

JOR412D4-D8 Series

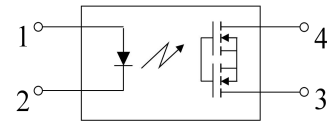
Photo Relay

Description

The JOR412D4-D8 Photo Relay consist of photo MOSFET、Photoelectric voltage generator and infrared LED. The JOR412D4-D8 achieve low on-resistance and have a good cost-performance.

JOR412D4 is packaged in a 4-pin package (DIP/SMD), JOR412D8 is packaged in a 8-pin package (DIP/SMD)

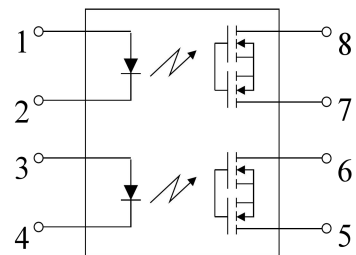
SCHEMATIC



Pin Configuration

- | | |
|-------|------|
| 1. AN | 3.D1 |
| 2. CA | 4.CA |

SCHEMATIC



Pin Configuration

- | | |
|---------|---------|
| 1.3. AN | 2.4. CA |
| 5.D1 | 6.D2 |
| 7.D3 | 8.D4 |

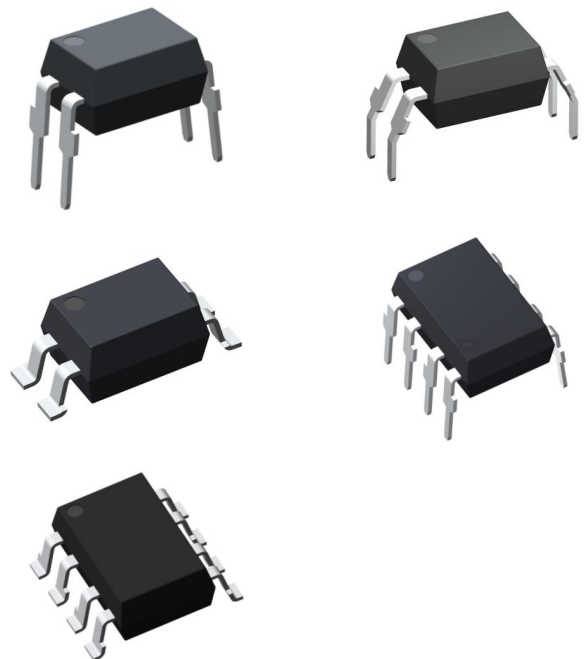
Features

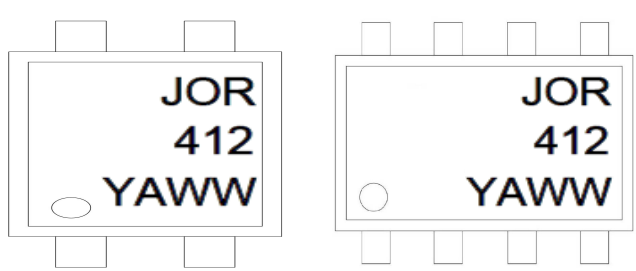

- Load voltage: 60V
- Load current: 2A
- High sensitivity and Low on-resistance
- Controls low-level analog signal
- Low-level off state leakage current
- High isolation voltage between input and output (VISO=5000 V_{rms})
- Lead free, meet RoHS standards

Applications

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

PACKAGE OUTLINE



ORDERING AND MARKING INFORMATION	
MARKING INFORMATION	
	<p>JOR : Company Abbr. 412: Part Number YAWW : LOT NO.</p>
ORDERING INFORMATION	LABEL INFORMATION
<h2 style="margin: 0;">JOR412DX(Y)(Z)-G</h2> <p>JOR – Company Abbr 412– Part Number D – DIP or SMD Package X – 4 or 8(Pin Count) Y – Lead Form Option (M/S/SL/None) Z – Tape and Reel Option (T1/T2) G – Green</p>	

Insulation and Safety related specifications

Photo Relay

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	VIORM	700	V _{peak}	DIN/EN/IEC EN60747-5-5.
Transient Isolation Voltage	VIOTM	7000	V _{peak}	DIN/EN/IEC EN60747-5-5.
Isolation Voltage	VISO	>5000	V _{rms}	For 1 minute.

