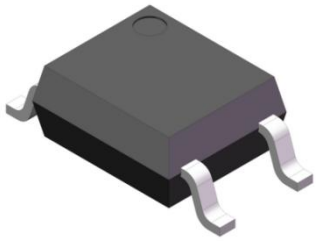
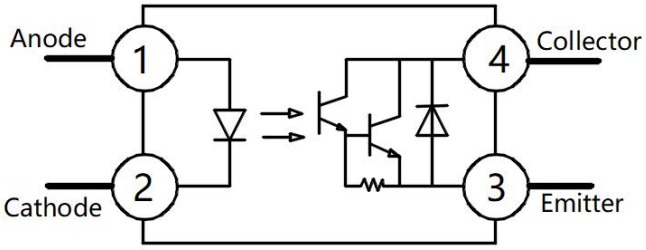
Product packaging logic diagram



SOP4



Pin Configuration

Features

- Current transfer ratio
  (CTR: ≧1000% at IF =1mA, VCE = 2V)
- High isolation voltage between input and output (Viso =3750Vrms)
- Operating Temperature: -55℃~110℃
- Environmentally friendly products, compliant with CQC, UL, and VDE requirements

Mechanical Data

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

Applications

- Drive industrial controllers and actuators， Ensure the stability of signal transmission.
- At switch-mode power supplies, regulated power supplies, and battery management systems, Achieve signal isolation and amplification, ensuring the stability of power output.
- Can directly drive high-power motors and provide precise control signals. Achieve precise control over speed and direction
- Home appliances For controlling high-power loads such as motors and relays,Provide reliable signal transmission and electrical isolation to ensure the safe operation.
- Ensuring signal clarity and stability in signal transmission circuits.




Ordering Information

XL	452	(M)	(G)	(X)	-	(U)	(N)	(Y)
①	②	③	④	⑤		⑥	⑦	⑧

① Brand(XL)

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
XL452	SOP4	3000pcs / Tape & Reel	XL452

Marking Information

- " XL" 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	Vrms
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°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 = 10μA, I_F = 0	0.1	-	-	V
Transfer Characteristics	Current Transfer Ratio	CTR	I_F = 1 mA, V_{CE} = 2V	1000	-	-	%
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_F = 20mA, I_C = 100mA	-	1.2	1.5	V
	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	VCE = 2V, IC = 2mA RL=100Ω, -3dB	-	7	-	kHz
	Turn On Time	T_{on}	V_{CE}=2V, RL= 100Ω I_C=20mA	-	80	250	μs
	Turn Off Time	T_{off}		-	10	100	

