IS481/IS482

Low Voltage Operating and High Sensitivity Type OPIC Light Detectors

■ Features

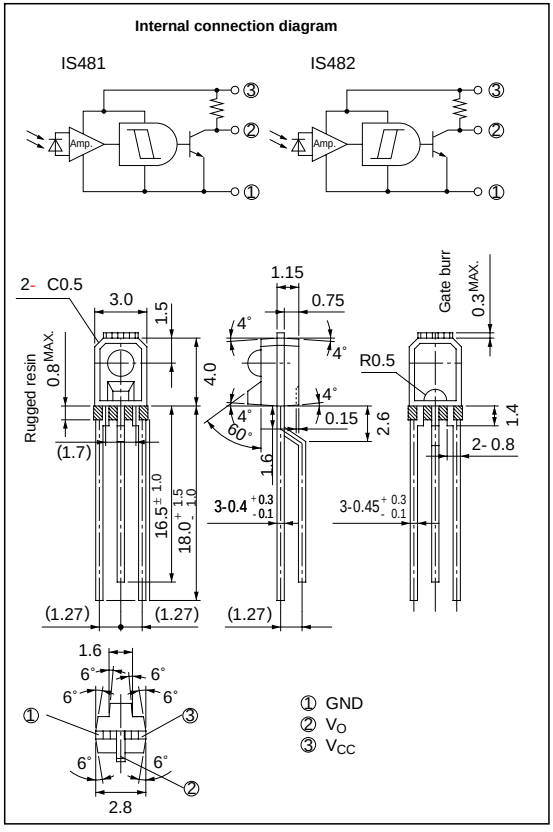
1. Built-in Schmidt trigger circuit
2. Low voltage operating type (V_{CC}:2.3to 7.0V)
3. High sensitivity type (**IS481** E_{VHL} : TYP. 5.4 lx at Ta=25 ˚C)
   (**IS482** E_{VLH} : TYP. 5.4 lx at Ta=25 ˚C)
4. LSTTL and TTL compatible
5. Low level output under incident light (**IS481**)
   High level output under incident light (**IS482**)

■ Applications

1. Battery-driven portable equipment

■ Outline Dimensions

(Unit : mm)

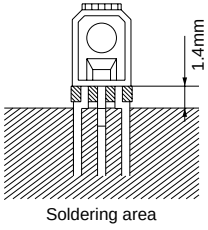


* OPIC (Optical IC) is a trademark of the SHARP Corporation. An OPIC consists of a light-detecting element and signal-processing circuit integrated onto a single chip.

■ Absolute Maximum Ratings

(Ta=25˚C)

Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	-0.5 to +8	V
*1 Output current	Io	8	mA
*2 Total power dissipation	P	80	mW
Operating temperature	T_{opr}	-25 to +85	˚C
Storage temperature	T_{stg}	-40 to +100	˚C
*3 Soldering temperature	T_{sol}	260	˚C



*1 Output current vs. ambient temperature : Per Fig. 1

*2 Total power dissipation vs. ambient temperature : Per Fig. 2

*3 For 5 seconds at the position of 1.4 mm from bottom face of resin package

" In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that occur in equipment using any of SHARP's devices, shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest version of the device specification sheets before using any SHARP's device."

■ Electro-optical Characteristics

(Ta=0 to 70˚C, V_{CC} =5V unless otherwise specified)

Parameter			Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Low level output voltage			V_{OL}	I_{OL}= 4mA,*4	-	0.15	0.4	V
High level output voltage			V_{OH}	*5	4.9	-	-	V
Low level supply current			I_{CCL}	*4	-	1.3	3.8	mA
High level supply current			I_{CCH}	*5	-	1.0	3.0	mA
*6 "High →Low" threshold illuminance		**IS481**	E_{VHL}	Ta= 25˚C	-	5.4	15	lx
					-	-	22	
		IS482		Ta= 25˚C	0.6	4.3	-	
					0.4	-	-	
*7 "Low→High" threshold illuminance		**IS481**	E_{VLH}	Ta= 25˚C	0.6	4.3	-	lx
					0.4	-	-	
		IS482		Ta= 25˚C	-	5.4	15	
					-	-	22	
*8 Hysteresis		**IS481**	E_{VLH}/E_{VHL}	Ta= 25˚C	0.55	0.80	0.95	-
		IS482	E_{VHL}/E_{VLH}					
Response time	"High→Low" propagation delay time	**IS481**	t_{PHL}	Ta= 25˚C Ev= 50 lx R_L= 1.2kΩ	-	3.0	15	μs
		IS482			-	9.0	30	
	"Low →High" propagation delay time	**IS481**	t_{PLH}		-	9.0	30	
		IS482			-	3.0	15	
	Rise time		t_r		-	0.1	0.5	
	Fall time		t_f		-	0.05	0.5	
Peak sensitivity wavelength			λ_P		-	900	-	nm

