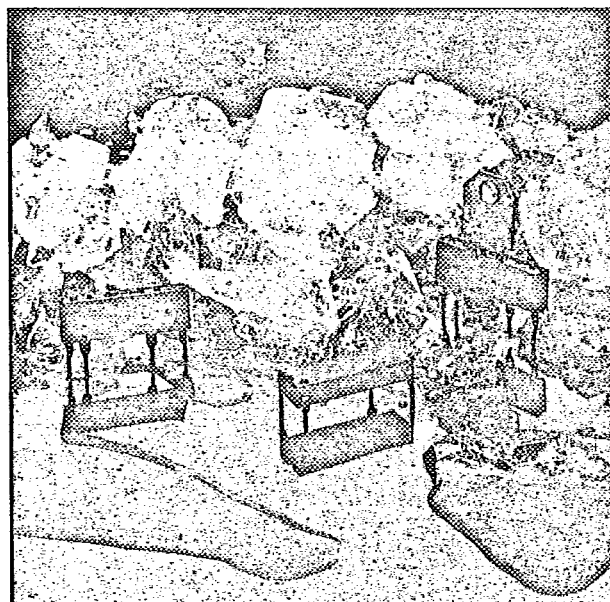


# Power DIP<sup>®</sup>

PD 1201/2401/2601  
PS 1201/2401/2601  
PT 1201/2401/2601

## SOLID-STATE RELAYS

**Optically isolated solid-state relays  
for small loads. Ideal for  
lamps, solenoids or small motors.**



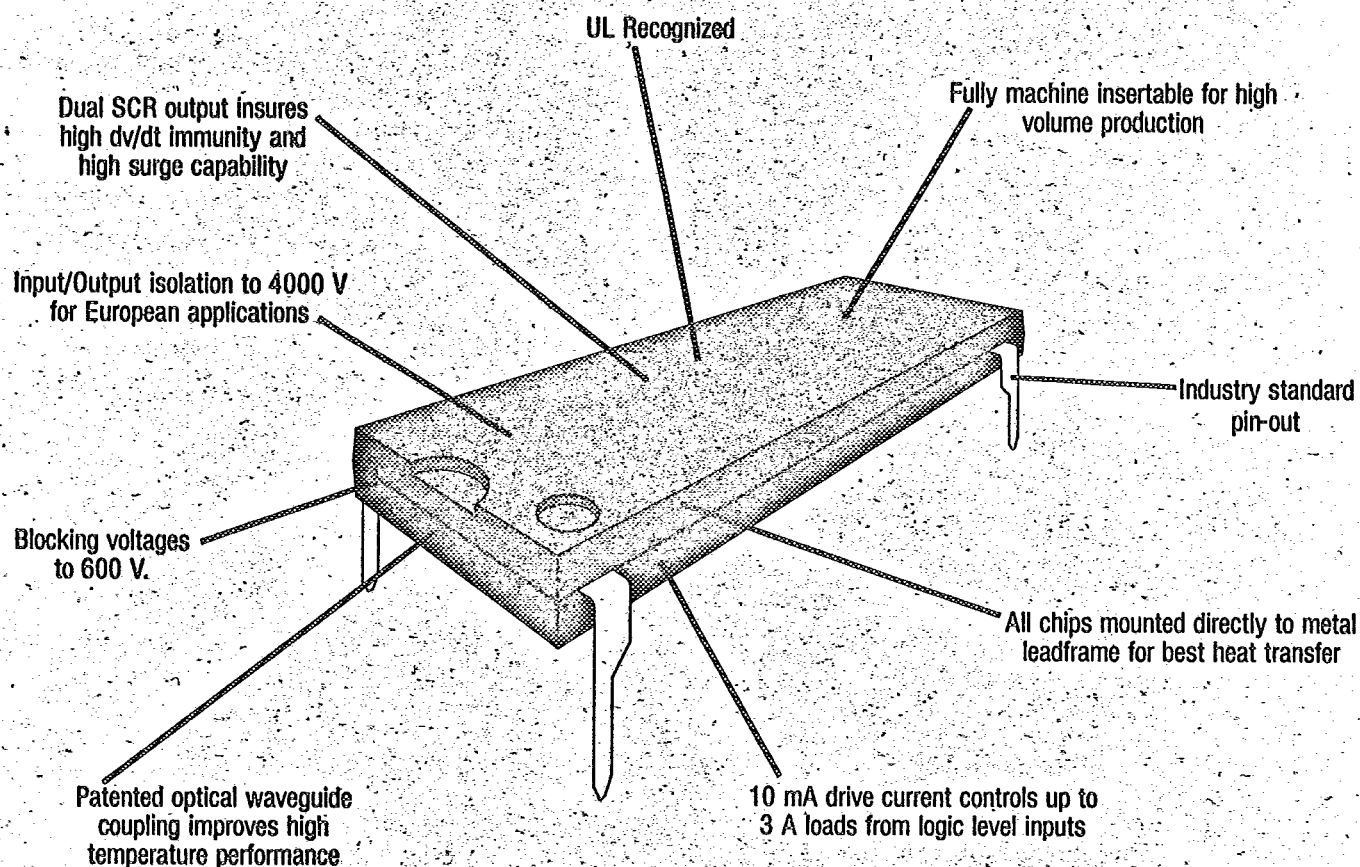
- Dual power SCR output
- Low cost
- High dielectric isolation
- Temperature compensated  
Zero-crossing detector
- 3 package options
- UL Recognized



