

## HIGH POWERED MULTI-LINE VSIP® TVS ARRAY



10 PIN VSIP® PACKAGE

### DESCRIPTION

The VSIP Series are high powered multi-line TVS arrays available in a 10 pin VSIP package. This series is designed to protect telecommunications equipment from the damaging effects of ESD, EFT and secondary transient threats.

The VSIP Series "A" has a peak pulse power rating of 800 Watts for an 8/20 $\mu$ s waveshape and the VSIP Series "B" has a peak pulse power rating of 3400 Watts for an 8/20 $\mu$ s waveshape. These devices meets the IEC 61000-4-2, IEC 61000-4-4 and IEC 61000-4-5 requirements.

### FEATURES

- Compatible with IEC 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- Compatible with IEC 61000-4-4 (EFT): 40A - 5/50ns
- Compatible with IEC 61000-4-5 (Surge): 24A, 8/20 $\mu$ s - Level 2(Line-Gnd) & Level 3(Line-Line)
- Series "A" - 800 Watts Peak Pulse Power per Line (tp = 8/20 $\mu$ s)
- Series "B" - 3400 Watts Peak Pulse Power per Line (tp = 8/20 $\mu$ s)
- Bidirectional Configuration
- ESD Protection > 25 kilovolts
- High Surge Capability & Low Capacitance Option
- Available in Multiple Voltages
- Protects 8 to 9 Bidirectional Lines
- RoHS Compliant
- REACH Compliant

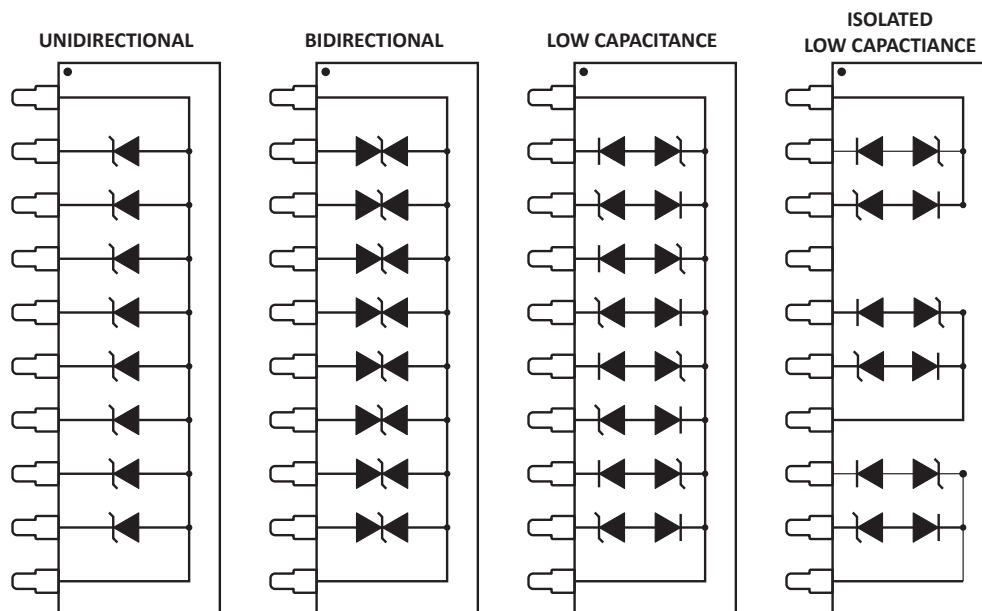
### APPLICATIONS

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

### MECHANICAL CHARACTERISTICS

- Molded 10 Pin Plastic VSIP® Package
- Approximate Weight: 1.5 grams
- Lead-Free Pure-Tin Plating (Annealed)
- Solder Reflow Temperature:  
Pure-Tin - Sn, 100: 260-270°C
- Flammability Rating UL 94V-0

## PIN CONFIGURATIONS



**TYPICAL DEVICE CHARACTERISTICS**
**MAXIMUM RATINGS @ 25°C Unless Otherwise Specified**

PARAMETER	SYMBOL	VALUE	UNITS
Series "A" Peak Pulse Power (tp = 8/20µs) - See Figure 1	P <sub>PP</sub>	800	Watts
Series "B" Peak Pulse Power (tp = 8/20µs) - See Figure 1	P <sub>PP</sub>	3400	Watts
Operating Temperature	T <sub>L</sub>	-55 to 150	°C
Storage Temperature	T <sub>STG</sub>	-55 to 150	°C

