

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 : 5 000V_{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 = ± 1mA, V_{CE} = 5V
5. Recognized by UL, file No. E64380

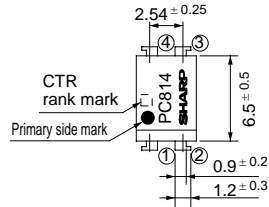
■ Applications

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

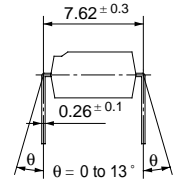
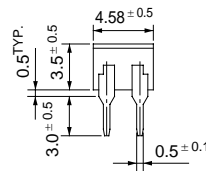
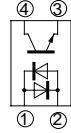
■ Outline Dimensions

(Unit : mm)

PC814



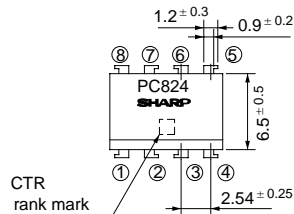
Internal connection diagram



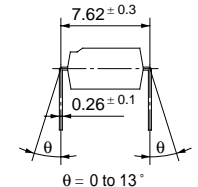
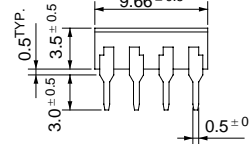
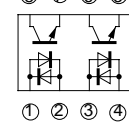
- ① Anode, Cathode
- ② Anode, Cathode

- ③ Emitter
- ④ Collector

PC824



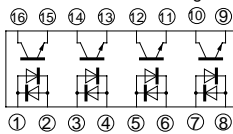
Internal connection diagram



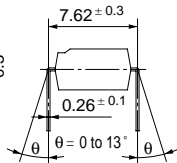
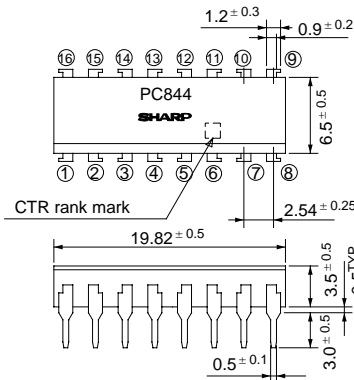
- ①③ Anode, Cathode
- ②④ Anode, Cathode

- ⑤⑦ Emitter
- ⑥⑧ Collector

PC844 Internal connection diagram



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



"In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that occur in equipment using any of SHARP's devices, shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest version of the device specification sheets before using any SHARP's device."

Absolute Maximum Ratings

(Ta = 25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I _F	± 50	mA
	*1Peak forward current	I _{FM}	± 1	A
	Power dissipation	P	70	mW
Output	Collector-emitter voltage	V _{CEO}	35	V
	Emitter-collector voltage	V _{ECO}	6	V
	Collector current	I _C	50	mA
	Collector power dissipation	P _C	150	mW
Total power dissipation		P _{tot}	200	mW
*2Isolation voltage		V _{iso}	5 000	V _{rms}
Operating temperature		T _{opr}	- 30 to + 100	°C
Storage temperature		T _{stg}	- 55 to + 125	°C
*3Soldering temperature		T _{sol}	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 _F	I _F = ± 20mA	-	1.2	1.4	V		
	Peak forward voltage	V _{FM}	I _{FM} = ± 0.5V	-	-	3.0	V		
	Terminal capacitance	C _t	V = 0, f = 1kHz	-	50	250	pF		
Output	Collector dark current	I _{CEO}	V _{CE} = 20V, I _F = 0	-	-	10 ⁻⁷	A		
Transfer characteristics	*4Current 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		
	Isolation resistance	R _{ISO}	DC500V, 40 to 60% RH	5 x 10 ¹⁰	10 ¹¹	-	Ω		
	Floating capacitance	C _f	V = 0, f = 1MHz	-	0.6	1.0	pF		
	Cut-off frequency	Response time	Rise time	t _r	V _{CE} = 2V, I _C = 2mA, R _L =	-	4	18	μs
			Fall time	t _f	100Ω	-	3	18	μs

