International
IOR Rectifier

Data Sheet No. PD 60040 revL

Series PVT412PbF

Microelectronic Power IC

HEXFET® Power MOSFET Photovoltaic Relay

Single Pole, Normally Open,

0-400V, 140mA AC/DC

General Description

The PVT412 Series 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.

These SSRs are specifically designed for worldwide telecom applications. PVT412L employs an active current-limiting circuitry enabling it to pass FCC Part 68 and other regulatory agency current surge requirements when overvoltage protection is provided. PVT412 does not employ the current-limiting circuitry and offers lower on-state resistance.

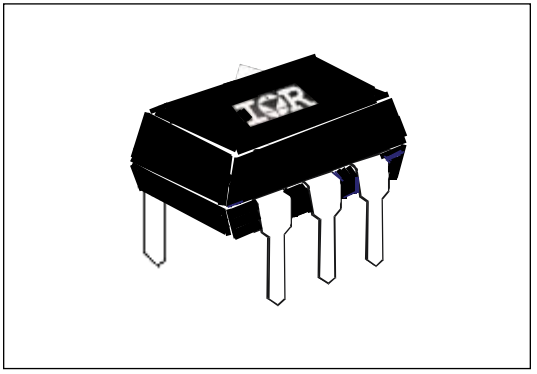
Series PVT412 Relays are packaged in a 6-lead molded DIP package with either thru-hole or surface mount ('gull-wing') terminals. It is available in standard plastic shipping tubes or on tape-and-reel.Please refer to part identification information opposite.

Applications

- On/Off hook switch
- Dial-Out Relay
- Ring Relay
- General Switching

Features

- HEXFET Power MOSFET output
- Bounce-free operation
- 4,000 VRMS I/O isolation
- Load current limiting
- Linear AC/DC operation
- Solid-State Reliability
- UL Recognized BABT certified
- ESD Tolerance:
  - 4000V Human Body Model
  - 500V Machine Model



Part Identification

PVT412LPbF	current limit, thru-hole
PVT412LSPbF	current limit, surface-mount
PVT412LS-TPbF	surface-mount, Tape and Reel
PVT412PbF	no current limit, thru-hole
PVT412SPbF	no current limit, surface-mount
PVT412S-TPbF	no current limit, Tape and Reel

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

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

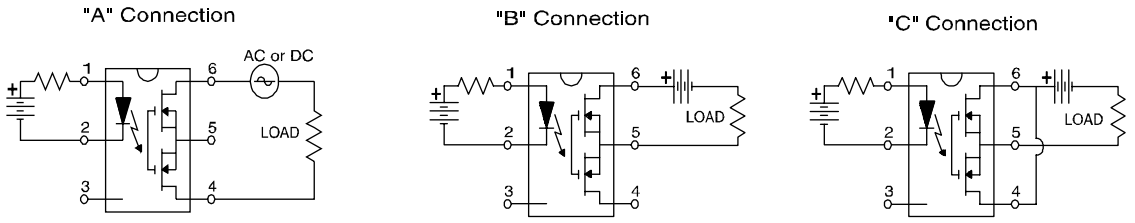
INPUT CHARACTERISTICS	PVT412L	PVT412	Units
Minimum Control Current (see figure 1 and 2)	3.0		mA
Maximum Control Current for Off-State Resistance	0.4		mA
Control Current Range (Caution: current limit input LED, see figure 6)	3.0 to 25		mA
Maximum Reverse Voltage	6.0		V

