

PC120 Series PC121 Series

Long Creepage Distance Type Photocoupler

* Lead forming type (I type) and taping 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

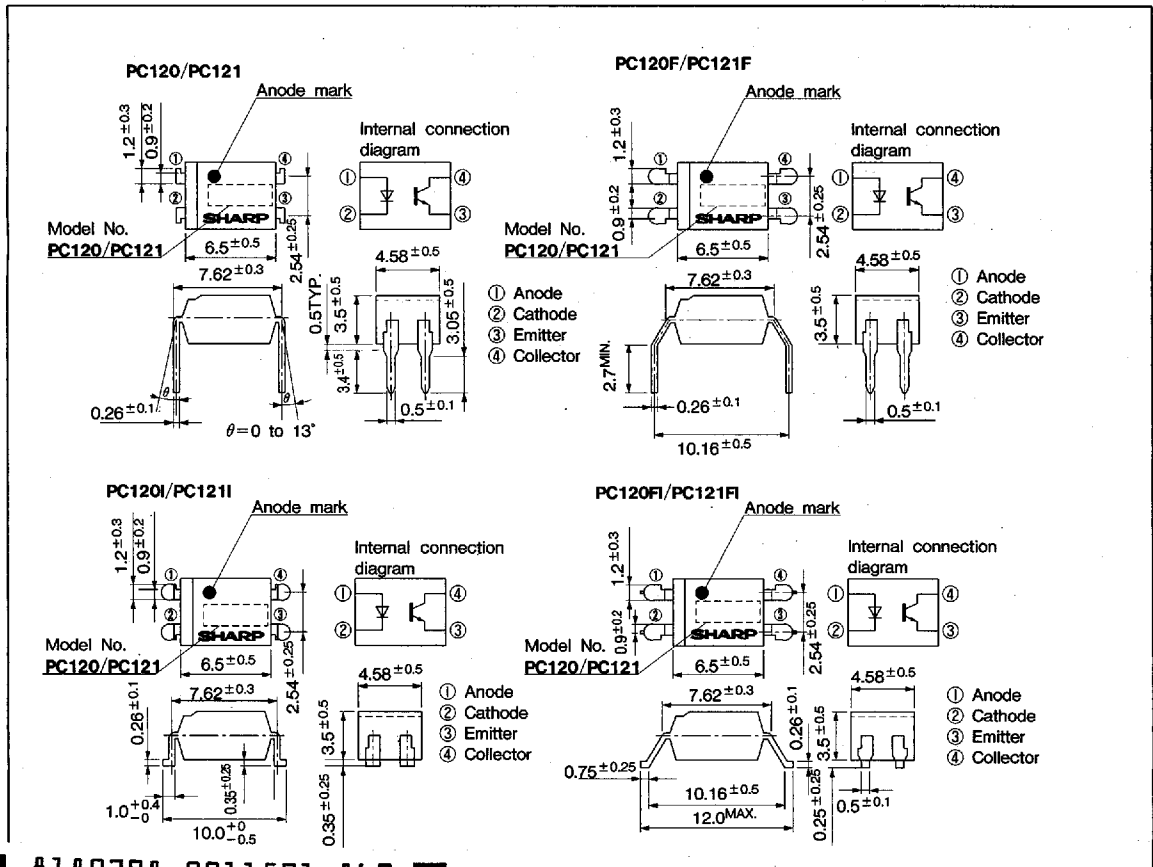
■ Model Line-up

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

*Lead forming type

(Unit : mm)

■ Outline Dimensions



8180798 0011591 869

■ 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		
Transfer characteristics	Current transfer ratio	CTR	I _F =5mA, V _{CE} =5V	50	—	400	%	
	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

