PC725V High Sensitivity, High Collector-emitter Voltage Type Photocoupler

※ Lead forming type is also available. (PC725W) (Page 597)

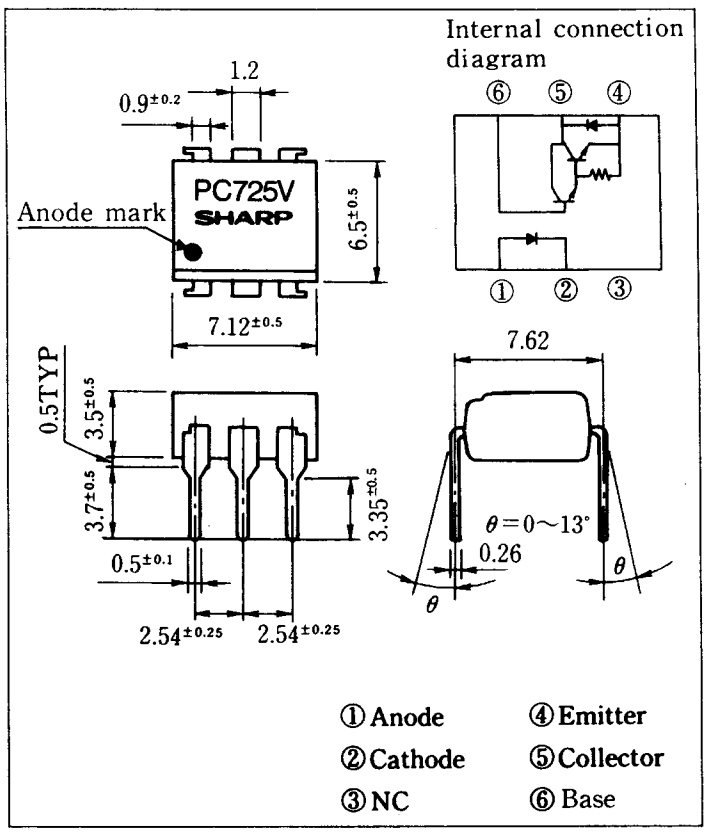
■ Features

1. High collector-emitter voltage (V_{CEO}: 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}: 5,000Vrms)
4. Low collector dark current (I_{CEO}: MAX. 10^{-6}A at V_{CE}=200V)

■ 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 (Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward voltage	I_F	50	mA
	*1Peak 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 (forward)	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
*2Isolation voltage		V_{iso}	5,000	Vrms
Operating temperature		T_{opr}	−25 to +100	°C
Storage temperature		T_{stg}	−40 to +125	°C
*3Soldering temperature		T_{sol}	260	°C

*1 Pulse width≦100μs, Duty ratio=0.001
*2 RH=40 to 60%, AC for 1 minute
*3 For 10 seconds

■ Electro-optical Characteristics

(Ta=25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward current	V_F	I_F=10mA	—	1.2	1.4	V
	Peak forward current	V_{FM}	I_{FM}=0.5A	—	—	3	V
	Reverse voltage	I_R	V_R=4V	—	—	10	μA
	Power dissipation	C_t	V=0, f=1kHz	—	30	250	pF
Output	Collector dark current	I_{CEO}	V_{CE}=200V, I_F=0, R_{BE}=∞	—	—	10^{-6}	A
Transfer characteristics	Current transfer ratio	CTR	I_F=1mA, V_{CE}=2V, R_{BE}=∞	1,000	4,000	15,000	%
	Collector-emitter saturation voltage	$V_{CE(sat)}$	I_F=20mA, I_C=100mA, R_{BE}=∞	—	—	1.2	V
	Isolation resistance	R_{ISO}	DC500V, RH=40 to 60%	5×10^{10}	10^{11}	—	Ω
	Floating capacitance	C_f	V=0, f=1MHz	—	0.6	1.0	pF
	Cut-off frequency	f_c	V_{CE}=2V, I_C=20mA, R_L=100Ω, R_{BE}=∞	1	7	—	kHz
	Response time (Rise)	t_r	V_{CE}=2V, I_C=20mA	—	100	300	μs
	Response time (Fall)	t_f	R_L=100Ω, R_{BE}=∞	—	20	100	μs

