

Transient Voltage Suppressors (TVS) Data Sheet

Description

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

Features

- Low leakage
- Glass passivated junction
- Low inductance
- Excellent clamping capability
- 5000W peak pulse power capability at 10/1000μs waveform
- Fast response time
- Typical IR less than 1μA above 12V
- High Temperature soldering: 260°C /10 seconds at terminals
- Typical maximum temperature coefficient $\Delta V_{BR} = 0.1\% \times V_{BR}@25^{\circ}\text{C} \times \Delta T$
- Plastic package has Underwriters Laboratory Flammability 94V-0
- Matte tin lead-free Plated
- 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 30KV(Air),30KV(contact)

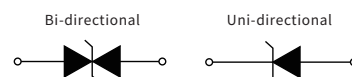
Breakdown Voltage

5.0 to 250 V

Peak Pulse Power

5000 W

R-6



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

Maximum Ratings (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	VALUE	SYMBOL
Peak Pulse Power Dissipation with a 10/1000μs waveform (Fig.1)(Note 1), (Note 2)	P_{PPM}	5000	W
Peak Pulse Current with a 10/1000μs waveform.(Note1, Fig.3)	I_{PP}	See Next Table	A
Power Dissipation on Infinite Heat Sink at TL=75° C	$P_{M(AV)}$	8	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 3)	I_{FSM}	400	A
Maximum Instantaneous Forward Voltage at 25A for Unidirectional Only(Note 4)	V_F	3.5/5.0	V
Operating junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Note :

(1) Non-repetitive current pulse, per Fig. 3 and derated above Ta = 25°C per Fig. 2.

(2) Mounted on 5.0mm x 5.0mm (0.03mm thick) 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 $V_{BR} < 220V$ and $V_F < 5.0V$ for $V_{BR} > 220V$.

● **Electrical Characteristics** (Ta=25°C Unless otherwise specified)

