Data Sheet No. PD 10029-G

Series PVI

Photovoltaic Isolator 5-10 Volt Output

General Description

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ICR Rectifier

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 GaAIAs 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.

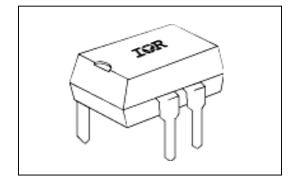
A PVI can serve as an isolator, a coupler and as an isolated voltage source. As an isolator, the PVI can serve as the key component in a solid state relay circuits. The PVI is ideally suited for driving power MOS-FETs and IGBTs or sensitive gate SCRs to form solid state relays.

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 10µA Output
 - Fast Response
 - GaAIAs LED
- 2500V (RMS) Isolation
 - 8-pin DIP Package
 - Single or Dual Output



Part Identification

Part Number	Outputs	Output	Output
		Voltage	Current
PVI5050	1	5.0V	5µA
PVI5080	1	5.0V	8μΑ
PVI1050	2	5.0/10.0V	10/5µA

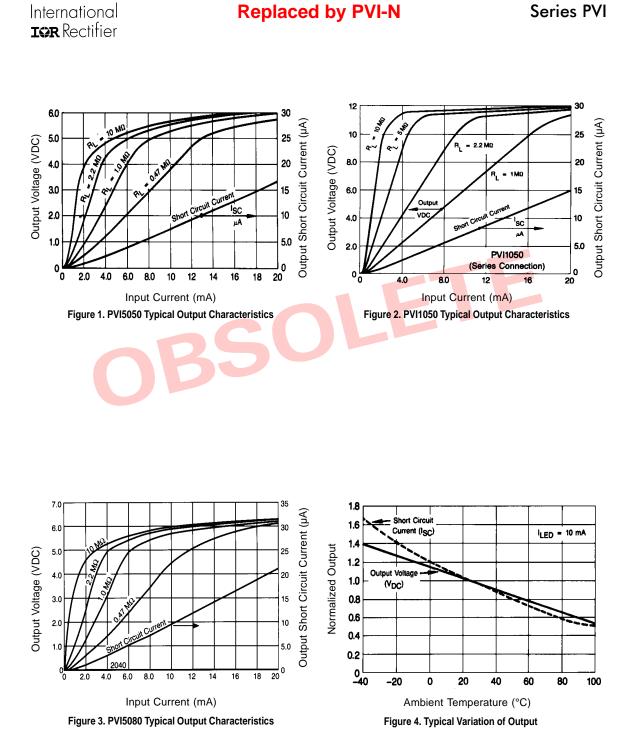
Electrical Specifications (-40°C \leq T_A \leq +85°C unless otherwise specified)

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	μA(DC)
Maximum Pulsed Input Current @ 25°C (see figure 8)	1.0	A(peak)

PVI Series	Units
8.0 per channel	V _(DC)
10	μA(DC)
-	8.0 per channel

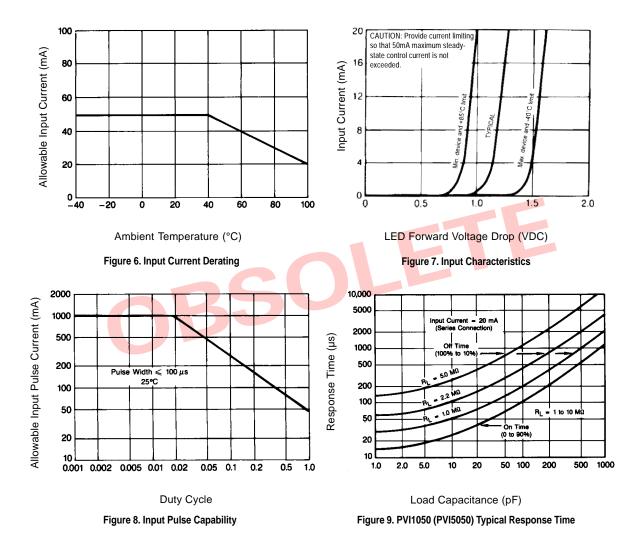
COUPLED CHARACTERISTICS		PVI5050	PVI5080	PVI1050	Units
Minimum Open Circuit Voltage @ 10mA, 25°C (see	figures 1 to 4)	5.	0V	5.0V/channel 10V series	V (DC)
Minimum Short Circuit Current @ 10mA, 25°C (see	figures 1 to 3)	5μΑ	8μΑ	5.0µA/channel 10µA parallel	μΑ (DC)
Maximum Capacitance (Input/Output)		1	.0	2.0	pF
Maximum Turn-On Time @ 20mA Input, 25°C	RL=5.0MΩ	30	30	30	μs
(see figure 9)	$R_L=1.0M\Omega$	40	40	40	μs
Maximum Turn-Off Time @ 20mA Input, 25°C	RL=5.0MΩ	400	400	400	μs
(see figure 9)	$R_L=1.0M\Omega$	100	100	100	μs
Insulation Resistance @ 90VDC (Input/Output)		1(0 ¹²		Ω
Dielectric Strength	Input/Output	25	00		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	°C
Maximum Lead Temperature (1.6mm below seating plane for 10 seconds)		280	

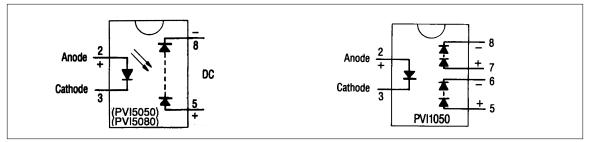


Series PVI

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Wiring Diagram



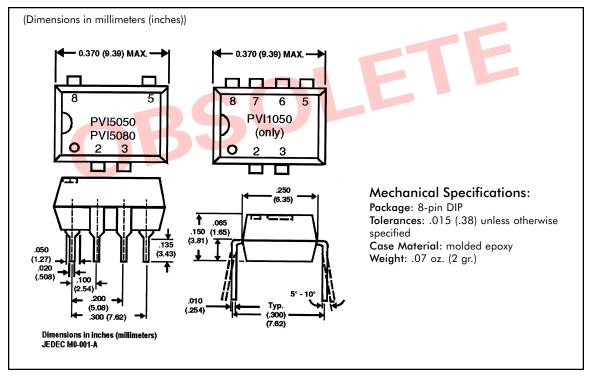
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Application Note:

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 5μ A minimum short circuit current. Alternatively, the two ouptut of the PVI1050 may be connected in parallel to produce a 5.0-volt ouput with a 10μ 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



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Data and specifications subject to change without notice. 12/6/2000