Description

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

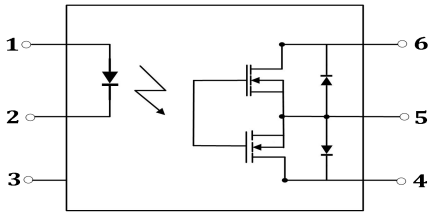
Features

- 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

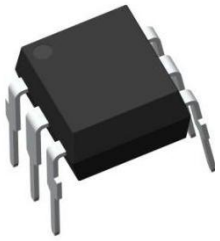
Block Diagram and Package



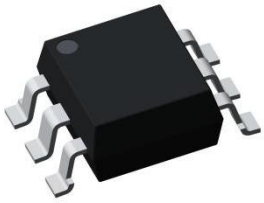
PIN DEFINITION

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

PACKAGE OUTLINE



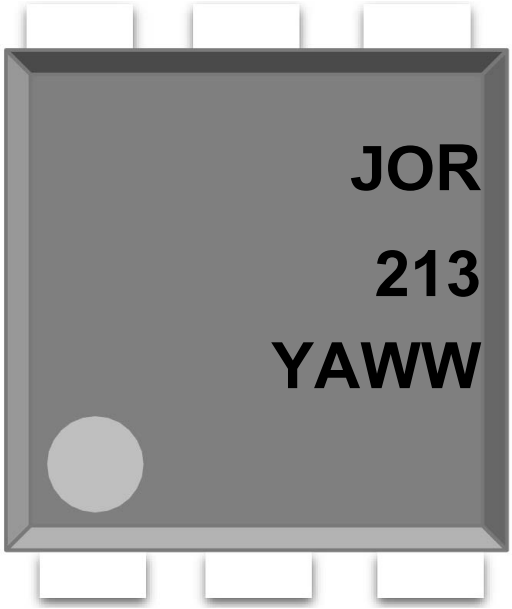
DIP-6



SMD-6

ORDERING AND MARKING INFORMATION

MARKING INFORMATION



JOR：Company Abbr.

213 ：Part Number

YAWW ：LOT NO.

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	Vpeak	DIN/EN/IEC EN60747-5-5.
Transient Isolation Voltage	V_{IOTM}	7000	Vpeak	DIN/EN/IEC EN60747-5-5.
Isolation Voltage	V_{ISO}	5000	Vrms	For 1 min

Absolute Maximum Ratings (T_A=25℃)

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	Vrms
Operating Temperature		T_{opr}	-40~+85	℃
Storage Temperature		T_{stg}	-40~+100	℃
Soldering Temperature		T_{sol}	260	℃

Electro-optical Characteristics (T_A=25℃)

