

# PC7 16V

## High Sensitivity, High Output Type Photocoupler

※ Lead forming type (I type) and taping reel type (P type) are also available. ( PC716VI/PC716VP) (Page 656)  
 ※※TUV (VDE0884) approved type is also available as an option.

### ■ Features

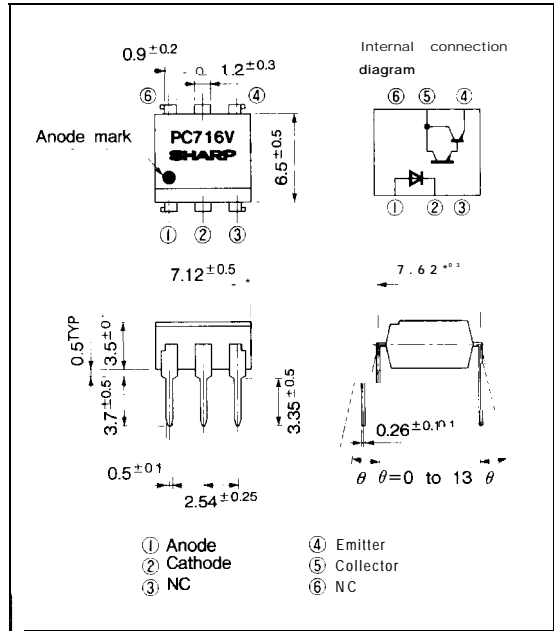
1. High current transfer ratio  
(CTR : MIN. 1 000% at  $I_F=1\text{mA}$ ,  $V_{CE}=2\text{V}$ )
2. High collector power dissipation  
( $P_c$  : 300mW)
3. High isolation voltage between input and output  
( $V_{iso}$  : 5 000V<sub>rms</sub>)
4. Recognized by UL, file No. E64380

### ■ Applications

1. DC-DC SSRS
2. Power monitors, welding machines
3. System appliances, measuring instruments
4. 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
	*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	V
	Emitter-collector voltage	$V_{ECO}$	6	V
	Collector current	$I_C$	200	mA
	Collector power dissipation	$P_C$	300	mW
	Total power dissipation	$P_{tot}$	350	mW
	*2 Isolation voltage	$V_{iso}$	5 000	V <sub>rms</sub>
	Operating temperature	$T_{opr}$	-25 to +100	°C
Storage temperature	$T_{stg}$	-40 to +125	°C	
	*3 Soldering temperature	$T_{sol}$	260	°C

\*1 Pulse width  $\leq 100 \mu\text{s}$ , Duty ratio= 0.001  
 \*2 40 to 60%RH, AC for 1 minute  
 \*3 For 1() seconds

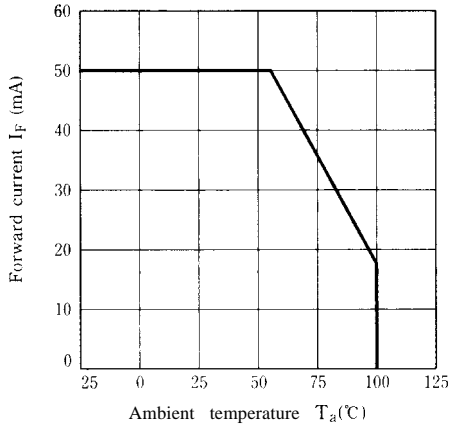
6  
Photocouplers

**Electro-optical Characteristics**

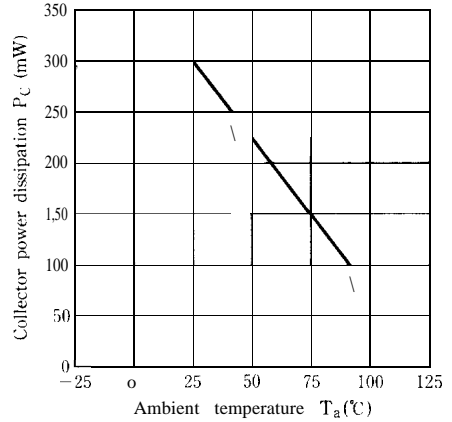
( $T_a = 25^\circ\text{C}$ )

