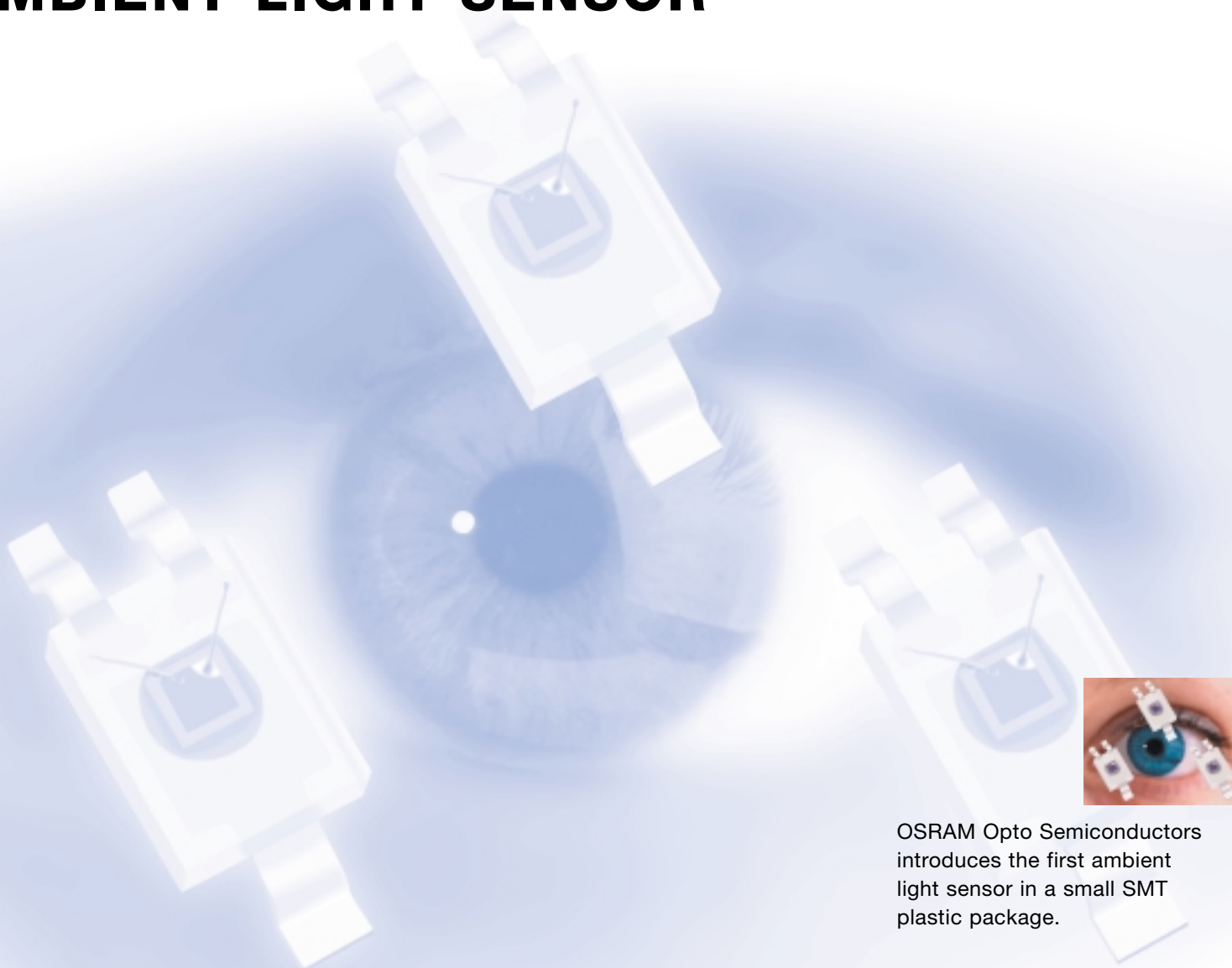


THE CUSTOMERS' PARTNER OF CHOICE

SILICON EYE – AMBIENT LIGHT SENSOR



OSRAM Opto Semiconductors introduces the first ambient light sensor in a small SMT plastic package.

