

## Description of Part Number

### P thyristor for circuit protection

<b>Part Number</b>	<b>P</b>	<b>310</b>	<b>0</b>	<b>E</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
310	310 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 (E series)



TO-92 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>DRM</sub> Volts	V <sub>S</sub> Volts	V <sub>T</sub> Volts	I <sub>DRM</sub> μAmps	I <sub>S</sub> mAmps	I <sub>T</sub> Amps **	I <sub>H</sub> mAmps	C <sub>O</sub> pF
P0080E_	6	25	4	5	800	2.2	50	50-125
P0300E_	25	40	4	5	800	2.2	150	70-175
P0640E_	58	77	4	5	800	2.2	150	55-140
P0720E_	65	88	4	5	800	2.2	150	55-140
P0900E_	75	98	4	5	800	2.2	150	55-140
P2300E_	190	260	4	5	800	2.2	150	45-115
P2600E_	220	300	4	5	800	2.2	150	40-100
P3100E_	275	350	4	5	800	2.2	150	35-90
P3500E_	320	400	4	5	800	2.2	150	30-75

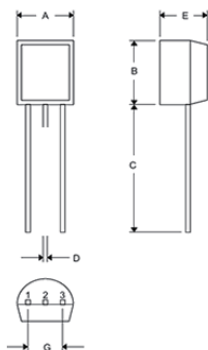
\* For individual “EA”, “EB”, and “EC” surge ratings, see table below

Surge Ratings

Series	IPP 2x10 μs Amps	IPP 8x20 μs Amps	IPP 10x160 μs Amps	IPP 10x560 μs Amps	IPP 10x1000 μs Amps	ITSM 60 Hz Amps	di/dt Amps/μs
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 TO-92	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>BJA</sub>	Thermal Resistance: Junction to Ambient	90	°C/W



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.175	.185	4.45	4.70	
B	.175	.185	4.46	4.70	
C	.500	---	12.7	---	
D	.016	.020	0.41	0.63	
E	.135	.145	3.43	3.68	
G	.095	.105	2.42	2.67	

## 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.

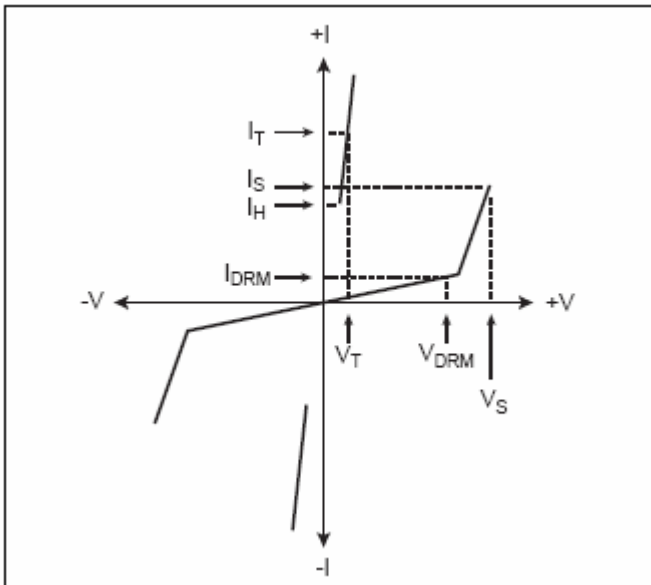


Figure1 V-I Characteristics

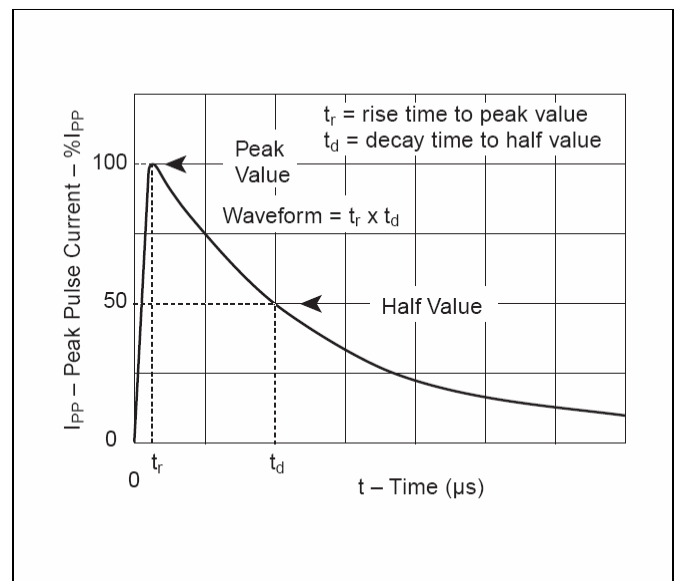


Figure2  $t_r \times t_d$  Pulse Wave-form

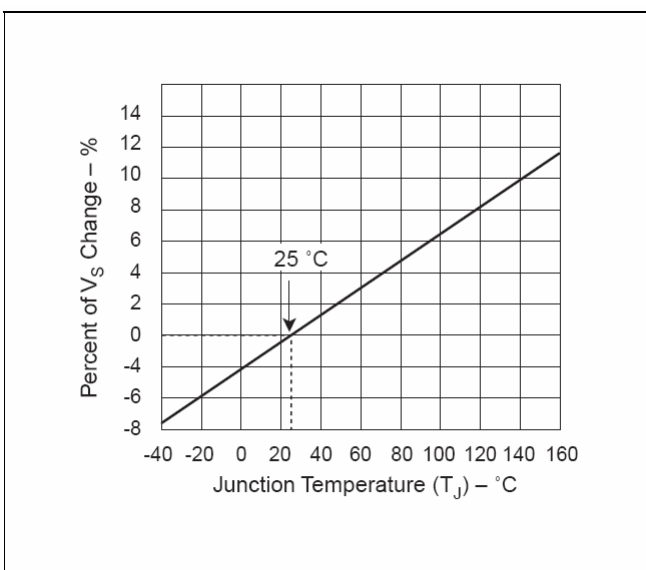


Figure3  
Normalized  $V_S$  Change versus Junction Temperature

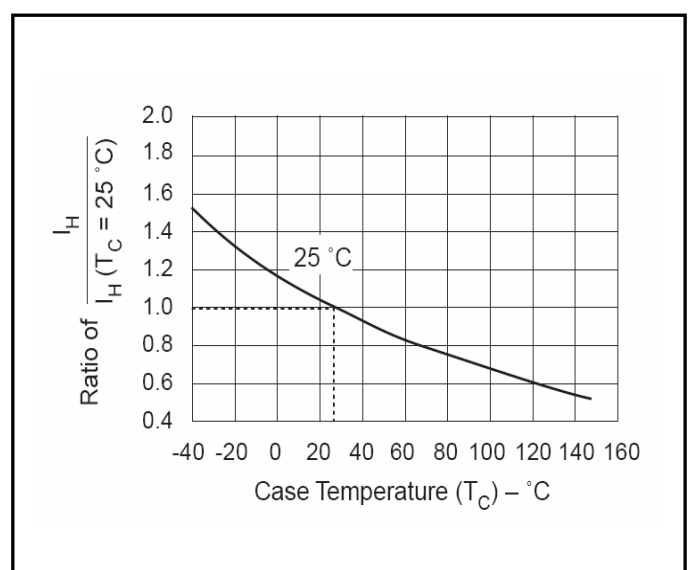


Figure4  
Normalized DC Holding Current