



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



## Series PVR33NPbF

Microelectronic Power IC  
HEXFET® Power MOSFET Photovoltaic Relay  
Dual-Pole, Normally-Open  
0-300V AC/DC, 165mA

### General Description

The PVR33 Series AC/DC Relay is a dual-pole, normally open, solid-state replacement for electromechanical relays used for general purpose switching of analog signals. It utilizes International Rectifier's HEXFET power MOSFETs as the output switches, driven by an integrated circuit photovoltaic generator of novel construction. The output switch is controlled by radiation from a GaAlAs light emitting diode (LED), which is optically isolated from the photovoltaic generator.

The PVR33 Series overcomes the limitations of both conventional electromechanical and reed relays by offering the solid state advantages of long life, fast operating speed, low pick up power, bounce-free operation, low thermal offset voltages and miniature package. These advantages allow product improvement and design innovations in many applications such as process control, multiplexing, automatic test equipment and data acquisition.

The PVR33 can switch analog signals from thermocouple level to 300 Volts peak AC or DC polarity. Signal frequencies into the RF range are easily controlled and switching rates up to 350Hz are achievable. The extremely small thermally generated offset voltages allow increased measurement accuracies.

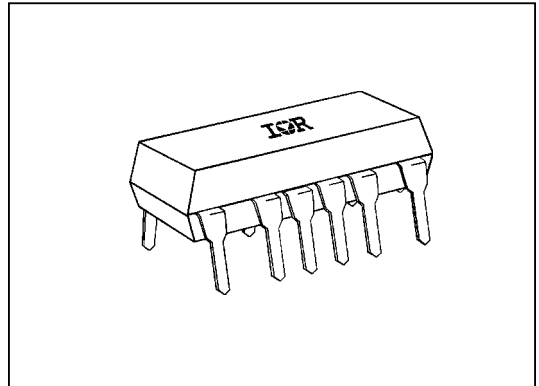
These relays are packaged in 16-pin, molded DIP packages and available with thru-hole leads, in plastic shipping tubes.

### Applications

- Process Control
- Data Acquisition
- Test Equipment
- Multiplexing and Scanning

### Features

- Bounce-Free Operation
- $10^{10}$  Off-State Resistance
- 1,000 V/ $\mu$ sec dv/dt
- 0.2  $\mu$ V Thermal Offset
- 5 mA Input Sensitivity
- 1,500 V<sub>RMS</sub> I/O Isolation
- Solid-State Reliability



### Part Identification

PVR2300NPbF  
PVR3300NPbF  
PVR3301NPbF

*(HEXFET is the registered trademark for International Rectifier Power MOSFETs)*

**Electrical Specifications** ( $-40^{\circ}\text{C} \leq T_A \leq +85^{\circ}\text{C}$  unless otherwise specified)

| INPUT CHARACTERISTICS  |           | Units                          |
|--|-----------|--------------------------------|
| Minimum Control Current A Connection (see figure 1)                    |           | DC                             |
| For 170 Continuous Load Current  | 2.0       | $\text{mA}@25^{\circ}\text{C}$ |
| For 165 Continuous Load Current  | 5.0       | $\text{mA}@40^{\circ}\text{C}$ |
| For 130 Continuous Load Current  | 5.0       | $\text{mA}@85^{\circ}\text{C}$ |
| Minimum Turn-Off Current   | 10        | $\mu\text{A}(\text{DC})$       |
| Minimum Turn-Off Voltage   | 0.6       | $\text{V}(\text{DC})$          |
| Control Current Range (Caution: current limit input LED. See figure 6) | 2.0 to 25 | $\text{mA}(\text{DC})$         |
| Maximum Reverse Voltage  | 6.0       | $\text{V}(\text{DC})$          |

