

APDS-9801

Digital Proximity and Analog Ambient Light Sensor



Data Sheet

Description

APDS-9801 is a module that integrates functions of an Analog ambient light sensor (ALS) and a proximity sensor (PS). The sensor has four chips in one small package: an ambient light sensor IC, proximity sensor signal conditioning circuitry and a proximity sensor that includes both an emitter and detector. The Analog ambient light sensor has current output, with spectral response close to the CIE standard Photopic observer. The proximity sensor IC has a LED driver and receiver circuit with digital count output, featuring excellent ambient light cancellation capability. With the built-in LED, the proximity sensor is able to sense the proximity of an object, such as finger or head to a portable device.

Ambient light sensors can be used to control the brightness of display backlighting by detecting the ambient light illuminance level. Proximity sensor technology make possible applications where detection or proximity of a user's head in relationship to display will turn off/on the keypad and LCD backlight. The combination of ambient light sensors and proximity sensors in one module make it ideal for portable devices, such as mobile phone, PDA and notebooks.

Ordering Information

Part Number	Packaging Type	Quantity
APDS-9801	Tape and Reel	2500 per reel

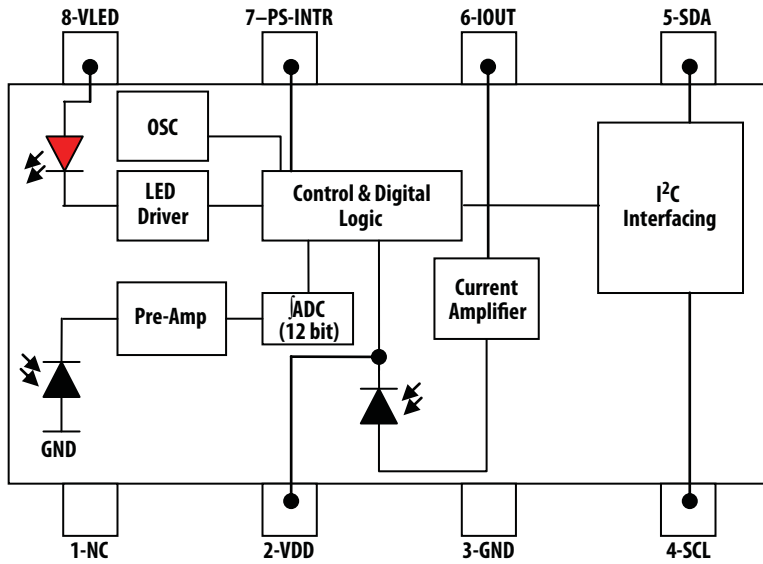
Features

- Integrated module with built-in IR LED, IR Detector, Digital Signal Conditioning ASIC and Analog ALS
- Package size: L 6.1 x W 3.9 x H 1.75 mm
- Sensor power supply voltage range: 1.7 V to 2.5 V
- I²C Bus power supply voltage range: 1.7 V to 3.6 V
- Broad VLED range for PS: 2.5 V to 5V
- PS Shutdown Current 1 μ A Typical
- ALS approximate the Human Eye response
- Low sensitivity variation across various light sources
- ALS Output linearity up-to 5k Lux range
- Operational under sunlight (PS)
- Artificial light Immunity
- Low crosstalk between Emitter & Detector
- Programmable LED driving current and burst pulse control (PS)
- Interrupt logic with Programmable Threshold
- Lead-free & ROHS Compliant

Applications

- PDA and mobile phones
- Portable and Handheld devices
- Personal Computers/Notebooks
- Amusement/Games/Vending Machines
- Contactless Switches

Functional Block Diagram



I/O Pins Configuration Table:

Pin	SYMBOL	Description
1	NC	No Connect
2	VDD	Power Supply Pin
3	GND	Ground
4	SCL	I ² C Clock Input
5	SDA	I ² C Data Input/Output
6	IOOUT	ALS Output Current
7	PS-INTR	Output pin for PS Level Interrupt
8	VLED	Power Supply pin for LED. Connect this pin to V-Battery or Power supply

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Conditions
Supply Voltage	V _{DD}	-0.5	4	V	T _A = 25°C
Voltage at I/O pins	V _{IO}	-0.5	5	V	T _A = 25°C
Reflow Soldering Temperature	T _S		260	°C	

Recommended Operating Conditions

Parameter	Symbol	Min	Max	Unit	Condition
Operating Temperature	T _A	-40	70	°C	
Storage Temperature	T _S	-40	85	°C	
Supply Voltage	V _{DD}	1.7	2.5	V	
I ² C Bus Power Supply Voltage	V _{BUS}	1.7	3.6	V	
PS LED Power Supply Voltage	V _{LED}	2.5	5	V	