

PC120 Series PC121 Series

Long Creepage Distance Type Photocoupler

* Lead forming type (J type) and taping reel type (F type) are also available. (PC120J/PC120FJ/PC121J/PC121FJ/PC120P/PC120PF/PC121P/PC121PF) (Page 636)

* 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_{CE0} : 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

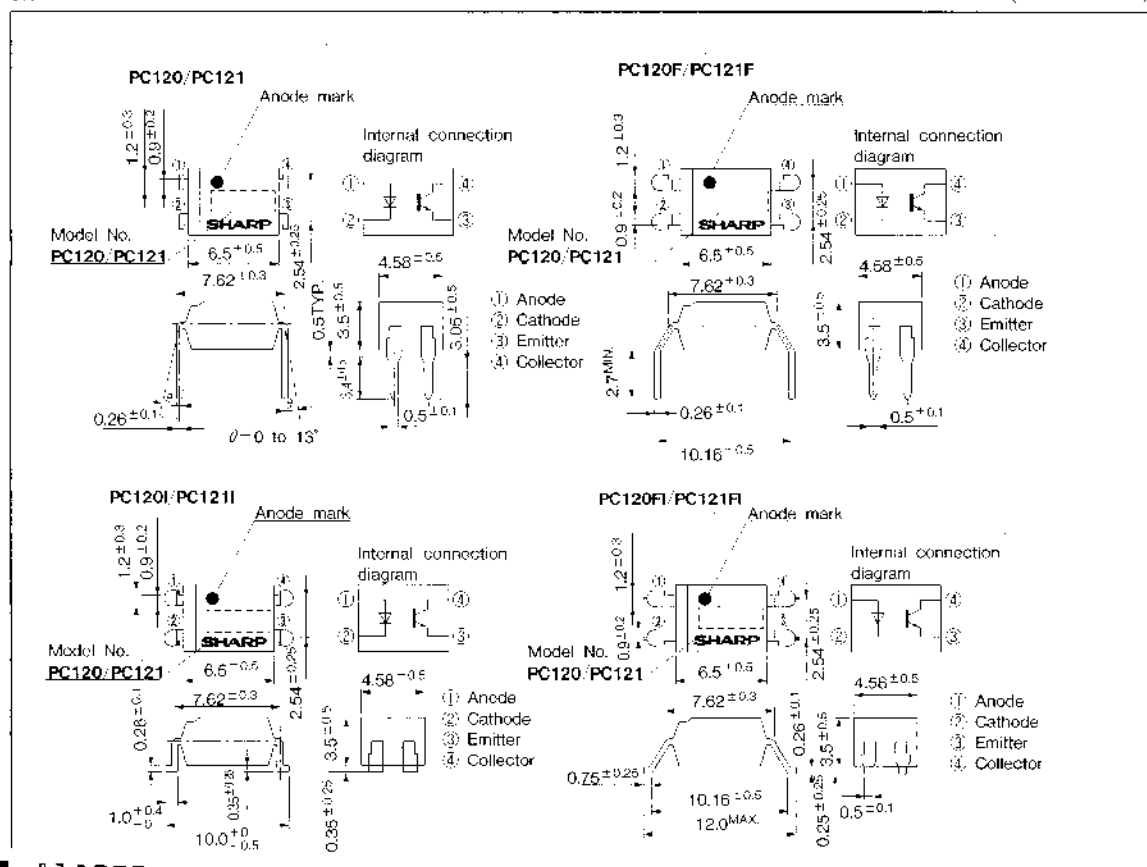
■ Model Line-up

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

*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_{out}	-30 to +100		°C
Storage temperature		T_{stg}	-55 to +125		°C
*3 Soldering temperature		T_{sol}	260		°C

*1 Pulse width $\leq 100 \mu s$, Duty ratio = 0.001

*2 40 to 60%RH, AC for 1 minute

*3 For 10 seconds

PC120 Series :

PC120/PC120I/

PC120F/PC120FI

PC121 Series :