*4 Classification table of current transfer ratio

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

Fig. 1 Forward Current vs. Ambient Temperature

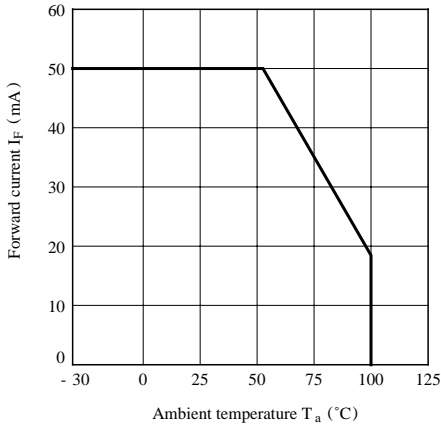


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

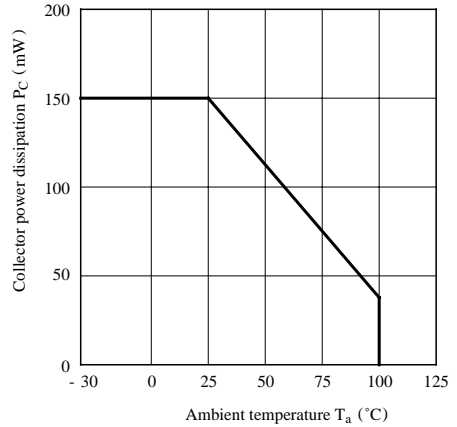


Fig. 3 Peak Forward Current vs. Duty Ratio

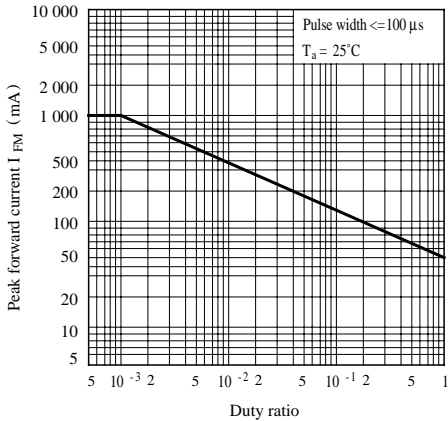


Fig. 4 Forward Current vs. Forward Voltage

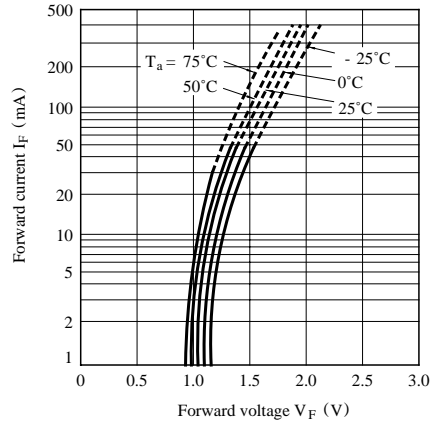


Fig. 5 Current Transfer Ratio vs. Forward Current

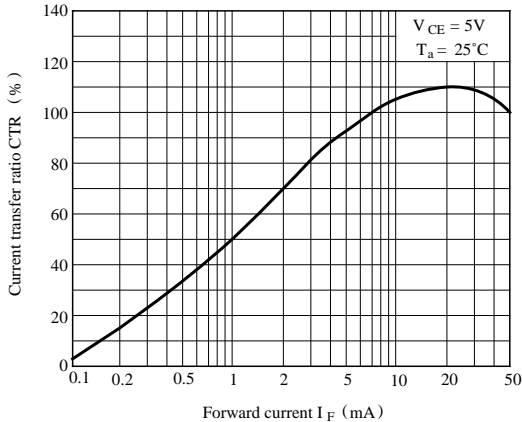


Fig. 6 Collector Current vs. Collector-emitter Voltage

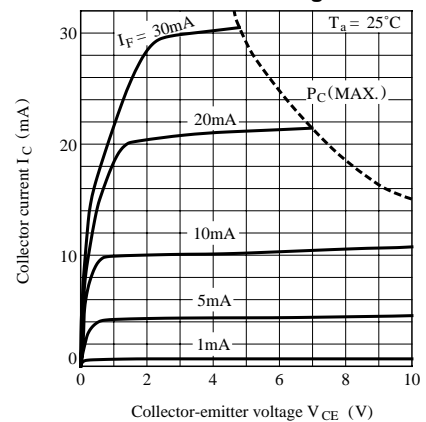


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

