

**Description**

The 5KP-TR Series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

**Features**

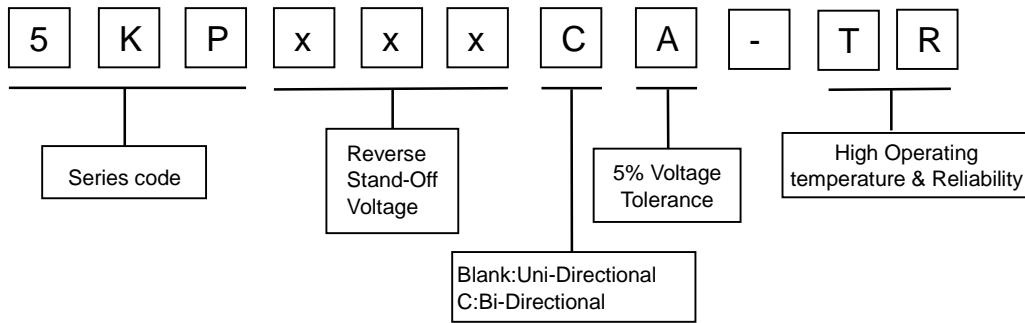
- I Glass passivated chip
- I 6000 W peak pulse power capability with a 10/1000  $\mu$ s waveform, repetitive rate (duty cycle):0.01 %
- I Meet ISO 7637-2 load dump test (varied by test condition)
- I High reliability application and automotive grade AEC Q101 qualified
- I Low leakage
- I Uni and Bidirectional unit
- I Excellent clamping capability
- I Very fast response time
- I ROHS compliant
- I High Operating temperature & Reliability



**Mechanical Data**

- I Case: Molded plastic
- I Epoxy: UL 94V-0 rate flame retardant
- I Lead: Solderable per MIL-STD-202, method 208 guranteed
- I Polarity: Color band denotes cathode end except Bipolar
- I Mounting position: Any

**Part Number Code**



**Mechanical Characteristics**

Rating	Symbol	Value	Units
Peak power dissipation with a 10/1000 $\mu$ s waveform <sup>(1)</sup>	P <sub>PP</sub>	6000	W
Peak power dissipation with a 10/10000 $\mu$ s waveform <sup>(1)</sup>	P <sub>PP</sub>	2400	W
Power Dissipation on Infinite Heat Sink at T <sub>L</sub> =75°C	P <sub>D</sub>	8.0	W
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only <sup>(2)</sup>	I <sub>FSM</sub>	500	A
Maximum instantaneous forward voltage at 100 A for unidirectional only	V <sub>F</sub>	3.5	V
Operating junction and Storage Temperature Range.	T <sub>J</sub> ,T <sub>STG</sub>	-55 to 175	°C

1. Non-repetitive current pulse per Fig.5 and derated above T<sub>A</sub>= 25 °C per Fig.1.  
 2. Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum



## Electrical Characteristics

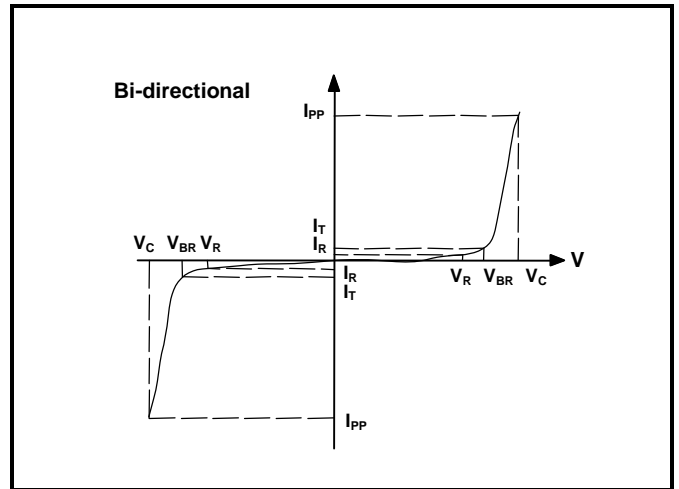
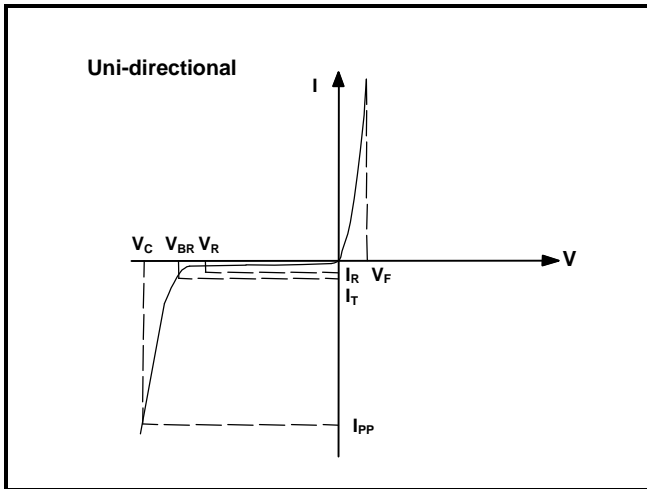
Type Number		Working Peak Reverse Voltage	Breakdown Voltage		Test Current	Max. Clamping Voltage 10/1000µs	Max. Peak Pulse Current 10/1000µs	Max. Reverse Leakage
			V <sub>BR</sub> @I <sub>T</sub>					
		V <sub>RWM</sub>	Min	Max	I <sub>T</sub>	V <sub>C</sub> @I <sub>PP</sub>	I <sub>PP</sub>	I <sub>R</sub> @V <sub>RWM</sub>
UNI	BI	V	V	V	mA	V	A	µA
5KP10A-TR	5KP10CA-TR	10.0	11.80	13.00	5	17.0	350.00	10
5KP11A-TR	5KP11CA-TR	11.0	12.20	13.50	5	18.2	327.00	10
5KP12A-TR	5KP12CA-TR	12.0	13.30	14.70	5	19.9	300.00	10
5KP13A-TR	5KP13CA-TR	13.0	14.40	15.90	5	21.5	277.00	10
5KP14A-TR	5KP14CA-TR	14.0	15.60	17.20	5	23.2	257.00	10
5KP15A-TR	5KP15CA-TR	15.0	16.70	18.50	5	24.4	245.00	10
5KP16A-TR	5KP16CA-TR	16.0	17.80	19.70	5	26.0	229.00	10
5KP17A-TR	5KP17CA-TR	17.0	18.90	20.90	5	27.6	216.00	10
5KP18A-TR	5KP18CA-TR	18.0	20.00	22.10	5	29.2	204.00	10
5KP20A-TR	5KP20CA-TR	20.0	22.20	24.50	5	32.4	184.00	10
5KP22A-TR	5KP22CA-TR	22.0	24.40	26.90	5	35.5	168.00	10
5KP26A-TR	5KP26CA-TR	26.0	28.90	31.90	5	42.1	142.00	10
5KP28A-TR	5KP28CA-TR	28.0	31.10	34.40	5	45.4	131.00	10
5KP30A-TR	5KP30CA-TR	30.0	33.30	36.80	5	48.4	123.00	10
5KP33A-TR	5KP33CA-TR	33.0	36.70	40.60	5	53.3	112.00	10
5KP36A-TR	5KP36CA-TR	36.0	40.00	44.20	5	58.1	103.00	10
5KP40A-TR	5KP40CA-TR	40.0	44.40	49.10	5	64.5	92.50	10
5KP43A-TR	5KP43CA-TR	43.0	49.00	54.20	5	69.4	86.00	10
5KP60A-TR	5KP60CA-TR	60.0	68.40	75.60	5	96.8	61.50	10

Note:

1. Add suffix 'C' or 'CA' after part number to specify Bi-directional devices
2. For Bi-Directional devices having VR of 10 volts, the IR limit is double



**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 though 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 ( $T_A=25^\circ C$  unless otherwise noted)**