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

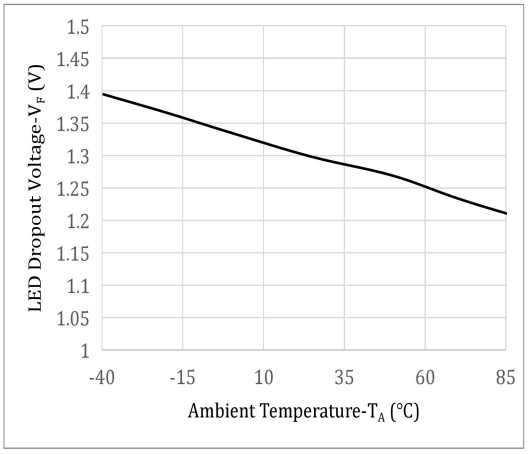


Fig.2 Output Current vs. Output Voltage

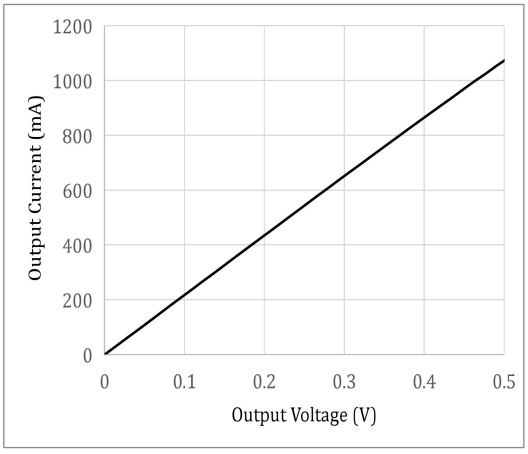


Fig.3 On Resistance vs. Ambient Temperature

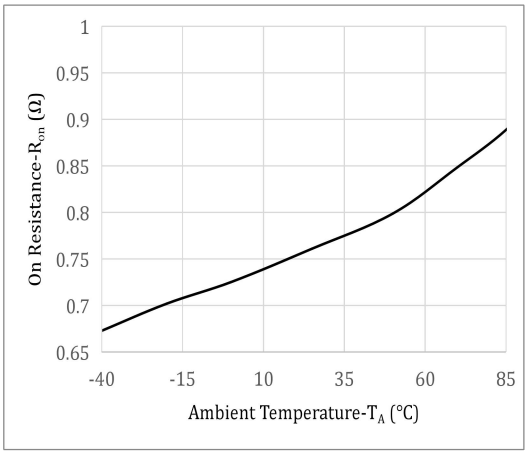


Fig.4 Load Current vs. Ambient Temperature

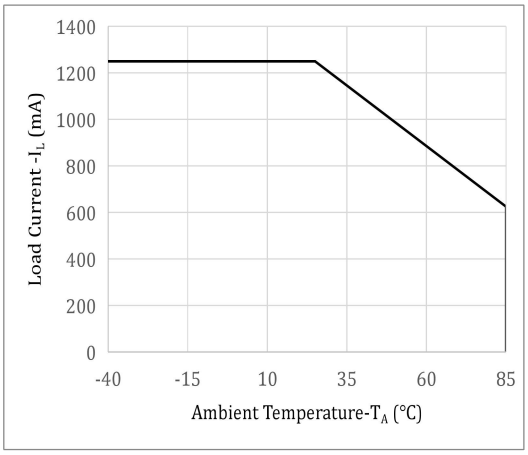


Fig.5 LED Operate Current vs. Ambient Temperature

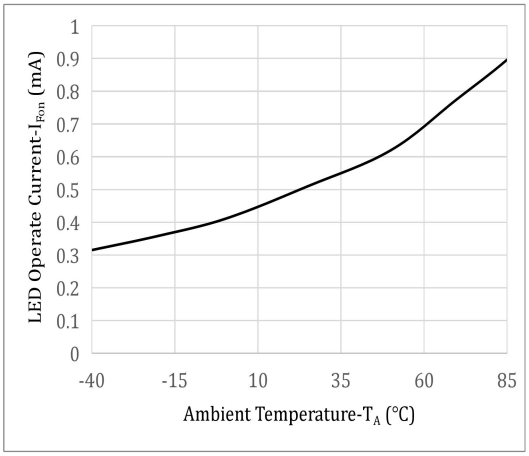


Fig.6 LED Turn Off Current vs. Ambient Temperature

