

# PC817 Series

## High Density Mounting Type Photocoupler

\* Lead forming type (I type) and taping reel type (P type) are also available. (PC817I/PC817P) (Page 656)  
 \*\*TUV (VDE0884) approved type is also available as an option.

### Features

1. Current transfer ratio  
(CTR : MIN. 50% at  $I_F=5mA$ )
2. High isolation voltage between input and output ( $V_{iso} : 5\ 000V_{rms}$ )
3. Compact dual-in-line package

PC817 : 1-channel type

PC827 : 2-channel type

PC837 : 3-channel type

PC847 : 4-channel type

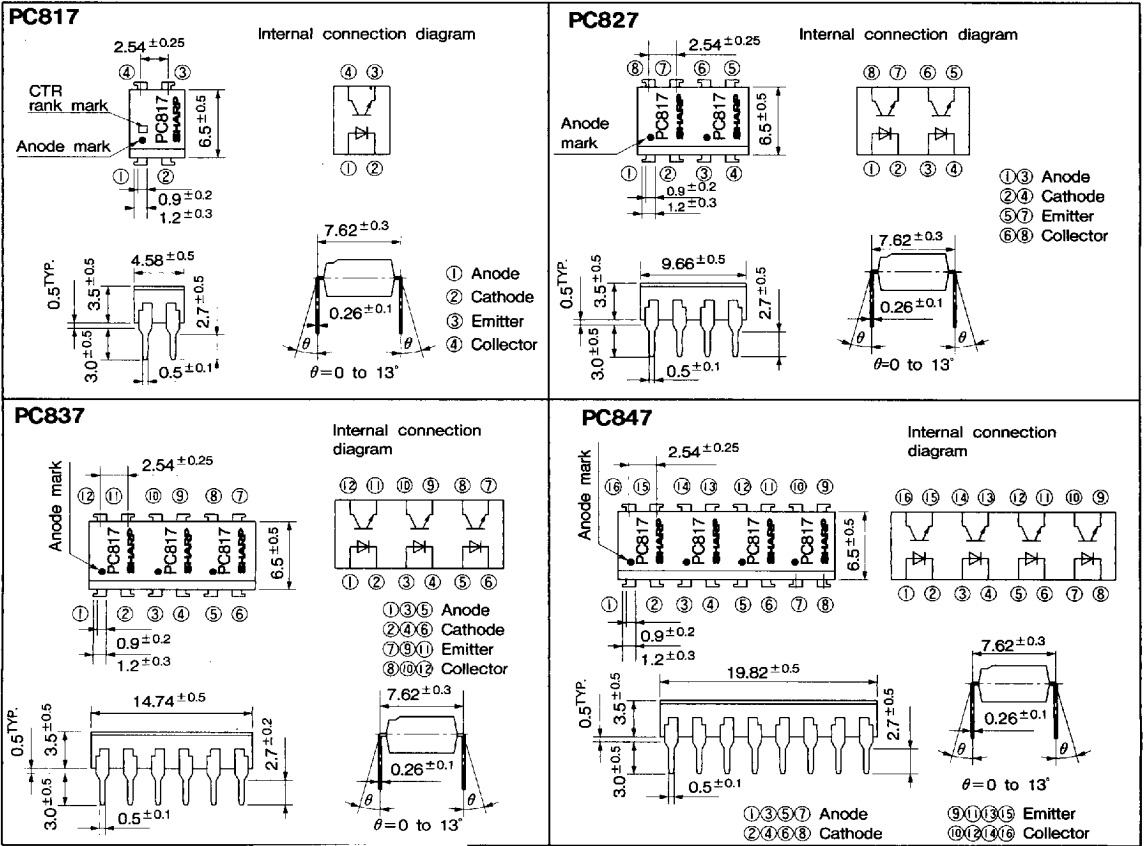
4. Recognized by UL, file No. E64380

### Applications

1. Computer terminals
2. System appliances, measuring instruments
3. Registers, copiers, automatic vending machines
4. Electric home appliances, such as fan heaters, etc.
5. Medical instruments, physical and chemical equipment
6. Signal transmission between circuits of different potentials and impedances

