

PxxxxSx series

Thyristor Surge Suppressors(TSS)



V_{DRM} : 5~390 Volts

I_{PP} : 45~100 A

Package: SMB

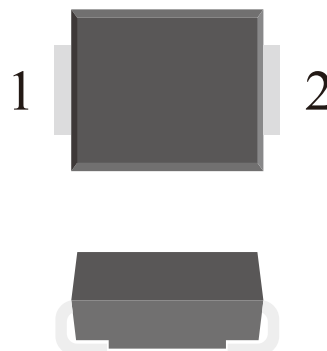
Features

- NH'S Glass Passivated Chip Technology
- Wave And Reflow Solderable
- Low Capacitance Making Them Ideal For High-speed Transmission Equipment
- Very Fast Response Time To Surge Voltage
- Eliminate Hysteresis And Heat Dissipation Typically Found With Clamping Devices
- Eliminates Overvoltage Caused By Fast Rising Transients
- For Surface Mounted Applications In Order To Optimize Board Space

Typical Applications

- Power Port And RS-485/RS-232/RS-422
- Communication And Data Port
- Audio/Video Line, Network And Telecom
- Data Lines And Security Systems

Diagram:



Polarity:



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

Parameter	Test Conditions	Symbol	Value	Unit
Operating Junction Temperature Range		T_J	-40 ~ 150	°C
Storage Temperature Range		T_{STG}	-40 ~ 150	
Thermal Resistance Junction To Ambient With Steady-State	Device Mounted On 1 in2 FR-4 Board With 2oz. Copper	$R_{\theta JA}$	90	°C/W

C-V Curve Chart And Parameter Instruction

	Parameter	Symbol	Instruction
	Peak Off-state Voltage	V_{DRM}	Maximum Voltage That Can Be Applied While Maintaining Off-State
	Switching Voltage	V_S	Maximum Voltage Prior To Switching To On-State
	On-state Voltage	V_T	Maximum Voltage Measured At Rated On-State Current
	Leakage Current	I_{DRM}	Maximum Peak Off-State Current Measured At V_{DRM}
	Switching Current	I_S	Maximum Current Required To Switch To On-state
	On-state Current	I_T	Maximum Rated Continuous On-State Current
	Holding Current	I_H	Minimum Current Required To Maintain On-State
	Off-state Capacitance	C_O	Typical Capacitance Measured In Off-State
	Peak Pulse Voltage	V_{PP}	Maximum Rated Peak Impulse Voltage
	Peak Pulse Current	I_{PP}	Maximum Rated Peak Impulse Current

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

Part Number	Marking	V _{DRM} (V)	V _S (V)	V _T (V)	I _{DRM} (uA)	I _S (mA)	I _T (A)	I _H (mA)	C _{O-MAX} (pF)
P0060SA	P006A	5	15	4	5	800	2.2	50	50
P0060SB	P006B	5	15	4	5	800	2.2	50	70
P0060SC	P006C	5	15	4	5	800	2.2	50	100
P0080SA	P008A	6	25	4	5	800	2.2	50	50
P0080SB	P008B	6	25	4	5	800	2.2	50	70
P0080SC	P008C	6	25	4	5	800	2.2	50	100
P0300SA	P03A	25	40	4	5	800	2.2	50	70
P0300SB	P03B	25	40	4	5	800	2.2	50	70
P0300SC	P03C	25	40	4	5	800	2.2	50	100
P0640SA	P06A	58	77	4	5	800	2.2	150	50
P0640SB	P06B	58	77	4	5	800	2.2	150	60
P0640SC	P06C	58	77	4	5	800	2.2	150	100
P0720SA	P07A	65	88	4	5	800	2.2	150	50
P0720SB	P07B	65	88	4	5	800	2.2	150	60
P0720SC	P07C	65	88	4	5	800	2.2	150	100
P0900SA	P09A	75	98	4	5	800	2.2	150	45
P0900SB	P09B	75	98	4	5	800	2.2	150	55
P0900SC	P09C	75	98	4	5	800	2.2	150	90
P1100SA	P11A	90	130	4	5	800	2.2	150	45
P1100SB	P11B	90	130	4	5	800	2.2	150	55
P1100SC	P11C	90	130	4	5	800	2.2	150	90
P1300SA	P13A	120	160	4	5	800	2.2	150	45
P1300SB	P13B	120	160	4	5	800	2.2	150	55
P1300SC	P13C	120	160	4	5	800	2.2	150	90
P1500SA	P15A	140	180	4	5	800	2.2	150	40
P1500SB	P15B	140	180	4	5	800	2.2	150	60
P1500SC	P15C	140	180	4	5	800	2.2	150	85
P1800SA	P18A	170	220	4	5	800	2.2	150	40
P1800SB	P18B	170	220	4	5	800	2.2	150	60
P1800SC	P18C	170	220	4	5	800	2.2	150	85
P2300SA	P23A	190	260	4	5	800	2.2	150	35
P2300SB	P23B	190	260	4	5	800	2.2	150	55
P2300SC	P23C	190	260	4	5	800	2.2	150	80
P2600SA	P26A	220	300	4	5	800	2.2	150	35
P2600SB	P26B	220	300	4	5	800	2.2	150	50
P2600SC	P26C	220	300	4	5	800	2.2	150	80
P3100SA	P31A	275	350	4	5	800	2.2	150	30
P3100SB	P31B	275	350	4	5	800	2.2	150	45
P3100SC	P31C	275	350	4	5	800	2.2	150	65

