

1. Synopsis

1-1. General Description

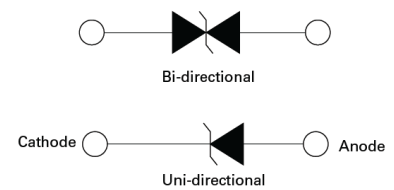
The 10KP Series Is Designed Specifically To Protect Sensitive Electronic Equipment From Voltage Transients Induced By Lightning And Other Transient Voltage Events.

1-2. Feature List

- Bi / Uni-Directional Configurations
- Plastic Package Has Underwriters
- Glass Passivated Chip Junction in P600 Package
- 10K Watts Peak Pulse Power ($t_p = 10/1000\mu s$)
- Halogen Free and RoHS Compliant
- Fast Response Time: Typically Less Than 1.0ps From 0 Volts to $V_{(BR)}$ For Uni-Directional and 5.0ns For Bi-Directional Types
- High Temperature Soldering Guaranteed: 250°C / 10 Seconds at Terminals



P600



1-3. Applications

- Power Supply Protection
- Industrial Application
- Power Manager

1-4. IEC Compatibility

- EN61000-4
- 61000-4-2(ESD): Contact: $>\pm 30KV$, Air: $>\pm 30KV$
- 61000-4-4(EFT)
- 61000-4-5(Surge): 10/1000 μs

1-5. Mechanical Characteristics

- Molded JEDEC P600 Package
- Packing: Tape and Reel
- Flammability Rating UL 94V-0
- Halogen Free
- JEDEC MSL Classification: Level 1



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3. Electrical Property

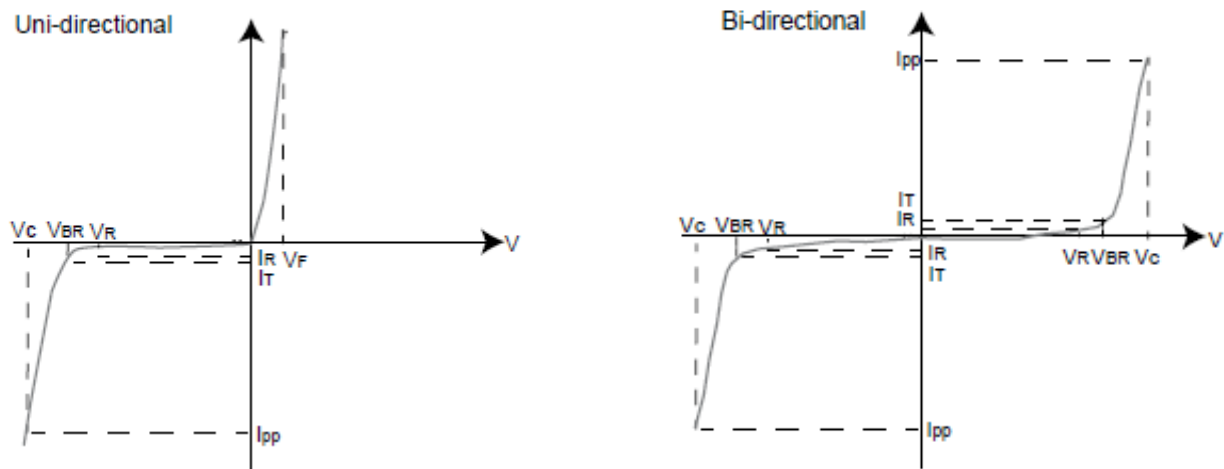
3-1. Absolute Maximum Ratings

Maximum Ratings@25°C Unless Otherwise Specified			
Parameter	Symbol	Value	Units
Peak Pulse Power (tp=10/1000us)	P_{PP}	10	KW
Steady State Power Dissipation On Infinite Heat Sink at $T_L=75^{\circ}\text{C}$	P_D	8.0	W
Peak Forward Surge Current, 8.3ms Signal Half Sine Wave Uni-Directional Only	I_{FSM}	400	A
Maximum Instantaneous Forward Voltage at 100A For Uni-Direction Only	V_F	3.5	V
Operating Temperature	T_J	-55~+175	$^{\circ}\text{C}$
Storage Temperature	T_{STG}		

