



|                       | PD1201 | Units                           |
|-----------------------|--------|---------------------------------|
| AC Operating Voltage  | 120    | $V_{RMS}$                       |
| Load Current          | 1      | A                               |
| On-State Voltage Drop | 1.2    | $V_{RMS}$<br>( $A_T I_L = 1A$ ) |

### Features

- Load Current up to 1A
- Blocking Voltage to 400V
- 5mA Sensitivity
- Zero-Crossing Detection
- DC Control, AC Output
- Optically Isolated
- TTL and CMOS Compatible
- Low EMI and RFI Generation
- High Noise Immunity
- VDE compatible
- Machine Insertable, Wave Solderable

### Applications

- Programmable Control
- Process Control
- Power Control Panels
- Remote Switching
- Gas Pump Electronics
- Contractors
- Large Relays
- Solenoids
- Motors
- Heaters

### Description

The PD1201 is an AC Solid State Switch using optical coupling with dual power SCR outputs to produce an alternative to optocoupler and Triac circuits. The PD1201 switches are robust enough to provide a blocking voltage of up to 400V and max surge current rating of 20A. In addition, tightly controlled zero cross circuitry ensures switching of AC loads without the generation of transients. The input and output circuits are optically coupled to provide 3750V of isolation and noise immunity between control and load circuits. As a result the PD1201 is well suited for industrial environments where electromagnetic interference would disrupt the operation of electromechanical relays.

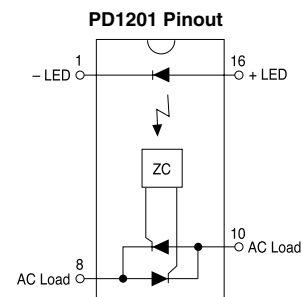
### Approvals

- UL recognized file #: E69938
- CSA certified file #: LR 43639-8

### Ordering Information

| Part # | Description          |
|--------|----------------------|
| PD1201 | 16 Pin DIP (25/Tube) |

### Pin Configuration



**Absolute Maximum Ratings (@ 25° C)**

| Parameter                                  | Min  | Typ | Max               | Units            |
|--|------|-----|-------------------|------------------|
| Input Power Dissipation                    | -    | -   | 150 <sup>1</sup>  | mW               |
| Input Control Current                      | -    | -   | 50                | mA               |
| Peak (10ms)                                | -    | -   | 1                 | A                |
| Reverse Input Voltage                      | -    | -   | 5                 | V                |
| Total Package Dissipation<br>PD            | -    | -   | 1600 <sup>2</sup> | mW               |
| Isolation Voltage<br>Input to Output       | 3750 | -   | -                 | V <sub>RMS</sub> |
| Operational Temperature                    | -40  | -   | +85               | °C               |
| Storage Temperature                        | -40  | -   | +125              | °C               |
| Soldering Temperature                      |      |     |                   |                  |
| DIP Package                                | -    | -   | +260              | °C               |
| Surface Mount Package<br>(10 Seconds Max.) | -    | -   | +220              | °C               |

<sup>1</sup> Derate Linearly 1.33 mW/°C

<sup>2</sup> Derate Linearly 16.6 mW/°C

*Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this data sheet is not implied. Exposure of the device to the absolute maximum ratings for an extended period may degrade the device and effect its reliability.*

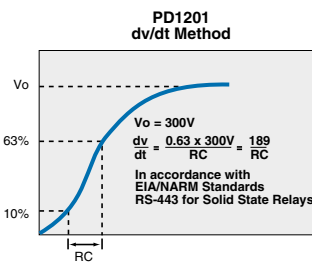
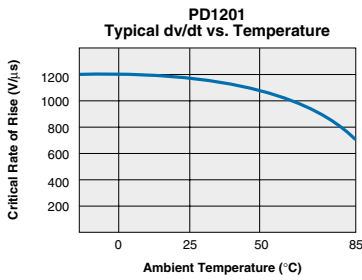
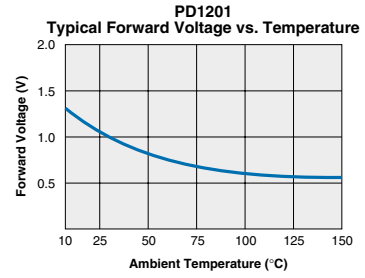
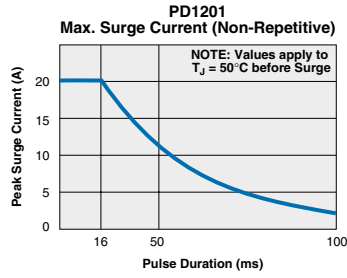
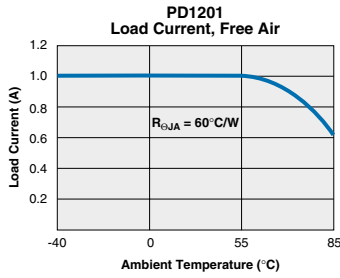
**Electrical Characteristics**

