

PC4N29V/PC4N30V PC4N32V/PC4N33V

* Lead forming type (I type) is also available. (PC4N29VI/PC4N30VI/PC4N32VI/PC4N33VI) (Page 482)

■ Features

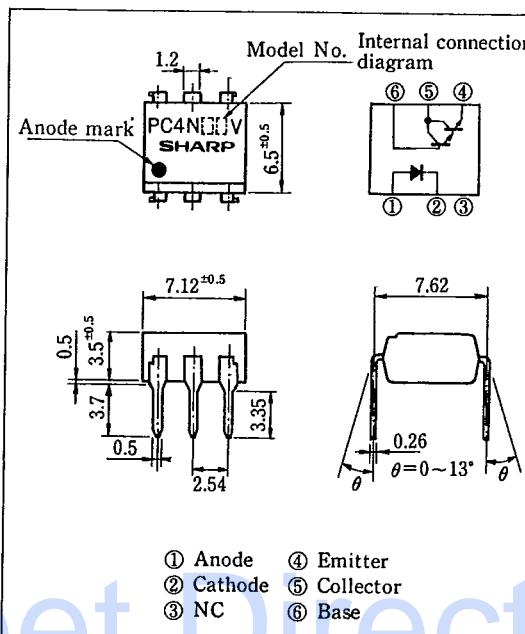
1. High current transfer ratio
PC4N29V, PC4N30V
(CTR : MIN. 100% at $I_F = 10\text{mA}$, $V_{CE} = 10\text{V}$)
PC4N32V, PC4N33V
(CTR : MIN. 500% at $I_F = 10\text{mA}$, $V_{CE} = 10\text{V}$)
2. Response time t_{on} : MAX. $5\mu\text{s}$ at $I_F = 200\text{mA}$, $V_{cc} = 10\text{V}$, $I_c = 50\text{mA}$
3. UL recognized, file No. E64380
TÜV approved, PC4N29V/32V : No. R40184, PC4N30V/33V : No. R40185

■ Applications

1. I/O interfaces for computers
2. System appliances, measuring instruments
3. Signal transmission between circuits of different potentials and impedances

High Transfer Efficiency, General Purpose Type Photocoupler

■ Outline Dimensions (Unit : mm)



■ Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit
Input	Forward current	I_F	mA
	*1 Peak forward current	I_{FM}	A
	Reverse voltage	V_R	V
	Power dissipation	P	mW
Output	Collector-emitter voltage	V_{CEO}	V
	Emitter-collector voltage	V_{ECO}	V
	Collector-base voltage	V_{CBO}	V
	Collector current	I_c	mA
	Collector power dissipation	P_c	mW
Total power dissipation		P_{tot}	mW
*2 Isolation voltage	PC4N29V,32V	V_{iso}	2,500 Vrms
	PC4N30V,33V		1,500 Vrms
Operating temperature		T_{opr}	-55 ~ +100 °C
Storage temperature		T_{stg}	-55 ~ +150 °C
*3 Soldering temperature		T_{sol}	260 °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

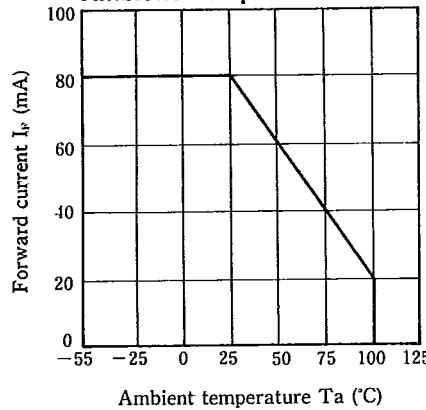
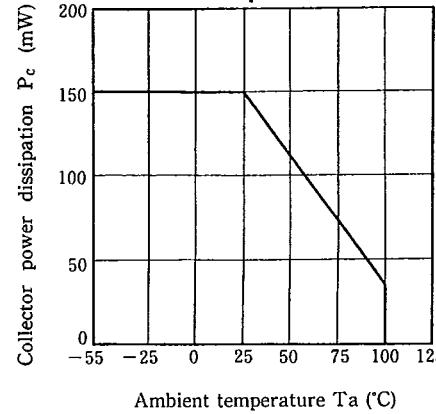
SHARP

