

# PC316 Series

Opaque\*, Mini-Flat Package, High Collector-emitter voltage Type Photocoupler

## ■ Features

1. High collector-emitter voltage ( $V_{CE0}$ : 120V)
2. Opaque type, mini-flat package  
PC316 (1-channel)    PC3D16 (2-channel)  
PC3Q16 (4-channel)
3. Subminiature type  
(The volume is smaller than that of our conventional DIP type by as far as 30%.)
4. Isolation voltage between input and output  
 $V_{ISO}$ : 2,500Vrms

\* Employs double transfer mold technology.

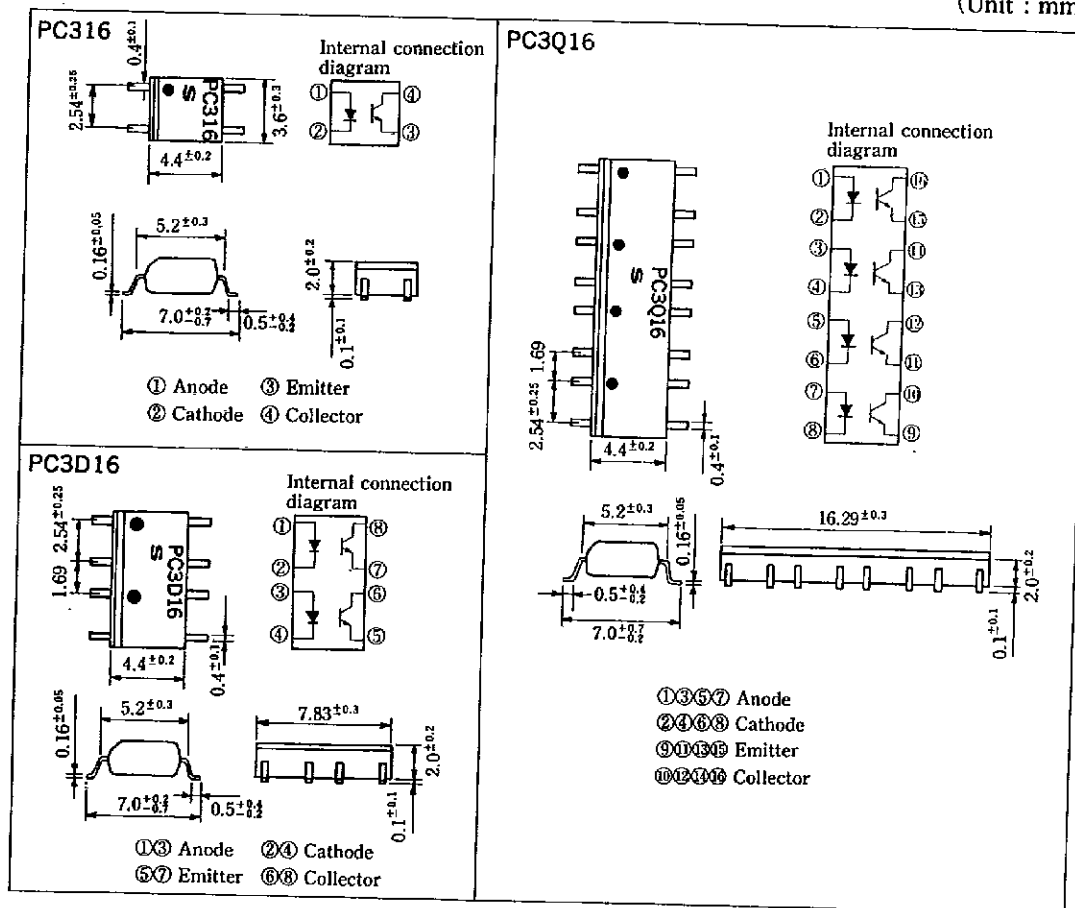
## ■ Applications

T-41-83

1. Hybrid substrates that require high density mounting
2. Programmable controllers

## ■ 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	$V_{CE0}$	120 V
	Emitter-collector voltage	$V_{ECO}$	6 V
	Collector current	$I_C$	50 mA
	Collector power dissipation	$P_C$	150 mW
	Total power dissipation	$P_{lot}$	170 mW
*2 Isolation voltage	$V_{iso}$	2,500	Vrms
Operating temperature	$T_{opr}$	-30 ~ +100	°C
Storage temperature	$T_{stg}$	-40 ~ +125	°C
*3 Soldering temperature	$T_{sol}$	260	°C

- \*1 Pulse width  $\leq 100\mu s$ , Duty ratio = 0.001
- \*2 RH = 40 ~ 60%, AC for 1 minute
- \*3 For 10 seconds

