



Description

The JOR213D6 PhotoRelay consist of a photo MOSFET、Photovoltage generator、infrared LED. The JOR213D6 achieves low on-resistance.

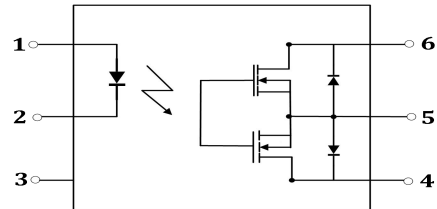
Features

- Normally opened (SPST)
- Control 100V AC or DC voltage
- Switch 1.25A loads
- Controls low-level analog signal
- High sensitivity, low on-resistance
- Low-level off-state leakage current
- High isolation voltage 5000V_{rms}
- Lead free, meet RoHS standards

Applications

- Communications products (Personal computers, Laptops)
- Modem/Sensor
- Mobile phones/Security equipment
- Measuring and Testing equipment
- Plant automation equipment
- High-speed inspection machines

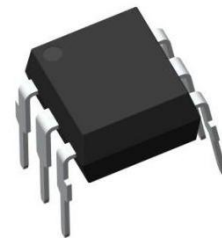
Block Diagram and Package



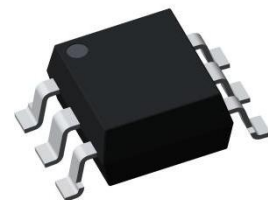
PIN DEFINITION

- | | |
|----------|-----------|
| 1.Anode | 2.Cathode |
| 3.NC | 4.D1 |
| 5.Source | 6.D2 |

PACKAGE OUTLINE



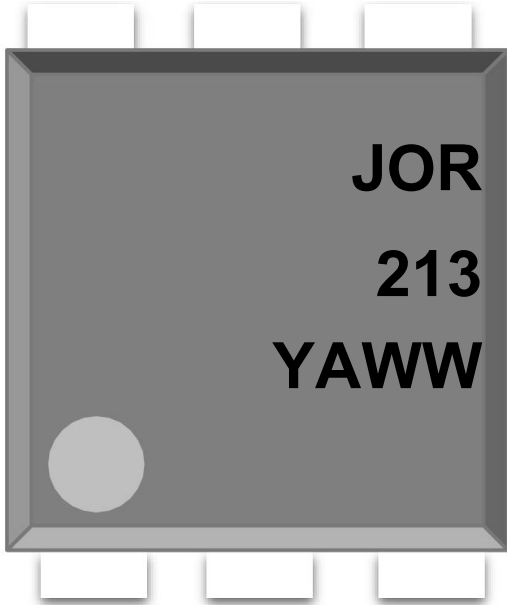
DIP-6



SMD-6

ORDERING AND MARKING INFORMATION

MARKING INFORMATION



JOR : Company Abbr.
213 : Part Number
Y : Fiscal Year
A : Manufacturing Code
WW : Work Week

ORDERING INFORMATION

JOR213DX(Y)(Z)-G

JOR – Company Abbr
213 – Part Number
D – DIP or SMD Package
X – 6(Pin Count)
Y – Lead Form Option (SL/None)
Z – Tape and Reel Option (T1/T2)
G – Green

LABEL INFORMATION



Insulation and Safety related specifications

Item	Symbol	Value	Unit	Remark
Creepage Distance	L	7.0	mm	Measured from input terminals to output terminals, shortest distance path along body.
Clearance Distance	L	7.0	mm	Measured from input terminals to output terminals, shortest distance through air.
Insulation Thickness	DTI	0.4	mm	Insulation thickness between emitter and detector.
Peak Isolation Voltage	V _{IORM}	1500	V _{peak}	DIN/EN/IEC EN60747-5-5.
Transient Isolation Voltage	V _{IOTM}	7000	V _{peak}	DIN/EN/IEC EN60747-5-5.
Isolation Voltage	V _{ISO}	5000	V _{rms}	For 1 min

Absolute Maximum Ratings (T_A=25°C)

