5KP Series

SURGE SUPPRESSOR

TOP-EMC

Features

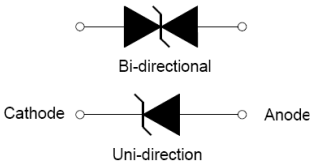
- Junction passivation optimized design passivated anisotropic rectifier technology
- 5000W peak pulse power capability at 10×1000μs waveform.
- Very fast response time
- Meets MSL-1,per J-STD-020,LF maxmum peak of 260℃
- AEC-Q101 qualified
- Compliant to RoHS directive 2002/96/EC

Mechanical Characteristics

- Case:DO-214AB (SMC)
- Molding compound meets UL 94V-0 flammability rating
- Base P/NHE3-RoHS compliant,AEC-Q101 qualified
- Terminals:Matte tin plated leads,solderable per
- J-STD-002 and JESD22-B102

Schematic And Configuration

SMC



Symbol

Primary Characteristics	
V_{RWM}	11 V to170 V
P_{PPM}	5000 W
$P_{M(AV)}$	6.5W
I_{FSM}	300 A
T_J max.	150 °C

Absolute Maximum Ratings (T_C=25℃, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage and operating junction temperature range	T_{STG}/ T_J	-55 to +150	℃
Steady state power dissipation at T_L=75℃	$P_{M(AV)}$	6.5	W
Peak pulse power dissipation on 10/1000μs waveform	P_{PP}	5000	W
Maximum instantaneous forward voltage at 100A for unidirectional only	V_F	5	V
Peak forward surge current, 8.3ms single half sine wave（Note 1）	I_{FSM}	300	A
Typical thermal resistance junction to lead	$R_{\theta JL}$	15	℃/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75	℃/W

Notes：

Measured on 8.3ms single half sine wave or equival ent square wave for unidirectional device only, duty cycle=4 per minute maximum

Electrical Characteristics (Ta=25℃,unless otherwise noted)

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
5KP11A	5KP11CA	11	5	12.20	13.50	10	18.2	275.0
5KP12A	5KP12CA	12	5	13.30	14.70	10	19.9	252.0
5KP13A	5KP13CA	13	5	14.40	15.90	10	21.5	233.0
5KP14A	5KP14CA	14	5	15.60	17.20	10	23.2	216.0
5KP15A	5KP15CA	15	5	16.70	18.50	1	24.4	205.0
5KP16A	5KP16CA	16	5	17.80	19.70	1	26.0	193.0
5KP17A	5KP17CA	17	5	18.90	20.90	1	27.6	181.0
5KP18A	5KP18CA	18	5	20.00	22.10	1	29.2	172.0
5KP20A	5KP20CA	20	5	22.20	24.50	1	32.4	155.0
5KP22A	5KP22CA	22	5	24.40	26.90	1	35.5	141.0
5KP24A	5KP24CA	24	5	26.70	29.50	1	38.9	129.0
5KP26A	5KP26CA	26	5	28.90	31.90	1	42.1	119.0
5KP28A	5KP28CA	28	5	31.10	34.40	1	45.4	110.0
5KP30A	5KP30CA	30	5	33.30	36.80	1	48.4	103.0
5KP33A	5KP33CA	33	1	36.70	40.60	1	53.3	93.9
5KP36A	5KP36CA	36	1	40.00	44.20	1	58.1	86.1
5KP40A	5KP40CA	40	1	44.40	49.10	1	64.5	77.6
5KP43A	5KP43CA	43	1	47.80	52.80	1	69.4	72.1
5KP45A	5KP45CA	45	1	50.00	55.30	1	72.7	68.8
5KP48A	5KP48CA	48	1	53.30	58.90	1	77.4	64.7
5KP51A	5KP51CA	51	1	56.70	62.70	1	82.4	60.7
5KP54A	5KP54CA	54	1	60.00	66.30	1	87.1	57.5
5KPJ58A	5KP58CA	58	1	64.40	71.20	1	93.6	53.5
5KP60A	5KP60CA	60	1	66.70	73.70	1	96.8	51.7
5KP64A	5KP64CA	64	1	71.10	78.60	1	103.0	48.6
5KP70A	5KP70CA	70	1	77.80	86.00	1	113.0	44.3
5KP75A	5KP75CA	75	1	83.30	92.10	1	121.0	41.4
5KP78A	5KP78CA	78	1	86.70	95.80	1	126.0	39.7
5KP85A	5KP85CA	85	1	94.40	104.0	1	137.0	36.5

Electrical Characteristics (Ta=25℃,unless otherwise noted)

