THE DATASHEET OF

PVO402AP-T

International
IOR Rectifier

OBSOLETE

Data Sheet No. PD10045 revG

PVO402AP

Microelectronic Power IC
HEXFET® Power MOSFET Relay
Single Pole, Normally Open + Ring Detector
0-400V, 150mA AC/DC

General Description

The PVO402AP Photovoltaic Relay is a single pole, normally open solid-state relay plus ring detector. By integrating these two functions in one package it can replace two discrete components, i.e., a relay and an AC-input opto-coupler. The relay portion of PVO402AP utilizes International Rectifier's 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. The ring detector portion of PVO402AP has two LEDs in inverse parallel connection as the input sensing element and a silicon NPN photo-transistor as the output switch.

PVO402AP is ideally suited for PCMCIA fax/modem cards. Its extremely low profile allows it to be used in Type II cards whose outer shells are only 5mm thick.

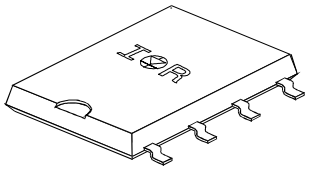
PVO402AP Relays are packaged in an 8-pin, molded 'Thin-Pak' DIP package with 'gull-wing' surface mount terminals. It is available in plastic shipping tubes or on tape-and-reel. Please refer to Part Identification (opposite) for details.

Applications

- On/Off Hook switch
- Dial pulsing
- Ringer injection
- Ring detection
- Loop current detection

Features

- HEXFET Power MOSFET output
- Bounce-free operation
- 3,750 V_{RMS} I/O Isolation
- Linear AC/DC operation
- Solid-State Reliability
- BABT certified



PVO402AP 'Thin-Pak'

Part Identification

PVO402AP	SMT, plastic shipping tube
PVO402AP-T	SMT, tape and reel

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

Electrical Specifications (-40°C ≤ T_A ≤ +85°C unless otherwise specified)

RELAY

INPUT CHARACTERISTICS	Limits	Units
Min. Control Current (See Fig.1)	5.0	mA
Max. Control Current for Off-State Resistance @T_A=+25°C	0.4	mA
Control Current Range (Caution: current limit input LED, see Fig.6)	5.0 to 25	mA
Max. Reverse Voltage	6.0	V

OUTPUT CHARACTERISTICS	Limits	Units
Operating Voltage Range	0 to ±400	$V_{(DC\ or\ AC\ peak)}$
Max. Load Current @ T_A=+40°C 5mA Control (See Fig.1)	150	mA
Max. On-State Resistance @T_A=+25°C For 50mA Pulsed Load, 5mA Control (See Fig.4)	22	Ω
Max. Off-State Leakage @T_A=+25°C, ±400V (See Fig.5)	1.0	µA
Max. Turn-On Time @T_A=+25°C (See Fig. 7) For 50mA, 100 V_{DC} Load, 5mA Control	1.0	ms
Max. Turn-Off Time @T_A=+25°C (See Fig. 7) For 50mA, 100 V_{DC} Load, 5mA Control	0.5	ms
Max. Output Capacitance @ 50V_{DC}	12	pF

DETECTOR

INPUT CHARACTERISTICS	Limits	Units
Min. Control Current @ I_C = 2mA, V_{CE} = 0.5V	5.0	mA
Max. Control Current for Off-State Leakage I_C=1µA, V_{CE}=5V @T_A=+25°C	5	µA
Control Current Range (Caution: current limit input LED, see Fig.6)	5.0 to 25	mA

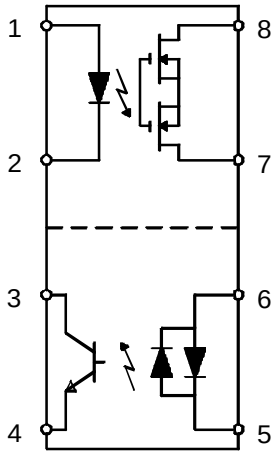
OUTPUT CHARACTERISTICS	Limits	Units
Min. Collector-Emitter Breakdown Voltage @ I_C = 10µA	20	V_{DC}
Min.Current Transfer Ratio @ I_{LED} = 6mA, V_{CE} = 5V (see Fig. 9)	33	%
Max. Saturation Voltage @ I_{LED} = 16mA, I_C = 2mA	0.5	V
Max. Leakage Current @ I_{LED}=0mA, V_{CE} = 5V	500	nA
Max. Power Dissipation @T_A=+25°C (derate linearly 2.0mW/°C)	150	mW

