Product Document

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Light-to-Digital Device Family

www.ams.com/TSL2540

TSL2540 – Ambient Light Sensor Family

- Very high sensitivity behind spectrally distorting materials
- Provides near photopic responsiveness while allowing lux calculation regardless of glass type
- Wide dynamic range enables dark room to sunlight operation

Sensing is life.

General Description

The TSL2540 is a very-high sensitivity light-to-digital converter that approximates the human eye response to light intensity under varying lighting conditions and transforms this light intensity to a digital signal output capable through a 1.8V I²C interface. The ALS sensor features two output channels, a visible channel and an IR channel. The visible channel has a photodiode with a photopic Interferometric UV and IR blocking filter and the IR channel has a photodiode with an IR pass filter. Each channel has a dedicated integrating data converter which converts photodiode current into a 16-bit digital output. This digital output can be interfaced with a microprocessor where illuminance in lux is derived to accurately measure ambient light to control a displays backlight.

Applications

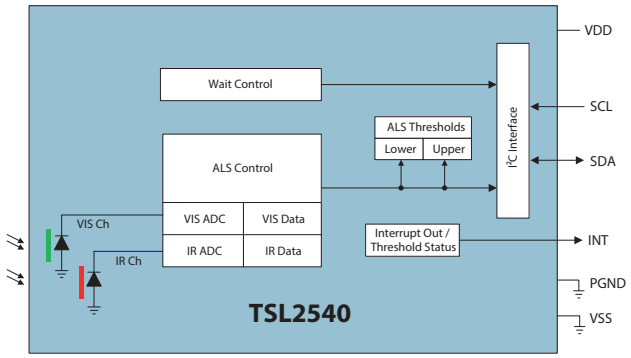
- Digital home assistants
- Smartwatch wearables
- Display backlight control
- Tablets
- Smartphones
- Medical diagnostics

Device	Package	I²C Interface		Ordering Number
		Address	Bus Voltage	
TSL2540	OQFN	0X39	1.8V	TSL25403

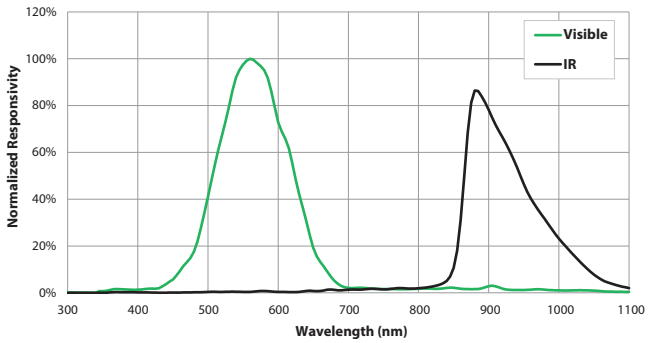
Features

- Integrated on-chip photopic filter
- Programmable analog gain and integration time
- 0.18µm process technology with 1.8V I²C
- 1M:1 Dynamic Range
- Automatic AUTO Zero/Dark Count control
- 5.0 µA Sleep State
- I²C fast-mode compatible interface
  - Data Rates up to 400 kbit/s
- 2.0 mm x 2.0 mm x 0.5mm OQFN package

TSL2540 Block Diagram



TSL2540 Spectral Responsivity



www.ams.com
products@ams.com

Headquarters
ams AG
Tobelbader Strasse 30, 8141 Premstaetten, Austria
Phone +43 3136 500-0 · Fax +43 3136 525-01

Sales Offices Worldwide
sales-europe@ams.com
sales-asia@ams.com
sales-americas@ams.com