

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

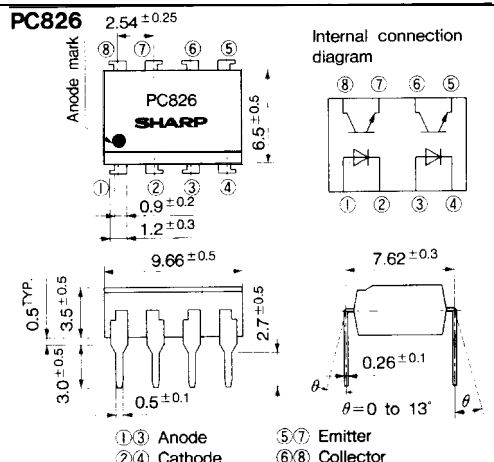
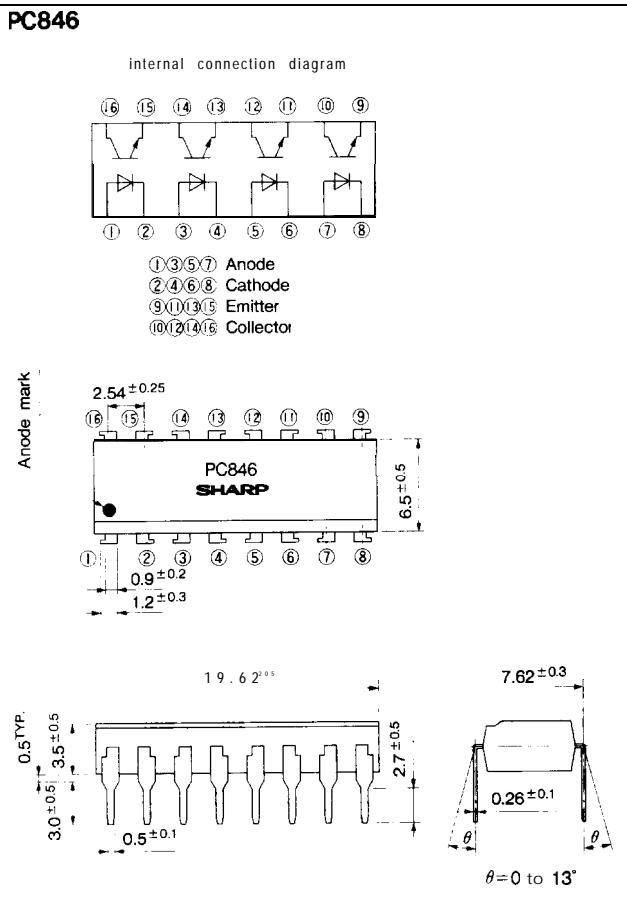
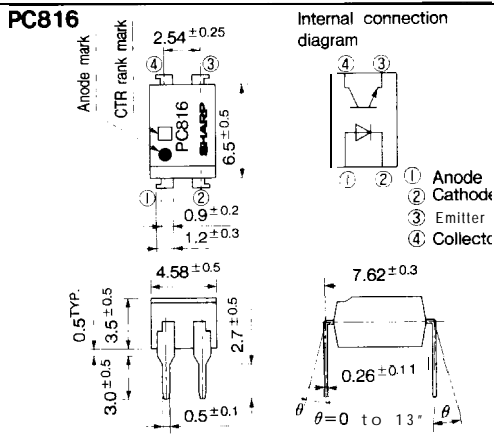
1. High collector-emitter voltage ($V_{CE0} : 70V$)
2. Compact dual-in-line package
 PC816 : 1-channel type
 PC826 : 2-channel type
 PC846 : 4-channel type
3. High isolation voltage between input and output ($V_{ISO} : 5\,000V_{rms}$)
4. Current transfer ratio
 (CTR : MIN. 50% at $I_F = 5mA, V_{CE} = 5V$)
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)



6

Photocouplers

■ Absolute Maximum Ratings

(Ta = 25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I _F	50	mA
	*1 Peak forward current	I _{FM}	1	A
	Reverse voltage	V _R	6	V
	power dissipation	P	70	mW
Output	Collector -emitter voltage	V _{CEO}	70	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}	5000	V _{rms}
Operating temperature		T _{opr}	-30 to + 100	°C
Storage temperature		T _{stg}	-55 to +125	°C
*3 Soldering temperature		T _{sol}	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 _F	I _F = 20mA	—	1.2	1.4	v
	Peak forward voltage	V _{FM}	I _{FM} = 0.5A			3.0	V
	Reverse current	I _R	V _R = 4V		—	10	μA
	Terminal capacitance	C _t	V = 0, f = 1kHz		30	250	pF
output	Collector dark current	I _{CEO}	V _{CE} = 20V, I _F = 0	—	—	10 ⁻⁷	A
Transfer characteristics	*4 Current transfer ratio	CTR	I _F = 5mA, V _{CE} = 5V	50	—	600	%
	Collector -emitter saturation voltage	V _{CE(sat)}	I _F = 20mA, I _C = 1mA	—	0.1	0.2	v
	Isolation resistance	R _{ISO}	DC500V, 40 to 60%RH	5 × 10 ¹⁰	1 × 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, -3dB	—	80		kHz
	Response time	Rise time	t _r	V _{CE} = 2V, I _C = 2mA		4	18
Fall time		t _f	R _L = 100 Ω	—	3	18	μs

