5KP Series

5000W Transient Voltage suppressor

Features

- AEC-Q101 Qualified
- Glass passivated chip junction in P600 Package
- Plastic package
- Excellent clamping capability
- Low Zener impedance.
- 5000W peak pulse power capability on 10/1000μs waveform.
- Typical IR less than 2μA above 11V.
- Fast response time: typically less than 1.0ps from 0 Volts to BV min.
- High temperature soldering guaranteed: 265℃/10 seconds

P600

Uni-directional

Bi-directional

Typical Applications

Use in sensitive electronic protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, automotive, and telecommunication.

Mechanical Data

- Case: JEDEC P600 Molded Plastic
- Terminals: Axial leads, solderable per MIL-STD-750, Method 2026.
- Polarity: Color band denoted cathode except bidirectional.
- Mounting Position: Any.

Maximum Ratings (T_a = 25℃ unless otherwise specified)

Parameter	Symbol	Max	Unit
Peak power dissipation, with a 10/1000us waveform	P_{PPM}	5000	W
Peak pulse current, with a 10/1000us waveform	I_{PPM}	See Next Table	A
Power Dissipation on infinite heat sink at T_L=75℃	P_D	8	W
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only	I_{FSM}	600	A
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	℃

Electrical Characteristics (T_a = 25℃ unless otherwise specified)

Parameter	Symbol	Max	Unit
Maximum instantaneous forward Voltage(1) at 100A for unidirectional only	V_F	3.5	V

1) Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

Electrical Characteristics (Ta = 25℃ unless otherwise specified)

Uni-directional	Bi-directional	Breakdown Voltage V_{BR} @IT			Maximum Reverse Leakage I_R @ V_{WM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP} (A)	Maximum Clamping Voltage V_C@I_{PP} (V)	Maximum Temperature Coefficient of V_{BR} (%/°C)
		Min. (V)	Max. (V)	IT(mA)					
5KP5.0	5KP5.0C	6.40	7.30	50	2000	5.0	521	9.6	0.057
5KP5.0A	5KP5.0CA	6.40	7.00	50	2000	5.0	543	9.2	0.057
5KP6.0	5KP6.0C	6.67	8.15	50	5000	6.0	439	11.4	0.061
5KP6.0A	5KP6.0CA	6.67	7.37	50	5000	6.0	485	10.3	0.061
5KP6.5	5KP6.5C	7.22	8.82	50	2000	6.5	407	12.3	0.065
5KP6.5A	5KP6.5CA	7.22	7.98	50	2000	6.5	446	11.2	0.065
5KP7.0	5KP7.0C	7.78	9.51	50	1000	7.0	376	13.3	0.068
5KP7.0A	5KP7.0CA	7.78	8.60	50	1000	7.0	417	12.0	0.068
5KP7.5	5KP7.5C	8.33	10.2	5.0	250	7.5	350	14.3	0.073
5KP7.5A	5KP7.5CA	8.33	9.21	5.0	250	7.5	388	12.9	0.073
5KP8.0	5KP8.0C	8.89	10.9	5.0	150	8.0	333	15.0	0.075
5KP8.0A	5KP8.0CA	8.89	9.83	5.0	150	8.0	368	13.6	0.075
5KP8.5	5KP8.5C	9.44	11.5	5.0	50	8.5	314	15.9	0.078
5KP8.5A	5KP8.5CA	9.44	10.4	5.0	50	8.5	347	14.4	0.078
5KP9.0	5KP9.0C	10.0	12.2	5.0	20	9.0	296	16.9	0.081
5KP9.0A	5KP9.0CA	10.0	11.1	5.0	20	9.0	325	15.4	0.081
5KP10	5KP10C	11.1	13.6	5.0	15	10.0	266	18.8	0.084
5KP10A	5KP10CA	11.1	12.3	5.0	15	10.0	294	17.0	0.084
5KP11	5KP11C	12.2	14.9	5.0	10	11.0	249	20.1	0.086
5KP11A	5KP11CA	12.2	13.5	5.0	10	11.0	275	18.2	0.086
5KP12	5KP12C	13.3	16.3	5.0	5.0	12.0	227	22.0	0.088
5KP12A	5KP12CA	13.3	14.7	5.0	5.0	12.0	251	19.9	0.088
5KP13	5KP13C	14.4	17.6	5.0	2.0	13.0	210	23.8	0.090
5KP13A	5KP13CA	14.4	15.9	5.0	2.0	13.0	233	21.5	0.090
5KP14	5KP14C	15.6	19.1	5.0	2.0	14.0	194	25.8	0.092
5KP14A	5KP14CA	15.6	17.2	5.0	2.0	14.0	216	23.2	0.092
5KP15	5KP15C	16.7	20.4	5.0	2.0	15.0	186	26.9	0.094
5KP15A	5KP15CA	16.7	18.5	5.0	2.0	15.0	205	24.4	0.094
5KP16	5KP16C	17.8	21.8	5.0	2.0	16.0	174	28.8	0.096
5KP16A	5KP16CA	17.8	19.7	5.0	2.0	16.0	192	26.0	0.096
5KP17	5KP17C	18.9	23.1	5.0	2.0	17.0	164	30.5	0.097
5KP17A	5KP17CA	18.9	20.9	5.0	2.0	17.0	181	27.6	0.097
5KP18	5KP18C	20.0	24.4	5.0	2.0	18.0	155	32.2	0.098
5KP18A	5KP18CA	20.0	22.1	5.0	2.0	18.0	171	29.2	0.098
5KP20	5KP20C	22.2	27.1	5.0	2.0	20.0	140	35.8	0.099
5KP20A	5KP20CA	22.2	24.5	5.0	2.0	20.0	154	32.4	0.099

