

## Description of Part Number

### P thyristor for circuit protection

<b>Part Number</b>	<b>P</b>	<b>030</b>	<b>0</b>	<b>S</b>	<b>B</b>
<b>Code</b>	①	②	③	④	⑤
	Main			Suffix	

#### ① PRODUCT TYPE

Product type	TYPE
P	TYPE

#### ② MEDIAN VOLTAGE RATING

Code	Median voltage rating
030	30 V

#### ③ CONSTRUCTION VARIABLE

Code	Product shape
0	One chip
1	Unidirectional part
2	Two chips
3	Three chips

#### ④ PACKAGE TYPE

Code	PACKAGE TYPE
E	TO-92
S	<b>SMB/DO-214AA</b>
R	<b>SMA/DO-214AC</b>
L	DO-15
M	<b>DO-27</b>

#### ⑤ IPP RATING

Code	IPP RATING
A	<b>150 A</b> (8x20 μs)
B	<b>250 A</b> (8x20 μs)
C	<b>400 A</b> (8x20 μs)
D	<b>1000 A</b> (8x20 μs)

## Applications

When protecting telecommunication circuits, *P* devices are connected across Tip and Ring for metallic protection and across Tip and Ground and Ring and Ground for longitudinal protection. They typically are placed behind some type of current-limiting device. Common applications include:

- Central office line cards (SLICs)
- T-1/E-1, ISDN, and xDSL transmission equipment
- Customer Premises Equipment (CPE) such as phones, modems, and caller ID adjunct boxes
- PBXs, KSUs, and other switches
- Primary protection including main distribution frames, five-pin modules, building entrance equipment, and station protection modules
- Data lines and security systems
- CATV line amplifiers and power inserters
- Sprinkler systems

**P Device (S series)**


DO-214AA *P* solid state protection devices protect telecommunications equipment such as modems, line cards, fax machines, and other CPE.

*P* 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**

Part Number *	V <sub>RM</sub> Volts	V <sub>S</sub> Volts	V <sub>T</sub> Volts	I <sub>DRM</sub> $\mu$ Amps	I <sub>S</sub> mAmps	I <sub>T</sub> Amps **	I <sub>H</sub> mAmps	C <sub>O</sub> pF
P0080S_	6	25	4	5	800	2.2	50	50-125
P0300S_	25	40	4	5	800	2.2	150	70-175
P0640S_	58	77	4	5	800	2.2	150	55-140
P0720S_	65	88	4	5	800	2.2	150	55-140
P0900S_	75	98	4	5	800	2.2	150	55-140
P2300S_	190	260	4	5	800	2.2	150	45-115
P2600S_	220	300	4	5	800	2.2	150	40-100
P3100S_	275	350	4	5	800	2.2	150	35-90
P3500S_	320	400	4	5	800	2.2	150	30-75

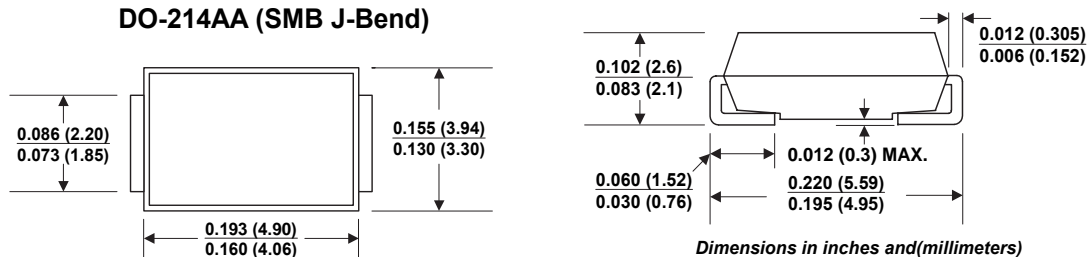
\* For individual “SA”, “SB”, and “SC” surge ratings, see table below

**Surge Ratings**

Series	I <sub>PP</sub> 2x10 $\mu$ s Amps	I <sub>PP</sub> 8x20 $\mu$ s Amps	I <sub>PP</sub> 10x160 $\mu$ s Amps	I <sub>PP</sub> 10x560 $\mu$ s Amps	I <sub>PP</sub> 10x1000 $\mu$ s Amps	I <sub>TSM</sub> 60 Hz Amps	di/dt Amps/ $\mu$ s
A	150	150	90	50	45	20	500
B	250	250	150	100	80	30	500
C	500	400	200	150	100	50	500

**Thermal Considerations**

Package DO-214AA	Symbol	Parameter	Value	Unit
	T <sub>J</sub>	Operating Junction Temperature	-40 to +150	°C
	T <sub>S</sub>	Storage Temperature Range	-65 to +150	°C
	R <sub>θJA</sub>	Thermal Resistance: Junction to Ambient	90	°C/W

**DO-214AA (SMB J-Bend)**


## The Basic Characteristic of the P

### ■ The principle introduction

#### Operation

In the standby mode, *P* devices exhibit a high off-state impedance, eliminating excessive leakage currents and appearing transparent to the circuits they protect. Upon application of a voltage exceeding the switching voltage ( $V_S$ ), *P* devices crowbar and simulate a short circuit condition until the current flowing through the device is either interrupted or drops below the *P* device's holding current ( $I_H$ ). Once this occurs, *P* devices reset and return to their high off-state impedance.

