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.
AG-BK is 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, AG-BK devices offer absolute surge protection regardless of the surge current available and the rate of applied voltage (dv/dt). AG-BK 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
V_{PP}	**Peak Pulse Voltage –** maximum rated peak impulse voltage
I_{PP}	**Peak Pulse Current –** maximum rated peak impulse current
V_C	**Clamping Voltage –** maximum voltage measured at V_{PP}

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)	V_{PP} 10/700μs (V)	I_{PP} 10/1000μs (A)	V_C @ V_{PP} (V)	Marking
AG-BK	6	25	4	5	800	2.2	50	125	6000	90	25	AG

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.

Thermal Considerations

Package DO-214AA/SMB	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature	-40 to +125	℃
	T_S	Storage Temperature Range	-40 to +150	℃
	$R_{\theta JA}$	Junction to Ambient on printed circuit	90	℃/W

Characteristics Curves

Figure 1. V-I Characteristics

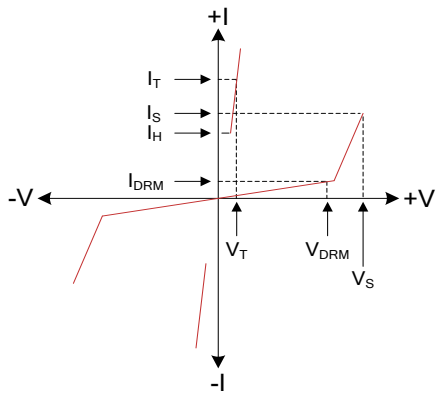


Figure 2. tr × td Pulse Wave-form

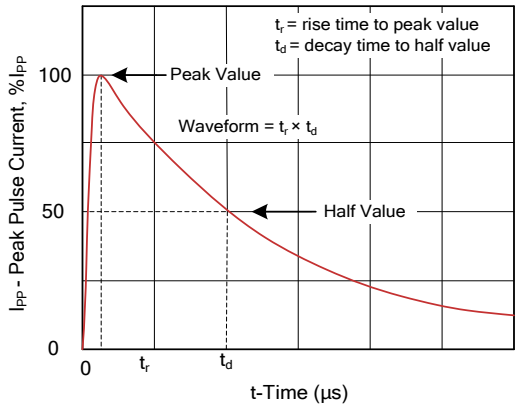


Figure 3. Normalized Vs Change versus Junction Temperature

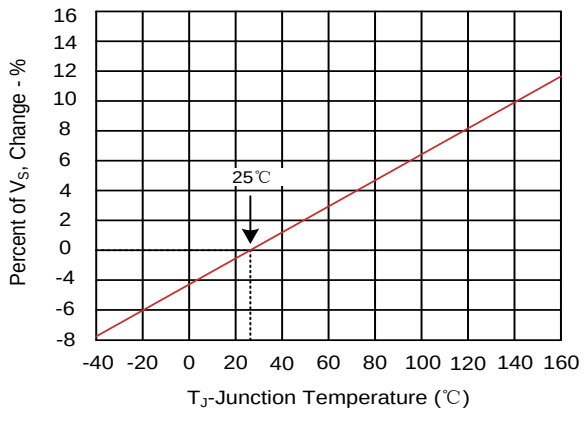
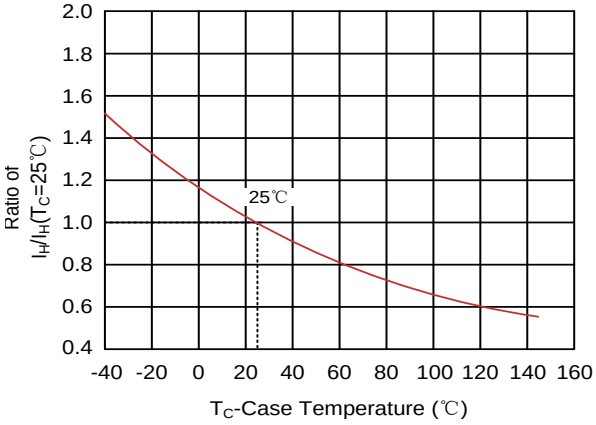
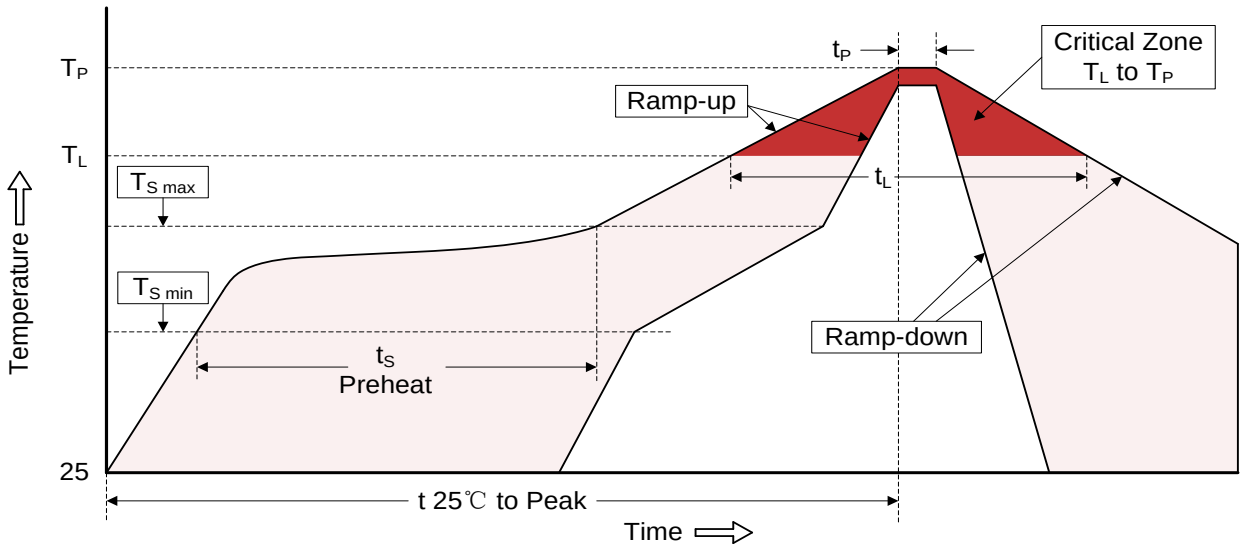


