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IS485/IS486

Bulit-in Amp. Type OPIC Light Detector

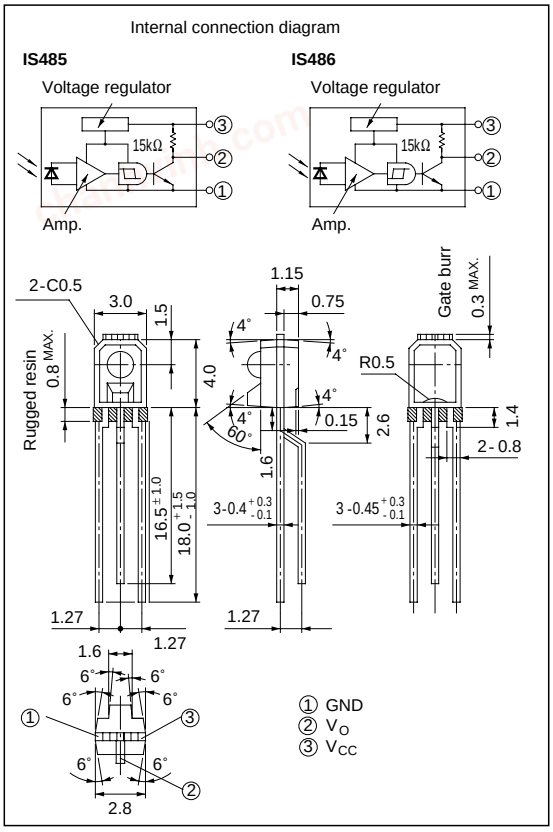
■ Features

1. Built-in schmidt trigger circuit
2. High sensitivity(E_V : MAX. 35 ℓx at Ta= 25˚C)
3. A wide range of operating supply voltage (V_{CC}: 4.5 to 17V)
4. LSTTL and TTL compatible output
5. Low level output under incident light (IS485)
   High level output under incident light (IS486)
6. Compact package

■ Applications

1. Floppy disk drive units
2. Copiers, printers, facsimiles
3. VCRs, cassette decks
4. Automatic vending machines

■ 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.
* Unspecified tolerance shall be ±0.2mm.

■ Absolute Maximum Ratings (Ta= 25˚C)

Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	-0.5 to + 17	V
Output current	Io	50	mA
Power dissipation	P	175	mW
Operating temperature	T_{opr}	-25 to + 85	˚C
Storage temperature	T_{stg}	-40 to + 100	˚C
*1 Soldering temperature	T_{sol}	260	˚C

*1 For 5 seconds at the position of 1.4mm from the bottom face of package.

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■ Electro-optical Characteristics (Unless otherwise specified Ta= 0 to 70˚C, Vcc= 5V)

Parameter			Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Low level output voltage			V_{OL}	I_{OL}= 16mA, *2	-	0.15	0.4	V
High level output voltage			V_{OH}	*3	3.5	-	-	V
Low level supply current			I_{CCL}	*2	-	1.7	3.8	mA
High level supply current			I_{CCH}	*3	-	0.7	2.2	mA
*4 "High"→ "Low" threshold illuminance		**IS485**	E_{VHL}	Ta = 25˚C	-	15	35	lx
				-	-	-	50	
		IS486		Ta = 25˚C	1.5	10	-	
				-	1	-	-	
*5 "Low"→ "High" threshold illuminance		**IS485**	E_{VLH}	Ta = 25˚C	1.5	10	-	lx
				-	1	-	-	
		IS486		Ta = 25˚C	-	15	35	
				-	-	-	50	
*6 Hysteresis		**IS485**	E_{VLH}/E_{VHL}	Ta = 25˚C	0.50	0.65	0.90	-
		IS486	E_{VHL}/E_{VLH}					
Response time	"High"→ "Low" propagation delay time	**IS485**	t_{PHL}	Ta = 25˚C Ev = 50lx R_L = 280Ω	-	3	9	µs
		IS486			-	5	15	
	"Low"→ "High" propagation delay time	**IS485**	t_{PLH}		-	5	15	
		IS486			-	3	9	
	Rise time		t_r		-	0.1	0.5	
	Fall time		t_f		-	0.05	0.5	

*2 Defines E_V= 50lx (**IS485**) and E_V= 0 (**IS486**).
*3 Defines E_V= 0 (**IS485**) and E_V= 50lx (**IS486**).
*4 E_{VHL} represents illuminance by CIE standard light source A(tungsten lamp) when output changes from high to low.
*5 E_{VLH} represents illuminance by CIE standard light source A(tungsten lamp) when output changes from low to high.
*6 Hysteresis stands for E_{VLH}/E_{VHL} (**IS485**) and E_{VHL}/E_{VLH} (**IS486**).

