

# International IOR Rectifier

Replaced by PVI-N

**Series PVI**  
Photovoltaic Isolator  
5-10 Volt Output

## General Description

The PVI Photovoltaic Isolator generates an electrically isolated DC voltage upon receipt of a DC input signal. The input of the PVI is a light-emitting diode (LED) which is optically coupled to, but electrically isolated from, the output. A GaAlAs LED is used for high output and maximum stability. The infrared emission from the LED energizes, by photovoltaic action, a series connection of silicon PN junctions. A unique alloyed junction stack which is edge-illuminated is used to form the output photovoltaic generators. This novel structure produces extremely high operating efficiency. Units are available with a single 5-volt output or dual 5-volt outputs which can be series connected to produce 10 volts.

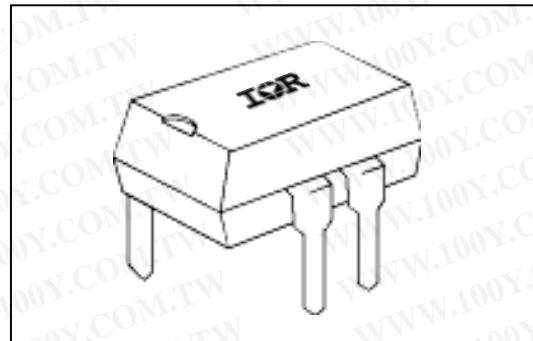
A PVI can serve as an isolator, a coupler and as an isolated voltage source. As an isolator, the PVI can serve as the key component in a solid state relay circuits. The PVI is ideally suited for driving power MOSFETs and IGBTs or sensitive gate SCRs to form solid state relays.

As a coupler, the PVI can sense a low-level DC signal and transmit a voltage signal to an electrically remote circuit. As a voltage source, the PVI can function as a 'DC transformer' by providing an isolated, low-current DC source for biasing or supplying power to low quiescent current electronic devices.

Conventional optocouplers merely modulate the resistance of an output device such as a transistor, diode or resistor. Such optocouplers require a separate voltage source to detect the presence of an input signal. In contrast, a PVI actually transmits (and transforms) energy across the isolation barrier and directly generates an output voltage. This DC voltage, available at a 2500VAC isolation level, gives circuit designers a new and uniquely useful electronic component.

## Features

- Isolated Voltage Source ■
- MOSFET Driver ■
- Up to 10 $\mu$ A Output ■
- Fast Response ■
- GaAlAs LED ■
- 2500V (RMS) Isolation ■
- 8-pin DIP Package ■
- Single or Dual Output ■



## Part Identification

Part Number	Outputs	Output Voltage	Output Current
PVI5050	1	5.0V	5 $\mu$ A
<b>PVI5080</b>	1	5.0V	8 $\mu$ A
PVI1050	2	5.0/10.0V	10/5 $\mu$ A

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

Series PVI

Replaced by PVI-N

International  
 Rectifier

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

INPUT CHARACTERISTICS	PVI Series	Units
Input Current Range (see figure 6)	2.0 to 50	mA (DC)
Maximum Forward Voltage Drop @ 10mA, 25°C (see figure 7)	1.4	V (DC)
Maximum Reverse Voltage	7.0	V(DC)
Maximum Reverse Current @ -7.0V (DC), 25°C	100	$\mu\text{A(DC)}$
Maximum Pulsed Input Current @ 25°C (see figure 8)	1.0	A(peak)

OUTPUT CHARACTERISTICS	PVI Series	Units
Maximum Forward Voltage @ 10 $\mu\text{A}$	8.0 per channel	$V_{(DC)}$
Maximum Reverse Current @ -10VDC	10	$\mu\text{A(DC)}$

