

IS481/IS482

Low Voltage Operating and High Sensitivity Type OPIC Light Detectors

■ Features

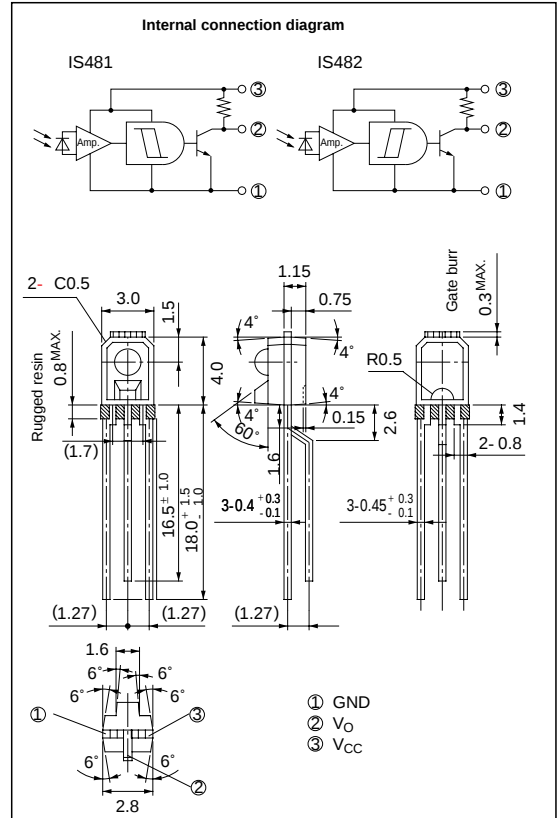
1. Built-in Schmidt trigger circuit
2. Low voltage operating type (V_{CC} : 2.3 to 7.0V)
3. High sensitivity type (**IS481** E_{VHL} : TYP. 5.4 lx at $T_a=25^\circ\text{C}$)
(**IS482** E_{VLH} : TYP. 5.4 lx at $T_a=25^\circ\text{C}$)
4. LSTTL and TTL compatible
5. Low level output under incident light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

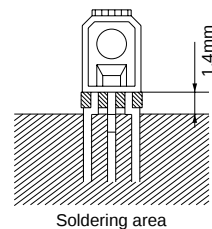
(Ta=25°C)

Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	-0.5 to +8	V
*1 Output current	I_O	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



■ 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	Ta= 25°C Ev= 50 lx R _L = 1.2kΩ	-	3.0	15	μ s	
		IS482		-	9.0	30		
	"Low →High" propagation delay time	IS481		-	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)

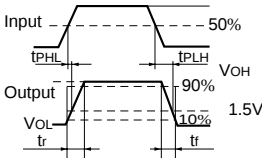
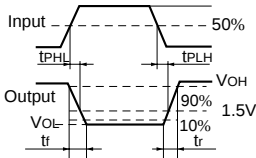
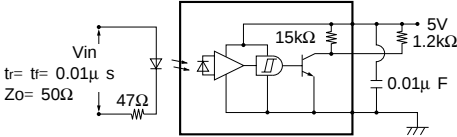
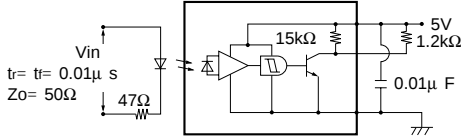


