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/PC120FI, 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

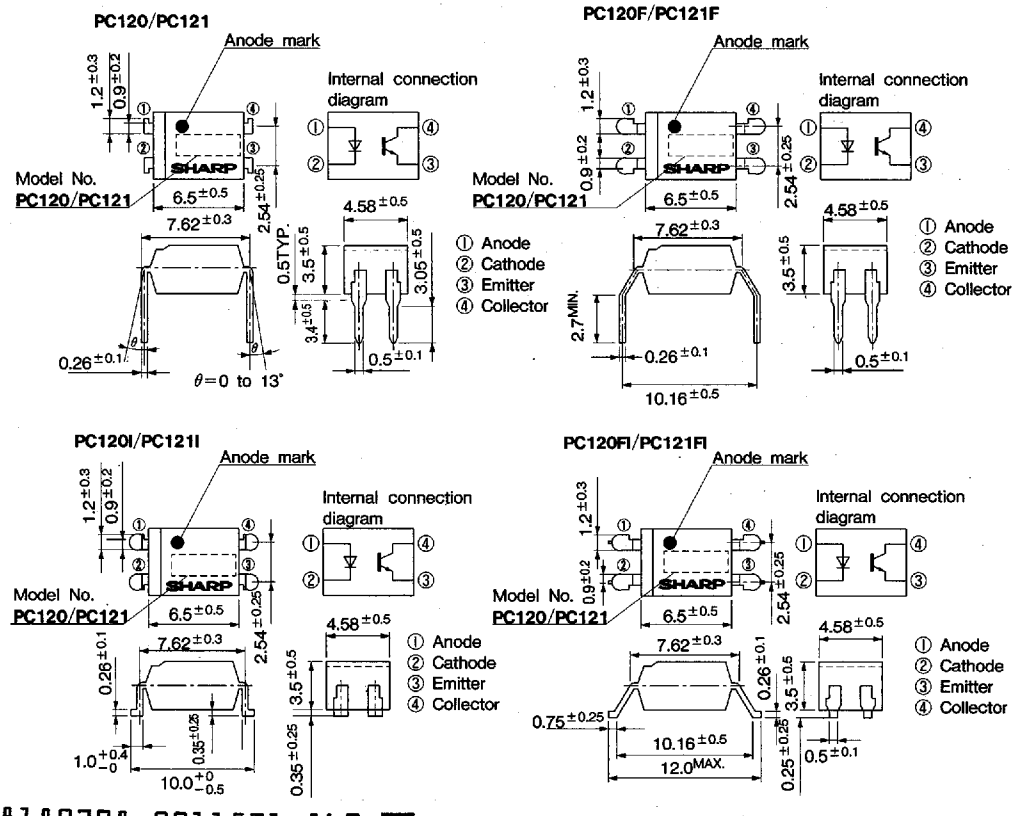
■ Model Line-up

	Standard type		High collector-emitter voltage type	
DIP type	**PC120**	**PC120F**	**PC121**	**PC121F**
Surface mount type	**PC120I***	**PC120FI***	**PC121I***	**PC121FI***

*Lead forming type

■ Outline Dimensions

(Unit : mm)



■ Absolute Maximum Ratings (Ta=25℃)

Parameter		Symbol	Rating		Unit
			PC120 Series	PC121 Series	
Input	Forward current	I_F	50		mA
	*1Peak 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
*2Isolation voltage		V_{iso}	5 000		V_{rms}
Operating temperature		T_{opr}	−30 to +100		℃
Storage temperature		T_{stg}	−55 to +125		℃
*3Soldering temperature		T_{sol}	260		℃

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℃)

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	PC120 series	BV_{CEO}	I_C=0.1mA, I_F=0	35	−	−	V
		PC121 series			70	−	−	
	Emitter-collector breakdown voltage		BV_{ECO}	I_E=10 μA, I_F=0	6	−	−	V
Tranfer 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

