

T-41-83

PC4N35V/PC4N36V PC4N37V

General Purpose Type Photocoupler

※ Lead forming type (I type) is also available. (PC4N35VI/PC4N36VI/PC4N37VI) (Page 482)

Features

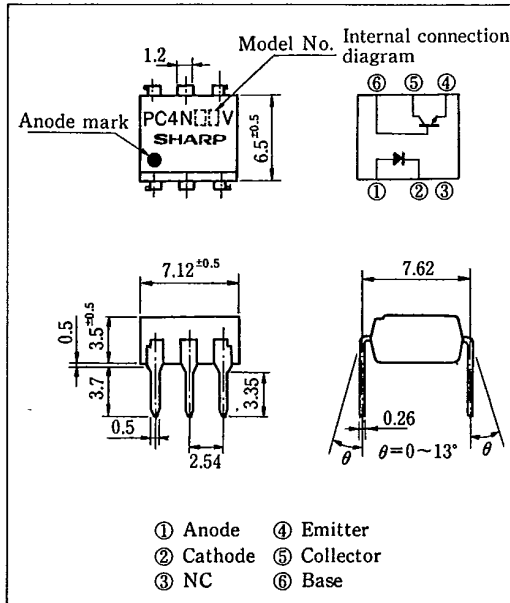
1. High current transfer ratio
(CTR : MIN. 100% at $I_F=10\text{mA}$, $V_{CE}=10\text{V}$)
2. Response time
 t_r, t_f : TYP. $3\mu\text{s}$ at $V_{CC}=10\text{V}$, $I_C=2\text{mA}$,
 $R_L=100\Omega$
3. Isolation voltage between Input and Output
PC4N35V (V_{iso} : 3,550Vrms), PC4N36V
(V_{iso} : 2,500Vrms), PC4N37V (V_{iso} :
1,500Vrms)
4. UL recognized, file No. 64380
TUV approved, PC4N35V/36V:
No. R40182, PC4N37V: No. R40183

Applications

1. I/O interfaces for computers
2. System appliances, measuring instruments
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	60	mA
	*1 Peak forward current	I_{FM}	3	A
	Reverse voltage	V_R	6	V
	Power dissipation	P	100	mW
Output	Collector-emitter voltage	V_{CEO}	30	V
	Emitter-collector voltage	V_{ECO}	7	V
	Collector-base voltage	V_{CBO}	70	V
	Collector current	I_C	100	mA
	Collector power dissipation	P_C	300	mW
	Total power dissipation	P_{tot}	350	mW
*2 Isolation voltage	PC4N35V	V_{iso}	3,550	Vrms
	PC4N36V		2,500	
	PC4N37V		1,500	
Operating temperature		T_{opr}	-55 ~ +100	$^\circ\text{C}$
Storage temperature		T_{stg}	-55 ~ +150	$^\circ\text{C}$
*3 Soldering temperature		T_{sol}	260	$^\circ\text{C}$

*1 Pulse width $\leq 1\mu\text{s}$, Duty ratio = 0.001

*2 RH = 40 ~ 60%, AC for 1 minute

*3 For 10 seconds

SHARP

■ Electro-optical Characteristics

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	V_F	$I_F = 10\text{mA}$	—	1.2	1.5	V
	Reverse current	I_R	$V_R = 4\text{V}$	—	—	10	μA
	Terminal capacitance	C_t	$V = 0, f = 1\text{MHz}$	—	50	—	pF
Output	Collector darkcurrent	I_{CEO}	$V_{CE} = 10\text{V}$ $T_a = 100^\circ\text{C}, V_{CE} = 30\text{V}$	—	—	5×10^{-8} 5×10^{-4}	A
	Collector-emitter breakdown voltage	BV_{CEO}	$I_C = 0.1\text{mA}, I_F = 0$	30	—	—	V
	Emitter-collector breakdown voltage	BV_{ECO}	$I_E = 10\mu\text{A}, I_F = 0$	7	—	—	V
	Collector-base breakdown voltage	BV_{CBO}	$I_C = 0.1\text{mA}, I_F = 0$	70	—	—	V
Transfer characteristics	**Current transfer ratio	CTR	$I_F = 10\text{mA}, V_{CE} = 10\text{V}$	100	—	—	%
			$T_a = -55^\circ\text{C}, I_F = 10\text{mA}, V_{CE} = 10\text{V}$	40	—	—	
			$T_a = 100^\circ\text{C}, I_F = 10\text{mA}, V_{CE} = 10\text{V}$	40	—	—	
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 50\text{mA}, I_C = 2\text{mA}$	—	—	0.3	V
	Isolation resistance	R_{ISO}	DC500V, HR=40~60%	5×10^{10}	10^{11}	—	Ω
	Floating capacitance	C_f	$V = 0, f = 1\text{MHz}$	—	1.0	2.5	pF
	Response time (Rise)	t_r	$V_{CC} = 10\text{V}, I_C = 2\text{mA}$	—	3	10	μs
Response time (Fall)	t_f	$R_L = 100\Omega, R_{BE} = \infty$	—	3	10	μs	

