Axial Lead Transient Voltage Suppressors

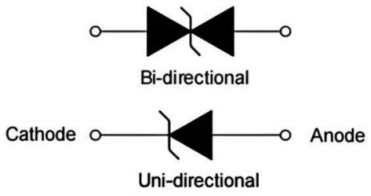
1 General Description

1.1 Features

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

- Glass passivated chip junction in P600 Package
- Low Leakage
- Built-in strain relief
- Excellent clamping capability
- 5000W Peak power capability at 10 x 1000us waveform Repetition
- rate (duty cycle):0.01%
- Fast response time: typically less than 1.0ps from 0 Volts to V_{BR} min
- Typical I_R less than 5μA above 12V.
- High Temperature soldering: 260°C/40 seconds at terminals
- Typical maximum temperature coefficient $\Delta V_{BR}=0.1\%xV_{BR}@25°Cx\Delta T$
- Plastic package has Underwriters Laboratory Flammability 94V-0
- Matte tin lead-free Plated
- Halogen free and RoHS compliant
- Typical failure mode is short from over-specified voltage or current
- Whisker test is conducted based on JEDEC JESD201A per its table 4a and 4c
- IEC-61000-4-2 ESD 15kV(Air),8kV (Contact)
- ESD protection of data lines in accordance with IEC 61000-4-2(IEC801-2)
- EFT protection of data lines in accordance with IEC 61000-4-4(IEC801-4)

Stand-Off Voltage
5.0-440V
Peak Pulse Power
5000W



1.2 Applications

- TVS devices are ideal for the protection of I/O interfaces, Vcc bus and other vulnerable circuits used in Telecom, Computer, Industrial and Consumer electronic applications

1.3 Mechanical Data

- Case:Molded plastic over glass passivated junction
- Terminal: Tin plated, solderable per MIL-STD-750, Method 2026

2 Maximum Ratings(TA=25℃ RH=40%-75% Unless otherwise specified)

PARAMETER	SYMBOL	VALUE	UNIT
Peak Pulse Power Dissipation at 10/1000μs waveform (Note1, Note2, Fig.1)	P_{PPM}	5000	W
Peak Forward Surge Current, 8.3ms Single Half Sine-wave (Note3)	I_{FSM}	500	A
Peak Pulse Current of at 10/1000μs waveform (Note 1, Fig.3)	I_{PPM}	See Next Table	A
Power Dissipation on Infinite Heat Sink at T_L=75℃	$P_{M(AV)}$	8.0	W
Operating Junction Temperature	T_J	-55 to +150	℃
Storage Temperature	T_{STG}	-55 to +150	℃
Maximum Instantaneous Forward Voltage at 25A for Unidirectional Only(Note4)	V_F	3.0/5.0	V

Notes:

1.Non-repetitive current pulse per Fig 3 and derated above T_A=25°C per Fig 2

2.Mounted on 5.0mm×5.0mm copper pads to each terminal.

3.8.3ms single half sine wave, or equivalent square wave duty cycle=4 pulses per minutes maximum

