Product Document

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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

• Invisible ALS sensing under any glass type	• Configurable, high sensitivity
	  • Programmable gain and integration time
	  • 4098x dynamic range by gain adjustment only
	  • 1mlux detectable illuminance
	• Tailored ALS response
	  • Photopic filter for visible channel
	  • Independent IR channel
	• ALS interrupt with thresholds

• Integrated light flicker detection on chip	• Concurrent flicker and ALS measurement with new simplified readout methodology • Independently configurable sample time • Up to 7kHz flicker detection (14kHz sampling) • FIFO buffer interrupt
• Auxiliary information for ambient UV index estimation	• UVA channel with independent and programmable channel gain • Photopic filter for visible channel • Independent IR channel
• Low power consumption and minimum I^2C traffic	• $1.8V_{DD}$ operation • Configurable sleep mode • Interrupt-driven device • I^2C interface up to 1Mbit/s (Fast mode)
• Integrated status checking for all functions	• Digital and analog saturation flags
• Reduced I^2C bus traffic load	• On chip data compression

Applications

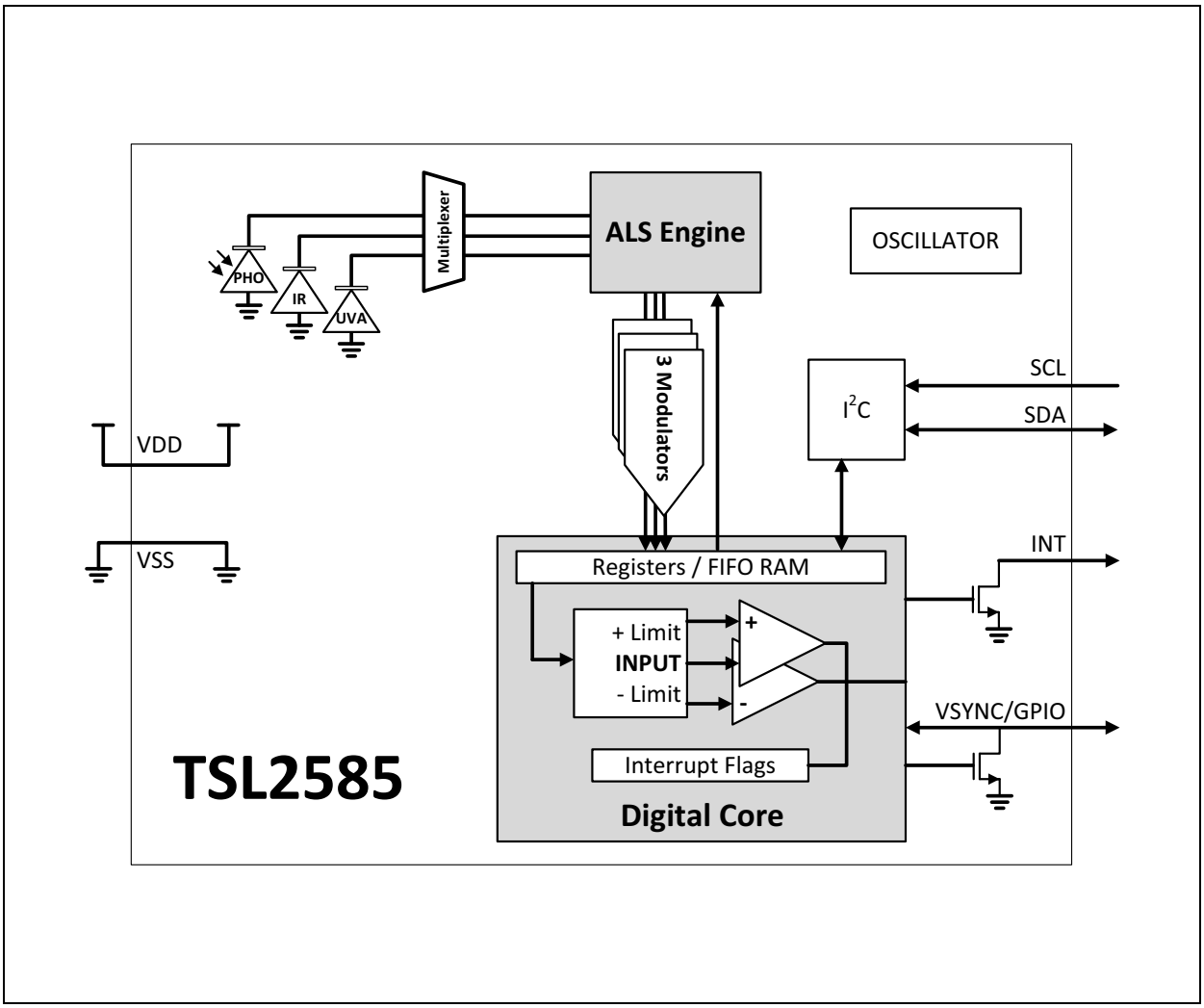
TSL2585 integrates multiple applications within one device. The applications include:

- 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)

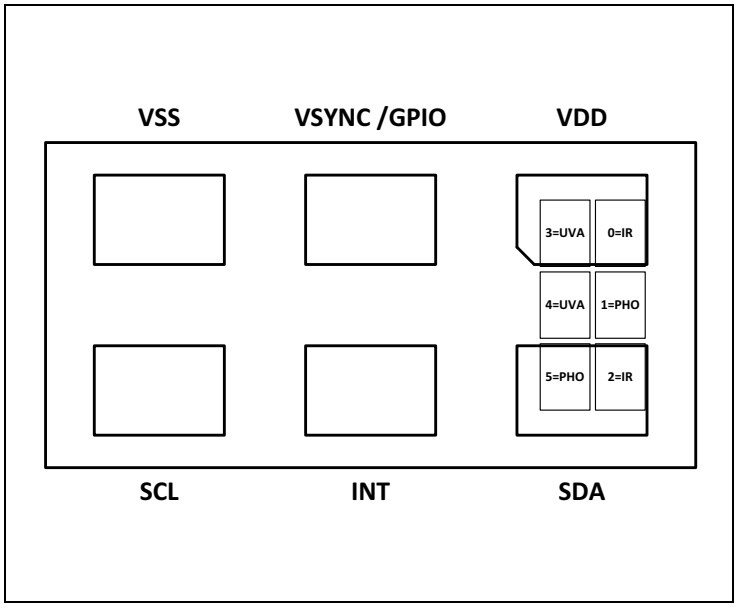


Figure 4:
Pin Description of TSL2585

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^2C serial clock terminal
5	INT	Interrupt. Open-drain output.
6	SDA	I^2C 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^2C	Tape & Reel	10000 pcs/reel

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Revision Information

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