PXXX0SB- 2L Series DO-214AA(SMB-3L) ROHS

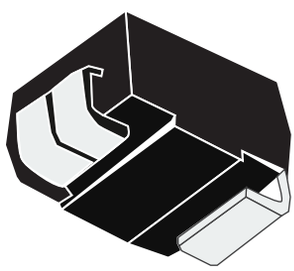
@10/700μS，4KV

Thyristor Surge Suppressors (TSS)

www.unsemi.com.tw

Description

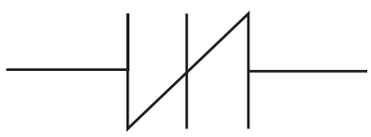
PXXX0SB-2L Series are designed to protect broadband equipment such as modems, line card, CPE and DSL from damaging over-voltage transients. The series provides a surface mount solution that enables equipment to comply with global regulatory standards



Features and Benefits

- Excellent capability of absorbing transient surge
- Quick response to surge voltage (ns Level)
- Eliminates over voltage caused by fast rising transients
- Moisture sensitivity level: Level 1
- Weight 69 mg (approximate)
- Non degenerative
- Response Time is < 1us
- ROHS compliant

Schematic Symbol

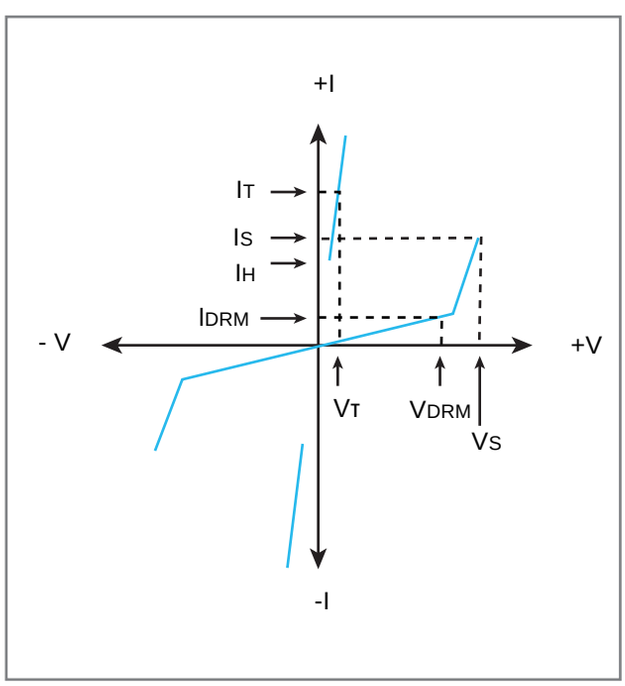


Applicable Global Standards

- TIA-968-A
- ITU K.20/21 Enhanced level
- ITU K.20/21 Basic Level
- GR 1089 Inter building
- IEC 6100-4-5
- YD/T 1082

Electrical Parameters

Parameter	Definition
I_S	**Switching Current -** maximum current required to switch to on state
I_{DRM}	**Leakage Current -** maximum peak off-state current measured at VDRM
I_H	**Holding Current -** minimum current required to maintain on state
I_T	**On-state Current -** maximum rated continuous on-state bcurrent
V_S	**Switching Voltage -** maximum voltage prior to switching to on stat
V_{DRM}	**Peak Off-state Voltage -** maximum voltage that can be applied while maintaining off state
V_T	**On-state Voltage -** maximum voltage measured at rated on-state current
C_0	**Off-state Capacitance -** typical capacitance measured in off state



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Electrical Characteristics (@ 25℃ Unless Otherwise Specified)

Type	V_{DRM}	I_{DRM}	V_S	I_S	V_T	I_T	C_O	I_H	Body Marking
	Pin1,3-2	Max.	Pin1,3-2	Max.			Typ	Typ	
	V	μA	V	mA	V	A	pF	mA	
P0080SB-2L	6	5	20	800	4	2.2	150	120	P008B-2
P0300SB-2L	25	5	40	800	4	2.2	100	50	P03B-2
P0640SB-2L	58	5	77	800	4	2.2	80	120	P06B-2
P4200SB-2L	380	5	460	800	4	2.2	60	5	P42B-2

Notes:

- All measurements are made at an ambient temperature of 25℃.Ipp applies to -40℃ through +85℃ temperature range.
- Special voltage(VBO and VDRM) and holding current(IH) requirements are available up on request.
- Off-state capacitance (CO) is measured at 1 MHz with a 2 V bias and is typical value.

