

# PC715V

## High Sensitivity Type Photocoupler

- \* Lead forming type ( I type ) and taping reel type ( P type ) are also available. ( PC715VI/PC715VP )  
 \*\* TÜV ( VDE0884 ) approved type is also available as an option.

### ■ Features

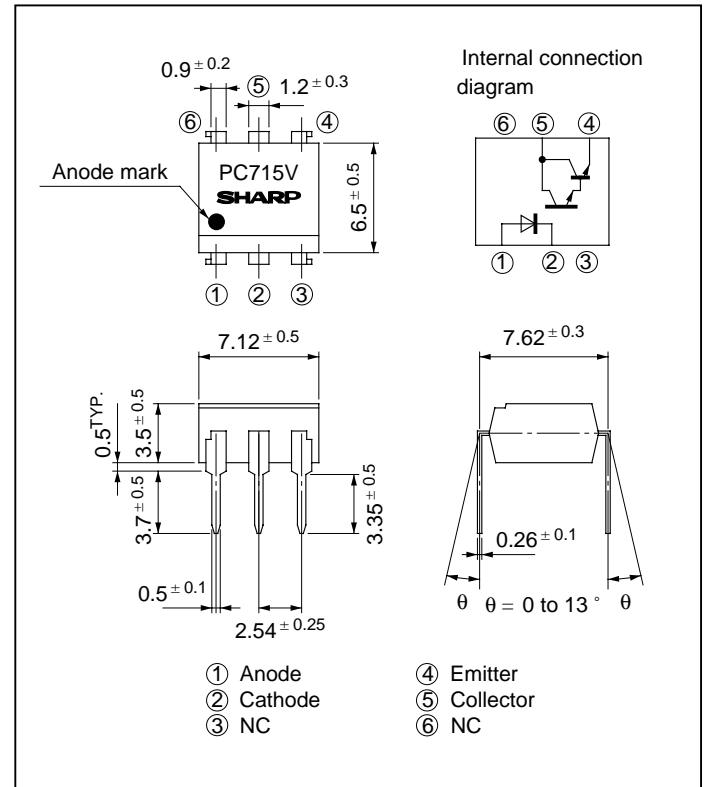
1. High current transfer ratio  
( CTR : MIN. 600% at  $I_F = 1\text{mA}$ ,  $V_{CE} = 2\text{V}$  )
2. High isolation voltage between input and output  
(  $V_{iso} : 5\,000\text{V}_{rms}$  )
3. Recognized by UL, file No. E64380

### ■ Applications

1. System appliances, measuring instruments
2. Copiers, automatic vending machines
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
	*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	$I_C$	80	mA
	Collector power dissipation	$P_C$	150	mW
	Total power dissipation	$P_{tot}$	170	mW
	*2 Isolation voltage	$V_{iso}$	5 000	$V_{rms}$
	Operating temperature	$T_{opr}$	- 25 to + 100	$^\circ\text{C}$
	Storage temperature	$T_{stg}$	- 40 to + 125	$^\circ\text{C}$
	*3 Soldering 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 minutes

\*3 For 10 seconds

" In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that occur in equipment using any of SHARP's devices, shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest version of the device specification sheets before using any SHARP's device."

■ 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	
Transfer characteristics	Current transfer ratio	CTR	$I_F = 1\text{mA}, V_{CE} = 2\text{V}$	600	1 600	7 500	%	
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 20\text{mA}, I_C = 5\text{mA}$	-	-	1.0	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	
	Response time	Cut-off frequency	$f_C$	$V_{CE} = 2\text{V}, I_C = 2\text{mA}, R_L = 100\Omega, -3\text{dB}$	-	6	-	kHz
		Rise time	$t_r$	$V_{CE} = 2\text{V}, I_C = 10\text{mA}, R_L = 100\Omega$	-	60	250	$\mu\text{s}$
Fall time	$t_f$	-	53		250	$\mu\text{s}$		

