PC900V/PC900VQ

Digital output Type OPIC Photocoupler

※ Lead forming type (I type) and taping reel type (P type) are also available. (**PC900VI/PC900VP**) (page 656)
※※ TÜV (DIN -VDE0884) approved type is also available as an option.

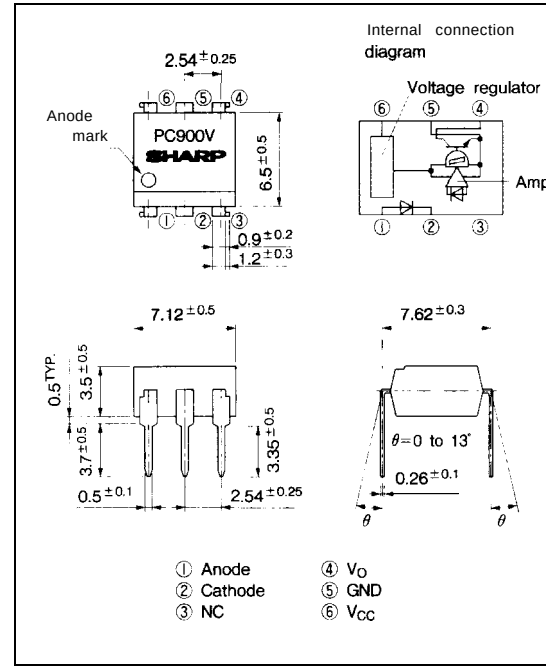
■ Features

1. High reliability type (**PC900VQ**)
   ① Temperature cycling
   Ta = – 40℃ (30 min.) →+125℃
   (30 min.), 10 cycles
   ② High temperature storage
   Ta = + 125℃ (20 hours)
2. Normal OFF operation, open collector output
3. TTL and LSTTL compatible output
4. Operating supply voltage V_{CC}: 3 to 15V
5. High isolation voltage between input and output (V_{iso} :5 000V_{rms})
6. Recognized by UL, file No. E64380

■ Applications

1. Isolation between logic circuits
2. Logic level shifters
3. Line receivers
4. Replacements for relays and pulse transformers
5. Noise reduction

■ Outline Dimensions (Unit : mm)



* "OPIC" (Optical IC) is a trademark of the SHARP Corporation. An OPIC consists of a light-detecting element and signal processing circuit integrated onto a single chip.

■ Absolute Maximum Ratings (Ta=25℃)

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	Supply voltage	V_{CC}	16	V
	High level output voltage	Von	16	V
	Low level output current	I_{OL}	50	mA
	Power dissipation	Po	150	mW
Total power dissipation		P_{tot}	170	mW
*Isolation voltage		V_{iso}	5000	V_{rms}
Operating temperature		T_{opr}	–25 to +85	‘c
Storage temperature		T_{stg}	–40 to +125	℃
‘Soldering temperature		T_{sol}	260	℃

*1 Pulse width ≦ 100 μs, Duty ratio= 0,001
*2 40 to 60% RH, AC for 1 minute
*3 For 10 seconds

■ Electro-optical Characteristics

(Ta =0 to +70℃ unless specified)

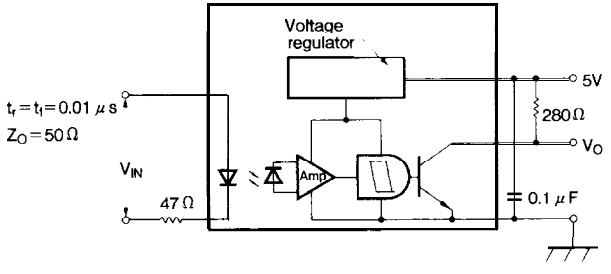
Parameter			Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage		V_F	I_F=4mA	−	1.1	1.4	v
				I_F=0.3mA	0.7	1.0	−	
	Reverse current		I_R	Ta=25℃, V_R=3V	−		10	μA
	Terminal capacitance		C_t	Ta=25℃, V=O, f=1kHz	−	30	250	pF
Output	operating supply voltage		V_{CC}		3	·	15	v
	Low level output voltage		V_{OL}	I_{OL}=16mA, V_{CC}=5V, I_F=4mA	-	0.2	0.4	v
	High level output current		I_{OH}	V_O=V_{CC}=15V, IF=O	−	−	100	μA
	Low level supply current		I_{CCL}	V_{CC}=5V, I_F=4mA	−	2.5	5,0	mA
	High level supply current		I_{CCH}	V_{CC}=5V, I_F=0		1.0	5.0	mA
Transfer characteristics	*4 "High→Low" threshold input current		I_{FHL}	Ta=25℃, V_{CC}=5V, R_L=280Ω	–	1.1	2.0	mA
				V_{CC}=5V, R_L=280Ω		−	4.0	
	*5 "Low→High" threshold input current		I_{FLH}	Ta=25℃, V_{CC}=5V, R_L=280Ω	0.4	0.8	−	mA
				V_{CC}=5V, R_L=280Ω	0.3	−	−	
	*Hysteresis		I_{FLH}/I_{FHL}	V_{CC}=5V, R_L=280Ω	0.5	0.7	0.9	−
	Isolation resistance		R_{ISO}	Ta=25℃, DC500V, 40 to 60% RH	5×10^{10}	10^{11}	–	Ω
	*Response time	High-Low propagation delay time	t_{PHL}	Ta=25℃ V_{CC}=5V, I_F=4mA R_L=280Ω	−	1	3	μs
		Low-High propagation delay time	t_{PLH}		−	2	6	
		Fall time	t_f		−	0.05	0.5	
		Rise time	t_r		−	0.1	0.5	

