

PC314 Series

Opaque*, Mini-Flat Package, AC Input Type Photocoupler

Features

1. AC or Polarity insensitive inputs
2. Opaque type, mini-flat package
PC314 (1-channel) PC3D14 (2-channel)
PC3Q14 (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
 $V_{iso} : 2,500V_{rms}$

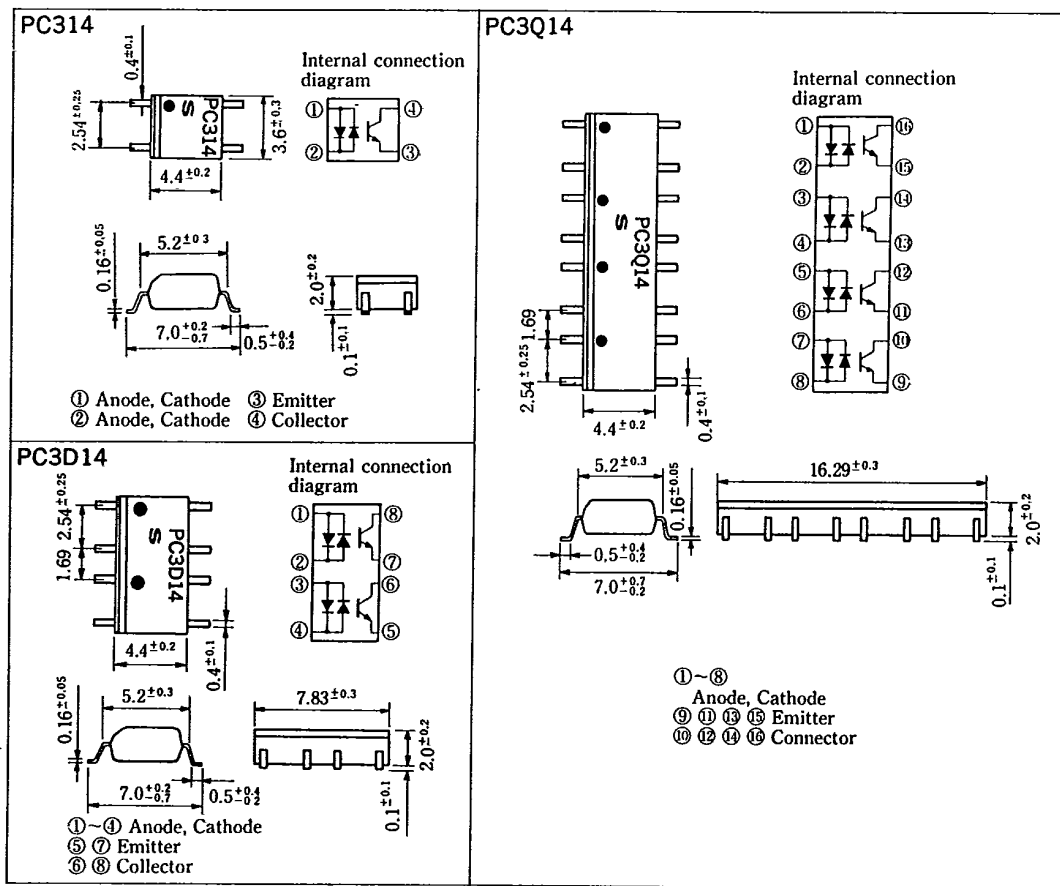
* Employs double transfer mold technology.

Applications

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
	*1Peak forward current	I_{FM}	± 1	A
	Power dissipation	P	70	mW
Output	Collector-emitter voltage	V_{CEO}	35	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}	170	mW
	*2Isolation voltage	V_{iso}	2,500	Vrms
Operating temperature	T_{opr}	-30 ~ +100	°C	
Storage temperature	T_{stg}	-40 ~ +125	°C	
*3Soldering 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	$I_F = \pm 20mA$	—	1.2	1.4	V
	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	Current transfer ratio	CTR	$I_F = \pm 1mA, V_{CE} = 5V$	20	—	300	%
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = \pm 20mA, I_C = 1mA$	—	0.1	0.2	V
	Isolation resistance	R_{iso}	DC500V, RH=40~60%	5×10^{10}	10^{11}	—	Ω
	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	μs
	Response time (Fall)	t_f	$R_L = 100\Omega$	—	3	18	μs

