

P6SMAJ series



TRANSIENT VOLTAGE SUPPRESSOR DIODES

Voltage: 5~120 Volts

Power: 600 W

Package: SMA

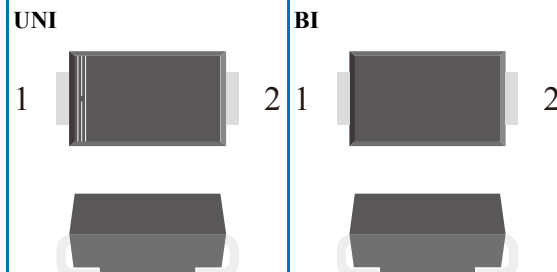
Features

- NH'S Glass Passivated Chip Technology
- Wave And Reflow Solderable
- Low Reverse Leakage
- Very Fast Response Time
- Excellent Clamping Capability
- 10/1000 μ s Waveform, Repetition Rate(Duty Cycle):0.01%
- ESD Immunity Acc. IEC 61000-4-2

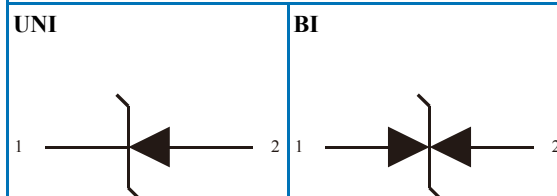
Typical Applications

- Power Port
- Communication And Data Port
- ESD Protection And Automotive Electronics
- Industrial Control and Automation

Diagram:



Polarity:



Single Phase, Half Wave, 60Hz, Resistive Or Inductive Load. For Capacitive Load, Derate Current By 20%

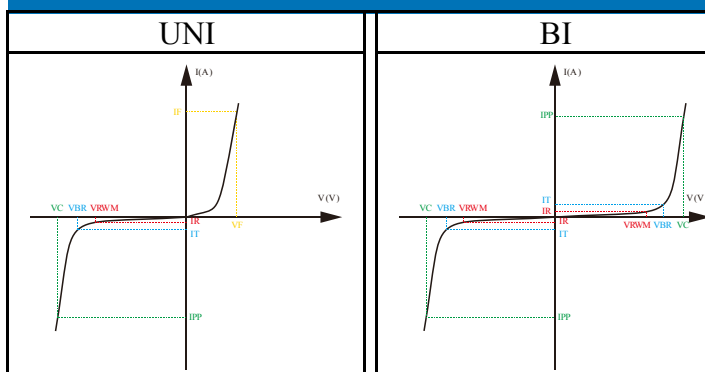
Maximum Ratings (Ta=25°C Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	Value	Unit
Non-Repetitive Peak Pulse Power Dissipation	10/1000 μ s Waveform	P_{PP}	600	W
Peak Pulse Current	10/1000 μ s Waveform	I_{PP}	See Table-1	A
Peak Forward Surge Current	8.3ms Single Half Sine-Wave Superimposed On Rate Load	I_{FSM}	60	A
Power Dissipation On Infinite Heatsink	$T_L = 75.0\text{ }^{\circ}\text{C}$	P_D	5.0	W
Maximum Instantaneous Forward Voltage	$I_F = 50.0\text{ A}, V_{BR} \text{ Max. V}$	V_F	5.0	V

Thermal Characteristics (Ta=25°C Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	Value	Unit
Operating Junction Temperature Range		T_J	-55 ~ 150	$^{\circ}\text{C}$
Storage Temperature Range		T_{STG}	-55 ~ 150	
Thermal Resistance Junction To Ambient With Steady-State	Device Mounted On 1 in2 FR-4 Board With 2oz. Copper	$R_{\theta JA}$	120	$^{\circ}\text{C/W}$

C-V Curve Chart



Symbol Instruction

Symbol	Instruction
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
P_{PP}	Peak Power Dissipation
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Reverse Voltage
I_T	Test Current @ V_{RWM}
I_F	Maximum Average Forward Rectified Current
V_F	Maximum Instantaneous Forward Voltage
C_J	Junction Capacitance @ $V_R = 0$ and $f = 1.0\text{ MHz}$

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Table-1.ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

