



## Description

The PC814 is a photoelectric coupler composed of two light-emitting diode and phototransistor. It is packaged in a 4-pin package SMD.

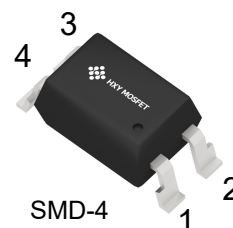
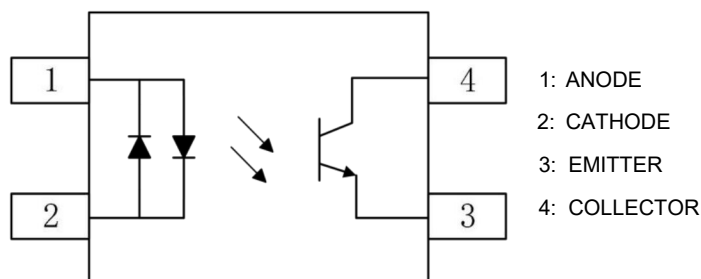
## Features

- Current transfer ratio:20~300% ( $I_F = 5\text{mA}$ ,  $V_{CE} = 5\text{V}$ )
- High isolation voltage between input and output( $V_{ISO}=5000\text{ Vrms}$ )
- Collector - emitter breakdown voltage  $BV_{CEO} \geq 80\text{V}$

## 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.

## Schematic Diagram and Package



## Absolute Maximum Ratings ( $T_a=25^\circ\text{C}$ )

Parameter		Symbol	Rating	Unit
Input	Forward Current	$I_F$	$\pm 50$	mA
	Power Dissipation	P	70	mW
	Power dissipationDerating factor (above $T_a = 100^\circ\text{C}$ )	PDD	2.9	mW/ $^\circ\text{C}$
	Thermal Resistance Junction-Ambient	$R_{thJ-A}$	325	$^\circ\text{C/W}$
	Thermal Resistance Junction-Case	$R_{thJ-C}$	200	$^\circ\text{C/W}$



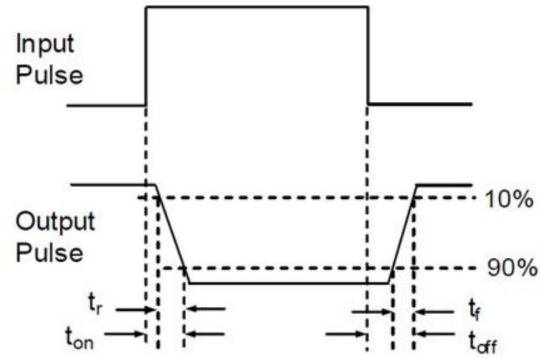
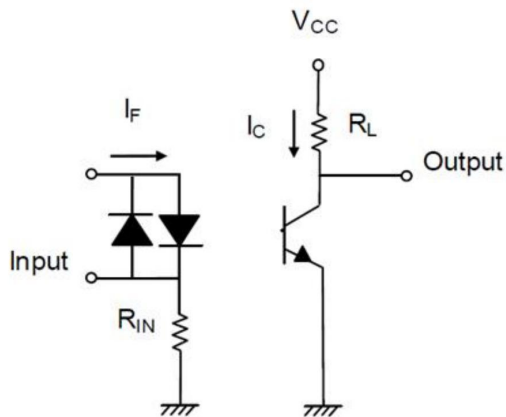
output	Collector Power Dissipation	PC	150	mW
	Collector Current	IC	50	mA
	Collector-Emitter Voltage	VCEO	80	V
	Emitter - Collector Voltage	VECO	6	V
Total Power Dissipation		Ptot	200	mW
Isolation Voltage		Viso	5000	Vrms
Operating Temperature		Topr	-55~+110	°C
Storage Temperature		Tstg	-55~+125	°C
Soldering Temperature		Tsol	260 (10s)	°C

