BORN SEMICONDUCTOR

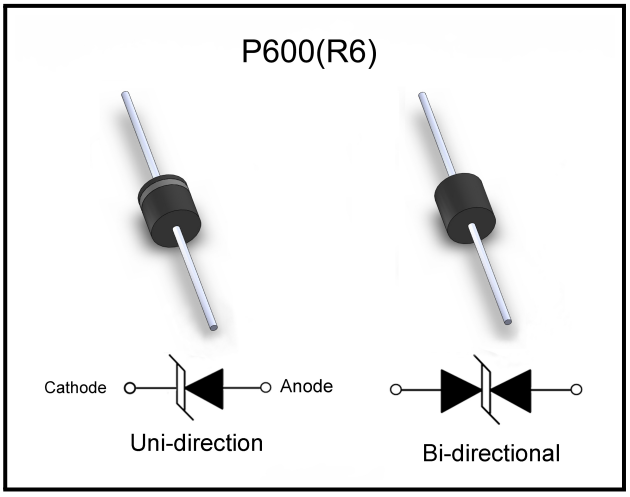
15KP Series

Transient Voltage Suppressor

Features

- Excellent clamping capability
- Low leakage current
- Low capacitance
- High surge capability
- Glass passivated chip
- Epoxy resin package
- Built-in strain relief
- Will not fatigue
- RoHS Compliant
- Fast response time:typically less than 1.0ps from 0 Volts to V_{BR} min

Package



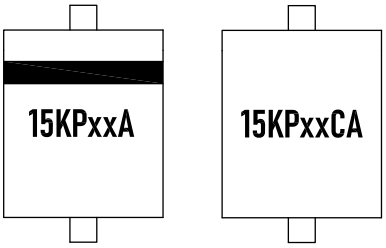
Mechanical Characteristics

- Package: P600 plastic package.
- Lead Finish: Matte Tin
- Case Material: Epoxy Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020

Applications

- Telecom
- Computer
- Industrial electronic
- Consumer electronic

Making Code



Summary of Packing Options

Package	Packing Description	Packing Quantity	Industry Standard
P600	Tape/Box,Box	300	BORN SPEC
	Tape/Reel,13” reel	800	EIA STD RS-296

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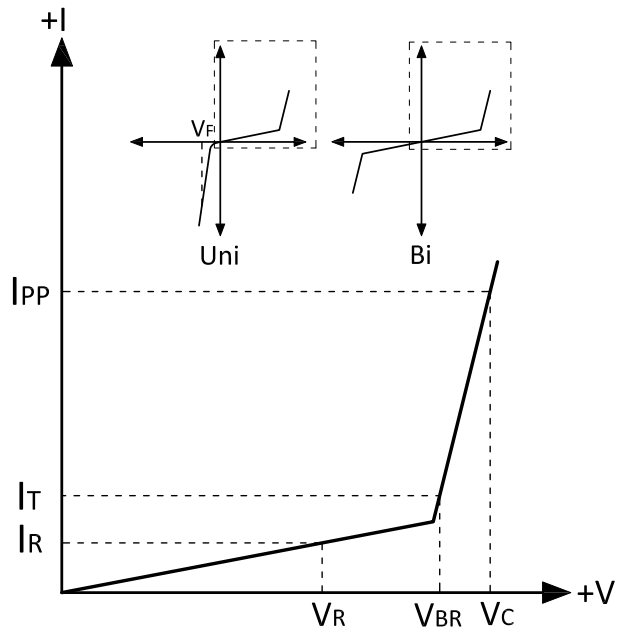
Revision: 2022-Jan-1-A

15KP Series

Transient Voltage Suppressor

Electrical Parameters

Parameter	Definition
C_J	Junction Capacitance - typical capacitance measured with 0V orV_R bias
I_{PP}	Peak Pulse Current - maximum rated peak impulse current
V_C	Clamping Voltage - Peak voltage measured across the suppressor at a specified Ippm
V_{BR}	Breakdown Voltage - Maximum voltage that flows though the TVS at a specified test current (I_T)
I_R	Leakage Current - maximum peak off-state current measured at V_R
V_R	Peak Off-state Voltage - maximum voltage that can be applied while maintaining off state



