

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 $I_F = \pm 1mA$, $V_{CE} = 5V$
5. Recognized by UL, file No. E64380

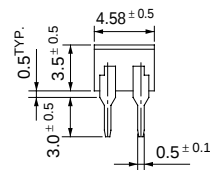
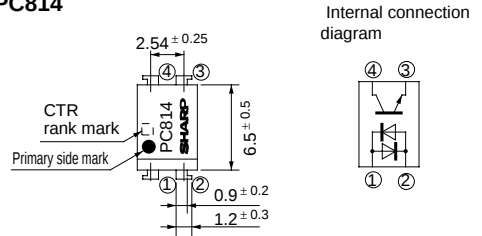
■ Applications

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

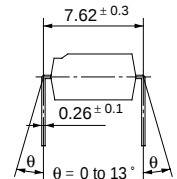
■ Outline Dimensions

(Unit : mm)

PC814

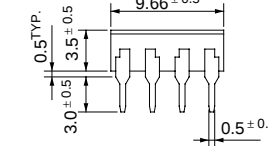
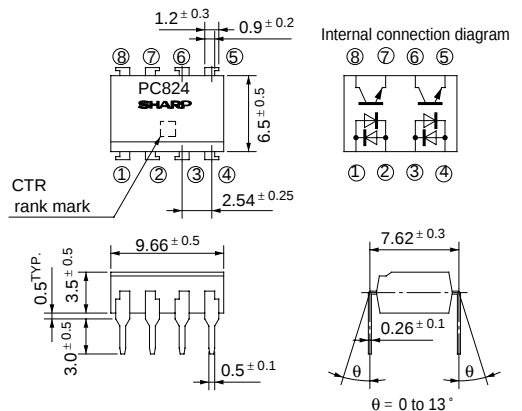


- ① Anode, Cathode
- ② Anode, Cathode



- ③ Emitter
- ④ Collector

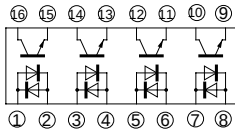
PC824



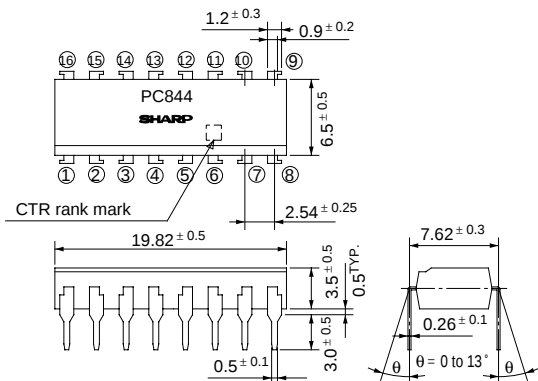
- ①③ Anode, Cathode
- ②④ Anode, Cathode
- ⑤⑦ Emitter
- ⑥⑧ Collector

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 _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 charac- teristics	*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		f _c	V _{CE} = 5V, I _C = 2mA, R _L = 100 Ω, - 3dB	15	80	-	kHz
	Response time	Rise time	t _r	V _{CE} = 2V, I _C = 2mA, R _L =	-	4	18	μ s
Fall time		t _f	100 Ω	-	3	18	μ s	

