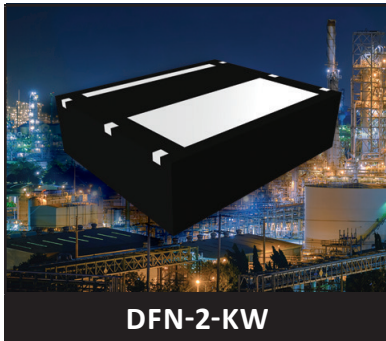


## HYBRID TVS COMPONENT



### DESCRIPTION

The PHYTVSxxxV3 series is a patent pending hybrid state-of-the-art semiconductor technology intended for AC power transient protection. This series is designed to protect critical industrial and consumer applications, where a reliable overvoltage solution with lower clamping voltage is required. The PHYTVSxxxV3 series technology is an ideal replacement for surface mount Metal Oxide Varistors (MOV), offering a more robust product in a small form factor that does not present a wear-out mechanism that is common with MOVs, thus extending significantly its operation lifetime.

### FEATURES

- Compatible with IEC 61000-4-2 (ESD): Level 4 Air  $\pm 15\text{kV}$ , Contact  $\pm 8\text{kV}$
- Compatible with IEC 61000-4-4 (EFT): 40A
- Compatible with IEC 61000-4-5 (Surge): L-L Class 2, 250Apk, 8/20 $\mu\text{s}$ , 500V with Req = 2 Ohms
- Bidirectional Operation 50/60/400Hz AC Lines
- Very Low Clamping Voltage
- Form Factor Compatible with SMT 3225
- Available for SMT Reflow Soldering
- Low Profile and Space Saving Package
- Operating Temperature -55 to +125°C
- RoHS Compliant
- REACH Compliant

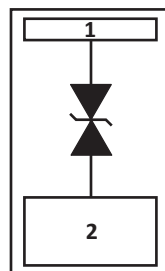
### APPLICATIONS

- Power Adapters
- Home Appliances
- Industrial Equipment - Automation Controls
- Instrumentation
- SMART Meters

### MECHANICAL CHARACTERISTICS

- Molded DFN-2-KW Package
- Approximate Weight: 2.5 grams
- Lead-Free Tin Matte Plating
- Solder Reflow Temperature: 260-270°C, 10 seconds
- 12mm Tape and Reel Per EIA Standard 481
- Flammability Rating UL 94V-0

### PIN CONFIGURATION



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

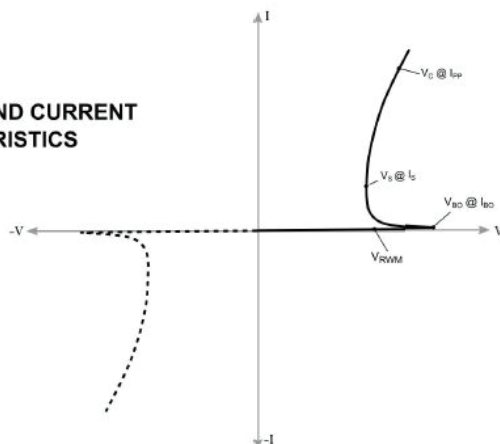
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Current (8/20µs) - per IEC 61000-4-5	$I_{PP}$	250	A
Storage Temperature	$T_{STG}$	-55 to 125	°C
Operating Temperature	$T_L$	-55 to 125	°C
ESD Rating per IEC 61000-4-2 - Contact	-	±30	kV
ESD Rating per IEC 61000-4-2 - Air	-	±30	kV

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

PART NUMBER	MARKING CODE	TYPICAL OPERATING VOLTAGE	MINIMUM REVERSE WORKING VOLTAGE	MAXIMUM REVERSE BREAKOVER VOLTAGE	REVERSE BREAKOVER CURRENT	SWITCHING VOLTAGE	SWITCHING CURRENT
		$V_{RMS}$ VOLTS	$V_{RWM}$ VOLTS	$V_{BO}$ VOLTS	$I_{BO}$ mA	$V_S$ V	$I_S$ mA
PHYTVS125V3	125V3	125	200	220	1.0	110	100.0
PHYTVS250V3	250V3	250	375	420	1.0	200	100.0
PHYTVS277V3	277V3	277	410	440	1.0	220	100.0