Fig. 1 Forward Current vs. Ambient Temperature

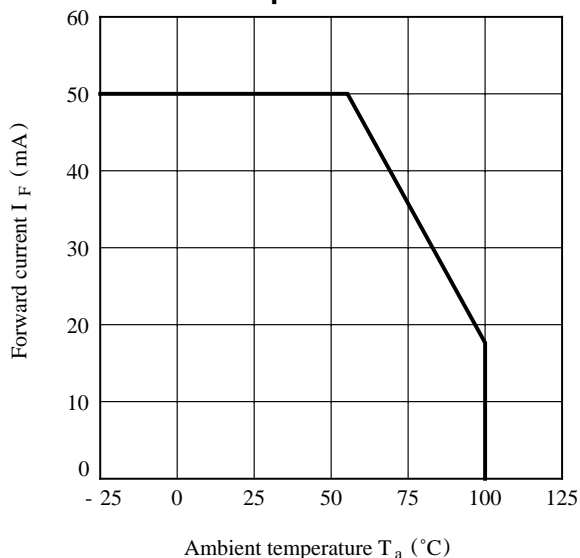


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

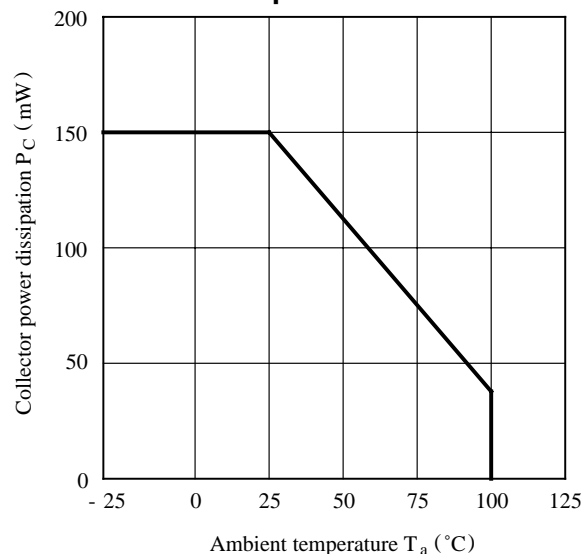


Fig. 3 Peak Forward Current vs. Duty Ratio

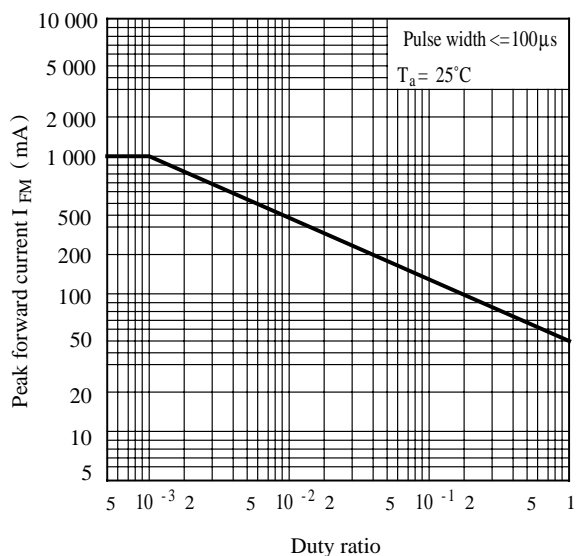
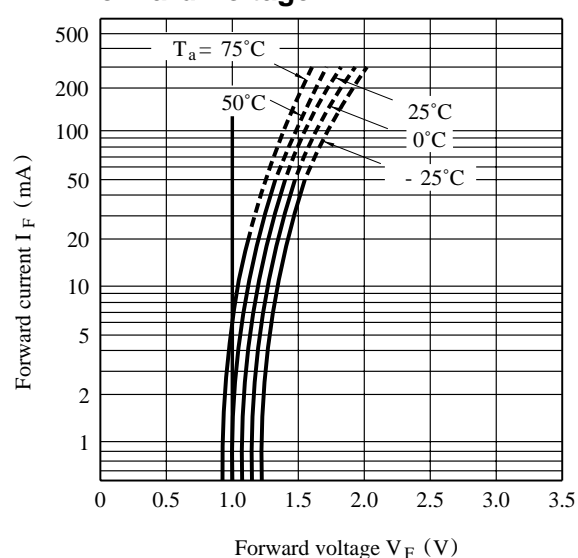
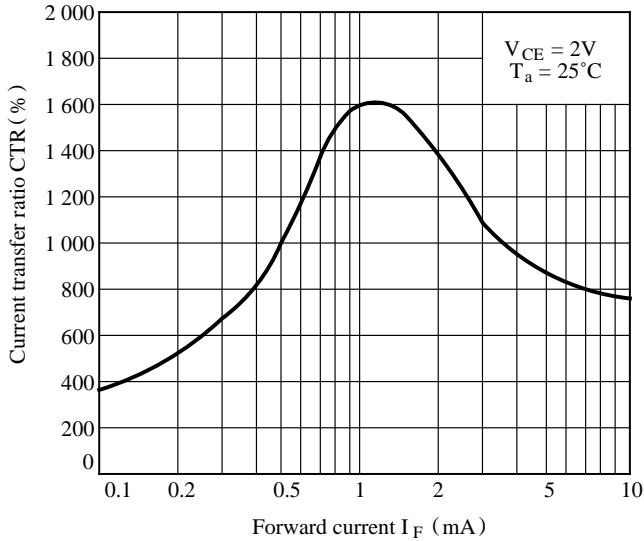


