

# PC725V

## High Sensitivity, High Collector-emitter Voltage Type Photocoupler

※ Lead forming type (W type) and taping reel type (P type) are also available. (PC725W/PC725VP) (Page 656)  
 ※ \*TUV (VDE0884) approved type as an option is also available.

### ■ Features

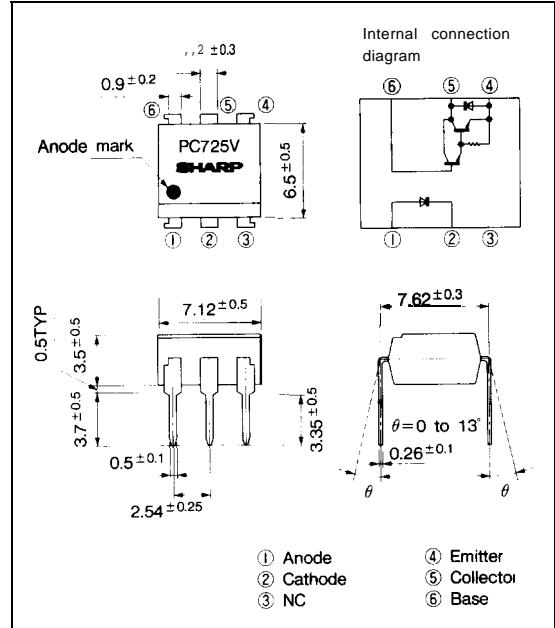
1. High collector-emitter voltage ( $V_{CE0} : 300V$ )
2. High current transfer ratio (CTR : MIN. 1 000% at  $I_F = 1mA, V_{CE} = 2V$ )
3. High isolation voltage between input and output ( $V_{ISO} : 5 000V_{rms}$ )
4. Low collector dark current ( $I_{CEO} : MAX. 10^{-7}A$  at  $V_{CE} = 200V$ )
5. Recognized by UL, file No. E64380

### ■ Applications

1. Telephone sets, telephone exchangers
2. Power apparatus switchboards
3. Numerical control machines
4. DC-DC SSRs, DC motor controllers

### ■ Outline Dimensions

(Unit : mm)



### ■ Absolute Maximum Ratings

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

	Parameter	Symbol	Rating	Unit
Input	Forward voltage	$I_F$	50	mA
	*1 Peak forward voltage	$I_{FM}$	1	A
	Reverse current	$V_R$	6	v
	Power dissipation	P	70	mW
output	Collector-emitter voltage	$V_{CEO}$	300	v
	Collector-base voltage	$V_{CBO}$	300	v
	Emitter-base voltage	$V_{EBO}$	6	v
	Collector current	$I_C$	150	mA
	Collector current (reverse)	$-I_C$	10	mA
	Collector power dissipation	$P_C$	300	mW
	Total power dissipation	$P_{tot}$	350	mW
	*Isolation voltage	$V_{iso}$	5000	v <sub>rms</sub>
	Operating temperature	$T_{opr}$	-25 to +100	°C
	Storage temperature	$T_{stg}$	-40 to +125	°C
	*Soldering temperature	$T_{soi}$	260	°C

\*1 Pulse width  $\leq 100 \mu s$ , Duty ratio  $\approx 0.001$

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

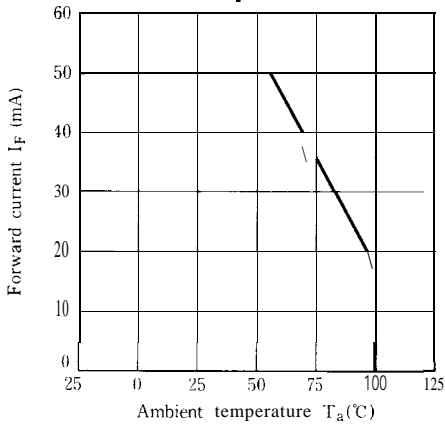
\*3 For 10 seconds

**■ Electro-optical Characteristics**

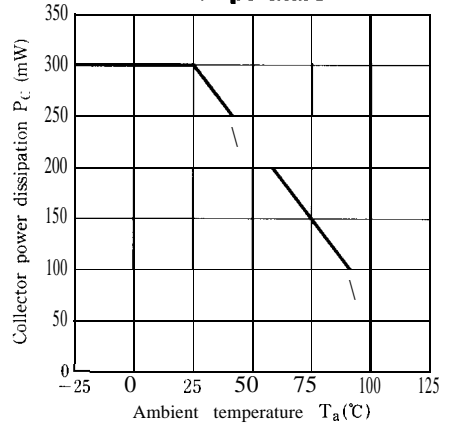
( $T_a = 25^\circ\text{C}$ )

