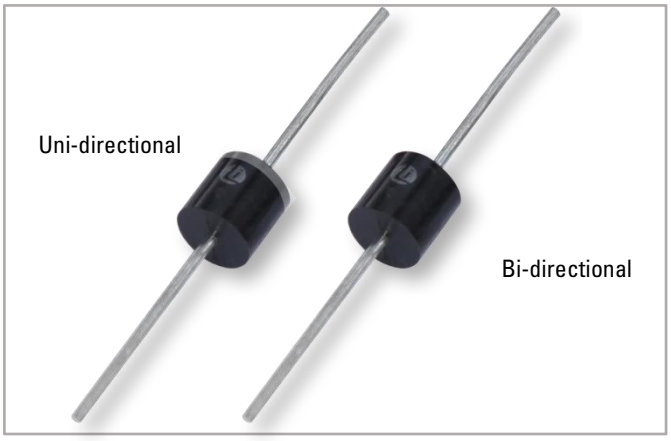
15KP Series
Axial Leaded – 15000W



Additional Information

Resources | Accessories | Samples

Maximum Ratings and Thermal Characteristics

(T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation by 10/1000μs Waveform(Fig.1) (Note 1)-Single Die Parts	P_{PPM}	15000	W
Power Dissipation on Infnite Heat Sink at T_L=75℃	P_D	8	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 2)	I_{FSM}	400	A
Operating Temperature Range	T_J	-55 to 150	℃
Storage Temperature Range	T_{STG}	-55 to 150	℃
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	8	℃/W
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	40	℃/W

Notes:

1. Non-repetitive current pulse , per Fig.3 and derated above T_J (initial) =25℃ per Fig.2.
2. Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 per minute maximum.

Description

The 15KP series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

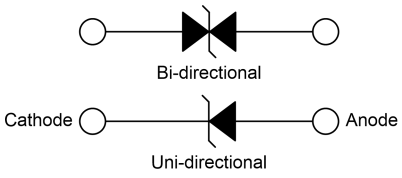
Features

- 15000W peak pulse power capability at 10/1000μs waveform, repetition rate (duty cycles):0.01%
- Glass passivated chip junction in P600 package
- Fast response time:typically less than 1.0ps from 0 Volts to V_B min
- Excellent clamping capability
- Typical failure mode is a short circuit
- Whisker test is conducted based on JEDEC JESD201A per its table 4a and 4c
- ESD protection of data lines in accordance with IEC 61000-4-2, 30kV(Air), 30kV (Contact)
- EFT protection of data lines in accordance with IEC 61000-4-4
- Low incremental surge resistance
- Typical I_R less than 2μA when V_R >30V
- High temperature to reflow soldering guaranteed: 260℃/ 20~40sec./ 0.375",(9.5mm) lead length, 5 lbs., (2.3kg) tension
- V_B @ T_J= V_B@25℃x (1+ α T x (T_J - 25))(α T:Temperature Coefficient, typical value is 0.1%)
- Matte tin lead–free plated
- Halogen free and RoHS compliant
- Pb-free E3 means 2nd level interconnect is Pb-free and the terminal finish material is tin(Sn) (IPC/JEDEC J-STD 609A.01)

Applications

TVS components are ideal for the protection of I/O interfaces, V_{CC} bus and other vulnerable circuits used in telecom, computer, industrial ICT equipment and consumer electronic applications.

Functional Diagram



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Electrical Characteristics (T_A=25℃ unless otherwise noted)

