

# PC814 Series

## AC Input Photocoupler

※ Lead forming type (I type) and taping reel type (P type) are also available (PC814I/PC814P) (Page 656)

### ■ Features

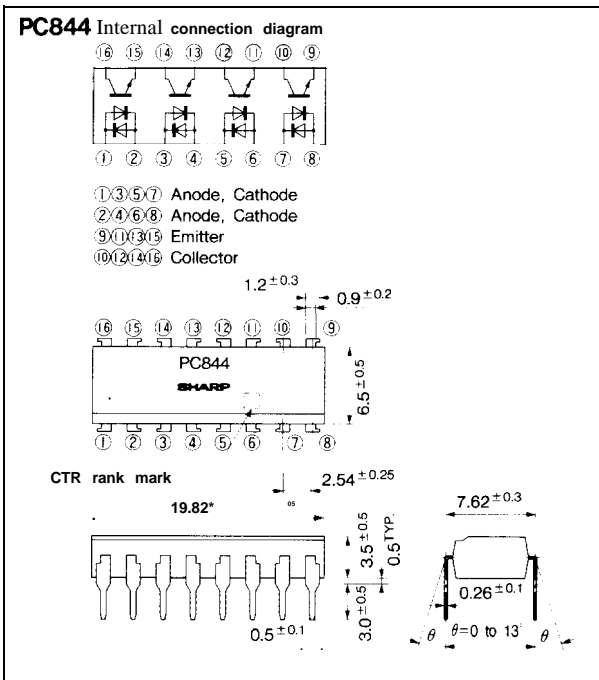
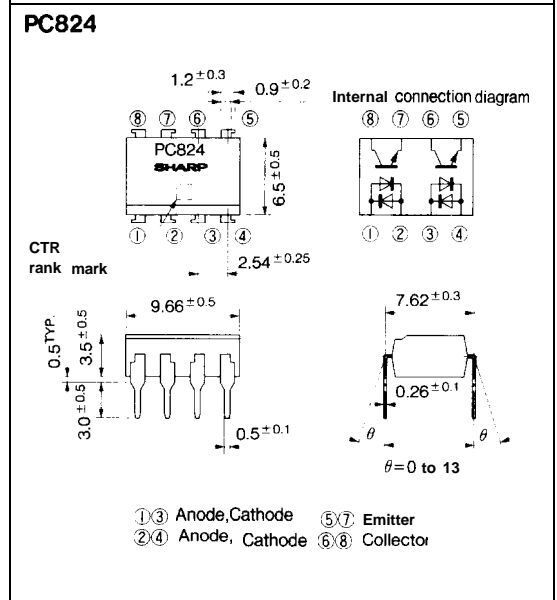
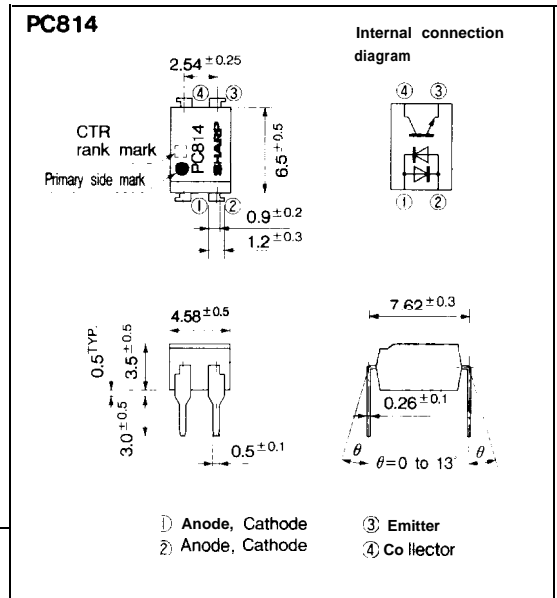
1. AC input
2. High isolation voltage between input and output ( $V : 5000V_{rms}$ )
3. Compact dual-in-line package  
**PC814** (1-channel type)  
**PC824** (2-channel type)  
**PC844** (4-channel type)
4. Current transfer ratio  
 CTR : MIN. 20% at  $I_F = \pm 1mA, V_{CE} = 5V$
5. Recognized by UL, 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)



## ■ Absolute Maximum Ratings

(Ta= 25°C)

Parameter	Symbol	Rating	Unit	
Input	Forward current	$I_F$	$\pm 50$	mA
	*1 Peak forward current	$I_{FM}$	$\pm 1$	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	
*2 Isolation voltage	$V_{iso}$	5000	$V_{rms}$	
Operating temperature	$T_{opr}$	-30 to +100	°C	
Storage temperature	$T_{stg}$	-55 to +125	°C	
*3 Soldering temperature	$T_{sol}$	260	°C	