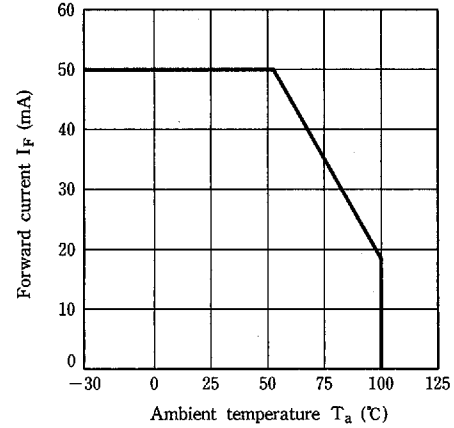


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

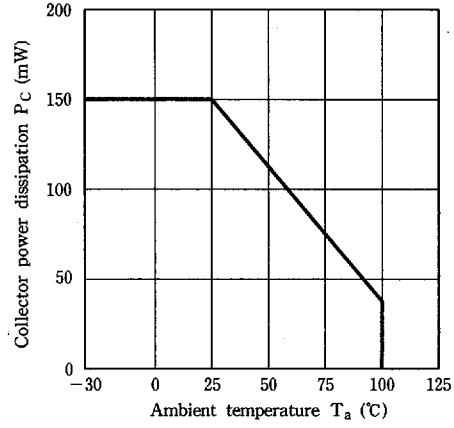


Fig. 3 Peak Forward Current vs. Duty Ratio

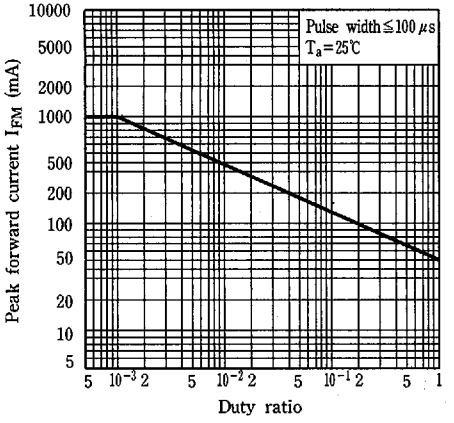


Fig. 4 Forward Current vs. Forward Voltage

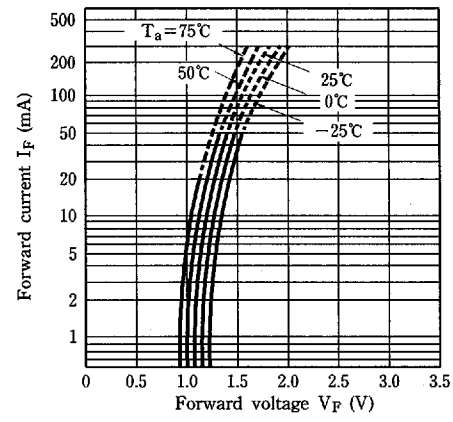


Fig. 5-a Current Transfer Ratio vs. Forward Current (PC120 Series)

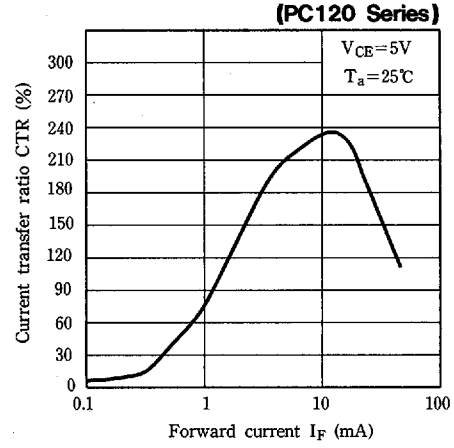
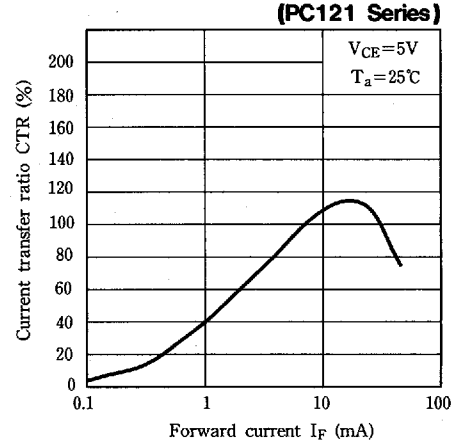


Fig. 5-b Current Transfer Ratio vs. Forward Current (PC121 Series)



6 Photocouplers

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

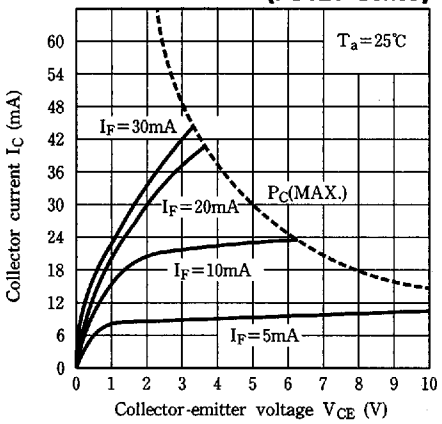


Fig. 6-b Collector Current vs. Collector-emitter Voltage (PC121 Series)

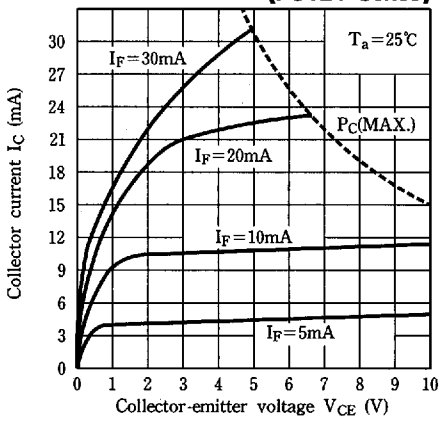


Fig. 7-a Relative Current Transfer Ratio vs. Ambient Temperature (PC120 Series)

