

PC120 Series PC121 Series

Long Creepage Distance Type Photocoupler

* Lead forming type (I type) and tapping reel type (P type) are also available. (PC120I/PC120FI/PC121I/PC121FI, PC120P/PC120PF/PC121P/PC121PF) (Page 656)
* DIN-VDE0884 approved type is also available as an option.

■ Features

1. Conforms to European Safety Standards
2. Long creepage distance type
(Creepage distance : 6mm or more)
3. Internal isolation distance : 0.4mm or more
4. Compact dual-in-line package
5. High collector-emitter voltage
(V_{CEO} : 70V for PC121 series)
6. Recognized by UL file No. E64380
Approved by VDE (DIN-VDE0884 ; No. 76851)
Approved by BSI (BS415 : No. 7087,
BS7002 : No. 7409)

Approved by SEMKO (No. 9216212)
Approved by DEMKO (No. 108025)
Approved by EI (No. 155030-01)

■ Applications

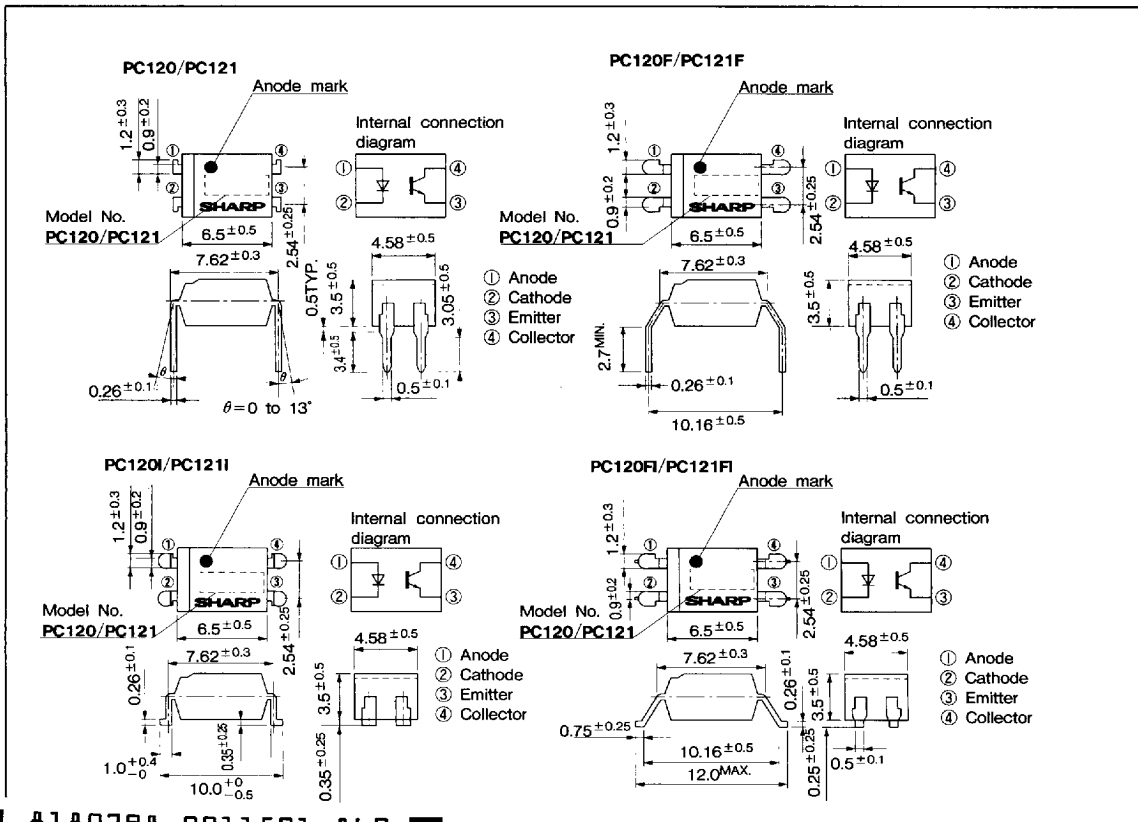
1. Switching power supplies
2. OA equipment
3. TVs

■ Model Line-up

	Standard type		High collector-emitter voltage type	
DIP type	PC120	PC120F	PC121	PC121F
Surface mount type	PC120F*	PC120FF*	PC121F*	PC121FF*

■ Outline Dimensions

*Lead forming type (Unit : mm)



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"In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that occur in equipment using any of SHARP's devices, shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest version of the device specification sheets before using any SHARP's device."

