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IS489

Low Voltage Operating Type High Sensitivity OPIC Light Detector

■ Features

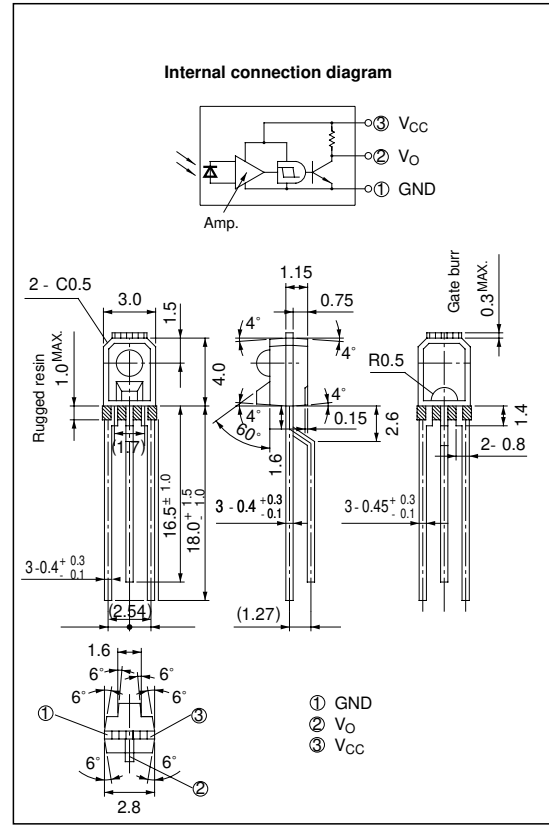
1. Low voltage operating type (Vcc : 1.4 to 7.0V)
2. High sensitivity type (E_{VHL} : TYP. 5 lx)
3. Built-in Schmidt trigger circuit
4. Low level output under incident light

■ Applications

1. Amusement equipment
2. 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	2	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 the resin edge

" 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} =3V unless otherwise specified)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Low level output voltage		V_{OL}	I_{OL} = 1mA, Ev = 50 lx	-	0.1	0.4	V
High level output voltage		V_{OH}	Ev = 0 lx	2.9	-	-	V
Low level supply current		I_{CCL}	Ev = 50 lx	-	0.6	1.2	mA
High level supply current		I_{CCH}	Ev = 0 lx	-	0.4	0.5	mA
*1 "High →Low" threshold illuminance		E_{VHL}	Ta = 25˚C	-	4.8	15	lx
			-	-	-	22	
*2 "Low→High" threshold illuminance		E_{VLH}	Ta = 25˚C	0.6	3.7	-	lx
			-	0.4	-	-	
*3 Hysteresis		E_{VLH} /E_{VHL}	Ta = 25˚C	0.55	0.75	0.95	-
Response time	"High→Low" propagation delay time	t_{PHL}	Ev = 125 lx or equivalent R_L = 3kΩ Ta = 25˚C	-	1.3	15	μs
	"Low →High" propagation delay time	t_{PLH}		-	8.5	30	
	Rise time	t_r		-	0.1	3.0	
	Fall time	t_f		-	0.06	1.0	
Peak sensitivity wavelength		λ_P	-	-	900	-	nm

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

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

*3 Hysteresis standards for E_{VLH}/E_{VHL}.

■ Recommended Operating Conditions

(Ta=25˚C)

Parameter	Symbol	MIN.	MAX.	Unit
Supply voltage	V_{CC}	1.4	7.0	V
Output current	I_{OL}	-	1.0	mA

