

## Features

- 5000W peak pulse power capability at 10/1000µs waveform, repetition rate (duty cycles):0.01%
- Excellent clamping capability
- Typical failure mode is a short circuit condition for current events exceeding component rating
- Plastic package is flammability rated V-0 per UL-94
- IEC61000-4-2 +/-30kV both contact and air
- IEC61000-4-4 50A(5/50nS)

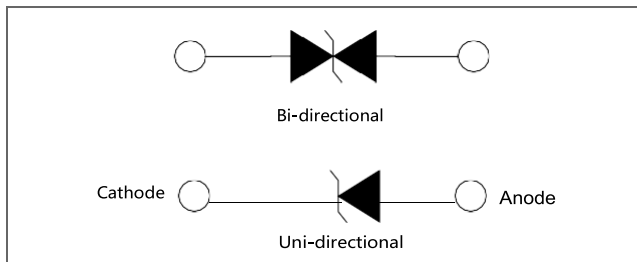
**RoHS**  
Compliant



## Applications

TVS devices are ideal for the transient voltage clamp protection of I/O Interfaces, DC power line bus and other circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

## Function Diagram




Maximum Ratings and Thermal Characteristics (T <sub>A</sub> =25°C unless otherwise noted)			
Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at T <sub>A</sub> =25°C by 10/1000µs Waveform (Fig.3)	P <sub>PPM</sub>	5000	W
Power Dissipation on Infinite Heat Sink at T <sub>L</sub> =50°C	P <sub>D</sub>	8	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 1)	I <sub>FSM</sub>	400	A
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only(Note 2)	V <sub>F</sub>	3.5/5	V
Operating Temperature Range	T <sub>J</sub>	-55 to 150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to 150	°C


AGENCY	AGENCY FILE NUMBER
	Pending

### Notes:

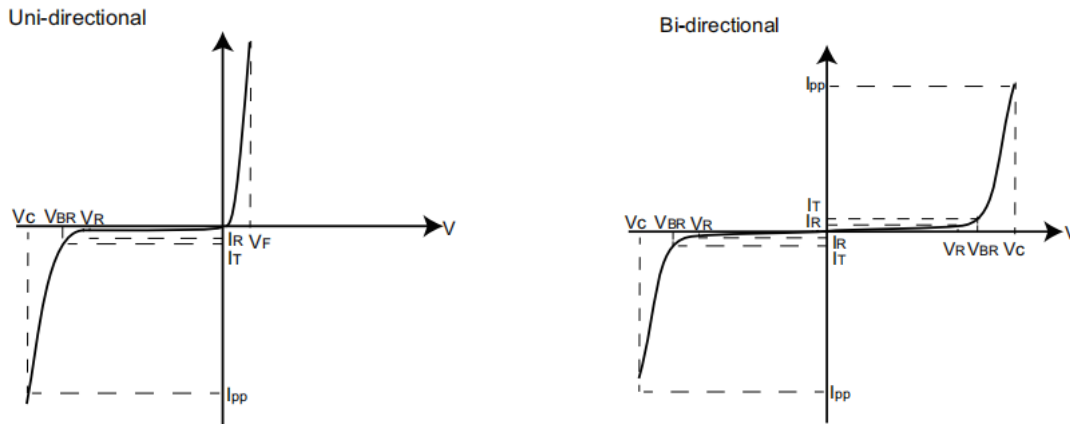
1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.
2. 3.5V for single die, 5V for stack die

