

PHP &amp; PIP PACKAGE

## DESCRIPTION

The PHP and PIP Series of devices are designed in accordance with DOD-STD-1399, section 300 interface standard and MIL-STD704A for shipboard systems, electrical power and alternating current. When large voltage transients endanger voltage sensitive components, this series provides reliable protection against power interruptions and shore power switch-over.

This series can be screened upon request for military requirements in accordance with MIL-PRF-19500 (applicable tests).

## FEATURES

- RTCA DO-160G COMPLIANT PRODUCT
- DOD-STD-1399, MIL-STD-704, MIL-STD-2036 & MIL-PRF-19500/507 Compliant
- 7,500 & 15,000 kilowatts Peak Pulse Power per Line ( $t_p = 10/1000\mu s$ )
- Each Device 100% Tested
- Available in Multiple Voltages
- PHP Series Meets CE Low Voltage Directive

## MECHANICAL CHARACTERISTICS

- PHP: Hermetically Sealed Glass to Metal Sub-Assemblies
- PIP: Molded Epoxy Case Sub-Assemblies
- Approximate Weight: 46 grams
- Flammability Rating UL 94V-0
- Screening Available Upon Request:
  - H1 - Submodule Screening (Test Plans 05231 & 05232)
  - H2 - Submodule & Module Screening (Test Plan 05233)
  - H3 - Submodule & Module Screening with Group B & C Lot Testing (Test Plans 05234 & 05235)

## APPLICATIONS

- Secondary AC Power Supply
- Aircraft & Shipboard AC Power Bus
- Heavy Duty AC Switching Power

## TYPICAL DEVICE CHARACTERISTICS

## RTCA DO-160G COMPLIANT PRODUCT

## MAXIMUM RATINGS @ 25°C Unless Otherwise Specified

PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power (tp = 10/1000µs) - See Figure 1	$P_{PP}$	7.5 & 15	kilowatts
Operating Temperature	$T_L$	-55 to 150	°C
Storage Temperature	$T_{STG}$	-55 to 150	°C
Steady State Power Dissipation @ 50°C	$T_A$	7.5	Watts

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

PART NUMBER	AVERAGE RMS VOLTAGE	RATED STAND-OFF VOLTAGE	MINIMUM BREAKDOWN VOLTAGE (Note 1)	MAXIMUM CLAMPING VOLTAGE (Fig. 2)	MAXIMUM LEAKAGE CURRENT	MAXIMUM PEAK PULSE CURRENT	MAXIMUM PEAK PULSE POWER
	$V_{RMS}$ VOLTS	$V_{WM}$ VOLTS	@1mA $V_{(BR)}$ VOLTS	@ $I_{PPM}$ $V_C$ VOLTS	@ $V_{WM}$ $I_D$ µA	$I_{PPM}$ AMPS	@ 1ms $P_{PP}$ KILOWATTS
PHP8.4	8.4	12.0	14	22	250	341	7.5
PIP8.4	8.4	12.0	14	22	250	341	7.5
PHP24	24.0	34.0	40	67	250	112	7.5
PIP24	24.0	34.0	40	67	250	112	7.5
PHP30	30.0	42.5	50	84	250	90	7.5
PIP30	30.0	42.5	50	84	250	90	7.5
PHP60	60.0	85.0	100	167	250	90	15
PIP60	60.0	85.0	100	167	250	90	15
PHP120*	120.0	170.0	200	319	250	47	15
PIP120*	120.0	170.0	200	319	250	47	15
PHP208	208.0	295.0	347	536	250	28	15
PIP208	208.0	295.0	347	536	250	28	15
PHP250*	250.0	354.0	418	652	250	23	15
PIP250*	250.0	354.0	418	652	250	23	15
PHP275	275.0	390.0	460	710	250	21	15
PHP440	440.0	623.0	735	1138	250	13.2	15
PIP440	440.0	623.0	735	1138	250	13.2	15
PHP500*	500.0	708.0	835	1292	250	11.6	15
PIP500*	500.0	708.0	835	1292	250	11.6	15

## NOTE

1. A \* indicates that this series is recommended for marine applications. For military and aerospace applications, use the PHP Series, for industrial applications, use the PIP Series.
2. The following voltages have a peak pulse power rating of 7,500 Watts for an 10/1000µs waveshape (see Figure 1): 8.4V, 24V and 30V.