OUTPUT CHARACTERISTICS	PVT412L	PVT412	Units
Operating Voltage Range	0 to ±400		V (DC or AC peak)
Maximum Load Current @ T_A=+40°C 5mA Control (see figure 1 and 2)			
A Connection	120	140	mA (AC or DC)
B Connection	130	150	mA (DC)
C Connection	200	210	mA (DC)
Maximum On-State Resistance @T_A=+25°C For 50mA Pulsed Load, 5mA Control (see figures 4)			
A Connection	35	27	Ω
B Connection	18	14	Ω
C Connection	9	7	Ω
Maximum Off-State Leakage @T_A=+25°C, ±400V (see figure 5)	1.0		µA
Current Limit @T_A=+25°C, For 5mA Control Current:			
Connection:	A	C	–	Ω
Maximum	130	260	n / a	Ω
Minimum	220	440	n / a	Ω
Complies with FCC Part 68 Surge Requirements*	yes	yes		
Maximum Turn-On Time @T_A=+25°C (see figures 7) For 50mA, 100 V_{DC} load, 5mA Control	2.0		ms
Maximum Turn-Off Time @T_A=+25°C (see figures 7) For 50mA, 100 V_{DC} load, 5mA Control	0.5		ms
Maximum Thermal Offset Voltage @ 5mA Control	0.5		µV
Maximum Output Capacitance @ 50V_{DC}	12		pF

GENERAL CHARACTERISTICS		Limits	Units
Minimum Dielectric Strength, Input-Output		4000	V_{RMS}
Minimum Insulation Resistance, Input-Output @ T_A=+25°C, 50%RH, 100 V_{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	
	Storage	-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 Diagrams



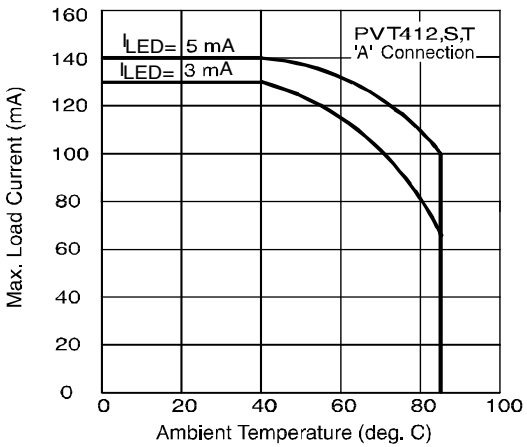


Figure 1. Current Derating Curves*

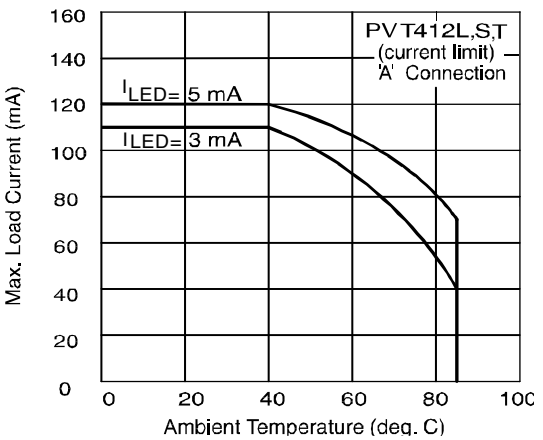


Figure 2. Current Derating Curves*

* Derating of 'B' and 'C' connection at +85 C will be 70% of that specified at +40 C and is linear from +40 C to +85 C.