| OUTPUT CHARACTERISTICS   | PVR2300N  | PVR3300N, PVR3301N | Units                    |
|--|-----------|--------------------|--------------------------|
| Operating Voltage Range  | $\pm 200$ | $\pm 300$          | $\text{V}(\text{peak})$  |
| Maximum Load Current $40^{\circ}\text{C}$ $I_{\text{LED}} = 5\text{mA}$ (see figure 1)     |           |                    |                          |
| AC (A Connection)  |           | 165                | $\text{mA}(\text{peak})$ |
| DC (B Connection)  |           | 180                | $\text{mA}(\text{DC})$   |
| DC (C Connection)  |           | 310                | $\text{mA}(\text{DC})$   |
| Response Time @ $25^{\circ}\text{C}$ (see figures 7 and 8)                                 |           |                    |                          |
| Maximum T(on) @ 12mA Control, 100 mA Load, 100 VDC   |           | 150                | $\mu\text{s}$            |
| Maximum T(off) @ 12mA Control, 100 mA Load, 100 VDC  |           | 125                | $\mu\text{s}$            |
| Maximum On-state Resistance $25^{\circ}\text{C}$ (Pulsed) (fig. 2) 50 mA Load, 5mA Control |           |                    |                          |
| AC (A Connection)  |           | 24                 | $\Omega$                 |
| DC (B Connection)  |           | 12                 | $\Omega$                 |
| DC (C Connection)  |           | 6                  | $\Omega$                 |
| Minimum Off-state Resistance $25^{\circ}\text{C}$ @ 160 VDC PVR2300, PVR3300               |           | $10^9$             | $\Omega$                 |
| @ 240 VDC PVR3301  |           | $10^{10}$          | $\Omega$                 |
| Maximum Thermal Offset Voltage @ 5.0mA Control   |           | 0.2                | $\mu\text{volts}$        |
| Minimum Off-State dv/dt  |           | 1000               | $\text{V}/\mu\text{s}$   |
| Typical Output Capacitance (see figure 9)  |           | 6                  | $\text{pF}@50\text{VDC}$ |

| GENERAL CHARACTERISTICS  |           | Units                   |
|--|-----------|-------------------------|
| Dielectric Strength: Input-Output  | 1500      | $\text{V}_{\text{RMS}}$ |
| Insulation Resistance: Input-Output @ 500Vdc                               | $10^{12}$ | $\Omega$                |
| Maximum Capacitance: Input-Output  | 1.0       | $\text{pF}$             |
| Maximum Lead Soldering Temperature (1.6mm below seating plane for 10 sec.) | 260       | $^{\circ}\text{C}$      |
| Ambient Temperature Range:   | Operating | $-40$ to $+85$          |
|  | Storage   | $-40$ to $+100$         |

International Rectifier does not recommend the use of this product in aerospace, avionics, military or life support applications. Users of this International Rectifier product in such applications assume all risks of such use and indemnify International Rectifier against all damages resulting from such use.