Opto Semiconductors

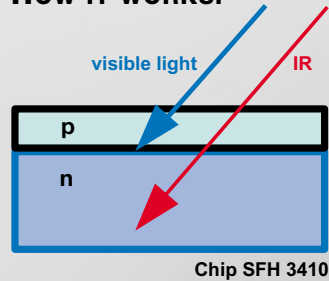


OSRAM

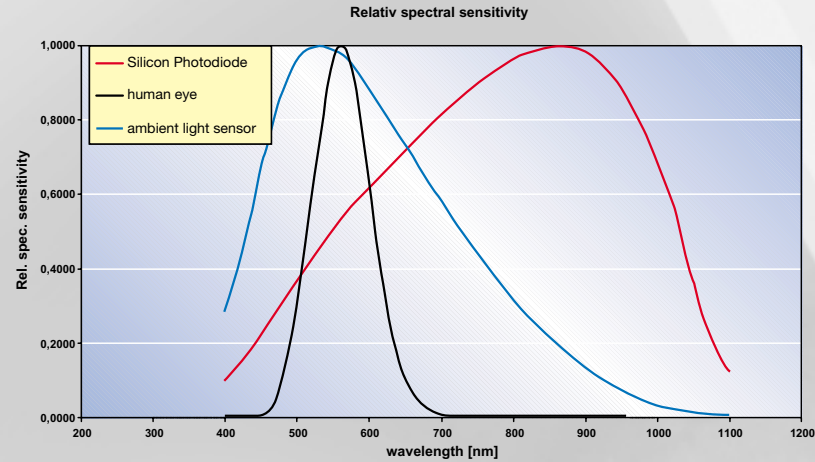
THE NEW SILICON SENSOR SEEING LIGHT THE WAY

Regular silicon detectors have their maximum sensitivity in the IR range, and thus behave considerably different from human eyes. If they are used as ambient light sensors, i.e. to adjust display backlighting, one has to cope with inaccurate results due to differences in the IR spectra of various light sources.

HOW IT WORKS:

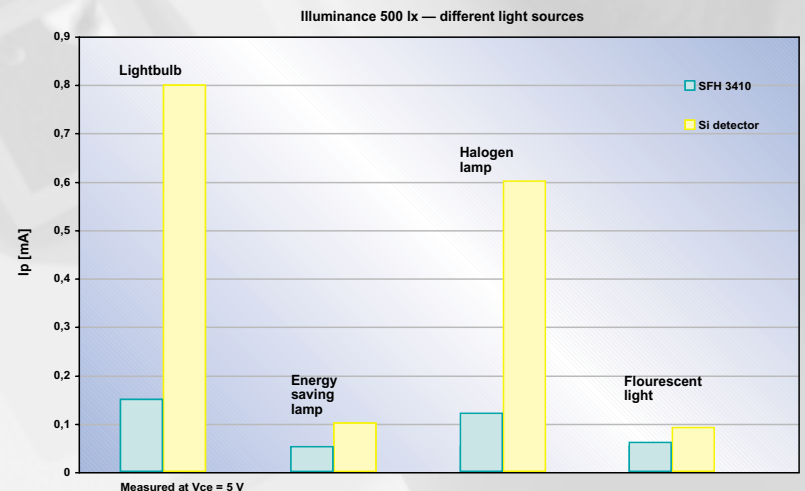
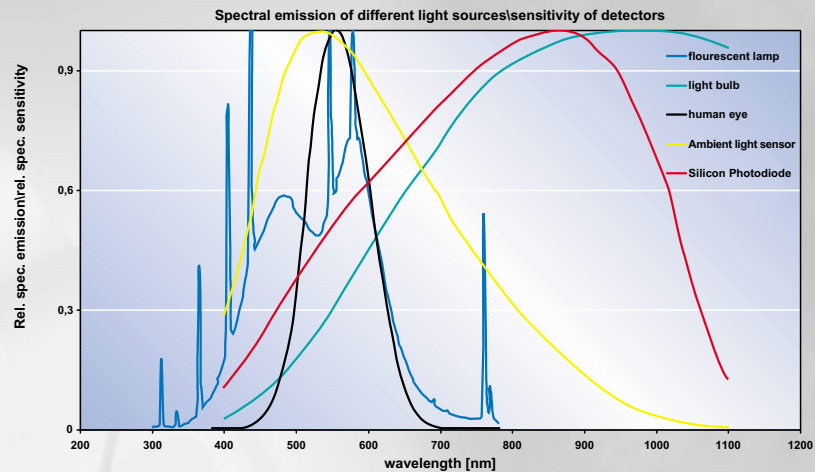


