

PVT442

Microelectronic Power IC
HEXFET® Power MOSFET Relay
Single Pole, Normally Closed
0-400V, 170mA AC/DC

General Description

PVT442 Photovoltaic Relay is a single-pole, normally closed solid-state relay that can replace electromechanical relays in many applications. It utilizes a 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.

PVT442 is ideally suited for worldwide telecom applications: On/Off Hook switch, Parallel telecom equipment setup, and general switching.

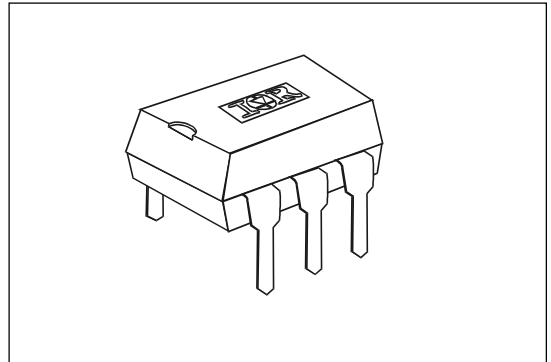
PVT442 Relays are packaged in a 6-pin, molded DIP package with either thru-hole or "gull-wing" surface mount terminals. It is available in standard plastic shipping tubes or on Tape-and-Reel. Refer to Part Identification information.

Applications

- On/Off Hook switch
- Parallel telecom equipment setup
- General switching

Features

- HEXFET Power MOSFET output ■
- Bounce-free operation ■
- 4,000 V_{RMS} I/O isolation ■
- Linear AC/DC operation ■
- Solid-State reliability ■
- BABT certified ■



Part Identification

PVT442	thru-hole
PVT442S	SMT
PVT442S-T	SMT, tape and reel

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

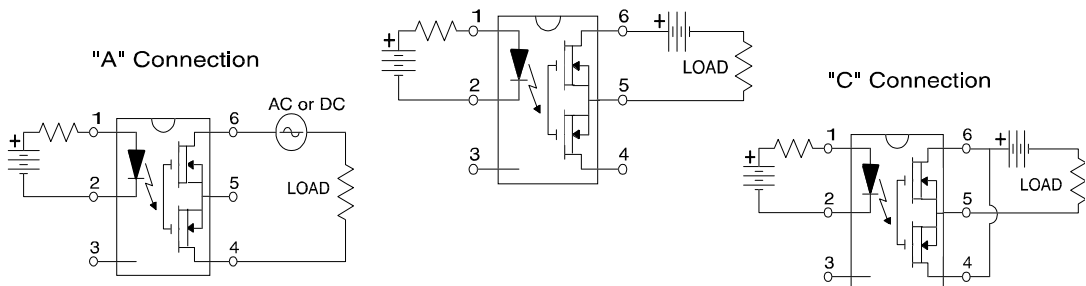
INPUT CHARACTERISTICS	Limits	Units
Min. Control Current (See Fig.1)	3.0	mA
Control Current Range (Caution: current limit input LED, see Fig.6)	3.0 to 25	mA
Max. Reverse Voltage	7.0	V

OUTPUT CHARACTERISTICS	Limits	Units
Operating Voltage Range	0 to ± 400	$V_{(DC \text{ or } AC \text{ peak})}$
Max. Load Current @ $T_A = +40^{\circ}\text{C}$ (See Fig.1)		mA (AC or DC)
"A" Connection	170	mA (AC or DC)
"B" Connection	185	mA (DC)
"C" Connection	300	mA (DC)
Max. On-State Resistance @ $T_A = +25^{\circ}\text{C}$ For 50mA Pulsed Load, 5mA Control (See Fig.4)		Ω
"A" Connection	16	Ω
"B" Connection	14	Ω
"C" Connection	7	Ω
Max. Off-State Leakage @ $T_A = +25^{\circ}\text{C}$, $\pm 400\text{V}$ (See Fig.5) @ 5mA Control	1.0	μA
Max. Turn-On Time @ $T_A = +25^{\circ}\text{C}$ (See Fig. 7) For 50mA, 100 V_{DC} Load, 5mA Control	2.0	ms
Max. Turn-Off Time @ $T_A = +25^{\circ}\text{C}$ (See Fig. 7) For 50mA, 100 V_{DC} Load, 5mA Control	3.0	ms
Max. Output Capacitance @ 50 V_{DC} (See Fig. 2)	50	pF