Part Number		Reverse Stand-Off Voltage	Breakdown Voltage @I_T		Test Current	Maximum Clamping Voltage @I_{PP}	Peak Pulse Current	Reverse Leakage @V_R
Uni.	Bi.	V_R(V)	$V_{B\ Min.}$(V)	$V_{B\ Max.}$(V)	I_T(mA)	V_C(V)	I_{PP}(A)	I_R(μA)
15KP17A	15KP17CA	17.0	18.99	21.22	50	29.3	515.4	5000
15KP18A	15KP18CA	18.0	20.11	22.65	50	30.9	488.7	5000
15KP20A	15KP20CA	20.0	22.34	24.96	20	34.3	440.2	1500
15KP22A	15KP22CA	22.0	24.57	27.46	10	37.1	407.0	500
15KP24A	15KP24CA	24.0	26.81	29.95	5	40.7	371.0	150
15KP26A	15KP26CA	26.0	29.04	32.45	5	44.0	343.2	50
15KP28A	15KP28CA	28.0	31.28	34.95	5	47.5	317.9	25
15KP30A	15KP30CA	30.0	33.51	37.44	5	50.7	297.8	15
15KP33A	15KP33CA	33.0	36.90	41.19	5	54.7	276.1	2
15KP36A	15KP36CA	36.0	40.20	44.93	5	59.8	252.5	2
15KP40A	15KP40CA	40.0	44.70	49.92	5	65.8	229.5	2
15KP43A	15KP43CA	43.0	48.00	53.67	5	69.8	216.3	2
15KP45A	15KP45CA	45.0	50.30	56.16	5	72.8	207.4	2
15KP48A	15KP48CA	48.0	53.60	59.91	5	77.7	194.3	2
15KP51A	15KP51CA	51.0	57.00	63.65	5	82.9	182.1	2
15KP54A	15KP54CA	54.0	60.30	67.39	5	87.7	172.2	2
15KP58A	15KP58CA	58.0	64.80	72.39	5	93.8	161.0	2
15KP60A	15KP60CA	60.0	67.00	74.88	5	97.4	155.0	2
15KP64A	15KP64CA	64.0	71.50	79.87	5	104.2	144.9	2
15KP70A	15KP70CA	70.0	78.20	87.36	5	113.6	132.9	2
15KP75A	15KP75CA	75.0	83.80	93.60	5	122.0	123.8	2
15KP78A	15KP78CA	78.0	87.10	97.35	5	126.1	119.7	2
15KP85A	15KP85CA	85.0	94.90	106.08	5	137.6	109.7	2
15KP90A	15KP90CA	90.0	100.50	112.32	5	145.6	103.7	2
15KP100A	15KP100CA	100.0	111.70	124.80	5	161.3	93.6	2
15KP110A	15KP110CA	110.0	122.90	137.28	5	178.6	84.5	2
15KP120A	15KP120CA	120.0	134.00	149.76	5	192.3	78.5	2
15KP130A	15KP130CA	130.0	145.20	162.25	5	208.3	72.5	2
15KP150A	15KP150CA	150.0	167.60	187.21	5	241.9	62.4	2
15KP160A	15KP160CA	160.0	178.70	199.69	5	258.6	58.4	2
15KP170A	15KP170CA	170.0	189.90	212.17	5	272.7	55.4	2
15KP180A	15KP180CA	180.0	201.10	224.65	5	288.5	52.3	2
15KP200A	15KP200CA	200.0	223.40	249.61	5	319.1	47.3	2
15KP220A	15KP220CA	220.0	245.70	274.57	5	352.5	42.8	2
15KP240A	15KP240CA	240.0	268.10	299.53	5	384.6	39.3	2
15KP260A	15KP260CA	260.0	290.40	324.49	5	416.7	36.2	2
15KP280A	15KP280CA	280.0	312.80	349.45	5	454.5	33.2	2

Notes:

For bidirectional type having V_R of 30 volts and less, the I_R limit is double.

