



## DESCRIPTION

The SM45KPAxxAN/CAN 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 compared to legacy axial lead package configurations.

These devices provide 45,000 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

- RTCA DO-160G COMPLIANT PRODUCT
- Compatible with IEC 61000-4-5 (Surge): 48A, 8/20 $\mu$ s - L3(Line-Ground), L4(Line-Line) & L1 (Power)
- 45,000 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

- Approximate Weight: 4 grams
- Lead-Free Silver Plating
- Solder Reflow Temperature: 260-270°C
- Flammability Rating UL 94V-0
- Marking: Logo and Marking Code

## CIRCUIT DIAGRAMS

Unidirectional



Bidirectional



## 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 <sub>PP</sub>	45,000	Watts
Forward Surge Rating	I <sub>F</sub>	200	Amps
Storage Temperature	T <sub>STG</sub>	-55 to 150	°C
Operating Temperature	T <sub>L</sub>	-55 to 150	°C

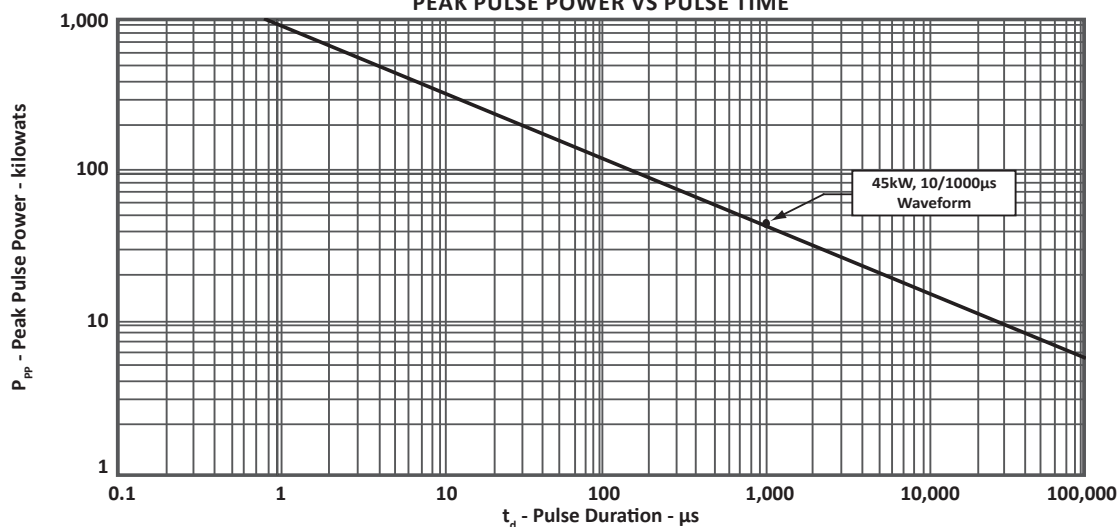
## ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER (Notes 1 - 2)	MARKING CODE		RATED STAND-OFF VOLTAGE  V <sub>WM</sub> VOLTS	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
	UNI	BI		MIN V <sub>(BR)</sub> VOLTS	@I <sub>T</sub> mA			
SM45KPA36AN	36K	36T	36.0	40.2	5	10	60.0V @ 750.0A	44
SM45KPA70AN	70K	70T	70.0	77.8	5	2	120.0V @ 375.0A	83
SM45KPA72AN	72K	72T	72.0	80.4	5	2	127.0V @ 354.0A	85
SM45KPA75AN	75K	75T	75.0	83.3	5	2	135.0V @ 333.0A	89
SM45KPA78AN	78K	78T	78.0	87.1	5	2	148.0V @ 304.0A	95
SM45KPA110AN	110K	110T	110.0	122.0	5	2	173.0V @ 260.0A	126
SM45KPA160AN	160K	160T	160.0	178.0	5	2	276.0V @ 163.0A	195
SM45KPA200AN	200K	200T	200.0	222.0	5	2	350.0V @ 128.0A	250