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	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	$I_{CEO}$	$V_{CE} = 200\text{V}, I_F = 0, R_{BE} = \infty$	—		10-6	A	
	Current transfer ratio	CTR	$I_F = 1\text{mA}, V_{CE} = 2\text{V}, R_{BE} = \infty$	1 000	4000	15000	%	
Transfer characteristics	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 20\text{mA}, I_C = 100\text{mA}, R_{BE} = \infty$	—		1.2	v	
	Isolation resistance	$R_{ISO}$	DC500V, 40 to 60%RH	$5 \times 10^{11}$	$10^{11}$	—	$\Omega$	
	Floating capacitance	$C_f$	$V = 0, f = 1\text{MHz}$	—	0.6	1.0	pF	
	Cot-off frequency	$f_c$	$V_{CE} = 2\text{V}, I_C = 20\text{mA}, R_L = 100\Omega, R_{BE} = \infty, -3\text{dB}$	1	7	—	kHz	
	Response time	Rise time	$t_r$	$V_{CE} = 2\text{V}, I_C = 20\text{mA}$	—	100	300	$\mu\text{s}$
		Fall time	$t_f$	$R_L = 100\Omega, R_{BE} = \infty$	—	20	100	$\mu\text{s}$

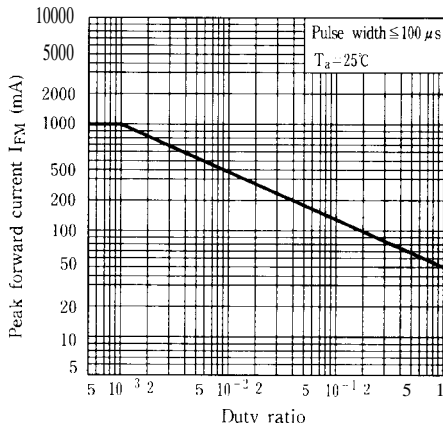
**Fig. 1 Forward Current vs. Ambient Temperature**



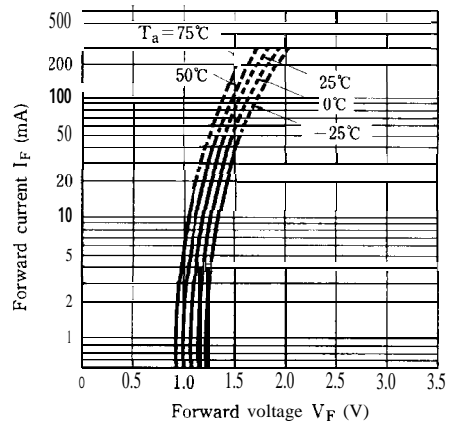
**Fig. 2 Collector Power Dissipation vs. Ambient Temperature**



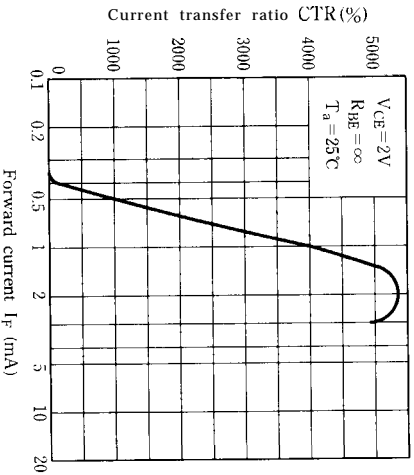
**Fig. 3 Peak Forward Current vs. Duty Ratio**



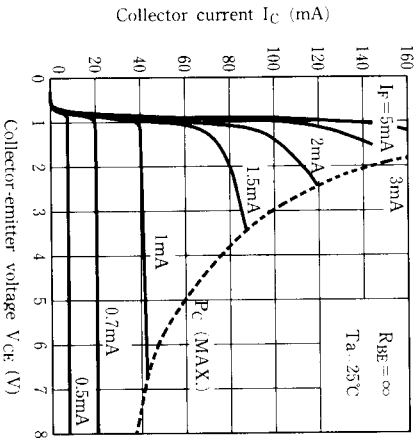
**Fig. 4 Forward Current vs. Forward Voltage**