COUPLED CHARACTERISTICS	PVI5050	PVI5080	PVI1050	Units	
Minimum Open Circuit Voltage @ 10mA, 25°C (see figures 1 to 4)	5.0V		5.0V/channel 10V series	V (DC)	
Minimum Short Circuit Current @ 10mA, 25°C (see figures 1 to 3)	5 $\mu\text{A}$	8 $\mu\text{A}$	5.0 $\mu\text{A}$ /channel 10 $\mu\text{A}$ parallel	$\mu\text{A (DC)}$	
Maximum Capacitance (Input/Output)	1.0		2.0	pF	
Maximum Turn-On Time @ 20mA Input, 25°C (see figure 9)	$R_L=5.0\Omega$	30	30	30	$\mu\text{s}$
	$R_L=1.0\Omega$	40	40	40	$\mu\text{s}$
Maximum Turn-Off Time @ 20mA Input, 25°C (see figure 9)	$R_L=5.0\Omega$	400	400	400	$\mu\text{s}$
	$R_L=1.0\Omega$	100	100	100	$\mu\text{s}$
Insulation Resistance @ 90VDC (Input/Output)	$10^{12}$			$\Omega$	
Dielectric Strength	Input/Output	2500		V(RMS)	
	Between Outputs	N/A	1200	V(DC)	

GENERAL CHARACTERISTICS	PVI Series	Units
Ambient Temperature Range	Operating	-40 to +100
	Storage	-40 to +100
Maximum Lead Temperature (1.6mm below seating plane for 10 seconds)	280	$^{\circ}\text{C}$