3-2. Electrical Characteristics (TA=25°C unless otherwise noted)

Part Number		Reverse Stand-off Voltage	Breakdown Voltage		Test Current	Reverse Leakage	Max. Clamp Voltage	Peak Pulse Current	Marking	
		V_{RWM}	$V_{BR} @ I_T$		I_T	$I_R @ V_{RWM}$	$V_C @ I_{PP}$	$I_{PP} (10/1000\mu\text{s})$		
Uni	Bi	V	Min	Max	mA	μA	V	A	Uni	Bi
10KW Surface Mount Transient Voltage Suppressors 10KP Series										
10KP17A	10KP17CA	17.0	18.9	20.9	50	5000	29.3	341.3	10KP17A	10KP17CA
10KP18A	10KP18CA	18.0	20.0	22.1	50	5000	30.9	323.6	10KP18A	10KP18CA
10KP20A	10KP20CA	20.0	22.2	24.5	20	1500	34.3	291.5	10KP20A	10KP20CA
10KP22A	10KP22CA	22.0	24.4	26.9	10	500	37.1	269.5	10KP22A	10KP22CA
10KP24A	10KP24CA	24.0	26.7	29.5	5	150	40.7	245.7	10KP24A	10KP24CA
10KP26A	10KP26CA	26.0	28.9	31.9	5	50	44.0	227.3	10KP26A	10KP26CA
10KP28A	10KP28CA	28.0	31.1	34.4	5	25	47.5	210.5	10KP28A	10KP28CA
10KP30A	10KP30CA	30.0	33.3	36.8	5	15	50.7	197.2	10KP30A	10KP30CA
10KP33A	10KP33CA	33.0	36.7	40.6	5	2	54.7	182.8	10KP33A	10KP33CA
10KP36A	10KP36CA	36.0	40.0	44.2	5	2	59.8	167.2	10KP36A	10KP36CA
10KP40A	10KP40CA	40.0	44.4	49.1	5	2	65.8	152.0	10KP40A	10KP40CA
10KP43A	10KP43CA	43.0	47.8	52.8	5	2	69.8	143.3	10KP43A	10KP43CA
10KP45A	10KP45CA	45.0	50.0	55.3	5	2	72.8	137.4	10KP45A	10KP45CA
10KP48A	10KP48CA	48.0	53.3	58.9	5	2	77.7	128.7	10KP48A	10KP48CA
10KP51A	10KP51CA	51.0	56.7	62.7	5	2	82.9	120.6	10KP51A	10KP51CA
10KP54A	10KP54CA	54.0	60.0	66.3	5	2	87.7	114.0	10KP54A	10KP54CA
10KP58A	10KP58CA	58.0	64.4	71.2	5	2	93.8	106.6	10KP58A	10KP58CA
10KP60A	10KP60CA	60.0	66.7	73.7	5	2	97.4	102.7	10KP60A	10KP60CA
10KP64A	10KP64CA	64.0	71.1	78.6	5	2	104.2	96.0	10KP64A	10KP64CA
10KP70A	10KP70CA	70.0	77.8	86.0	5	2	113.6	88.0	10KP70A	10KP70CA
10KP75A	10KP75CA	75.0	83.3	92.1	5	2	122.0	82.0	10KP75A	10KP75CA
10KP78A	10KP78CA	78.0	86.7	95.8	5	2	126.1	79.3	10KP78A	10KP78CA
10KP85A	10KP85CA	85.0	94.4	104.0	5	2	137.6	72.7	10KP85A	10KP85CA
10KP90A	10KP90CA	90.0	100.0	111.0	5	2	145.6	68.7	10KP90A	10KP90CA
10KP100A	10KP100CA	100.0	111.0	123.0	5	2	161.3	62.0	10KP100A	10KP100CA
10KP110A	10KP110CA	110.0	122.0	135.0	5	2	178.6	56.0	10KP110A	10KP110CA
10KP120A	10KP120CA	120.0	133.0	147.0	5	2	192.3	52.0	10KP120A	10KP120CA
10KP130A	10KP130CA	130.0	144.0	159.0	5	2	208.3	48.0	10KP130A	10KP130CA
10KP150A	10KP150CA	150.0	167.0	185.0	5	2	241.9	41.3	10KP150A	10KP150CA
10KP160A	10KP160CA	160.0	178.0	197.0	5	2	258.6	38.7	10KP160A	10KP160CA
10KP170A	10KP170CA	170.0	189.0	209.0	5	2	272.7	36.7	10KP170A	10KP170CA
10KP180A	10KP180CA	180.0	200.0	221.0	5	2	288.5	34.7	10KP180A	10KP180CA

