

# PC816 Series

## High Collector-emitter Voltage, High Density Mounting Type Photocoupler

※ Lead forming type (I type) and taping reel type (P type) are also available. ( PC816I/PC81 6P) (Page 656)

### ■ Features

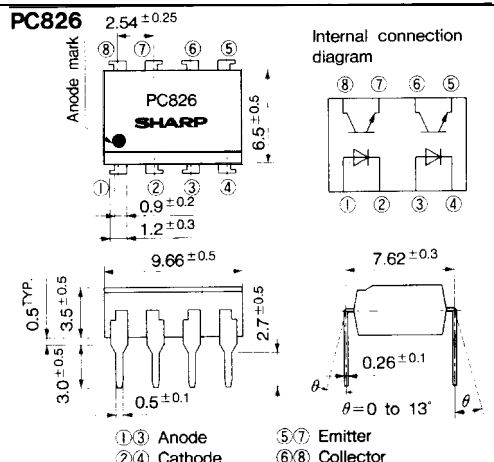
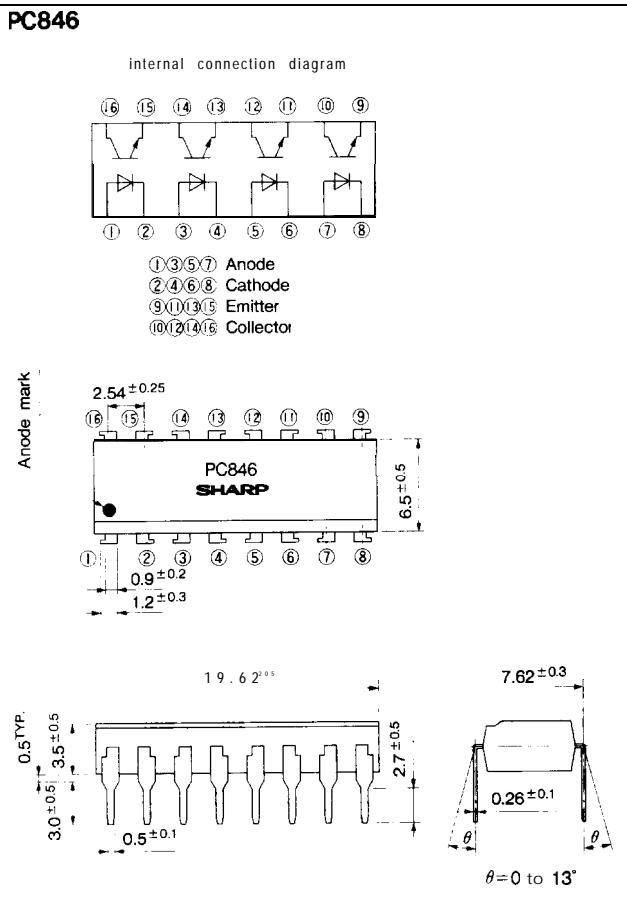
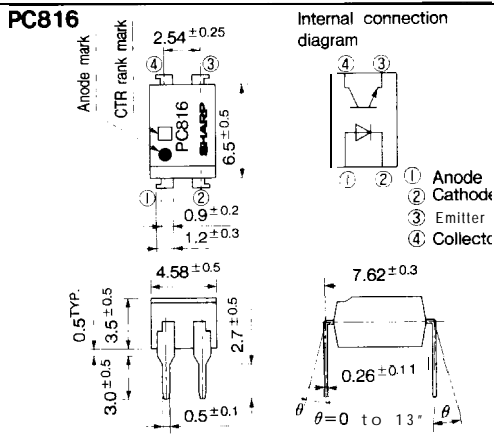
1. High collector-emitter voltage ( $V_{CE0} : 70V$ )
2. Compact dual-in-line package  
 PC816 : 1-channel type  
 PC826 : 2-channel type  
 PC846 : 4-channel type
3. High isolation voltage between input and output ( $V_{ISO} : 5\ 000V_{rms}$ )
4. Current transfer ratio  
 (CTR : MIN. 50% at  $I_F=5mA, V_{CE}=5V$ )
5. Recognized by UL, file No. E64380

### ■ Applications

1. Programmable controllers, computers
2. System appliances, measuring instruments
3. Signal transmission between circuits of different potentials and impedances

### ■ Outline Dimensions

(Unit : mm)



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Photocouplers

■ Absolute Maximum Ratings

(Ta = 25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I <sub>F</sub>	50	mA
	*1 Peak 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>	70	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
*2 Isolation voltage		V <sub>iso</sub>	5000	V <sub>rms</sub>
Operating temperature		T <sub>opr</sub>	-30 to + 100	°C
Storage temperature		T <sub>stg</sub>	-55 to +125	°C
*3 Soldering 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 Characteristic