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

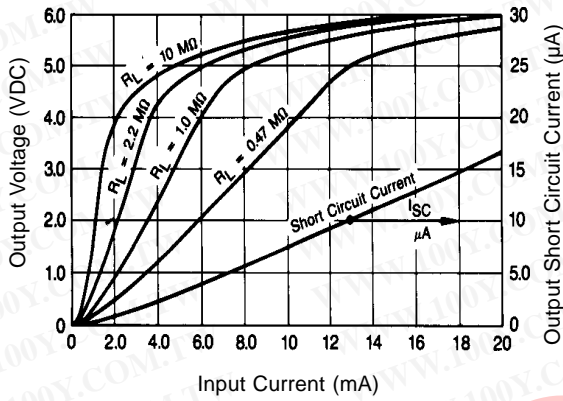


Figure 1. PVI5050 Typical Output Characteristics

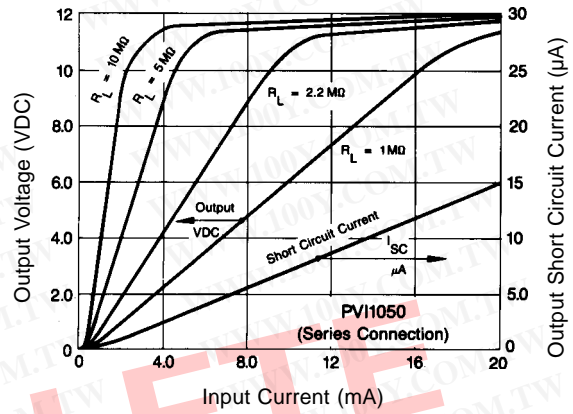


Figure 2. PVI1050 Typical Output Characteristics

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

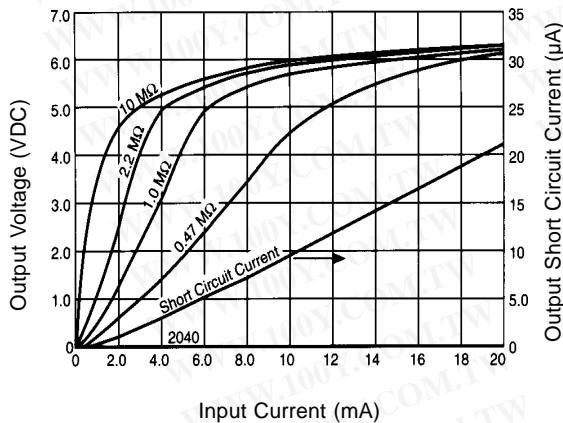


Figure 3. PVI5080 Typical Output Characteristics

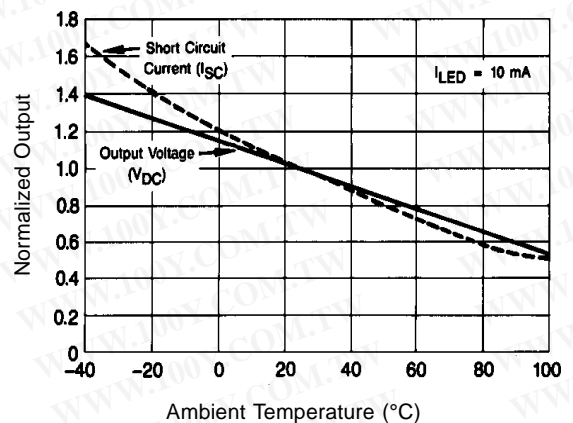


Figure 4. Typical Variation of Output

Series PVI

Replaced by PVI-N

International  
**IR** Rectifier

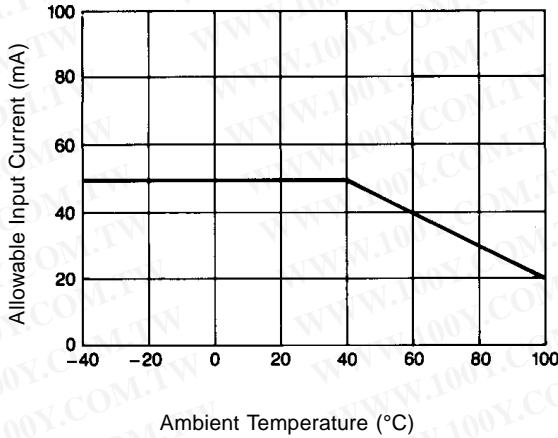


Figure 6. Input Current Derating

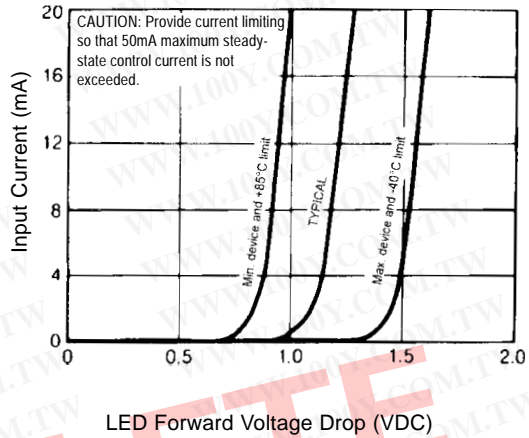


Figure 7. Input Characteristics

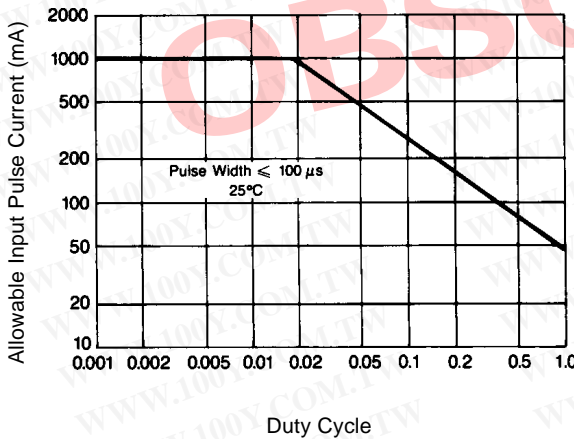


Figure 8. Input Pulse Capability

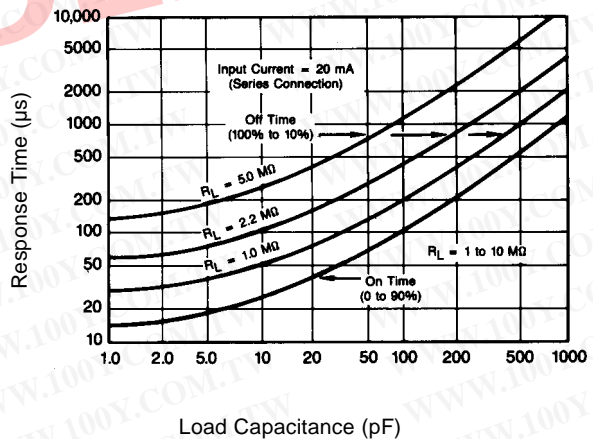
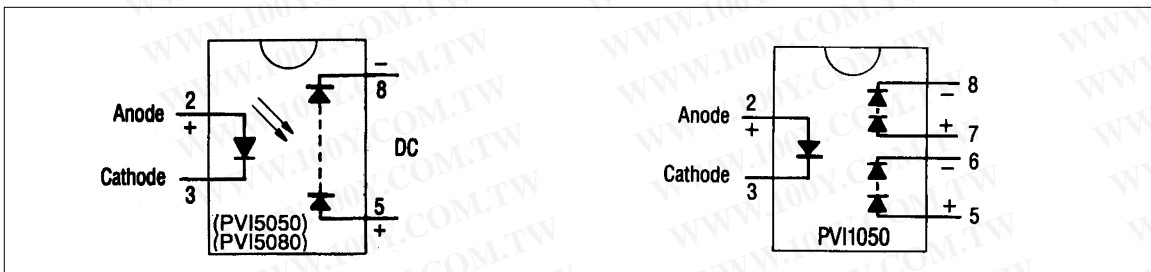


