

TSL2585

Miniature Ambient Light Sensor with UV and Light Flicker Detection

General Description

The TSL2585 incorporates Photopic, IR and UV photodiodes that are connected to 3 modulators, provides concurrent ambient light sensing, UV sensing and light flicker detection. The device comes in a low-profile and small footprint, L2.0mm x W1.0mm x H0.35mm OLGA package.

The Photopic photodiode area is covered with an optimized Photopic filter. In association with dedicated IR channel, this architecture accurately measures ambient light and enables the calculation of irradiance of different light sources. Calculation results help to automatically optimize display brightness under different lighting conditions for a better user experience.

The device also integrates functionality of ambient light flicker detection. It is executed in parallel with ambient light sensing by using the same photodiodes. The flicker detection engine will sample and buffer data for calculating flicker frequencies externally on a host CPU.

The UV photodiode area is covered with a band-pass UV filter. In combination with Photopic and IR channels, it is possible to estimate ambient UV index by running an algorithm externally on a host CPU.

Key Benefits & Features

The benefits and features of TSL2585 are listed below:

Figure 1:
Added Value of Using TSL2585

Benefits	Features
<ul style="list-style-type: none"> Invisible ALS sensing under any glass type 	<ul style="list-style-type: none"> Configurable, high sensitivity <ul style="list-style-type: none"> Programmable gain and integration time 4098x dynamic range by gain adjustment only 1mlux detectable illuminance Tailored ALS response <ul style="list-style-type: none"> Photopic filter for visible channel Independent IR channel ALS interrupt with thresholds
<ul style="list-style-type: none"> Integrated light flicker detection on chip 	<ul style="list-style-type: none"> Concurrent flicker and ALS measurement with new simplified readout methodology Independently configurable sample time Up to 7kHz flicker detection (14kHz sampling) FIFO buffer interrupt
<ul style="list-style-type: none"> Auxiliary information for ambient UV index estimation 	<ul style="list-style-type: none"> UVA channel with independent and programmable channel gain Photopic filter for visible channel Independent IR channel
<ul style="list-style-type: none"> Low power consumption and minimum I²C traffic 	<ul style="list-style-type: none"> 1.8V_{DD} operation Configurable sleep mode Interrupt-driven device I²C interface up to 1Mbit/s (Fast mode)
<ul style="list-style-type: none"> Integrated status checking for all functions 	<ul style="list-style-type: none"> Digital and analog saturation flags
<ul style="list-style-type: none"> Reduced I²C bus traffic load 	<ul style="list-style-type: none"> On chip data compression

Applications

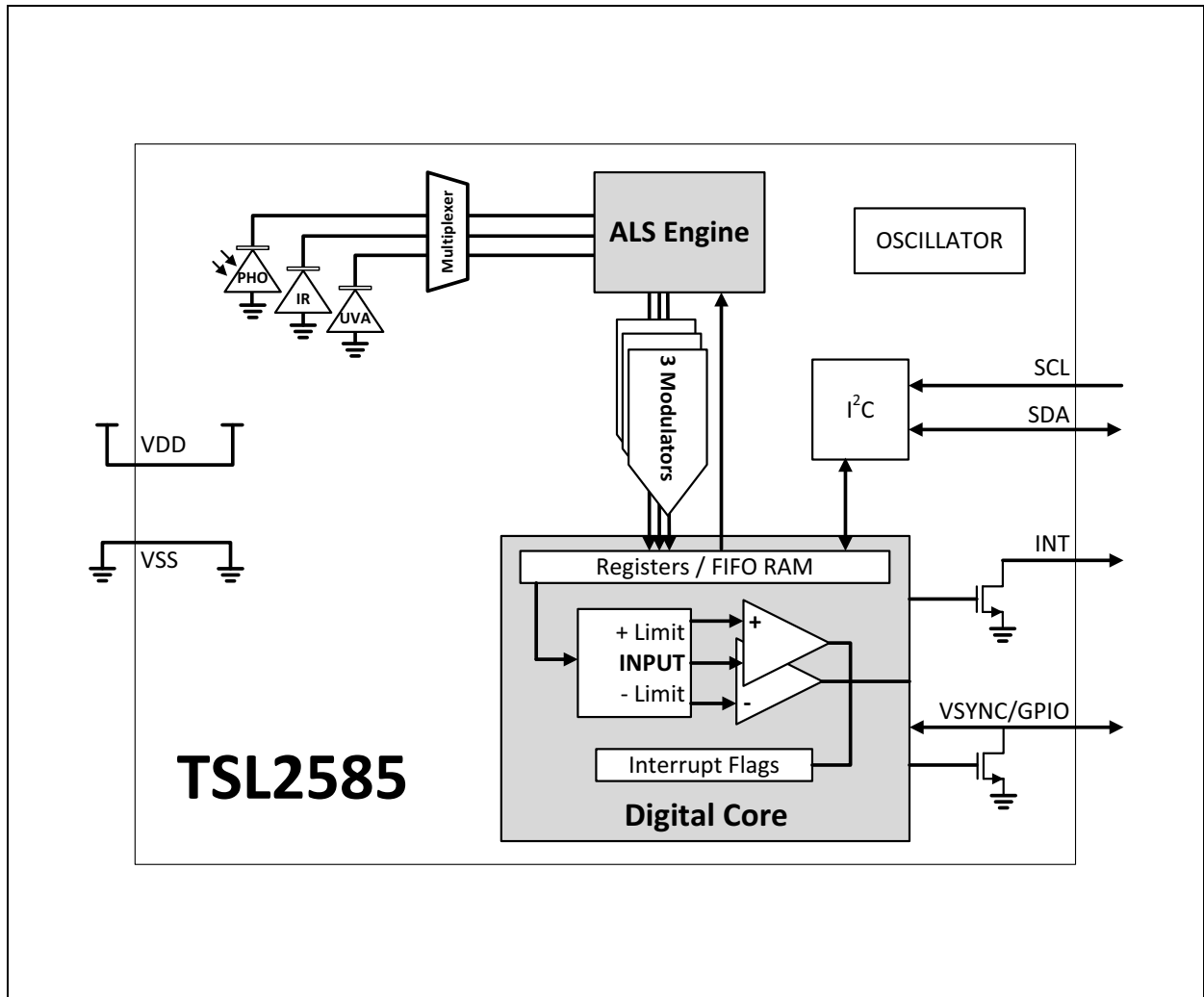
TSL2585 integrates multiple applications within one device. The applications include:

- Ambient light sensing for display brightness management
- Ambient UV index estimation
- Auto exposure and flicker detection for camera assistance

Block Diagram

The functional blocks of this device are shown below:

Figure 2:
Functional Blocks of TSL2585



Pin Assignments

Figure 3:
Pin Diagram of TSL2585 (top view)

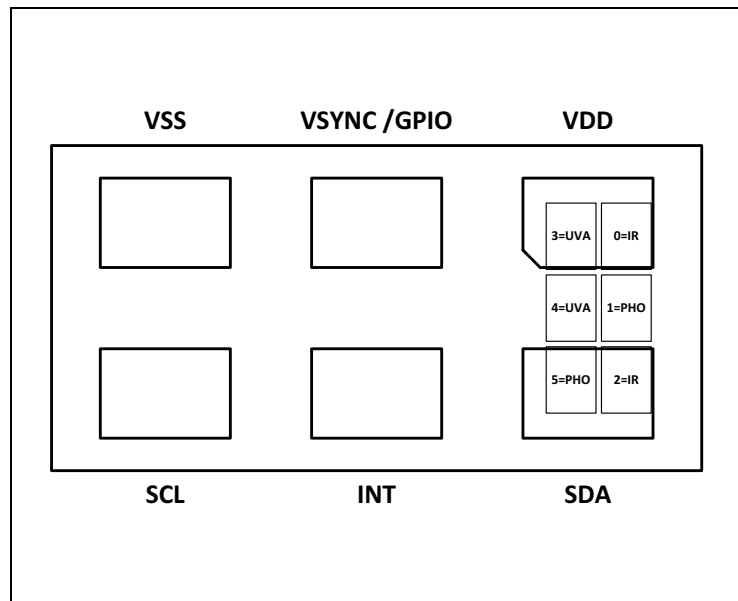


Figure 4:
Pin Description of TSL2585

Pin Number	Pin Name	Description
1	VDD	Supply voltage (1.8V)
2	VSYNC/GPIO	Synchronization input OR General Purpose open-drain Input/Output
3	VSS	Ground. All voltages are referenced to VSS.
4	SCL	I ² C serial clock terminal
5	INT	Interrupt. Open-drain output.
6	SDA	I ² C serial data I/O terminal

Ordering & Contact Information

Figure 5:
Ordering Information

Ordering Code	Address	Interface	Delivery Form	Delivery Quantity
TSL25853P	0x39	1.8V I ² C	Tape & Reel	10000 pcs/reel

Buy our products or get free samples online at:

www.ams.com/Products

Technical Support is available at:

www.ams.com/Technical-Support

Provide feedback about this document at:

www.ams.com/Document-Feedback

For further information and requests, e-mail us at:

ams_sales@ams.com

For sales offices, distributors and representatives, please visit:

www.ams.com/Contact

Headquarters

ams AG

Tobelbader Strasse 30

8141 Premstaetten

Austria, Europe

Tel: +43 (0) 3136 500 0

Website: www.ams.com

RoHS Compliant & ams Green Statement

RoHS: The term RoHS compliant means that ams AG products fully comply with current RoHS directives. Our semiconductor products do not contain any chemicals for all 6 substance categories plus additional 4 substance categories (per amendment EU 2015/863), including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, RoHS compliant products are suitable for use in specified lead-free processes.

ams Green (RoHS compliant and no Sb/Br/Cl): ams Green defines that in addition to RoHS compliance, our products are free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material) and do not contain Chlorine (Cl not exceed 0.1% by weight in homogeneous material).

Important Information: The information provided in this statement represents ams AG knowledge and belief as of the date that it is provided. ams AG bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. ams AG has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. ams AG and ams AG suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

Copyrights & Disclaimer

Copyright ams AG, Tobelbader Strasse 30, 8141 Premstaetten, Austria-Europe. Trademarks Registered. All rights reserved. The material herein may not be reproduced, adapted, merged, translated, stored, or used without the prior written consent of the copyright owner.

Devices sold by ams AG are covered by the warranty and patent indemnification provisions appearing in its General Terms of Trade. ams AG makes no warranty, express, statutory, implied, or by description regarding the information set forth herein. ams AG reserves the right to change specifications and prices at any time and without notice. Therefore, prior to designing this product into a system, it is necessary to check with ams AG for current information. This product is intended for use in commercial applications. Applications requiring extended temperature range, unusual environmental requirements, or high reliability applications, such as military, medical life-support or life-sustaining equipment are specifically not recommended without additional processing by ams AG for each application. This product is provided by ams AG "AS IS" and any express or implied warranties, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose are disclaimed.

ams AG shall not be liable to recipient or any third party for any damages, including but not limited to personal injury, property damage, loss of profits, loss of use, interruption of business or indirect, special, incidental or consequential damages, of any kind, in connection with or arising out of the furnishing, performance or use of the technical data herein. No obligation or liability to recipient or any third party shall arise or flow out of ams AG rendering of technical or other services.

Revision Information

This short datasheet is derived from v1-00 of full datasheet.