#### PHOTO IC

# Photo IC diode assembly **S10108, S10109**



For flame eye/using photo IC diode (RoHS compliance) instead of CdS cell

S10108 and S10109 sensors are designed specifically for flame detection (flame eye) in oil-fired hot water boilers and heaters. These sensors incorporate a photo IC diode instead of conventional CdS cells and are available with 2 types of incident light direction (head-on type S10108: and side-on type: S10109). Each sensor is assembled in an easy-to-install package along with the cable.

Applications

Flame detection in oil boilers and heaters

Photorelay control devices

Safety devices and alarms for heat generating devices

#### Features

- Spectral response suitable for detecting oil burner
- Easy-to-install assembly with cable
- Little variation in output current and good linearity (in comparison with conventional types using phototransistors and CdS cells)
- RoHS compliant products

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

Parameter	Symbol	Value	Unit		
Maximum reverse voltage	VR Max.	-0.5 to +16	V		
Photocurrent	١L	10	mA		
Forward current	lF	10	mA		
Power dissipation *1	Р	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)

Parameter	Symbol	Condition	Min.	Тур.	Max.	Unit
Spectral response range	λ		-	300 to 820	-	nm
Peak sensitivity wavelength	λρ		-	560	-	nm
Dark current	lD	VR=5 V	-	1.0	50	nA
Photocurrent	ΙL	VR=5 V, 100 <i>lx</i>	0.19	0.31	0.48	mA
Rise time *2	tr	10 to 90 %, VR=7.5 V RL=10 kΩ, λ=560 nm	-	6.0	-	ms
Fall time *2	tf	90 to 10 %, VR=7.5 V RL=10 kΩ, λ=560 nm	-	2.5	-	ms

\*2: Rise/fall time measurement method





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#### Note)

- The photo IC diode has a specific polarity (anode/cathode). Be careful to make the correct connection.
- · The photo IC diode must be reverse-biased so that a positive potential is applied to the cathode.
- · Set load resistance R by taking the latter circuit into account.

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

Cut-off frequency fc  $= \frac{1}{2\pi CLRL}$ 

 Before using, check whether noise is present in the location where this product is used. Take measures to prevent noise as needed, for example, by shielding the cable or adding a capacitor (about 0.1 µF between the anode and cathode of the photo IC diode).

S10108 (head-on type) 44 34 ∞ţ PHOTO IC DIODE 6.5 ♦9.5 MAX. INPUT LIGHT 8.2 6.5 3.8 22 g 2-CONDUCTOR FLAT CABLE 2 Þ15 650<sup>+50</sup>

Dimensional outlines (unit: mm)



#### 2-conductor flat cable

Color	Conductor cross-section area	Dimension	Pin connection	
White	0.3 mm <sup>2</sup>	φ1.6 mm	Anode	
With red line	0.3 mm <sup>2</sup>	φ1.6 mm	Cathode	

These products have a shape designed for specific use in flame detection applications. Before using, however, please test these products in actual equipment to ensure their characteristics and reliability.



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