

ISL29102

Low Power Ambient Light-to-Voltage Nonlinear Converter

FN6483
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The [ISL29102](#) is a low cost, light-to-voltage silicon optical sensor combining a photodiode array, a nonlinear current amplifier, and a micro-power op amp on a single monolithic IC. Similar to human eyes, the photodiode array has peak sensitivity at 550nm and spans from 400nm to 600nm, rejecting UV light and IR light. The input luminance range is from 0.3 lux to 10,000 lux.

The integrated nonlinear current amplifier boosts and converts the photodiode signal in a square root fashion, extending the light input dynamic range, while maintaining excellent sensitivity at dim conditions with low lux levels. The device consumes minimal power over a wide range of ambient lux levels because the current consumption ramps at a square root fashion. 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 while maintaining excellent sensitivity at low lux levels. The built-in 1µA op amp gives the ISL29102 an output voltage driving advantage for heavier loads.

The ISL29102 is housed in an ultra compact 2mmx2.1mm ODFN plastic case surface mount package. Operation is rated from -40°C to +85°C.

Related Literature

- For a full list of related documents, visit our website
 - [ISL29102](#) product page

Features

- Square root voltage output
- 0.3 lux to 10,000 lux range
- 1.8V to 3.3V 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

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

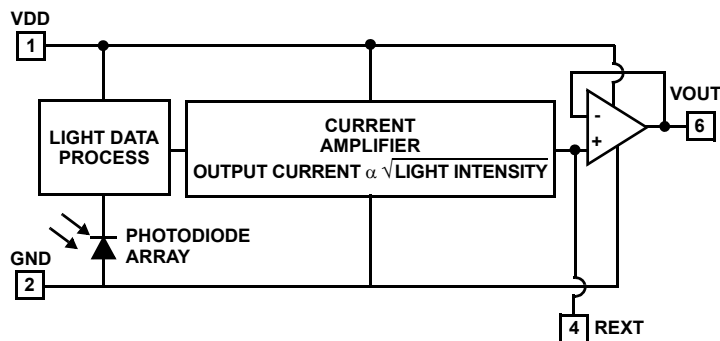


FIGURE 1. SIMPLIFIED BLOCK DIAGRAM

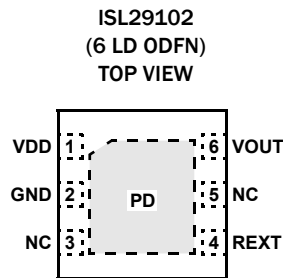
Ordering Information

PART NUMBER (Notes 1, 2, 3)	TEMP RANGE (°C)	TAPE AND REEL (UNITS)	PACKAGE (RoHS COMPLIANT)	PKG. DWG. #
ISL29102IROZ-T7	-40 to +85	3k	6 Ld ODFN	L6.2x2.1
ISL29102IROZ-T7A	-40 to +85	250	6 Ld ODFN	L6.2x2.1
ISL29102IROZ-EVALZ		Evaluation Board		

NOTES:

1. 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), see the device information page for the [ISL29102](#). For more information on MSL, see techbrief [TB363](#).

Pin Configuration



Pin Descriptions

PIN NUMBER	PIN NAME	PIN DESCRIPTION
1	VDD	Supply (1.8V to 3.3V).
2	GND	Ground
3	NC	No connect
4	REXT	Connected to an external resistor to GND setting the light-to-voltage scaling constant.
5	NC	No connect
6	VOUT	Voltage Output
-	PD	Thermal pad. The thermal pad can be connected to GND or electrically isolated.