Surge Ratings

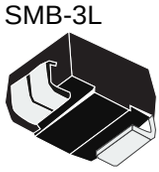
Series	2/10μS[1]	8/20μS[1]	10/560μS[1]	10/560μS[1]	10/1000μS[1]	5/320μS[1]	I_{TSM} 50/60Hz	di/dt
	2/10μS[2]	1.2/50μS[2]	10/560μS[2]	10/560μS[2]	10/1000μS[2]	10/700μS[2]		
	A min	A min	A min	A min	A min	A min	A min	Amps/μs max
B	250	250	250	200	80	100	30	500

Notes:

1. Current waveform in μs
2. Voltage waveform in μs

- Peak pulse current rating (IPP) is repetitive and guaranteed for the life of the product.
- IPP ratings applicable over temperature range of -40ºC to +85ºC
- The device must initially be in thermal equilibrium with -40°C < TJ < +150°C

Thermal Considerations

Package	Symbol	Parameter	Value	Unit
SMB-3L 	T_J	Operating Junction Temperature Range	- 40 to +150	°C
	T_S	Storage Temperature Range	- 40 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	90	°C/W

Characteristic Curves

Figure 1 - V- I Characteristics

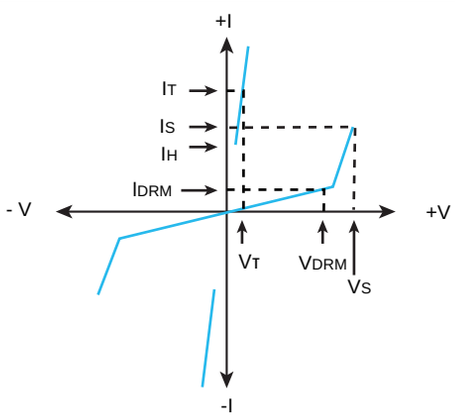


Figure 2 - $t_r \times t_d$ Pulse Waveform

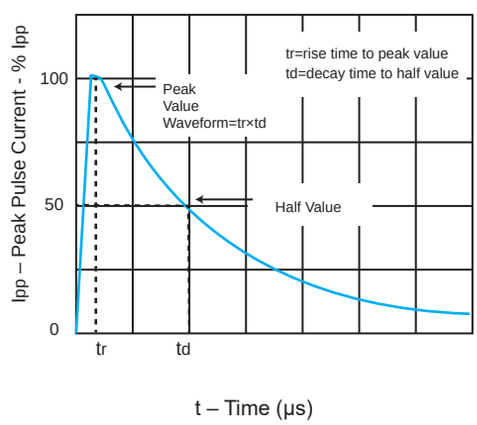


Figure 3 - Normalized VS Change Versus Junction Temperature

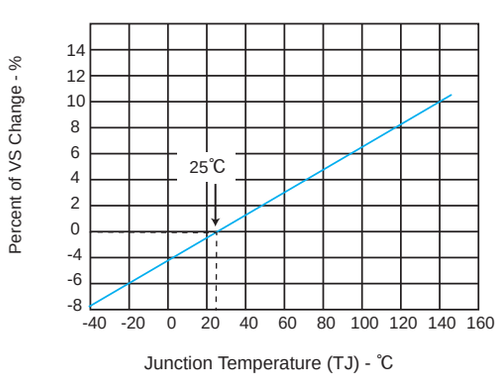
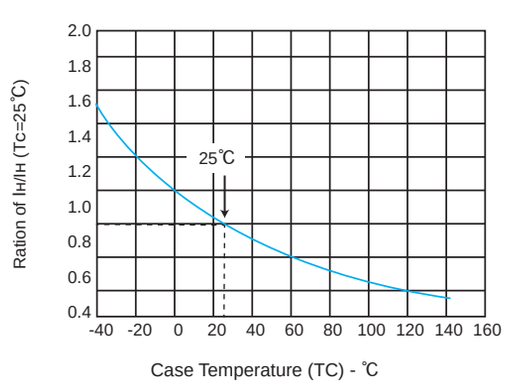


Figure 4 - Normalized DC Holding Current Versus Case Temperature



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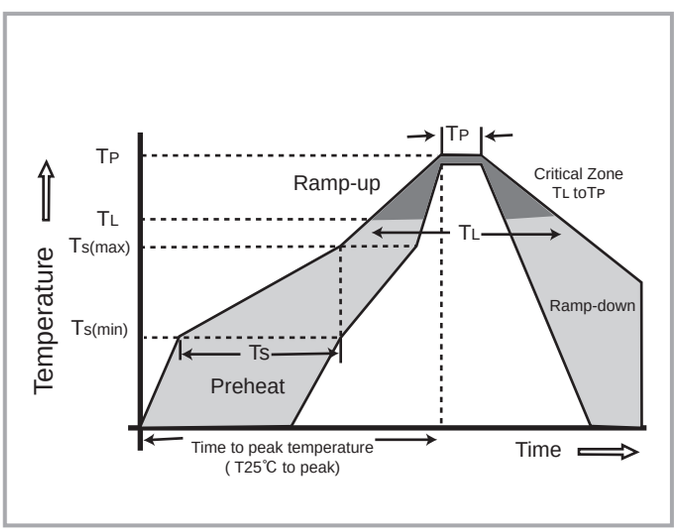
Environmental Specifications

