PC814 Series AC Input Type Photocoupler

※ Lead forming type (I type) is also available. (PC814I) (Page 482)

■ Features

1. AC or polarity insensitive input
2. High isolation voltage between input and output (V_{iso}: 5,000Vrms)
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 $I_F = \pm 1$mA, $V_{CE} = 5$V
5. UL recognized, file No. E64380

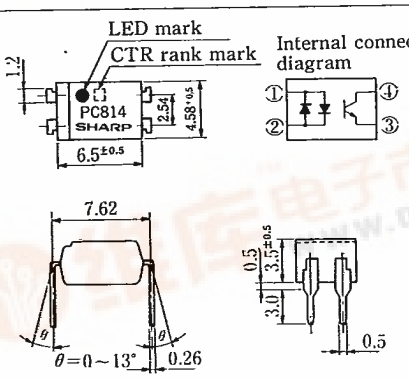
■ Applications

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

■ Outline Dimensions

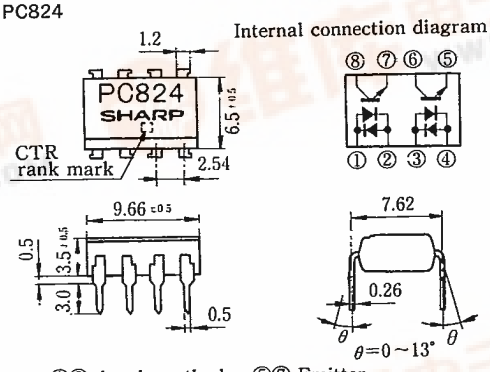
(Unit : mm)

PC814



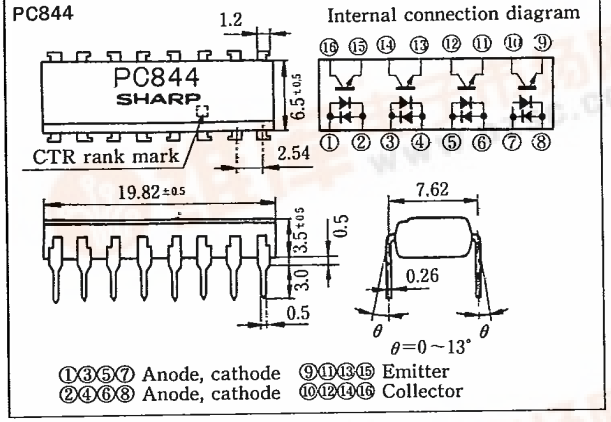
① Anode, cathode ③ Emitter
② Anode, cathode ④ Collector

PC824



①③ Anode, cathode ⑤⑦ Emitter
②④ Anode, cathode ⑥⑧ Collector

PC844



①③⑤⑦ Anode, cathode ⑨⑪⑬⑮ Emitter
②④⑥⑧ Anode, cathode ⑩⑫⑭⑯ Collector

T-41-83

■ 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	Vrms
Operating temperature		T_{opr}	−30~+100	°C
Storage temperature		T_{stg}	−55~+125	°C
*3Soldering temperature		T_{sol}	260	°C

*1 Pulse width≦100μs, Duty ratio=0.001
*2 RH=40~60%, AC for 1 minute
*3 For 10 seconds

■ Electro-optical Characteristics (Ta=25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Inpuut	Forward voltage	V_F	I_F=±20mA	—	1.2	1.4	V
	Peak forward voltage	V_{FM}	I_{FM}=±0.5A	—	—	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, RH=40~60%	5×10^{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=100Ω	15	80	—	kHz
	Response time (Rise)	t_r	V_{CE}=2V, I_C=2mA, R_L=100Ω	—	4	18	μs
	Response time (Fall)	t_f		—	3	18	μs

