

# PC733

## AC Input Type Photocoupler

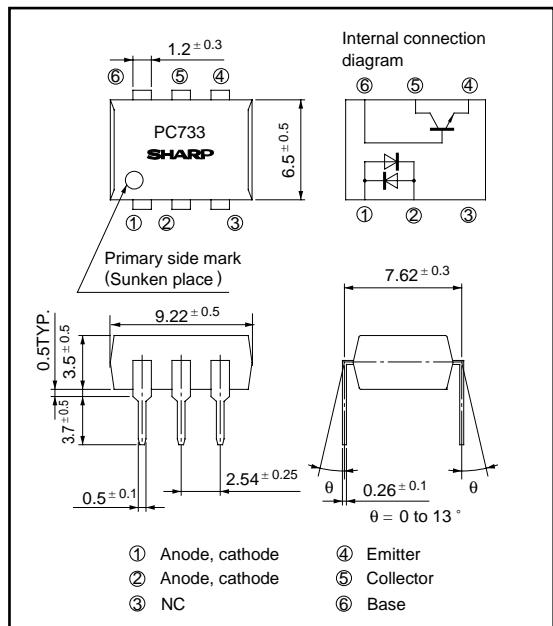
\* Lead forming type (I type) is also available. (PC733I)

### ■ Features

1. AC input response
2. High isolation voltage between input and output ( $V_{iso}$  : 5 000V<sub>rms</sub>)
3. Current transfer ratio  
CTR : MIN. 15% at  $I_F = \pm 1\text{mA}$ ,  $V_{CE} = 5\text{V}$
4. Low collector dark current  
( $I_{CEO}$  : MAX.  $10^{-7}\text{A}$  at  $V_{CE} = 20\text{V}$ )
5. TTL compatible output
6. Recognized by UL, file No. E64380

### ■ Outline Dimensions

(Unit : mm)



### ■ Applications

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

### ■ Absolute Maximum Ratings

(Ta = 25°C)

Parameter	Symbol	Rating	Unit
Input	Forward current	I <sub>F</sub>	± 50
	* <sup>1</sup> Peak forward current	I <sub>FM</sub>	± 1
	Power dissipation	P	70
Output	Collector-emitter voltage	V <sub>CEO</sub>	35
	Emitter-collector voltage	V <sub>ECO</sub>	6
	Collector-base voltage	V <sub>CBO</sub>	35
	Emitter-base voltage	V <sub>EBO</sub>	6
	Collector current	I <sub>C</sub>	50
	Collector power dissipation	P <sub>C</sub>	150
Total power dissipation		P <sub>tot</sub>	mW
* <sup>2</sup> Isolation voltage		V <sub>iso</sub>	5 000 V <sub>rms</sub>
Operating temperature		T <sub>opr</sub>	- 25 to + 100 °C
Storage temperature		T <sub>stg</sub>	- 40 to + 125 °C
* <sup>3</sup> Soldering temperature		T <sub>sol</sub>	260 °C

\*1 Pulse width <= 100μs, Duty ratio : 0.001

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

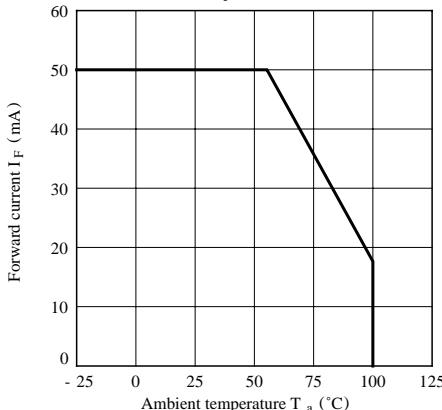
\*3 For 10 seconds

## ■ Electro-optical Characteristics

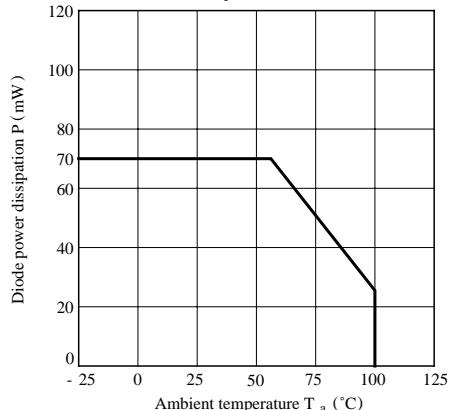
(Ta = 25°C)

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
	Terminal capacitance	C <sub>t</sub>	V = 0, f = 1kHz	-	50	400	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	Current transfer ratio	CTR	I <sub>F</sub> = ± 1mA, V <sub>CE</sub> = 5V	15	-	300	%
	Collector-emitter saturation voltage	V <sub>CE</sub> (sat)	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	f <sub>C</sub>	V <sub>CE</sub> = 5V, I <sub>C</sub> = 2mA, R <sub>L</sub> = 100Ω, -3dB	15	80	-	kHz
	Response time	t <sub>r</sub>	V <sub>CE</sub> = 2V, I <sub>C</sub> = 2mA	-	4	18	μs
	Fall time	t <sub>f</sub>	R <sub>L</sub> = 100Ω	-	3	18	μs