Principle: penetration depth of visible radiation is smaller than that of IR radiation. Therefore a pn-junction closely under the surface mainly detects visible light.



DIFFERENT EMISSIONS SPECTRA, ONE "HUMAN" SENSOR MIND

With the new technology our silicon sensor "sees" the way our eyes do and is not fooled by artificial light from lightbulbs, fluorescent lamps and other light sources. These lamps are all characterized by different emission spectra which then lead to different signals at the standard sensor, even though our eyes do not recognize any difference in brightness.



Photocurrents of different light sources – regular Silicon detector versus ambient light sensor

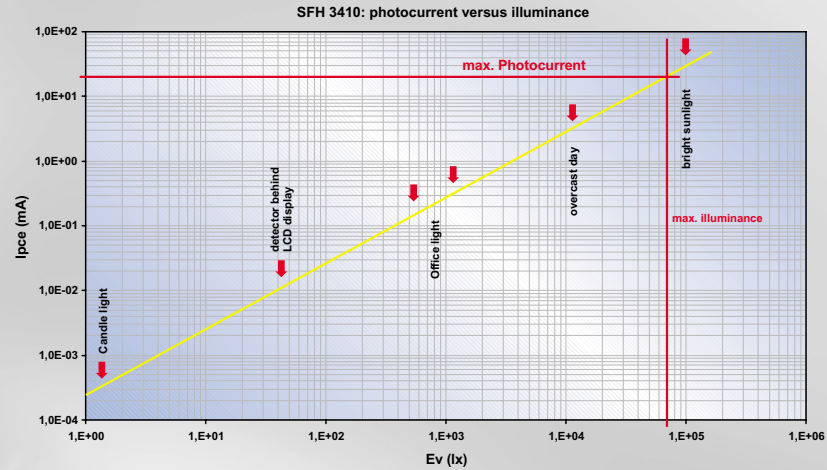


OSRAM Opto Semiconductors GmbH & Co. OHG (OSRAM OS), founded on 1 January 1999, is a joint venture between OSRAM GmbH and Infineon Technologies AG. OSRAM OS was established to continue the activities of Siemens in the optoelectronic semiconductors business. OSRAM GmbH holds a majority share of 51% and is responsible for the executive management of the company. OSRAM Opto Semiconductors offers the customer solutions based on semiconductor technology – for illumination, sensor engineering and visualization applications. OSRAM Opto Semiconductors builds upon and combines the experience and expertise of two major players in the global market. The two major players are OSRAM, one of the world's three largest lamp manufacturers, and Infineon Technologies, a company that ranks among the top ten semiconductor producers in the world.

