

# PC824/PC844

## AC Input Photocoupler

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

### Features

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

### Applications

1. Programmable controllers
2. Telephones
3. Facsimiles

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

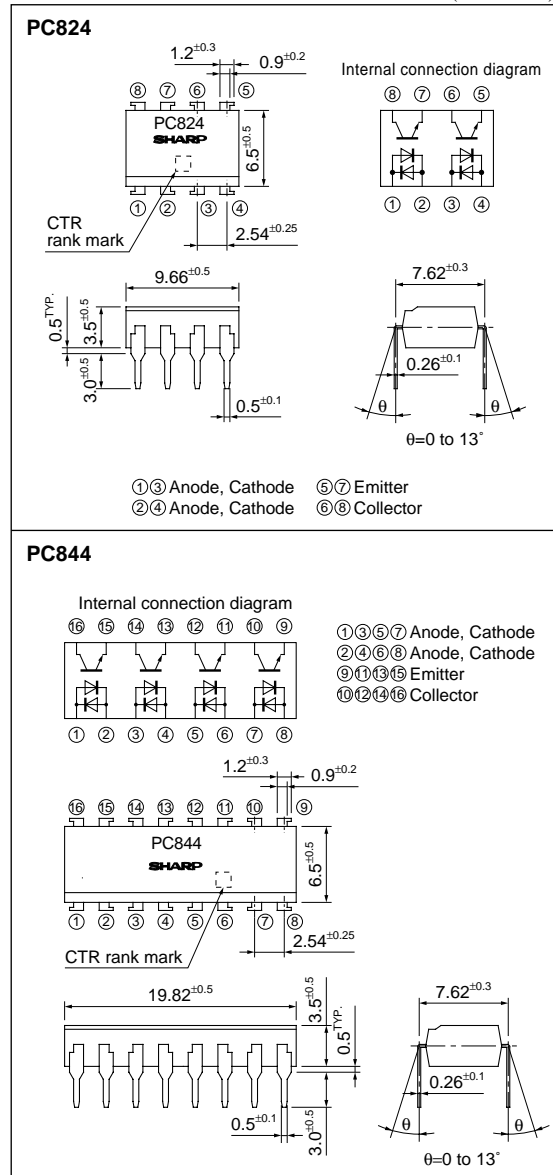
	Parameter	Symbol	Rating	Unit
Input	Forward current	$I_F$	$\pm 50$	mA
	*1 Peak forward current	$I_{FM}$	$\pm 1$	A
	Power dissipation	P	70	mW
Output	Collector-emitter voltage	$V_{CEO}$	35	V
	Emitter-collector voltage	$V_{ECO}$	6	V
	Collector current	$I_C$	50	mA
	Collector power dissipation	$P_C$	150	mW
	Total power dissipation	$P_{tot}$	200	mW
	*2 Isolation voltage	$V_{iso(rms)}$	5	kV
	Operating temperature	$T_{opr}$	-30 to +100	$^\circ\text{C}$
	Storage temperature	$T_{stg}$	-55 to +125	$^\circ\text{C}$
	*3 Soldering temperature	$T_{sol}$	260	$^\circ\text{C}$

\*1 Pulse width  $\leq 100\mu\text{s}$ , Duty ratio: 0.001

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

\*3 For 10s

### Outline Dimensions (Unit : mm)



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■ Electro-optical Characteristics

( $T_a=25^{\circ}\text{C}$ )

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	$V_F$	$I_F=\pm 20\text{mA}$	—	1.2	1.4	V	
	Peak forward voltage	$V_{FM}$	$I_{FM}=\pm 0.5\text{V}$	—	—	3.0	V	
	Terminal capacitance	$C_t$	$V=0, f=1\text{kHz}$	—	50	250	pF	
Output	Collector dark current	$I_{CEO}$	$V_{CE}=20\text{V}, I_F=0$	—	—	100	nA	
	Collector current	$I_C$	$I_F=\pm 1\text{mA}, V_{CE}=5\text{V}$	0.2	—	3.0	mA	
Transfer characteristics	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F=\pm 20\text{mA}, I_C=1\text{mA}$	—	0.1	0.2	V	
	Isolation resistance	$R_{ISO}$	DC500V, 40 to 60%RH	$5 \times 10^{10}$	$10^{11}$	—	$\Omega$	
	Floating capacitance	$C_f$	$V=0, f=1\text{MHz}$	—	0.6	1.0	pF	
	Cut-off frequency	$f_c$	$V_{CE}=5\text{V}, I_C=2\text{mA}, R_L=100\Omega, -3\text{dB}$	15	80	—	kHz	
	Response time	Rise time	$t_r$	$V_{CE}=2\text{V}, I_C=2\text{mA}, R_L=100\Omega$	—	4	18	$\mu\text{s}$
		Fall time	$t_f$		—	3	18	$\mu\text{s}$