Fig. 1 Output Current vs. Ambient Temperature

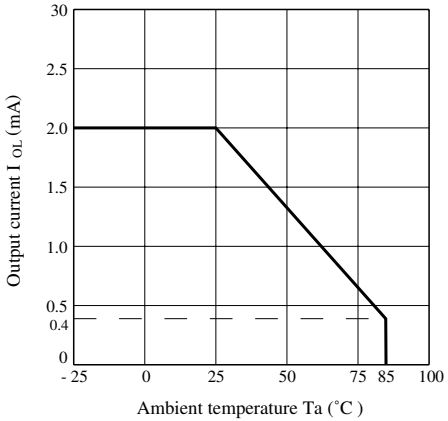


Fig. 2 Output Power Dissipation vs. Ambient Temperature

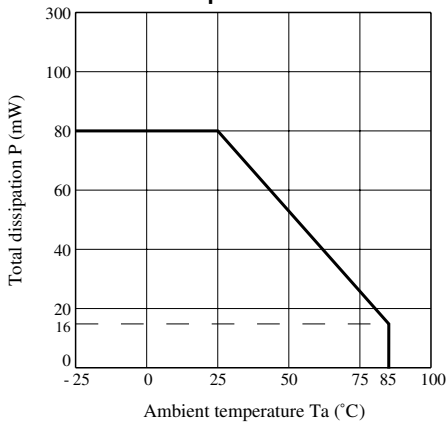


Fig. 3 Low Level Output Voltage vs. Low Level Output Current

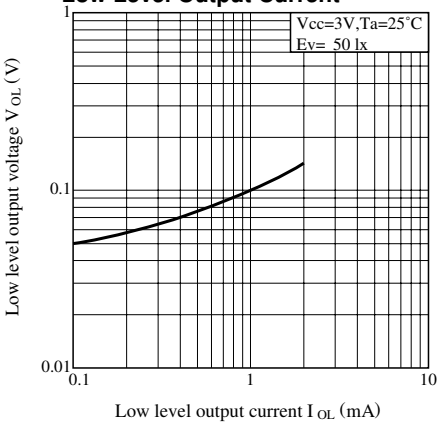


Fig. 4 Supply Current vs. Ambient Temperature

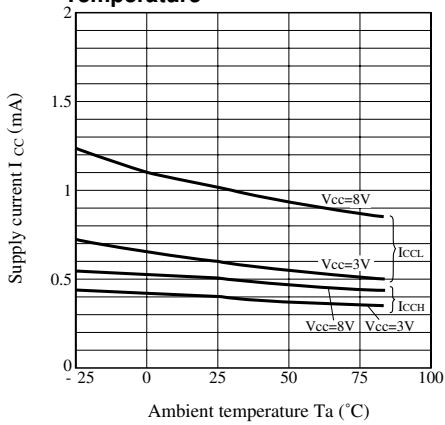
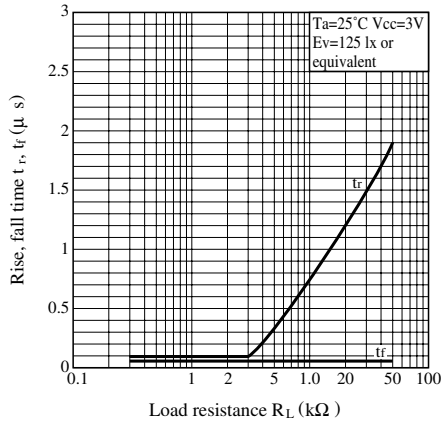


Fig. 5 Rise, Fall Time vs. Load Resistance



Test Circuit for Response Time

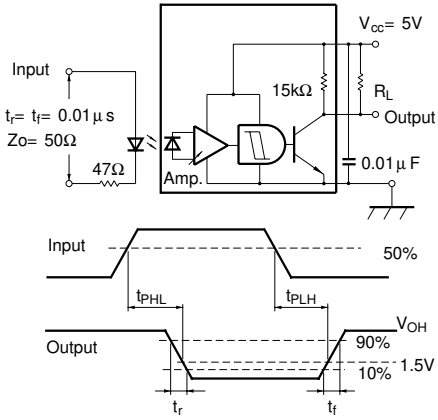


Fig. 6 Radiation Diagram

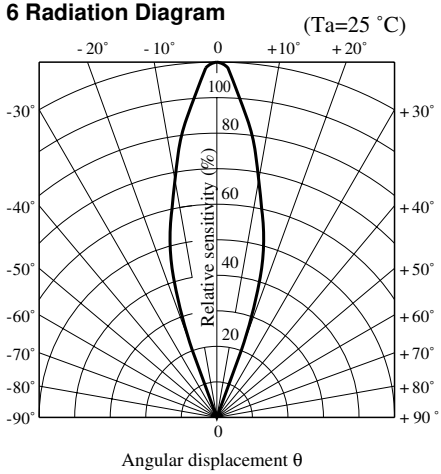
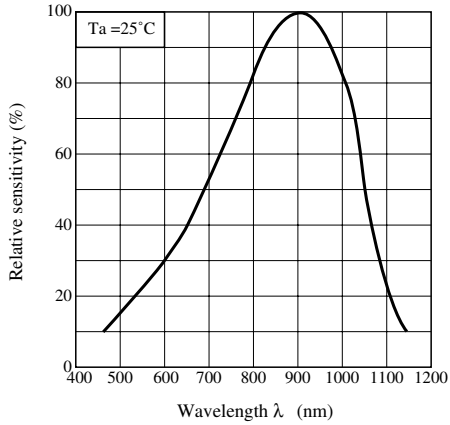


Fig. 7 Spectral Sensitivity



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

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- Industrial control
- Audio visual equipment
- Consumer electronics

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- Traffic signals
- Gas leakage sensor breakers
- Alarm equipment
- Various safety devices, etc.

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