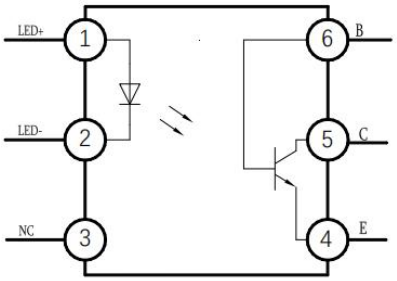
TWS4N25

Features

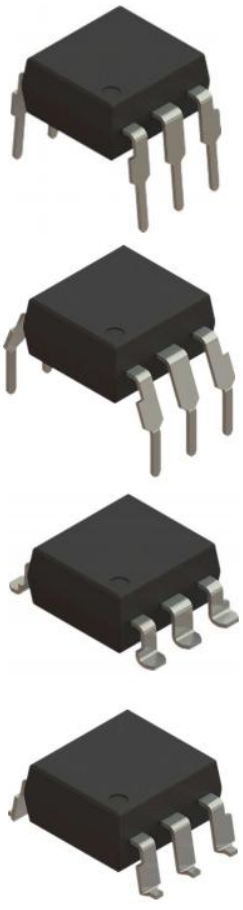
HF

- Current transfer ratio
  (CTR: ≥20% at I_F = 10mA, V_{CE} = 10V)
- High isolation voltage between input and output (Viso =5000V rms)
- Operating Temperature: -55℃~100℃



Applications

- Power regulator
- Digital logic input
- Microprocessor input



Mechanical Data

- Case: DIP-6L, DIP-6L(M),SMD-6L, SMD-6L(SS)
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208

Ordering Information

TWS 4N25 (M) (G) - (U) (N) (Y)

① ② ③ ④ ⑤ ⑥ ⑦

① Brand(TWS)
② Product series(4N25)
③ Package type(DIP-6L:None, DIP-6L(M):M,SMD-6L:S, SMD-6L(SS):SS)
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
TWS4N25	DIP-6L	65 pcs / Tube	TWS4N25
TWS4N25M	DIP-6L(M)	65 pcs / Tube	TWS4N25
TWS4N25S	SMD-6L	1000 pcs / Tape & Reel	TWS4N25
TWS4N25SS	SMD-6L(SS)	1000 pcs / Tape &Reel	TWS4N25

Marking Information

- "TWS" denotes brand
- "4N25" denotes product series
- "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
	Forward Peak Current*1	I_{FP}	1	A
	Reverse Voltage	V_R	6	V
	Power Dissipation	P_D	100	mW
Output	Collector Power Dissipatio	P_C	300	mW
	Collected Current	I_C	100	mA
	Collector-Base Voltage	V_{CBO}	70	V
	Collector-Emitter Voltage	V_{CEO}	30	V
	Eemitter-Collector Voltage	V_{ECO}	7	V

Thermal Characteristics

Parameter	Symbol	Value	Unit
Total Power Dissipation	P_{TOT}	350	mW
Isolation Voltage *2	V_{ISO}	5000	Vrms
Operating Temperature	T_{OPR}	-55 ~ +100	°C
Storage Temperature Range	T_{STG}	-55 ~ +125	°C
Soldering Temperature *3	T_{SOL}	260	°C

Notes:
1. Pulse width≤1μs, Duty ratio: 0.001
2. 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.
3. 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 = 10mA	-	1.2	1.5	V
	Reverse Current	I_R	V_R = 3V	-	-	10	μA
	Input Capacitance	C_t	V = 0V, f = 1kHz	-	50	-	pF
Output	Collector Dark Current	I_{CEO}	V_{CE}=10V	-	-	50	nA
	Collector-Base Breakdown Voltage	BV_{CBO}	I_B=0.1mA, I_F=0	70	-	-	V
	Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C=0.1mA, I_F=0	30	-	-	V
	Emitter-Collector Breakdown Voltage	BV_{ECO}	I_E=0.01mA, I_F=0	7	-	-	V

Transfer Characteristics	Current Transfer Ratio	CTR	I_F=10mA ,V_{CE}=10V	20	-	-	%
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_F=50mA,I_C=2mA	-	-	0.5	V
	Isolation Resistance	R_{ISO}	DC500V,40~60%R.H.	$5*10^{10}$	10^{11}	-	Ω
	Isolation Capacitance	C_f	V=0, f=1MHz	-	1	2.5	pF
	Response Time (Rise)	T_r	V_{CE}=10V	-	3	10	μs
	Response Time (Fall)	T_f	I_C=2mA,R_L=100Ω	-	3	10	μs