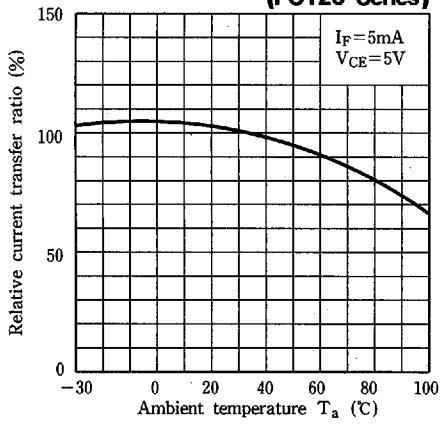


Fig. 7-b Relative Current Transfer Ratio vs. Ambient Temperature (PC121 Series)

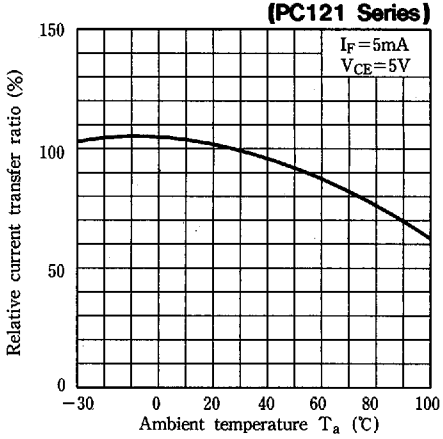


Fig. 8-a Collector-emitter Saturation Voltage vs. Ambient Temperature (PC120 Series)

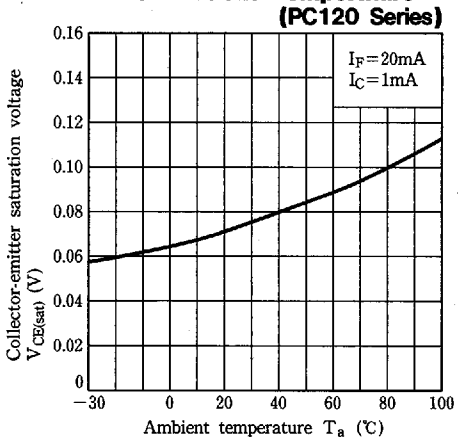


Fig. 8-b Collector-emitter Saturation Voltage vs. Ambient Temperature (PC121 Series)

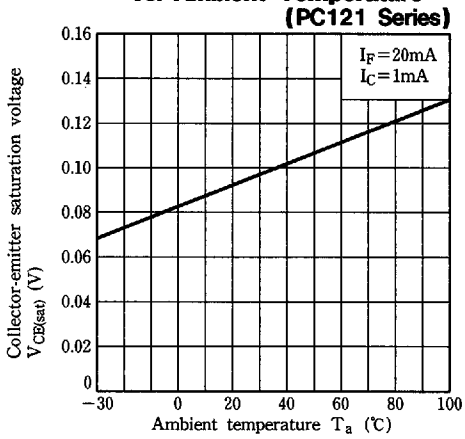


Fig. 9-a Collector Dark Current vs. Ambient Temperature (PC120 Series)

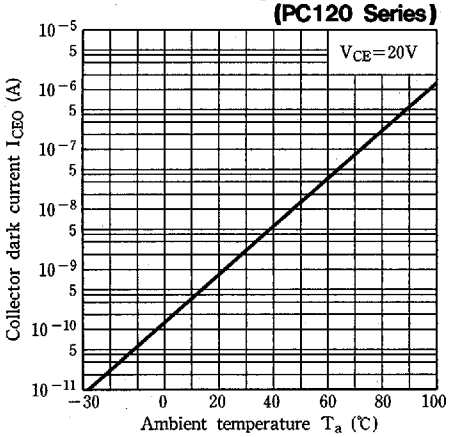


Fig. 9-b Collector Dark Current vs. Ambient Temperature (PC121 Series)

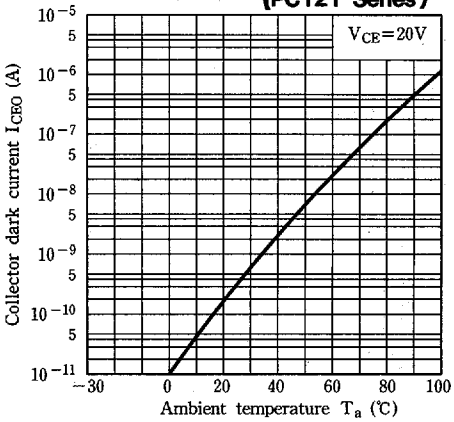


Fig.10-a Response Time vs. Load Resistance (PC120 Series)

