

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/PC120FP/PC121P/PC121FP) (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

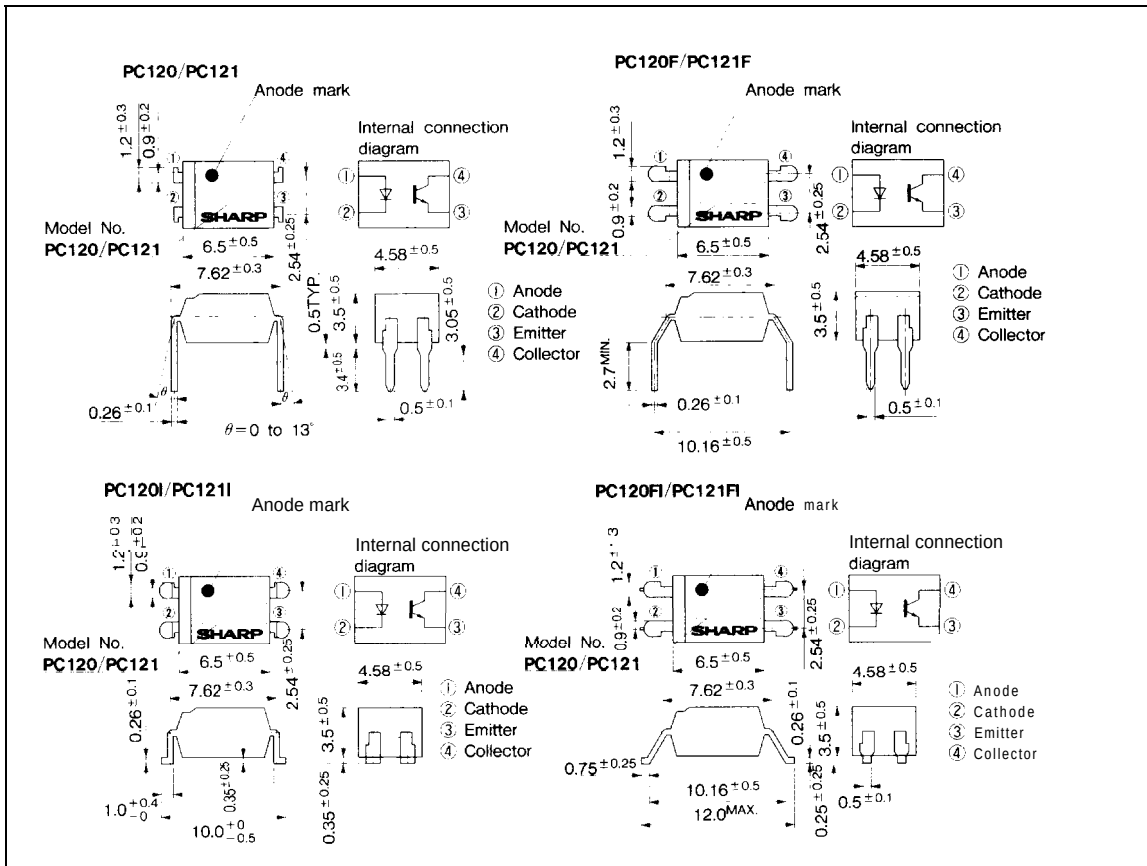
- 1. Switching power supplies
- 2. OA equipment
- 3. TVS

■ Model line-up

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

■ Outline Dimensions

*Lead forming type (Unit : mm)



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Photocouplers

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 _{t.}	200	mW
*2 Isolation voltage		V _{iso}	5000	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 wends

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	μ A
	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	PC120 series	BV _{CEO}	I _C = 0.1mA, I _F = 0	35	—	—	v
		PC121 series		I _F = 0	70	—	—	
	Emitter-collector breakdown voltage		BV _{ECO}	I _F = 10 μ A, I _R = 0	6	—	—	v
	Current transfer ratio		CTR	I _F = 5mA, V _{CE} = 5V	50	·	400	%
Transfer charac teristics	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	μ s
		Fall time	t _f	R _L = 100Ω	—	3	18	μ s

