

TVS Diode – 5KP Series

Features

- Plastic package, excellent insulation strength.
- Glass passivated chip junction in P600 package.
- Excellent voltage clamping capability.
- Low Zener impedance.
- 5000W peak pulse power capability on 10/1000μs waveform.
- Typical leakage current less than 1μA above 13V.
- Very fast response time, typically less than 1.0ps from 0 volt to V_{BR} minimum.
- High temperature soldering guaranteed: 265°C/10 sec.
- MSL: JEDEC-J-STD-020, Level 1

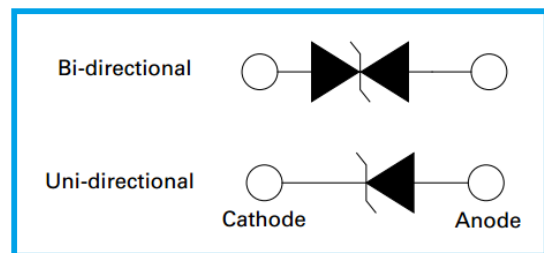


Applications

- I/O interface, V_{CC} bus
- Telecom
- Industrial and consumer electronic applications.
- Relay and electromagnetic valve surge absorption.

Agency Approval

- UL file no.: E474915



Mechanical and Physical Data

- Case: JEDEC P600 molded plastic.
- Axial leaded, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denoted cathode except bidirectional.

Maximum Ratings and Thermal Characteristics

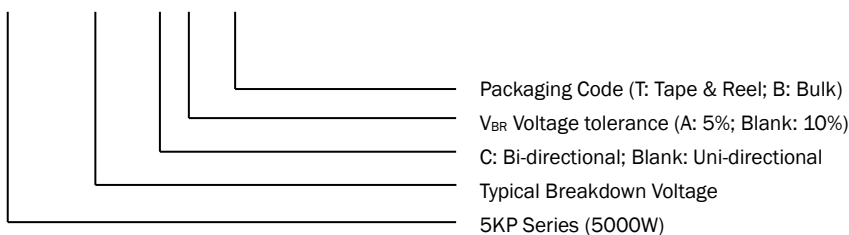
Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation on 10/1000μs waveform (Note 1, Fig.1).	P _{PPM}	Min 5000	Watt
Peak Pulse Current of 10/1000μs waveform (Note 1, Fig.3).	I _{PPM}	See Table	Amp
Steady State Power Dissipation at TL = 75°C, Lead lengths 0.375", (9.5mm) (Fig.5).	P _{M(AV)}	8.0	Watt
Peak Forward Surge Current, 8.3 ms Single Half Sine Wave Superimposed on Rated Load (Note 2, Fig.6).	I _{FSM}	400	Amp
Operating Junction and Storage Temperature Range.	T _J , T _{STG}	-55~175	°C

Note:

1. Non-repetitive current pulse, per Fig.3 and derated above T_A = 25°C per Fig.2.
2. 8.3ms single half sine wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

