

PC900V0NSZX/ PC900V0YSZX

■ Features

1. Normal OFF operation, open collector output
2. TTL and LSTTL compatible output
3. Operating supply voltage V_{CC} :3 to 15V
4. Isolation voltage (Viso (rms)):5kV
5. Recognized by UL, file No.E64380
Approved by TÜV (VDE0884) (PC900V0YSZX)
6. 6-pin DIP package

■ Applications

1. Programmable controllers
2. PC peripherals
3. Electronic musical instruments

■ Model Line-up

Model No.	* Safety Standard Approval		Package	Packing
	UL	TÜV (VDE0884)		
PC900V0NSZX	○	—	DIP	Sleeve
PC900V0YSZX	○	○		

* Application Model No. PC900V

■ Absolute Maximum Ratings

($T_a=25^{\circ}\text{C}$)

	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	V_{OH}	16	V
	Low level output current	I_{OL}	50	mA
	Power dissipation	P_O	150	mW
	Total power dissipation	P_{tot}	170	mW
	*2 Isolation voltage	V_{iso} (rms)	5	kV
	Operating temperature	T_{opr}	-25 to +85	$^{\circ}\text{C}$
	Storage temperature	T_{stg}	-40 to +125	$^{\circ}\text{C}$
	*3 Soldering temperature	T_{sol}	260	$^{\circ}\text{C}$

*1 Pulse width \leq 100 μ s, Duty ratio=0.001

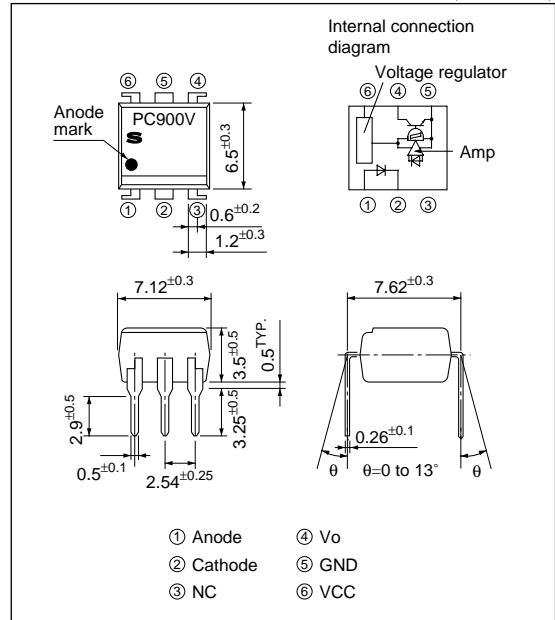
*2 40 to 60%RH, AC for 1 min

*3 For 10 s

Digital Output Type OPIC Photocoupler

■ 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.

■ Electro-optical Characteristics

(Ta=0 to 70°C unless spesified)

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°C, V _R =3V	-	-	10	μA
	Terminal capacitance	C _t	Ta=25°C, V=0, 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, I _F =250μA	-	-	100	μA
	Low level supply current	I _{CCL}	V _{CC} =5.5V, I _F =0	-	2.5	5.0	mA
	High level supply current	I _{CCH}	V _{CC} =5V, I _F =0	-	1.0	5.0	mA
	*4 "High→Low" threshold input current	I _{FHL}	Ta=25°C, 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°C, V _{CC} =5V, R _L =280Ω	0.4	0.8	-	mA
			V _{CC} =5V, R _L =280Ω	0.3	-	-	
	*6 Hysteresis	I _{FLH} /I _{FHL}	V _{CC} =5V, R _L =280Ω	0.5	0.7	0.9	-
Isolation resistance	R _{ISO}	Ta=25°C, DC=500V, 40 to 60%RH	5×10 ¹⁰	10 ¹¹	-	Ω	
Transfer characteristics	*7 Response time	"High→Low" propagation delay time	Ta=25°C V _{CC} =5V, I _F =4mA R _L =280Ω	-	1	3	μs
		"Low→High" propagation delay time		-	2	6	
		Fall time		-	0.05	0.5	
		Rise time		-	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 for I_{FLH}/I_{FHL}.

*7 Test circuit for response time is shown below.

