Thyristor Surge Suppressors (TSS) Data Sheet

Description

DO-214AA Thyristor solid state protection thyristor protect telecommunications equipment such as modems, line cards, fax machines, and other CPE.
B Series devices are used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21 and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68).

Features

Compared to surge suppression using other technologies, B Series devices offer absolute surge protection regardless of the surge current available and the rate of applied voltage (dv/dt). B Series devices:

- Cannot be damaged by voltage
- Eliminate hysteresis and heat dissipation typically found with clamping devices
- Eliminate voltage overshoot caused by fast-rising transients
- Are non-degenerative
- Will not fatigue
- Have low capacitance, making them ideal for high-speed transmission equipment
- Meets MSL level 1, per J-STD-020

Electrical Parameters

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

Electrical Characteristics

Part Number	V_{DRM} (V)	V_S (V)	V_T (V)	I_{DRM} (μA)	I_S (mA)	I_T (A)	I_H (mA)	C_O (pF)	I_{PP} 10×1000μs (A)	Marking
B0300SB	25	40	4	5	800	2.2	10	50	75	B03B

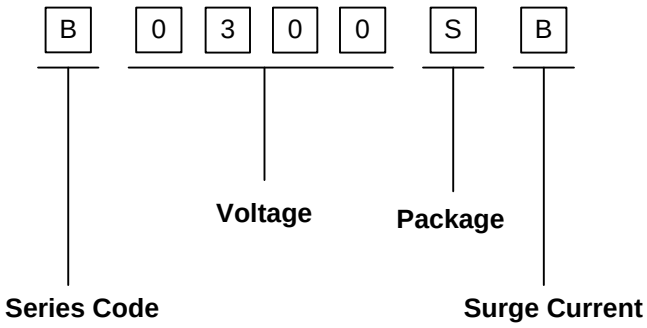
Notes:

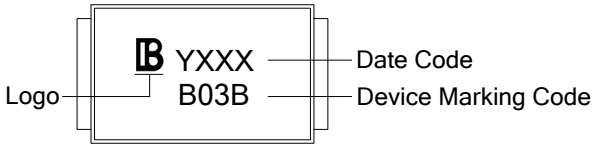
- All measurements are made at an ambient temperature of 25℃. I_{PP} applies to -40℃ through +85℃ temperature range.
- Off-state capacitance(C_O) is measured at 1 MHz with a 2V bias and is typical value.
- Rating Surge Voltage: 4KV, ±5 times (10/700μs)

Thermal Considerations

Package DO-214AA/SMB	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature	-40 to +150	℃
	T_S	Storage Temperature Range	-40 to +150	℃
	$R_{\theta JA}$	Junction to Ambient on printed circuit	90	℃/W