### Electrical Characteristics (Ta=25°C)

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	VF	IF=±20mA	-	1.2	1.4	V
	Terminal Capacitance	Ct	V=0, f= 1kHz	-	30	250	pF
Output	Collector Dark Current	ICEO	VCE=20V	-	-	100	nA
	Collector-Emitter Breakdown Voltage	BVCEO	IC=0. 1mA, IF=0	80	-	-	V
	Emitter-Collector Breakdown Voltage	BVECO	IE= 10μA, IF=0	6	-	-	V
Transfer Characteristics	Current Transfer Ratio	CTR	IF=5mA, VCE=5V	50	-	150	%
	Collector-Emitter Saturation Voltage	VCE(sat)	IF=20mA, IC=1mA	-	0. 1	0.2	V
	Isolation Resistance	RISO	DC500V, 40~60%R. H.	5x10 <sup>10</sup>	1x10 <sup>11</sup>	-	Ω
	Isolation capacitance	Cf	V=0, f= 1MHz	-	0.6	1.0	pF
	Cut-off Frequency	Fc	VCE=5V, IC=2mA, RL= 100Ω, -3dB	-	80	-	kHz
switching time	Rise Time	Tr	VCE=2V, IC=2mA, RL= 100Ω	-	4	18	μs
	Fall Time	Tf		-	3	18	μs



