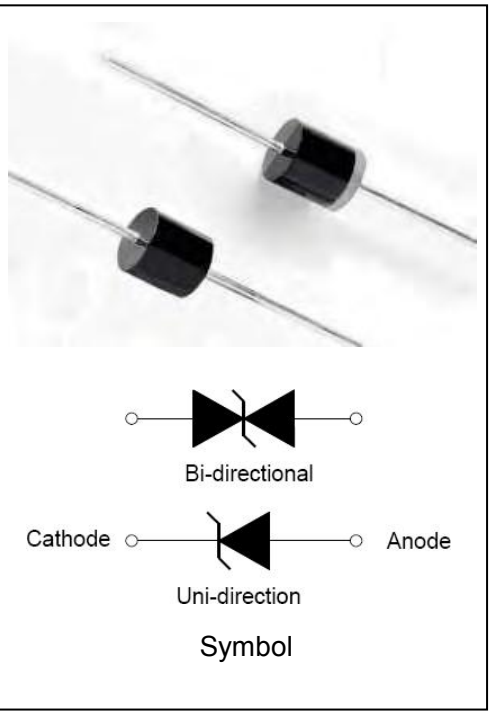
30KPXXH Series 30KW Transient Voltage Suppressor

DESCRIPTION:

The 30KP 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 28 volts to 288 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℃/10s at terminals.
- ✧ Glass passivated chip junction in R-6/P600 package.
- ✧ 30000W Peak Pulse power capability at 10×1000μs waveform.
- ✧ Fast response time: typically less than 1.0ps from 0V to V_{BR}min.
- ✧ High reliability application and automotive grade (AEC-Q101 qualified).

IEC COMPATIBILITY:

- ✧ ISO16750-2 P5A 12V system (90V/4Ω/200ms 10c)
- ✧ ISO16750-2 P5A 24V system (151V/8Ω/200ms 10c)

ABSOLUTE MAXIMUM RATINGS (T_A=25ºC, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation on 10/1000μs waveform	P_{PP}	30000	W
Peak pulse current of on 10/1000μs waveform	I_{PP}	See next table	A
Steady state power dissipation at T_L=75℃	$P_{M(AV)}$	8	W
Operating junction and Storage temperature range	T_{STG}, T_J	-55 to +125	℃
Peak forward surge current, 8.3ms single half sine-wave	I_{FSM}	400	A

ELECTRICAL CHARACTERISTICS (T_A=25℃)

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	μA	min(V)	max(V)	mA	max(V)	A
30KP28AH	30KP28CAH	28.0	5000	31.28	33.60	50	50.0	600.0
30KP30AH	30KP30CAH	30.0	5000	33.51	36.00	50	55.2	543.5
30KP33AH	30KP33CAH	33.0	5000	36.90	39.60	50	58.5	512.8
30KP36AH	30KP36CAH	36.0	5000	40.20	43.20	50	61.8	485.4
30KP39AH	30KP39CAH	39.0	2000	43.60	46.80	20	67.2	446.4
30KP42AH	30KP42CAH	42.0	1000	46.90	50.40	10	72.0	416.7
30KP43AH	30KP43CAH	43.0	1000	48.00	51.60	10	73.0	411.0
30KP45AH	30KP45CAH	45.0	250	50.30	54.00	5	77.4	387.6
30KP48AH	30KP48CAH	48.0	150	53.60	57.60	5	81.6	367.6
30KP51AH	30KP51CAH	51.0	50	57.00	61.20	5	86.4	347.2
30KP54AH	30KP54CAH	54.0	20	60.30	64.80	5	91.4	328.2
30KP58AH	30KP58CAH	58.0	20	64.80	69.60	5	92.4	324.7
30KP60AH	30KP60CAH	60.0	15	67.00	72.00	5	102.0	294.1
30KP64AH	30KP64CAH	64.0	10	71.50	76.80	5	104.0	288.5
30KP66AH	30KP66CAH	66.0	2	73.70	79.20	5	107.0	280.4
30KP70AH	30KP70CAH	70.0	2	78.20	84.00	5	109.0	275.2
30KP71AH	30KP71CAH	71.0	2	79.30	85.20	5	111.5	269.1
30KP72AH	30KP72CAH	72.0	2	80.40	86.40	5	114.0	263.2
30KP75AH	30KP75CAH	75.0	2	83.80	90.00	5	119.4	251.3
30KP78AH	30KP78CAH	78.0	2	87.10	93.60	5	129.0	232.6
30KP84AH	30KP84CAH	84.0	2	93.80	100.80	5	139.2	215.5
30KP90AH	30KP90CAH	90.0	2	100.50	108.00	5	146.4	204.9
30KP96AH	30KP96CAH	96.0	2	107.20	115.20	5	156.0	192.3
30KP102AH	30KP102CAH	102.0	2	113.90	122.40	5	165.6	181.2
30KP108AH	30KP108CAH	108.0	2	120.60	129.60	5	175.2	171.2
30KP120AH	30KP120CAH	120.0	2	134.00	144.00	5	194.4	154.3
30KP132AH	30KP132CAH	132.0	2	147.40	158.40	5	213.0	140.8
30KP144AH	30KP144CAH	144.0	2	160.80	172.80	5	223.2	134.4
30KP150AH	30KP150CAH	150.0	2	167.60	180.00	5	233.4	128.5
30KP156AH	30KP156CAH	156.0	2	174.30	187.20	5	245.0	122.4