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

Fig.1 Forward Current vs. Forward Voltage

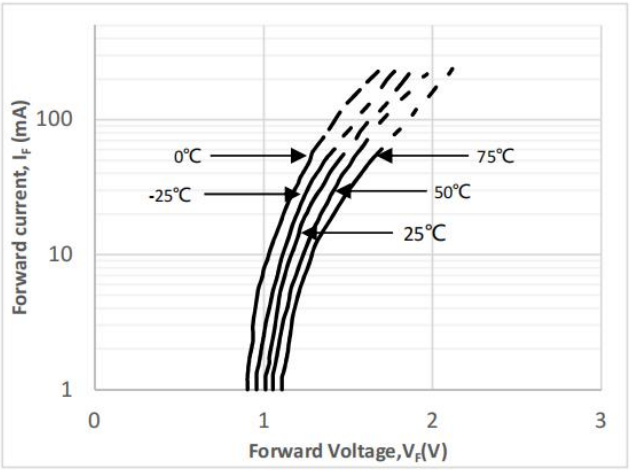


Fig.2 Collector Current vs. Collector-emitter Voltage

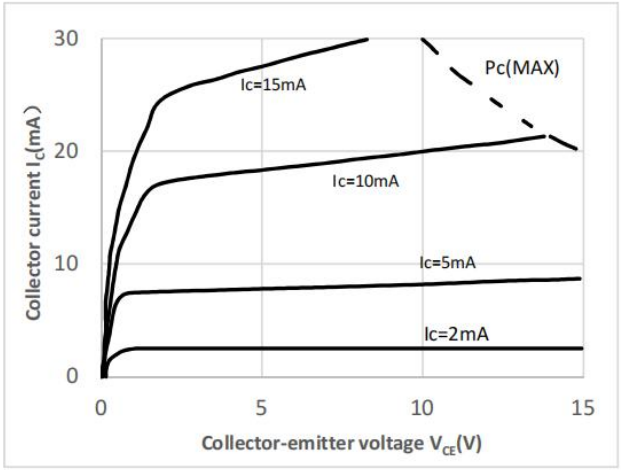


Fig.3 Forward Current vs. Forward Voltage

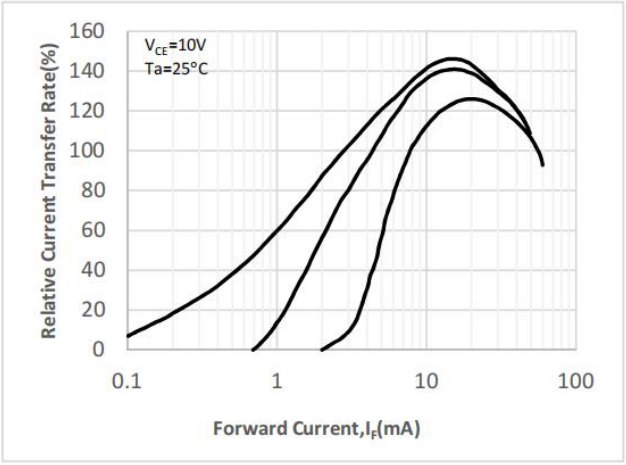


Fig4 Collector-emitter Saturation Voltage vs. Forward Current

