

## Description

DO-15 P Series 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).



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

## Electrical Parameters

Parameter	Definition
$C_0$	<b>Off-state Capacitance</b> — typical capacitance measured in off state
$di/dt$	<b>Rate of Rise of Current</b> — maximum rated value of the acceptable rate of rise in current over time
$I_S$	<b>Switching Current</b> — maximum current required to switch to on state
$I_{DRM}$	<b>Leakage Current</b> — maximum peak off-state current measured at $V_{DRM}$
$I_H$	<b>Holding Current</b> — minimum current required to maintain on state
$I_{PP}$	<b>Peak Pulse Current</b> — maximum rated peak impulse current
$I_T$	<b>On-state Current</b> — maximum rated continuous on-state current
$I_{TSM}$	<b>Peak One-cycle Surge Current</b> — maximum rated one-cycle AC current
$V_S$	<b>Switching Voltage</b> — maximum voltage prior to switching to on state
$V_{DRM}$	<b>Peak Off-state Voltage</b> — maximum voltage that can be applied while maintaining off state
$V_F$	<b>On-state Forward Voltage</b> — maximum forward voltage measured at rated on-state current
$V_T$	<b>On-state Voltage</b> — maximum voltage measured at rated on-state current



**Over-voltage Protection Thyristor**
**SP2300LB**

ROHS

**Electrical Characteristics**

Part Number*	V <sub>DRM</sub> Volts	V <sub>S</sub> Volts	V <sub>T</sub> Volts	I <sub>DRM</sub> μ Amps	I <sub>S</sub> mAmps	I <sub>T</sub> Amps	I <sub>H</sub> mAmps	C <sub>O</sub> pF
SP2300LB	190	260	4	5	800	2.2	150	60

\* For surge ratings, see table below.


Notes:

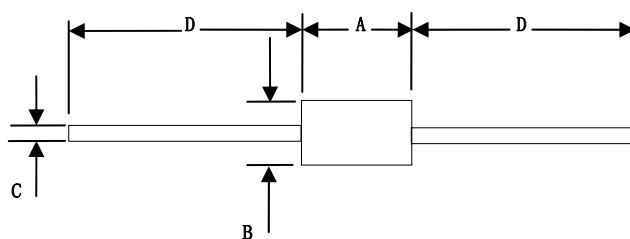
- All measurements are made at an ambient temperature of 25°C. I<sub>PP</sub> applies to -40°C through +85°C temperature range.
- Off-state capacitance (C<sub>O</sub>) is measured at 1 MHz with a 2 V bias and is typical value.

**Surge Ratings**

Series	I <sub>PP</sub> 2/10 μ s Amps	I <sub>PP</sub> 8/20 μ s Amps	I <sub>PP</sub> 10/160 μ s Amps	I <sub>PP</sub> 10/560 μ s Amps	I <sub>PP</sub> 10/1000 μ s Amps	I <sub>TSM</sub> 60 Hz Amps	di/dt Amps/μ s
B	250	250	150	100	80	30	500

