

## 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

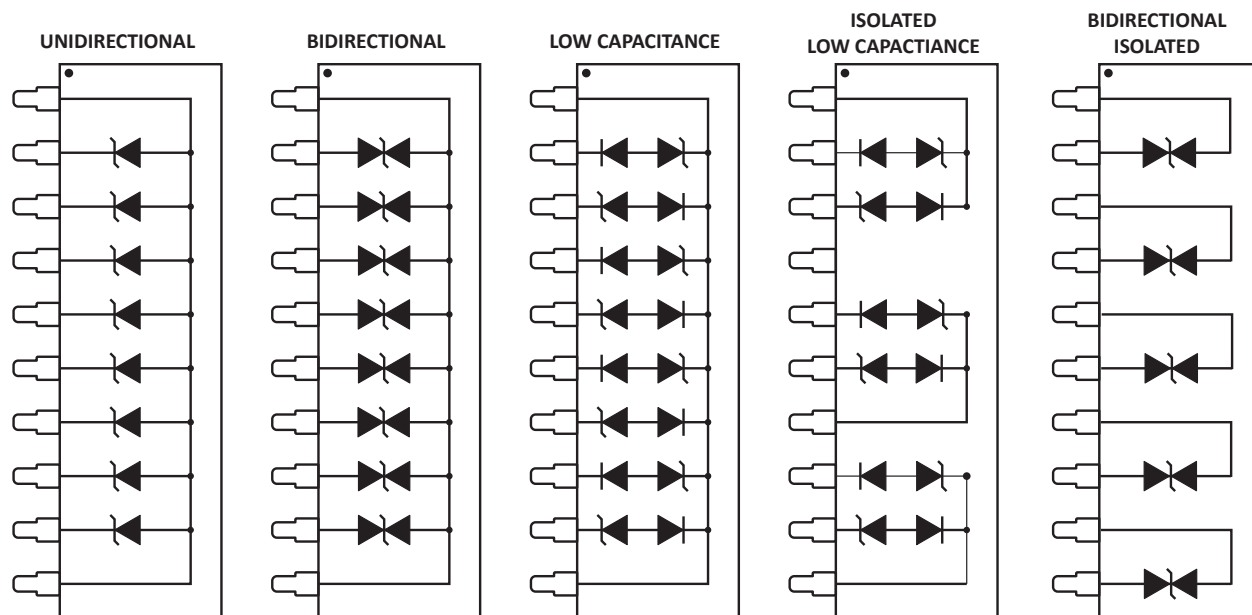
### APPLICATIONS

- 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 1-5)	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
VS10P05CI	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
VS10P08CI	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
VS10P12CI	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
VS10P15CI	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
VS10P24CI	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

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

PART NUMBER (Note 1-5)	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
VSB10P05CI	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
VSB10P08CI	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
VSB10P12CI	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
VSB10P15CI	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
VSB10P24CI	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	44.0	2	93
VSB10P28C	28.0	31.1	39.8	44.0	2	93
VSB10P28CI	28.0	31.1	39.8	44.0	2	93
VSB10P28LC	28.0	31.1	39.8	44.0	2	93
VSB10P28LCI	28.0	31.1	39.8	44.0	2	93

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

PART NUMBER (Note 1-5)	RATED STAND-OFF VOLTAGE  $V_{WM}$ VOLTS	MINIMUM BREAKDOWN VOLTAGE	MAXIMUM CLAMPING VOLTAGE (Fig. 2)	MAXIMUM CLAMPING VOLTAGE (Fig. 2)	MAXIMUM LEAKAGE CURRENT	MAXIMUM PEAK PULSE CURRENT (Fig. 2)
		@1mA $V_{(BR)}$ VOLTS	@ IP = 1A $V_C$ VOLTS	@ IP = 10A $V_C$ VOLTS	@ $V_{WM}$ $I_D$ $\mu A$	$I_{PP}$ amps
VSB10P33	33.0	36.7	47.0	51.9	2	83
VSB10P33C	33.0	36.7	47.0	51.9	2	83
VSB10P33CI	33.0	36.7	47.0	51.9	2	83
VSB10P33LC	33.0	36.7	47.0	51.9	2	83
VSB10P33LCI	33.0	36.7	47.0	51.9	2	83
VSB10P36	36.0	40.0	51.2	56.6	2	68
VSB10P36C	36.0	40.0	51.2	56.6	2	68
VSB10P36CI	36.0	40.0	51.2	56.6	2	68
VSB10P36LC	36.0	40.0	51.2	56.6	2	68
VSB10P36LCI	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 "CI" suffix denotes bidirectional isolated device, such as VSB10P05CI.
4. The "LC" suffix denotes a low capacitance device, such as VSB10P05LC. These devices have a capacitance of 100pF.
5. The "LCI" suffix denotes an isolated low capacitance device, such as VSB10P05LCI.