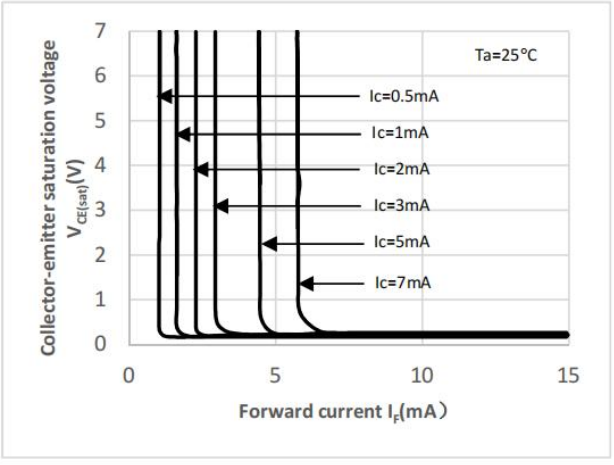


Fig.5 Collector Dark Current vs. Ambient Temperature

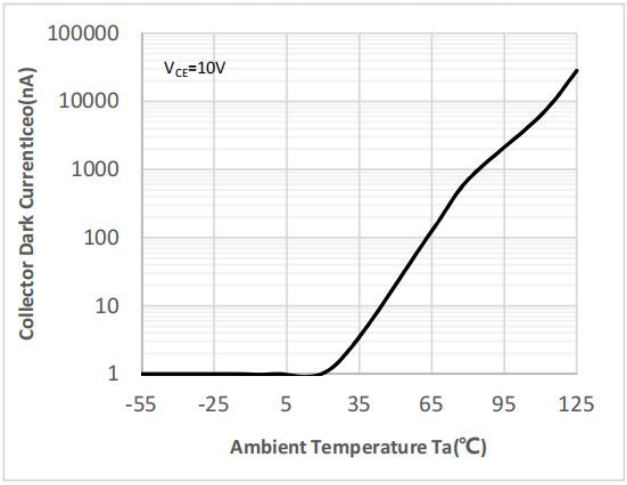


Fig.6 Relative Current Transfer Ratio vs. Ambient Temperature

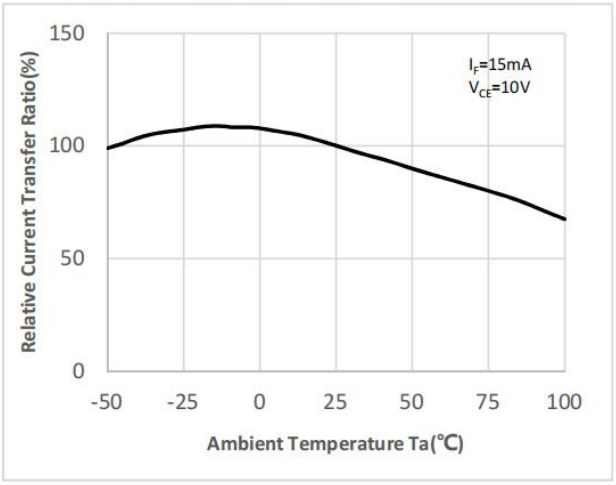


Fig.7 Response Time vs. Load Resistance

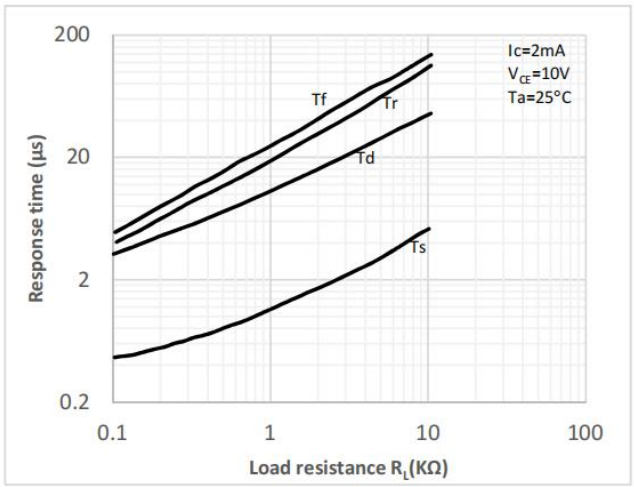
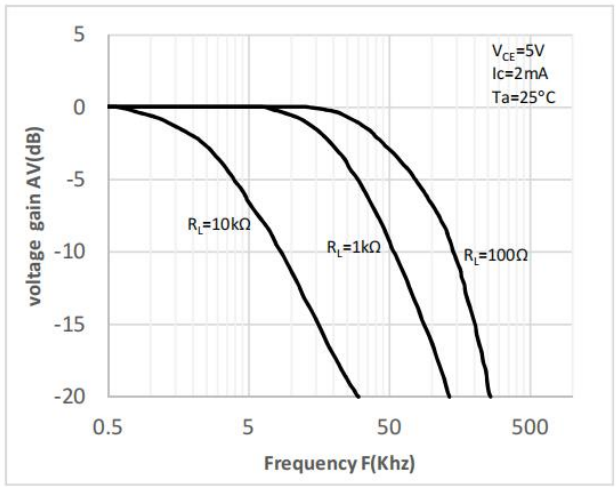
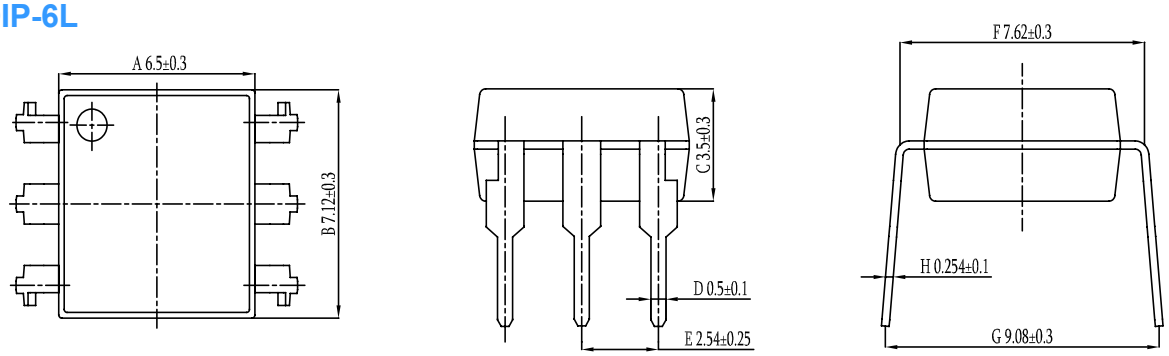