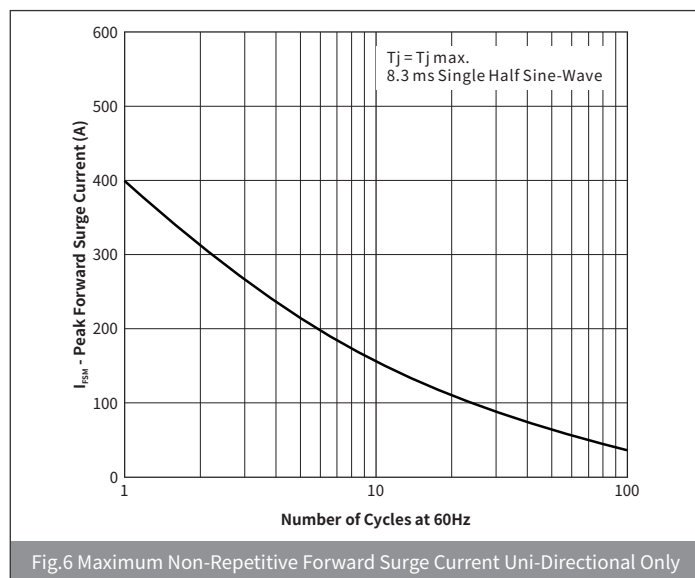
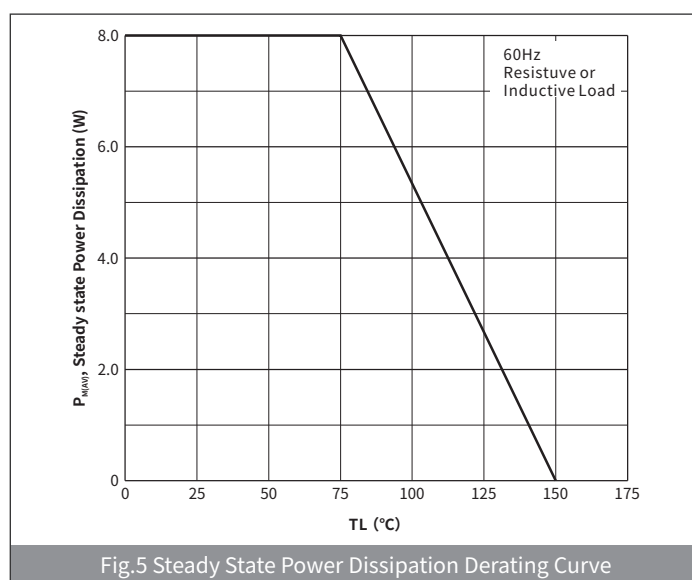
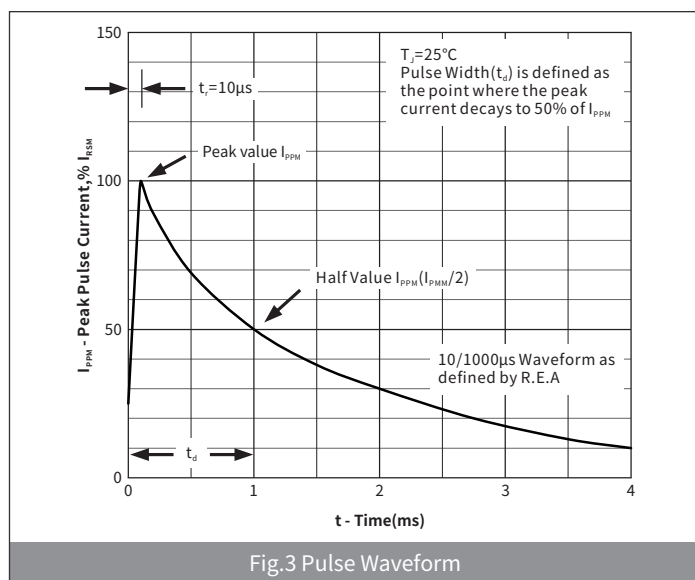
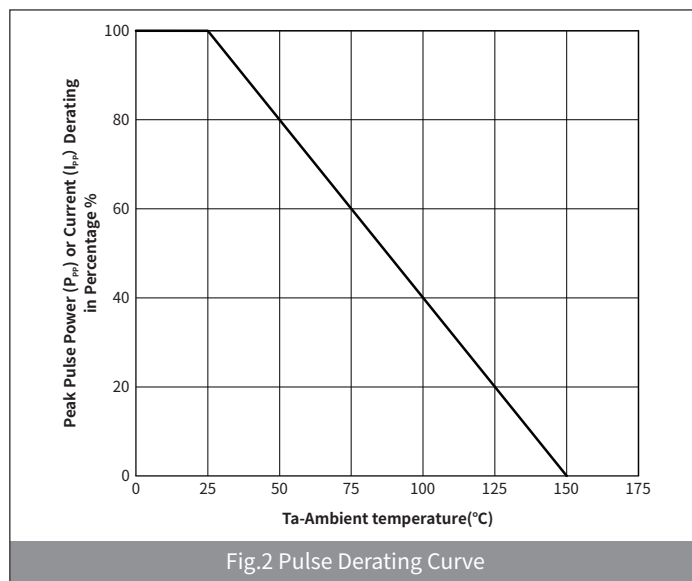
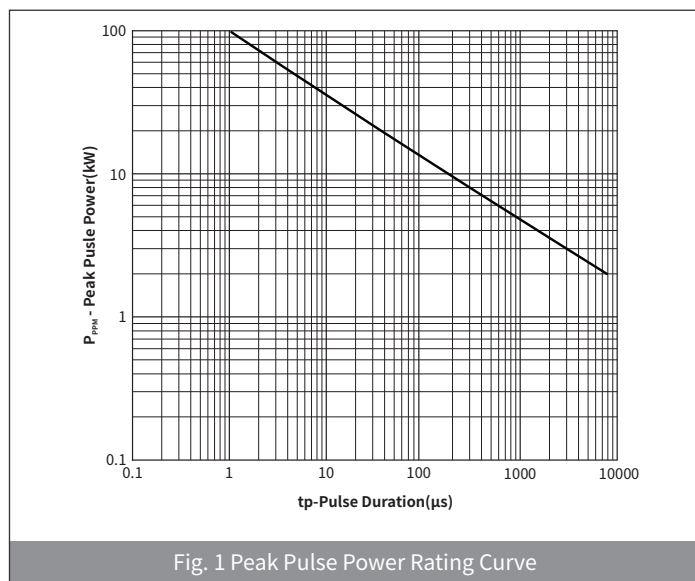
Part Number		Marking		Reverse Stand-Off Voltage	Breakdown Voltage V_{BR} (V) @ I_T		Test Current	Maximum Clamping Voltage @ I_{PP}	Peak Pulse Current	Reverse Leakage @ V_{RWM}
Uni	Bi	Uni	Bi	V_{RWM} (V)	Min.	Max.	I_T (mA)	V_C (V)	I_{PP} (A)	I_R (μA)
5KP5.0A	5KP5.0CA	5KP5.0A	5KP5.0CA	5	6.4	7	50	9.2	544	1000
5KP6.0A	5KP6.0CA	5KP6.0A	5KP6.0CA	6	6.67	7.37	50	10.3	486	1000
5KP6.5A	5KP6.5CA	5KP6.5A	5KP6.5CA	6.5	7.22	7.98	50	11.2	448	800
5KP7.0A	5KP7.0CA	5KP7.0A	5KP7.0CA	7	7.78	8.6	50	12	417	500
5KP7.5A	5KP7.5CA	5KP7.5A	5KP7.5CA	7.5	8.33	9.21	5	12.9	388	150
5KP8.0A	5KP8.0CA	5KP8.0A	5KP8.0CA	8	8.89	9.83	5	13.6	367	100
5KP8.5A	5KP8.5CA	5KP8.5A	5KP8.5CA	8.5	9.44	10.4	5	14.4	347	20
5KP9.0A	5KP9.0CA	5KP9.0A	5KP9.0CA	9	10	11.1	5	15.4	325	5
5KP10A	5KP10CA	5KP10A	5KP10CA	10	11.1	12.3	5	17	294	2
5KP11A	5KP11CA	5KP11A	5KP11CA	11	12.2	13.5	5	18.2	275	1
5KP12A	5KP12CA	5KP12A	5KP12CA	12	13.3	14.7	5	19.9	252	1
5KP13A	5KP13CA	5KP13A	5KP13CA	13	14.4	15.9	5	21.5	233	1
5KP14A	5KP14CA	5KP14A	5KP14CA	14	15.6	17.2	5	23.2	216	1
5KP15A	5KP15CA	5KP15A	5KP15CA	15	16.7	18.5	5	24.4	205	1
5KP16A	5KP16CA	5KP16A	5KP16CA	16	17.8	19.7	5	26	193	1
5KP17A	5KP17CA	5KP17A	5KP17CA	17	18.9	20.9	5	27.6	181	1
5KP18A	5KP18CA	5KP18A	5KP18CA	18	20	22.1	5	29.2	172	1
5KP20A	5KP20CA	5KP20A	5KP20CA	20	22.2	24.5	5	32.4	155	1