Part Number		Device Marking Code		Reverse Stand-off Voltage	Breakdown Voltage V_{BR} @ I_T		Test Current	Max. Clamping Voltage @ I_{PP}	Max. Peak Pulse Current	Max. Reverse Leakage @ V_{RWM}
UNI-POLAR	BI-POLAR	UNI	BI	$V_{RWM}(V)$	Min.(V)	Max.(V)	$I_T(mA)$	$V_{C\ Max.}(V)$	IPP(A)	$I_R(\mu A)$
P6SMAJ5.0A	P6SMAJ5.0CA	6KE	6AE	5.0	6.40	7.00	10	9.2	65.20	120
P6SMAJ6.0A	P6SMAJ6.0CA	6KG	6AG	6.0	6.67	7.37	10	10.3	58.30	120
P6SMAJ6.5A	P6SMAJ6.5CA	6KK	6AK	6.5	7.22	7.98	10	11.2	53.60	120
P6SMAJ7.0A	P6SMAJ7.0CA	6KM	6AM	7.0	7.78	8.60	10	12.0	50.00	50
P6SMAJ7.5A	P6SMAJ7.5CA	6KP	6AP	7.5	8.33	9.21	1	12.9	46.50	50
P6SMAJ8.0A	P6SMAJ8.0CA	6KR	6AR	8.0	8.89	9.83	1	13.6	44.10	20
P6SMAJ8.5A	P6SMAJ8.5CA	6KT	6AT	8.5	9.44	10.40	1	14.4	41.70	10
P6SMAJ9.0A	P6SMAJ9.0CA	6KV	6AV	9.0	10.00	11.10	1	15.4	39.00	5
P6SMAJ10A	P6SMAJ10CA	6KX	6AX	10.0	11.10	12.30	1	17.0	35.30	2
P6SMAJ11A	P6SMAJ11CA	6KZ	6AZ	11.0	12.20	13.50	1	18.2	33.00	1
P6SMAJ12A	P6SMAJ12CA	6LE	6BE	12.0	13.30	14.70	1	19.9	30.20	1
P6SMAJ13A	P6SMAJ13CA	6LG	6BG	13.0	14.40	15.90	1	21.5	27.90	1
P6SMAJ14A	P6SMAJ14CA	6LK	6BK	14.0	15.60	17.20	1	23.2	25.90	1
P6SMAJ15A	P6SMAJ15CA	6LM	6BM	15.0	16.70	18.50	1	24.4	24.60	1
P6SMAJ16A	P6SMAJ16CA	6LP	6BP	16.0	17.80	19.70	1	26.0	23.10	1
P6SMAJ17A	P6SMAJ17CA	6LR	6BR	17.0	18.90	20.90	1	27.6	21.80	1
P6SMAJ18A	P6SMAJ18CA	6LT	6BT	18.0	20.00	22.10	1	29.2	20.60	1
P6SMAJ20A	P6SMAJ20CA	6LV	6BV	20.0	22.20	24.50	1	32.4	18.60	1
P6SMAJ22A	P6SMAJ22CA	6LX	6BX	22.0	24.40	26.90	1	35.5	16.90	1
P6SMAJ24A	P6SMAJ24CA	6LZ	6BZ	24.0	26.70	29.50	1	38.9	15.40	1
P6SMAJ26A	P6SMAJ26CA	6ME	6CE	26.0	28.90	31.90	1	42.1	14.30	1
P6SMAJ28A	P6SMAJ28CA	6MG	6CG	28.0	31.10	34.40	1	45.4	13.20	1
P6SMAJ30A	P6SMAJ30CA	6MK	6CK	30.0	33.30	36.80	1	48.4	12.40	1
P6SMAJ33A	P6SMAJ33CA	6MM	6CM	33.0	36.70	40.60	1	53.3	11.30	1
P6SMAJ36A	P6SMAJ36CA	6MP	6CP	36.0	40.00	44.20	1	58.1	10.40	1
P6SMAJ40A	P6SMAJ40CA	6MR	6CR	40.0	44.40	49.10	1	64.5	9.30	1
P6SMAJ43A	P6SMAJ43CA	6MT	6CT	43.0	47.80	52.80	1	69.4	8.70	1
P6SMAJ45A	P6SMAJ45CA	6MV	6CV	45.0	50.00	55.30	1	72.7	8.30	1
P6SMAJ48A	P6SMAJ48CA	6MX	6CX	48.0	53.30	58.90	1	77.4	7.80	1
P6SMAJ51A	P6SMAJ51CA	6MZ	6CZ	51.0	56.70	62.70	1	82.4	7.30	1
P6SMAJ54A	P6SMAJ54CA	6NE	6DE	54.0	60.00	66.30	1	87.1	6.90	1
P6SMAJ58A	P6SMAJ58CA	6NG	6DG	58.0	64.40	71.20	1	93.6	6.40	1
P6SMAJ60A	P6SMAJ60CA	6NK	6DK	60.0	66.70	73.70	1	96.8	6.20	1
P6SMAJ64A	P6SMAJ64CA	6NM	6DM	64.0	71.10	78.60	1	103.0	5.80	1
P6SMAJ70A	P6SMAJ70CA	6NP	6DP	70.0	77.80	86.00	1	113.0	5.30	1
P6SMAJ75A	P6SMAJ75CA	6NR	6DR	75.0	83.30	92.10	1	121.0	5.00	1
P6SMAJ78A	P6SMAJ78CA	6NT	6DT	78.0	86.70	95.80	1	126.0	4.80	1
P6SMAJ85A	P6SMAJ85CA	6NV	6DV	85.0	94.40	104.00	1	137.0	4.40	1
P6SMAJ100A	P6SMAJ100CA	6NZ	6DZ	100.0	111.00	123.00	1	162.0	3.70	1
P6SMAJ110A	P6SMAJ110CA	6PE	6EE	110.0	122.00	135.00	1	177.0	3.40	1
P6SMAJ120A	P6SMAJ120CA	6PG	6EG	120.0	133.00	147.00	1	193.0	3.10	1