Fig. 1 Forward Current vs. Ambient Temperature

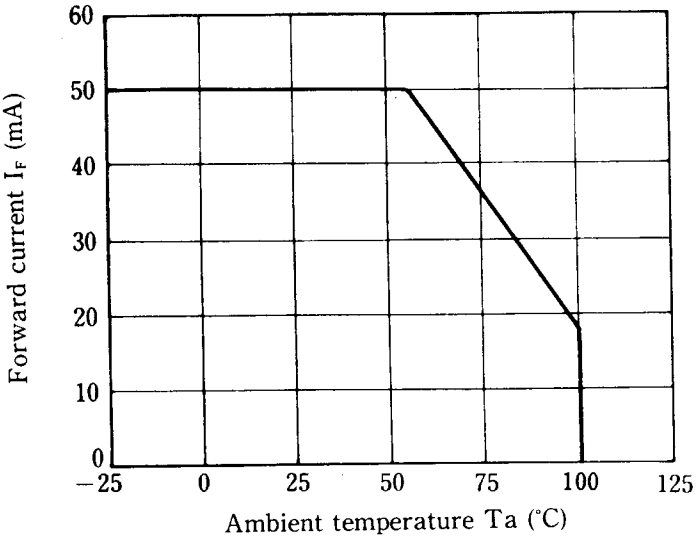


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

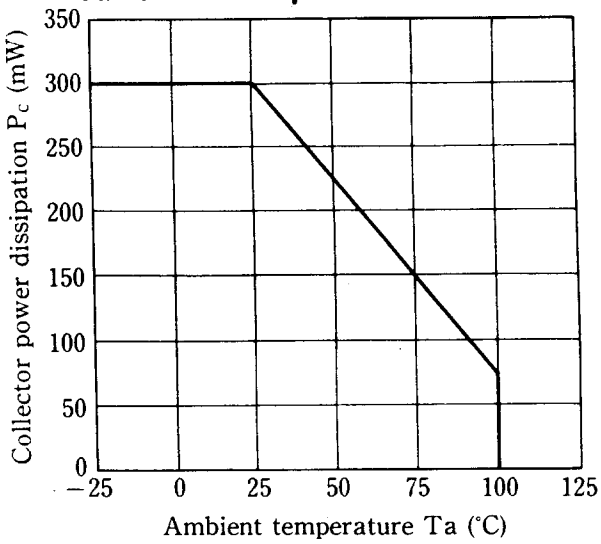


Fig. 3 Peak Forward Current vs. Duty Ratio

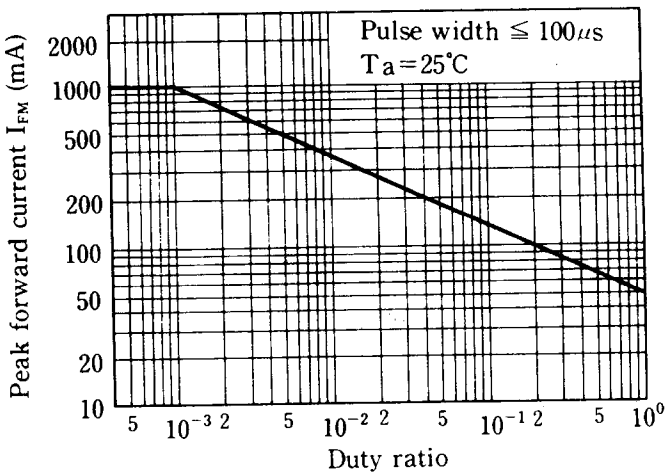


Fig. 4 Forward Current vs. Forward Voltage

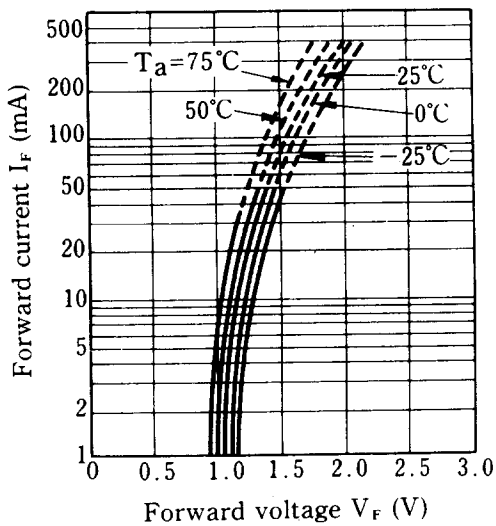