**Characteristics (T = 25°C unless otherwise noted)**

Part Number (Uni)	Part Number (Bi)	Reverse Stand off Voltage V <sub>R</sub> (Volts)	Breakdown Voltage V <sub>BR</sub> (Volts) @ I <sub>T</sub>		Test Current I <sub>T</sub> (mA)	Maximum Clamping Voltage V <sub>C</sub> @ I <sub>DD</sub> (V)	Maximum Peak Pulse Current I <sub>pp</sub> (A)	Maximum Reverse Leakage I <sub>R</sub> @ V <sub>R</sub> (μA)	Agency Approval 
			MIN	MAX					
5KP5.0A	5KP5.0CA	5.0	6.40	7.00	50	9.2	554.3	5000	
5KP6.0A	5KP6.0CA	6.0	6.67	7.37	50	10.3	495.1	5000	
5KP6.5A	5KP6.5CA	6.5	7.22	7.98	50	11.2	455.4	2000	
5KP7.0A	5KP7.0CA	7.0	7.78	8.60	50	12.0	425.0	1000	
5KP7.5A	5KP7.5CA	7.5	8.33	9.21	5	12.9	395.3	250	
5KP8.0A	5KP8.0CA	8.0	8.89	9.83	5	13.6	375.0	150	
5KP8.5A	5KP8.5CA	8.5	9.44	10.40	5	14.4	354.2	50	
5KP9.0A	5KP9.0CA	9.0	10.00	11.10	5	15.4	331.2	20	
5KP10A	5KP10CA	10.0	11.10	12.30	5	17.0	300.0	15	
5KP11A	5KP11CA	11.0	12.20	13.50	5	18.2	280.2	2	
5KP12A	5KP12CA	12.0	13.30	14.70	5	19.9	256.3	2	
5KP13A	5KP13CA	13.0	14.40	15.90	5	21.5	237.2	2	
5KP14A	5KP14CA	14.0	15.60	17.20	5	23.2	219.8	2	
5KP15A	5KP15CA	15.0	16.70	18.50	5	24.4	209.0	2	
5KP16A	5KP16CA	16.0	17.80	19.70	5	26.0	196.2	2	
5KP17A	5KP17CA	17.0	18.90	20.90	5	27.6	184.8	2	
5KP18A	5KP18CA	18.0	20.00	22.10	5	29.2	174.7	2	
5KP20A	5KP20CA	20.0	22.20	24.50	5	32.4	157.4	2	
5KP22A	5KP22CA	22.0	24.00	26.90	5	35.5	143.7	2	
5KP24A	5KP24CA	24.0	26.70	29.50	5	38.9	131.1	2	
5KP26A	5KP26CA	26.0	28.90	31.90	5	42.1	121.1	2	
5KP28A	5KP28CA	28.0	31.10	34.40	5	45.4	112.3	2	
5KP30A	5KP30CA	30.0	33.30	36.80	5	48.4	105.4	2	
5KP33A	5KP33CA	33.0	36.70	40.60	5	53.3	95.7	2	
5KP36A	5KP36CA	36.0	40.00	44.20	5	58.1	87.8	2	
5KP40A	5KP40CA	40.0	44.40	49.10	5	64.5	79.1	2	
5KP43A	5KP43CA	43.0	47.80	52.80	5	69.4	73.5	2	
5KP45A	5KP45CA	45.0	50.00	55.30	5	72.7	70.2	2	
5KP48A	5KP48CA	48.0	53.30	58.90	5	77.4	65.9	2	
5KP51A	5KP51CA	51.0	56.70	62.70	5	82.4	61.9	2	
5KP54A	5KP54CA	54.0	60.00	66.30	5	87.1	58.6	2	
5KP58A	5KP58CA	58.0	64.40	71.20	5	93.6	54.5	2	
5KP60A	5KP60CA	60.0	66.70	73.70	5	96.8	52.7	2	
5KP64A	5KP64CA	64.0	71.10	78.60	5	103.0	49.5	2	
5KP70A	5KP70CA	70.0	77.80	86.00	5	113.0	45.1	2	
5KP75A	5KP75CA	75.0	83.30	92.10	5	121.0	42.1	2	
5KP78A	5KP78CA	78.0	86.70	95.80	5	126.0	40.5	2	
5KP85A	5KP85CA	85.0	94.40	104.00	5	137.0	37.2	2	
5KP90A	5KP90CA	90.0	100.00	111.00	5	146.0	34.9	2	
5KP100A	5KP100CA	100.0	110.00	123.00	5	162.0	31.5	2	
5KP110A	5KP110CA	110.0	122.00	135.00	5	177.0	28.8	2	
5KP120A	5KP120CA	120.0	133.00	147.00	5	193.0	26.4	2	
5KP130A	5KP130CA	130.0	144.00	159.00	5	209.0	24.4	2	
5KP150A	5KP150CA	150.0	167.00	185.00	5	243.0	21.0	2	
5KP160A	5KP160CA	160.0	178.00	197.00	5	259.0	19.7	2	
5KP170A	5KP170CA	170.0	189.00	209.00	5	275.0	18.5	2	

