

## HIGH POWERED SURGE PROTECTION TVS ARRAY



**DFN-2 PACKAGE**

### DESCRIPTION

The PHS505/C Series are transient voltage suppressor arrays, designed for ESD protection of SMART phones, laptop computers and other portable electronics. These silicon based diodes offer superior clamping voltage and performance compared to other technologies such as MLVs.

The PHS505/C series can be utilized as a single line protector in either a bidirectional or unidirectional configuration. The DFN-2 package is similar in size to a SOD-523 and gives the flexibility of placement on the printed circuit board for each IO port or voltage bus. The PHS505/C Series meets IEC 61000-4-2 (ESD), IEC 61000-4-4 (EFT) and IEC 61000-4-5 (Surge) requirements.

### FEATURES

- Compatible with IEC 61000-4-2 (ESD): Air  $\pm 15\text{kV}$ , Contact  $\pm 8\text{kV}$
- Compatible with IEC 61000-4-4 (EFT): 40A - 5/50ns
- Compatible with IEC 61000-4-5 (Surge): 24A, 8/20 $\mu\text{s}$  Level 2 (Line-Gnd) and Level 3 (Line-Line)
- Unidirectional: 500 Watts Peak Pulse Power per Line ( $t_p = 8/20\mu\text{s}$ )
- Bidirectional: 400 Watts Peak Pulse Power per Line ( $t_p = 8/20\mu\text{s}$ )
- Similar size as SOD-532 or 1.6mm x 0.8mm
- Protects One Power or I/O Port
- ESD Protection > 25kV
- Low Clamping Voltage
- Available in Multiple Voltages: 5V - 36V
- RoHS Compliant
- REACH Compliant

### APPLICATIONS

- SMART Phones
- Laptop Computers
- Portable Electronics

### MECHANICAL CHARACTERISTICS

- DFN-2 Package
- Approximate Weight: 3mg
- Lead-Free Plating
- Solder Reflow Temperature:  
Pure-Tin - Sn, 100: 260-270°C
- 8mm Tape and Reel Per EIA Standard 481
- Flammability Rating UL 94V-0

### PIN CONFIGURATIONS



**UNIDIRECTIONAL**



**BIDIRECTIONAL**

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

PARAMETER	SYMBOL	VALUE	UNITS
Unidirectional Peak Pulse Power (tp = 8/20μs) - See Figure 1	P <sub>PP</sub>	500	Watts
Bidirectional Peak Pulse Power (tp = 8/20μs) - See Figure 1	P <sub>PP</sub>	400	Watts
Operating Temperature	T <sub>L</sub>	-55 to 150	°C
Storage Temperature	T <sub>STG</sub>	-55 to 150	°C

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

PART NUMBER (Note 1)	DEVICE MARKING	RATED STAND-OFF VOLTAGE	MINIMUM BREAKDOWN VOLTAGE	MAXIMUM CLAMPING VOLTAGE (Fig. 2)	MAXIMUM LEAKAGE CURRENT	TYPICAL CAPACITANCE
		V <sub>WM</sub> VOLTS	@ 1mA V <sub>(BR)</sub> VOLTS	@ I <sub>p</sub> = 1A V <sub>C</sub> VOLTS	@ V <sub>WM</sub> I <sub>D</sub> μA	@ 0V, 1MHz C pF
PHS505	B	5.0	6.0	9.8	10	350
PHS505C	H	5.0	6.0	9.8	10	175
PHS508	C	8.0	8.5	13.4	10	250
PHS508C	J	8.0	8.5	13.4	10	150
PHS512	D	12.0	13.3	19.0	1	150
PHS512C	K	12.0	13.3	19.0	1	50
PHS515	E	15.0	16.7	24.0	1	100
PHS515C	L	15.0	16.7	24.0	1	40
PHS518	18	18.0	20.0	29.0	1	90
PHS518C	N	18.0	20.0	29.0	1	40
PHS524	F	24.0	26.7	43.0	1	88
PHS524C	M	24.0	26.7	43.0	1	40
PHS536	R	36.0	40.0	60.0	1	75
PHS536C	T	36.0	40.0	60.0	1	35

