

# PC702V

## High Collector-emitter Voltage Type Photocoupler

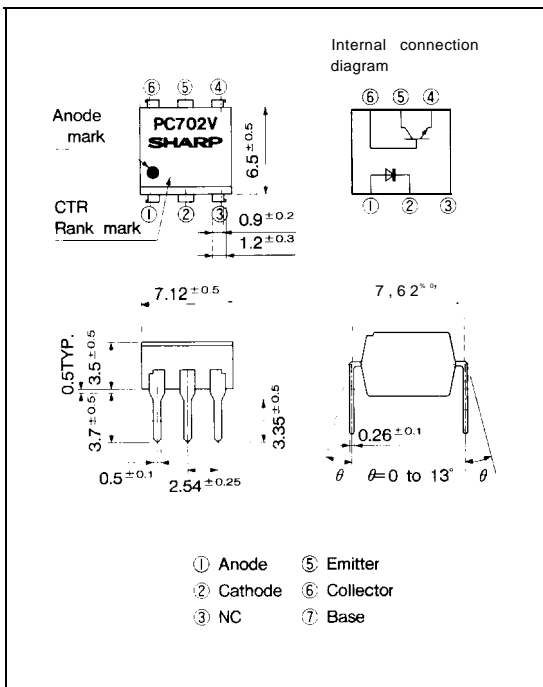
※ Lead forming type (I type) and taping reel type (P type) are also available. (PC702VI/PC702VP) (Page 656)  
 ※※ TÜV (VDE0884) approved type is also available as an option.

### Features

1. High collector-emitter voltage ( $V_{CEO}: 70V$ )
2. High isolation voltage between input and output ( $V_{iso}: 5\,000V_{rms}$ )
3. TTL compatible output
4. Recognized by UL, file No. E64380

### Outline Dimensions

(Unit : mm)



- ① Anode      ⑤ Emitter
- ② Cathode   ⑥ Collector
- ③ NC        ⑦ Base

### Applications

1. Telephone sets, telephone exchangers
2. System appliances, measuring instruments
3. Signal transmission between circuits of different potentials and impedances

### Absolute Maximum Ratings

( $T_a = 25^\circ C$ )

Parameter		Symbol	Rating	Unit
Input	Forward current	$I_F$	60	mA
	*1 Peak forward current	$I_{FM}$	1.5	A
	Reverse voltage	$V_R$	6	V
	Power dissipation	P	105	mW
output	Collector-emitter voltage	$V_{CEO}$	70	V
	Emitter-collector voltage	$V_{ECO}$	6	V
	Collector-base voltage	$V_{CBO}$	70	V
	Emitter-base voltage	$V_{EBO}$	6	V
	Collector current	$I_C$	50	mA
	Collector power dissipation	$P_C$	160	mW
	Total power dissipation	$P_{tot}$	200	mW
*isolation voltage	$V_{iso}$	5 000	$V_{rms}$	
Operating temperature	$T_{opr}$	-55 to +100	°C	
Storage temperature	$T_{stg}$	-55 to +150	°C	
*Soldering temperature	$T_{sol}$	260	°C	

\*1 Pulse width  $\leq 10 \mu s$ , Duty ratio = 0.0004"

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

\*3 For 1( ) seconds

## ■ Electro-optical Characteristics

(T<sub>a</sub> = 25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	V <sub>F</sub>	I <sub>F</sub> = 60mA		1.4	1.7	V	
	Reverse current	I <sub>R</sub>	V <sub>R</sub> = 6V			10	UA	
	Terminal capacitance	C <sub>t</sub>	V = 0, f = 1kHz	—	30	250	PF	
Output	Collector dark current	I <sub>CEO</sub>	V <sub>CE</sub> = 10V, I <sub>F</sub> = 0			5 × 10 <sup>-8</sup>	A	
Transfer characteristics	Current transfer ratio	CTR	I <sub>F</sub> = 10mA, V <sub>CE</sub> = 5V	40	—	320	%	
	Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>F</sub> = 10mA, I <sub>C</sub> = 2.5mA	—	0.25	0.4	v	
	Isolation resistance	R <sub>ISO</sub>	DC500V, 40 to 60%RH	5 × 10 <sup>10</sup>	10 <sup>11</sup>	—	Ω	
	Floating capacitance	C <sub>f</sub>	V = 0, f = 1MHz	—	0.6	1.0	pF	
	Response time	Cut-off frequency	f <sub>c</sub>	I <sub>F</sub> = 10mA, V <sub>CC</sub> = 5V, R <sub>L</sub> = 75Ω, R <sub>BE</sub> = ∞, -3dB	—	150	—	kHz
		Rise time	t <sub>r</sub>	I <sub>F</sub> = 10mA, V <sub>CC</sub> = 5V		2	7	μs
	Fall time	t <sub>f</sub>	R <sub>L</sub> = 75Ω, R <sub>BE</sub> = ∞		2	8	μs	