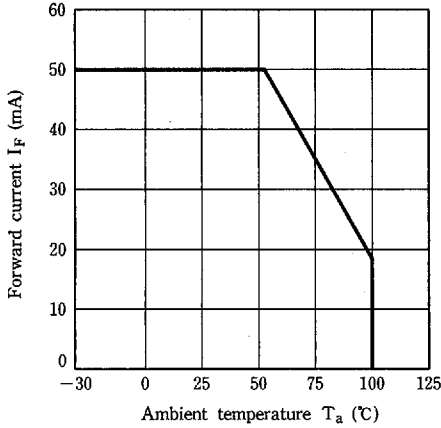


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

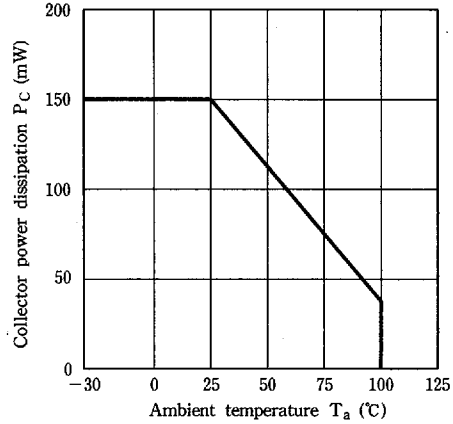


Fig. 3 Peak Forward Current vs. Duty Ratio

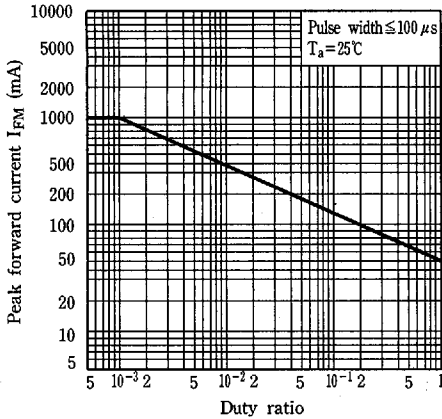


Fig. 4 Forward Current vs. Forward Voltage

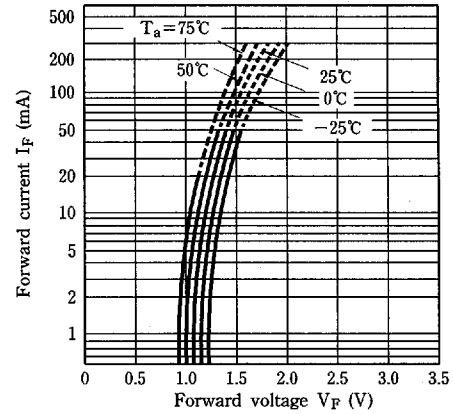


Fig. 5-a Current Transfer Ratio vs. Forward Current (PC120 Series)

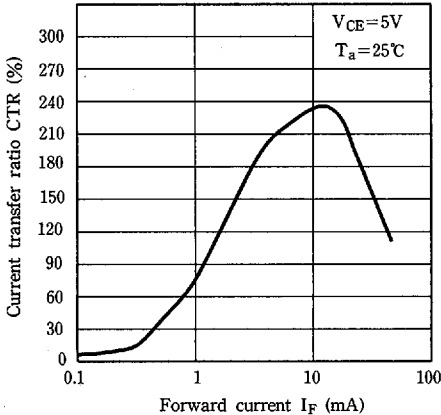


Fig. 5-b Current Transfer Ratio vs. Forward Current (PC121 Series)