PC121/PC121I/

PC121F/PC121FI

■ Electro-optical Characteristics

(Ta = 25°C)

Parameter		Symbol	Condition	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	V_F	$I_F = 20 \text{ mA}$	—	1.2	1.4	V
	Reverse voltage	I_R	$V_R = 4 \text{ V}$	—	—	10	μA
	Terminal capacitance	C_T	$V = 0, f = 1 \text{ kHz}$	—	30	250	pF
Output	Collector dark current	I_{CEO}	$V_{CE} = 20 \text{ V}, I_F = 0$	—	—	10^{-7}	A
	Collector-emitter breakdown voltage	BV_{CEO}	$I_C = 0.1 \text{ mA}, I_F = 0$	35	—	—	V
				70	—	—	
	Emitter-collector breakdown voltage	BV_{ECO}	$I_E = 10 \mu A, I_F = 0$	6	—	—	V
Transfer characteristics	Current transfer ratio	CTR	$I_F = 5 \text{ mA}, V_{CE} = 5 \text{ V}$	50	—	400	%
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 20 \text{ mA}, I_C = 1 \text{ mA}$	—	0.1	0.2	V
	Isolation resistance	R_{ISO}	DC500V, 40 to 60%RH	5×10^{10}	10^{11}	—	Ω
	Floating capacitance	C_f	$V = 0, f = 1 \text{ MHz}$	—	0.6	1.0	pF
	Cut-off frequency	f_c	$V_{CE} = 5 \text{ V}, I_C = 2 \text{ mA}, R_L = 100 \Omega$ -3dB point	—	80	—	kHz
	Response time	Rise time	$V_{CE} = 2 \text{ V}, I_C = 2 \text{ mA}$	—	4	18	μs
		Fall time	$R_L = 100 \Omega$	—	3	18	μs

