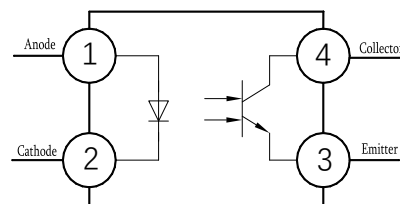


Features

- Current transfer ratio
(CTR: 50~600% at $I_F = 5\text{mA}$, $V_{CE} = 5\text{V}$)
- High isolation voltage between input and output (Viso = 5000V rms)
- Collector - emitter breakdown voltage $BV_{CEO} \geq 350\text{V}$
- Operating Temperature: $-55^\circ\text{C} \sim 100^\circ\text{C}$

HF

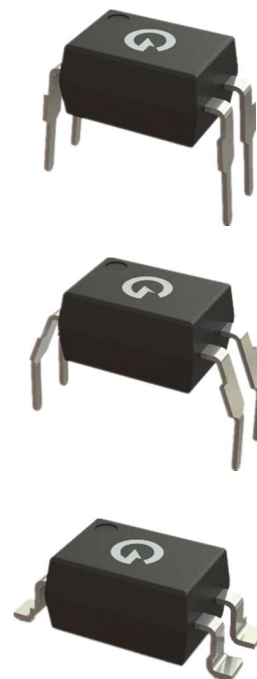


Applications

- Switching power supplies, smart meters
- Industrial Controls, measuring instruments
- Office equipment, such as photocopiers
- Household appliances, such as air conditioners, fans, and water heaters

Mechanical Data

- Case: DIP-4L, DIP-4L(M), SMD-4L
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



Ordering Information

BL 851 (M) (G) - (U) (N) (Y)

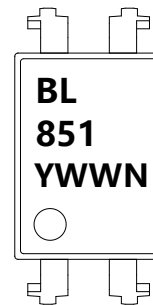
① ② ③ ④ ⑤ ⑥ ⑦

- ① Brand(BL)
- ② Product series(851)
- ③ Package type(DIP-4L:None, DIP-4L(M):M,SMD-4L: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
BL851	DIP-4L	100 pcs / Tube	BL851
BL851M	DIP-4L(M)	100 pcs / Tube	BL851
BL851S	SMD-4L	2000 pcs / Tape & Reel	BL851

Marking Information

- "BL" denotes brand
- "851" 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
	Reverse Voltage	V _R	6	V
	Power Dissipation	P _D	100	mW
	Power Dissipation Rating reduction factor*1	P _{DD}	2.9	mW/°C
Output	Collector Power Dissipation	P _C	150	mW
	Collector Current	I _C	50	mA
	Collector-Emitter Voltage	V _{CEO}	350	V
	Emitter-Collector Voltage	V _{ECO}	7	V

Thermal Characteristics

Parameter	Symbol	Value	Unit
Total Power Dissipation	P_{TOT}	200	mW
Isolation Voltage ^{*2}	V_{ISO}	5000	V _{rms}
Operating Temperature	T_{OPR}	-55 ~ +100	°C
Storage Temperature Range	T_{STG}	-55 ~ +125	°C
Soldering Temperature ^{*3}	T_{SOL}	260	°C

Notes:

1. $T_a \geq 100^\circ\text{C}$
2. 40 to 60% RH, AC for 1 minute
3. For 10 seconds

