

Over-voltage Protection Thyristor

SP1800EC

ROHS

Description

P Series solid state protection thyristor protect telecommunications equipment such as modems, line cards, fax machines, and other CPE.

P Series solid state protection 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).

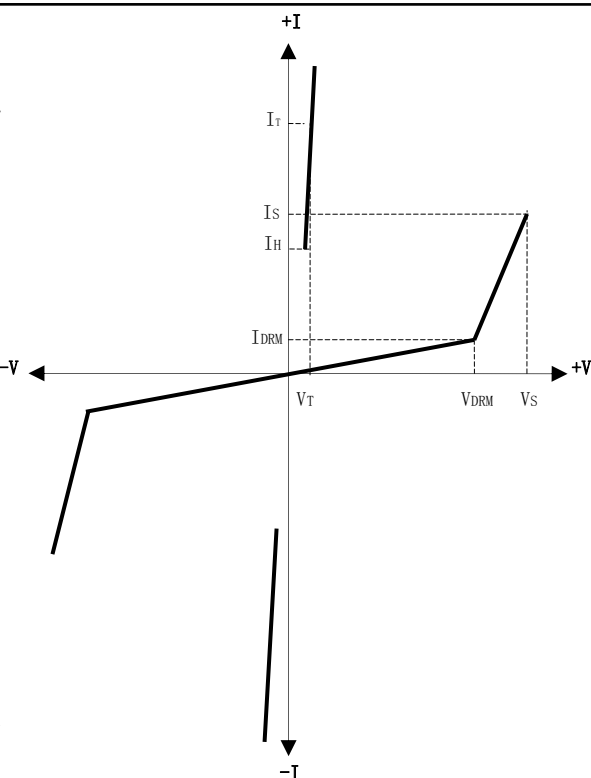
Electrical Parameters

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 |



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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 |
|-------------|---------------------------|-------------------------|-------------------------|----------------------------|-------------------------|------------------------|-------------------------|----------------------|
| SP1800EC | 170 | 220 | 4 | 5 | 800 | 2.2 | 150 | 55 |

* 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.

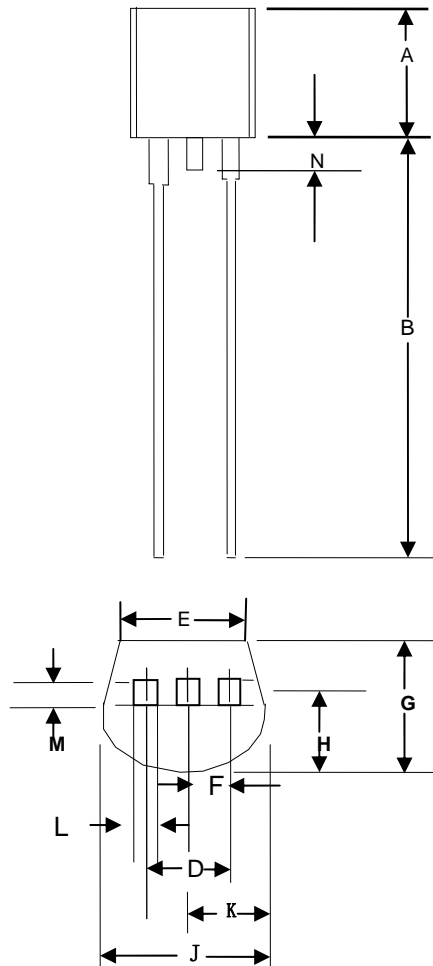
Surge Ratings

| 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 |
|--------|-------------------------------------|-------------------------------------|---------------------------------------|---------------------------------------|--|-----------------------------------|-------------------|
| C | 500 | 400 | 200 | 150 | 100 | 50 | 500 |

Thermal Considerations

| Package | T0-92 | 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 | 90 | °C/W |

