

# 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/PC816P )

### ■ Features

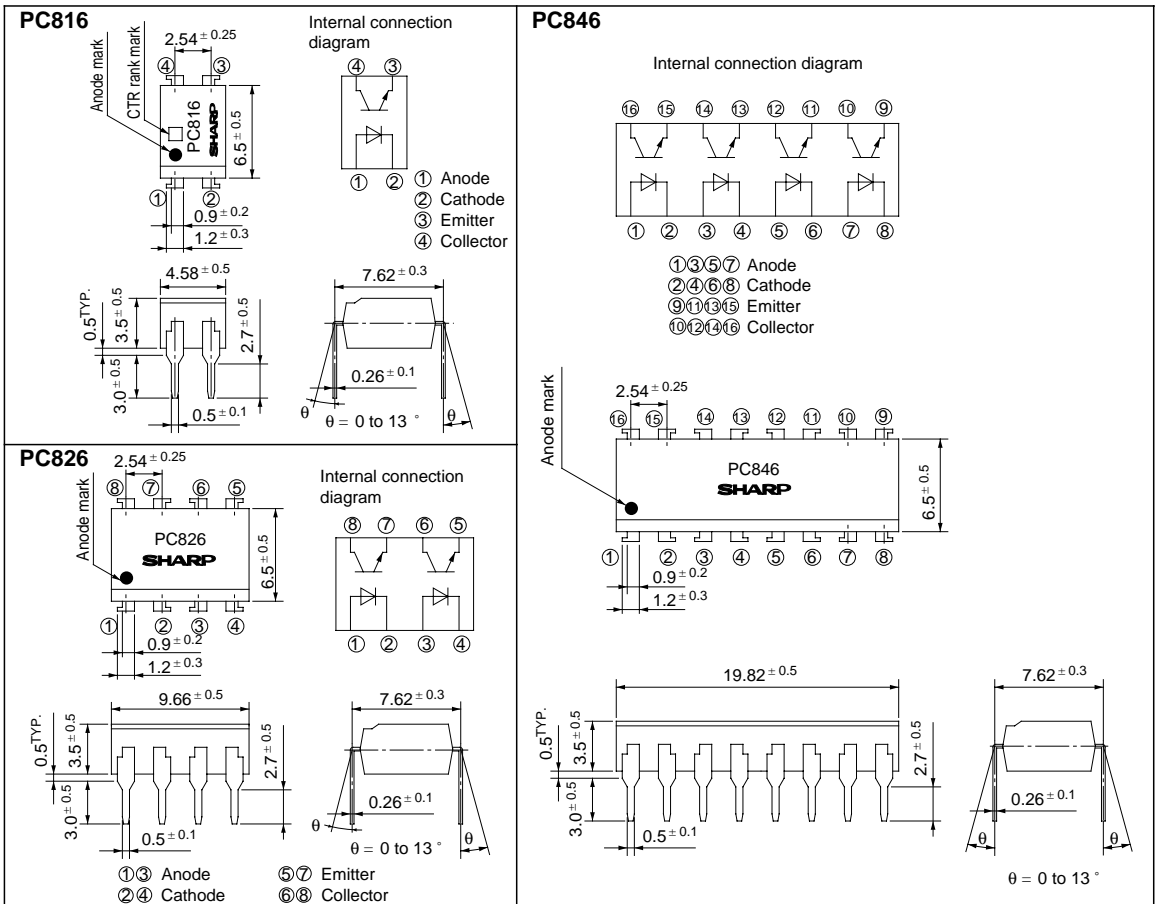
1. High collector-emitter voltage (  $V_{CEO}$ : 70V )
2. Compact dual-in-line package  
**PC816** : 1-channel type  
**PC826** : 2-channel type  
**PC846** : 4-channel type
3. High isolation voltage between input and output (  $V_{ISO}$  : 5 000V<sub>rms</sub> )
4. Current transfer ratio  
( CTR : MIN. 50% at  $I_F = 5\text{mA}$ ,  $V_{CE} = 5\text{V}$  )
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 )



## 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>ECCO</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>	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
*3 Soldering temperature		T <sub>sol</sub>	260	°C

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

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

\*3 For 10 seconds

## Electro-optical Characteristics

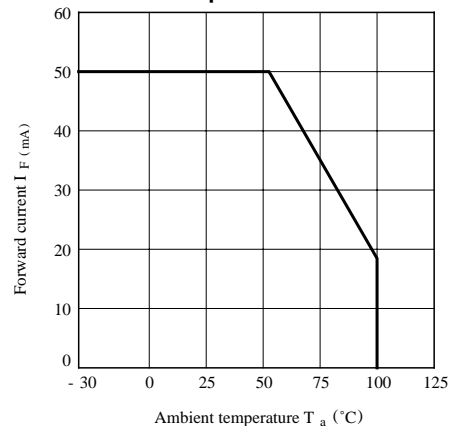
(Ta = 25°C)