■ Absolute Maximum Ratings

(Ta = 25°C)

Parameter		Symbol	Rating		Unit
			PC120 Series	PC121 Series	
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}	35	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}	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

PC120 Series :

PC120/PC120I/
PC120F/PC120FI

PC121 Series :

PC121/PC121I/
PC121F/PC121FI

*1 Pulse width ≤ 100 μs, 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	Condition	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	V _F	I _F = 20mA	—	1.2	1.4	V
	Reverse voltage	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
	Collector-emitter breakdown voltage	BV _{CEO}	I _C = 0.1mA, I _F = 0	35	—	—	V
				70	—	—	
	Emitter-collector breakdown voltage	BV _{ECO}	I _E = 10 μA, I _F = 0	6	—	—	V
Current transfer ratio	CTR	I _F = 5mA, V _{CE} = 5V	50	—	400	%	
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, 40 to 60%RH	5 × 10 ¹⁰	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 point	—	80	—	kHz
				—	—	—	
Response time	Rise time	t _r	V _{CE} = 2V, I _C = 2mA	—	4	18	μs
	Fall time	t _f	R _L = 100Ω	—	3	18	μs

Fig. 1 Forward Current vs. Ambient Temperature

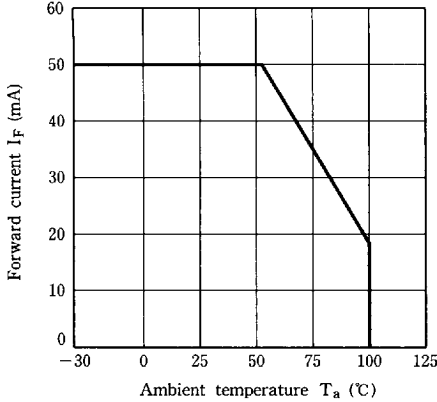


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

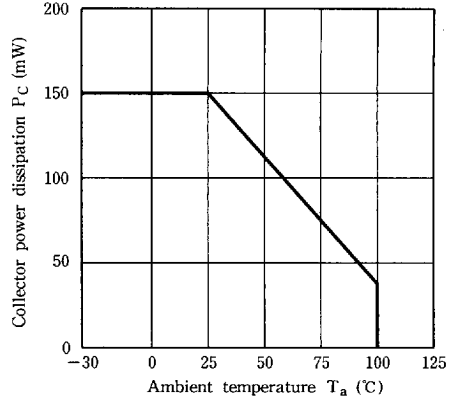


Fig. 3 Peak Forward Current vs. Duty Ratio

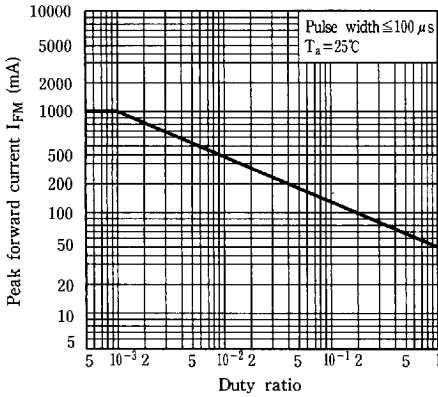


Fig. 4 Forward Current vs. Forward Voltage

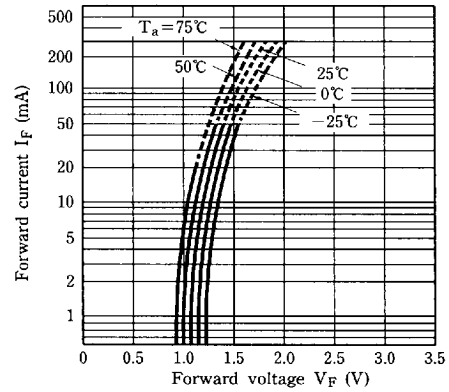


Fig. 5-a Current Transfer Ratio vs. Forward Current (PC120 Series)

