

## Thyristor Surge Suppressors (TSS) Data Sheet

### Description

**DO-214AC Thyristor** solid state protection thyristor protect telecommunications equipment such as modems, line cards, fax machines, and other CPE.

P 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, P Series devices offer absolute surge protection regardless of the surge current available and the rate of applied voltage (dv/dt). P 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
$V_{DRM}$	<b>Peak Off-state Voltage</b> – maximum voltage that can be applied while maintaining off state
$V_S$	<b>Switching Voltage</b> – typical voltage prior to switching to on state
$V_T$	<b>On-state Voltage</b> – maximum voltage measured at rated on-state current
$I_{DRM}$	<b>Leakage Current</b> – maximum peak off-state current measured at $V_{DRM}$
$I_S$	<b>Switching Current</b> – maximum current required to switch to on state
$I_T$	<b>On-state Current</b> – maximum rated continuous on-state current
$I_H$	<b>Holding Current</b> – minimum current required to maintain on state
$C_O$	<b>Off-state Capacitance</b> – typical capacitance measured in off state
$I_{PP}$	<b>Peak Pulse Current</b> – maximum rated peak impulse current

### Electrical Characteristics

Part Number	V <sub>DRM</sub> (V)	V <sub>S</sub> (V)	V <sub>T</sub> (V)	I <sub>DRM</sub> (μA)	I <sub>S</sub> (mA)	I <sub>T</sub> (A)	I <sub>H</sub> (mA)	C <sub>O</sub> (pF)	I <sub>PP</sub> 10×1000μs (A)	Marking
P0060CA	5	15	4	5	800	1	10	25	80	6CA

Notes: • All measurements are made at an ambient temperature of 25°C. I<sub>PP</sub> applies to -40°C through +85°C temperature range.  
 • Off-state capacitance(C<sub>O</sub>) is measured at 1 MHz with a 2V bias and is typical value.  
 • Rating Surge Voltage: 4KV (10/700μs)

### Thermal Considerations

Package DO-214AC/SMA	Symbol	Parameter	Value	Unit
	T <sub>J</sub>	Operating Junction Temperature	-40 to +125	°C
	T <sub>S</sub>	Storage Temperature Range	-40 to +125	°C
	R <sub>θJA</sub>	Junction to Ambient on printed circuit	90	°C/W

