



**THE DATASHEET OF
PVI5080NPBF**



General Description

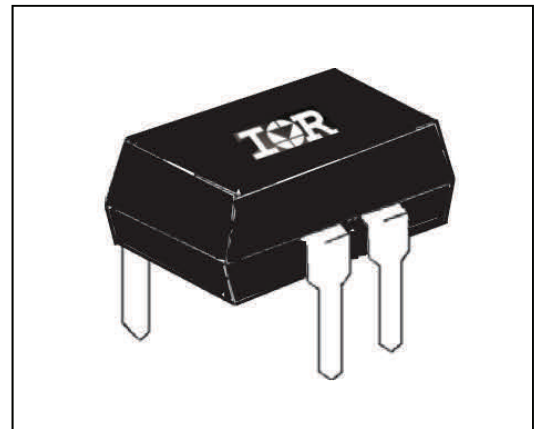
The PVI Series Photovoltaic Isolator generates an electrically isolated DC voltage upon receipt of a DC input signal. It is capable of directly driving gates of power MOSFETs or IGBTs. It utilizes a monolithic integrated circuit photovoltaic generator of novel construction as its output. The output is controlled by radiation from a GaAlAs light emitting diode (LED), which is optically isolated from the photovoltaic generator.

The PVI Series 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 device 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. The PVI Series Photovoltaic isolators employ fast turn-off circuitry.

These PVI Series Photovoltaic Isolators are packaged in 8-pin, molded DIP packages and available with either thru-hole or surface-mount ("gull-wing") leads, in plastic shipping tubes.

Features

- Isolated Voltage Source
- Monolithic Construction
- Up to 8 μ A Output
- Single Output
- Solid-State Reliability



Applications

- Load Distribution
- Industrial Controls
- Current-to-Voltage Conversion
- Custom Solid-State Relay

Part Identification

| | |
|--------------|------------------------------|
| PVI5080NPbF | thru-hole |
| PVI5080NSPbF | Surface-mount (gull-wing) |

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

| INPUT CHARACTERISTICS | Limits | Units |
|--|---------------|---------------------|
| Input Current Range (see figure 4) | 2.0 to 50 | mA _(DC) |
| Maximum Forward Voltage Drop @ 10mA, 25°C (see figure 5) | 1.4 | V _(DC) |
| Maximum Reverse Voltage | 6.0 | V _(DC) |
| Maximum Reverse Current @ -6.0V (DC), 25°C | 100 | μA _(DC) |
| Maximum Pulsed Input Current @ 25°C (see figure 6) | 1.0 | A _(peak) |

| OUTPUT CHARACTERISTICS | Limits | Units |
|--|-----------------|--------------------|
| Maximum Forward Voltage @ 10μA | 8.0 per channel | V _(DC) |
| Maximum Reverse Current @ -10V _{DC} | 10 | μA _(DC) |

| COUPLED CHARACTERISTICS | Limits | Units |
|--|---------------|--------------------|
| Minimum Open Circuit Voltage @ ILED = 10mA, 25°C, RL = >10MΩ (see figures 1 to 2) | 5.0 | V _(DC) |
| Minimum Short Circuit Current @ ILED = 14mA, 25°C (see figures 1 to 2) | 8.0 | μA _(DC) |
| Maximum Capacitance (Input/Output) | 1.0 | pF |
| Maximum Ton Time @ ILED=10mA, CLOAD=10pF (See Figure7) RL > 20MΩ RL=10MΩ RL=4.7MΩ | 300 | μS |
| | 160 | μS |
| | 90 | μS |
| Maximum Toff Time @ ILED=10mA, CLOAD=10pF (See Figure7) | 220 | μS |

| GENERAL CHARACTERISTICS | Limits | Units |
|---|------------------|------------------|
| Minimum Dielectric Strength, Input-Output | 4000 | V _{RMS} |
| Minimum Dielectric Strength, Output-to-Output | 1200 | V _{DC} |
| Minimum Insulation Resistance, Input-to-Output, @T _A =+25°C, 50%RH, 100V _{DC} | 10 ¹² | Ω |
| Maximum Pin Soldering Temperature (10 seconds maximum) | +260 | °C |
| Ambient Temperature Range: Operating | -40 to 85 | |
| Storage | -40 to 125 | |