### Outline Dimensions

(Unit : mm)



8180798 0011741 0T5

"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 <sub>F</sub>	50	mA
	*1Peak forward current	I <sub>FM</sub>	1	A
	Reverse voltage	V <sub>R</sub>	6	V
	Power dissipation	P	70	mW
Output	Collector-emitter voltage	V <sub>CEO</sub>	35	V
	Emitter-collector voltage	V <sub>ECO</sub>	6	V
	Collector current	I <sub>C</sub>	50	mA
	Collector power dissipation	P <sub>C</sub>	150	mW
	Total power dissipation	P <sub>tot</sub>	200	mW
*2Isolation voltage		V <sub>iso</sub>	5 000	V <sub>rms</sub>
Operating temperature		T <sub>opr</sub>	-30 to +100	°C
Storage temperature		T <sub>stg</sub>	-55 to +125	°C
*3Soldering temperature		T <sub>sol</sub>	260	°C

\*1 Pulse width ≤ 100 μs, Duty ratio = 0.001

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

\*3 For 10 seconds

**Electro-optical Characteristics**

(Ta = 25°C)

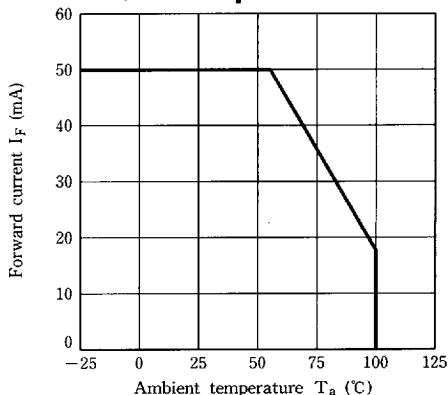
Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	V <sub>F</sub>	I <sub>F</sub> = 20mA	—	1.2	1.4	V	
	Peak forward voltage	V <sub>FM</sub>	I <sub>FM</sub> = 0.5A	—	—	3.0	V	
	Reverse current	I <sub>R</sub>	V <sub>R</sub> = 4V	—	—	10	μA	
	Terminal capacitance	C <sub>t</sub>	V = 0, f = 1kHz	—	30	250	pF	
Output	Collector dark current	I <sub>CEO</sub>	V <sub>CE</sub> = 20V	—	—	10 <sup>-7</sup>	A	
Transfer characteristics	*4Current transfer ratio		CTR	I <sub>F</sub> = 5mA, V <sub>CE</sub> = 5V	50	—	600	%
	Collector-emitter saturation voltage		V <sub>CE(sat)</sub>	I <sub>F</sub> = 20mA, I <sub>C</sub> = 1mA	—	0.1	0.2	V
	Isolation resistance		R <sub>ISO</sub>	DC500V, 40 to 60%RH	5 × 10 <sup>10</sup>	10 <sup>11</sup>	—	Ω
	Floating capacitance		C <sub>f</sub>	V = 0, f = 1MHz	—	0.6	1.0	pF
	Cut-off frequency		f <sub>c</sub>	V <sub>CE</sub> = 5V, I <sub>C</sub> = 2mA, R <sub>L</sub> = 100Ω, -3dB	—	80	—	kHz
	Response time	Rise time	t <sub>r</sub>	V <sub>CE</sub> = 2V, I <sub>C</sub> = 2mA, R <sub>L</sub> = 100Ω	—	4	18	μs
Fall time		t <sub>f</sub>	—		3	18	μs	

\*4 Classification table of current transfer ratio is shown below.

