International
IOR Rectifier

Data Sheet No. PD 10038 revK

Series PVT312 & PbF

Microelectronic Power IC

HEXFET® Power MOSFET Photovoltaic Relay

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

General Description

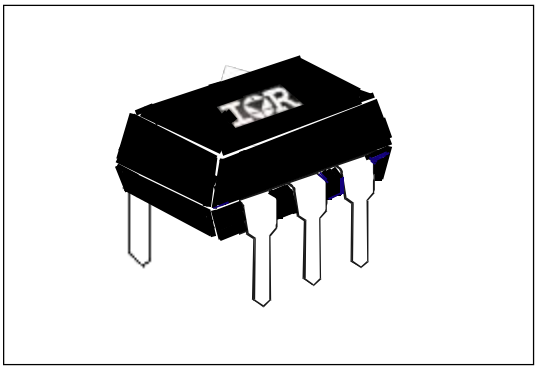
The PVT312 Photovoltaic Relay is a single-pole, normally open solid-state relay that can replace electromechanical relays in many applications. It utilizes International Rectifier`s proprietary HEXFET power MOSFET as the output switch, driven by an integrated circuit photovoltaic generator of novel construction. 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 thru-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.

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 and BABT certified;
- ESD Tolerance:
  - 4000V Human Body Model
  - 500V Machine Model



Applications

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

Part Identification

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

(HEXFET is the registered trademark for International Rectifier Power MOSFETs)

Electrical Specifications (-40°C ≤ T_A ≤ +85°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°C	0.4		mA
Control Current Range (Caution: current limit input LED, see figure 6)	2.0 to 25		mA
Maximum Reverse Voltage	6.0		V

OUTPUT CHARACTERISTICS	PVT312L	PVT312	
Operating Voltage Range	0 to ±250		$V_{(DC\ or\ AC\ peak)}$
Maximum Load Current @ T_A=+40°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°C for 50mA pulsed load 5mA Control (see figure4)			
A Connection	15	10	Ω
B Connection	8	5.5	Ω
C Connection	4.25	3	Ω
Maximum Off-State Leakage @T_A=+25°C, ±250V (see figure 5)	1.0		µA
Current Limit @T_A=+25°C, 5mA Control			
Connection:	A	C	
Minimum	190	330	n/a	mA
Maximum	300	560	n/a	mA
Maximum Turn-On Time @T_A=+25°C (see figure 7) for 50mA, 100 V_{DC} load, 5mA Control	3.0		ms
Maximum Turn-Off Time @T_A=+25°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	
Minimum Dielectric Strength, Input-Output		4000	V_{RMS}
Minimum Insulation Resistance, Input-Output @T_A=+25°C, 50%RH, 100V_{DC}		10^{12}	Ω
Maximum Capacitance, Input-Output		1.0	pF
Maximum Pin Soldering Temperature (10 seconds maximum)		+260	°C
Ambient Temperature Range:	Operating	-40 to +85	°C
	Storage	-40 to +100	

Case Outlines