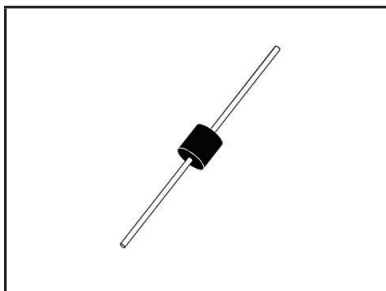


5kW POWER TVS COMPONENT



AXIAL LEAD PACKAGE

DESCRIPTION

The 5KP Series, are discrete 5,000 Watt, silicon transient voltage suppressors (TVS) designed for use in applications where large voltage transients can permanently damage voltage sensitive components and equipment.

The 5KP series is available in voltages ranging from 5V to 440V with 5 percent and 5 and 10 percent tolerances. Both tolerances are referenced to the power supply output or operating voltage level. This series is compatible with IEC 61000-4-5 (Surge) requirements.

FEATURES

- Compatible with IEC 61000-4-5 (Surge): 48A, 8/20 μ s - L3(Line-Ground), L4(Line-Line) & L1 (Power)
- 5,000 Watts Peak Pulse Power per Line ($t_p = 10/1000\mu$ s)
- Unidirectional and Bidirectional Configurations
- Easy Mounting to Printed Circuit Board
- tClamping (0V to V_{BR} Min.) $< 1 \times 10^{-12}$ seconds theoretical
- Available in Multiple Voltages Ranging From 5V to 440V
- RoHS Complaint (Exemption #7)

APPLICATIONS

- Relay Drives
- Motor (Start/Stop) Back EMF Protection
- Module Lightning Protection
- Secondary Lightning Protection for AC/DC

MECHANICAL CHARACTERISTICS

- Molded Case
- Approximate Weight: 5 grams
- Lead-Free Pure-Tin Plating (Annealed)
- Solder Reflow Temperature:
Pure-Tin - Sn, 100: 260-270°C
- Flammability Rating UL 94V-0

CIRCUIT DIAGRAMS



UNIDIRECTIONAL



BIDIRECTIONAL

TYPICAL DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power (tp = 10/1000µs) - See Figure 1	P _{PP}	5,000	Watts
Forward Surge Rating - 1/120 seconds - See Note 2	I _F	500	Amps
Steady State Power Dissipation	P _P	8.0	Watts
Storage Temperature	T _{STG}	-55 to 150	°C
Operating Temperature	T _L	-55 to 150	°C
Typical Thermal Resistance - Junction to Lead	R _{UJL}	8.0	°C/W
Typical Thermal Resistance - Junction to Ambient	R _{UJA}	40.0	°C/W

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified						
PART NUMBER (Notes 1 - 3)	RATED STAND-OFF VOLTAGE V _{WM} VOLTS	BREAKDOWN VOLTAGE		MAXIMUM LEAKAGE CURRENT @ V _{WM} I _D µA	MAXIMUM CLAMPING VOLTAGE (Fig. 2) 10/1000µs @ I _{PP} VOLTS	MAXIMUM REVERSE SURGE CURRENT @ I _{PP} AMPS
		MIN V _(BR) VOLTS	@ I _T mA			
5KP5.0	5.0	6.4	50	5000	9.6	521
5KP5.0A	5.0	6.4	50	5000	9.2	543
5KP6.0	6.0	6.67	50	5000	11.4	439
5KP6.0A	6.0	6.67	50	5000	10.3	485
5KP6.5	6.5	7.22	50	2000	12.3	407
5KP6.5A	6.5	7.22	50	2000	11.2	446
5KP7.0	7.0	7.78	50	1000	13.3	376
5KP7.0A	7.0	7.78	50	1000	12.0	417
5KP7.5	7.5	8.33	5	250	14.3	350
5KP7.5A	7.5	8.33	5	250	12.9	388
5KP8.0	8.0	8.89	5	150	15.0	333
5KP8.0A	8.0	8.89	5	150	13.6	368
5KP8.5	8.5	9.44	5	50	15.9	314
5KP8.5A	8.5	9.44	5	50	14.4	347
5KP9.0	9.0	10.0	5	20	16.9	296
5KP9.0A	9.0	10.0	5	20	15.4	325
5KP10	10.0	11.1	5	15	18.8	266
5KP10A	10.0	11.1	5	15	17.0	294
5KP11	11.0	12.2	5	2	20.1	249
5KP11A	11.0	12.2	5	2	18.2	275
5KP12	12.0	13.3	5	2	22.0	227
5KP12A	12.0	13.3	5	2	19.9	251
5KP13	13.0	14.4	5	2	23.8	210
5KP13A	13.0	14.4	5	2	21.5	233