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

Parameter		Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	V_F	$I_F = 10\text{mA}$	-	1.2	1.4	V
	Reverse Current	I_R	$V_R = 5\text{V}$	-	-	10	μA
	Input Capacitance	C_{in}	$V_R = 0\text{V}$, $f = 1\text{kHz}$	-	30	250	pF
Output	Collector-Emitter Dark Current	I_{CEO}	$V_{CE} = 200\text{V}$, $I_F = 0$	-	-	100	nA
	Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C = 0.1\text{mA}$, $I_F = 0$	350	-	-	V
	Emitter-Collector Breakdown Voltage	BV_{ECO}	$I_C = 0.1\text{mA}$, $I_F = 0$	7	-	-	V
Transfer Characteristics	Current Transfer Ratio	CTR	$I_F = 5\text{mA}$, $V_{CE} = 5\text{V}$	50	-	600	%
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F = 20\text{mA}$, $I_C = 1\text{mA}$	-	-	0.4	V
	Isolation Resistance	R_{IO}	$V_{IO} = 500\text{Vdc}$ 40~60% R.H.	1×10^{11}	-	-	Ω
	Floating Capacitance	C_{IO}	$V_{IO} = 0$, $f = 1\text{MHz}$	-	0.6	-	pF
	Cut-off frequency	f_c	$V_{CE} = 5\text{V}$, $I_C = 2\text{mA}$ $R_L = 100\Omega$, -3dB	-	80	-	kHz
	Turn On Time	T_{on}	$V_{CE} = 2\text{V}$, $R_L = 100\Omega$ $I_C = 2\text{mA}$	-	4	18	μs
	Turn Off Time	T_{off}		-	5	18	