*4 Pulse test : input pulse width=300 μs , duty ratio ≤ 0.02



Fig. 1 Forward Current vs. Ambient Temperature

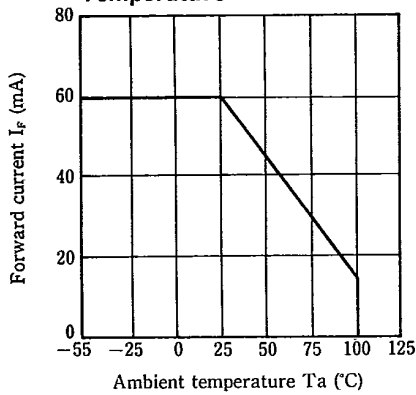


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

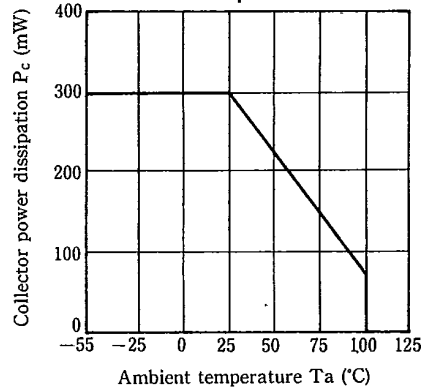


Fig. 3 Forward Current vs. Forward Voltage

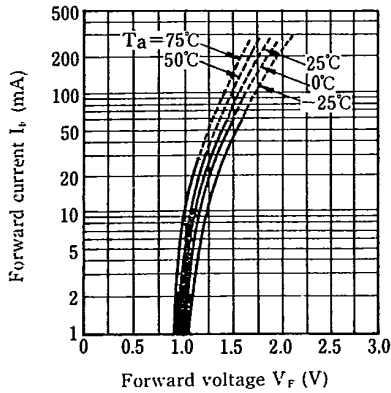


Fig. 4 Current Transfer Ratio vs. Forward Current

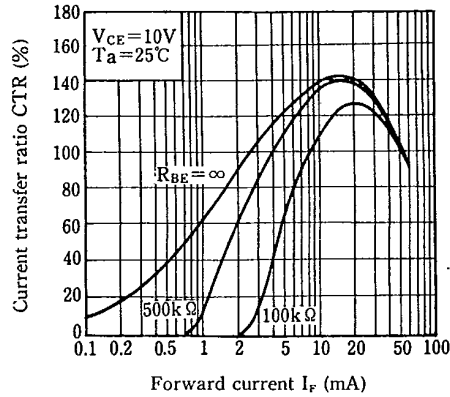


Fig. 5 Collector Current vs. Collector-emitter Voltage ($T_a = 25^\circ C$)