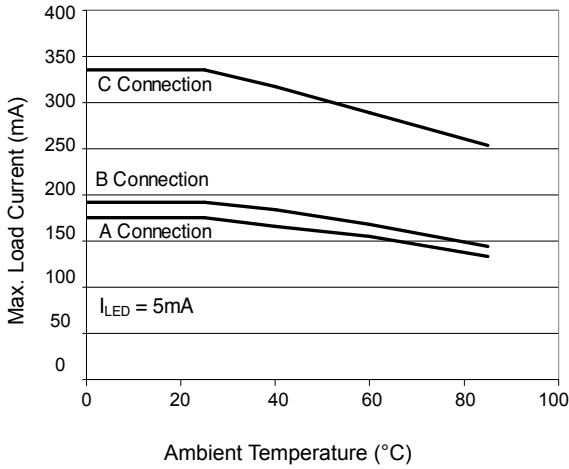


Figure 1. Current Derating Curve

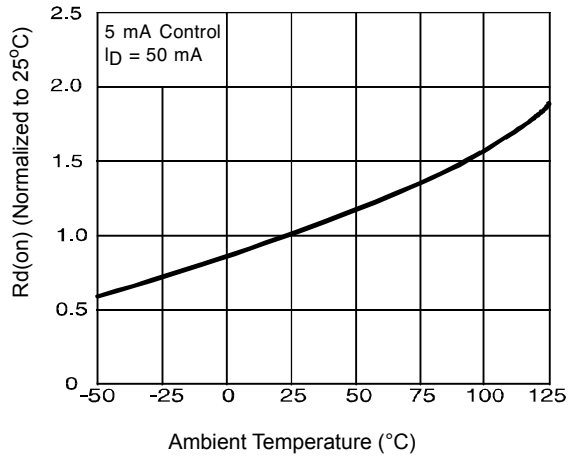


Figure 2. Typical On-Resistance

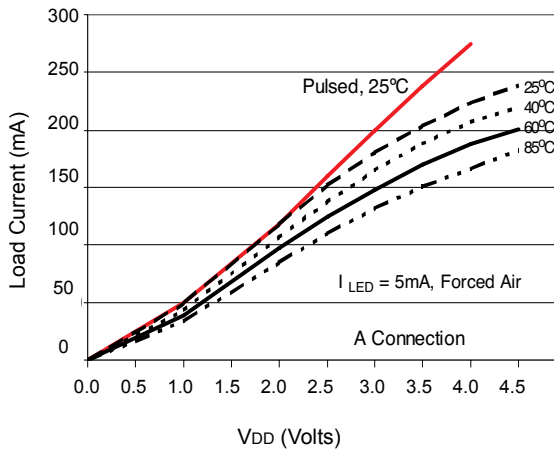


Figure 3. Typical On-Characteristic A Connection

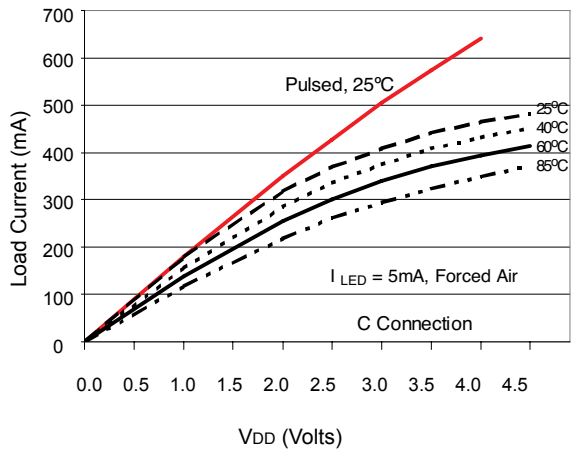


Figure 4. Typical On-Characteristic C Connection

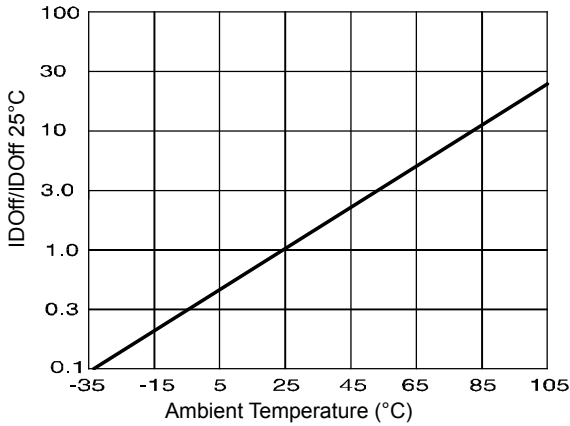


Figure 5. Typical Normalized Off-State Leakage

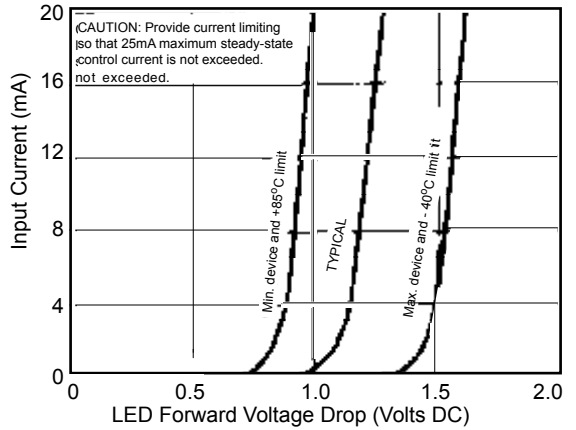


Figure 6. Input Characteristics (Current Controlled)