TYPICAL DEVICE CHARACTERISTICS

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER (Notes 1 - 3)	RATED STAND-OFF VOLTAGE V_{WM} VOLTS	BREAKDOWN VOLTAGE		MAXIMUM LEAKAGE CURRENT @ V_{WM} I_D μA	MAXIMUM CLAMPING VOLTAGE (Fig. 2) @ I_{PP} VOLTS	MAXIMUM REVERSE SURGE CURRENT @ I_{PP} AMPS
		MIN $V_{(BR)}$ VOLTS	@ I_T mA			
5KP14	14.0	15.6	5	2	25.8	194
5KP14A	14.0	15.6	5	2	23.2	216
5KP15	15.0	16.7	5	2	26.9	186
5KP15A	15.0	16.7	5	2	24.4	205
5KP16	16.0	17.8	5	2	28.8	174
5KP16A	16.0	17.8	5	2	26.0	192
5KP17	17.0	18.9	5	2	30.5	164
5KP17A	17.0	18.9	5	2	27.6	181
5KP18	18.0	20.0	5	2	32.2	155
5KP18A	18.0	20.0	5	2	29.2	171
5KP19	19.0	21.13	5	2	34.0	147
5KP19A	19.0	21.13	5	2	30.8	162
5KP20	20.0	22.2	5	2	35.8	140
5KP20A	20.0	22.2	5	2	32.4	154
5KP22	22.0	24.4	5	2	39.4	127
5KP22A	22.0	24.4	5	2	35.5	141
5KP24	24.0	26.7	5	2	43.0	116
5KP24A	24.0	26.7	5	2	38.9	129
5KP26	26.0	28.9	5	2	46.6	107
5KP26A	26.0	28.9	5	2	42.1	119
5KP28	28.0	31.1	5	2	50.0	100
5KP28A	28.0	31.1	5	2	45.4	110
5KP30	30.0	33.3	5	2	53.5	93.5
5KP30A	30.0	33.3	5	2	48.4	103
5KP33	33.0	36.7	5	2	59.0	84.8
5KP33A	33.0	36.7	5	2	53.3	93.8
5KP36	36.0	40.0	5	2	64.3	77.8
5KP36A	36.0	40.0	5	2	58.1	86.1
5KP40	40.0	44.4	5	2	71.4	70.0
5KP40A	40.0	44.4	5	2	64.5	77.5
5KP43	43.0	47.8	5	2	76.7	65.2
5KP43A	43.0	47.8	5	2	69.4	72.1
5KP45	45.0	50.0	5	2	80.3	62.2
5KP45A	45.0	50.0	5	2	72.7	68.8

TYPICAL DEVICE CHARACTERISTICS

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER (Notes 1 - 3)	RATED STAND-OFF VOLTAGE V_{WM} VOLTS	BREAKDOWN VOLTAGE		MAXIMUM LEAKAGE CURRENT @ V_{WM} I_D μA	MAXIMUM CLAMPING VOLTAGE (Fig. 2) @ I_{PP} VOLTS	MAXIMUM REVERSE SURGE CURRENT @ I_{PP} AMPS
		MIN $V_{(BR)}$ VOLTS	@ I_T mA			
5KP48	48.0	53.3	5	2	85.5	54.5
5KP48A	48.0	53.3	5	2	77.4	64.6
5KP51	51.0	56.7	5	2	91.1	54.9
5KP51A	51.0	56.7	5	2	82.4	60.7
5KP54	54.0	60.0	5	2	96.3	51.9
5KP54A	54.0	60.0	5	2	87.1	57.4
5KP58	58.0	64.4	5	2	103.0	48.5
5KP58A	58.0	64.4	5	2	93.6	53.4
5KP60	60.0	66.7	5	2	107.0	46.7
5KP60A	60.0	66.7	5	2	96.8	51.7
5KP64	64.0	71.1	5	2	114.0	43.9
5KP64A	64.0	71.1	5	2	103.0	48.5
5KP70	70.0	77.8	5	2	125.0	40.0
5KP70A	70.0	77.8	5	2	113.0	44.3
5KP75	75.0	83.3	5	2	134.0	37.3
5KP75A	75.0	83.3	5	2	121.0	41.3
5KP78	78.0	86.7	5	2	139.0	36.0
5KP78A	78.0	86.7	5	2	126.0	40.0
5KP80	80.0	88.96	5	2	143.2	34.9
5KP80A	80.0	88.8	5	2	129.6	38.6
5KP85	85.0	94.4	5	2	151.0	33.1
5KP85A	85.0	94.4	5	2	137.0	36.5
5KP90	90.0	100.0	5	2	160.0	31.3
5KP90A	90.0	100.0	5	2	146.0	34.3
5KP100	100.0	111.0	5	2	179.0	27.9
5KP100A	100.0	111.0	5	2	162.0	30.9
5KP110	110.0	122.0	5	2	196.0	25.5
5KP110A	110.0	122.0	5	2	177.0	28.3
5KP120	120.0	133.0	5	2	214.0	23.4
5KP120A	120.0	133.0	5	2	193.0	25.9
5KP130	130.0	144.0	5	2	231.0	21.7
5KP130A	130.0	144.0	5	2	209.0	23.9
5KP140	140.0	155.68	5	2	250.6	20.0
5KP140A	140.0	155.0	5	2	226.8	22.1