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

Model No.	Rank mark	CTR (%)
PC616A	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
Pc616AD	A, B, C or D	80 to 600
PC816	A, B, C, D or So mark	50 to 600

Fig. 1 Forward Current vs. Ambient Temperature

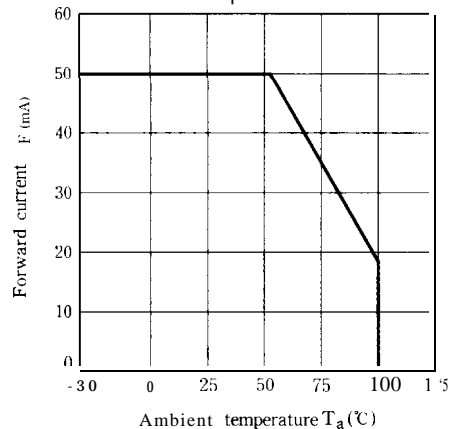


Fig. 2 Collector Power Dissipation VS. Ambient Temperature

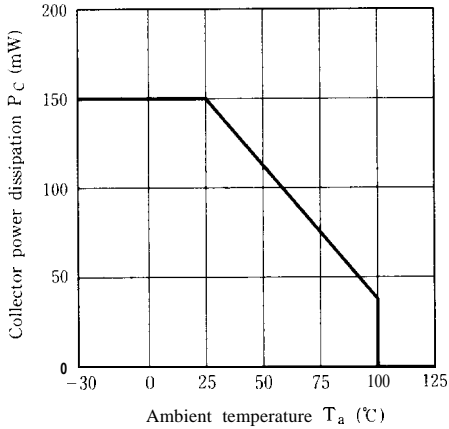


Fig. 3 Peak Forward Current vs. Duty Ratio

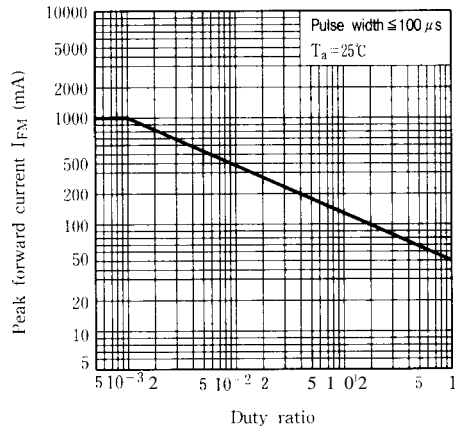


Fig. 4 Forward Current vs. Forward Voltage

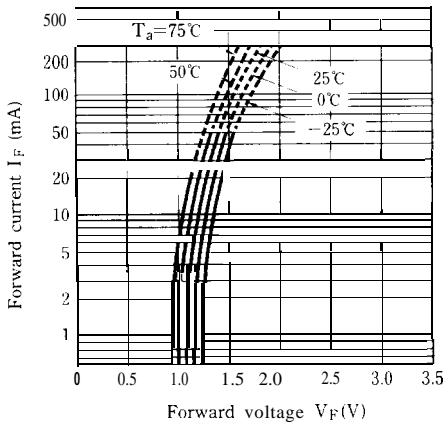


Fig. 5 Current Transfer Ratio vs. Forward Current

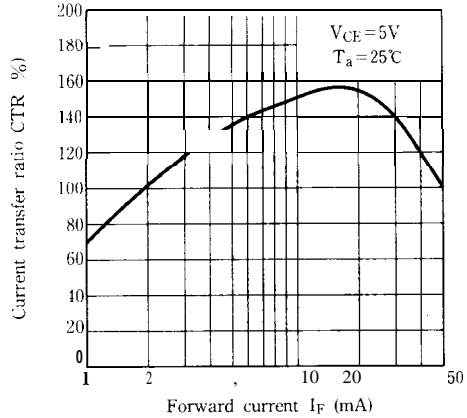


Fig. 6 Collector Current vs. Collector-emitter Voltage

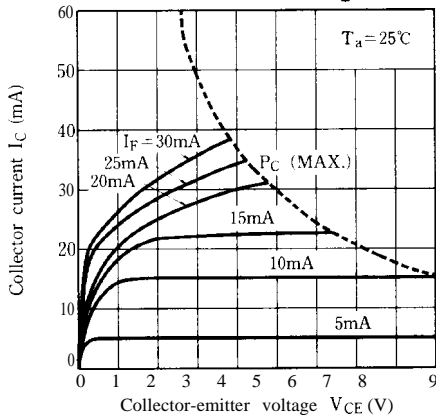