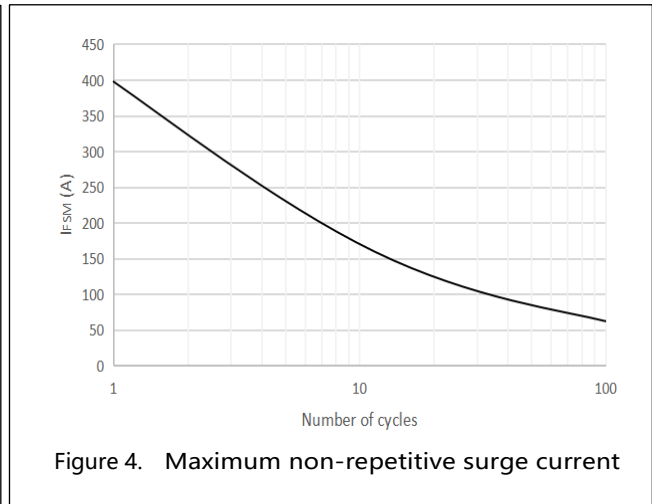
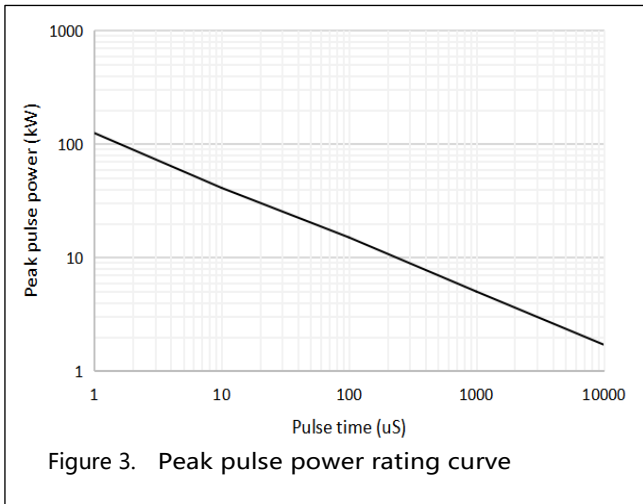
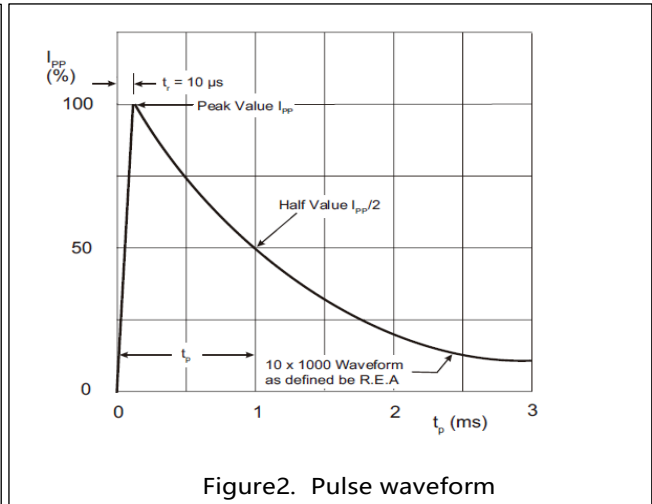
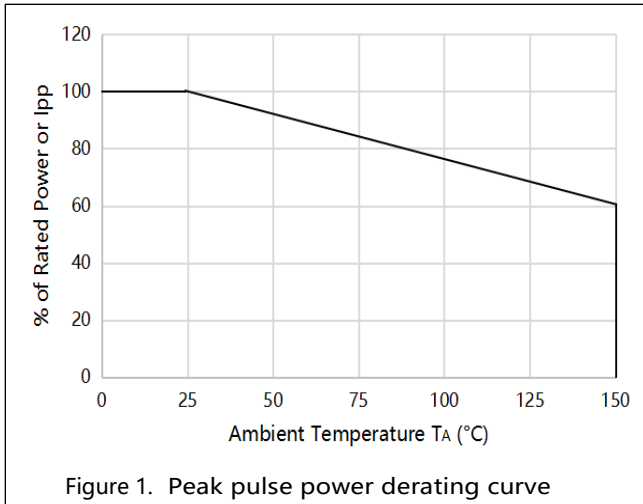
Part Number (Uni)	Part Number (Bi)	Reverse Stand off Voltage $V_R$ (Volts)	Breakdown Voltage $V_{BR}$ (Volts) @ $I_T$		Test Current $I_T$ (mA)	Maximum Clamping Voltage $V_C$ @ $I_{nn}$ (V)	Maximum Peak Pulse Current $I_{pp}$ (A)	Maximum Reverse Leakage $I_R$ @ $V_R$ ( $\mu$ A)	Agency Approval 
			MIN	MAX					
5KP180A	5KP180CA	180.0	200.00	221.00	5	292.0	17.5	2	
5KP190A	5KP190CA	190.0	211.00	233.00	5	310.0	16.5	2	
5KP200A	5KP200CA	200.0	222.00	246.00	5	329.2	15.5	2	
5KP210A	5KP210CA	210.0	233.00	258.00	5	349.5	14.6	2	
5KP220A	5KP220CA	220.0	244.00	270.00	5	371.1	13.7	2	
5KP250A	5KP250CA	250.0	277.00	306.00	5	425.0	12.0	2	
5KP300A	5KP300CA	300.0	335.00	373.00	5	503.0	10.2	2	
5KP350A	5KP350CA	350.0	391.00	433.00	5	585.0	8.7	2	