Absolute Maximum Ratings (T_A=+25°C, unless otherwise noted)

Parameter	Symbol	Value	Units
Peak Pulse Power Dissipation(Note1)	P_{PPM}	15000	W
Steady State Power Dissipation (Note2)	P_D	8	W
Peak Forward Surge Current (Note3)	I_{FSM}	400	A
Maximum Instantaneous Forward Voltage at 100A (Note4)	V_{FM}	3.5/5	V
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	8	°C/W
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	40	°C/W
Operating Junction Temperature Range	T_J	-55 to 150	°C
Storage Temperature Range	T_{SJG}	-55 to 150	°C

Notes:

(1) Non-repetitive current pulse , 10/1000us Waveform.

(2) Infinite Heat Sink at T_L=75°C, at 0.375”(9.5mm) lead length, P.C.B. mounted.

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

(4) For Unidirectional Only.

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15KP Series

Transient Voltage Suppressor

Absolute Maximum Ratings (T_A=+25°C, unless otherwise noted)

Part Number		Reverse Stand-Off Votage V_R	Breakdown Voltage V_{BR}@ I_T		Test Current I_T	Maximum Clamping Voltage V_C@ I_{pp}	Maximum Peak Pulse Current I_{pp}	Maximum Reverse Leakage I_R@ V_R
(Uni)	(Bi)	(V)	Min.(V)	Max.(V)	(mA)	(V)	(A)	(uA)
15KP17A	15KP17CA	17	18.99	20.79	50	29.3	515	5000
15KP18A	15KP18CA	18	20.11	22.01	50	30.9	489	5000
15KP20A	15KP20CA	20	22.34	24.46	20	34.3	440	1500
15KP22A	15KP22CA	22	24.57	26.91	10	37.1	407	500
15KP24A	15KP24CA	24	26.81	29.35	5	40.7	371	150
15KP26A	15KP26CA	26	29.04	31.8	5	44	343	50
15KP28A	15KP28CA	28	31.28	34.24	5	47.5	318	25
15KP30A	15KP30CA	30	33.51	36.7	5	50.7	298	15
15KP33A	15KP33CA	33	36.9	40.4	5	54.7	276	2
15KP36A	15KP36CA	36	40.2	44	5	59.8	253	2
15KP40A	15KP40CA	40	44.7	48.9	5	65.8	230	2
15KP43A	15KP43CA	43	48	52.6	5	69.8	216	2
15KP45A	15KP45CA	45	50.3	55	5	72.8	207	2
15KP48A	15KP48CA	48	53.6	58.7	5	77.7	194	2
15KP51A	15KP51CA	51	57	62.4	5	82.9	182	2
15KP54A	15KP54CA	54	60.3	66	5	87.7	172	2
15KP58A	15KP58CA	58	64.8	70.9	5	93.8	161	2
15KP60A	15KP60CA	60	67	73.4	5	97.4	155	2
15KP64A	15KP64CA	64	71.5	78.3	5	104.2	145	2
15KP70A	15KP70CA	70	78.2	85.6	5	113.6	133	2
15KP75A	15KP75CA	75	83.8	91.7	5	122	124	2
15KP78A	15KP78CA	78	87.1	95.4	5	126.1	120	2
15KP85A	15KP85CA	85	94.9	104	5	137.6	110	2
15KP90A	15KP90CA	90	100.5	110.1	5	145.6	104	2
15KP100A	15KP100CA	100	111.7	122.3	5	161.3	94	2
15KP110A	15KP110CA	110	122.9	134.5	5	178.6	85	2
15KP120A	15KP120CA	120	134	146.8	5	192.3	79	2
15KP130A	15KP130CA	130	145.2	159	5	208.3	73	2