\*1 Pulse width  $\leq 100 \mu s$ , 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	$V_F$	$I_F = \pm 20mA$		1.2	1.4	v
	Peak forward voltage	$V_{FM}$	$I_{FM} = \pm 0.5V$	-	-	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	*4 Current transfer ratio	CTR	$I_F = \pm 1mA, V_{CE} = 5V$	20	-	300	%
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = \pm 20mA, I_C = 1mA$	-	0.1	0.2	V
	Isolation resistance	$R_{iso}$	DC500V, 40 to 60%RH	$5 \times 10^{10}$	$10^{11}$	-	$\Omega$
	Floating capacitance	$C_f$	$V = 0, f = 1MHz$	-	0.6	1.0	pF
	Cut-off frequency	$f_c$	$V_{CE} = 5V, I_C = 2mA, R_L = 100\Omega, -3dB$	15	80		kHz
Response time	Rise time $t_r$	$V_{CE} = 2V, I_C = 2mA, R_L = 100\Omega$		4	18	$\mu s$	
	Fall time $t_f$			3	18	$\mu s$	

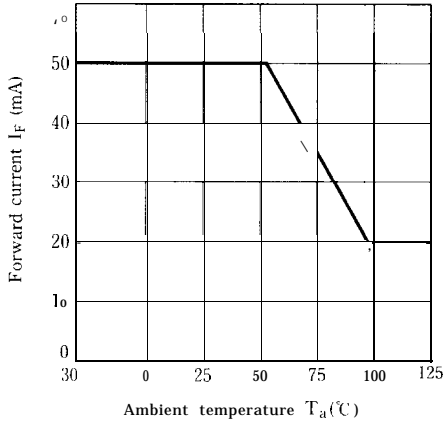
\*4 Classification table of current transfer ratio

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

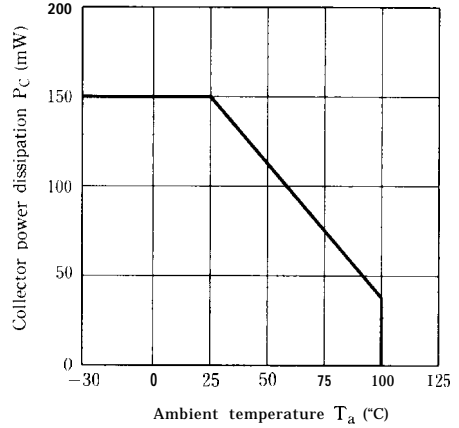
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Photocouplers

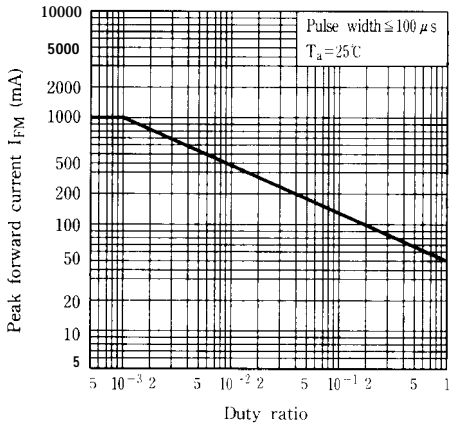
**Fig. 1 Forward Current vs. Ambient Temperature**



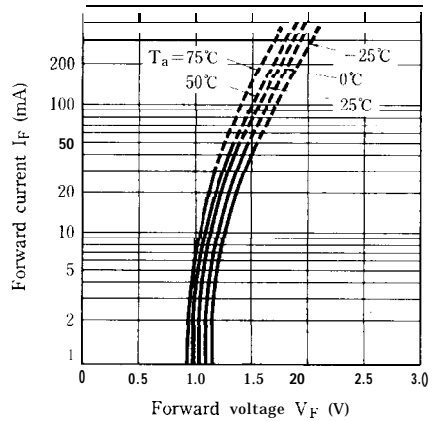
**Fig. 2 Collector Power Dissipation VS. Ambient Temperature**



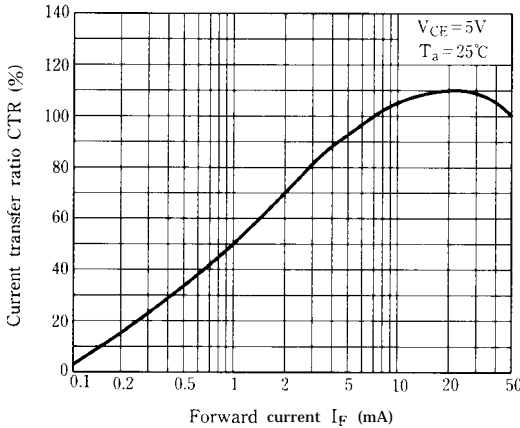
**Fig. 3 Peak Forward Current vs. Duty Ratio**



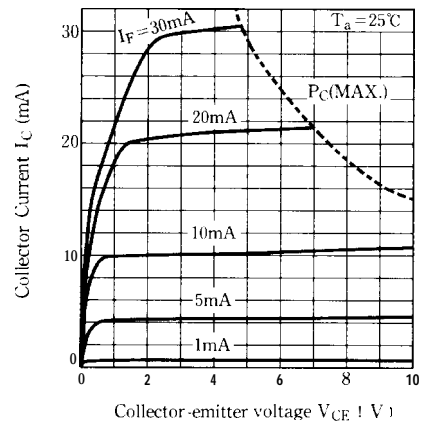
**Fig. 4 Forward Current vs. Forward Voltage**



