

ISL29112

Low Power, <100 Lux Optimized, Analog Output Ambient Light Sensor

FN8836
Rev.1.00
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The [ISL29112](#) is a low cost, light-to-voltage silicon optical sensor combining a photodiode array, a non-linear current amplifier, and a micropower op amp on a single monolithic IC. Similar to the human eye, the photodiode array has peak sensitivity at 550nm and spans the wavelength range 400nm to 600nm, rejecting UV and IR light. The input luminance range is from 0.01 lux to 100 lux.

The integrated non-linear current amplifier boosts and converts the photodiode signal into a square root output format, extending dynamic range while maintaining excellent sensitivity in dimly lit conditions. As such, the part is ideal for measuring incident daylight when mounted behind heavily smoked bezels used around displays or behind mirrors.

The device consumes minimum power. A dark current compensation circuit minimizes the effect of temperature dependent leakage currents in the absence of light, improving the light sensitivity at low lux levels. The output gain has been optimized to require a relatively low value external bias resistor that falls within recommended automotive EMI limits. The built-in 1µA op amp gives the ISL29112 an output voltage driving advantage for heavier loads that can drive an ADC directly.

The ISL29112 is housed in an ultra compact 2mmx2.1mm ODFN plastic surface mount package. Operation is rated from -40 °C to +85 °C.

Features

- Square root voltage output
- 0.01 lux to 100 lux range
- 1.8V to 3V supply range
- Close to human eye spectral response
- Fast response time
- Internal temperature compensation
- Good IR rejection
- Low supply current
- Operating temperature range -40 °C to +85 °C
- 6 Ld ODFN: 2mmx2.1mmx0.7mm
- Pb-free (RoHS compliant)

Applications

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

Related Literature

- For a full list of related documents, visit our website - [ISL29112](#) product page

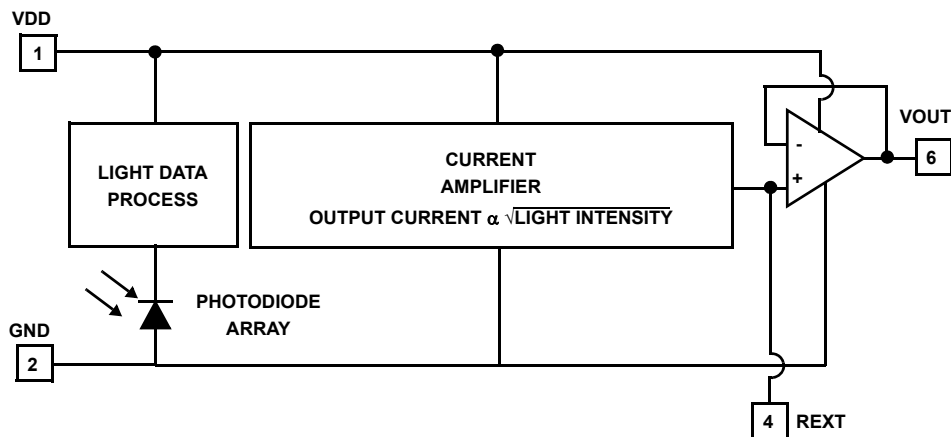
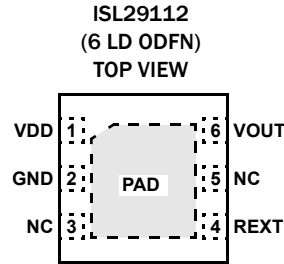


FIGURE 1. SIMPLIFIED BLOCK DIAGRAM

Pin Configuration



Pin Descriptions

PIN NUMBER	PIN NAME	PIN DESCRIPTION
1	VDD	Voltage Supply (1.8V to 3V).
2	GND	Ground
3, 5	NC	No connect
4	REXT	Connected to an external resistor to GND, setting the light-to-voltage scaling constant. A R_{EXT} value of 100k Ω is recommended.
6	VOUT	Voltage Output.
-	PAD	Thermal Pad. The thermal pad can be connected to GND or electrically isolated.

Ordering Information

PART NUMBER (Notes 1, 2, 3)	TAPE AND REEL (UNITS)	PACKAGE (RoHS Compliant)	PKG. DWG. #
ISL29112IROZ-T7	3k	6 Ld ODFN	L6.2x2.1
ISL29112IROZ-T7A	250	6 Ld ODFN	L6.2x2.1
ISL29112IROZ-EVALZ	Evaluation Board		

NOTES:

- Please 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 product information page for [ISL29112](#). For more information on MSL please see techbrief [TB477](#).