4.V_F < 3.5V for V_{BR} < 200V and V_F < 6.5V for V_{BR} > 201V

3 Electrical Characteristics(TA=25℃ Unless otherwise specified)

Part Number		Reverse Stand-Off Voltage	Breakdown Voltage @IT		Test Current	Max.Clamp Voltage@ IPP	Peak Pulse Current	Reverse Leakage@ VRWM
Uni	Bi	VRWM(V)	Min VBR(V)	Max VBR(V)	IT(mA)	VC(V)	IPP(A)	IR(μA)
5KP5.0A	5KP5.0CA	5	6.4	7	50	9.2	543.48	800
5KP6.0A	5KP6.0CA	6	6.67	7.37	50	10.3	485.44	800
5KP6.5A	5KP6.5CA	6.5	7.22	7.98	50	11.2	446.43	500
5KP7.0A	5KP7.0CA	7	7.78	8.6	50	12	416.67	200
5KP7.5A	5KP7.5CA	7.5	8.33	9.21	5	12.9	387.6	100
5KP8.0A	5KP8.0CA	8	8.89	9.83	5	13.6	367.65	50
5KP8.5A	5KP8.5CA	8.5	9.44	10.4	5	14.4	347.22	25
5KP9.0A	5KP9.0CA	9	10	11.1	5	15.4	324.68	10
5KP10A	5KP10CA	10	11.1	12.3	5	17	294.12	5
5KP11A	5KP11CA	11	12.2	13.5	5	18.2	274.73	5
5KP12A	5KP12CA	12	13.3	14.7	5	19.9	251.26	5
5KP13A	5KP13CA	13	14.4	15.9	5	21.5	232.56	5
5KP14A	5KP14CA	14	15.6	17.2	5	23.2	215.52	5
5KP15A	5KP15CA	15	16.7	18.5	5	24.4	204.92	5
5KP16A	5KP16CA	16	17.8	19.7	5	26	192.31	5
5KP17A	5KP17CA	17	18.9	20.9	5	27.6	181.16	5
5KP18A	5KP18CA	18	20	22.1	5	29.2	171.23	5
5KP19A	5KP19CA	19	21.1	23.3	5	30.8	162.44	5
5KP20A	5KP20CA	20	22.2	24.5	5	32.4	154.32	5
5KP22A	5KP22CA	22	24.4	26.9	5	35.5	140.85	5
5KP24A	5KP24CA	24	26.7	29.5	5	38.9	128.53	5
5KP26A	5KP26CA	26	28.9	31.9	5	42.1	118.76	5
5KP28A	5KP28CA	28	31.1	34.4	5	45.4	110.13	5
5KP30A	5KP30CA	30	33.3	36.8	5	48.4	103.31	5
5KP33A	5KP33CA	33	36.7	40.6	5	53.3	93.81	5
5KP36A	5KP36CA	36	40	44.2	5	58.1	86.06	5
5KP40A	5KP40CA	40	44.4	49.1	5	64.5	77.52	5
5KP43A	5KP43CA	43	47.8	52.8	5	69.4	72.05	5
5KP45A	5KP45CA	45	50	55.3	5	72.7	68.78	5
5KP48A	5KP48CA	48	53.3	58.9	5	77.4	64.6	5
5KP51A	5KP51CA	51	56.7	62.7	5	82.4	60.68	5
5KP54A	5KP54CA	54	60	66.3	5	87.1	57.41	5
5KP58A	5KP58CA	58	64.4	71.2	5	93.6	53.42	5
5KP60A	5KP60CA	60	66.7	73.7	5	96.8	51.65	5
5KP64A	5KP64CA	64	71.1	78.6	5	103	48.54	5
5KP70A	5KP70CA	70	77.8	86	5	113	44.25	5
5KP75A	5KP75CA	75	83.3	92.1	5	121	41.32	5
5KP78A	5KP78CA	78	86.7	95.8	5	126	39.68	5
5KP80A	5KP80CA	80	88.8	97.6	5	129.6	38.58	5
5KP85A	5KP85CA	85	94.4	104	5	137	36.5	5
5KP90A	5KP90CA	90	100	111	5	146	34.25	5
5KP100A	5KP100CA	100	111	123	5	162	30.86	5
5KP110A	5KP110CA	110	122	135	5	177	28.25	5
5KP120A	5KP120CA	120	133	147	5	193	25.91	5
5KP130A	5KP130CA	130	144	159	5	209	23.92	5
5KP140A	5KP140CA	140	155	171	5	226.8	22.05	5
5KP150A	5KP150CA	150	167	185	5	243	20.58	5
5KP160A	5KP160CA	160	178	197	5	259	19.31	5
5KP170A	5KP170CA	170	189	209	5	275	18.18	5
5KP180A	5KP180CA	180	201	220	5	291.6	17.15	5
5KP190A	5KP190CA	190	211	232	5	307.8	16.24	5
5KP200A	5KP200CA	200	224	247	5	324	15.43	5
5KP210A	5KP210CA	210	233	258	5	349.5	14.31	5
5KP220A	5KP220CA	220	246	272	5	356	14.04	5
5KP250A	5KP250CA	250	279	309	5	405	12.35	5
5KP300A	5KP300CA	300	335	371	5	486	10.29	5
5KP350A	5KP350CA	350	391	432	5	567	8.82	5
5KP400A	5KP400CA	400	447	494	5	648	7.72	5
5KP440A	5KP440CA	440	492	543	5	713	7.01	5

