

Description

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

Features

- Halogen-free
- Rohs compliant
- Typical maximum temperature coefficient
 $\Delta V_{BR} = 0.1\% \times V_{BR}@25^{\circ}\text{C} \times \Delta T$
- Glass passivated Chip junction in P-600 package
- 5000W peak pulse capability at 10×1000μs waveform, repetition rate (duty cycles):0.01%
- Fast response time: typically less than 1.0ps from 0 Volts to BV min
- Excellent clamping capability
- Low incremental surge resistance
- Typical I_R less than 2μA above 11V
- High temperature soldering guaranteed: 260°C/40 seconds / 0.375", (9.5mm) lead length, 5lbs., (2.3kg) tension
- Plastic package has underwriters laboratory flammability classification 94v-0

Application

- I/O interface
- AC/DC power supply
- Low frequency signal transmission line (RS232, RS485, etc.)

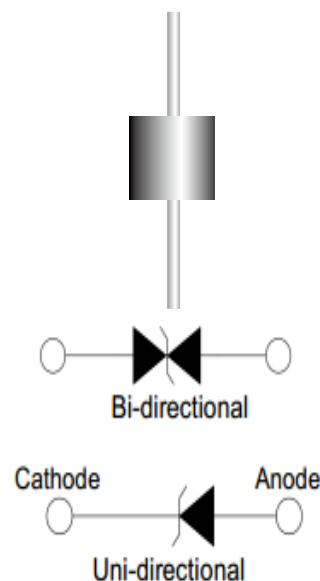
Maximum Ratings and Characteristics (Ta=25°C unless otherwise specified)

Rating	Symbol	Value	Units
Peak Pulse Power Dissipation by 10x1000μs test waveform (Fig.1)(Note 1)	P_{PPM}	5000	Watts
Steady State Power Dissipation on infinite heat sink at TL=75°C (Fig. 5)	P_D	8.0	Watts
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Unidirectional only (Note 2)	I_{FSM}	400	Amps
Maximum Instantaneous Forward Voltage at 25A for Unidirectional only (Note 3)	V_F	3.5/5.0	V
Operating junction and Storage Temperature Range.	T_J, T_{STG}	-55 to 175	°C
Typical Thermal Resistance Junction to Lead	R_{uJL}	8.0	°C/W
Typical Thermal Resistance Junction to Ambient	R_{uJA}	40	°C/W

Notes:

1. Non-repetitive current pulse, per Fig. 3 and derated above $T_A = 25^{\circ}\text{C}$ per Fig. 2.
2. Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 per minute maximum.
3. $V_F < 3.5\text{V}$ for devices of $V_{BR} < 200\text{V}$ and $V_F < 5.0\text{V}$ for devices of $V_{BR} > 201\text{V}$.

