# International **IOR** Rectifier

#### Data Sheet No. PD 10034 revJ

### Series PVN012 & PbF

Microelectronic Power IC HEXFET<sup>®</sup> Power MOSFET Photovoltaic Relay Single Pole, Normally Open, 0-20V, 2.5AAC/ 4.5ADC

#### **General Description**

The PVN012 Series Photovoltaic Relay at 100 milliohms features the lowest possible on-state resistance in a miniature package — lower than a comparable reed relay.

The PVN012 is a single-pole, normally open solidstate relay. It utilizes a GenerationV HEXFET output switch, 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.

These units exceed the performance capabilities of electromechanical relays in life, sensitivity, stable onresistance, miniaturization, magnetic insensitivity and ruggedness. They are ideally suited for switching high currents or low level signals without distortion or injection of electrical noise.

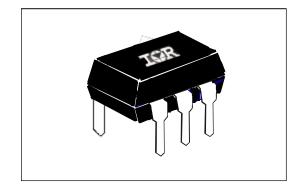
Series PVN012 Relays are packaged in a 6-lead molded DIP package with either thru-hole or surface mount (gull-wing) terminals. They are available in standard plastic shipping tubes or on tapeand-reel. Please refer to part identification information opposite.

#### Applications

- Portable Electronics
- Programmable Logic Controllers
- Computers and Peripheral Devices
- Audio Equipment
- Power Supplies and Power Distribution
- Instrumentation

#### Features

- 100mΩ On-Resistance
- GenV HEXFET output
- Bounce-free operation
- 2.5 4.5 Amp capacity
- Linear AC/DC operation
- 4,000 V<sub>RMS</sub> I/O isolation
- Solid-State reliability
- UL recognized
  - ESD Tolerance: 4000V Human Body Model 500V Machine Model



#### Part Identification

| PVN012 & PbF    |
|-----------------|
| PVN012S & PbF   |
| PVN012S-T & PbF |

thru-hole surface-mount surface-mount, tape and reel

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

1

#### Series PVN012 & PbF

#### **Electrical Specifications (**-40°C $\leq$ T\_A $\leq$ +85°C unless otherwise specified)

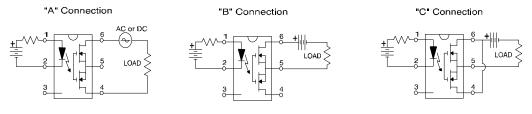
| INPUT CHARACTERISTICS   | Limits    | Units |
|---|-----------|-------|
| Minimum Control Current (see figure 1)                                    | 3.0       | mA    |
| Maximum Control Current for Off-State Resistance @ T <sub>A</sub> = +25°C | 0.4       | mA    |
| Control Current Range (Caution: current limit input LED, see figure 6)    | 3.0 to 25 | mA    |
| Maximum Reverse Voltage   | 6.0       | V     |

| OUTPUT CHARACTERISTICS  | Limits                 | Units            |
|---|------------------------|------------------|
| Operating Voltage Range   | 0 to ±20               | V(DC or AC peak) |
| Maximum Continuous Load Current @ T <sub>A</sub> =+40°C, 5mA Control (see figure 1)                       |                        |                  |
| A Connection  | 2.5                    | A (DC or AC)     |
| B Connection  | 3.0                    | A (DC)           |
| C Connection  | 4.5                    | A (DC)           |
| Maximum Pulsed Load Current @T <sub>A</sub> =+25°C, (100 ms @ 10% duty cycle)                             |                        |                  |
| A Connection  | 6.0                    | A (DC or AC)     |
| Maximum On-State Resistance @T <sub>A</sub> =+25°C, for 1A pulsed load, 5mA Control (see figure 4)        |                        |                  |
| A Connection  | 100                    |                  |
| B Connection  | 65                     | mΩ               |
| C Connection  | 40                     |                  |
| Minimum Off-State Resistance @ T <sub>A</sub> =+25°C, ±16V <sub>DC</sub>                                  | 0.16 x 10 <sup>8</sup> | Ω                |
| Maximum Turn-On Time @T <sub>A</sub> =+25°C (see figure 7), for 1A, 20 V <sub>DC</sub> load, 5mA Control  | 5.0                    | ms               |
| Maximum Turn-Off Time @T <sub>A</sub> =+25°C (see figure 7), for 1A, 20 V <sub>DC</sub> load, 5mA Control | 0.5                    | ms               |
| Maximum Output Capacitance @ 20V <sub>DC</sub> (see figure 2)   | 300                    | pF               |

| GENERAL CHARACTERISTICS  |           | Limits      | Units |
|--|-----------|-------------|-------|
| Minimum Dielectric Strength, Input-Output  |           | 4000        | VRMS  |
| Minimum Insulation Resistance, Input-Output, @T <sub>A</sub> =+25°C, 50%RH, 100V <sub>DC</sub> |           | 1012        | Ω     |
| Maximum Capacitance, Input-Output  |           | 1.0         | pF    |
| Maximum Pin Soldering Temperature (10 seconds maximum)   |           | +260        |       |
| Ambient Temperature Range:   | Operating | -40 to +85  | °C    |
|  | 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.

### **Connection Diagrams**



Series PVN012 & PbF

## International **TOR** Rectifier

#### NOTES: 1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1982. 8.63 (.340) CONTROLLING DIMENSION: INCH. CONTROLLING DIMENSION: INCH. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES). DIMENSION DOES NOT INCLUDE MOLD PROTUSIONS. MOLD PROTUSIONS SHALL NOT EXCEED 0.25 (010). -A- -8.13 (.320) 4 4 F-7 F-7 6.47 (.255) 6.23 (.245) 6 5 4 - B -2 3 1 E--- E------1.65 (.065) 7.87 (.310) 7.37 (.290) 1.40 (.055) 0.56 (.022) 0.46 (.018) 1 3.42 (.135) 3.18 (.125) -C-Å 3.42 (.135) 3.18 (.125) Ŧ 0.63 (.025) 0.39 (.015) 9.65 (.380) 8.13 (.320) 6X 0.304 (.012) 2.54 (.100) 6Х ⊕0.25 (.010) @CBSAS 0.204 (.008) 4X 8.63 (.340) -A-NDTES: 8.13 (.320) 1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1982. 4 묘 \_\_\_\_ гЩ-4 2 CONTROLLING DIMENSION: INCH. 3 DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES). 4 6 5 6.47 (.255) DIMENSION DOES NOT INCLUDE MOLD PROTUSIONS. MOLD PROTUSIONS SHALL NOT EXCEED 0.25 (.010). 6.23 (.245) -B-1 2 3 日 ╘╦╴ 급 10.03 (.395) 1.65 (.065) 9.53 (.375) 1.40 (.055) 1.01 (.040) 0.51 (.020) Ľ\_., 3.42 (.135) 3.18 (.125) -C-0°-6° 6Х Ī K 1.14 (.045) 6X \_0.63 (.025) 0.39 (.015) 0.89 (.035) 6X 0.304 (.012) 2.54 (.100) ⊕ 0.25 (.010) MCBSAS 6X 0.204 (.008) 4X

International