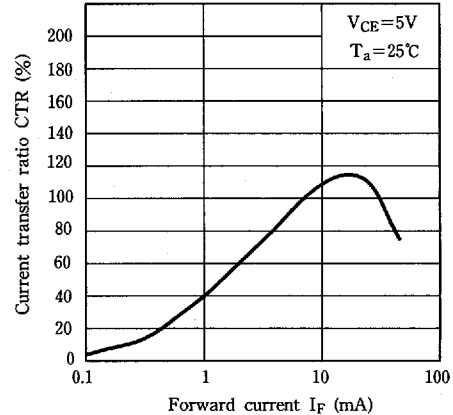


Fig. 6-a Collector Current vs. Collector-emitter Voltage

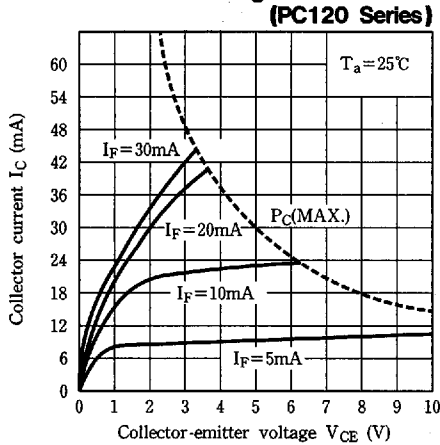


Fig. 6-b Collector Current vs. Collector-emitter Voltage

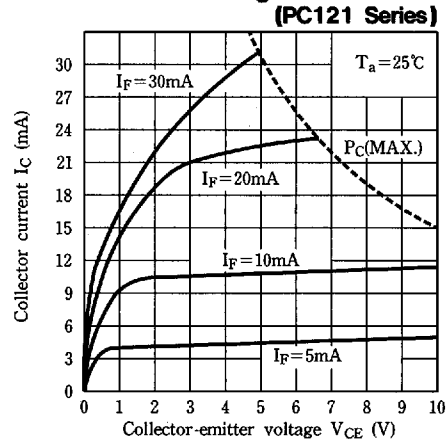


Fig. 7-a Relative Current Transfer Ratio vs. Ambient Temperature

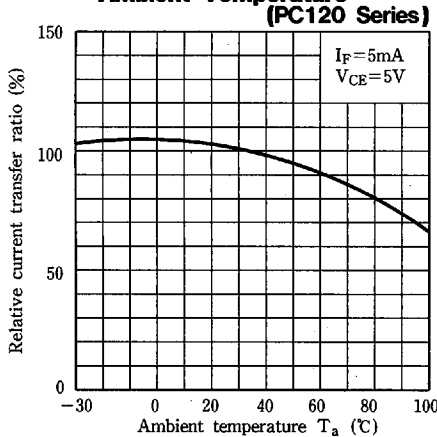


Fig. 7-b Relative Current Transfer Ratio vs. Ambient Temperature

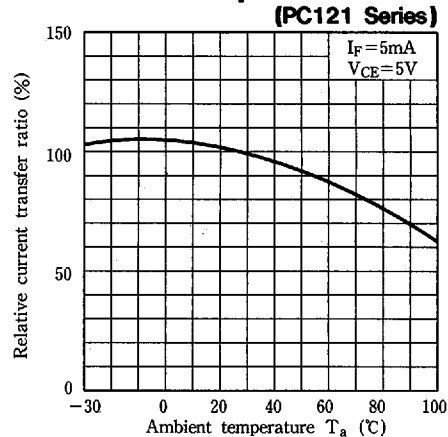


Fig. 8-a Collector-emitter Saturation Voltage vs. Ambient Temperature

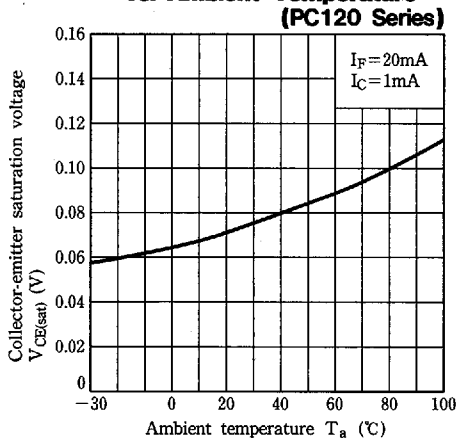


Fig. 8-b Collector-emitter Saturation Voltage vs. Ambient Temperature

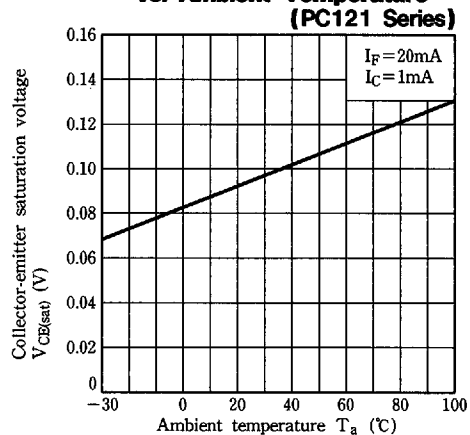


Fig. 9-a Collector Dark Current vs. Ambient Temperature (PC120 Series)

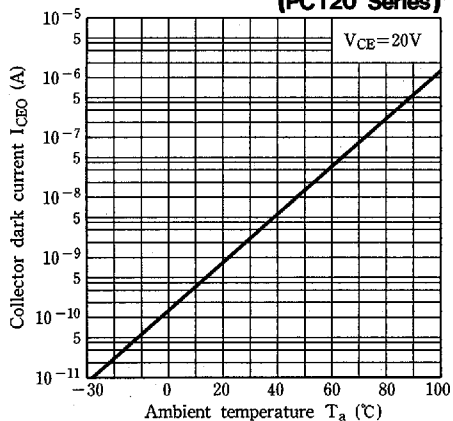


Fig. 9-b Collector Dark Current vs. Ambient Temperature (PC121 Series)

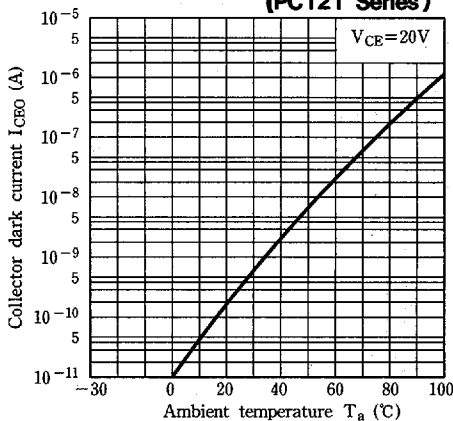


Fig. 10-a Response Time vs. Load Resistance (PC120 Series)

