

International

IOR Rectifier

HEXFET® Power MOSFET Photovoltaic Relay

Series PVT312

Microelectronic

Power IC Relay

Single Pole, Normally Open, 0-250V, 190mA AC/DC

General Description

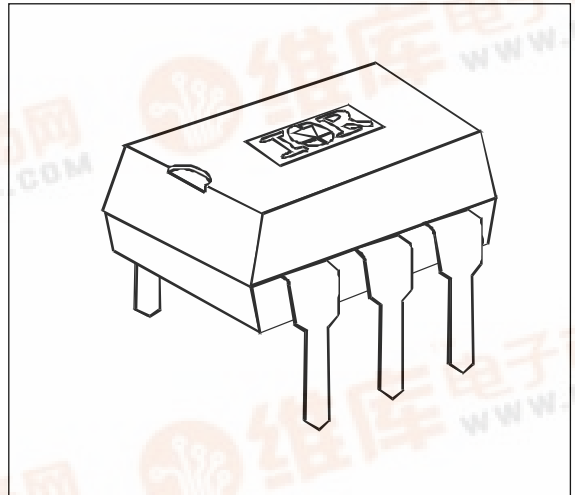
The PVT312 Photovoltaic Relay is a single-pole, normally open solid-state relay that can replace electromechanical relays in many applications. It utilizes International Rectifier's proprietary HEXFET power MOSFET as the output switch, driven by an integrated circuit photovoltaic generator of novel construction. The output switch is controlled by radiation from a GaAlAs light emitting diode (LED) which is optically isolated from the photovoltaic generator.

This SSR is specifically designed for telecom applications. PVT312L employs an active current-limiting circuitry enabling it to withstand current surge transients.

PVT312 Relays are packaged in a 6-pin, molded DIP package with either through-hole or surface mount ("gull-wing") terminals. It is available in standard plastic shipping tubes or on tape-and-reel. Please refer to the Part Identification information opposite.

PVT312L Features

- HEXFET Power MOSFET output ■
- Bounce-free operation ■
- 4,000 V_{RMS} I/O isolation ■
- Load current limiting ■
- Linear AC/DC operation ■
- Solid-State reliability ■
- UL recognized ■



Applications

- On/Off Hook switch
- Dial-Out relay
- Ring injection relay
- Ground start
- General switching

Part Identification

PVT312L	current limit, through-hole
PVT312LS	current limit, surface-mount
PVT312LS-T	surface-mount, tape and reel
PVT312	no current limit, through-hole
PVT312S	no current limit, surface-mount
PVT312S-T	no current limit, surface-mount, tape and reel



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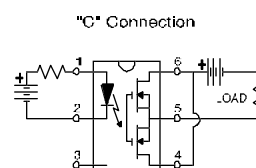
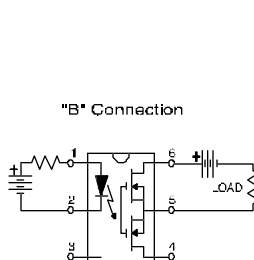
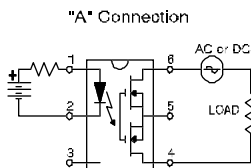
Electrical Specifications ($-40^{\circ}\text{C} \leq T_A \leq +85^{\circ}\text{C}$ unless otherwise specified)

INPUT CHARACTERISTICS	Part Numbers	Units
	PVT312L PVT312	
Minimum Control Current (see figures 1 and 2)	2.0	mA
Maximum Control Current for Off-State Resistance @ $T_A=+25^{\circ}\text{C}$	0.4	mA
Control Current Range (Caution: current limit input LED, see figure 6)	2.0 to 25	mA
Maximum Reverse Voltage	7.0	V

OUTPUT CHARACTERISTICS	PVT312L	PVT312	Units
Operating Voltage Range	0 to ± 250		$V_{\text{DC or AC peak}}$
Maximum Load Current @ $T_A=+40^{\circ}\text{C}$, 5mA Control (see figures 1 and 2)			
A Connection	170	190	mA (AC or DC)
B Connection	190	210	mA (DC)
C Connection	300	320	mA (DC)
Maximum On-State Resistance @ $T_A=+25^{\circ}\text{C}$ for 50mA pulsed load 5mA Control (see figure 4)			
A Connection	15	10	Ω
B Connection	8	5.5	Ω
C Connection	4.25	3	Ω
Maximum Off-State Leakage @ $T_A=+25^{\circ}\text{C}$, $\pm 250\text{V}$ (see figure 5)	1.0		μA
Current Limit @ $T_A=+25^{\circ}\text{C}$, 5mA Control			
Connection:	A	C	
Minimum	190	330	n/a
Maximum	300	560	n/a
Maximum Turn-On Time @ $T_A=+25^{\circ}\text{C}$ (see figure 7) for 50mA, 100 V_{DC} load, 5mA Control	3.0		ms
Maximum Turn-Off Time @ $T_A=+25^{\circ}\text{C}$ (See Fig. 6) For 50mA, 100 V_{DC} load, 5mA Control	0.5		ms
Maximum Output Capacitance @ 50V DC	50		pF

