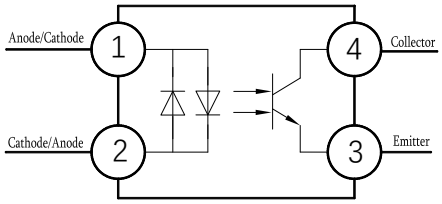
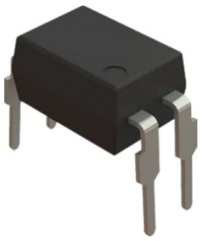
Features

HF

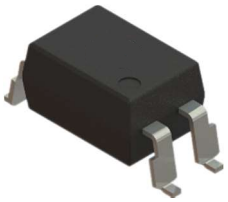
- Current transfer ratio
  (CTR: 20~300% at I_F =±1mA, V_{CE} = 5V)
- High isolation voltage between input and output (Viso =5000V rms)
- Collector - emitter breakdown voltage BV_{CEO} ≥ 80V
- Operating Temperature: -55℃~110℃











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

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Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter		Symbol	Value	Unit
Input	Forward Current	I_F	±60	mA
	Power Dissipation	P_D	100	mW
	Power Dissipation Derating factor (above Ta = 100°C)	P_{DD}	2.9	mW/°C
	Thermal Resistance Junction-Ambient	Rth_{J-A}	325	°C/W
	Thermal Resistance Junction-Case	Rth_{J-C}	200	°C/W
Output	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}	200	mW
Isolation Voltage *1	V_{ISO}	5000	Vrms
Operating Temperature	T_{OPR}	-55 ~ +110	°C
Storage Temperature Range	T_{STG}	-55 ~ +125	°C
Soldering Temperature *2	T_{SOL}	260	°C

Notes:
1. 40 to 60% RH, AC for 1 minute
2. 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=±20mA	-	1.2	1.4	V
	Terminal Capacitance	Ct	V=0,f=1kHz	-	30	250	pF
Output	Collector-Emitter Dark Current	I_{CEO}	V_{CE} = 20V, I_F = 0	-	-	100	nA
	Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C = 0.1mA, I_F = 0	80	-	-	V
	Emitter-Collector Breakdown Voltage	BV_{ECO}	I_E = 10μA, I_F = 0	7	-	-	V
Transfer Characteristics	Current Transfer Ratio	CTR	I_F=±1mA,V_{CE}=5V	20	-	300	%
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_F=±20mA,I_C=1mA	-	0.1	0.2	V

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	Isolation Resistance	R_{ISO}	DC500V,40~60%R.H	$5x10^{10}$	$1x10^{11}$	-	Ω
	Floating Capacitance	Cf	V=0, f=1MHz	-	0.6	1.0	pF
	Cut-off Frequency	Fc	V_{CE}=5V, I_C=2mA, R_L=100Ω, -3dB	-	80	-	kHz
	Rise Time	Tr	V_{CE}=2V, R_L= 100Ω	-	3	-	μs
	Fall Time	Tf	I_C=2mA	-	3	-	

Rank Table of Current Transfer Ratio CTR

Rank Mark	Min. (%)	Max. (%)	Condition
A	50	150	I_F = ±1mA, V_{CE} = 5V
B	100	300	
No mark	20	300	