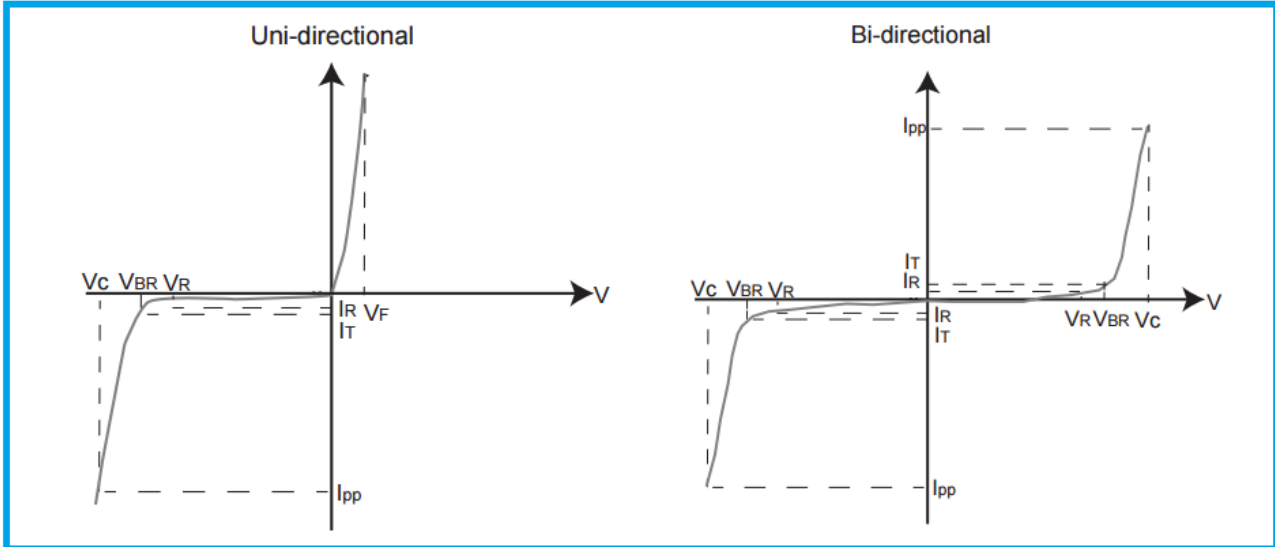
Part Number Code

5KP □□□ CA - □



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I-V Curve Characteristics



- P_{PPM} Peak Pulse Power Dissipation – Maximum 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

Electrical Characteristics

Part Number		Reverse Stand Off Voltage V_R (V)	Breakdown Voltage V_{BR} (V) @ I_T		Test Current I_T (mA)	Maximum Clamping Voltage V_C (V) @ I_{PP}	Maximum Peak Pulse Current I_{PP} (A)	Maximum Reverse Leakage I_R (μ A) @ V_R
Uni	Bi		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	10.4	5	14.4	354.2	50
5KP9.0A	5KP9.0CA	9.0	10.0	11.1	5	15.4	331.2	20
5KP10A	5KP10CA	10.0	11.1	12.3	5	17.0	300.0	15
5KP11A	5KP11CA	11.0	12.2	13.5	5	18.2	280.2	2
5KP12A	5KP12CA	12.0	13.3	14.7	5	19.9	256.3	2
5KP13A	5KP13CA	13.0	14.4	15.9	5	21.5	237.2	2
5KP14A	5KP14CA	14.0	15.6	17.2	5	23.2	219.8	2
5KP15A	5KP15CA	15.0	16.7	18.5	5	24.4	209.0	2
5KP16A	5KP16CA	16.0	17.8	19.7	5	26.0	196.2	2
5KP17A	5KP17CA	17.0	18.9	20.9	5	27.6	184.8	2
5KP18A	5KP18CA	18.0	20.0	22.1	5	29.2	174.7	2
5KP20A	5KP20CA	20.0	22.2	24.5	5	32.4	157.4	2

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Part Number		Reverse Stand Off Voltage V_R (V)	Breakdown Voltage V_{BR} (V) @ I_T		Test Current I_T (mA)	Maximum Clamping Voltage V_C (V) @ I_{PP}	Maximum Peak Pulse Current I_{PP} (A)	Maximum Reverse Leakage I_R (μ A) @ V_R
			Min.	Max.				
Uni	Bi							
5KP22A	5KP22CA	22.0	24.4	26.9	5	35.5	143.7	2
5KP24A	5KP24CA	24.0	26.7	29.5	5	38.9	131.1	2
5KP26A	5KP26CA	26.0	28.9	31.9	5	42.1	121.1	2
5KP28A	5KP28CA	28.0	31.1	34.4	5	45.4	112.3	2