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

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

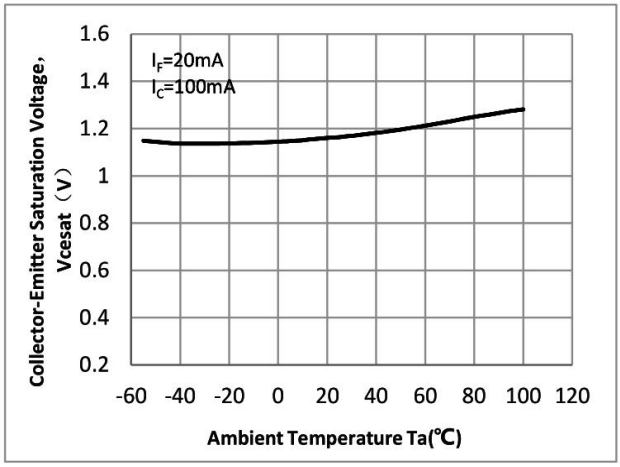


Fig.2 Forward Current vs. Forward Voltage

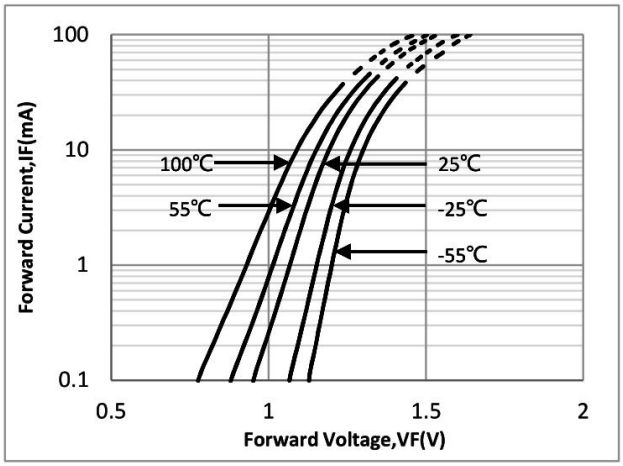


Fig.3 Current Transfer Ratio vs. Forward Current

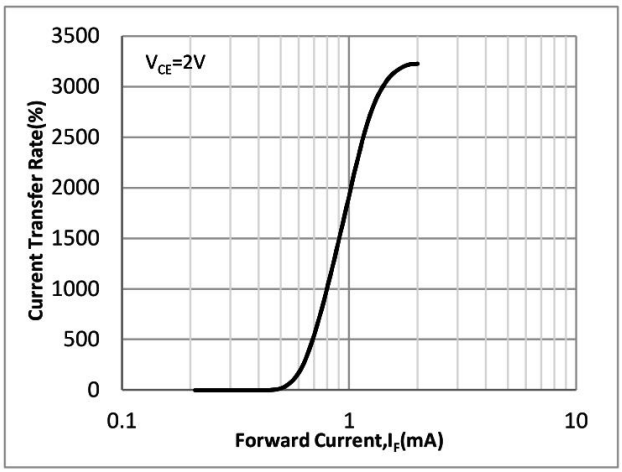


Fig4 Relative Current Transfer Ratio vs. Ambient Temperature

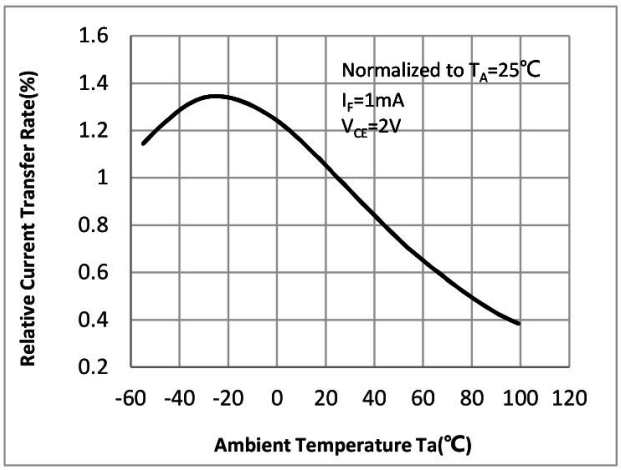


Fig.5 Collector-Emitter Dark Current vs. Ambient Temperature

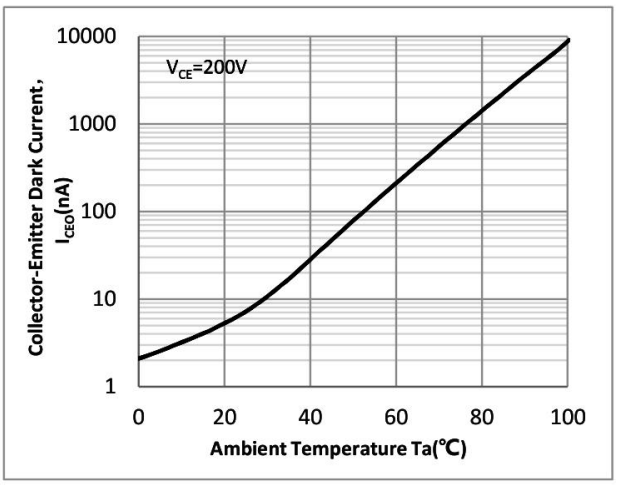
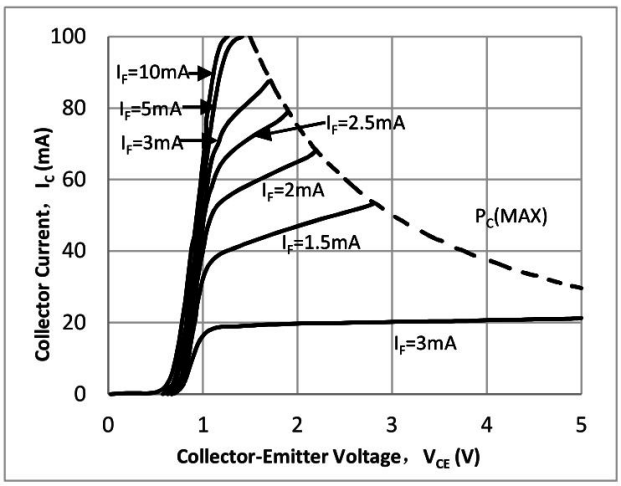


