

# PC814 Series

## AC Input Photocoupler

\* Lead forming type (I type) and taping reel type (P type) are also available. (PC814I/PC814P)

### ■ Features

1. AC input
2. High isolation voltage between input and output ( $V : 5000V_{rms}$ )
3. Compact dual-in-line package
  - PC814 (1-channel type)
  - PC824 (2-channel type)
  - PC844 (4-channel type)
4. Current transfer ratio  
CTR : MIN. 20% at  $I_F = \pm 1mA, V_{CE} = 5V$
5. Recognized by UL, file No. E64380

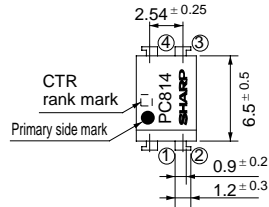
### ■ Applications

1. Programmable controllers
2. Telephone sets, telephone exchangers
3. System appliances
4. Signal transmission between circuits of different potentials and impedances

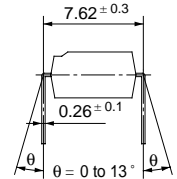
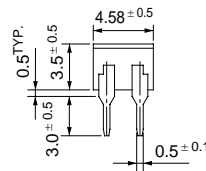
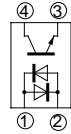
### ■ Outline Dimensions

(Unit : mm)

#### PC814



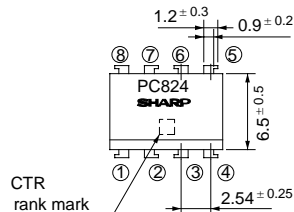
Internal connection diagram



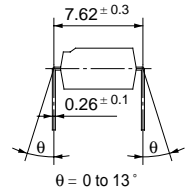
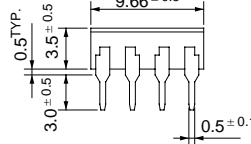
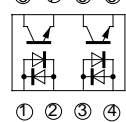
- ① Anode, Cathode
- ② Anode, Cathode

- ③ Emitter
- ④ Collector

#### PC824



Internal connection diagram

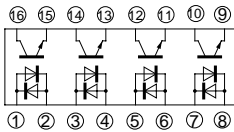


- ①③ Anode, Cathode
- ②④ Anode, Cathode

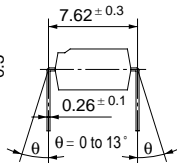
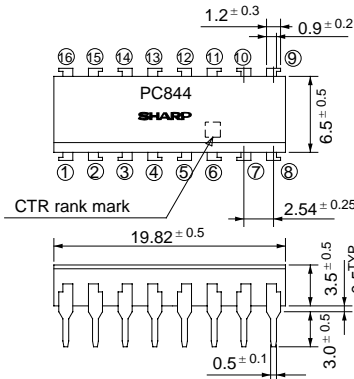
- ⑤⑦ Emitter
- ⑥⑧ Collector

#### PC844

Internal connection diagram



- ①③⑤⑦ Anode, Cathode
- ②④⑥⑧ Anode, Cathode
- ⑨⑪⑬⑮ Emitter
- ⑩⑫⑭⑯ Collector



## Absolute Maximum Ratings

(Ta = 25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I <sub>F</sub>	± 50	mA
	*1Peak forward current	I <sub>FM</sub>	± 1	A
	Power dissipation	P	70	mW
Output	Collector-emitter voltage	V <sub>CEO</sub>	35	V
	Emitter-collector voltage	V <sub>ECO</sub>	6	V
	Collector current	I <sub>C</sub>	50	mA
	Collector power dissipation	P <sub>C</sub>	150	mW
Total power dissipation		P <sub>tot</sub>	200	mW
*2Isolation voltage		V <sub>iso</sub>	5 000	V <sub>rms</sub>
Operating temperature		T <sub>opr</sub>	- 30 to + 100	°C
Storage temperature		T <sub>stg</sub>	- 55 to + 125	°C
*3Soldering temperature		T <sub>sol</sub>	260	°C

