIONS**

**PACKAGE OUTLINE**



**VSIP® PACKAGE**



**VSIP DIMENSIONS**

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	25.81	26.01	1.016	1.024
B	6.25	6.45	0.246	0.254
C	5.92	6.02	0.233	0.237
D	0.406	0.508	0.016	0.020
E	1.47	1.57	0.058	0.062
F	2.49	2.59	0.098	0.102
G	0.38	1.02	0.015	0.040
H	3.20	3.40	0.126	0.134
I	7° TYP	7° TYP	7° TYP	7° TYP
J	1.47	1.57	0.058	0.062
K	0.20	0.30	0.008	0.012
L	1.47	1.57	0.058	0.062

**NOTES**

1. Dimensions are exclusive of mold flash and metal burrs.

**BULK ORDERING NOMENCLATURE**

1. Product Shipped in Tubes of 18 pcs per Tube.
2. Suffix - LF = Lead-Free Plating, i.e., VSB10P15C-LF.

**Outline & Dimensions: Rev 1 - 11/01, 06016**

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