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

Connection Diagrams

"B" Connection



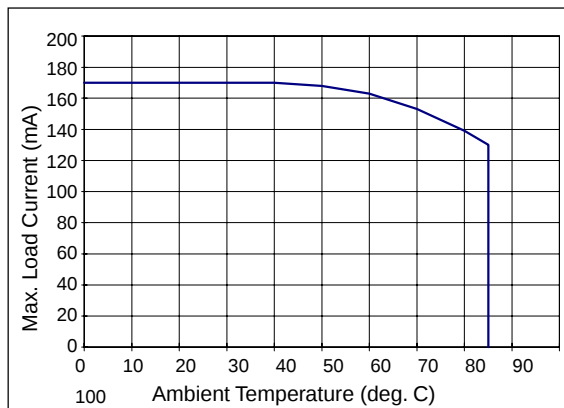


Figure 1. Current Derating Curve, "A" connection

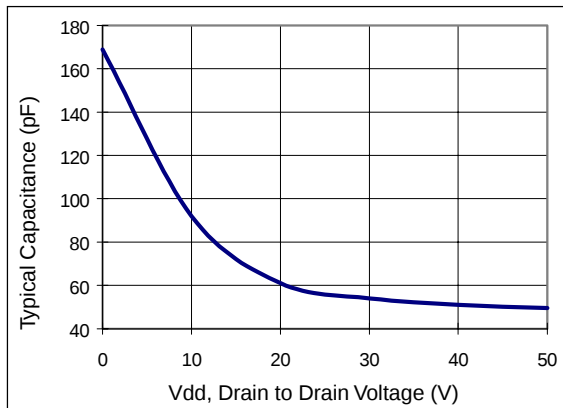


Figure 2. Typical Output Capacitance

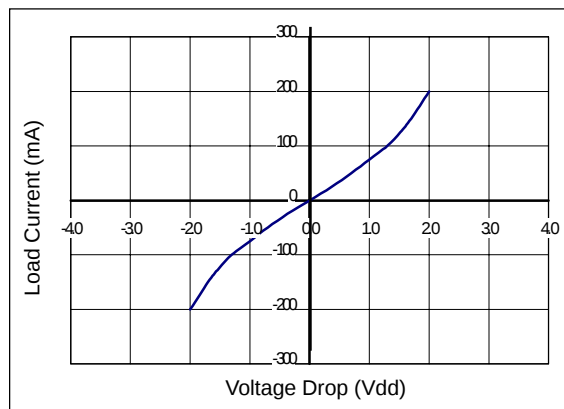


Figure 3. Linearity Characteristics, "A" connection

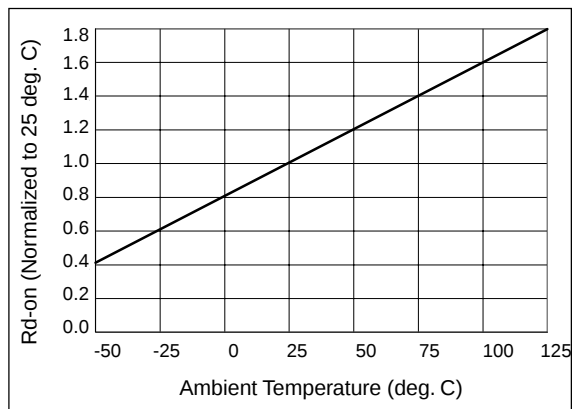


Figure 4. Typical Normalized On-Resistance; "A" conn

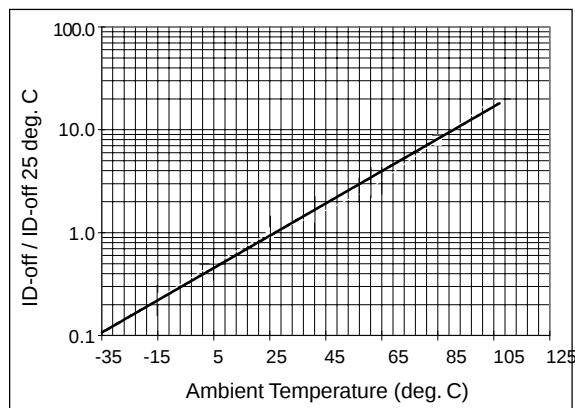


Figure 5. Typical Normalized Off-State Leakage

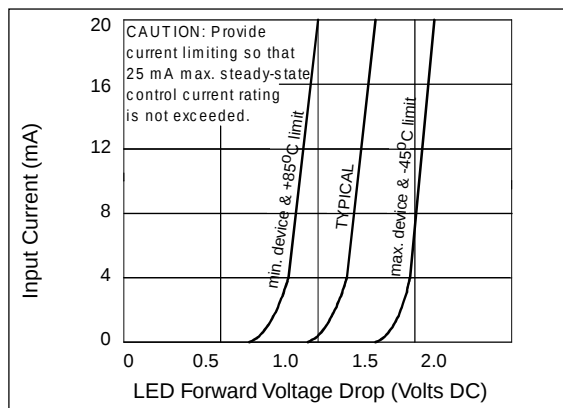


Figure 6. Input Characteristics (Current Controlled)

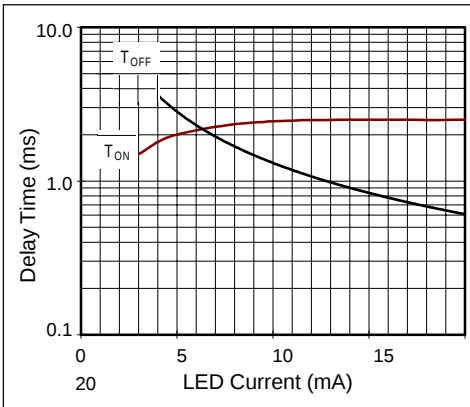


Figure 7. Typical Delay Times

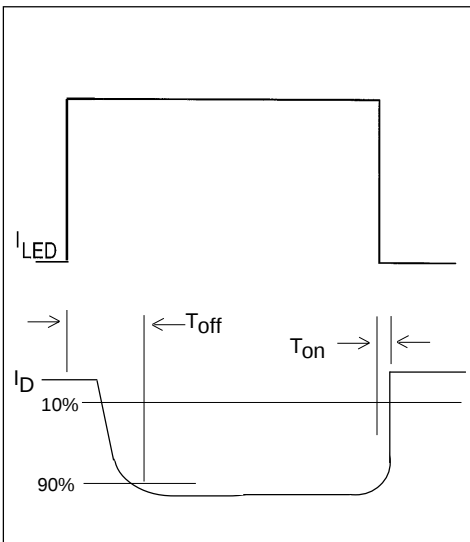


Figure 8. Delay Time Definitions

Case Outline

Dimensions in millimeters (inches)

Mechanical Specifications:

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

