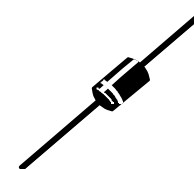


Transient Voltage Suppression Diodes Axial Leaded – 3000W

Descriptions

Transient Voltage Suppressors (TVS) are semiconductor devices designed to provide protection against over voltage transients. When over voltage events occur, the silicon TVS activates from an very high impedance status to a very low impedance status by operating in the avalanche mode and uses a large junction area to absorb large transient currents in a fast response time, protecting voltage sensitive electronics equipment from damaging.

Boarden supplies unipolar and bipolar TVS devices with axial and SMD packages, with maximum working voltage 5V to 550V, maximum power dissipation from 200W-5000W.



P600

Features

- Glass passivated chip junction in P600 Package
- 3000W peak pulse power @10/1000 μ s
- Typical I_R less than 2 μ A above 13V
- Low incremental surge resistance
- Excellent clamping capability
- Typical failure mode is short from over-specified voltage/current
- Fast response time: typically less than 1.0ps from 0V to BV min
- EFT protection of data lines in accordance with IEC 61000-4-4
- UL94V-0 Flammability Rating
- Halogen free and RoHS compliant

Applications

- Telecom and Network
- Industrial Products
- Business Machines
- Vehicles Electronics
- Power Adapter
- Consumer Products
- Security Protection

Maximum Ratings and Thermal Characteristics (TA=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation by 10/1000 μ s Test Waveform	P_{PPM}	3000	W
Steady State Power Dissipation on Infinite Heat Sink at $T_L=75^\circ\text{C}$	P_D	7.0	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Unidirectional Only ⁽¹⁾	I_{FSM}	300	A
Maximum Instantaneous Forward Voltage at 100A for Unidirectional Only ⁽²⁾	V_F	3.5/5.0	V
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 175	$^\circ\text{C}$
Typical Thermal Resistance Junction to Lead	R_{uJL}	8.0	$^\circ\text{C/W}$
Typical Thermal Resistance Junction to Ambient	R_{uJA}	40	$^\circ\text{C/W}$

Notes:

1) Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 per minute maximum.

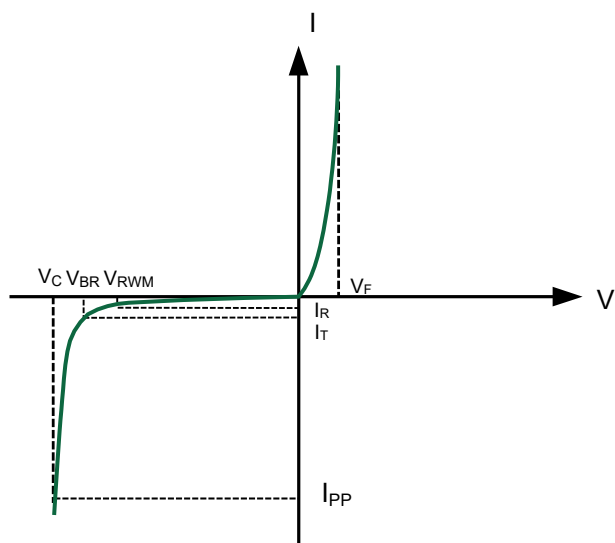
2) $V_F < 3.5\text{V}$ for devices of $V_{BR} \leq 200\text{V}$ and $V_F < 5.0\text{V}$ for devices of $V_{BR} \geq 201\text{V}$.

Electrical Characteristics (TA=25°C unless otherwise noted)