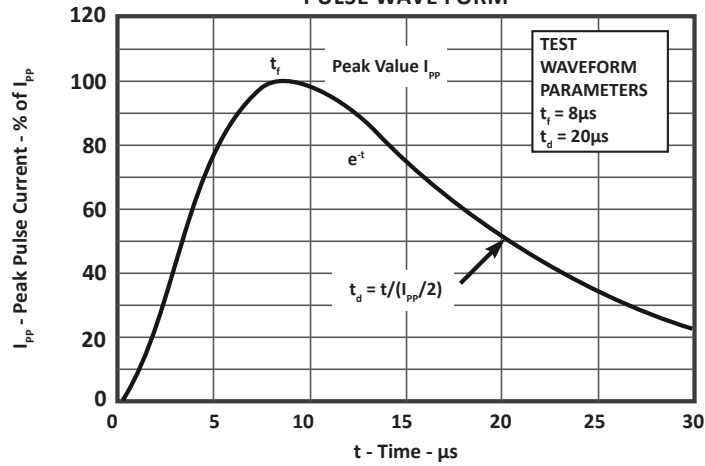
**ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified**

PART NUMBER	MAXIMUM REVERSE LEAKAGE CURRENT @ $V_{RWM}$ $I_R$ µA	MAXIMUM CLAMPING VOLTAGE $V_C$ VOLTS	MAXIMUM PEAK PULSE CURRENT (8/20µs) $I_{PP}$ A	MAXIMUM OFF-STATE CAPACITANCE @ 1MHz, 0V $C_O$ pF
PHYTVS125V3	10.0	130	250	80.0
PHYTVS250V3	10.0	230	250	80.0
PHYTVS277V3	10.0	250	250	80.0