5KP Series 5000W



Electrical Characteristics

5KP PART NUMBER UNI/BI-DIRECTION	REVERSE STAND-OFF VOLTAGE $V_{RWM}(V)$	BREAKDOWN VOLTAGE $V_{BR}(V)$ Min.@ I_T	BREAKDOWN VOLTAGE $V_{BR}(V)$ Max.@ I_T	TEST CURRENT $I_T(mA)$	MAXIMUM CLAMPING VOLTAGE $@I_{PP} V_C(V)$	PEAK PULSE CURRENT $I_{PP}(A)$	REVERSE LEAKAGE $@V_{RWM} I_R$ (μA)
5KP5.0A/CA	5.0	6.40	7.00	50	9.2	554.0	5000
5KP6.0A/CA	6.0	6.67	7.37	50	10.3	495.0	5000
5KP6.5A/CA	6.5	7.22	7.98	50	11.2	455.0	2000
5KP7.0A/CA	7.0	7.78	8.60	50	12.0	425.0	1000
5KP7.5A/CA	7.5	8.33	9.21	5	12.9	395.0	250
5KP8.0A/CA	8.0	8.89	9.83	5	13.6	375.0	150
5KP8.5A/CA	8.5	9.44	10.40	5	14.4	354.0	50
5KP9.0A/CA	9.0	10.00	11.10	5	15.4	331.0	20
5KP10A/CA	10.0	11.10	12.30	5	17.0	300.0	15
5KP11A/CA	11.0	12.20	13.50	5	18.2	280.0	2
5KP12A/CA	12.0	13.30	14.70	5	19.9	256.0	2
5KP13A/CA	13.0	14.40	15.90	5	21.5	237.0	2
5KP14A/CA	14.0	15.60	17.20	5	23.2	220.0	2
5KP15A/CA	15.0	16.70	18.50	5	24.4	209.0	2
5KP16A/CA	16.0	17.80	19.70	5	26.0	196.0	2
5KP17A/CA	17.0	18.90	20.90	5	27.6	185.0	2
5KP18A/CA	18.0	20.00	22.10	5	29.2	175.0	2
5KP20A/CA	20.0	22.20	24.50	5	32.4	157.0	2
5KP22A/CA	22.0	24.00	26.90	5	35.5	144.0	2
5KP24A/CA	24.0	26.70	29.50	5	38.9	131.0	2
5KP26A/CA	26.0	28.90	31.90	5	42.1	121.0	2
5KP28A/CA	28.0	31.10	34.40	5	45.4	112.0	2
5KP30A/CA	30.0	33.30	36.80	5	48.4	105.4	2
5KP33A/CA	33.0	36.70	40.60	5	53.3	95.7	2
5KP36A/CA	36.0	40.00	44.20	5	58.1	87.8	2
5KP40A/CA	40.0	44.40	49.10	5	64.5	79.1	2
5KP43A/CA	43.0	47.80	52.80	5	69.4	73.5	2
5KP45A/CA	45.0	50.00	55.30	5	72.7	70.2	2
5KP48A/CA	48.0	53.30	58.90	5	77.4	65.9	2
5KP51A/CA	51.0	56.70	62.70	5	82.4	61.9	2
5KP54A/CA	54.0	60.00	66.30	5	87.1	58.6	2
5KP58A/CA	58.0	64.40	71.20	5	93.6	54.5	2
5KP60A/CA	60.0	66.70	73.70	5	96.8	52.7	2
5KP64A/CA	64.0	71.10	78.60	5	103.0	49.6	2
5KP70A/CA	70.0	77.80	86.00	5	113.0	45.1	2
5KP75A/CA	75.0	83.30	92.10	5	121.0	42.1	2
5KP78A/CA	78.0	86.70	95.80	5	126.0	40.5	2
5KP85A/CA	85.0	94.40	104.00	5	137.0	37.2	2
5KP90A/CA	90.0	100.00	111.00	5	146.0	34.9	2
5KP100A/CA	100.0	110.00	123.00	5	162.0	31.5	2
5KP110A/CA	110.0	122.00	135.00	5	177.0	28.8	2
5KP120A/CA	120.0	133.00	147.00	5	193.0	26.4	2
5KP130A/CA	130.0	144.00	159.00	5	209.0	24.4	2
5KP150A/CA	150.0	167.00	185.00	5	243.0	21.0	2
5KP160A/CA	160.0	178.00	197.00	5	259.0	19.7	2
5KP170A/CA	170.0	189.00	209.00	5	275.0	18.5	2
5KP180A/CA	180.0	200.00	221.00	5	292.0	17.6	2
5KP190A/CA	190.0	211.00	233.00	5	310.0	16.5	2
5KP200A/CA	200.0	222.00	246.00	5	329.0	15.5	2
5KP210A/CA	210.0	233.00	258.00	5	349.0	14.6	2
5KP220A/CA	220.0	244.00	270.00	5	371.0	13.7	2

For bidirectional type having V_R of 10 volts and less, the I_R limit is double.
For parts without A, the V_{BR} is $\pm 10\%$ and V_C

Ratings and Characteristic Curves ($T_a=25^\circ\text{C}$ unless otherwise specified)