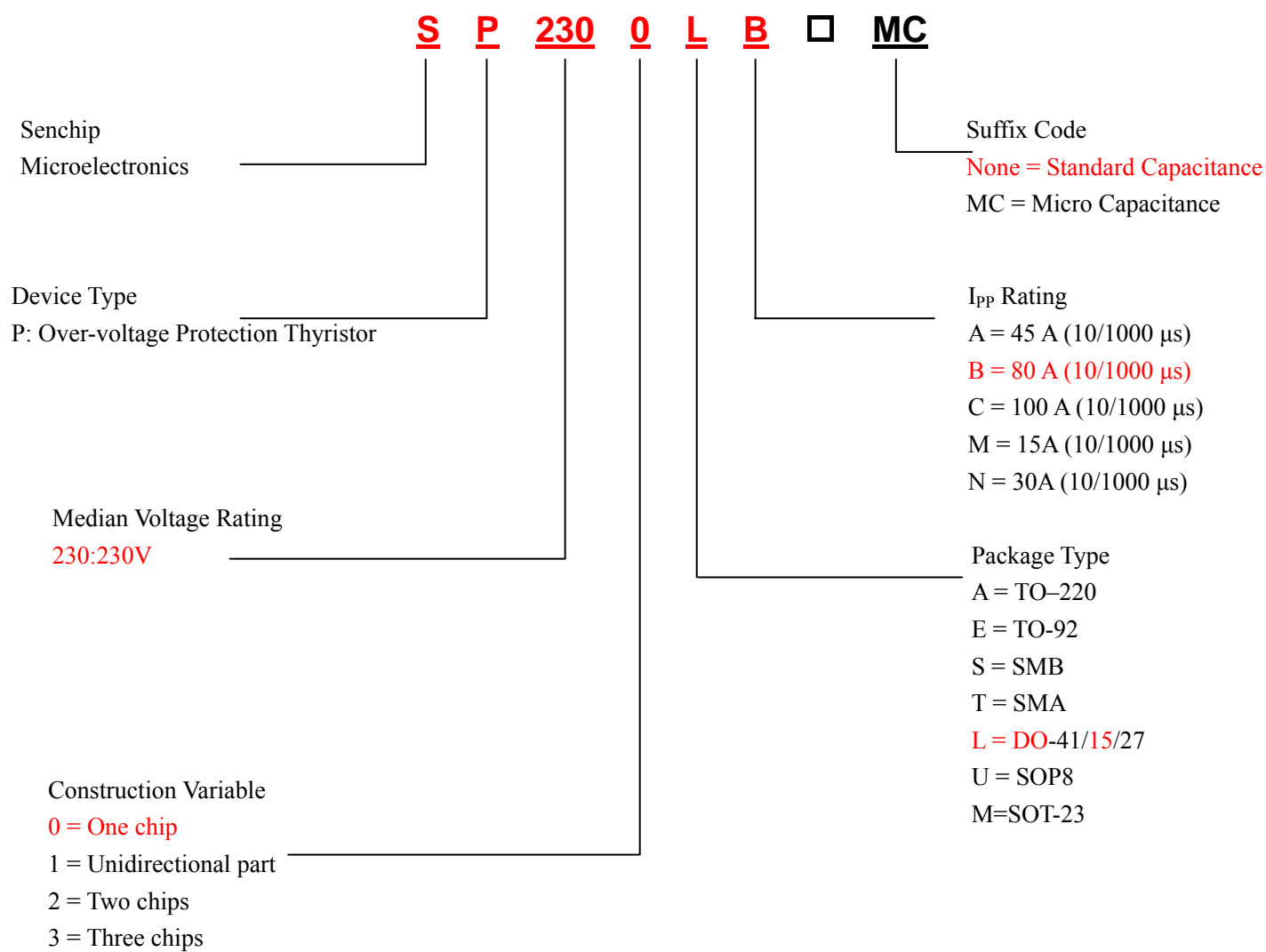
**Thermal Considerations**

Package	D0-15	Symbol	Parameter	Value	Unit
		T <sub>J</sub>	Operating Junction Temperature	-40 to +150	°C
		T <sub>S</sub>	Storage Temperature Range	-40 to +150	°C
		R <sub>θJA</sub>	Junction to Ambient on printed circuit	90	°C/W

**Dimensions**


Dimension	Inches		Millimeters		NOTE
	MIN	MAX	MIN	MAX	
A	0.230	0.300	5.80	7.60	
B	0.104	0.140	2.60	3.60	$\phi$
C	0.026	0.034	0.70	0.90	$\phi$
D	1.000		25.40		

Description of Part Number



Description of Marking

Device Type

S: Senchip Over-voltage  
Protection Thyristor

23: 230V (VBR Median  
Voltage Rating)

08: 2008

The last two numbers of  
year.

L: DO-41/15/27

I<sub>PP</sub> Rating

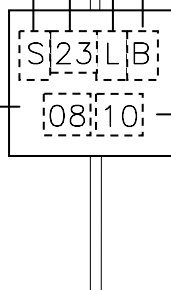
A = 45 A (10/1000  $\mu$ s)

B = 80 A (10/1000  $\mu$ s)

C = 100 A (10/1000  $\mu$ s)

10: October

The two numbers of  
month.




# Over-voltage Protection Thyristor

SP2300LB

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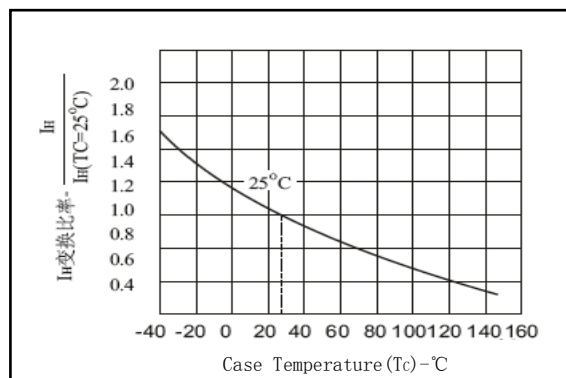
## Summary of Packing Options

Package Type	Description	Packing Quantity	Industry Standard
D0-15 	Embossed Carrier Reel Pack	2000 PCS	EIA RS-481

## Thermal Derating Curves



Normalized VS Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature



E313687