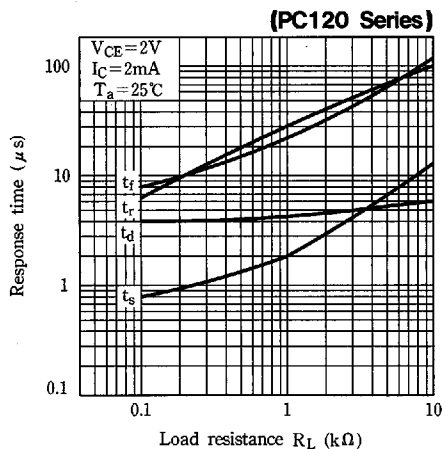


Fig. 10-b Response Time vs. Load Resistance (PC121 Series)

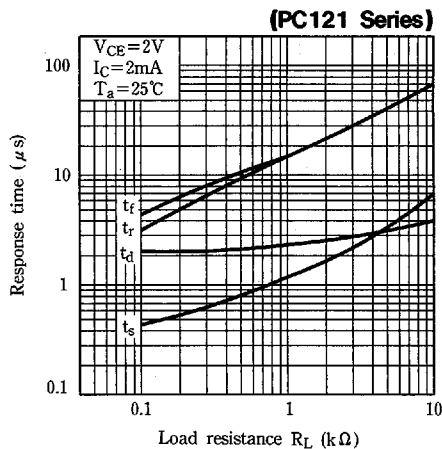


Fig. 11-a Frequency Response (PC120 Series)

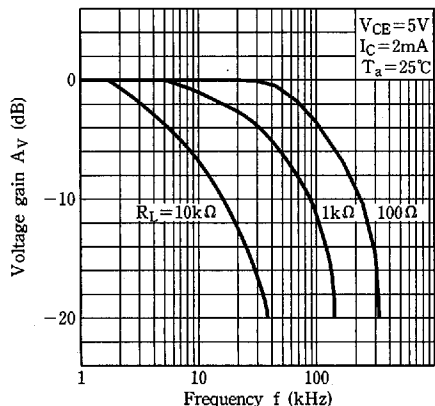
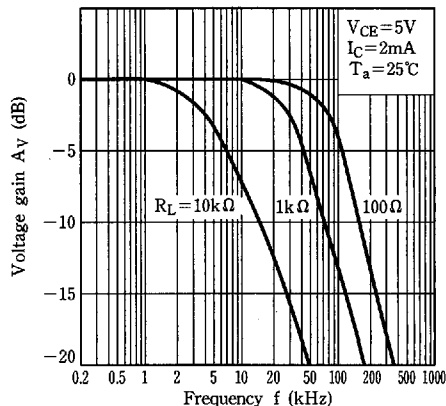


Fig. 11-b Frequency Response (PC121 Series)



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Photocouplers

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

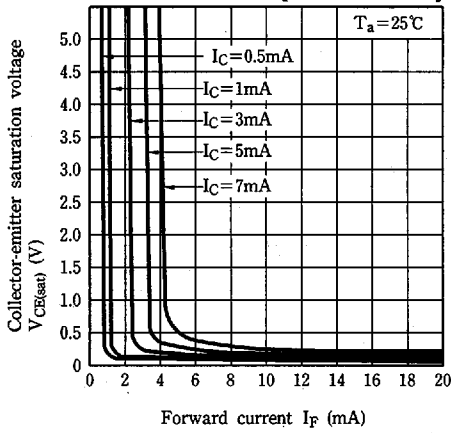
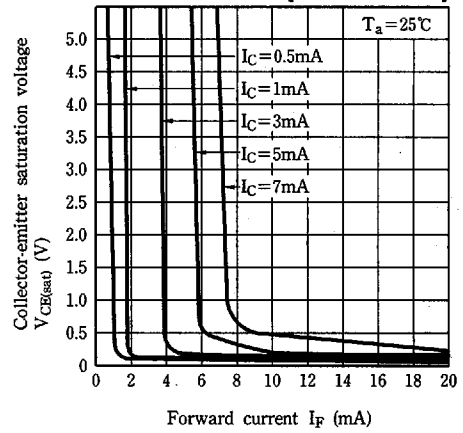


Fig.12-b Collector-emitter Saturation Voltage vs. Forward Current (PC121 Series)



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