■ Electro-optical Characteristics

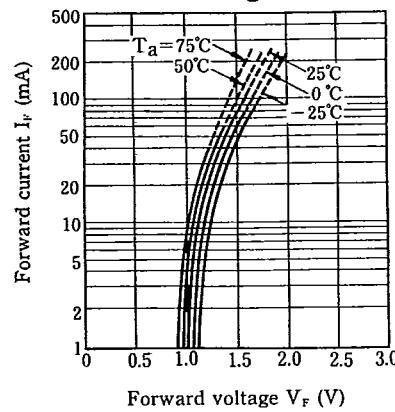
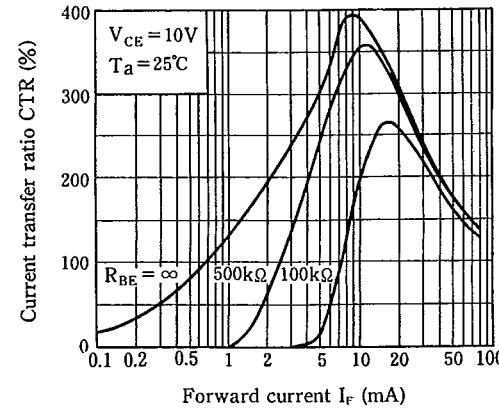
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(Ta=25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	V _F	I _F =10mA	—	1.2	1.5	V
	Reverse current	I _R	V _R =4V	—	—	10	μA
	Terminal capacitance	C _t	V=0, f=1kHz	—	50	—	pF
Output	Collector dark current	I _{CEO}	V _{CE} =10V, I _F =0	—	—	10 ⁻⁷	A
	Collector-emitter breakdown voltage	BV _{CEO}	I _c =0.1mA, I _F =0	30	—	—	V
	Emitter-collector breakdown voltage	BV _{EBO}	I _e =10μA, I _F =0	5	—	—	V
Transfer characteristics	Collector-base breakdown voltage	BV _{CBO}	I _c =0.1mA, I _F =0	30	—	—	V
	Current transfer ratio PC4N29V,30V PC4N32V,33V	CTR	I _F =10mA, V _{CE} =10V Pulse test : input pulse width=300μs, duty ratio≤0.02	100 500	—	—	%
	Collector-emitter saturation voltage	V _{CE(sat)}	I _F =8mA, I _c =2mA	—	—	1.0	V
	Isolation resistance	R _{ISO}	DC500V, RH=40~60%	5×10 ¹⁰	10 ¹¹	—	Ω
	Floating capacitance	C _f	V=0, f=1MHz	—	1.0	—	pF
	Response time (Turn-on time)	t _{on}	I _F =200mA	—	—	5	μs
	Response time (Turn-off time)	t _{off}	(t _w ≈1.0ms) V _{cc} =10V, I _c =50mA	—	—	40	μs
				—	—	100	μs

Fig. 1 Forward Current vs.
Ambient TemperatureFig. 2 Collector Power Dissipation vs.
Ambient Temperature

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Fig. 3 Forward Current vs.
Forward VoltageFig. 4 Current Transfer Ratio vs.
Forward Current (PC4N29V, PC4N30V)

