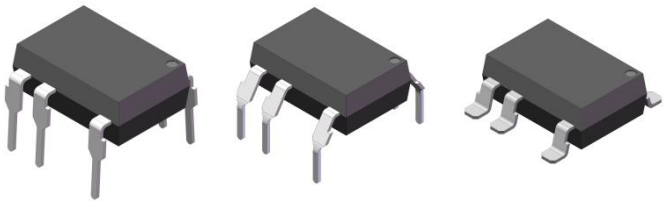
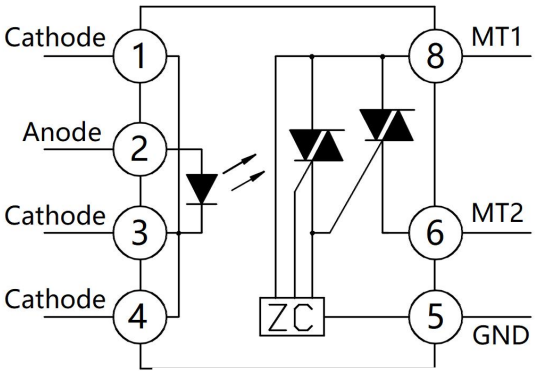
Product packaging logic diagram



DIP7　　DIP7-M　　SMD7



Pin Configuration

Features

- Peak Breakdown Voltage: 600V
- Peak Current Load: 0.3A, 0.6A, 0.9A and 1.2A
- High isolation voltage between input and output (Viso =5000Vrms)
- Operating Temperature: -55℃~100℃
- Environmentally friendly products, compliant with CQC, UL, and VDE requirements

Mechanical Data

- Case: DIP7、DIP7-M、SMD7
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solder ability-per MIL-STD-202, Method 208

Applications

- Commonly used in motor speed control systems，Power regulation system and follow-up system，Control of high-power equipment through low-power controls.
- Mainly used for motor speed control and temperature control。
- In the power system for power switches，Charging pile control and battery management system（BMS）,Achieve precise control of voltage/current and equipment protection。
- Vehicle power management，Drive motor control and charge/discharge management，Improving vehicle energy efficiency and safety。
- In fiber optic communication equipment, routers and medical devices，signal isolation and power control in the middle，Ensure stable operation of equipment.



Ordering Information

XL	RX213	(M)	(G)	-	(U)	(N)	(Y)
①	②	③	④		⑤	⑥	⑦

① Brand(XL)

② Product series(X:0,1,2,3)

③ Package type (DIP7: DIP7-M: M, SMD7: S)

④ Halogen option (None :Halogen free)

⑤ Lead frame (None: Copper)

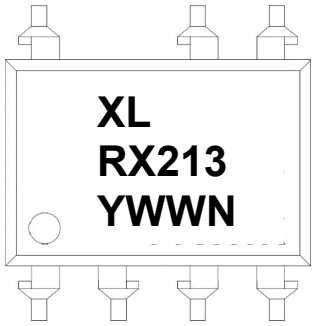
⑥ Customer option 1 (0-9 or A-Z or none)

⑦ Customer option 2 (0-9 or A-Z or none)

Part Number	Package	Shipping Quantity	Marking Code
XLRX213	DIP7	45pcs / Tube	XLRX213
XLRX213M	DIP7-M	45pcs / Tube	XLRX213
XLRX213S	SMD7	1000pcs / Tape & Reel	XLRX213

Marking Information

- " XL" denotes brand
- " X" denotes IFT digit: 0, 1, 2, 3
- " 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	50	mA
	Reverse Voltage		V_R	5	V
	Power Dissipation		P_D	75	mW
Output	Power Dissipation		P_C	300	mW
	Off-state Output Terminal Voltage		V_{DRM}	600	V
	Peak repetitive surge current	XLR0213	I_{TSM}	3	A
		XLR1213		6	
		XLR2213		9	
		XLR3213		12	
	Turn-on current (root mean square value)	XLR0213	$I_{T(RMS)}$	0.3	A
		XLR1213		0.6	
		XLR2213		0.9	
		XLR3213		1.2	