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

Part Number	Marking	V _{DRM} (V)	V _S (V)	V _T (V)	I _{DRM} (uA)	I _S (mA)	I _T (A)	I _H (mA)	C _{O-TYP.} (pF)
P3500SA	P350A	320	400	4	5	800	2.2	150	30
P3500SB	P350A	320	400	4	5	800	2.2	150	40
P3500SC	P350A	320	400	4	5	800	2.2	150	65
P4200SA	P420A	390	500	4	5	800	2.2	150	30
P4200SB	P420A	390	500	4	5	800	2.2	150	40
P4200SC	P420A	390	500	4	5	800	2.2	150	65

Model And Identification Instructions

	P	V V V V V	S	y
Product Type P=TSS				
V _{DRM} Spec. 3500=320V				
Package Code S=SMB,T=SMA				
Surge Ratings Code(I _{TSM} Spec.) y=A=20A,y=B=30A,y=C=50A				

Surge Ratings(y=A,y=B,y=C)

Item	I _{pp}					V _{pp}	I _{TSM}	di/dt
Conditions	2x10us	8x20us	10x160us	10x560us	10x1000us	10x700us	60Hz	/
Unit	A	A	A	A	A	V	A	A/us
A	150	150	90	50	45	2000	20	500
B	250	250	150	100	80	4000	30	500
C	500	400	200	150	100	6000	50	500

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Typical Characteristics Curves