Absolute Maximum Ratings (T_A=25°C)

Parameter		Symbol	Rating	Unit	Note
Input	LED Forward Current	I _F	50	mA	
	LED Reverse Voltage	V _R	3	V	
	Peak Forward Current	I _{FP}	1	A	f =100 Hz, Duty factor= 0.1%
	Power Dissipation	P	75	mW	
Output	Load Voltage(peak AC)	V _L	60	V	
	Continuous load current (peak AC)	I _L	2	A	
	Peak load current	I _{peak}	6	A	100 ms (1 shot), V _L = DC
	Power Dissipation	P _{out}	500	mW	
I/O isolation voltage		V _{iso}	5,000	V _{rms}	
Temperature limits	Operating Temperature	T _{opr}	-40 ~ + 85	°C	Non-condensing at low temp
	Storage Temperature	T _{stg}	-40 ~ + 100		
Soldering Temperature		T _{sol}	260	°C	

Electro-optical Characteristics ($T_A=25^{\circ}\text{C}$)

Photo Relay

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Input	LED Operate Current	I_{Fon}	$I_L = 2A$	-	1	3	mA
	LED Turn Off Current	I_{Foff}	$I_L = 2A$	0.1	0.6	-	mA
	LED Dropout Voltage	V_F	$I_F=5mA$	1	1.3	1.4	V
Output	On Resistance	R_{on}	$I_F = 5mA$ $I_L = 2A$ Within 1s on time	-	0.08	0.2	Ω
	Off State Leakage Current	I_{Leak}	$I_F = 0mA$ $V_L = 60V$	-	-	1000	nA
Transfer Characteristics	Turn On Time	T_{on}	$I_F = 5mA$ $I_L = 2A$	-	2.4	5	ms
	Turn Off Time	T_{off}	$I_F = 5mA$ $I_L = 2A$	-	0.5	1	ms
	I/O Capacitance	C_{ISO}	$f = 1\text{ MHz}$ $V_B = 0V$	-	0.8	1.5	pF
	Initial I/O Isolation Resistance	R_{ISO}	500 V DC	1000	-	-	M Ω

