Photovoltaic Isolator
Single Channel
5-10 Volt Output

General Description

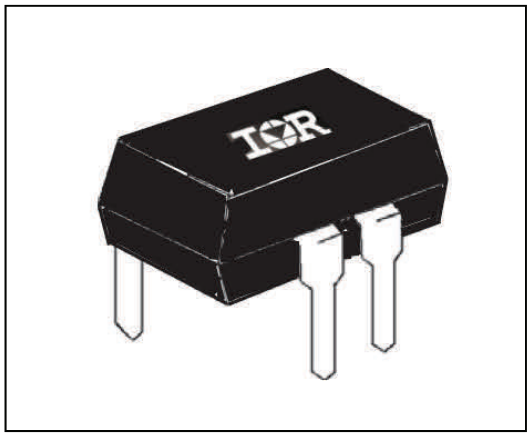
The PVI Series Photovoltaic Isolator generates an electrically isolated DC voltage upon receipt of a DC input signal. It is capable of directly driving gates of power MOSFETs or IGBTs. It utilizes a monolithic integrated circuit photovoltaic generator of novel construction as its output. The output is 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 8μA 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°C ≤ T_A ≤ +85°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	300	µS
RL=10MΩ	160	µS
RL=4.7MΩ	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	

Infineon Technology does not recommend the use of this product in aerospace, avionics, military or life support applications. Users of this Infineon Technology product in such applications assume all risks of such use and indemnify Infineon Technology against all damages resulting from such use.

