

# PC703V

## High Collector-emitter Voltage Type Photocoupler

\* Lead forming type (I type) and taping reel type (P type) are also available. (PC703VI/PC703VP)

\*\* TÜV (VDE0884) approved type is also available as an option.

### ■ Features

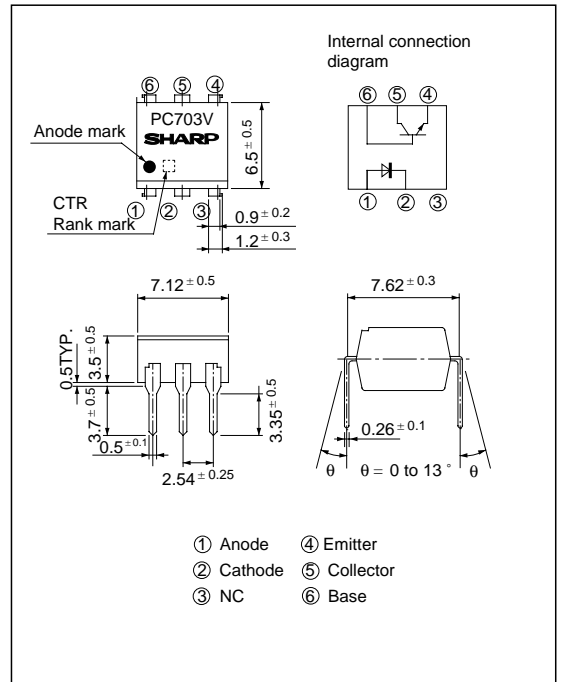
1. High collector-emitter voltage ( $V_{CEO}$  : 70V)
2. High isolation voltage between input and output  
( $V_{iso}$  : 5 000V<sub>rms</sub>)
3. TTL compatible output
4. Recognized by UL, file No. E64380,

### ■ Applications

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

### ■ Outline Dimensions

(Unit : mm)



### ■ Absolute Maximum Ratings

( $T_a = 25^\circ\text{C}$ )

	Parameter	Symbol	Rating	Unit
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	$V_{CEO}$	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
*2Isolation voltage		$V_{iso}$	5 000	V <sub>rms</sub>
Operating temperature		$T_{opr}$	- 30 to + 100	$^\circ\text{C}$
Storage temperature		$T_{stg}$	- 55 to + 125	$^\circ\text{C}$
*3Soldering temperature		$T_{sol}$	260	$^\circ\text{C}$

\*1 Pulse width  $\leq 100\mu\text{s}$ , Duty ratio : 0.001

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

\*3 For 10 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> = 20mA	-	1.2	1.4	V	
	Peak forward voltage	V <sub>FM</sub>	I <sub>FM</sub> = 0.5A	-	-	3.0	V	
	Reverse current	I <sub>R</sub>	V <sub>R</sub> = 4V	-	-	10	μA	
	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> = 20V, I <sub>F</sub> = 0	-	-	10 <sup>-7</sup>	A	
Transfer characteristics	*4Current 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> = 20mA, I <sub>C</sub> = 1mA	-	0.1	0.2	V	
	Isolation resistance	R <sub>ISO</sub>	DC500V, 40 to 60% RH	5 x 10 <sup>10</sup>	10 <sup>11</sup>	-	Ω	
	Floating capacitance	C <sub>f</sub>	V = 0, f = 1MHz	-	0.6	1.0	pF	
	Cut-off frequency	Response time	Rise time	V <sub>CE</sub> = 5V, I <sub>C</sub> = 2mA R <sub>L</sub> = 100Ω, - 3dB	-	80	-	kHz
			Fall time	V <sub>CE</sub> = 2V, I <sub>C</sub> = 2mA R <sub>L</sub> = 100Ω	-	4	15	μs
				-	3	15	μs	

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

Model No.	Rank mark	CTR (%)
PC703V1	A	40 to 80
PC703V2	B	63 to 125
PC703V3	C	100 to 200
PC703V4	D	160 to 320
PC703V5	A or B	40 to 125
PC703V6	B or C	63 to 200
PC703V7	C or D	100 to 320
PC703V	A, B, C or D	40 to 320