Typical Electro-Optical Characteristics Curves

Fig.1 LED Dropout Voltage vs. Ambient Temperature

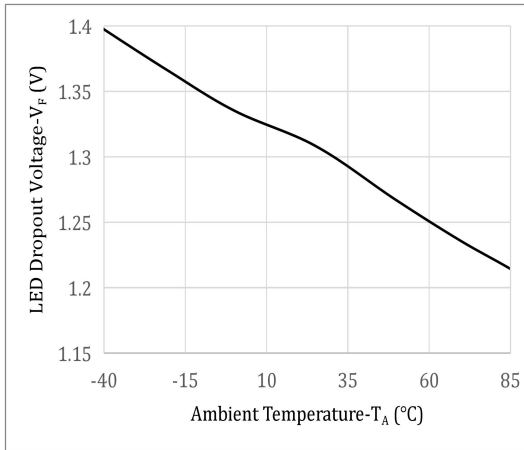


Fig.2 Output Current vs. Output Voltage

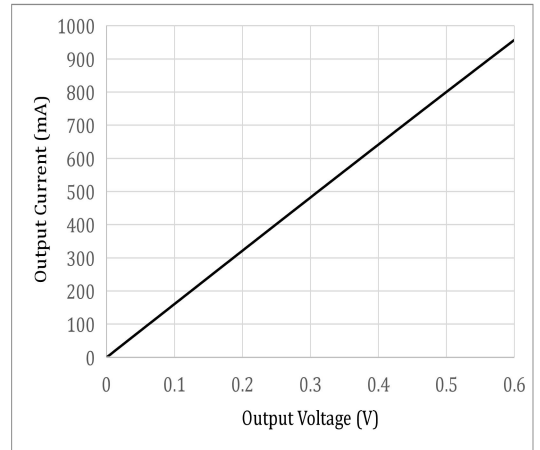


Fig.3 On Resistance vs. Ambient Temperature

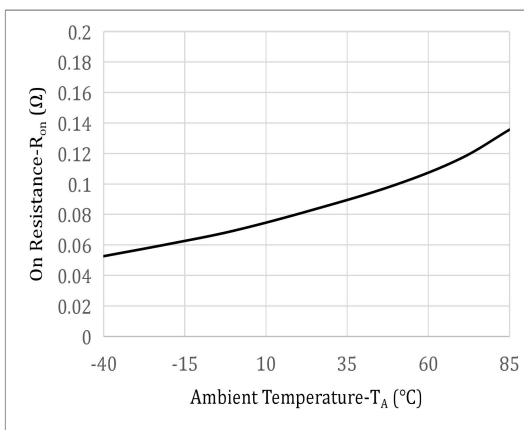


Fig.4 Load Current vs. Ambient Temperature

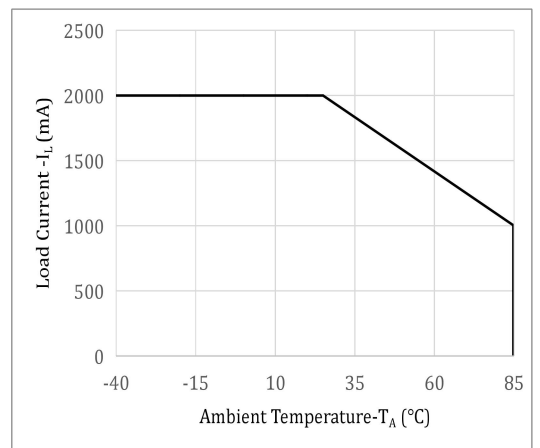


Fig.5 LED Operate Current vs. Ambient Temperature

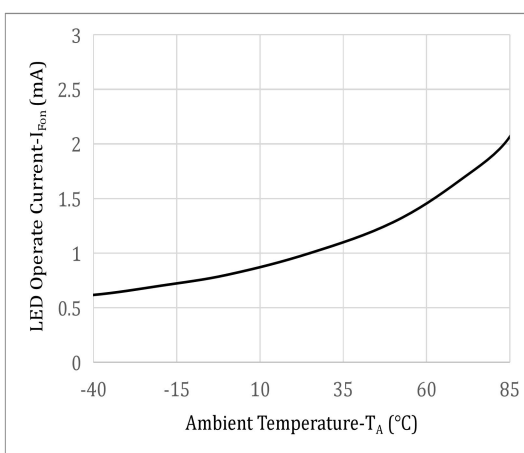


