

Series PVI5033R

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

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.

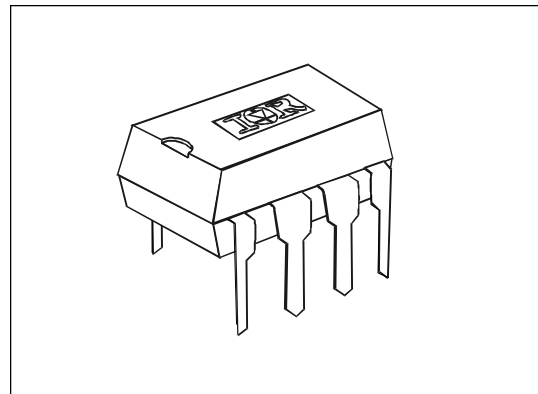
PVI5033R Photovoltaic Isolators are packaged in an 8-pin, molded DIP package with either thru-hole or "gull-wing" terminals. It is available in standard plastic shipping tubes or on tape-and-reel. Refer to Part Identification information.

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)

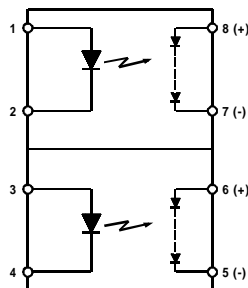
INPUT CHARACTERISTICS	Limits	Units
Min. Input Current (See Fig.1)	5.0	mA
Input Current Range (See Fig. 1)	3.0 to 25	mA
Max. Continuous Input Current @ T _A =+25°C	40	mA
LED Forward Voltage Drop @ 5mA, T _A =+25°C (See Fig. 3)	1.4	V
Max. Reverse Voltage	7.0	V
Max. Reverse Current @ -7V _{DC} , T _A =+25°C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



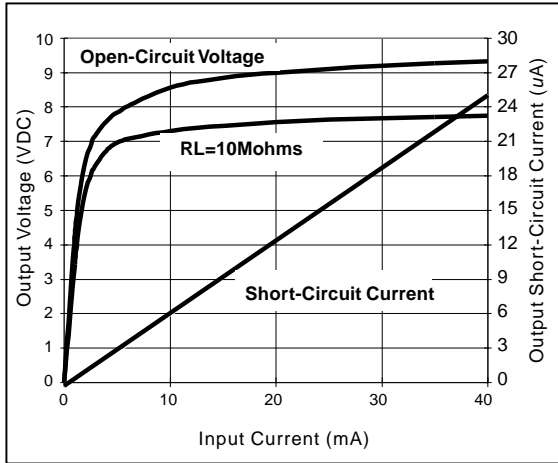


Figure 1. Typical Output Characteristics

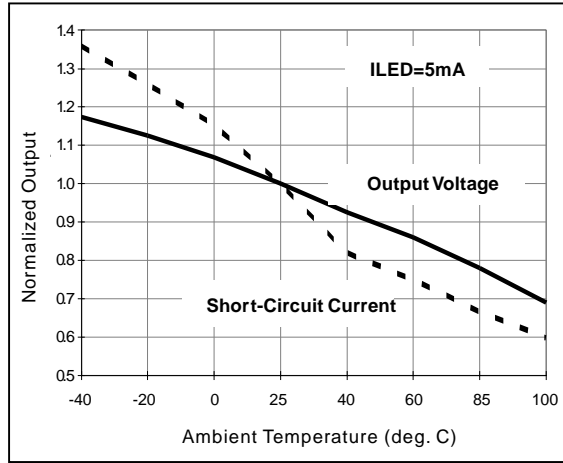


Figure 2. Typical Variation of Output

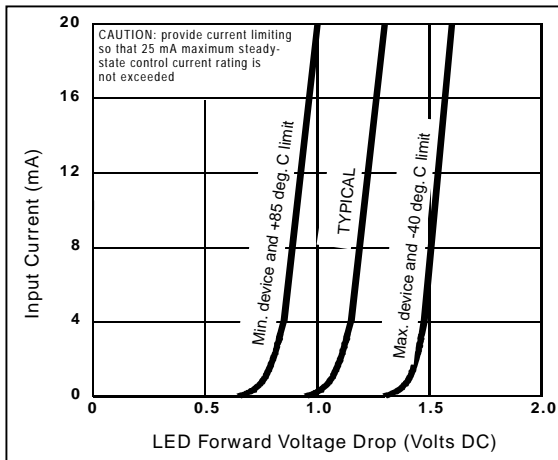


Figure 3. Input Characteristics (Current Controlled)