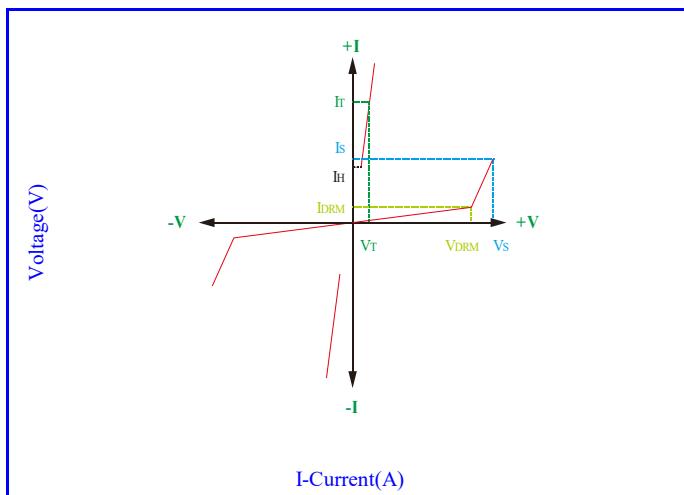


Fig.1- V-I Characteristics

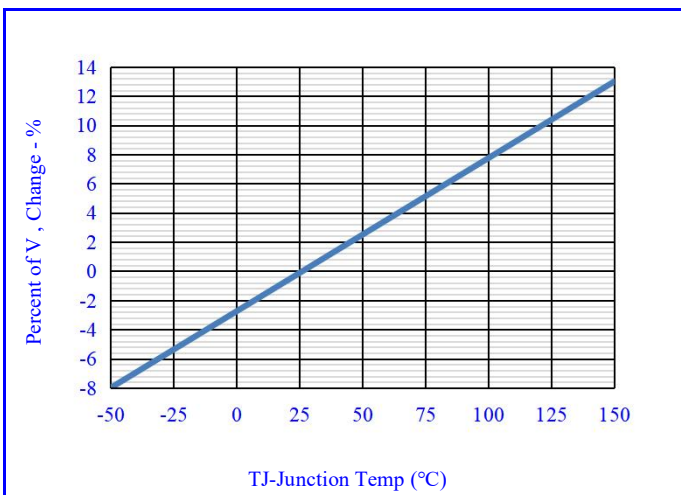


Fig.2-Normalized Vs.Change Versus Junction Temperature

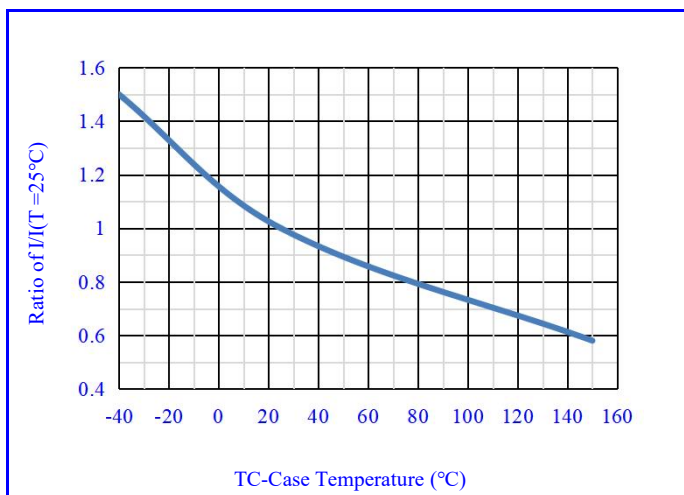


Fig.3-Normalized DC Holding Current Versus Case Temperature

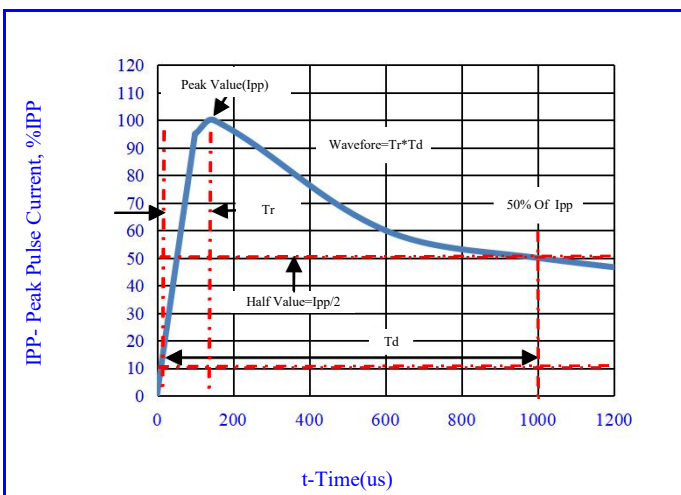


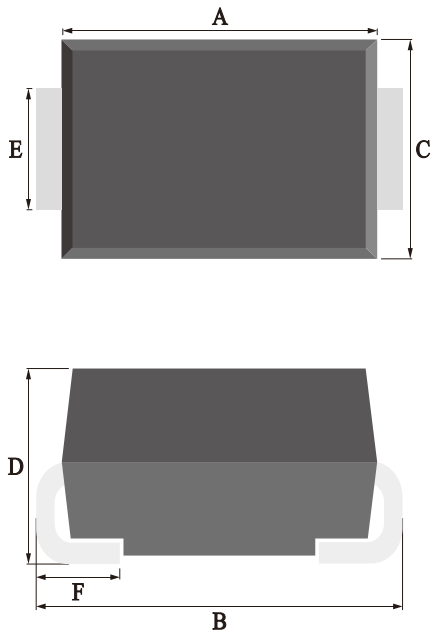
Fig.4-Pulse Waveform

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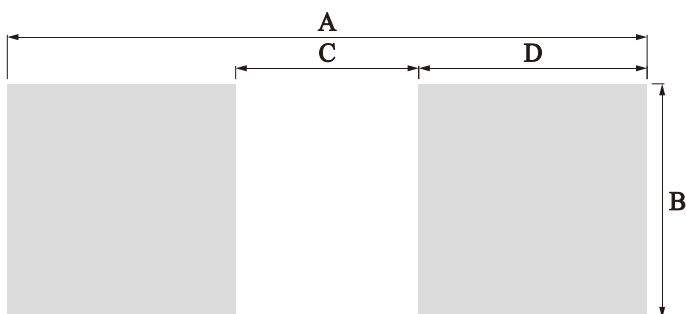
OUTLINE DRAWINGS



SMB

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.00	-	4.70	0.1575	-	1.8504