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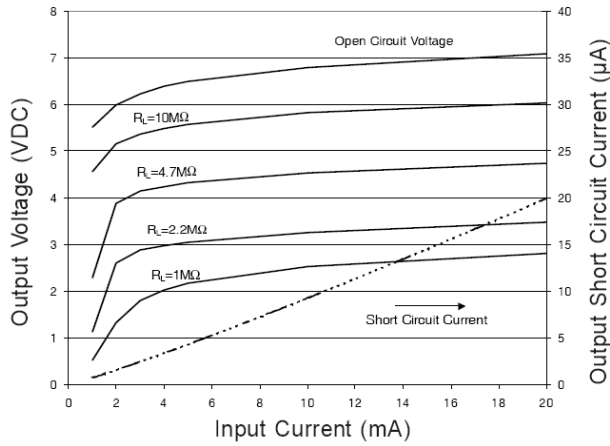


Figure 1. Typical Output Characteristics

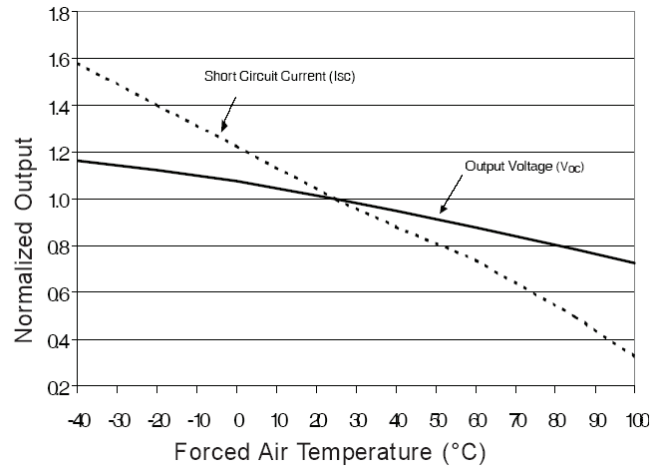


Figure 2. Typical Variation of Output

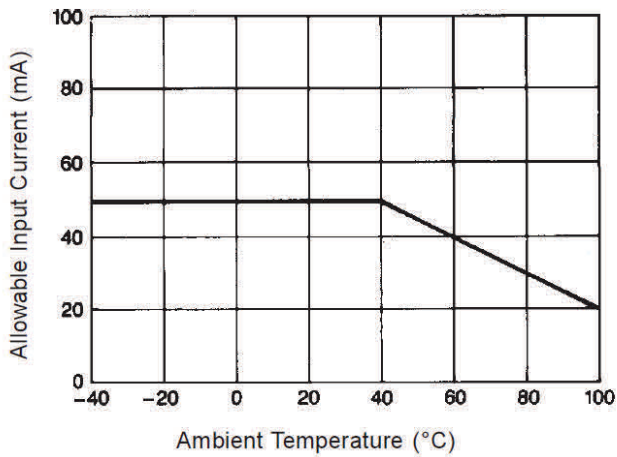


