

**NEW**

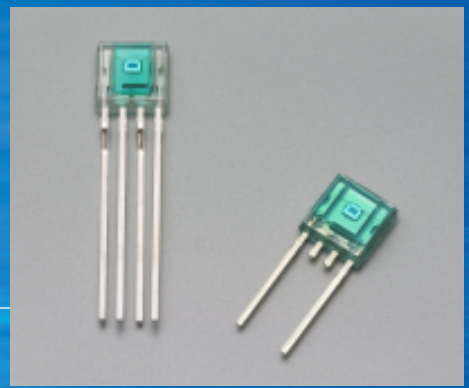
PHOTO IC

Photo IC diode

**NEW**

# S7565, S7805-10

Linear current amplification photo IC for visible range



S7565 and S7805-10 amplify the photocurrents generated in the photodiode and provide adequate output current equal to that obtained from large active area photodiodes. These photo ICs can be used in a wide range of applications involving visible light

### Features

- Visible light detection
- S7565 : Amplifies photocurrents about 1,300 times
- S7805-10: Amplifies photocurrents about 13,000 times
- Just as easy to use as a photodiode

### Applications

- Energy saving sensor for TV and air conditioners, etc.

### Absolute maximum ratings (Ta=25 °C)

Parameter	Symbol	S7565	S7805-10	Unit
Reverse voltage	VR Max.	-0.5 to +16		V
Photocurrent	IL	10		mA
Forward current	IF	10		mA
Power dissipation	P	250 *1	150 *2	mW
Operating temperature	Topr	-10 to +60		°C
Storage temperature	Tstg	-20 to +70		°C
Soldering	-	260 °C, 3 s, at least 3.6 mm away from package surface	260 °C, 3 s, at least 1.8 mm away from package surface	-

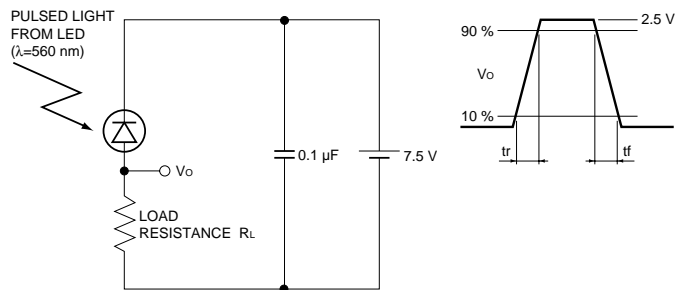
\*1: Derate power dissipation at a rate of 3.3 mW/°C above Ta=25 °C

\*2: Derate power dissipation at a rate of 2.0 mW/°C above Ta=25 °C

### Electrical and optical characteristics (Ta=25 °C, VR=5 V)

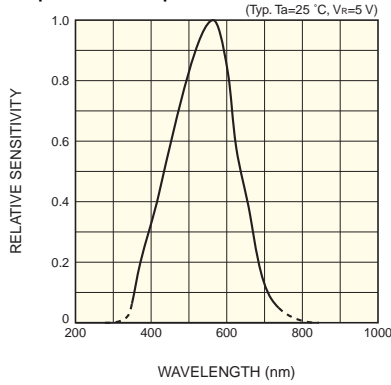
Parameter	Symbol	Condition	S7565			S7805-10			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Spectral response range	$\lambda$		-	350 to 750	-	-	350 to 750	-	nm
Peak sensitivity wavelength	$\lambda_p$		-	560	-	-	560	-	nm
Operating reverse voltage	VR		3	-	12	3	-	12	V
Dark current	ID		-	0.5	10	-	5	100	nA
Photocurrent	IL	2856 K, 1000 lx	0.24	0.32	0.4	2.25	3	3.75	mA
Rise time	tr	10 to 90 %, RL=10 kΩ	-	0.6	-	-	6	-	ms
Fall time	tf	$\lambda=560$ nm	-	0.6	-	-	6	-	ms

### Rise/fall time measurement method



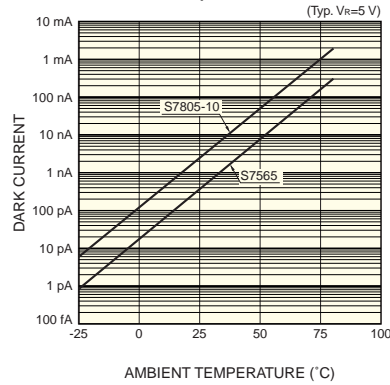
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## ■ Spectral response