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

Fig.1 Forward Current vs. Forward Voltage

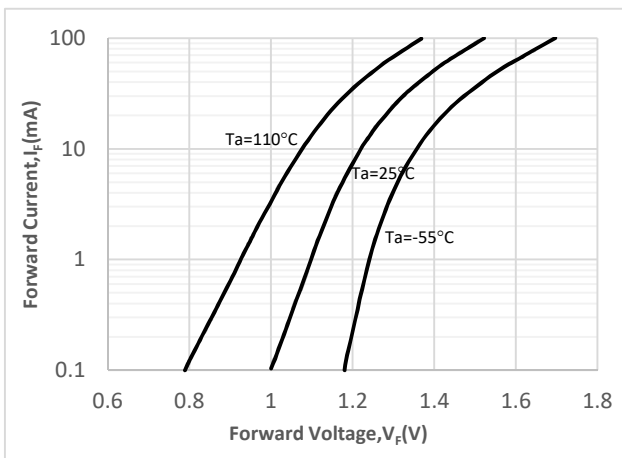


Fig.2 Relative Current Transfer Ratio vs. Forward Current

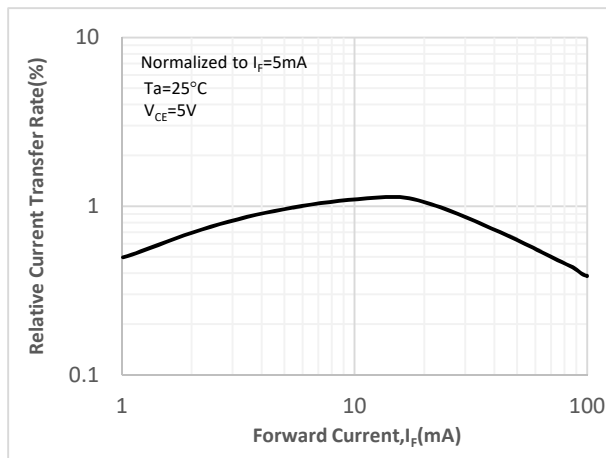


Fig.3 Collector Current vs. Collector-emitter Voltage

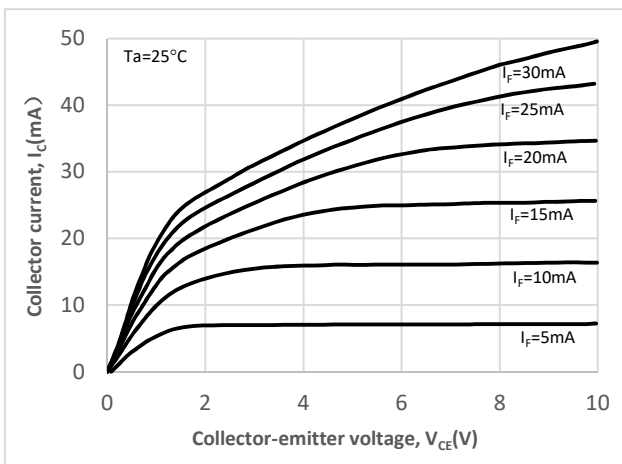


Fig.4 Relative Current Transfer Ratio vs. Ambient Temperature

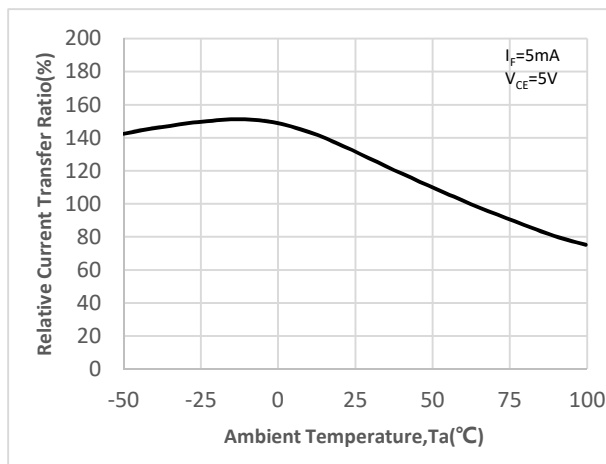


Fig.5 Collector-emitter Saturation Voltage vs. Ambient Temperature

