International
IOR Rectifier

Data Sheet No. PD10048B

Series PVI5033R

Photovoltaic Isolator
Solid-State
Opto-Isolated MOSFET Gate Driver
Dual-Channel, 5V, 5µA

General Description

The PVI5033R Photovoltaic Isolator is a dual-channel, opto-isolated driver capable of directly driving gates of power MOSFETs or IGBTs. It utilizes a monolithic integrated circuit photovoltaic generator of novel construction as its output. The output is controlled by radiation from a GaAlAs light emitting diode (LED) which is optically isolated from the photovoltaic generator.

The PVI5033R is ideally suited for applications requiring high-current and/or high voltage switching with optical isolation between the low-level driving circuitry and high-energy or high- voltage load circuits. It can be used for directly driving gates of power MOSFETs. The dual- channel configuration allows its outputs to drive independent discrete power MOSFETs, or be connected in parallel or in series to provide higher-current drive for power MOSFETs or higher-voltage drive for IGBTs. PVI5033R employs a fast turn-off circuitry.

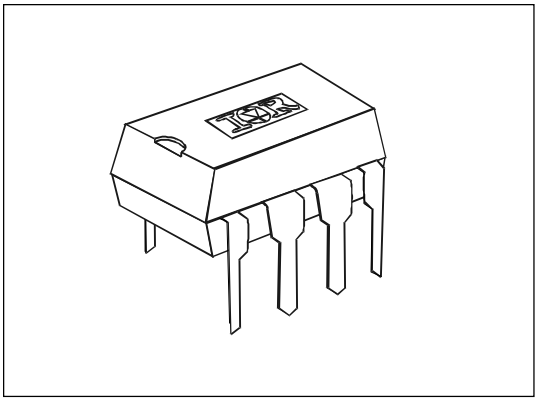
PVI5033R Photovoltaic Isolators are packaged in an 8-pin, molded DIP package with either thru-hole or “gull-wing” terminals. It is available in standard plastic shipping tubes or on tape-and-reel. Refer to Part Identification information.

Applications

- Telecommunications
- Load Distribution
- Industrial Controls
- Instrumentation and Measurement
- Electronic Ballast

Features

- Monolithic construction
- 3,750 V_{RMS} I/O isolation
- 1,200 V_{DC} output-to-output isolation
- Dual-Channel application flexibility
- Solid-State Reliability
- UL Recognized and BABT Certified



Part Identification

PVI5033R	thru-hole
PVI5033RS	SMT
PVI5033RS-T	SMT, Tape and Reel

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

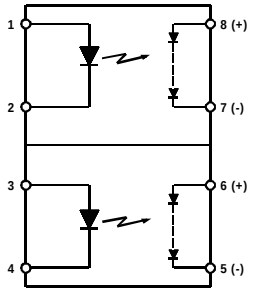
INPUT CHARACTERISTICS	Limits	Units
Min. Input Current (See Fig.1)	5.0	mA
Input Current Range (See Fig. 1)	3.0 to 25	mA
Max. Continuous Input Current @ T_A=+25°C	40	mA
LED Forward Voltage Drop @ 5mA, TA=+25°C (See Fig. 3)	1.4	V
Max. Reverse Voltage	7.0	V
Max. Reverse Current @ -7V_{DC}, TA=+25°C	10	µA

OUTPUT CHARACTERISTICS	Limits	Units
Min. Forward Voltage	8.0	V_{DC}
Max. Reverse Current	10	μA_{DC}

COUPLED CHARACTERISTICS	Limits	Units
Min. Output Voltage @ I_{LED} = 10mA, R_L = 10MΩ @ T_A=0°C to +70°C (See Fig. 1 & 2)	5	V
Max. Output Voltage @ I_{LED} = 10mA, R_L = 10MΩ @ T_A=0°C to +70°C (See Fig. 1 & 2)	10	V
Max. Voltage Differential Between Outputs @ I_{LED} = 5mA, R_L = 10MΩ	1.0	V
Min. Output Short-Circuit Current @ I_{LED} = 10mA, @ T_A=+25°C (See Fig. 1 & 2)	5	µA
Max. Turn-On Time @ I_{LED} = 5mA, C_{LOAD} = 200pF (See Fig. 4)	2.5	ms
Max. Turn-Off Time @ I_{LED} = 5mA, C_{LOAD} = 200pF (See Fig. 4)	.5	ms
Off-State Clamping Resistance: minimum	350	Ω
maximum	1500	Ω