Electrical Characteristics (Ta = 25℃ unless otherwise specified)

Uni-directional	Bi-directional	Breakdown Voltage V_{BR} @IT			Maximum Reverse Leakage I_R @ V_{WM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP} (A)	Maximum Clamping Voltage V_C@I_{PP} (V)	Maximum Temperature Coefficient of V_{BR} (%/°C)
		Min. (V)	Max. (V)	IT(mA)					
5KP22	5KP22C	24.4	29.8	5.0	2.0	22.0	127	39.4	0.100
5KP22A	5KP22CA	24.4	26.9	5.0	2.0	22.0	141	35.5	0.100
5KP24	5KP24C	26.7	32.6	5.0	2.0	24.0	116	43.0	0.101
5KP24A	5KP24CA	26.7	29.5	5.0	2.0	24.0	129	38.9	0.101
5KP26	5KP26C	28.9	35.3	5.0	2.0	26.0	107	46.6	0.101
5KP26A	5KP26CA	28.9	31.9	5.0	2.0	26.0	119	42.1	0.101
5KP26A	5KP26CA	28.9	31.9	5.0	2.0	26.0	119	42.1	0.101
5KP28	5KP28C	31.1	38.0	5.0	2.0	28.0	100	50.1	0.102
5KP28A	5KP28CA	31.1	34.4	5.0	2.0	28.0	110	45.4	0.102
5KP30	5KP30C	33.3	40.7	5.0	2.0	30.0	93.5	53.5	0.103
5KP30A	5KP30CA	33.3	36.8	5.0	2.0	30.0	103	48.4	0.103
5KP33	5KP33C	36.7	44.9	5.0	2.0	33.0	84.7	59.0	0.104
5KP33A	5KP33CA	36.7	40.6	5.0	2.0	33.0	93.8	53.3	0.104
5KP36	5KP36C	40.0	48.9	5.0	2.0	36.0	77.8	64.3	0.104
5KP36A	5KP36CA	40.0	44.2	5.0	2.0	36.0	86.1	58.1	0.104
5KP40	5KP40C	44.4	54.3	5.0	2.0	40.0	70.0	71.4	0.105
5KP40A	5KP40CA	44.4	49.1	5.0	2.0	40.0	77.5	64.5	0.105
5KP43	5KP43C	47.8	58.4	5.0	2.0	43.0	65.2	76.7	0.105
5KP43A	5KP43CA	47.8	52.8	5.0	2.0	43.0	72.0	69.4	0.105
5KP45	5KP45C	50.0	61.1	5.0	2.0	45.0	62.3	80.3	0.106
5KP45A	5KP45CA	50.0	55.3	5.0	2.0	45.0	68.8	72.7	0.106
5KP48	5KP48C	53.3	65.2	5.0	2.0	48.0	58.5	85.5	0.106
5KP48A	5KP48CA	53.3	58.9	5.0	2.0	48.0	64.6	77.4	0.106
5KP51	5KP51C	56.1	69.3	5.0	2.0	51.0	54.9	91.1	0.107
5KP51A	5KP51CA	56.7	62.7	5.0	2.0	51.0	60.7	82.4	0.107
5KP54	5KP54C	60.0	73.3	5.0	2.0	54.0	51.9	96.3	0.107
5KP54A	5KP54CA	60.0	66.3	5.0	2.0	54.0	57.4	87.1	0.107
5KP58	5KP58C	64.4	78.7	5.0	2.0	58.0	48.5	103	0.107
5KP58A	5KP58CA	64.4	71.2	5.0	2.0	58.0	53.4	94	0.107
5KP60	5KP60C	66.7	81.5	5.0	2.0	60.0	46.7	107	0.108
5KP60A	5KP60CA	66.7	73.7	5.0	2.0	60.0	51.7	97	0.108
5KP64	5KP64C	71.1	96.9	5.0	2.0	64.0	43.9	114	0.108
5KP64A	5KP64CA	71.1	78.6	5.0	2.0	64.0	48.5	103	0.108
5KP70	5KP70C	77.6	95.1	5.0	2.0	70.0	40.0	125	0.108
5KP70A	5KP70CA	77.8	86.0	5.0	2.0	70.0	44.2	113	0.108
5KP75	5KP75C	83.3	102	5.0	2.0	75.0	37.3	134	0.108
5KP75A	5KP75CA	83.3	92.1	5.0	2.0	75.0	41.3	121	0.108