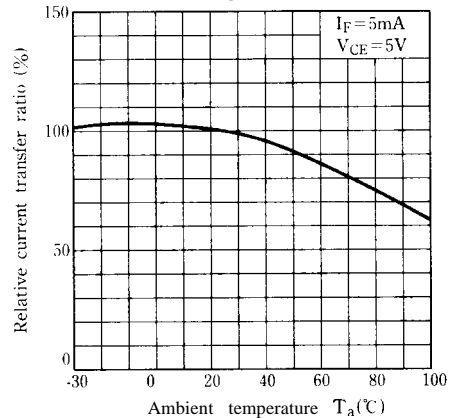


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature



6
Photocouplers

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

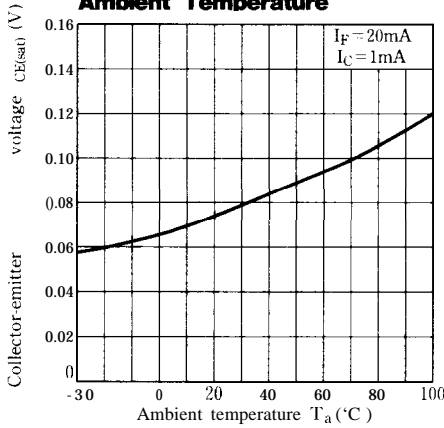


Fig. 9 Collector Dark Current vs. Ambient Temperature

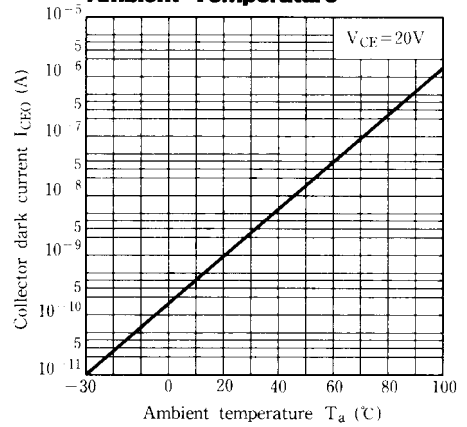
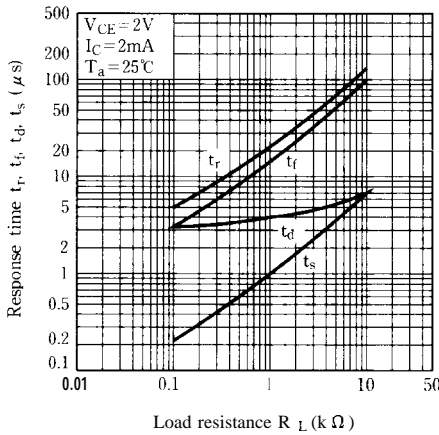
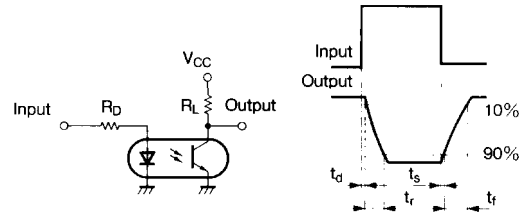


Fig.10 Response Time vs. Load Resistance



Test Circuit for Response Time



Test Circuit for Frequency Response

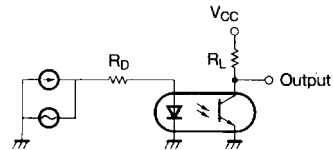


Fig.11 Frequency Response

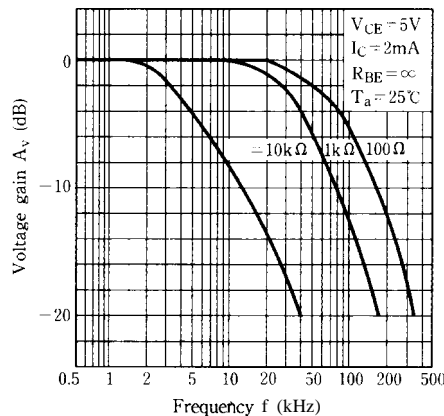
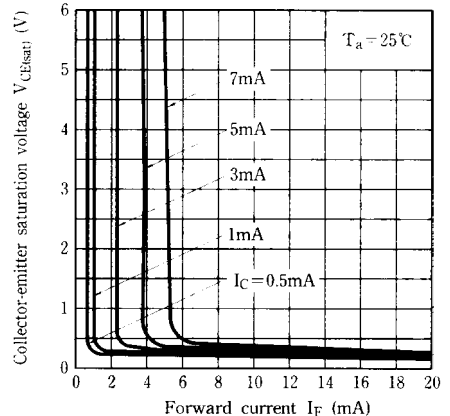


Fig.12 Collector-emitter Saturation Voltage vs. Forward Current



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