

# IS455

## Linear Output Type OPIC Light Detector

### ■ Features

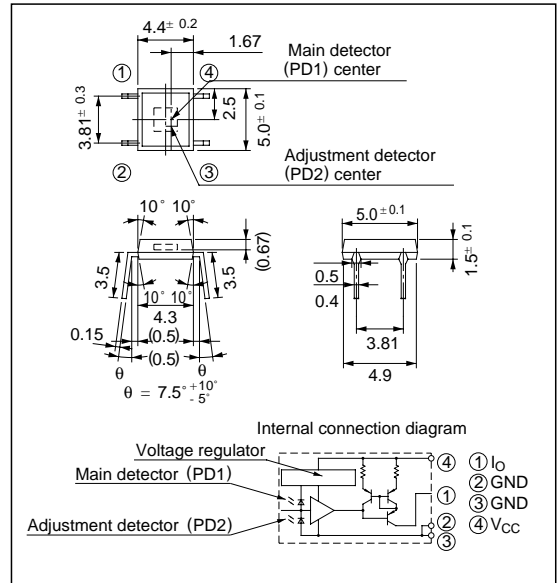
1. Linear output
2. Capable of output voltage level adjustment due to external resistor

### ■ Applications

1. Copiers

### ■ Outline Dimensions

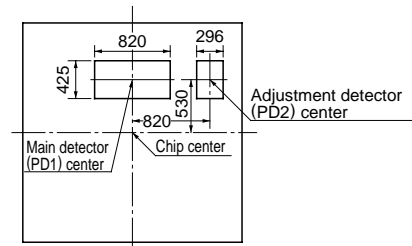
(Unit : mm)



\*\*\* 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.

### ■ Enlarged Figure of Light Detecting Portion

(Unit : μm)



### ■ Absolute Maximum Ratings (Ta= 25°C)

Parameter	Symbol	Rating	Unit
Supply voltage	V <sub>CC</sub>	-0.5 to +8	V
Output voltage	V <sub>O</sub>	-0.5 to V <sub>CC</sub>	V
Output current	I <sub>O</sub>	- 10	mA
Power dissipation	P <sub>O</sub>	150	mW
Operating temperature	T <sub>opr</sub>	-25 to +85	°C
Storage temperature	T <sub>stg</sub>	-40 to +85	°C
*1 Soldering temperature	T <sub>sol</sub>	260	°C

\*1 For 3 seconds at the position of 1mm from the bottom face of resin package.

## ■ Electro-optical Characteristics

( $T_a = 25^\circ\text{C}$ ,  $V_{CC} = 5\text{V}$ )

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Supply current	$I_{CC}$	$E_v = 0\text{ lx}$	0.2	0.55	1.0	mA
Output current 1	$I_{O1}$	$E_v = 10\text{ lx}^{*2}$	-6.5	-10	-13.5	$\mu\text{A}$
Output current 2	$I_{O2}$	$E_v = 1\ 000\text{ lx}^{*2}$	-0.65	-1	-1.35	mA
<sup>*3</sup> Output current ratio	$R_{IO}$	-	92	100	108	-
Dark output current	$I_{od}$	$E_v = 0$	-	-10	-500	nA
Peak sensitivity wavelength	$\lambda_P$	-	-	700	-	nm

<sup>\*2</sup>  $E_v$ : Illuminance by CIE standard light source A (tungsten lamp)

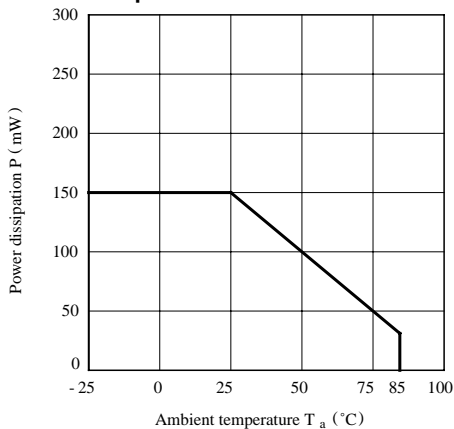
<sup>\*3</sup>  $R_{IO} = \frac{I_{O2}}{I_{O1}}$