Fig.6 LED Turn Off Current vs. Ambient Temperature

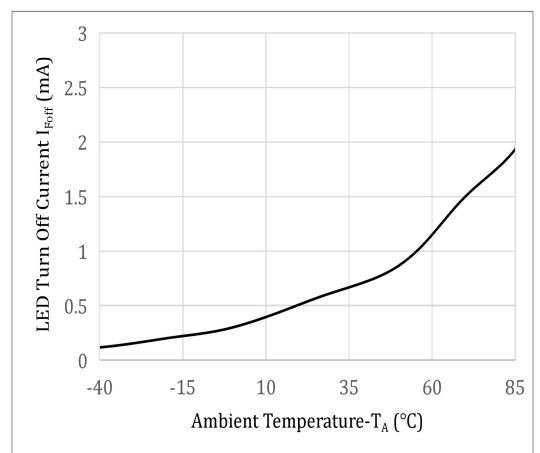


Fig.7 Turn On Time vs. Ambient Temperature

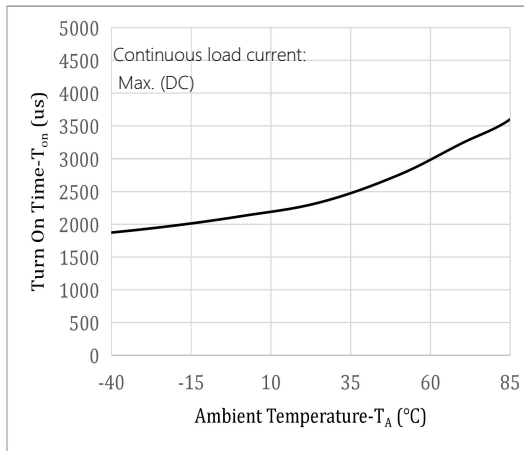


Fig.8 Turn Off Time vs. Ambient Temperature

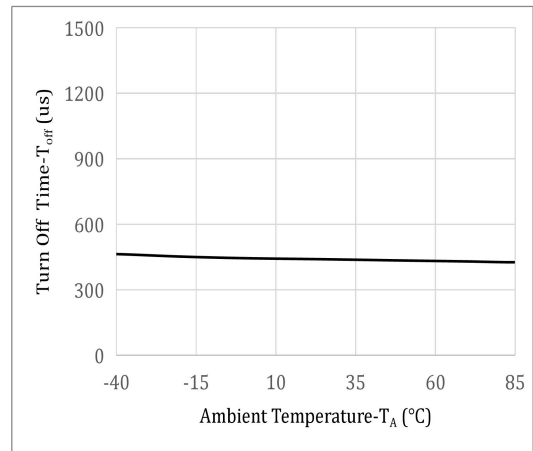


Fig.9 Turn On Time vs. LED Forward Current

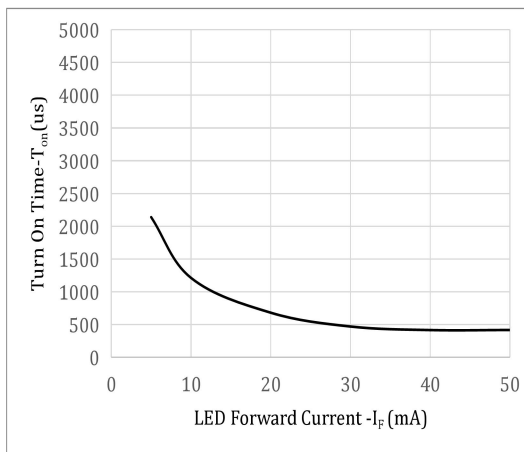


Fig.10 Turn Off Time vs. LED Forward Current

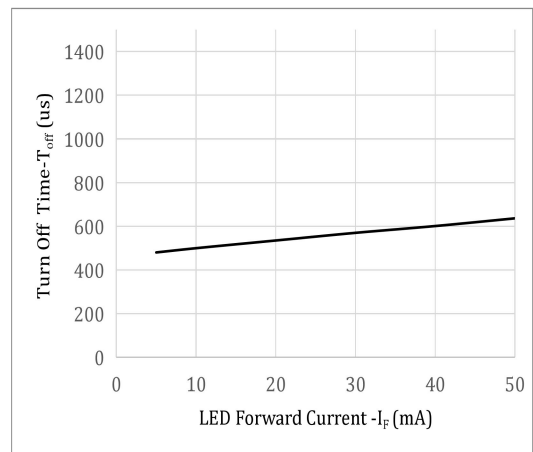
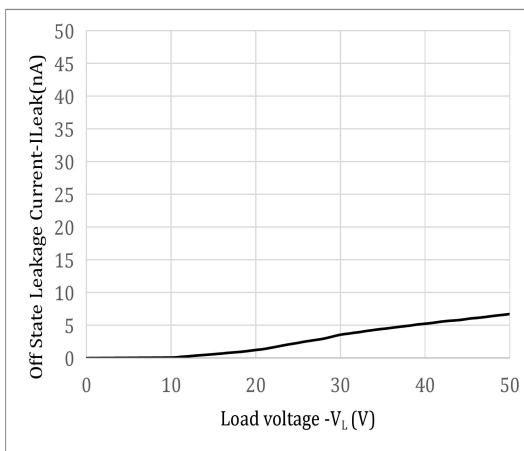