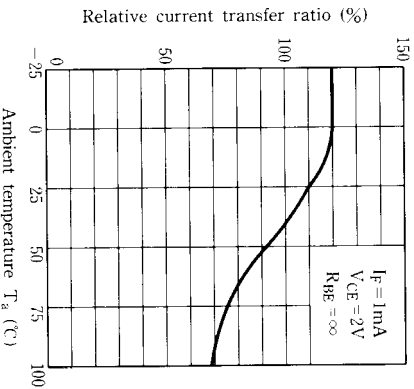
**Fig. 5 Current Transfer Ratio vs. Forward Current**



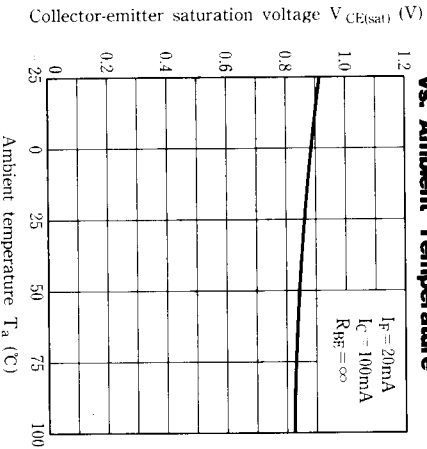
**Fig. 6 Collector Current vs. Collector-emitter Voltage**



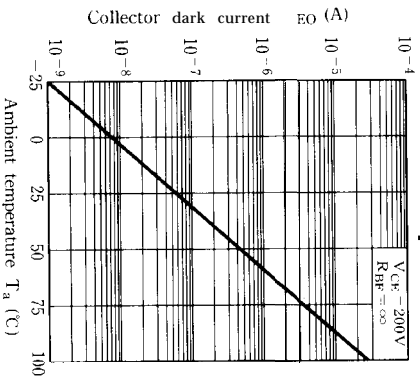
**Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature**



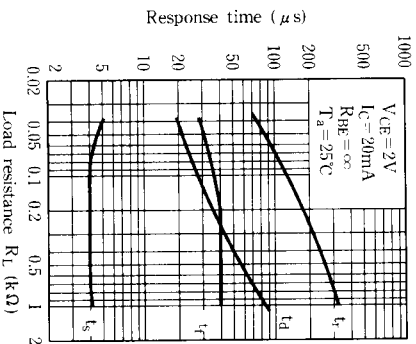
**Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature**



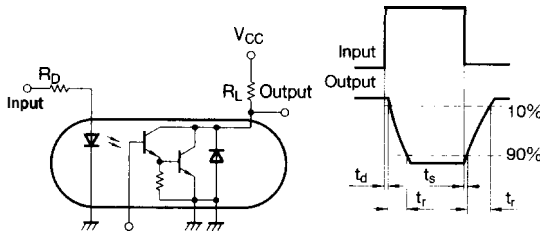
**Fig. 9 Collector Dark Current vs. Ambient Temperature**



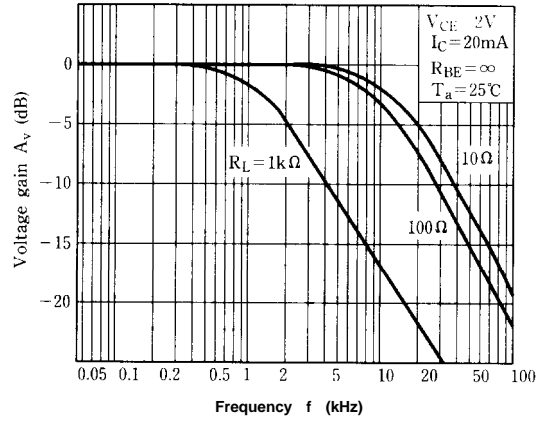
**Fig.10 Response Time vs. Load Resistance**



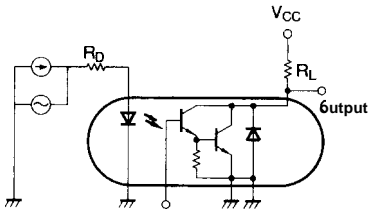
**Test Circuit for Response Time**



**Fig.10 Frequency Response**



**Test Circuit for Frequency Response**



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