

## 15kW SURFACE MOUNT POWER TVS COMPONENT



**SMD-15 PACKAGE**

### DESCRIPTION

The SM15KPA Series are high-powered surface mount transient voltage suppression components designed to protect equipment and systems from the damaging effects of high voltage spikes. The surface mount package configuration provides a lower profile at a reduce cost compared to legacy axial lead package configurations.

These devices provide 15,000 Watts of peak pulse power dissipation for an 10/1000 $\mu$ s waveform. Applications include AC and DC power line protection, terrestrial base station protection as well as module lightning protection.

### FEATURES

- Compatible with IEC 61000-4-5 (Surge): 48A, 8/20 $\mu$ s - L3(Line-Ground), L4(Line-Line) & L1 (Power)
- 15,000 Watts Peak Pulse Power per Line (tp = 10/1000 $\mu$ s)
- Unidirectional and Bidirectional Configurations
- Easy Mounting to Printed Circuit Board
- Available in Multiple Voltages
- tClamping (0V to V<sub>(BR)</sub> Min) < 100ps, Theoretical for Unidirectional and 5ns for Bidirectional
- RoHS Complaint (Exemption #7)

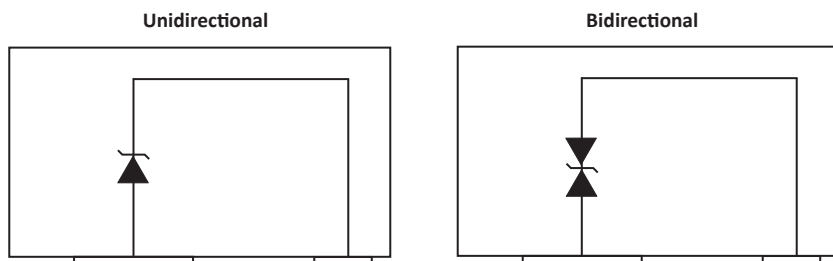
### APPLICATIONS

- Relay Drives
- Motor (Start/Stop) Back EMF Protection
- Module Lightning Protection
- Secondary Lightning Protection for AC/DC

### MECHANICAL CHARACTERISTICS

- Black Molded Case
- Approximate Weight: 2.5 grams
- Lead-Free Silver Plating
- Solder Reflow Temperature: 240-250°C
- Flammability Rating UL 94V-0
- Marking: Logo, Marking Code and Date Code

## CIRCUIT DIAGRAMS



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

PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power (tp = 10/1000µs) - See Figure 1	P <sub>PP</sub>	15,000	Watts
Forward Surge Rating	I <sub>F</sub>	200	Amps
Steady State Power Dissipation	P <sub>P</sub>	1.0	Watts
Storage Temperature	T <sub>STG</sub>	-55 to 150	°C
Operating Temperature	T <sub>L</sub>	-55 to 150	°C

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

UNIDIRECTIONAL PART NUMBER (Notes 1 - 2)	MARKING CODE	RATED STAND-OFF VOLTAGE  V <sub>WM</sub> VOLTS	MINIMUM BREAKDOWN VOLTAGE		MAXIMUM LEAKAGE CURRENT  @V <sub>WM</sub> I <sub>D</sub> µA	MAXIMUM CLAMPING VOLTAGE (Fig. 2)  @ 10/1000µS V <sub>C</sub> @ I <sub>PP</sub>	TEMPERATURE COEFFICIENT OF V <sub>(BR)</sub>  qV <sub>(BR)</sub> mV/°C
			MIN V <sub>(BR)</sub> VOLTS	@I <sub>T</sub> mA			
SM15KPA17A	17A	17.0	18.9	50	5000	29.3V @ 512.0A	17
SM15KPA30A	30A	30.0	33.3	5	15	50.7V @ 296.0A	34
SM15KPA33A	33A	33.0	36.7	5	10	54.8V @ 274.0A	38
SM15KPA48A	48A	48.0	53.3	5	10	77.7V @ 193.0A	56

**NOTES**

1. Devices shown are preferred voltages. Consult factory for additional voltages.
2. V<sub>i</sub>(MAX) = 15 Volts @ 200A, 8.3ms (1/2 Sine Wave) - unidirectional configuration only.