Figure 1 - Peak Pulse Power Rating Curve

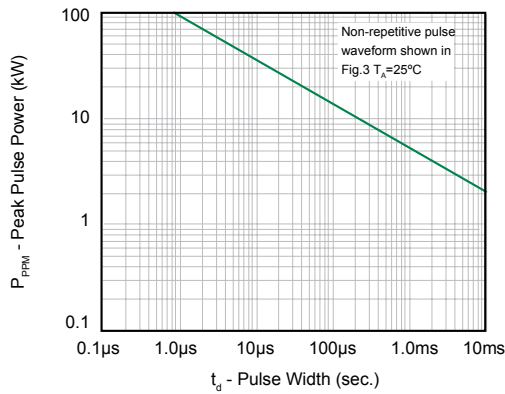


Figure 2 - Pulse Derating Curve

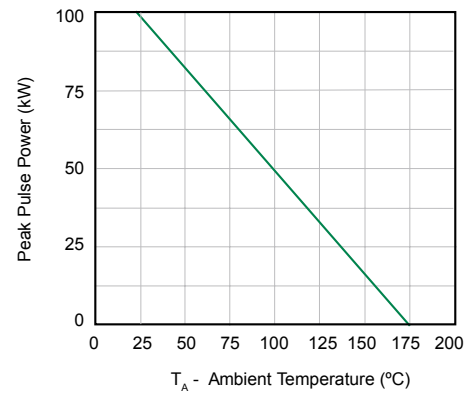


Figure 3 - Pulse Waveform

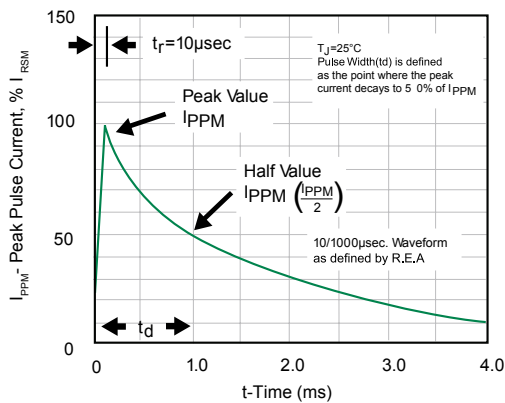


Figure 4 - Typical Junction Capacitance

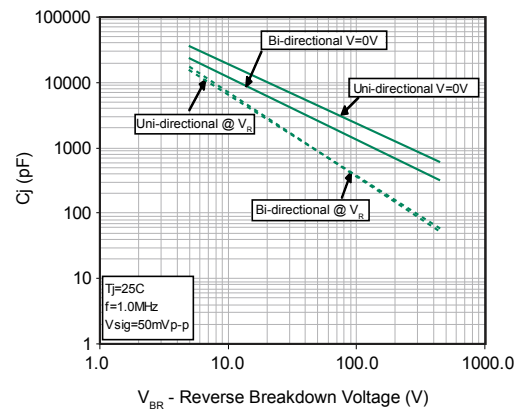


Figure 5 - Steady State Power Derating Curve

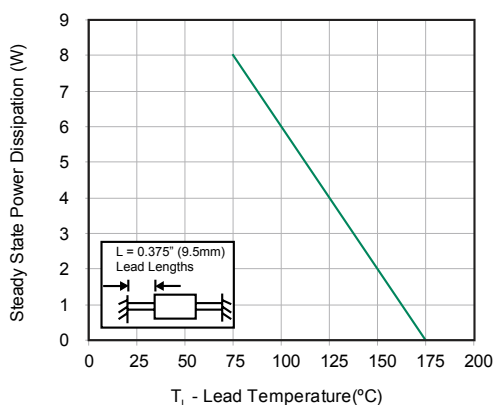
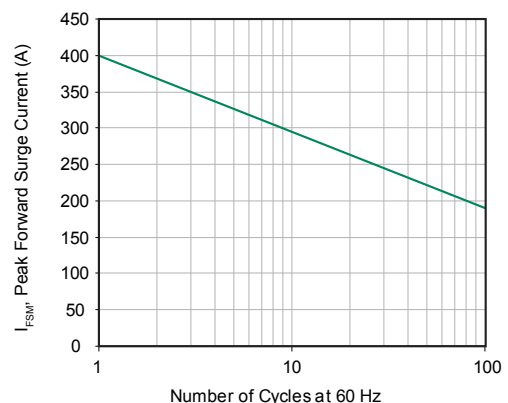
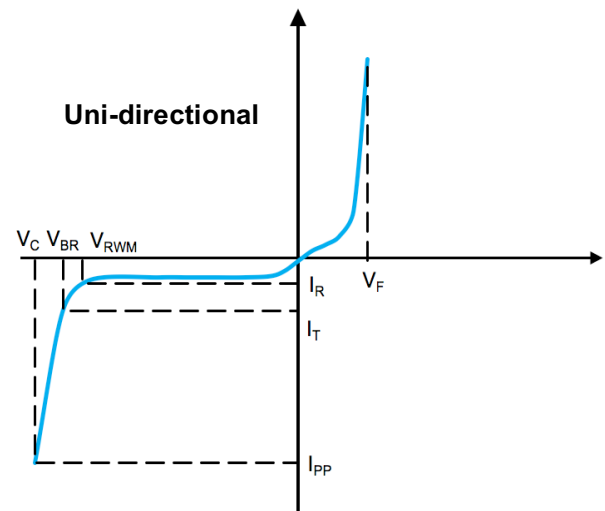
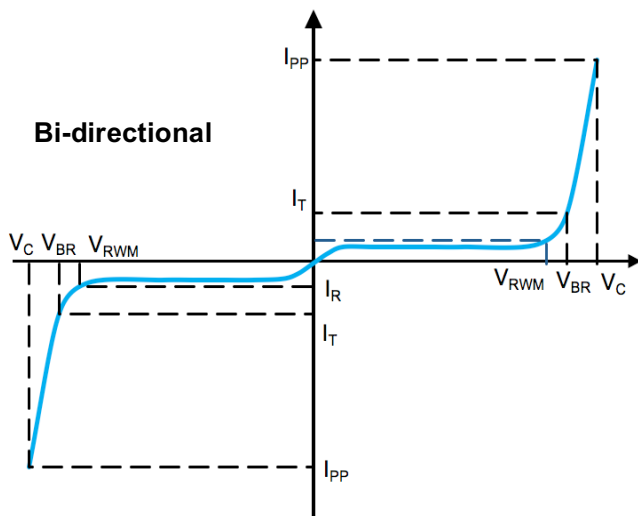