## Switching Time Test Circuit & Waveforms



## Typical Characteristics

Figure 1. Forward Current vs Forward Voltage

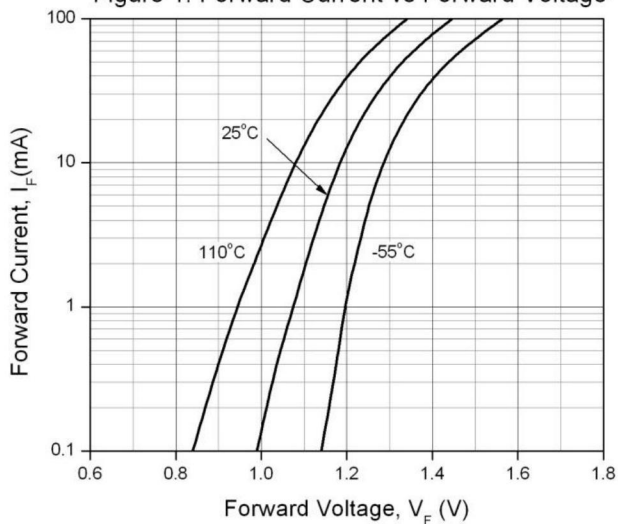


Figure 2. Normalized Current Transfer Ratio vs Forward Current

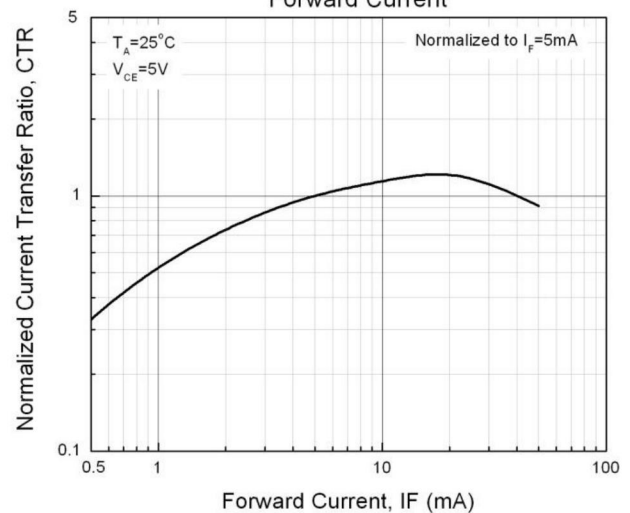


Figure 3. Current Transfer Ratio vs Ambient Temperature

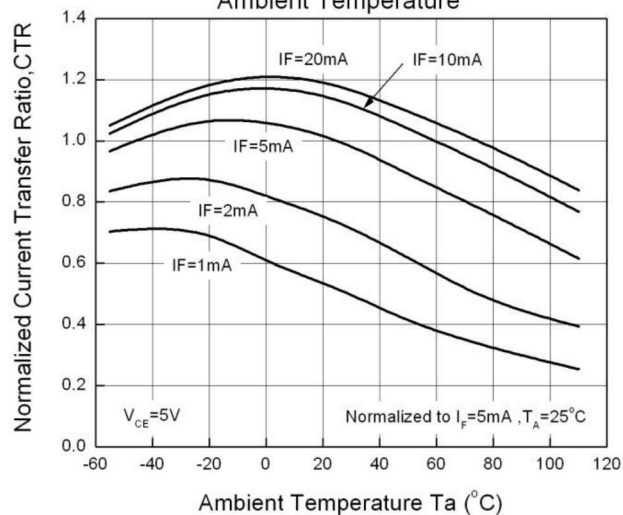


Figure 4. Dark Current vs Ambient Temperature

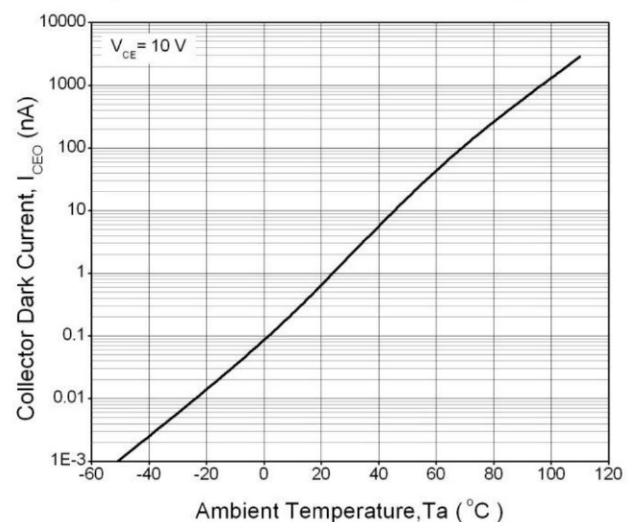




Figure 5. Collector Current vs Collector Voltage

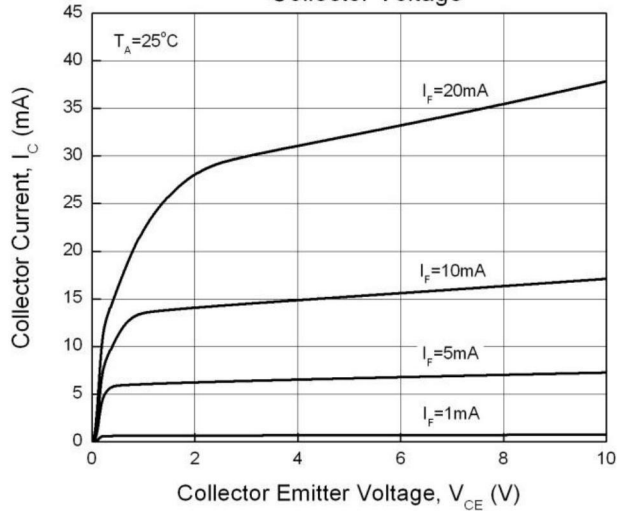


Figure 6. Collector Current vs Collector Voltage

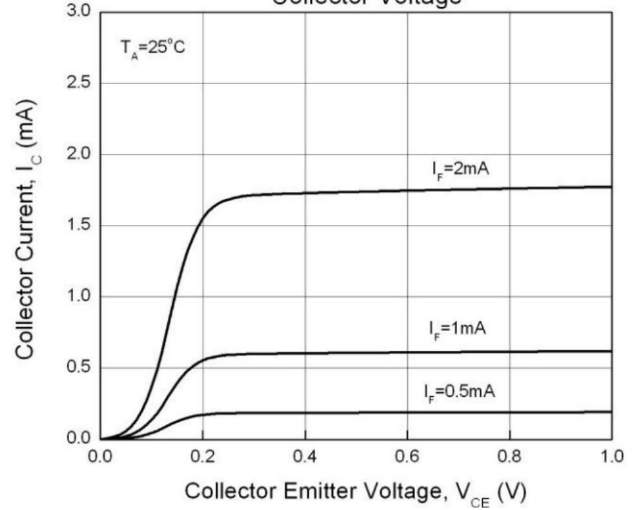


Figure 7. Collector-Emitter Saturation Voltage vs Collector Current

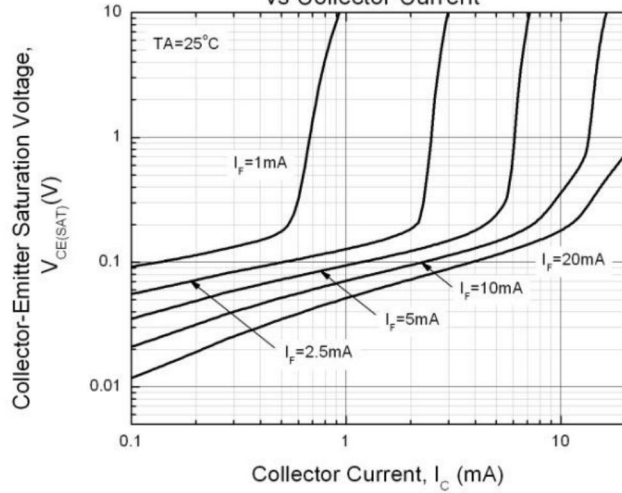