*4 I_{FHL} represents forward current when output goes from high to low.
*5 I_{FLH} represents forward current when output goes from low to high.
*6 Hysteresis stands tor I_{FLH}/I_{FHL}.
*7 Test circuit for response time is shown below.

⟨Precautions for Use⟩

Connect a capacitor of more than ().1 μF between V_{CC} and GND

Test Circuit for **Response** Time



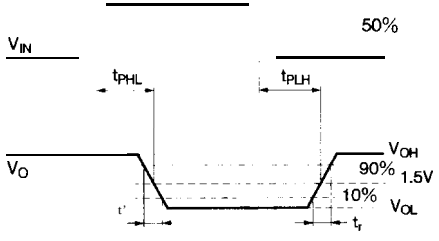


Fig. 1 Forward Current vs. Ambient Temperature

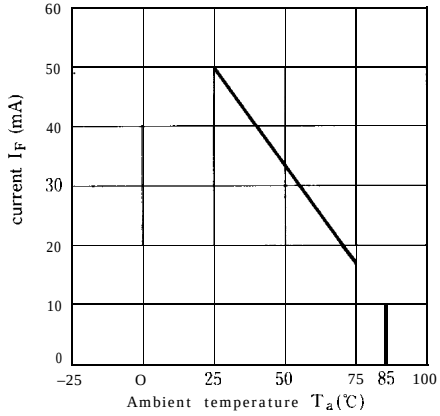


Fig. 2 Power Dissipation vs. Ambient Temperature

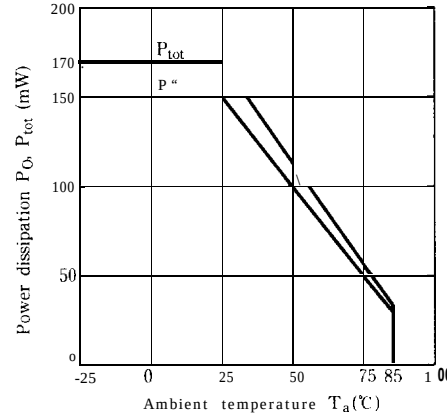


Fig. 3 Forward Current vs. Forward Voltage

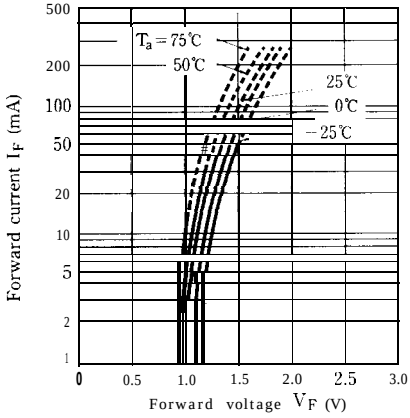


Fig. 4 Relative Threshold Input Current vs. Supply Voltage

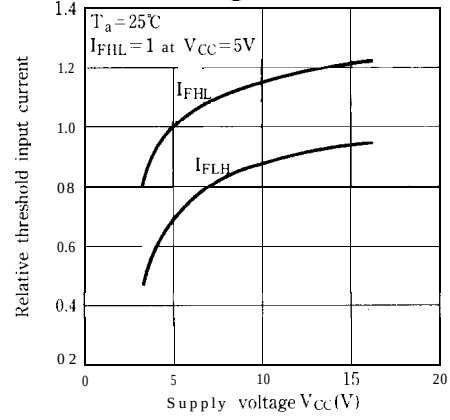


Fig. 5 Relative Threshold Input Current vs. Ambient Temperature

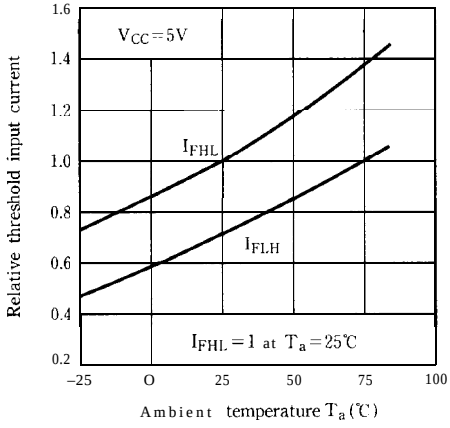