Fig.1 Test Circuit for Response Time

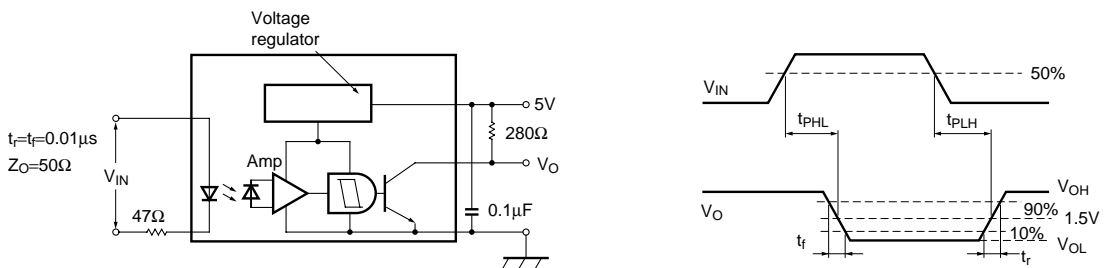


Fig.2 Forward Current vs. Ambient Temperature

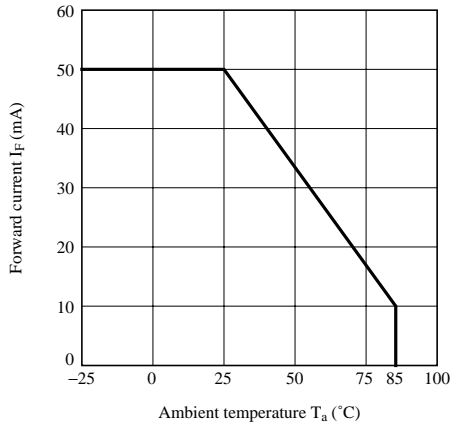


Fig.3 Power Dissipation vs. Ambient Temperature

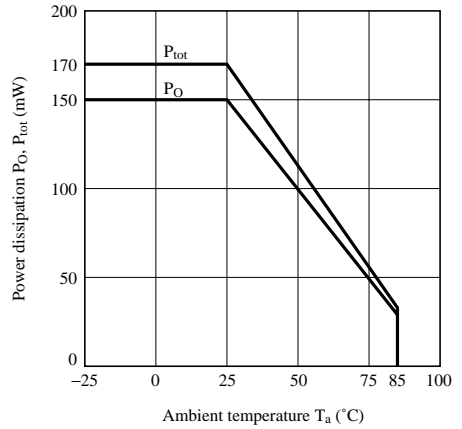


Fig.4 Forward Current vs. Forward Voltage

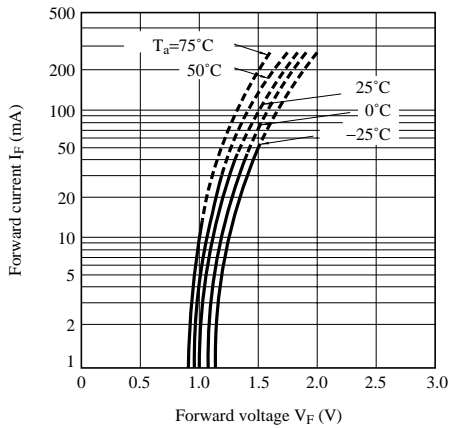


Fig.5 Relative Threshold Input Current vs. Supply Voltage

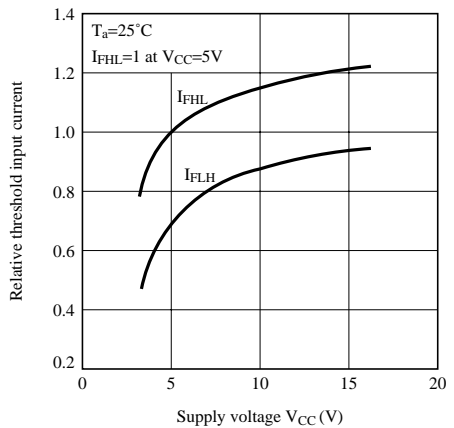


Fig.6 Relative Threshold Input Current vs. Ambient Temperature

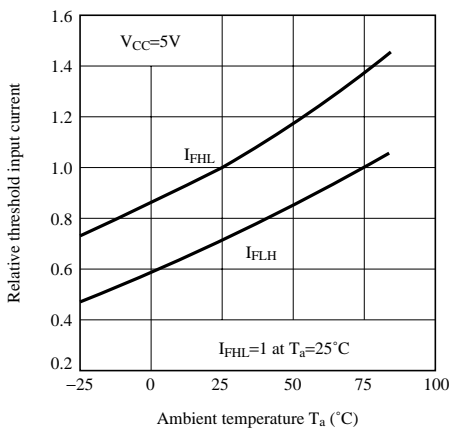


Fig.7 Low Level Output Voltage vs. Low Level Output Current

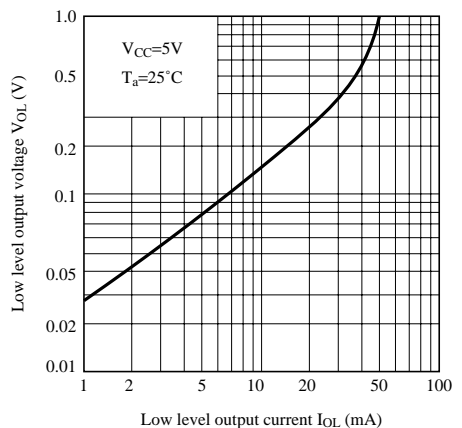


Fig.8 Low Level Output Voltage vs. Ambient Temperature

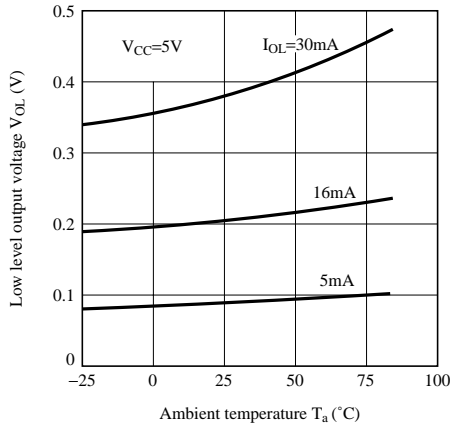


Fig.9 Supply Current vs. Supply Voltage

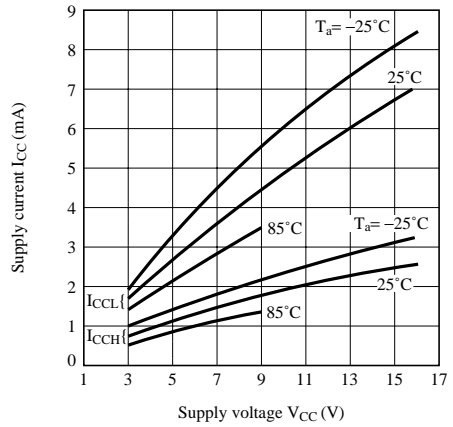


Fig.10 Propagation Delay Time vs. Forward Current

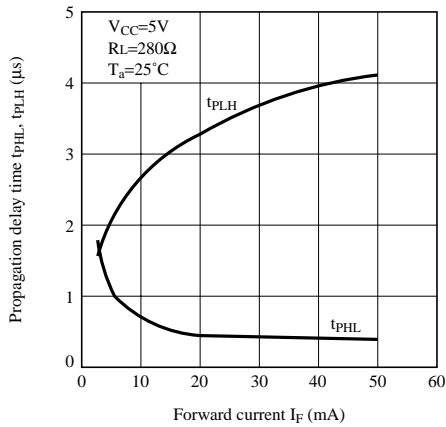
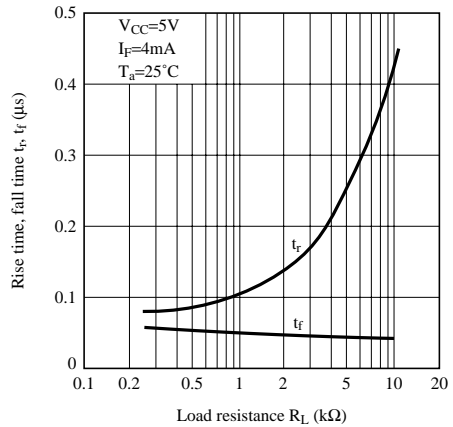


Fig.11 Rise Time, Fall Time vs. Load Resistance



■ Precautions for Use

1. It is recommended that a by-pass capacitor of more than 0.01μF 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.

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 - Office automation equipment
 - Telecommunication equipment [terminal]
 - Test and measurement equipment
 - Industrial control
 - Audio visual equipment
 - Consumer electronics
 - (ii) Measures such as fail-safe function and redundant design should be taken to ensure reliability and safety when SHARP devices are used for or in connection with equipment that requires higher reliability such as:
 - Transportation control and safety equipment (i.e., aircraft, trains, automobiles, etc.)
 - Traffic signals
 - Gas leakage sensor breakers
 - Alarm equipment
 - Various safety devices, etc.
 - (iii) SHARP devices shall not be used for or in connection with equipment that requires an extremely high level of reliability and safety such as:
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 - Nuclear power control equipment
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PC900V0NIZX/ PC900V0NIPX