Thermal Characteristics

Parameter	Symbol	Value	Unit
Total Power Dissipation	P_{TOT}	375	mW
Isolation Voltage *1	V_{ISO}	5000	Vrms
Operating Temperature	T_{OPR}	-40 ~ +85	°C
Storage Temperature Range	T_{STG}	-40 ~ +125	°C
Soldering Temperature *2	T_{SOL}	260	°C

Notes:

1. 40 to 60% RH, AC for 1 minute. At this time, pins 1, 2 & 3 are shorted, and pins 4, 5 & 6 are shorted together.
2. For 10 seconds

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

Parameter		Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	VF	IF=10mA	-	-	1.4	V
	Reverse Leakage current	IR	VR=5V	-	-	10	μA
	Input Capacitance	CIN	f=1kHz	-	45	-	PF
Output	Peak Blocking Current	IDRM	VDRM =600 V IF=0mA	-	-	100	μA
	Peak on-state voltage	VTM	ITM = 100mA peak, IF = Rated IFT	-	-	2.5	V
	Critical Rate of Rise off-state voltage	dv /dt	VPEAK = Rated VDRM	200	-	-	V/ μs
Transfer Characteristics	LED trigger current	IFT	Main terminal voltage = 3V	-	-	10	mA
	Holding Current	IH	Terminal Voltage from "ON" to "OFF" "ON" state IF=0mA	-	-	25	mA
	Turn On Time	Ton	IF= 20mA, VD= 6V, RL=100Ω	-	10	100	us
	Isolation Resistance	RIO	VIO=500VDC	$1X10^{11}$	-	-	Ω
	Isolation Capacitance	CIO	f=1MHz	-	0.25	-	PF

Notes:

1. The additional test voltage should be within dv/dt rated value.
2. This is static dv/dt, dv/dt is converted with changes of loading for the driven thyristor.
3. It is guaranteed that all devices trigger when IF value is less than or equal to the maximum value of IFT.

Ratings and Characteristics Curves (@ T_A = 25°C unless otherwise specified)