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15KP Series

Transient Voltage Suppressor

Part Number		Reverse Stand-Off Votage V_R	Breakdown Voltage V_{BR}@ I_T		Test Current I_T	Maximum Clamping Voltage V_C@ I_{pp}	Maximum Peak Pulse Current I_{pp}	Maximum Reverse Leakage I_R@ V_R
(Uni)	(Bi)	(V)	Min.(V)	Max.(V)	(mA)	(V)	(A)	(uA)
15KP150A	15KP150CA	150	167.6	183.5	5	241.9	62	2
15KP160A	15KP160CA	160	178.7	195.7	5	258.6	58	2
15KP170A	15KP170CA	170	189.9	207.9	5	272.7	55	2
15KP180A	15KP180CA	180	201.1	220.1	5	288.5	52	2
15KP200A	15KP200CA	200	223.4	244.6	5	319.1	47	2
15KP220A	15KP220CA	220	245.7	269.1	5	356	42	2
15KP240A	15KP240CA	240	268.1	293.5	5	384.6	39	2
15KP260A	15KP260CA	260	290.4	318	5	416.7	36	2
15KP280A	15KP280CA	280	312.8	342.4	5	454.5	33	2

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15KP Series

Transient Voltage Suppressor

Ratings and Characteristic Curves (T_A=+25°C, unless otherwise noted)

