

### Description

The Si1120 is a low-power, reflectance-based proximity and ambient light sensor with advanced analog signal processing and analog PWM output. It includes an integrated differential photodiode, signal processor, and LED driver. Proximity sensing is based on the measurement of reflected light from an external, optically-isolated, strobed LED. A separate visible light photodiode is used for ambient light sensing.

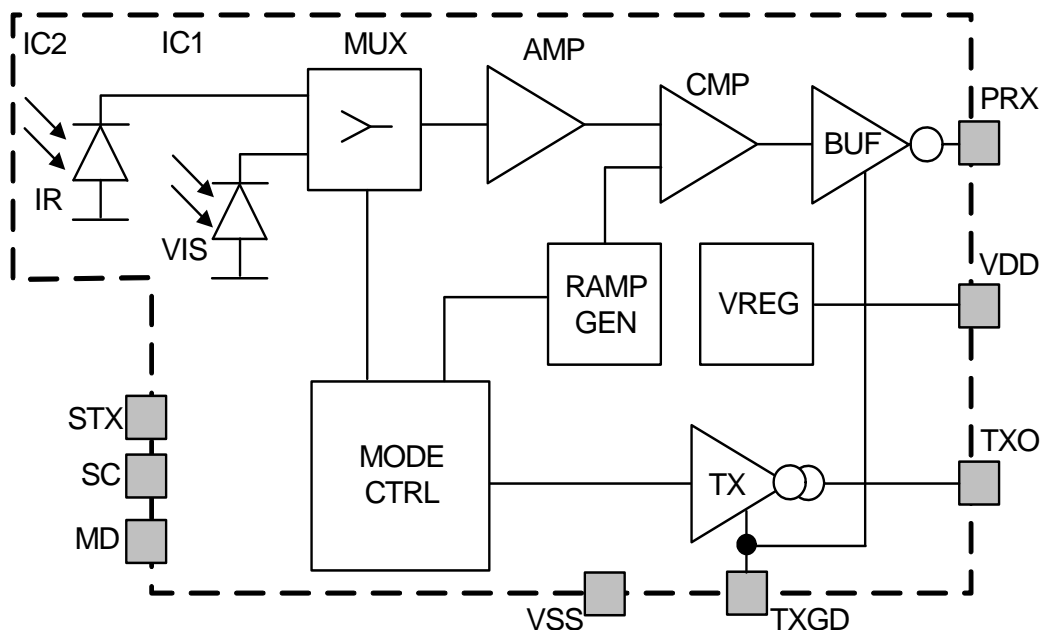
The standard package for the Si1120 is an 8-pin ODFN.

### Features

- 0–1/2 meter proximity range with single pulse
- 7 precision optical measurement modes
  - 3 Proximity ranges
  - 3 dc ambient ranges
  - 1 calibration mode
- Low-noise ambient cancelling circuit allows maximum sensitivity with 8–12 bit resolution
- Works in direct sunlight (100 klux)
- Minimum reflectance sensitivity  $<1 \mu\text{W}/\text{cm}^2$
- High EMI immunity without shielded packaging
- Power supply: 2.2–3.7 V
- Operating temperature range:  $-40$  to  $+85 \text{ }^\circ\text{C}$
- Typical  $10 \mu\text{A}$  current consumption
- Programmable 400/50 mA LED constant current driver output
- Allows independent LED supply voltage
- Small outline 3 x 3 mm (ODFN)
- U.S. Patents 5,864,591 and 6,198,118 (others pending)

### Applications

- Handsets
- Touchless switches
- Occupancy sensors
- Consumer electronics
- Notebooks/PCs
- Industrial automation
- Display backlighting control
- Photo-interrupter

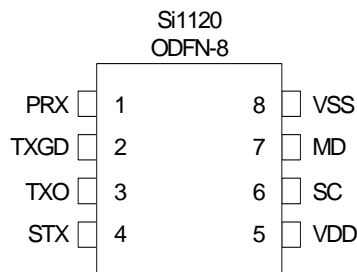


### Selected Electrical Specifications

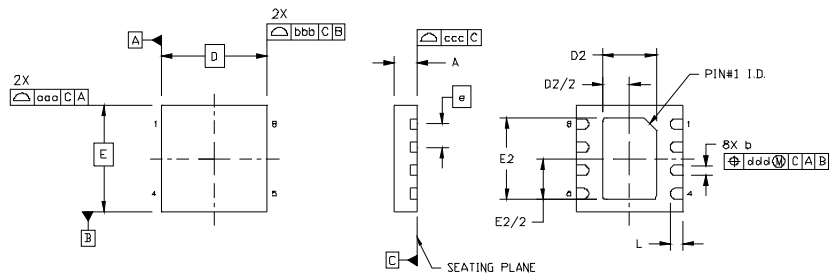
( $T_A = -40$  to  $+85$  °C unless otherwise specified)

Parameter	Conditions	Min	Typ	Max	Units
Supply Voltage	$-40$ to $+85$ °C, $V_{DD}$ to $V_{SS}$	2.2	3.3	3.7	V
Operating Temperature		$-40$	—	85	°C
PRX pulse width range	$V_{DD} = 3.3$ V	4		2000	$\mu$ s
DC Ambient light (Edc)	$V_{DD} = 3.3$ V			100	klux
$I_{DD}$ Shutdown	$SC = V_{DD} = 2.2$ to $3.7$ V		0.1	1.0	$\mu$ A
$I_{DD}$ idle current	$SC = STX = 0$ V, $V_{DD} = 3.3$ V		120		$\mu$ A
$I_{DD}$ current during transmit, not saturated	LED I = 50 mA, $V_{DD} = 3.3$ V		3		$\mu$ A
Min. Detectable Reflectance Input	$V_{DD} = 3.7$ V		1		$\mu$ W/cm <sup>2</sup>

### Pin Assignments



### 8-Pin ODFN Package



Symbol	Millimeters		
	Min	Typ	Max
A	0.55	0.65	0.75
b	0.25	0.30	0.35
D	3.00 BSC.		
D2	1.40	1.50	1.60
e	0.65 BSC.		
E	3.00 BSC.		
E2	2.20	2.30	2.40
L	0.30	0.35	0.40
aaa	0.10		
bbb	0.10		
ccc	0.08		
ddd	0.10		

### Product Family

Part Number	Pkg	LED Drivers	LED Drive Methods	Range	Measurement Modes	Resolution
Si1120-A-GM	ODFN-8	1	Current Driven (400 mA), Saturated	50 cm	3 Proximity 3 DC Ambient 1 Calibration	8 to 12 bits