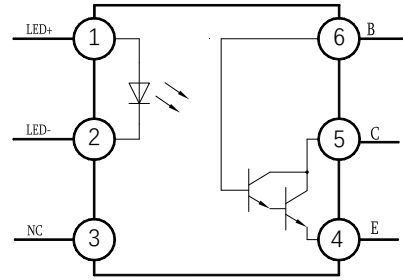


Features

- Current transfer ratio
(CTR: $\geq 500\%$ at $I_F = 10\text{mA}$, $V_{CE} = 10\text{V}$)
- High isolation voltage between input and output (Viso = 5000V rms)
- Operating Temperature: $-55^{\circ}\text{C} \sim 100^{\circ}\text{C}$

HF

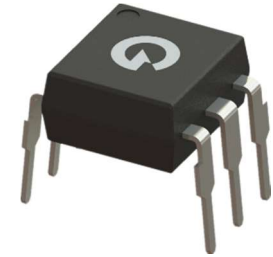


Applications

- Switching power supply
- Programmable controller
- Household appliances
- Industrial control, measuring

Mechanical Data

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



Ordering Information

BL 4N33 (M) (G) - (U) (N) (Y)

- ① ② ③ ④ ⑤ ⑥ ⑦
- ① Brand(BL)
② Product series(4N33)
③ Package type(DIP-6L:None, SMD-6L: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
BL4N33	DIP-6L	65 pcs / Tube	BL4N33
BL4N33S	SMD-6L	1000 pcs / Tape & Reel	BL4N33

Marking Information

- "BL" denotes brand
- "4N33" 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	3	V
	Power Dissipation	P _D	100	mW
Output	Collector Power Dissipation	P _C	150	mW
	Collected Current	I _C	100	mA
	Collector-Base Voltage	V _{CBO}	50	V
	Emitter-Base Voltage	V _{EBO}	8	V
	Collector-Emitter Voltage	V _{CEO}	30	V
	Eemitter-Collector Voltage	V _{ECO}	5	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 ~ +100	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C
Soldering Temperature ^{*3}	T_{SOL}	260	°C

Notes:

1. Pulse width $\leq 1\mu s$, 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 (@ $T_A = 25^\circ C$ 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}	$V_{CE}=10V$	-	-	100	nA
	Collector-Base Breakdown Voltage	BV_{CBO}	$I_B=0.1mA, I_F=0$	50	-	-	V
	Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C=0.1mA, I_F=0$	40	-	-	V
	Emitter-Collector Breakdown Voltage	BV_{ECO}	$I_E=0.1mA, I_F=0$	7	-	-	V
Transfer Characteristics	Current Transfer Ratio	CTR	$I_F=10mA, V_{CE}=10V$	500	-	-	%
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F=8mA, I_C=2mA$	-	-	1	V
	Isolation Resistance	R_{ISO}	DC500V, 40~60%R.H.	-	10^{11}	-	Ω
	Isolation Capacitance	C_f	$V=0, f=1MHz$	-	0.8	-	pF
	Turn On Time	T_{on}	$V_{CE}=10V$	-	-	5	μs
	Turn Off Time	T_{off}	$I_C=50mA, R_L=100\Omega$	-	-	100	μs