Figure 3. Input Current Derating

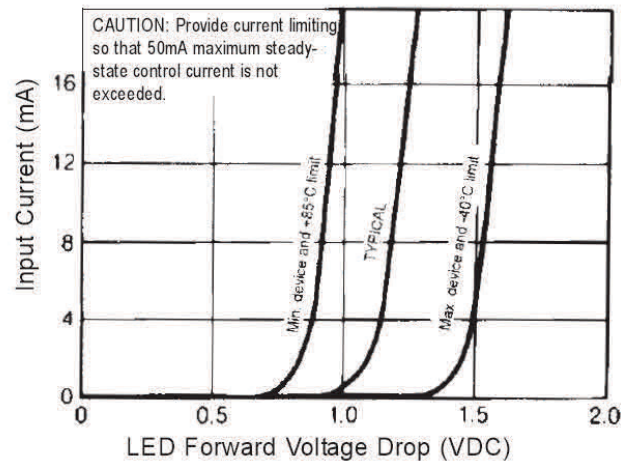


Figure 4. Input Characteristics

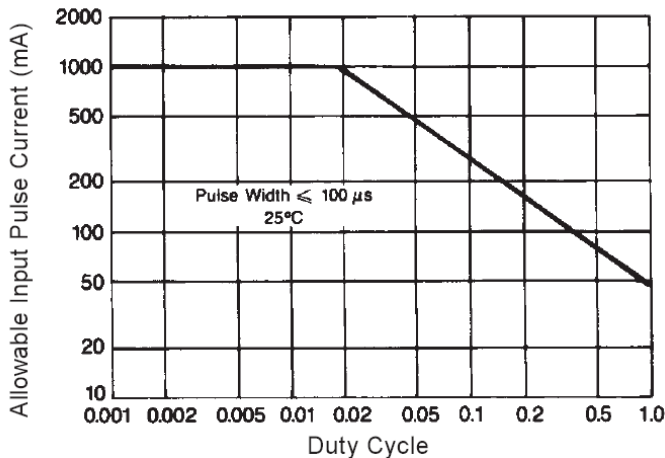


Figure 5. Input Pulse Capability

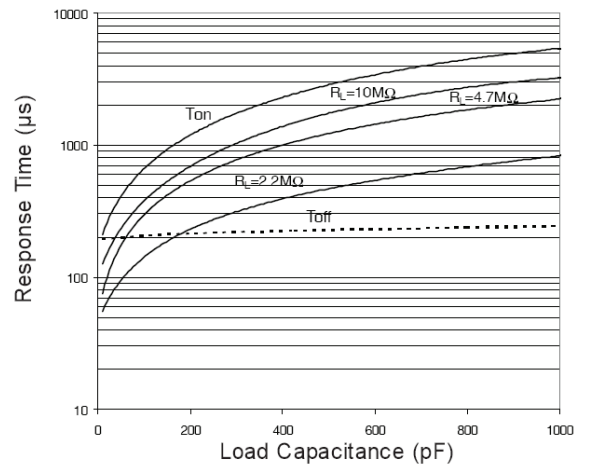
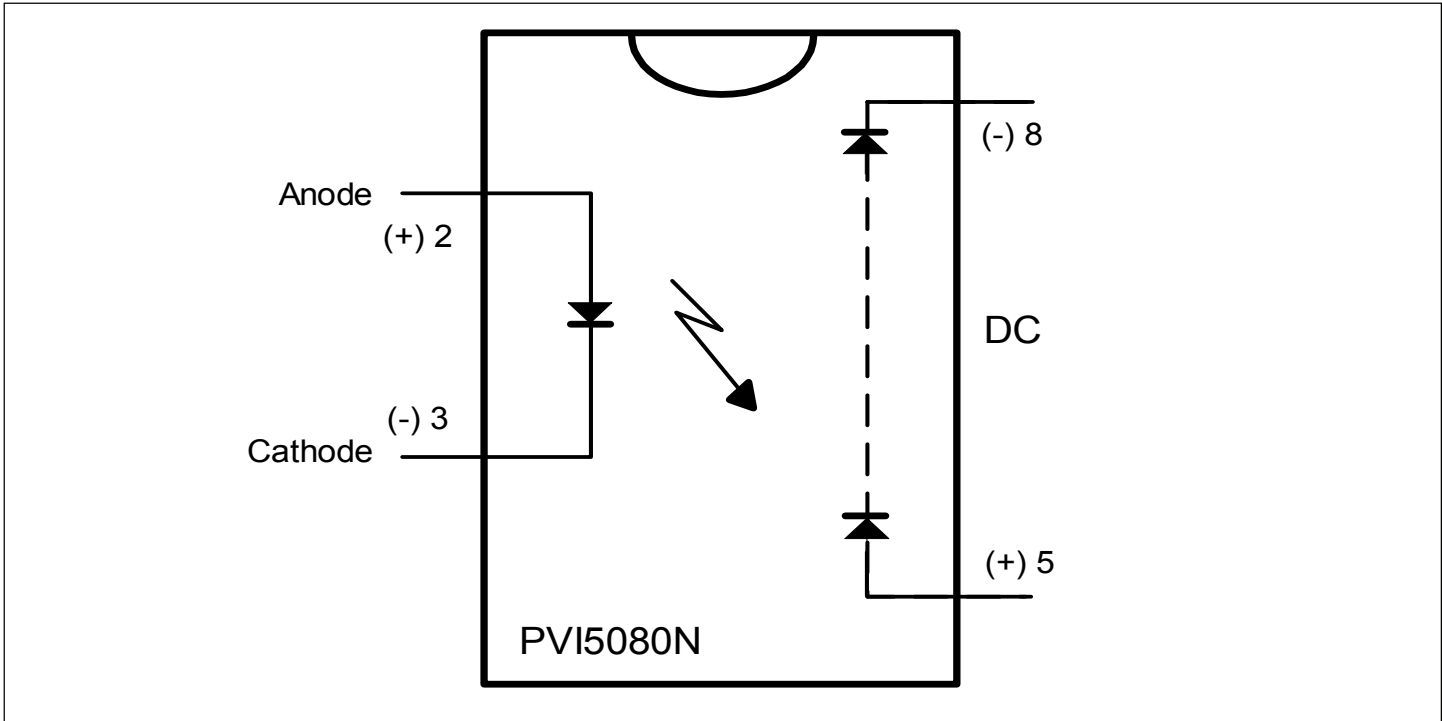
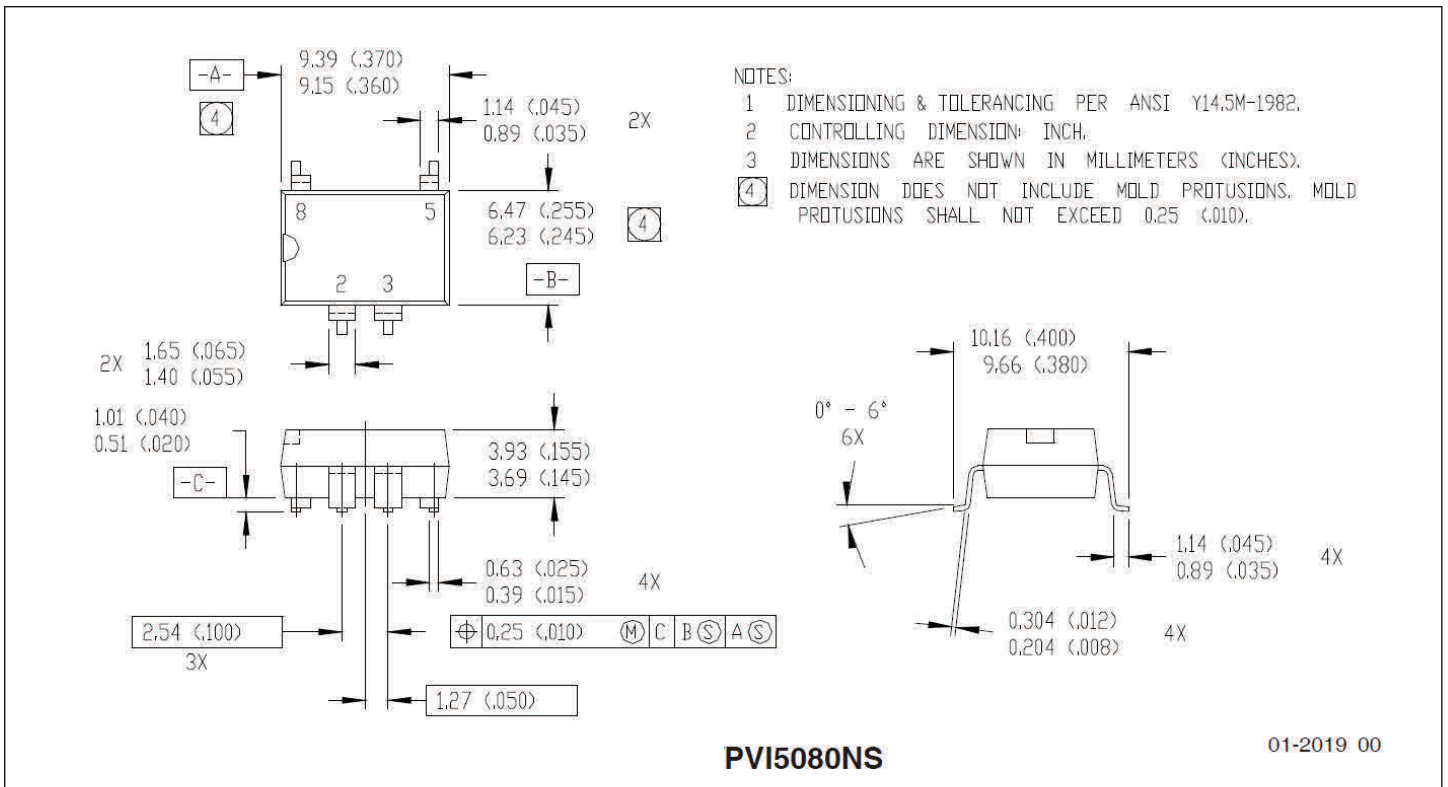