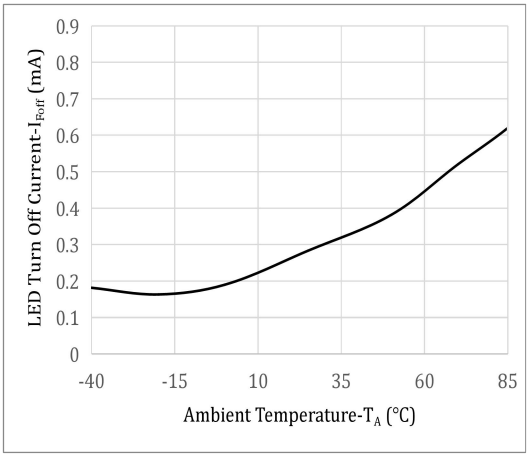


Fig.7 Turn On Time vs. Ambient Temperature

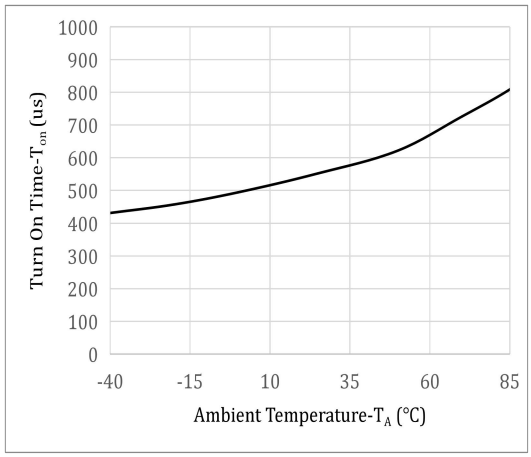


Fig.8 Turn Off Time vs. Ambient Temperature

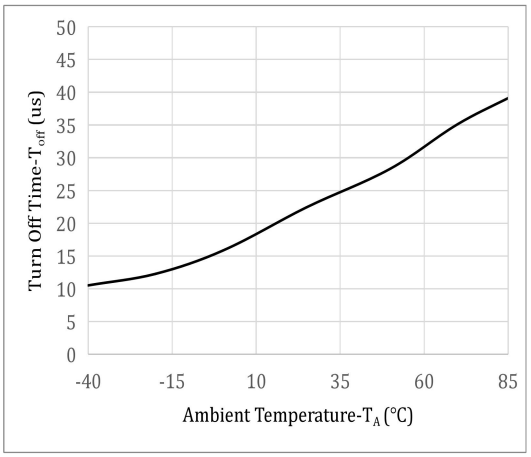


Fig.9 Turn On Time vs. LED Forward Current

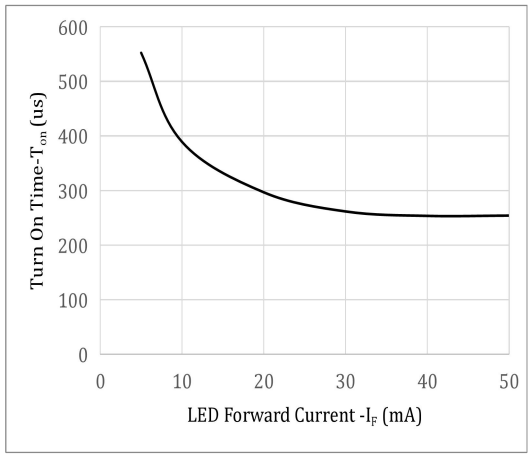


Fig.10 Turn Off Time vs. LED Forward Current

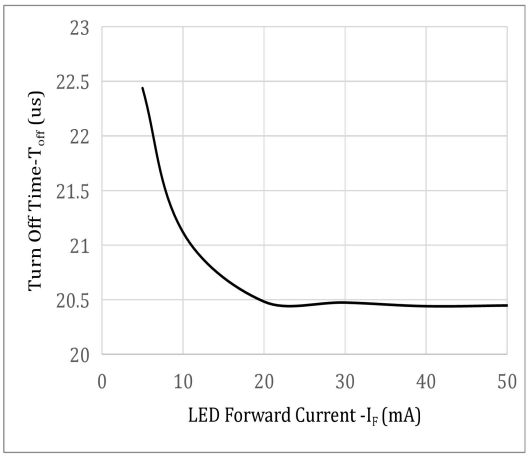
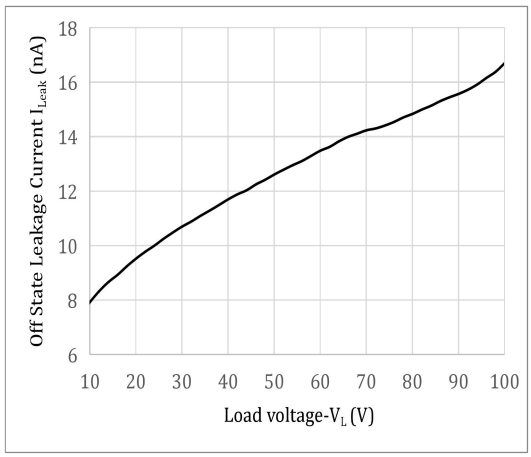
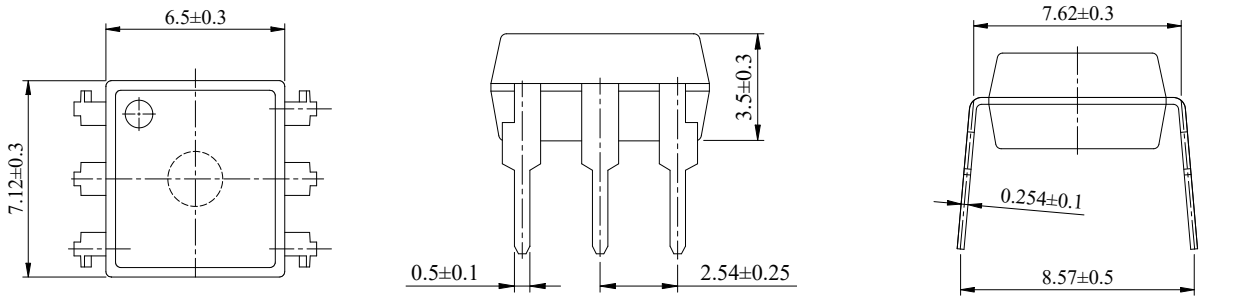


