

Features

- Current transfer ratio
($CTR \geq 1000\%$ at $I_F = 1\text{mA}$, $V_{CE} = 2\text{V}$)
- High isolation voltage between input and output ($V_{iso} = 3750\text{V rms}$)
- Operating Temperature: $-55^\circ\text{C} \sim 110^\circ\text{C}$

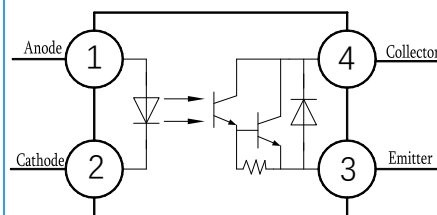
HF

Applications

- Switching power supply, intelligent meter
- Industrial control, measuring instruments
- Office equipment such as copiers
- Household appliances: such as air conditioners, fans, water heaters, etc.

Mechanical Data

- Case: SOP4
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



Ordering Information

BL 452 (M) (G) (X) - (U) (N) (Y)

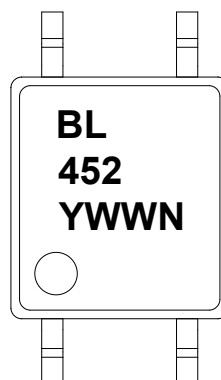
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

- ① Brand(BL)
- ② Product series(452)
- ③ Package type(None:SOP4)
- ④ Halogen option(None :Halogen free)
- ⑤ CTR Bank(None:≥1000)
- ⑥ Lead frame (None: Copper)
- ⑦ Customer option 1 (0-9 or A-Z or none)
- ⑧ Customer option 2 (0-9 or A-Z or none)

Part Number	Package	Shipping Quantity	Marking Code
BL452	SOP4	3000 pcs / Tape & Reel	BL452

Marking Information

- "BL" denotes brand
- "452" 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
	Peak Forward Current *1	I _{FM}	1	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	150	mA
	Collector-Emitter Voltage	V _{CEO}	350	V
	Emitter-Collector Voltage	V _{ECO}	0.1	V

Thermal Characteristics

Parameter	Symbol	Value	Unit
Total Power Dissipation	P_{TOT}	170	mW
Isolation Voltage ^{*2}	V_{ISO}	3750	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 $\leq 1\mu s$, Duty ratio: 0.001
2. 40 to 60% RH, AC for 1 minute
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	1.4	V
	Reverse Current	I_R	$V_R = 4V$	-	-	10	μA
	Input Capacitance	C_{in}	$V_R = 0V, f = 1kHz$	-	50	-	pF
Output	Collector-Emitter Dark Current	I_{CEO}	$V_{CE} = 200V$	-	-	100	nA
	Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C = 0.1mA, I_F = 0$	350	-	-	V
	Emitter-Collector Breakdown Voltage	BV_{ECO}	$I_E = 10\mu A, I_F = 0$	0.1	-	-	V
	Current Transfer Ratio	CTR	$I_F = 1mA, V_{CE} = 5V$	1000	-	-	%
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F = 20mA, I_C = 100mA$	-	1.2	1.5	V
Transfer Characteristics	Isolation Resistance	R_{ISO}	$V_{IO} = 500Vdc$ 40~60% R.H.	5×10^{10}	1×10^{11}	-	Ω
	Floating Capacitance	C_{IO}	$V_{IO} = 0, f = 1MHz$	-	0.6	-	pF
	Cut-off frequency	f_C	$V_{CE} = 2V, I_C = 2mA$ $R_L = 100\Omega, -3dB$	-	7	-	kHz
	Turn On Time	T_{on}	$V_{CE} = 2V, R_L = 100\Omega$ $I_C = 20mA$	-	80	250	μs
	Turn Off Time	T_{off}		-	10	100	