**SERIES "A" ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified**

PART NUMBER (Note 1-4)	RATED STAND-OFF VOLTAGE  V <sub>WM</sub> VOLTS	MINIMUM BREAKDOWN VOLTAGE  @1mA V <sub>(BR)</sub> VOLTS	MAXIMUM CLAMPING VOLTAGE (Fig. 2)  @ IP = 1A V <sub>C</sub> VOLTS	MAXIMUM CLAMPING VOLTAGE (Fig. 2)  @ IP = 10A V <sub>C</sub> VOLTS	MAXIMUM LEAKAGE CURRENT  @V <sub>WM</sub> I <sub>D</sub> µA	MAXIMUM PEAK PULSE CURRENT (Fig. 2)  I <sub>PP</sub> amps
VS10P05	5.0	6.0	9.8	12.5	100	45
VS10P05C	5.0	6.0	9.8	12.5	100	45
VS10P05LC	5.0	6.0	9.8	12.5	100	45
VS10P05LCI	5.0	6.0	9.8	12.5	100	45
VS10P08	8.0	8.5	13.4	16.6	10	40
VS10P08C	8.0	8.5	13.4	16.6	10	40
VS10P08LC	8.0	8.5	13.4	16.6	10	40
VS10P08LCI	8.0	8.5	13.4	16.6	10	40
VS10P12	12.0	13.3	19.5	22.7	1	34
VS10P12C	12.0	13.3	19.5	22.7	1	34
VS10P12LC	12.0	13.3	19.5	22.7	1	34
VS10P12LCI	12.0	13.3	19.5	22.7	1	34
VS10P15	15.0	16.7	24.4	28.5	1	27
VS10P15C	15.0	16.7	24.4	28.5	1	27
VS10P15LC	15.0	16.7	24.4	28.5	1	27
VS10P15LCI	15.0	16.7	24.4	28.5	1	27
VS10P24	24.0	26.7	39.1	45.6	1	22
VS10P24C	24.0	26.7	39.1	45.6	1	22
VS10P24LC	24.0	26.7	39.1	45.6	1	22
VS10P24LCI	24.0	26.7	39.1	45.6	1	22

**NOTES**

- The "C" suffix denotes a bidirectional device, such as VS10P5C.
- Forward voltage (Unidirectional Configurations Only): V<sub>F</sub> = 1.5V @ 200mA.
- The "LC" suffix denotes a low capacitance device, such as VS10P05LC. These devices have a capacitance of 25pF.
- The "LCI" suffix denotes an isolated low capacitance device, such as VS10P05LCI.

**TYPICAL DEVICE CHARACTERISTICS**
**SERIES "B" ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified**

PART NUMBER (Note 1-4)	RATED STAND-OFF VOLTAGE	MINIMUM BREAKDOWN VOLTAGE	MAXIMUM CLAMPING VOLTAGE (Fig. 2)	MAXIMUM CLAMPING VOLTAGE (Fig. 2)	MAXIMUM LEAKAGE CURRENT	MAXIMUM PEAK PULSE CURRENT (Fig. 2)
	$V_{WM}$ VOLTS	@1mA $V_{(BR)}$ VOLTS	@ IP = 1A $V_C$ VOLTS	@ IP = 10A $V_C$ VOLTS	@ $V_{WM}$ $I_D$ $\mu A$	$I_{PP}$ amps
VSB10P05	5.0	6.0	8.6	9.1	300	300
VSB10P05C	5.0	6.0	8.6	9.1	300	300
VSB10P05LC	5.0	6.0	8.6	9.1	300	300
VSB10P05LCI	5.0	6.0	8.6	9.1	300	300
VSB10P08	8.0	8.5	10.9	12.0	200	258
VSB10P08C	8.0	8.5	10.9	12.0	200	258
VSB10P08LC	8.0	8.5	10.9	12.0	200	258
VSB10P08LCI	8.0	8.5	10.9	12.0	200	258
VSB10P12	12.0	13.3	17.0	18.8	2	184
VSB10P12C	12.0	13.3	17.0	18.8	2	184
VSB10P12LC	12.0	13.3	17.0	18.8	2	184
VSB10P12LCI	12.0	13.3	17.0	18.8	2	184
VSB10P15	15.0	16.7	21.4	23.6	2	147
VSB10P15C	15.0	16.7	21.4	23.6	2	147
VSB10P15LC	15.0	16.7	21.4	23.6	2	147
VSB10P15LCI	15.0	16.7	21.4	23.6	2	147
VSB10P24	24.0	26.7	34.2	37.8	2	111
VSB10P24C	24.0	26.7	34.2	37.8	2	111
VSB10P24LC	24.0	26.7	34.2	37.8	2	111
VSB10P24LCI	24.0	26.7	34.2	37.8	2	111
VSB10P28	28.0	31.1	39.8	40.0	2	93
VSB10P28	28.0	31.1	39.8	40.0	2	93
VSB10P28	28.0	31.1	39.8	40.0	2	93
VSB10P28	28.0	31.1	39.8	40.0	2	93
VSB10P33	33.0	36.7	47.0	51.9	2	83
VSB10P33	33.0	36.7	47.0	51.9	2	83
VSB10P33	33.0	36.7	47.0	51.9	2	83
VSB10P33	33.0	36.7	47.0	51.9	2	83
VSB10P36	36.0	40.0	51.2	56.6	2	68
VSB10P36	36.0	40.0	51.2	56.6	2	68
VSB10P36	36.0	40.0	51.2	56.6	2	68
VSB10P36	36.0	40.0	51.2	56.6	2	68