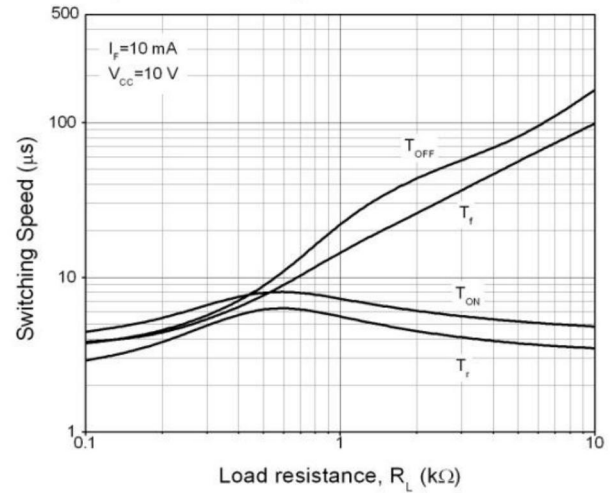


Figure 8. Switching Time vs Load Resistance





## Temperature Profile Of Soldering

### 1. Soldering Precautions

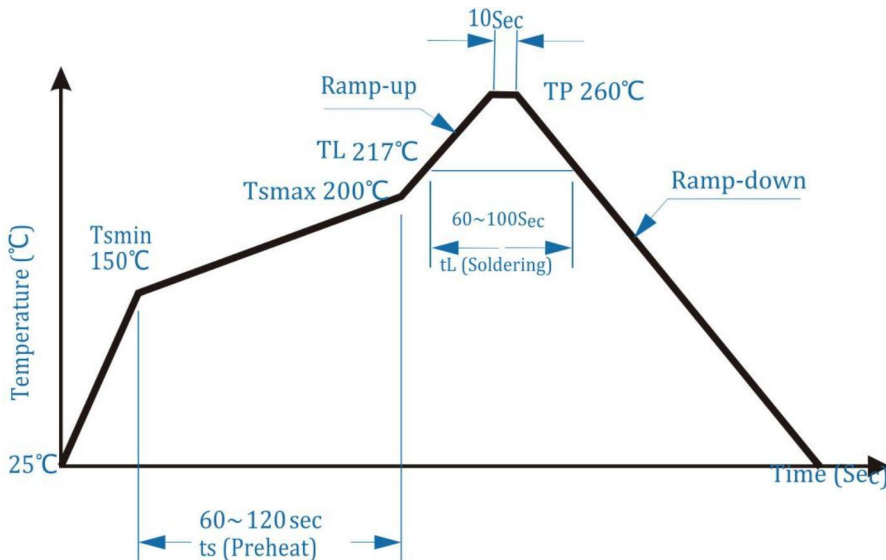
Whether using a soldering iron or reflow soldering, the soldering temperature should be as close as possible to the conditions shown below.

#### •When reflow soldering

Reflow soldering should be completed within 10 seconds if reflow soldering does not exceed 260°C. The soldering temperature profile is based on the surface temperature of the plastisol (see the chart below, based on the surface temperature of the plastisol).

Reflow soldering is limited to one or two passes.

It must be used within 2 weeks after unpacking.