## TYPICAL DEVICE CHARACTERISTICS

FIGURE 1  
PEAK PULSE POWER VS PULSE TIME

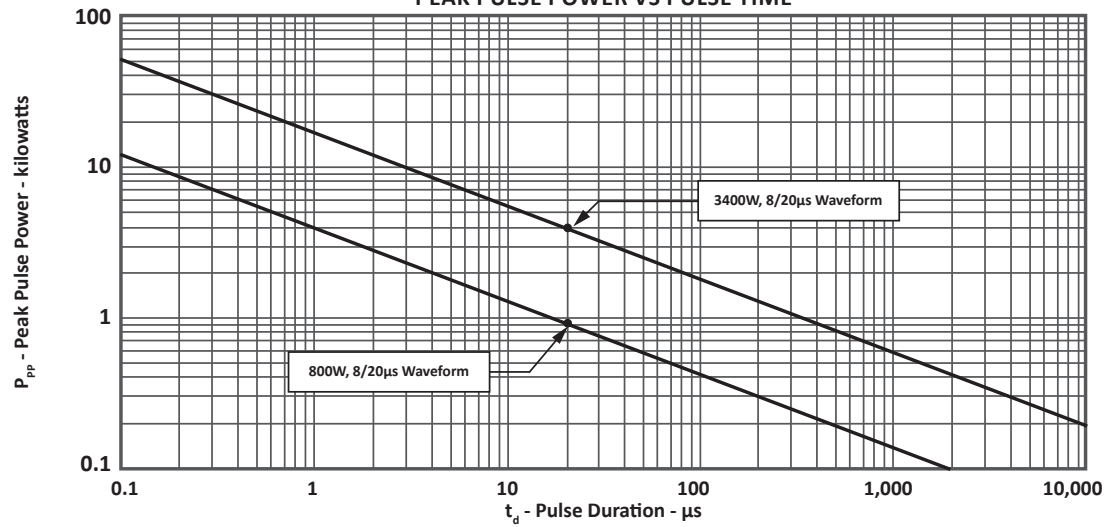
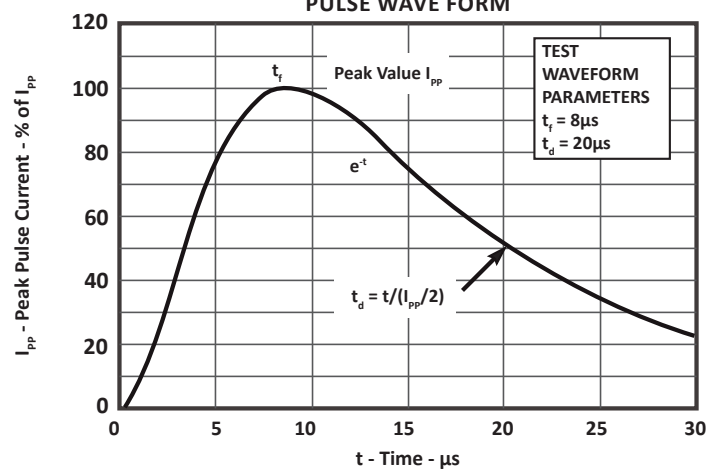
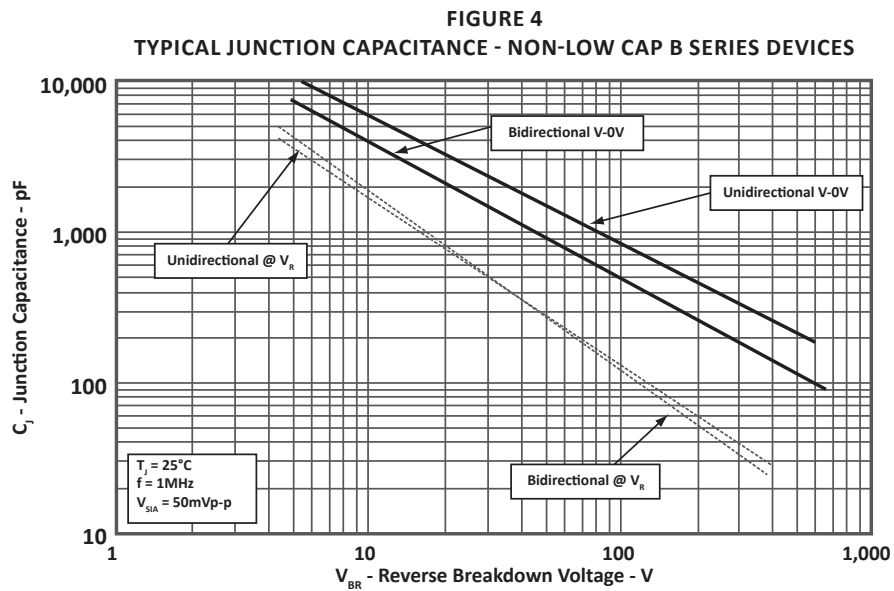
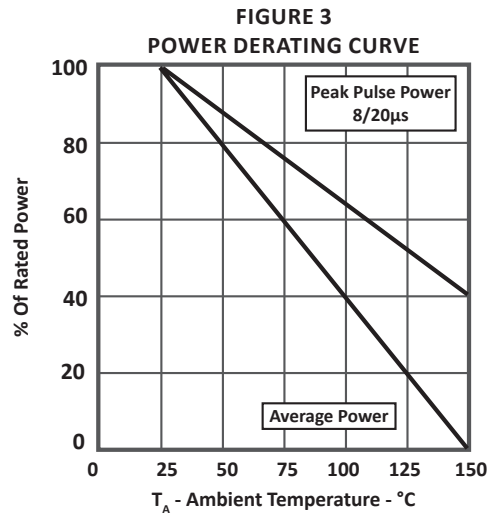