Fig. 1 Output Current vs. Ambient Temperature

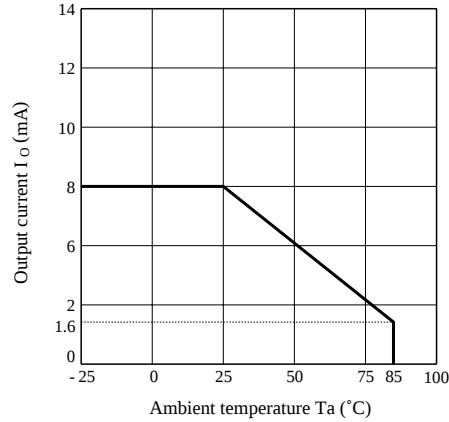


Fig. 2 Output Power Dissipation vs. Ambient Temperature

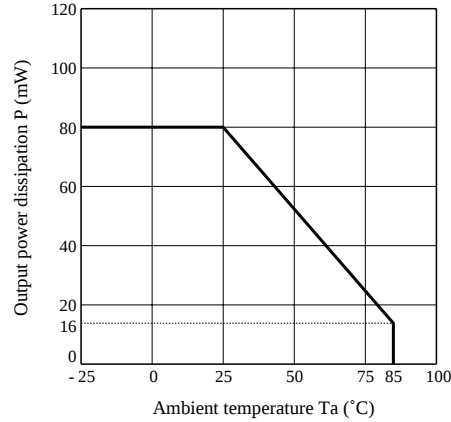


Fig. 3 Low Level Output Voltage vs. Low Level Output Current

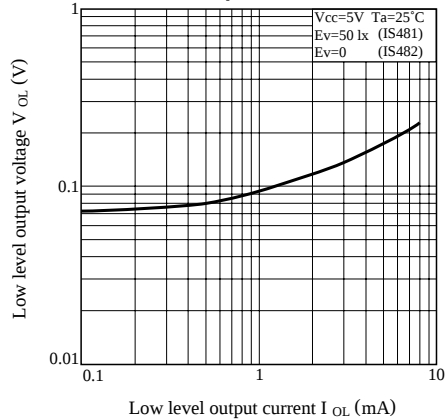


Fig. 4 Low Level Output Voltage vs. Ambient Temperature

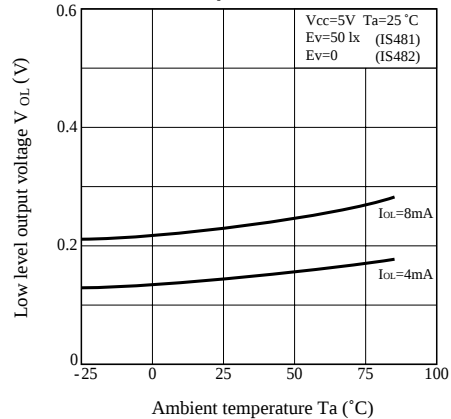


Fig. 5 Supply Current vs. Ambient Temperature

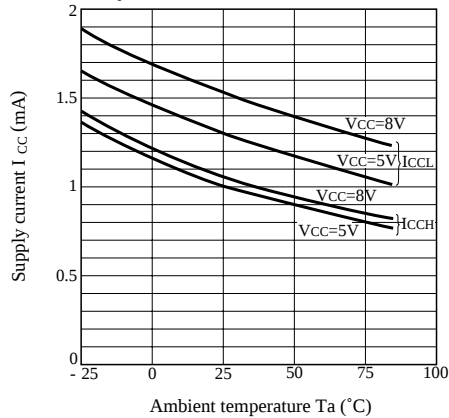


Fig. 6 Rise, Fall Time vs. Load Resistance

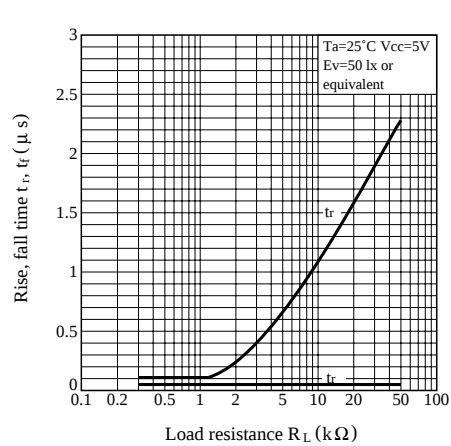


Fig. 7 Radiation Diagram (Ta=25 °C)

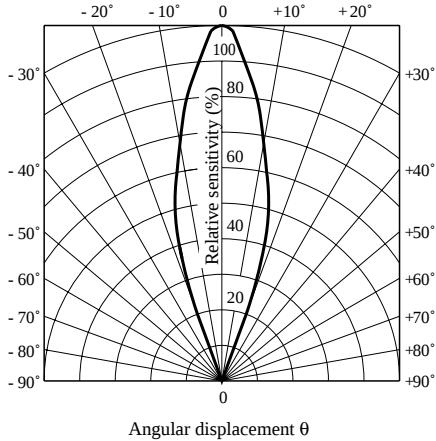
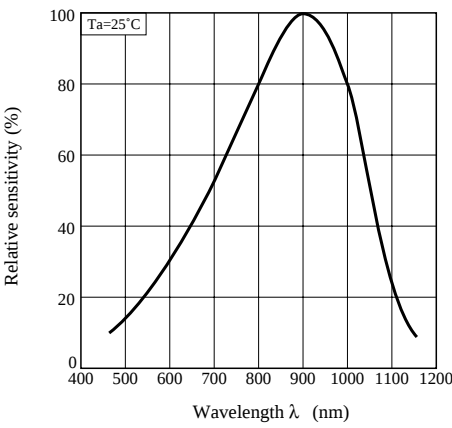


Fig. 8 Spectral Sensitivity (TYP.)



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