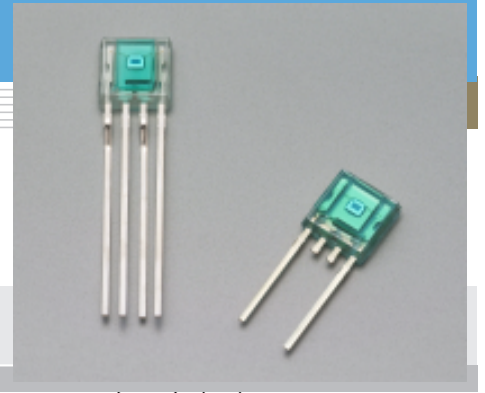


Photo IC diode

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 detection.

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 +10	-	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	-

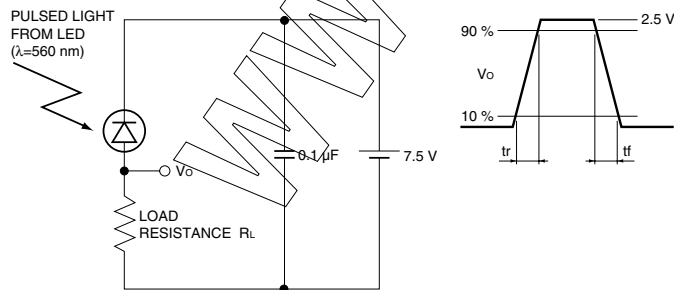
*1: Derate power dissipation at a rate of 3.3 mW/°C above Ta=25 °C

*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)

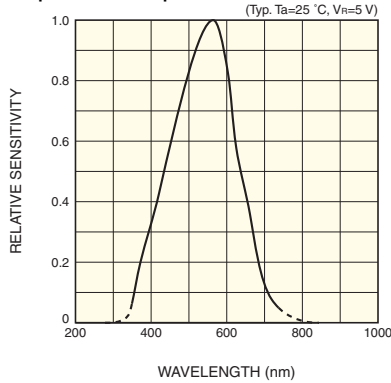
Parameter	Symbol	Condition	S7565			S7805-10			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Spectral response range	λ		-	350 to 750	-	-	350 to 750	-	nm
Peak sensitivity wavelength	λ_p		-	560	-	-	560	-	nm
Operating reverse voltage	VR		3	-	12	3	-	12	V
Dark current	ID		-	0.5	10	-	5	100	nA
Photocurrent	IL	2856 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