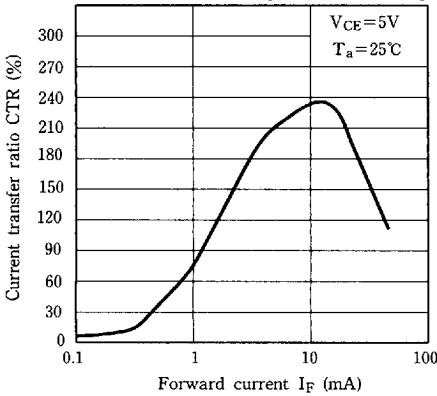
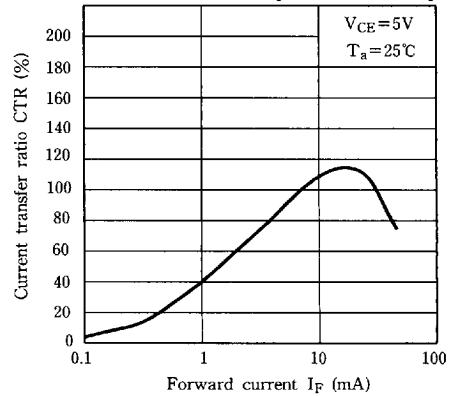


Fig. 5-b Current Transfer Ratio vs. Forward Current (PC121 Series)



6 Photocouplers

Fig. 6-a Collector Current vs. Collector-emitter Voltage
(PC120 Series)

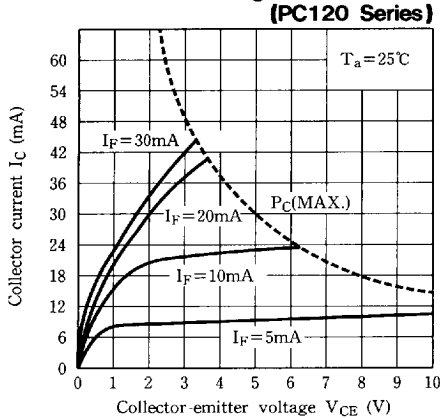


Fig. 6-b Collector Current vs. Collector-emitter Voltage
(PC121 Series)

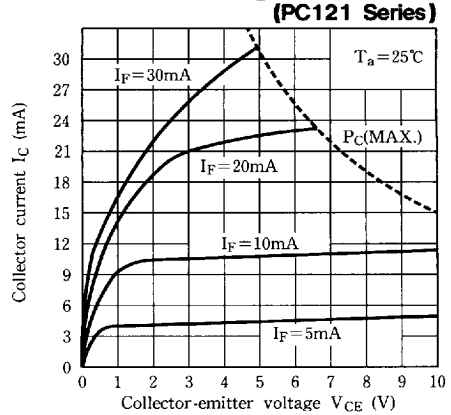


Fig. 7-a Relative Current Transfer Ratio vs. Ambient Temperature
(PC120 Series)

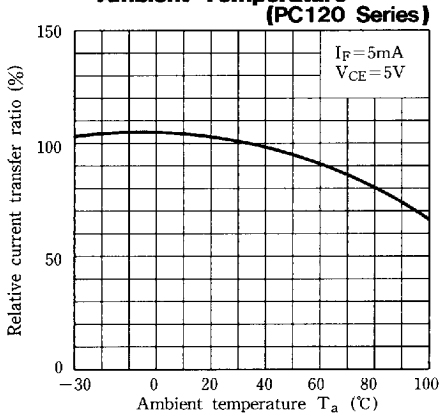


Fig. 7-b Relative Current Transfer Ratio vs. Ambient Temperature
(PC121 Series)