FIGURE 1

PEAK PULSE POWER VS PULSE TIME

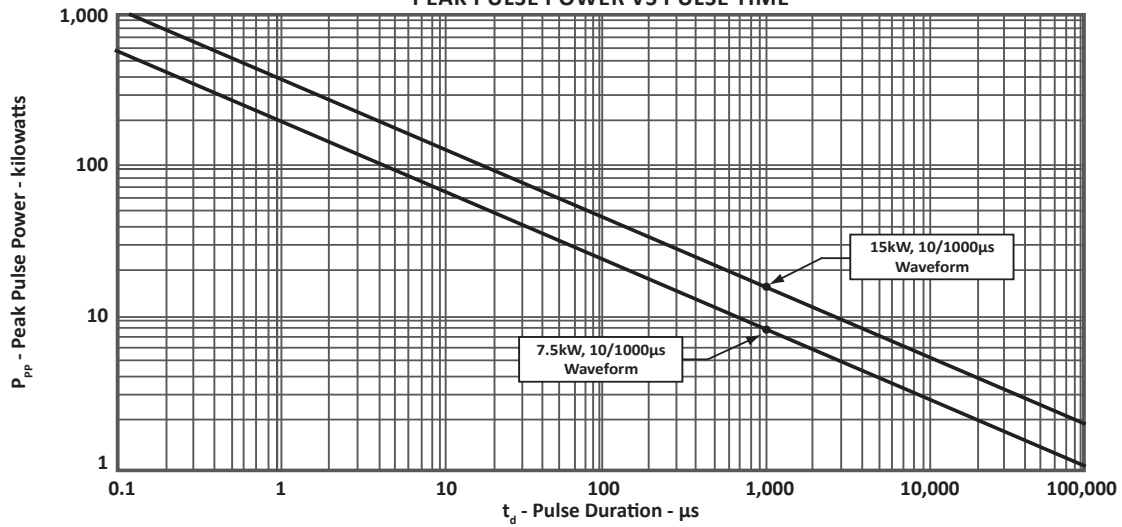


FIGURE 2  
PULSE WAVEFORM

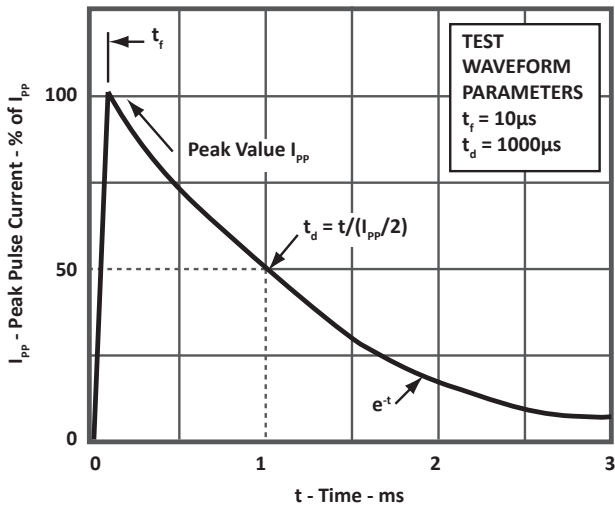
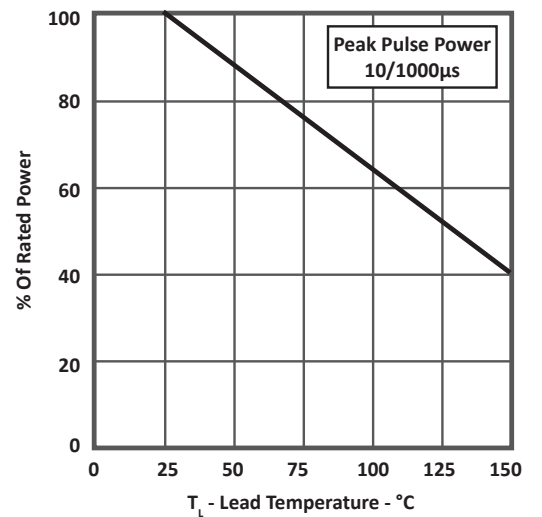