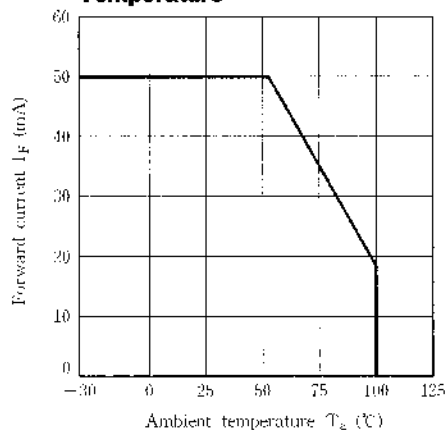
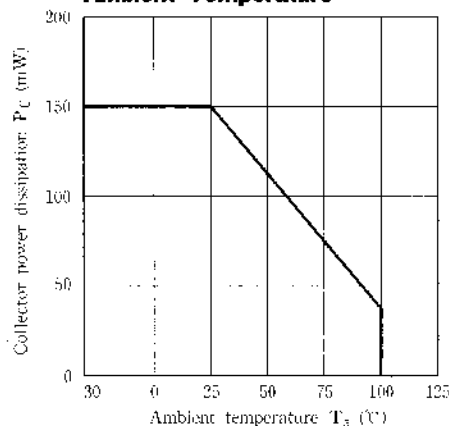
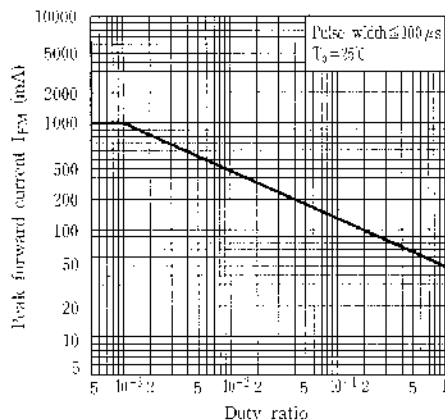
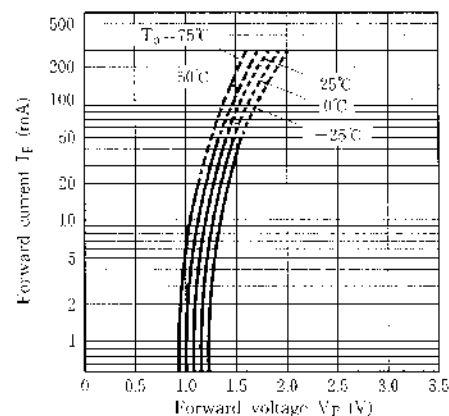
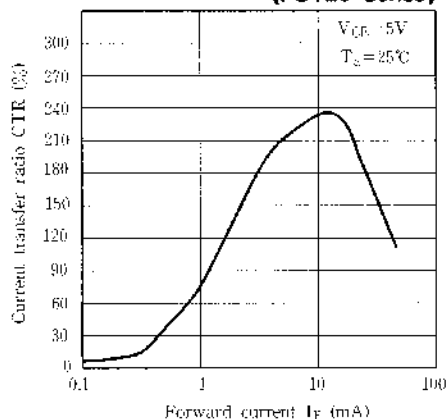
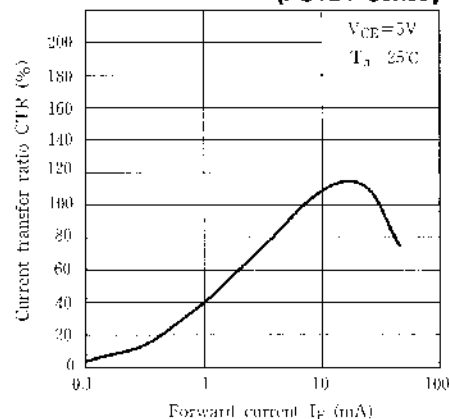
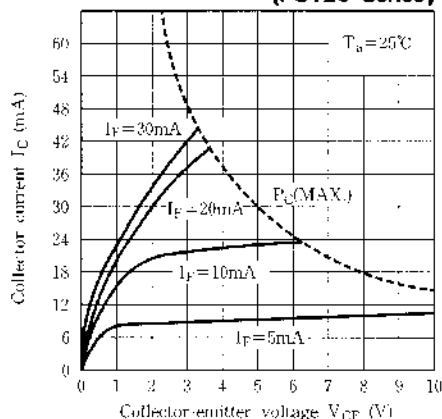
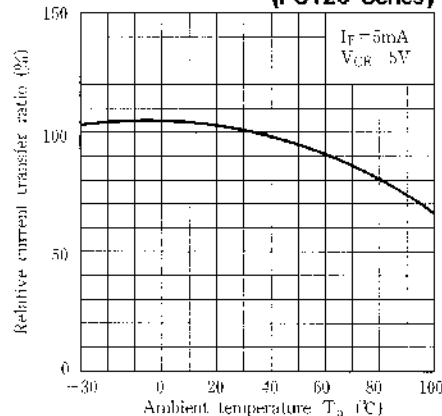
Fig. 1 Forward Current vs. Ambient Temperature**Fig. 2 Collector Power Dissipation vs. Ambient Temperature****Fig. 3 Peak Forward Current vs. Duty Ratio****Fig. 4 Forward Current vs. Forward Voltage****Fig. 5-a Current Transfer Ratio vs. Forward Current (PC120 Series)****Fig. 5-b Current Transfer Ratio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

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

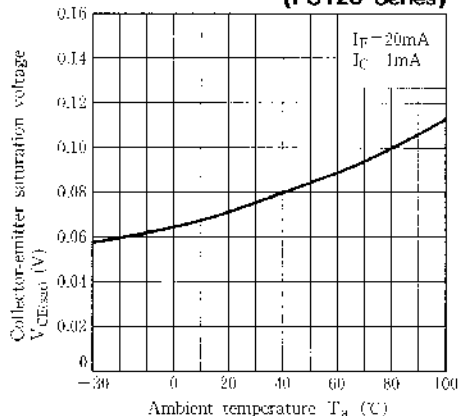
(PC120 Series)