■ Recommended Operating Conditions (Ta= 0 to 70˚C)

Parameter	Symbol	MIN.	MAX.	Unit
Supply voltage	V_{CC}	4.5	17	V
Low level output current	I_{OL}	-	16	mA

In order to stabilize power supply line, connect a by-pass capacitor of 0.01µ F or more between V_{CC} and GND near the device.

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Fig. 1 Low Level Output Current vs. Ambient Temperature

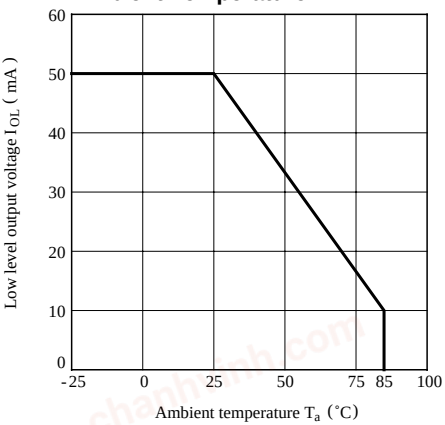


Fig. 2 Power Dissipation vs. Ambient Temperature

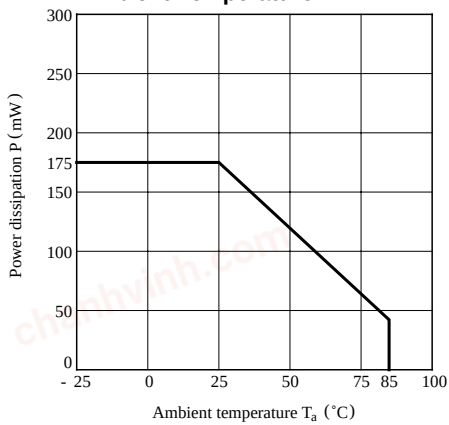


Fig. 3 Relative Threshold Illuminance vs. Supply Voltage

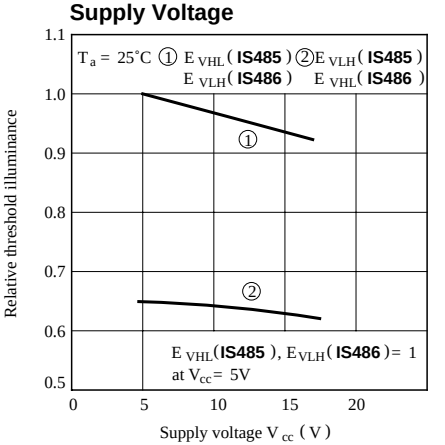


Fig. 4 Low Level Output Voltage vs. Low Level Output Current

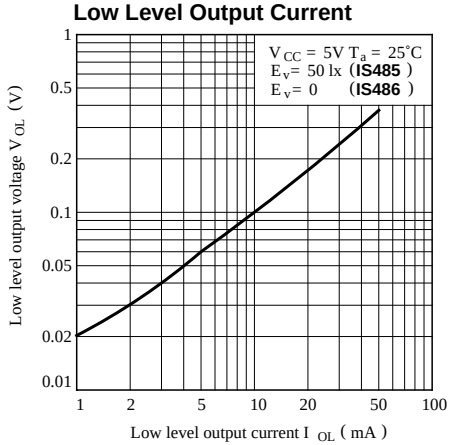


Fig. 5 Low Level Output Voltage vs. Ambient Temperature

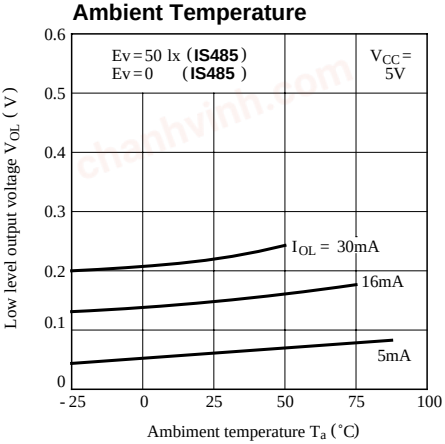
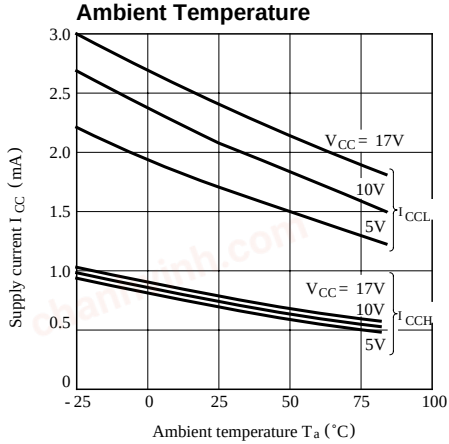