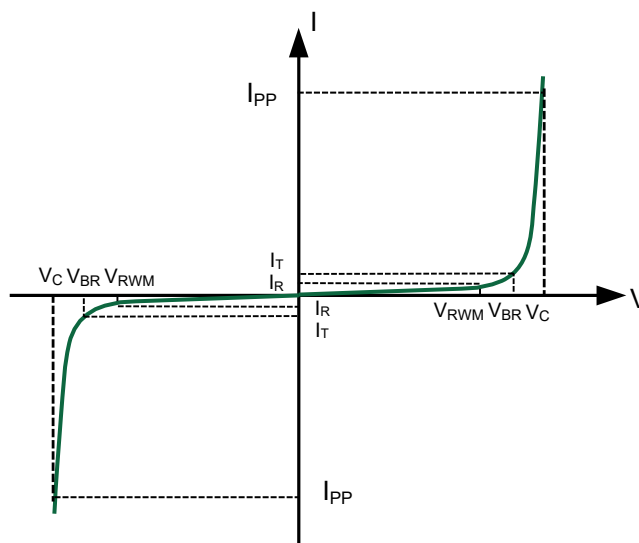
Type Number		V _{RMW}	I _R @V _{RMW}	V _{BR} @I _T (V)			I _T	V _C @I _{PP}	I _{PP} MAX
Uni	Bi	(V)	(μA)	Min	Nom	Max	(mA)	(V)	(A)
3KP5.0A	3KP5.0CA	5.0	5000	6.40	6.7	7.00	50	9.2	326.1
3KP6.0A	3KP6.0CA	6.0	5000	6.67	7.0	7.37	50	10.3	291.3
3KP6.5A	3KP6.5CA	6.5	2000	7.22	7.6	7.98	50	11.2	267.9
3KP7.0A	3KP7.0CA	7.0	1000	7.78	8.2	8.60	50	12.0	250.0
3KP7.5A	3KP7.5CA	7.5	250	8.33	8.8	9.21	5	12.9	232.6
3KP8.0A	3KP8.0CA	8.0	150	8.89	9.4	9.83	5	13.6	220.6
3KP8.5A	3KP8.5CA	8.5	50	9.44	9.9	10.4	5	14.4	208.3
3KP9.0A	3KP9.0CA	9.0	20	10.0	10.6	11.1	5	15.4	194.8
3KP10A	3KP10CA	10	15	11.1	11.7	12.3	5	17.0	176.5
3KP11A	3KP11CA	11	2	12.2	12.9	13.5	5	18.2	164.8
3KP12A	3KP12CA	12	2	13.3	14.0	14.7	5	19.9	150.8
3KP13A	3KP13CA	13	2	14.4	15.2	15.9	5	21.5	139.5
3KP14A	3KP14CA	14	2	15.6	16.4	17.2	5	23.2	129.3
3KP15A	3KP15CA	15	2	16.7	17.6	18.5	5	24.4	123
3KP16A	3KP16CA	16	2	17.8	18.8	19.7	5	26.0	115.4
3KP17A	3KP17CA	17	2	18.9	19.9	20.9	5	27.6	108.7
3KP18A	3KP18CA	18	2	20.0	21.1	22.1	5	29.2	102.7
3KP20A	3KP20CA	20	2	22.2	23.4	24.5	5	32.4	92.6
3KP22A	3KP22CA	22	2	24.0	25.5	26.9	5	35.5	84.5
3KP24A	3KP24CA	24	2	26.7	28.1	29.5	5	38.9	77.1
3KP26A	3KP26CA	26	2	28.9	30.4	31.9	5	42.1	71.3
3KP28A	3KP28CA	28	2	31.1	32.8	34.4	5	45.4	66.1
3KP30A	3KP30CA	30	2	33.3	35.1	36.8	5	48.4	62.0
3KP33A	3KP33CA	33	2	36.7	38.7	40.6	5	53.3	56.3
3KP36A	3KP36CA	36	2	40.0	42.1	44.2	5	58.1	51.6
3KP40A	3KP40CA	40	2	44.4	46.8	49.1	5	64.5	46.5
3KP43A	3KP43CA	43	2	47.8	50.3	52.8	5	69.4	43.2
3KP45A	3KP45CA	45	2	50.0	52.7	55.3	5	72.7	41.3
3KP48A	3KP48CA	48	2	53.3	56.1	58.9	5	77.4	38.8
3KP51A	3KP51CA	51	2	56.7	59.7	62.7	5	82.4	36.4
3KP54A	3KP54CA	54	2	60.0	63.2	66.3	5	87.1	34.4
3KP58A	3KP58CA	58	2	64.4	67.8	71.2	5	93.6	32.1
3KP60A	3KP60CA	60	2	66.7	70.2	73.7	5	96.8	31.0
3KP64A	3KP64CA	64	2	71.1	74.9	78.6	5	103	29.1
3KP70A	3KP70CA	70	2	77.8	81.9	86.0	5	113	26.5
3KP75A	3KP75CA	75	2	83.3	87.7	92.1	5	121	24.8
3KP78A	3KP78CA	78	2	86.7	91.3	95.8	5	126	23.8
3KP85A	3KP85CA	85	2	94.4	99.2	104	5	137	21.9
3KP90A	3KP90CA	90	2	100	105.5	111	5	146	20.5
3KP100A	3KP100CA	100	2	110	116.5	123	5	162	18.5
3KP110A	3KP110CA	110	2	122	128.5	135	5	177	16.9
3KP120A	3KP120CA	120	2	133	140.0	147	5	193	15.5
3KP130A	3KP130CA	130	2	144	151.5	159	5	209	14.4
3KP150A	3KP150CA	150	2	167	176.0	185	5	243	12.3
3KP160A	3KP160CA	160	2	178	187.5	197	5	259	11.6
3KP170A	3KP170CA	170	2	189	199.0	209	5	275	10.9
3KP180A	3KP180CA	180	2	200	210.5	221	5	289	10.4
3KP190A	3KP190CA	190	2	211	222.0	233	5	310	9.7
3KP200A	3KP200CA	200	2	222	234.0	246	5	329.2	9.1
3KP210A	3KP210CA	210	2	233	245.5	258	5	349.5	8.6
3KP220A	3KP220CA	220	2	244	257.0	270	5	371.1	8.1