Fig.1 On-state RMS Current vs. Ambient temperature

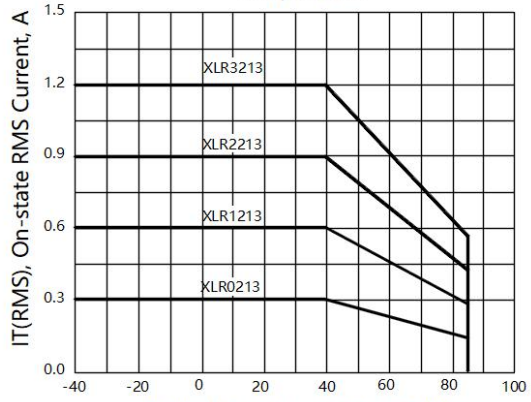


Fig.2 On-state Terminal Voltage vs. Ambient temperature

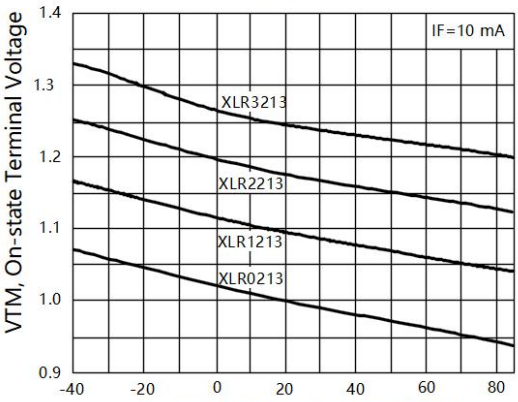


Fig.3 Normailzed Tigger Current vs. Ambient temperature

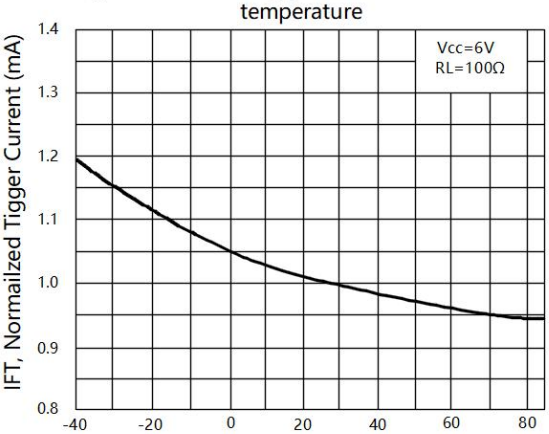


Fig.4 Forward Current vs. Forward Voltage

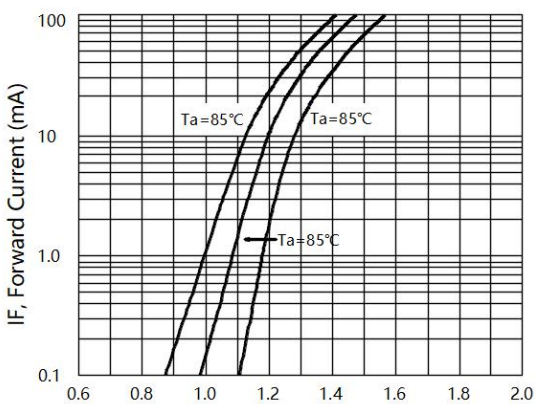


Fig.5 Turn-on time Vs. Forward Current

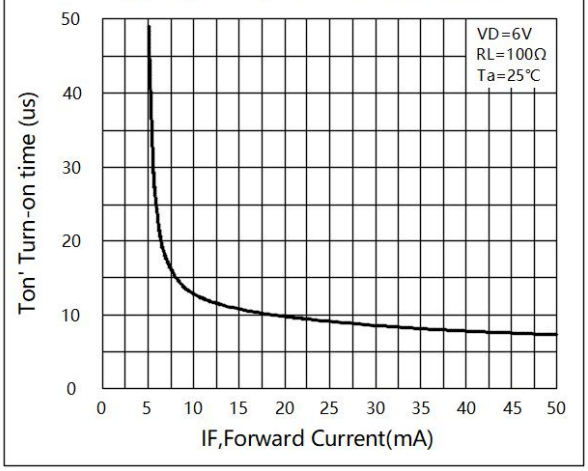
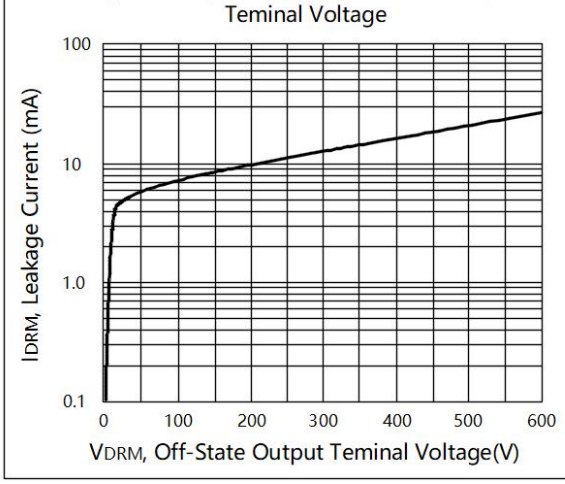
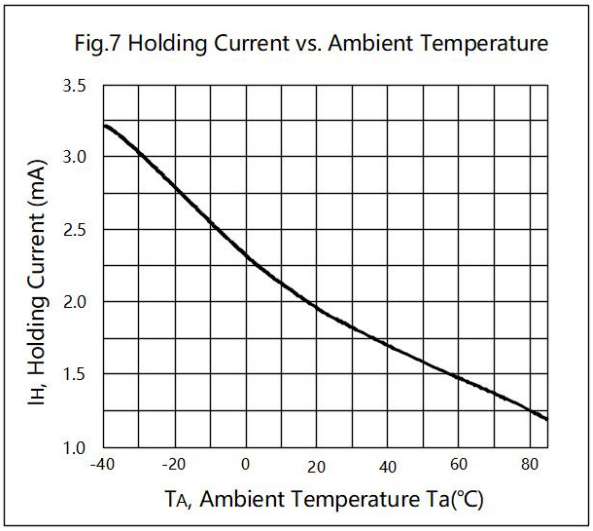
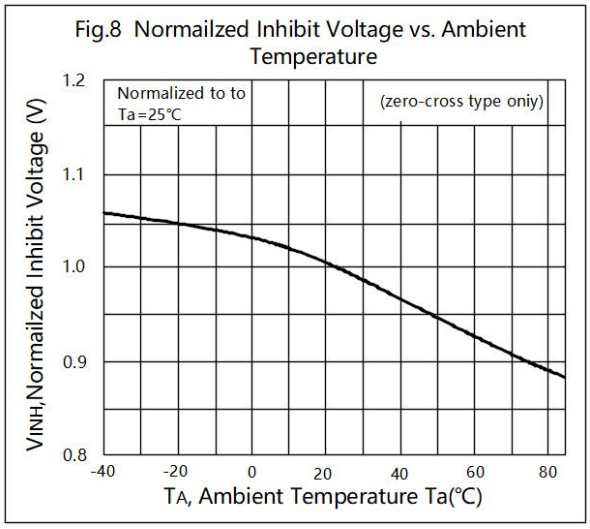