ELECTRICAL CHARACTERISTICS (T_A=25℃, 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	μA	min(V)	max(V)	mA	max(V)	A
30KP160AH	30KP160CAH	160.0	2	178.70	192.00	5	252.6	118.8
30KP168AH	30KP168CAH	168.0	2	187.70	201.60	5	272.4	110.1
30KP170AH	30KP170CAH	170.0	2	189.90	204.00	5	275.0	109.1
30KP180AH	30KP180CAH	180.0	2	201.10	216.00	5	290.4	103.3
30KP198AH	30KP198CAH	198.0	2	221.20	237.60	5	319.8	93.8
30KP216AH	30KP216CAH	216.0	2	241.30	259.20	5	348.6	86.1
30KP240AH	30KP240CAH	240.0	2	268.10	288.00	5	387.0	77.5
30KP258AH	30KP258CAH	258.0	2	288.20	309.60	5	414.4	72.4
30KP260AH	30KP260CAH	260.0	2	290.40	312.00	5	416.0	72.1
30KP270AH	30KP270CAH	270.0	2	301.60	324.00	5	436.2	68.8
30KP280AH	30KP280CAH	280.0	2	312.80	336.00	5	464.0	64.7
30KP288AH	30KP288CAH	288.0	2	321.70	345.60	5	469.9	63.8
30KP400AH	30KP400CAH	400.0	2	447.00	494.00	5	648.0	46.3

① Surge waveform: 10/1000μs

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 Ipp

I_R： Reverse Leakage Current

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

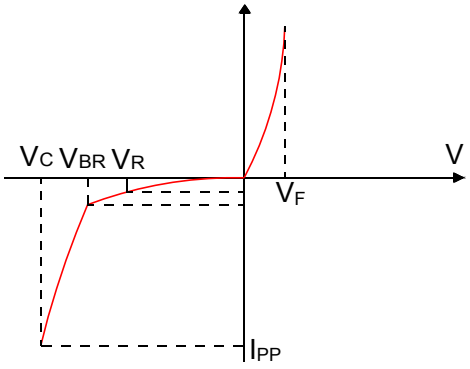


FIG.2:V- I curve characteristics (Bi-directional)

