PC400

Compact, Surface Mount Type
OPIC Photocoupler

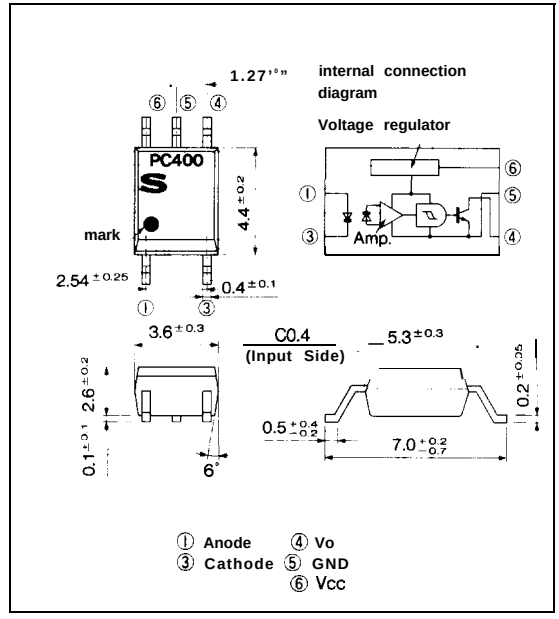
■ Features

1. Opaque, mini-flat package
2. "Low" output during light emission
3. Isolation voltage between input and output (V_{iso} : 3 750V_{rms})
4. TTL and LSTTL compatible output
5. Recognized by UL, file No. E64380

■ Applications

1. Hybrid substrate which requires high density mounting
2. Personal computers, office computers and peripheral equipment
3. Electronic musical instruments

■ Outline Dimensions (Unit : mm)



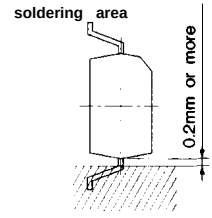
*"OPIC" (Optical IC) is a trademark of the SHARP Corporation
An OPIC consists of a light-detecting element and signal-processing circuit integrated onto a single chip,

■ Package Specifications

Model No.	Package specifications	Diameter of reel	Tape width
PC400	Taping package(Net:3000pcs.)	φ 370..	1 2..
PC400T	Taping package(Net: 750pcs.)	φ178mm	12mm
PC400Z	Sleeve package(Net: 100Pcs.)		

■ Absolute Maximum Ratings (Ta = 25℃)

	Parameter	Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	Reverse voltage	V_R	6	v
	Power dissipation	P	70	mW
output	Supply voltage	V_{CC}	16	v
	High level output voltege	V_{OH}	16	v
	Low level output current	I_{OL}	50	mA
	Power dissipation	Po	130	mW
Total power dissipation		P_{tot}	150	mW
*1 Isolation voltege		V_{iso}	3 750	V_{m},
Operating temperature		T_{opr}	−25 to +85	"c
Storage temperature		T_{stg}	−40 to +125	℃
*soldering temperature		T_{sol}	260	℃

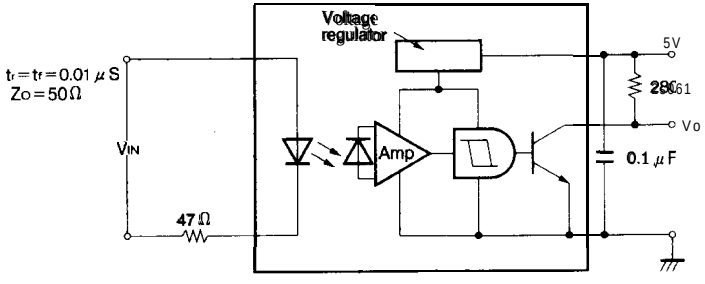


*1 AC for 1 minute, 40 to 60% RH
*2 For 10 seconds

■ Electro-optical Characteristics (Ta= O to + 70℃ unless otherwise 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=0 f=1kHz		30	250	pF
output	Operating supply voltage		Vcc		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_{CC}=V_O=15V, I_F=0	–	–	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	*3 "H→L" 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	
	*4 "L→H" 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_{FH}	Vcc = 5V, R_L=280Ω	0.5	0.7	0.9	
	Isolation resistance		R_{ISO}	Ta=25℃, DC500V 40 to 60% RH	$5x10^{10}$	10^{11}		Ω
	*6 Response time	"H→L" propagation delay time	t_{PHL}	Ta = 25℃	–	1	3	μs
		"L→H" propagation delay time	tPLH	V_{CC} = 5V, I_F = 4mA	–	2	6	
		Fall time	tf	R_L = 280Ω		0.05	0.5	
		Rise time	t_r		–	0.1	0.5	