3-3. I-V Curve Characteristics



P_{PPM}	Peak Pulse Power Dissipation -Max Power Dissipation
V_R	Stand-off Voltage -Maximum Voltage That Can be Applied to The TVS Without Operation
I_R	Reverse Leakage Current -Current Measured at V_R
V_F	Forward Voltage Drop for Uni-directional
V_{BR}	Breakdown Voltage -Maximum Voltage that Flows Though the TVS at a Specified Test Current (I_T)
V_C	Clamping Voltage -Peak Voltage Measured Across the Suppressor at a Specified I_{ppm} (Peak Impulse Current)

3-4. Ratings and Characteristics Curve ($T_A=25^\circ\text{C}$ unless otherwise noted)

Fig 1. Peak Pulse Power Rating Curve

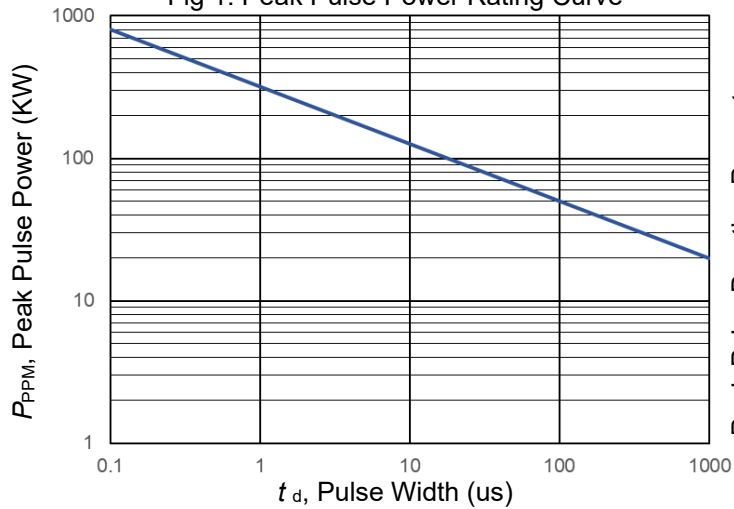


Fig 2. Pulse Derating Curve

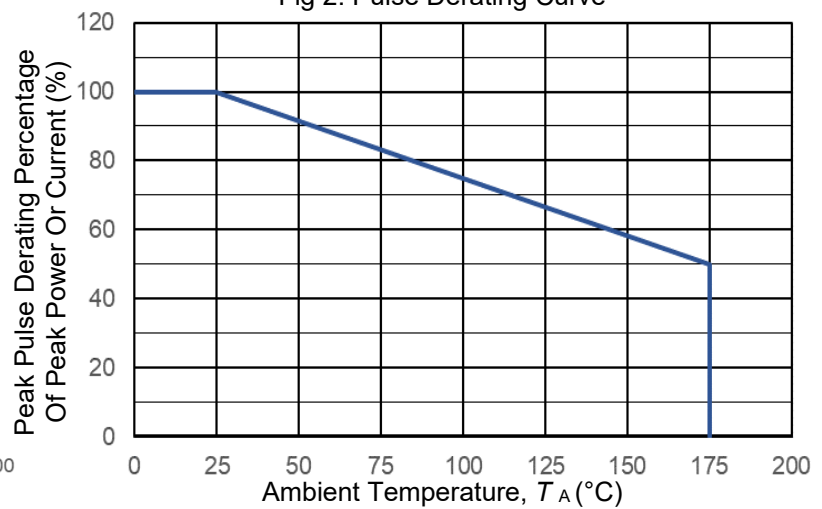


Fig 3. Maximum Non-repetitive Forward Surge Current Uni-direction Only

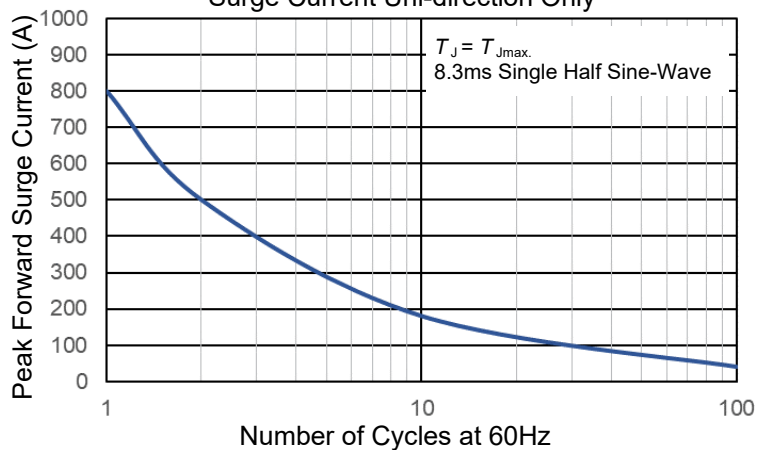
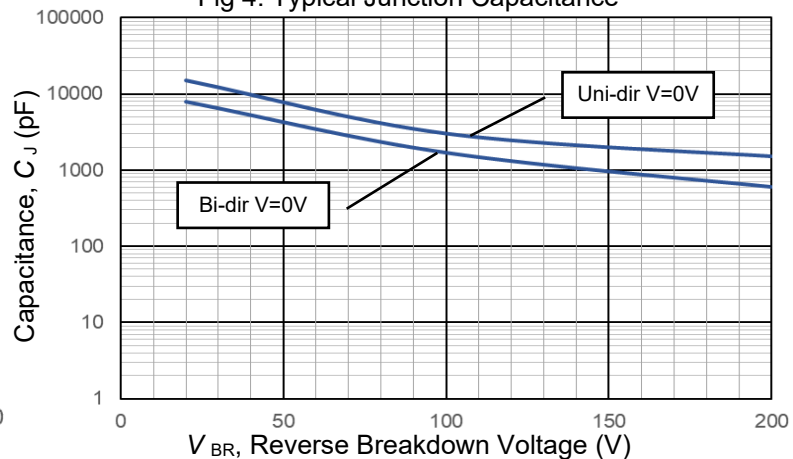