## NOTES

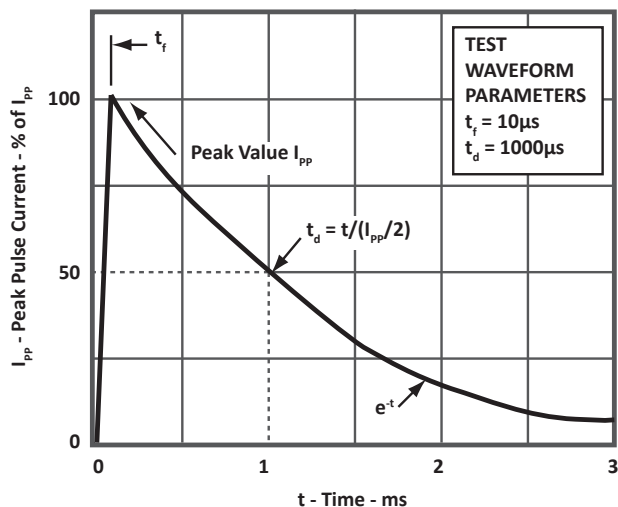
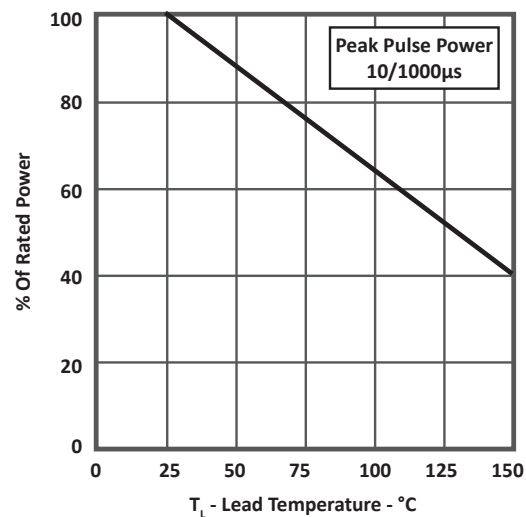
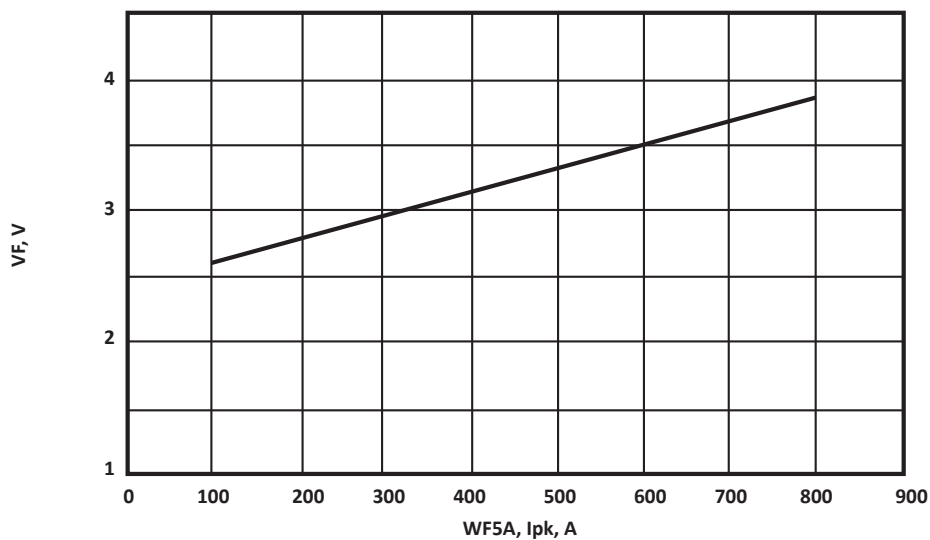
- Part numbers shown are unidirectional devices. Add a "C" suffix to specify bidirectional devices, such as SM45KPA70CAN.
- V<sub>F(MAX)</sub> = 15 Volts @ 200A, 8.3ms(1/2 Sine Wave) - Unidirectional devices only.

FIGURE 1  
PEAK PULSE POWER VS PULSE TIME



## TYPICAL DEVICE CHARACTERISTICS

## RTCA DO-160G COMPLIANT PRODUCT

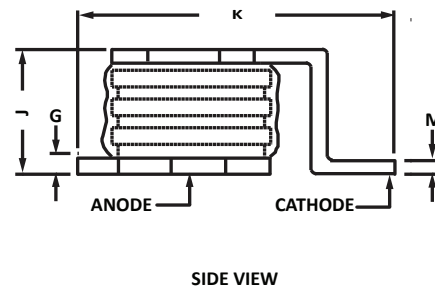
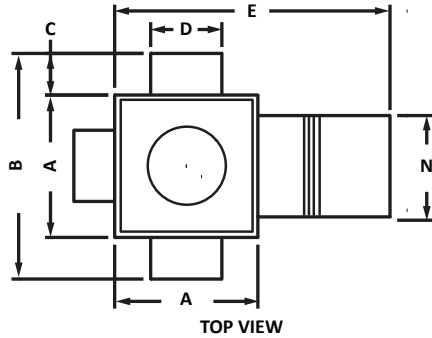
 FIGURE 2  
 PULSE WAVEFORM