Fig.6 Leakage Current vs. Off-State Output Teminal Voltage

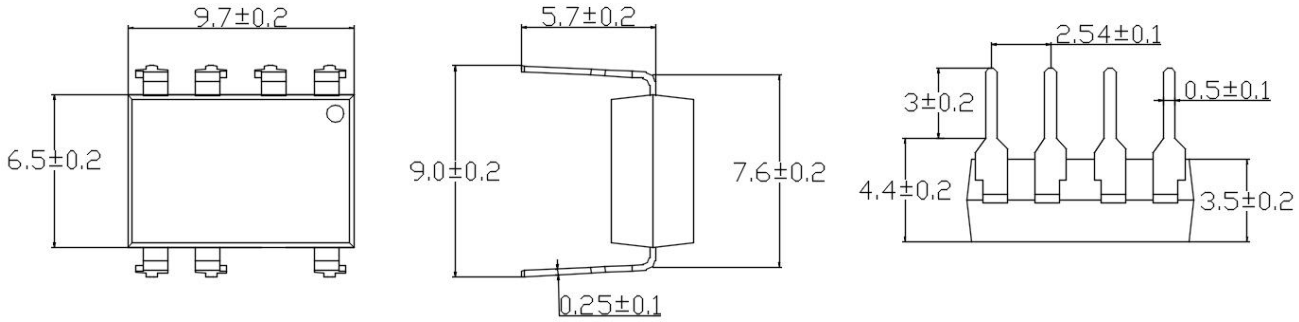



Fig.7 Holding Current vs. Ambient Temperature
IH, Holding Current (mA)
3.5
3.0
2.5
2.0
1.5
1.0
-40
-20
0
20
40
60
80
TA, Ambient Temperature Ta(℃)

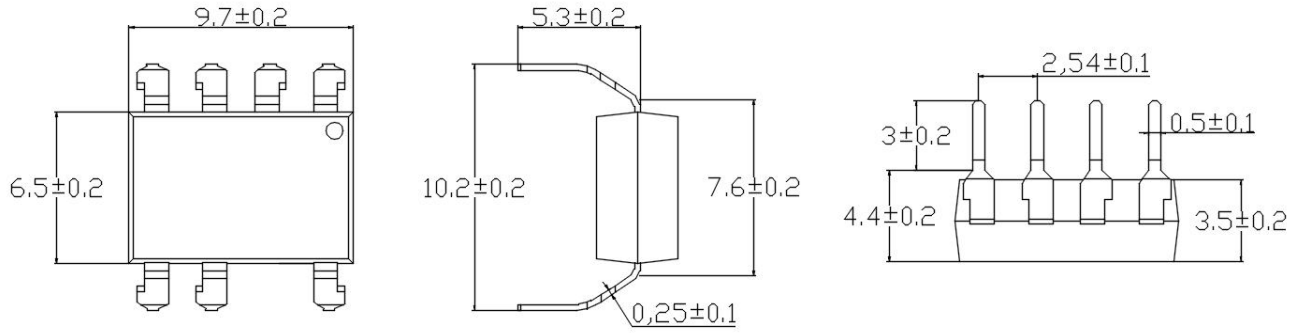

Fig.8 Normailzed Inhibit Voltage vs. Ambient Temperature
Normalized to to Ta=25℃
(zero-cross type oniy)
VINH,Normailzed Inhibit Voltage (V)
1.2
1.1
1.0
0.9
0.8
-40
-20
0
20
40
60
80
TA, Ambient Temperature Ta(℃)