**NOTE**

1. Part numbers with an additional "C" suffix are bidirectional devices.

## TYPICAL DEVICE CHARACTERISTICS

FIGURE 1  
PEAK PULSE POWER VS PULSE TIME

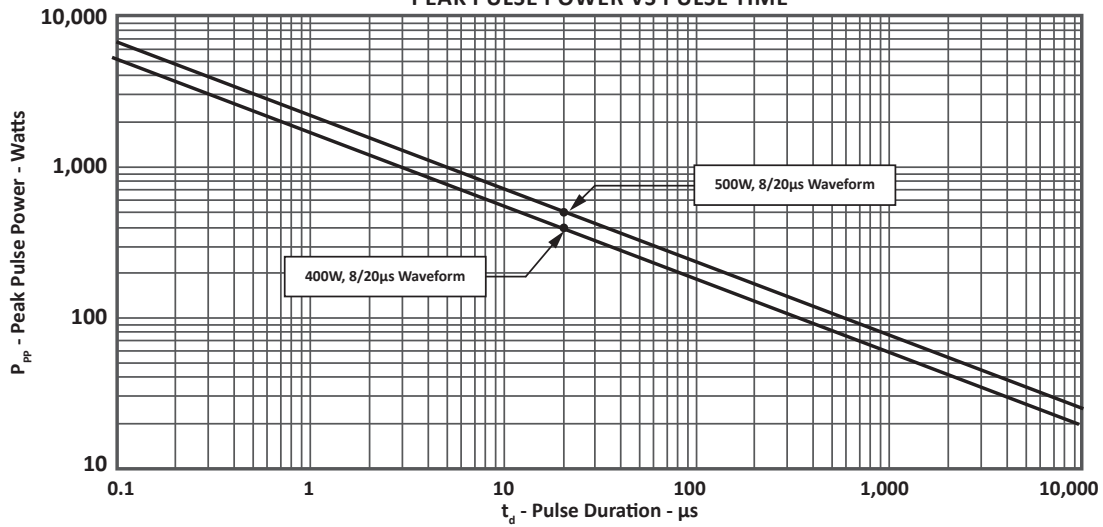
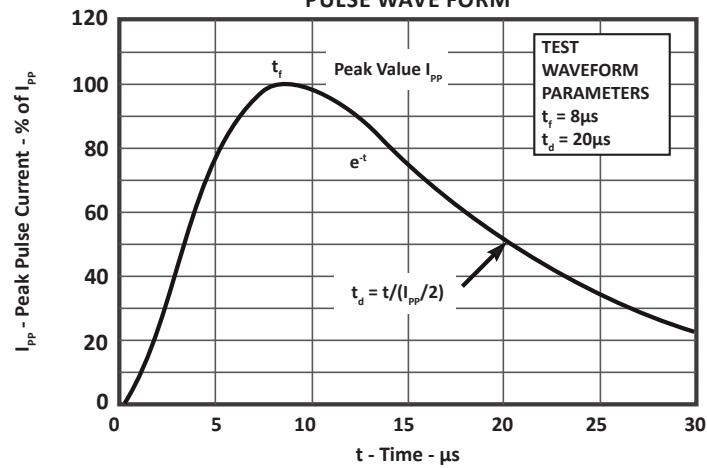


FIGURE 2  
PULSE WAVE FORM

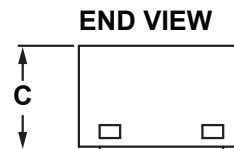
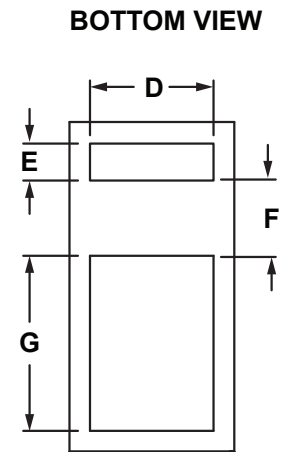
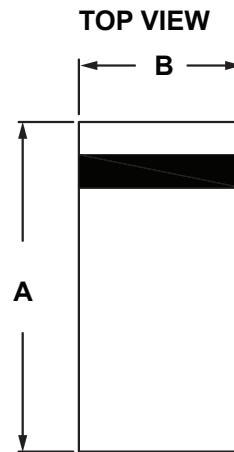