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, 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>	10 <sup>11</sup>	-	Ω	
	Floating capacitance	C <sub>f</sub>	V = 0, f = 1MHz	-	0.6	1.0	pF	
	Cut-off frequency	Response time	f <sub>c</sub>	V <sub>CE</sub> = 5V, I <sub>C</sub> = 2mA, R <sub>L</sub> = 100Ω, - 3dB	-	80	-	kHz
			Rise time	t <sub>r</sub>	V <sub>CE</sub> = 2V, I <sub>C</sub> = 2mA R <sub>L</sub> = 100Ω	-	4	18
Fall time	t <sub>f</sub>	-	3	18		μs		

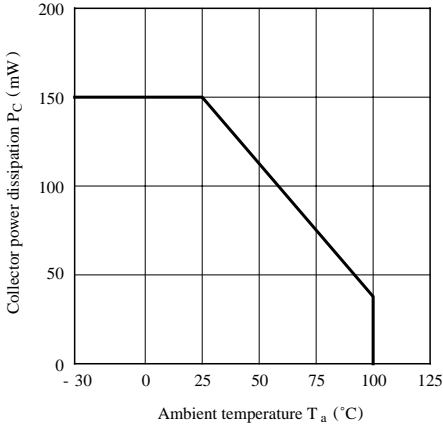
\*4 Classification table of current transfer ratio is shown below.

Model No.	Rank mark	CTR (%)
PC816A	A	80 to 160
PC816B	B	130 to 260
PC816C	C	200 to 400
PC816D	D	300 to 600
PC816AB	A or B	80 to 260
PC816BC	B or C	130 to 400
PC816CD	C or D	200 to 600
PC816AC	A, B or D	80 to 400
PC816BD	B, C or D	130 to 600
PC816AD	A, B, C or D	80 to 600
PC816	A, B, C, D or No mark	50 to 600

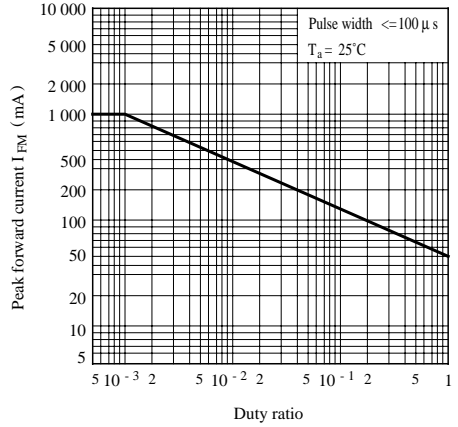
Fig. 1 Forward Current vs. Ambient Temperature



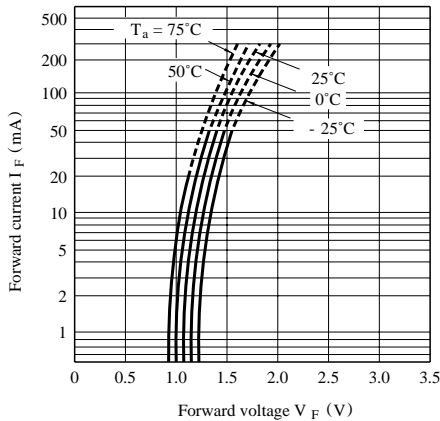
**Fig. 2 Collector Power Dissipation VS. Ambient Temperature**



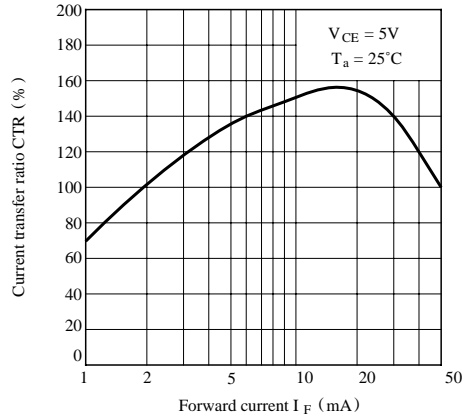
**Fig. 3 Peak Forward Current vs. Duty Ratio**



