

ISL29033

Ultra-Low Lux, Low Power, Integrated Digital Ambient Light Sensor with Interrupt Function

FN7656
Rev 5.00
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The [ISL29033](#) 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 16-bit 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. Power consumption can be reduced to less than 0.3µA when powered down.

The ISL29033 supports a software and hardware interrupt that remains asserted until the host clears it through the I²C interface. The function of ADC conversion continues without stopping after interrupt is asserted.

Designed to operate on supplies from 2.25V to 3.63V with an I²C supply from 1.7V to 3.63V, the ISL29033 is specified for operation across the -40°C to +85°C ambient temperature range.

Related Literature

- For a full list of related documents, visit our web page - [ISL29033](#) product page

Features

- Ambient light sensing
- Simple output code directly proportional to lux
- Variable conversion resolution up to 16 bits
- Adjustable sensitivity up to 520 counts per lux
- Measurement range: 0.0019 to 8,000lux with four selectable ranges
- Program interrupt feature
- Light sensor close to human eye response
 - Excellent light sensor IR and UV rejection
- 75µA maximum operating current
 - 0.3µA maximum shutdown current
- 6 Ld 2.0mmx2.1mmx0.7mm ODFN package

Applications

- Display and keypad dimming adjustment for:
 - Mobile devices: smart phone, PDA, GPS
 - Computing devices: notebook PC, webpad
 - Consumer devices: LCD-TV, digital picture frame, digital camera
- Industrial and medical lighting sensing

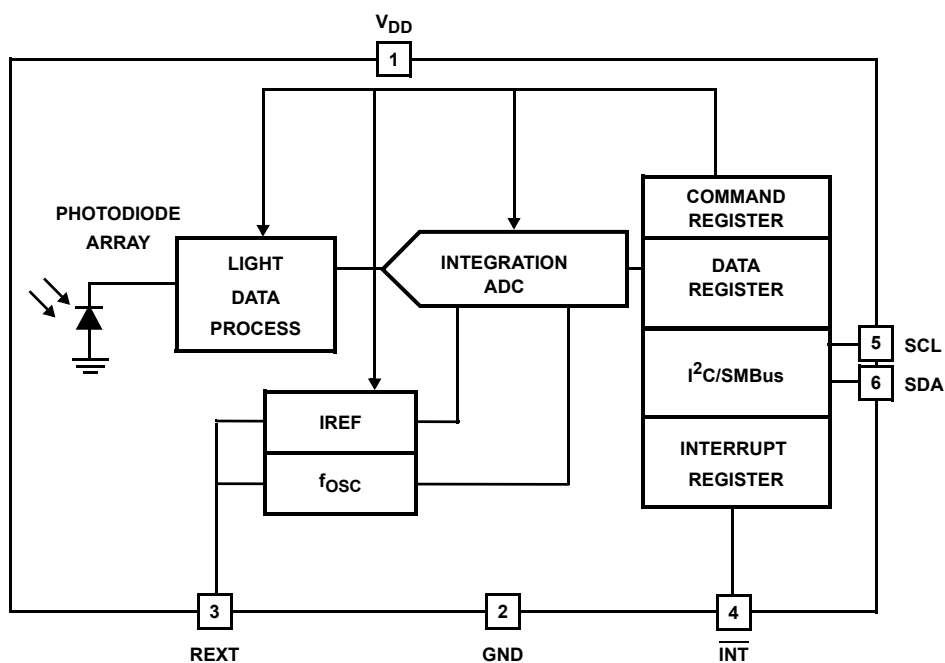
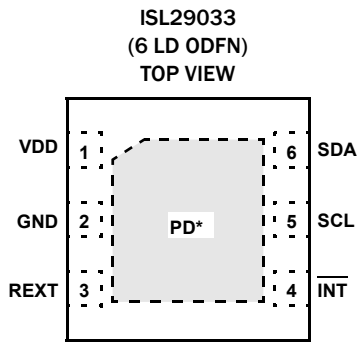


FIGURE 1. BLOCK DIAGRAM

Pin Configuration



*EXPOSED PAD CAN BE CONNECTED TO GND OR ELECTRICALLY ISOLATED

Pin Descriptions

| PIN NUMBER | PIN NAME | DESCRIPTION |
|------------|-------------------------|--|
| PD | PD | Thermal Pad (connect to GND, or float) |
| 1 | VDD | Positive supply: 2.25V to 3.63V |
| 2 | GND | Ground |
| 3 | REXT | External resistor pin for ADC reference; connect this pin to ground through a (nominal) 499kΩ resistor. |
| 4 | $\overline{\text{INT}}$ | Interrupt pin: low for interrupt alarming. $\overline{\text{INT}}$ pin is open-drain. $\overline{\text{INT}}$ remains asserted until the interrupt flag status bit is reset. |
| 5 | SCL | I ² C serial clock |
| 6 | SDA | I ² C serial data |

Ordering Information

| PART NUMBER (Notes 1, 2, 3, 4) | TEMP. RANGE (°C) | TAPE AND REEL (UNITS) | PACKAGE (RoHS COMPLIANT) | PKG. DWG. # |
|-----------------------------------|---------------------|--------------------------|-----------------------------|----------------|
| ISL29033IROZ-T7 | -40 to +85 | 3k | 6 Ld ODFN | L6.2x2.1 |
| ISL29033IROZ-EVALZ | Evaluation Board | | | |

NOTES:

- Refer to [TB347](#) for details on reel specifications.
- 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.
- For Moisture Sensitivity Level (MSL), see device information page for [ISL29033](#). For more information on MSL, see Tech Brief [TB477](#).
- The part marking is located on the bottom of the part.