For bidirectional type having V_{RMW} of 10 volts and less, the I_R limit is double.

I-V Curve Characteristics



Uni-Directional TVS



Bi-Directional TVS

V_{RWM} - Reverse Stand-Off Voltage - Working Peak Reverse Voltage

V_{BR} - Breakdown Voltage - Maximum current that flows through the TVS at a specified test current (I_T)

I_T - Test Current - Test Current

V_C - Clamping Voltage - Peak voltage measured across the suppressor at a specified I_{ppm} (peak impulse current)

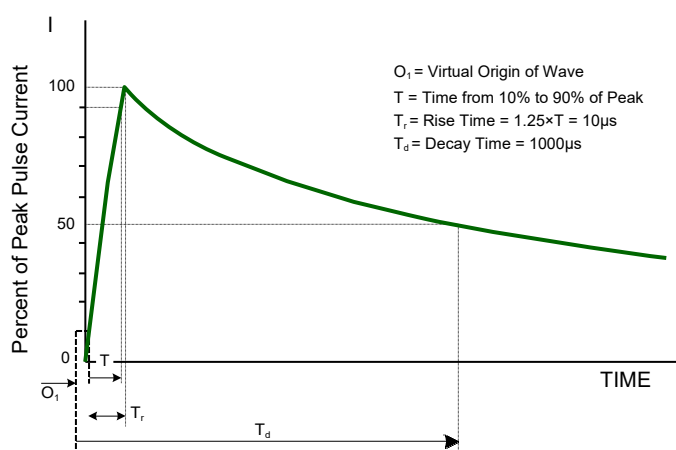
I_{PP} - Peak Pulse Current - Maximum Reverse Peak Pulse Current

P_{PPM} - Peak Pulse Power Dissipation - Max power dissipation

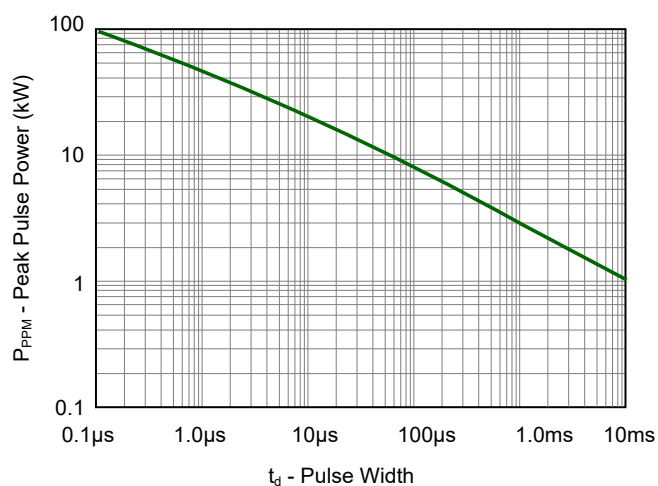
I_R - Reverse Leakage Current - Current measured at V_{RWM}