Fig.8 Frequency Response

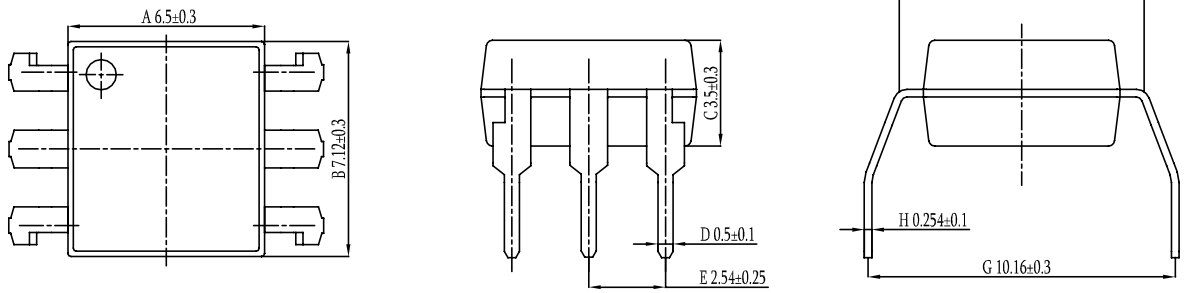


Package Outline Dimensions (unit: mm)

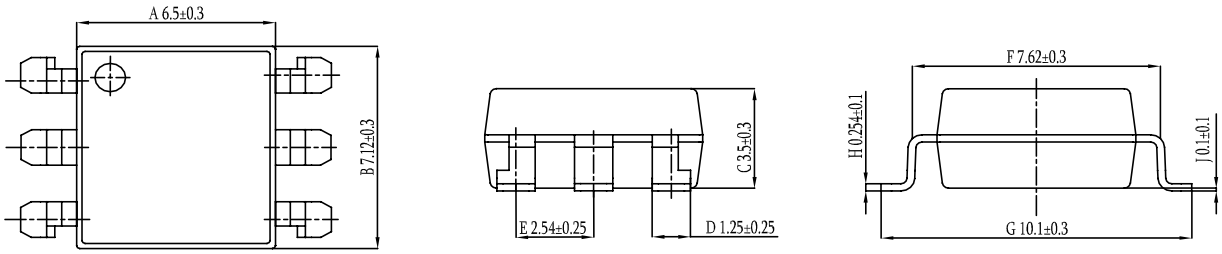
DIP-6L



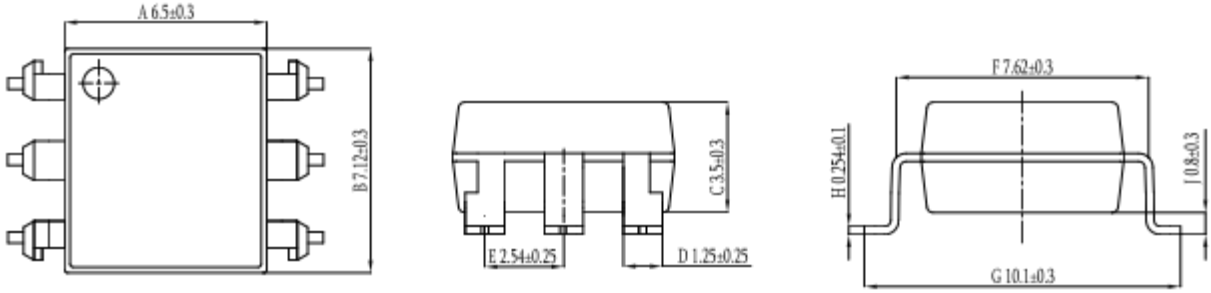
DIP-6L（M）



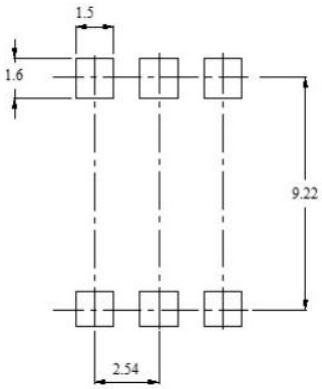
SMD-6L



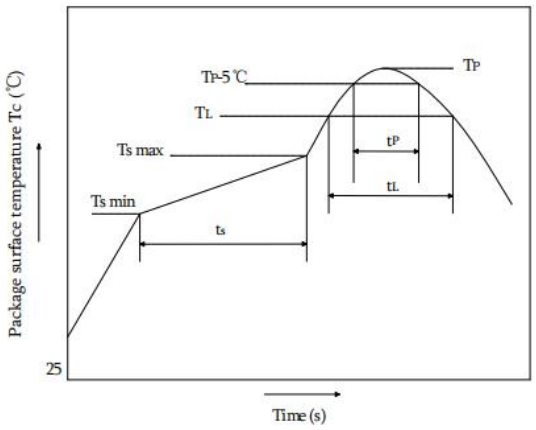
SMD-6L（SS）



SOLDERING FOOTPRINT (unit: mm)



Reflow soldering

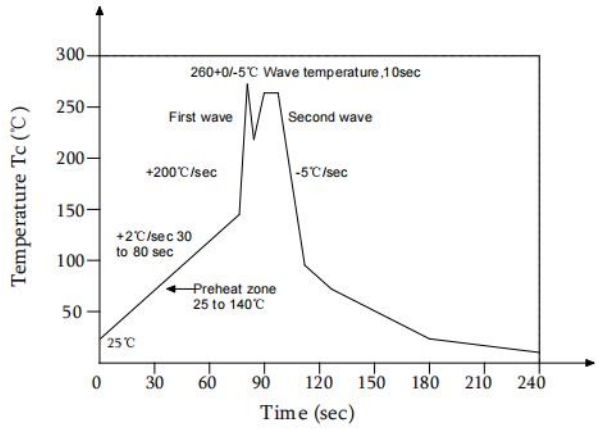


	Symbol	Min	Max	Unit
Preheat temperature	Ts	150	200	℃
Preheat time	ts	60	120	s
Ramp-up rate(T_L to T_P)			3	℃/s
Liquidus temperature	T_L	217		℃
Time above T_L	t_L	60	150	s
Peak temperature	Tp		260	℃
Time during which Tc is between (T_P-5) and T_P	t_p		30	s
Ramp-down rate(T_P to T_L)			6	℃/s

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
DIP-6L/ DIP-6L(M)	Tube(500mm)	65 pcs/tube	25 tubes /box	12 boxes /ctn	190*670mm	520*105*50mm	545*372*235mm	Straight insert type material tube
SMD-6L/ SMD-6L(SS)	Reel(ϕ330mm)	1000 pcs/reel	2 reels /box	5 boxes /ctn	380*420mm	350*340*60mm	365*330*370mm	Leave 25 Spaces at the beginning and 50 Spaces at the end

■Summary table

■ DIP-6L/DIP-6L(M) (Tube)

Qty/ tube ： 65 pcs. Qty/box： 1625 pcs.