**NOTES**

1. The "C" suffix denotes a bidirectional device, such as VSB10P5C.
2. Forward voltage (Unidirectional Configurations Only):  $V_F = 1.5V @ 200mA$ .
3. The "LC" suffix denotes a low capacitance device, such as VSB10P05LC. These devices have a capacitance of 100pF.
4. The "LCI" suffix denotes an isolated low capacitance device, such as VSB10P05LCI.

## TYPICAL DEVICE CHARACTERISTICS

FIGURE 1  
PEAK PULSE POWER VS PULSE TIME

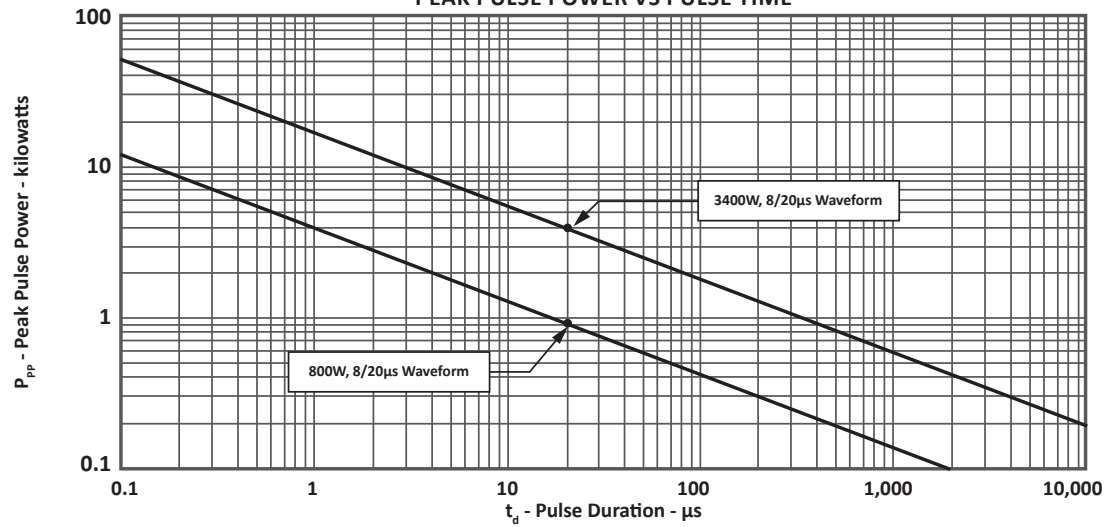
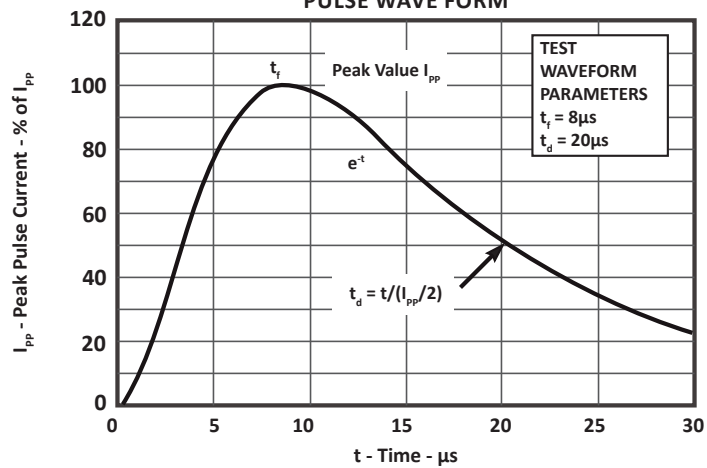
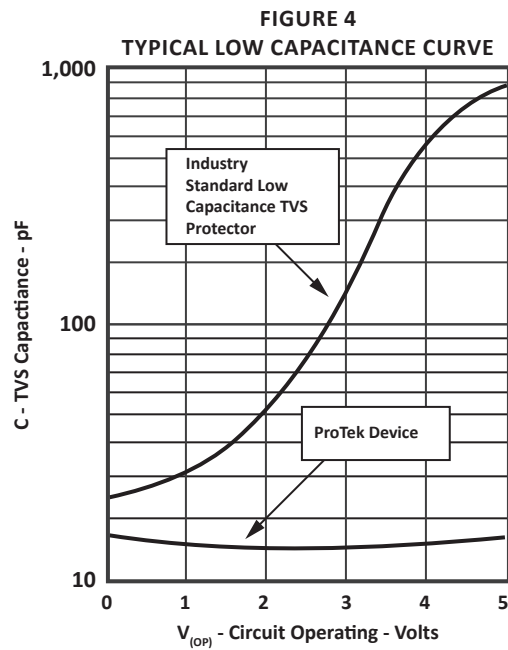
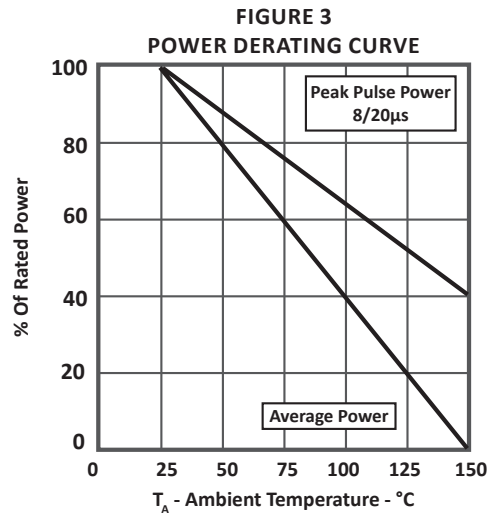


