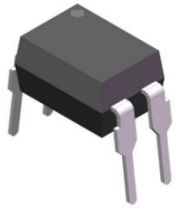
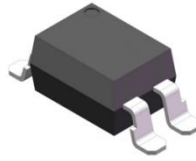


Product packaging logic diagram

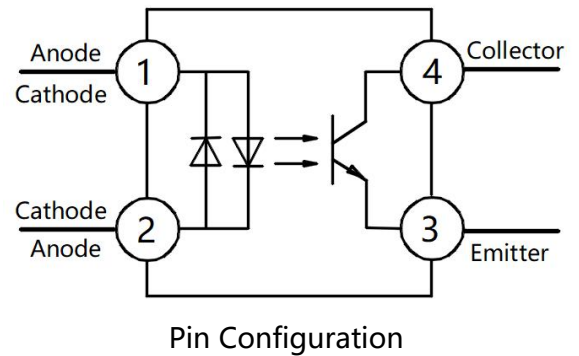
DIP4



DIP4-M



SMD4

**Features**

- Current transfer ratio
(CTR: 20~300% at $I_F = \pm 1\text{mA}$, $V_{CE} = 5\text{V}$)
- High isolation voltage between input and output ($V_{iso} = 5000\text{V}_{rms}$)
- Collector - emitter breakdown voltage $BV_{CEO} \geq 80\text{V}$
- Operating Temperature: $-55^\circ\text{C} \sim 110^\circ\text{C}$
- Environmentally friendly products, compliant with CQC, UL, and VDE requirements

Mechanical Data

- Case: DIP4、DIP4-M、SMD4
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solder ability-per MIL-STD-202, Method 208

Applications

- Industrial automation equipment (PLC module, sensor interface)
- Measurement instrument signal isolation
- Design and application of smart meters and switching power supplies
- Photo voltaic inverters, energy storage system applications
- Main control circuit for household appliances (air conditioning, refrigerator, water heater);



Ordering Information

<u>XL</u>	<u>814</u>	<u>(M)</u>	<u>(G)</u>	<u>(X)</u>	-	<u>(U)</u>	<u>(N)</u>	<u>(Y)</u>
①	②	③	④	⑤		⑥	⑦	⑧

- ① Brand(XL)
- ② Product series(814)
- ③ Package type(None:(DIP4、 DIP4-M、 SMD4)
- ④ Halogen option(None :Halogen free)
- ⑤ CTR Bank(A,B or None)
- ⑥ Lead frame (None: Copper)
- ⑦ Customer option 1 (0-9 or A- Z or none)
- ⑧ Customer option 2 (0-9 or A- Z or none)

Part Number	Package	Shipping Quantity	Marking Code
XL814X	DIP4	100pcs / Tube	XL814X
XL814MX	DIP4-M	100pcs / Tube	XL814X
XL814SX	SMD4	2000pcs / Tape & Reel	XL814X

Notes 1: X denotes CTR Rank : A, B or None.

Marking Information

- " XL" denotes brand.
- " 814" denotes Product series.
- " X" denotes CTR Rank : A, B , None.
- " Y" denotes Year : A(2024), B(2025), C(2026)
- " WW" denotes Week' s number .
- " N" denotes the day of Week.



Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter		Symbol	Value	Unit
Input	Forward Current	I _F	±60	mA
	Power Dissipation	PD	100	mW
	Power Dissipation Derating factor (above T _a = 100°C)	PDD	2.9	mW/°C
	Thermal Resistance Junction-Ambient	R _{thJ-A}	325	°C/W
	Thermal Resistance Junction-Case	R _{thJ-C}	200	°C/W
Output	Power Dissipation	PC	150	mW
	Collector Current	I _C	50	mA
	Collector-Emitter Voltage	V _{CEO}	80	V
	Emitter-Collector Voltage	V _{ECO}	7	V

Thermal Characteristics

Parameter	Symbol	Value	Unit
Total Power Dissipation	PTOT	200	mW
Isolation Voltage *1	VISO	5000	V _{rms}
Operating Temperature	TOPR	-55 ~ +100	°C
Storage Temperature Range	TSTG	-55 ~ +125	°C
Soldering Temperature *2	TSOL	260	°C

