

Description

DO-214AA 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).

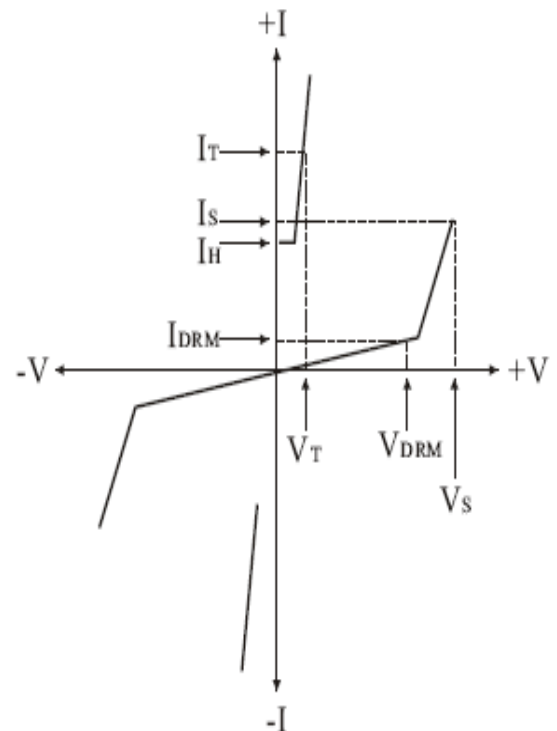


Compared to surge suppression using other technologies, P Series devices offer absolute surge protection regardless of the surge current available and the rate of applied voltage (dv/dt). P Series devices:

- 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 fatigu
- Have low capacitance, making them ideal for high-speed transmission equipment

Electrical Parameters

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



Over-voltage Protection Thyristor
SP3100SA

ROHS

Electrical Characteristics

| Part Number* | V _{DRM} Volts | V _S Volts | V _T Volts | I _{DRM} μ Amps | I _S mAmps | I _T Amps | I _H mAmps | C _o pF |
|--------------|---------------------------|-------------------------|-------------------------|----------------------------|-------------------------|------------------------|-------------------------|----------------------|
| SP3100SA | 275 | 350 | 4 | 5 | 800 | 2.2 | 150 | 35 |

* For surge ratings, see table below.


Notes:

- All measurements are made at an ambient temperature of 25°C. I_{PP} applies to -40°C through +85°C temperature range.
- Off-state capacitance (C_o) is measured at 1 MHz with a 2 V bias and is typical value.

