1S485/1S486

Bulit-in Amp. Type OPIC Light Detector

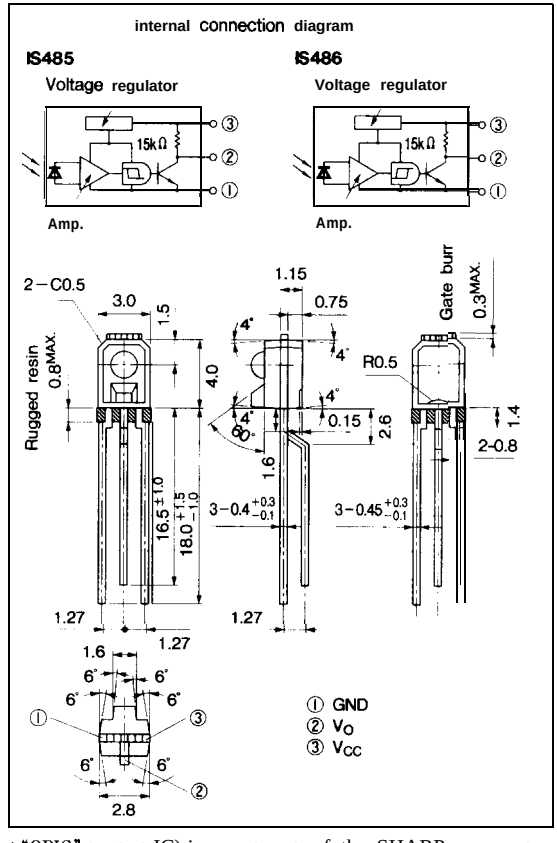
■ Features

1. Built-in Schmidt trigger circuit
2. High sensitivity (E_V : MAX. 35 ℓ x at Ta = 25℃)
3. A wide range of operating supply voltage (V_{CC} : −0.5 to 17V)
4. LSTTL and TTL compatible output
5. Low level output under incident light (6S485)
   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℃)

Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	−0.5 to +17	V
Output current	10	50	mA
Power dissipation	P	175	mW
Operating temperature	T_{opr}	−25 to +85	℃
Storage temperature	T_{stg}	−40 to +100	℃
*1 Soldering temperature	T_{sol}	260	℃

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

■ Electro-optical Characteristics (Unless otherwise specified Ta=O 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℃	1.5	10	—	
				1	–	–	
*5 "Low" → "High" threshold illuminance	IS485	E_{VLH}	Ta = 25℃	1.5	10	—	lx
				1	—	—	
	IS486		Ta = 25°C	—	15	35	
				—	—	50	
*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℃, Ev=501x, R_L=280Ω	—	3	9	μs
	IS486			—	5	15	
Response time: "Low" → "High" propagation delay time	IS485	t_{PLH}		—	5	15	
	IS486			—	3	9	
Response time: Rise time		t_r		—	0.1	0.5	
Response time: Fall time		t_f		—	0.05	0.5	

*2 Defines E_V=501 x (IS485) and E_V=0 (IS486).
*3 Defines $E_{V=O}$ (IS485) and E_V=501 x (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=O to 70"C)

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

In order to stabilize power SUPPIY line, connect a by-pass capacitor of 0.01μF or mOre between Vcc and GND near the device.