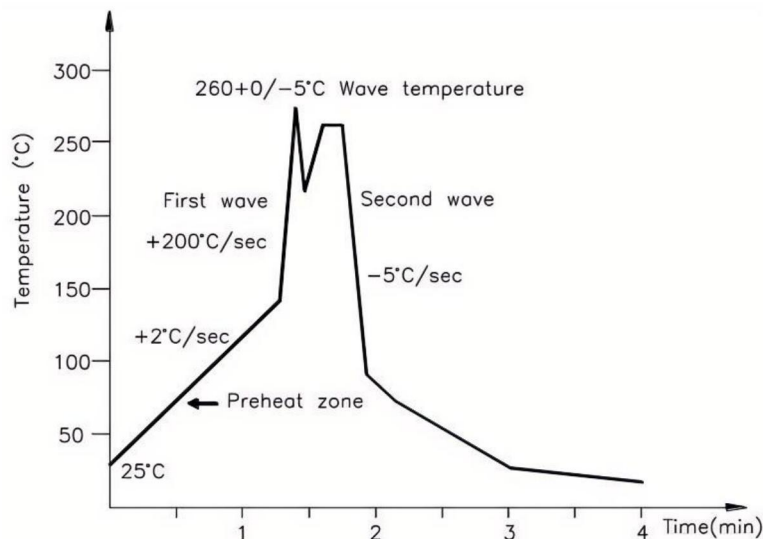


#### •Wave soldering

It is recommended to perform one-time soldering under temperature conditions.

Temperature: 260+0/-5°C Time: 10 sec.

Preheat temperature: 25 to 140°C Preheat time: 30 to 80 seconds.



#### • Soldering with a soldering iron

It is recommended to perform one-time soldering under temperature conditions.

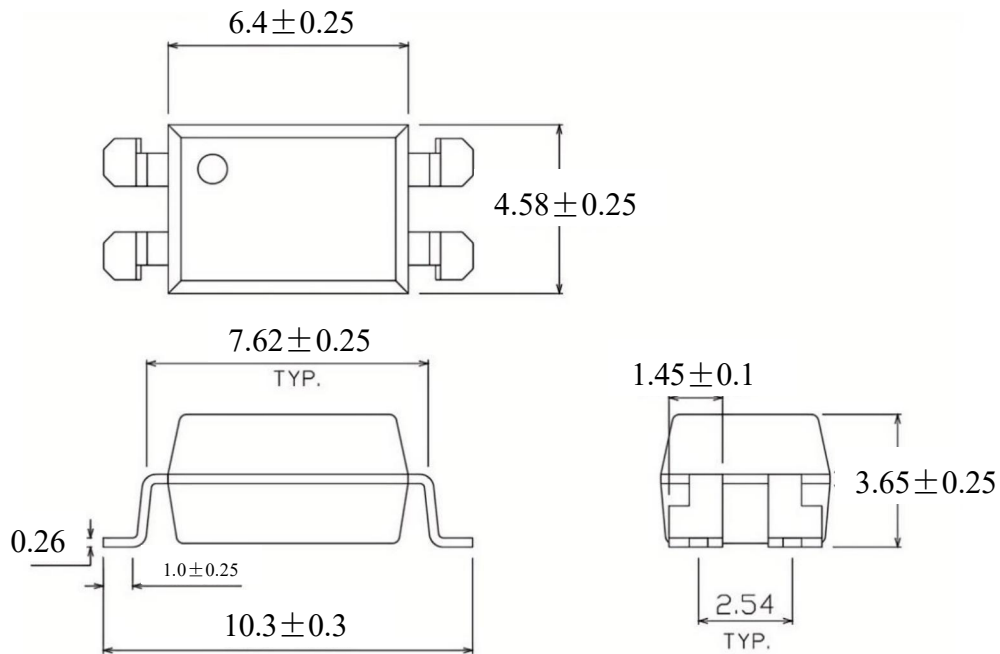
Temperature: 260+0/-5°C; Time: 10 seconds.

Preheating temperature: 25 to 140°C; Preheating time: 30 to 80 seconds.



## Outline Dimensions (mm)

### SMD-4





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