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Ratings and Characteristic Curves (T_A=25℃ unless otherwise noted)

Figure 1:
Peak Pulse Power Rating Curve

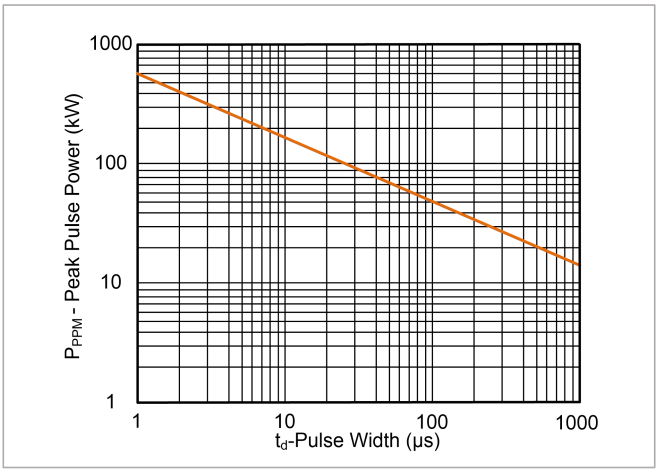


Figure 2:
Pulse Derating Curve

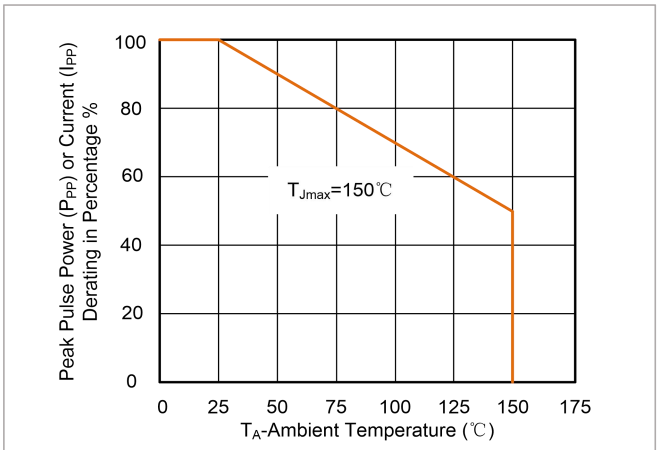


Figure 3:
Pulse Waveform

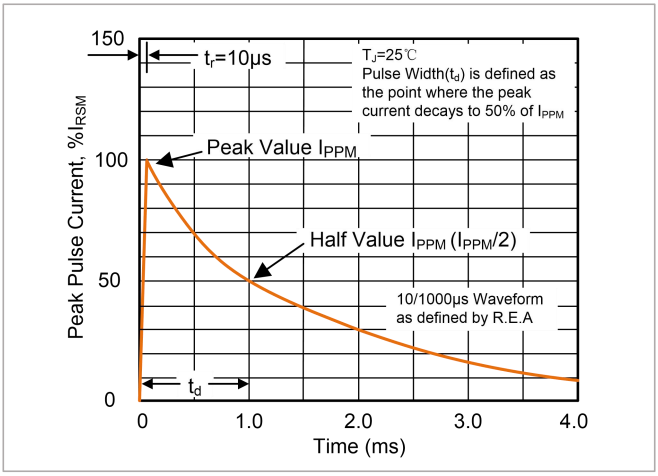


Figure 4:
Typical Junction Capacitance

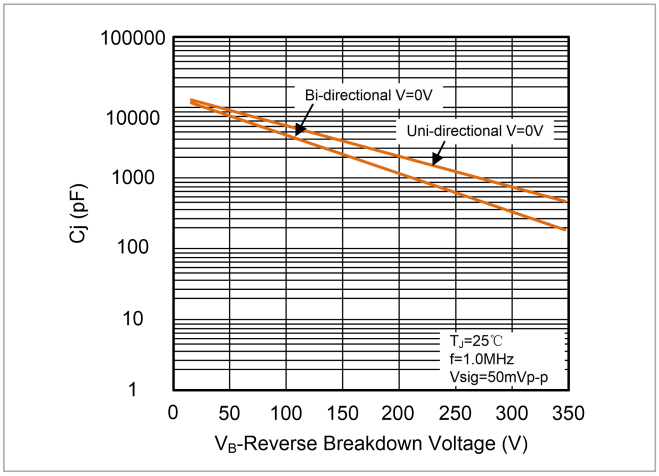


Figure 5:
Steady State Power Dissipation Derating Curve

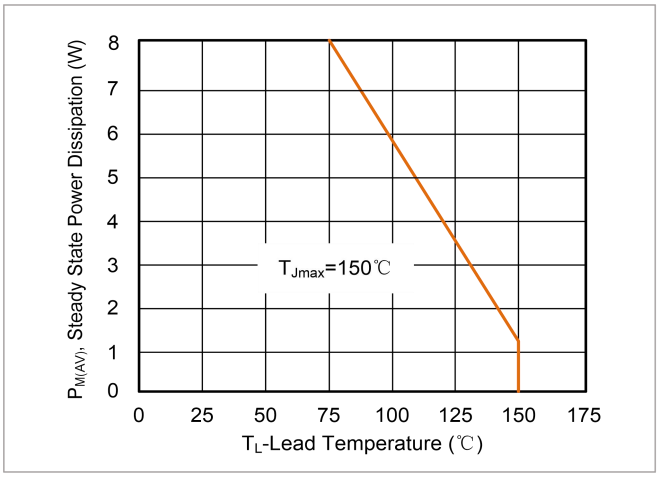
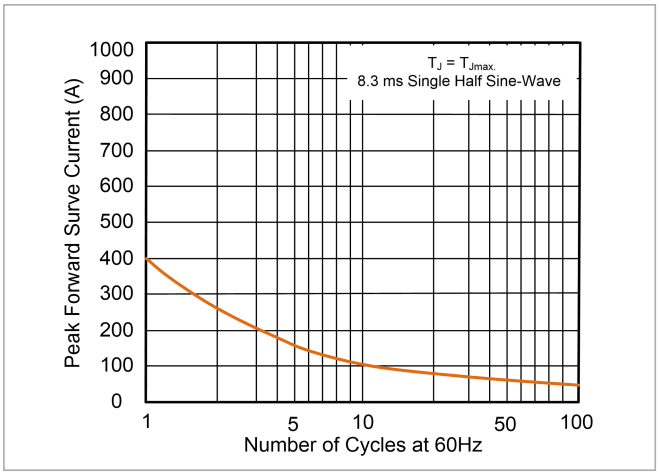


Figure 6:
Maximum Non-Repetitive Forward Surge Current Uni-Directional