Fig. 1 Low Level Output Current vs. Ambient Temperature

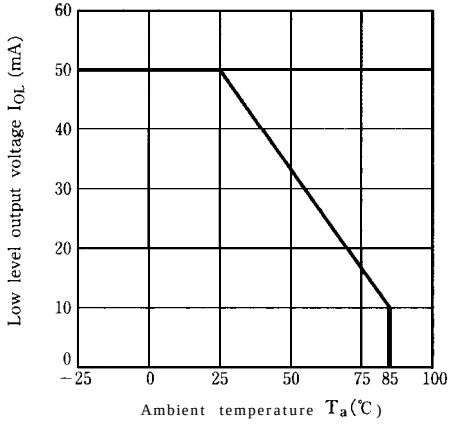


Fig. 2 Power Dissipation vs. Ambient Temperature

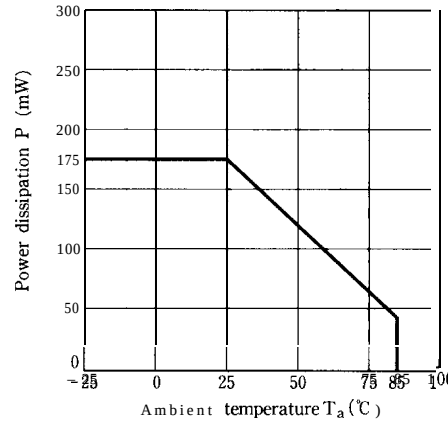


Fig. 3 Relative Threshold Illuminance vs. Supply Voltage

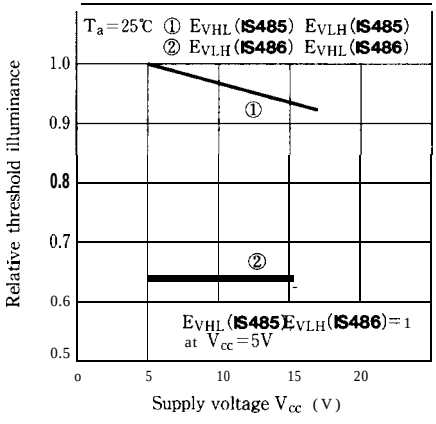


Fig. 4 Low Level Output Voltage vs. Low Level Output Current

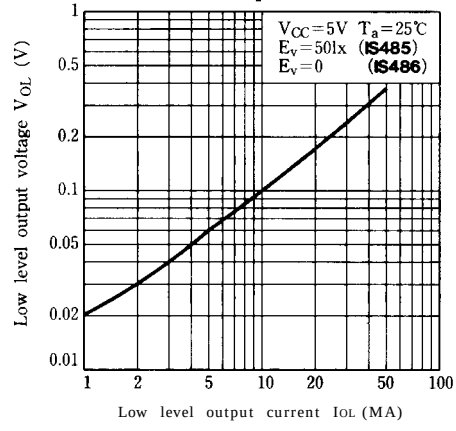


Fig. 5 Low Level Output Voltage vs. Ambient Temperature

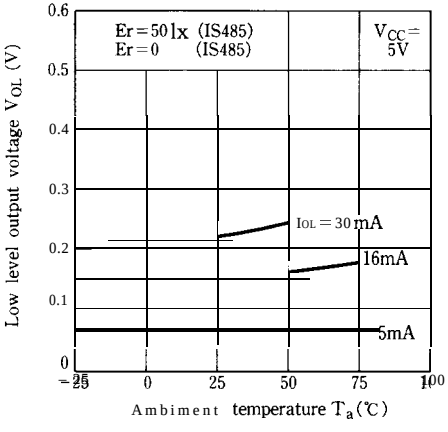


Fig. 6 Supply Current vs. Ambient Temperature

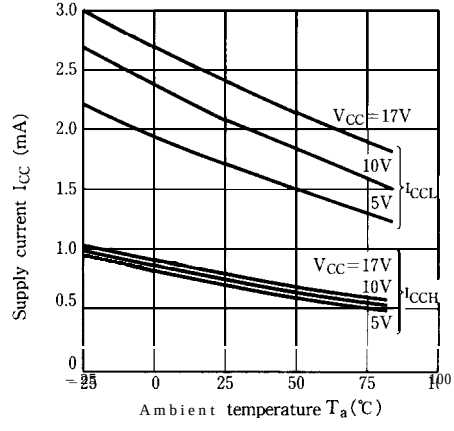


