

# 5KP-Q Series

Surface Mount — 5000W

**AUTOMOTIVE GRADE** **HF** **RoHS**



P600

## Additional Information



Resources



Accessories



Samples

## Maximum Ratings and Characteristics ( $T_A=25^{\circ}\text{C}$ )

Rating	Symbol	Value
Peak pulse power dissipation at 10/1000 $\mu\text{s}$ waveform(Note1, Note2, Fig.1)	$P_{PPM}$	5000W
Peak pulse current of at 10/1000 $\mu\text{s}$ waveform (Note 1, Fig.3)	$I_{PPM}$	See Table(A)
Steady state power dissipation at $T_L=75^{\circ}\text{C}$ (Fig.5)	$P_{M(AV)}$	8.0W
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note3, Fig.6)	$I_{FSM}$	400A
Operating junction and Storage Temperature Ranges	$T_J, T_{STG}$	$-55^{\circ}\text{C}$ to $+150^{\circ}\text{C}$
Typical thermal resistance junction to lead	$R_{\theta JL}$	$8^{\circ}\text{C/W}$
Typical thermal resistance junction to ambient	$R_{\theta JA}$	$40^{\circ}\text{C/W}$

Notes:

1. Non-repetitive current pulse, per Fig.3 and derating above  $T_A=25^{\circ}\text{C}$  per Fig.2.
2. 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minutes maximum.

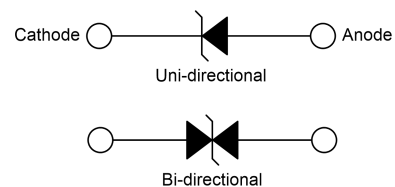
## Description

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

## Features

- Halogen free and RoHS compliant
- Glass passivated junction
- Low incremental surge resistance
- Excellent clamping capability
- 5000W peak pulse power capability at 10/1000 $\mu\text{s}$  waveform, repetition rate (duty cycle): 0.05%
- Fast response time
- Typical IR less than 2 $\mu\text{A}$  above 10V devices
- High Temperature soldering guaranteed:  $265^{\circ}\text{C}/10$  seconds/.375", (9.5mm) lead length, 5lbs (2.3kg) tension
- Plastic package has underwriters laboratory flammability 94V-0
- Meet MSL level1, per J-STD-020
- IEC-61000-4-2 ESD 30kV(Air), 30kV (Contact)
- Unit Weight: 2.1g
- AEC-Q101 Qualified