Electrical Characteristics (Ta = 25℃ unless otherwise specified)

Uni-directional	Bi-directional	Breakdown Voltage V_{BR} @IT			Maximum Reverse Leakage I_R @ V_{WM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP} (A)	Maximum Clamping Voltage V_C@I_{PP} (V)	Maximum Temperature Coefficient of V_{BR} (%/°C)
		Min. (V)	Max. (V)	IT(mA)					
5KP78	5KP78C	86.7	106.0	5.0	2.0	78.0	36.0	139	0.108
5KP78A	5KP78CA	86.7	95.8	5.0	2.0	78.0	39.7	126	0.108
5KP85	5KP85C	94.4	115	5.0	2.0	85.0	33.1	151	0.108
5KP85A	5KP85CA	94.4	104	5.0	2.0	85.0	36.5	137	0.108
5KP90	5KP90C	100	122	5.0	2.0	90.0	31.3	160	0.110
5KP90A	5KP90CA	100	111	5.0	2.0	90.0	34.2	146	0.110
5KP100	5KP100C	111	136	5.0	2.0	100	27.9	179	0.110
5KP100A	5KP100CA	111	123	5.0	2.0	100	30.9	162	0.110
5KP110	5KP110C	122	149	5.0	2.0	110	25.5	196	0.112
5KP110A	5KP110CA	122	135	5.0	2.0	110	28.2	177	0.112
5KP120	5KP120C	133	163	5.0	2.0	120	23.4	214	0.112
5KP120A	5KP120CA	133	147	5.0	2.0	120	25.9	193	0.112
5KP130	5KP130C	144	176	5.0	2.0	130	21.6	230	0.114
5KP130A	5KP130CA	144	159	5.0	2.0	130	23.9	209	0.114
5KP150	5KP150C	167	204	5.0	2.0	150	18.7	268	0.114
5KP150A	5KP150CA	167	185	5.0	2.0	150	20.6	243	0.114
5KP160	5KP160C	178	218	5.0	2.0	160	17.4	287	0.118
5KP160A	5KP160CA	178	197	5.0	2.0	160	19.3	259	0.118
5KP170	5KP170C	189	231	5.0	2.0	170	16.4	304	0.118
5KP170A	5KP170CA	189	209	5.0	2.0	170	18.2	275	0.118
5KP180	5KP180C	200	242	5.0	2.0	180	16.1	319	0.122
5KP180A	5KP180CA	200	221	5.0	2.0	180	17.6	292	0.122
5KP190	5KP190C	211	255	5.0	2.0	190	8.80	341	0.126
5KP190A	5KP190CA	211	233	5.0	2.0	190	9.70	310	0.126
5KP200	5KP200C	222	270	5.0	2.0	200	8.20	365.3	0.130
5KP200A	5KP200CA	222	246	5.0	2.0	200	9.10	329.2	0.130
5KP210	5KP210C	233	283	5.0	2.0	210	7.70	390.0	0.134
5KP210A	5KP210CA	233	258	5.0	2.0	210	8.60	349.5	0.134
5KP220	5KP220C	244	296	5.0	2.0	220	7.30	411.7	0.138
5KP220A	5KP220CA	244	270	5.0	2.0	220	8.10	371.1	0.138