5KP22A	5KP22CA	5KP22A	5KP22CA	22	24.4	26.9	5	35.5	141	1
5KP24A	5KP24CA	5KP24A	5KP24CA	24	26.7	29.5	5	38.9	129	1
5KP26A	5KP26CA	5KP26A	5KP26CA	26	28.9	31.9	5	42.1	119	1
5KP28A	5KP28CA	5KP28A	5KP28CA	28	31.1	34.4	5	45.4	110	1
5KP30A	5KP30CA	5KP30A	5KP30CA	30	33.3	36.8	5	48.4	103	1
5KP33A	5KP33CA	5KP33A	5KP33CA	33	36.7	40.6	5	53.3	93.9	1
5KP36A	5KP36CA	5KP36A	5KP36CA	36	40	44.2	5	58.1	86.1	1
5KP40A	5KP40CA	5KP40A	5KP40CA	40	44.4	49.1	5	64.5	77.6	1
5KP43A	5KP43CA	5KP43A	5KP43CA	43	47.8	52.8	5	69.4	72.1	1
5KP45A	5KP45CA	5KP45A	5KP45CA	45	50	55.3	5	72.7	68.8	1
5KP48A	5KP48CA	5KP48A	5KP48CA	48	53.3	58.9	5	77.4	64.7	1
5KP51A	5KP51CA	5KP51A	5KP51CA	51	56.7	62.7	5	82.4	60.7	1
5KP54A	5KP54CA	5KP54A	5KP54CA	54	60	66.3	5	87.1	57.5	1
5KP58A	5KP58CA	5KP58A	5KP58CA	58	64.4	71.2	5	93.6	53.5	1
5KP60A	5KP60CA	5KP60A	5KP60CA	60	66.7	73.7	5	96.8	51.7	1
5KP64A	5KP64CA	5KP64A	5KP64CA	64	71.1	78.6	5	103	48.6	1
5KP70A	5KP70CA	5KP70A	5KP70CA	70	77.8	86	5	113	44.3	1
5KP75A	5KP75CA	5KP75A	5KP75CA	75	83.3	92.1	5	121	41.4	1
5KP78A	5KP78CA	5KP78A	5KP78CA	78	86.7	95.8	5	126	39.7	1
5KP85A	5KP85CA	5KP85A	5KP85CA	85	94.4	104	5	137	36.5	1
5KP90A	5KP90CA	5KP90A	5KP90CA	90	100	111	5	146	34.3	1
5KP100A	5KP100CA	5KP100A	5KP100CA	100	111	123	5	162	30.9	1
5KP110A	5KP110CA	5KP110A	5KP110CA	110	122	135	5	177	28.3	1
5KP120A	5KP120CA	5KP120A	5KP120CA	120	133	147	5	193	26	1
5KP130A	5KP130CA	5KP130A	5KP130CA	130	144	159	5	209	24	1
5KP150A	5KP150CA	5KP150A	5KP150CA	150	167	185	5	243	20.6	1
5KP160A	5KP160CA	5KP160A	5KP160CA	160	178	197	5	259	19.3	1