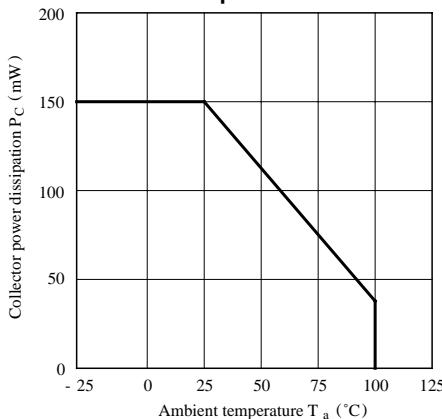
**Fig. 1 Forward Current vs.  
Ambient Temperature**



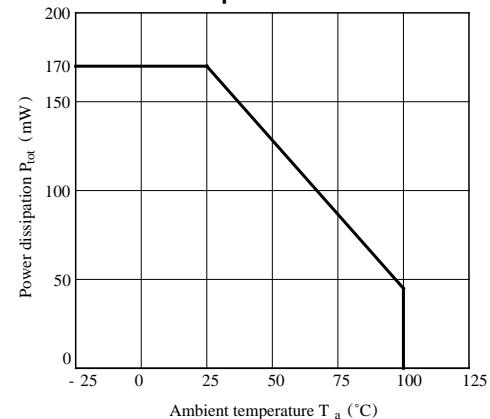
**Fig. 2 Diode Power Dissipation vs.  
Ambient Temperature**

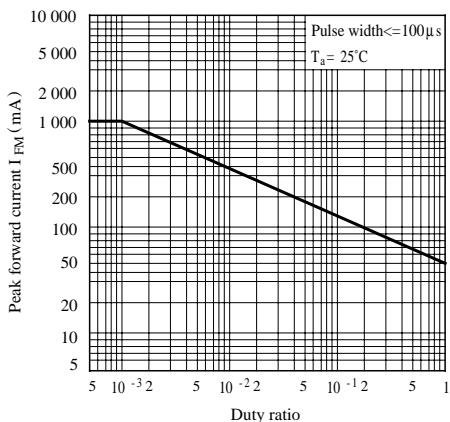
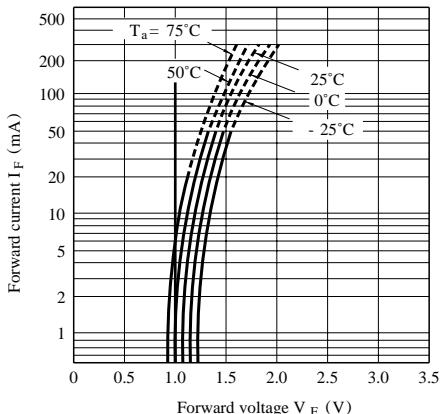
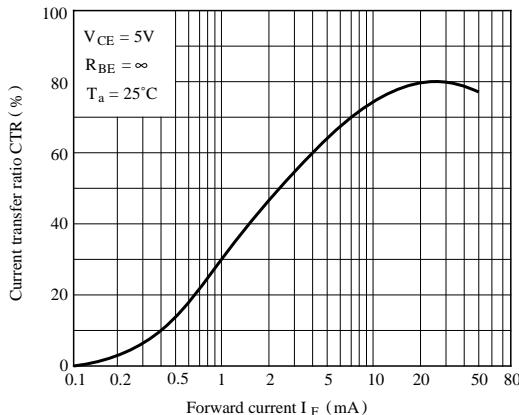
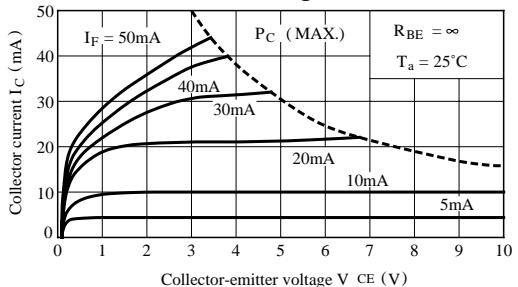
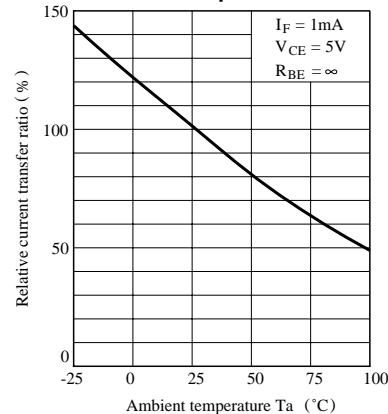
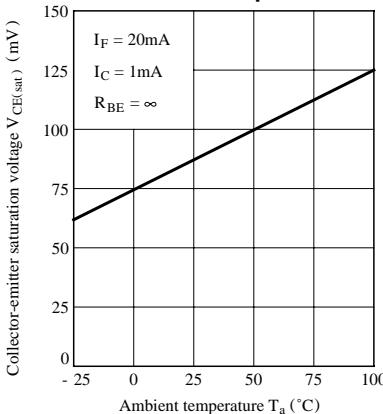


