

High Voltage Thyristor Surge Suppressors (TSS)

HP8800SC
DO-214AA(SMB)
@10/700 μ S, 6KV

Description

HP8800SC is designed to protect broadband equipment such as modems, line card, CPE and DSL from damaging over-voltage transients.

The product provides a surface mount solution that enables equipment to comply with global regulatory standards.

Features and Benefits

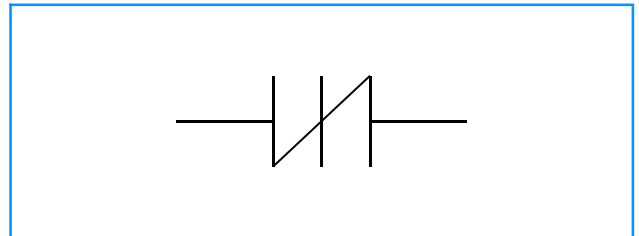
- ◆ Low voltage overshoot
- ◆ Low on-state voltage
- ◆ Does not degrade surge capability after multiple surge events within limit
- ◆ Fails short circuit when surged in excess of ratings
- ◆ Low Capacitance

Applicable Global Standards

- ◆ TIA-968-A
- ◆ ITU K.20/21 Enhanced level
- ◆ ITU K.20/21 Basic Level
- ◆ GR 1089 Inter building
- ◆ GR 1089 Inter building
- ◆ IEC 6100-4-5
- ◆ YD/T 1082
- ◆ YD/T 993
- ◆ YD/T 950



Schematic Symbol



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 V_{DRM}
I_H	Holding Current - minimum current required to maintain on state
I_T	On-state Current - maximum rated continuous on-state current
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 ($T_A=25^{\circ}\text{C}$)

Part Number	Marking	V_{DRM} @ $I_{\text{DRM}}=5\mu\text{A}$	V_s ① @100V/ μS	V_T @ $I_T=2.2\text{A}$	I_s	I_T	I_H	C_0 ② @1MHz, 2V bias
		V min	V max	V max	mA max	A max	mA min	pF max
HP8800SC	P88C	750	980	4	800	2.2	50	50

Notes:

- ① V_s is measured at 100KV/s.
- ② Off-state capacitance is measured in $V_{\text{DC}}=2\text{V}$, $V_{\text{RMS}}=1\text{V}$, $f=1\text{MHz}$.

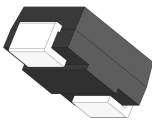
Surge Ratings

Series	2/10 μS^1	8/20 μS^1	10/160 μS^1	10/560 μS^1	10/1000 μS^1	5/310 μS^1	I_{TSM} 50/60 Hz	di/dt
	2/10 μS^2	1.2/50 μS^2	10/160 μS^2	10/560 μS^2	10/1000 μS^2	10/700 μS^2		
	A min	A min	A min	A min	A min	A min	A min	Amps/ μs max
C	500	400	200	150	100	150	50	500

Notes:

1. Current waveform in μs
 2. Voltage waveform in μs
- Peak pulse current rating (I_{PP}) is repetitive and guaranteed for the life of the product.
 - I_{PP} ratings applicable over temperature range of -40°C to $+85^{\circ}\text{C}$
 - The device must initially be in thermal equilibrium with $-40^{\circ}\text{C} < T_J < +150^{\circ}\text{C}$