### Characteristics Curves

Figure 1. V-I Characteristics

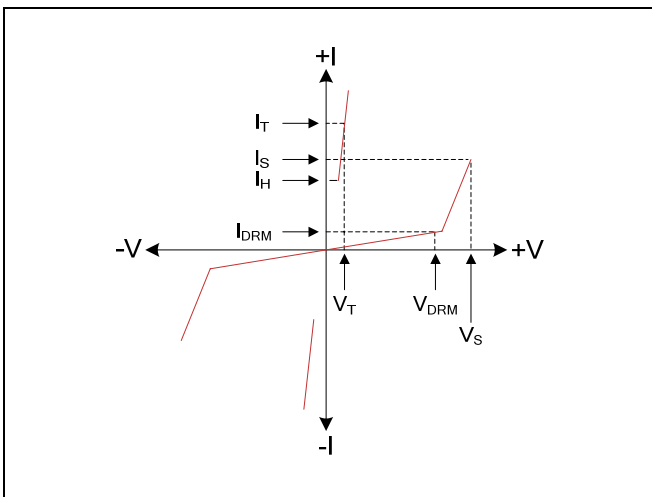


Figure 2. tr × td Pulse Wave-form

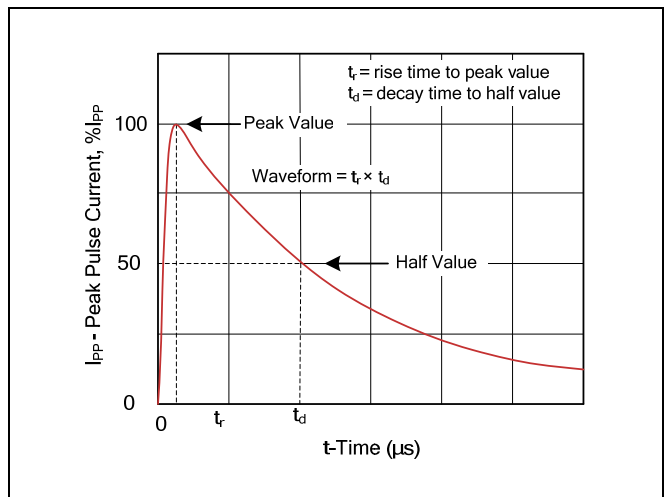


Figure 3. Normalized V<sub>S</sub> Change versus Junction Temperature

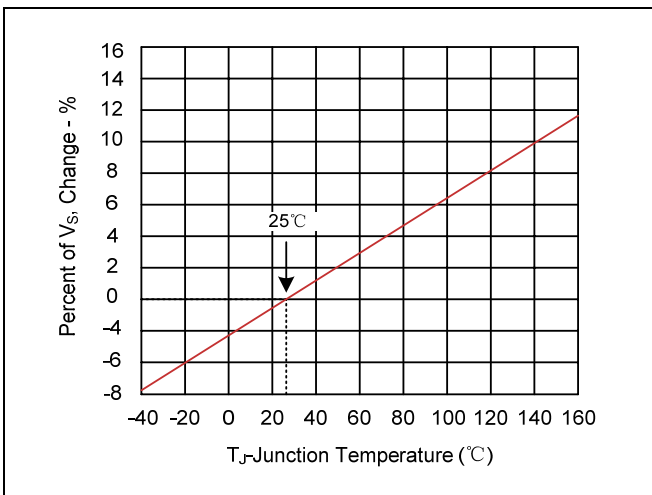
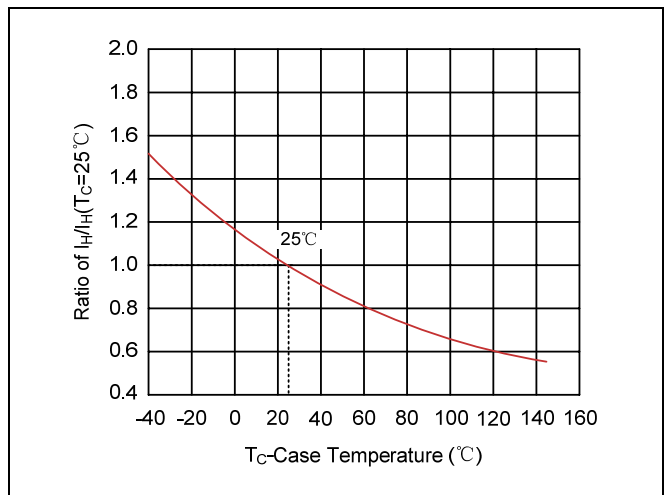
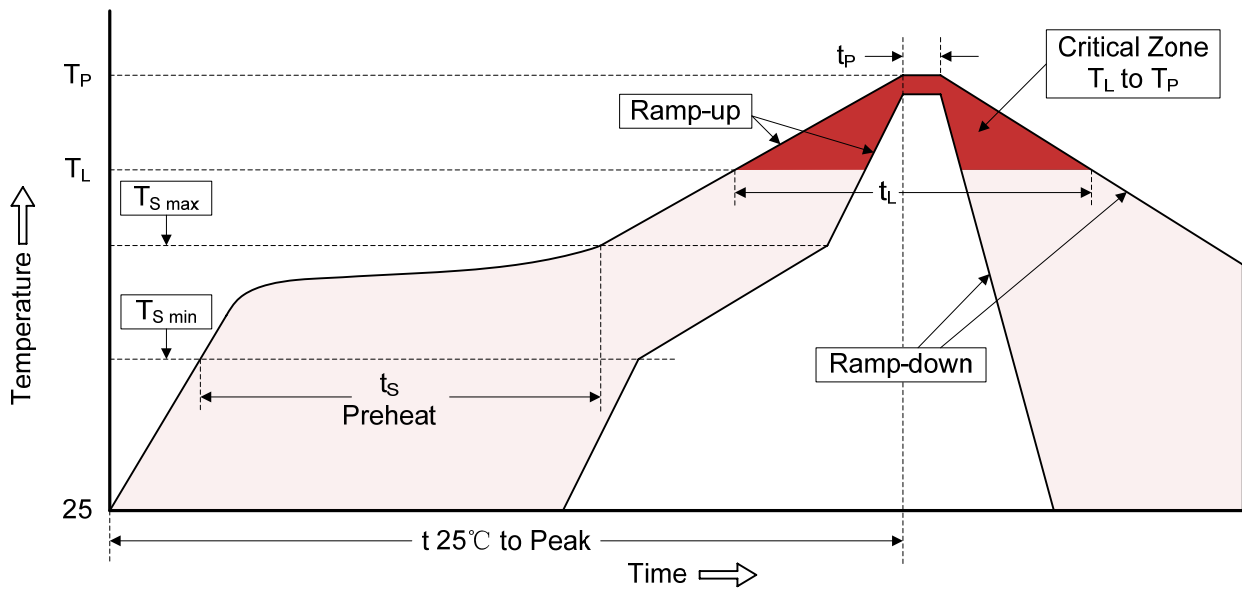


Figure 4. Normalized DC Holding Current versus Case Temperature



### Recommended Soldering Conditions

Reflow Soldering



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (TL to TP)	3°C/second max.
Preheat -Temperature Min (TSmin) -Temperature Max (TSmax) -Time (min to max) (ts)	150°C 200°C 60-180 seconds
TSmax to TL -Ramp-up Rate	3°C/second max.
Time maintained above: -Temperature (TL) -Time (tL)	217°C 60-150 seconds
Peak Temperature (TP)	260°C
Time within 5°C of actual Peak Temperature (tp)	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

	Symbol	Millimeters		Inches	
		Min.	Max.	Min.	Max.
	L	3.99	4.50	0.157	0.177
	D	2.54	2.79	0.100	0.110
	D1	1.25	1.65	0.049	0.065
	T	4.93	5.28	0.194	0.208
	T1	0.76	1.52	0.030	0.060
	d	-	0.203	-	0.008
	H	2.00	2.50	0.079	0.098

**Packaging**

<p>Tape</p>	Symbol	Dimension (mm)
	W	12.00±0.20
	P0	4.00±0.10
	P1	4.00±0.10
	P2	2.00±0.10
	D0	Φ1.50±0.10
	D1	Φ1.50±0.10
	E	1.50±0.10
	F	5.65±0.05
	A0	2.79±0.15
<p>Reel</p>	B0	5.33±0.15
	K0	2.55±0.10
	T	0.25±0.05
	D2	Φ330.0±2.0
	D3	Φ13.5±0.5
	H	2.5±0.5
	W1	16.0±1.0
	Quantity: 5000PCS	