**PACKAGE INFORMATION**

OUTLINE DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.50	1.70	0.059	0.067
B	0.72	0.88	0.028	0.035
C	0.47	0.56	0.018	0.022
D	0.55	0.65	0.022	0.026
E	0.15	0.22	0.006	0.009
F	0.33	0.40	0.013	0.016
G	0.81	0.89	0.032	0.035

**NOTES**

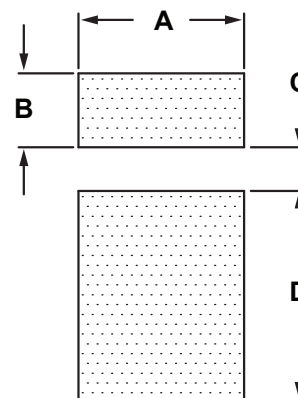
1. Dimensioning and tolerances per ANSI Y14.M, 1985.
2. Dimensions are exclusive of mold flash and metal burrs.



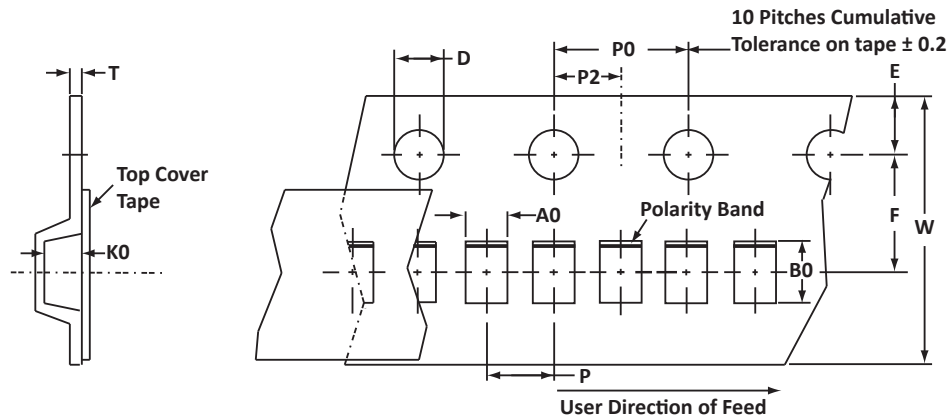
PAD LAYOUT DIMENSIONS		
DIM	MILLIMETERS	INCHES
	NOMINAL	NOMINAL
A	0.80	0.032
B	0.36	0.014
C	0.21	0.008
D	1.03	0.040

**NOTES**

1. Controlling dimension: millimeters.



## TAPE AND REEL



## SPECIFICATIONS

REEL DIA.	TAPE WIDTH	A0	B0	K0	D	E	F	W	P0	P2	P	tmax
178mm (7")	8mm	0.93 ± 0.05	1.78 ± 0.10	0.63 ± 0.05	1.55 ± 0.10	1.75 ± 0.10	3.50 ± 0.05	8.00 ± 0.30	4.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	0.25

## NOTES

1. Dimensions are in millimeters.
2. Surface mount product is taped and reeled in accordance with EIA-481.
3. Marking on Part - marking code (see page 2) and polarity band (unidirectional devices).

## ORDERING INFORMATION

BASE PART NUMBER (XXX = VOLTAGE)	LEADFREE SUFFIX	TAPE SUFFIX	QTY/REEL	REEL SIZE	TUBE QTY
PHSxxxx/C	n/a	-T710	10,000	7"	n/a

This device is only available 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 an ISO 9001 certified company.

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