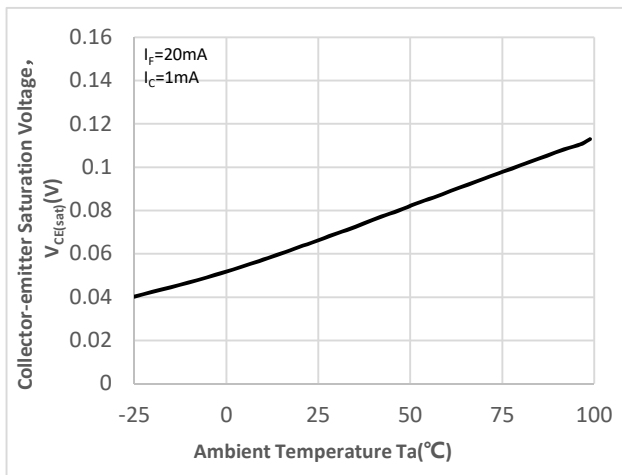


Fig.6 Collector Dark Current vs. Ambient Temperature

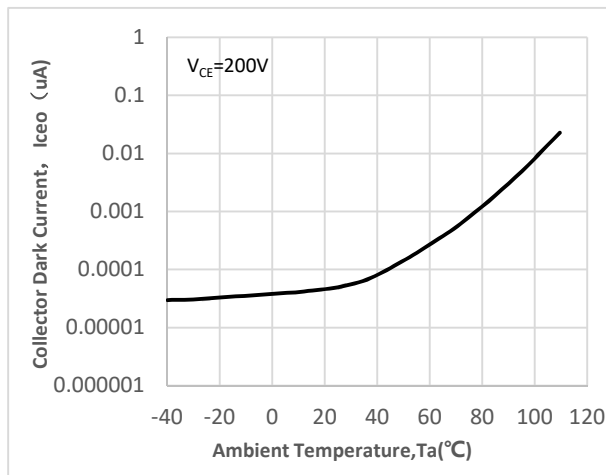


Fig.7 Response Time vs. Load Resistance

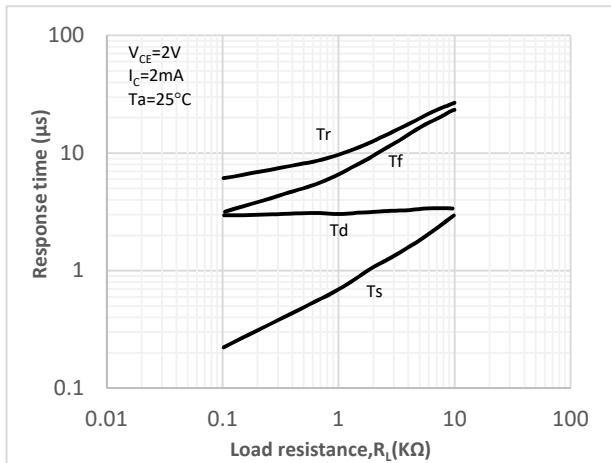


Fig.8 Collector-emitter Saturation Voltage vs. Forward Current

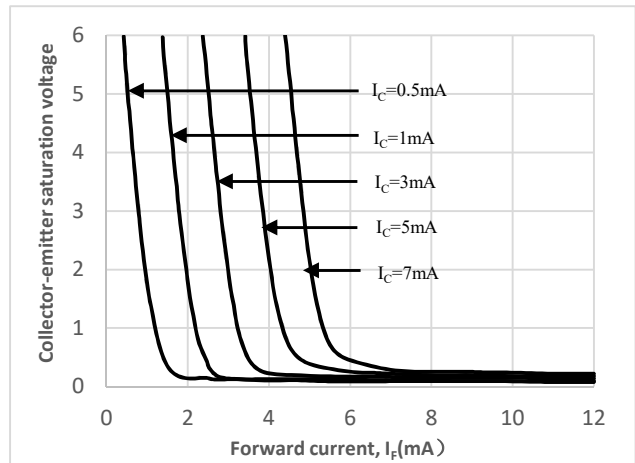
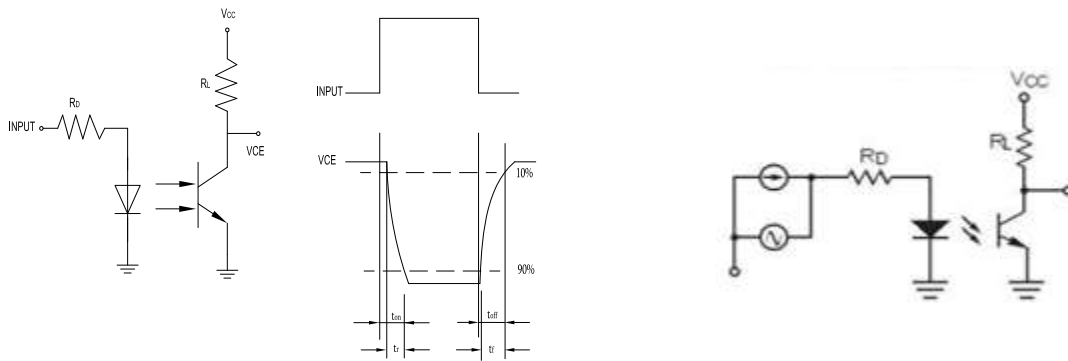
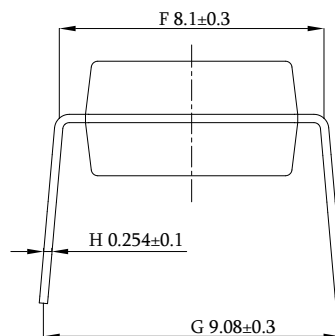
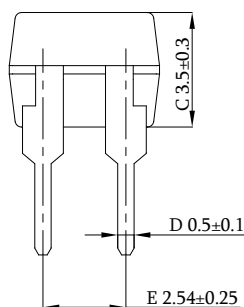
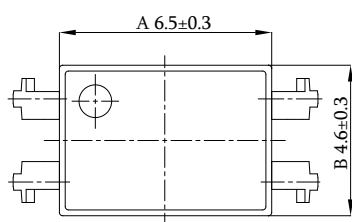