6

Fig. 1 Forward Current vs. Ambient Temperature

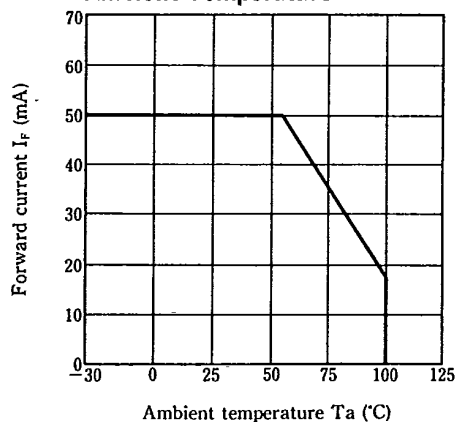
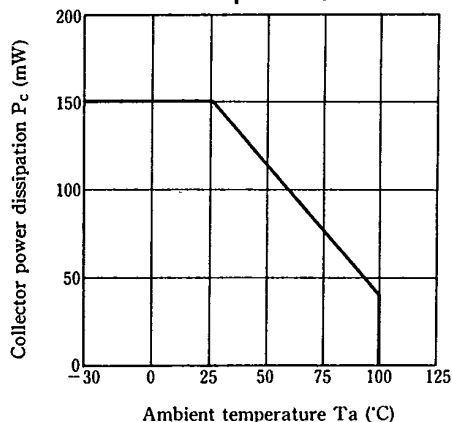