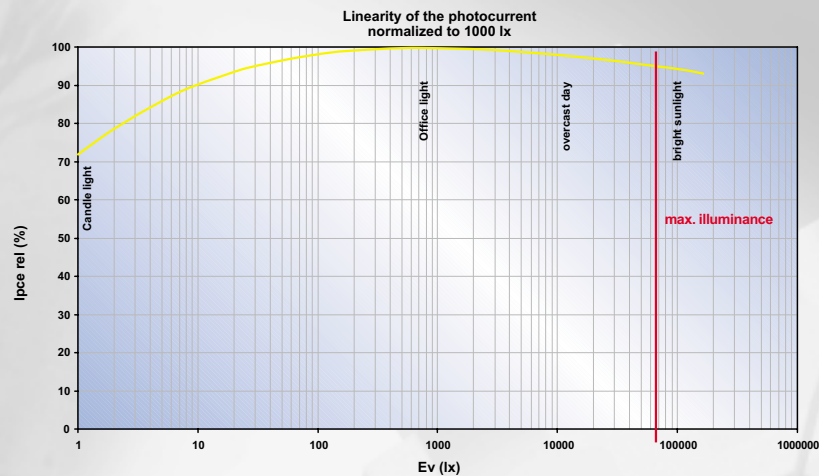
HUMAN EYES DO.

TYPICAL APPLICATION: LCD DISPLAY

Normally the sensor is mounted behind the display. The transmission factor of a transmissive or transreflective LCD display is roughly 20 %. To be on the safe side, the sensor has to function down to a transmission of 10 %. 500 lx ambient light (i.e. office illumination) will result in 50 lx behind the display. This leads to a photocurrent of ca. 30 μ A. For negativ displays the transmission is too low, unless the sensor is placed behind a window.



Typical photocurrents for several light sources;
Max. photocurrent 20 mA



SFH 3410: the highest linearity is achieved
between 100 lx and 1000 lx.



COMPACT DIMENSIONS, MANIFOLD APPLICATIONS

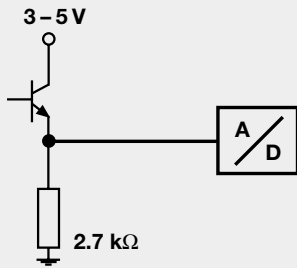
The chip is packed into a SMART DIL housing, resulting in a particularly compact sensor and very low cost. The sensor is used especially to control backlighting of dashboards, audio sets and aircon units in cars as well as for portable devices and consumer applications.

KEY PARAMETERS SFH 3410	
package dimensions	2 mm x 2.5 mm x 1 mm
Top, Tst	-40 ... +85 °C
max sensitivity at	570 nm
photo current (at 100 lx, Vce 5 V)	40 μ A

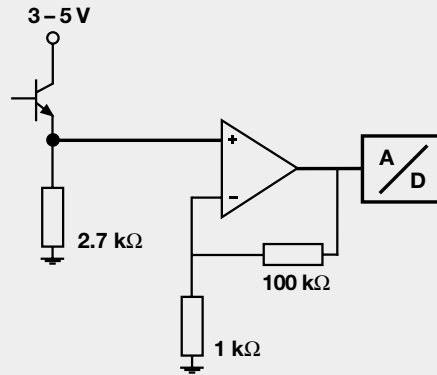
ORDERING INFORMATION	
part number	SFH3410
ordering code	Q62702P5160
packing	Tape and reel

TECHNICAL DATA

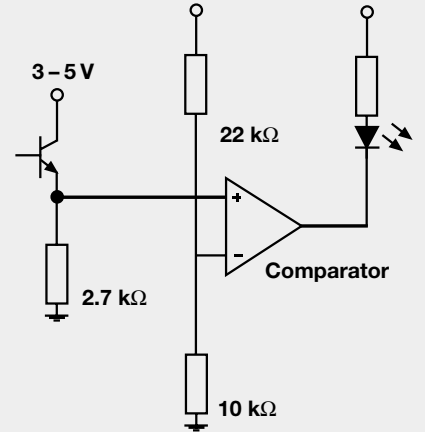
Some suitable driving circuits:



Ev: 10 lx – 1000 lx
I_p: 4 μA – 400 μA
V_{out}: 10 mV – 1 V



Low illuminance application
(detector behind LCD display)
Ev: 0.1 lx – 10 lx*
I_p: 30 nA – 4 μA
V_{out}: 10 mV – 1 V
** influence by dark current*



Light source control,
switch on at Ev < 100 lx



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