Notes:

1. 40 to 60% RH, AC for 1 minute

2. For 10 seconds

Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

Parameter		Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	V _F	I _F = ±20mA	-	1.2	1.4	V
	Terminal Capacitance	C _t	V=0, f=1kHz	-	30	250	pF
Output	Collector-Emitter Dark Current	I _{CEO}	V _{CE} = 20V, I _F = 0	-	-	100	nA
	Collector-Emitter Breakdown Voltage	BV _{CEO}	I _C = 0.1mA, I _F = 0	80	-	-	V
	Emitter-Collector Breakdown Voltage	BV _{ECO}	I _E = 10μA, I _F = 0	7	-	-	V
Transfer Characteristics	Current Transfer Ratio	CTR	I _F = ±1mA, V _{CE} = 5V	20	-	300	%
	Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _F = ±20mA, I _C = 1mA	-	0.1	0.2	V
	Isolation Resistance	R _{ISO}	DC500V, 40~60%R.H	5x10 ¹⁰	1x10 ¹¹	-	Ω
	Floating Capacitance	C _f	V=0, f=1MHz	-	0.6	1.0	pF
	Cut-off Frequency	F _c	V _{CE} = 5V, I _C = 2mA, R _L = 100Ω, -3dB	-	80	-	kHz
	Rise Time	T _r	V _{CE} = 2V, R _L = 100 Ω I _C = 2mA	-	-	18	μs
	Fall Time	T _f		-	-	18	

Rank Table of Current Transfer Ratio CTR

Rank Mark	Min. (%)	Max. (%)	Condition
A	50	150	I _F = ±1mA, V _{CE} = 5V
B	100	300	
No mark	20	300	

Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Fig.1 Relative Current Transfer Ratio vs Forward Current