COMBINED

GENERAL CHARACTERISTICS	Limits	Units
Min. Dielectric Strength, Input-Output	3750	V_{RMS}
Min. Dielectric Strength, Relay-Detector	1000	V_{DC}
Min. Insulation Resistance, Input-Output @T_A=+25°C, 50%RH, 100V_{DC}	10^{12}	Ω
Max. Capacitance, Input-Output	3.0	pF
Max. Pin Soldering Temperature (10 seconds max.)	+260	°C
Ambient Temperature Range: Operating Storage	-40 to +85 -40 to +100	

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

Connection Diagram



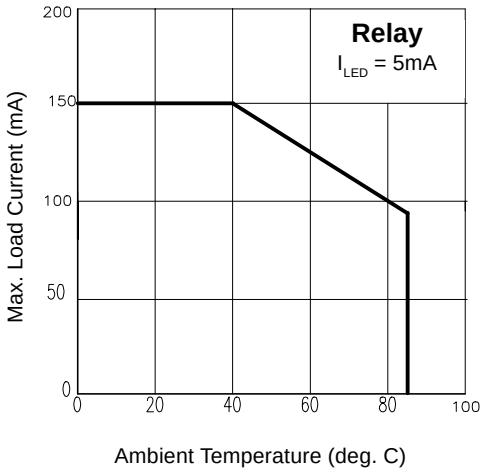


Figure 1. Current Derating Curve

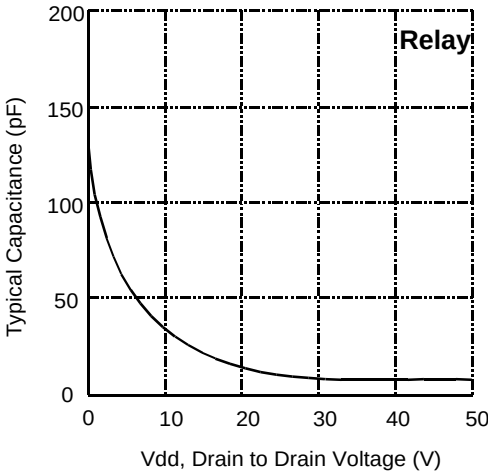


Figure 2. Typical Output Capacitance

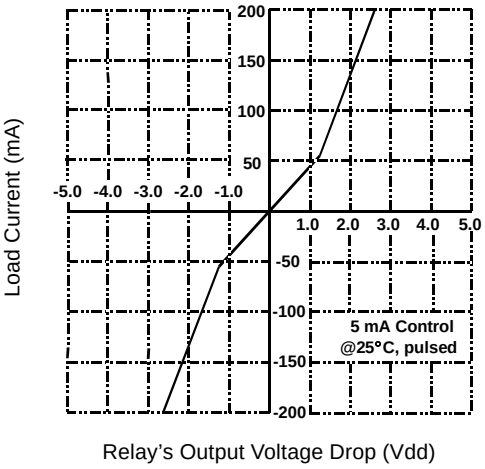


Figure 3. Linearity Characteristics

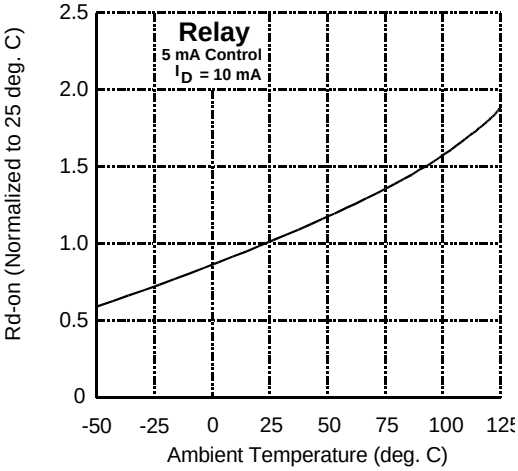


Figure 4. Typical Normalized On-Resistance