Fig.12 Switching Time Test Circuit & Waveforms

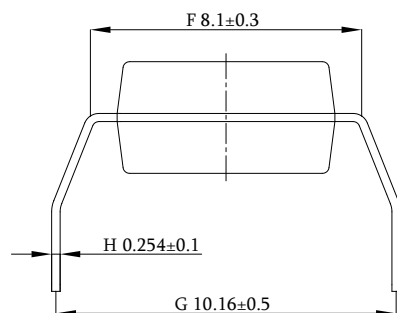
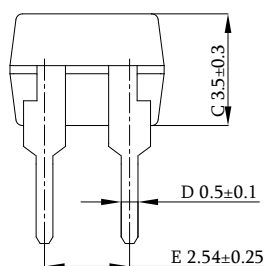
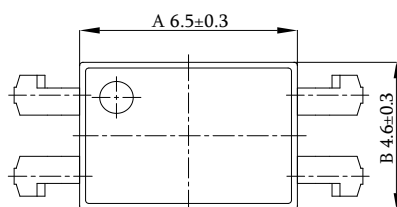


Package Outline Dimensions (unit: mm)

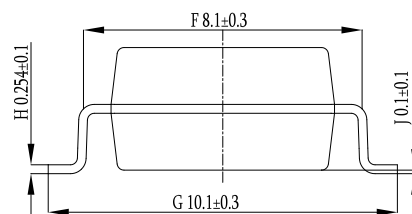
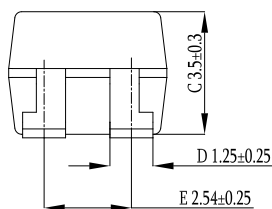
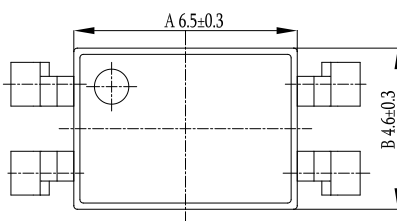
DIP-4L



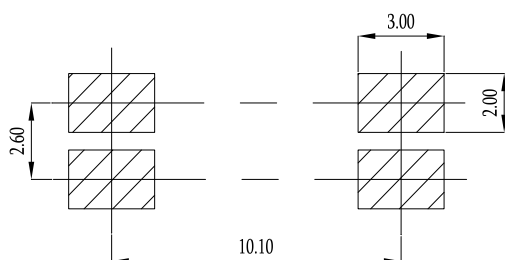
DIP-4L (M)



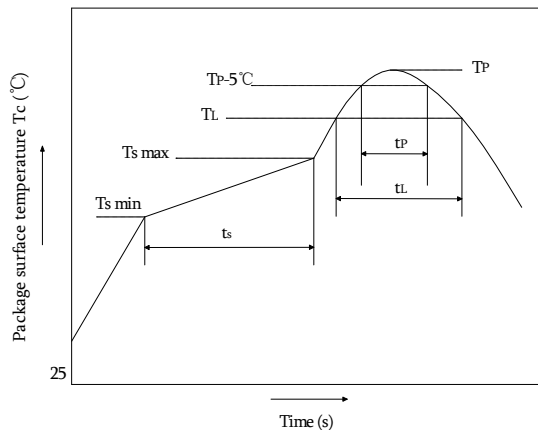
SMD-4L



SOLDERING FOOTPRINT (unit: mm)



Reflow soldering

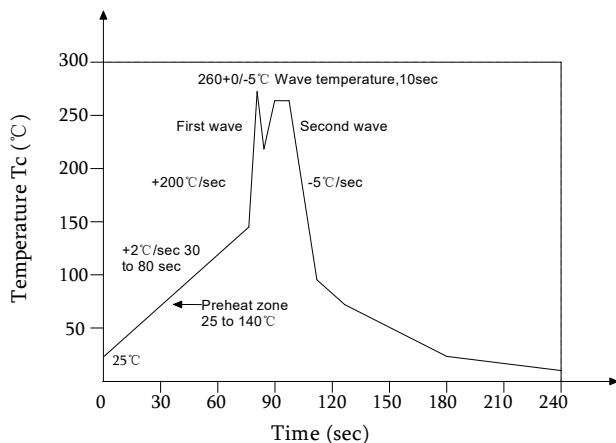


	Symbol	Min	Max	Unit
Preheat temperature	Ts	150	200	°C
Preheat time	ts	60	120	s
Ramp-up rate(T _L to T _P)			3	°C/s
Liquidus temperature	T _L	217		°C
Time above T _L	t _L	60	150	s
Peak temperature	T _P		260	°C
Time during which T _c is between (T _P -5) and T _P	t _p		30	s
Ramp-down rate(T _P to T _L)			6	°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

