

Features

HF

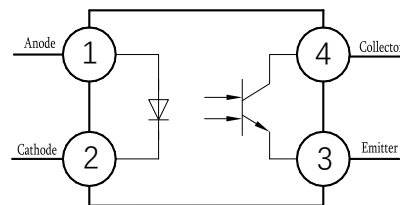
- Current transfer ratio
(CTR: 50~600% at $I_F = 5\text{mA}$, $V_{CE} = 5\text{V}$)
(CTR: 63~320% at $I_F = 10\text{mA}$, $V_{CE} = 5\text{V}$)
- High isolation voltage between input and output ($V_{iso} = 5000\text{V rms}$)
- Collector - emitter breakdown voltage $BV_{CEO} \geq 80\text{V}$
- Operating Temperature: $-55^\circ\text{C} \sim 110^\circ\text{C}$
- VDE :40052527
- UL : E340048
- CQC : CQC21001320064

Applications

- Programmable controllers
- System appliances, measuring instruments
- Telecommunication equipments
- Home appliances, such as Fan Heaters, etc
- Signal transmission between circuits of different potentials and impedances

Mechanical Data

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



Ordering Information

BL 101 X (G)

① ② ③ ④

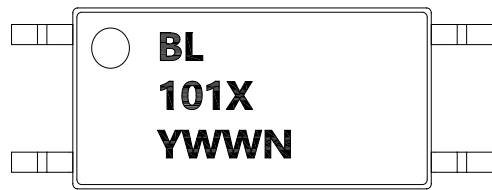
- ① Brand(BL)
- ② Product series(101)
- ③ CTR Bank(0、2、3、4、7、8、9)
- ④ Halogen option(None :Halogen free;G: Halogen free)

Part Number	Package	Shipping Quantity	Marking Code
BL101X ^{*1}	LSOP-4L	3000 pcs / Reel	BL101X ^{*1}
BL101XG ^{*1}	LSOP-4L	3000 pcs / Reel	BL101X ^{*1}

Notes 1: X denotes CTR Rank : 0, 2, 3, 4, 7, 8, 9.

Marking Information

- "BL" denotes brand
- "X" denotes CTR Rank : 0、2、3、4、7、8、9
- "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
	Peak Forward Current ^{*1}	I _{FM}	1.5	A
	Reverse Voltage	V _R	6	V
	Power Dissipation	P _D	100	mW
Output	Collector Power Dissipation	P _C	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	P_{TOT}	250	mW
Isolation Voltage ^{*2}	V_{ISO}	5000	V _{rms}
Operating Temperature	T_{OPR}	-55 ~ +110	°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
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	$I_F = 50\text{mA}$	-	1.3	1.5	V
	Reverse Current	I_R	$V_R = 6\text{V}$	-	-	10	μA
	Input Capacitance	C_{in}	$V_R = 0\text{V}, f = 1\text{kHz}$	-	50	-	pF
Output	Collector-Emitter Dark Current	I_{CEO}	$V_{CE} = 20\text{V}, I_F = 0$	-	-	100	nA
	Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C = 0.1\text{mA}, I_F = 0$	80	-	-	V
	Emitter-Collector Breakdown Voltage	BV_{ECO}	$I_E = 0.1\text{mA}, I_F = 0$	7	-	-	V
Transfer Characteristics	Current Transfer Ratio	CTR	$I_F = 5\text{mA}, V_{CE} = 5\text{V}$	50	-	600	%
			$I_F = 10\text{mA}, V_{CE} = 5\text{V}$	63	-	320	%
			$I_F = 1\text{mA}, V_{CE} = 5\text{V}$	22	-	-	%
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F = 10\text{mA}, I_C = 1\text{mA}$	-	0.1	0.3	V
	Isolation Resistance	R_{IO}	$V_{IO} = 500\text{Vdc}$ 40~60% R.H.	1×10^{12}	-	-	Ω
	Floating Capacitance	C_{IO}	$V_{IO} = 0, f = 1\text{MHz}$	-	-	1.0	pF
	Turn On Time	T_{on}	$V_{CE} = 5\text{V}$ $I_C = 5\text{mA}$ $RL = 100\Omega$	1	4	19	μs
	Turn Off Time	T_{off}		1	3	19	
	Rise Time	t_r		-	-	18	
	Fall Time	T_f		-	-	18	