GENERAL CHARACTERISTICS	Limits	Units
Min. Dielectric Strength, Input-Output	3750	V_{RMS}
Min. Dielectric Strength, Output-to-Output	1200	V_{DC}
Min. Insulation Resistance, Input-to-Output @T_A=+25°C, 50%RH, 100V_{DC}	10^{12}	Ω
Max. Capacitance, Input-Output	5.0	pF
Max. Pin Soldering Temperature (10 seconds max.)	+260	°C
Ambient Temperature Range: Operating	-40 to +85	°C
Storage	-40 to +125	°C

Connection Diagram



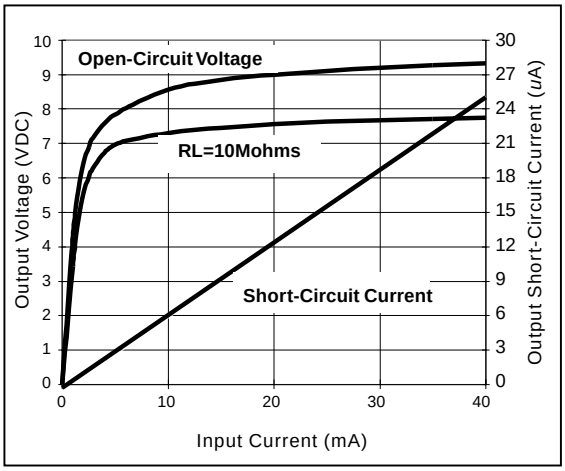


Figure 1. Typical Output Characteristics

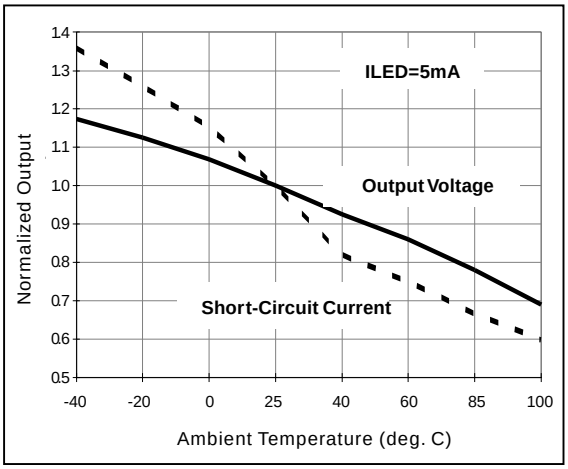


Figure 2. Typical Variation of Output

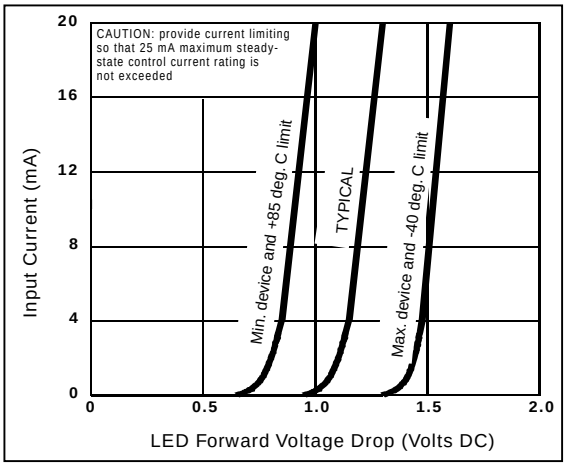


Figure 3. Input Characteristics (Current Controlled)