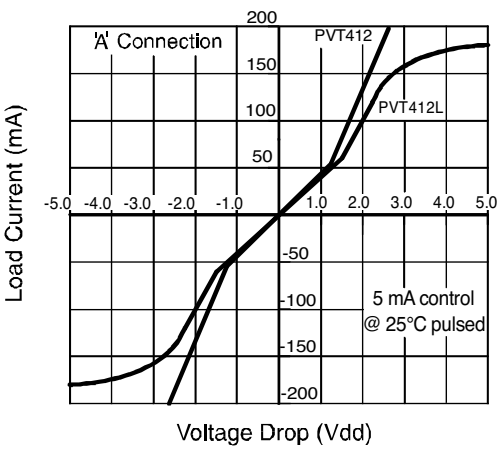


Figure 3. Linearity Characteristics

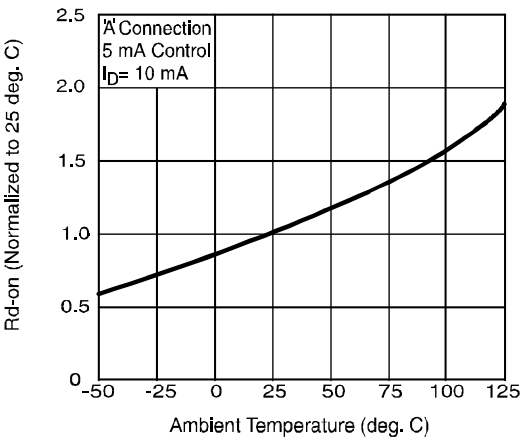


Figure 4. Typical Normalized On-Resistance

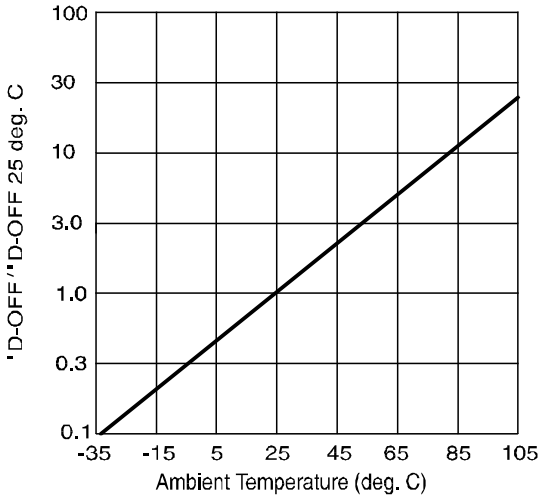


Figure 5. Typical Normalized Off-State Leakage

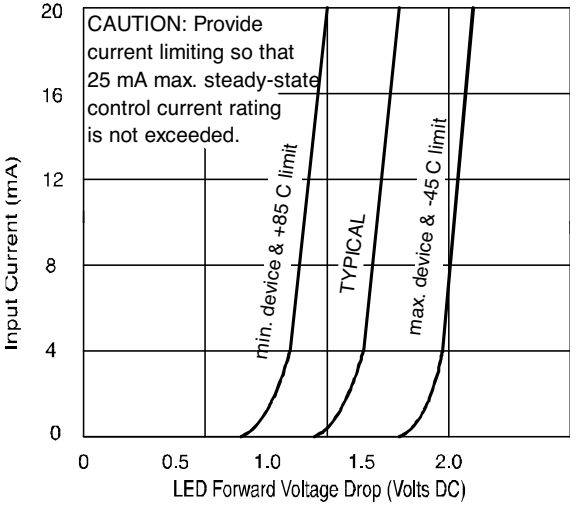


Figure 6. Input Characteristics (Current Controlled)