Figure 1: Peak Pulse Power Rating

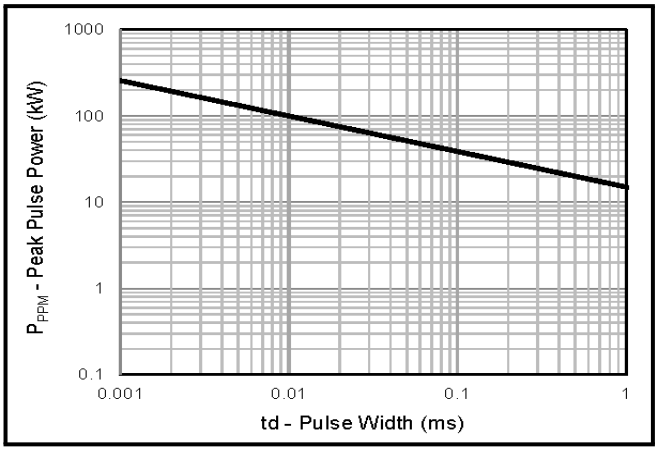


Figure 2: Pulse Derating Curve

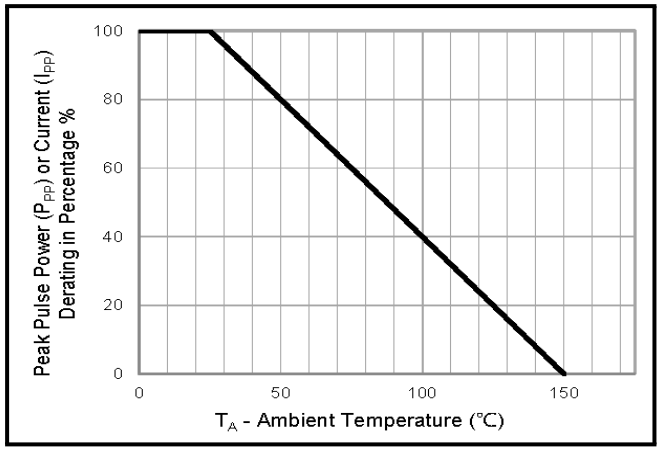


Figure 3: Pulse Waveform

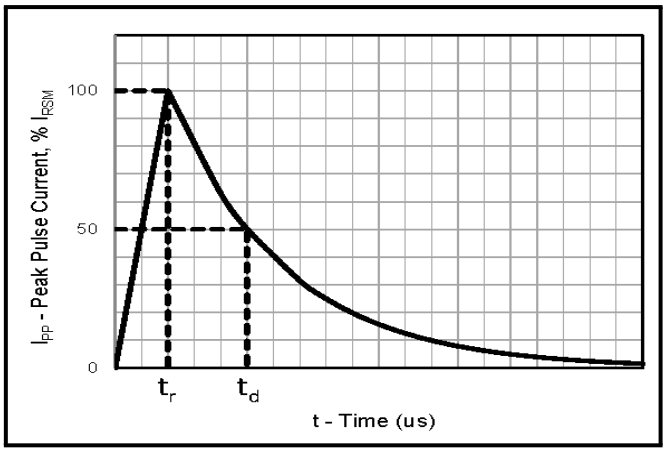


Figure 4 : Typical Junction Capacitance

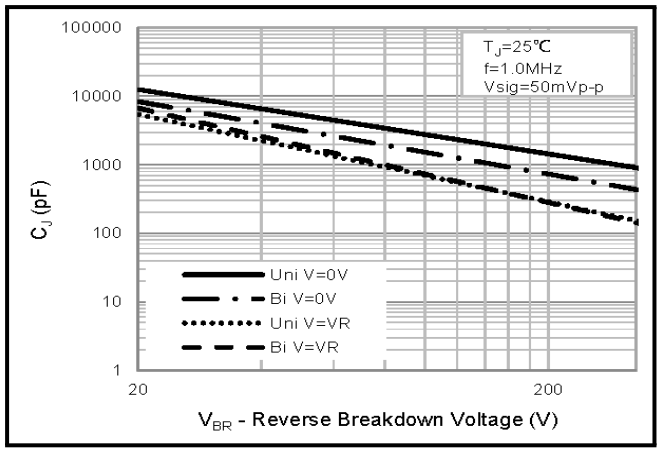


Figure 5: Steady State Power Dissipation Derating Curve

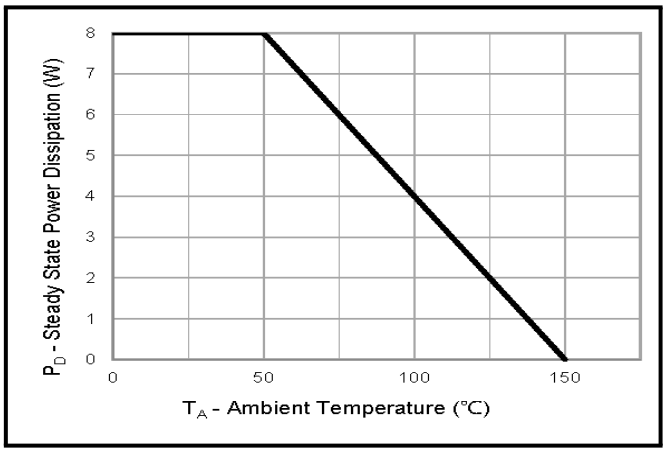
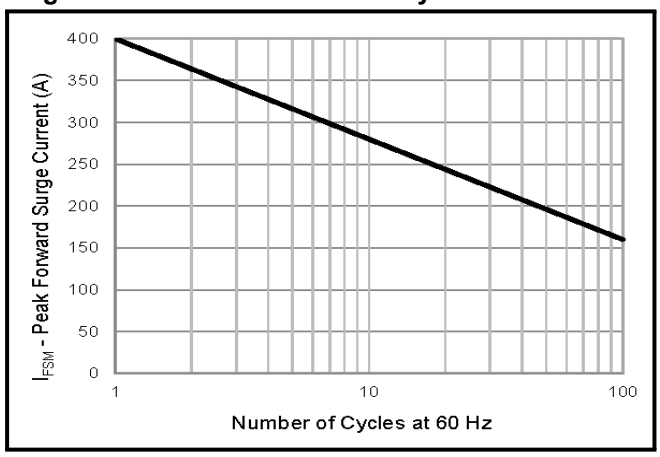