Parameter		Symbol	Rating	Unit
Input	LED Forward Current	I _F	50	mA
	LED Reverse Voltage	V _R	5	V
	Peak Forward Current	I _{FP}	1	A
	Power Dissipation	P _{in}	75	mW
Output	Load Voltage (Peak AC)	V _L	100	V
	Continuous Load Current	I _L	1.25	A
	Peak Load Current	I _{peak}	3.75	A
	Power Dissipation	P _{out}	500	mW
Isolation Voltage		V _{ISO}	5000	V _{rms}
Operating Temperature		T _{opr}	-40~+85	°C
Storage Temperature		T _{stg}	-40~+100	°C
Soldering Temperature		T _{sol}	260	°C

Electro-optical Characteristics (T_A=25°C)

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Input	LED Operate Current	I _{Fon}	I _L = 1.25A	-	0.6	3	mA
	LED Turn Off Current	I _{FOff}	I _L = 1.25A	0.1	0.4	-	mA
	LED Dropout Voltage	V _F	I _F =5mA	1	1.3	1.4	V
Output	On Resistance	R _{on}	I _F = 5mA I _L = 1.25A. Within 1s on time	-	0.8	1.5	Ω
	Off State Leakage Current	I _{Leak}	I _F = 0mA V _L = 100V	-	-	1	μA
Transfer Characteristics	Turn On Time	T _{on}	I _F =5mA, I _L =1.25A	-	0.6	8	ms
	Turn Off Time	T _{off}	I _F =5mA, I _L =1.25A	-	0.03	1	ms
	I/O Capacitance	C _{ISO}	f = 1 MHz V _B = 0V	-	0.8	1.5	pF
	Initial I/O Isolation Resistance	R _{ISO}	500 V DC	1000	-	-	MΩ