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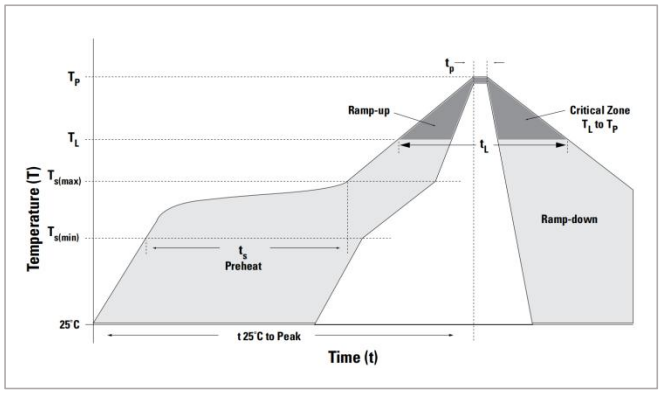
Soldering Parameters

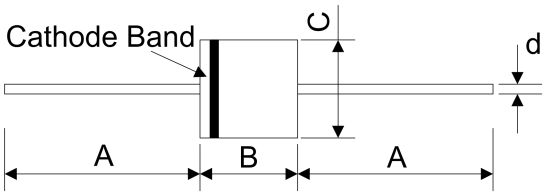
Reflow Condition		Lead–free assembly
Pre Heat	**-Temperature Min ($T_{S\ min}$)**	150℃
	-Temperature Max ($T_{S\ max}$)	200℃
	-Time (min to max) (t_S)	60 – 180 secs
Average ramp-up rate(Liquidus Temp (T_L) to peak		3℃/second max.
$T_{S\ (max)}$ to T_L-Ramp-up Rate		3℃/second max.
Reflow	**-Temperature (T_L) (Liquidus)**	217℃
	-Time (min to max) (t_L)	60-150 seconds
Peak Temperature (T_P)		260℃
Time within 5℃ of actual Peak Temperature (t_P)		20-40 seconds
Ramp-down Rate		6℃/second max.
Time 25℃ to Peak Temperature		8 minutes max.
Do not exceed		260℃