Fig.6 Collector Current vs. Collector-Emitter Voltage



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

Fig.7 Response time vs. Load resistor

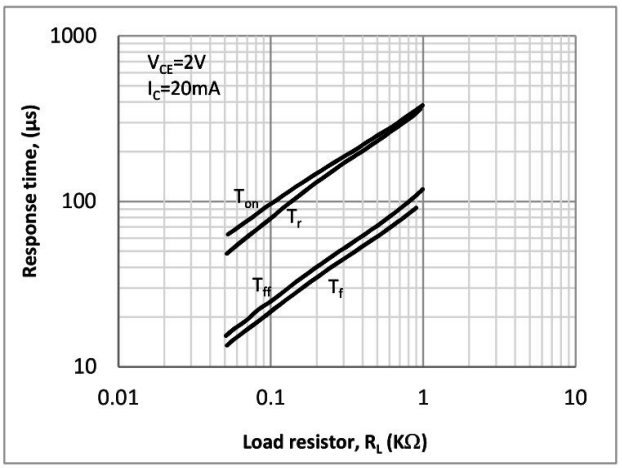


Fig.8 Forward Current vs. Collector-Emitter Saturation Voltage,

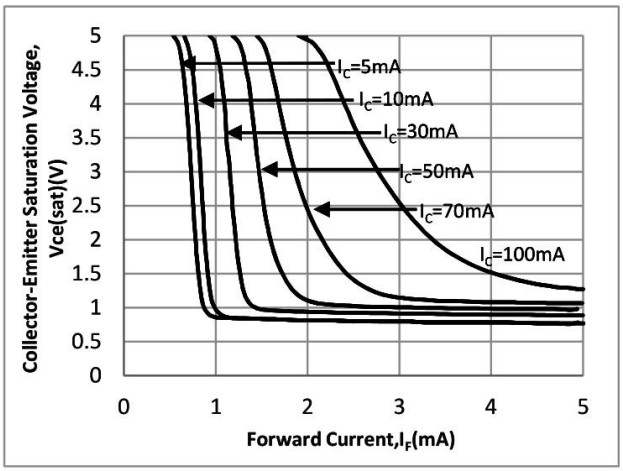


Fig.9 Frequency response