5KP30A	5KP30CA	30.0	33.3	36.8	5	48.4	105.4	2
5KP33A	5KP33CA	33.0	36.7	40.6	5	53.3	95.7	2
5KP36A	5KP36CA	36.0	40.0	44.2	5	58.1	87.8	2
5KP40A	5KP40CA	40.0	44.4	49.1	5	64.5	79.1	2
5KP43A	5KP43CA	43.0	47.8	52.8	5	69.4	73.5	2
5KP45A	5KP45CA	45.0	50.0	55.3	5	72.7	70.2	2
5KP48A	5KP48CA	48.0	53.3	58.9	5	77.4	65.9	2
5KP51A	5KP51CA	51.0	56.7	62.7	5	82.4	61.9	2
5KP54A	5KP54CA	54.0	60.0	66.3	5	87.1	58.6	2
5KP58A	5KP58CA	58.0	64.4	71.2	5	93.6	54.5	2
5KP60A	5KP60CA	60.0	66.7	73.7	5	96.8	52.7	2
5KP64A	5KP64CA	64.0	71.1	78.6	5	103.0	49.5	2
5KP70A	5KP70CA	70.0	77.8	86.0	5	113.0	45.1	2
5KP75A	5KP75CA	75.0	83.3	92.1	5	121.0	42.1	2
5KP78A	5KP78CA	78.0	86.7	95.8	5	126.0	40.5	2
5KP85A	5KP85CA	85.0	94.4	104.0	5	137.0	37.2	2
5KP90A	5KP90CA	90.0	100.0	111.0	5	146.0	34.9	2
5KP100A	5KP100CA	100.0	111.0	123.0	5	162.0	31.5	2
5KP110A	5KP110CA	110.0	122.0	135.0	5	177.0	28.8	2
5KP120A	5KP120CA	120.0	133.0	147.0	5	193.0	26.4	2
5KP130A	5KP130CA	130.0	144.0	159.0	5	209.0	24.4	2
5KP150A	5KP150CA	150.0	167.0	185.0	5	243.0	21.0	2
5KP160A	5KP160CA	160.0	178.0	197.0	5	259.0	19.7	2
5KP170A	5KP170CA	170.0	189.0	209.0	5	275.0	18.5	2
5KP180A	5KP180CA	180.0	201.0	222.0	5	292.0	17.5	2
5KP190A	5KP190CA	190.0	211.0	233.0	5	308.0	16.5	2
5KP200A	5KP200CA	200.0	224.0	247.0	5	324.0	15.5	2
5KP210A	5KP210CA	210.0	237.0	263.0	5	340.0	14.6	2
5KP220A	5KP220CA	220.0	246.0	272.0	5	356.0	13.7	2
5KP250A	5KP250CA	250.0	279.0	309.0	5	425.0	12.0	2
5KP300A	5KP300CA	300.0	335.0	371.0	5	486.0	10.5	2
5KP350A	5KP350CA	350.0	391.0	432.0	5	567.0	9.0	2
5KP400A	5KP400CA	400.0	447.0	494.0	5	658.0	7.75	2
5KP440A	5KP440CA	440.0	492.0	543.0	5	742.2	6.85	2