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

Fig.1 Relative Current Transfer Ratio vs Forward Current

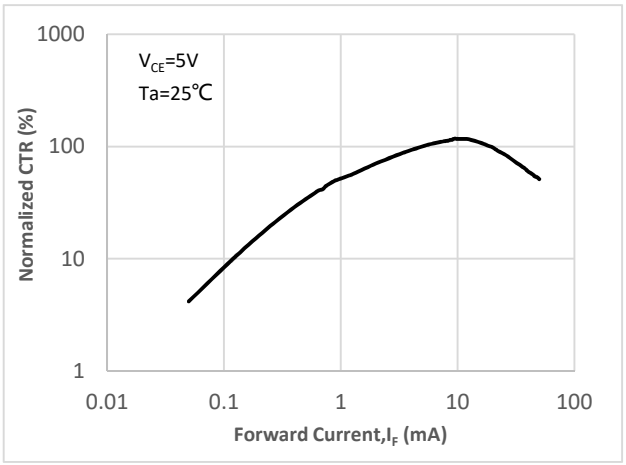


Fig.2 Forward Current vs Forward Voltage

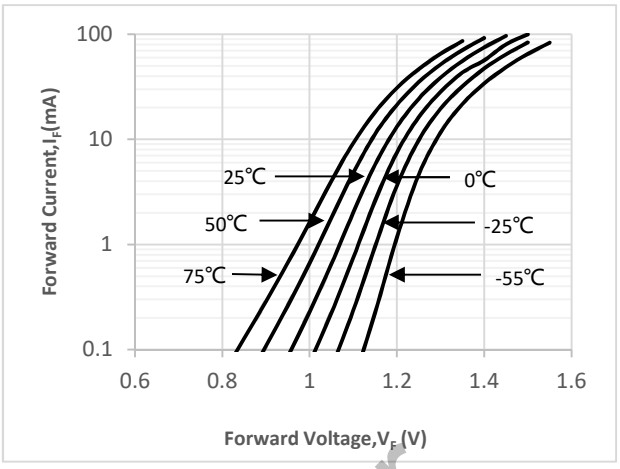


Fig.3 Collector Current vs Collector Emitter voltage

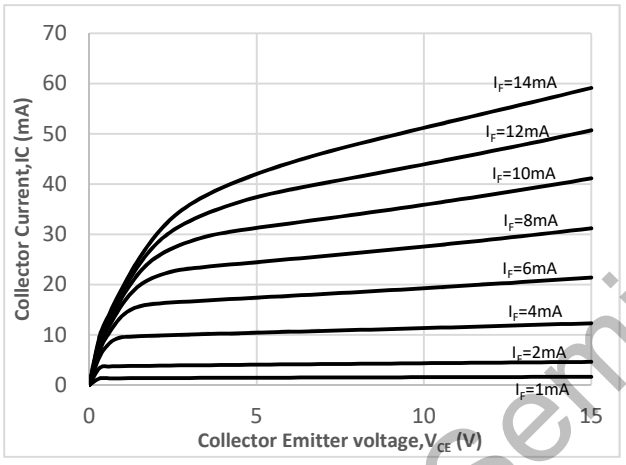


Fig4 Relative Current Transfer Ratio vs Ambient Temperature

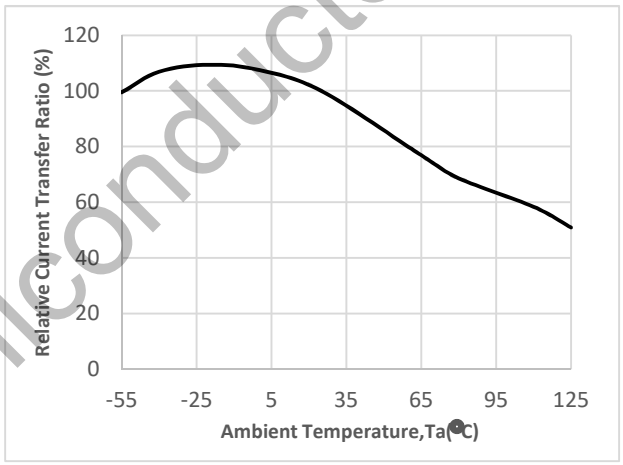


Fig.5 Collector-emitter saturation voltage vs. Ambient Temperature

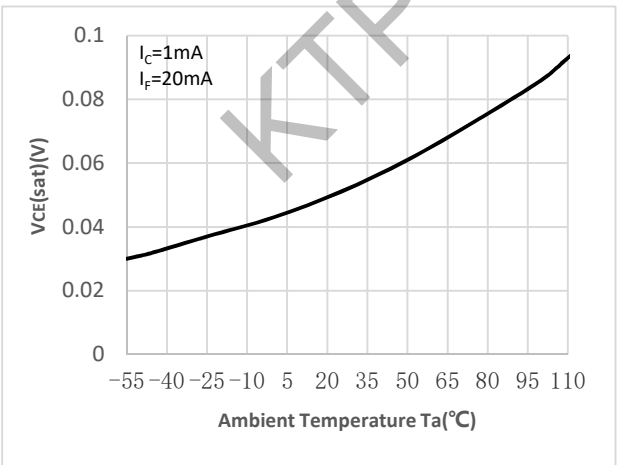
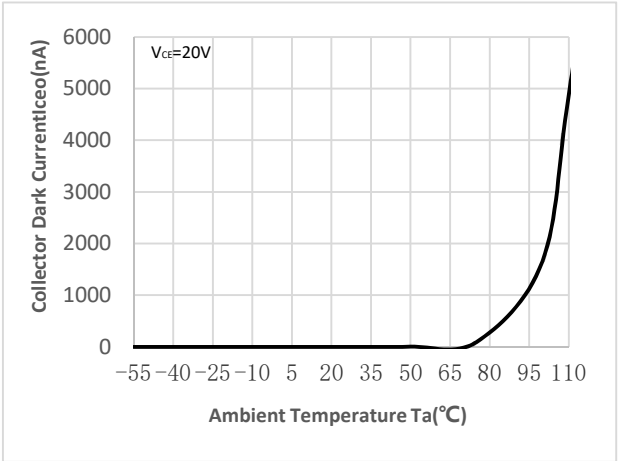