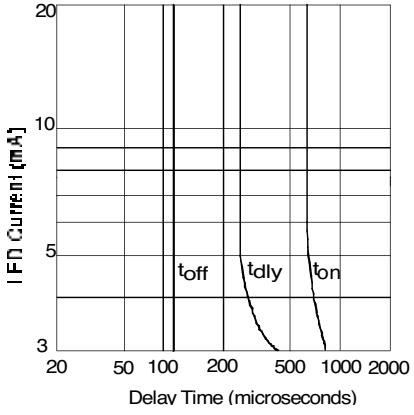


Figure 7. Typical Delay Time

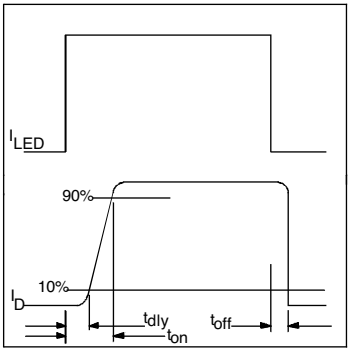


Figure 8. Delay Time Definitions

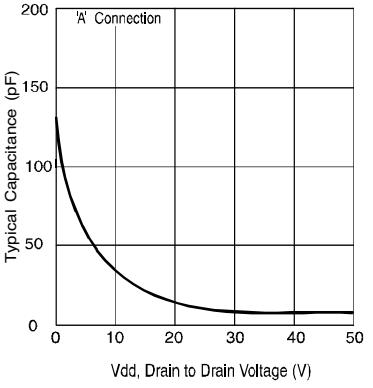
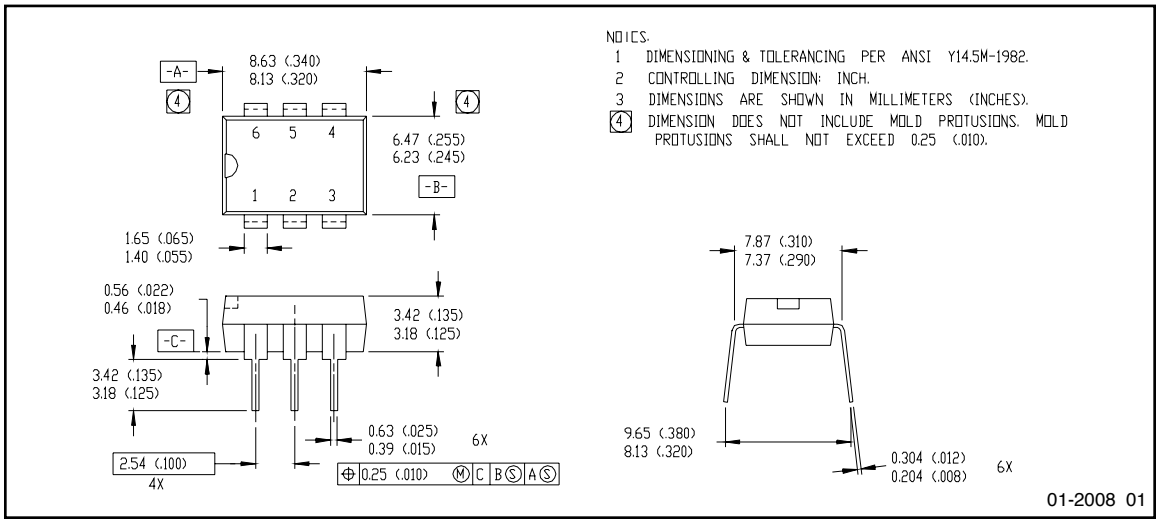
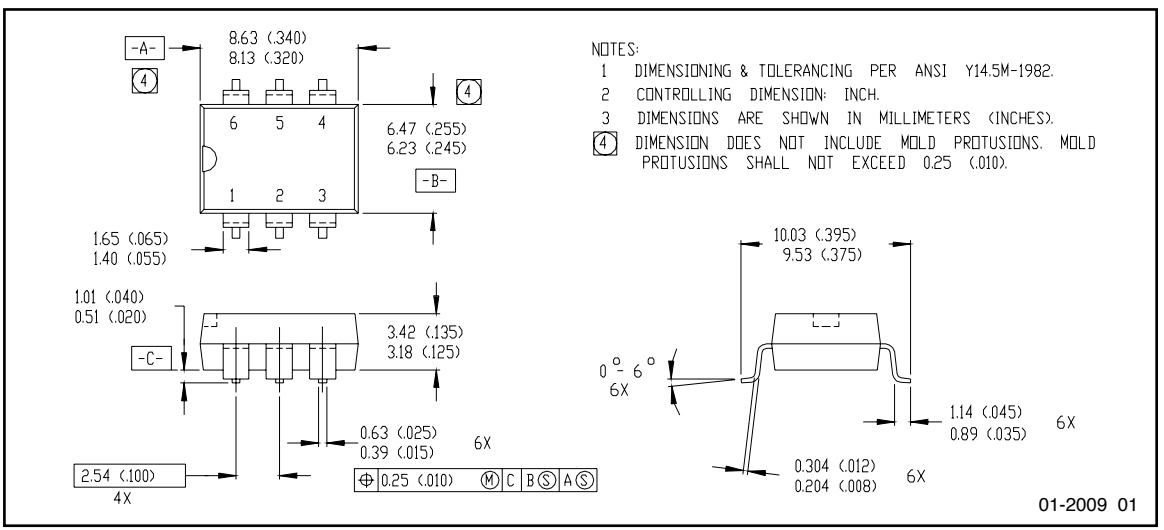


Figure 9. Typical Output Capacitance

Case Outlines





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>>Infineon Technologies(英飞凌)

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