TCS3707

ALS/Color Sensor with Flicker Detection

General Description

The TCS3707 features ambient light and color (RGB) sensing, proximity and flicker detection. The device comes in a low-profile and small footprint, L2.5mm x W2.0mm x H0.5mm package.

The Ambient Light and Color Sensing function provides five concurrent ambient light sensing channels: Red, Green, Blue, Clear, and Wideband. The RGB and Clear channels have a UV/IR blocking filter. This architecture accurately measures ambient light and enables the calculation of illuminance, chromaticity, and color temperature to manage display appearance.
The device integrates direct detection of 50Hz or 60Hz ambient light flicker. Flicker detection is executed in parallel with ambient light and color sensing and has independent gain configuration. The flicker detection engine can also buffer data for calculating other flicker frequencies externally.

Key Benefits & Features

The benefits and features of TCS3707 are listed below:

Figure 1:
Added Value of Using TCS3707

Benefits	Features

• Invisible ALS and color sensing under any glass type	• Configurable, high sensitivity
	  • Programmable gain and integration time
	  • 1024x dynamic range by gain adjustment only
	  • 1mlux minimum detectable illuminance (100ms)
	• Tailored ALS and color response
	  • UV/IR blocking filter for RGBC channels
	  • Wideband reference channel without filters
	• ALS/color interrupt with thresholds

• Unique fast ALS integration mode	• Flicker-immune ALS sensing within 10ms
• Integrated ambient light flicker detection on chip	• Independently configurable timing and gain • Automatic gain adjustment • 50Hz and 60Hz flicker detection flags • Flicker detected interrupt
• Low power consumption and minimum I^2C traffic	• $1.8V_{DD}$ operation • Configurable sleep mode • Interrupt-driven device • On-chip self-calibration of ALS and proximity functions
• Integrated status checking for all functions	• Digital and analog ALS saturation flags • Proximity saturation flag

Applications

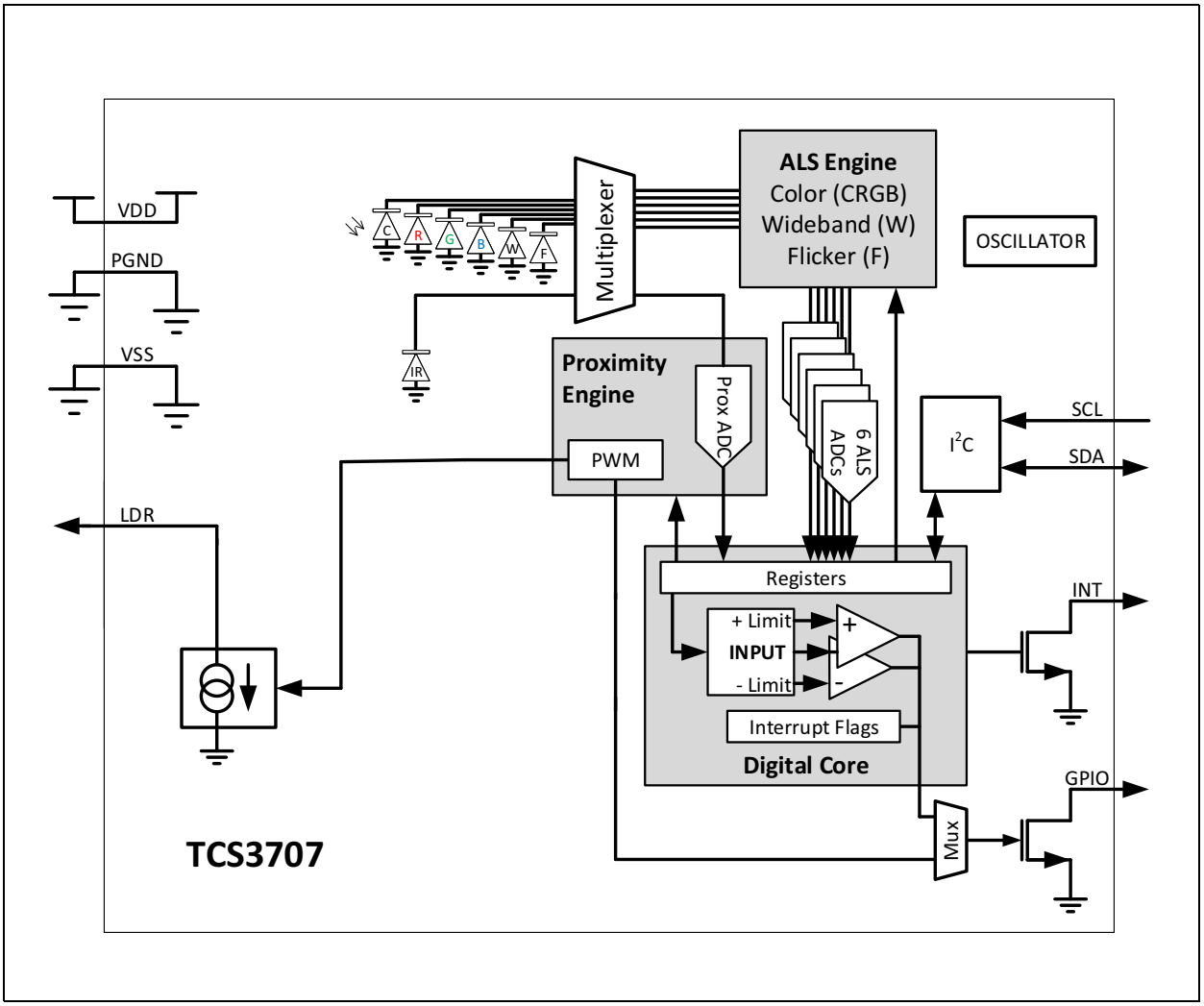
TCS3707 integrates multiple applications within one device. The applications for TCS3707 include:

- Brightness management for displays
- Color management for displays
- Camera image processing
- Flicker-immune camera operation
- Touch screen disable

Block Diagram

The functional blocks of this device are shown below:

Figure 2:
Functional Blocks of TCS3707



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