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International
IOR Rectifier

Data Sheet No. PD10047B

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.

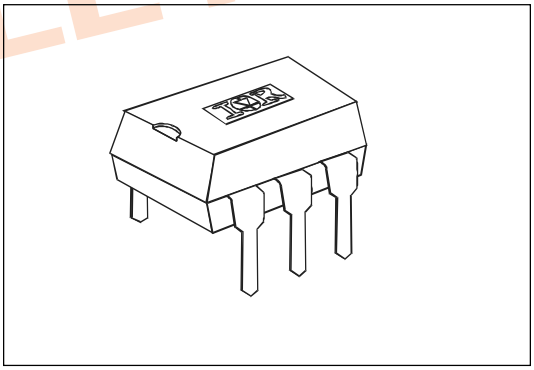
PVT442 Relays are packaged in a 6-pin, molded DIP package with either thru-hole or "gull-wing" surface mount terminals. It is available in standard plastic shipping tubes or on Tape-and-Reel. Refer to Part Identification information.

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
- ESD Tolerance:
  4000V Human Body Model
  500V Machine Model



Part Identification

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

(HEXFET® is a trademark of International Rectifier)

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

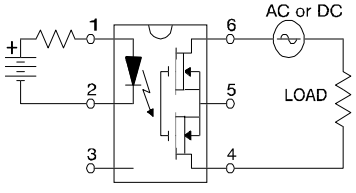
INPUT CHARACTERISTICS	Limits	Units
Min. Control Current (See Fig.1)	3.0	mA
Control Current Range (Caution: current limit input LED, see Fig.6)	3.0 to 25	mA
Max. Reverse Voltage	7.0	V

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

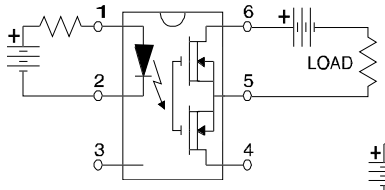
GENERAL CHARACTERISTICS		Limits	Units
Min. Dielectric Strength, Input-Output		4000	V_{RMS}
Min. Insulation Resistance, Input-Output @T_A=+25°C, 50%RH, 100V_{DC}		10^{12}	Ω
Max. Capacitance, Input-Output		1.0	pF
Max. Pin Soldering Temperature (10 seconds max.)		+260	°C
Ambient Temperature Range:	Operating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