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
5KP90A	5KP90CA	90	1	100.0	111.0	1	146.0	34.3
5KP100A	5KP100CA	100	1	111.0	123.0	1	162.0	30.9
5KP110A	5KP110CA	110	1	122.0	135.0	1	177.0	28.3
5KP120A	5KP120CA	120	1	133.0	147.0	1	193.0	26.0
5KP130A	5KP130CA	130	1	144.0	159.0	1	209.0	24.0
5KP150A	5KP150CA	150	1	167.0	185.0	1	243.0	20.6
5KP160A	5KP160CA	160	1	178.0	197.0	1	259.0	19.3
5KP170A	5KP170CA	170	1	189.0	209.0	1	275.0	18.2

① Surge waveform:10/1000μs

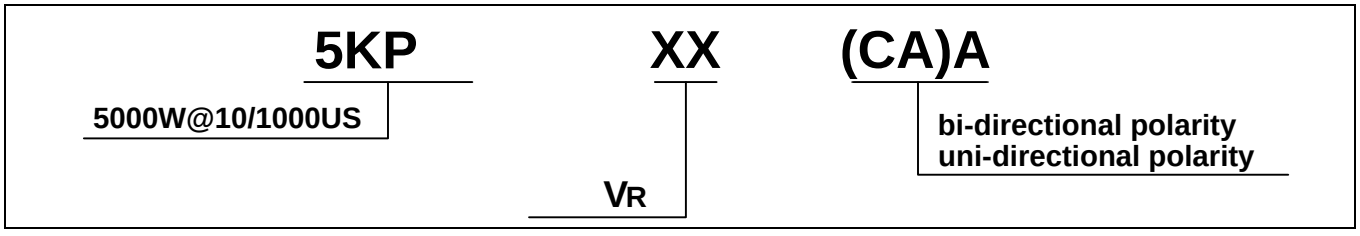
V_R: Stand-off voltage -- Maximum voltage that can be applied

V_{BR}: Breakdown voltage

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

I_R: Reverse leakage current

Ordering Information



Ratings And Characteristics Curves (T_A=25℃, unless otherwise noted)

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

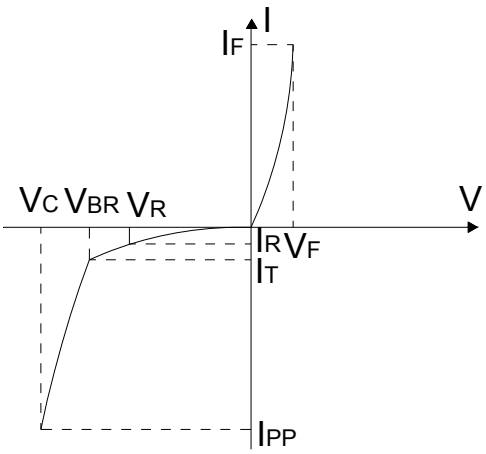


FIG.2:V- I curve characteristics (Bi-directional)