Fig. 5 Current Transfer Ratio vs. Forward Current

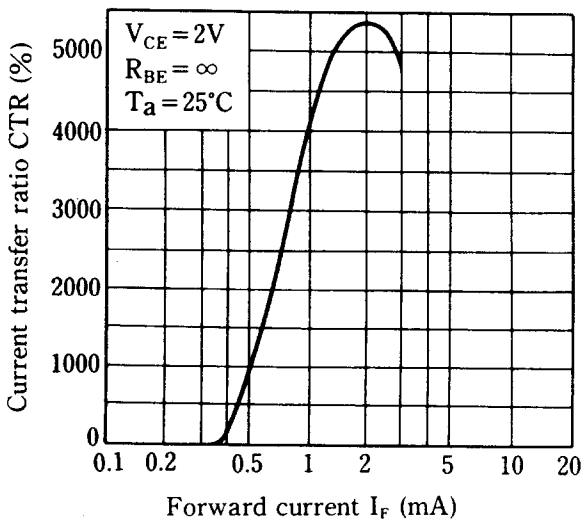


Fig. 6 Collector Current vs. Collector-emitter Voltage

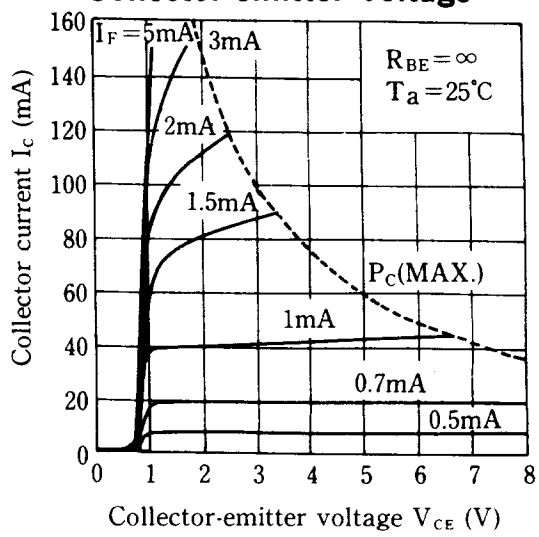


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

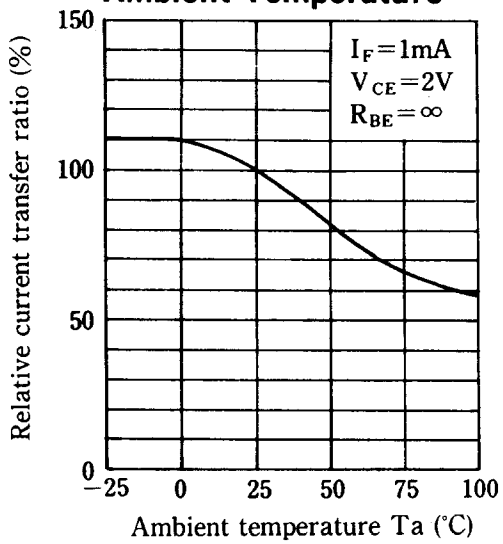


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature

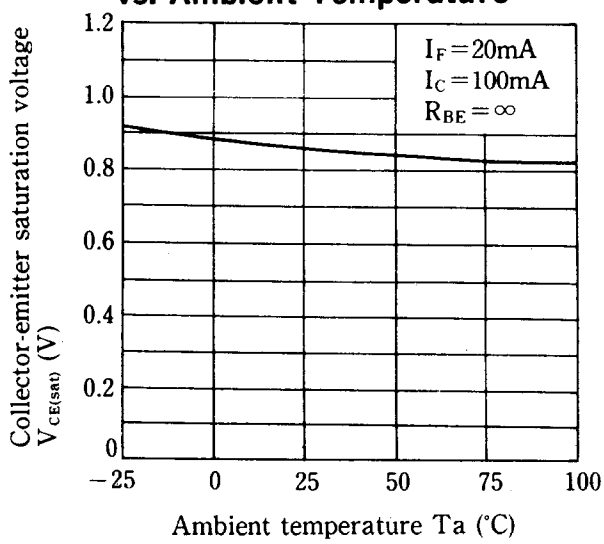