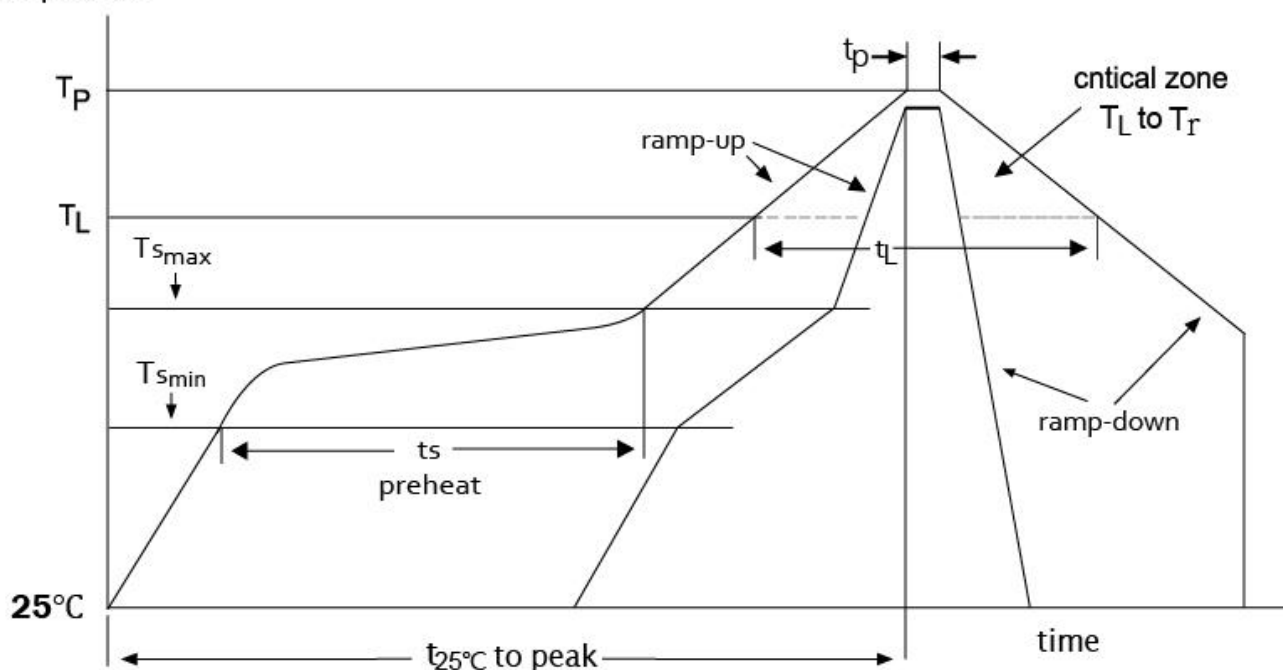
Fig 4. Typical Junction Capacitance



4. Soldering Parameters

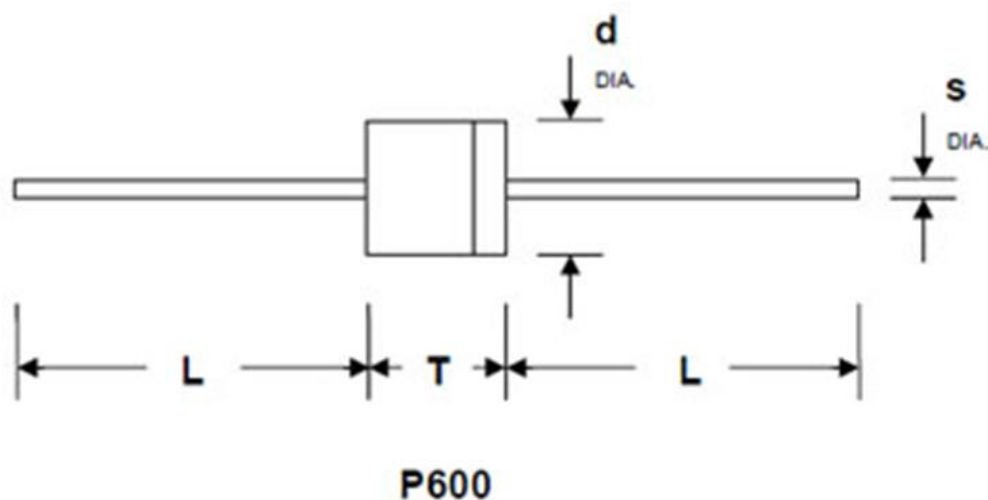
Profile Feature	SnPb eutectic assembly	Pb-free assembly
Average ramp-up rate (T _{smax} to T _p)	3 °C/s maximum	3 °C/s maximum
Preheat		
Temperature minimum (T _{smin})	100 °C	150 °C
Temperature maximum (T _{smax})	150 °C	200 °C
Time (t _{smin} to t _{smax})	60 s to 120 s	60 s to 180 s
Time maintained above		
Temperature (T _L)	183 °C	217 °C
Time (t _L)	60 s to 150 s	60 s to 150 s
Peak/classification temperature (T)	235 °C	260 °C
Number of allowed reflow cycles	3	3
Time within 5 °C of actual peak temperature (t _p)	10 s to 30 s	20 s to 40 s
Ramp-down rate	6 °C/s maximum	6 °C/s maximum
Time 25 °C to peak temperature	6 minutes maximum	8 minutes maximum