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

Fig.1 Forward Current vs. Forward Voltage

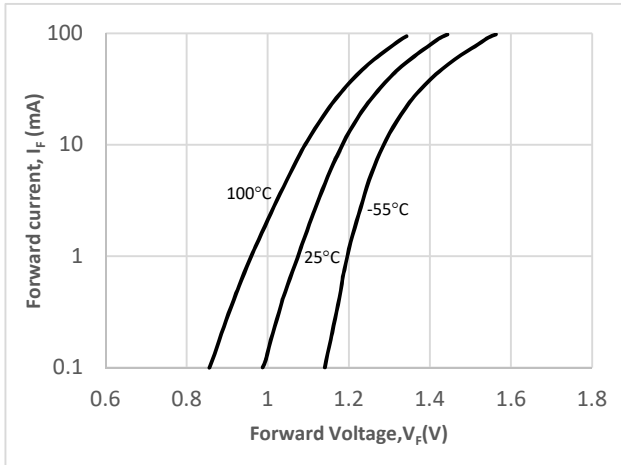


Fig.2 Turn on time vs. Forward Voltage

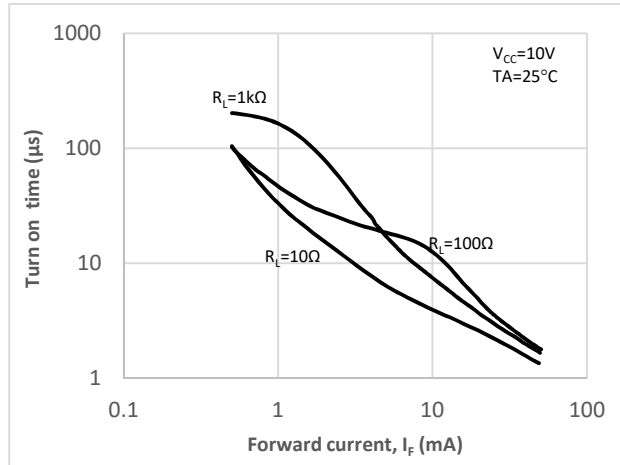


Fig.3 Current Transfer Ratio vs. Forward Current

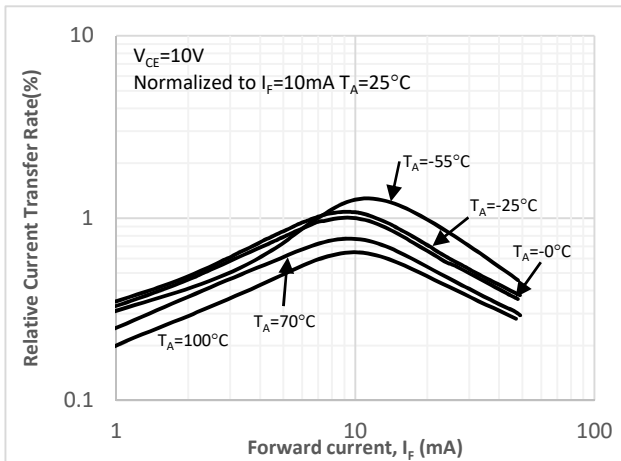


Fig.4 Turn off time vs. Forward Voltage

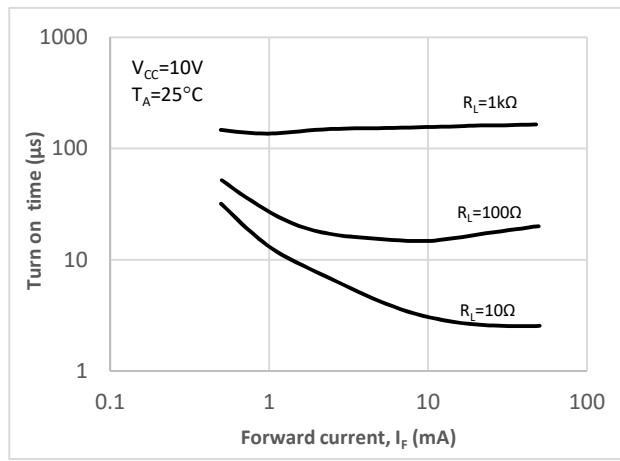


Fig.5 Collector Dark Current vs. Ambient Temperature