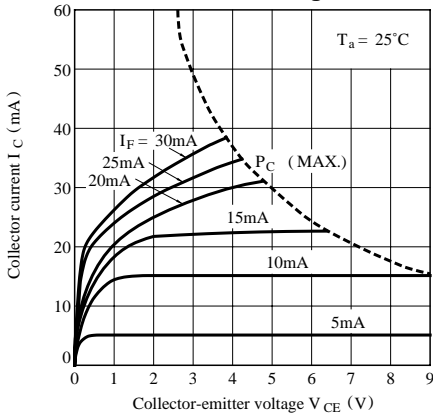
**Fig. 4 Forward Current vs. Forward Voltage**



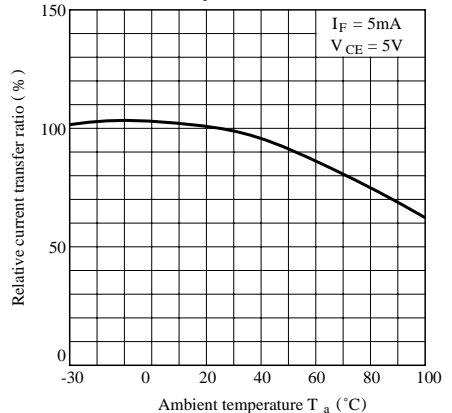
**Fig. 5 Current Transfer Ratio vs. Forward Current**



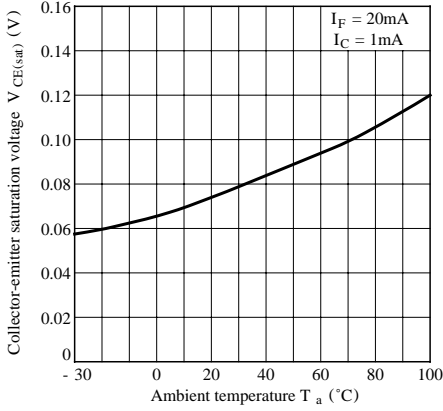
**Fig. 6 Collector Current vs. Collector-emitter Voltage**



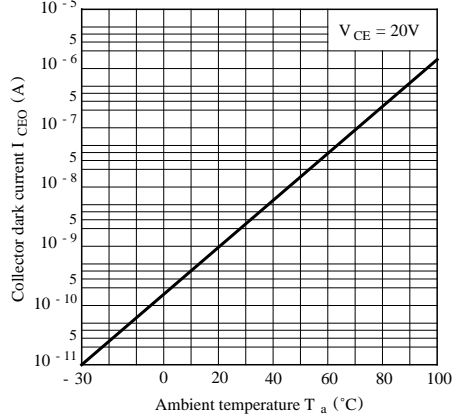
**Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature**



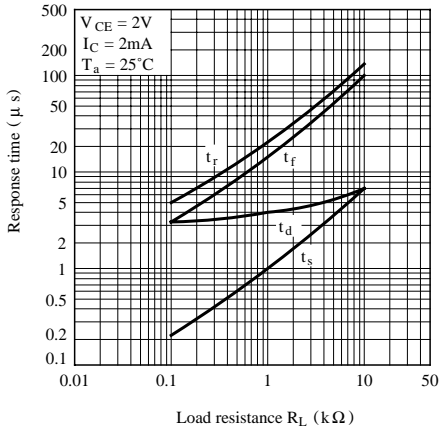
**Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature**



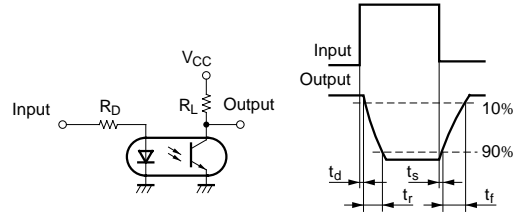
**Fig. 9 Collector Dark Current vs. Ambient Temperature**



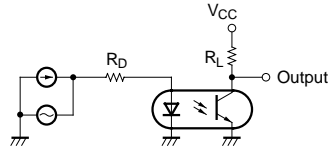
**Fig.10 Response Time vs. Load Resistance**



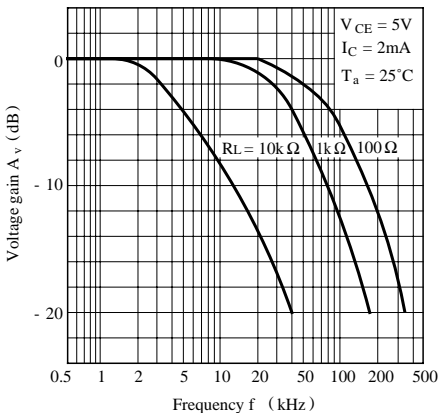
**Test Circuit for Response Time**



**Test Circuit for Frequency Response**



**Fig.11 Frequency Response**



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