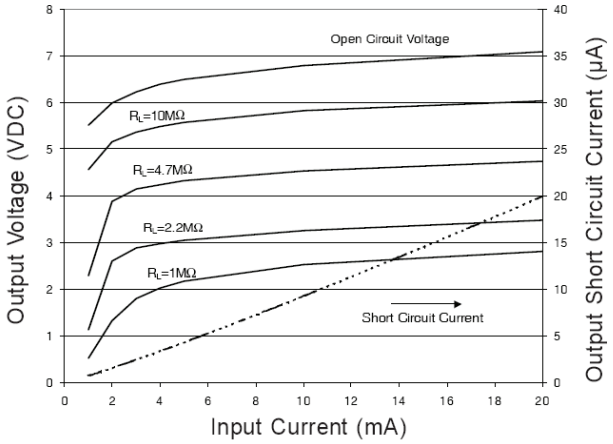


Figure 1. Typical Output Characteristics

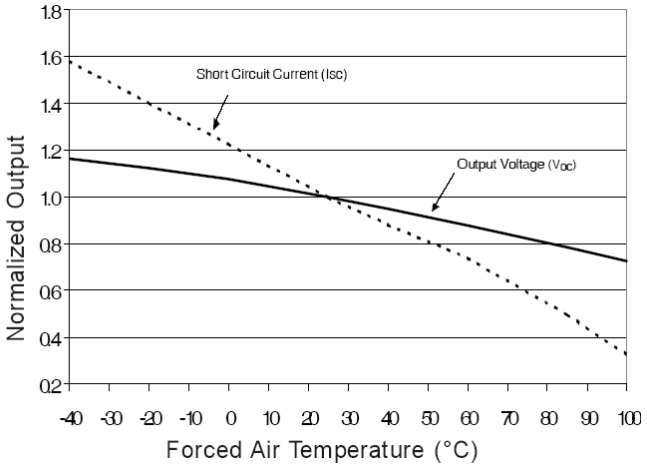


Figure 2. Typical Variation of Output

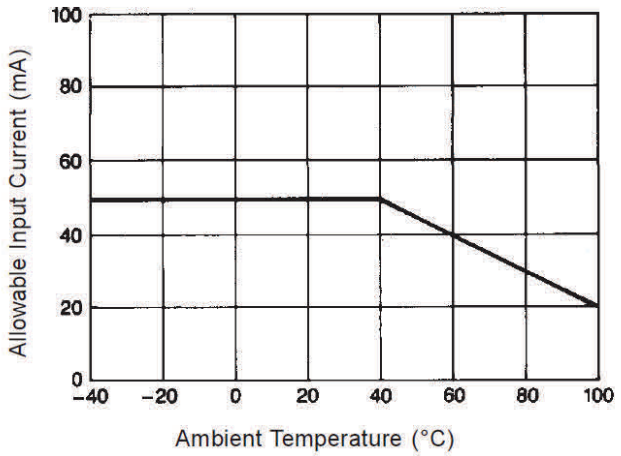


Figure 3. Input Current Derating

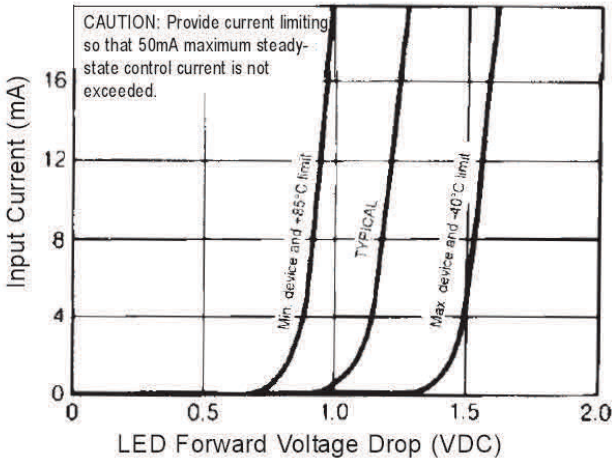


Figure 4. Input Characteristics

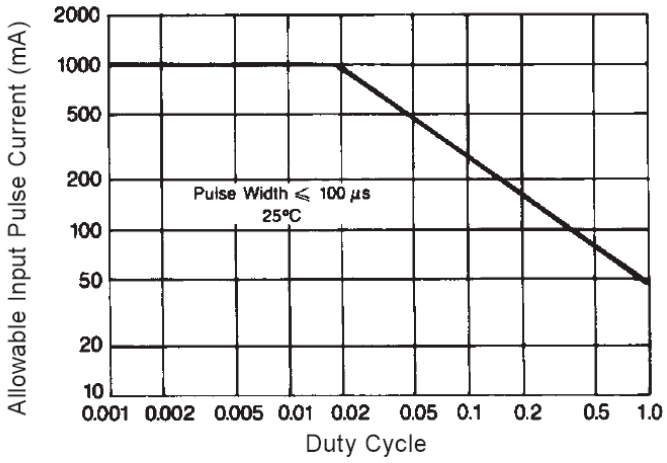


Figure 5. Input Pulse Capability

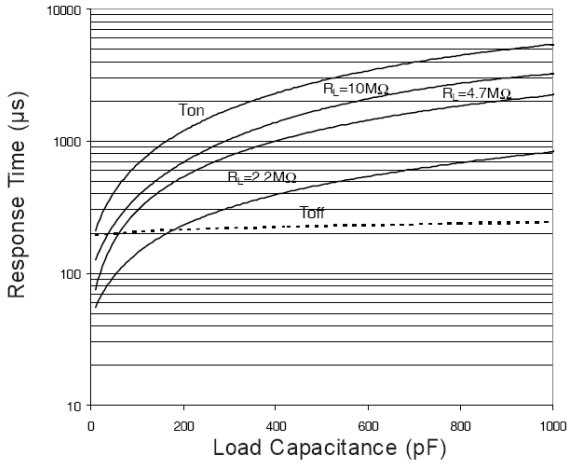
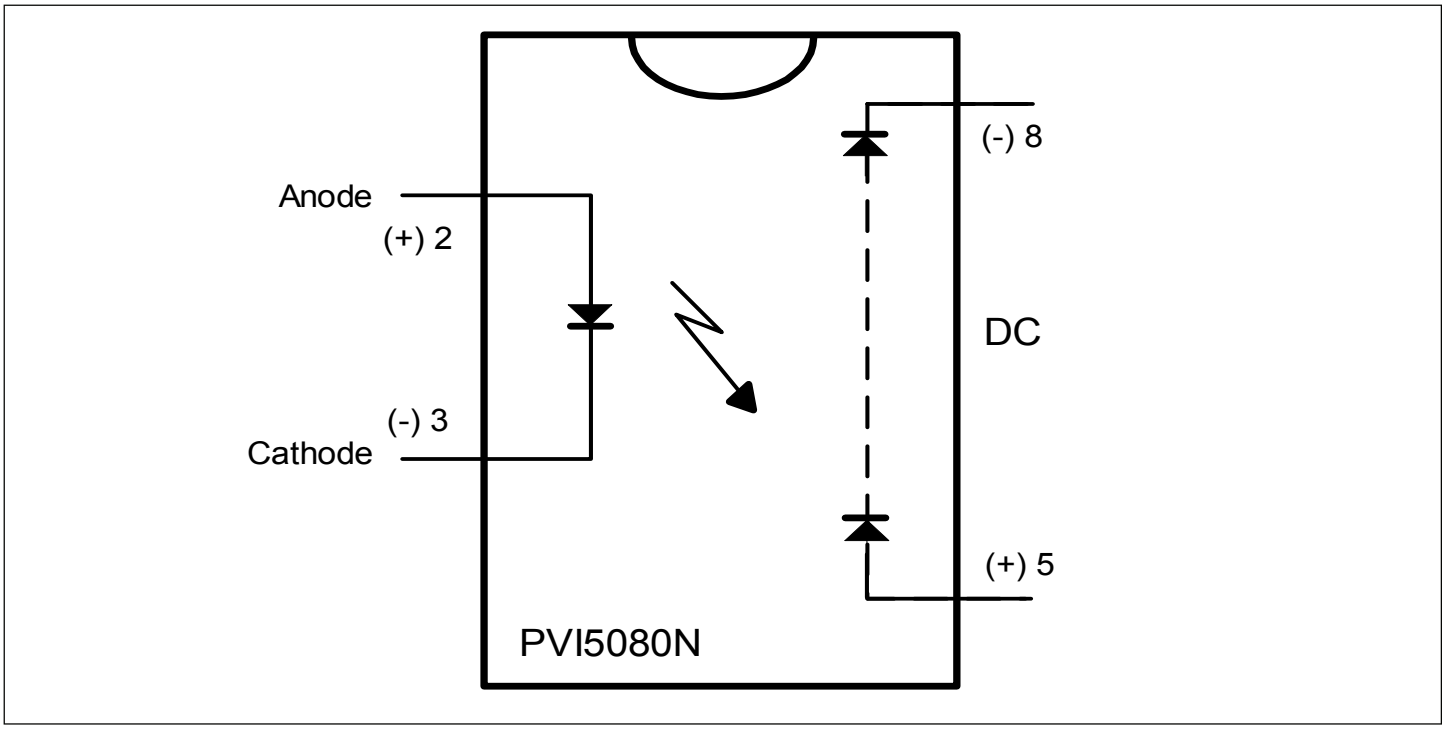
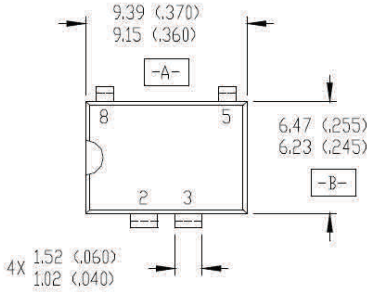