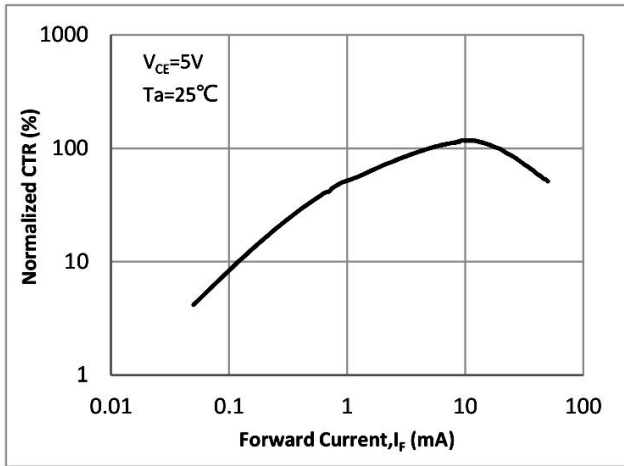


Fig.2 Forward Current vs Forward Voltage

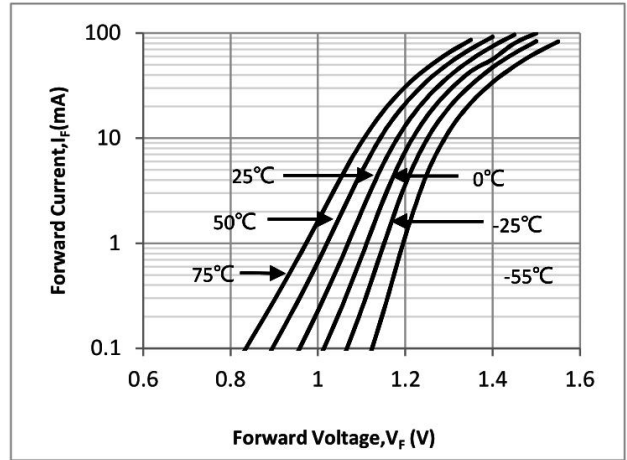


Fig.3 Collector Current vs Collector Emitter voltage

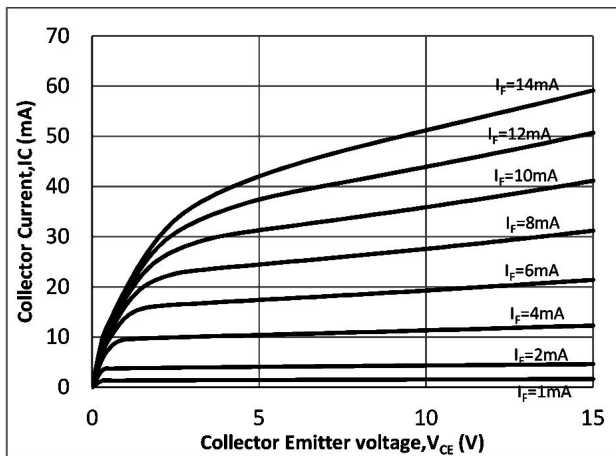


Fig.4 Relative Current Transfer Ratio vs Ambient Temperature

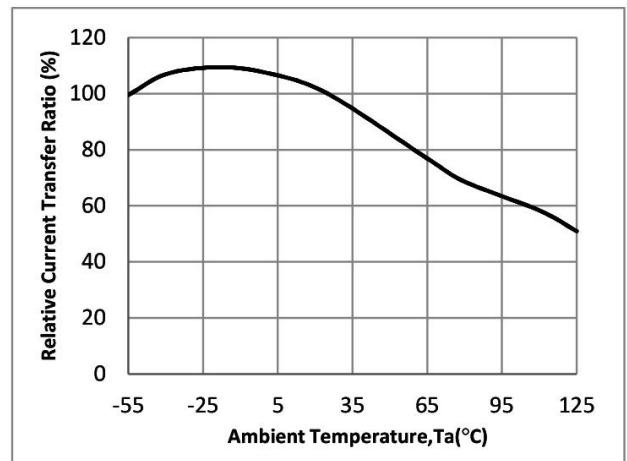


Fig.5 Collector-emitter saturation voltage vs. Ambient Temperature

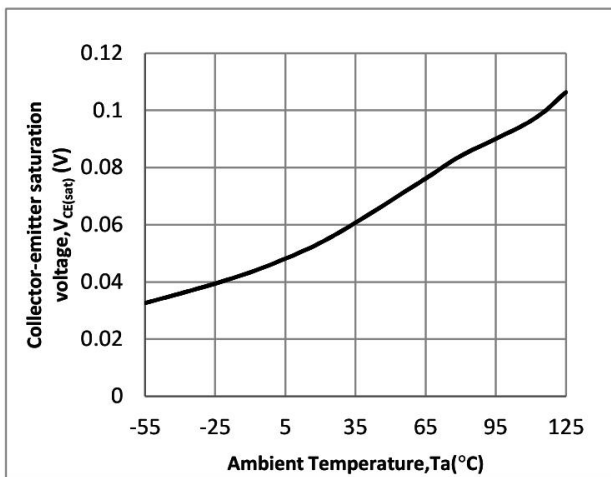
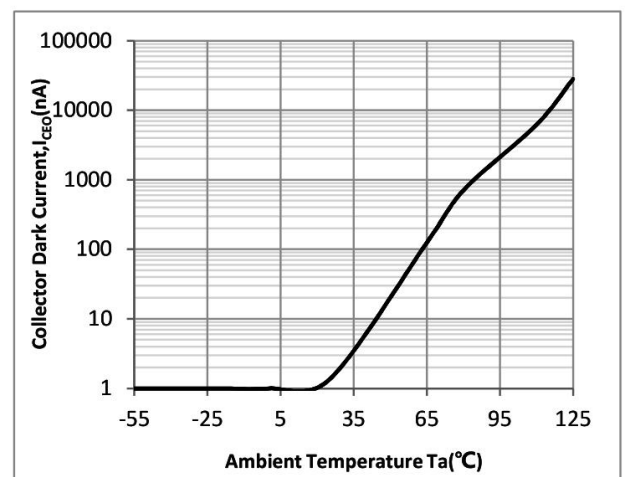