TYPICAL DEVICE CHARACTERISTICS
ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER (Notes 1 - 3)	RATED STAND-OFF VOLTAGE V_{WM} VOLTS	BREAKDOWN VOLTAGE		MAXIMUM LEAKAGE CURRENT @ V_{WM} I_D μA	MAXIMUM CLAMPING VOLTAGE (Fig. 2) @ I_{PP} VOLTS	MAXIMUM REVERSE SURGE CURRENT @ I_{PP} AMPS
		MIN $V_{(BR)}$ VOLTS	@ I_T mA			
5KP150	150.0	167.0	5	2	268.0	18.7
5KP150A	150.0	167.0	5	2	243.0	20.1
5KP160	160.0	178.0	5	2	287.0	17.4
5KP160A	160.0	178.0	5	2	259.0	19.3
5KP170	170.0	189.0	5	2	304.0	16.5
5KP170A	170.0	189.0	5	2	275.0	18.2
5KP180	180.0	200.16	5	2	322.2	15.5
5KP180A	180.0	200.0	5	2	291.6	17.2
5KP190	190.0	211.28	5	2	340.1	14.7
5KP190A	190.0	211.0	5	2	307.8	16.2
5KP200A	200.0	224.0	5	2	324.0	15.4
5KP210A	210.0	233.0	5	2	349.5	14.3
5KP220A	220.0	246.0	5	2	356.0	14.0
5KP250A	250.0	279.0	5	2	405.0	12.4
5KP300A	300.0	335.0	5	2	486.0	10.3
5KP350A	350.0	391.0	5	2	567.0	8.8
5KP400A	400.0	447.0	5	2	648.0	7.7
5KP440A	440.0	492.0	5	2	713.0	7.0

NOTES

1. Part numbers shown are unidirectional devices. Add a "CA" suffix to specify bidirectional devices, such as 5KP20CA.
2. Suffix "A" denotes 5% tolerance, otherwise device is rated at 10% tolerance.
3. For bidirectional devices having a V_R of 10V and under, the I_R limit is double.