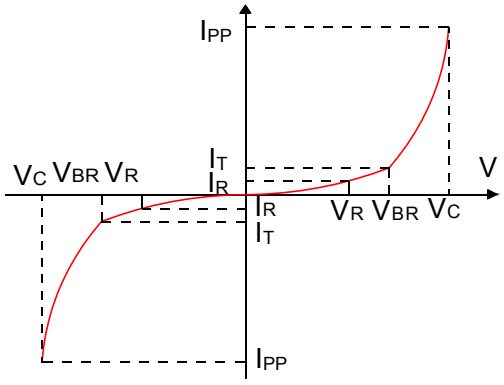


FIG.3: Pulse waveform

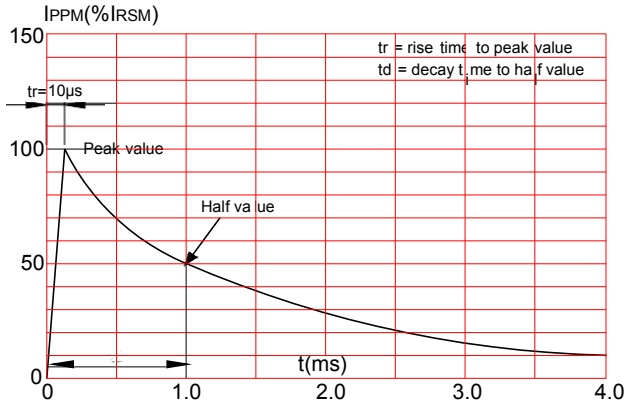
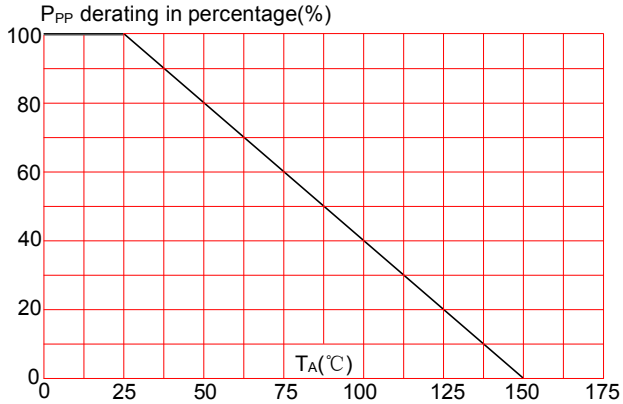


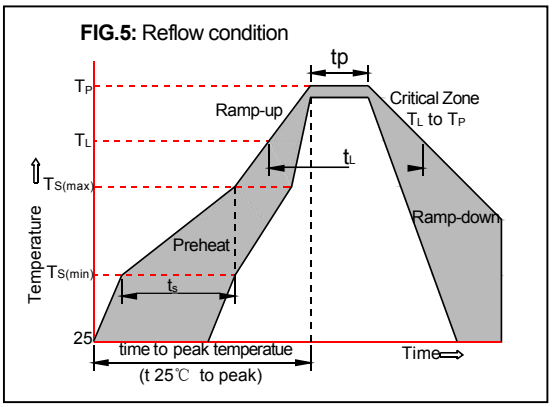
FIG.4: Pulse derating curve

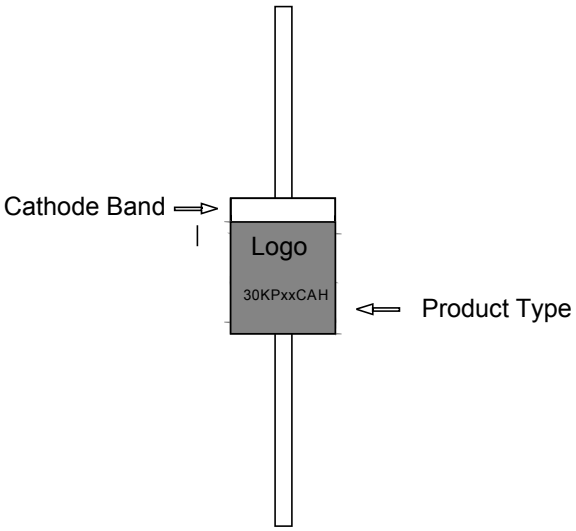


SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see FIG.5)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃

FIG.5: Reflow condition

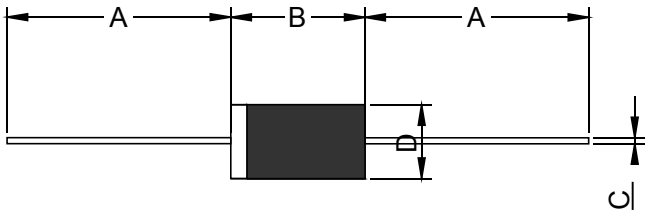




30KP XX C A H
(1) (2) (3) (4) (5)

(1) Series:30000 watts series
(2)Reverse Stand-off Voltage
(3)Bi-directional
(4)5% V_{BR} Voltage tolerance
(5)For AEC-Q101

PACKAGE MECHANICAL DATA



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
30KPXXCAH/AH	R6/P600	300	Box