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

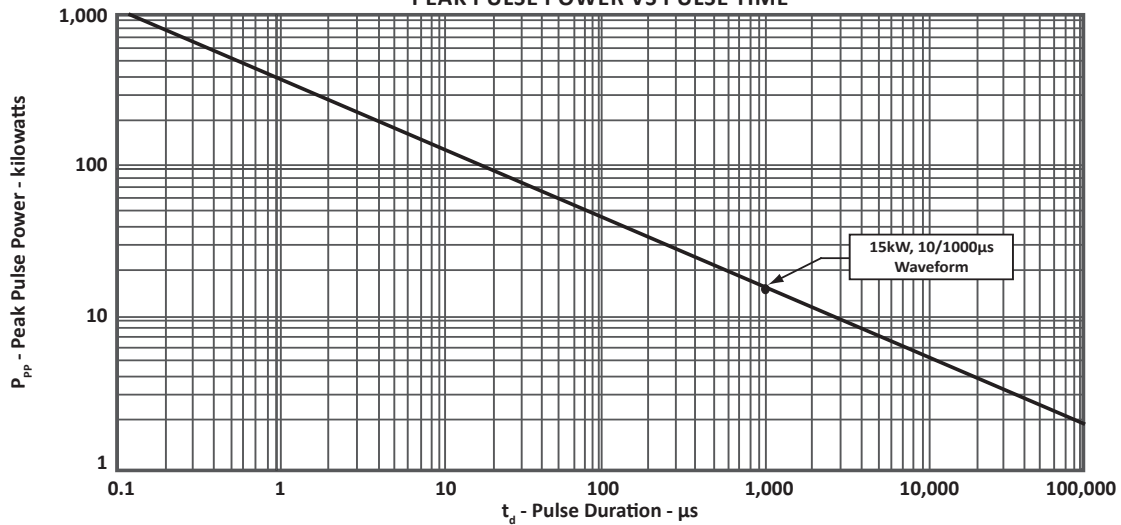
BIDIRECTIONAL PART NUMBER (Note 1)	MARKING CODE	RATED STAND-OFF VOLTAGE  V <sub>WM</sub> VOLTS	MINIMUM BREAKDOWN VOLTAGE		MAXIMUM LEAKAGE CURRENT  @V <sub>WM</sub> I <sub>D</sub> µA	MAXIMUM CLAMPING VOLTAGE (Fig. 2)  @ 10/1000µS V <sub>C</sub> @ I <sub>PP</sub>	TEMPERATURE COEFFICIENT OF V <sub>(BR)</sub>  qV <sub>(BR)</sub> mV/°C
			MIN V <sub>(BR)</sub> VOLTS	@I <sub>T</sub> mA			
SM15KPA30CA	30C	30.0	33.3	5	15	50.7V @ 296.0A	34
SM15KPA43CA	43C	43.0	47.8	5	10	69.7V @ 215.0A	50
SM15KPA54CA	54C	54.0	60.0	5	10	87.5V @ 171.0A	63
SM15KPA58CA	58C	58.0	64.4	5	10	94.0V @ 160.0A	68
SM15KPA78CA	78C	78.0	86.7	5	10	126.0V @ 119.0A	93
SM15KPA220CA	220C	220.0	245.0	5	10	356.0V @ 42.0A	269