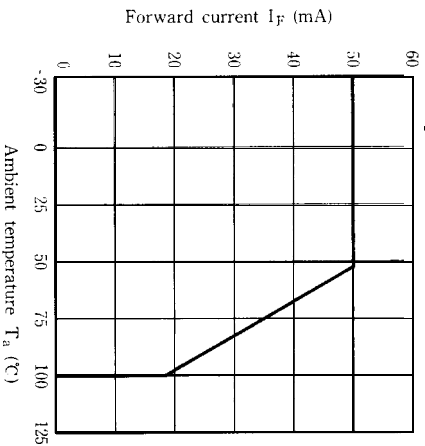
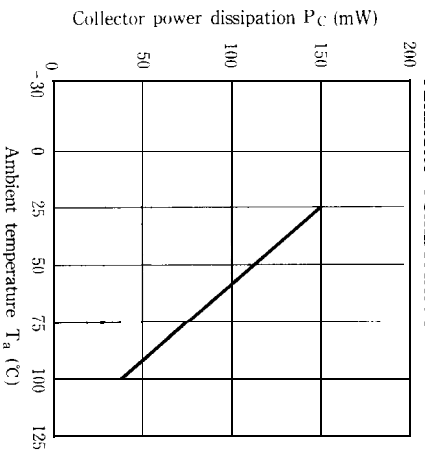
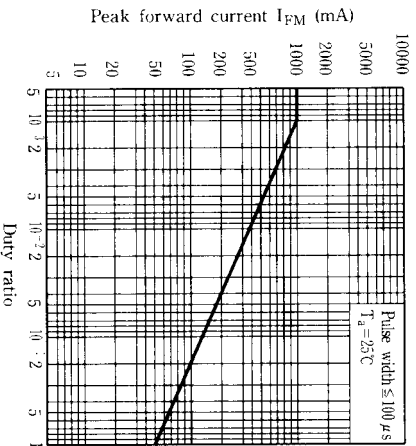
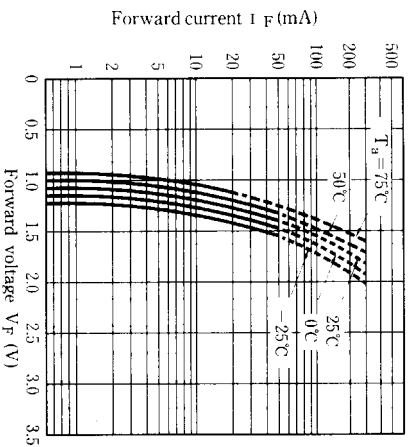
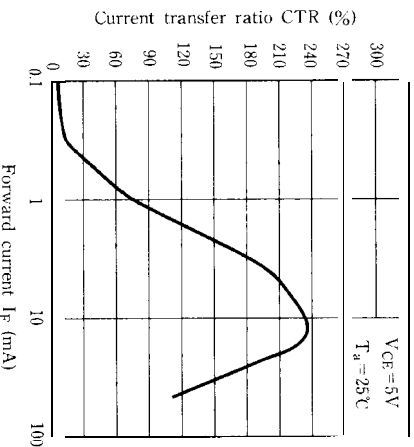
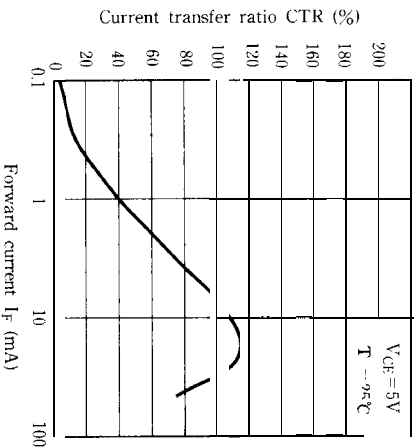
Fig. 1 Forward Current vs. Ambient Temperature**Fig. 2 Collector Power Dissipation vs. Ambient Temperature****Fig. 3 Peak Forward Current vs. Duty Ratio****Fig. 4 Forward Current vs. Forward Voltage****Fig. 5-a Current Transfer Ratio vs. Forward Current (PC120 Series)****Fig. 5-b Current Transfer Ratio vs. Forward Current (PC121 Series)**

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

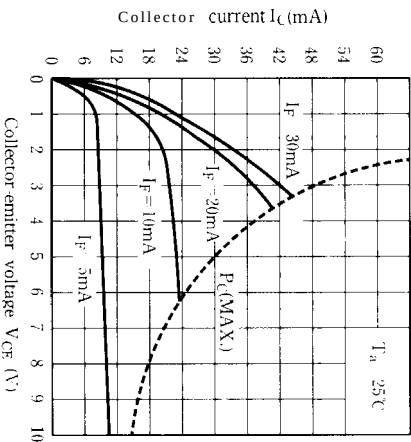


Fig. 7-a Relative Current Transfer Ratio vs. Ambient Temperature
(PC120 Series)