## Functional Diagram



# 5KP-Q Series

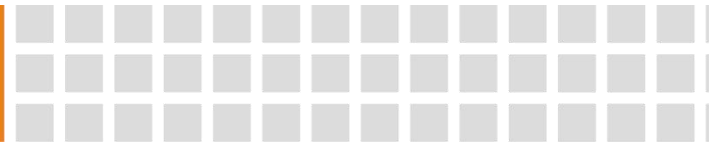
Surface Mount — 5000W

## Electrical Characteristics (T<sub>A</sub>=25°C)

Part Number		Type	Reverse Stand-Off Voltage	Breakdown Voltage @I <sub>T</sub>		Test Current	Maximum Clamping Voltage @I <sub>PP</sub>	Peak Pulse Current	Reverse Leakage @V <sub>R</sub>
Uni.	Bi.		V <sub>R</sub> (V)	V <sub>B Min.</sub> (V)	V <sub>B Max.</sub> (V)	I <sub>T</sub> (mA)	V <sub>C</sub> (V)	I <sub>PP</sub> (A)	I <sub>R</sub> (μA)
5KP5.0A	5KP5.0CA	Q	5.0	6.40	7.00	50	9.2	554.3	3000
5KP6.0A	5KP6.0CA	Q	6.0	6.67	7.37	50	10.3	495.1	2000
5KP6.5A	5KP6.5CA	Q	6.5	7.22	7.98	50	11.2	455.4	1000
5KP7.0A	5KP7.0CA	Q	7.0	7.78	8.60	50	12.0	425.0	800
5KP7.5A	5KP7.5CA	Q	7.5	8.33	9.21	5	12.9	395.3	250
5KP8.0A	5KP8.0CA	Q	8.0	8.89	9.83	5	13.6	375.0	150
5KP8.5A	5KP8.5CA	Q	8.5	9.44	10.40	5	14.4	354.2	50
5KP9.0A	5KP9.0CA	Q	9.0	10.00	11.10	5	15.4	331.2	20
5KP10A	5KP10CA	Q	10.0	11.10	12.30	5	17.0	300.0	10
5KP11A	5KP11CA	Q	11.0	12.20	13.50	5	18.2	280.2	2
5KP12A	5KP12CA	Q	12.0	13.30	14.70	5	19.9	256.3	2
5KP13A	5KP13CA	Q	13.0	14.40	15.90	5	21.5	237.2	2
5KP14A	5KP14CA	Q	14.0	15.60	17.20	5	23.2	219.8	2
5KP15A	5KP15CA	Q	15.0	16.70	18.50	5	24.4	209.0	2
5KP16A	5KP16CA	Q	16.0	17.80	19.70	5	26.0	196.2	2
5KP17A	5KP17CA	Q	17.0	18.90	20.90	5	27.6	184.8	2
5KP18A	5KP18CA	Q	18.0	20.00	22.10	5	29.2	174.7	2
5KP20A	5KP20CA	Q	20.0	22.20	24.50	5	32.4	157.4	2
5KP22A	5KP22CA	Q	22.0	24.40	26.90	5	35.5	143.7	2
5KP24A	5KP24CA	Q	24.0	26.70	29.50	5	38.9	131.1	2
5KP26A	5KP26CA	Q	26.0	28.90	31.90	5	42.1	121.1	2
5KP28A	5KP28CA	Q	28.0	31.10	34.40	5	45.4	112.3	2
5KP30A	5KP30CA	Q	30.0	33.30	36.80	5	48.4	105.4	2
5KP33A	5KP33CA	Q	33.0	36.70	40.60	5	53.3	95.7	2
5KP36A	5KP36CA	Q	36.0	40.00	44.20	5	58.1	87.8	2
5KP40A	5KP40CA	Q	40.0	44.40	49.10	5	64.5	79.1	2

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Part Number		Type	Reverse Stand-Off Voltage	Breakdown Voltage @ $I_T$		Test Current	Maximum Clamping Voltage @ $I_{PP}$	Peak Pulse Current	Reverse Leakage @ $V_R$
Uni.	Bi.		$V_R$ (V)	$V_{B Min.}$ (V)	$V_{B Max.}$ (V)	$I_T$ (mA)	$V_C$ (V)	$I_{PP}$ (A)	$I_R$ ( $\mu$ A)
5KP43A	5KP43CA	Q	43.0	47.80	52.80	5	69.4	73.5	2
5KP45A	5KP45CA	Q	45.0	50.00	55.30	5	72.7	70.2	2
5KP48A	5KP48CA	Q	48.0	53.30	58.90	5	77.4	65.9	2
5KP51A	5KP51CA	Q	51.0	56.70	62.70	5	82.4	61.9	2
5KP54A	5KP54CA	Q	54.0	60.00	66.30	5	87.1	58.6	2
5KP58A	5KP58CA	Q	58.0	64.40	71.20	5	93.6	54.5	2
5KP60A	5KP60CA	Q	60.0	66.70	73.70	5	96.8	52.7	2
5KP64A	5KP64CA	Q	64.0	71.10	78.60	5	103.0	49.5	2
5KP70A	5KP70CA	Q	70.0	77.80	86.00	5	113.0	45.1	2
5KP75A	5KP75CA	Q	75.0	83.30	92.10	5	121.0	42.1	2
5KP78A	5KP78CA	Q	78.0	86.70	95.80	5	126.0	40.5	2
5KP85A	5KP85CA	Q	85.0	94.40	104.00	5	137.0	37.2	2
5KP90A	5KP90CA	Q	90.0	100.00	111.00	5	146.0	34.9	2
5KP100A	5KP100CA	Q	100.0	110.00	123.00	5	162.0	31.5	2
5KP110A	5KP110CA	Q	110.0	122.00	135.00	5	177.0	28.8	2

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**Ratings and Characteristic Curves ( $T_A=25^\circ\text{C}$ )**

Figure 1. Peak Pulse Power Rating Curve

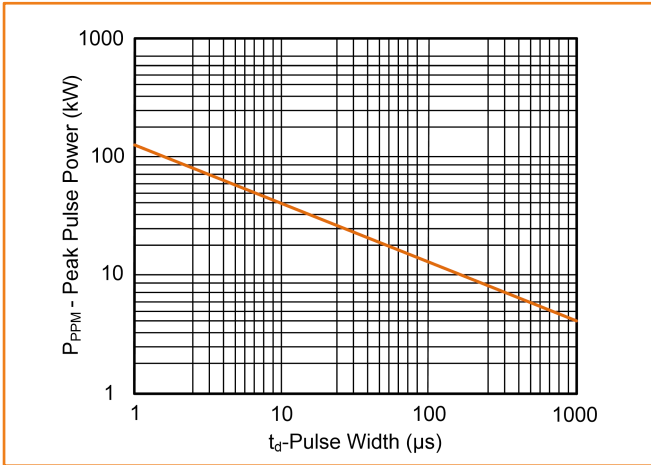


Figure 2. Pulse Derating Curve



Figure 3. Pulse Waveform



Figure 4. Typical Junction Capacitance

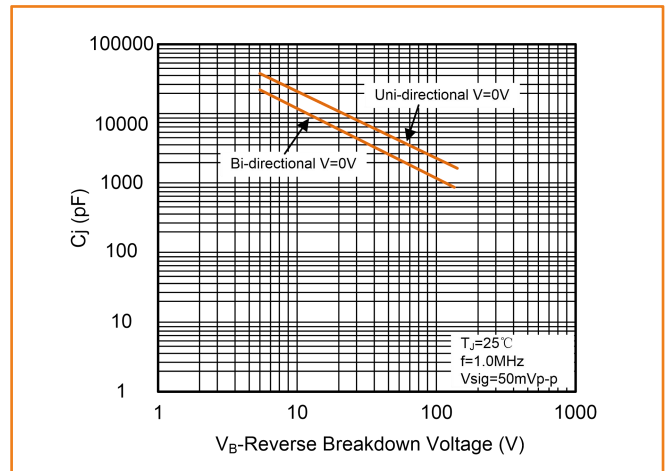


Figure 5. Steady State Power Dissipation Derating Curve

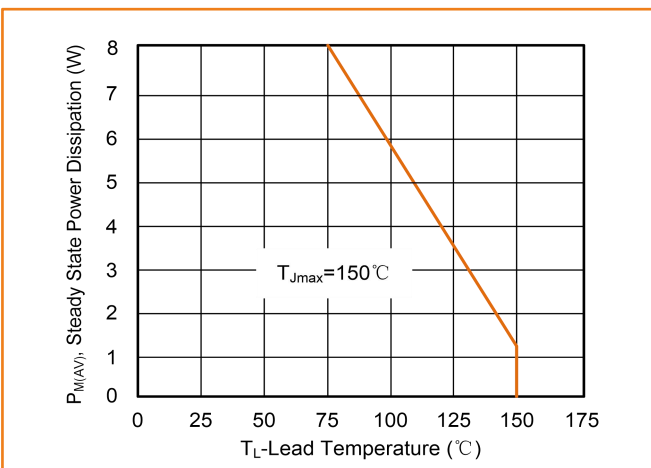
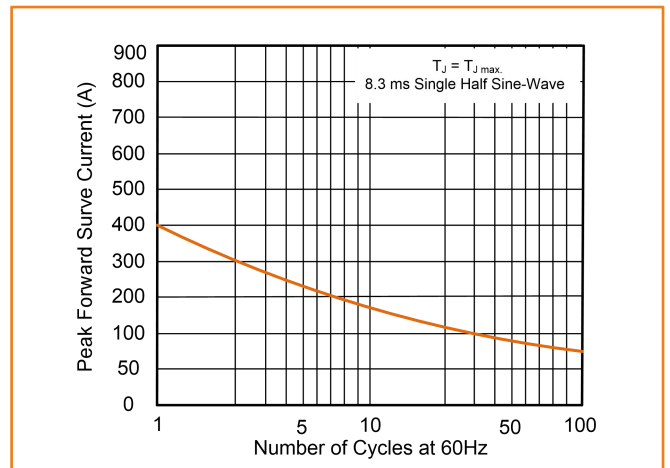


Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional



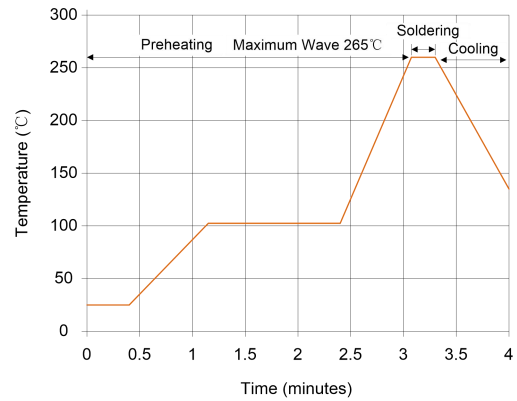
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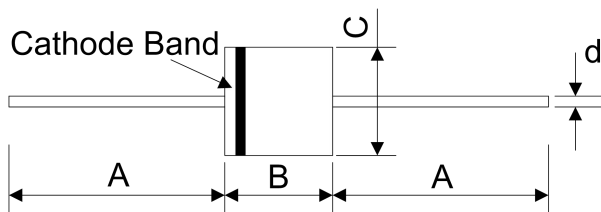
## Soldering Parameters

Peak Temperature :	265°C
Dipping Time :	10 seconds (max.)
Soldering :	1 time

### Wave Soldering

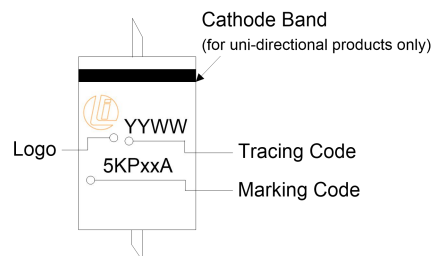
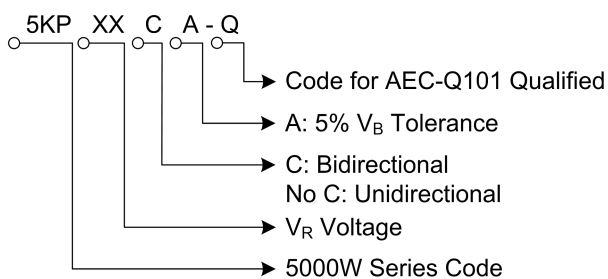


## Dimensions (P600)



Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	25.40	—	1.000	—
B	8.60	9.10	0.340	0.360
C	8.60	9.10	0.340	0.360
D	1.19	1.35	0.047	0.053

## Part Number Code and Marking Code



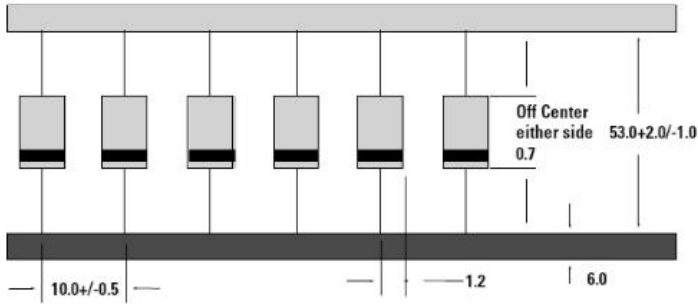
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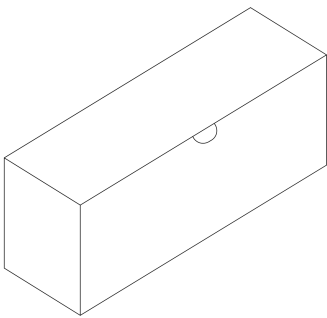


## Packaging Specification

Tape (Unit: mm)

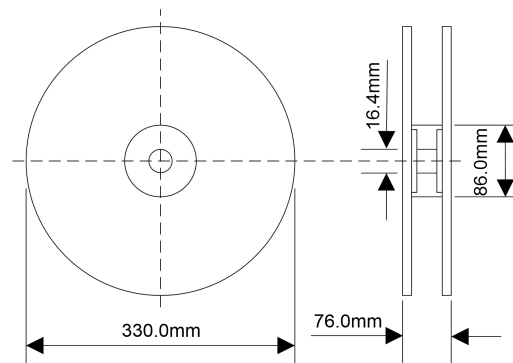


Box



Quantity: 300pcs/box

Reel



Quantity: 800pcs/reel