*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

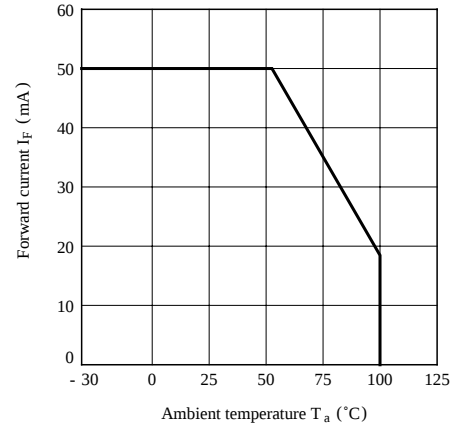


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

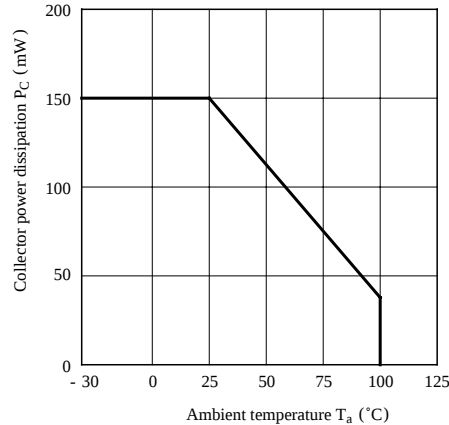


Fig. 3 Peak Forward Current vs. Duty Ratio

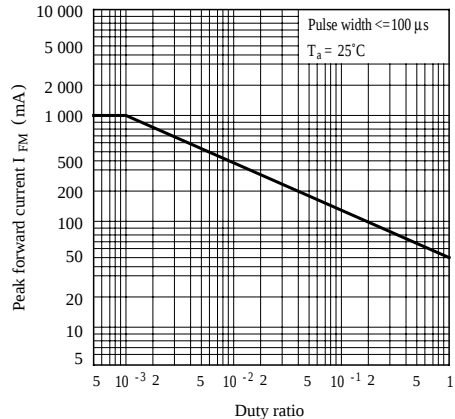


Fig. 4 Forward Current vs. Forward Voltage

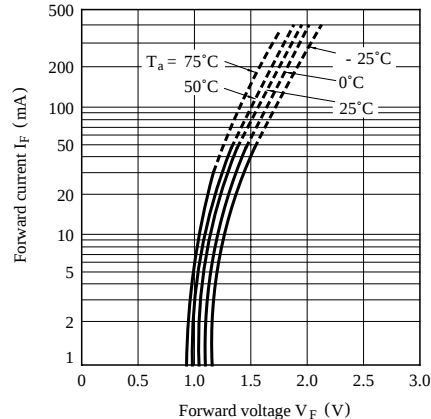


Fig. 5 Current Transfer Ratio vs. Forward Current

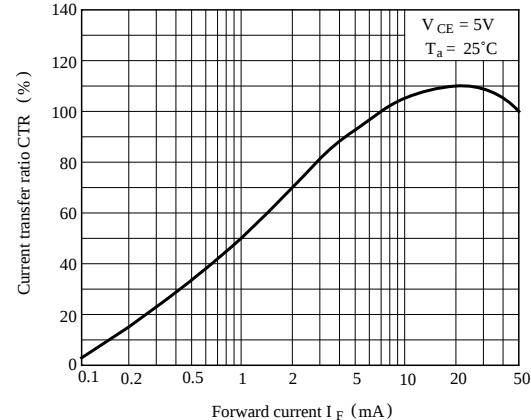


Fig. 6 Collector Current vs. Collector-emitter Voltage

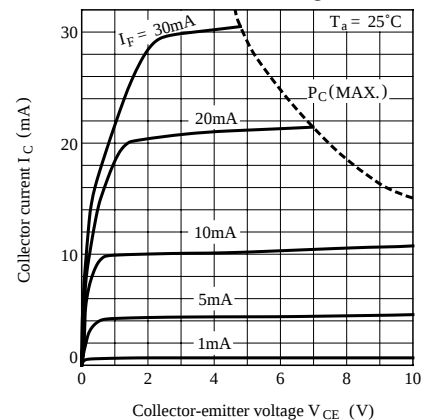


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

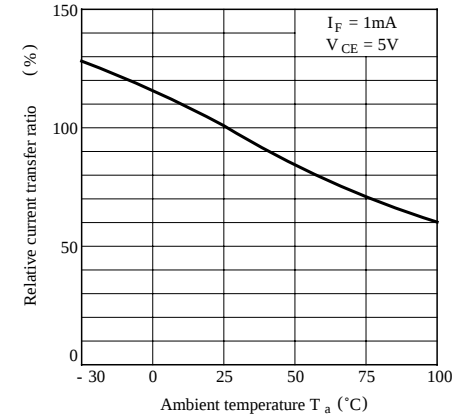