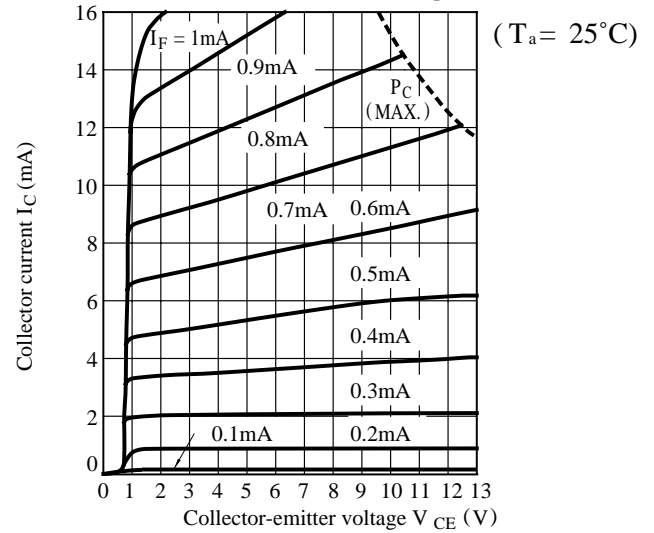
Fig. 4 Forward Current vs. Forward Voltage



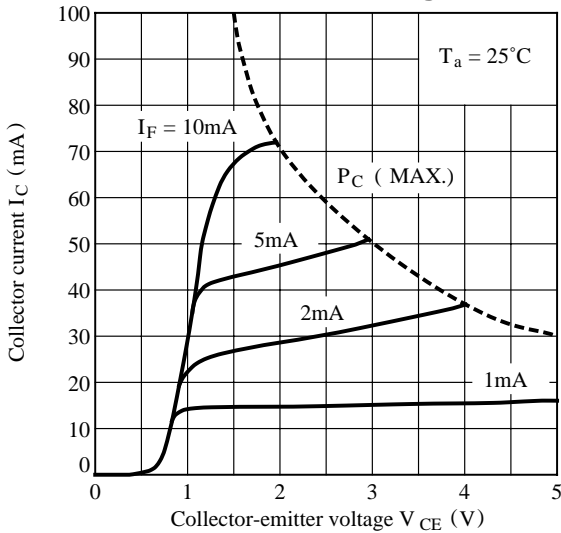
**Fig. 5 Current Transfer Ratio vs. Forward Current**



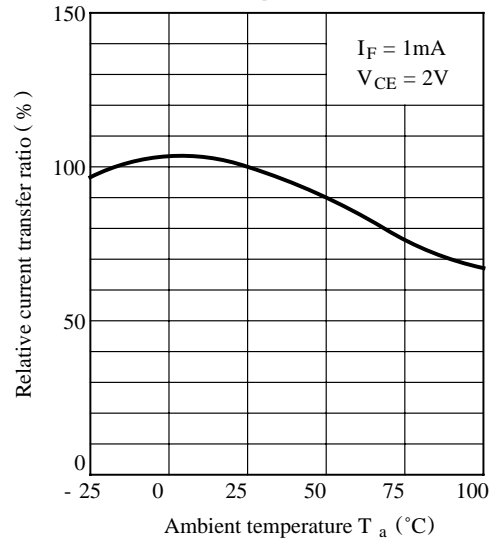
**Fig. 6-a Collector Current vs. Collector-emitter Voltage**



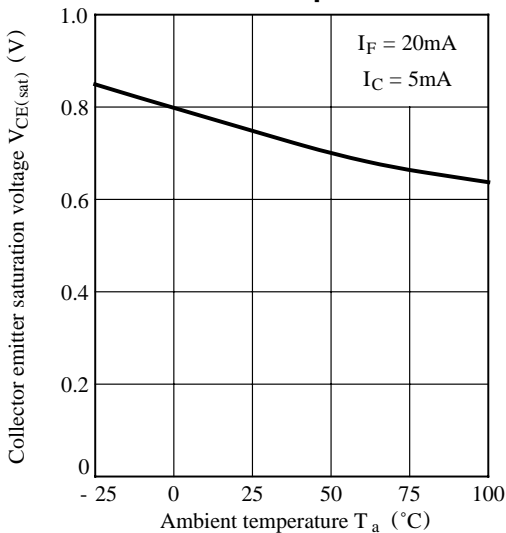
**Fig. 6-b Collector Current vs. Collector-emitter Voltage**