Package Outline Dimensions (unit: mm)

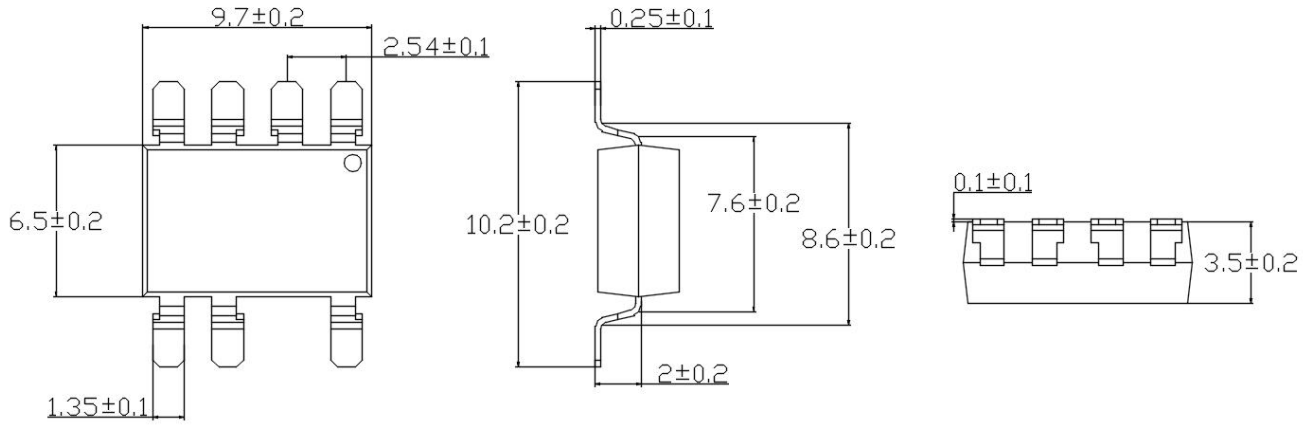
DIP7



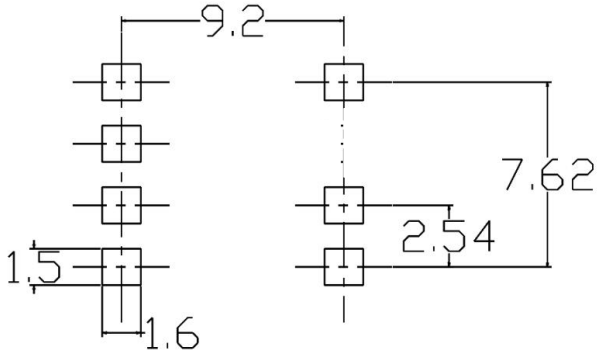
DIP7-M



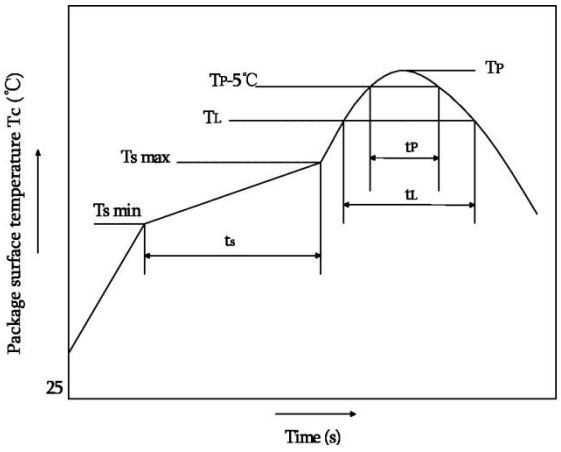
SMD7



SOLDERING FOOTPRINT (unit: mm)