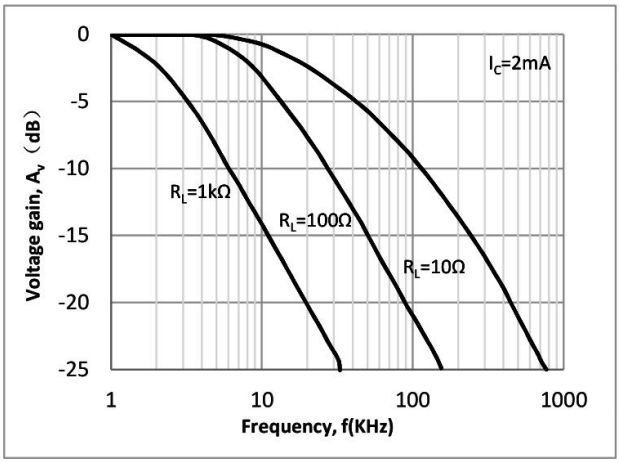
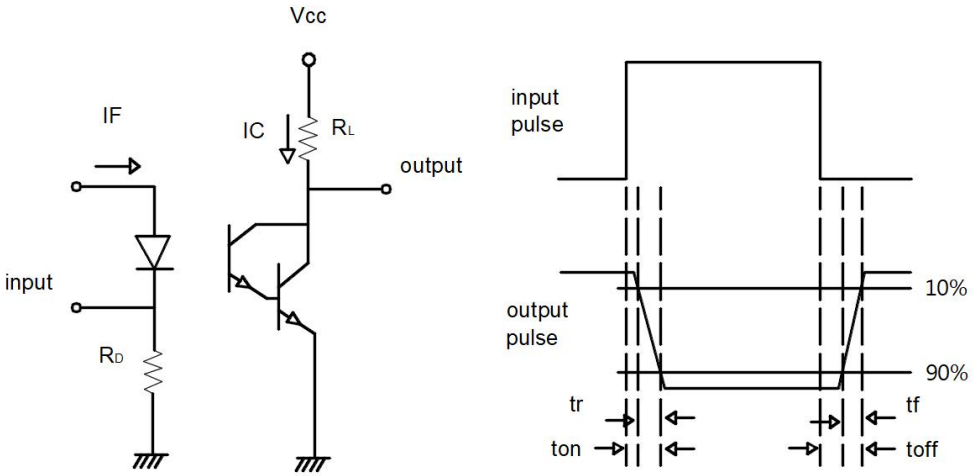
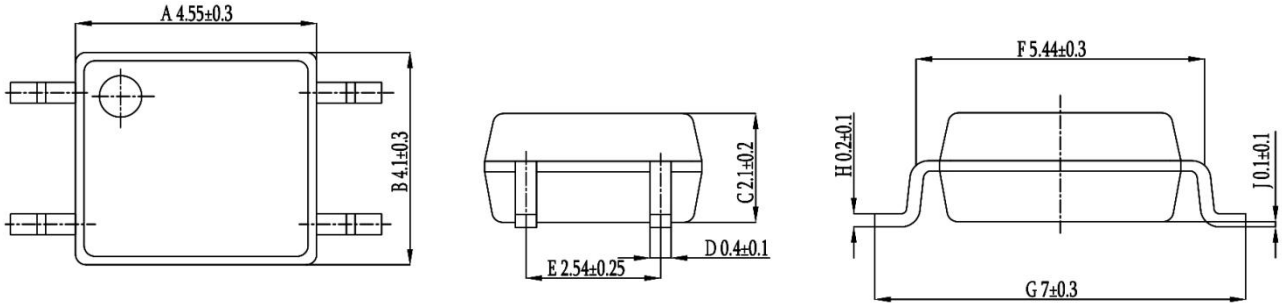


Fig.10 Switching Time Test Circuit & Wave forms

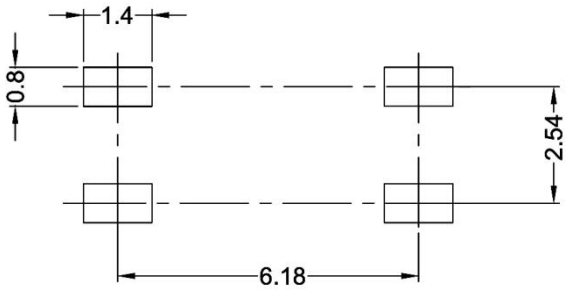


Package Outline Dimensions (unit: mm)

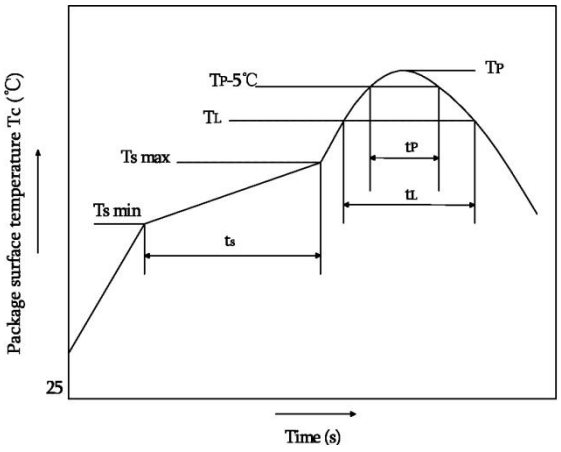
SOP4



SOLDERING FOOTPRINT (unit: mm)