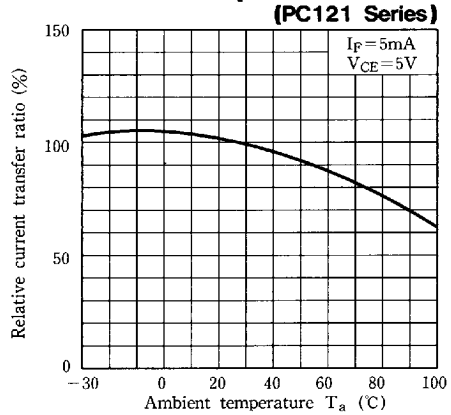


Fig. 8-a Collector-emitter Saturation Voltage vs. Ambient Temperature
(PC120 Series)

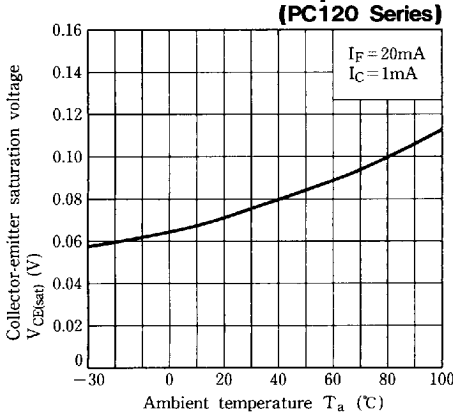


Fig. 8-b Collector-emitter Saturation Voltage vs. Ambient Temperature
(PC121 Series)

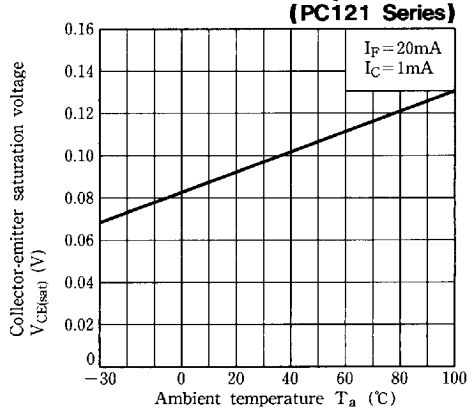


Fig. 9-a Collector Dark Current vs. Ambient Temperature (PC120 Series)

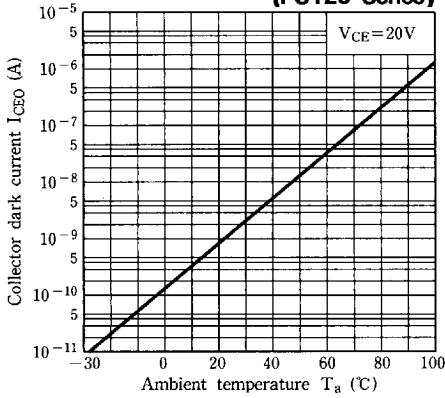


Fig. 9-b Collector Dark Current vs. Ambient Temperature (PC121 Series)

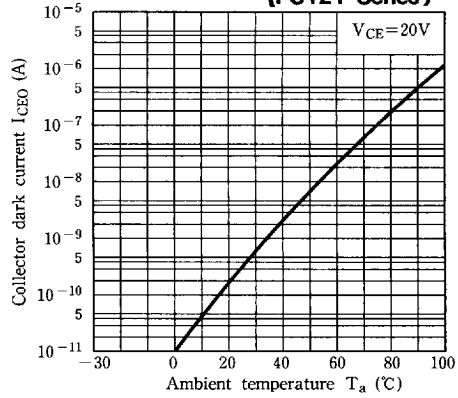


Fig.10-a Response Time vs. Load Resistance (PC120 Series)