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

Fig.1 Collector-Emitter Saturation Voltage vs. Ambient Temperature

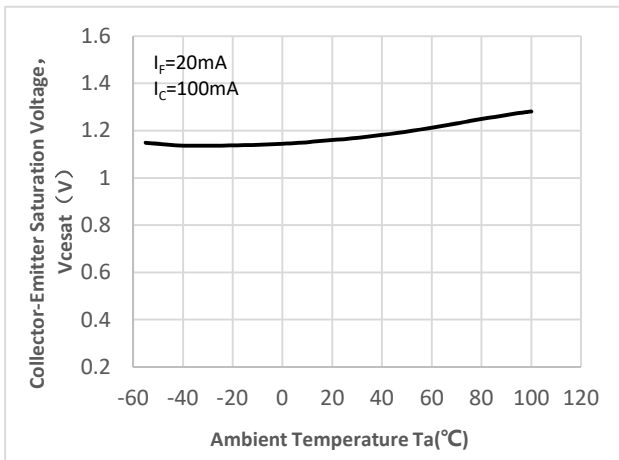


Fig.2 Forward Current vs. Forward Voltage

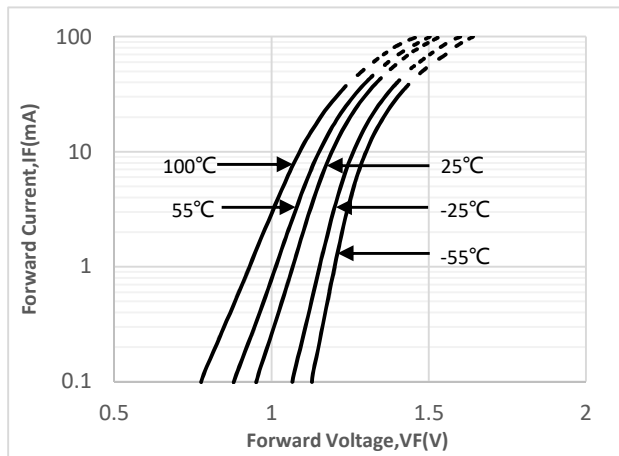


Fig.3 Current Transfer Ratio vs. Forward Current

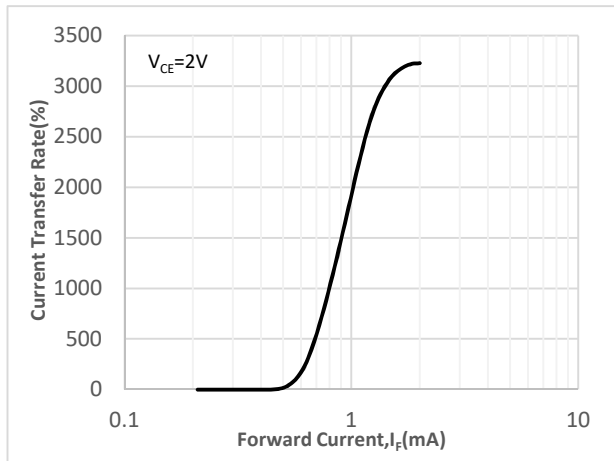


Fig.4 Relative Current Transfer Ratio vs. Ambient Temperature