■ Rank Table

( $I_F=\pm 1\text{mA}, V_{CE}=5\text{V}, T_a=25^{\circ}\text{C}$ )

Model No.	Rank mark	$I_C$ (mA)
PC824A	A	0.5 to 1.5
PC844A		
PC824	A or no mark	0.2 to 3.0
PC844		

Fig.1 Forward Current vs. Ambient Temperature

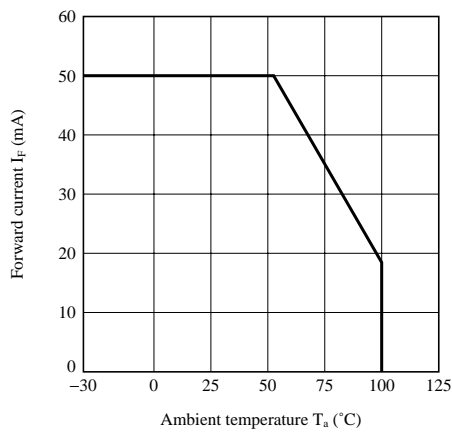


Fig.2 Collector Power Dissipation vs. Ambient Temperature

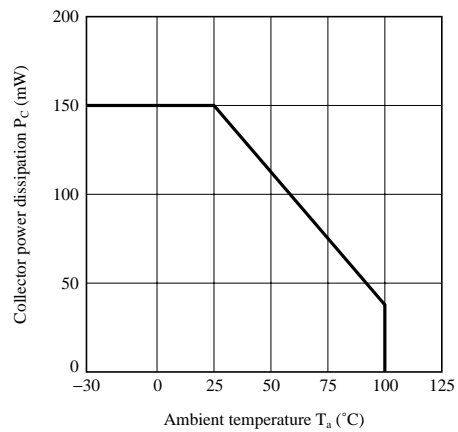


Fig.3 Peak Forward Current vs. Duty Ratio

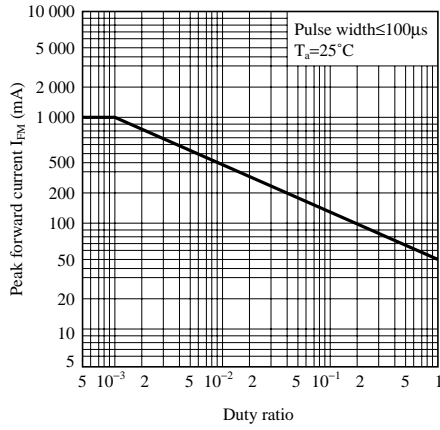


Fig.4 Forward Current vs. Forward Voltage

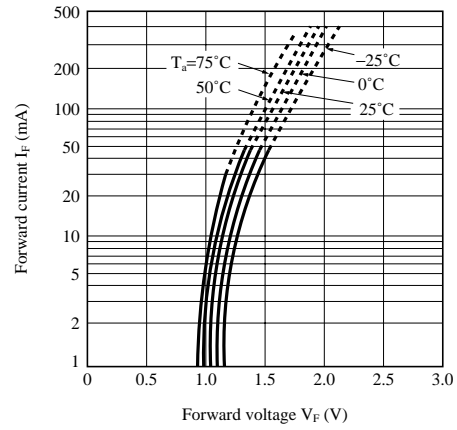


Fig.5 Current Transfer Ratio vs. Forward Current

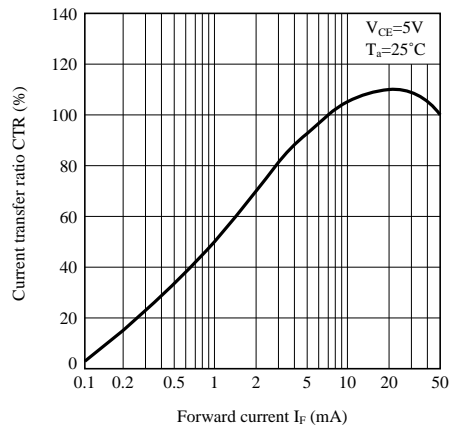


Fig.6 Collector Current vs. Collector-emitter Voltage

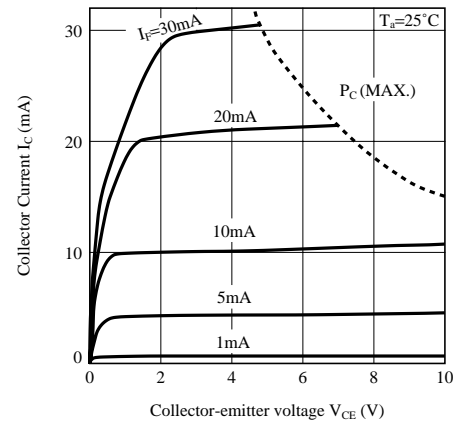


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