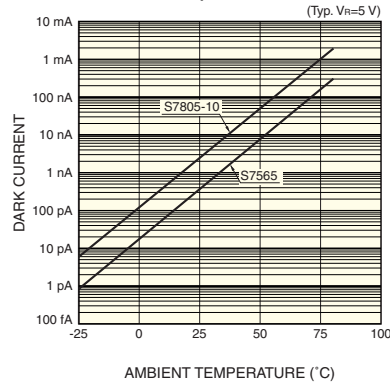
KPIC00053EA

Spectral response



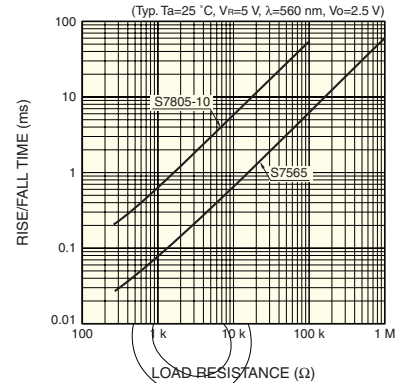
KPICB0039EA

Dark current temperature characteristics



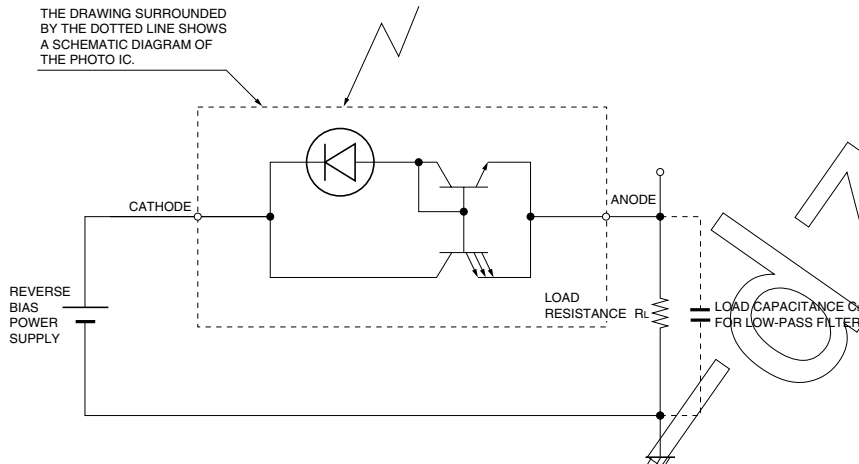
KPICB0040EA

Rise/fall time vs. load resistance



KPICB0041EA

Operating circuit example



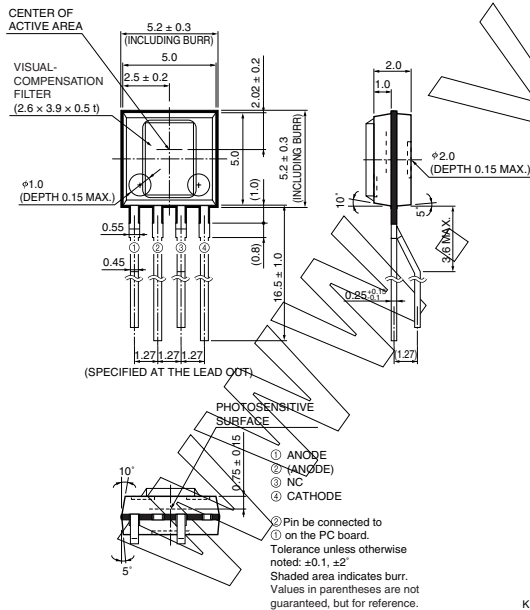
Connect a bias power supply so that a positive voltage is applied to the cathode. To remove high-frequency components from the circuit, we recommend inserting a load capacitance (C_L) for low-pass filter, in parallel with a load resistance (R_L). The cut-off frequency (f_c) is then given by

$$\text{Cut-off frequency } (f_c) \doteq \frac{1}{2\pi C_L R_L}$$

Dimensional outlines (unit: mm)

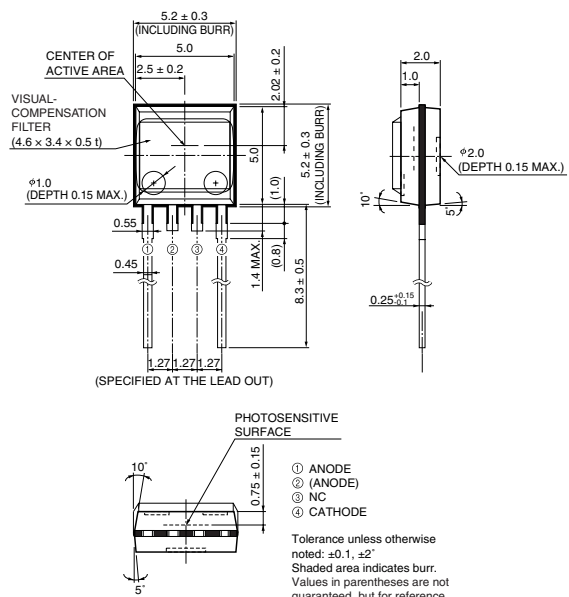
KPICC0018EA

S7565



KPICA0025EA

S7805-10



KPICA0040EA

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HAMAMATSU PHOTONICS K.K., Solid State Division

1126-1 Ichino-cho, Hamamatsu City, 435-8558 Japan, Telephone: (81) 053-434-3311, Fax: (81) 053-434-5184, <http://www.hamamatsu.com>

U.S.A.: Hamamatsu Corporation: 360 Foothill Road, P.O.Box 6910, Bridgewater, N.J. 08807-0910, U.S.A., Telephone: (1) 908-231-0960, Fax: (1) 908-231-1218

Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49) 08152-3750, Fax: (49) 08152-2658

France: Hamamatsu Photonics France S.A.R.L.: 8, Rue du Saule Trappu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: 33-(1) 69 53 71 00, Fax: 33-(1) 69 53 71 10

United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, United Kingdom, Telephone: (44) 1707-294888, Fax: (44) 1707-325777

North Europe: Hamamatsu Photonics Norden AB: Smidesvägen 12, SE-171 41 Solna, Sweden, Telephone: (46) 8-509-031-00, Fax: (46) 8-509-031-01

Italy: Hamamatsu Photonics Italia S.R.L.: Strada della Moia, 1/E, 20020 Arese, (Milano), Italy, Telephone: (39) 02-935-81-733, Fax: (39) 02-935-81-741

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