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Typical Characteristics Curves

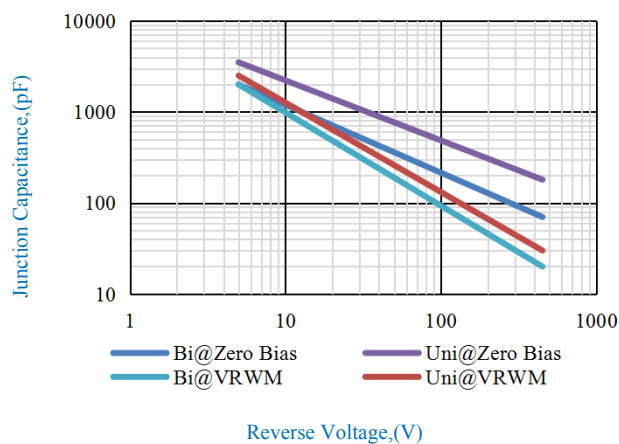
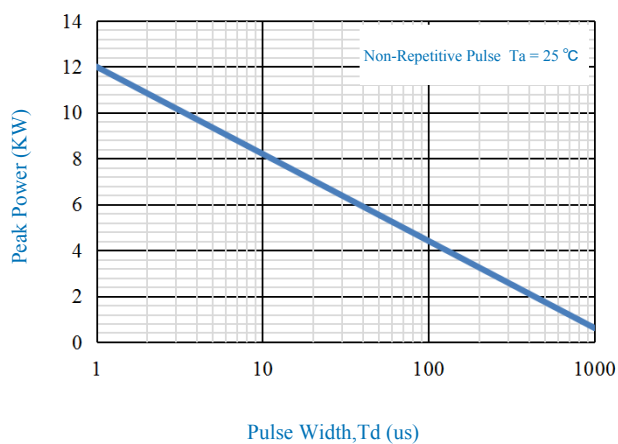
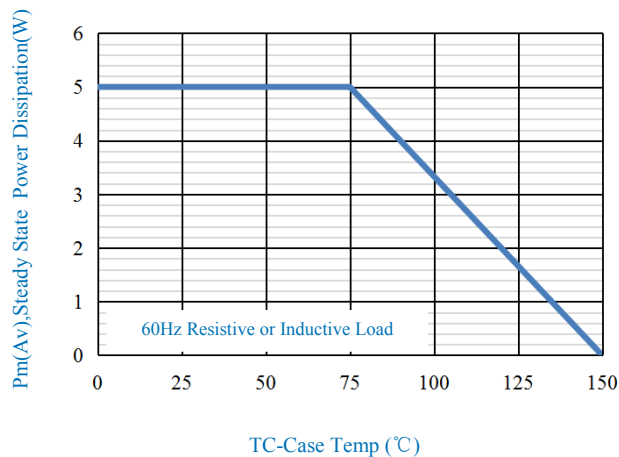
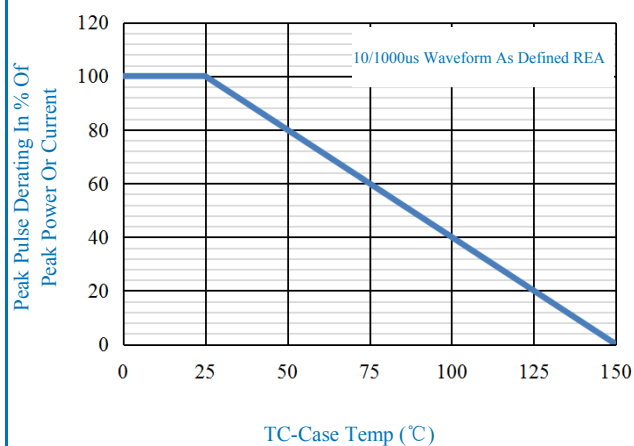