Fig.6 Collector Dark Current vs. Ambient Temperature



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Fig.7 Response Time vs. Load Resistance

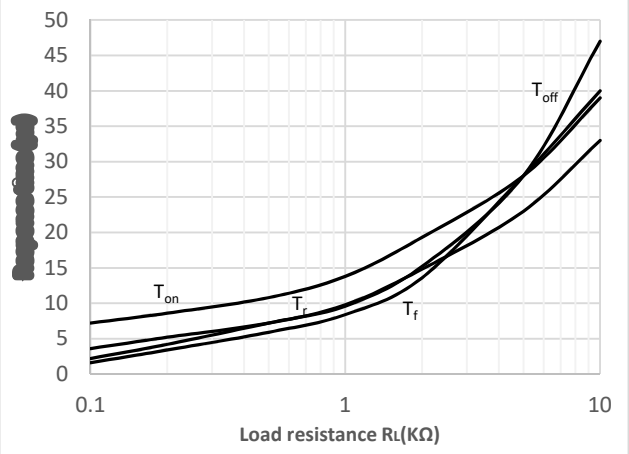


Fig.8 Frequency Response

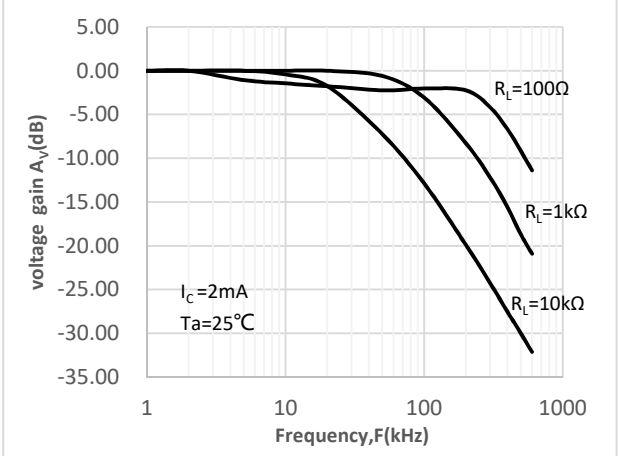


Fig.9 Collector-emitter Saturation Voltage vs. Forward Current

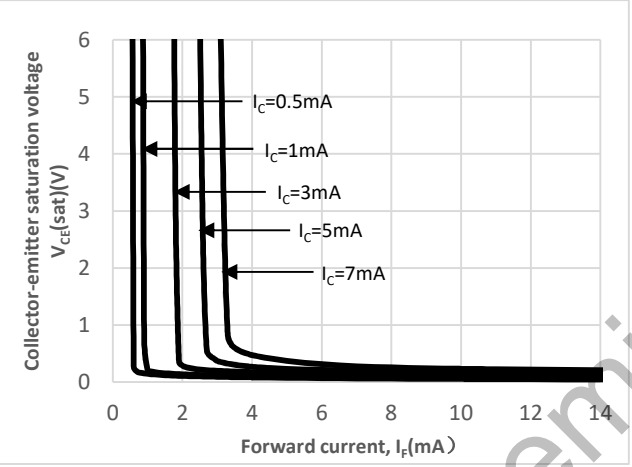
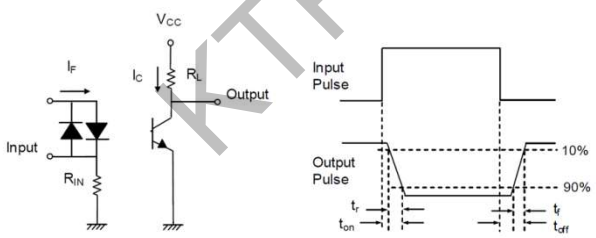
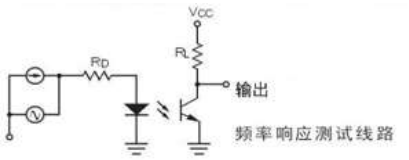