| Parameters   | Conditions                 | Symbol            | Min   | Typ  | Max | Units            |
|--|----------------------------|-------------------|-------|------|-----|------------------|
| <b>Output Characteristics @ 25°C</b>                     |                            |                   |       |      |     |                  |
| Peak Blocking Voltage                                    | -                          | V <sub>DRM</sub>  | -     | -    | 400 | V                |
| Load Current (Continuous)                                | V <sub>L</sub> =120-240VAC | I <sub>L</sub>    | 0.005 | -    | 1   | A                |
| Off State Leakage Current                                | V <sub>DRM</sub>           | I <sub>LEAK</sub> | -     | -    | 1   | mA               |
| On-State Voltage Drop                                    | I <sub>L</sub> =1A         |                   | -     | -    | 1.2 | V <sub>RMS</sub> |
| Critical Rate of Rise                                    | dv/dt                      |                   | 1000  | 1200 | -   | V/μS             |
| Switching Speeds   |                            |                   |       |      |     |                  |
| Turn-on  | I <sub>F</sub> =5 mA       | T <sub>ON</sub>   | -     | -    | 0.5 | Cycles           |
| Turn-off   | I <sub>F</sub> =5 mA       | T <sub>OFF</sub>  | -     | -    | 0.5 | Cycles           |
| Zero-Cross Turn-On Voltage                               | 1st half cycle             |                   | -     | 2    | 5   | V                |
|  | Sub. half cycle            |                   | -     | -    | 1   | V                |
| Operating Frequency <sup>1</sup>                         | -                          |                   | 20    | -    | 500 | Hz               |
| Load Power Factor for<br>Guaranteed Turn-On <sup>2</sup> | -                          | PF                | 0.25  | -    | -   | -                |
| Capacitance Input to Output                              |                            |                   | -     | -    | -   | pF               |
| <b>Input Characteristics @ 25°C</b>                      |                            |                   |       |      |     |                  |
| Input Control Current                                    |                            |                   |       |      |     |                  |
| For Normal Environment                                   | -                          | I <sub>F</sub>    | 5     | -    | 50  | mA               |
| For High Noise Environment                               | -                          | I <sub>F</sub>    | 10    | -    | 100 | mA               |
| Input Voltage Drop                                       | I <sub>F</sub> =5mA        | V <sub>F</sub>    | 0.9   | 1.2  | 1.4 | V                |
| Input Drop-out Voltage                                   | -                          |                   | 0.8   | -    | -   | V                |
| Reverse Input Current                                    | V <sub>R</sub> =5V         | I <sub>R</sub>    | -     | -    | 10  | uA               |
| <b>Common Characteristics @ 25°C</b>                     |                            |                   |       |      |     |                  |
| Input to Output Capacitance                              | -                          | C <sub>I/O</sub>  | -     | -    | 3   | V <sub>RMS</sub> |
| Input to Output Isolation                                | -                          | V <sub>I/O</sub>  | 3750  | -    | -   | V <sub>RMS</sub> |

<sup>1</sup> Zero cross 1st 1/2 cycle @ <100Hz

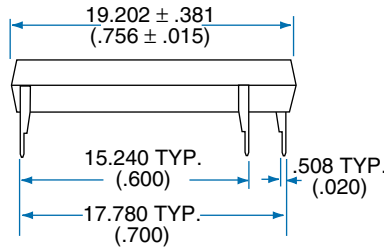
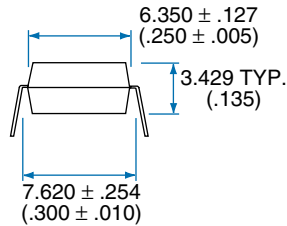
<sup>2</sup> Snubber circuits may be required at low power factors.

PERFORMANCE DATA\*



Mechanical Dimensions

16 Pin DIP



The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

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