Fig.6 Collector Dark Current vs. Ambient Temperature



Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Fig.7 Response Time vs. Load Resistance

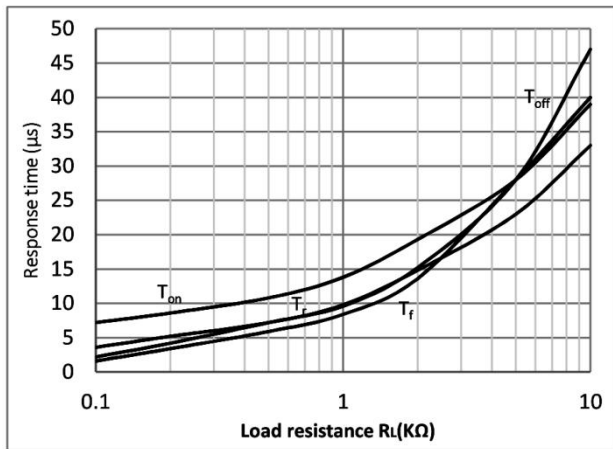


Fig.8 Frequency Response

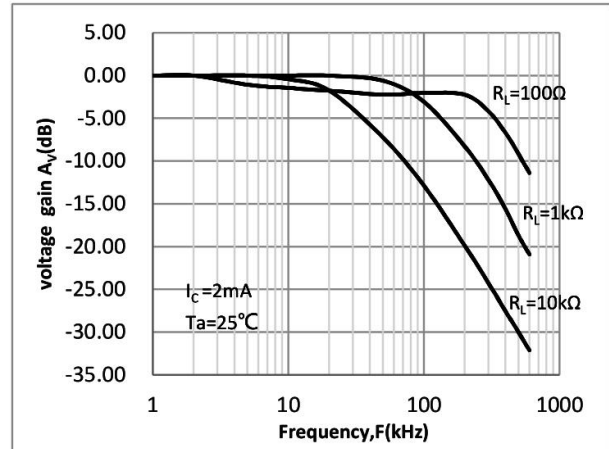