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

Pcaking

Package Type	Packing Form	Quantity per Tube & Reel	Quantity per Box	Quantity per Carton	Antistatic Bag Specification	Box Specification	Carton Specification	Note
DIP-4L	Tube(500mm)	100 pcs/tube	25 tubes /box	12 boxes /ctn	190*670mm	520*105*50mm	545*372*235mm	Straight insert type material tube
DIP-4L(M)	Tube(500mm)	100 pcs/tube	25 tubes /box	12 boxes /ctn	190*670mm	520*105*50mm	545*372*235mm	Seagull foot (M foot) tube
SMD-4L	Reel($\phi 330$ mm)	2000 pcs/reel	2 reels /box	5 boxes /ctn	380*420mm	350*340*60mm	365*330*370mm	Guard band 200mm /min.

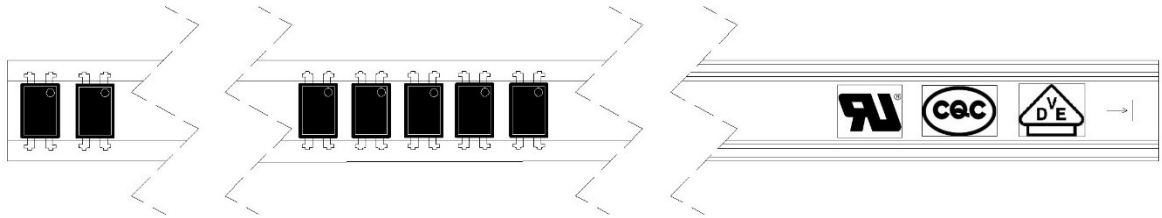
■ Summary table

■ DIP-4L/ DIP-4L(M) (Tube)

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

Qty/ctn : 30000 pcs.

Schematic: (unit:mm)