V_F - Forward Voltage - Drop for Uni-directional

Ratings and Characteristic Curves (TA=25°C unless otherwise noted)

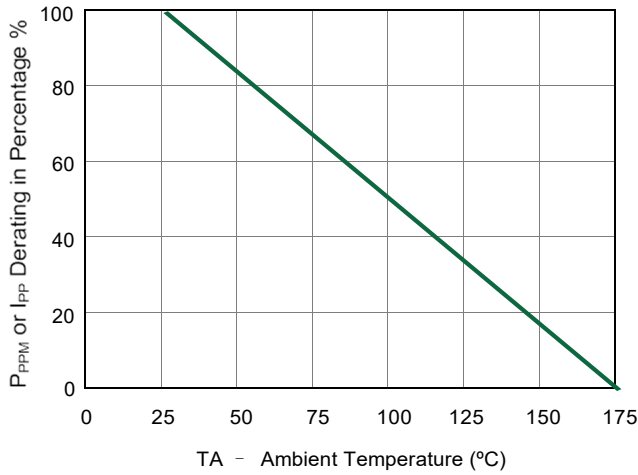


Pulse Waveform- 10/1000µs

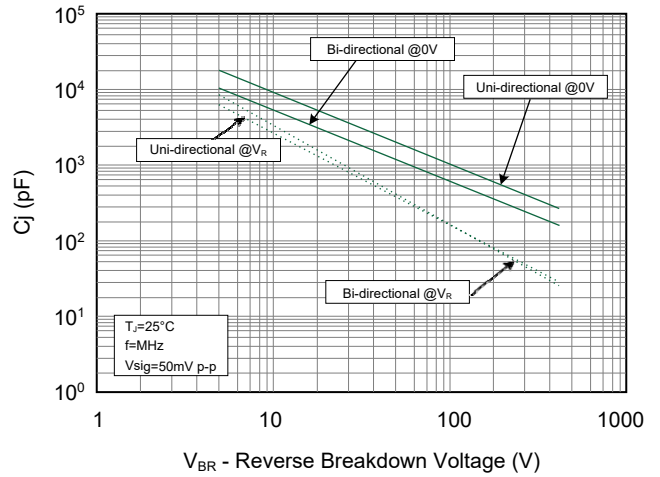


Peak Pulse Power Rating Curve

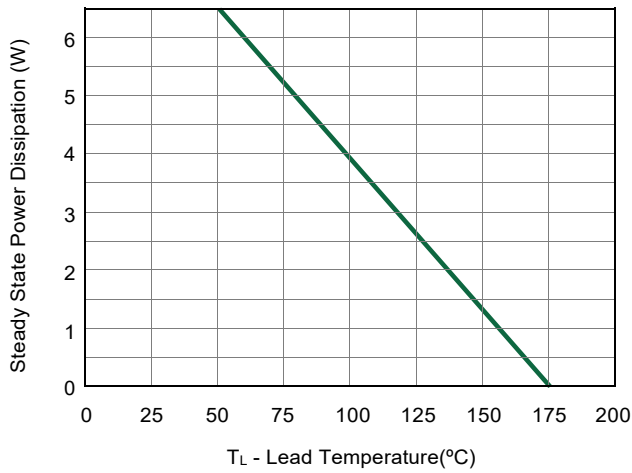
Ratings and Characteristic Curves (TA=25°C unless otherwise noted)