Reflow soldering

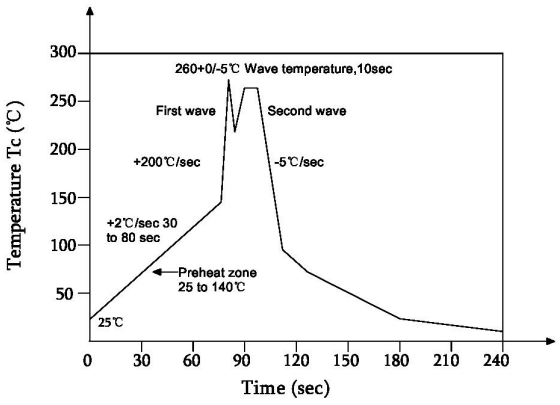


	Symbol	Min	Max	Unit
Preheat temperayure	Ts	150	200	℃
Preheat time	ts	60	120	s
Ramp-up ratea(T_L to T_P)	-	-	3	℃/s
Liquidus temperature	T_L	217		℃
Time above T_L	t_L	60	150	s
Peak temperature	Tp	-	260	℃
Time during which Tc is between (T_P-5) and T_P	t_p	-	30	s
Ramp-down rate(T_P to T_L)	-	-	6	℃/s

Note:

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

Wave soldering



Profile feature	
Average ramp-up rate	~200℃/s
Heating rate during preheat	1℃/s to 2℃/s typical;4℃/s maximum
Final preheat temperature Ts	~130℃
Preheat time (25℃ to Ts)	>60s
Peak temperature Tp	260℃
Time within peak temperature tp	10s
Ramp-down rate	5℃/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 ℃+5℃ 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
DIP7	Tube(500mm)	45pcs/tube	25 tubes /box	12 boxes /ctn	190*670mm	520*105*50mm	545*372*235mm	Straight insert type material tube
DIP7-M	Tube(500mm)	45pcs/tube	25 tubes /box	12 boxes /ctn	190*670mm	520*105*50mm	545*372*235mm	Seagull foot (M foot) tube
SMD7	Reel(ϕ330mm)	1000pcs/reel	2 reels /box	5 boxes /ctn	380*420mm	350*340*60mm	365*330*370mm	Guard band 200mm /min.

■ Summary table

■ DIP8/DIP8-M（Tube）

Qty/tube： 45pcs. Qty/box： 1125pcs.

Qty/ctn ： 13500pcs.

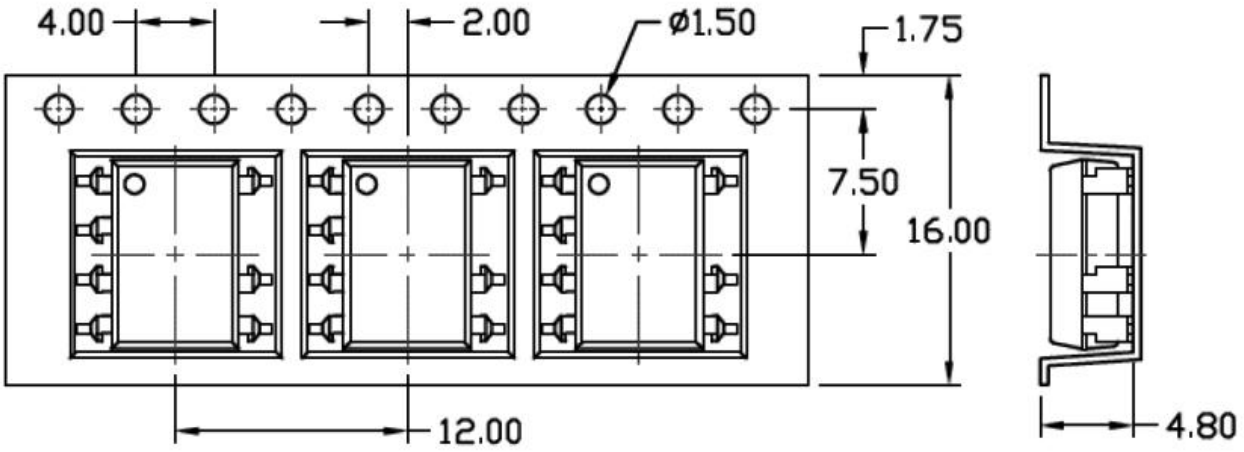
Schematic：(unit:mm)

■ SMD8（Reel）

Qty/reel： 1000pcs. Qty/box： 2000pcs.

Qty/ctn ： 10000pcs.

Schematic：(unit:mm)



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