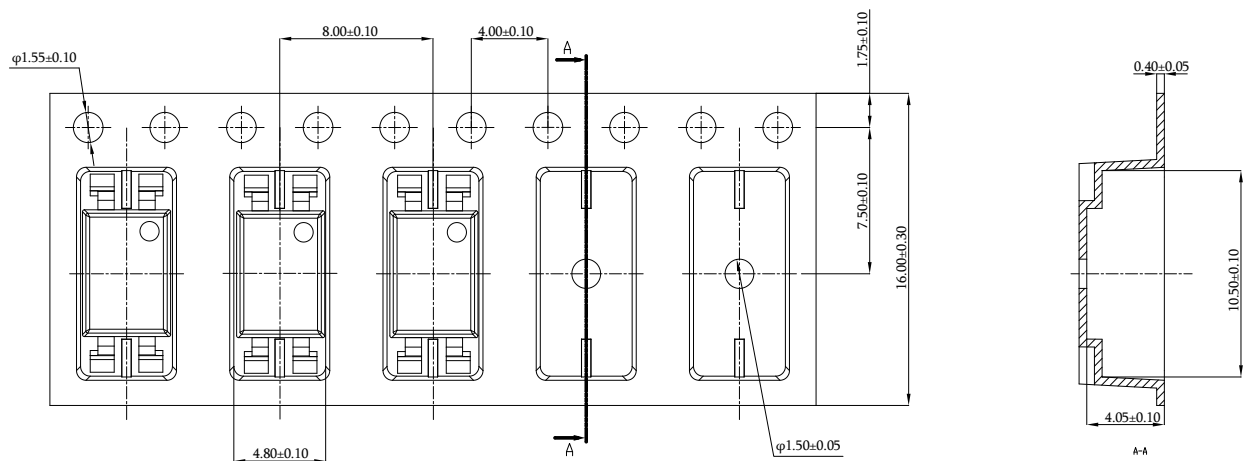


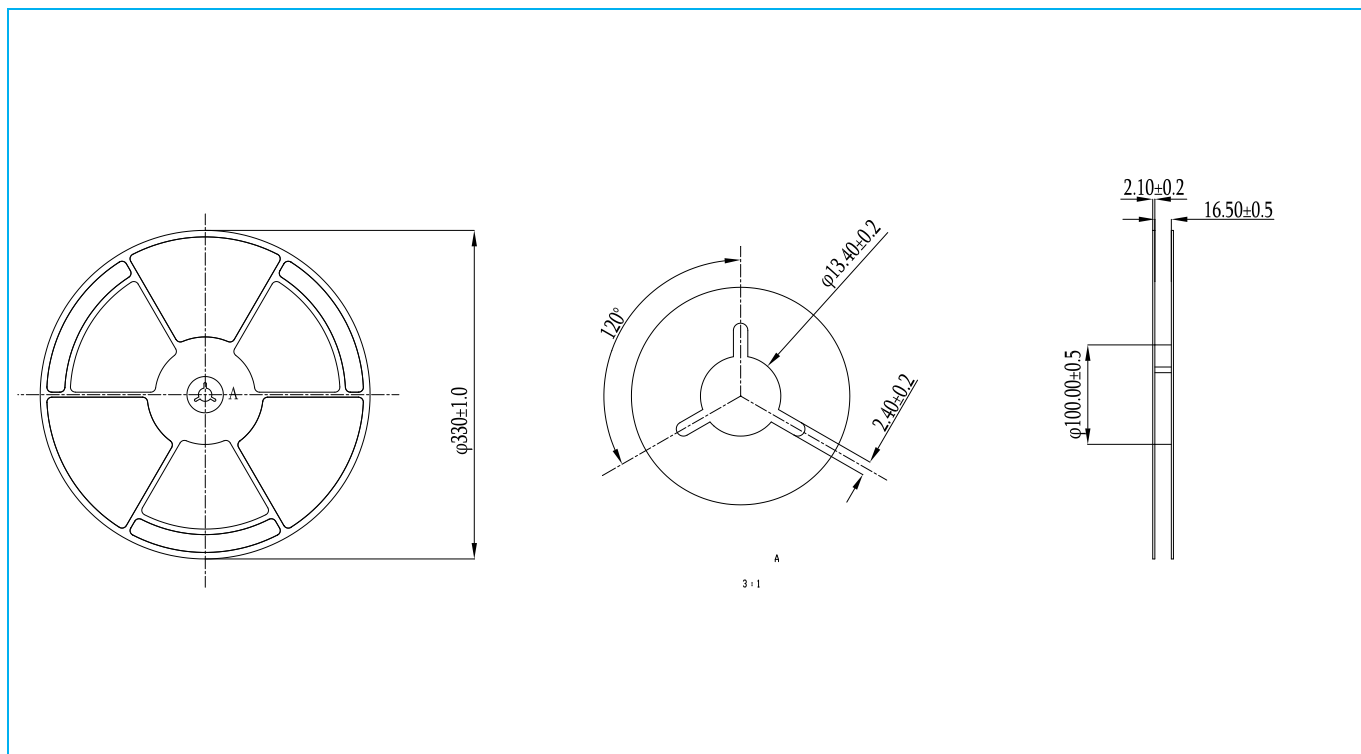
■ SMD-4L (Reel)

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

Qty/ctn : 20000 pcs.

Schematic: (unit:mm)





IMPORTANT NOTICE

Galaxy Microelectronics (GME) reserves the right to make changes without further notice to any product herein to make corrections, modifications, improvements, or other changes. GME does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others.