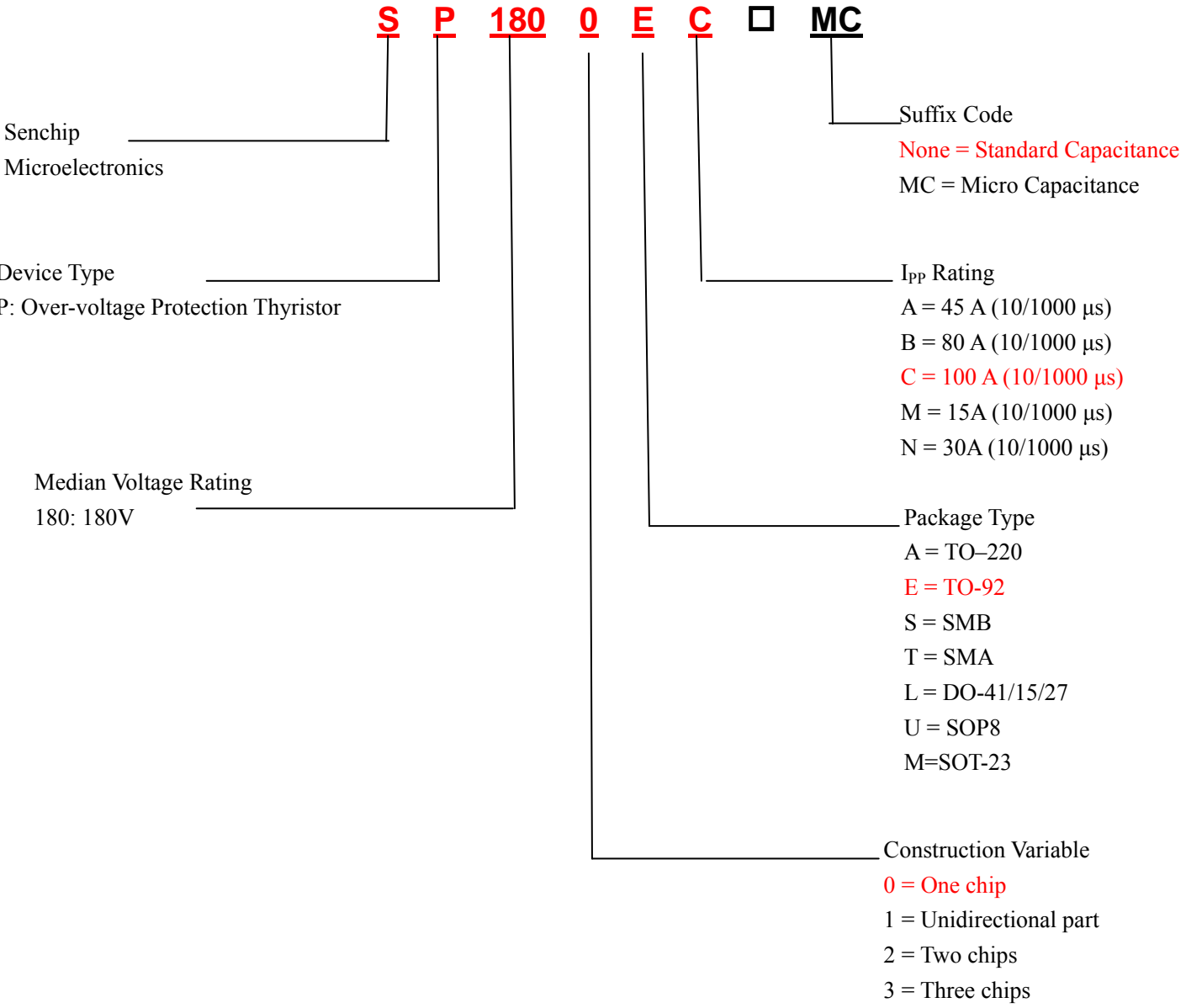
Dimensions



| Dimension | Inches | | Millimeters | |
|-----------|--------|-------|-------------|------|
| | MIN | MIN | MIN | MIN |
| A | 0.176 | 0.196 | 4.47 | 4.98 |
| B | 0.5 | | 12.7 | |
| D | 0.095 | 0.105 | 2.14 | 2.67 |
| E | 0.15 | | 3.81 | |
| F | 0.046 | 0.054 | 1.16 | 1.37 |
| G | 0.135 | 0.145 | 3.43 | 3.68 |
| H | 0.088 | 0.096 | 2.23 | 2.44 |
| J | 0.176 | 0.186 | 4.47 | 4.73 |
| K | 0.088 | 0.096 | 2.23 | 2.44 |
| L | 0.013 | 0.019 | 0.33 | 0.48 |
| M | 0.013 | 0.017 | 0.33 | 0.43 |
| N | | 0.06 | | 1.52 |