temperature



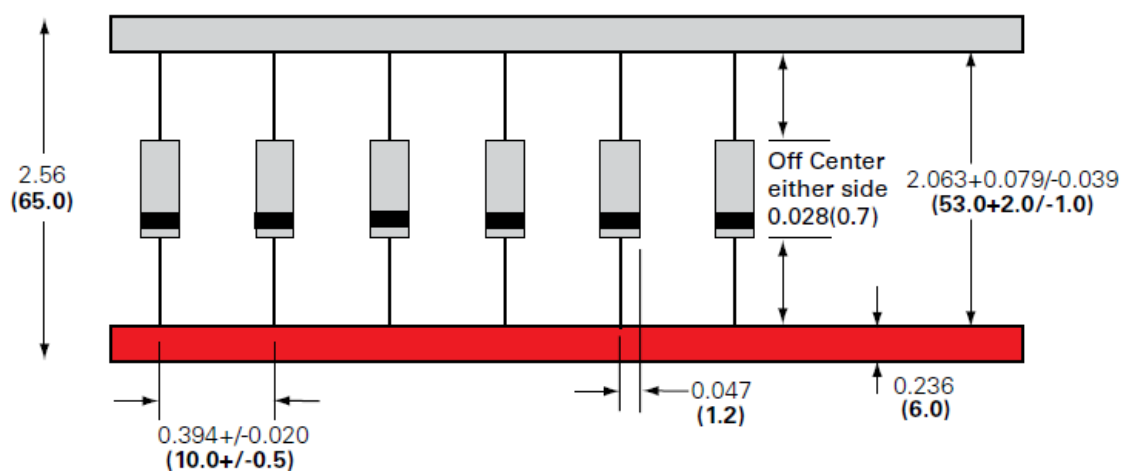
5. Package Information

5-1. Dimension



Dimension	Millimeters		Inches	
	Min	Max	Min	Max
L	25.4	-	1.00	-
T	8.6	9.10	0.34	0.36
d	8.6	9.10	0.34	0.36
s	1.22	1.32	0.048	0.052

5-2. Taping Information



6. Family Members

Part Number	Component Package	Watts	Working Voltage $V_{RWM}(V)$
SMF Series	SOD-123FL	300W	5.0V ~ 190V
NVS4M Series		400W	5.0V ~ 58V
NVS4D Series	DFN2020-3L	400W	3.3V ~ 58V
SMAJ Series	SMAJ	400W	5.0V ~ 190V
SMA6J Series		600W	12V ~ 58V
NVS6A Series	SMAF	600W	12V ~ 58V
SMBJ Series	SMBJ	600W	5.0V ~ 190V
SMB10J Series		1000W	
NVS15B Series	SMBF	1500W	5.0V ~ 58V
SMPJ Series	TO-277	1500W	5.0V ~ 200V
SMCJ Series	SMCJ	1500W	5.0V ~ 190V
2.0SMCJ Series		2000W	
3.0SMCJ Series		3000W	
4.0SMCJ Series		4000W	12V ~ 58V
5.0SMCJ Series		5000W	12V ~ 170V
6KA Series		6600W	21V ~ 58V
5KP Series	P600	5000W	5.0V ~ 180V
10KP Series		10000W	17V ~ 180V
15KP Series		15000W	
20KP Series		20000W	20V ~ 180V

7. Ordering Information

Part Number	Marking Code	Quantity	Component Package	Packaging Option
10KPxxA	Series	100PCS	P600	BULK
10KPxxCA				

8. Version

8-1. History

Version	Date	File No.	Recording	Basis
A	03-Mar-2018	F11809E	New Create	Market
B	28-Jan-2019		Update Company Info.	System
2.0	20-Jul-2021		Update Version	System