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	$V_F$	$I_F = 10\text{mA}$	—	1.2	1.4	v
	Peak forward voltage	$V_{FM}$	$I_{FM} = 0.5\text{A}$	—	—	3.0	v
	Reverse current	$I_R$	$V_R = 4\text{V}$	—	—	10	$\mu\text{A}$
	Terminal capacitance	$C_t$	$V = 0, f = 1\text{kHz}$	—	30	250	pF
output	Collector dark current	$I_{CEO}$	$V_{CE} = 10\text{V}, I_F = 0$	—	—	$10^{-6}$	A
	Current transfer ratio	CTR	$I_F = 1\text{mA}, V_{CE} = 2\text{V}$	1 000	6000	15000	%
Transfer characteristics	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 20\text{mA}, I_c = 10\text{mA}$	—	—	1.2	v
	Isolation resistance	$R_{ISO}$	DC500V, 40 to 60%RH	$5 \times 10^{10}$	$10^{11}$	—	$\Omega$
	Floating capacitance	$C_f$	$V = 0, f = 1\text{MHz}$	—	0.6	1.0	pF
	Cut -off frequency	$f_c$	$V_{CE} = 2\text{V}, I_c = 10\text{mA}, R_l = 100\Omega, -3\text{dB}$	—	3	—	kHz
	Response time	Rise time	$t_r$	$V_{CE} = 2\text{V}, I_c = 20\text{mA}, R_l = 100\Omega$	—	130	400
Fall time		$t_f$	—		60	350	$\mu\text{s}$

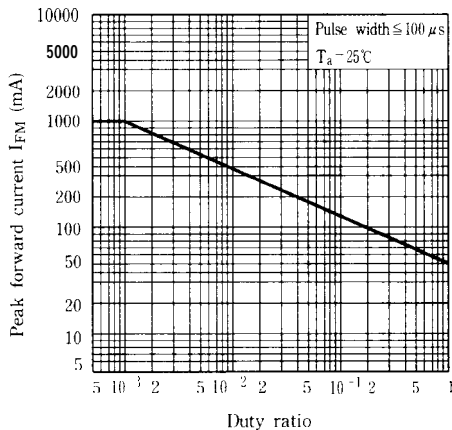
**Fig. 1 Forward Current vs. Ambient Temperature**



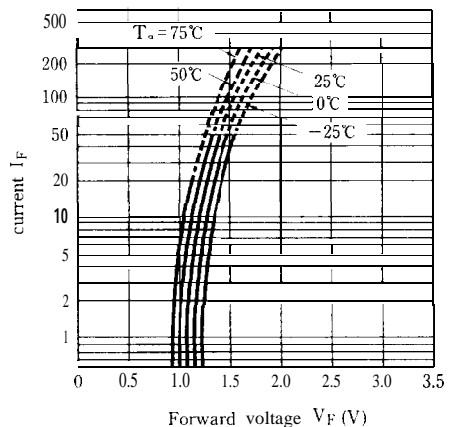
**Fig. 2 Collector Power Dissipation vs. Ambient Temperature**



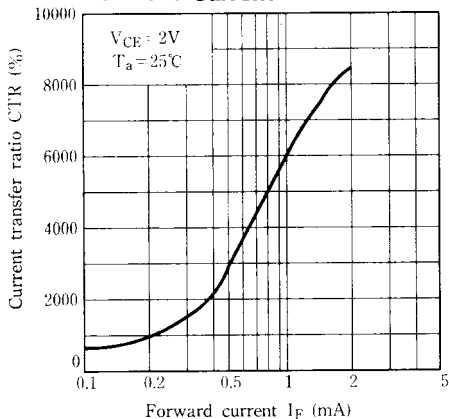
**Fig. 3 Peak Forward Current vs. Duty Ratio**



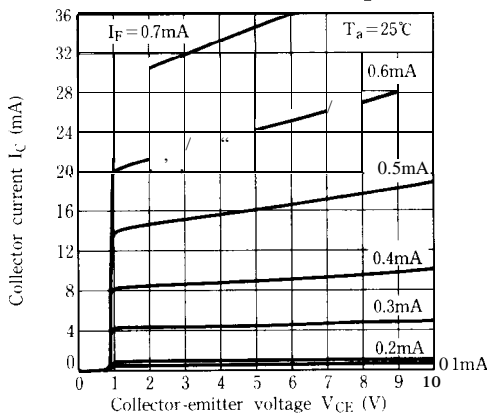
**Fig. 4 Forward Current vs. Forward Voltage**