Fig. 7 Propagation Delay Time vs. Illuminance

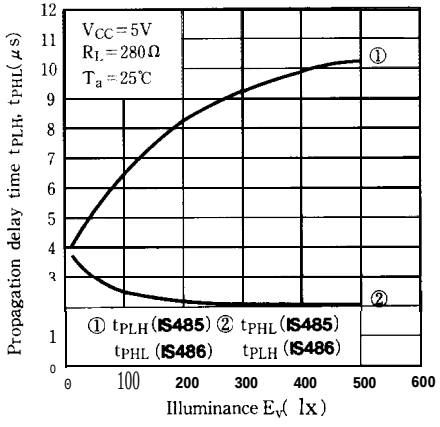
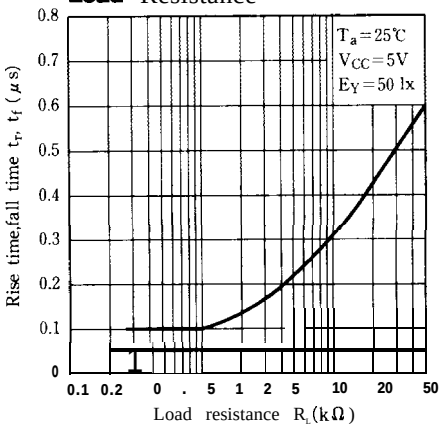
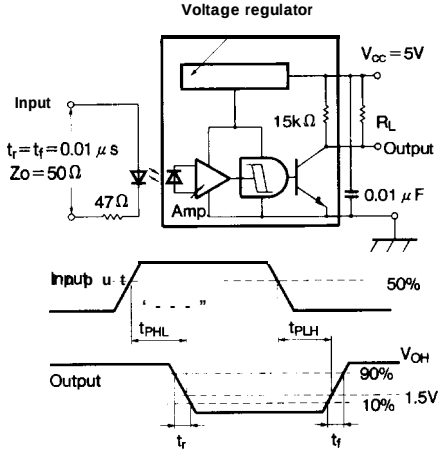


Fig. 8 Rise Time, Fall Time vs. Load Resistance



Test Circuit for Response Time (IS485)



Test Circuit for Response Time (IS486)

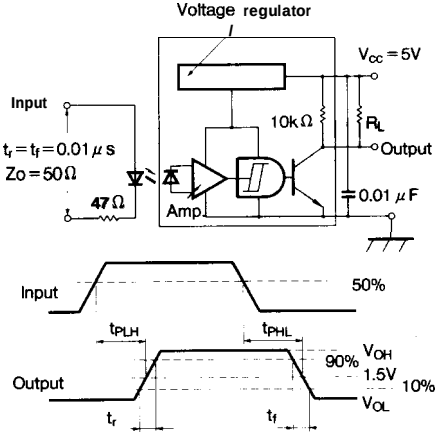


Fig. 9 Sensitivity Diagram (T_a=25℃)

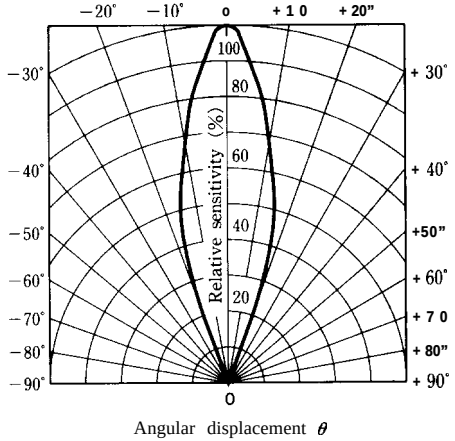
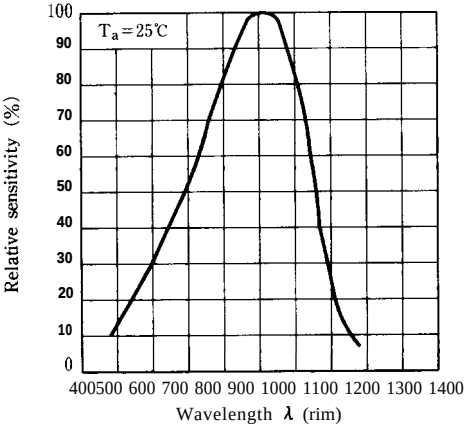


Fig.10 Spectral Sensitivity



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