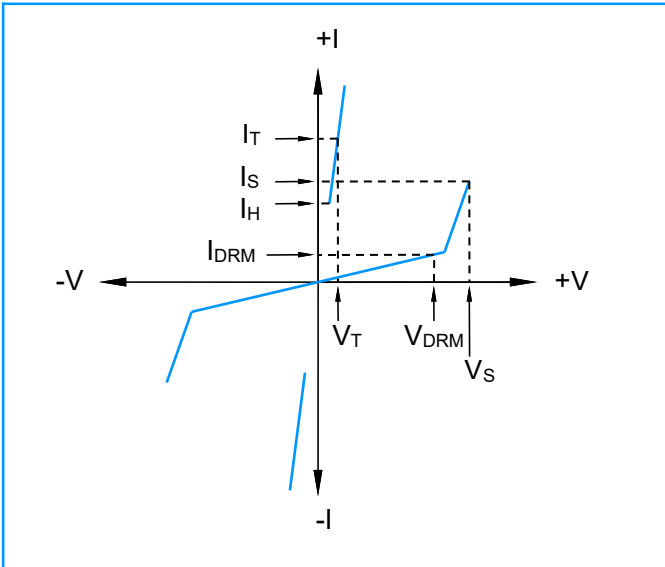
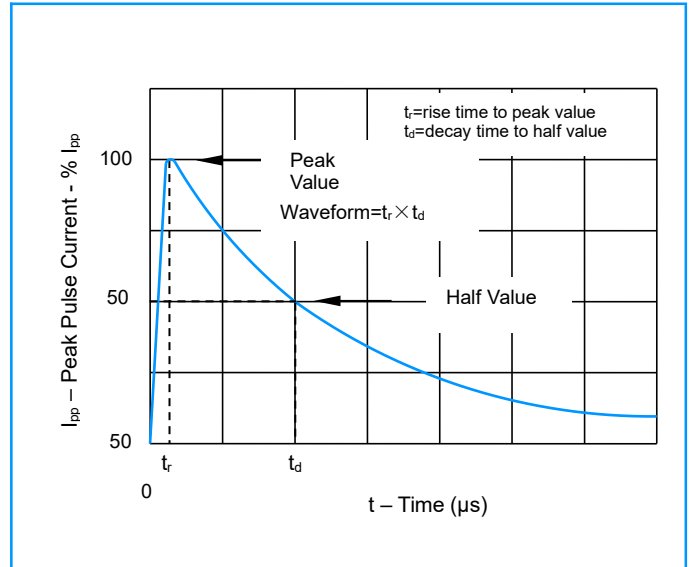
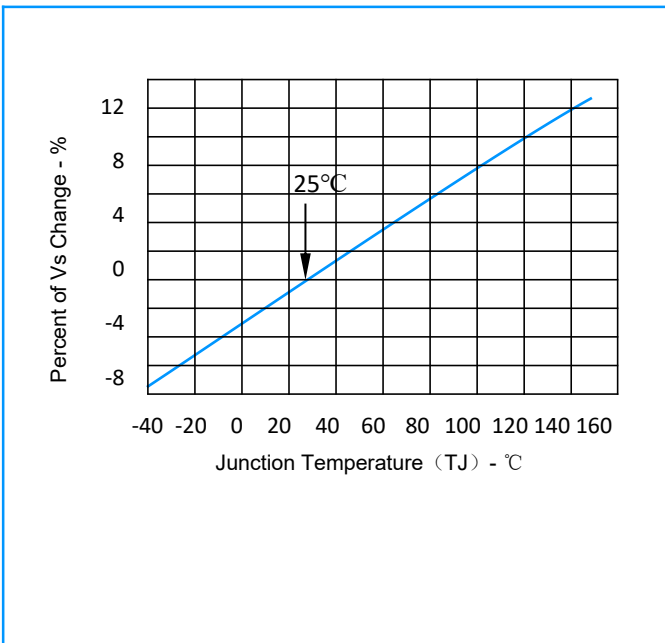
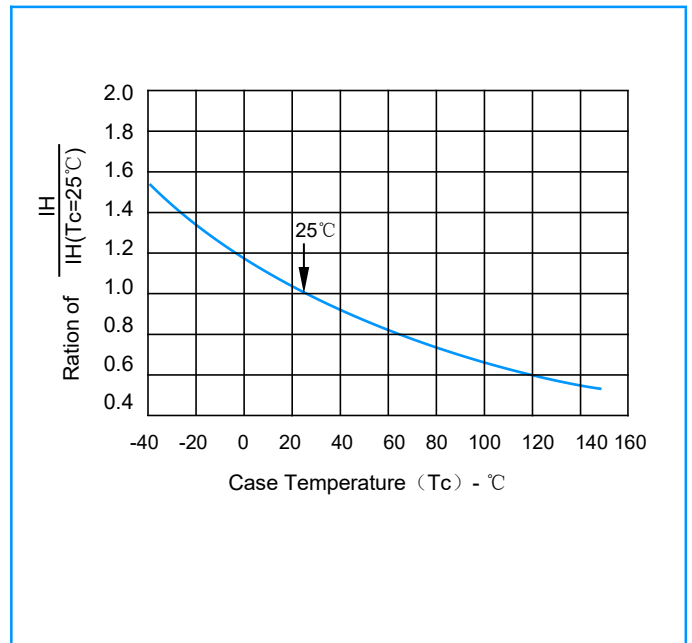
Thermal Considerations

Package	Symbol	Parameter	Value	Unit
DO-214AA 	T_J	Operating Junction Temperature Range	- 40 to + 150	$^{\circ}\text{C}$
	T_s	Storage Temperature Range	- 40 to +150	$^{\circ}\text{C}$
	$R_{\theta\text{JA}}$	Thermal Resistance: Junction to Ambient	90	$^{\circ}\text{C}/\text{W}$