Figure 4. Normalized DC Holding Current versus Case Temperature



Recommended Soldering Conditions

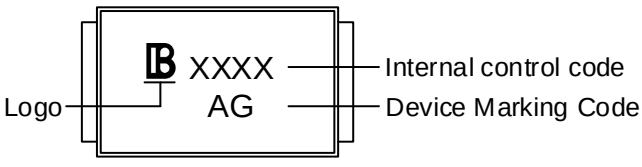
Reflow Soldering



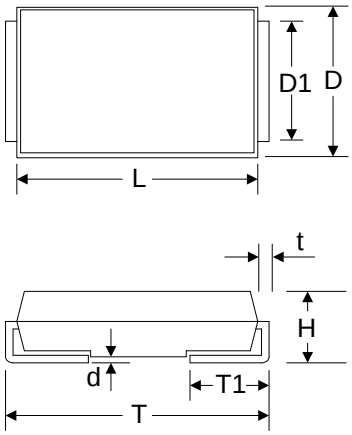
Recommended Conditions

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.

Marking Code



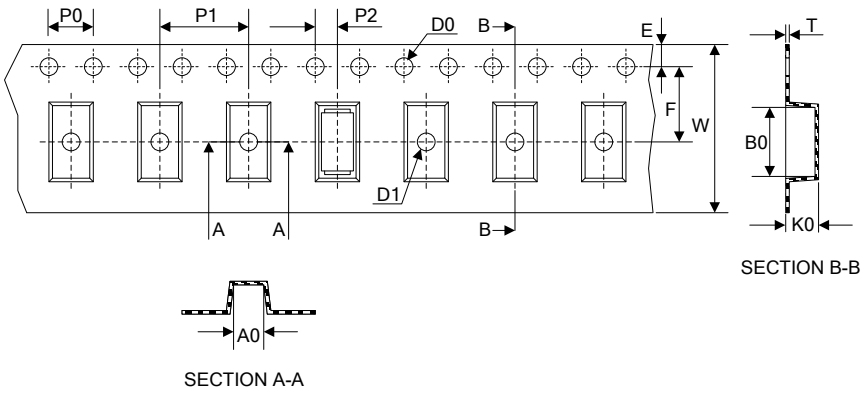
Dimensions (SMB/DO-214AA)



Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
L	4.06	4.57	0.160	0.180
D	3.30	3.94	0.130	0.155
D1	1.95	2.20	0.077	0.086
T	5.21	5.59	0.205	0.220
T1	0.76	1.52	0.030	0.060
d	-	0.16	-	0.006
H	2.13	2.47	0.084	0.097
t	0.152	0.305	0.006	0.012

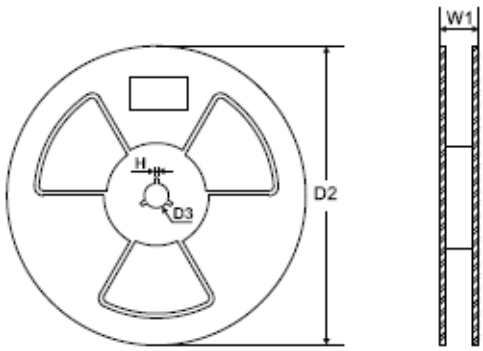
Packaging

Tape



Symbol	Dimension (mm)
W	12.00±0.20
P0	4.00±0.10
P1	8.00±0.10
P2	2.00±0.10
D0	Φ1.55±0.10
D1	Φ1.5±0.10
E	1.75±0.10
F	5.50±0.10
A0	3.86±0.15
B0	5.65±0.10
K0	2.75±0.15
T	0.25±0.05

Reel



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

Quantity: 3000PCS

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