● **Electrical Characteristics** (Ta=25°C Unless otherwise specified)

Part Number		Marking		Reverse Stand-Off Voltage	Breakdown Voltage V _{BR} (V) @I _T		Test Current	Maximum Clamping Voltage@I _{PP}	Peak Pulse Current	Reverse Leakage @V _{RWM}
Uni	Bi	Uni	Bi	V _{RWM} (V)	Min.	Max.	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (μA)
5KP170A	5KP170CA	5KP170A	5KP170CA	170	189	209	5	275	18.2	1
5KP180A	5KP180CA	5KP180A	5KP180CA	180	201	222	5	292	17.5	1
5KP190A	5KP190CA	5KP190A	5KP190CA	190	211	233	5	310	16.5	1
5KP200A	5KP200CA	5KP200A	5KP200CA	200	224	247	5	329.2	15.5	1
5KP210A	5KP210CA	5KP210A	5KP210CA	210	237	263	5	349.5	14.6	1
5KP220A	5KP220CA	5KP220A	5KP220CA	220	246	272	5	371.1	13.7	1
5KP250A	5KP250CA	5KP250A	5KP250CA	250	277	306	5	425	12	1

Note :
(1)Suffix 'A ' denotes 5% tolerance device.
(2)Add suffix ' CA ' after part number to specify Bi-directional devices.
(3)For Bi-Directional devices having VR of 10 volts and under, the IR limit is double.

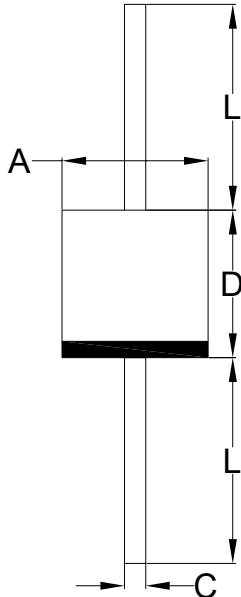
● Ratings And Characteristics Curves ($T_a=25^\circ\text{C}$ Unless otherwise specified)



● Ordering Information

PACKAGE	UNIT WEIGHT(g)	BOX(pcs)	CARTON(pcs)
R-6	2.1	500	5000

● Package Outline Dimensions (R-6)

	Symbol	Dimensions			
		Millimeters		Inches	
		Min.	Max.	Min.	Max.
	A	8.6	9.1	0.34	0.36
	C	1.0	1.3	0.039	0.052
	D	8.6	9.1	0.34	0.36
	L	24.5	-	0.96	-

Note:
(1) Cathode Band: unidirectional only.
(2) Bidirectional devices without this marking.

● Part Numbering