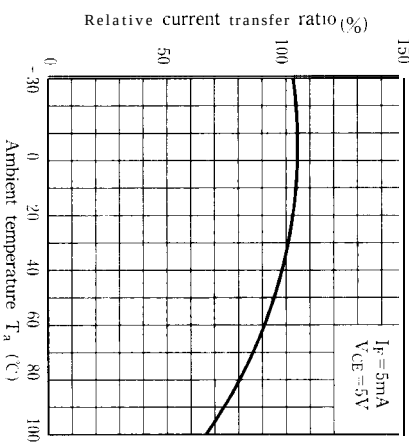


Fig. 8-a Collector-emitter Saturation Voltage vs. Ambient Temperature
(PC120 Series)

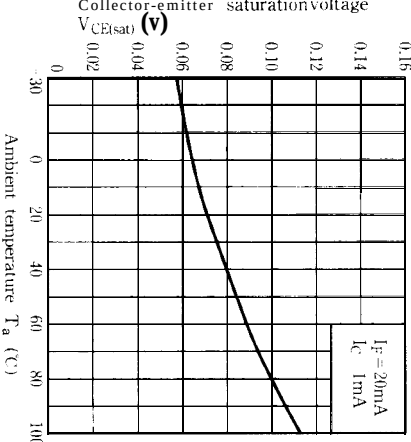


Fig. 6-b Collector Current vs. Collector-emitter Voltage
(PC121 Series)

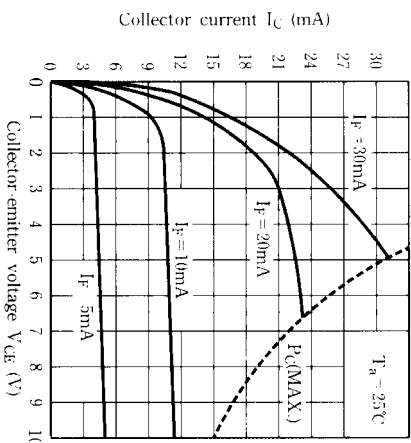


Fig. 7-b Relative Current Transfer Ratio vs. Ambient Temperature
(PC121 Series)

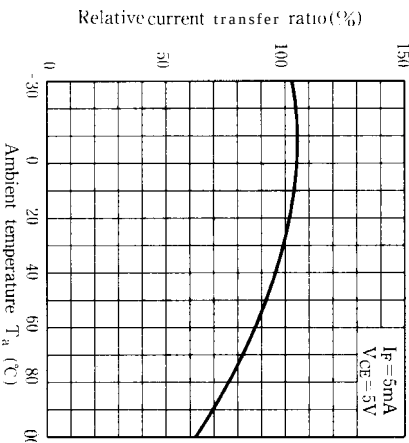


Fig. 8-b Collector-emitter Saturation Voltage vs. Ambient Temperature
(PC121 Series)

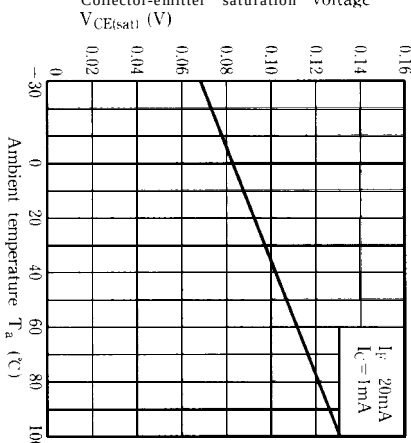


Fig. 9-a Collector Dark Current vs. Ambient Temperature
(PC120 Series)

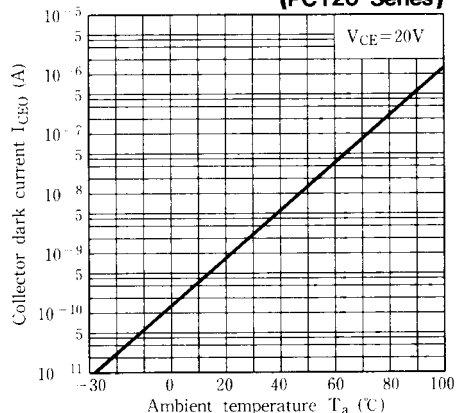


Fig. 9-b Collector Dark Current vs. Ambient Temperature
(PC121 Series)