Fig.9 Collector-emitter Saturation Voltage vs. Forward Current

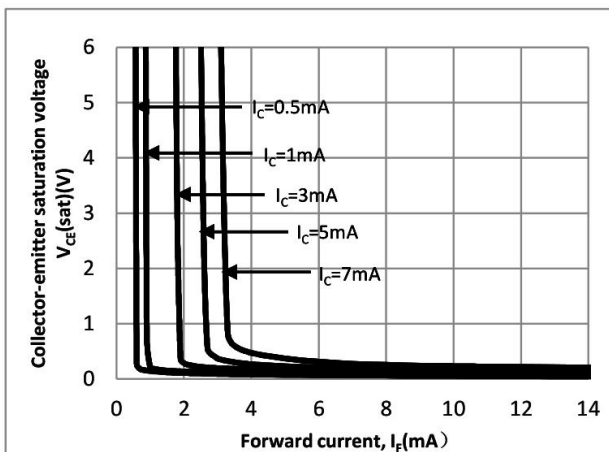
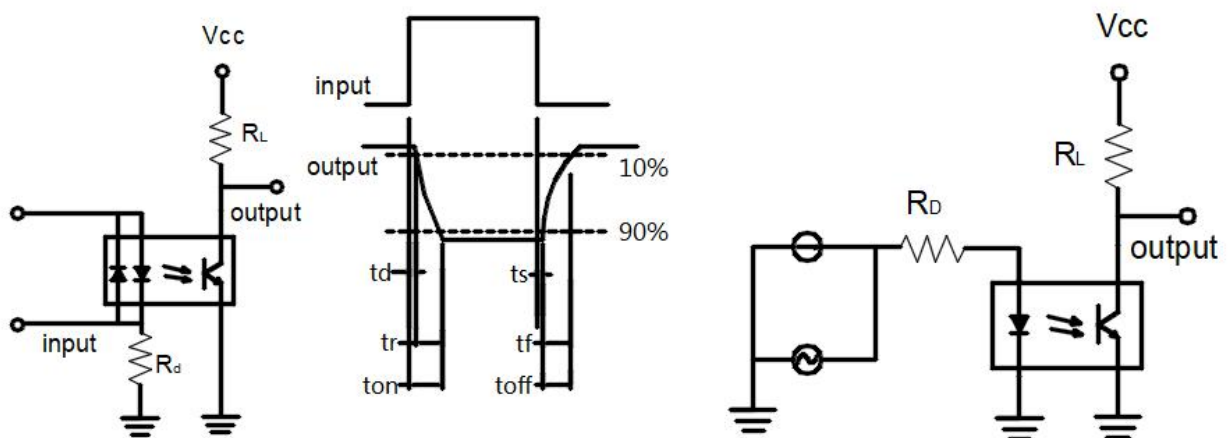
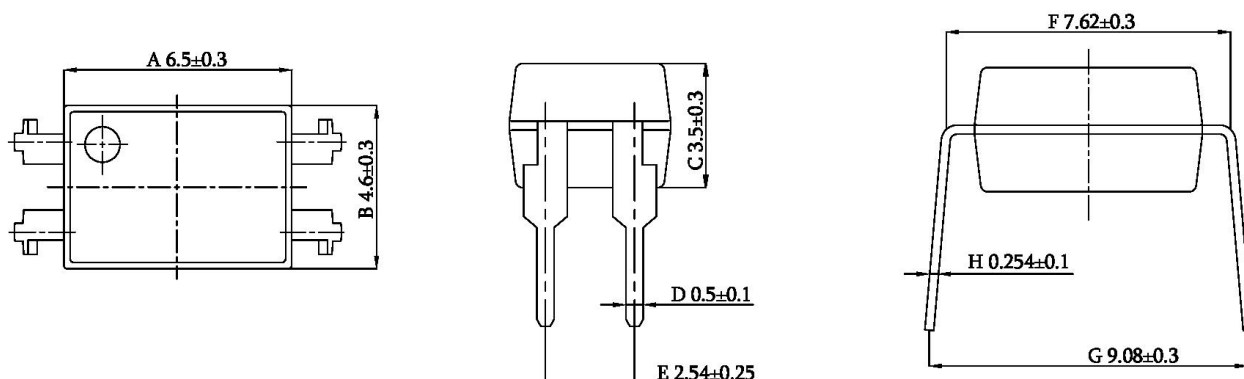


Fig.10 Switching Time Test Circuit & Wave forms

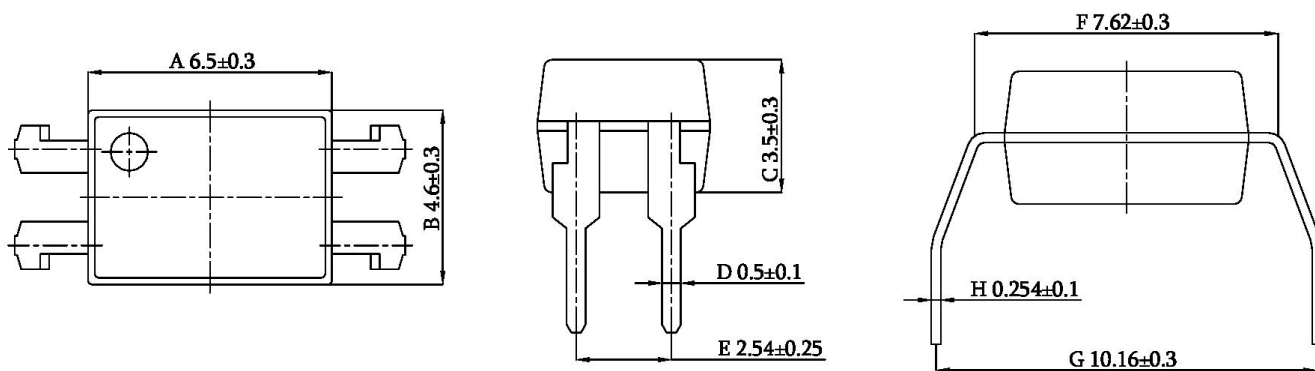


Package Outline Dimensions (unit: mm)