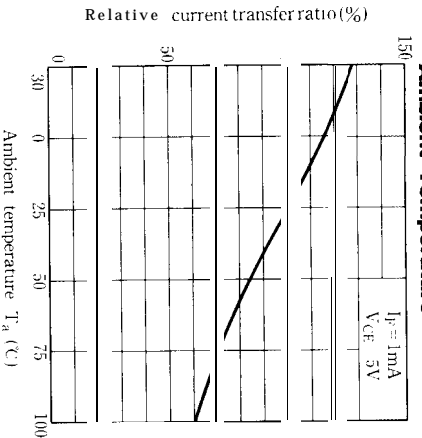
**Fig. 5 Current Transfer Ratio vs. Forward Current**



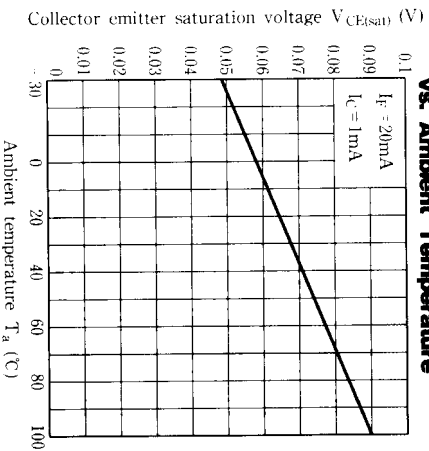
**Fig. 6 Collector Current vs. Collector-emitter Voltage**



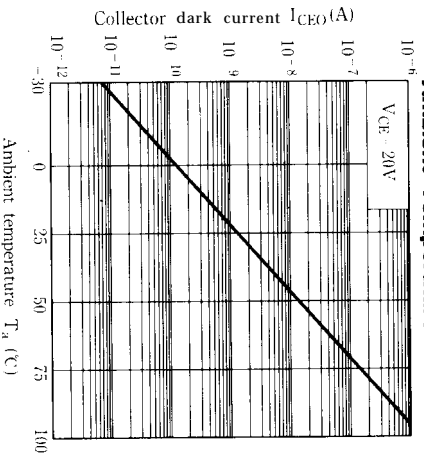
**Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature**



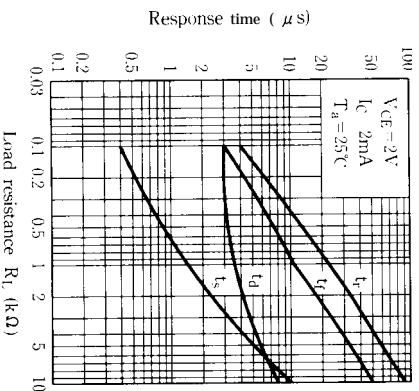
**Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature**



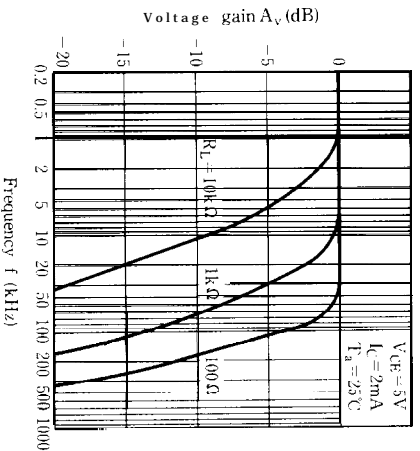
**Fig. 9 Collector Dark Current vs. Ambient Temperature**



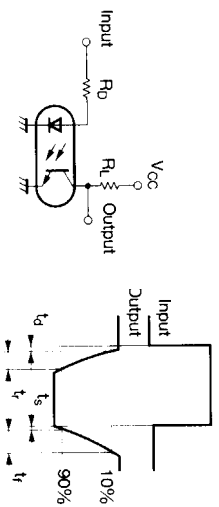
**Fig.10 Response Time vs. Load Resistance**



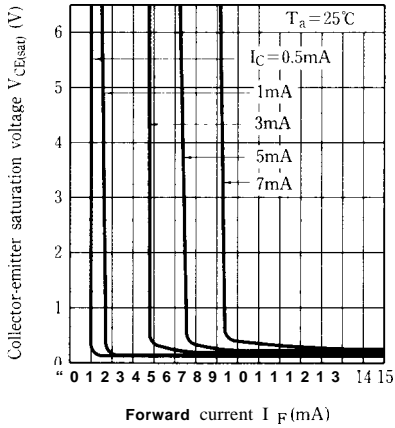
**Fig.11 Frequency Response**



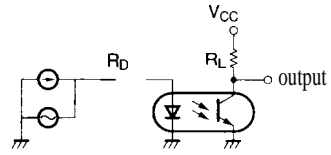
**Test Circuit for Response Time**



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



**Test Circuit for Frequency Response**



- Please refer to the chapter “Precautions for Use” (Page 78 to 93)