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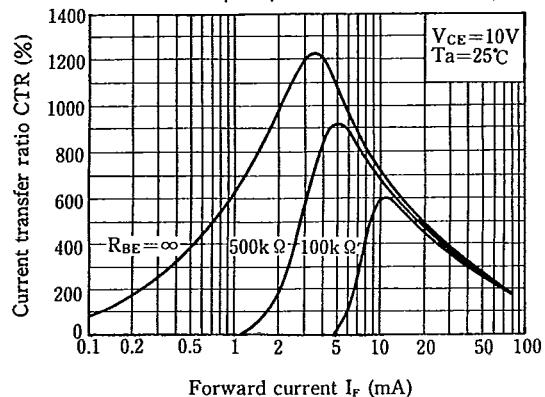
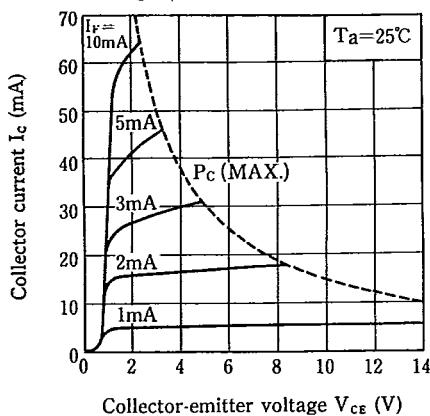
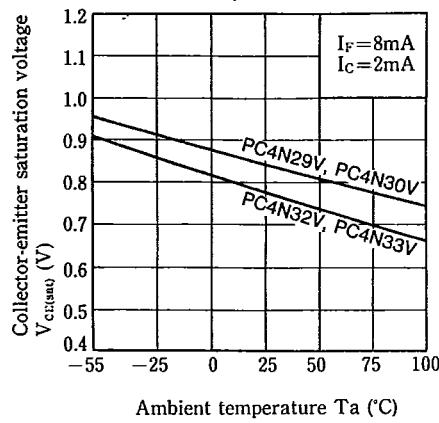
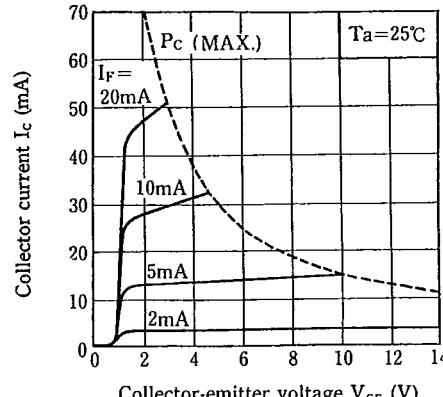
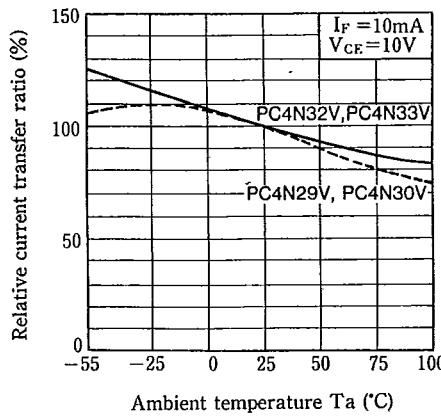
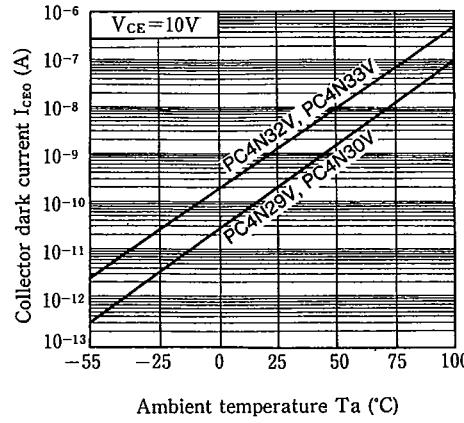
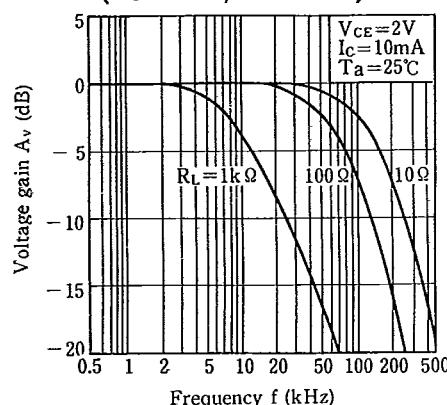
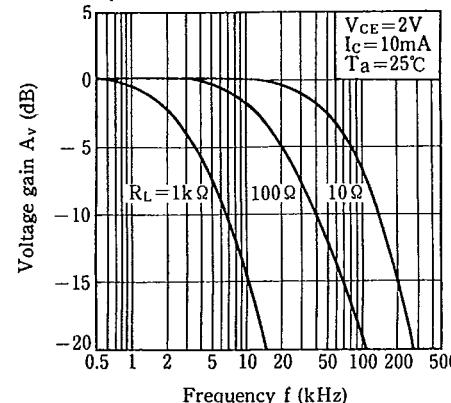
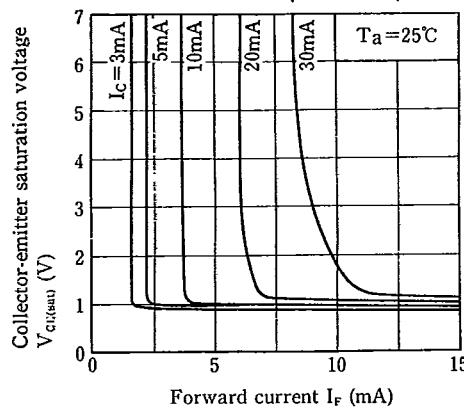
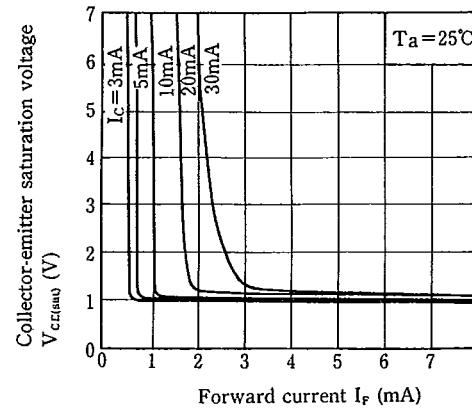
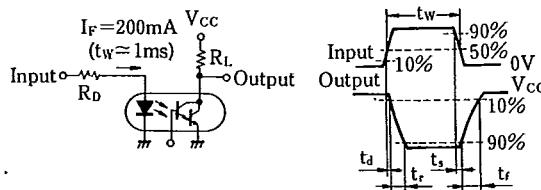
**Fig. 5 Current Transfer Ratio vs.
Forward Current (PC4N32V, PC4N33V)****Fig. 7 Collector Current vs. Collector-emitter
Voltage (PC4N32V, PC4N33V)****Fig. 9 Collector-emitter Saturation Voltage vs.
Ambient Temperature****Fig. 6 Collector Current vs. Collector-emitter
Voltage (PC4N29V, PC4N30V)****Fig. 8 Relative Current Transfer Ratio vs.
Ambient Temperature****Fig. 10 Collector Dark Current vs.
Ambient Temperature**

Fig. 11 Frequency Response
(PC4N29V, PC4N30V)Fig. 12 Frequency Response
(PC4N32V, PC4N33V)Fig. 13 Collector-emitter Saturation Voltage vs.
Forward Current (PC4N29V, PC4N30V)Fig. 14 Collector-emitter Saturation Voltage vs.
Forward Current (PC4N32V, PC4N33V)

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Test Circuit for Response Time



Test Circuit for Frequency Response

