

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

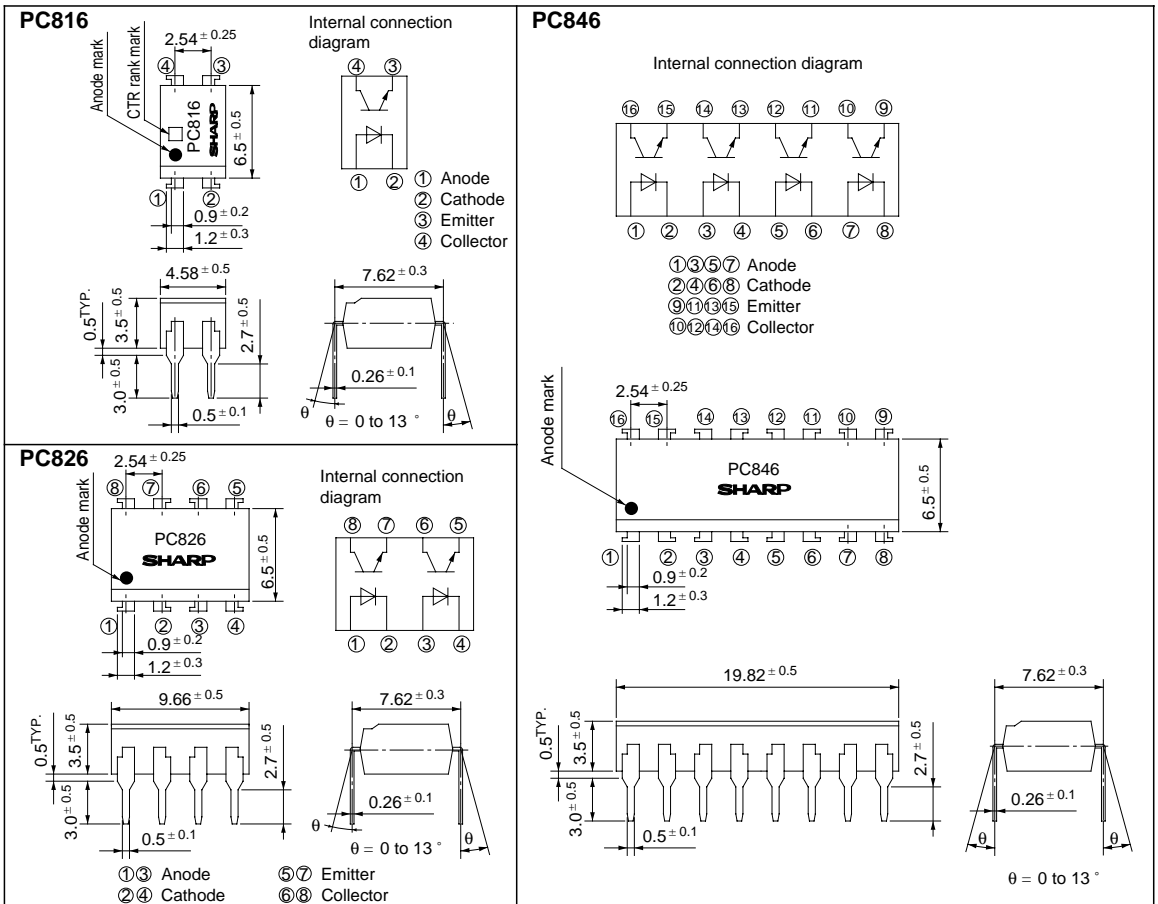
1. High collector-emitter voltage ($V_{CE0} : 70V$)
2. Compact dual-in-line package
PC816 : 1-channel type
PC826 : 2-channel type
PC846 : 4-channel type
3. High isolation voltage between input and output ($V_{ISO} : 5\ 000V_{rms}$)
4. Current transfer ratio
($CTR : \text{MIN. } 50\% \text{ at } I_F =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



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 _{ECCO}	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}	5 000	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 <= 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 _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 x 10 ¹⁰	10 ¹¹	-	Ω	
	Floating capacitance	C _f	V = 0, f = 1MHz	-	0.6	1.0	pF	
	Cut-off frequency	Response time	f _c	V _{CE} = 5V, I _C = 2mA, R _L = 100Ω, - 3dB	-	80	-	kHz
			Rise time	t _r	V _{CE} = 2V, I _C = 2mA R _L = 100Ω	-	4	18
Fall time	t _f	-	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