Reflow soldering

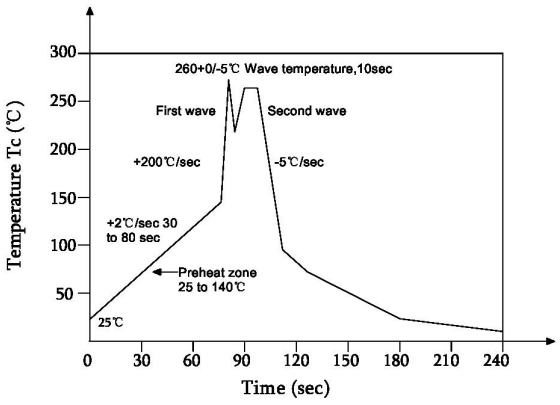


	Symbol	Min	Max	Unit
Preheat temperayure	Ts	150	200	℃
Preheat time	ts	60	120	s
Ramp-up ratea(T_L to T_P)			3	℃/s
Liquidus temperature	T_L	217		℃
Time above T_L	t_L	60	150	s
Peak temperature	Tp		260	℃
Time during which Tc is between (T_P-5) and T_P	t_p		30	s
Ramp-down rate(T_P to T_L)			6	℃/s

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
SOP4	Reel(ϕ330mm)	3000pcs/reel	2 reels /box	5 boxes /ctn	380*420mm	350*340*60mm	365*330*370mm	Leave 20 Spaces at the beginning and 50 Spaces at the end

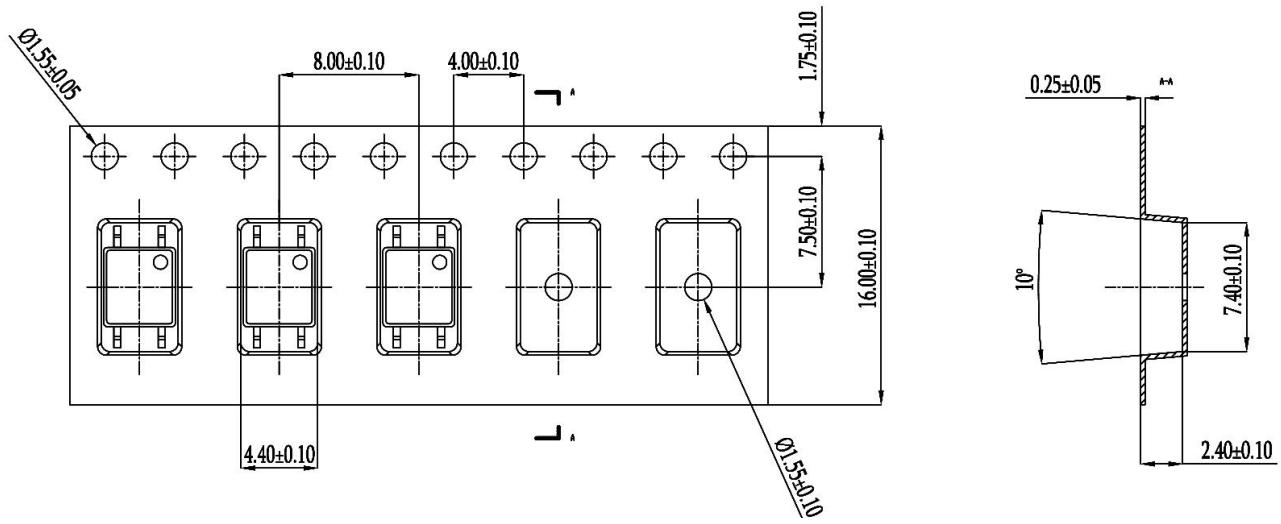
■ Summary table

■ SOP4 (Reel)

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

Qty/ctn : 30000pcs.

Schematic: (unit:mm)



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