Connection Diagrams

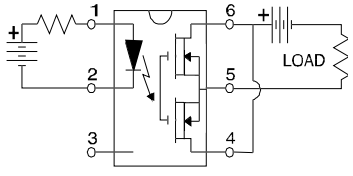
"A" Connection



"B" Connection



"C" Connection



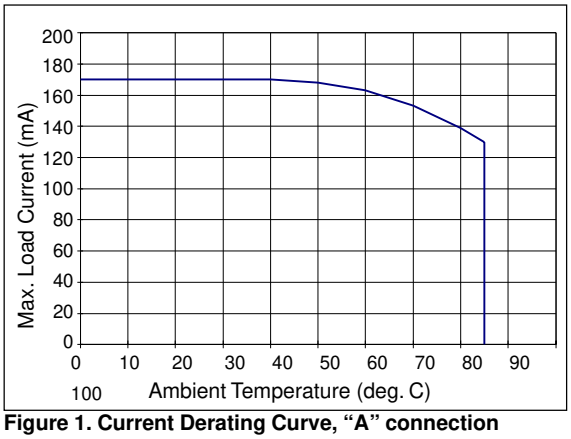


Figure 1. Current Derating Curve, "A" connection

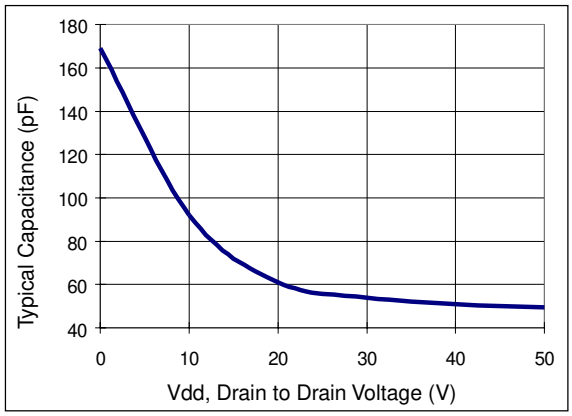


Figure 2. Typical Output Capacitance

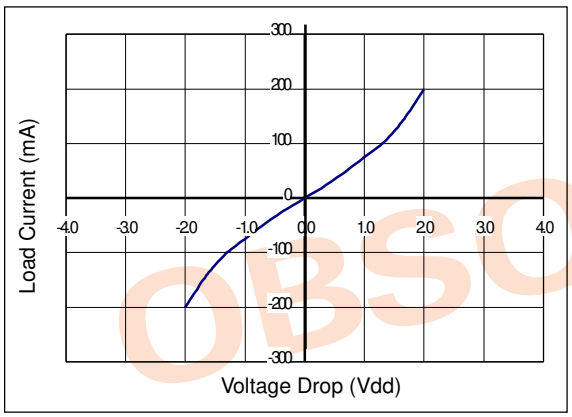


Figure 3. Linearity Characteristics, "A" connection

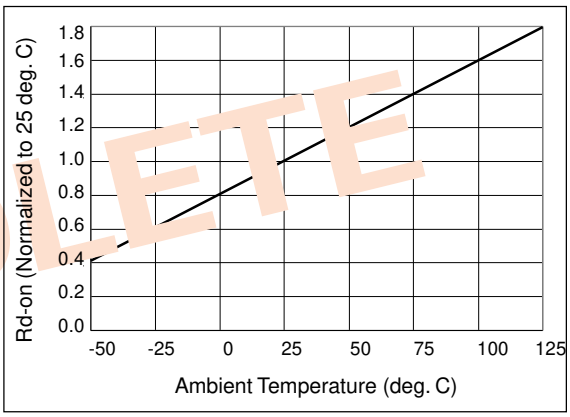


Figure 4. Typical Normalized On-Resistance; "A" conn

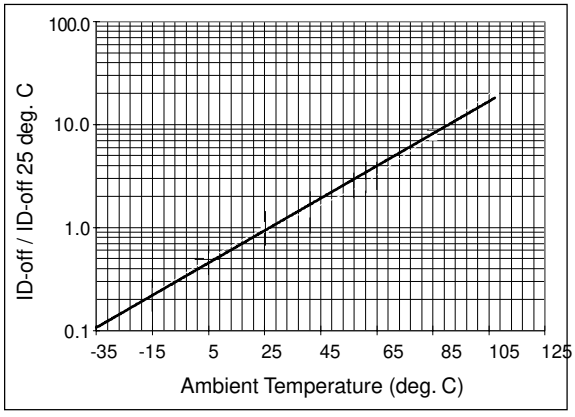


Figure 5. Typical Normalized Off-State Leakage

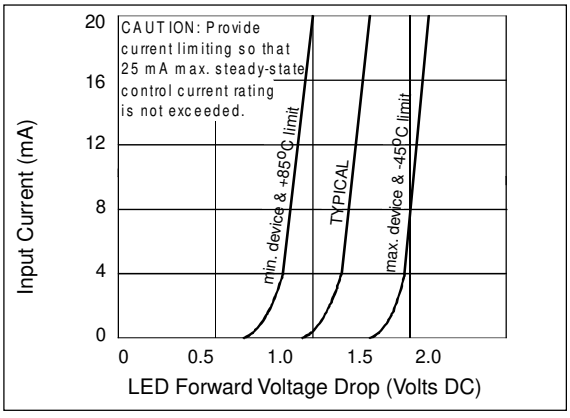


Figure 6. Input Characteristics (Current Controlled)