Typical Electro-Optical Characteristics Curves

Fig.1 LED Dropout Voltage vs. Ambient Temperature

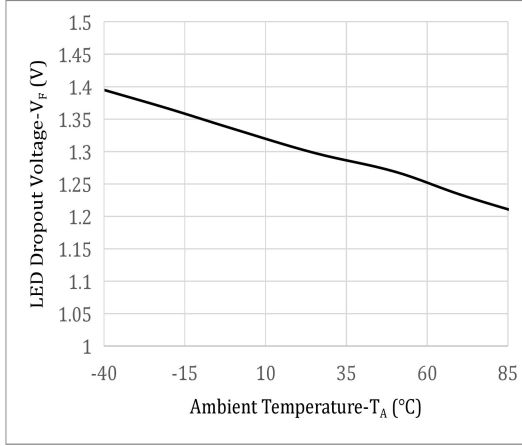


Fig.2 Output Current vs. Output Voltage

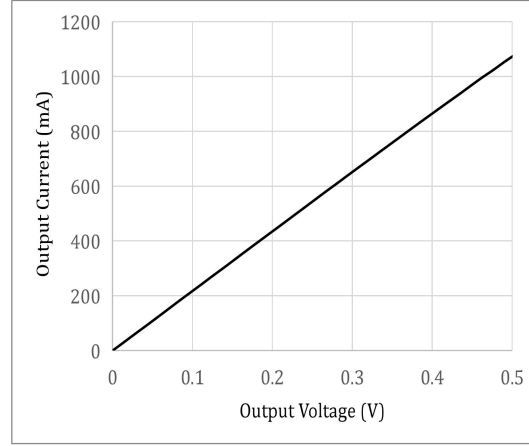


Fig.3 On Resistance vs. Ambient Temperature

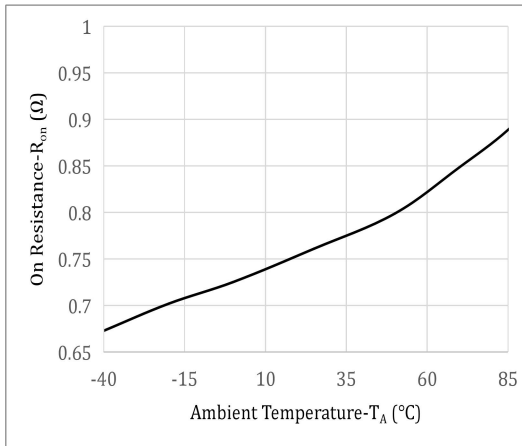


Fig.4 Load Current vs. Ambient Temperature

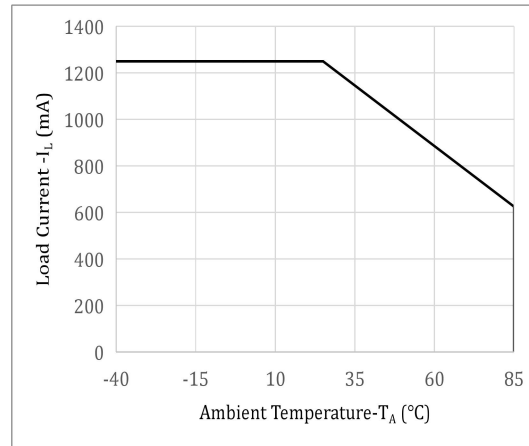


Fig.5 LED Operate Current vs. Ambient Temperature

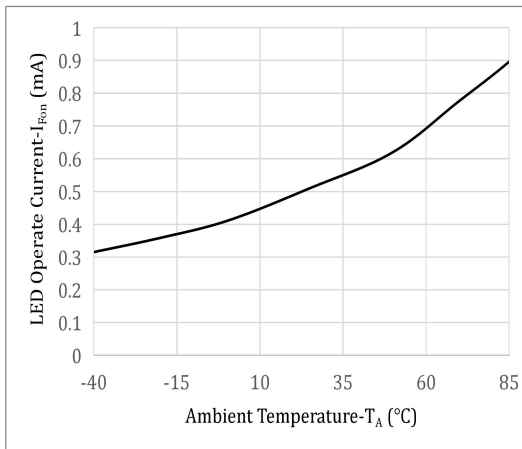