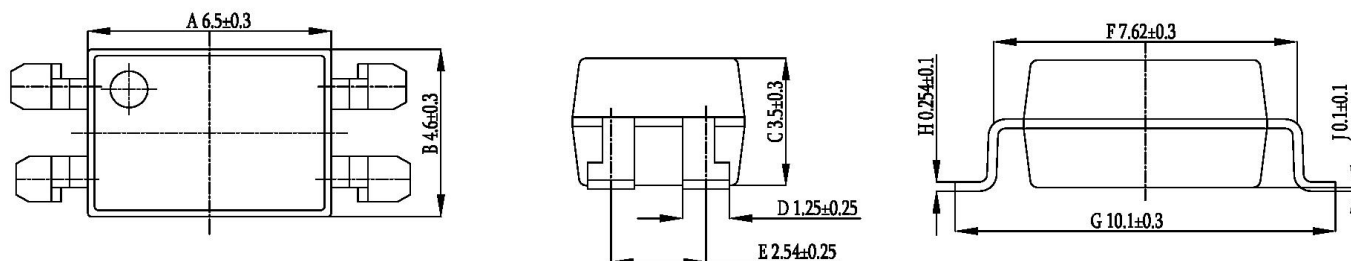
DIP4



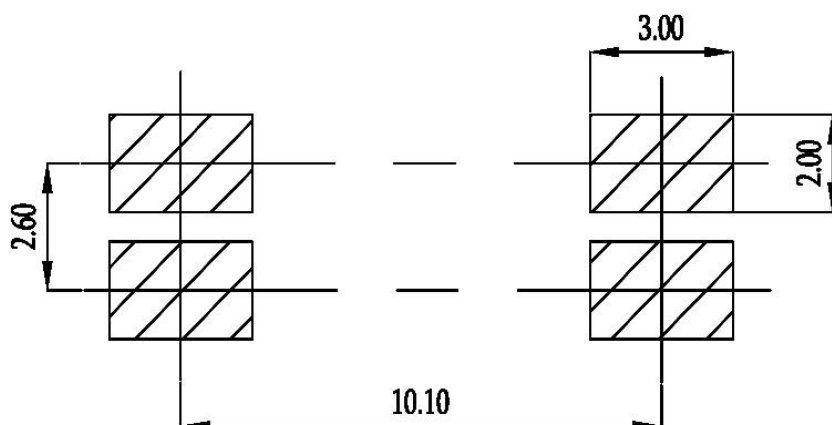
DIP4-M



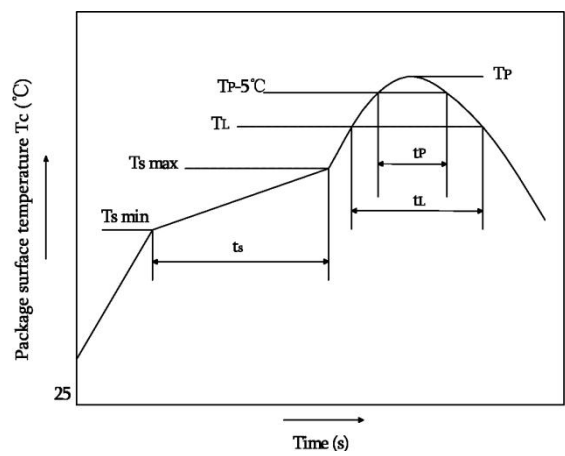
SMD4



SOLDERING FOOTPRINT (unit: mm)