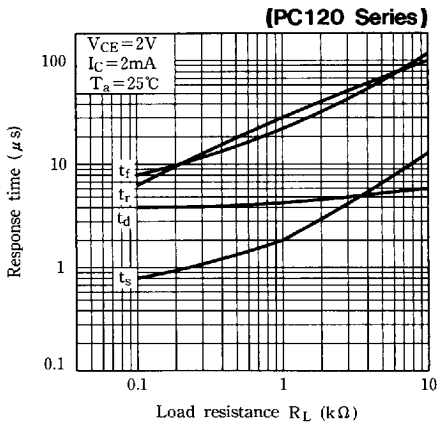


Fig.10-b Response Time vs. Load Resistance (PC121 Series)

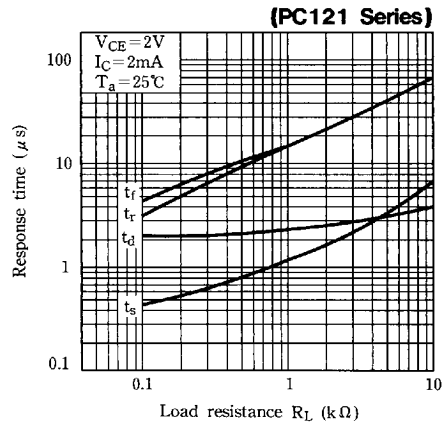


Fig.11-a Frequency Response (PC120 Series)

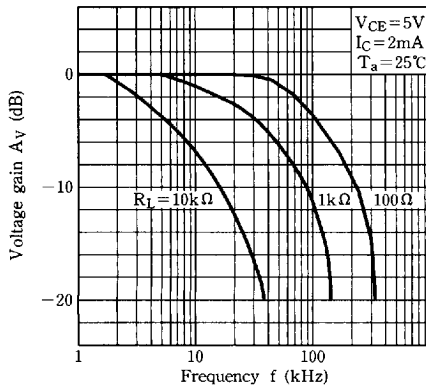
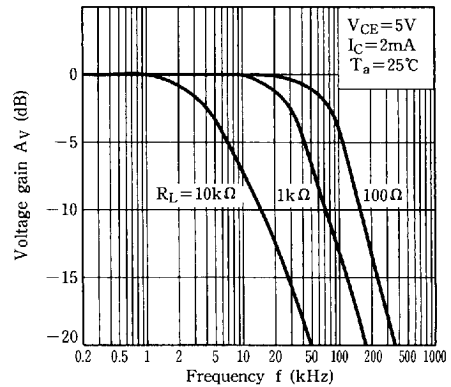


Fig. 11-b Frequency Response (PC121 Series)



Photocouplers

Fig.12-a Collector-emitter Saturation Voltage vs. Forward Current (PC120 Series)

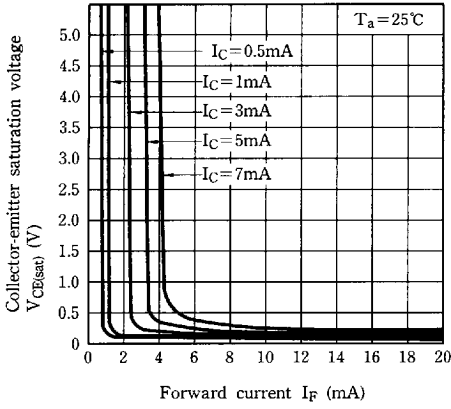
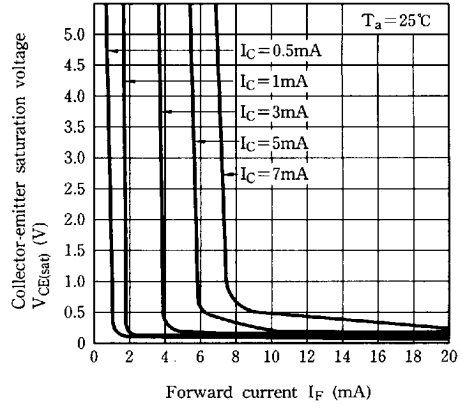


Fig.12-b Collector-emitter Saturation Voltage vs. Forward Current (PC121 Series)



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