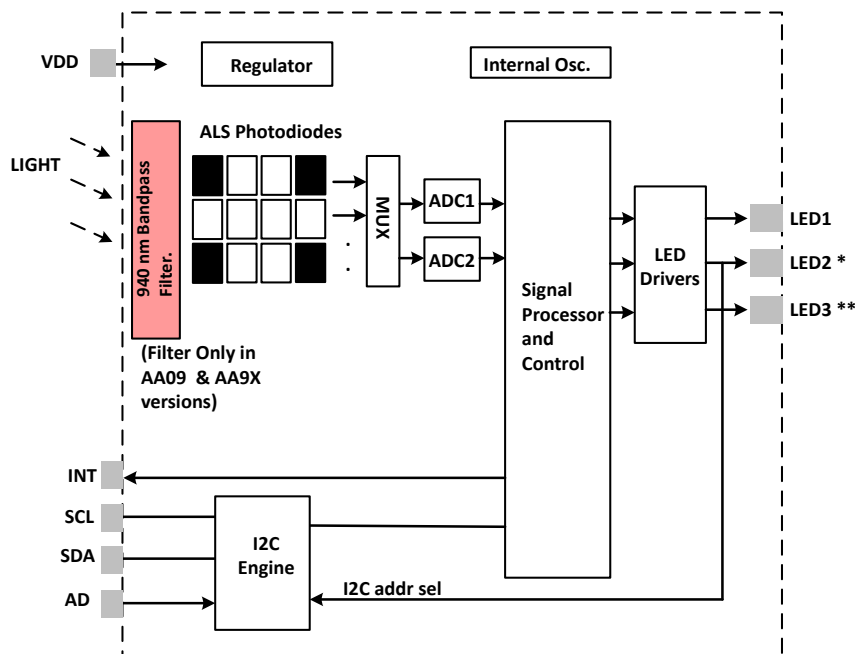


Si1153 Data Sheet

Proximity/Ambient Light Sensor IC with I²C Interface

The Si1153-AA00/AA09/AA9x is an ambient light sensor, proximity, and gesture detector with I2C digital interface and programmable-event interrupt output.

This touchless sensor IC includes dual 23-bit analog-to-digital converters, an integrated high-sensitivity array of visible and infrared photodiodes, a digital signal processor, and three integrated LED drivers with programmable drive levels. The Si1153 offers excellent performance under a wide dynamic range and a variety of light sources, including direct sunlight. The Si1153 can also work under dark glass covers. The photodiode response and associated digital conversion circuitry provide excellent immunity to artificial light flicker noise and natural light flutter noise. With two or more LEDs, the Si1153 is capable of supporting multiple-axis proximity motion detection. The Si1153 is provided in a 10-lead 2x2 mm DFN package or in a 10-lead 2.9x4.9 mm LGA module with integrated LED, and is capable of operation from 1.62 to 3.6 V over the -40 to +85 °C temperature range.



* Pull up to VDD with 47 kOhm resistor to select primary I2C address (0x53), or down to GND for alt I2C address 0x52.

** Pull up to VDD with 47 kOhm resistor

KEY FEATURES

- Proximity detector
 - From under 1 cm, to 50 cm without additional lensing.
 - From under 1 cm, to 200 cm with additional lensing (e.g., 5 mm hemispherical lens as in our EVB).
 - Up to three independent LED drivers.
 - 30 current settings from 5.6 mA to 360 mA for each LED driver.
 - Operates in direct sunlight with optional on-die 940 nm passband filter.
 - On die 940 bandpass filter that rejects unwanted visible light and IR from daylight and other sources (Si1153-AA09/AA9X).
- Ambient light sensor
 - <100 lx resolution possible, allowing operation under dark glass.
 - Up to 128 lx dynamic range possible across two ADC range settings.
- Industry's lowest power consumption
 - 1.62 to 3.6 V supply voltage.
 - 9 µA average current (LED pulsed 25.6 µs every 800 ms at 180 mA plus 3 µA Si1153 supply).
 - <500 nA standby current.
 - 25.6 µs LED "on" time keeps total power consumption duty cycle low without compromising performance or noise community.
 - Internal and external wake support.
 - Built-in voltage supply monitor and power-on reset controller.

APPLICATIONS

- Wearables
- Handsets
- Display backlighting control
- Consumer electronics

1. Feature List

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 - 25.6 μ s LED "on" time keeps total power consumption duty cycle low without compromising performance or noise community.
 - Internal and external wake support.
 - Built-in voltage supply monitor and power-on reset controller.
- Trim-able internal oscillator with typical 1% accuracy.
- I²C Serial communications
 - Up to 3.4 Mbps data rate.
 - Slave mode hardware address decoding.
- Two package options:
 - 10-lead 2 x 2 x 0.65 mm DFN
 - 10-lead 2.9 x 4.9 x 1.2 mm LGA module with integrated 940 nm LED
- Temperature Range: -40 to +85 °C