GENERAL CHARACTERISTICS	ALL MODELS	Units
Minimum Dielectric Strength, Input-Output	4000	V_{RMS}
Minimum Insulation Resistance, Input-Output @ $T_A=+25^{\circ}\text{C}$, 50%RH, 100 V_{DC}	10^{12}	Ω
Maximum Capacitance, Input-Output	1.0	pF
Maximum Pin Soldering Temperature (10 seconds maximum)	+260	$^{\circ}\text{C}$
Ambient Temperature Range:	Operating	$^{\circ}\text{C}$
	Storage	$^{\circ}\text{C}$
	-40 to +85	
	-40 to +100	

Connection Diagrams



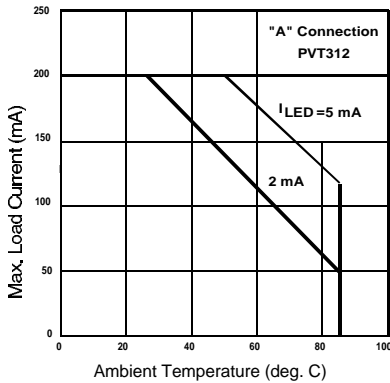


Figure 1. Typical Current Derating Curves

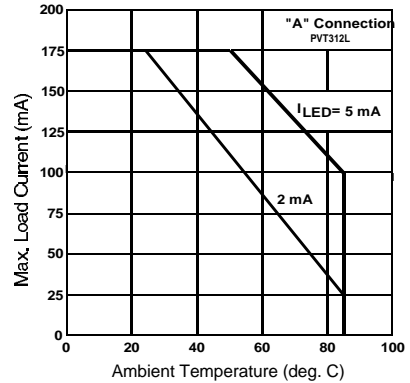


Figure 2. Typical Current Derating Curves

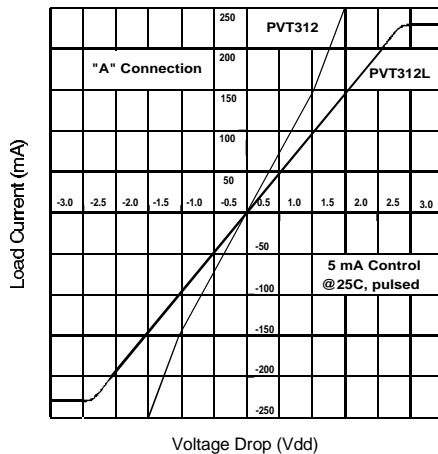


Figure 3. Linearity Characteristics

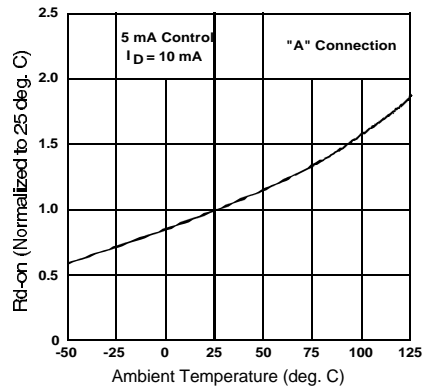


Figure 4. Typical Normalized On-Resistance

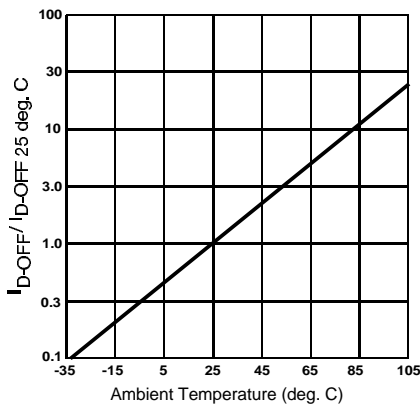


Figure 5. Typical Normalized Off-State Leakage

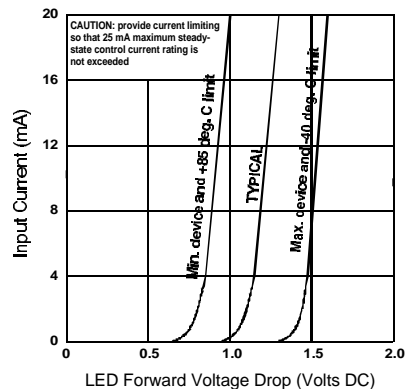


Figure 6. Input Characteristics (Current Controlled)