TYPICAL DEVICE CHARACTERISTICS

FIGURE 1
PEAK PULSE POWER VS PULSE TIME

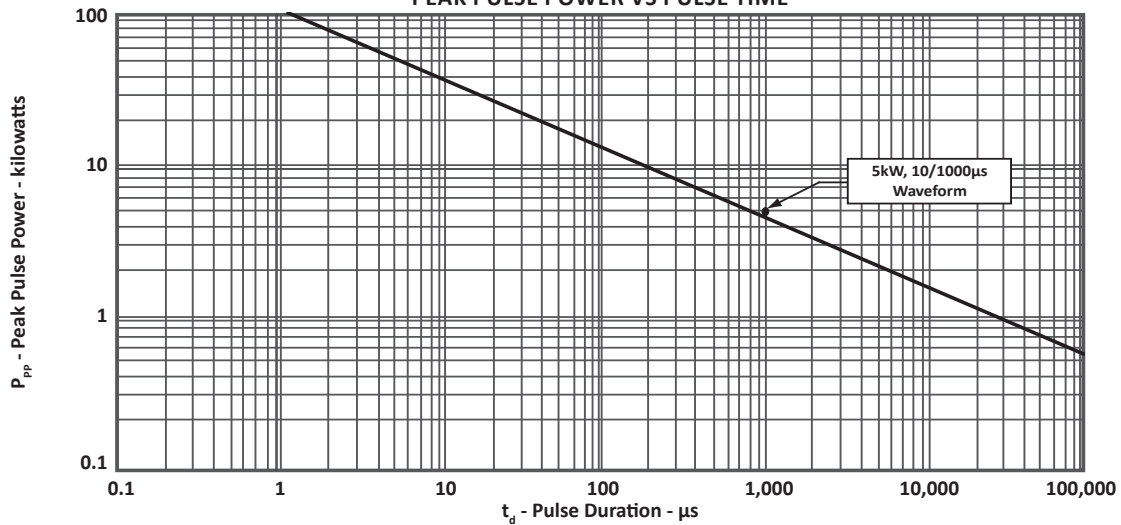


FIGURE 2
PULSE WAVEFORM

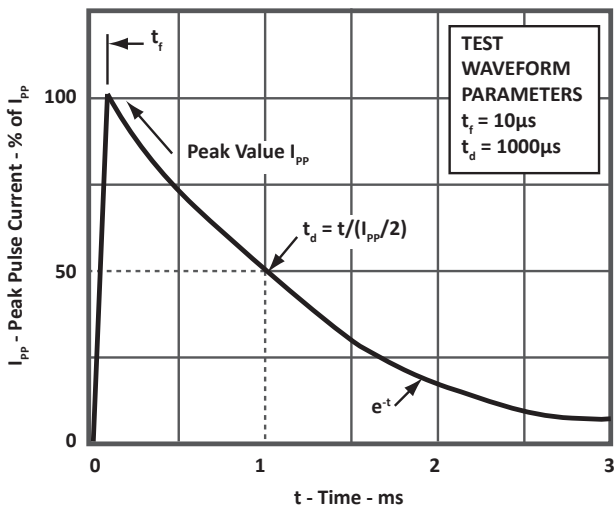
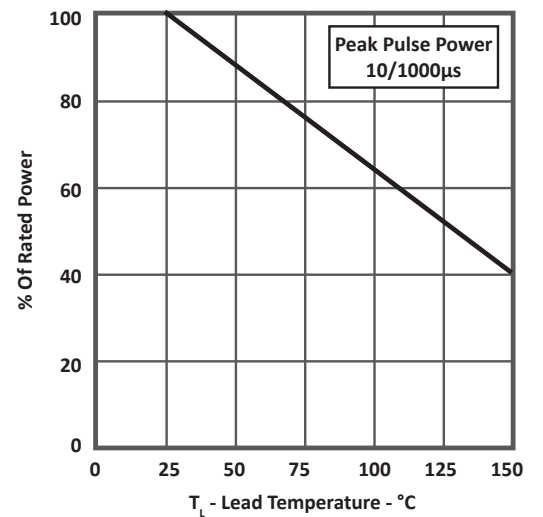


FIGURE 3
POWER DERATING CURVE



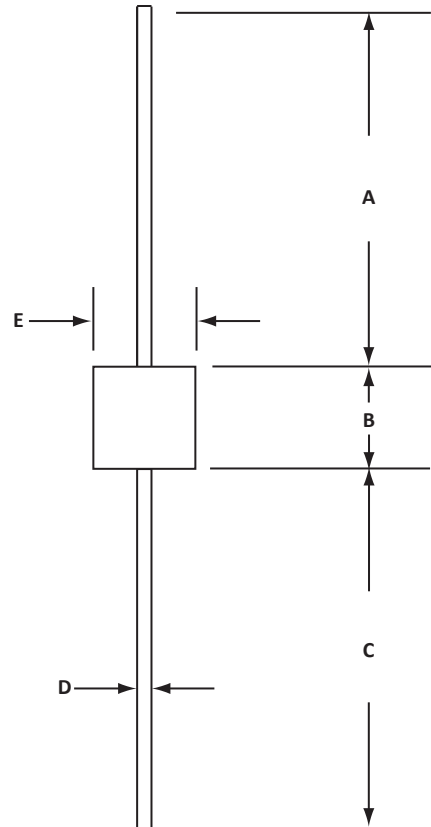
AXIAL LEAD PACKAGE INFORMATION

OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	24.5	-	1.00	-
B	8.64	9.14	0.34	0.36
C	24.5	-	1.00	-
D	1.22 DIA.	1.32 DIA.	0.048 DIA.	0.052 DIA.
E	8.64	9.14	0.34	0.36

NOTES

1. Dimensions are exclusive of mold flash and metal burrs.



ORDERING INFORMATION

BASE PART NUMBER (xx = Voltage)	LEADFREE SUFFIX	TAPE SUFFIX	QTY/REEL	REEL SIZE	TUBE QTY
5KPxx	-LF	n/a	n/a	n/a	n/a
5KPxxA	-LF	n/a	n/a	n/a	n/a
5KPxxCA	-LF	n/a	n/a	n/a	n/a

NOTES

1. Marking on Part - logo, part number, date code and positive terminal marked with band (unidirectional only).

MARKING DIAGRAM



COMPANY INFORMATION

COMPANY PROFILE

In business more than 25 years, ProTek Devices™ is a privately held semiconductor company. The company offers a product line of overvoltage protection and overcurrent protection components. These include transient voltage suppressor array (TVS arrays) avalanche breakdown diode, steering diode TVS array and electronics SMD chip fuses. These components deliver circuit protection in electronic systems from numerous overvoltage and overcurrent events. They include lightning; electrostatic discharge (ESD); nuclear electromagnetic pulses (NEMP); inductive switching; and electromagnetic interference (EMI) / radio frequency interference (RFI). ProTek Devices also offers LED wafer die for ESD protection and related high frequency products. ProTek Devices is ISO 9001:2015 certified.

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