Fig.6 LED Turn Off Current vs. Ambient Temperature

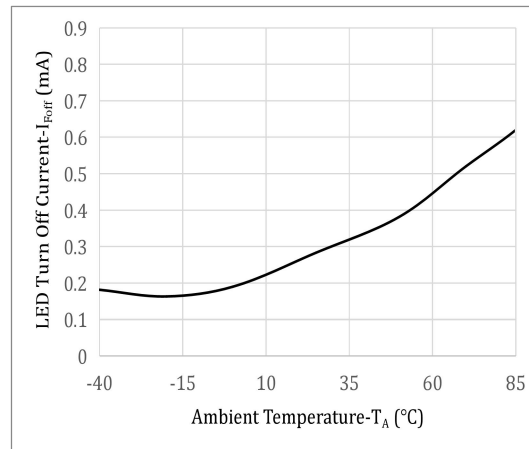


Fig.7 Turn On Time vs. Ambient Temperature

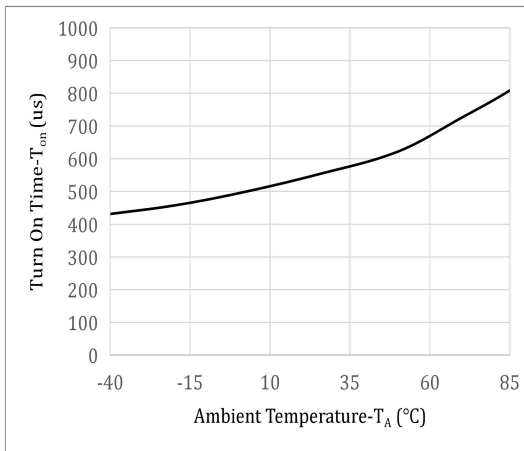


Fig.8 Turn Off Time vs. Ambient Temperature

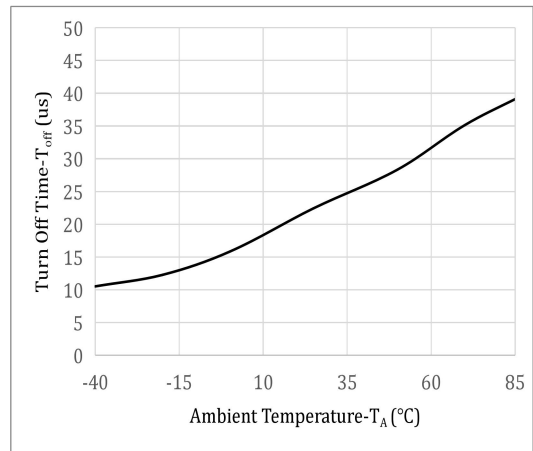


Fig.9 Turn On Time vs. LED Forward Current

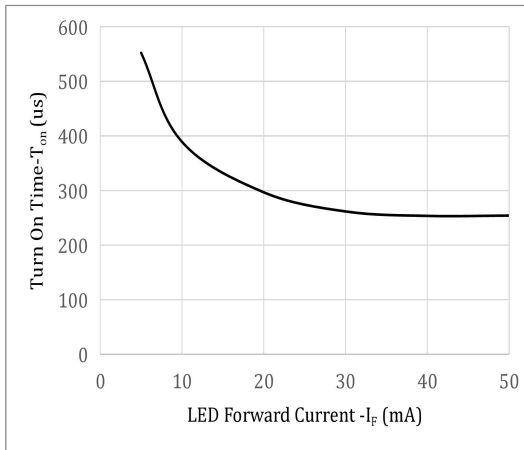


Fig.10 Turn Off Time vs. LED Forward Current

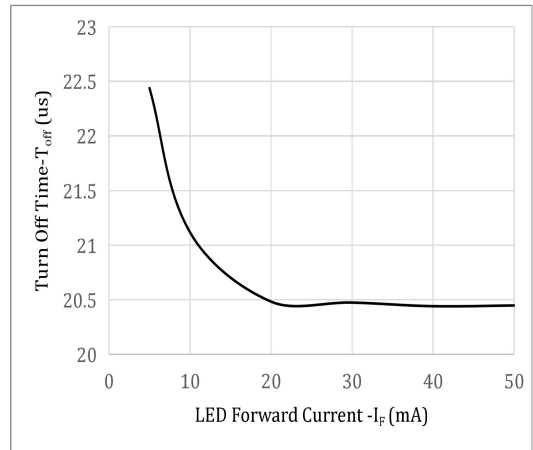
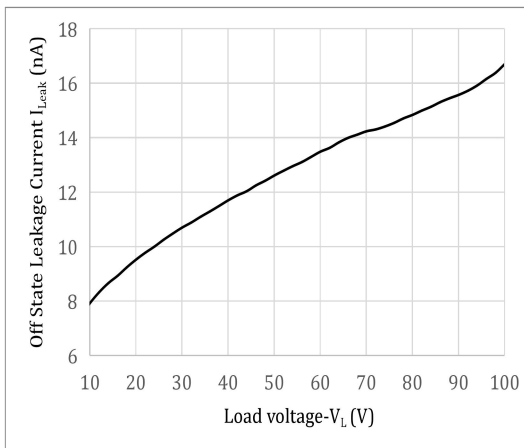
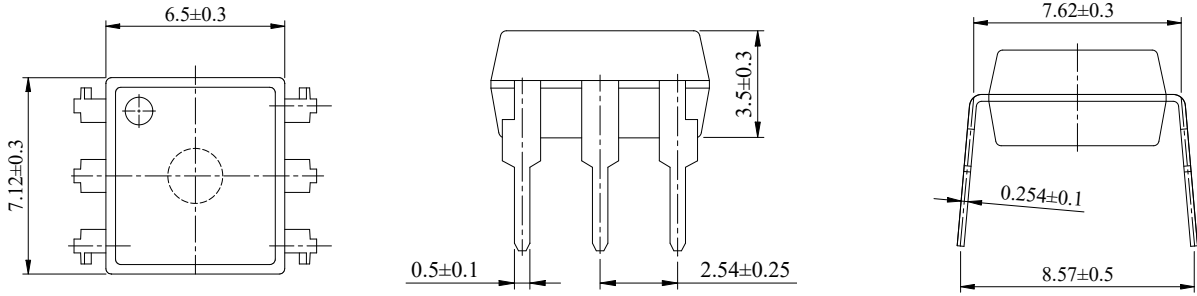