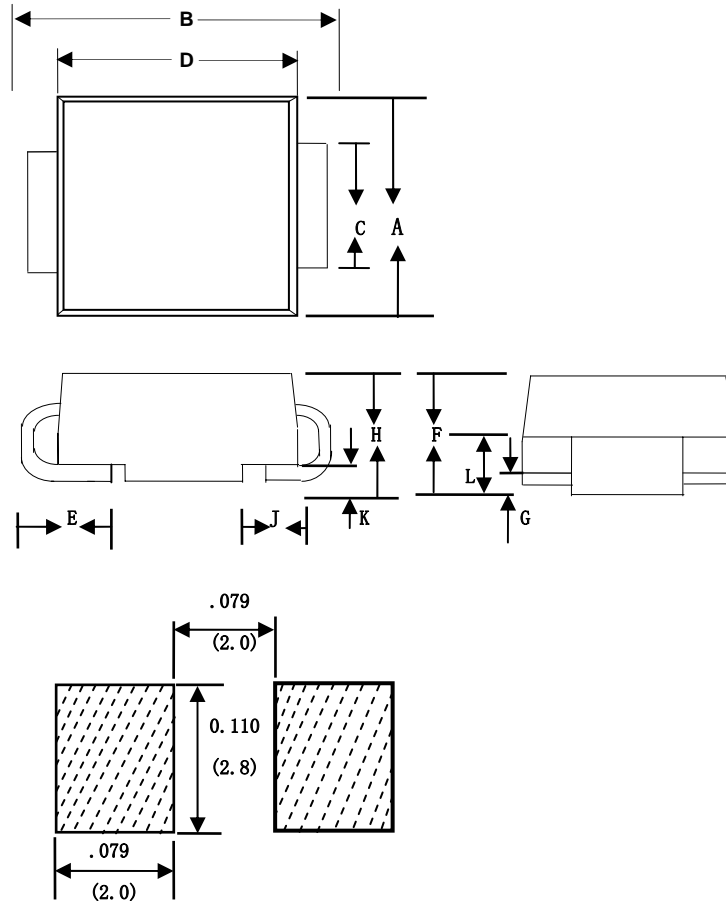
Surge Ratings

| Series | I _{PP} 2/10 μ s Amps | I _{PP} 8/20 μ s Amps | I _{PP} 10/160 μ s Amps | I _{PP} 10/560 μ s Amps | I _{PP} 10/1000 μ s Amps | I _{TSM} 60 Hz Amps | di/dt Amps/μ s |
|--------|-------------------------------------|-------------------------------------|---------------------------------------|---------------------------------------|--|-----------------------------------|-------------------|
| A | 150 | 150 | 90 | 50 | 45 | 20 | 500 |

Thermal Considerations

| Package | DO-214AA/SMB | Symbol | Parameter | Value | Unit |
|---|--------------|------------------|--|-------------|------|
|  | | T _J | Operating Junction Temperature | -40 to +150 | °C |
| | | T _S | Storage Temperature Range | -40 to +150 | °C |
| | | R _{θJA} | Junction to Ambient on printed circuit | 120 | °C/W |