## ■ Recommended Operating Conditions

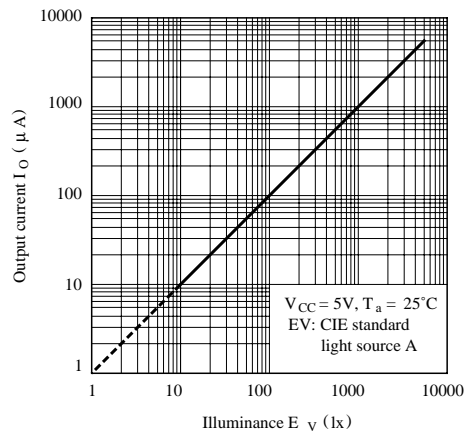
Parameter	Symbol	MIN.	MAX.	Unit
Supply voltage	$V_{CC}$	4.5	5.5	V
<sup>*4</sup> Illuminance	$E_v$	10	5\ 000	lx
Output voltage	$V_O$	0	$V_{CC} - 1.5$	V
Operating temperature	$T_{opr}$	-10	70	$^\circ\text{C}$

<sup>\*4</sup>  $E_v$ : Illuminance by standard light source A (tungsten lamp)

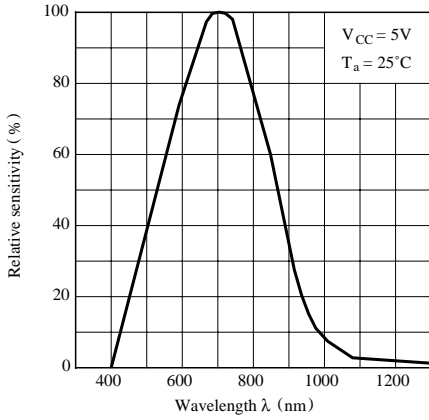
**Fig. 1 Power Dissipation vs. Ambient Temperature**



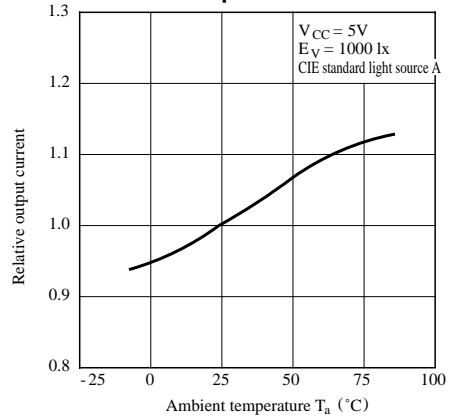
**Fig. 2 Output Current vs. Illuminance**



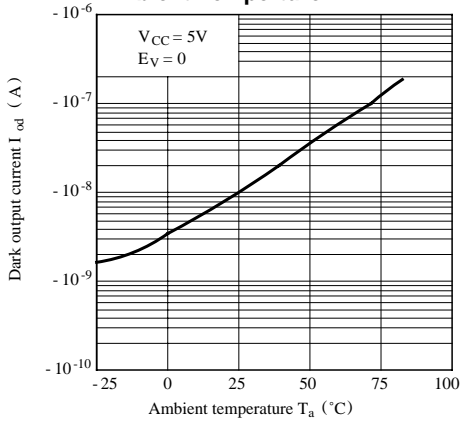
**Fig. 3 Spectral Sensitivity**



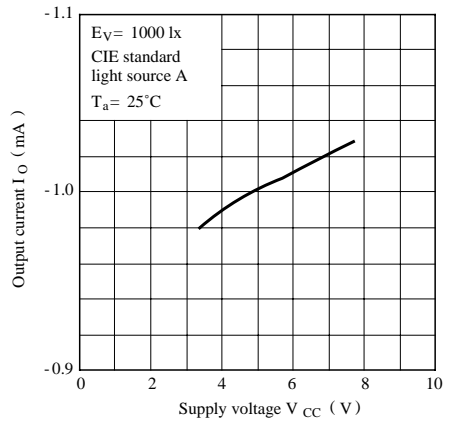
**Fig. 4 Relative Output Current vs. Ambient Temperature**



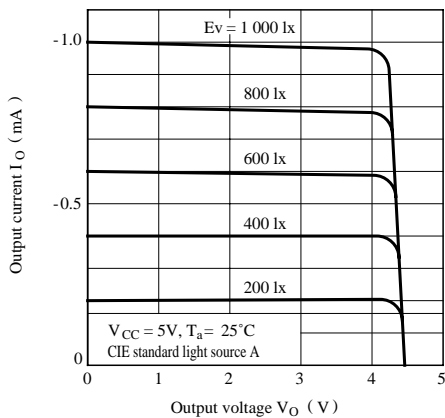
**Fig. 5 Dark Output Current vs. Ambient Temperature**