Fig. 6 Supply Current vs. Ambient Temperature



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Fig. 7 Propagation Delay Time vs. Illuminance

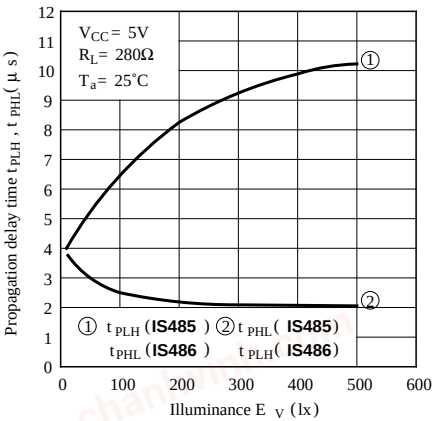
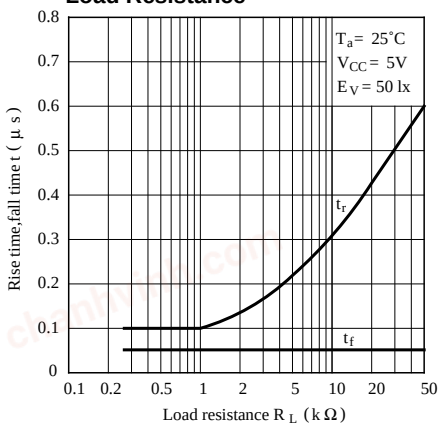
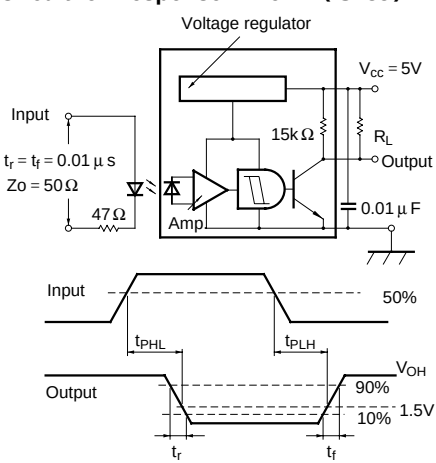


Fig. 8 Rise Time, Fall Time vs. Load Resistance



Test Circuit for Response Time (IS485)



Test Circuit for Response Time (IS486)

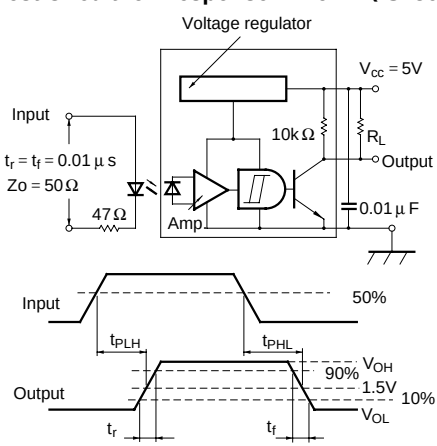


Fig. 9 Sensitivity Diagram

(T_a = 25°C)

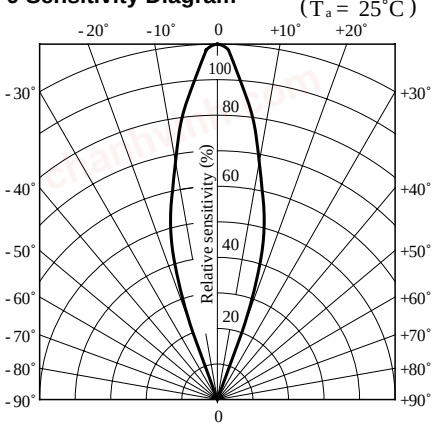
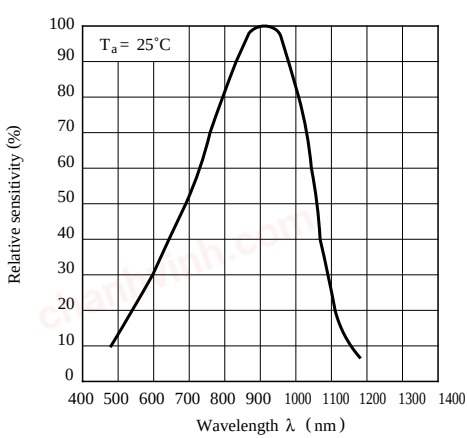


Fig.10 Spectral Sensitivity



● Please refer to the chapter "Precautions for Use."

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  - Test and measurement equipment
  - Industrial control
  - Audio visual equipment
  - Consumer electronics

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