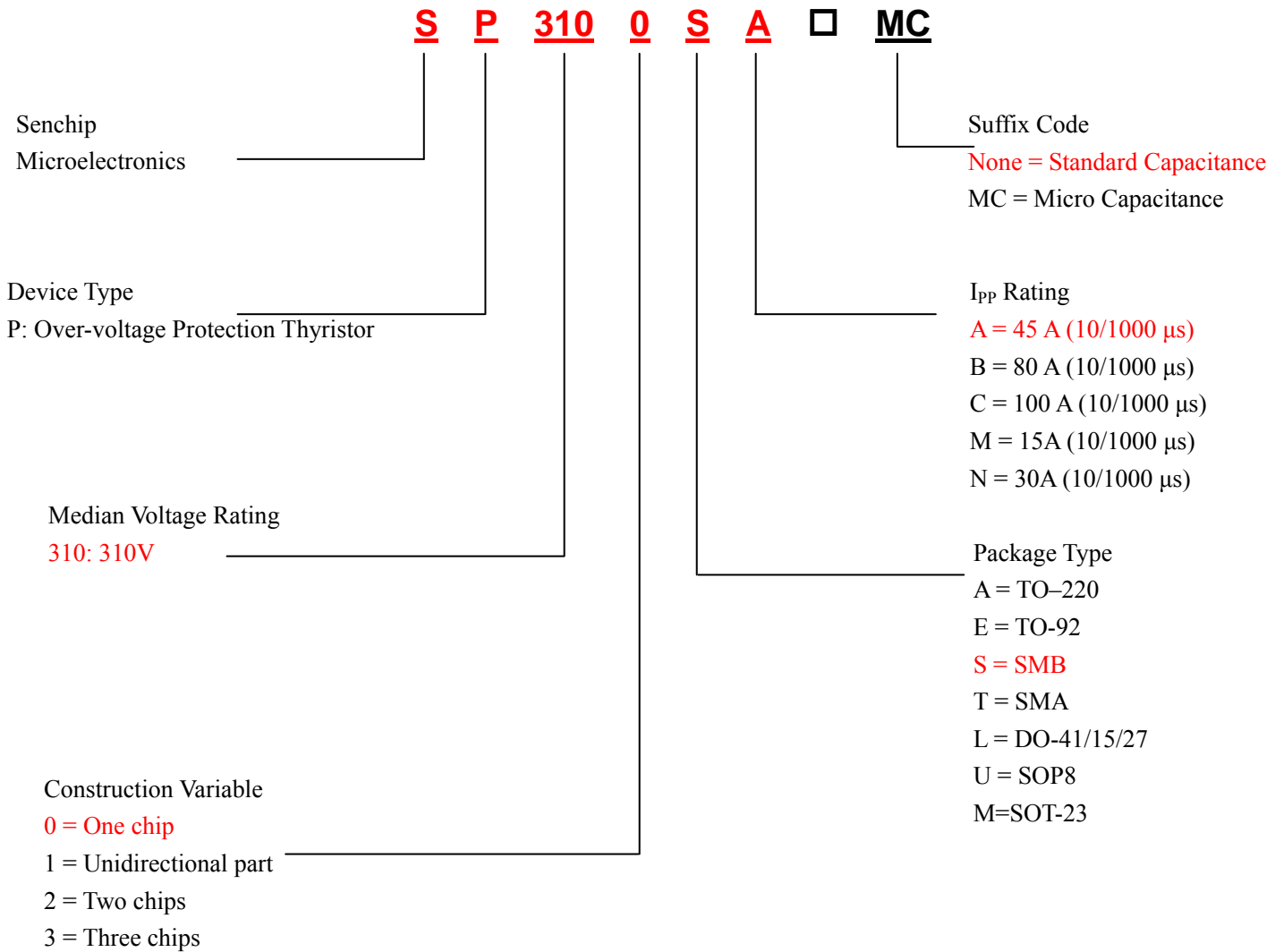
Dimensions



SMB

| Dimension | Inches | | Millimeters | |
|-----------|--------|-------|-------------|------|
| | MIN | MAX | MIN | MAX |
| A | 0.134 | 0.155 | 3.40 | 3.94 |
| B | 0.205 | 0.22 | 5.21 | 5.59 |
| C | 0.075 | 0.083 | 1.90 | 2.11 |
| D | 0.166 | 0.185 | 4.22 | 4.70 |
| E | 0.036 | 0.056 | 0.91 | 1.42 |
| F | 0.073 | 0.087 | 1.85 | 2.2 |
| G | 0.002 | 0.008 | 0.05 | 0.20 |
| H | 0.077 | 0.094 | 1.95 | 2.40 |
| J | 0.043 | 0.053 | 1.09 | 1.35 |
| K | 0.008 | 0.014 | 0.20 | 0.35 |
| L | 0.039 | 0.049 | 0.99 | 1.24 |

Description of Part Number

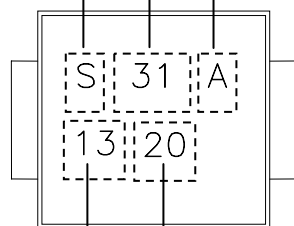


Description of Marking

S:
Senchip Over-voltage
Protection Thyristor

31: 310V (VBR Median
Voltage Rating)


I_{pp} Rating
A = 45 A (10/1000 μs)
B = 80 A (10/1000 μs)
C = 100 A (10/1000 μs)



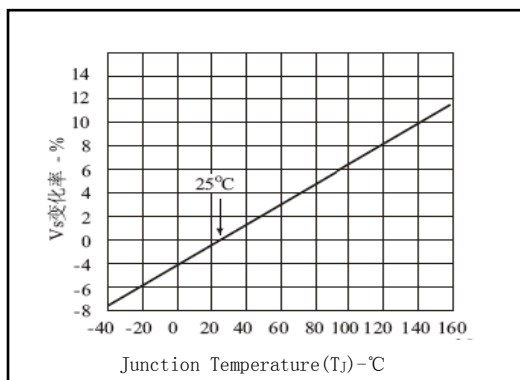
13: 2013
The last two numbers of
year.

20: the 20th week.
The week order.

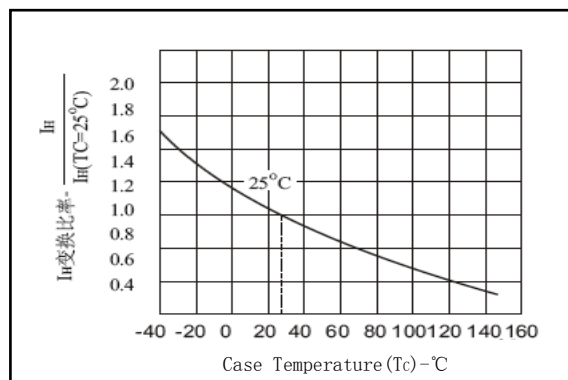
Summary of Packing Options

| Package Type | Description | Packing Quantity | Industry Standard |
|--|----------------------------|------------------|-------------------|
| DO-214AA SMB  | Embossed Carrier Reel Pack | 2500 PCS | EIA RS-481 |

Thermal Derating Curves



Normalized VS Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature



E313687