## I-V Curve Characteristics



- $P_{PPM}$  Peak Pulse Power Dissipation -- Max power dissipation
- $V_R$  Stand-off Voltage -- Maximum voltage that can be applied to the TVS without operation
- $V_{BR}$  Breakdown Voltage -- Maximum voltage that flows through the TVS at a specified test current ( $I_T$ )
- $V_C$  Clamping Voltage -- Peak voltage measured across the TVS at a specified  $I_{PPM}$  (peak impulse current)
- $I_R$  Reverse Leakage Current -- Current measured at  $V_R$
- $V_F$  Forward Voltage Drop for Uni-directional

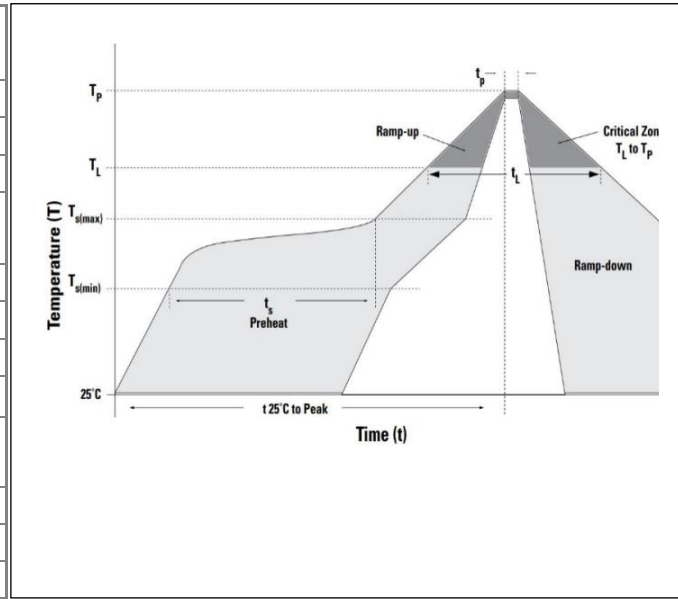
**Ratings and Characteristic Curves (T = 25°C unless otherwise noted)**



Soldering Parameters

Soldering profile

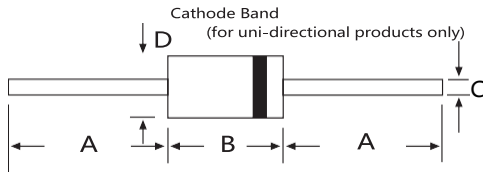
Reflow Condition		Lead-free assembly
Pre Heat	- Temperature Min ( $T_{S(min)}$ )	150°C
	- Temperature Max ( $T_{S(max)}$ )	200°C
	- Time (min to max) ( $t_S$ )	60 – 180 secs
Average ramp up rate (Liquidus Temp ( $T_A$ ) to peak)		3°C/second max
$T_{S(max)}$ to $T_A$ - Ramp-up Rate		3°C/second max
Reflow	- Temperature ( $T_A$ ) (Liquidus)	217°C
	- Time (min to max) ( $t_S$ )	60 – 150 seconds
Peak Temperature ( $T_P$ )		260+0/-5 °C
Time within 5°C of actual peak Temperature ( $t_P$ )		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature ( $T_P$ )		8 minutes Max.
Do not exceed		260°C



