

ISL29034

Integrated Digital Light Sensor

FN8370
Rev 2.00
August 19, 2016

The [ISL29034](#) is an integrated ambient and infrared light-to-digital converter with I²C (SMBus compatible) interface. Its advanced self-calibrated photodiode array emulates human eye response with excellent IR rejection. The on-chip ADC is capable of rejecting 50Hz and 60Hz flicker caused by artificial light sources. The Lux range select feature allows users to program the Lux range for optimized counts/Lux.

For ambient light sensing, an internal 16-bit ADC has been designed based upon the charge-balancing technique. The ADC conversion time is nominally 105ms and is user selectable from 11μs to 105ms, depending on oscillator frequency and ADC resolution. In normal operation, typical current consumption is 57μA. In order to further minimize power consumption, two power-down modes have been provided. If polling is chosen over continuous measurement of light, the auto power-down function shuts down the whole chip after each ADC conversion for the measurement. The other power-down mode is controlled by software via the I²C interface. The power consumption can be reduced to less than 0.3μA when powered down.

The ISL29034 supports a software brownout condition detection. The device powers up with the brownout bit asserted until the host clears it through the I²C interface. Designed to operate on supplies from 2.25V to 3.63V with an I²C supply from 1.7V to 3.63V, the ISL29034 is specified for operation across the -40°C to +85°C ambient temperature range.

Features

- Resolution 16-bit ADC
- Wide dynamic range1: 4,200,000
- Integrated noise reduction 50/60Hz
- Close to human eye response with excellent IR/UV rejection
- Shutdown modes.software and automatic
- Supply current (typical) 57μA
- Shutdown current (maximum) 0.51μA
- I²C (SMB compatible) power supply 1.7V to 3.63V
- Sensor power supply 2.25V to 3.63V
- Operating temperature range. -40°C to +85°C
- Small form factor package 4 Ld 1.5x1.3x0.75 ODFN

Applications

- Mobile devices: smart phone, PDA, GPS
- Computing devices: notebook PC, MacBook, tablets
- Consumer devices: LCD-TV, digital picture frame, digital camera
- Industrial and medical light sensing

Related Literature

- [AN1591](#), "Evaluation Hardware/Software Manual for ALS and Proximity Sensor"