Fig.11 Off State Leakage Current vs. Load Voltage



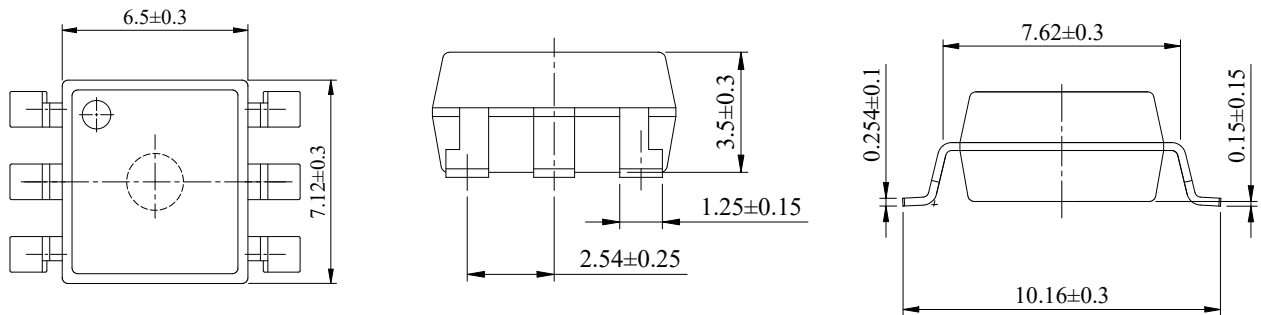
Outline Dimensions

DIP6

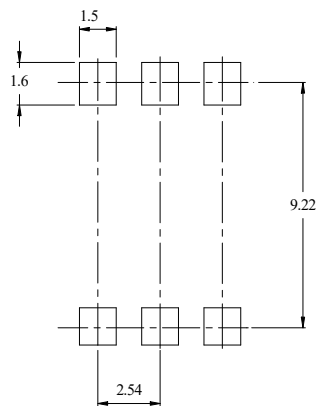


Unit: mm

SMD6



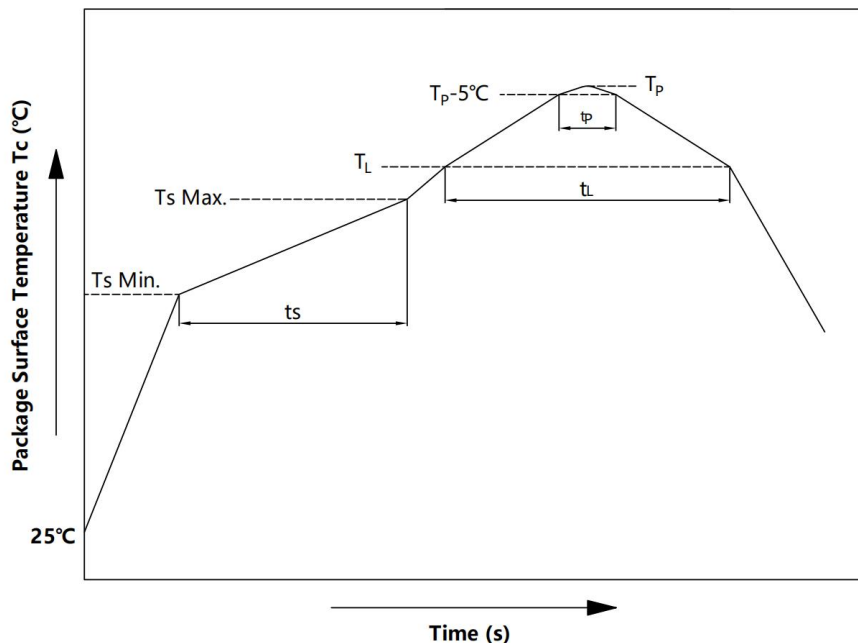
Recommended Pad Layout



Unit: mm

Note: The picture above is the front view of the product.