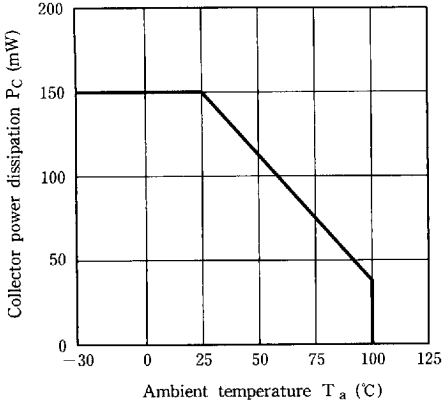
Model No.	Rank mark	CTR (%)
PC817A	A	80 to 160
PC817B	B	130 to 260
PC817C	C	200 to 400
PC817D	D	300 to 600
PC8*7AB	A or B	80 to 260
PC8*7BC	B or C	130 to 400
PC8*7CD	C or D	200 to 600
PC8*7AC	A, B or C	80 to 400
PC8*7BD	B, C or D	130 to 600
PC8*7AD	A, B, C or D	80 to 600
PC8*7	A, B, C, D or No mark	50 to 600

\* : 1 or 2 or 3 or 4

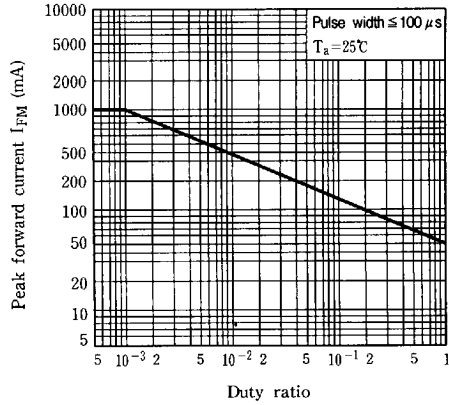
**Fig. 1 Forward Current vs. Ambient Temperature**



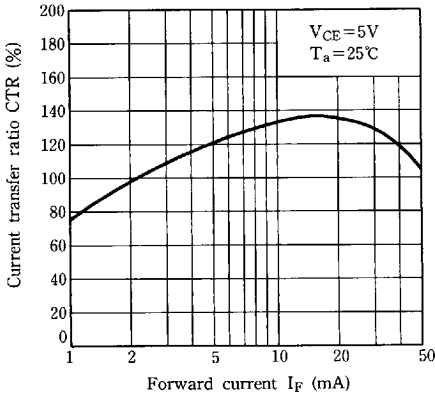
**Fig. 2 Collector Power Dissipation VS. Ambient Temperature**



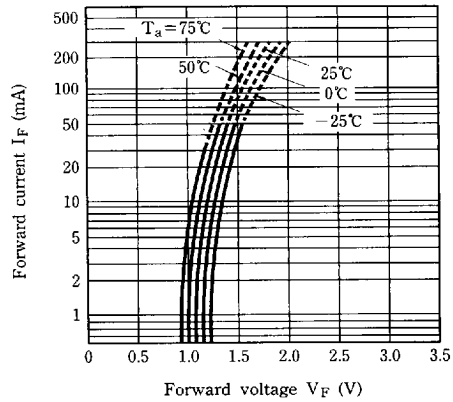
**Fig. 3 Peak Forward Current vs. Duty Ratio**



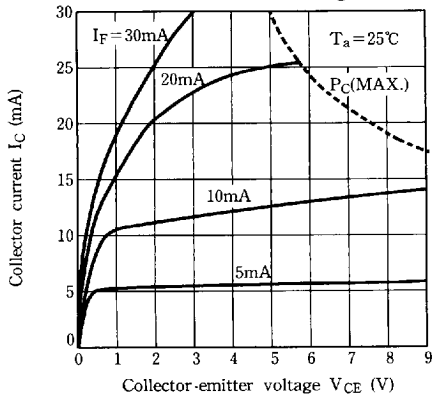
**Fig. 4 Current Transfer Ratio vs. Forward Current**



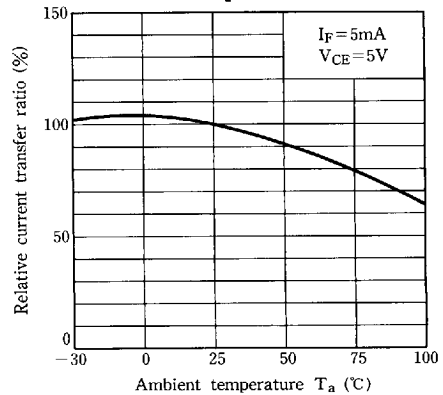
**Fig. 5 Forward Current vs. Forward Voltage**