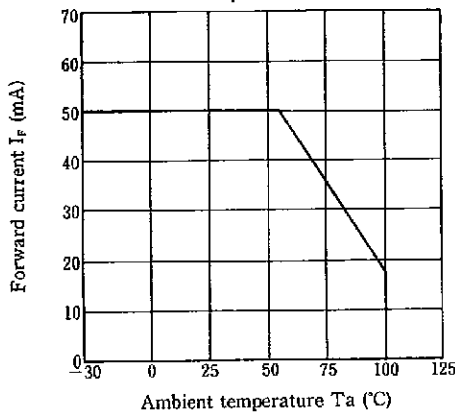
**Electro-optical Characteristics**

(Ta = 25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	$V_F$ $I_F = 20mA$	—	1.2	1.4	V
	Reverse current	$I_R$ $V_R = 4V$	—	—	10	$\mu A$
	Terminal capacitance	$C_t$ $V = 0, f = 1kHz$	—	30	250	pF
Output	Collector dark current	$I_{CBO}$ $V_{CE} = 20V, I_F = 0$	—	—	$10^{-7}$	A
	Current transfer ratio	CTR $I_F = 5mA, V_{CE} = 5V$	50	100	600	%
Transfer characteristics	Collector-emitter saturation voltage	$V_{CE(sat)}$ $I_F = 20mA, I_C = 1mA$	—	0.1	0.2	V
	Isolation resistance	$R_{iso}$ DC500V, RH = 40 ~ 60%	$5 \times 10^{10}$	$10^{11}$	—	$\Omega$
	Floating capacitance	$C_f$ $V = 0, f = 1MHz$	—	0.6	1.0	pF
	Response time (Rise)	$t_r$ $V_{CE} = 2V, I_C = 2mA$	—	4	18	$\mu s$
	Response time (Fall)	$t_f$ $R_L = 100\Omega$	—	3	18	$\mu s$