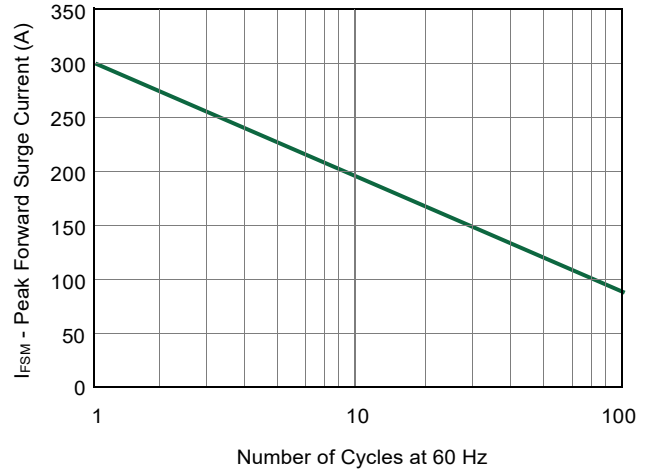
Pulse Derating Curve



Typical Junction Capacitance



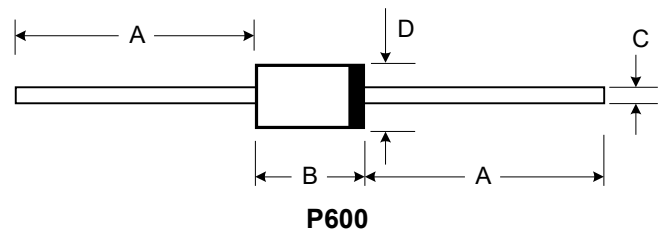
Steady State Power Derating Curve



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

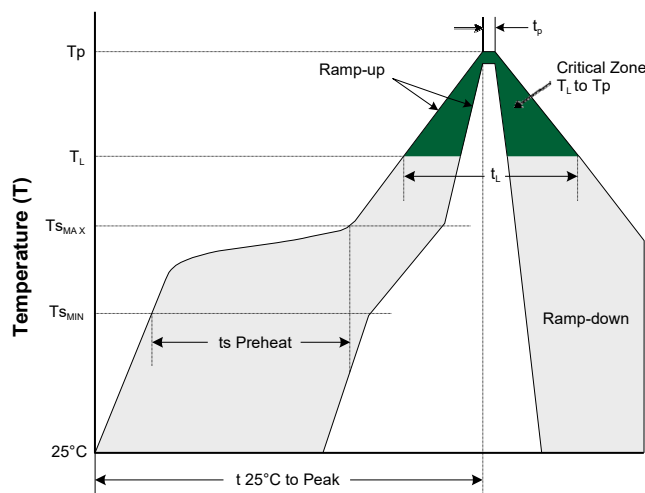
Product Dimensions

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

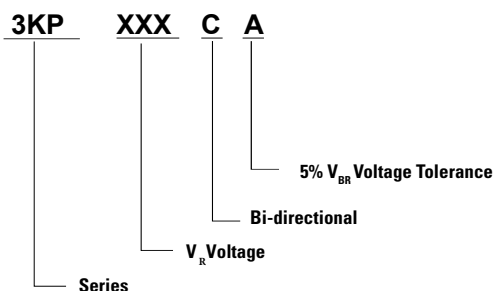


Soldering Parameters

Profile Feature	Lead-Free Assembly
Average Ramp-up Rate ($T_{S_{MAX}}$ to T_p) Average Ramp-down Rate (T_p to T_L)	3°C/second max. 6°C/second max.
Preheat • Temperature Min ($T_{S_{MIN}}$) • Temperature Max ($T_{S_{MAX}}$) • Time (t_s Preheat)	150°C 200°C 60-180 seconds
Time maintained above: • Temperature (T_L) • Time (t_L)	217°C 60-150 seconds
Peak/Classification Temperature • Temperature (T_p)	260 ^{+0/-5} °C
Time within 5°C of actual Peak Time (t_p)	20-40 seconds
Time 25°C to peak Temperature	8 minutes max
Do not exceed	260 °C



Part Numbering System



Order Information

Device	Package	Qty per Box	Packaging
3KP series	P600	300	Box