Rank Table of Current Transfer Ratio CTR

Rank Mark	Min. (%)	Max. (%)	Condition
BL1010	50	600	$I_F=5\text{mA}, V_{CE}=5\text{V}$
BL1017	80	160	
BL1018	130	260	
BL1019	200	400	
BL1012	63	125	$I_F=10\text{mA}, V_{CE}=5\text{V}$
BL1013	100	200	
BL1014	160	320	
BL1012	22	-	$I_F=1\text{mA}, V_{CE}=5\text{V}$
BL1013	34	-	
BL1014	56	-	

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

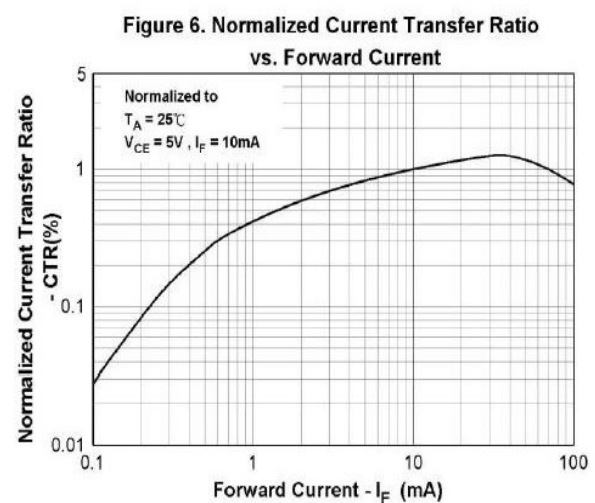
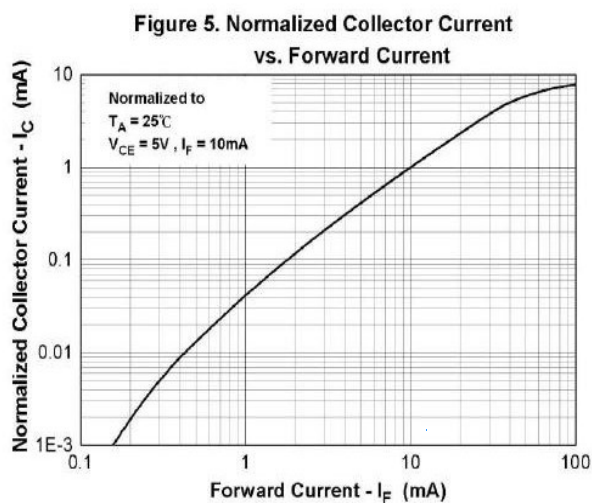
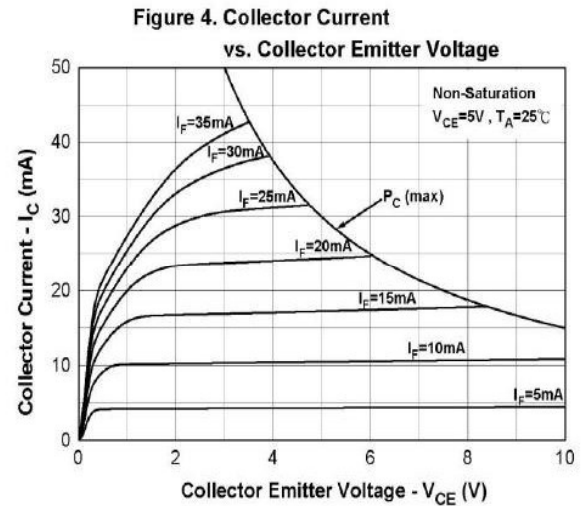
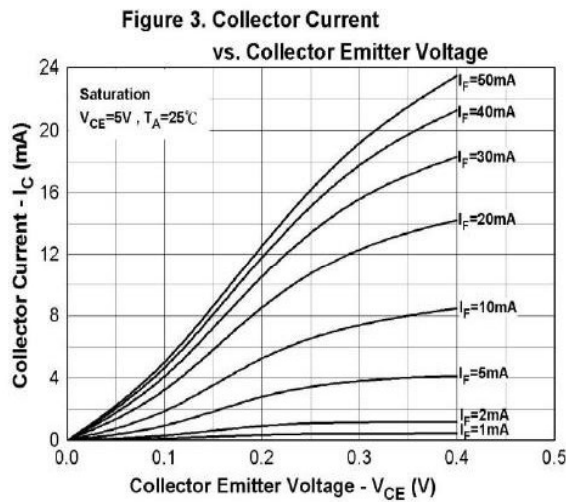
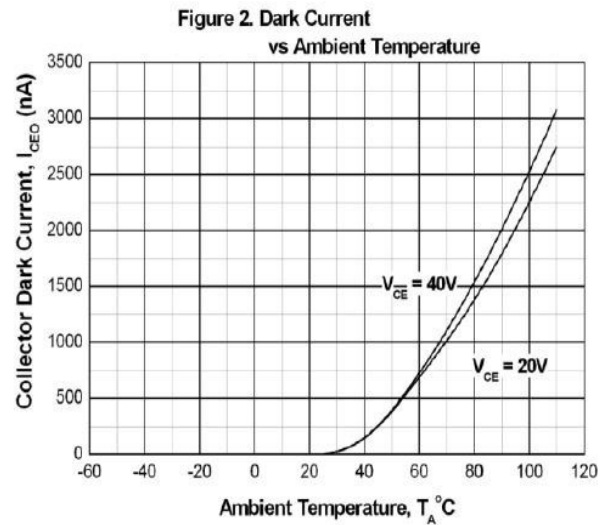
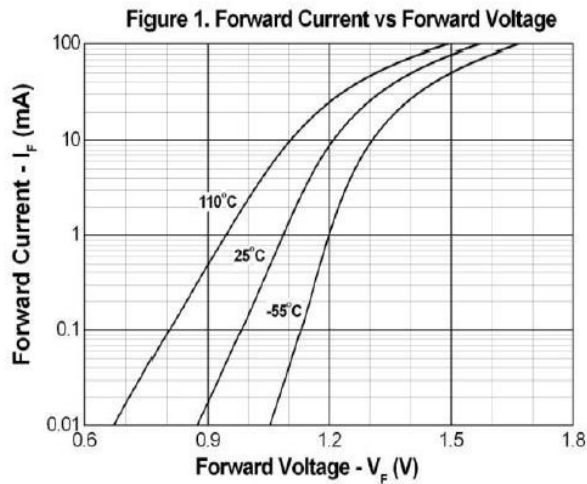


