

15000W Transient Voltage Suppressors

15KPAXXA/CA



R-6

Leaded Plastic Package
RoHS compliant

FEATURES:

1. Peak power dissipation 15000W @10 x 1000 μ s Pulse
2. Low profile package.
3. Excellent clamping capability.
4. Glass passivated junction.
5. Fast response time: typically less than 1ps from 0 Volts to BV min
6. Typical I_R less than 2 μ A when V_{BR} min above 36V.
7. IEC 61000-4-2 ESD 30KV(Air), 30KV(Contact)
8. ESD protection of data lines in accordance with IEC 61000-4-2
9. EFT protection of data lines in accordance with IEC 61000-4-4
10. Halogen free and RoHS compliant
11. Lead-free finish

ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

PARAMETER	SYMBOL	VALUE	UNIT
Peak Pulse Power Dissipation on 10/1000 μ s Waveform(Note 1, FIG.1)	P_{PPM}	Min 15000	W
Power Dissipation on Infinite Heat Sink at $T_L=75^\circ\text{C}$	P_D	8	W
Peak Pulse Current of on 10/1000 μ s Waveform (Note 1, FIG.3)	I_{PPM}	See Next Table	A
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave (Note 2)	I_{FSM}	400	A
Operating Junction Temperature Range	T_J	-55 to 150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to 150	$^\circ\text{C}$

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above $T_A=25^\circ\text{C}$ per Fig.2.
2. Measured on 8.3ms single half sine-wave, or equivalent square wave, for Unidirectional device only.



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ELECTRICAL CHARACTERISTICS

(T_A = 25°C unless otherwise specified)

Type Number		Reverse Stand-Off Voltage	Breakdown Voltage Min. @I _T	Breakdown Voltage Max. @ I _T	Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _{RMW}
(Uni)	(Bi)	V _{RMW(V)}	V _{BR MIN(V)}	V _{BR MAX(V)}	I _T (mA)	V _{C(V)}	I _{PP(A)}	I _{R(μA)}
15KPA17A	15KPA17CA	17	18.99	20.79	50	29.3	515.4	5000
15KPA18A	15KPA18CA	18	20.11	22.01	50	30.9	488.7	5000
15KPA20A	15KPA20CA	20	22.34	24.46	20	34.3	440.2	1500
15KPA22A	15KPA22CA	22	24.57	26.91	10	37.1	407	500
15KPA24A	15KPA24CA	24	26.81	29.35	5	40.7	371	150
15KPA26A	15KPA26CA	26	29.04	31.8	5	44	343.2	50
15KPA28A	15KPA28CA	28	31.28	34.24	5	47.5	317.9	25
15KPA30A	15KPA30CA	30	33.51	36.7	5	50.7	297.8	15
15KPA33A	15KPA33CA	33	36.9	40.4	5	54.7	276.1	2
15KPA36A	15KPA36CA	36	40.2	44	5	59.8	252.5	2
15KPA40A	15KPA40CA	40	44.7	48.9	5	65.8	229.5	2
15KPA43A	15KPA43CA	43	48	52.6	5	69.8	216.3	2
15KPA45A	15KPA45CA	45	50.3	55	5	72.8	207.4	2
15KPA48A	15KPA48CA	48	53.6	58.7	5	77.7	194.3	2
15KPA51A	15KPA51CA	51	57	62.4	5	82.9	182.1	2
15KPA54A	15KPA54CA	54	60.3	66	5	87.7	172.2	2
15KPA58A	15KPA58CA	58	64.8	70.9	5	93.8	161	2
15KPA60A	15KPA60CA	60	67	73.4	5	97.4	155	2
15KPA64A	15KPA64CA	64	71.5	78.3	5	104.2	144.9	2
15KPA70A	15KPA70CA	70	78.2	85.6	5	113.6	132.9	2
15KPA75A	15KPA75CA	75	83.8	91.7	5	122	123.8	2
15KPA78A	15KPA78CA	78	87.1	95.4	5	126.1	119.7	2
15KPA85A	15KPA85CA	85	94.9	104	5	137.6	109.7	2
15KPA90A	15KPA90CA	90	100.5	110.1	5	145.6	103.7	2
15KPA100A	15KPA100CA	100	111.7	122.3	5	161.3	93.6	2
15KPA110A	15KPA110CA	110	122.9	134.5	5	178.6	84.5	2
15KPA120A	15KPA120CA	120	134	146.8	5	192.3	78.5	2
15KPA130A	15KPA130CA	130	145.2	159	5	208.3	72.5	2
15KPA150A	15KPA150CA	150	167.6	183.5	5	241.9	62.4	2
15KPA160A	15KPA160CA	160	178.7	195.7	5	258.6	58.4	2
15KPA170A	15KPA170CA	170	189.9	207.9	5	272.7	55.4	2
15KPA180A	15KPA180CA	180	201.1	220.1	5	288.5	52.3	2

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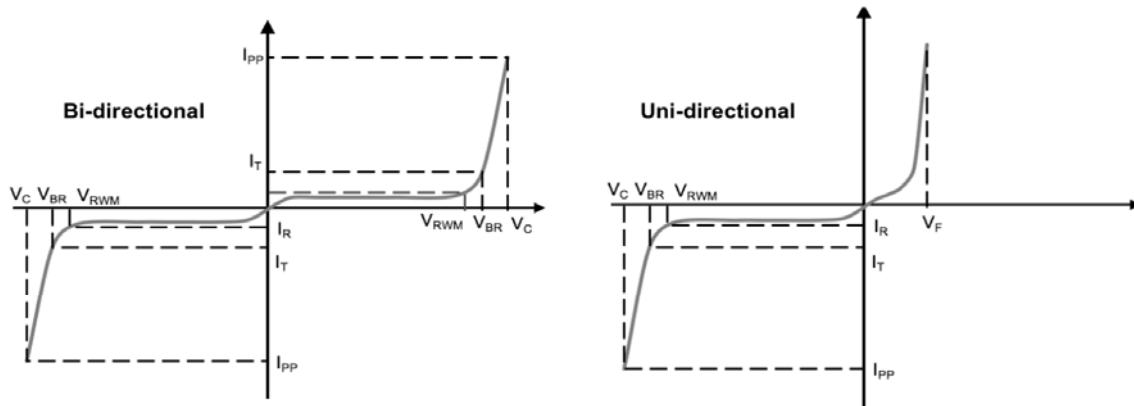
ELECTRICAL CHARACTERISTICS (CONTD...)

Type Number		Reverse Stand-Off Voltage	Breakdown Voltage Min. @I _T	Breakdown Voltage Max. @ I _T	Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _{RMW}
(Uni)	(B _i)	V _{RMW(V)}	V _{BR MIN(V)}	V _{BR MAX(V)}	I _T (mA)	V _{C(V)}	I _{PP(A)}	I _{R(μA)}
15KPA200A	15KPA200CA	200	223.4	244.6	5	319.1	47.3	2
15KPA220A	15KPA220CA	220	245.7	269.1	5	356	42.4	2
15KPA240A	15KPA240CA	240	268.1	293.5	5	384.6	39.3	2
15KPA260A	15KPA260CA	260	290.4	318	5	416.7	36.2	2
15KPA280A	15KPA280CA	280	312.8	342.4	5	454.5	33.2	2

NOTES

1. For Bi-directional type having V_{RMW} of 30 Volts and less, the I_R limit is double.
2. For parts without A, the V_{BR} is ± 10% and V_C is 5% higher than with A parts

I-V CHARACTERISTIC CURVES



- I_{PPM}** Peak Pulse Power Dissipation - Max power dissipation
- V_{RWM}** Reverse Stand-off Voltage - Maximum voltage that can be applied to TVS without operation
- V_{BR}** Breakdown Voltage – Maximum voltage that flows through the TVS at a specified current (I_T)
- V_C** Clamping Voltage – Peak voltage measured across the TVS at a specified I_{PPM} (peak impulse current)
- I_R** Reverse Leakage Current – Current measured at V_R
- V_F** Forward Voltage Drop for Uni-directional

TYPICAL CHARACTERISTIC CURVES

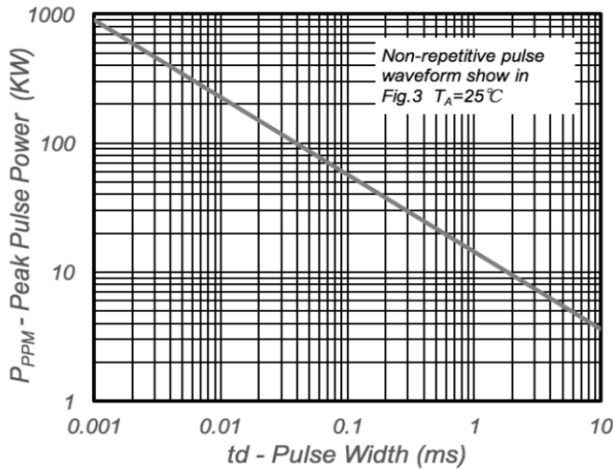


Fig.1 - Peak Pulse Power Rating

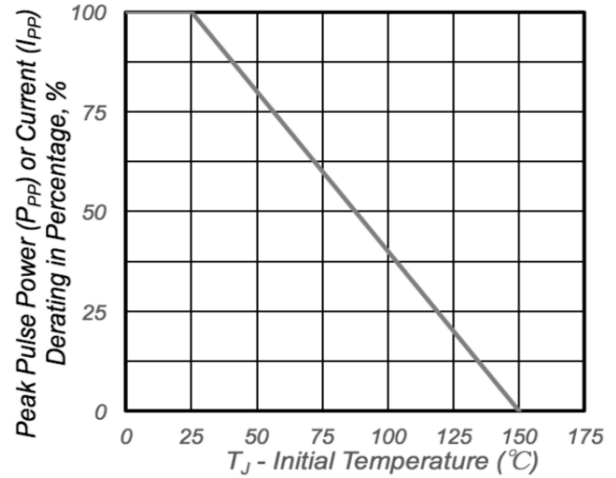


Fig.2 - Pulse Derating Curve

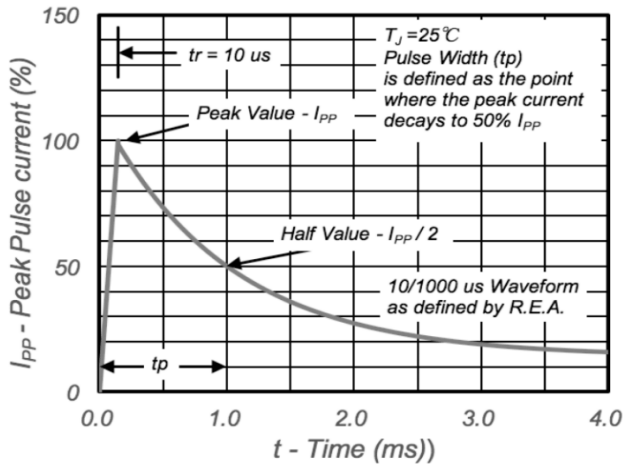


Fig.3 - Pulse Waveform

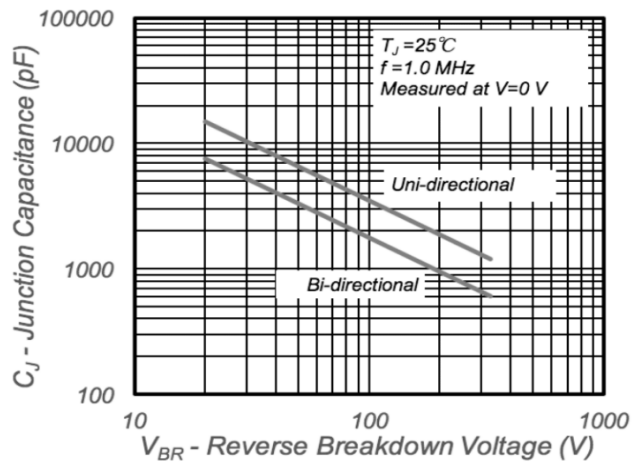
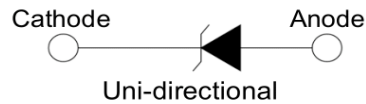
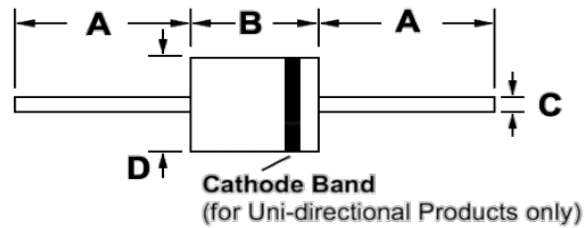


Fig.4 - Typical Junction Capacitance

PACKAGE DETAILS



Mechanical Data :

1. Case: R-6 Molded Plastic
2. Mounting Position: Any
3. Polarity: by cathode band denotes uni-directional device, none cathode band denotes bi-directional device.
4. Terminal: Solder plated

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	25.4	---	1	---
B	8.6	9.5	0.34	0.375
C	1.2	1.3	0.048	0.052
D	8.6	9.5	0.34	0.375



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Recommended Product Storage Environment for Discrete Semiconductor Devices

This storage environment assumes that the Diodes and transistors are packed properly inside the original packing supplied by CDIL.

- Temperature 5 °C to 30 °C
- Humidity between 40 to 70 %RH
- Air should be clean.
- Avoid harmful gas or dust.
- Avoid outdoor exposure or storage in areas subject to rain or water spraying .
- Avoid storage in areas subject to corrosive gas or dust. Product shall not be stored in areas exposed to direct sunlight.
- Avoid rapid change of temperature.
- Avoid condensation.
- Mechanical stress such as vibration and impact shall be avoided.
- The product shall not be placed directly on the floor.
- The product shall be stored on a plane area. They should not be turned upside down. They should not be placed against the wall.

Shelf Life of CDIL Products

The shelf life of products is the period from product manufacture to shipment to customers. The product can be unconditionally shipped within this period. The period is defined as 2 years.

If products are stored longer than the shelf life of 2 years the products shall be subjected to quality check as per CDIL quality procedure.

The products are further warranted for another one year after the date of shipment subject to the above conditions in CDIL original packing.

Floor Life of CDIL Products and MSL Level

When the products are opened from the original packing, the floor life will start.

For this, the following JEDEC table may be referred:

JEDEC MSL Level		
Level	Time	Condition
1	Unlimited	≤30 °C / 85% RH
2	1 Year	≤30 °C / 60% RH
2a	4 Weeks	≤30 °C / 60% RH
3	168 Hours	≤30 °C / 60% RH
4	72 Hours	≤30 °C / 60% RH
5	48 Hours	≤30 °C / 60% RH
5a	24 Hours	≤30 °C / 60% RH
6	Time on Label(TOL)	≤30 °C / 60% RH



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Customer Notes

Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Data Sheet and on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).

CDIL strives for continuous improvement and reserves the right to change the specifications of its products without prior notice.



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