\*4 Classification table of current transfer ratio is shown below

Model No.	Rank mark	CTR(%)
PC702V1	A	40 to 80
PC702V2	B	63 to 125
PC702V3	c	100 to 200
PC702V4	D	160 to 320
PC702V5	A or B	40 to 125
PC702V6	B or C	63 to 200
PC702V7	C or D	100 to 320
PC702V	A, B, C or D	40 to 320

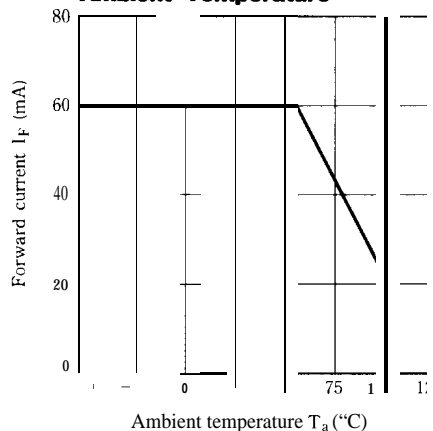
Measuring Conditions

I<sub>F</sub> = 10mA

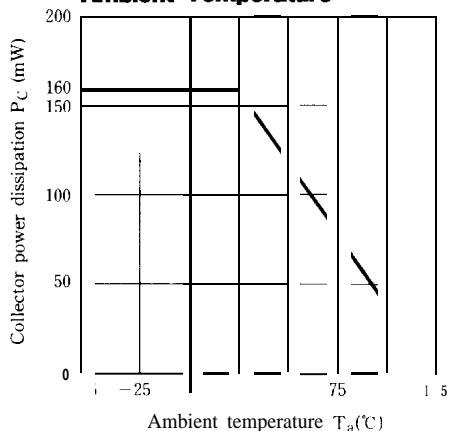
V<sub>CE</sub> = 5V

T<sub>a</sub> = 25°C

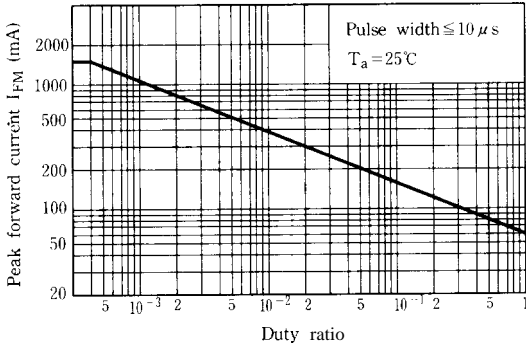
**Fig. 1 Forward Current vs. Ambient Temperature**



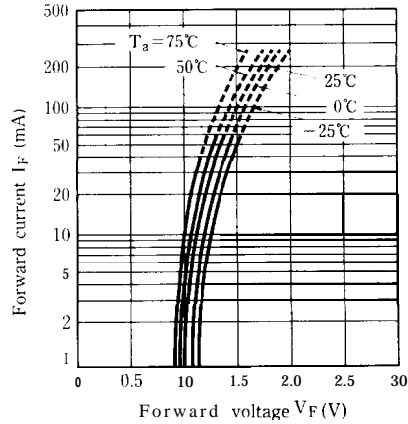
**Fig. 2 Collector Power Dissipation vs. Ambient Temperature**



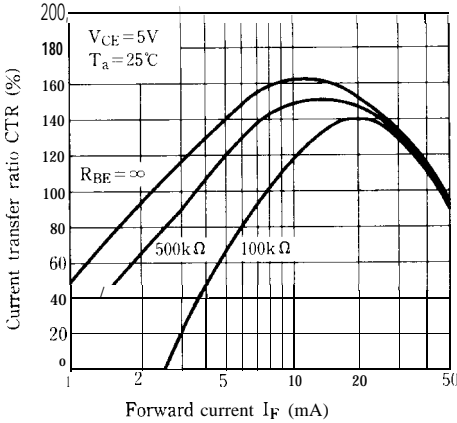
**Fig. 3 Peak Forward Current vs. Duty Ratio**



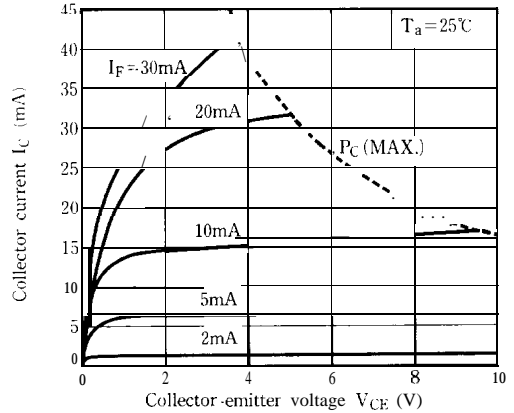
**Fig. 4 Forward Current vs. Forward Voltage**