■ Features

1. Normal OFF operation, open collector output
2. TTL and LSTTL compatible output
3. Operating supply voltage V_{CC} : 3 to 15V
4. Isolation voltage (Viso (rms)): 5kV
5. Recognized by UL, file No.E64380
6. 6-pin DIP package (Lead forming type)

■ Applications

1. Programmable controllers
2. PC peripherals
3. Electronic musical instruments

■ Model Line-up

Model No.	* Safty Standard Approval		Package	Packing
	UL	TÜV (VDE0884)		
PC900V0NIZX	○	—	Surface Mount	Sleeve
PC900V0NIPX	○	—	Mount	Taping

* Application Model No. PC900V

■ Absolute Maximum Ratings

($T_a=25^{\circ}\text{C}$)

	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	V_{OH}	16	V
	Low level output current	I_{OL}	50	mA
	Power dissipation	P_O	150	mW
	Total power dissipation	P_{tot}	170	mW
	^{*2} Isolation voltage	V_{iso} (rms)	5	kV
	Operating temperature	T_{opr}	-25 to +85	$^{\circ}\text{C}$
	Storage temperature	T_{stg}	-40 to +125	$^{\circ}\text{C}$
	^{*3} Soldering temperature	T_{sol}	260	$^{\circ}\text{C}$

*1 Pulse width \leq 100 μ s, Duty ratio=0.001

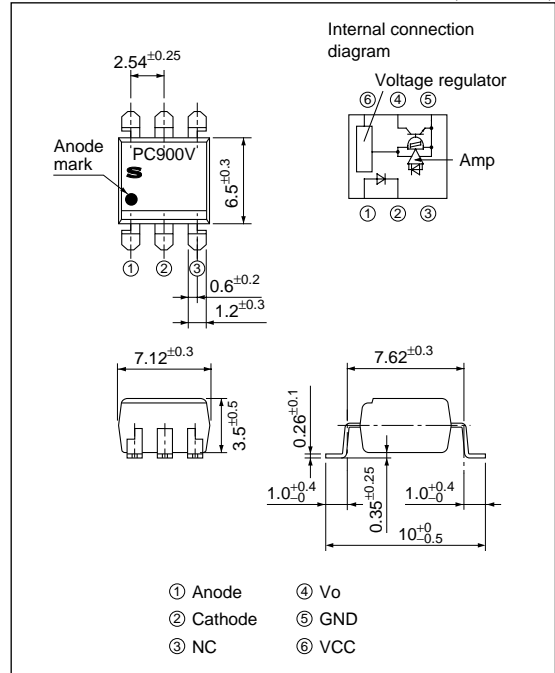
*2 40 to 60%RH, AC for 1 min

*3 For 10 s

Digital Output Type OPIC Photocoupler

■ Outline Dimensions

(Unit : mm)



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■ Electro-optical Characteristics

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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°C, V _R =3V	-	-	10	μA	
	Terminal capacitance	C _t	Ta=25°C, V=0, 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, I _F =250μA	-	-	100	μA	
	Low level supply current	I _{CCL}	V _{CC} =5.5V, I _F =0	-	2.5	5.0	mA	
	High level supply current	I _{CCH}	V _{CC} =5V, I _F =0	-	1.0	5.0	mA	
	*4 "High→Low" threshold input current	I _{FHL}	Ta=25°C, V _{CC} =5V, R _L =280Ω	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°C, V _{CC} =5V, R _L =280Ω	V _{CC} =5V, R _L =280Ω	0.4	0.8	-	mA
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	*6 Hysteresis	I _{FLH} /I _{FHL}	V _{CC} =5V, R _L =280Ω	0.5	0.7	0.9	-	
Isolation resistance	R _{ISO}	Ta=25°C, DC=500V, 40 to 60%RH	5×10 ¹⁰	10 ¹¹	-	Ω		
Transfer characteristics	*7 Response time	"High→Low" propagation delay time	Ta=25°C V _{CC} =5V, I _F =4mA R _L =280Ω	-	1	3	μs	
		"Low→High" propagation delay time		-	2	6		
		Fall time		-	0.05	0.5		
		Rise time		-	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 for I_{FLH}/I_{FHL}.