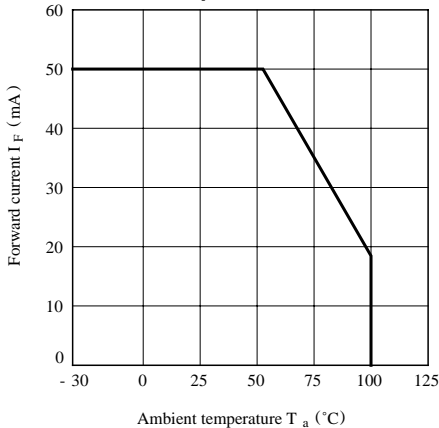
Measurement conditions

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

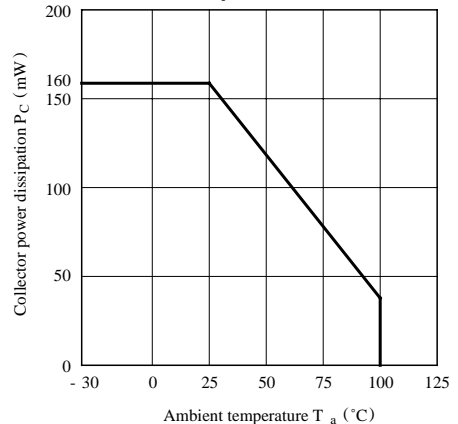
V<sub>CE</sub> = 5V

T<sub>a</sub> = 25°C

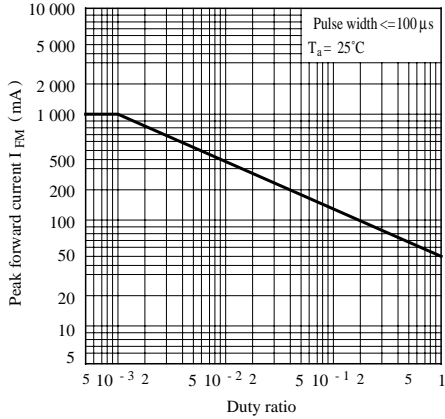
**Fig. 1 Forward Current vs. Ambient Temperature**



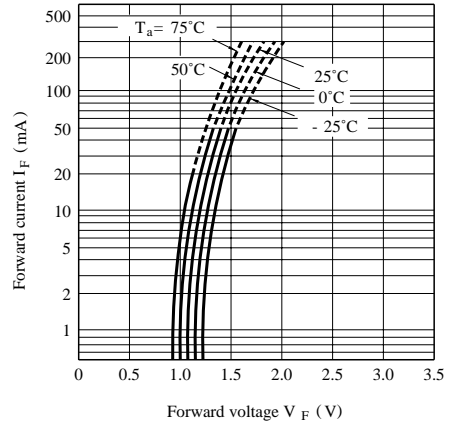
**Fig.12 Collector Power Dissipation VS. Ambient Temperature**



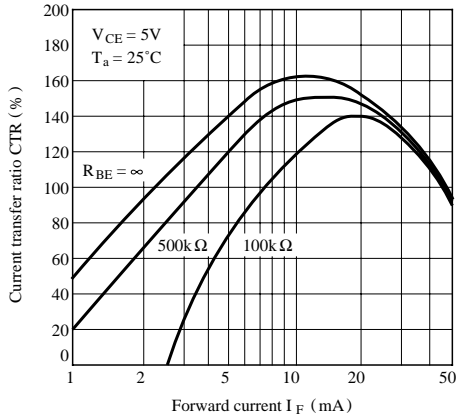
**Fig. 3 Peak Forward Current vs. Duty Ratio**



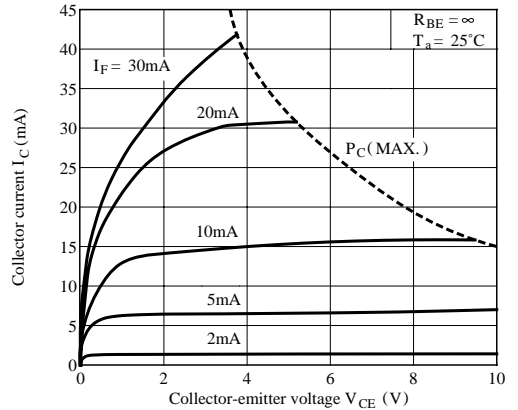
**Fig. 4 Forward Current vs. Forward Voltage**



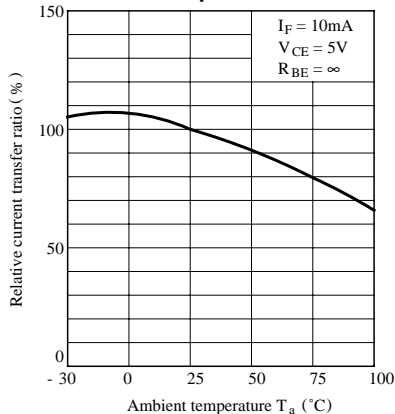
**Fig. 5 Current Transfer Ratio vs. Forward Current**