Fig. 9 Collector Dark Current vs. Ambient Temperature

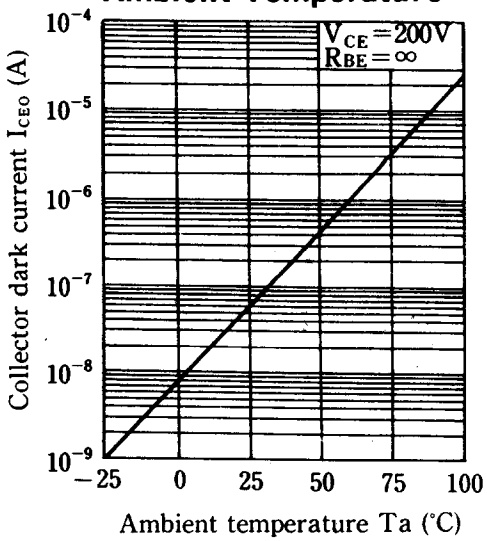
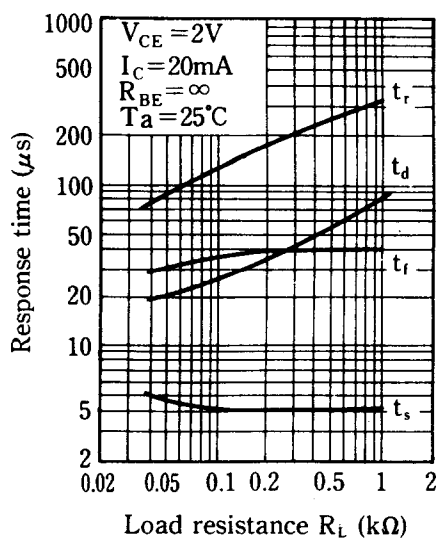


Fig. 10 Response Time vs. Load Resistance



Test Circuit for Response Time

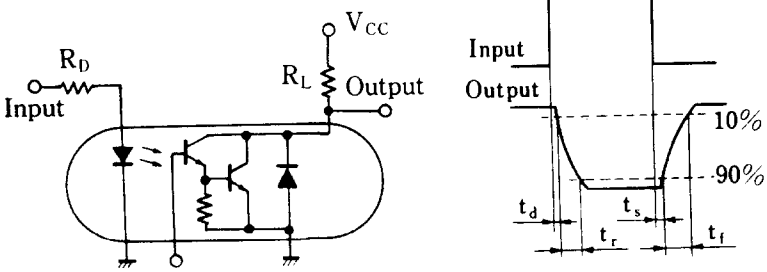
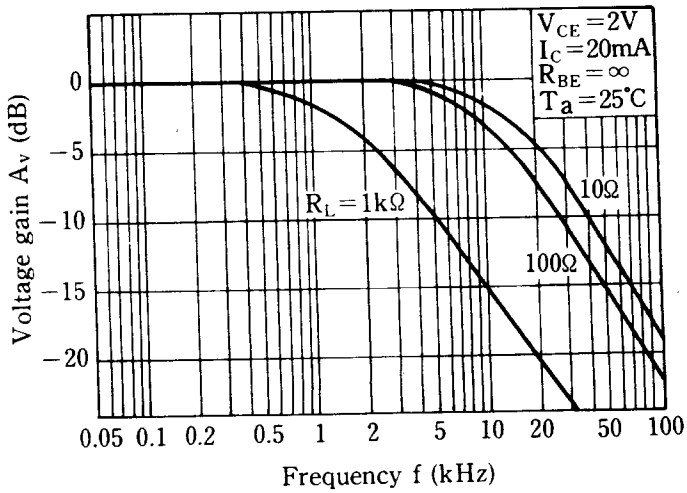


Fig. 11 Frequency Response



Test Circuit for Frequency Response