*7 Test circuit for response time is shown below.

Fig.1 Test Circuit for Response Time

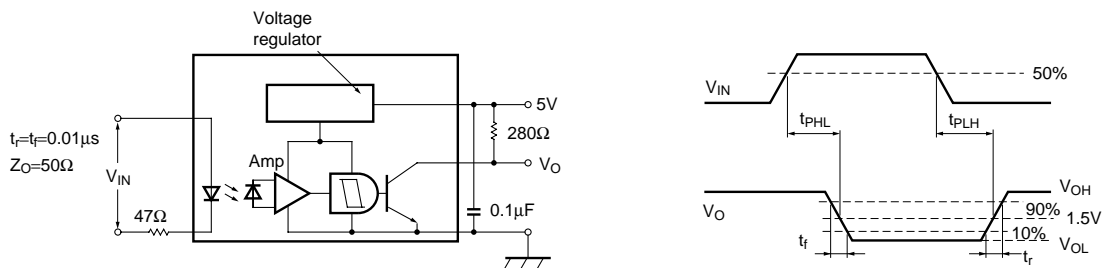


Fig.2 Forward Current vs. Ambient Temperature

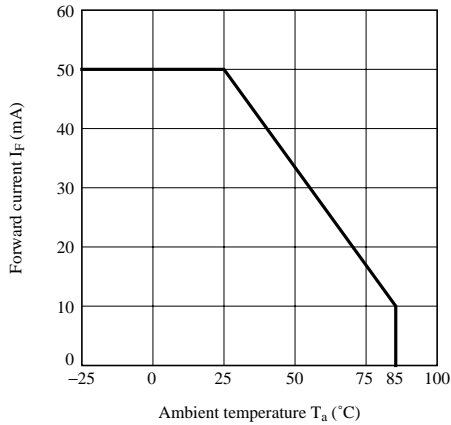


Fig.3 Power Dissipation vs. Ambient Temperature

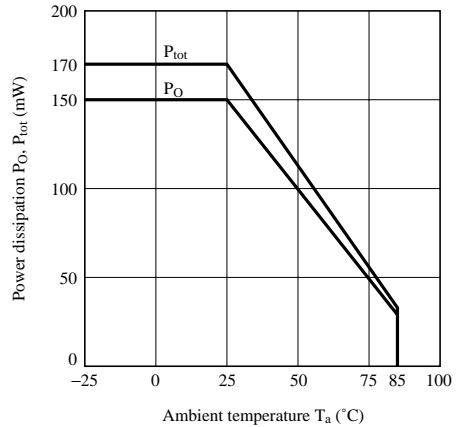


Fig.4 Forward Current vs. Forward Voltage

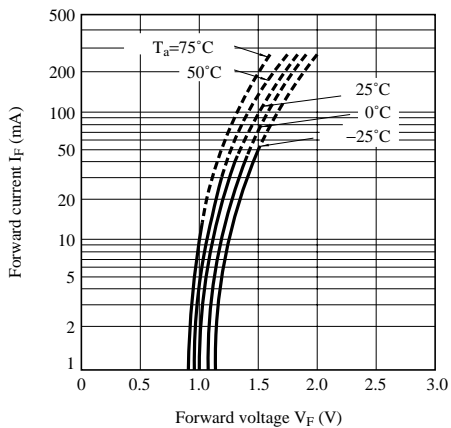


Fig.5 Relative Threshold Input Current vs. Supply Voltage

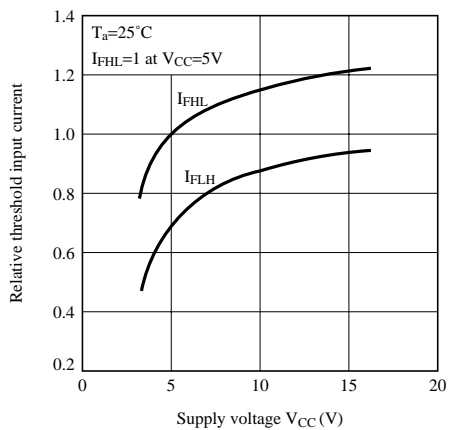


Fig.6 Relative Threshold Input Current vs. Ambient Temperature