Qty/ctn ： 19500 pcs.

Schematic： (unit:mm)

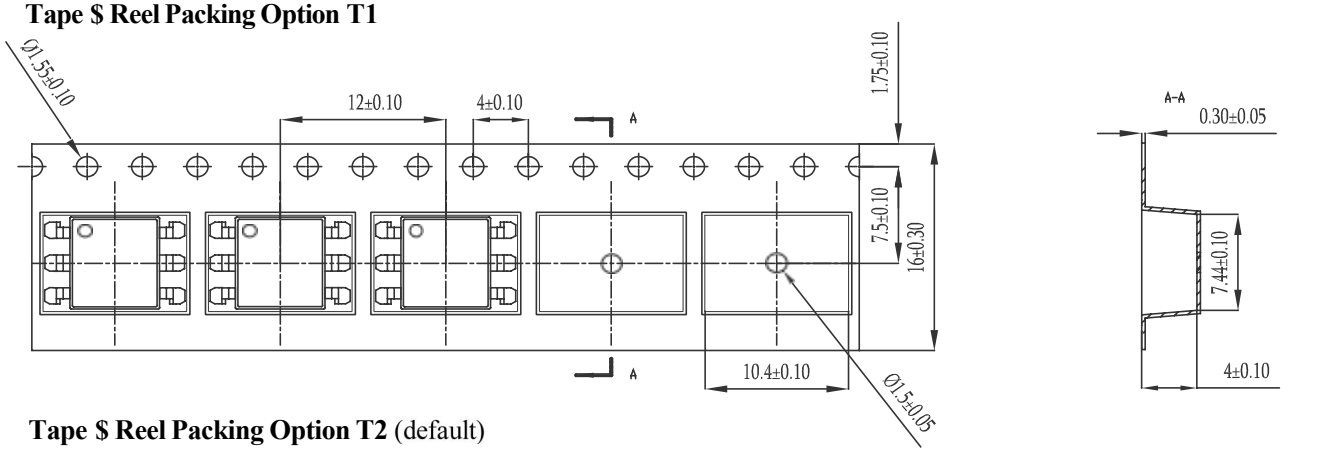
■SMD-6L/ SMD-6L(SS) （Reel）

Qty/reel： 1000 pcs. Qty/box： 2000 pcs.

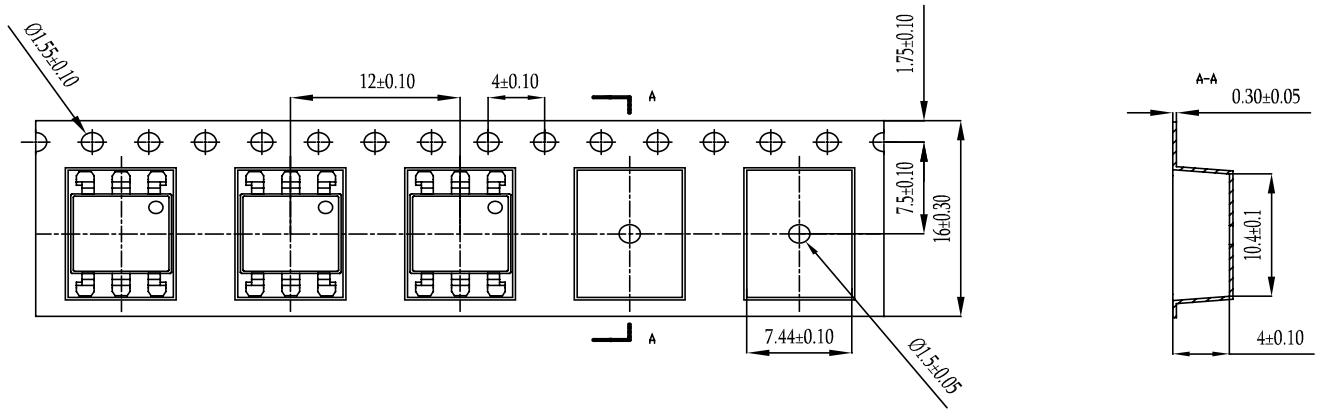
Qty/ctn ： 10000 pcs.

Schematic： (unit:mm)

Tape $ Reel Packing Option T1



Tape $ Reel Packing Option T2 (default)



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