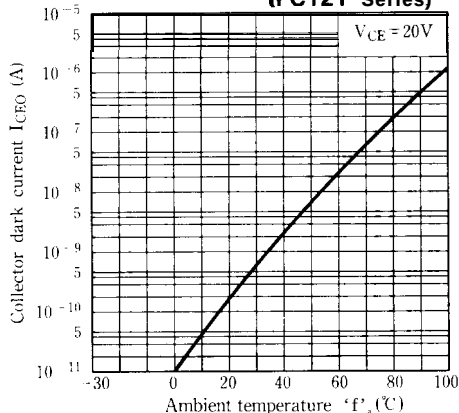


Fig.10-a Response Time vs. Load Resistance

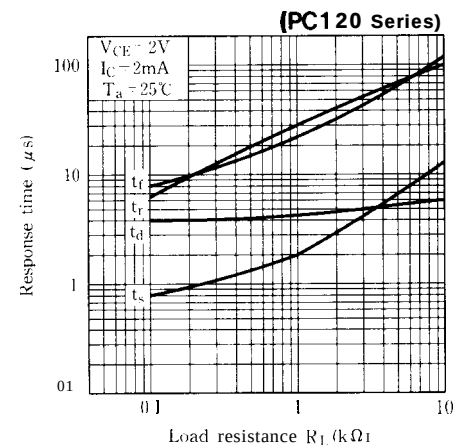


Fig.10-b Response Time vs. Load Resistance

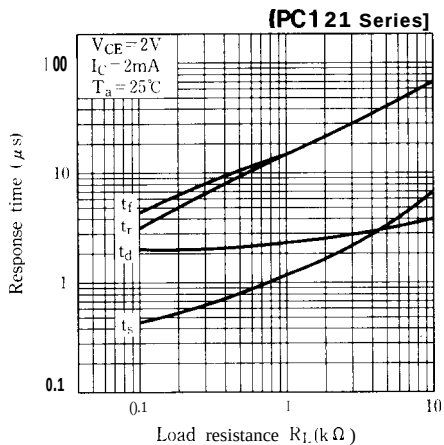


Fig.11 -a Frequency Response

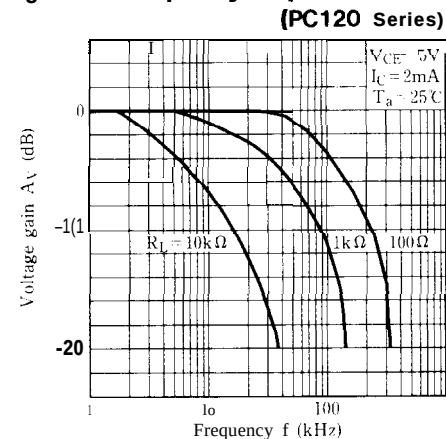


Fig. 11-b Frequency Response

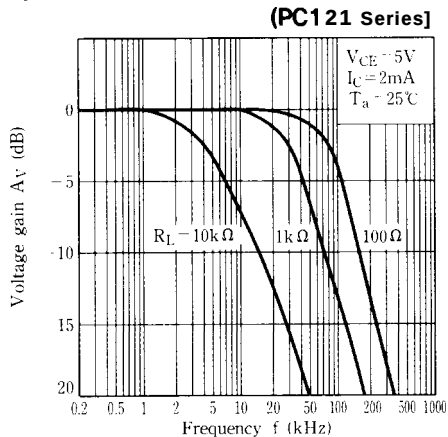


Fig.12-a Collector-emitter Saturation Voltage vs. Forward Current (PC120 Series)

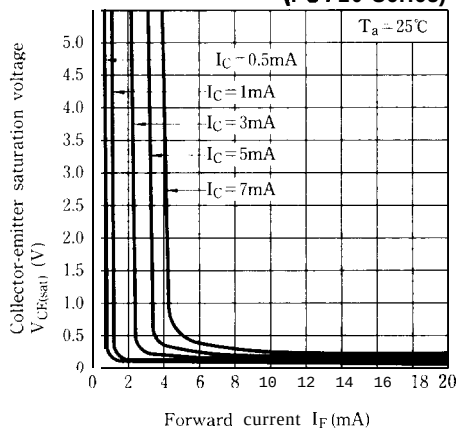
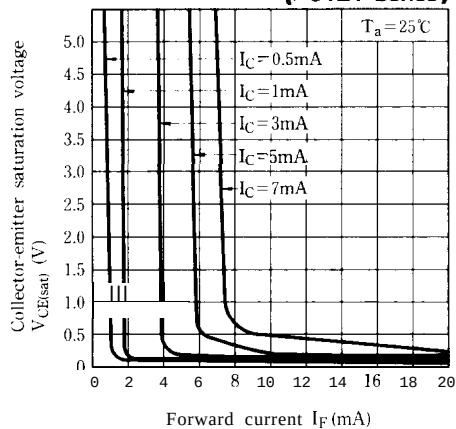


Fig.12-b Collector-emitter Saturation Voltage vs. Forward Current (PC121 Series)



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