 FIGURE 3  
 POWER DERATING CURVE

 FIGURE 4  
 FORWARD VOLTAGE @ I<sub>pk</sub> 40/120µs PULSE


## PACKAGE INFORMATION

## RTCA DO-160G COMPLIANT PRODUCT

## PACKAGE OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	7.75	8.26	0.305	0.325
B	11.40	11.50	0.449	0.453
C	1.75	1.85	0.069	0.073
D	2.55	2.79	0.100	0.110
E	13.95	14.45	0.549	0.589
G	0.46	0.56	0.018	0.022
J	3.70	4.85	0.145	0.191
K	15.50	17.02	0.610	0.670
M	0.46	0.56	0.018	0.022
N	5.81	5.97	0.229	0.235



## PACKAGE INFORMATION

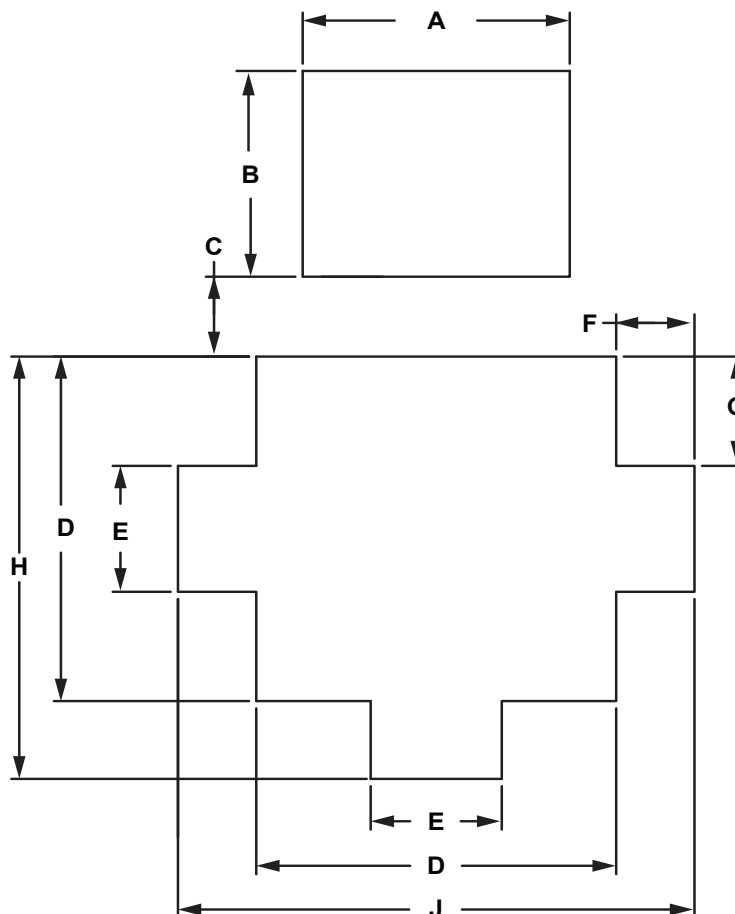
## RTCA DO-160G COMPLIANT PRODUCT

## SOLDER PAD OUTLINE DIMENSIONS

DIM	MILLIMETERS	INCHES
A	6.10	0.240
B	4.90	0.193
C	1.90	0.075
D	8.19	0.323
E	3.00	0.118
F	1.79	0.070
G	2.60	0.102
H	10.04	0.395
J	11.79	0.464

## NOTES

1. All metric are  $\pm 0.05\text{mm}$  and standard are  $\pm 0.002\text{in.}$
2. 5-6mils solder stencil thickness recommended.



## ORDERING INFORMATION

BASE PART NUMBER (Voltage = xx)	TRAY QTY (Note 1)	TRAY DIMENSIONS (Inches)	MIN. ORDER QTY
SM45KPAxxAN	80	11 x 7 x 0.5	80
SM45KPAxxCAN	80	11 x 7 x 0.5	80

## NOTES

1. Minimum order quantity required for plastic tray packaging. Standard product packaging for small quantities: cardboard box with foam insert.
2. This device is only available in a Lead-Free configuration.

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