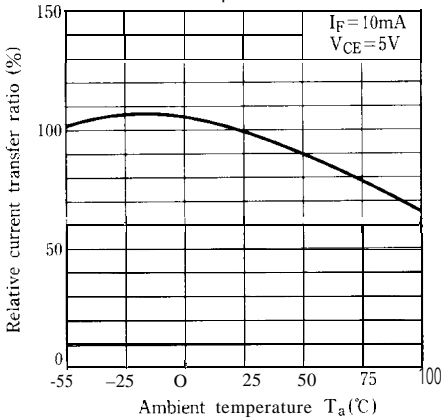
**Fig. 5 Current Transfer Ratio vs. Forward Current**



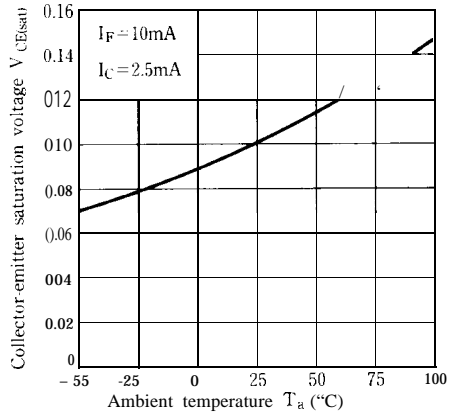
**Fig. 6 Collector Current vs. Collector-emitter Voltage**



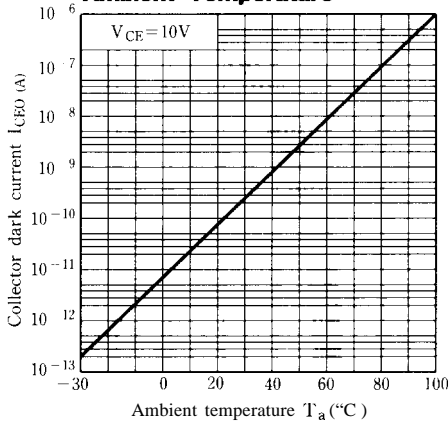
**Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature**



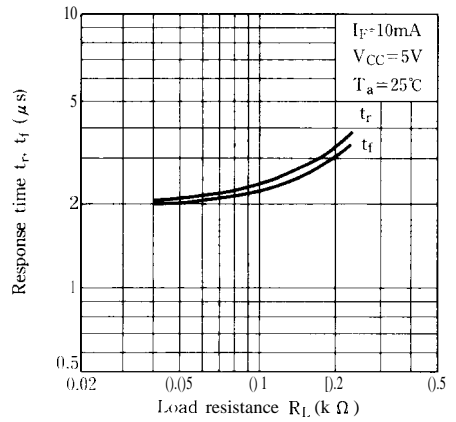
**Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature**



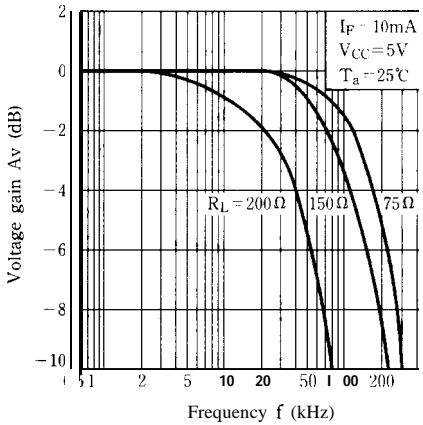
**Fig. 9 Collector Dark Current vs. Ambient Temperature**



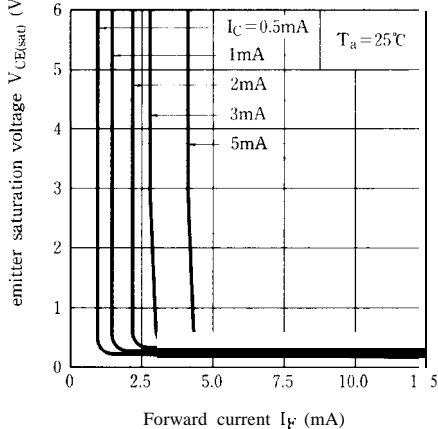
**Fig.10 Response Time vs. Load Resistance**



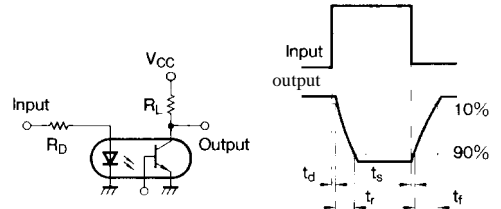
**Fig.11 Frequency Response**



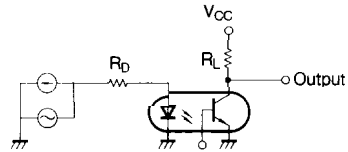
**Fig.12 Collector-emitter Saturation Voltage vs. Forward Current**



**Test Circuit for Response Time**



**Test Circuit for Frequency Response**



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