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



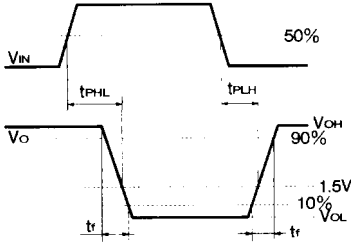


Fig. 1 Forward Current vs. Ambient Temperature

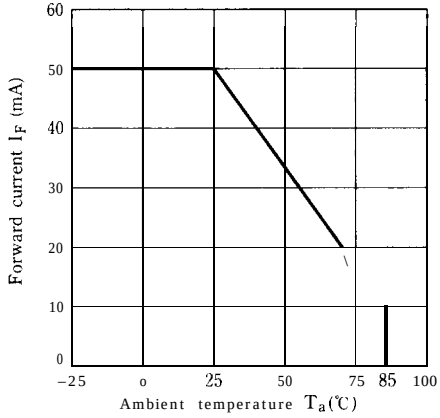


Fig. 2 Power Dissipation vs. Ambient Temperature

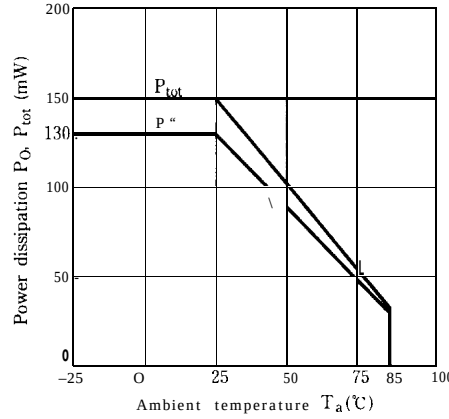


Fig. 3 Forward Current vs. Forward Voltage

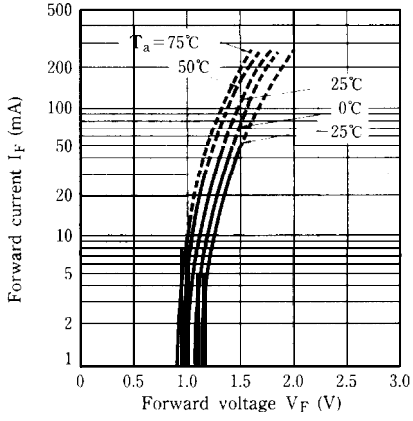


Fig. 4 Relative Threshold Input Current vs. Supply Voltage

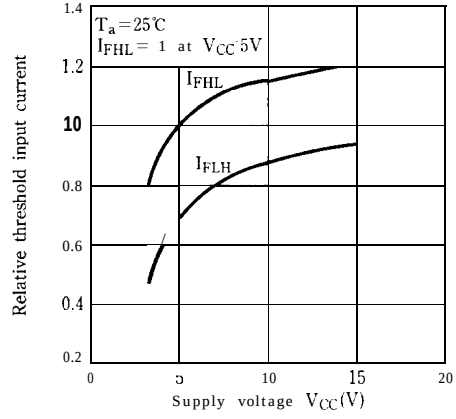


Fig. 5 Relative Threshold Input Current vs. Ambient Temperature

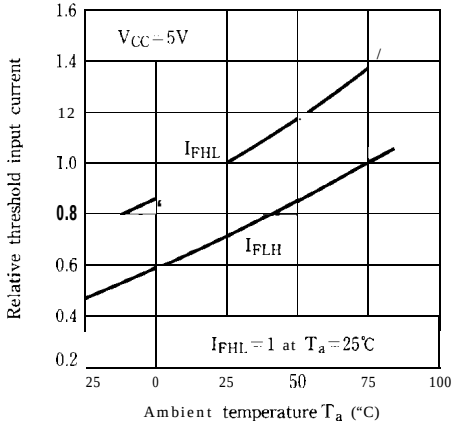


Fig. 6 Low Level Output Voltage vs. Low Level Output Current