Electrical Characteristics Curves

FIG1:Peak Pulse Power Rating Curve

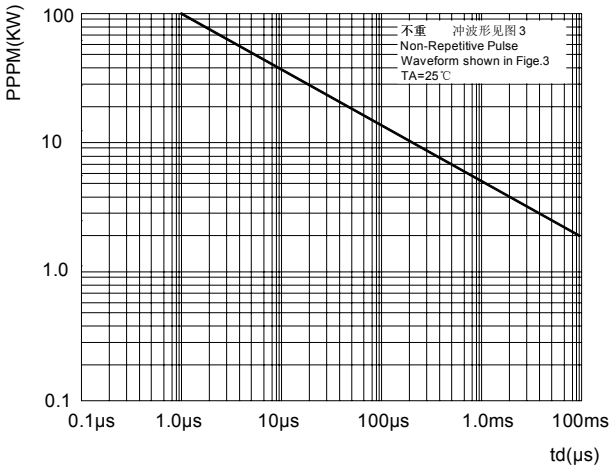


FIG2: Pulse Power or Current vs. Initial Junction Temperature

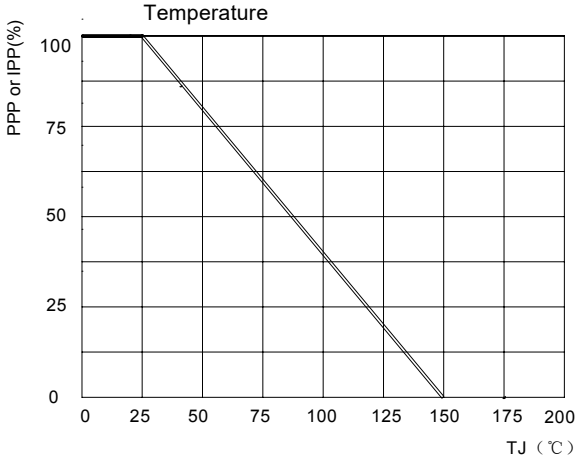


FIG3: Pulse Waveform

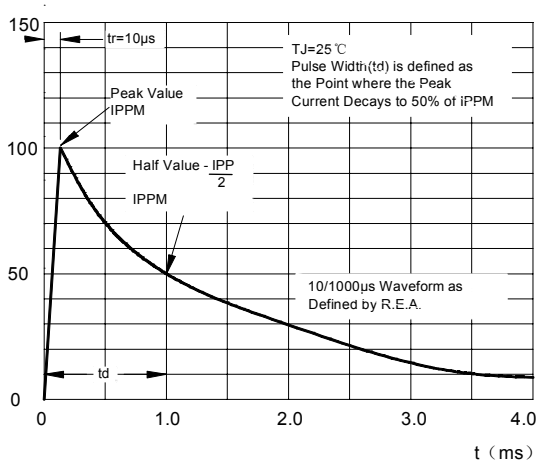


FIG4: Power Derating Curve

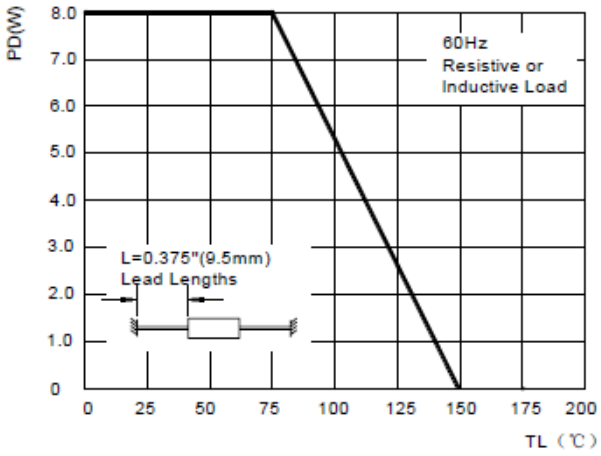
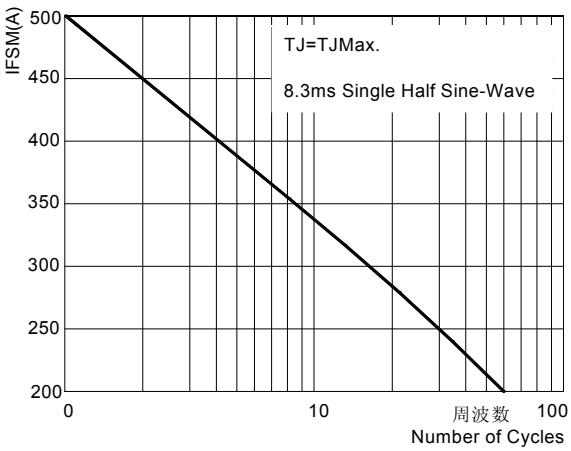
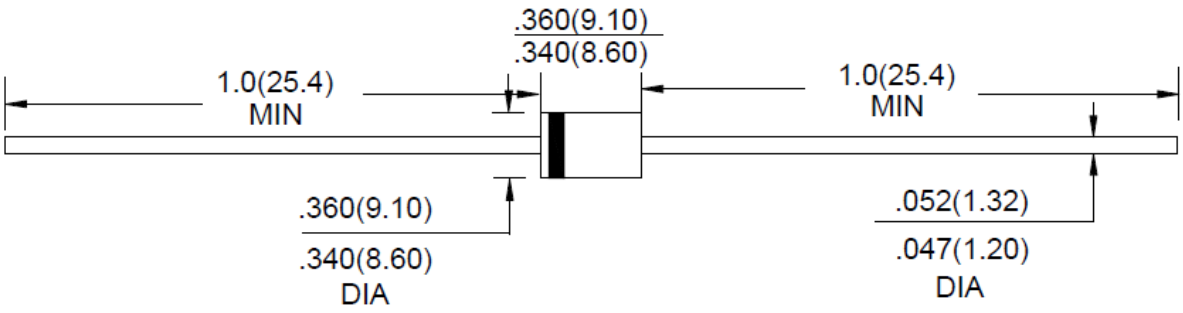


FIG5: Maximum Non-Repetitive Surge Current



Package Outline Dimensions in inches (millimeters) **P600**



Packing Information

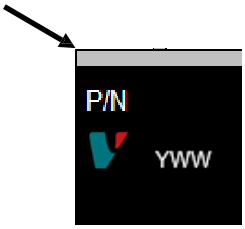
Package	Carton Quantity	Box Quantity	Base Quantity	Delivery Mode
P600	3.5 K / Carton	350pcs / Ammo box	350pcs / Ammo box	Ammo box

Marking information

" 5KP180A " = Part No.

" YWW " = Date Code Marking)

" Y " = Last digit of year (ex: 2 = 2022

" WW " = Week Code (ex: 24 = the 24th week of the year)

Cathode band for uni-directional products only