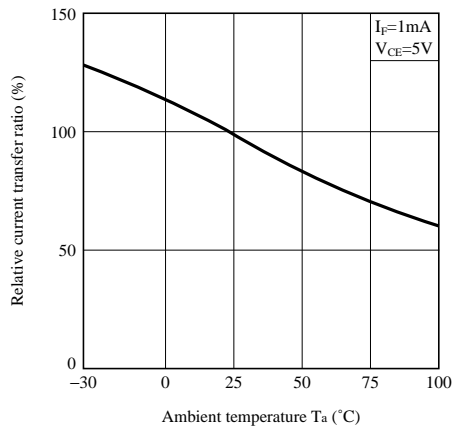
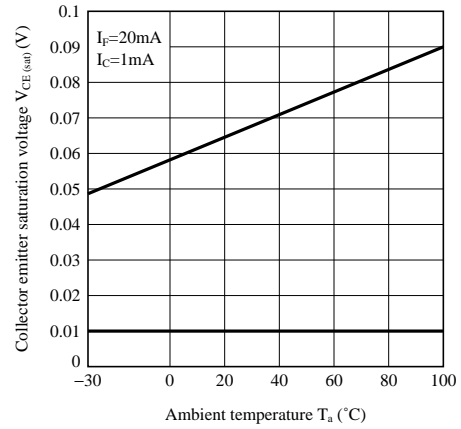
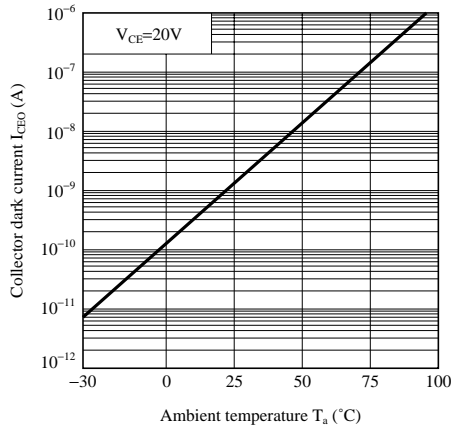


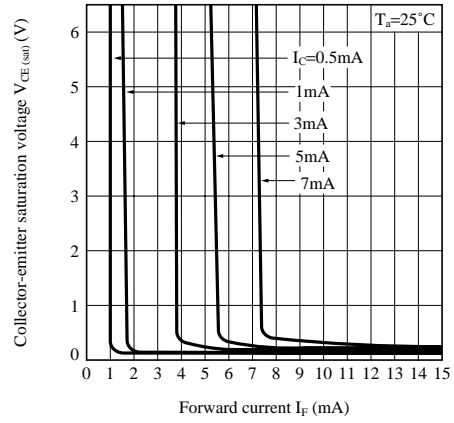
Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature



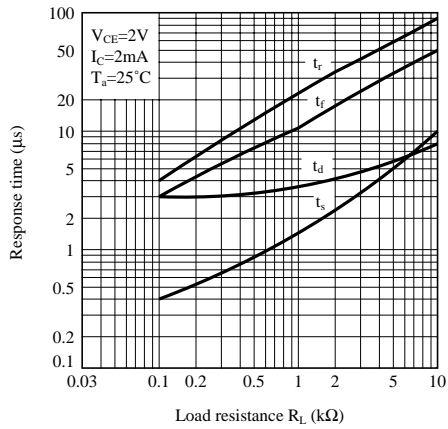
**Fig.9 Collector Dark Current vs. Ambient Temperature**



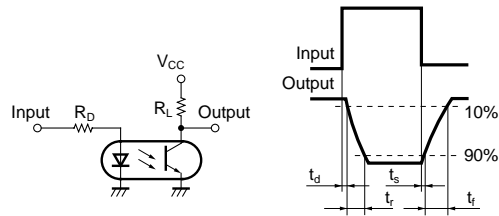
**Fig.10 Collector-emitter Saturation Voltage vs. Forward Current**



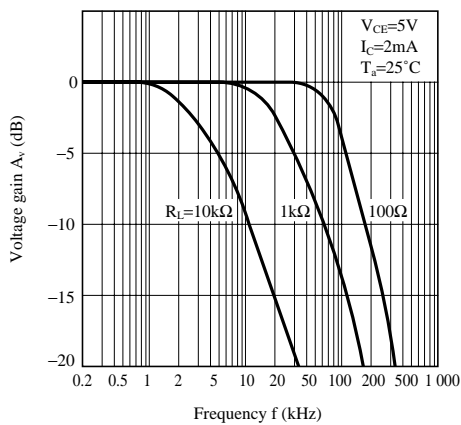
**Fig.11 Response Time vs. Load Resistance**



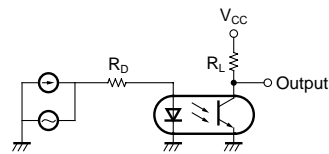
**Test Circuit for Response Time**



**Fig.12 Frequency Response**



**Test Circuit for Frequency Response**





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