6

*4 Classification table of current transfer ratio

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

Fig. 1 Forward Current vs. Ambient Temperature

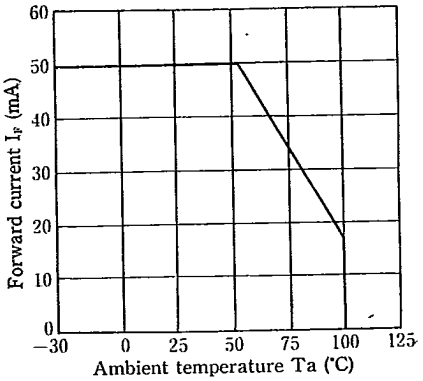


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

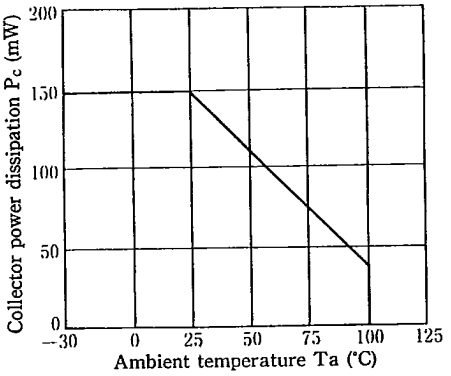


Fig. 3 Peak Forward Current vs. Duty Ratio

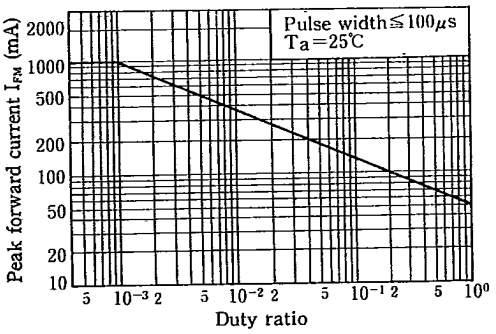


Fig. 4 Forward Current vs. Forward Voltage

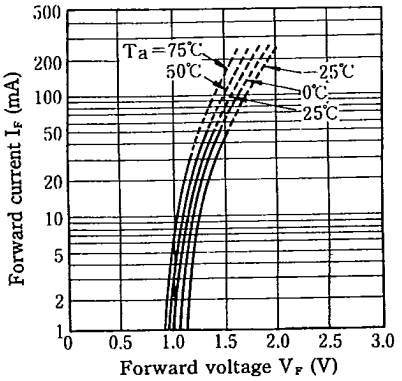


Fig. 5 Current Transfer Ratio vs. Forward Current

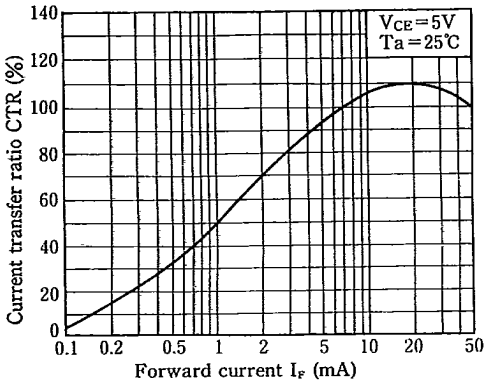


Fig. 6 Collector Current vs. Collector-emitter Voltage

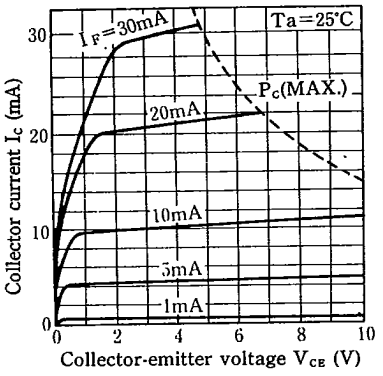


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