B	5.00	-	5.59	1.9685	-	2.2008
C	3.30	-	3.94	1.2992	-	1.5512
D	2.10	-	2.45	0.8268	-	0.9646
E	1.90	-	2.11	0.7480	-	0.8307
F	0.76	-	1.50	0.2992	-	0.5906

RECOMMEDND LAYOUT DRAWINGS



SMB

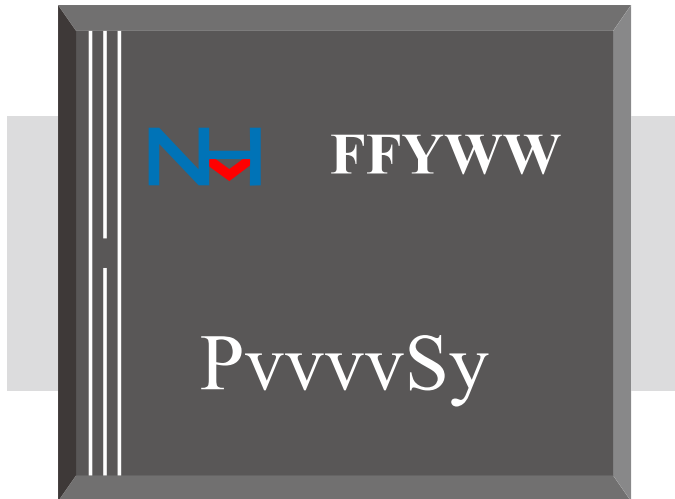
OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	6.34	-	-	2.4961	-
B	-	2.72	-	-	1.0709	-
C	-	1.76	-	-	0.6929	-
D	-	2.29	-	-	0.9016	-

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MARKING



MARKING INSTRUCTION

NH=Niuhang Trademark

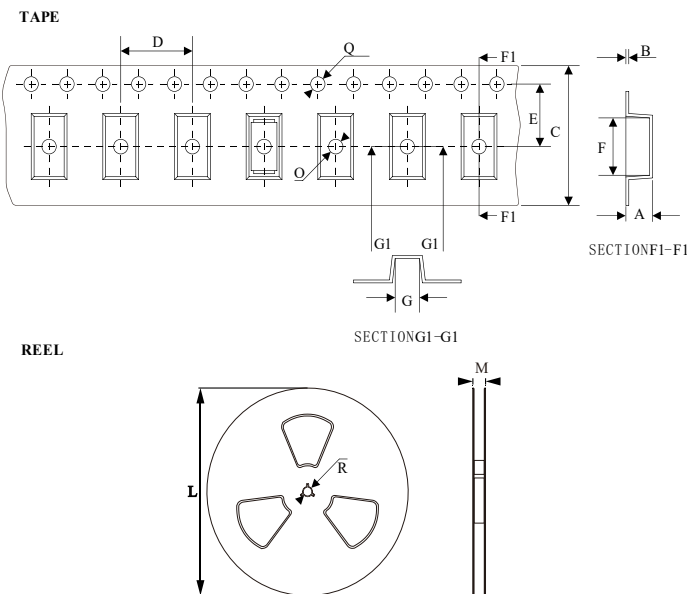
FF=Product Line Code,According To Actual Changes