Fig.11 Off State Leakage Current vs. Load Voltage



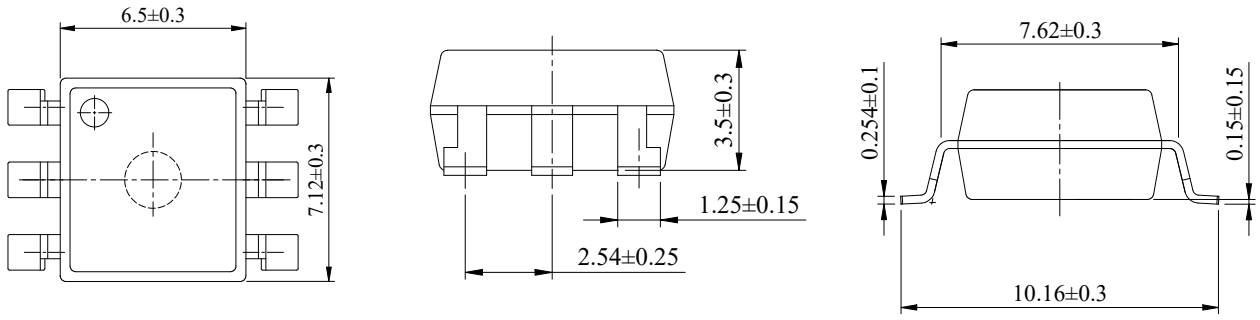
Outline Dimensions

DIP6

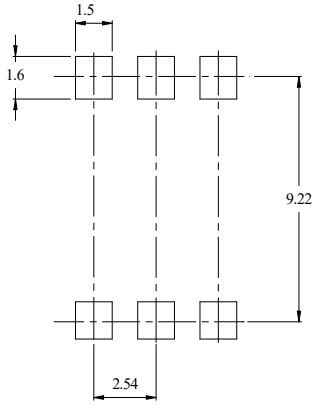


Unit: mm

SMD6



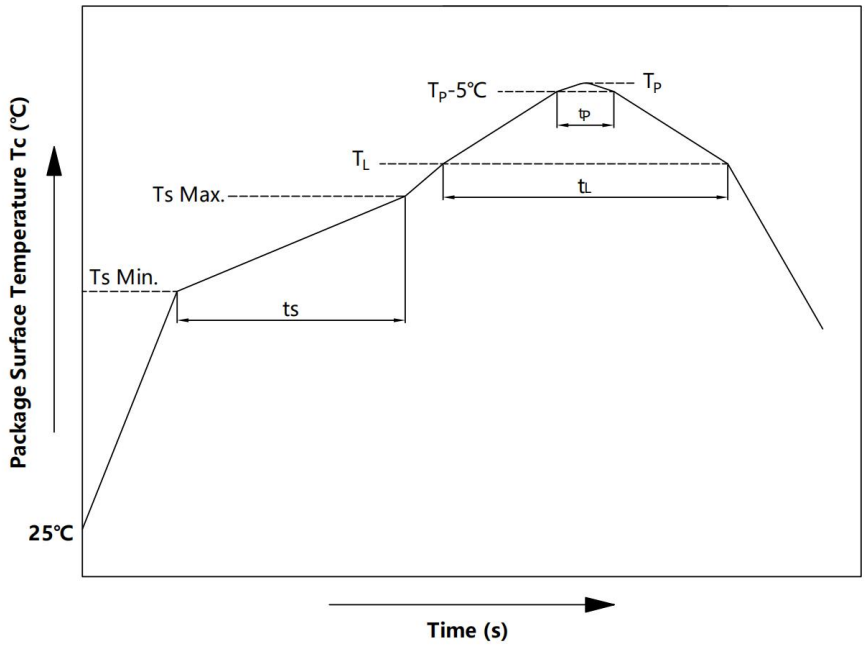
Recommended Pad Layout



Unit: mm

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

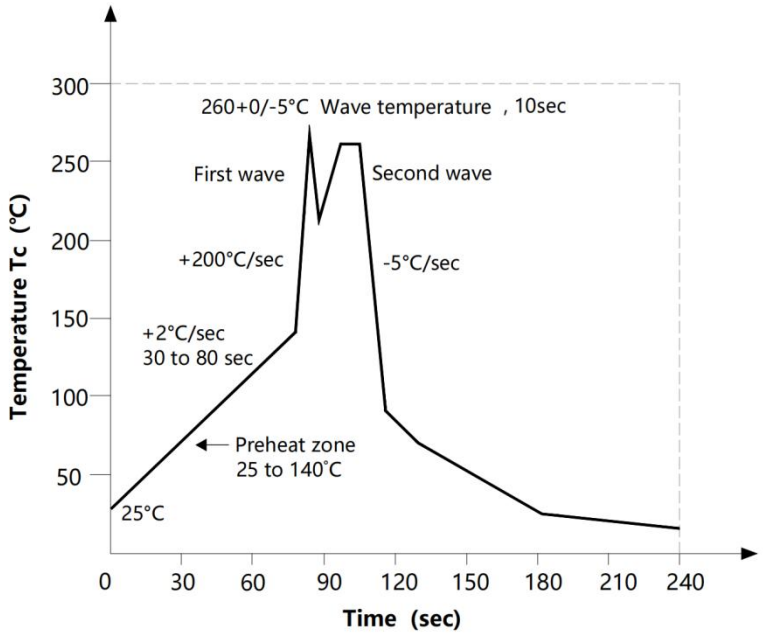
Solder Reflow Profile



Item	Symbol	Min.	Max.	Unit
Preheat Temperature	Ts	150	200	℃
Preheat Time	ts	60	120	s
Ramp-Up Rate (T_L to T_P)	-	-	3	℃/s
Liquidus Temperature	T_L	217		℃