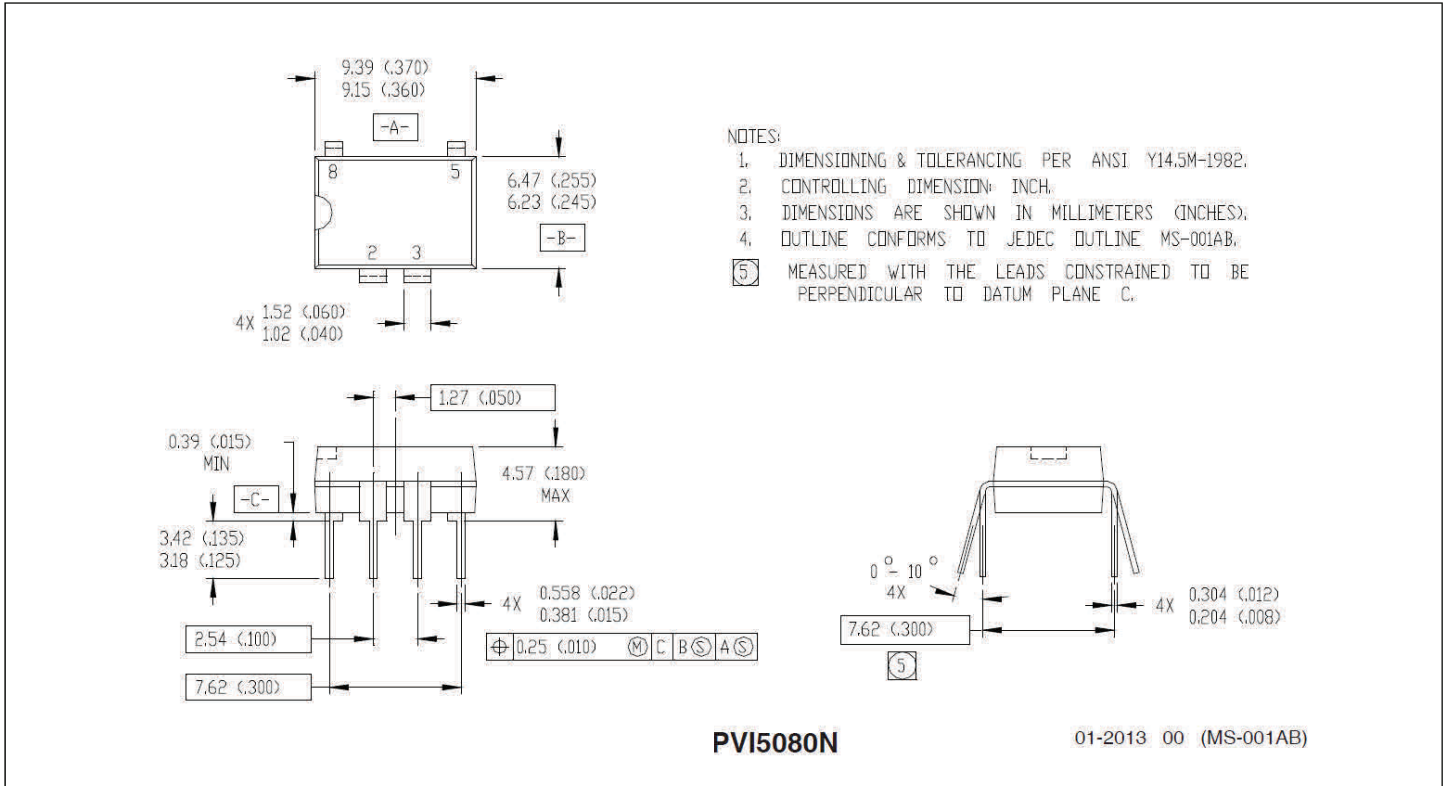


Figure 6. Typical Response Time

Wiring Diagram



Case Outlines


Qualification Information

| | | |
|-----------------------------------|---|--|
| Qualification Level | Industrial (per JEDEC JESD47F [†] guidelines) | |
| Moisture Sensitivity Level | PVI5080NPbF | N/A |
| | PVI5080NSPbF | MSL4 (per JEDEC J-STD-020E & JEDEC J-STD-033C) [†] |
| RoHS Compliant | Yes | |

[†] Applicable version of JEDEC standard at the time of product release.

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