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Characteristic Curves

Figure 1 - V-I Characteristics

Figure 2. $t_r \times t_d$ Pulse Waveform

Figure 3 - Normalized V_S Change Versus Junction Temperature

Figure 4 - Normalized DC Holding Current Versus Case Temperature


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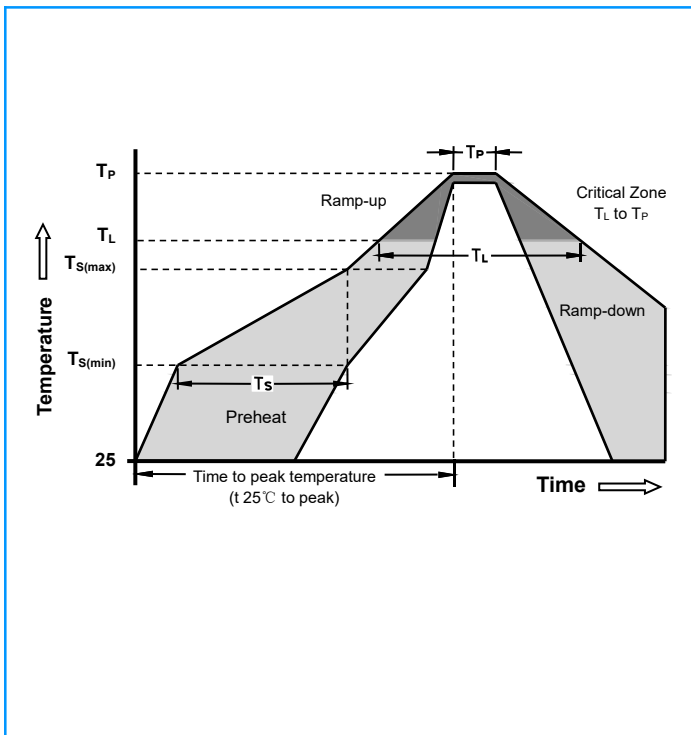
Environmental Specifications

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 Cycling	-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

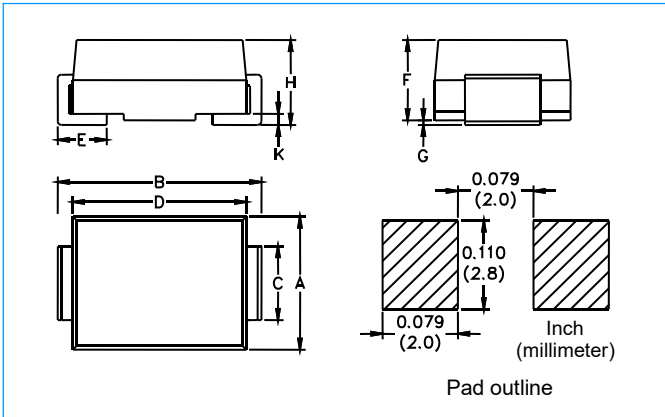


Reflow Condition		Lead-free assembly
Pre Heat	-Temperature Min ($T_{S(min)}$)	+150 °C
	-Temperature Max ($T_{S(max)}$)	+200 °C
	-Time (min to max) (T_s)	60 -180 Seconds
Average ramp up rate (Liquidus Temp T_L to peak)		3 °C/Second Max
$T_{S(max)}$ to T_L - Ramp-up Rate		3 °C/Second Max
Reflow	- Temperature (T_L) (Liquidus)	+217 °C
	- Time (min to max) (T_L)	60 -150 Seconds
Peak Temperature (T_P)		260 +0/-5 °C
Time within 5 °C of actual peak Temperature (t_p)		30 Seconds Max
Ramp-down Rate		6 °C/Second Max
Time 25 °C to peak Temperature (T_P)		8 minutes Max
Do not exceed		+260 °C

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Dimensions DO-214AA(SMB)



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.130	0.156	3.30	3.95
B	0.201	0.220	5.10	5.60
C	0.077	0.087	1.95	2.20
D	0.159	0.181	4.05	4.60
E	0.030	0.063	0.76	1.60
F	0.076	0.096	1.90	2.45
G	0.002	0.008	0.05	0.20
H	0.077	0.104	1.95	2.65
K	0.006	0.016	0.15	0.41

Packaging

Part Number	Component Package	Quantity	Packaging Option	Packaging Specification
HP8800SC	DO-214AA(SMB)	3000 PCS	Tape & Reel -12mm/13"tape	EIA -481 - D

Tape and Reel Specifications