\*1 Pulse width ≤ 100μs, Duty ratio : 0.001

\*2 40 to 60% RH, AC for 1 minute

\*3 For 10 seconds

## Electro-optical Characteristics

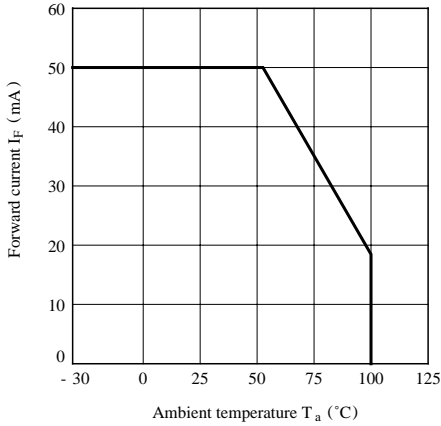
(Ta = 25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit		
Input	Forward voltage	V <sub>F</sub>	I <sub>F</sub> = ± 20mA	-	1.2	1.4	V		
	Peak forward voltage	V <sub>FM</sub>	I <sub>FM</sub> = ± 0.5V	-	-	3.0	V		
	Terminal capacitance	C <sub>t</sub>	V = 0, f = 1kHz	-	50	250	pF		
Output	Collector dark current	I <sub>CEO</sub>	V <sub>CE</sub> = 20V, I <sub>F</sub> = 0	-	-	10 <sup>-7</sup>	A		
Transfer characteristics	*4Current transfer ratio	CTR	I <sub>F</sub> = ± 1mA, V <sub>CE</sub> = 5V	20	-	300	%		
	Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>F</sub> = ± 20mA, I <sub>C</sub> = 1mA	-	0.1	0.2	V		
	Isolation resistance	R <sub>ISO</sub>	DC500V, 40 to 60% RH	5 x 10 <sup>10</sup>	10 <sup>11</sup>	-	Ω		
	Floating capacitance	C <sub>f</sub>	V = 0, f = 1MHz	-	0.6	1.0	pF		
	Cut-off frequency	Response time	Rise time	t <sub>r</sub>	V <sub>CE</sub> = 2V, I <sub>C</sub> = 2mA, R <sub>L</sub> = 100Ω	-	4	18	μs
			Fall time	t <sub>f</sub>		-	3	18	μs

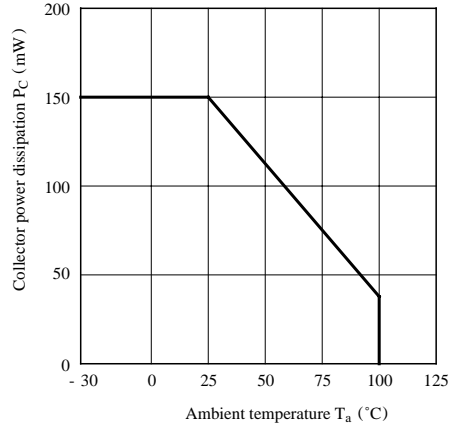
\*4 Classification table of current transfer ratio

Model No.	Rank mark	CTR (%)
<b>PC814A</b>	A	50 to 150
<b>PC824A</b>		
<b>PC844A</b>		
<b>PC814</b>	A or no mark	20 to 300
<b>PC824</b>		
<b>PC844</b>		

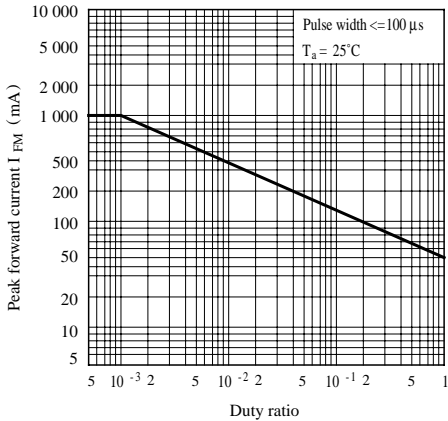
**Fig. 1 Forward Current vs. Ambient Temperature**



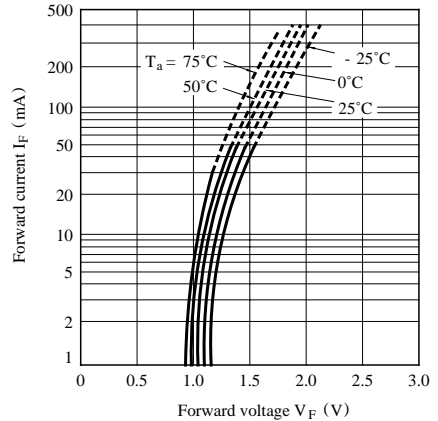
**Fig. 2 Collector Power Dissipation vs. Ambient Temperature**



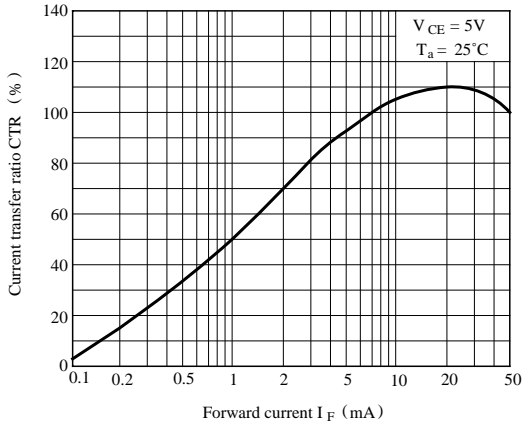
**Fig. 3 Peak Forward Current vs. Duty Ratio**



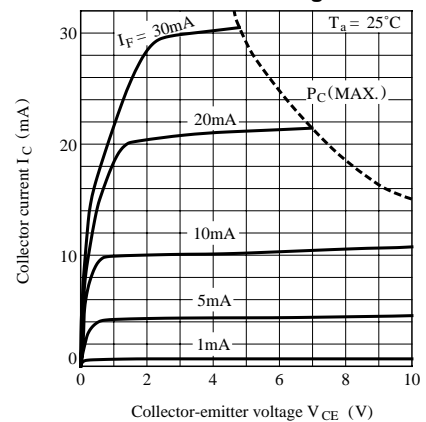
**Fig. 4 Forward Current vs. Forward Voltage**