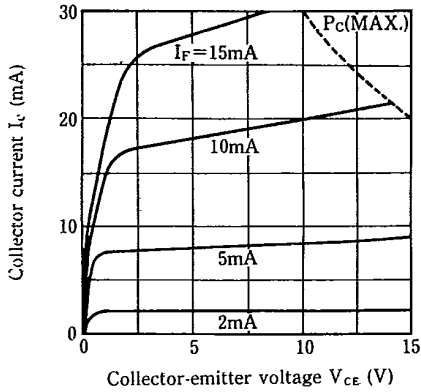


Fig. 6 Relative Current Transfer Ratio vs. Ambient Temperature

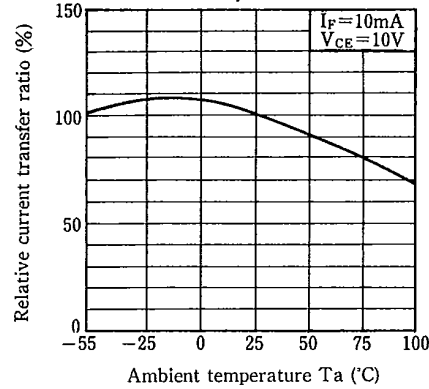


Fig. 7 Collector-emitter Saturation Voltage vs. Ambient Temperature

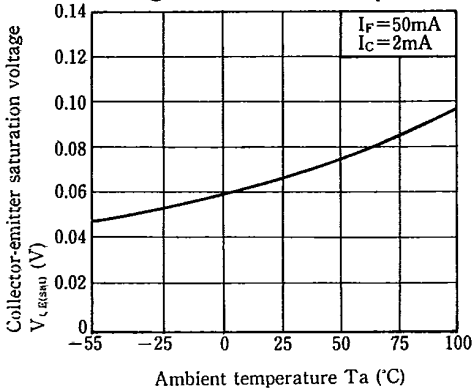


Fig. 8 Collector Dark Current vs. Ambient Temperature

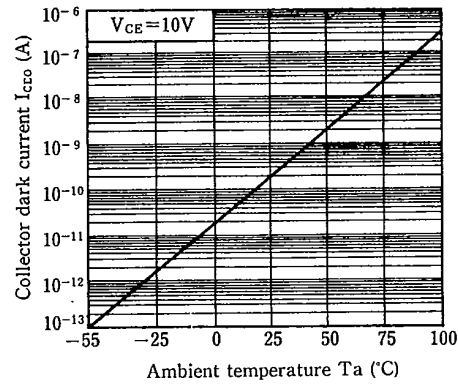


Fig. 9 Response Time vs. Load Resistance

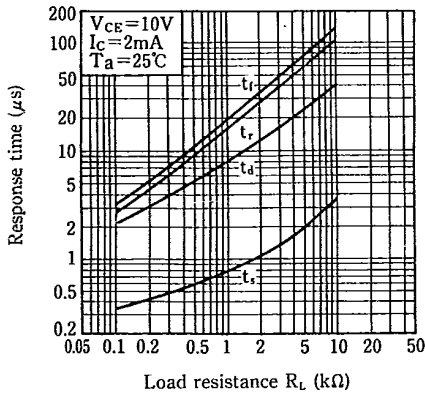
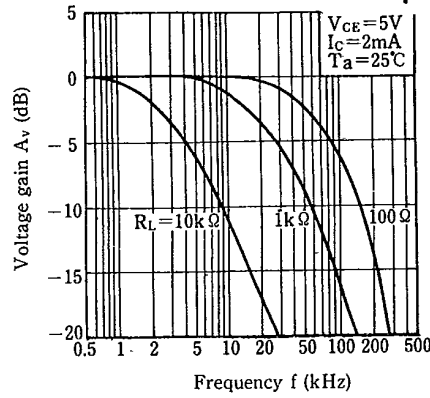
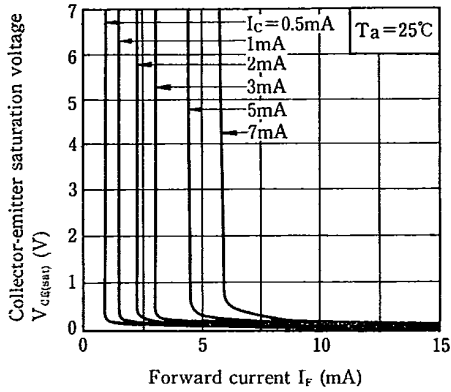


Fig. 10 Frequency Response

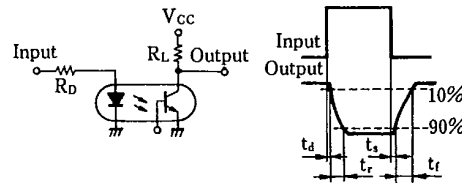


T-41-83

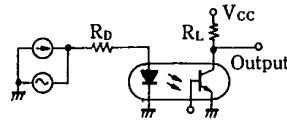
Fig. 11 Collector-emitter Saturation Voltage vs. Forward Current



Test Circuit for Response Time



Test Circuit for Frequency Response



6