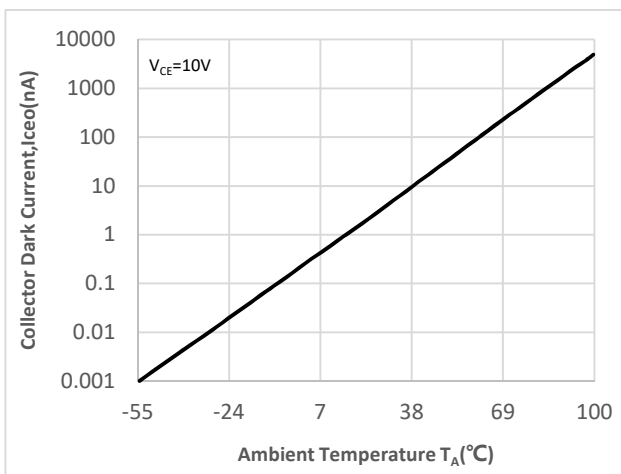


Fig.6 Relative Current Transfer Ratio vs. Ambient Temperature

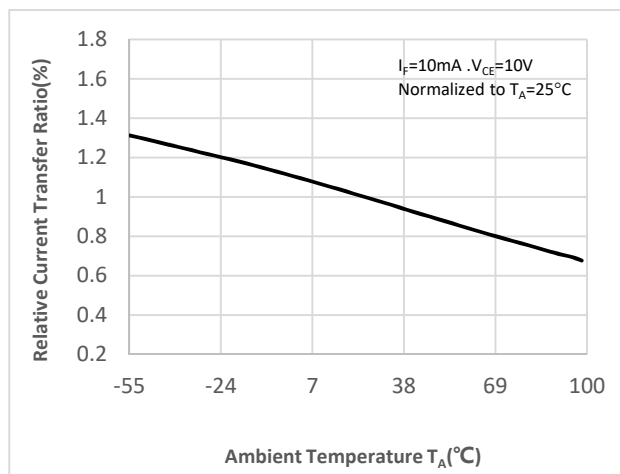
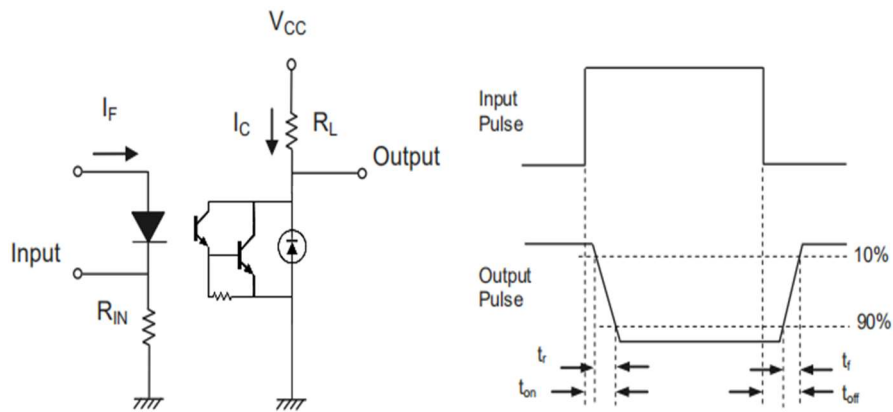
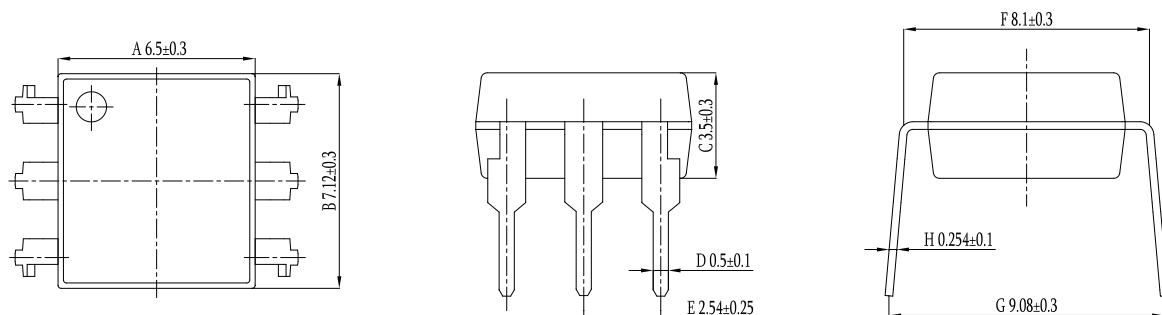


Fig.7 Test circuit diagram

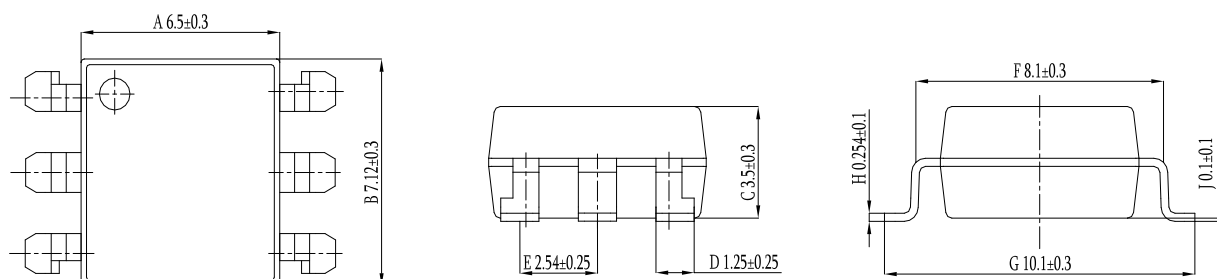


Package Outline Dimensions (unit: mm)

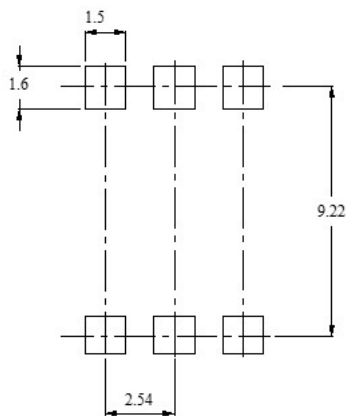
DIP-6L



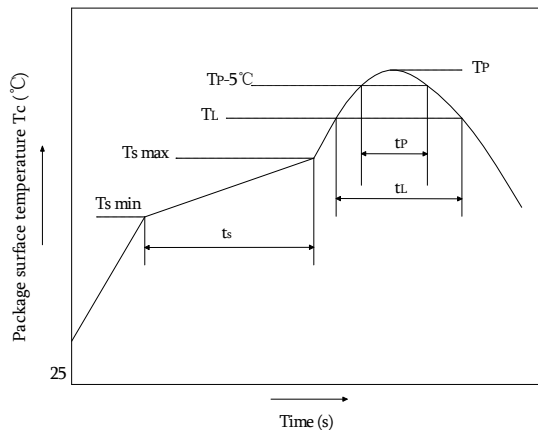
SMD-6L



SOLDERING FOOTPRINT (unit: mm)