**THETA-J CORPORATION**

107 Audubon Road  
Wakefield, MA 01880  
(617) 246-4000  
TWX 310 681-7300

## FEATURES:



## DESCRIPTION:

Theta-J's new PowerDIP® family of solid-state relays employs our time-proven patented optical waveguide coupling and a pair of optically sensitive power SCR's to produce the first cost effective alternative to triacs and triac drivers. Ideal for powering AC loads such as lamps, solenoids, heaters or small motors where zero cross switching will reduce or eliminate EMI/RFI problems.

Available with industry standard 16 pin DIP outline (PD), 8 pin SIP (PS) or 8 pin SIP with heat tab (PT).

## CROSS REFERENCE:

| Theta-J | Other Manufacturers                                |
|---------|----------------------------------------------------|
| PD 1201 | Crydom DP1210<br>Teledyne 645-1<br>Electrol SB61X  |
| PD 2401 | Crydom DP 2210<br>Teledyne 645-2<br>Electrol SB62X |
| PS 1201 | Crydom SP 1210                                     |
| PS 2401 | Crydom SP 2410.                                    |

**ABSOLUTE MAXIMUM RATINGS** (25°C Ambient):

| Parameter                        | Model  | Value | Units                      |
|----------------------------------|--------|-------|----------------------------|
| Load Voltage                     | 1201   | 400   | pk V AC                    |
|                                  | 2401   | 500   | pk V AC                    |
|                                  | 2601   | 600   | pk V AC                    |
| Load Current, Continuous to 40°C | PD, PS | 1     | A <sub>RMS</sub> see Fig 1 |
|                                  | PT     | 3     | A <sub>RMS</sub> see Fig 2 |
| Load Current, Peak (20 msec)     |        | 30    | A                          |
| Load Current, Peak ( 1 sec)      |        | 10    | A                          |
| Control Current, Continuous      |        | 50    | mA                         |
| Control Current, Reverse         |        | 2     | mA                         |
| Control Voltage, Reverse         |        | 10    | V                          |

**TEMPERATURE LIMITS:**

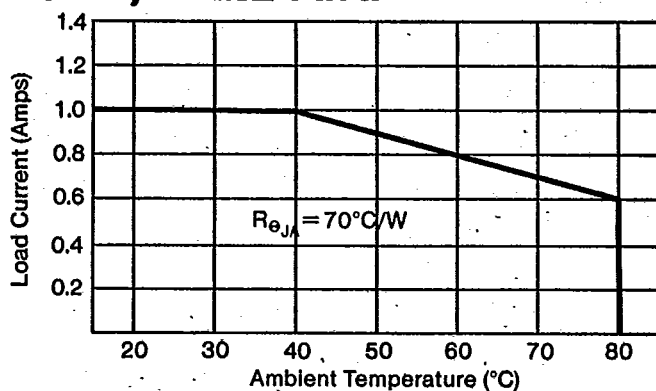
| Condition                           | Minimum | Maximum |
|-------------------------------------|---------|---------|
| Operating                           | -30°C   | + 80°C  |
| Storage                             | -40°C   | +125°C  |
| Solderability (10 seconds on leads) | ---     | +260°C  |