Fig.3-Peak Pulse Power Rating Curve

Fig.4-Typical Junction Capacitance

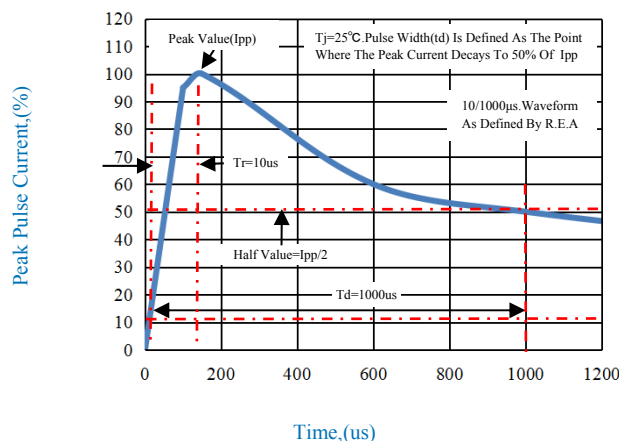
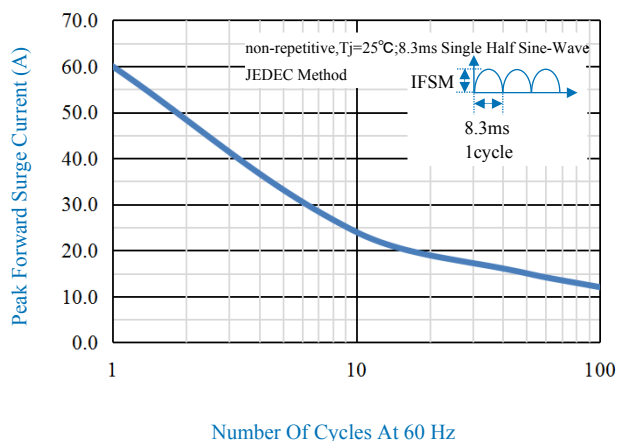