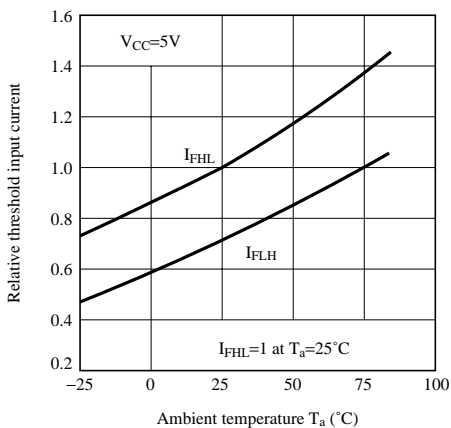


Fig.7 Low Level Output Voltage vs. Low Level Output Current

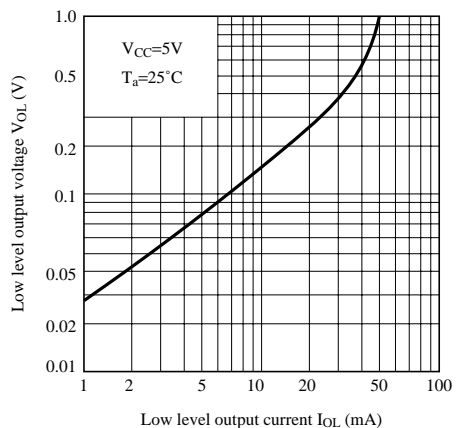


Fig.8 Low Level Output Voltage vs. Ambient Temperature

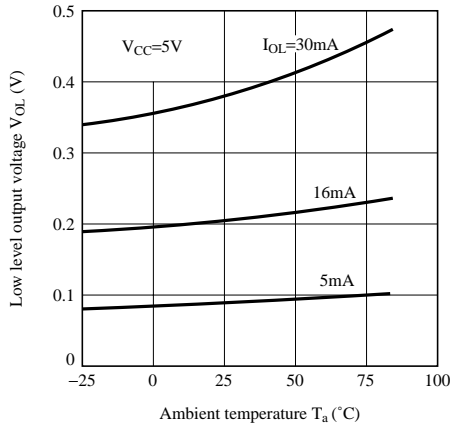


Fig.9 Supply Current vs. Supply Voltage

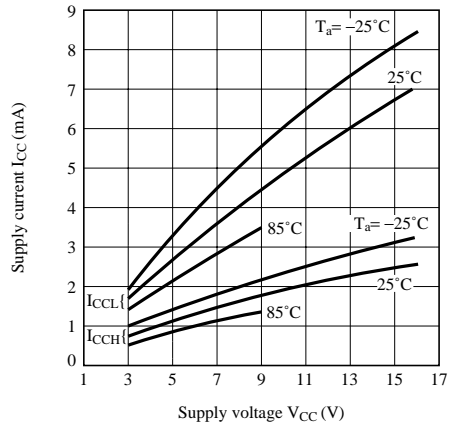


Fig.10 Propagation Delay Time vs. Forward Current

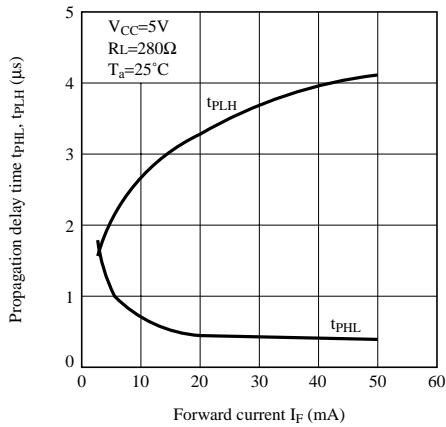
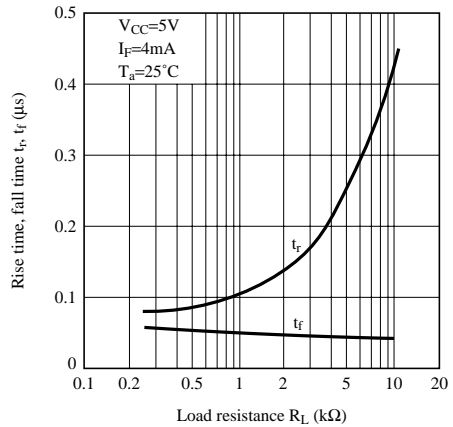


Fig.11 Rise Time, Fall Time vs. Load Resistance



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