FIGURE 2  
PULSE WAVE FORM



## TYPICAL DEVICE CHARACTERISTICS



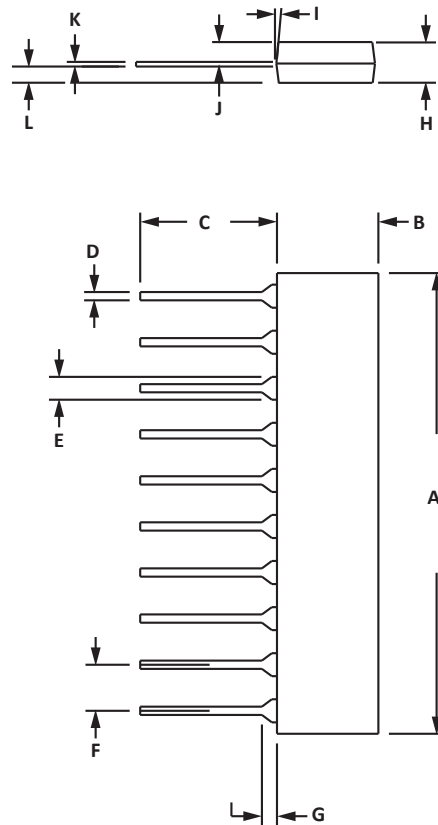
## 10 PIN VSIP PACKAGE INFORMATION

## 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
VS10PxxCI/VSB10PxxCI	-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.
- This device available only in a lead-free configuration.

## COMPANY INFORMATION

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### COMPANY PROFILE

In business more than 25 years, ProTek Devices™ is a privately held semiconductor company. The company offers a product line of overvoltage protection and overcurrent protection components. These include transient voltage suppressor array (TVS arrays) avalanche breakdown diode, steering diode TVS array and electronics SMD chip fuses. These components deliver circuit protection in electronic systems from numerous overvoltage and overcurrent events. They include lightning; electrostatic discharge (ESD); nuclear electromagnetic pulses (NEMP); inductive switching; and electromagnetic interference (EMI) / radio frequency interference (RFI). ProTek Devices also offers LED wafer die for ESD protection and related high frequency products. ProTek Devices is ISO 9001:2015 certified.

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[DF2S5.6ASL,L3F](#) [DF2S5.6FS\(TPL3\)](#) [DF2S6.2ASL,L3F](#) [DF2S6.2CT,L3F](#) [DF2S6.8FS,L3M](#) [DF2S8.2FS,L3M](#) [DF5A5.6JE,LM](#)  
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[ESD7321MUT5G](#)