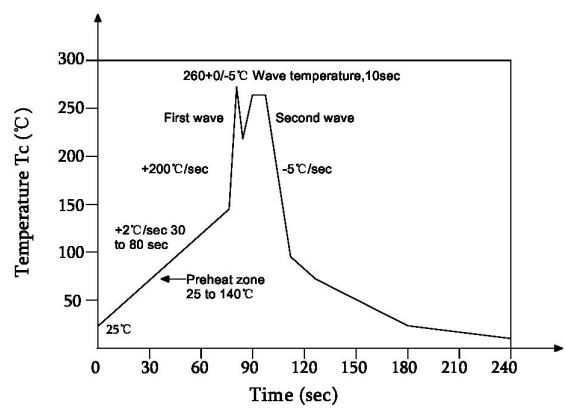
Reflow soldering



	Symbol	Min	Max	Unit
Preheat temperayure	Ts	150	200	°C
Preheat time	ts	60	120	s
Ramp-up ratea(TL to TP)			3	°C/s
Liquidus temperature	TL	217		°C
Time above TL	tL	60	150	s
Peak temperature	Tp		260	°C
Time during which Tc is between (TP-5) and TP	tp		30	s
Ramp-down rate(TP to TL)			6	°C/s

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

Wave soldering



Profile feature	
Average ramp-up rate	~200°C/s
Heating rate during preheat	1°C/s to 2°C/s typical; 4°C/s maximum
Final preheat temperature Ts	~130°C
Preheat time (25°C to Ts)	>60s
Peak temperature Tp	260°C
Time within peak temperature tp	10s
Ramp-down rate	5°C/s maximum

Soldering with hand soldering iron

- A. Hand soldering iron is only used for product rework or sample testing.
- B. Hand soldering iron requirements:Temperature:360 °C+5°C within 3s.

Packing

Package Type	Packing Form	Quantity per Tube & Reel	Quantity per Box	Quantity per Carton	Antistatic Bag Specification	Box Specification	Carton Specification	Note
DIP4	Tube(500mm)	100pcs/tube	25 tubes /box	12 boxes /ctn	190*670mm	520*105*50mm	545*372*235mm	Straight insert type material tube
DIP4-M	Tube(500mm)	100pcs/tube	25 tubes /box	12 boxes /ctn	190*670mm	520*105*50mm	545*372*235mm	Seagull foot (M foot) tube
SMD4	Reel(φ330mm)	2000pcs/reel	2 reels /box	5 boxes /ctn	380*420mm	350*340*60mm	365*330*370mm	Guard band 200mm /min.

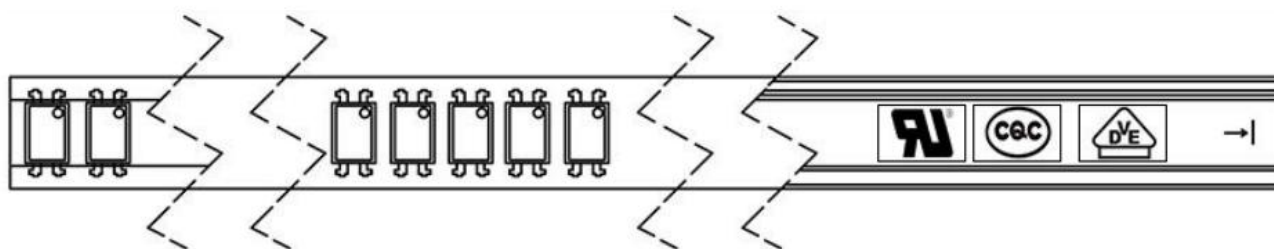
■ Summary table

■ DIP4/DIP4-M (Tube)

Qty/tube: 100pcs. Qty/box: 2500pcs.

Qty/ctn : 30000pcs.