Figure 1 - Pulse Derating Curve

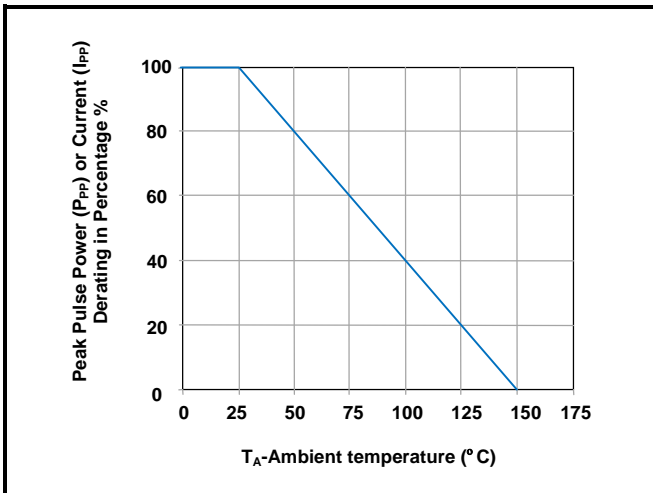


Figure 2 - Maximum Non-Repetitive Surge Current

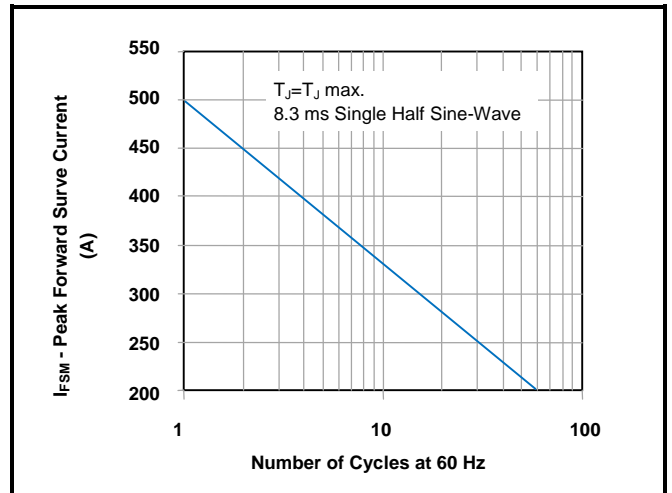


Figure 3 - Steady State Power Derating Curve

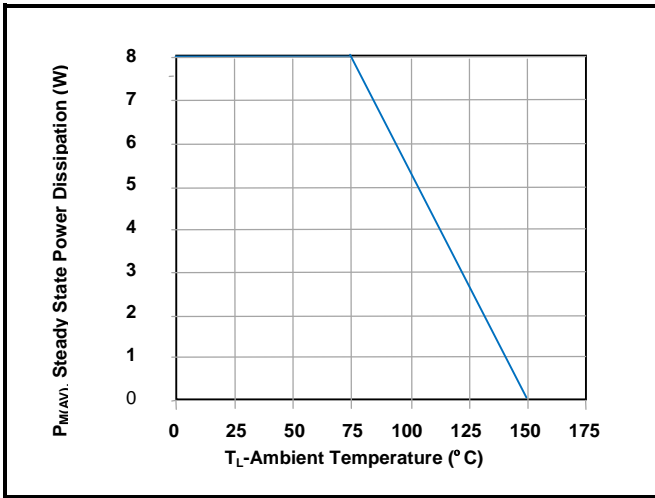


Figure 4 - Peak Pulse Power Rating Curve

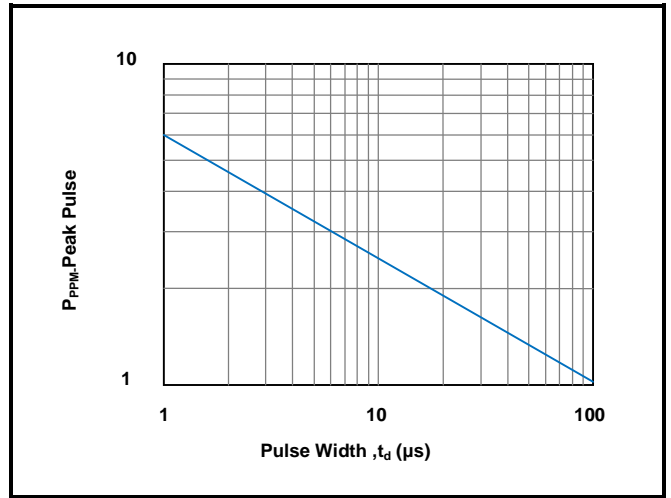


Figure 5 - Pulse Waveform

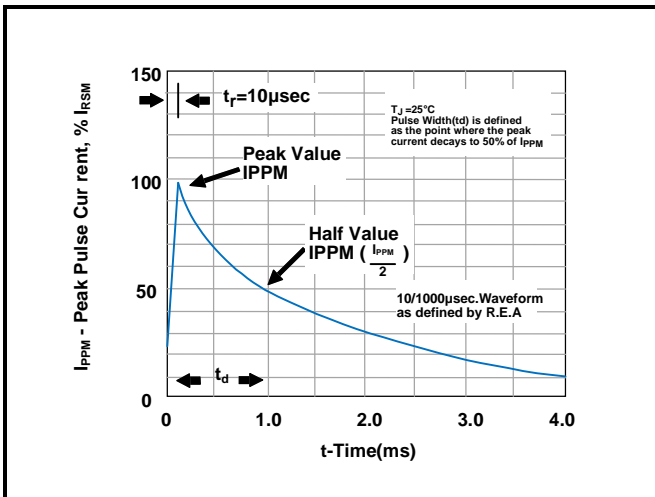
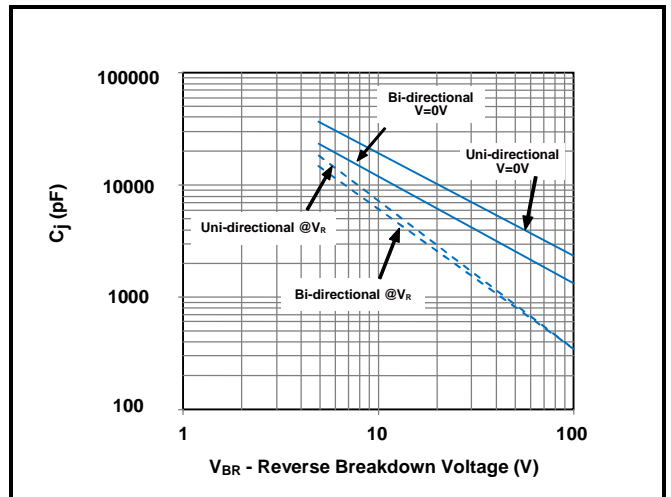
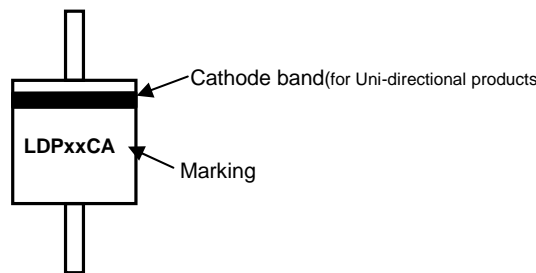


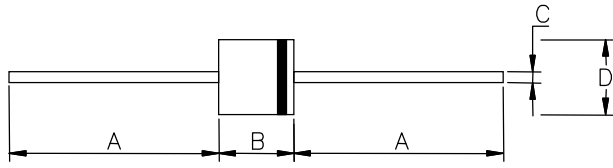
Figure 6 - Typical Junction Capacitance