Figure 7. Normalized Current Transfer Ratio vs. Ambient Temperature

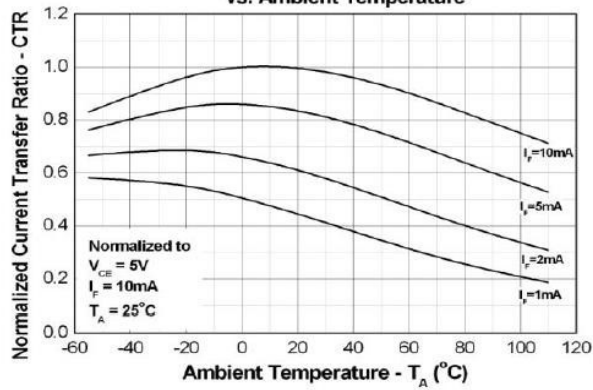


Figure 8. Normalized Current Transfer Ratio vs. Ambient Temperature

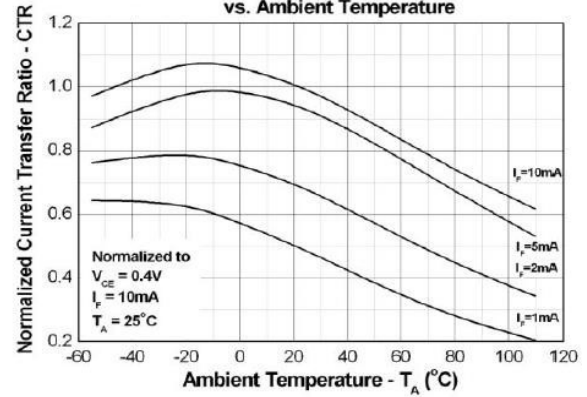


Figure 9. Turn on/off Time vs. Collector Current

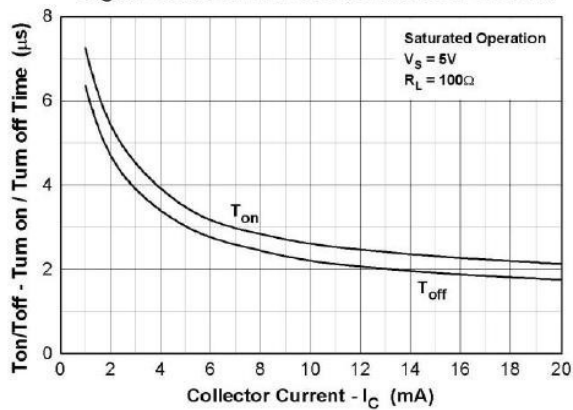
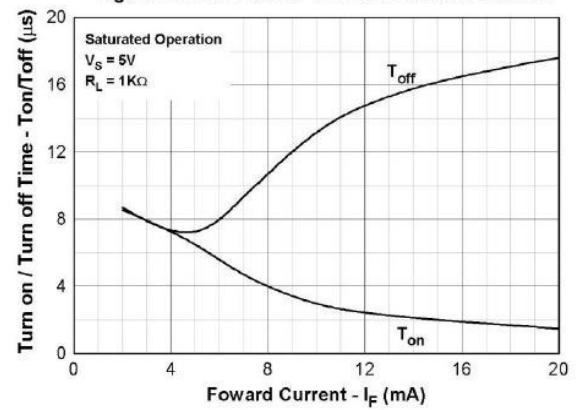
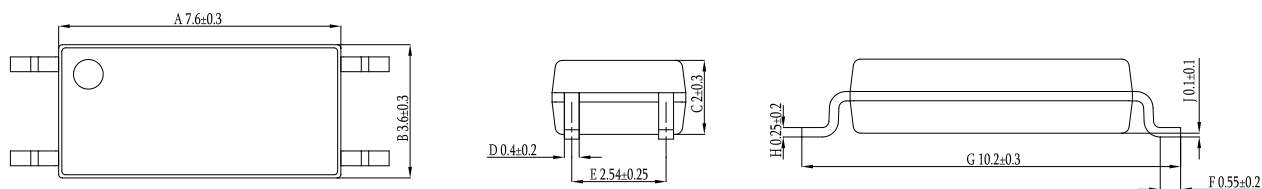


Figure 10. Turn on/off Time vs. Forward Current

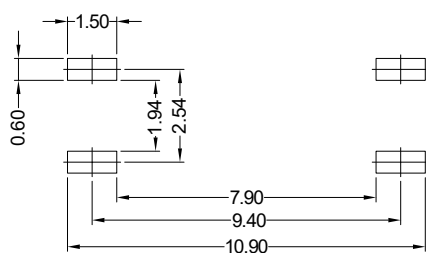


Package Outline Dimensions (unit: mm)

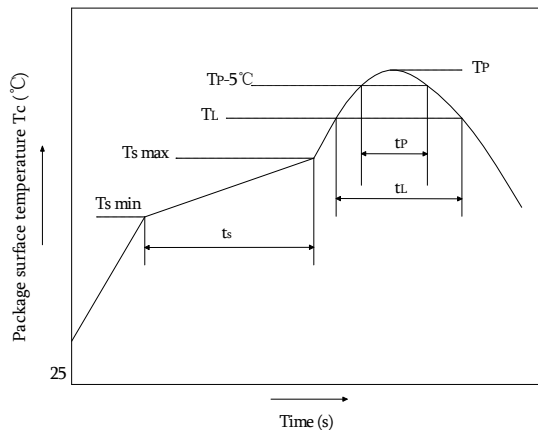
LSOP-4L



SOLDERING FOOTPRINT (unit: mm)