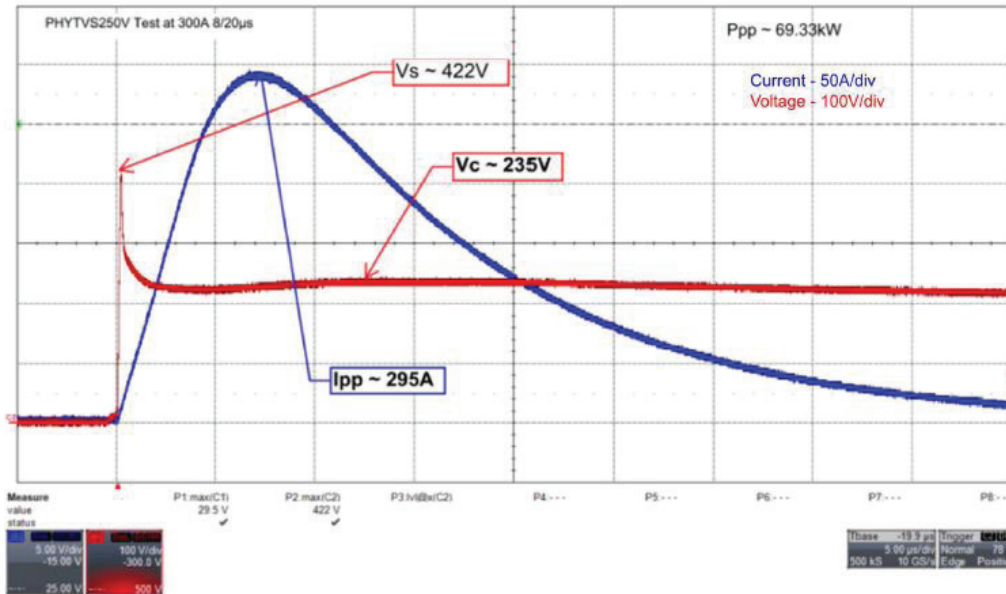
**VOLTAGE AND CURRENT CHARACTERISTICS**


TYPICAL DEVICE CHARACTERISTICS

**FIGURE 1**  
PULSE WAVE FORM



**FIGURE 2**  
DYNAMIC PERFORMANCE EXAMPLE UNDER SURGE PULSE - 8/20 $\mu$ s



## PACKAGE INFORMATION

## OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	7.52	7.75	0.296	0.304
B	6.50	6.70	0.256	0.264
C	1.93	2.13	0.076	0.084
D	3.96	4.16	0.156	0.164
E	0.68	0.84	0.027	0.033
F	2.69	2.85	0.106	0.112
G	3.12	3.28	0.123	0.129
H	0.42	0.58	0.017	0.023
J	5.51	5.67	0.217	0.223
K	0.44	0.56	0.018	0.022
L	3.49		0.137	
M	2.54		0.100	
N	0.60	0.70	0.024	0.028
P	0.20	0.30	0.008	0.012

## NOTES

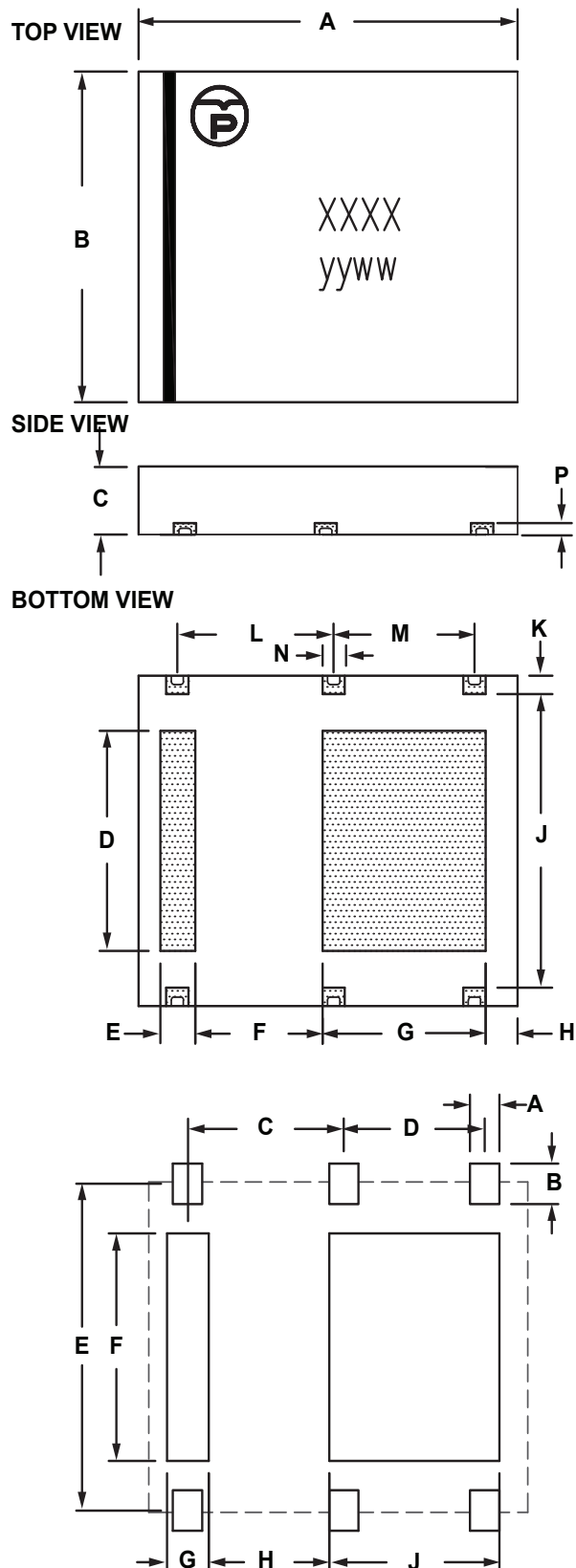
1. Dimensions are exclusive of mold flash and metal burrs.