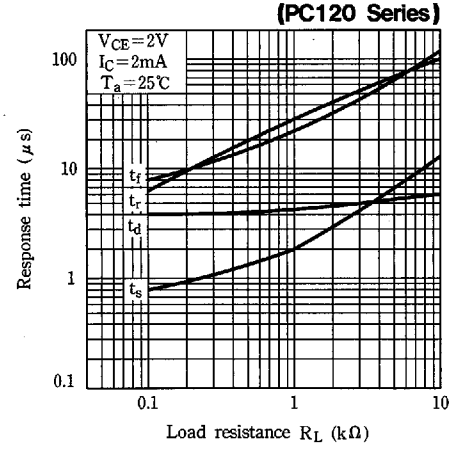


Fig.10-b Response Time vs. Load Resistance (PC121 Series)

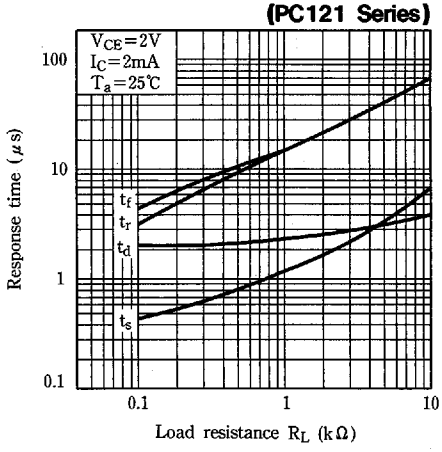


Fig.11-a Frequency Response (PC120 Series)

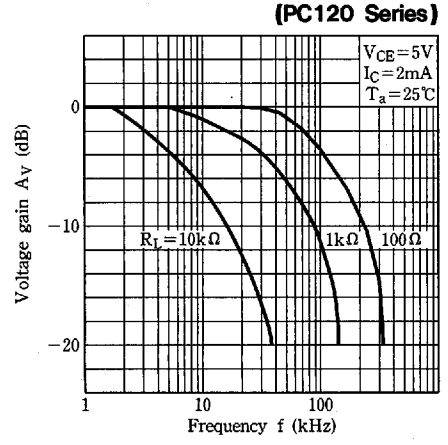


Fig. 11-b Frequency Response (PC121 Series)

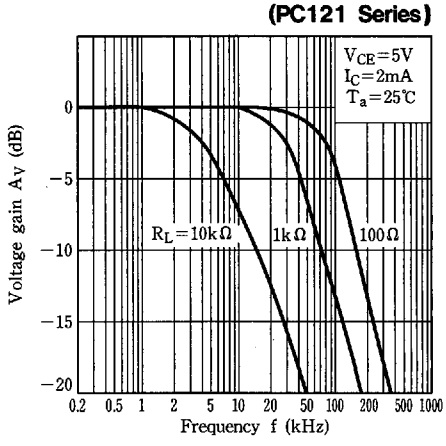


Fig.12-a Collector-emitter Saturation Voltage vs. Forward Current (PC120 Series)

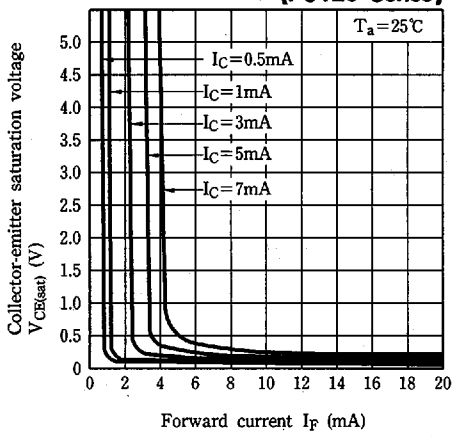
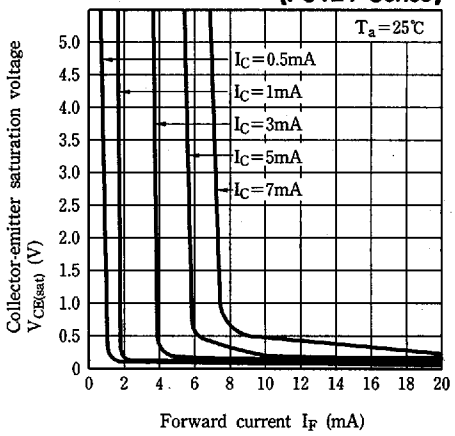


Fig.12-b Collector-emitter Saturation Voltage vs. Forward Current (PC121 Series)



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