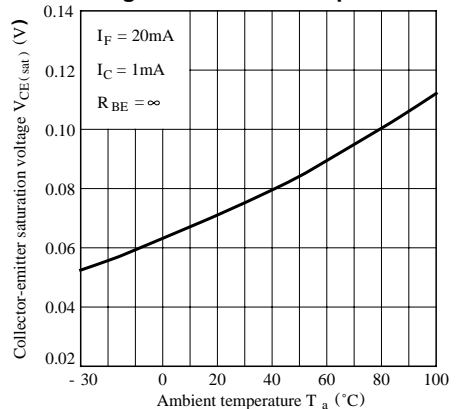
**Fig. 6 Collector Current vs. Collector-emitter Voltage**



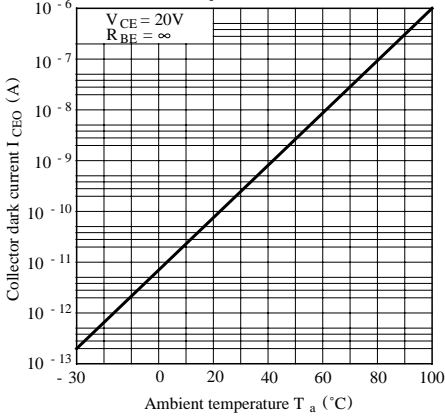
**Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature**



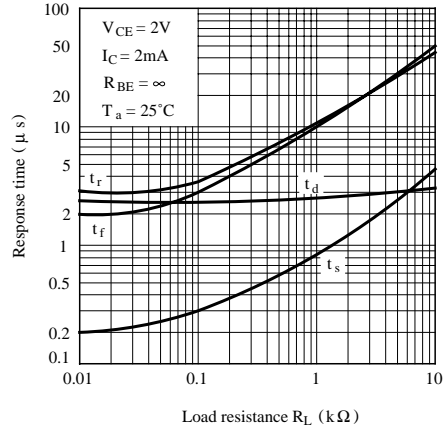
**Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature**



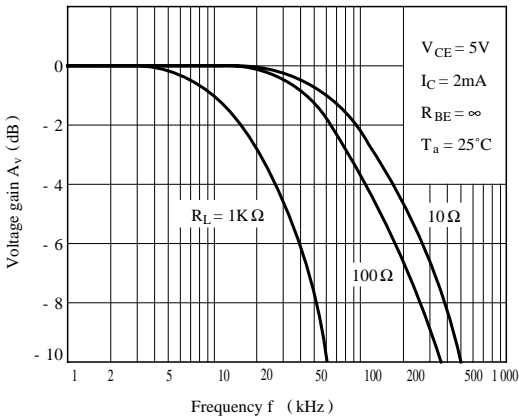
**Fig. 9 Collector Dark Current vs. Ambient Temperature**



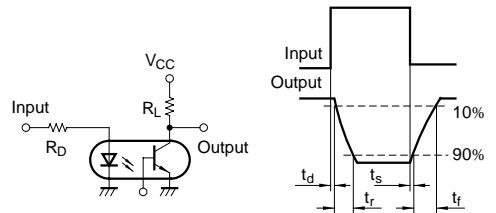
**Fig.10 Response Time vs. Load Resistance**



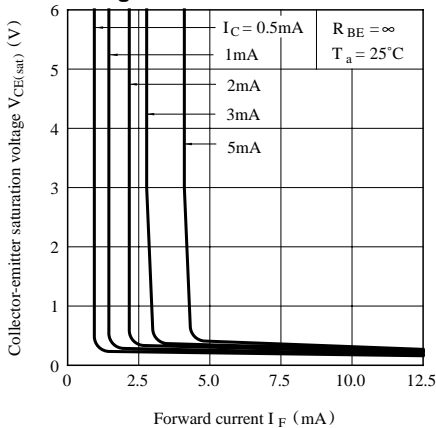
**Fig.11 Frequency Response**



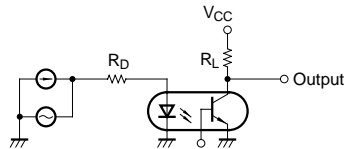
**Test Circuit for Response Time**



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



**Test Circuit for Frequency Response**



● Please refer to the chapter "Precautions for Use".