

Photo IC diode

S9648

Plastic package shaped the same as metal package



S9648 photo IC has spectral response close to human eye sensitivity. Two active areas are made on a single chip. Almost only the visible range can be measured by finding the difference between the two output signals in the internal current amplifier circuit. Compared to the conventional type, S9648 offers lower output fluctuations for light sources producing the same illuminance at different color temperatures. S9648 is encapsulated in a plastic package having the same shape as to metal packages. The shape of S9648 also resembles our 5R type visible sensors (CdS photoconductive cells), so S9648 can be used as a replacement for those visible sensors.

Features

- Spectral response close to human eye sensitivity is attained without using visual-compensated filter.
- Operation just as easy to use as a photodiode
- Lower output-current fluctuations compared with phototransistors and CdS photoconductive cells.
- Excellent linearity
- Low output fluctuations for light sources producing the same illuminance at different color temperatures

Applications

- Energy-saving sensor for TVs, etc.
- Light dimmers for liquid crystal panels
- Various types of light level measurement

■ Absolute maximum ratings (Ta=25 °C)

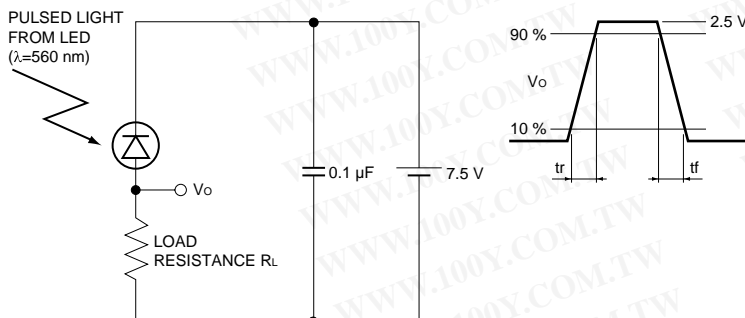
Parameter	Symbol	Value	Unit
Maximum reverse voltage	VR Max.	-0.5 to 16	V
Photocurrent	IL	10	mA
Forward current	IF	10	mA
Power dissipation *1	P	250	mW
Operating temperature	Topr	-30 to +80	°C
Storage temperature	Tstg	-40 to +85	°C

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

■ Electrical and optical characteristics (Ta=25 °C, unless otherwise noted.)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range	λ		-	320 to 820	-	nm
Peak sensitivity wavelength	λ_p		-	560	-	nm
Dark current	ID	VR=5 V	-	1.0	50	nA
Photocurrent	IL	VR=5 V, 100 lx	-	0.29	-	mA
Rise time *2	tr	10 to 90 %, VR=7.5 V RL=10 k Ω , λ =560 nm	-	6.0	-	ms
Fall time *2	tf	90 to 10 %, VR=7.5 V RL=10 k Ω , λ =560 nm	-	2.5	-	ms

*2: Rise/fall time measurement method

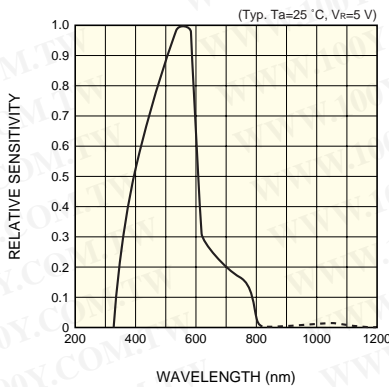


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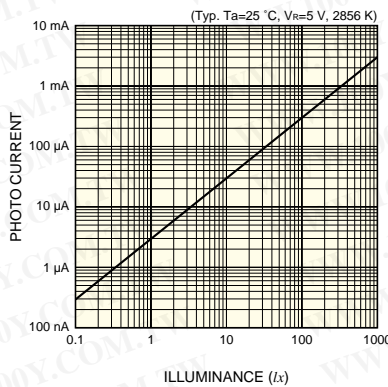
勝特力材料 886-3-5753170
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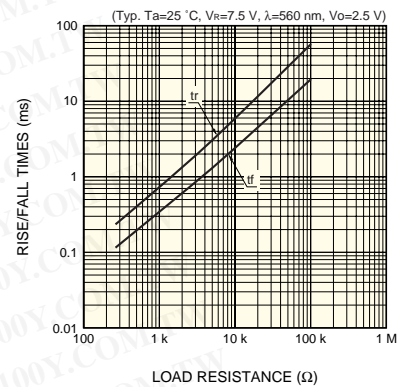
■ Spectral response



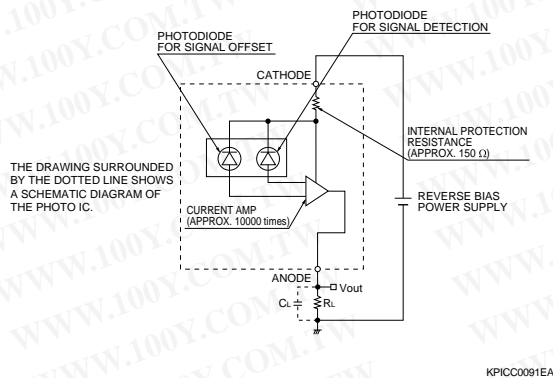
■ Linearity



■ Rise/fall times vs. load resistance



■ Operating circuit example

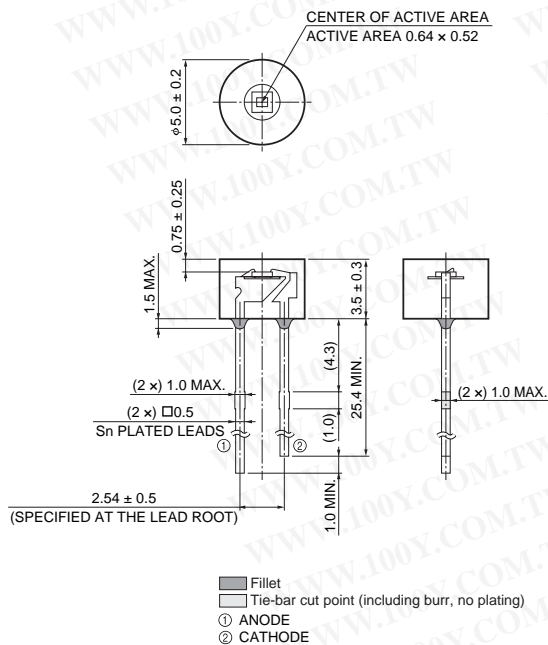


The photo IC diode must be reverse-biased so that a positive potential is applied to the cathode.

To eliminate high-frequency components, we recommend placing a load capacitance CL in parallel with load resistance RL as a low-pass filter.

$$\text{Cut-off frequency } f_c \cong \frac{1}{2\pi CLRL}$$

■ Dimensional outline (unit: mm)



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HAMAMATSU

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 Trapu, 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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