FIGURE 2  
PULSE WAVE FORM



## TYPICAL DEVICE CHARACTERISTICS



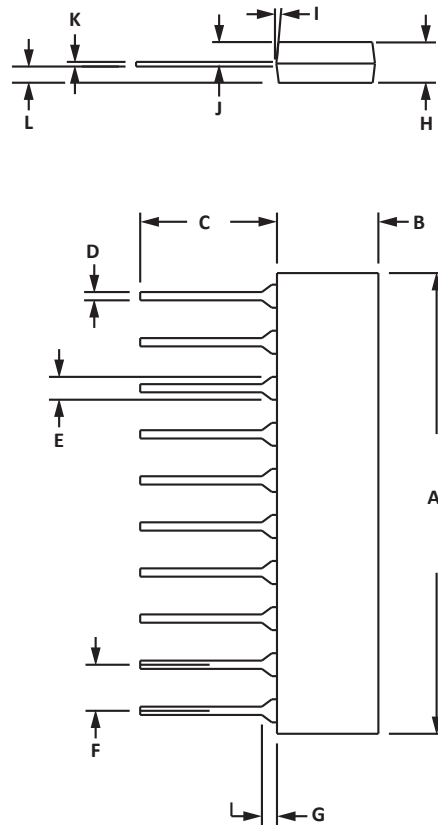
## 10 PIN VSIP PACKAGE INFORMATION

### OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	25.65	26.01	1.01	1.024
B	5.68	6.45	0.244	0.254
C	5.92	6.73	0.233	0.265
D	0.406	0.508	0.016	0.020
E	1.27	1.65	0.05	0.065
F	2.49	2.59	0.098	0.102
G	0.38	1.40	0.015	0.055
H	2.65	3.17	0.104	0.125
I	7° TYP	7° TYP	7° TYP	7° TYP
J	1.47	1.98	0.058	0.078
K	0.20	0.30	0.008	0.012
L	0.81	1.57	0.032	0.062

#### NOTES

- Dimensions are exclusive of mold flash and metal burrs.
- Controlling dimensions in inches.



### ORDERING INFORMATION

BASE PART NUMBER (xx = Voltage)	LEADFREE SUFFIX	TAPE SUFFIX	QTY/REEL	REEL SIZE	TUBE QTY
VS10Pxx/VSB10Pxx	-LF	n/a	n/a	n/a	18
VS10PxxC/VSB10PxxC	-LF	n/a	n/a	n/a	18
VS10PxxLC/VSB10PxxLC	-LF	n/a	n/a	n/a	18
VS10PxxLCI/VSB10PxxLCI	-LF	n/a	n/a	n/a	18

#### NOTES

- Marking on Part - logo, part number, date code and pin one defined by dot on top of package.

Package outline per document number 06017.R2 9/09

## COMPANY INFORMATION

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### COMPANY PROFILE

ProTek Devices, based in Tempe, Arizona USA, is a manufacturer of Transient Voltage Suppression (TVS) products designed specifically for the protection of electronic systems from the effects of lightning, Electrostatic Discharge (ESD), Nuclear Electromagnetic Pulse (NEMP), inductive switching and EMI/RFI. With over 25 years of engineering and manufacturing experience, ProTek designs TVS devices that provide application specific protection solutions for all electronic equipment/systems.

ProTek Devices Analog Products Division, also manufactures analog interface, control, RF and power management products.

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