Reflow soldering

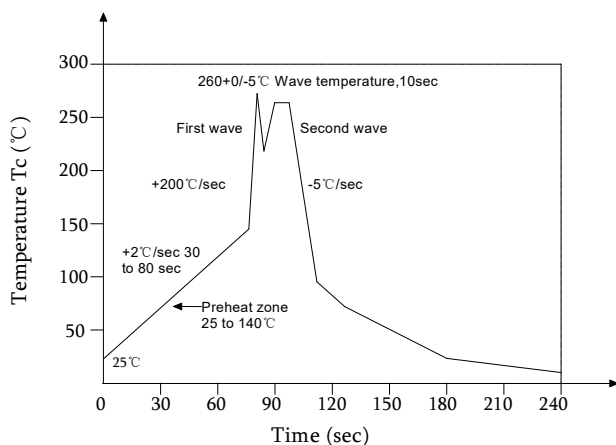


	Symbol	Min	Max	Unit
Preheat temperature	Ts	150	200	°C
Preheat time	ts	60	120	s
Ramp-up rate(T _L to T _P)			3	°C/s
Liquidus temperature	T _L	217		°C
Time above T _L	t _L	60	150	s
Peak temperature	T _P		260	°C
Time during which T _c is between (T _P -5) and T _P	t _p		30	s
Ramp-down rate(T _P to T _L)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

Packing

Package Type	Packing Form	Quantity per Tube & Reel	Quantity per Box	Quantity per Carton	Antistatic Bag Specification	Box Specification	Carton Specification	Note
LSOP-4L	Reel($\phi 330$ mm)	3000 pcs/reel	2 reels /box	5 boxes /ctn	380*420mm	350*340*60mm	365*330*370mm	Guard band 200mm/min.

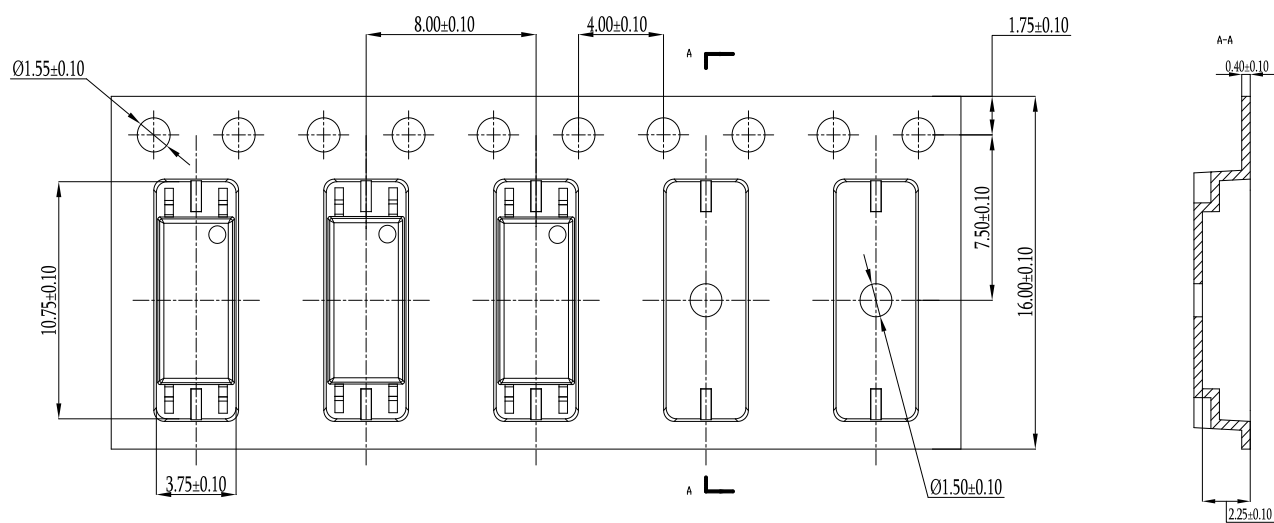
■ Summary table

■ LSOP-4L (Reel)

Qty/reel: 3000 pcs. Qty/box: 6000 pcs.

Qty/ctn : 30000 pcs.

Schematic: (unit:mm)



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