*4 Defines E_v =50 lx (**IS481**) and E_v =0 lx (**IS482**).

*5 Defines E_v =0 lx (**IS481**) and E_v =50 lx (**IS482**).

*6 E_{VHL} represents illuminance by CIE standard light source A (tungsten lamp) when output changes from "high" to "low".

*7 E_{VLH} represents illuminance by CIE standard light source A (tungsten lamp) when output changes from "low" to "high".

*8 Hysteresis standards for E_{VLH}/E_{VHL} (**IS481**) and E_{VHL}/E_{VLH} (**IS482**).

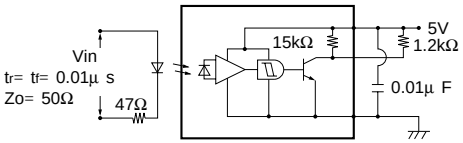
■ Recommended Operating Conditions

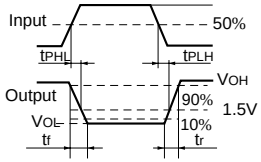
(Ta=0 to +70˚C)

Parameter	Symbol	MIN.	MAX.	Unit
Supply voltage	V_{CC}	2.3	7.0	V
Output current	I_{OL}	-	4.0	mA

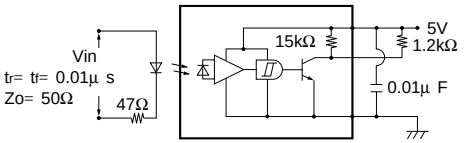
In order to stabilize power supply line, connect a by-pass capacitor of 0.01μ F or more between Vcc and GND near the device.

■ Test Circuit for Response Time (IS481)





■ Test Circuit for Response Time (IS482)