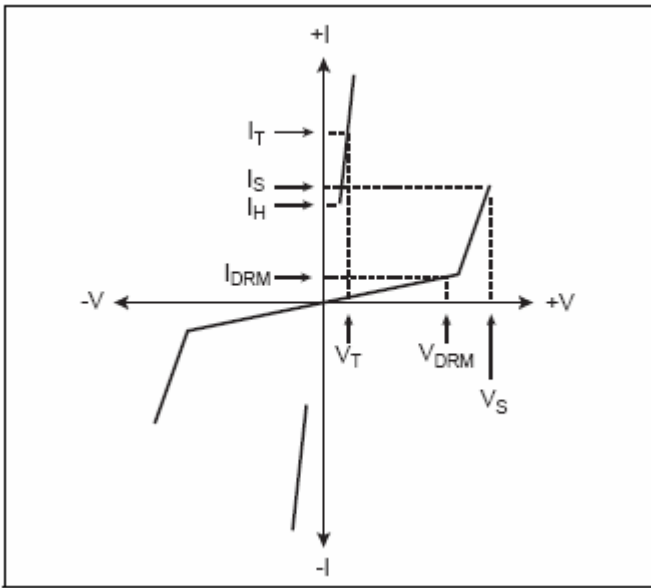


Figure1 V-I Characteristics

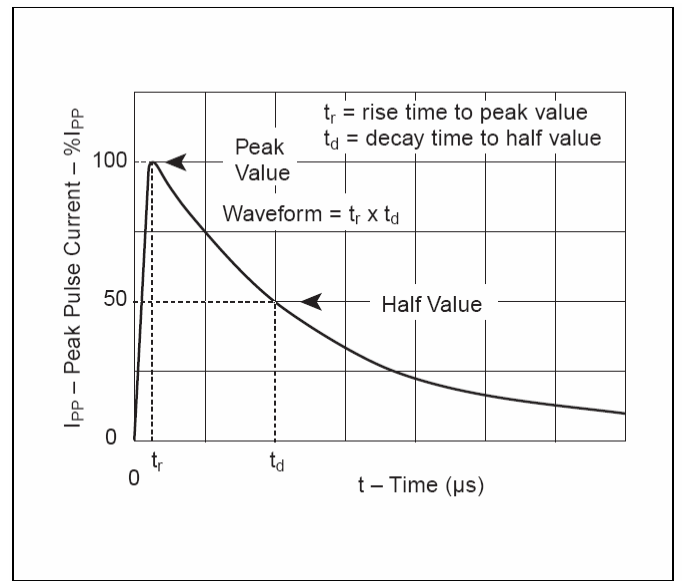


Figure2  $t_r \times t_d$  Pulse Wave-form

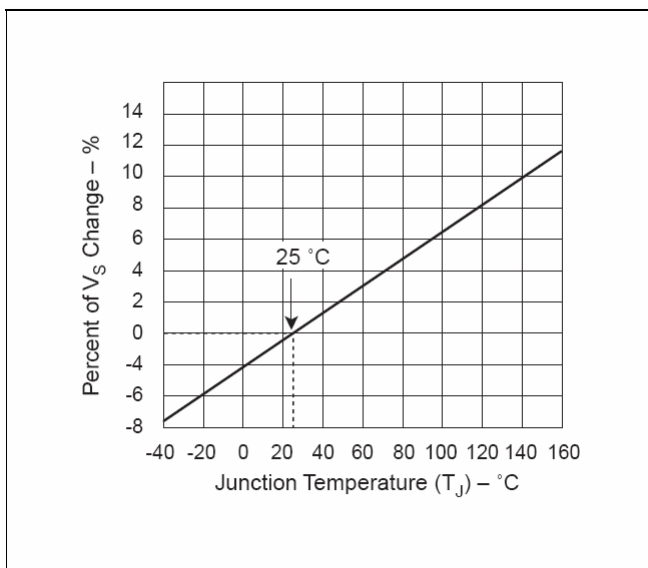


Figure3  
Normalized  $V_S$  Change versus Junction Temperature

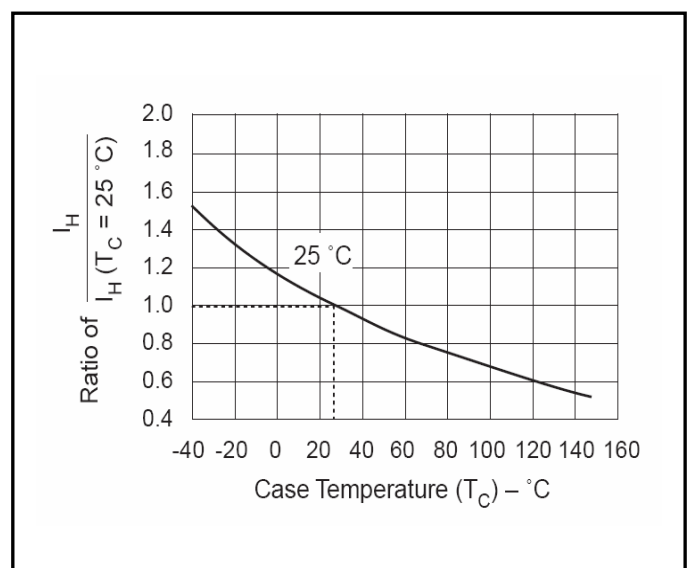


Figure4  
Normalized DC Holding Current