Fig.10 Switching Time Test Circuit & Waveforms

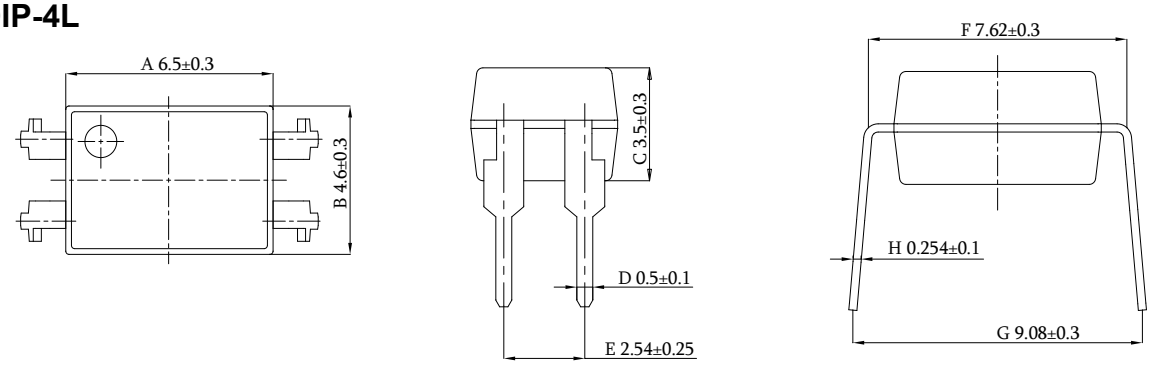




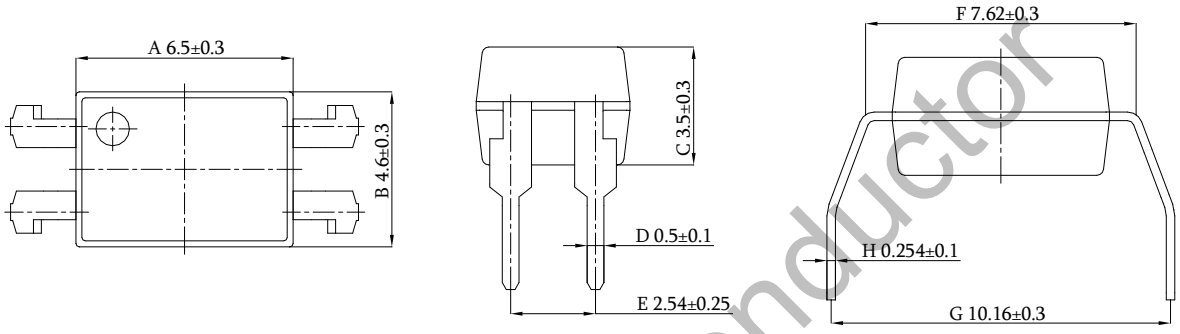
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Package Outline Dimensions (unit: mm)