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

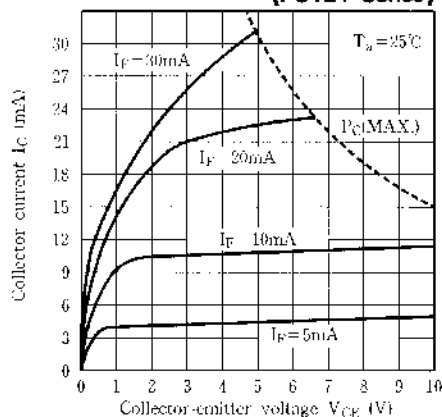
(PC120 Series)

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

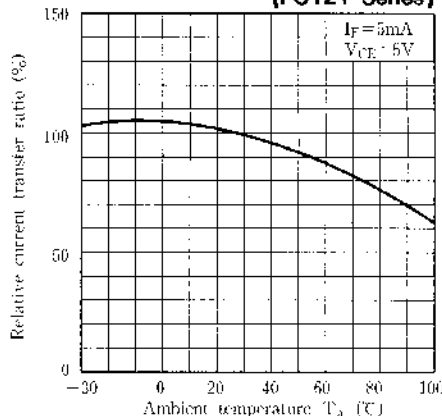
(PC120 Series)

**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)

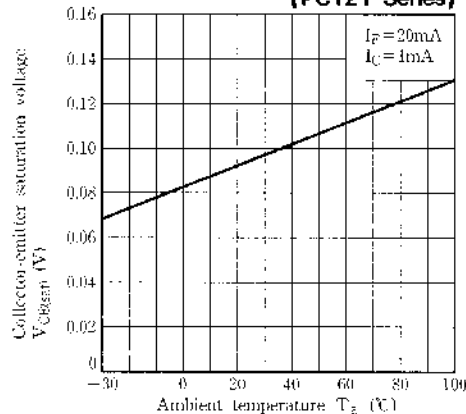


Fig. 9-a Collector Dark Current vs. Ambient Temperature
(PC120 Series)

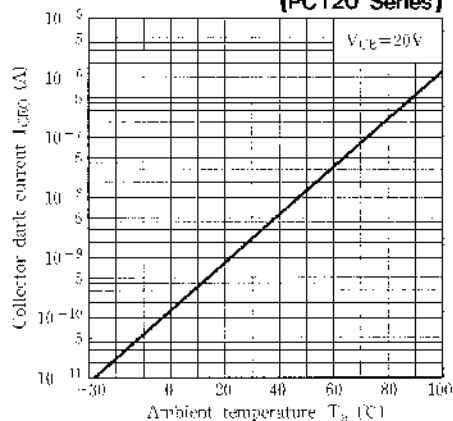


Fig. 9-b Collector Dark Current vs. Ambient Temperature
(PC121 Series)

