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Proximity Sensor with Intelligent Interrupt and Sleep Modes

ISL29027

The ISL29027 is an integrated infrared light-to-digital converter with a built-in IR LED driver and I²C Interface (SMBus Compatible). The flexible interrupt scheme is designed for minimal microcontroller utilization.

For proximity sensor (Prox) data conversions, the built-in driver turns on an external infrared LED and the proximity sensor ADC converts the reflected IR intensity to digital. This ADC rejects ambient IR noise (such as sunlight) and has a 540µs conversion time.

The ISL29027 provides proximity sensing with a typical 138µA normal operation current (110µA for sensors and internal circuitry, ~28µA for external LED) with 220mA current pulses for a net 100µs, repeating every 800ms (or under).

The ISL29027 uses both a hardware pin and software bits to indicate an interrupt event has occurred. A proximity interrupt is defined as a measurement over a threshold limit. The user may also require that proximity interrupts occur at once, up to 16 times in a row before activating the interrupt pin.

The ISL29027 is designed to operate from 2.25V to 3.63V over the -40°C to +85°C ambient temperature range. It is packaged in a clear, lead-free 8 lead ODFN package.

Applications

- Mobile Devices: Smart Phone, PDA, GPS
- Computing Devices: Laptop PC, Netbook
- Consumer Devices: LCD-TV, Digital Picture Frame, Digital Camera

Features

- · Works Under All Light Sources Including Sunlight
- Intelligent Interrupt Scheme Simplifies uC Code

Proximity Sensing

- Proximity Sensor with Broad IR Spectrum
 - Can Use 850nm and 950nm External IR LEDs
- IR LED Driver with I²C Programmable Sink Currents
 - Net 100µs Pulse with 110mA or 220mA Amplitudes
 - Periodic Sleep Time up to 800ms Between Pulses
- Ambient IR Noise Cancellation (Including Sunlight)

Intelligent and Flexible Interrupts

- Proximity Interrupt Thresholds
- Adjustable Interrupt Persistency
- 1/4/8/16 Consecutive Triggers Required Before Interrupt

Ultra Low Power

- 138µA DC Typical Supply Current for Prox Sensing
 - 110µA for Sensors and Internal Circuitry
 - 28µA Typical Current for External IR LED (Assuming 220mA for 100µs Every 800ms)
- <1.0µA Supply Current When Powered Down

Easy to Use

- · Set Registers; Wait for Interrupt
- I²C (SMBus Compatible) Output
- Temperature Compensated
- Tiny ODFN8 2.0x2.1x0.7 (mm) Package

Additional Features

- 1.7V to 3.63V Supply for I²C Interface
- 2.25V to 3.63V Sensor Power Supply
- Pb-Free (RoHS Compliant)
- I²C Address Selection Pin



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