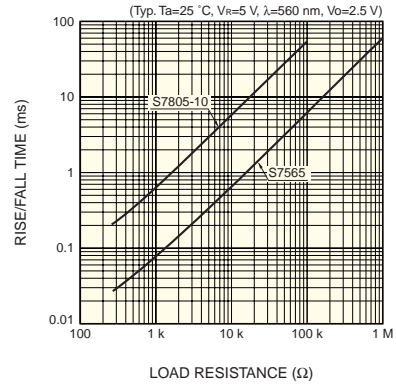


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## ■ Dark current temperature characteristics ■ Rise/fall time vs. load resistance

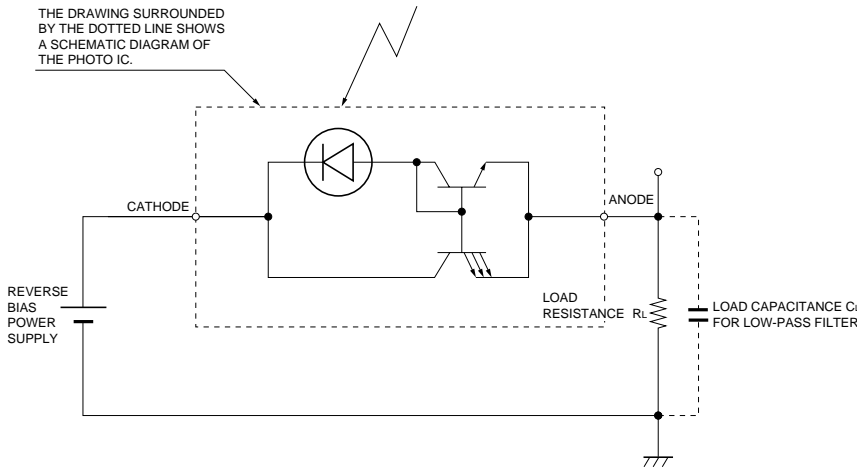


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## ■ Operating circuit example



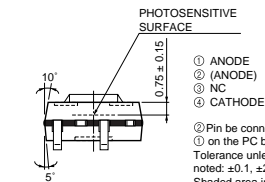
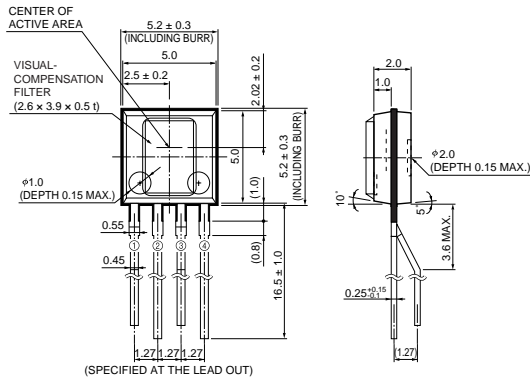
Connect a bias power supply so that a positive voltage is applied to the cathode. To remove high-frequency components from the circuit, we recommend inserting a load capacitance (CL) for low-pass filter, in parallel with a load resistance (RL). The cut-off frequency (fc) is then given by

$$\text{Cut-off frequency (fc)} \approx \frac{1}{2\pi CLRL}$$

## ■ Dimensional outlines (unit: mm)

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### S7565

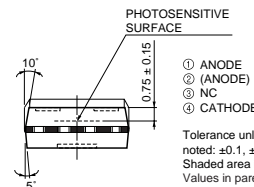
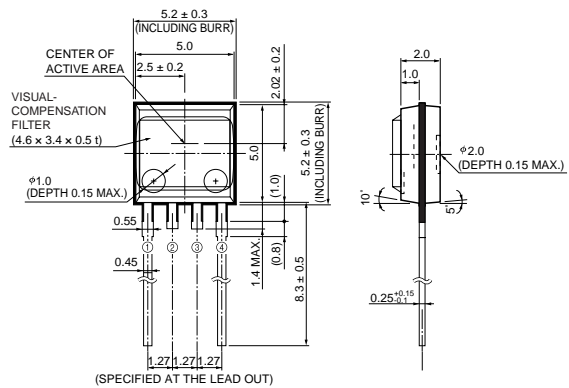


① ANODE  
② ANODE  
③ NC  
④ CATHODE

② Pin be connected to ① on the PC board.  
Tolerance unless otherwise noted: ±0.1, ±2°  
Shaded area indicates burr.  
Values in parentheses are not guaranteed, but for reference.

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### S7805-10



① ANODE  
② ANODE  
③ NC  
④ CATHODE

Tolerance unless otherwise noted: ±0.1, ±2°  
Shaded area indicates burr.  
Values in parentheses are not guaranteed, but for reference.

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