



Parameter	Rating	Units
AC Operating Voltage	240	V <sub>rms</sub>
Load Current	1	A <sub>rms</sub>
On-State Voltage Drop (I <sub>L</sub> =1A <sub>rms</sub> )	1.2	V <sub>rms</sub>

### Features

- Load Current up to 1A<sub>rms</sub>
- Blocking Voltages up to 500V<sub>P</sub>
- 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
- Contactors
- Large Relays
- Solenoids
- Motors
- Heaters

### Description

The PD2401 is an AC Solid State Switch using optical coupling with dual power SCR outputs to produce an alternative to optocoupler and Triac circuits. The PD2401 switches are robust enough to provide a blocking voltage of up to 500V<sub>P</sub> 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<sub>rms</sub> of isolation and noise immunity between control and load circuits. As a result the PD2401 is well suited for industrial environments where electromagnetic interference would disrupt the operation of electromechanical relays.

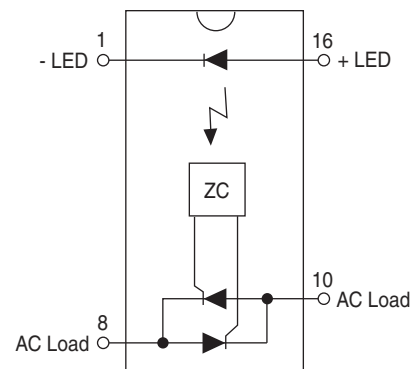
### Approvals

- UL Recognized Component: UL 508, File # E69938
- CSA Certified Component: Certificate # LR43639-8

### Ordering Information

Part #	Description
PD2401	4-Lead, 16-Pin, DIP Package (25/Tube)

### Pin Configuration



### Absolute Maximum Ratings (@ 25°C)

Parameter	Min	Max	Units
Blocking Voltage	-	500	V <sub>P</sub>
Reverse Input Voltage	-	5	V
Input Control Current	-	100	mA
Peak (10ms)	-	1	A
Input Power Dissipation <sup>1</sup>	-	150	mW
Total Package Dissipation <sup>2</sup>	-	1600	mW
Isolation Voltage, Input to Output	3750	-	V <sub>rms</sub>
Operational Temperature	-40	+85	°C
Storage Temperature	-40	+125	°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 conditions beyond those indicated in the operational sections of this data sheet is not implied.

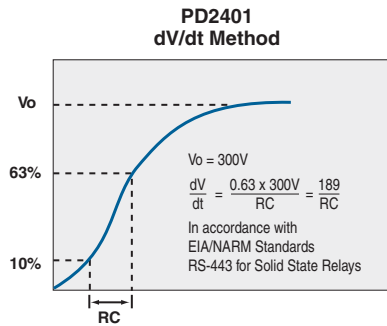
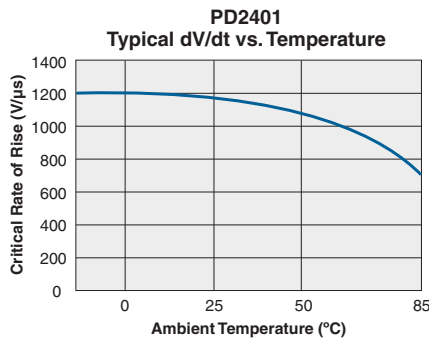
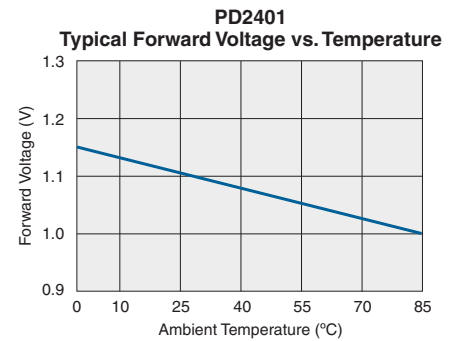
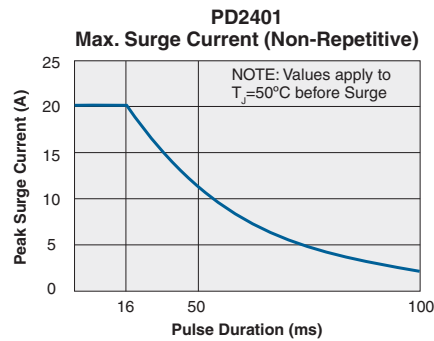
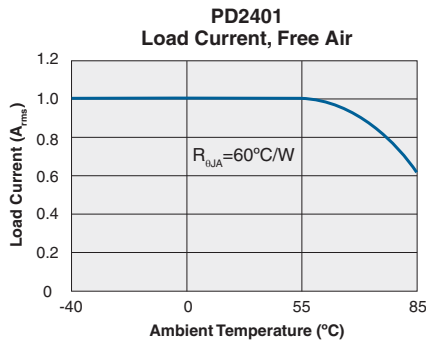
### Electrical Characteristics