**ELECTRICAL CHARACTERISTICS** (25°C Ambient):

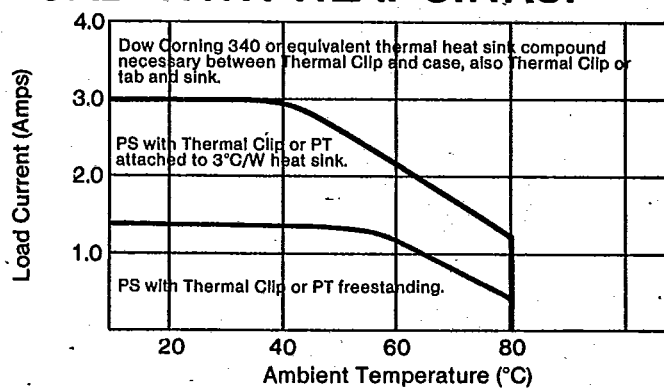
| Input (Control)                   | Minimum | Typical | Maximum | Units                                 |
|-----------------------------------|---------|---------|---------|---------------------------------------|
| Control Current to Operate        | ---     | 7       | 10      | mA <sup>1</sup>                       |
| Input Voltage Drop @ 10mA         | 0.9     | 1.2     | 1.5     | Volts                                 |
| LED Drop-out Voltage              | 0.8     | ---     | ---     | Volts                                 |
| Input/Output Isolation            | 2500    | ---     | ---     | V <sub>RMS</sub> <sup>2</sup>         |
| Input/Output Capacitance          | ---     | ---     | 3       | pF                                    |
| Output (Load)                     | Minimum | Typical | Maximum | Units                                 |
| Load Current                      | 0.005   | ---     | 1       | A <sub>RMS</sub> <sup>3</sup>         |
| Zero Cross Voltage - 1st ½ cycle  | ---     | ---     | 5       | Volts                                 |
|                                   | ---     | ---     | 1       | Volt                                  |
| T <sub>on</sub> /T <sub>off</sub> | ---     | ---     | 0.5     | AC cycle                              |
| On-State Voltage Drop             | ---     | ---     | 1.2     | V <sub>RMS</sub> @ 1 A <sub>RMS</sub> |
| dv/dt                             | 600     | ---     | ---     | V/μs <sup>4</sup>                     |
| Off-State Leakage Current         | ---     | ---     | 1       | mA @ rated Voltage                    |

- Notes:
1. More sensitive versions available. Consult factory.
  2. Available in UL recognized versions and isolations to 4000 V.
  3. Consult factory for heat sinks or other models to operate to 3 A
  4. RC snubbers are recommended for high temperature operation or power factors less than 0.3. Consult factory.

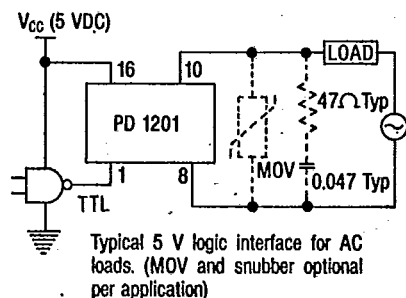
## LOAD, FREE AIR:



## LOAD WITH HEAT SINKS:

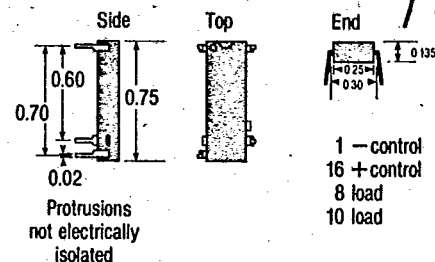


## TYPICAL APPLICATION:

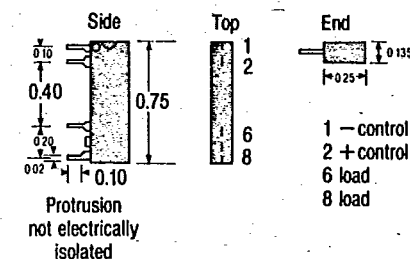


## MECHANICAL INFORMATION:

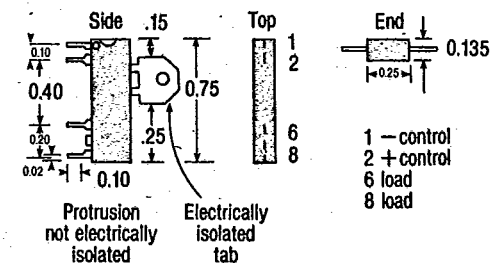
## PD Series



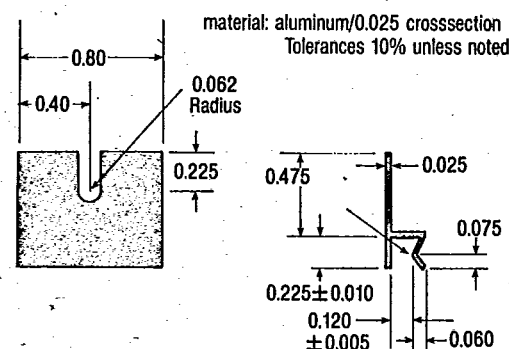
## PS Series



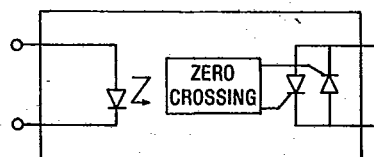
## PT Series



## Thermal Clip



## EQUIVALENT CIRCUIT:



| Connections | PD | PS, PT |
|-------------|----|--------|
| + Control   | 16 | 2      |
| - Control   | 1  | 1      |
| Load        | 8  | 6      |
| Load        | 10 | 8      |



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Theta-J reserves the right to make changes in specifications without notice.