6

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



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

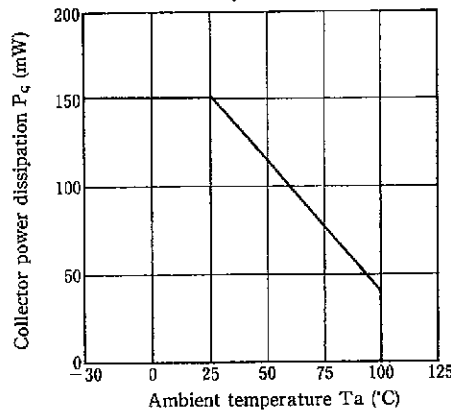


Fig. 3 Peak Forward Current vs. Duty Ratio

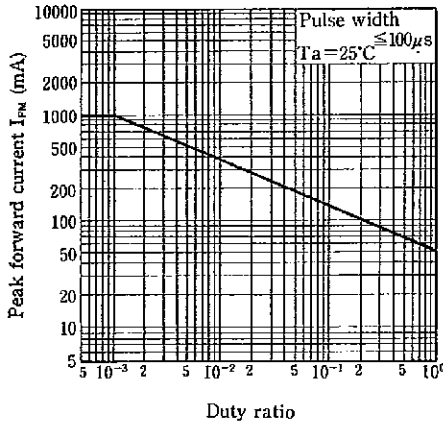


Fig. 4 Forward Current vs. Forward Voltage

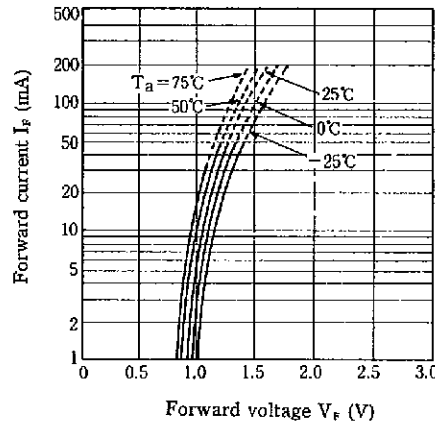


Fig. 5 Current Transfer Ratio vs. Forward Current

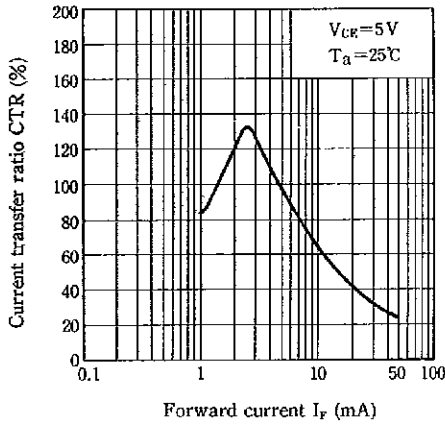


Fig. 6 Collector Current vs. Collector-emitter Voltage

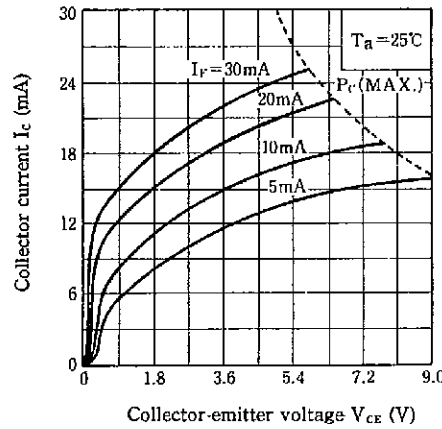


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

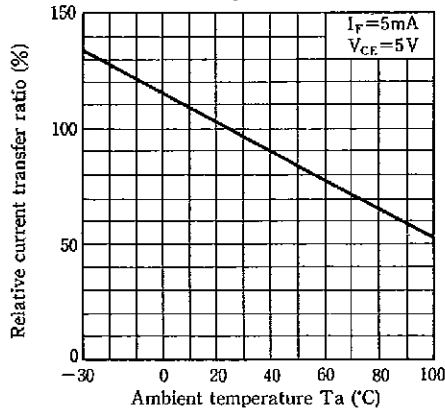
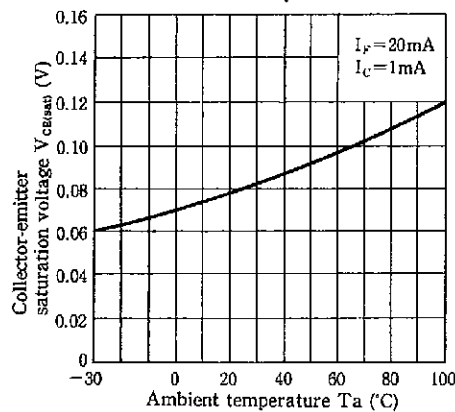
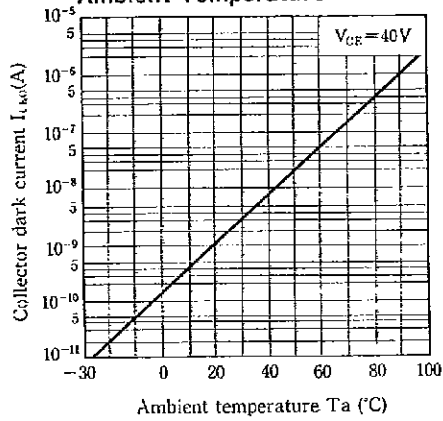


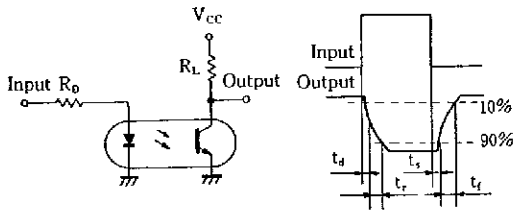
Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature



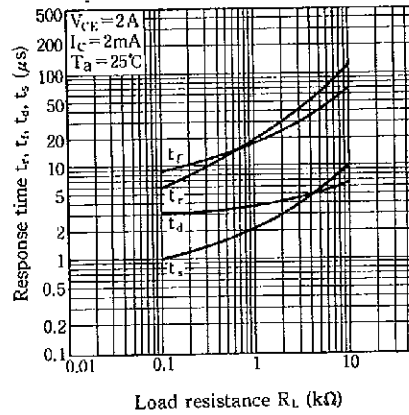
**Fig. 9 Collector Dark Current vs. Ambient Temperature**



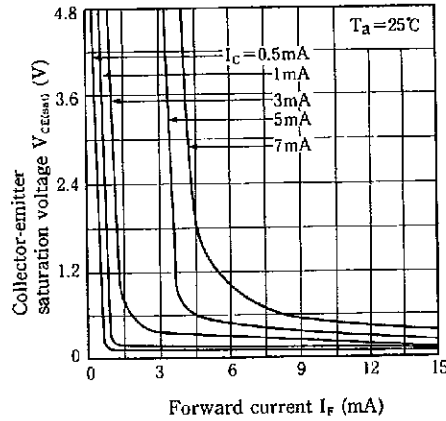
**Test Circuit for Response Time**



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



**Fig. 11 Collector-emitter Saturation Voltage vs. Forward Current**



6

**Package Specification of PC300 Series (1-ch type)**

Model No.	Sales Unit	Package Specifications	Diameter of Reel	Tape Width
PC3 * * Z	1 pc.	Sleeve package (Net: 125 pcs.)	—	—
PC3 * *	3,000 pcs.	Taping package (Net: 3,000 pcs.)	φ370mm	12mm
PC3 * * T	750 pcs.	Taping package (Net: 750 pcs.)	φ178mm	12mm