**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**

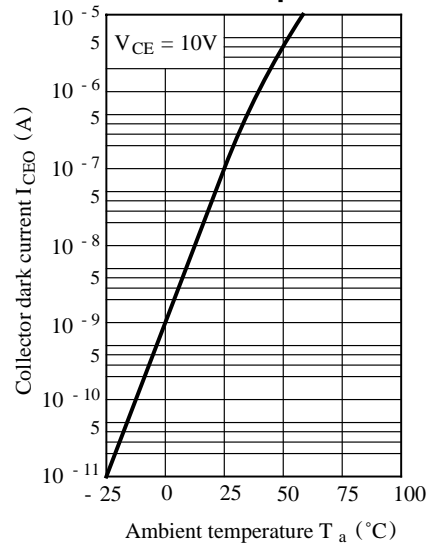
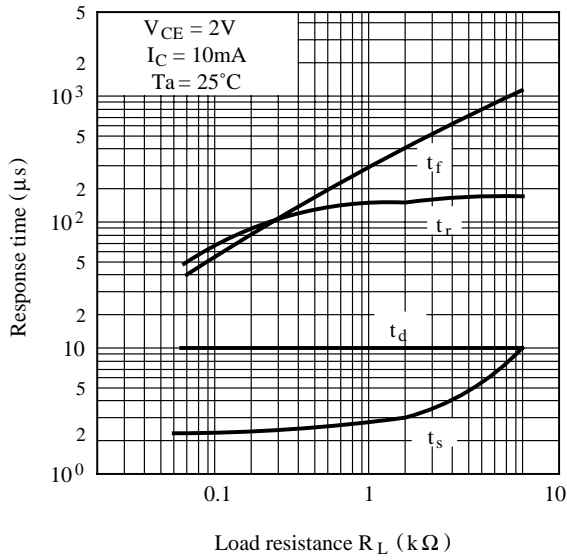


Fig.10 Response Time vs. Load Resistance



Test Circuit for Response Time

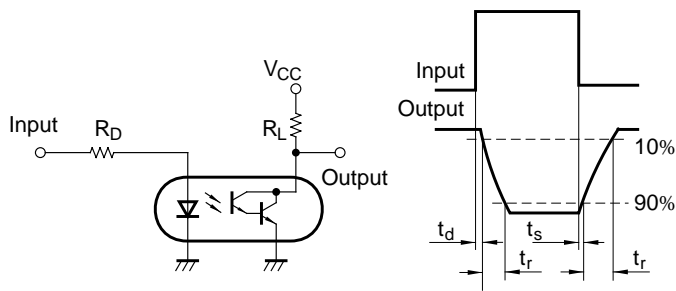
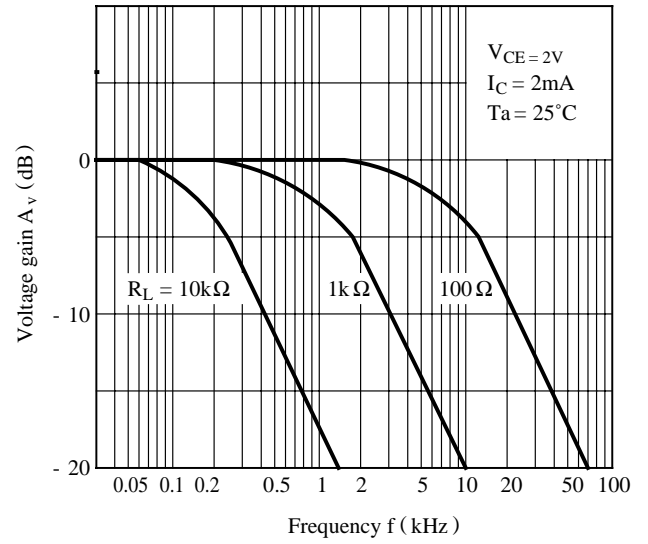
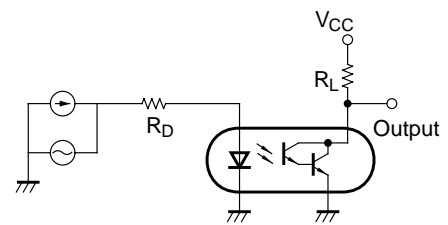


Fig.11 Frequency Response



Test Circuit for Frequency Response



● Please refer to the chapter “Precautions for Use”.