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Description of Part Number

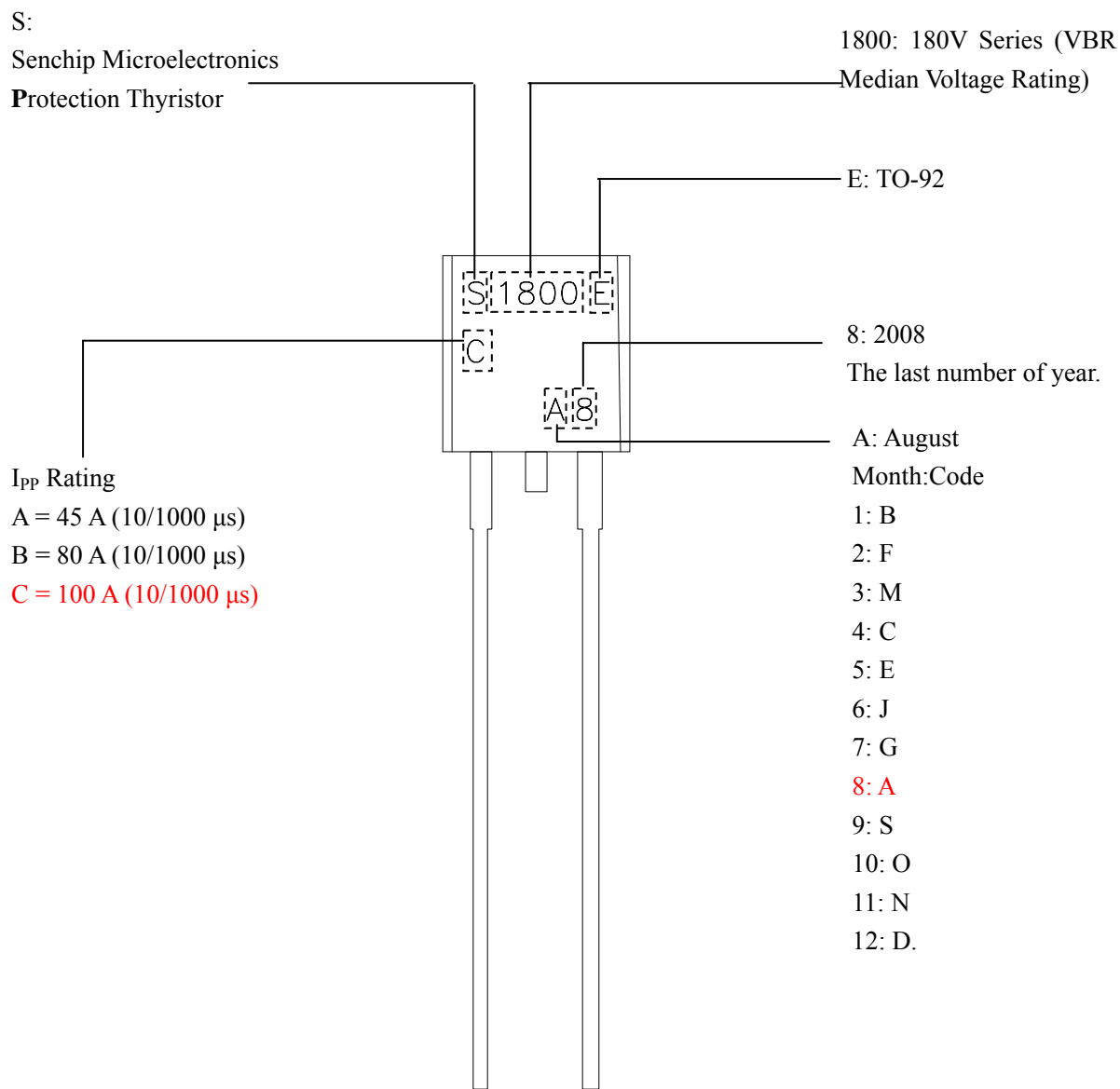


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Description of Marking



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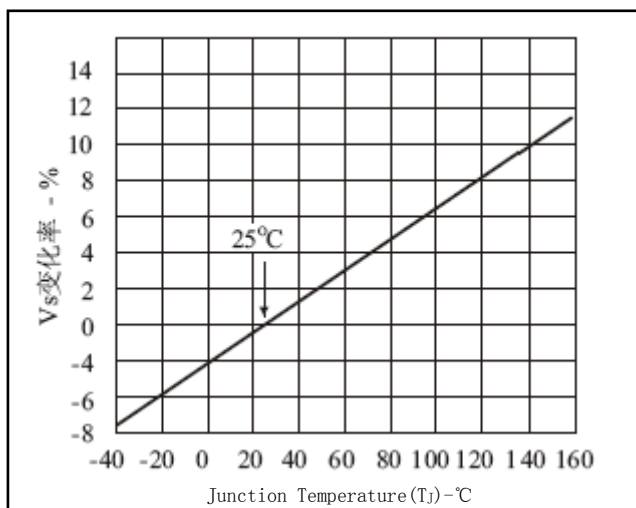
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Summary of Packing Options

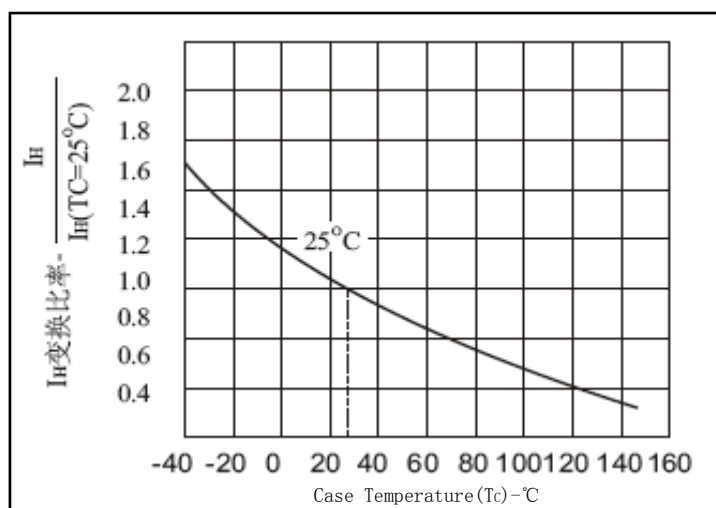
| Package Type | Description | Packing Quantity | Industry Standard |
|---------------------|-------------|------------------|-------------------|
| T0-92 EA, EB, EC | Bulk Pack | 2000 PCS | N/A |



Thermal Derating Curves



Normalized VS Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature



E313687