**Fig. 6 Output Current vs. Supply Voltage**



**Fig. 7 Output Current vs. Output Voltage**



**Test Circuit for Output Current vs. Output Voltage**

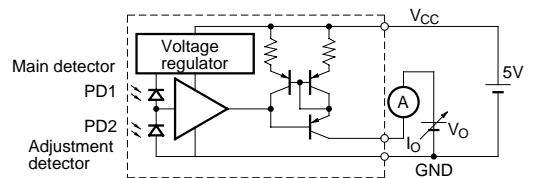


Fig. 8 Supply Current vs. Supply Voltage

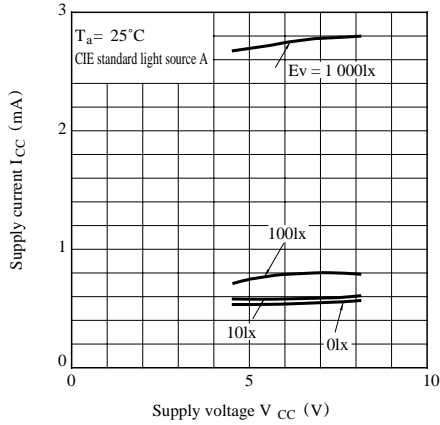


Fig. 9 Supply Current vs. Threshold Illuminance

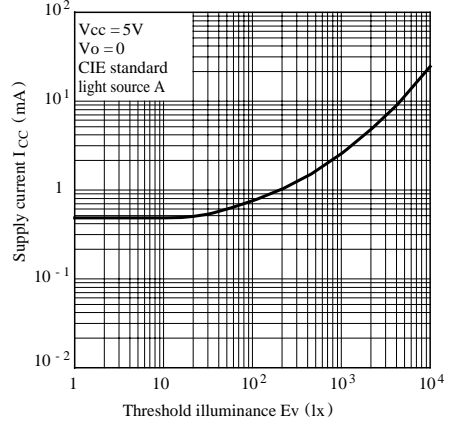
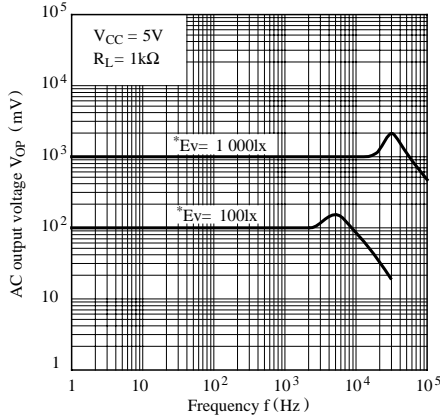


Fig.10 Frequency



Test Circuit For Frequency

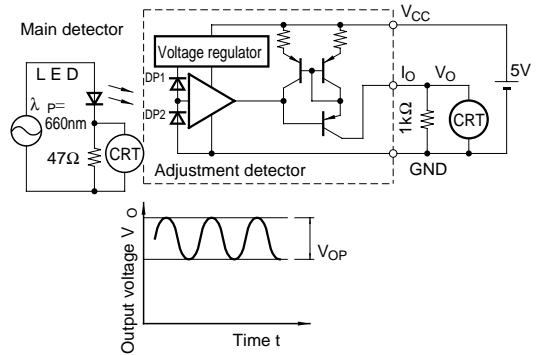


Fig.11 Supply Voltage Rejection Ratio vs. Ripple Frequency (1)

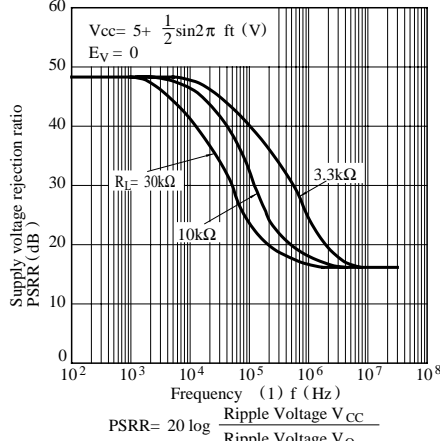
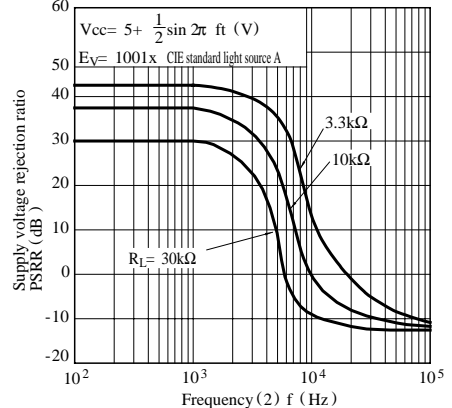


Fig.12 Supply Voltage Rejection Ratio vs. Ripple Frequency (2)



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    - Alarm equipment
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