Time Above T_L	t_L	60	150	s
Peak Temperature	T_P	-	260	℃
Time During Which T_C Is Between (T_P-5) and T_P	tp	-	30	s
Ramp-down Rate (T_P to T_L)	-	-	6	℃/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℃ ± 5℃, within 3s.

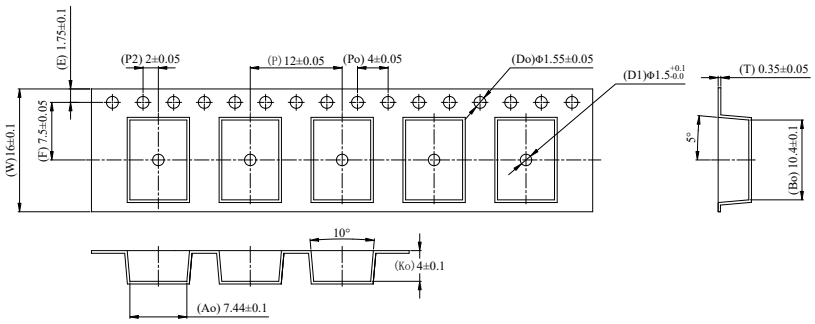
Packing

■ 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 (ϕ330mm 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

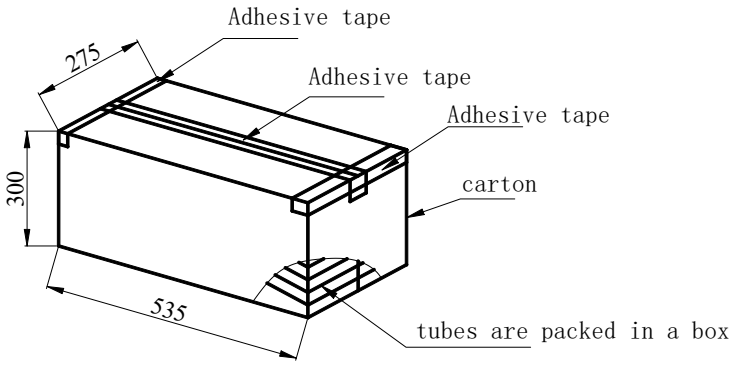
■ **SMD6 Tape & Reel**

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:



Unit: mm