Figure 6 - Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only

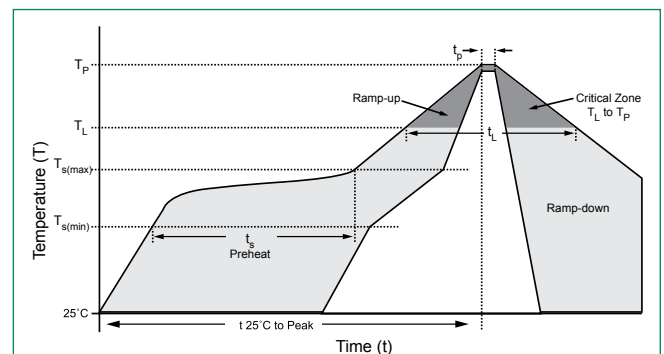


I-V Curve Characteristics



Recommended Soldering Conditions

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_L) to peak)		3°C/second max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_L) (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		280°C



Flow/Wave Soldering(Solder Dipping)

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

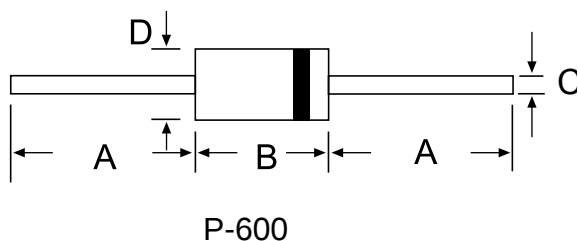
Physical Specifications

Weight	0.015oz., 0.4g
Case	JEDEC DO-204AC (DO-15) molded plastic body over passivated junction.
Polarity	Color band denotes the cathode except Bipolar.
Terminal	Matte Tin axial leads, solderable per JESD22-B102D.

Environmental Specifications

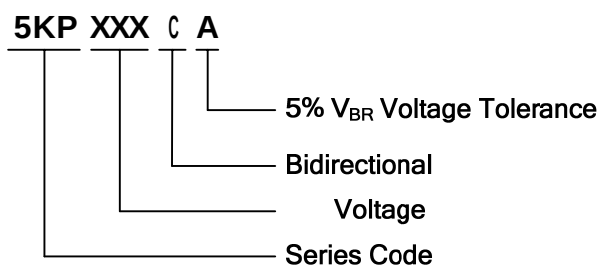
Temperature Cycle	JESD22-A104
Pressure Cooker	JESD 22-A102
High Temp. Storage	JESD22-A103
HTRB	JESD22-A108
Thermal Shock	JESD22-A106

Dimensions

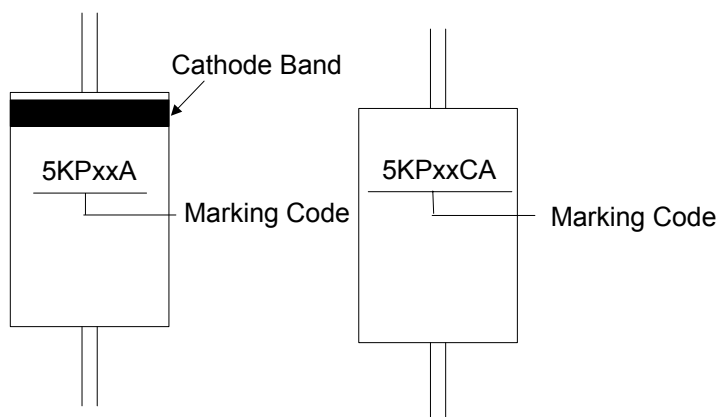


Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	1.000	-	25.40	-
B	0.340	0.360	8.60	9.10
C	0.048	0.052	1.22	1.32
D	0.340	0.360	8.60	9.10

Part Number Code



Marking Code



Packaging

Part Number	Component Package	Quantity	Packing Option
5KPxxxxx	P-600	300	Box

Packaging Dementions Unit:Inches(Millimeters)