Parameter	Conditions	Symbol	Min	Typ	Max	Units
<b>Output Characteristics @ 25°C</b>						
AC Operating Voltage	I <sub>F</sub> =5mA	V <sub>OP</sub>	20	-	240	V <sub>rms</sub>
Load Current (Continuous)	V <sub>L</sub> =120-240VAC	I <sub>L</sub>	0.005	-	1	A <sub>rms</sub>
Maximum Surge Current	t <sub>≤</sub> 16ms	I <sub>PEAK</sub>	-	-	20	A
Off-State Leakage Current	V <sub>L</sub> =500V <sub>DC</sub>	I <sub>LEAK</sub>	-	-	1	mA
On-State Voltage Drop	I <sub>L</sub> =1.0A <sub>rms</sub>	-	-	-	1.2	V <sub>rms</sub>
Critical Rate of Rise	-	dV/dt	1000	1200	-	V/μs
Switching Speeds						
Turn-On	I <sub>F</sub> =5mA	T <sub>ON</sub>	-	-	0.5	Cycles
Turn-Off		T <sub>OFF</sub>	-	-	0.5	
Zero-Cross Turn-On Voltage	1 <sup>st</sup> Half-Cycle	-	-	2	5	V
Sub Half-Cycle			-	-	1	V
Operating Frequency <sup>1</sup>	-	-	20	-	500	Hz
Load Power Factor for Guaranteed Turn-On <sup>2</sup>	-	PF	0.25	-	-	-
Capacitance Input-To-Output	-	C <sub>IO</sub>	-	3	-	pF
<b>Input Characteristics @ 25°C</b>						
Input Control Current						
For Normal Environment	-	I <sub>F</sub>	-	-	5	mA
For High Noise Environment	-		-	-	10	
Input Voltage Drop	I <sub>F</sub> =5mA	V <sub>F</sub>	0.9	1.2	1.4	V
Input Dropout Voltage	-	-	0.8	-	-	V
Reverse Input Current	V <sub>R</sub> =5V	I <sub>R</sub>	-	-	10	μA

<sup>1</sup> Zero Cross 1<sup>st</sup> half-cycle @ < 100Hz.

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

**PERFORMANCE DATA\***



\*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.

**MANUFACTURING INFORMATION**

**Soldering**

For proper assembly, the component must be processed in accordance with the current revision of IPC/JEDEC standard J-STD-020. Failure to follow the recommended guidelines may cause permanent damage to the device resulting in impaired performance and/or a reduced lifetime expectancy.

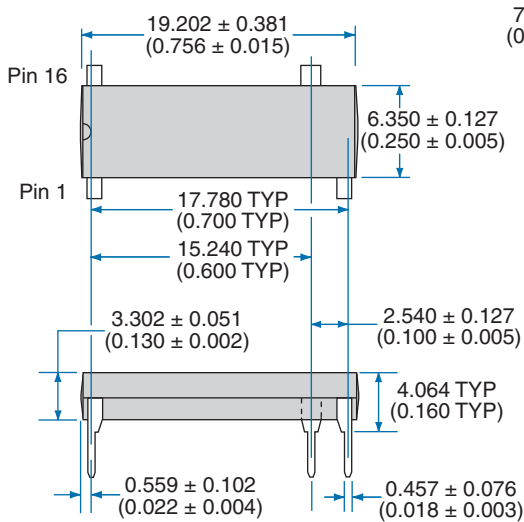
**Washing**

Clare does not recommend ultrasonic cleaning or the use of chlorinated solvents.

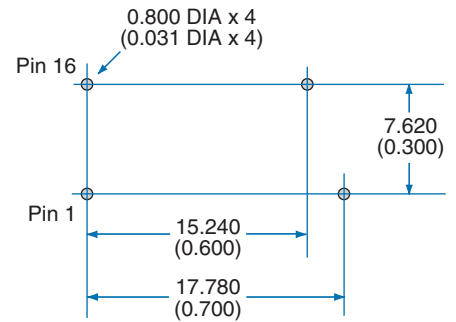


**MECHANICAL DIMENSIONS**

**4-Lead, 16-Pin, DIP Package**



**Recommended PCB Hole Pattern**



Dimensions  
mm  
(inches)

**For additional information please visit our website at: [www.clare.com](http://www.clare.com)**

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