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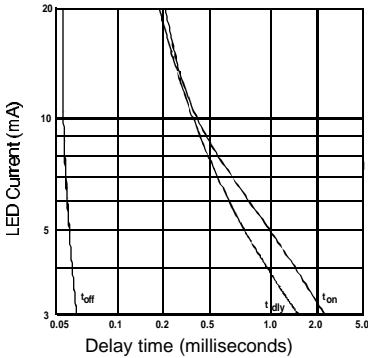


Figure 7. Typical Delay Times

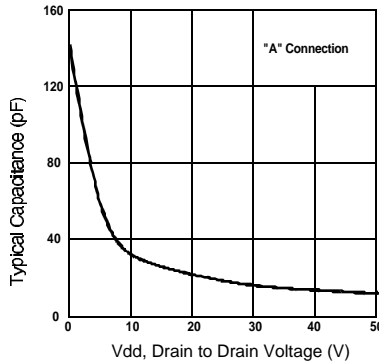


Figure 9. Typical Output Capacitance

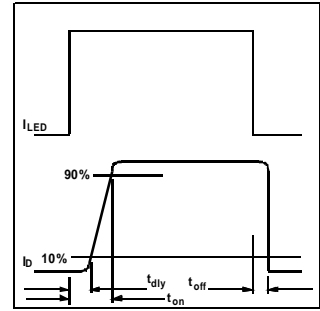
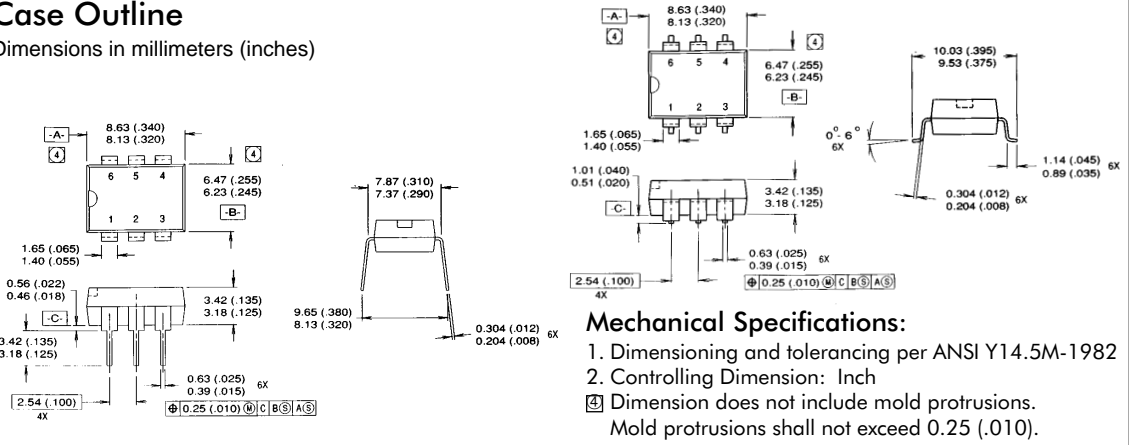


Figure 8. Delay Time Definitions

Case Outline

Dimensions in millimeters (inches)



Mechanical Specifications:

1. Dimensioning and tolerancing per ANSI Y14.5M-1982
 2. Controlling Dimension: Inch
- ④ Dimension does not include mold protrusions.
Mold protrusions shall not exceed 0.25 (.010).

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WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, Tel: (310) 322 3331
EUROPEAN HEADQUARTERS: Hurst Green, Oxted, Surrey RH8 9BB, UK Tel: ++ 44 1883 713215

IR CANADA: 7321 Victoria Park Ave., Suite 201, Markham, Ontario L3R 2Z8, Tel: (905) 475 1897

IR GERMANY: Saalburgstrasse 157, 61350 Bad Homburg Tel: ++ 49 6172 96590

IR ITALY: Via Liguria 49, 10071 Borgaro, Torino Tel: ++ 39 11 451 0111

IR FAR EAST: K&H Bldg., 2F, 3-30-4 Nishi-Ikeburo 3-Chome, Toshima-Ku, Tokyo, Japan 171 Tel: ++ 81 3 3983 0641

IR SOUTHEAST ASIA: 315 Outram Road, #10-02 Tan Boon Liat Building, Singapore 0316 Tel: ++ 65 221 8371