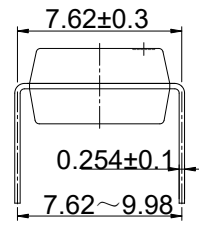
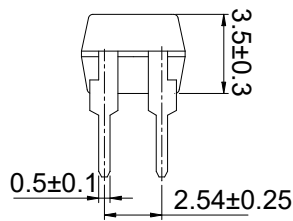
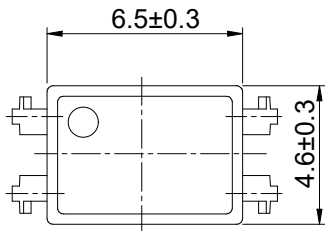
Fig.11 Off State Leakage Current vs Load Voltage



Outline Dimensions

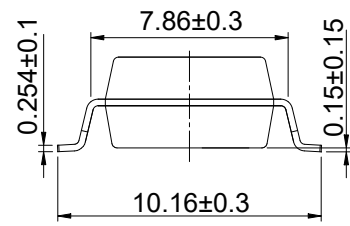
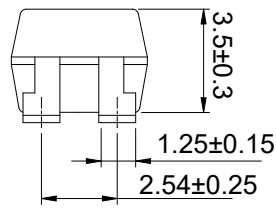
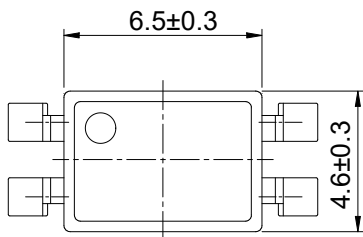
Photo Relay

DIP4



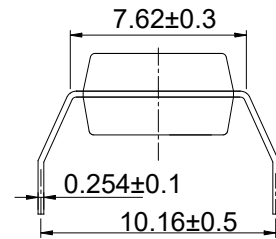
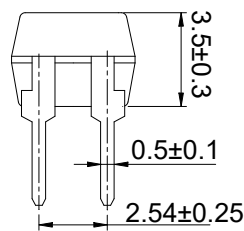
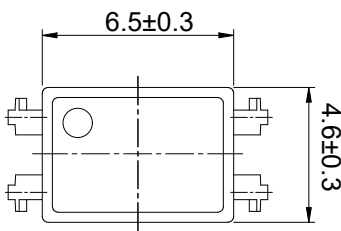
Unit: mm

SMD4



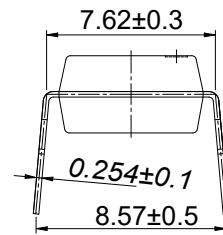
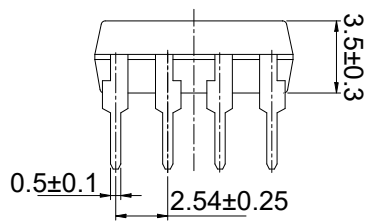
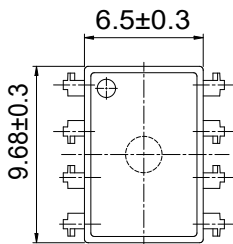
Unit: mm

DIP4-M



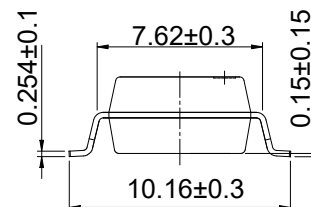
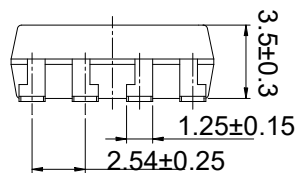
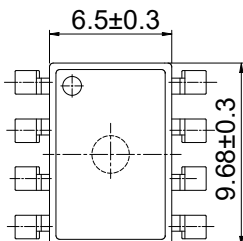
Unit: mm