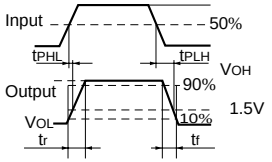


Fig. 1 Output Current vs. Ambient Temperature

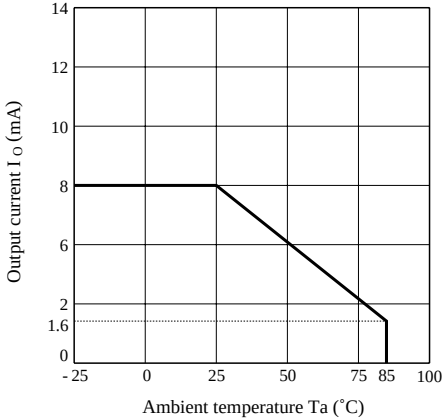


Fig. 2 Output Power Dissipation vs. Ambient Temperature

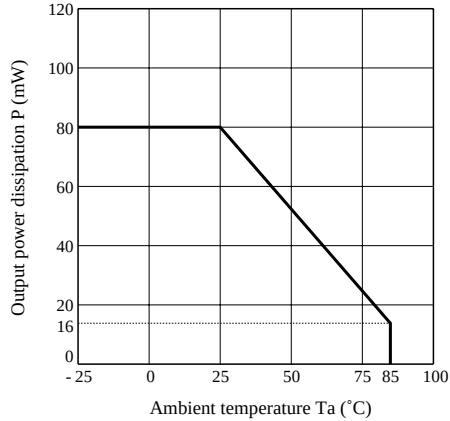


Fig. 3 Low Level Output Voltage vs. Low Level Output Current

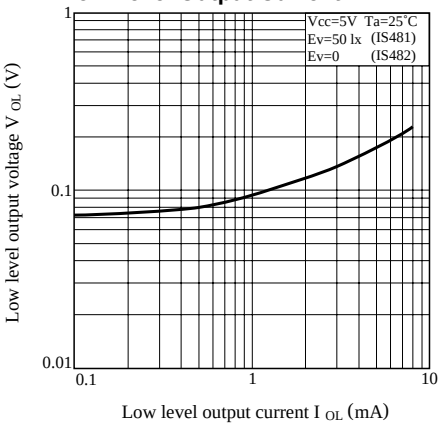


Fig. 4 Low Level Output Voltage vs. Ambient Temperature

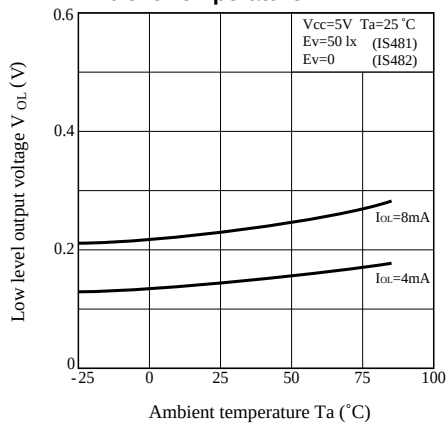


Fig. 5 Supply Current vs. Ambient Temperature

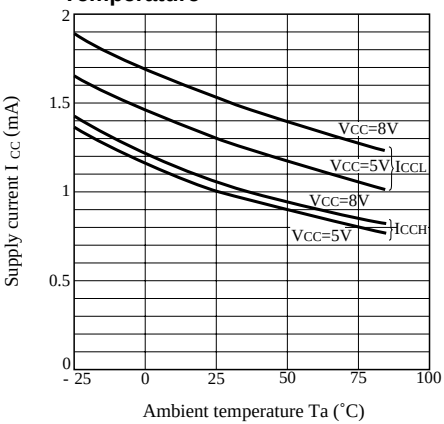


Fig. 6 Rise, Fall Time vs. Load Resistance

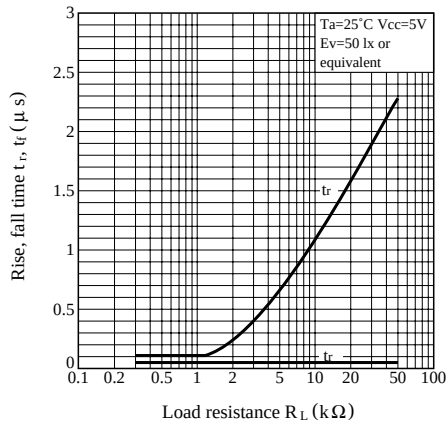


Fig. 7 Radiation Diagram (Ta=25 ˚C)

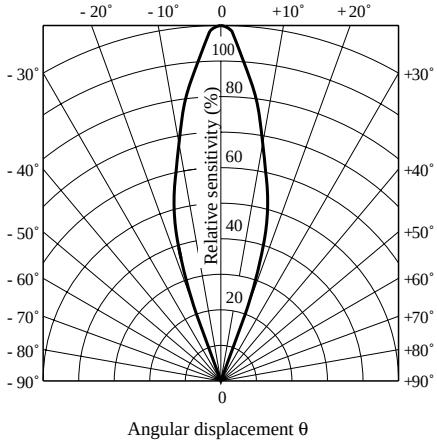
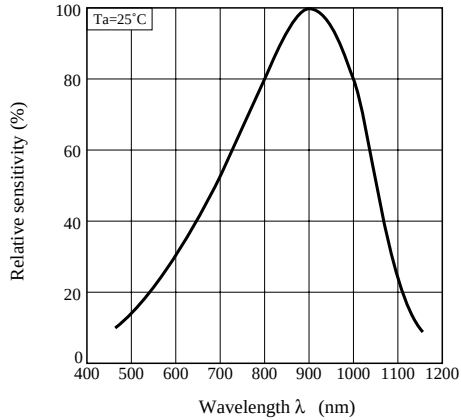


Fig. 8 Spectral Sensitivity (TYP.)



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

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