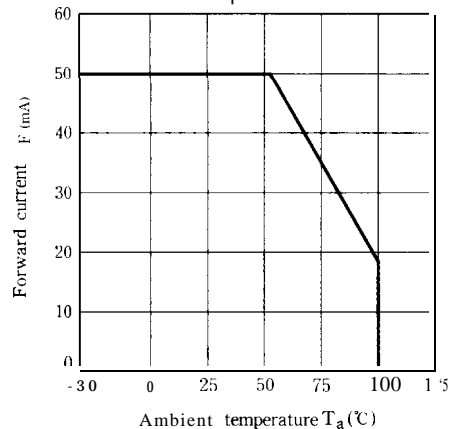
(Ta = 25°C)

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, I <sub>F</sub> = 0	—	—	10 <sup>-7</sup>	A
Transfer characteristics	*4 Current 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>	1 × 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> = 100 Ω		4	18
Fall time		t <sub>f</sub>			3	18	μs

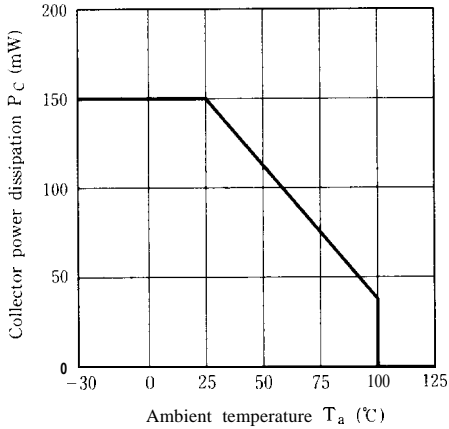
\*4 Classification table of current transfer ratio is shown below.

Model No.	Rank mark	CTR (%)
PC616A	A	80 to 160
<b>PC816B</b>	B	130 to 260
<b>PC816C</b>	c	200 to 400
<b>PC816D</b>	D	300 to 600
<b>PC816AB</b>	A or B	80 to 260
<b>PC816BC</b>	B or C	130 to 400
<b>PC816CD</b>	C or D	200 to 600
<b>PC816AC</b>	A, B or D	80 to 400
<b>PC816BD</b>	B, C or D	130 to 600
Pc616AD	A, B, C or D	80 to 600
<b>PC816</b>	A, B, C, D or So mark	50 to 600

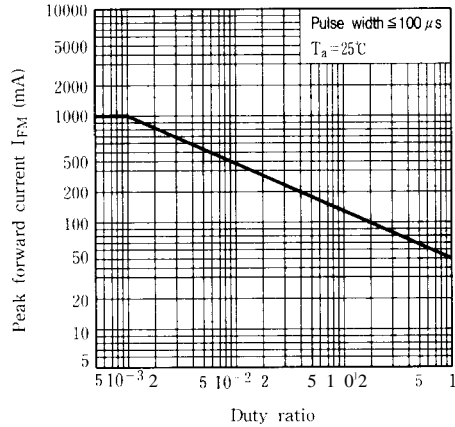
Fig. 1 Forward Current vs. Ambient Temperature



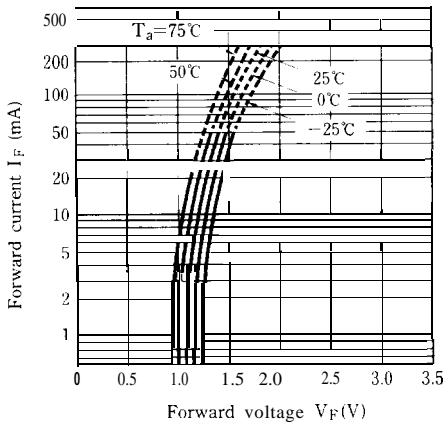
**Fig. 2 Collector Power Dissipation VS. Ambient Temperature**



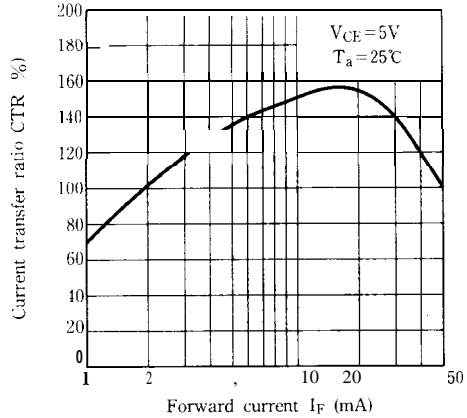
**Fig. 3 Peak Forward Current vs. Duty Ratio**



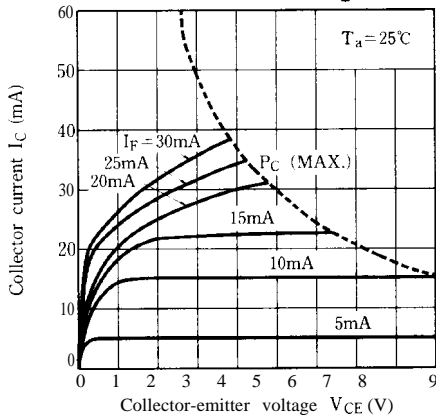
**Fig. 4 Forward Current vs. Forward Voltage**