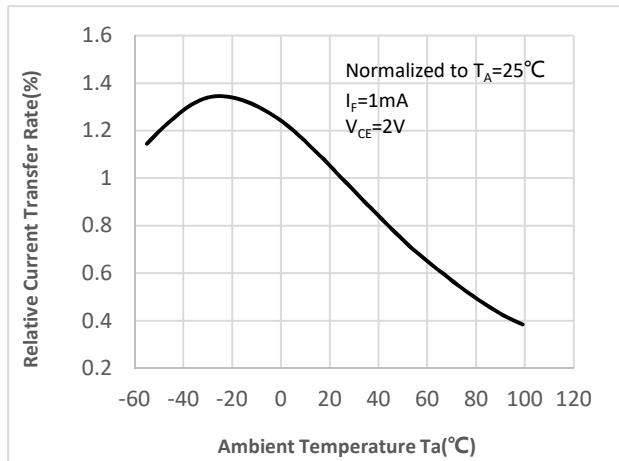


Fig.5 Collector-Emitter Dark Current vs. Ambient Temperature

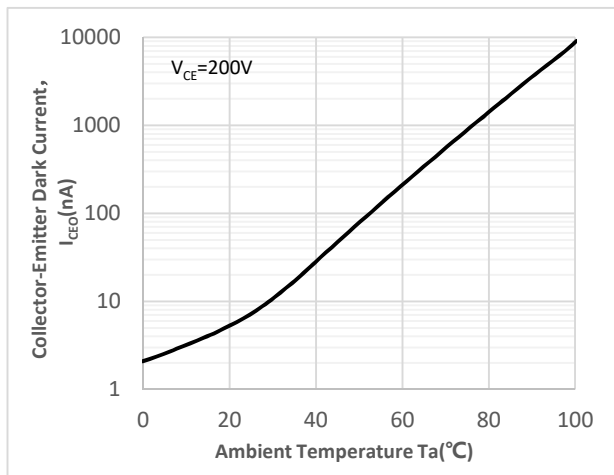


Fig.6 Collector Current vs. Collector-Emitter Voltage

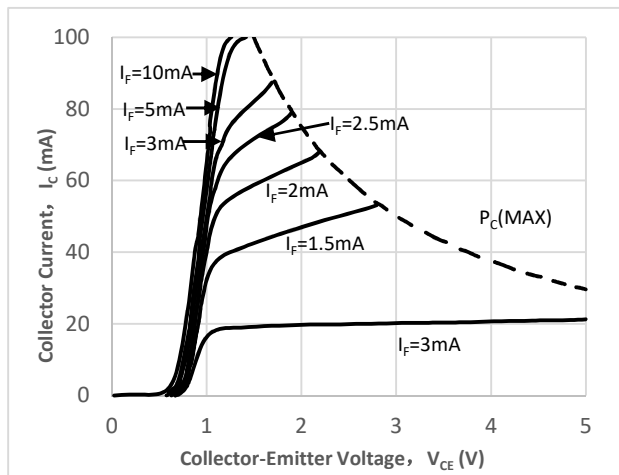


Fig.7 Response time vs. Load resistor

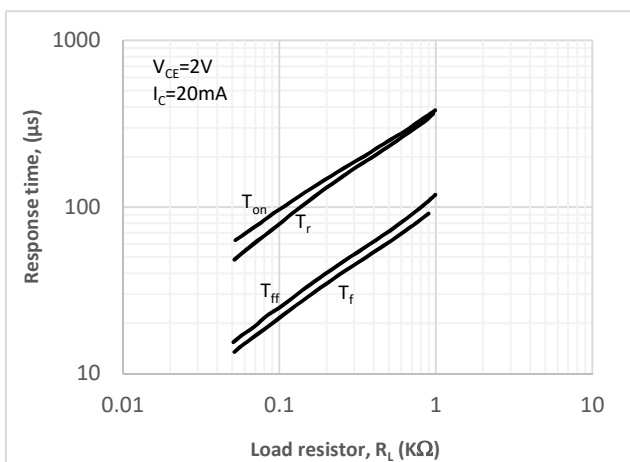


Fig.8 Forward Current vs. Collector-Emitter Saturation Voltage,