Part Marking System

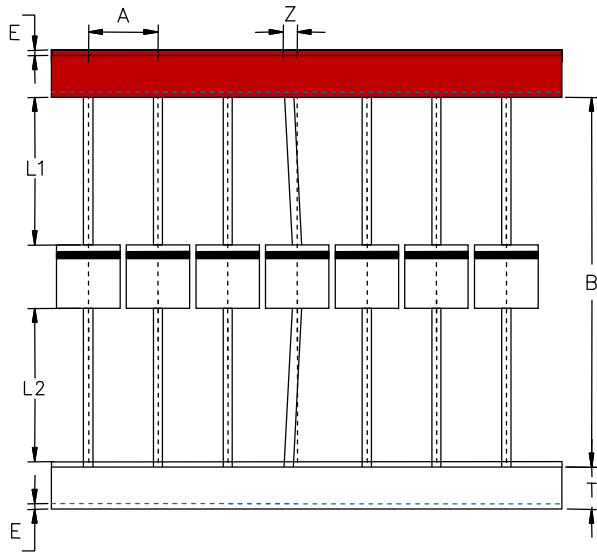


**Dimensions**

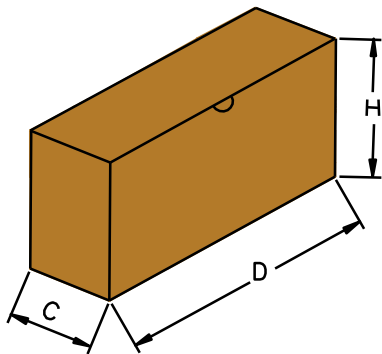


DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	25.4	-	1.000	-
B	8.64	9.14	0.340	0.360
C	1.22	1.32	0.048	0.052
D	8.64	9.14	0.340	0.360

**Taping and Reel Specifications**



Symbol	Millimeters	Inches
A	10±0.5	0.394±0.019
B	53.0±1.0	2.087±0.039
Z	1.2Max	0.047 Max
T	6.0±0.5	0.236±0.019
E	0.8Max	0.031 Max
L1-L2	1.0Max	0.039 Max



Symbol	Millimeters	Inches
D	257.0±5.0	10.118±0.197
C	80.0±5.0	3.15±0.197
H	149.0±5.0	5.866±0.197
Quantity	400PCS/ inner box	