Figure 6 : Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only



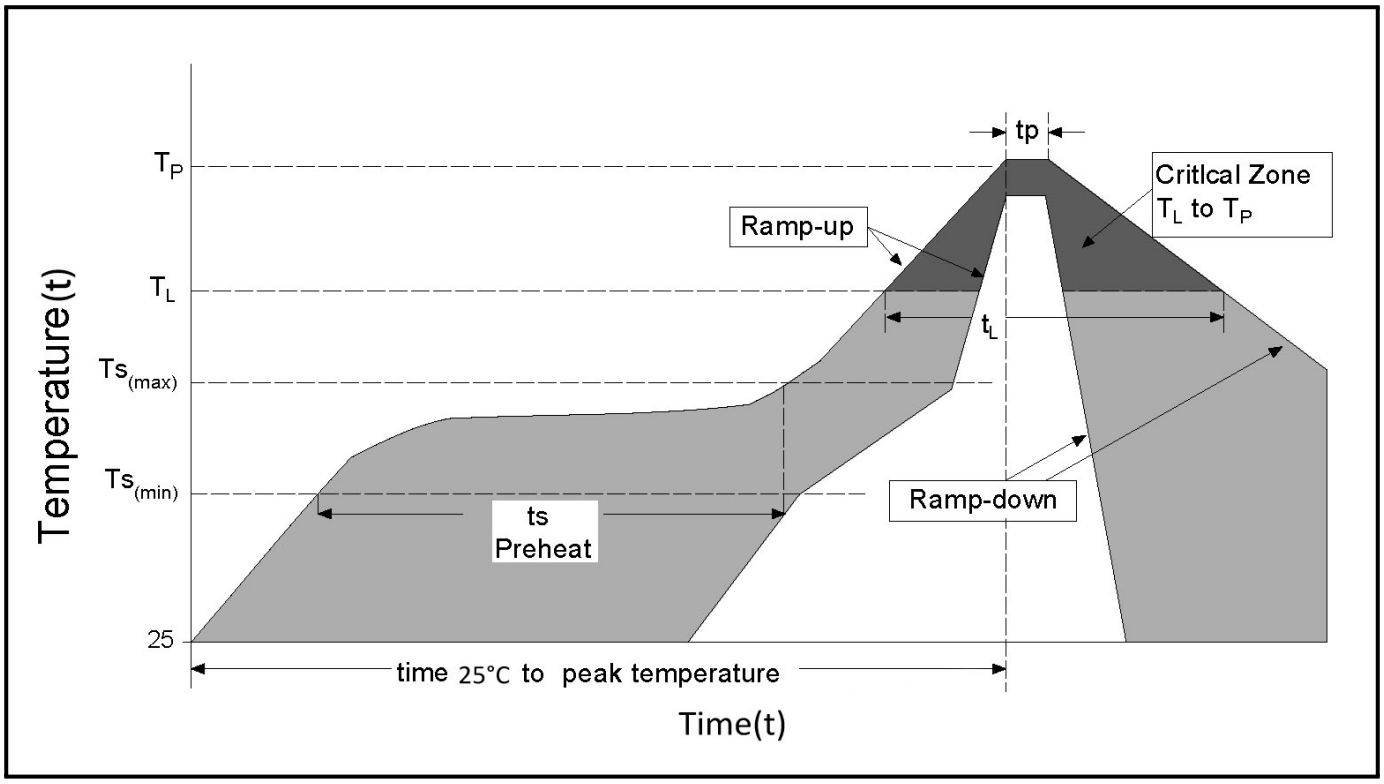
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15KP Series

Transient Voltage Suppressor

Soldering Parameters



Reflow Condition		Lead-free assembly
Pre Heat	- Temperature Min (T_S(min))	150°C
	- Temperature Max (T_S(max))	200°C
	- Time (min to max) (t_S)	60 - 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/second max
T_S(max) to T_L - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Time (t_L)	60 -150 secs
Peak Temperature (T_P)		$260^{+0/-5°C}$
Time within 5°C of actual peak Temperature (t_p)		20 - 40 secs
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (t)		8 minutes Max.
Do not exceed		260°C