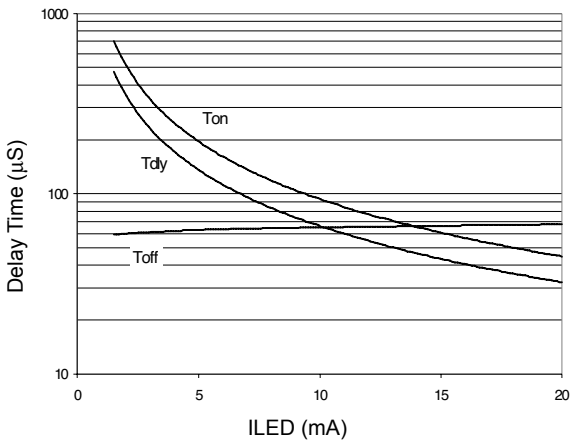


Figure 7. Typical Delay Times

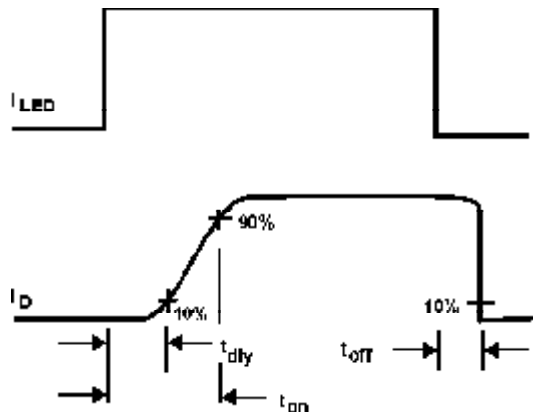
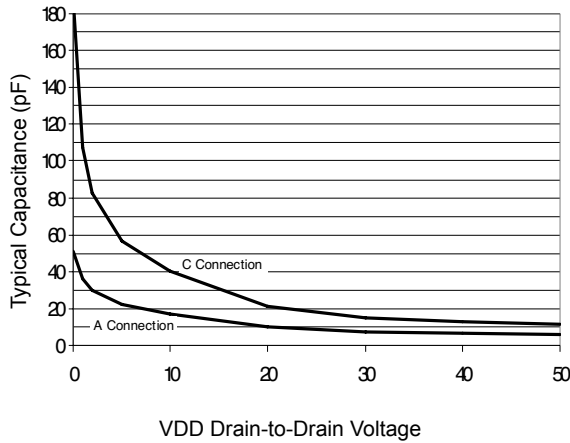


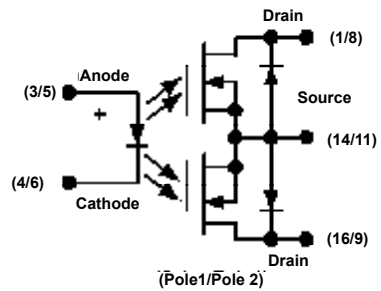
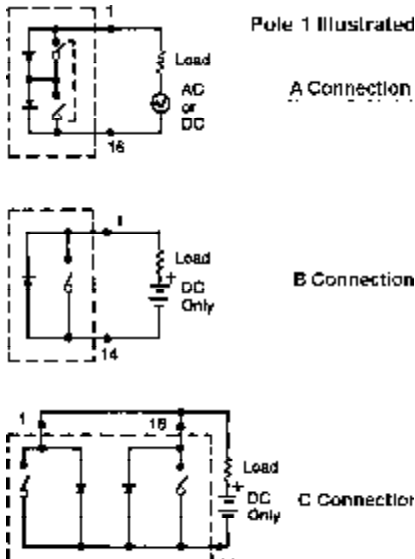
Figure 8. Delay Time Definitions



**Figure 9. Typical Output Capacitance**

**Wiring Diagram**

**Schematic Diagram**



**Case Outline**