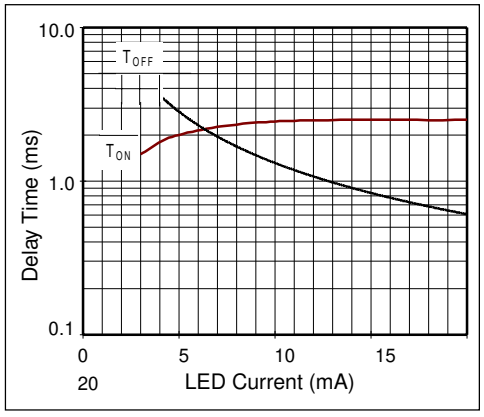


Figure 7. Typical Delay Times

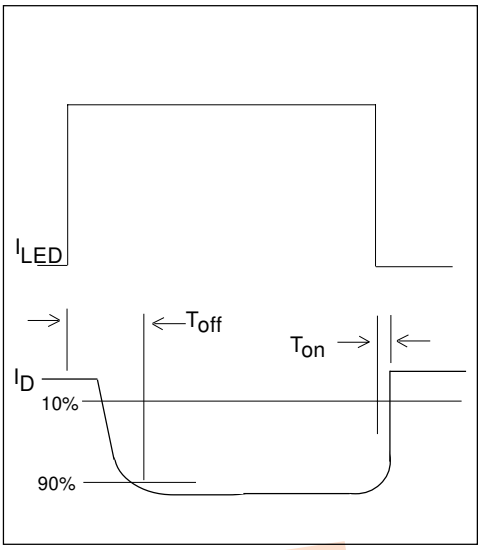
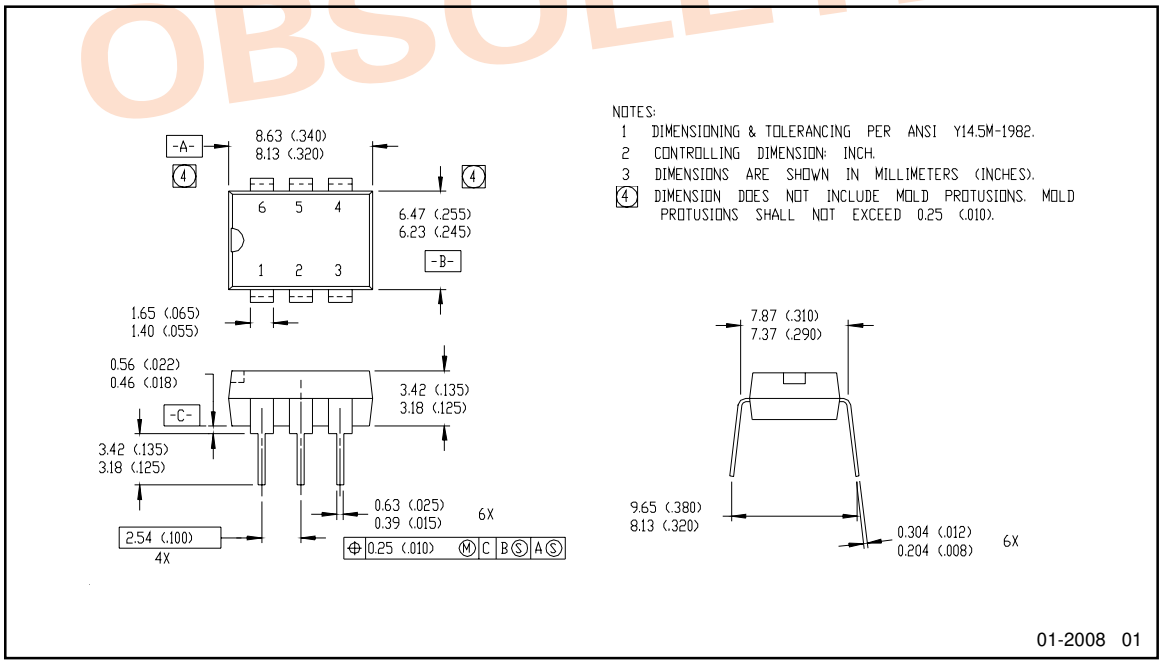


Figure 8. Delay Time Definitions

Case Outline



Case Outline