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

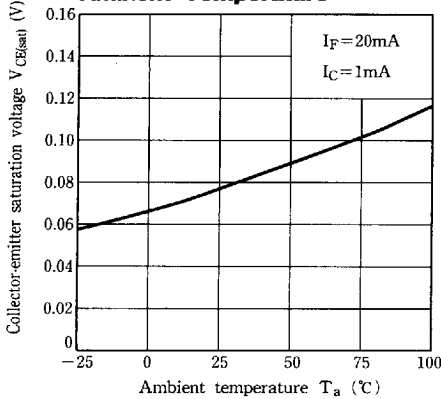


**Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature**

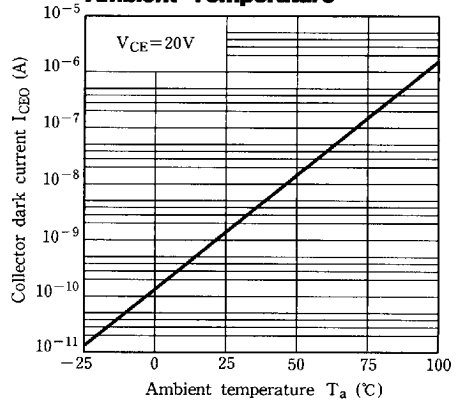


6  
Photocouplers

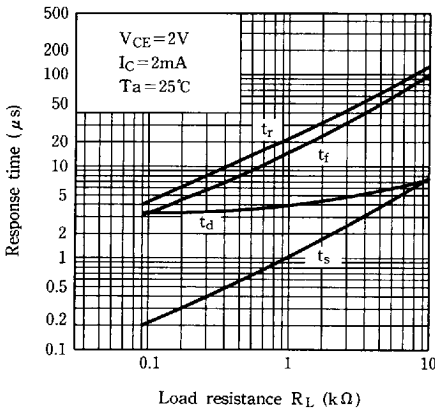
**Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature**



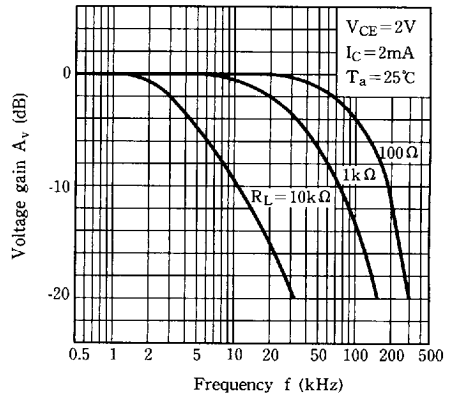
**Fig. 9 Collector Dark Current vs. Ambient Temperature**



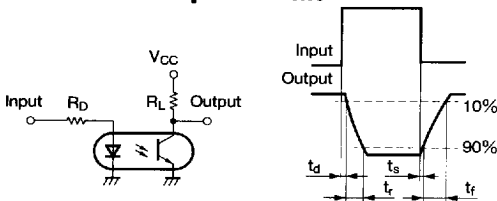
**Fig.10 Response Time vs. Load Resistance**



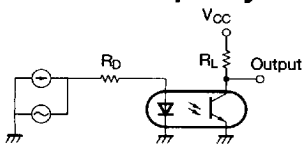
**Fig.11 Frequency Response**



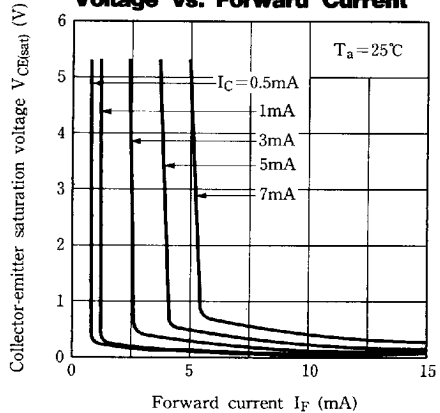
**Test Circuit for Response Time**



**Test Circuit for Frequency Response**



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



● Please refer to the chapter "Precautions for Use" (Page 78 to 93)