Fig. 6 Low Level Output Voltage vs. Low Level Output Current

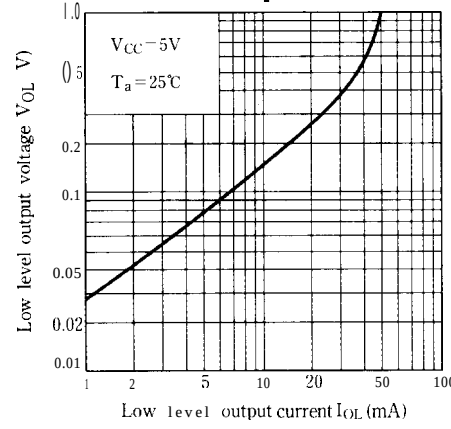


Fig. 7 Low **Level** output **Voltage vs. Ambient Temperature**

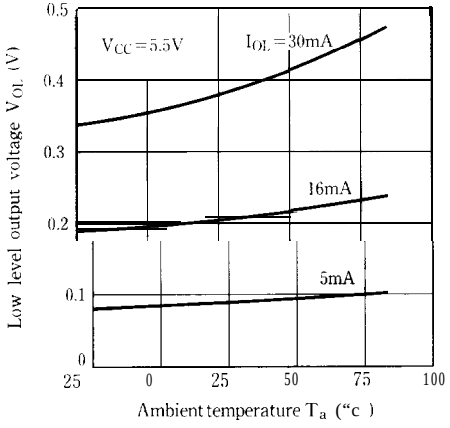


Fig. 8 Supply Current vs. Supply Voltage

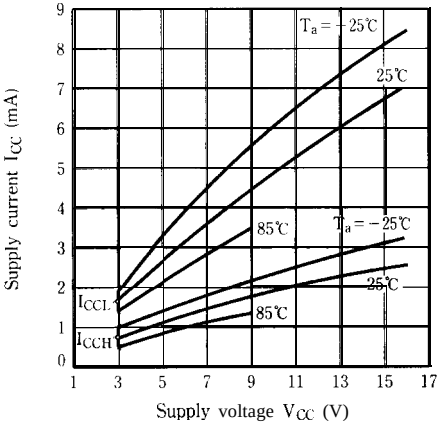


Fig. 9 Propagation Delay Time vs. Forward Current

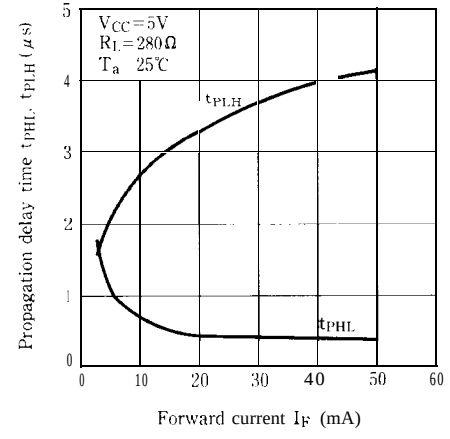
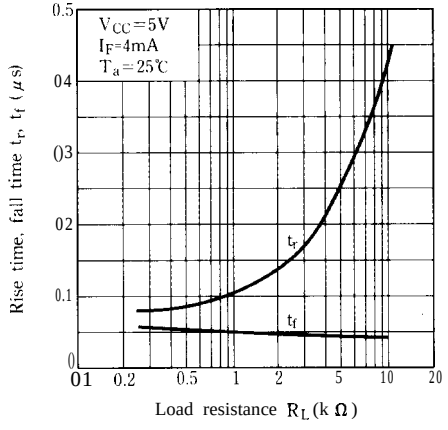


Fig.10 Rise Time, Fall Time vs. Load Resistance



■ Precautions for Use

(1) It is recommended that a by-pass capacitor of more than 0.01 μF is added between V_{CC} and GND near the device in order to stabilize power supply line.

(2) Handle this product the same as with other integrated circuits against static electricity.

. Please refrain from soldering under preheating and refrain from soldering by reflow.

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