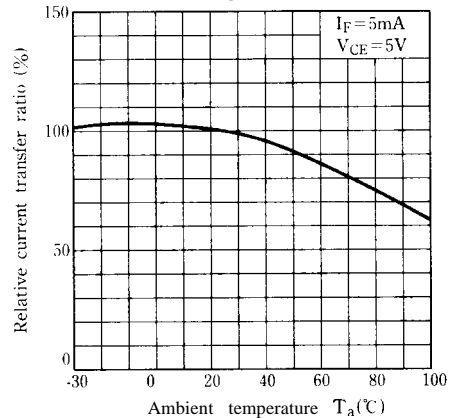
**Fig. 5 Current Transfer Ratio vs. Forward Current**



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

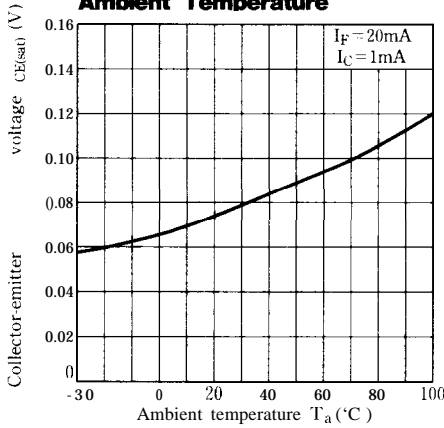


**Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature**

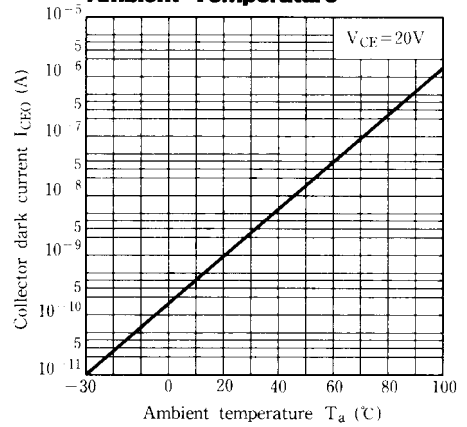


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Photocouplers

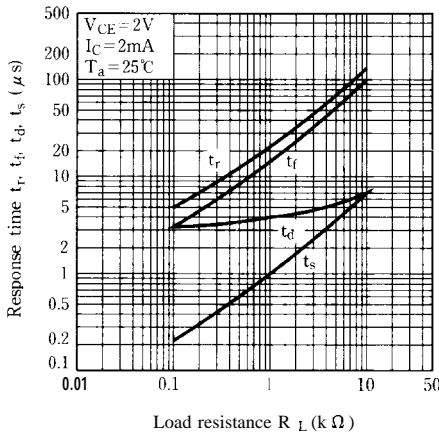
**Fig. 8 Collector-emitter Saturation voltage vs. Ambient Temperature**



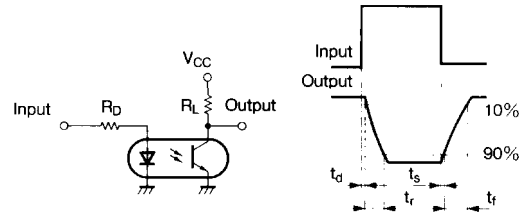
**Fig. 9 Collector Dark Current vs. Ambient Temperature**



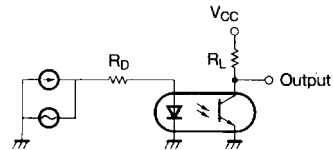
**Fig.10 Response Time vs. Load Resistance**



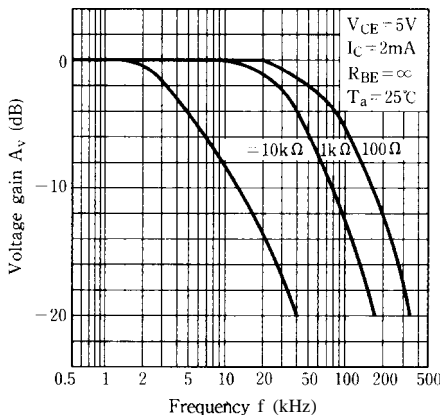
**Test Circuit for Response Time**



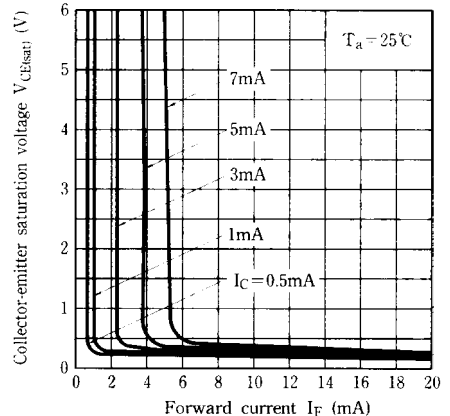
**Test Circuit for Frequency Response**



**Fig.11 Frequency Response**



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



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