4 Characteristics Curves(TA=25℃ Unless otherwise specified)

Figure 1 - Peak Pulse Power Rating Curve

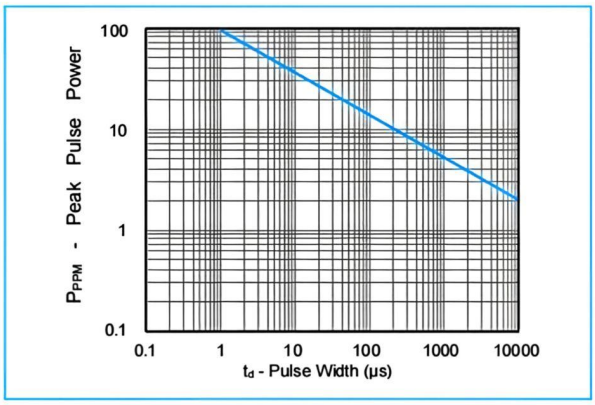


Figure 2 - Pulse Derating Curve

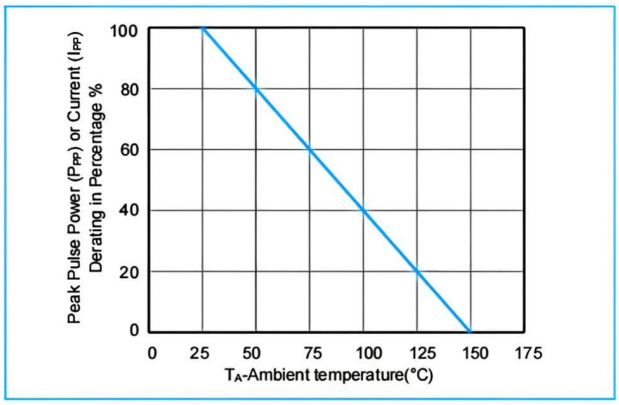


Figure 3 - Pulse Waveform

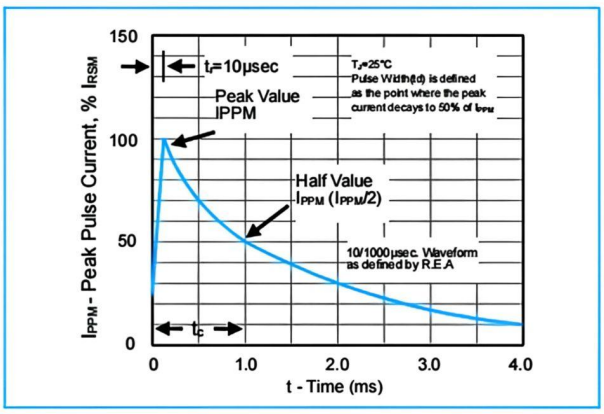


Figure 4 - Typical Junction Capacitance

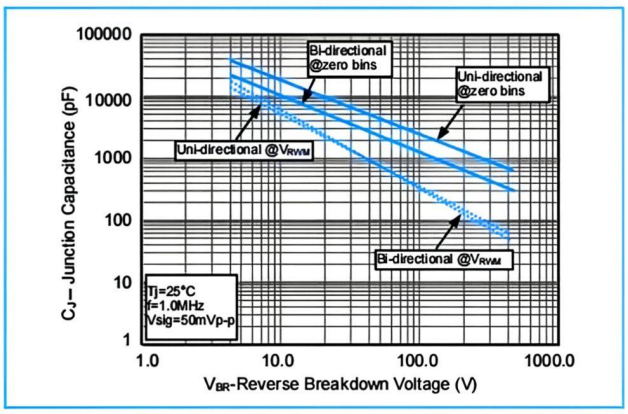


Figure 5 - Steady State Power Derating Curve

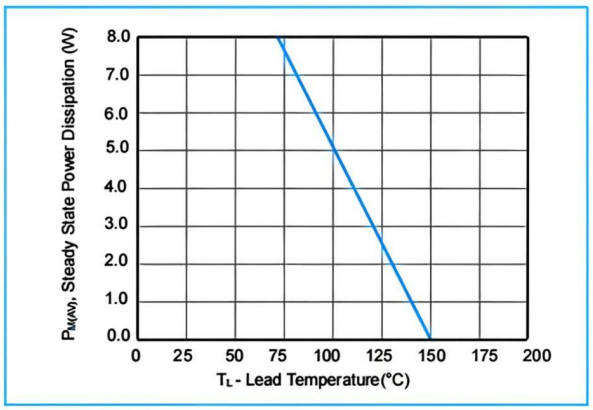
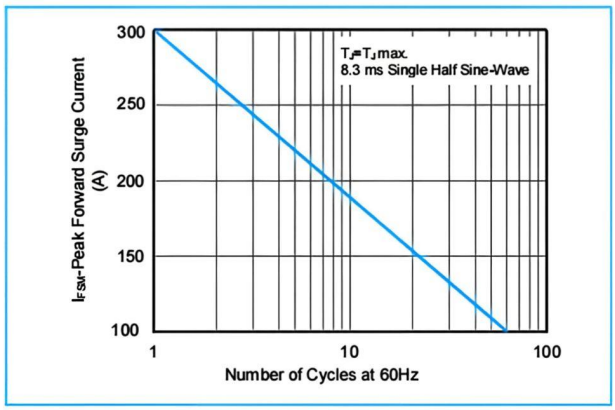
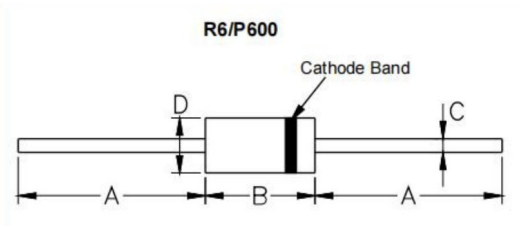


Figure 6 - Maximum Non-Repetitive Surge Current



5 Package Outline Dimensions



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	25.40	-	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

6 Ordering Information

PACKAGE	UNIT WEIGHT (g)	BOX (pcs)	CARTON (pcs)
R6/P600	Approximate 2.6	300	3000

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