Schematic: (unit:mm)

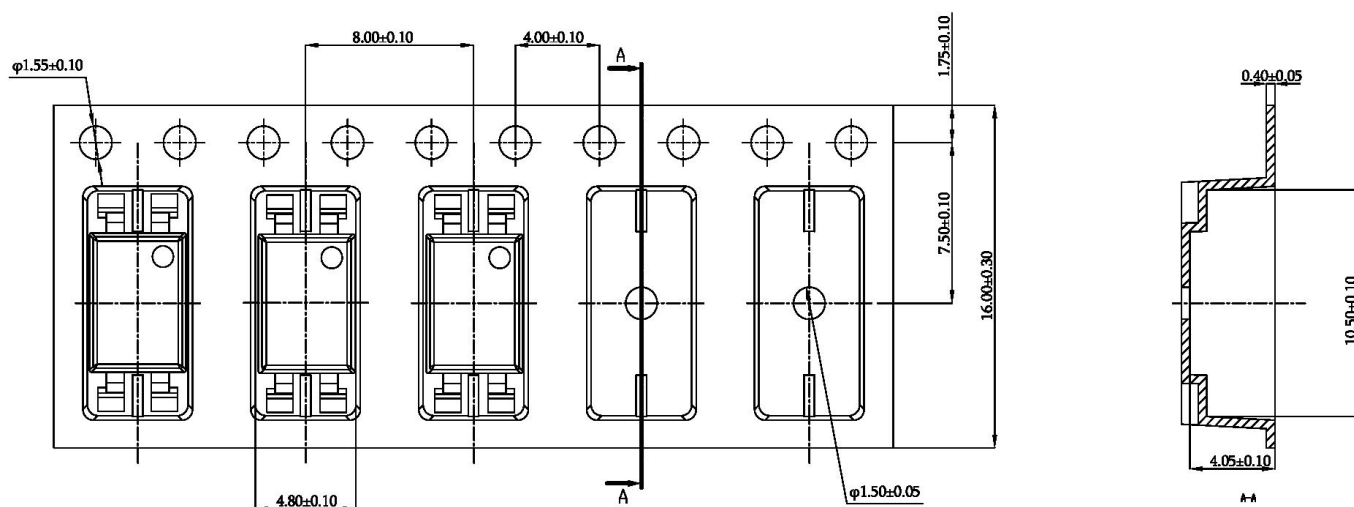


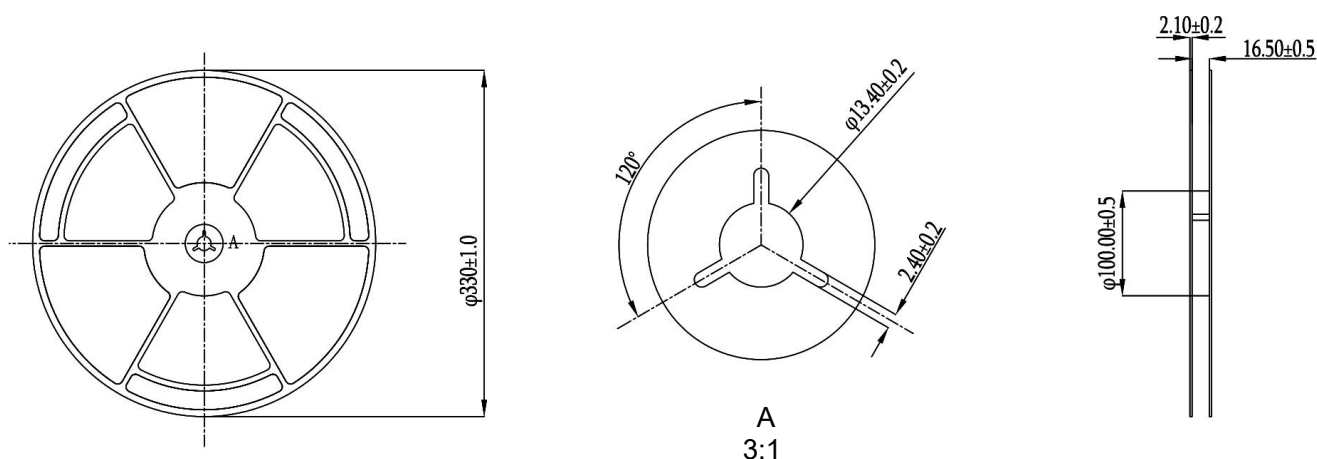
■ SMD4 (Reel)

Qty/reel: 2000pcs. Qty/box: 4000pcs.

Qty/ctn : 20000pcs.

Schematic: (unit:mm)





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