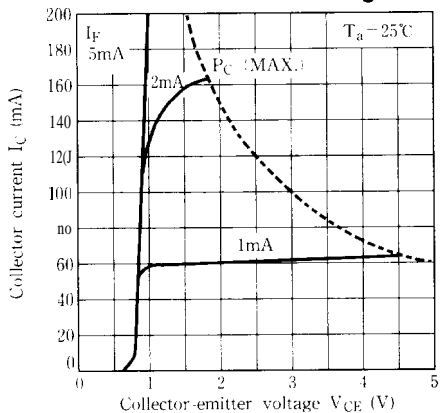
**Fig. 5 Current Transfer Ratio vs. Forward Current**



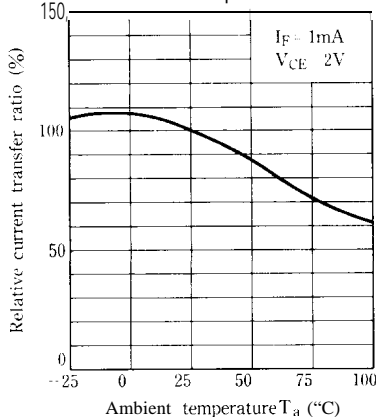
**Fig. 6-a Collector Current vs. Collector-emitter Voltage**



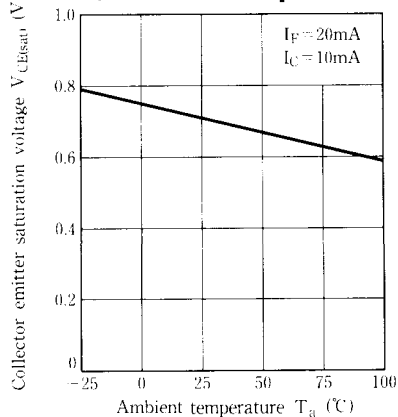
**Fig. 6-b Collector Current vs. Collector-emitter Voltage**



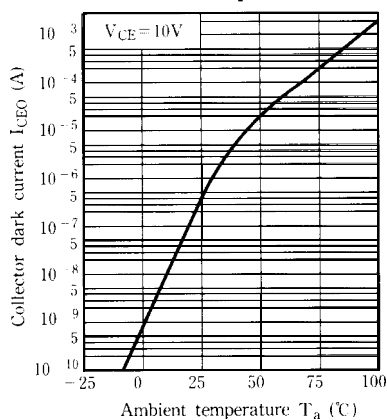
**Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature**



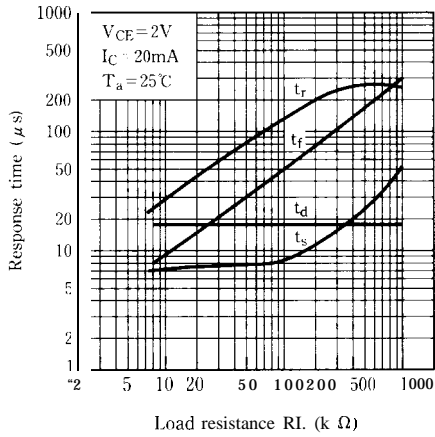
**Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature**



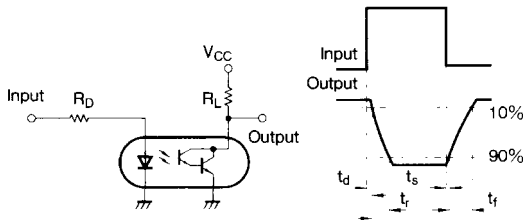
**Fig. 9 Collector Dark Current vs. Ambient Temperature**



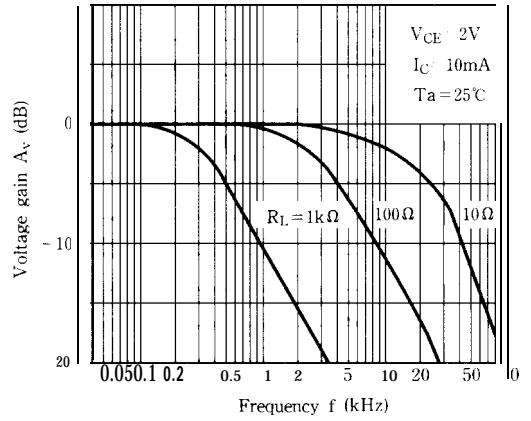
**Fig.10 Response Time vs. Load Resistance**



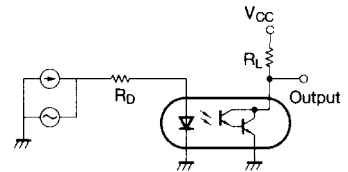
**Test Circuit for Response Time**



**Fig.1 1 Frequency Response**



**Test Circuit for Frequency Response**



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