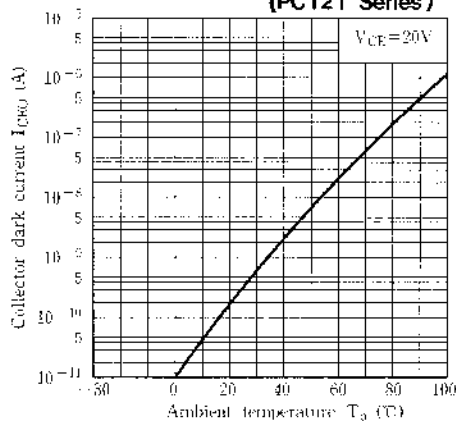


Fig.10-a Response Time vs. Load Resistance

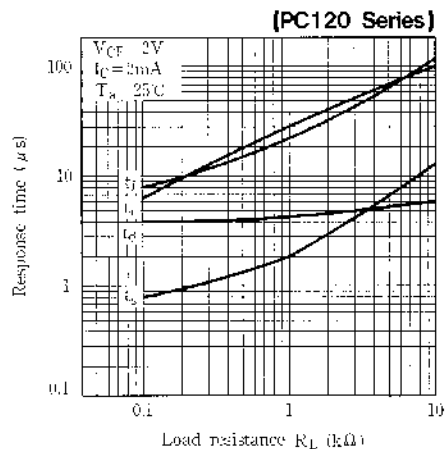


Fig.10-b Response Time vs. Load Resistance

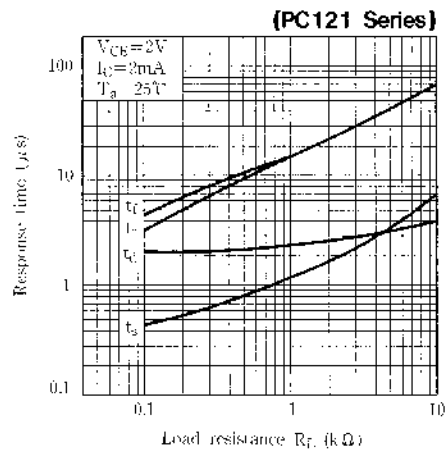


Fig.11-a Frequency Response
(PC120 Series)

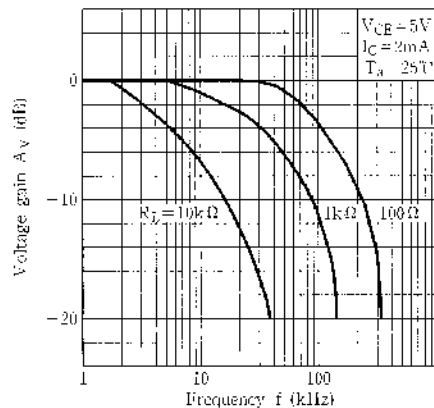


Fig. 11-b Frequency Response
(PC121 Series)

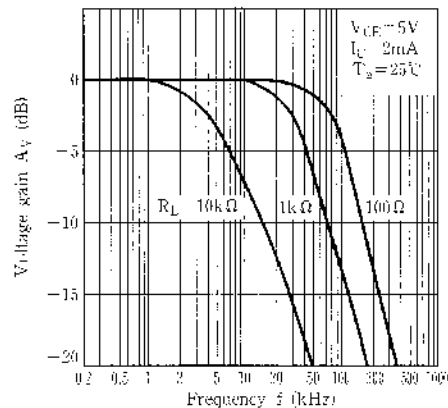


Fig.12-a Collector-emitter Saturation Voltage vs. Forward Current (PC120 Series)

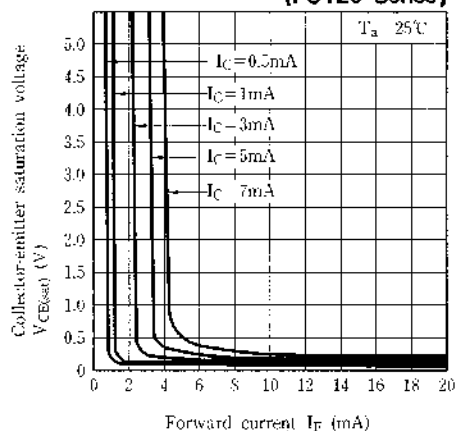
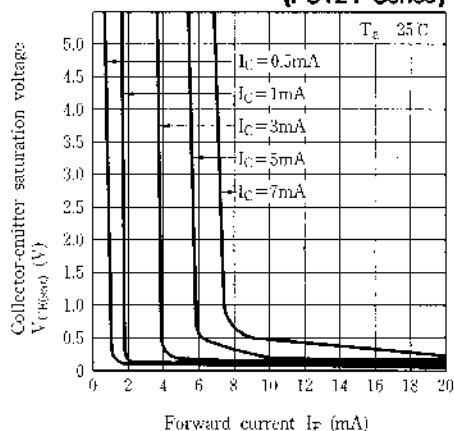


Fig.12-b Collector-emitter Saturation Voltage vs. Forward Current (PC121 Series)



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