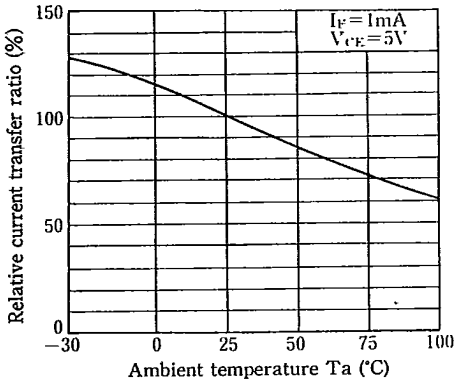


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature

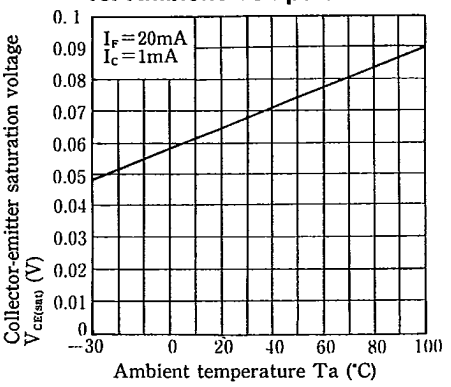


Fig. 9 Collector Dark Current vs. Ambient Temperature

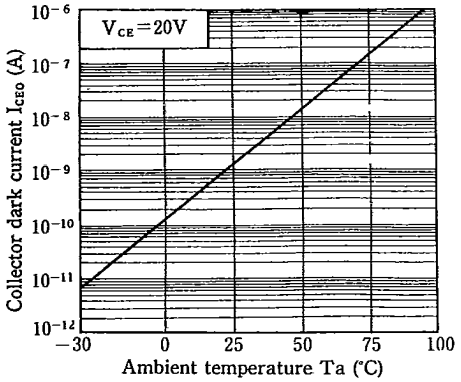


Fig. 10 Response Time vs. Load Resistance

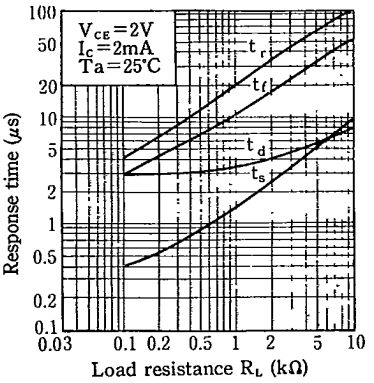
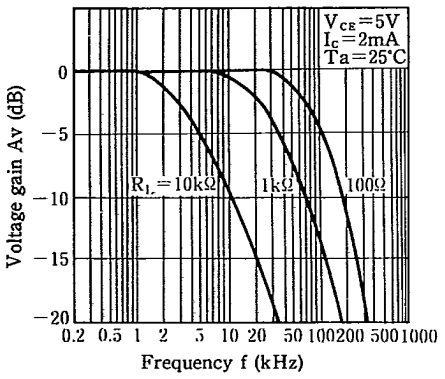


Fig. 11 Frequency Response



Test Circuit for Response Time

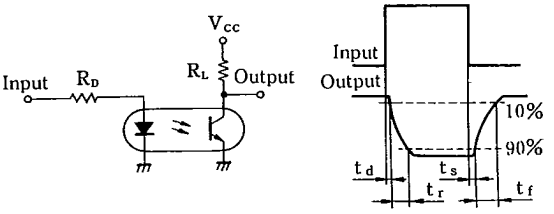


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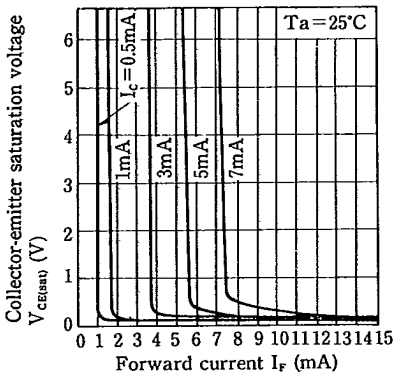
Fig. 12 Collector-emitter Saturation Voltage vs. Forward Current



Test Circuit for Frequency Response