Flow/Wave Soldering (Solder Dipping)	
Peak Temperature :	265℃
Dipping Time :	10 seconds (max.)
Soldering :	1 time

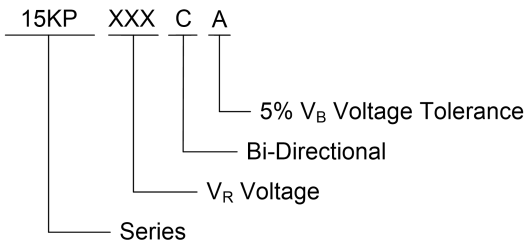
Dimensions

P600

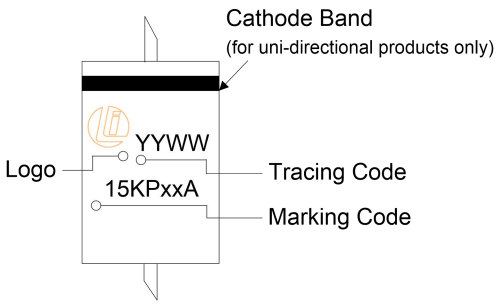


Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	25.40	-	1.000	-
B	8.60	9.10	0.340	0.360
C	8.60	9.10	0.340	0.360
d	1.19	1.35	0.047	0.053

Part Numbering System



Part Marking System



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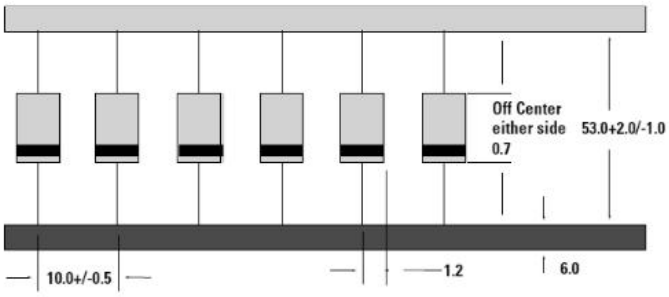
Packaging

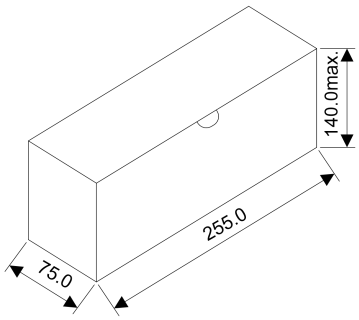
Part number	Component Package	Quantity	Packaging Option	Packaging Specification
15KPxxxXX/L/Box	P600	300	Tape & Box	EIA STD RS-296
15KPxxxXX/L/TR13	P600	800	Tape & Reel	EIA STD RS-296

Tape/Box/Reel Specification

Tape（Unit: mm）

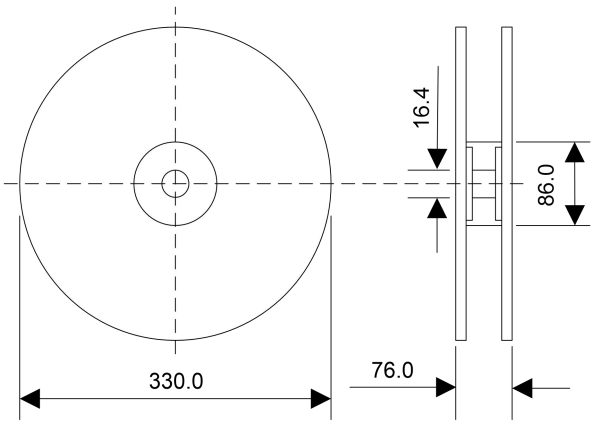


Box（Unit: mm）



Quantity：300pcs/box

Reel（Unit: mm）



Quantity：800pcs/reel