**NOTES**

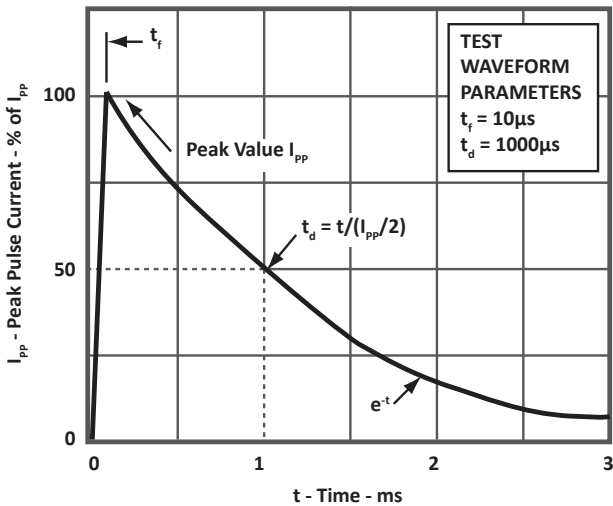
1. Devices shown are preferred voltages. Consult factory for additional voltages.

**TYPICAL DEVICE CHARACTERISTICS**

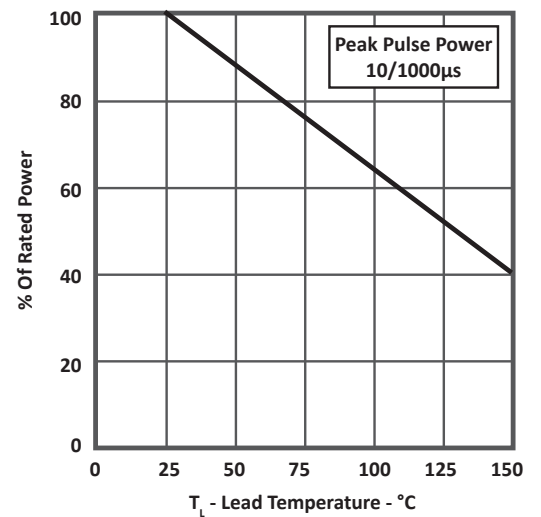
**FIGURE 1**  
**PEAK PULSE POWER VS PULSE TIME**



**FIGURE 2**  
**PULSE WAVEFORM**



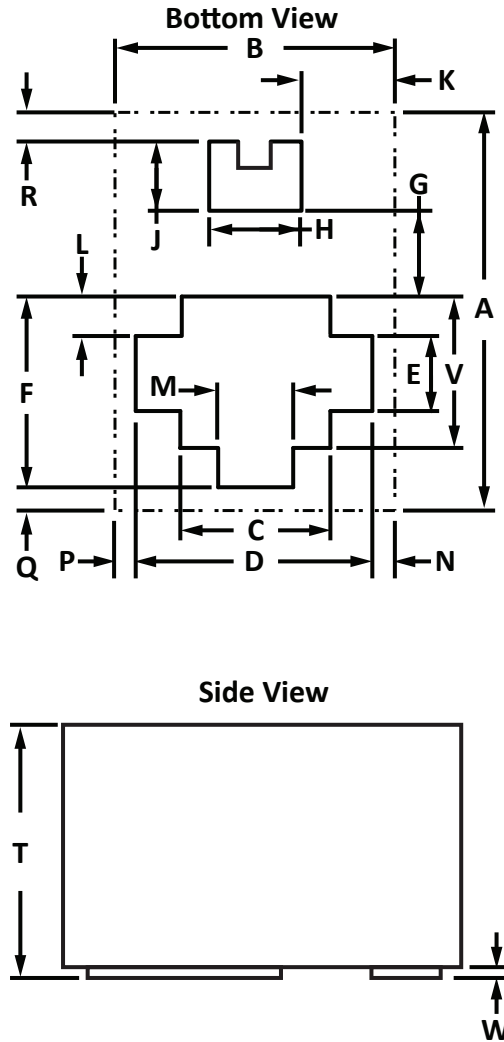
**FIGURE 3**  
**POWER DERATING CURVE**



## SMD-15 PACKAGE INFORMATION

## PACKAGE OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	13.46	14.22	0.530	0.560
B	9.52	9.78	0.375	0.385
C	5.08	5.18	0.200	0.204
D	8.15	8.25	0.321	0.325
E	2.55	2.65	0.100	0.104
F	6.65	6.75	0.262	0.266
G	2.65	3.15	0.104	0.124
H	3.15	3.25	0.124	0.128
J	2.25	2.54	0.090	0.100
K	3.15	3.25	0.124	0.128
L	1.25	1.35	0.049	0.053
M	2.51	2.61	0.099	0.103
N	0.70	0.80	0.028	0.031
P	0.70	0.80	0.028	0.031
Q	0.80	1.03	0.031	0.041
R	0.80	1.03	0.031	0.041
T	8.12	9.14	0.320	0.360
W	0.25	0.50	0.010	0.020
V	5.08	5.18	0.200	0.204

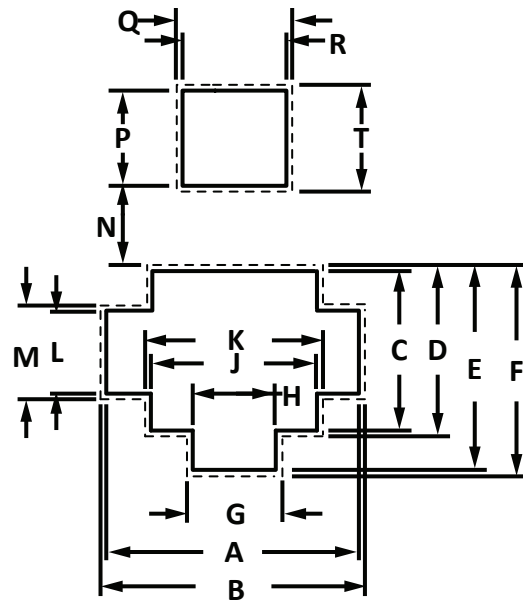