## PCB PAD LAYOUT DIMENSIONS

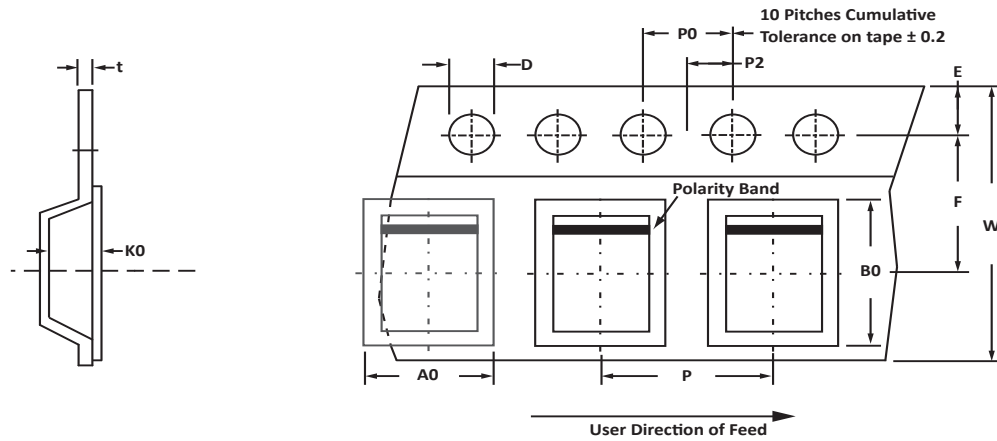
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.80	0.95	0.032	0.038
B	1.07	1.22	0.042	0.048
C	3.49		0.137	
D	2.54		0.100	
E	6.54		0.258	
F	4.22	4.32	0.165	0.171
G	0.92	1.02	0.036	0.040
H	2.52	2.62	0.098	0.104
J	3.36	3.46	0.130	0.138

## NOTES

1. Suggested solder print uses some dimensions as PCB pad layout.



## TAPE AND REEL



## SPECIFICATIONS

REEL DIA.	TAPE WIDTH	A0	B0	K0	D	E	F	W	P0	P2	P	tmax
330mm (13")	16mm	6.8 ± 0.10	7.8 ± 0.10	2.16 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	3.50 ± 0.05	16.00 ± 0.30	4.00 ± 0.10	2.00 ± 0.05	8.00 ± 0.10	0.25

## NOTES

- Dimensions are in millimeters.
- Surface mount product is taped and reeled in accordance with EIA-481.
- Suffix - T13 = 13" Reel - 2,500 pieces per 16mm tape.
- Marking on Part - marking code (see page 2), date code, logo and polarity band (Unidirectional only).

## ORDERING INFORMATION

BASE PART NUMBER (XXX=VOLTAGE)	LEADFREE SUFFIX	TAPE SUFFIX	QTY/REEL	REEL SIZE	TUBE QTY
PHYTVSxxxV3	n/a	-T13	2500	13"	n/a

This device is only available in a Lead-Free configuration.

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

In business more than 20 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.

**CONTACT US****Corporate Headquarters**

2929 South Fair Lane  
Tempe, Arizona 85282  
USA

**By Telephone**

General: 602-431-8101  
Sales: & Marketing: 602-414-5109  
Customer Service: 602-414-5114  
Product Technical Support: 602-414-5107

**By Fax**

General: 602-431-2288

**By E-mail:**

Asia Sales: [asiasales@protekdevices.com](mailto:asiasales@protekdevices.com)  
Europe Sales: [europesales@protekdevices.com](mailto:europesales@protekdevices.com)  
U.S. Sales: [ussales@protekdevices.com](mailto:ussales@protekdevices.com)  
Distributor Sales: [distysales@protekdevices.com](mailto:distysales@protekdevices.com)  
Customer Service: [service@protekdevices.com](mailto:service@protekdevices.com)  
Technical Support: [support@protekdevices.com](mailto:support@protekdevices.com)

**ProTek Devices (Asia Pacific) Pte. Ltd.**

8 Ubi Road 2, #06-19  
Zervex  
Singapore - 408538  
Tel: +65-67488312  
Fax: +65-67488313

**Web**

[www.protekdevices.com](http://www.protekdevices.com)

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