DIP8



Unit: mm

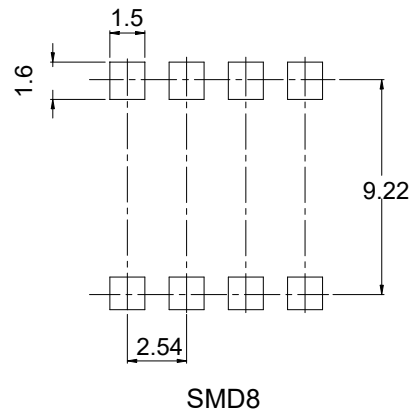
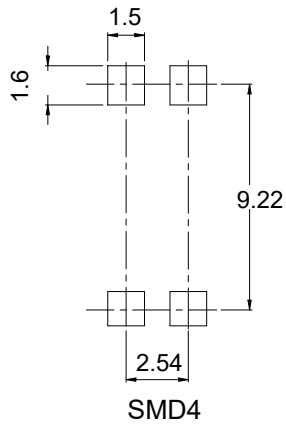
SMD8



Unit: mm

Recommended Pad Layout

Photo Relay

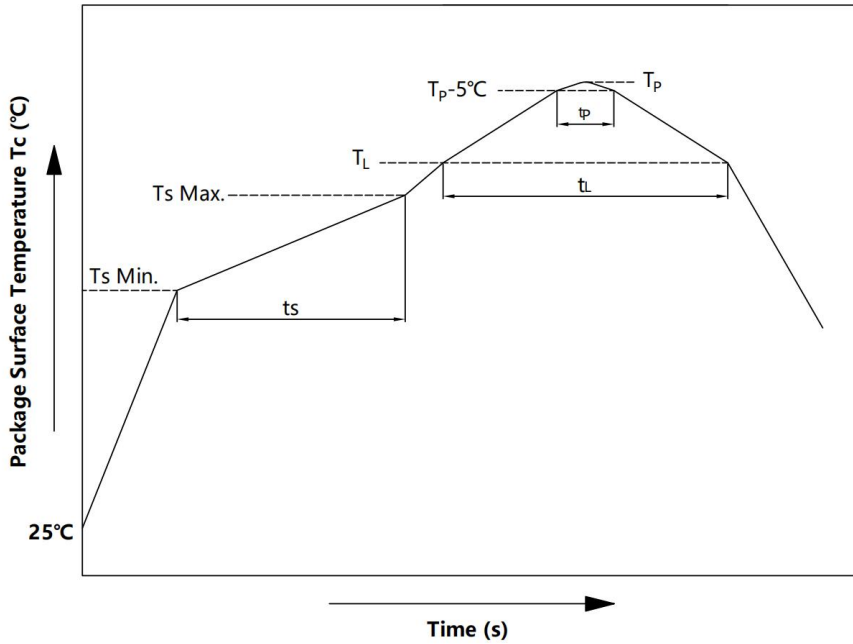


Unit: mm

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

Solder Reflow Profile

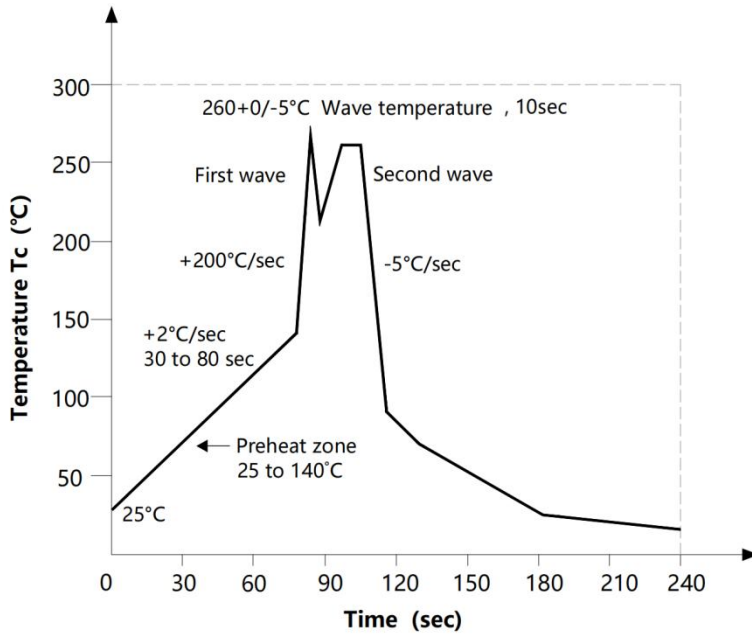
Photo Relay



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	$^\circ\text{C/s}$
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	$^\circ\text{C/s}$

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°C ± 5°C, within 3s.