TABLE 1. KEY DIFFERENCES BETWEEN FAMILY OF PARTS

PART NUMBER	ALS SENSING	INTERRUPT PIN	NUMBER OF PINS
ISL29034	Yes	No	4 Ld
ISL29035	Yes	Yes	6 Ld

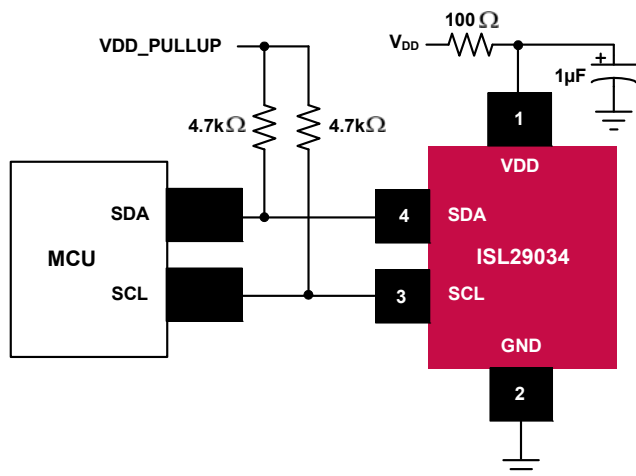


FIGURE 1. ISL29034 TYPICAL APPLICATION DIAGRAM

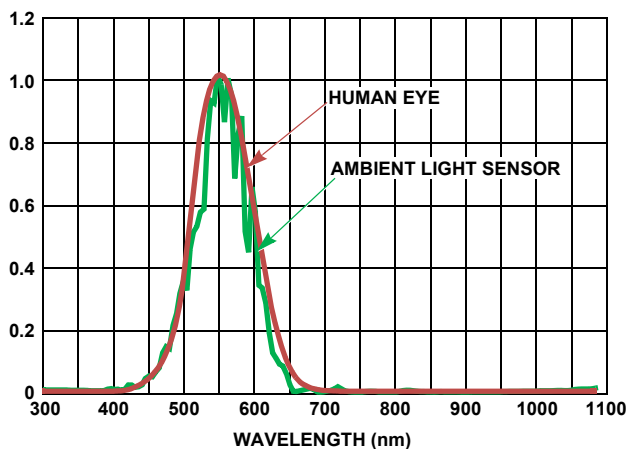


FIGURE 2. NORMALIZED SPECTRAL RESPONSE FOR AMBIENT LIGHT SENSING

Block Diagram

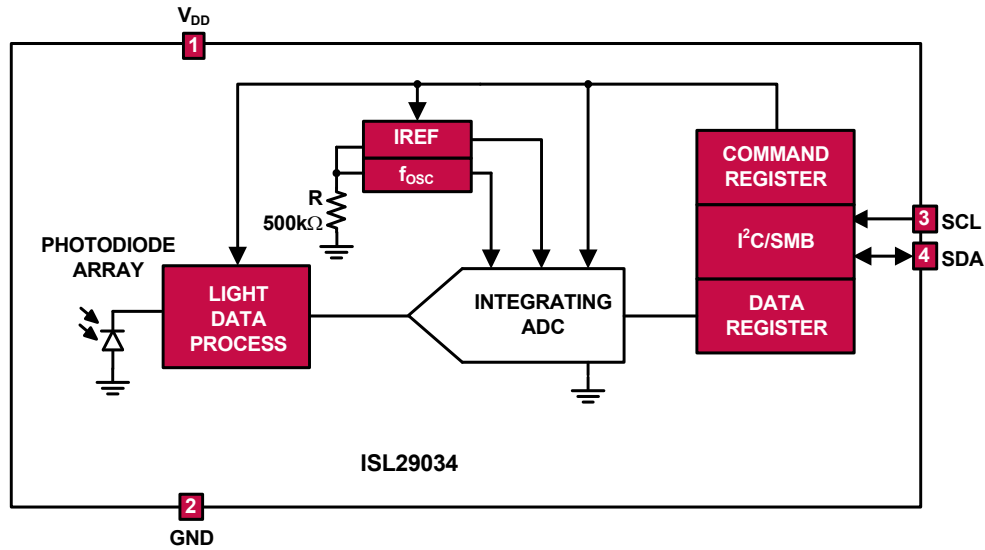
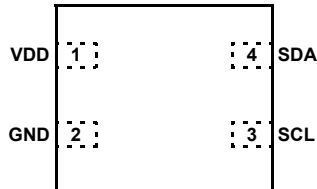


FIGURE 3. BLOCK DIAGRAM

Pin Configuration

ISL29034
(4 LD ODFN)
TOP VIEW



Pin Descriptions

PIN NUMBER	PIN NAME	DESCRIPTION
1	VDD	Positive supply
2	GND	Ground pin
3	SCL	I ² C serial clock.
4	SDA	I ² C serial data.

Ordering Information

PART NUMBER (Notes 1, 2, 3)	TEMP RANGE (°C)	TAPE AND REEL (UNITS)	PACKAGE (RoHS COMPLIANT)	PKG. DWG. #
ISL29034IROZ-T7	-40 to +85	3k	4 Ld ODFN	L4.1.5x1.3
ISL29034IROZ-EVALZ	Evaluation Board			

NOTES:

1. Please refer to [TB347](#) for details on reel specifications.
2. These Intersil Pb-free plastic packaged products employ special Pb-free material sets; molding compounds/die attach materials and NiPdAu plate - e4 termination finish, which is RoHS compliant and compatible with both SnPb and Pb-free soldering operations. Intersil Pb-free products are MSL classified at Pb-free peak reflow temperatures that meet or exceed the Pb-free requirements of IPC/JEDEC J STD-020.
3. For Moisture Sensitivity Level (MSL), please see device information page for [ISL29034](#). For more information on MSL please see tech brief [TB477](#).