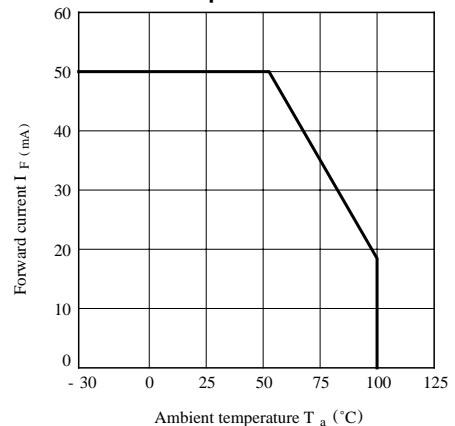


Fig. 2 Collector Power Dissipation VS. Ambient Temperature

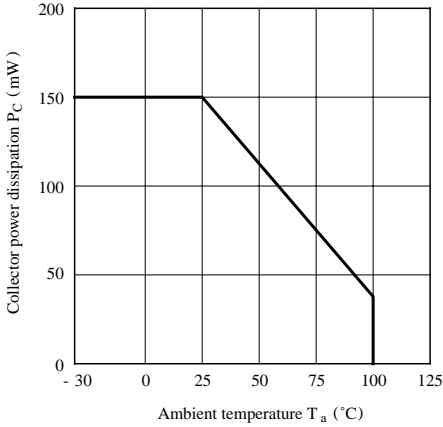


Fig. 3 Peak Forward Current vs. Duty Ratio

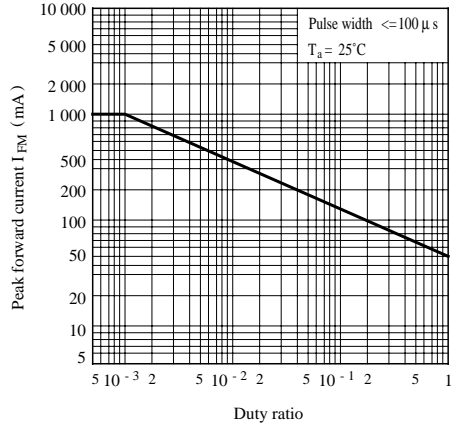


Fig. 4 Forward Current vs. Forward Voltage

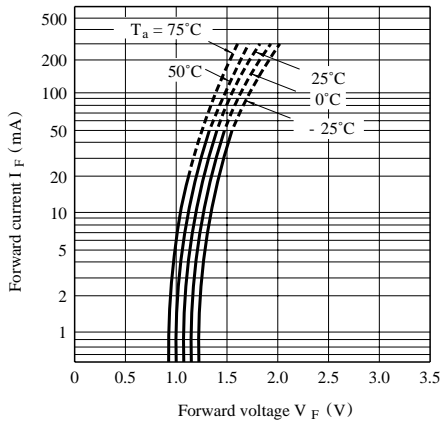


Fig. 5 Current Transfer Ratio vs. Forward Current

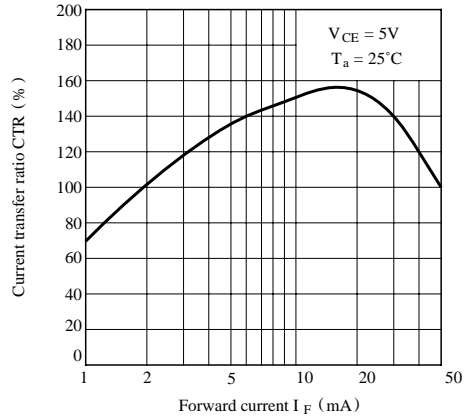


Fig. 6 Collector Current vs. Collector-emitter Voltage

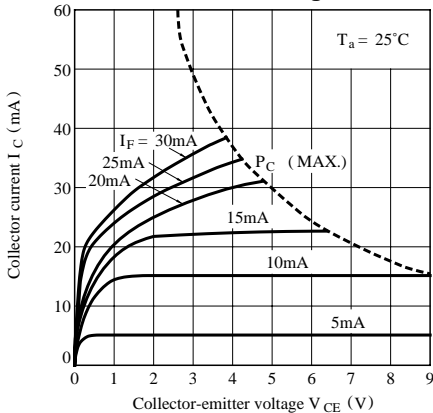


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

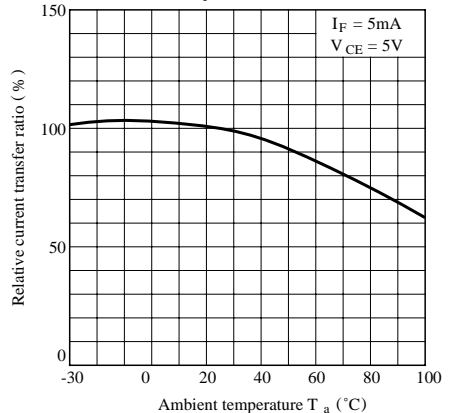


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature

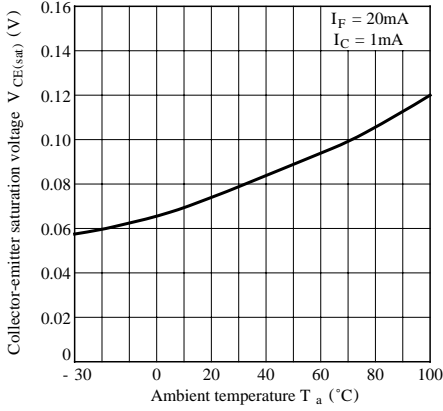


Fig. 9 Collector Dark Current vs. Ambient Temperature

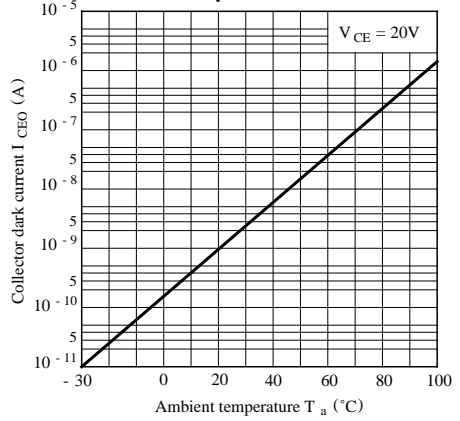
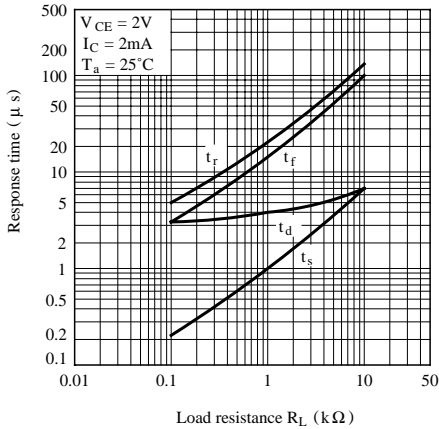
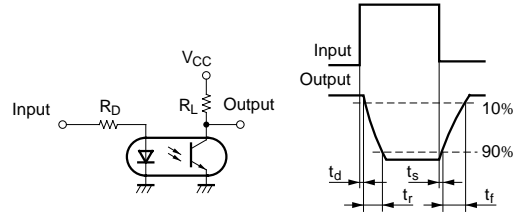


Fig.10 Response Time vs. Load Resistance



Test Circuit for Response Time



Test Circuit for Frequency Response

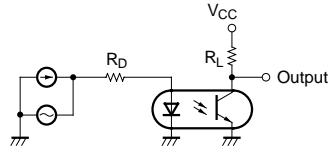


Fig.11 Frequency Response

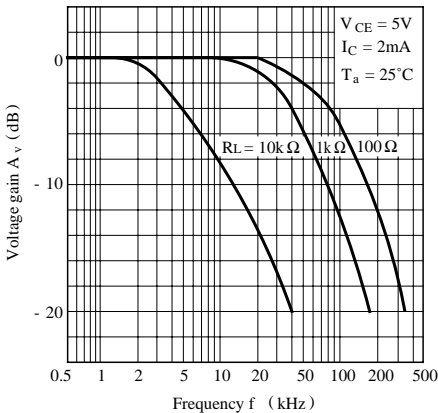
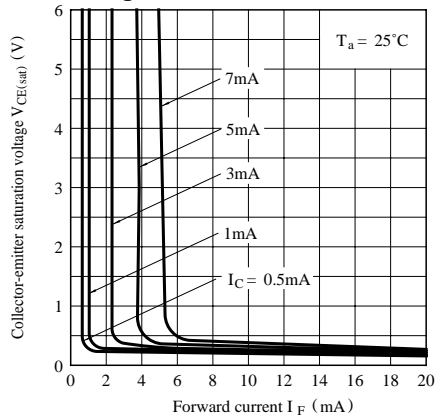


Fig.12 Collector-emitter Saturation Voltage vs. Forward Current



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