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature

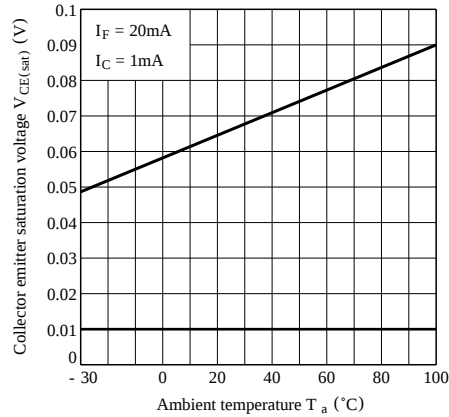


Fig. 9 Collector Dark Current vs. Ambient Temperature

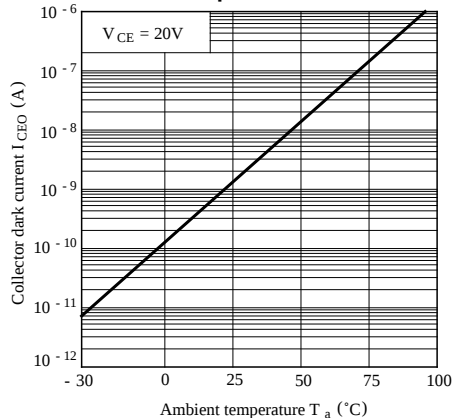


Fig.10 Response Time vs. Load Resistance

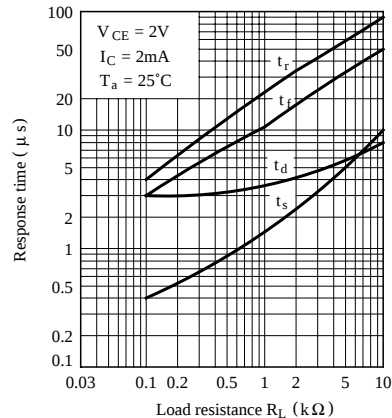
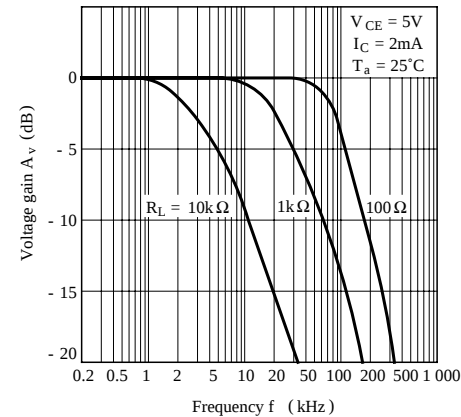
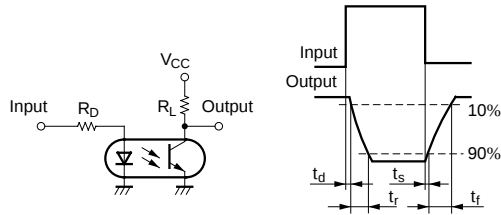


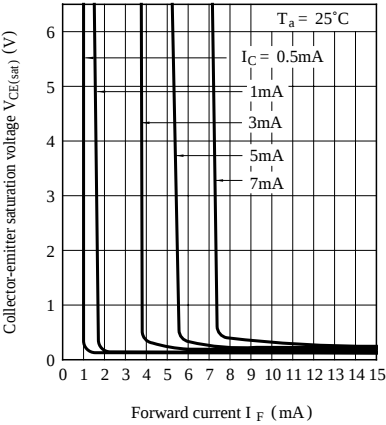
Fig.11 Frequency Response



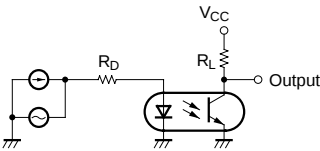
Test Circuit for Response Time



**Fig.12 Collector-emitter Saturation Voltage
vs. Forward Current**



Test Circuit for Frequency Response



● Please refer to the chapter “Precautions for Use ”