Fig. 2 Collector Power Dissipation vs. Ambient Temperature



SHARP

Fig. 3 Peak Forward Current vs. Duty Ratio

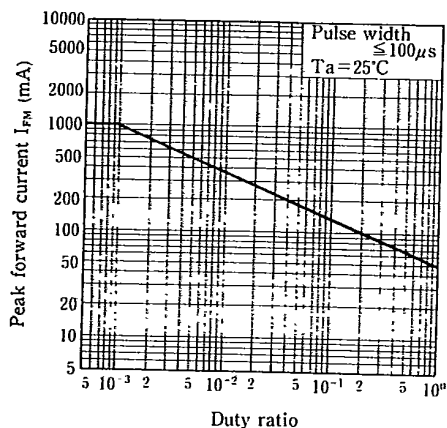


Fig. 4 Forward Current vs. Forward Voltage

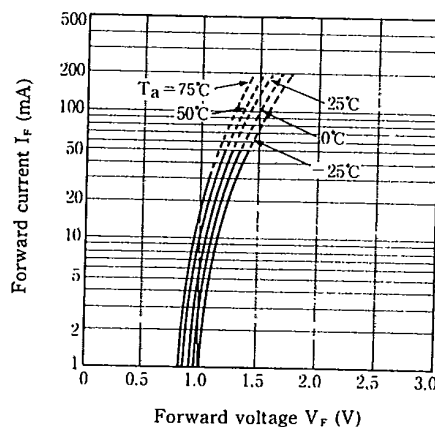


Fig. 5 Current Transfer Ratio vs. Forward Current

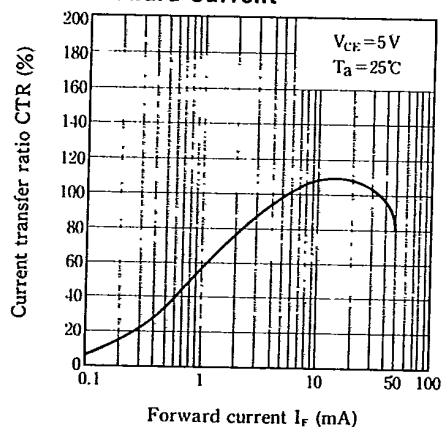


Fig. 6 Collector Current vs. Collector-emitter Voltage

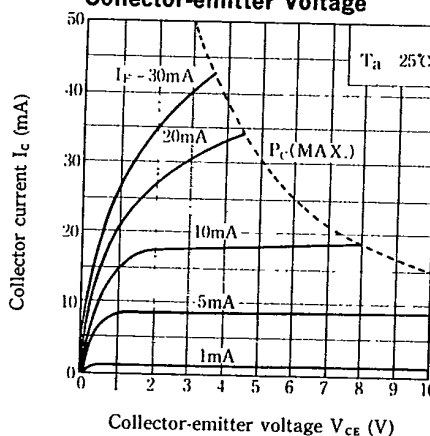


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

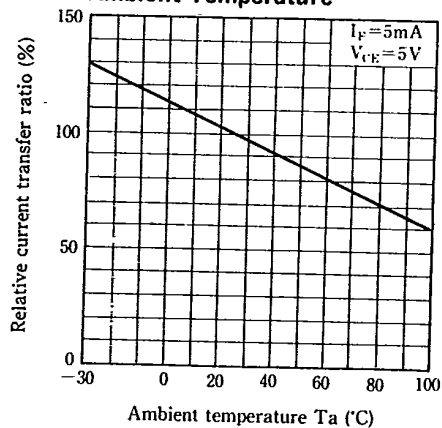
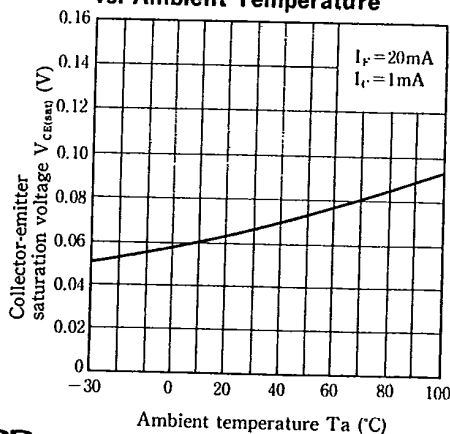


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature



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Fig. 9 Collector Dark Current vs. Ambient Temperature

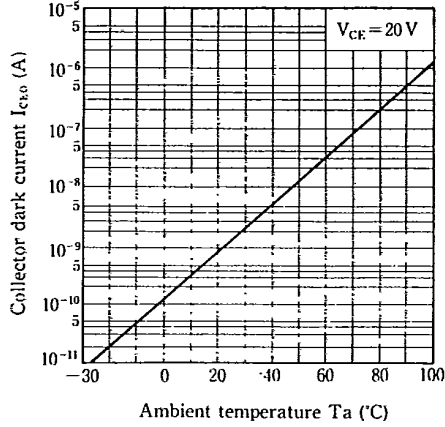
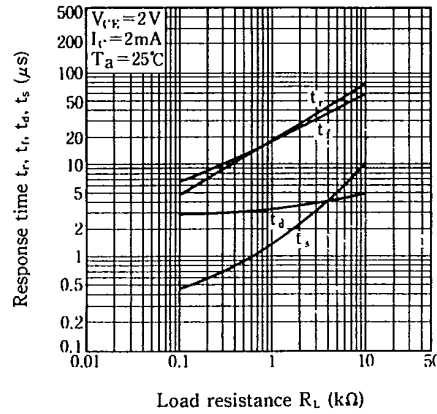


Fig. 10 Response Time vs. Load Resistance



Test Circuit for Response Time

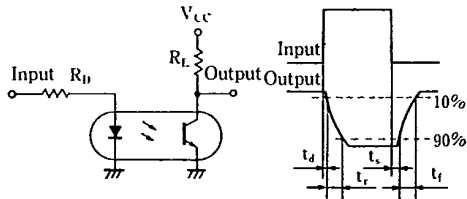
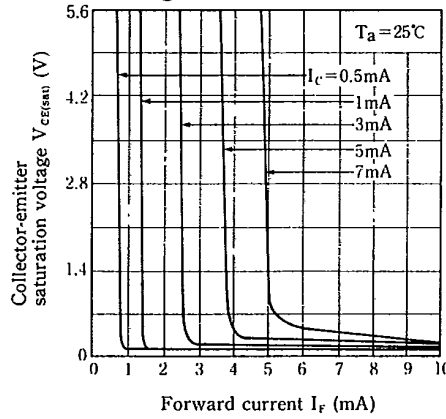


Fig. 11 Collector-emitter Saturation Voltage vs. Forward Current



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