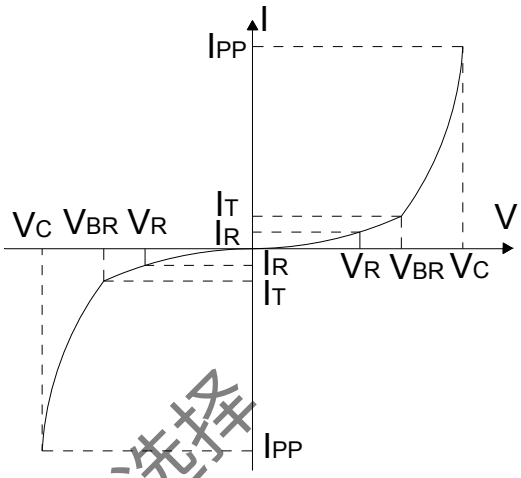


FIG.3: Pulse waveform

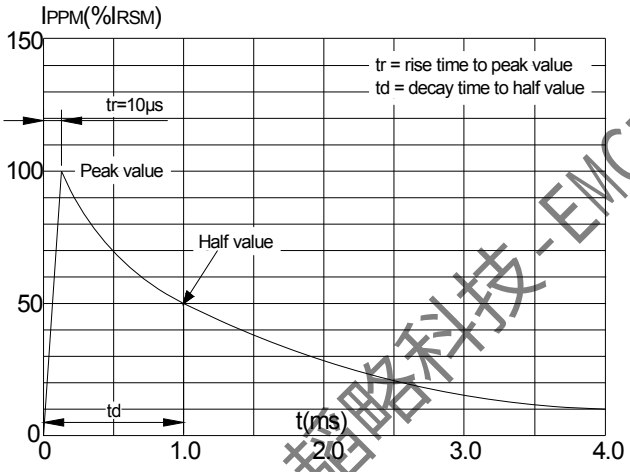


FIG.4: Pulse derating curve

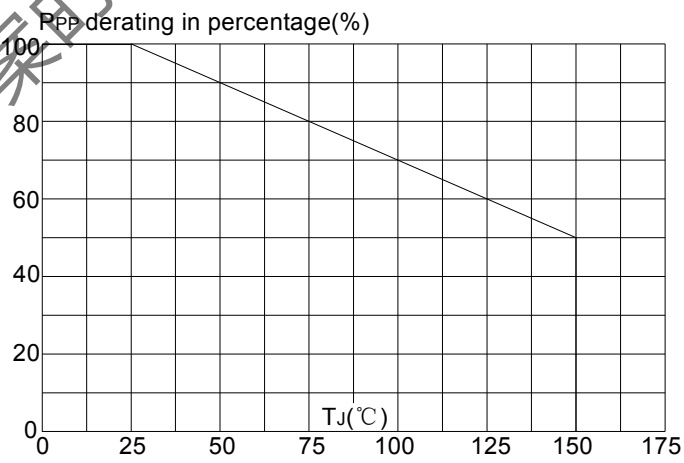
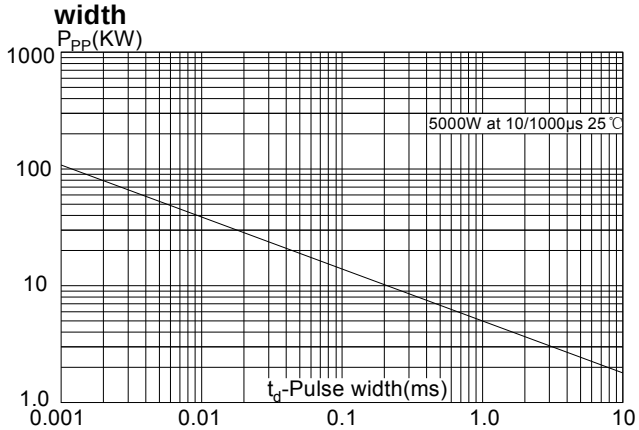
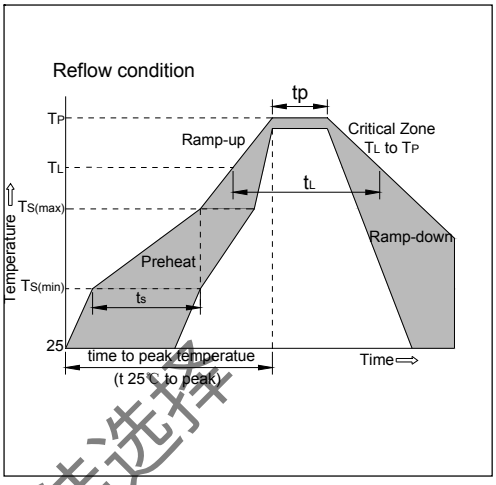


FIG.5:Peak pulse power dissipation vs. pulse width

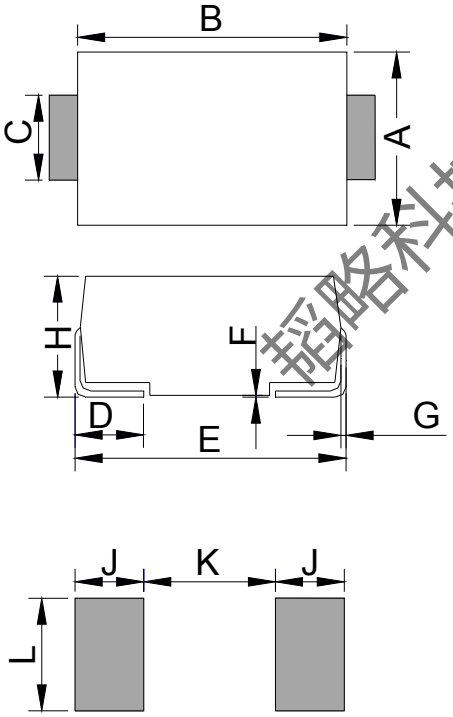


Soldering Parameters

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquidus Temp (T_L)to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquidus)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃of actual Peak Temp (t_p)		20-40secs.
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃



Package Mechanical Data



DO-214AB (SMC)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	5.75	6.25	0.226	0.246
B	6.90	7.40	0.272	0.291
C	2.75	3.25	0.108	0.128
D	0.95	1.52	0.037	0.060
E	7.70	8.20	0.303	0.323
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.15	2.62	0.085	0.103
J	2.40		0.094	
K		4.20		0.165
L	3.30		0.130	

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