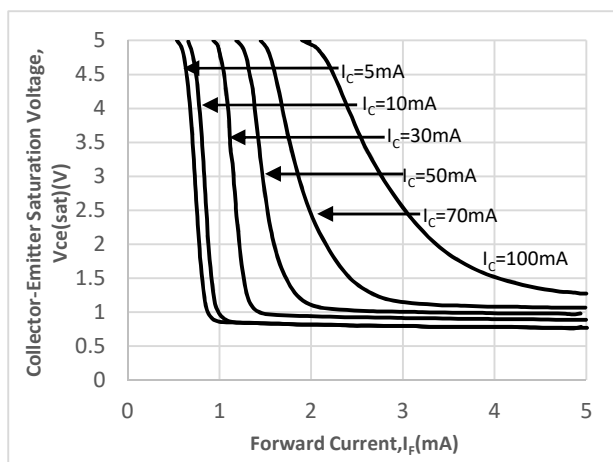


Fig.9 Frequency response

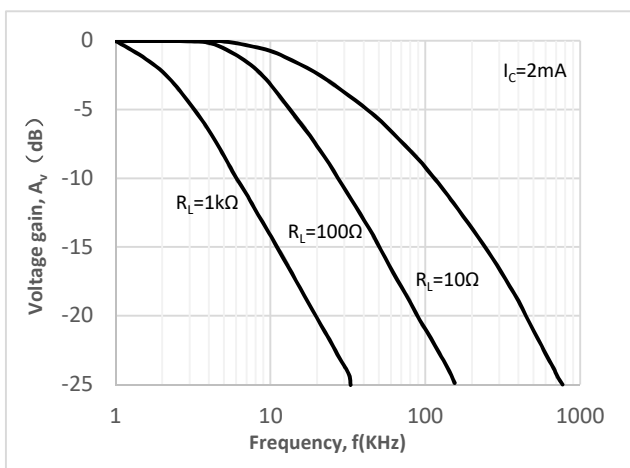
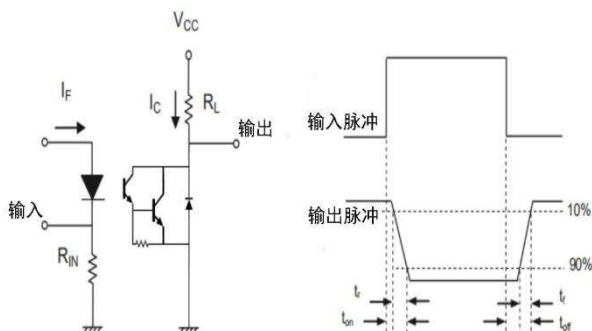
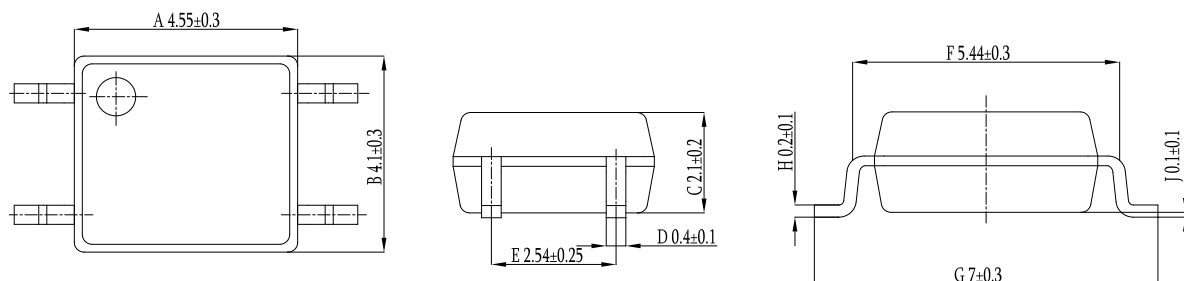


Fig.10 Switching Time Test Circuit & Waveforms

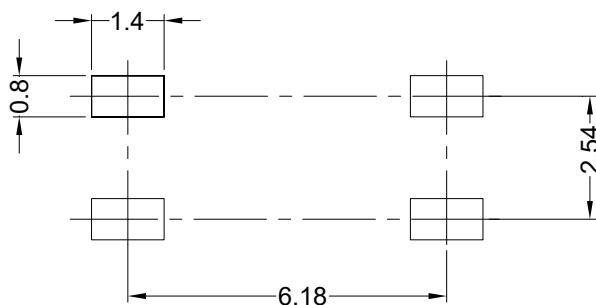


Package Outline Dimensions (unit: mm)

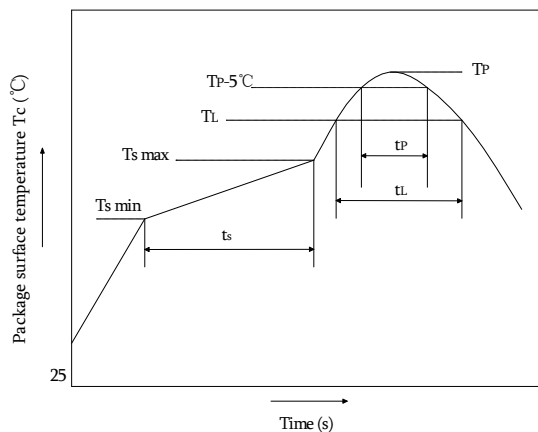
SOP4



SOLDERING FOOTPRINT (unit: mm)