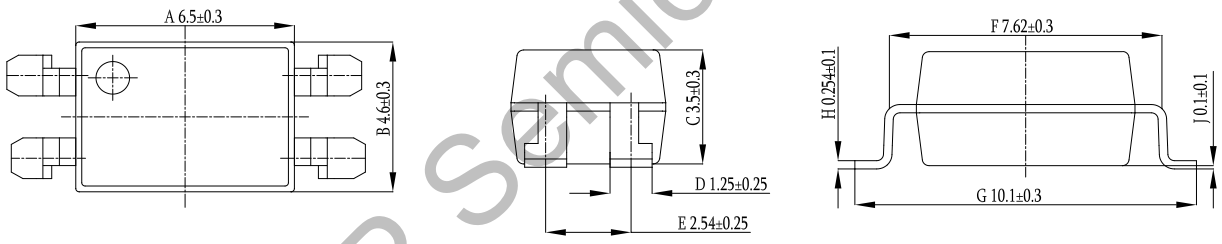
DIP-4L



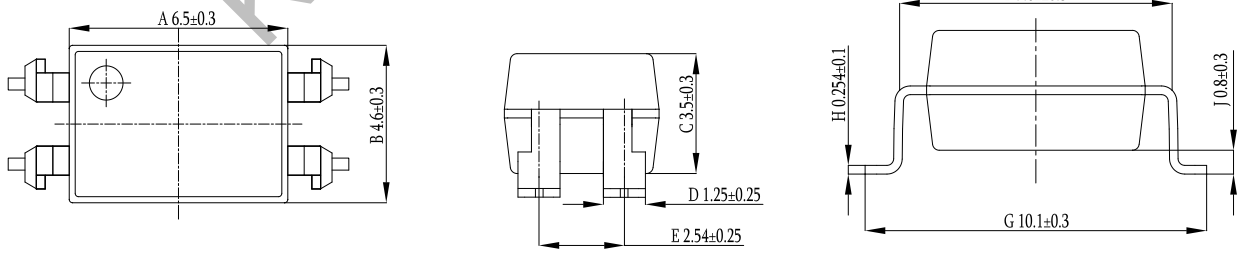
DIP-4L（M）



SMD-4L

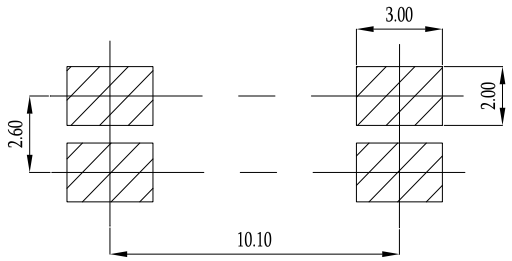


SMD-4L(SS)



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SOLDERING FOOTPRINT (unit: mm)



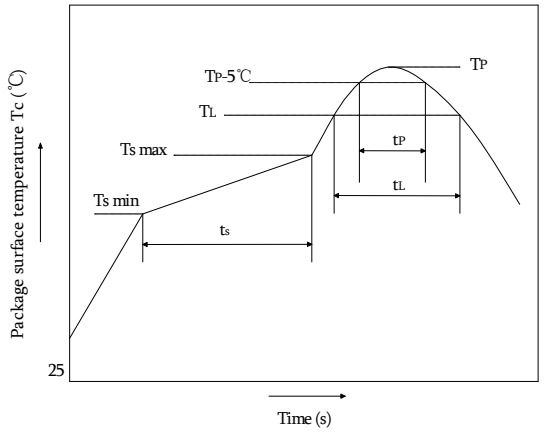
Ordering Information

PC814	X	Y
①	②	③

① Product series(PC814)
② Package type(DIP-4L:None, DIP-4L(M):M,SMD-4L:S,SMD-4L(SS):SS)
③ CTR Bank(A,B or None)

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Reflow soldering

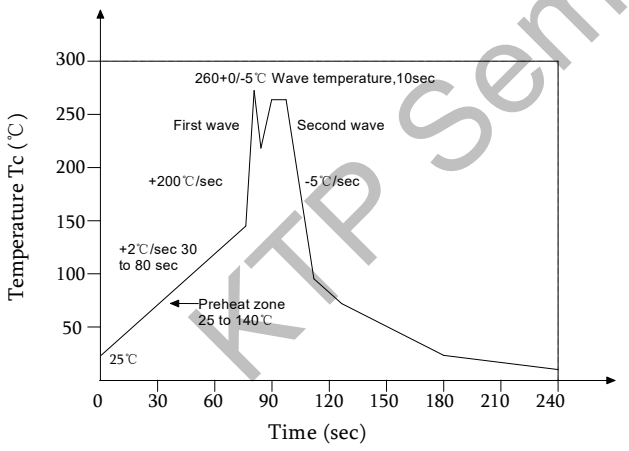


	Symbol	Min	Max	Unit
Preheat temperature	Ts	150	200	℃
Preheat time	ts	60	120	s
Ramp-up rate(T_L to T_P)			3	℃/s
Liquidus temperature	T_L	217		℃
Time above T_L	t_L	60	150	s
Peak temperature	Tp		260	℃
Time during which Tc is between (T_P-5) and T_P	t_p		30	s
Ramp-down rate(T_P to T_L)			6	℃/s

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.

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