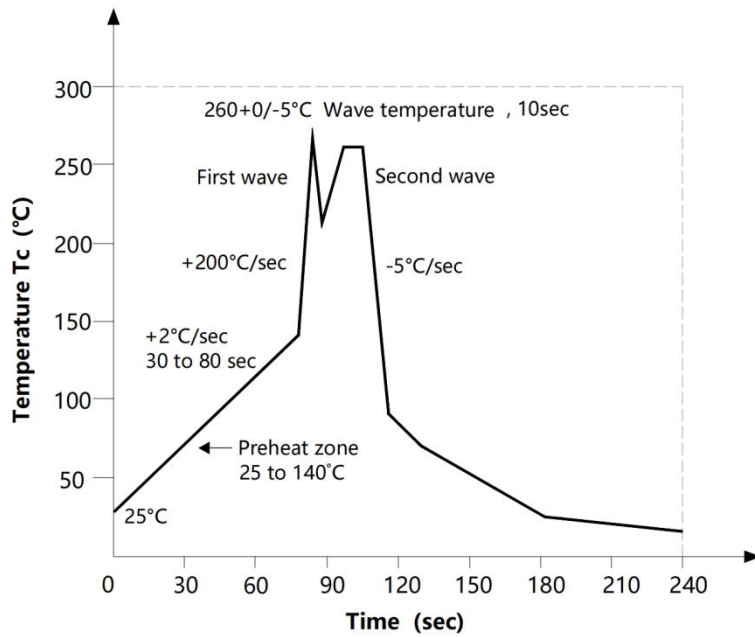
Solder Reflow Profile



Item	Symbol	Min.	Max.	Unit
Preheat Temperature	T_s	150	200	$^\circ\text{C}$
Preheat Time	t_s	60	120	s
Ramp-Up Rate (T_L to T_P)	-	-	3	$^\circ\text{C}/\text{s}$
Liquidus Temperature	T_L	217		$^\circ\text{C}$
Time Above T_L	t_L	60	150	s
Peak Temperature	T_P	-	260	$^\circ\text{C}$
Time During Which T_c Is Between ($T_P - 5$) and T_P	t_p	-	30	s
Ramp-down Rate (T_P to T_L)	-	-	6	$^\circ\text{C}/\text{s}$

Note: Reflow soldering is recommended at the temperatures and times shown, no more than three times.

Wave Soldering Profile



Soldering with hand soldering iron

- A. Hand soldering iron is only used for product rework or sample testing;
- B. Manual soldering method Temperature: $360^{\circ}\text{C} \pm 5^{\circ}\text{C}$, within 3s.

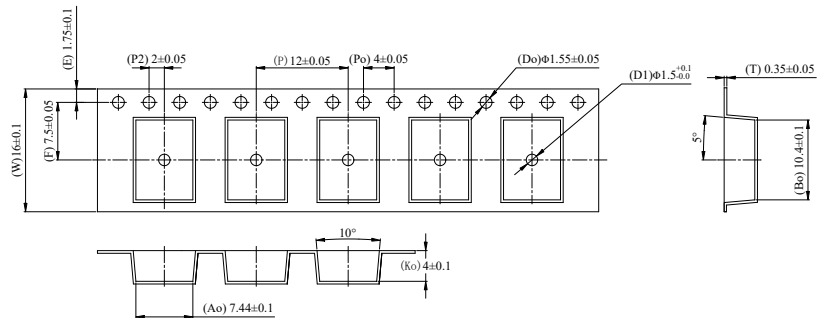
Packing

summary table

Package Type	Packing Form	Quantity per Reel	Quantity per Box	Quantity per Carton	Antistatic Bag Specification	Box Specification	Carton Specification	Note
SMD6	Reel ($\phi 330$ mm Blue)	1k pcs/reel	2 reels /box	10 boxes /ctn	380*380mm	340*60*340 mm	620*360*365 mm	Leave at least 200mm of blank space at both ends
DIP6	Tube (500*12*11mm)	65 pcs /tube	50 tubes/box	10 boxes /ctn	NA	525*128*56 mm	535*275*300 mm	Use blue and white rubber stoppers for each tube, with the same direction

SMD6 Tape & Reel

- 1) Qty/reel: 1000 pcs.
- 2) Qty/ctn: 20000 pcs.
- 3) Inner packing: 1000pcs/reel.
- 4) Schematic:



DIP6 Tube

- 5) Qty/tube: 65 pcs.
- 6) Qty/ctn: 32500 pcs.
- 7) Inner packing: 50 tubes/box.
- 8) Schematic:

