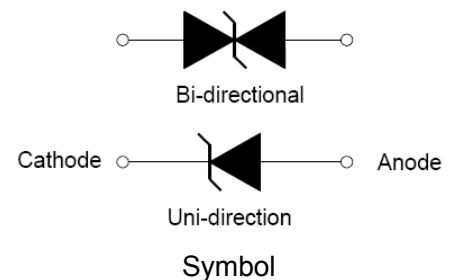


## DESCRIPTION:

The 15KP series of high current uni/bi-directional transient suppressors are designed for A.C. line protection and high power DC bus clamping applications. These devices offer uni/bi-directional port protection from 17 volts to 280 volts. They provide a clamping voltage lower than the avalanche voltage. Therefore, any voltage rise due to increased current conduction is contained to a minimum, providing the best possible protection level. They can also be connected in series and/or parallel to create very high capacity protection solutions.



## FEATURES:

- ✧ Low zener impedance.
- ✧ Excellent clamping capability.
- ✧ JEDEC R-6/P-600 Molded Plastic.
- ✧ Repetition rate (duty cycle): 0.01%.
- ✧ Color band denoted cathode except bidirectional.
- ✧ High temperature soldering: 260°C/10s at terminals.
- ✧ Glass passivated chip junction in R-6/P600 package.
- ✧ 15000W Peak Pulse power capability at 10×1000µs waveform.
- ✧ Fast response time: typically less than 1.0ps from 0V to  $V_{BR}$  min.
- ✧ AEC-Q101 qualified.

## ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ , RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation on 10/1000µs waveform	$P_{PP}$	15000	W
Peak pulse current of on 10/1000µs waveform	$I_{PP}$	See next table	A
Steady state power dissipation at $T_L=75^\circ\text{C}$	$P_{M(AV)}$	8	W
Operating junction and Storage temperature range	$T_{STG}, T_J$	-55 to +125	°C
Peak forward surge current, 8.3ms single half sine-wave	$I_{FSM}$	400	A

### ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ )

Part Number		$V_R$	$I_R@V_R$	$V_{BR}@I_T$		$I_T$	$V_C@I_{PP}$	$I_{PP}^{(1)}$
Uni-Polar	Bi-Polar	V	$\mu\text{A}$	min(V)	max(V)	mA	max(V)	A
15KP17A	15KP17CA	17.0	5000	18.90	20.90	5	29.3	515.4
15KP18A	15KP18CA	18.0	5000	20.00	22.10	5	30.9	488.7
15KP20A	15KP20CA	20.0	1500	22.20	24.50	5	34.3	440.2
15KP22A	15KP22CA	22.0	500	24.40	26.90	5	37.1	407.0
15KP24A	15KP24CA	24.0	150	26.70	29.50	5	40.7	371.0
15KP26A	15KP26CA	26.0	50	28.90	31.90	5	44.0	343.2
15KP28A	15KP28CA	28.0	25	31.10	34.40	5	47.5	317.9
15KP30A	15KP30CA	30.0	15	33.30	36.80	5	50.7	297.8
15KP33A	15KP33CA	33.0	2	36.70	40.60	5	54.7	276.1
15KP36A	15KP36CA	36.0	2	40.00	44.20	5	59.8	252.5
15KP40A	15KP40CA	40.0	2	44.40	49.10	5	65.8	229.5
15KP43A	15KP43CA	43.0	2	47.80	52.80	5	69.8	216.3
15KP45A	15KP45CA	45.0	2	50.00	55.30	5	72.8	207.4
15KP48A	15KP48CA	48.0	2	53.30	58.90	5	77.7	194.3
15KP51A	15KP51CA	51.0	2	56.70	62.70	5	82.9	182.1
15KP54A	15KP54CA	54.0	2	60.00	66.30	5	87.7	172.2
15KP58A	15KP58CA	58.0	2	64.40	71.20	5	93.8	161.0
15KP60A	15KP60CA	60.0	2	66.70	73.70	5	97.4	155.0
15KP64A	15KP64CA	64.0	2	71.10	78.60	5	104.2	144.9
15KP70A	15KP70CA	70.0	2	77.80	86.00	5	113.6	132.9
15KP75A	15KP75CA	75.0	2	83.30	92.10	5	122.0	123.8
15KP78A	15KP78CA	78.0	2	86.70	95.80	5	126.1	119.7
15KP85A	15KP85CA	85.0	2	94.40	104.0	5	137.6	109.7
15KP90A	15KP90CA	90.0	2	100.0	111.0	5	145.6	103.7
15KP100A	15KP100CA	100.0	2	100.0	111.0	5	161.3	93.6
15KP110A	15KP110CA	110.0	2	111.0	123.0	5	178.6	84.5
15KP120A	15KP120CA	120.0	2	122.0	135.0	5	192.3	78.5
15KP130A	15KP130CA	130.0	2	133.0	147.0	5	208.3	72.5
15KP150A	15KP150CA	150.0	2	144.0	159.0	5	241.9	62.4
15KP160A	15KP160CA	160.0	2	167.0	185.0	5	258.6	58.4

## ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , continued)

Part Number		$V_R$	$I_R@V_R$	$V_{BR}@I_T$		$I_T$	$V_C@I_{PP}$	$I_{PP}^{①}$
Uni-Polar	Bi-Polar	V	$\mu\text{A}$	min(V)	max(V)	mA	max(V)	A
15KP170A	15KP170CA	170.0	2	178.0	197.0	5	272.7	55.4
15KP180A	15KP180CA	180.0	2	189.0	209.0	5	288.5	52.3
15KP200A	15KP200CA	200.0	2	224.0	247.0	5	319.1	47.3
15KP220A	15KP220CA	220.0	2	246.0	272.0	5	352.5	42.8
15KP240A	15KP240CA	240.0	2	268.0	292.0	5	384.6	39.3
15KP260A	15KP260CA	260.0	2	289.0	317.0	5	416.7	36.2
15KP280A	15KP280CA	280.0	2	311.0	341.0	5	454.5	33.2

① Surge waveform: 10/1000 $\mu\text{s}$

$V_R$  : Stand-off Voltage -- Maximum voltage that can be applied

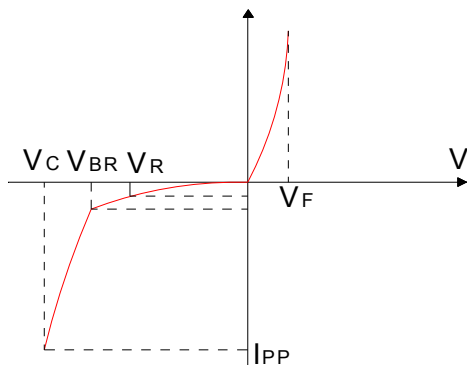
$V_{BR}$ : Breakdown Voltage

$V_C$ : Clamping Voltage -- Peak voltage measured across the suppressor at a specified  $I_{pp}$

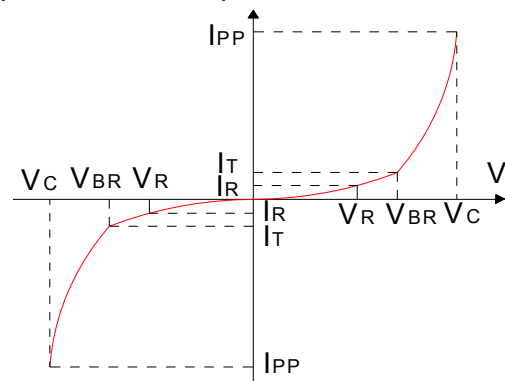
$I_R$ : Reverse Leakage Current

## RATINGS AND V-I CHARACTERISTICS CURVES ( $T_A=25^\circ\text{C}$ , unless otherwise noted)

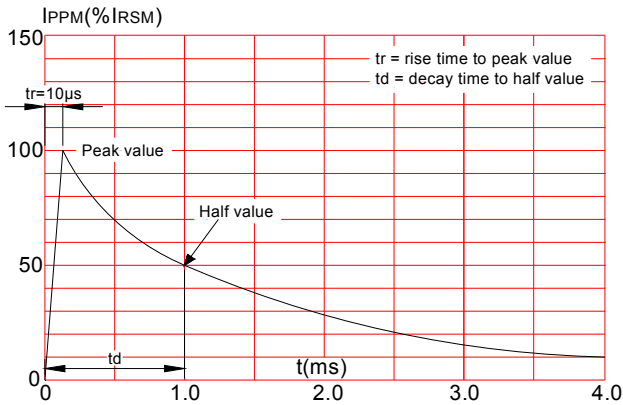
**FIG.1:V- I curve characteristics (Uni-directional)**



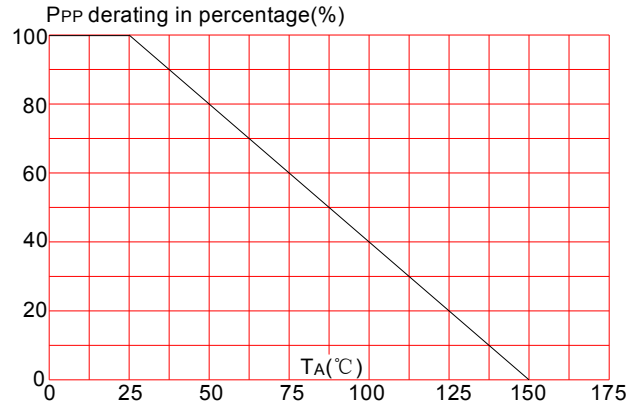
**FIG.2:V- I curve characteristics (Bi-directional)**



**FIG.3: Pulse waveform**

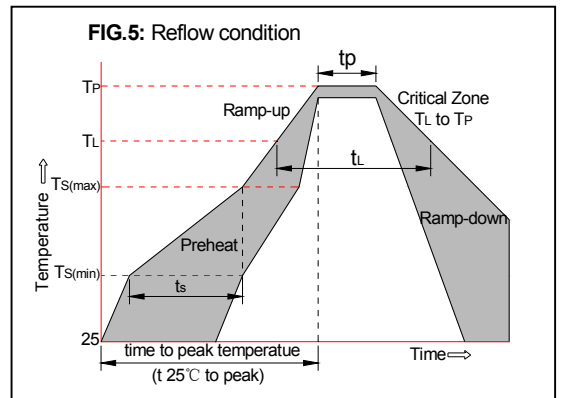


**FIG.4: Pulse derating curve**

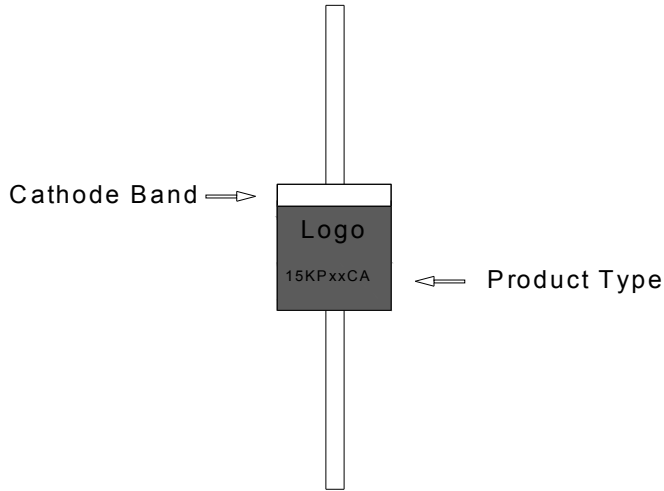


## SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see FIG.5)
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 (Liquid us Temp ( $T_L$ ) to peak)		3°C/sec. Max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature( $T_L$ )(Liquid us)	+217°C
	-Temperature( $t_L$ )	60-150 secs.
Peak Temp ( $T_p$ )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp ( $t_p$ )		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp ( $T_p$ )		8 min. Max
Do not exceed		+260°C

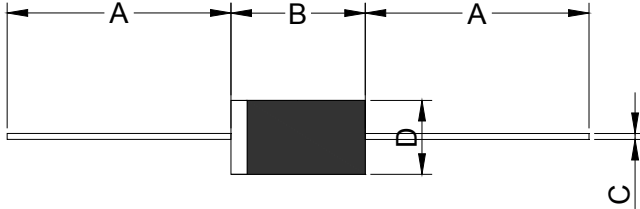


## MARKING & ORDERING INFORMATION



15KP XX C A  
 (1) (2) (3) (4)  
 (1) Series: 15000 watts series  
 (2) Reverse Stand-off Voltage  
 (3) Bi-directional  
 (4) 5%  $V_{BR}$  Voltage tolerance

## PACKAGE MECHANICAL DAT



Ref.	Dimensions			
	Inches		Millimeters	
	Min.	Max.	Min.	Max.
A	1.000	-	25.40	-
B	0.339	0.370	8.60	9.40
C	0.048	0.052	1.20	1.40
D	0.340	0.360	8.60	9.10

Part Number	Case Type	Quantity	Packing Option
15KPXXCA/A	R6/P600	300	Box

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