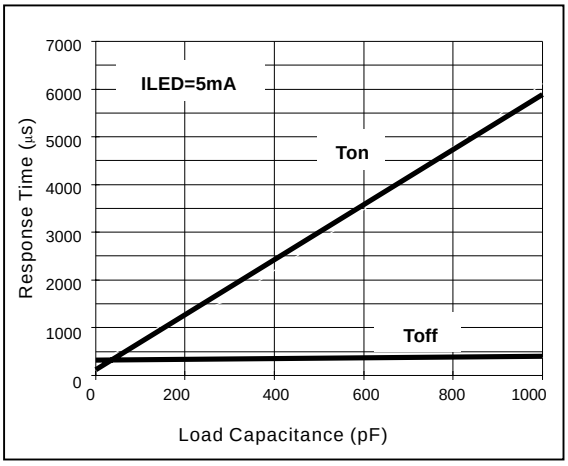
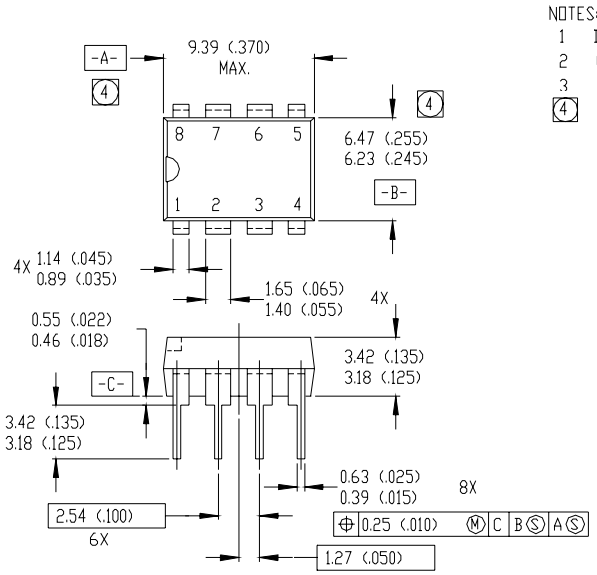
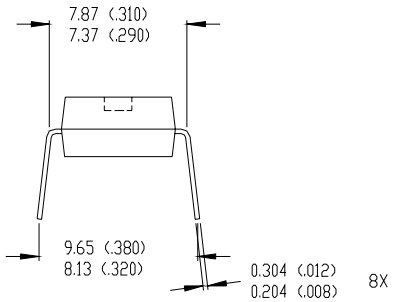


Figure 4. Typical Response Time

Case Outlines



NOTES:
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1982.
2 CONTROLLING DIMENSION: INCH.
3 DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4 DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS SHALL NOT EXCEED 0.25 (.010).



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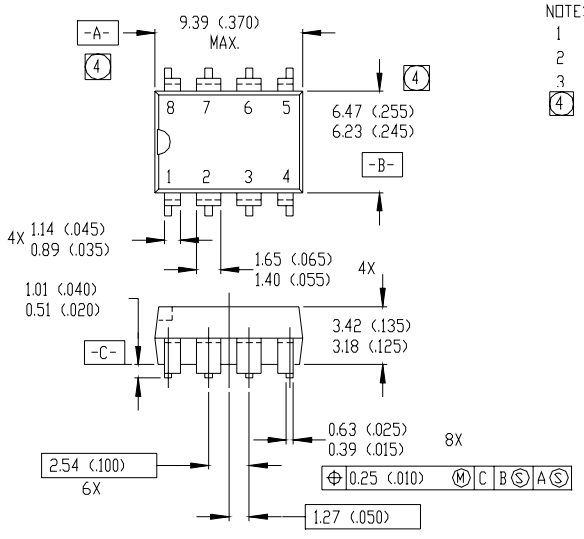

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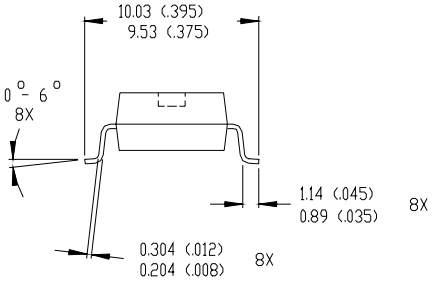

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