Figure 9. PVI1050 (PVI5050) Typical Response Time

**Wiring Diagram**



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

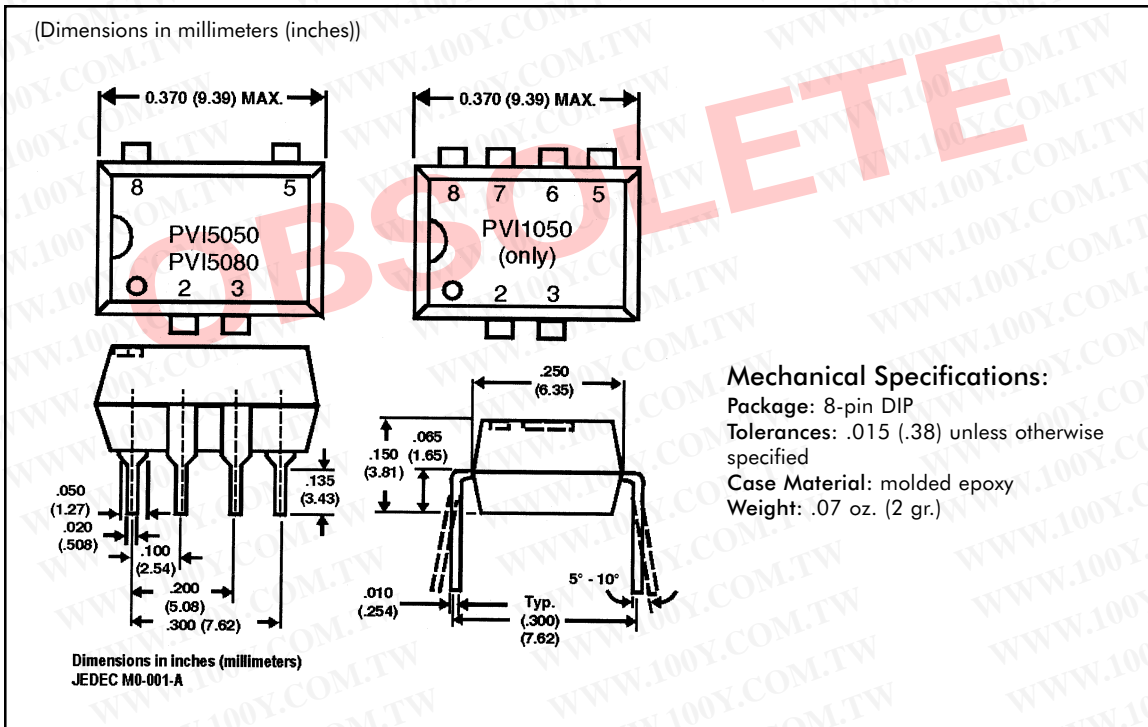


**Application Note:**

The outputs of the PVI1050 (pins 5-6 and 7-8) may be placed in series connection to produce a 10-volt output with a 5 $\mu$ A minimum short circuit current. Alternatively, the two outputs of the PVI1050 may be connected in parallel to produce a 5.0-volt output with a 10 $\mu$ A minimum short circuit current.

The two outputs of the PVI1050 may be applied separately with a maximum 1200VDC between the outputs. Input-to-output isolation to either output is 2500V (RMS).

**Case Outline**



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)