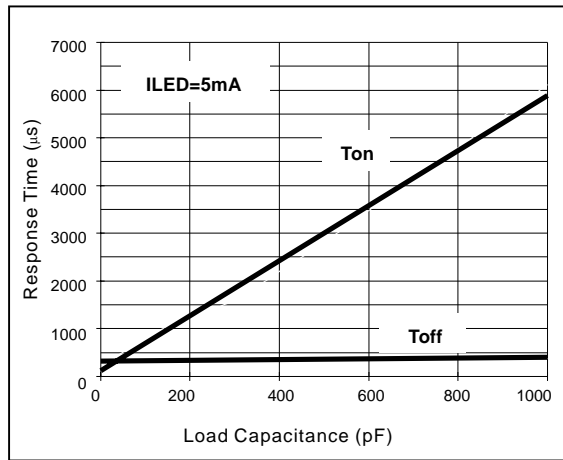
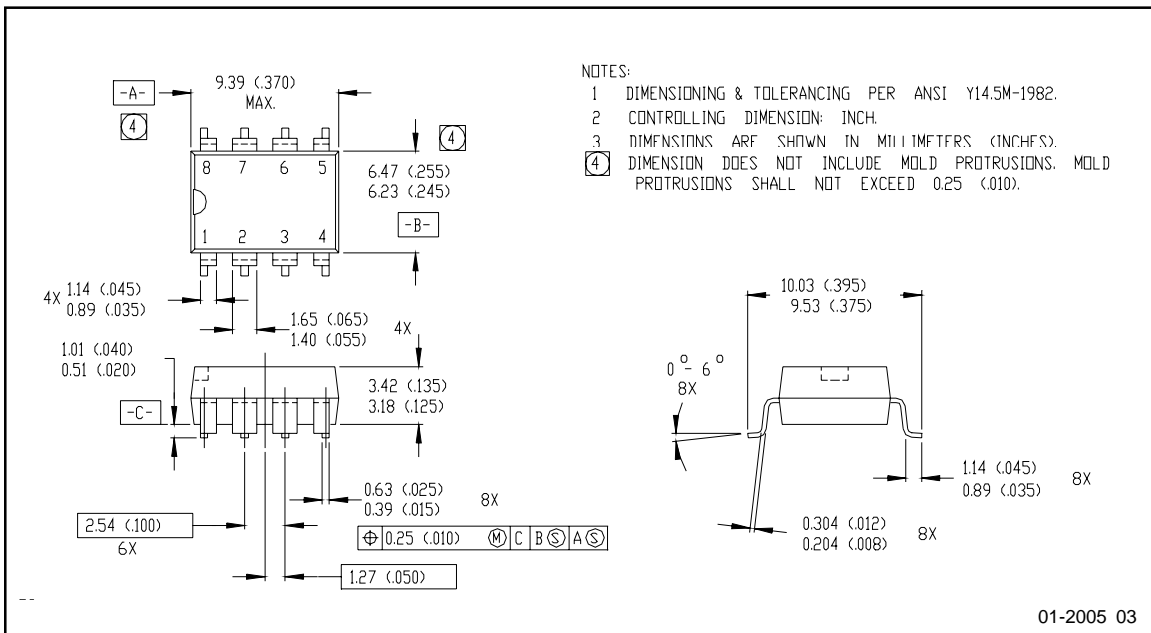
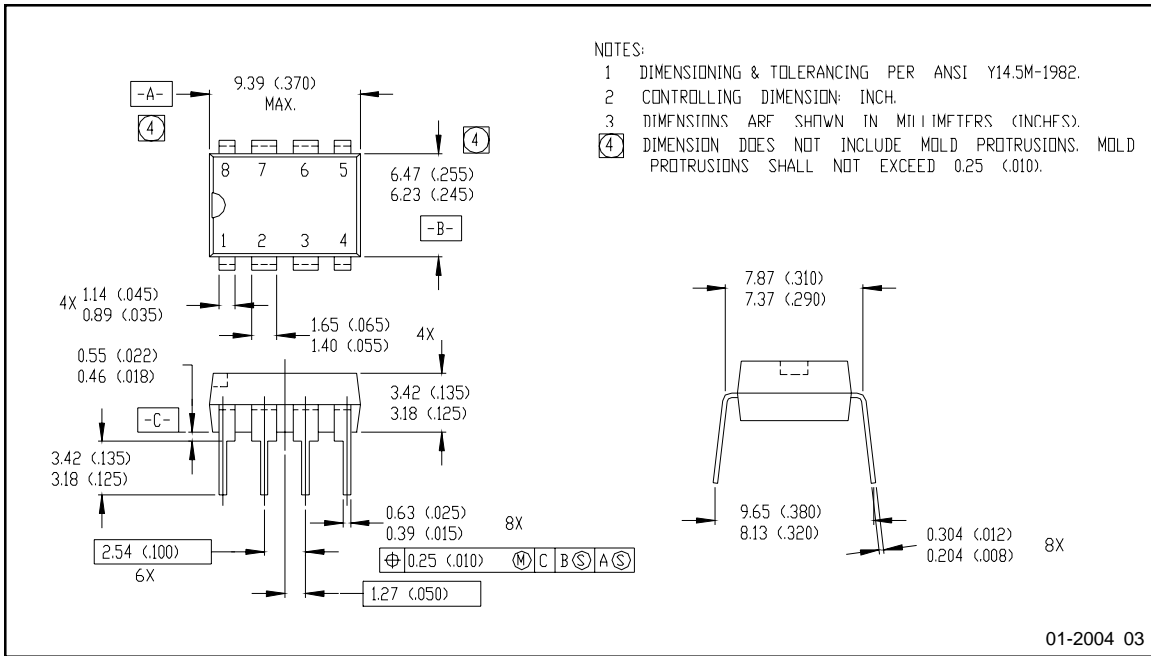


Figure 4. Typical Response Time

Case Outlines



8/9/2000

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