FIGURE 3  
POWER DERATING CURVE



## PACKAGE INFORMATION

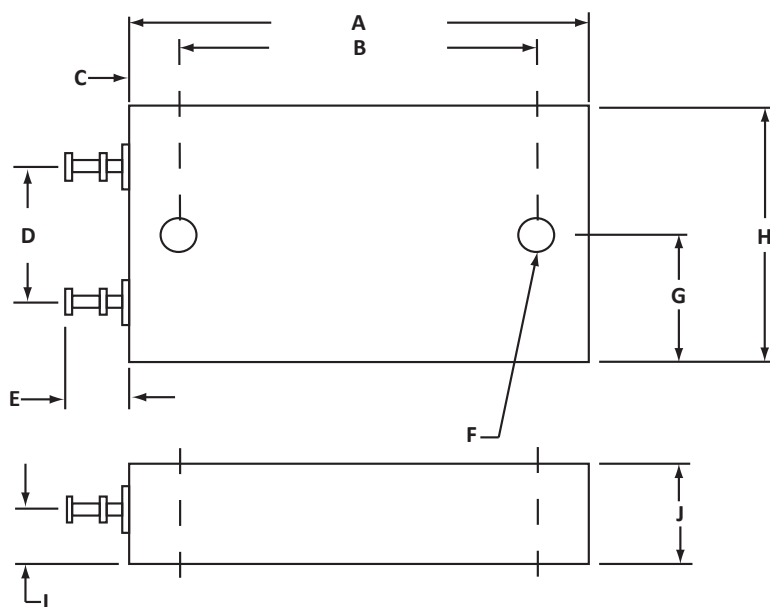
## RTCA DO-160G COMPLIANT PRODUCT

## OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	56.38	57.91	2.22	2.28
B	49.02	50.03	1.93	1.97
C	3.43	4.17	0.135	0.165
D	20.32		0.800	
E	8.26	9.27	0.325	0.365
F	3.18 DIA.		0.125 DIA.	
G	16.76	18.29	0.660	0.720
H	34.16	35.69	1.345	1.405
I	6.35		0.250	
J	11.94	13.46	0.47	0.53

## NOTES

1. Dimensions "D", "F" and "I" are nominal.



Note: Recommended torque value for mounting: less than 10 inch pounds

## ORDERING INFORMATION

BASE PART NUMBER (xx = Voltage)	SUBMODULE SCREENING	SUBMODULE & MODULE SCREENING	SUBMODULE & MODULE SCREENING, GROUP B & C LOT TESTING
PHPxxx	H1	H2	H3
PIPxxx	n/a	n/a	n/a

## NOTES

1. Marking on Part - logo, date code and part number.

**COMPANY INFORMATION****RTCA DO-160G COMPLIANT PRODUCT****COMPANY PROFILE**

In business more than 30 years, ProTek Devices™ is a privately held semiconductor company. The company offers a product line of overvoltage protection that include Transient Voltage Suppressor (TVS) Arrays, Steering Diode Array Hybrids, High-power Components and Modules, as well as Steering Diodes, EMI Filter/TVS Arrays and Thyristor Surge Suppressors. These components deliver circuit protection in electronic systems from numerous overvoltage events. They include lightning; electrostatic discharge (ESD); nuclear electromagnetic pulses (NEMP); inductive switching; and electromagnetic interference (EMI) / radio frequency interference (RFI). ProTek Devices is an ISO 9001 certified company.

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