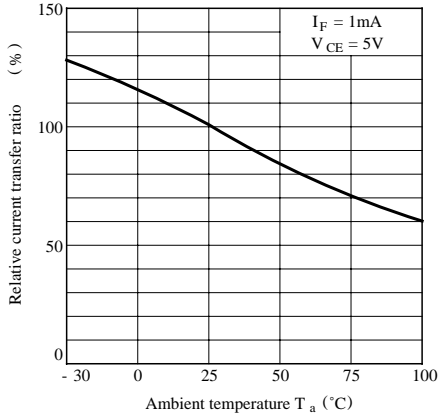


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature

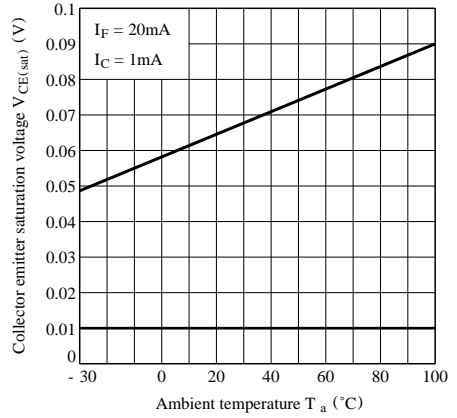


Fig. 9 Collector Dark Current vs. Ambient Temperature

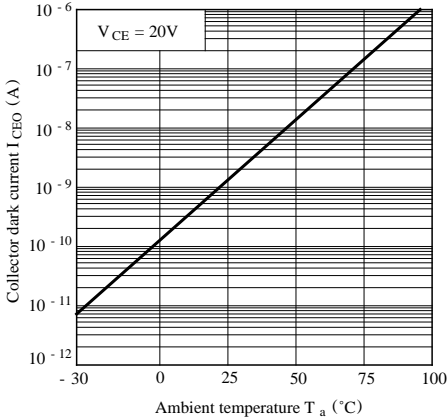


Fig.10 Response Time vs. Load Resistance

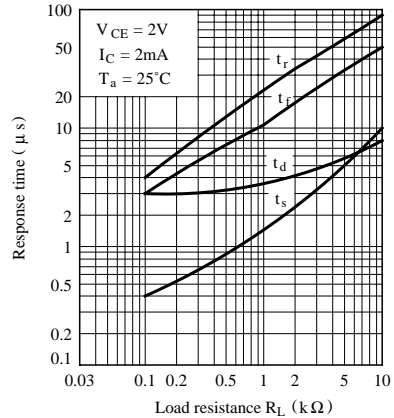
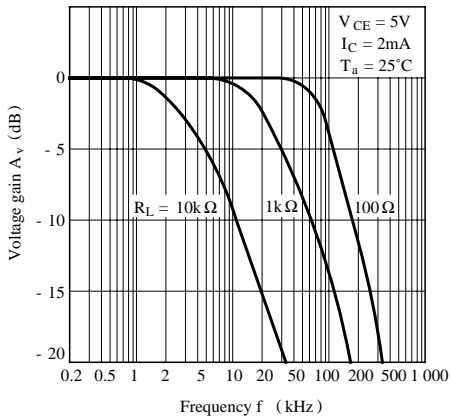


Fig.11 Frequency Response



Test Circuit for Response Time

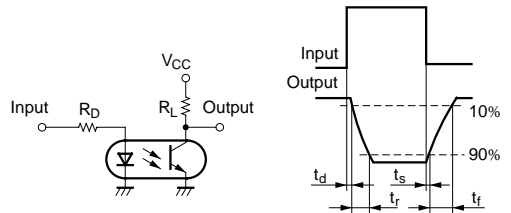
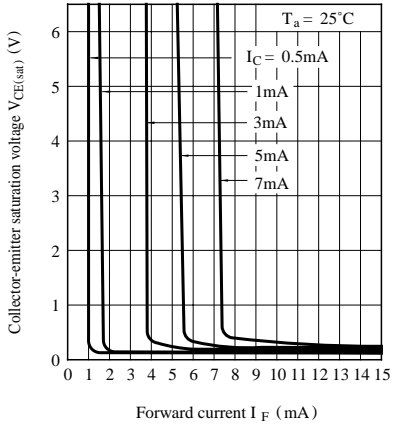
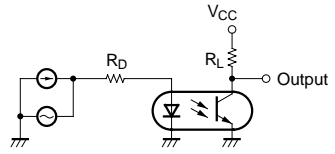


Fig.12 Collector-emitter Saturation Voltage vs. Forward Current**Test Circuit for Frequency Response**

● Please refer to the chapter “Precautions for Use”