Reflow soldering

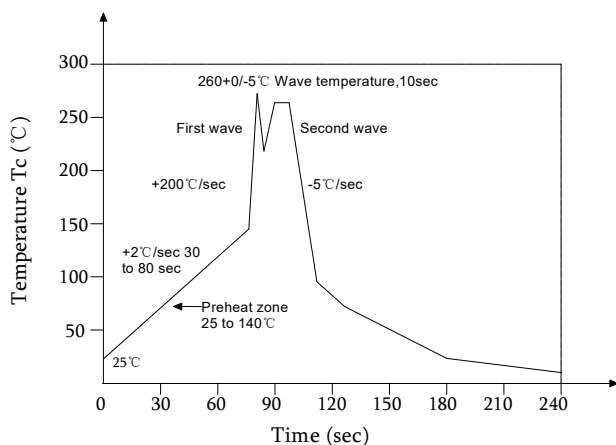


	Symbol	Min	Max	Unit
Preheat temperature	T_s	150	200	°C
Preheat time	t_s	60	120	s
Ramp-up rate(T_L to T_P)			3	°C/s
Liquidus temperature	T_L	217		°C
Time above T_L	t_L	60	150	s
Peak temperature	T_P		260	°C
Time during which T_c is between ($T_P - 5$) and T_P	t_p		30	s
Ramp-down rate(T_P to T_L)			6	°C/s

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
SOP4	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.

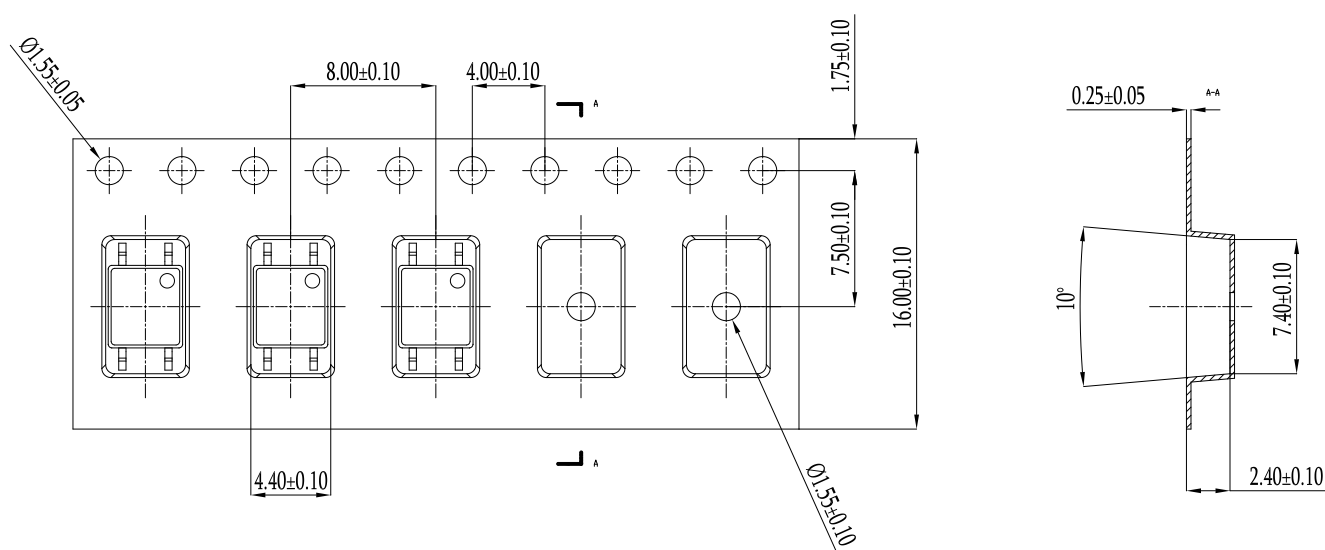
■ Summary table

■ SOP4 (Reel)

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

Qty/ctn : 30000 pcs.

Schematic: (unit:mm)



IMPORTANT NOTICE

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