Part Number Code and Marking





Characteristics Curves

Figure 1. V-I Characteristics

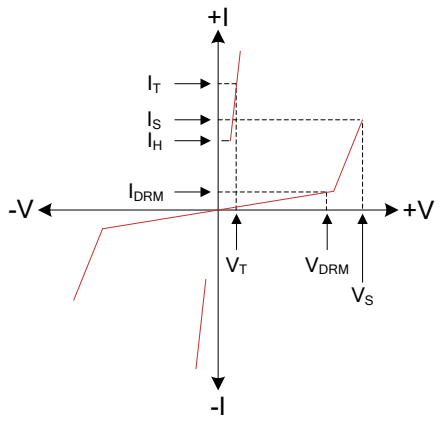


Figure 2. tr × td Pulse Wave-form

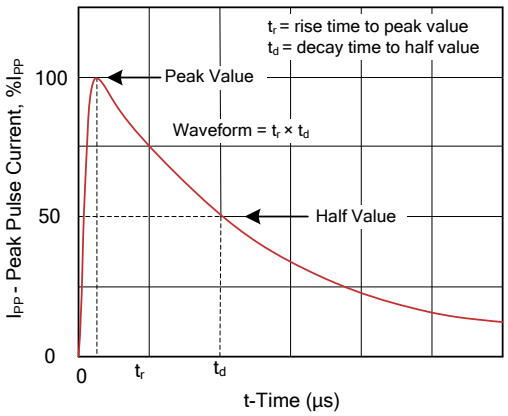


Figure 3. Normalized Vs Change versus Junction Temperature

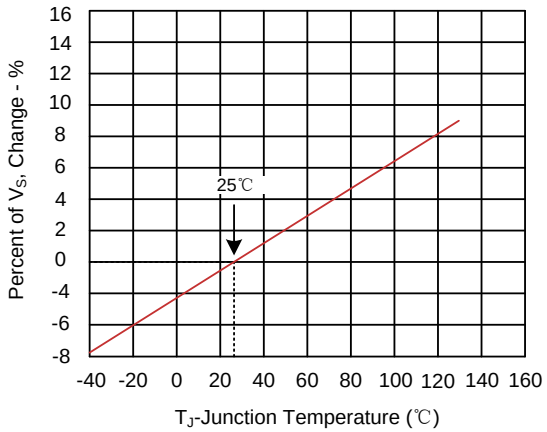
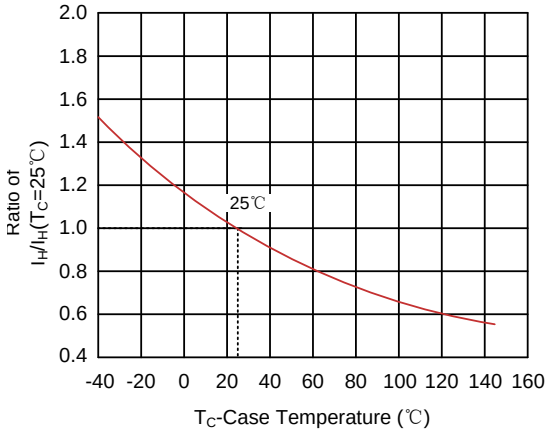
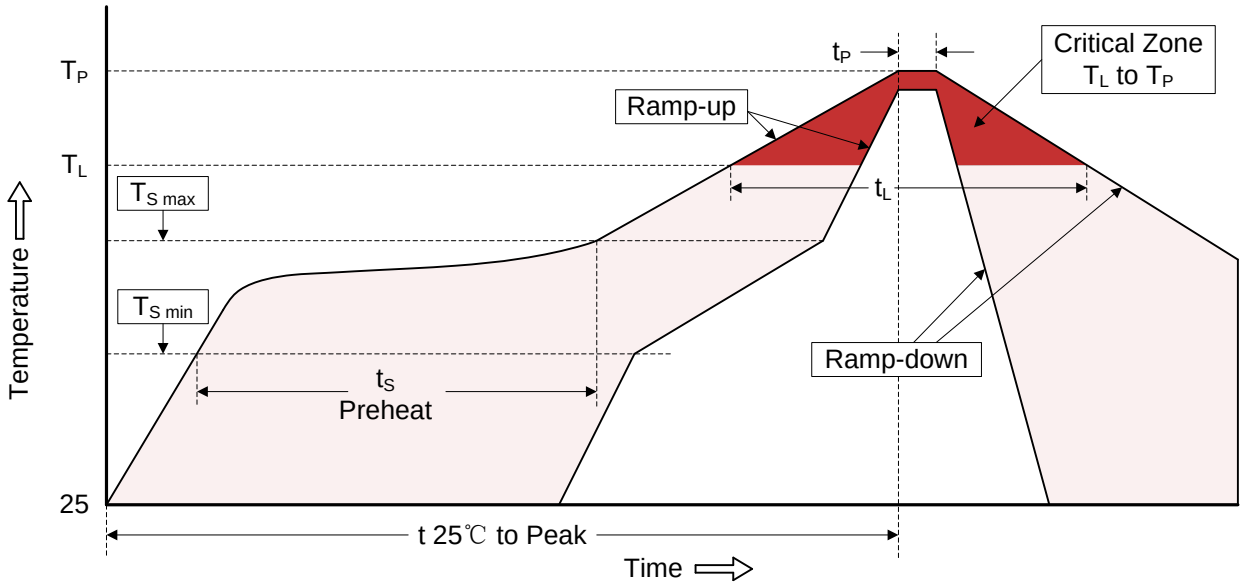