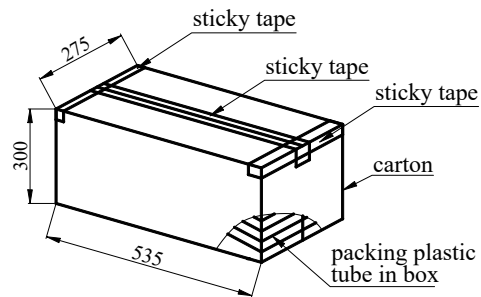
Packing

Summary table

Package Type	Packing Form	Quantity per Reel	Quantity per Box	Quantity per Carton	Antistatic Bag Specificator	Box Specification	Carton Specification	Note
DIP4	Tube (500*12*11mm)	100pcs /tube	50 tubes/box	10 boxes /ctn	NA	52.5*12.8*5.6cm	53.5*27.5*30cm	Use blue and white rubber stoppers for each tube, with the same direction
DIP4-M	Tube (500*13*11mm)	100pcs /tube	50 tubes/box	10 boxes /ctn	NA	52.5*13.6*5.8cm	53.5*29.5*31cm	
DIP8	Tube (500*12*11mm)	45pcs /tube	50 tubes/box	10 boxes /ctn	NA	52.5*12.8*5.6cm	53.5*27.5*30cm	
SMD4	Reel (φ330mm Blue)	2000 pcs /reel	2 reels /box	10 boxes /ctn	380*380mm	34*6*34cm	62*36*36.5cm	Leave at least 200mm of blank space at both ends
SMD8	Reel (φ330mm Blue)	1000 pcs /reel	2 reels /box	10 boxes /ctn	380*380mm	34*6*34cm	62*36*36.5cm	

DIP4 Tube

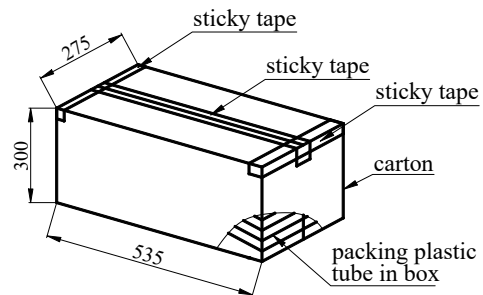
- 1) Qty/reel: 100 pcs.
- 2) Qty/ctn: 50000 pcs.
- 3) Inner packing: 50 tubes/box.
- 4) Schematic:



Unit: mm

DIP8 Tube

- 5) Qty/reel: 45 pcs.
- 6) Qty/ctn: 22500 pcs.
- 7) Inner packing: 50 tubes/box.
- 8) Schematic:

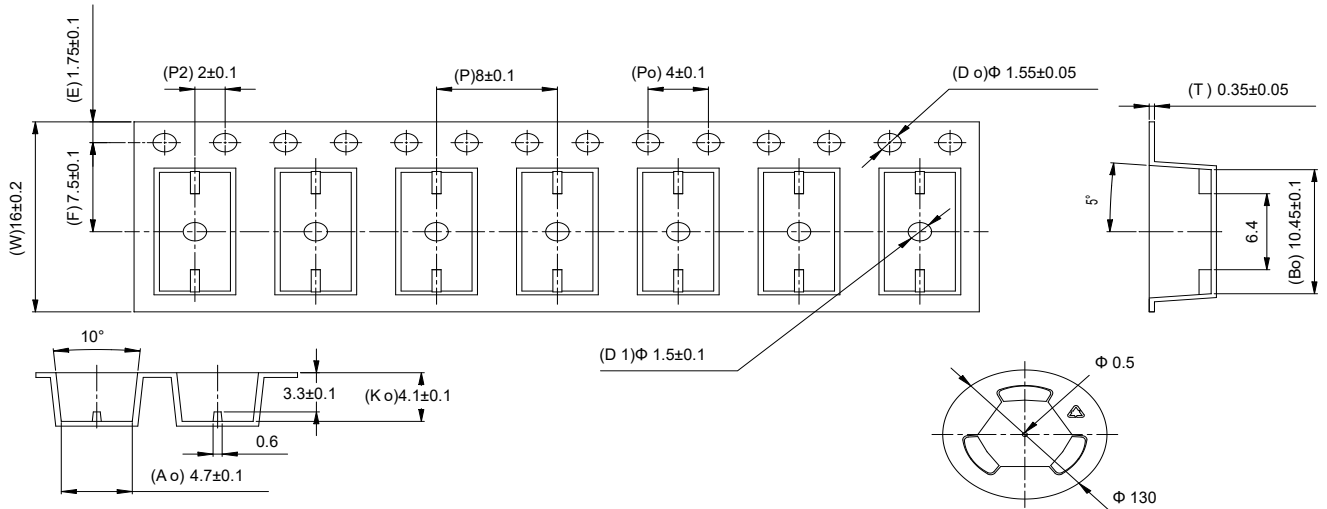


Unit: mm

Packing

■ **SMD4 Tape & Reel**

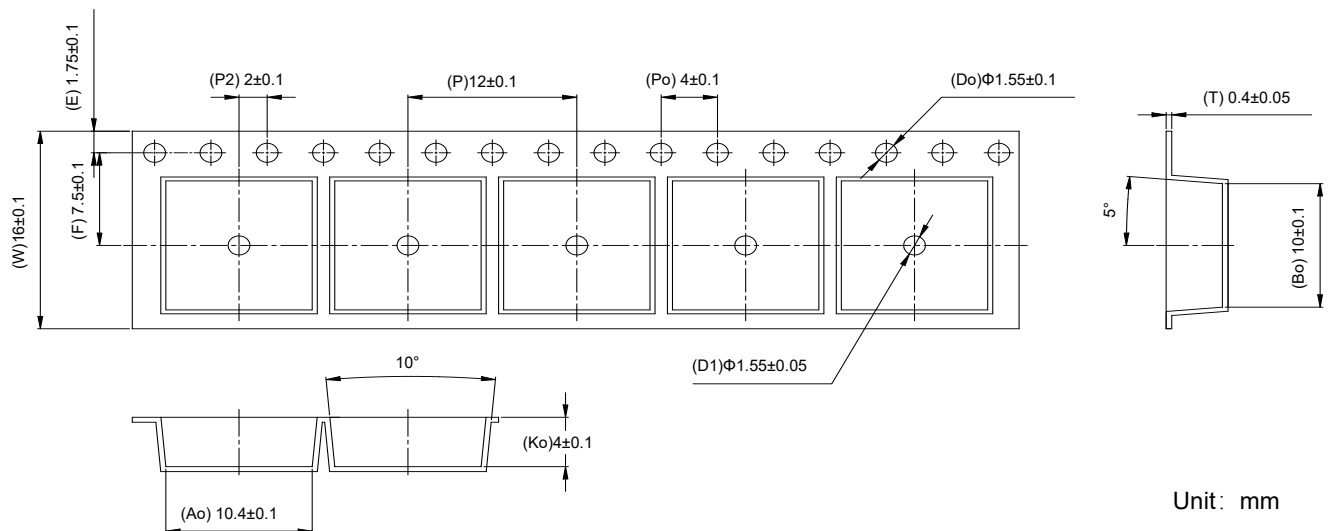
- 9) Qty/reel: 2000 pcs.
- 10) ctn: 40000 pcs.
- 11) packing: 2 reels/box.
- 12) Schematic:



Unit: mm

■ **SMD8 Tape & Reel**

- 13) reel: 1000 pcs.
- 14) ctn: 20000 pcs.
- 15) packing: 2 reels/box.
- 16) chematic:



Unit: mm

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