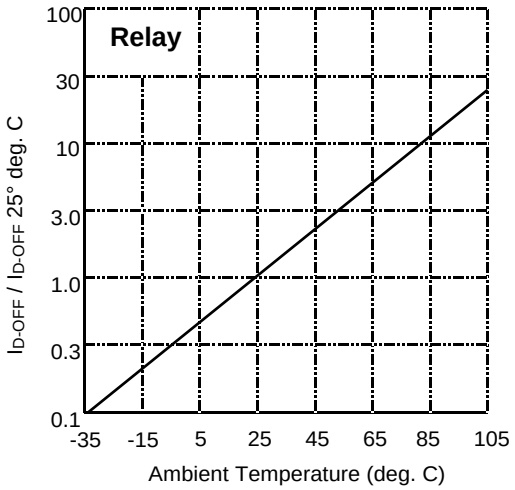


Figure 5. Typical Normalized Off-State Leakage

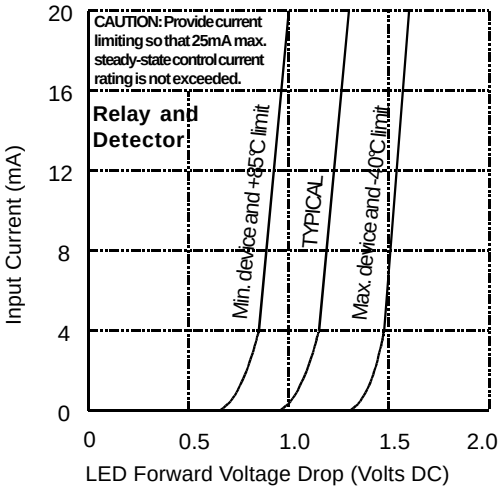


Figure 6. Input Characteristics (Current Controlled)

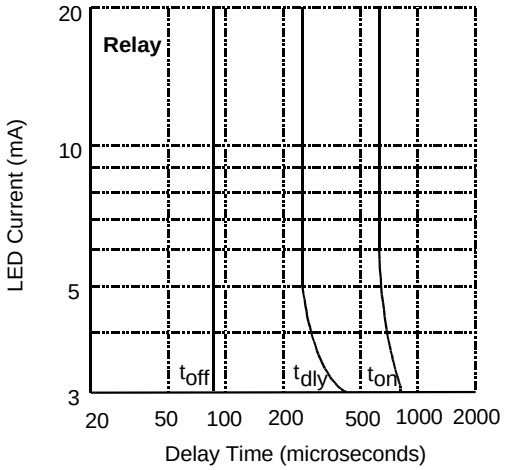


Figure 7. Typical Delay Times

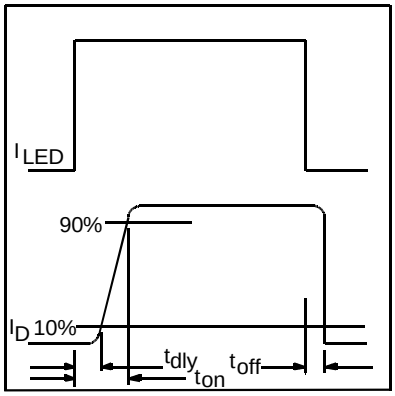


Figure 8. Delay Time Definitions

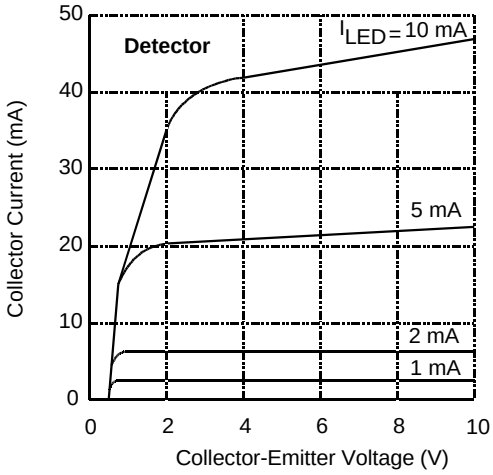
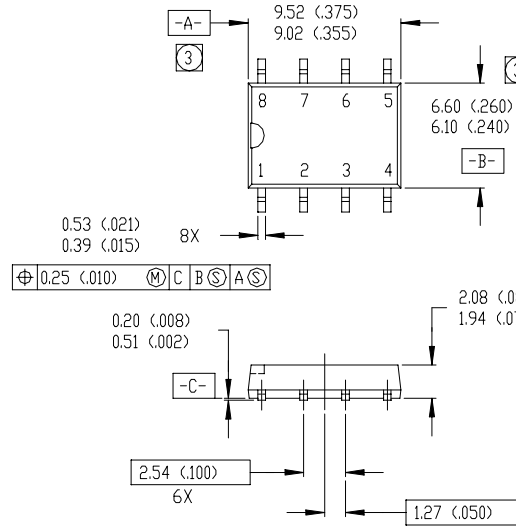
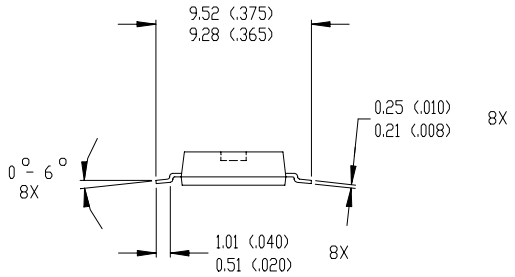


Figure 9.Typical Transfer Characteristics

Case Outline



NOTES:
1. CONTROLLING DIMENSION: INCH.
2. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
3. DIMENSION DOES NOT INCLUDE MOLD PROTUSIONS. MOLD PROTUSIONS SHALL NOT EXCEED 0.25 (.010).



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