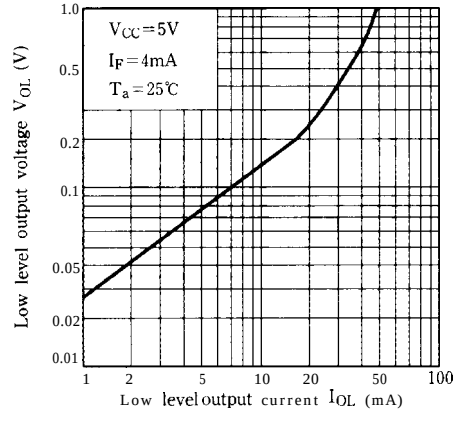


Fig. 7 Low Level Output Voltage vs. Ambient Temperature

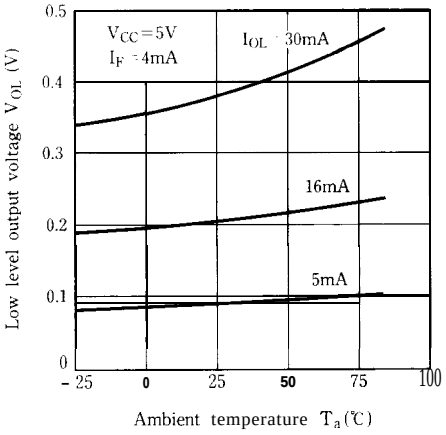


Fig. 8 Supply Current vs. Supply Voltage

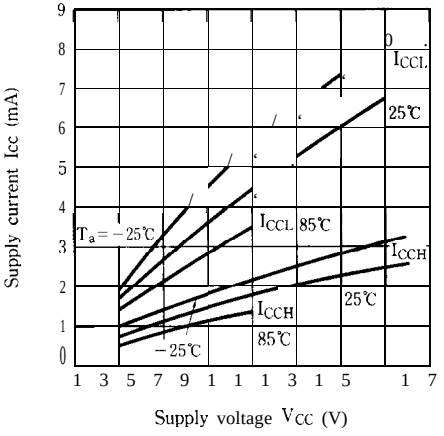


Fig. 9 Propagation Delay Time vs. Forward Currant

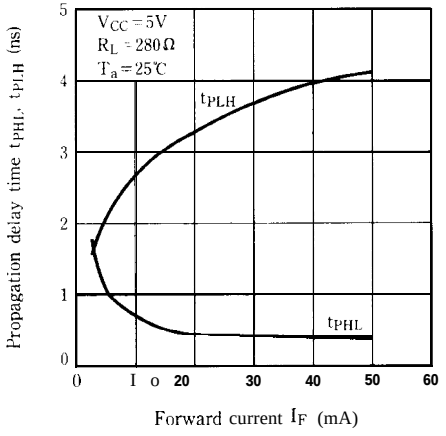
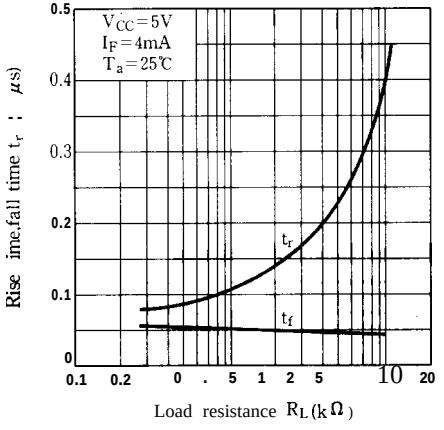


Fig.10 Rise Time, Fall Time vs. Load Resistance



■ Precautions for Use

(1) It is recommended that a by-pass capacitor of more than 0.01 μF be 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.
(3) As for other general cautions, refer to the chapter "Precautions for Use" (Page 78 to 93).