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Ratings and Characteristic Curves

Fig 1 - Peak Pulse Power Rating Curve

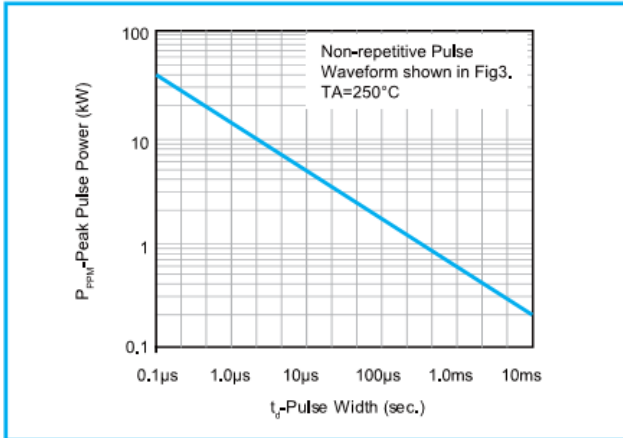


Fig 2 - Pulse Derating Curve

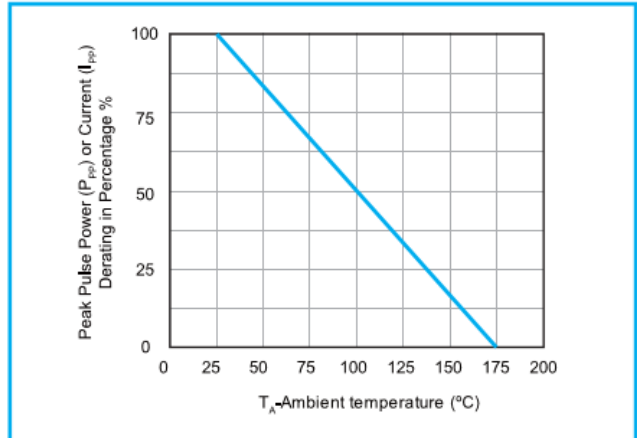


Fig 3 - Pulse Waveform

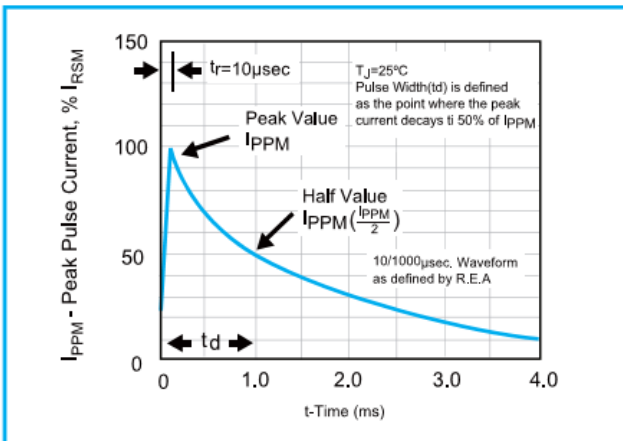


Fig 4 - Typical Junction Capacitance Uni-directional

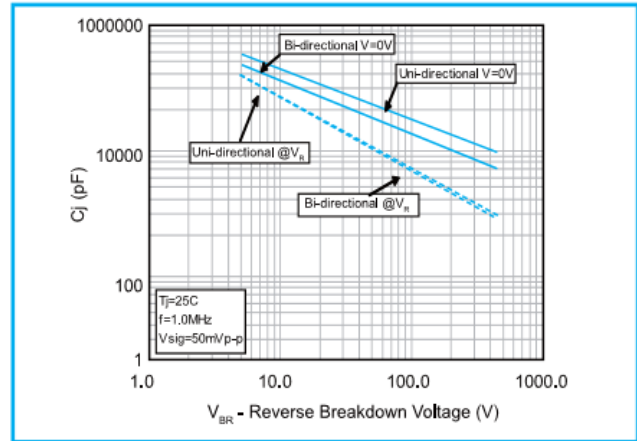


Fig 5 - Steady State Power Dissipation Derating Curve

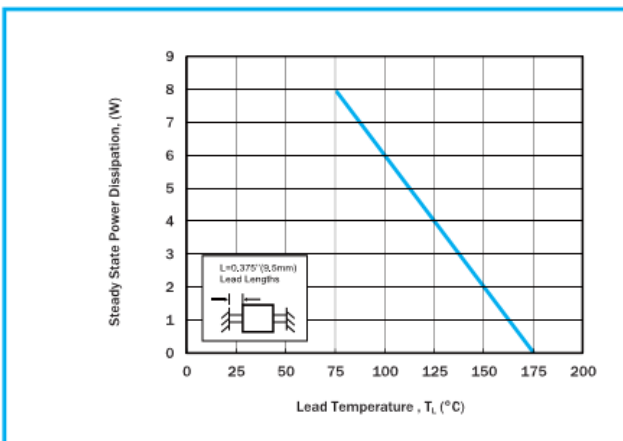
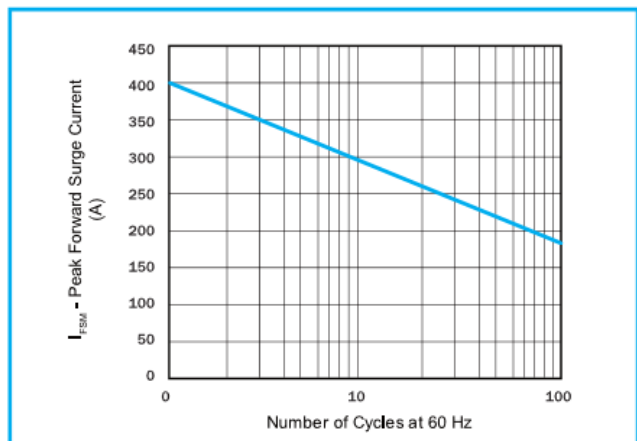
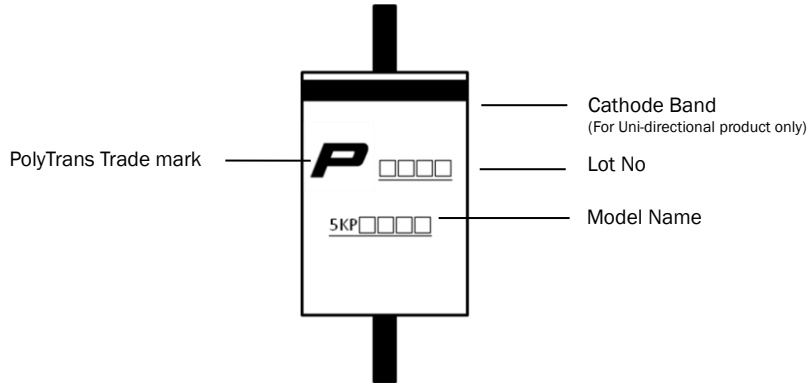


Fig 6 - Maximum Non-Repetitive Forward Surge Current (Uni-directional Only)

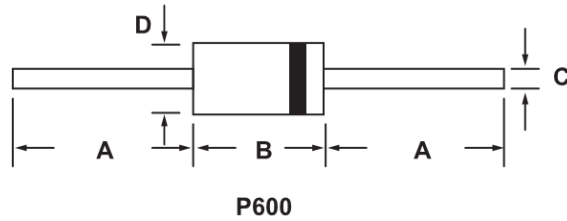


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Marking Definitions



Physical Dimensions



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

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Packaging Information

Part Number	Packaging Code	Component Package	Quantity	Packaging Option	Packaging Specification
5KP Series	T	P600	800	Tape & Reel	EIA STD RS-296
5KP Series	B	P600	100	Bulk	-

Tape and Reel Specifications