Fig.5-Max. Non-Repetitive Surge Current

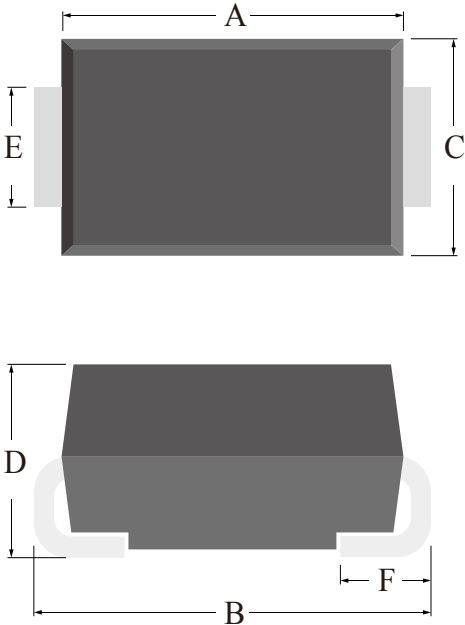
Fig.6-Pulse Waveform

P6SMAJ series



TRANSIENT VOLTAGE SUPPRESSOR DIODES

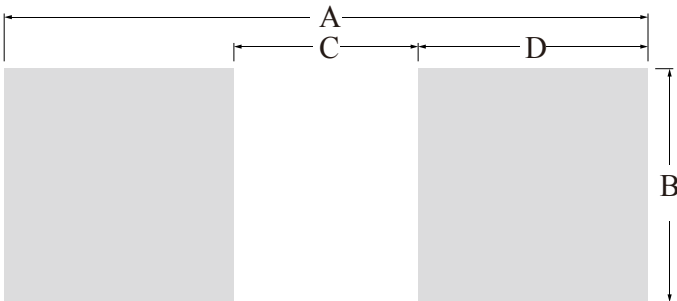
OUTLINE DRAWINGS



SMA

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.00	-	4.60	0.1575	-	1.8110
B	4.70	-	5.28	1.8504	-	2.0787
C	2.40	-	2.85	0.9449	-	1.1220
D	1.90	-	2.58	0.7480	-	1.0157
E	1.30	-	1.60	0.5118	-	0.6299
F	0.76	-	1.52	0.2992	-	0.5984

RECOMMEDND LAYOUT DRAWINGS



SMA

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	5.80	-	-	2.2835	-
B	-	2.06	-	-	0.8110	-
C	-	1.66	-	-	0.6535	-
D	-	2.07	-	-	0.8150	-

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TRANSIENT VOLTAGE SUPPRESSOR DIODES



MARKING



MARKING INSTRUCTION

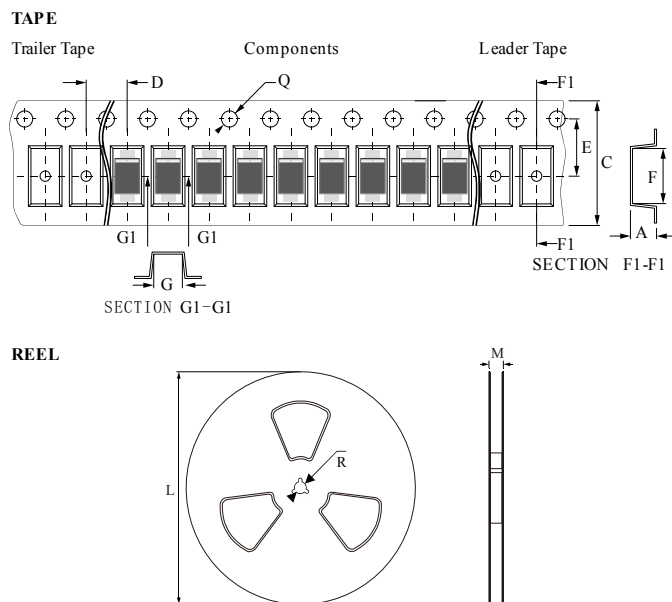
NH=Niuhan Trademark

FF=Product Line Code,According To Actual Changes

YWW=Date Code,According To Actual Changes

XX=mark,XX=See Table-1

PACKAGING



SMA

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
TAPE						
A	2.45	-	2.65	0.0965	-	0.1043
C	11.70	-	12.30	0.4606	-	0.4843
D	3.80	-	4.20	0.1496	-	0.1654
E	5.30	-	5.70	0.2087	-	0.2244
F	5.13	-	5.53	0.2020	-	0.2177
G	2.69	-	2.89	0.1059	-	0.1138
Q Φ	1.40	-	1.60	0.0551	-	0.0630
REEL						
L	328.00	-	332.00	12.913	-	13.071
R	12.00	-	14.00	0.4724	-	0.5512
M	15.00	-	17.00	0.5906	-	0.6693

PACKING INFORMATION

Package Type	Package Code	Product Weight Approx(g/Pcs)	Package Method	Quantity (Pcs/Min. Pack.)	Quantity (Pcs/Inner Box)	Quantity (Pcs/Carton)
SMA	P1	0.063	13" Reel	5000	10000	80000
SMA	P2	0.063	13" Reel	5000	10000	100000

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TRANSIENT VOLTAGE SUPPRESSOR DIODES

Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

Recommended temperature profile for IR reflow

	Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
	Average ramp-up rate (T _{smax} to T _p)	3°C/second max.	3°C/second max.
	Preheat-Temperature Min (T _S min) -Temperature Max (T _S max) -Time(ts min to ts max)	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
	Time maintained above: -Temperature (T _L) - Time (t _L)	183°C 60-150 seconds	217°C 60-150 seconds
	Peak Temperature(T _P)	240 +0/-5 °C	260 +0/-5 °C
	Time within 5°C of actual peak temperature (tp)	10-30 seconds	20-40 seconds
	Ramp down rate	6°C/second max.	6°C/second max.
	Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

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