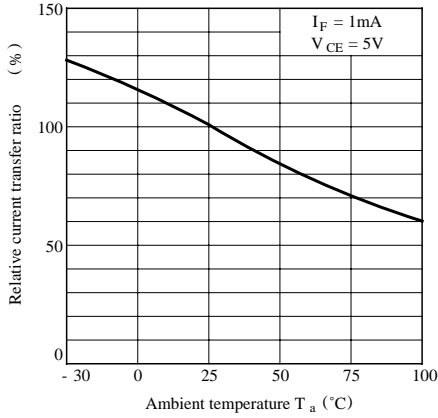
**Fig. 5 Current Transfer Ratio vs. Forward Current**



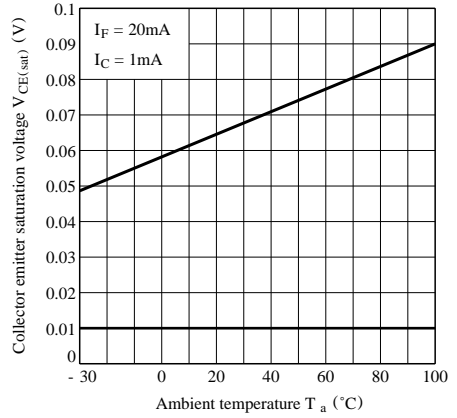
**Fig. 6 Collector Current vs. Collector-emitter Voltage**



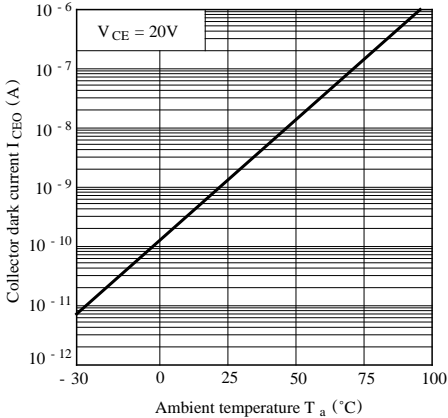
**Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature**



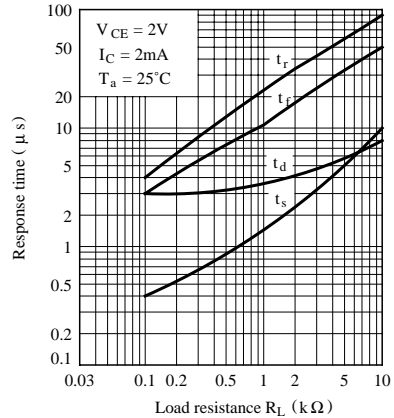
**Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature**



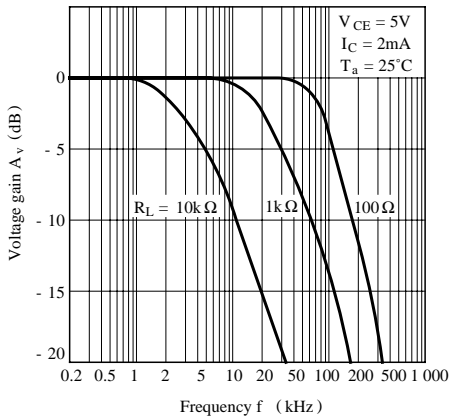
**Fig. 9 Collector Dark Current vs. Ambient Temperature**



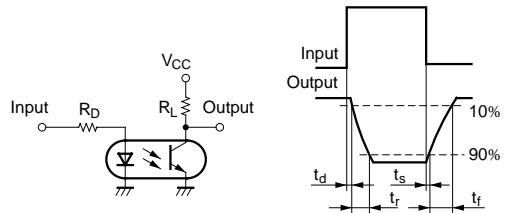
**Fig.10 Response Time vs. Load Resistance**

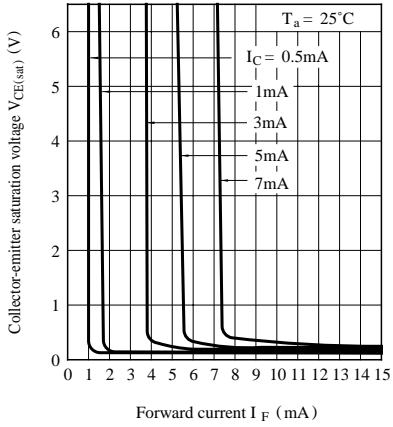
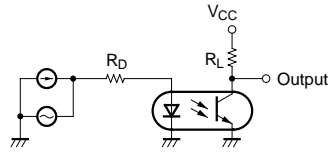


**Fig.11 Frequency Response**



**Test Circuit for Response Time**



**Fig.12 Collector-emitter Saturation Voltage vs. Forward Current****Test Circuit for Frequency Response**

● Please refer to the chapter “Precautions for Use”

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