Reflow soldering

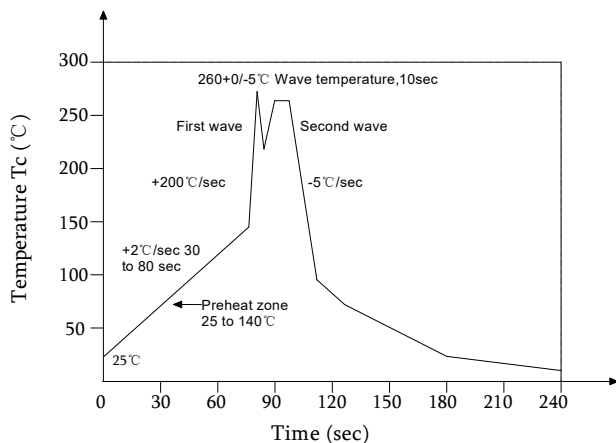


	Symbol	Min	Max	Unit
Preheat temperature	T_s	150	200	°C
Preheat time	t_s	60	120	s
Ramp-up rate(T_L to T_P)			3	°C/s
Liquidus temperature	T_L	217		°C
Time above T_L	t_L	60	150	s
Peak temperature	T_p		260	°C
Time during which T_c is between (T_P-5) and T_P	t_p		30	s
Ramp-down rate(T_P to T_L)			6	°C/s

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 T_s	~130°C
Preheat time (25°C to T_s)	>60s
Peak temperature T_p	260°C
Time within peak temperature t_p	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-6L	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	Reel(φ330mm)	1000 pcs/reel	2 reels /box	5 boxes /ctn	380*420mm	350*340*60mm	365*330*370mm	Guard band 200mm /min.

■ Summary table

■ DIP-6L (Tube)

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

Qty/ctn : 19500 pcs.

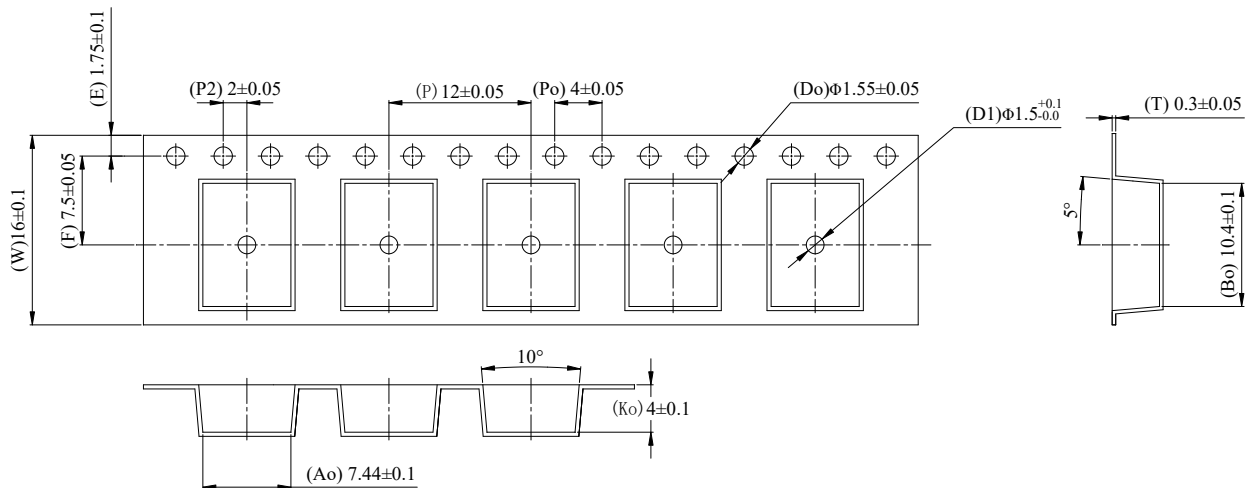
Schematic: (unit:mm)

■ SMD-6L (Reel)

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

Qty/ctn : 10000 pcs.

Schematic: (unit:mm)



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