Figure 4. Normalized DC Holding Current versus Case Temperature



Recommended Soldering Conditions

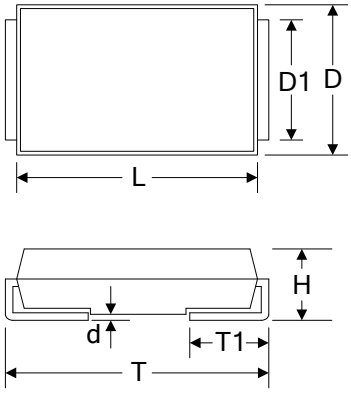
Reflow Soldering



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3℃/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_S)	 150℃ 200℃ 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	 3℃/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	 217℃ 60-150 seconds
Peak Temperature (T_P)	260℃
Time within 5℃ of actual Peak Temperature (t_P)	20-40 seconds
Ramp-down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8 minutes max.

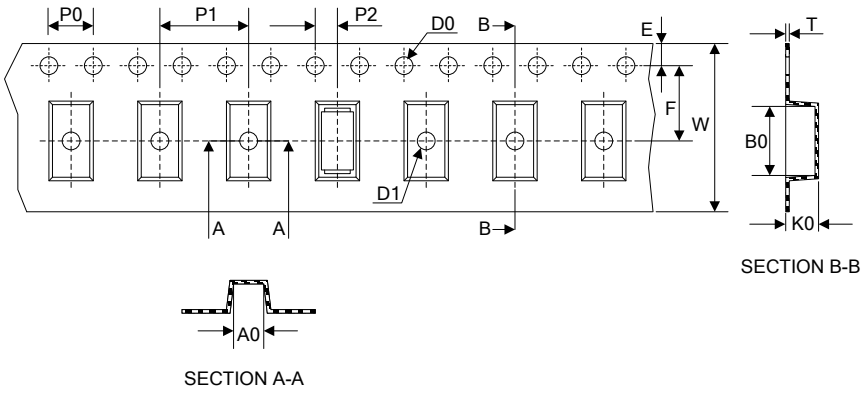
Dimensions (SMB/DO-214AA)



Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
L	4.22	4.70	0.166	0.185
D	3.40	3.94	0.134	0.155
D1	1.90	2.20	0.075	0.086
T	5.21	5.59	0.205	0.220
T1	0.91	1.42	0.036	0.056
d	0.05	0.20	0.002	0.008
H	1.95	2.40	0.077	0.095

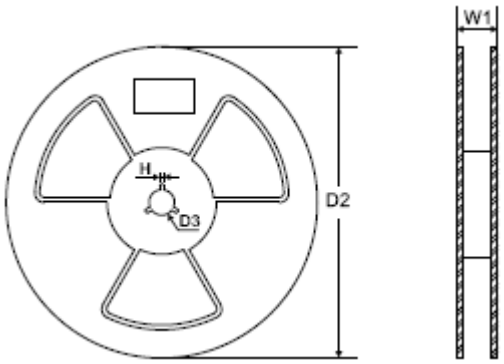
Packaging

Tape



Symbol	Dimension (mm)
W	12.00±0.30
P0	4.00±0.10
P1	8.00±0.10
P2	2.00±0.10
D0	Φ1.55±0.05
D1	Φ1.55±0.05
E	1.75±0.10
F	5.50±0.10
A0	3.76±0.10
B0	5.69±0.10
K0	2.70±0.10
T	0.25±0.10

Reel



D2	Φ330.0±2.0
D3	Φ13.5±0.5
H	2.5±0.5
W1	16.0±1.0

Quantity: 2500PCS