## SMD-15 PACKAGE INFORMATION

## SOLDER PAD OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	8.35	8.45	0.329	0.333
B	8.55	8.65	0.337	0.341
C	5.35	5.45	0.211	0.215
D	5.55	5.65	0.219	0.222
E	6.85	6.95	0.270	0.274
F	7.05	7.15	0.278	0.281
G	2.75	2.85	0.108	0.112
H	2.95	3.05	0.116	0.120
J	5.35	5.45	0.211	0.215
K	5.55	5.65	0.219	0.222
L	2.75	2.85	0.108	0.112
M	2.95	3.05	0.116	0.120
N	2.45	2.55	0.096	0.100
P	3.25	3.35	0.128	0.132
Q	3.95	4.05	0.156	0.159
R	3.55	3.65	0.140	0.144
T	3.65	3.75	0.144	0.148

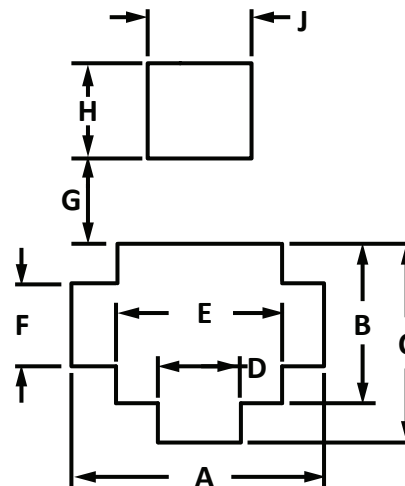
## Suggested Solder Pad



## SOLDER PRINT OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	8.35	8.45	0.329	0.333
B	5.35	5.45	0.211	0.215
C	6.85	6.95	0.270	0.274
D	2.75	2.85	0.108	0.112
E	5.35	5.45	0.211	0.215
F	2.75	2.85	0.108	0.112
G	2.45	2.55	0.096	0.100
H	3.25	3.35	0.128	0.132
J	3.55	3.65	0.140	0.144

## Suggest Solder Print



## 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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