YW=Date Code,According To Actual Changes

PvvvvSy=Make,vvvv=See Table-1,y=A,B,C

White band denotes cathode

PACKAGING



SMB

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
TAPE						
A	2.60	-	2.80	0.1024	-	0.1102
B	0.15	-	0.35	0.0059	-	0.0138
C	11.70	-	12.30	0.4606	-	0.4843
D	7.90	-	8.10	0.3110	-	0.3189
E	5.40	-	5.60	0.2126	-	0.2205
F	5.59	-	5.79	0.2201	-	0.2280
G	3.66	-	3.86	0.1441	-	0.1520
O Φ	1.50	-	1.60	0.0591	-	0.0630
Q Φ	1.50	-	1.60	0.0591	-	0.0630
REEL						
L	328.00	-	332.00	12.913	-	13.071
R	13.00	-	14.00	0.5118	-	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)
SMB	P1	0.095	13" Reel	3000	6000	48000
SMB	P1	0.095	13" Reel	3000	6000	60000

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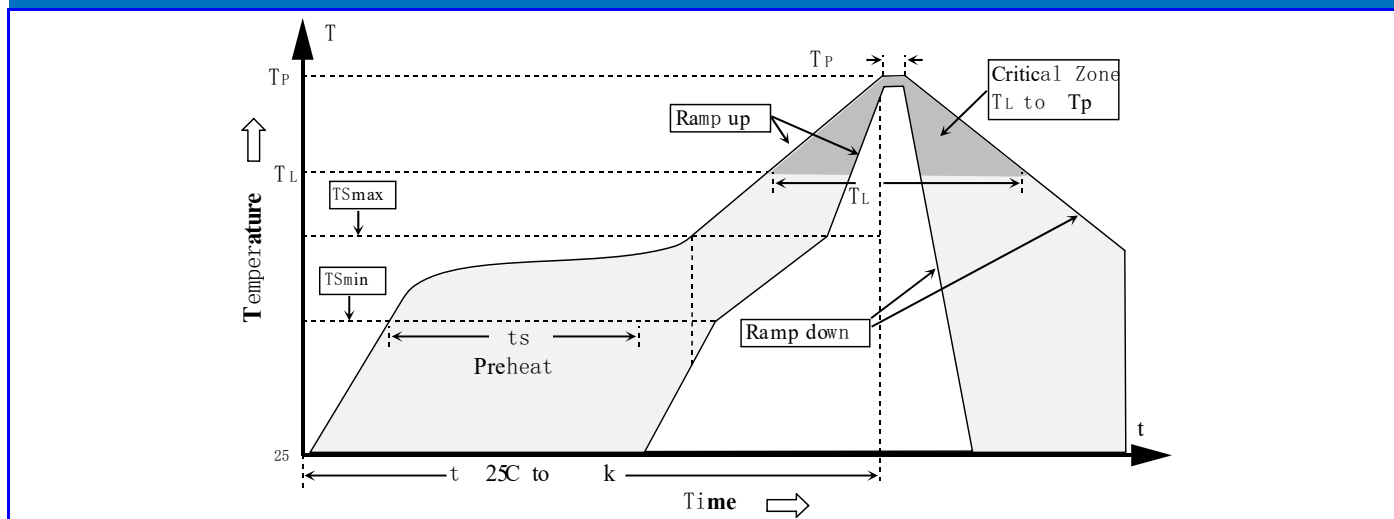
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Recommended wave soldering condition

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 (Tsmx to Tp)	3°C/second max.	3°C/second max.
Preheat -Temperature Min(TS min) -Temperature Max(TS 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 (TL) - Time (tL)	183°C 60-150 seconds	217°C 60-150 seconds
Peak Temperature(TP)	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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