Flow/Wave Soldering (Solder Dipping)

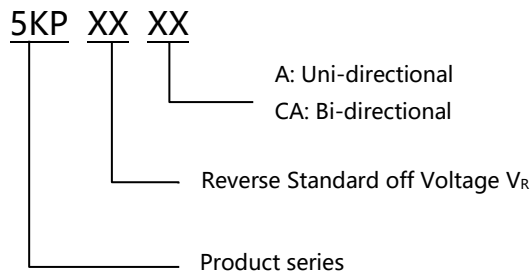
Peak Temperature:	265°C
Dipping Time:	10 seconds
Soldering:	1 time

## Dimensions

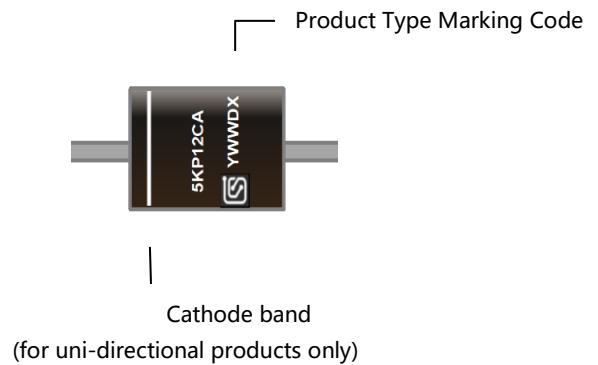


Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	1.000	-	25.40	-
B	0.340	0.360	8.60	9.10
C	0.048	0.054	1.22	1.36
D	0.34	0.360	8.60	9.10

## Part Numbering



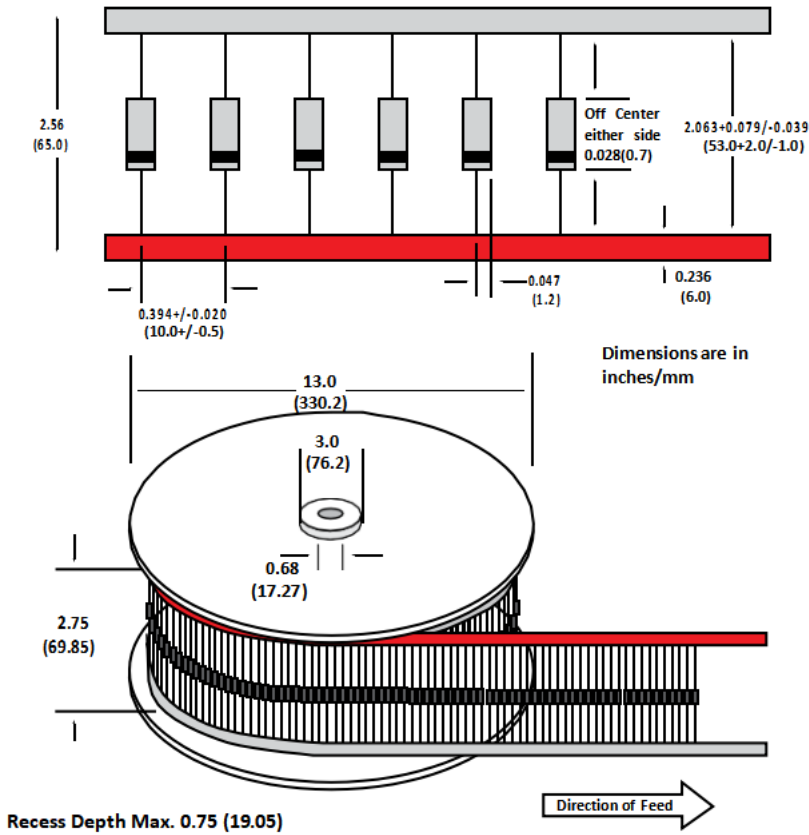
## Part Marking



## Packing

Part number	Package name	Small packing quantity	Packing method
5KPXXXX	P600	800	Tape & Reel
5KPXXXX-B	P600	100	Bulk

### Tape and Reel Specification



### Revision history of Specification

Version	Change Items	Effective Date
1.0	Initial Release	15-Aug-2021



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[P6KE13CA](#) [P6KE43CA](#) [P6KE6.8CA](#) [P6KE8.2](#) [P6SMBJ20CA](#) [JANTX1N6072A](#) [SR2835ESKG](#) [SA90CA](#)