High Temp Voltage Blocking	80% Rated VDRM (VAC Peak) +125°C or +150°C, Lead Material Copper Alloy High Temp Voltage Blocking 504 or 1008 hrs. MIL-STD-750 (Method 1040) JEDEC, JESD22-A-101
Temp Cycing	-65°C to +150°C, 15 min. dwell, 10 up to 100 cycles.MIL-STD-750 (Method 1051) EIA/JEDEC, JESD22-A104
Biased Temp & Humidity	52 VDC (+85°C) 85%RH, 504 up to 1008 hrs. EIA/ JEDEC, JESD22-A-101
High Temp Storage	+150°C 1008 hrs. MIL-STD-750 (Method 1031) JEDEC, JESD22-A-101
Low Temp Storage	-65°C, 1008 hrs.
Thermal Shock	0°C to +100°C, 5 min. dwell, 10 sec. transfer, Thermal Shock 10 cycles. MIL-STD-750 (Method 1056) JEDEC, JESD22-A-106
Autoclave (Pressure Cooker Test)	+121°C, 100%RH, 2atm, 24 up to 168 hrs. EIA/Cooker Test) JEDEC, JESD22-A-102
Resistance to Solder Heat	+260°C, 30 secs. MIL-STD-750 (Method 2031
Moisture Sensitivity Level	85%RH, +85°C, 168 hrs., 3 reflow cycles Level (+260°C Peak). JEDEC-J-STD-020, Level 1

Physical Specifications

Lead Material	Copper Alloy
Terminal Finish	100% Matte-Tin Plated
Body Material	UL recognized epoxy meeting flammability classification 94V-0

Soldering Parameters



Reflow Condition		Lead–free assembly
Pre Heat	**-Temperature Min (Ts(min))**	+150°C
	-Temperature Max (Ts(max))	+200°C
	- Time (min to max) (Ts)	60 -180 Seconds
Average ramp up rate (Liquidus Temp TL) to peak		3°C/Second max
Ts(max) to TL - Ramp-up Rate		5°C/Second max
Reflow	**- Temperature (TL) (Liquidus)**	217°C
	- Time (min to max) (Ts)	60 -150 Seconds
Peak Temperature (TP)		260 +0/-5°C
Time within 5°C of actual peak Temperature (TP)		30 Seconds Max
Ramp-down Rate		6°C/Second Max
Time 25°C to peak Temperature (TP)		8 minutes Max
Do not exceed		+260°C

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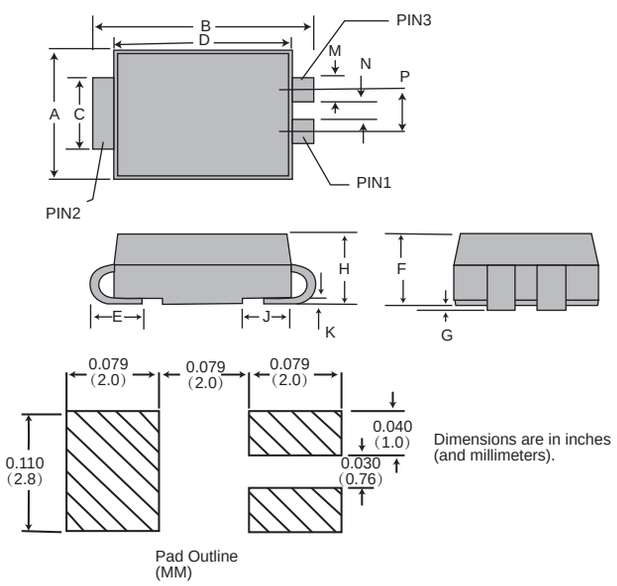
Dimensions DO-214AA(SMB-3L)



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.130	0.155	3.30	3.94
B	0.201	0.220	5.10	5.60
C	0.077	0.083	1.95	2.11
D	0.166	0.185	4.22	4.70
E	0.030	0.063	0.75	1.60
F	0.075	0.096	1.90	2.45
G	0.002	0.008	0.05	0.20
H	0.077	0.096	1.95	2.45
M	0.018	0.028	0.46	0.71
K	0..008	0.014	0.20	0.35
N	0.022	0.028	0.56	0.71
J	0.039	0.053	1.00	1.35
P	0.052	0.058	1.32	1.47

Packaging

Part Number	Component Package	Quantity	Packaging Option	Packaging Specification
PXXX0SB-2L	DO-214AA 3-leaded	3000	Tape & Reel -12mm/13″tape	EIA -481 - D

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ROHS

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