Figure 6. Typical Response Time

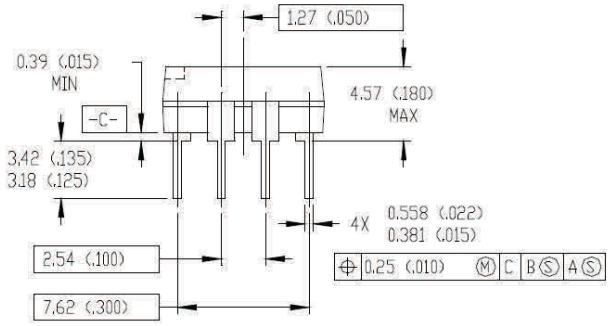
Wiring Diagram

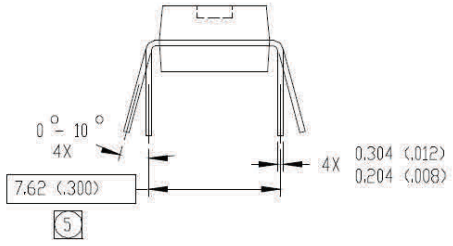


Case Outlines



NOTES:
1. DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-001AB.
5. MEASURED WITH THE LEADS CONSTRAINED TO BE PERPENDICULAR TO DATUM PLANE C.





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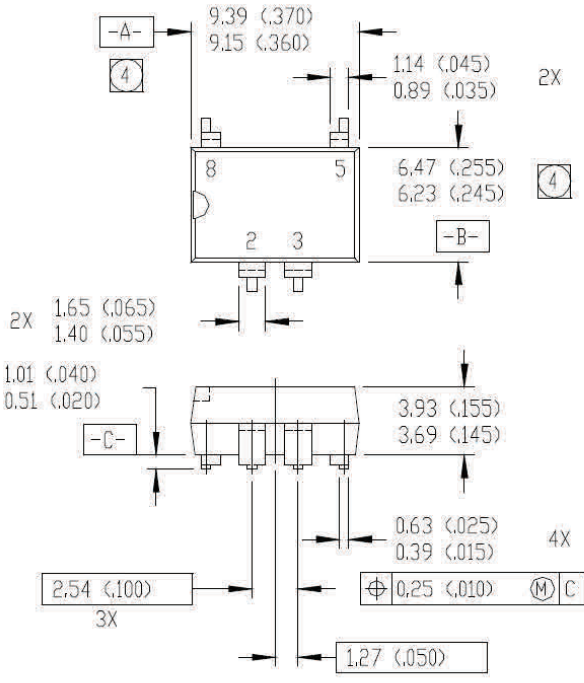
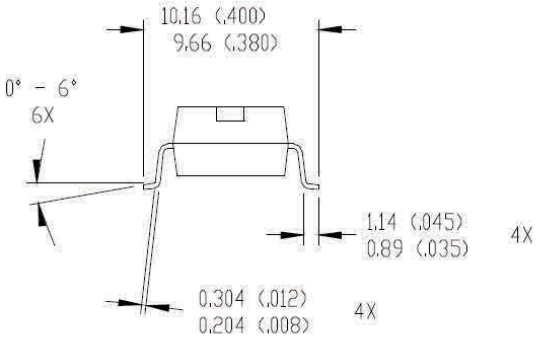


NOTES:
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1982.
2 CONTROLLING DIMENSION: INCH.
3 DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4 DIMENSION DOES NOT INCLUDE MOLD PROTUSIONS. MOLD PROTUSIONS SHALL NOT EXCEED 0.25 (.010).



PVI5080NS

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Qualifiction 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.