**Fig. 3 Collector Power Dissipation VS.  
Ambient Temperature**

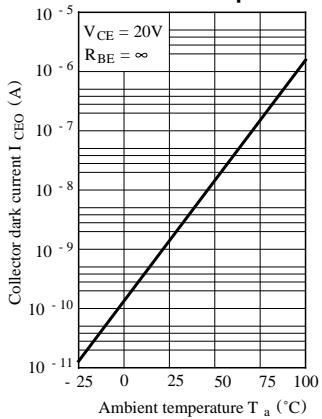


**Fig. 4 Power Dissipation vs.  
Ambient Temperature**

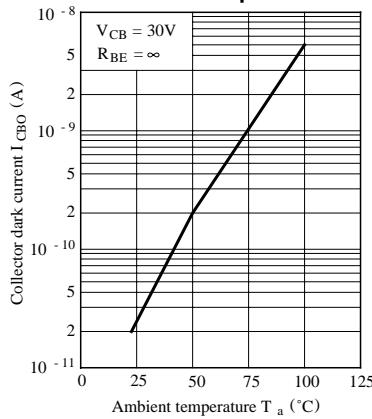


**Fig. 5 Peak Forward Current vs. Duty Ratio****Fig. 6 Forward Current vs. Forward Voltage****Fig. 7 Current Transfer Ratio vs. Forward Current****Fig. 8 Collector Current vs. Collector-emitter Voltage****Fig. 9 Relative Current Transfer Ratio vs. Ambient Temperature****Fig. 10 Collector-emitter Saturation Voltage vs. Ambient Temperature**

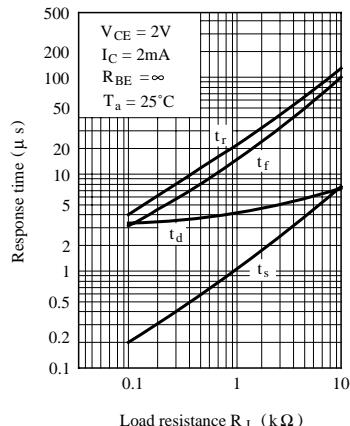
**Fig.11-a Collector Dark Current vs. Ambient Temperature**



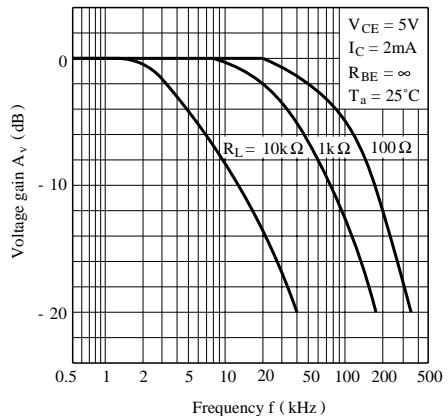
**Fig.11-b Collector-base Dark Current vs. Ambient Temperature**



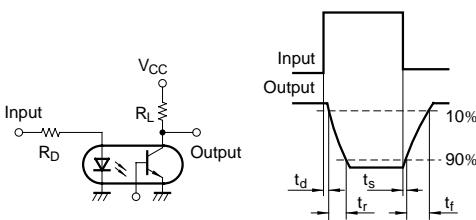
**Fig.12 Response Time vs. Load Resistance**



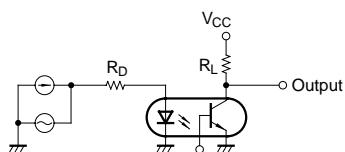
**Fig.13 Frequency Response**



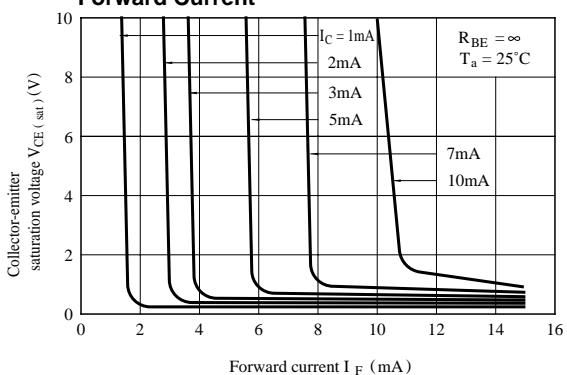
**Test Circuit for Response Time**



**Test Circuit for Frequency Response**



**Fig.14 Collector-emitter Saturation Voltage vs. Forward Current**



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