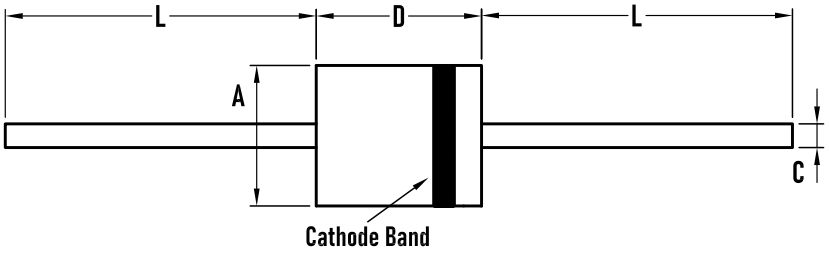
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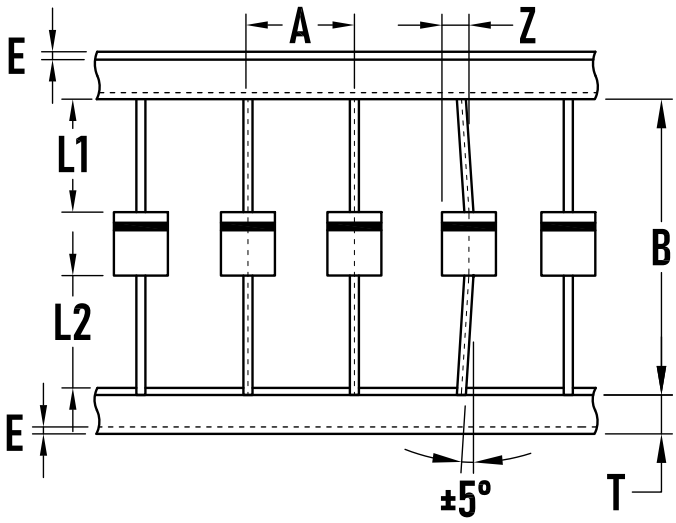
Transient Voltage Suppressor

Package Mechanical Data - P600



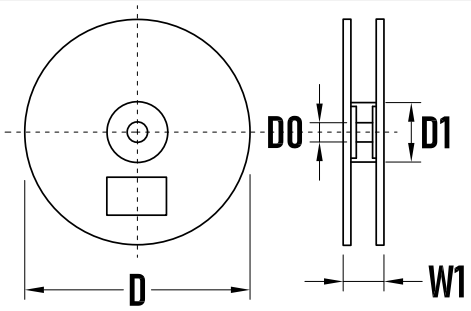
SYMBOL	Inches		MILLIMETER	
	MIN	MAX	MIN	MAX
A	0.339	0.358	8.6	9.1
C	0.048	0.052	1.22	1.32
D	0.339	0.358	8.6	9.1
L	1	–	25.4	–

Packaging Tape-P600



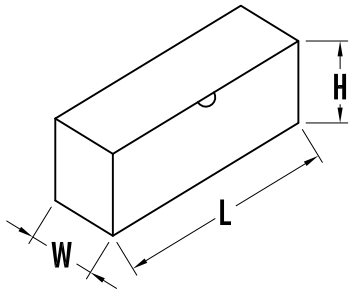
SYMBOL	Dimension(mm)
A	10.0±0.5
B	53.0±1.0
Z	1.2Max.
T	6.0±0.4
E	0.8Max.
L1-L2	1.0Max.

Packaging Reel



SYMBOL	Dimension(mm)
D	330.0±3.0
D0	16.4±2.0
D1	86.0±2.0
W1	76.0±3.0
Quantity	800PCS

Packaging BOX



SYMBOL	Dimension(mm)
L	250.0±5.0
W	75.0±5.0
H	114.0±5.0
Quantity	300PCS

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