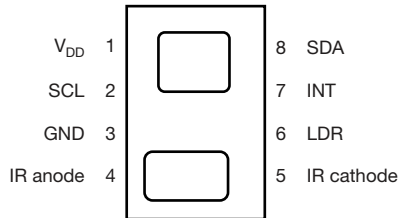
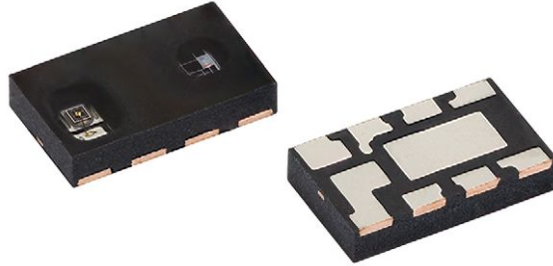


Fully Integrated Proximity Sensor With Infrared Emitter, I²C Interface, and Interrupt Function



LINKS TO ADDITIONAL RESOURCES


[3D Models](#)

[Design Tools](#)

[Application Notes](#)

[Technical Notes](#)

DESCRIPTION

VCNL3030X01 integrates a proximity sensor (PS) and a high power IRED into one small package. It incorporates photodiodes, amplifiers, and analog to digital converting circuits into a single chip by CMOS process. The PS offers a programmable interrupt with individual high and low thresholds offers the power savings on the microcontroller.

FEATURES

- Package type: surface-mount
- Dimensions (L x W x H in mm): 4.0 x 2.36 x 0.75
- AEC-Q101 qualified
- Integrated modules: infrared emitter (IRED), proximity sensor (PS), and signal conditioning IC
- Low power consumption I²C (SMBus compatible) interface
- Output type: I²C bus (PS)
- Operation voltage: 2.5 V to 3.6 V
- Floor life: 168 h, MSL 3, according to J-STD-020
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

 AUTOMOTIVE
GRADE

RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

PROXIMITY FUNCTION

- Immunity to red glow (940 nm IRED)
- Programmable IRED sink current
- Intelligent cancellation to reduce cross talk phenomenon
- Smart persistence scheme to reduce PS response time
- Selectable for 12- / 16-bit PS output data

INTERRUPT

- Programmable interrupt function for PS with upper and lower thresholds
- Adjustable persistence to prevent false triggers for PS

APPLICATIONS

- Force feedback applications
- Proximity / optical switch for consumer, computing, automotive and industrial devices

PRODUCT SUMMARY						
PART NUMBER	OPERATING RANGE ⁽¹⁾ (mm)	OPERATING VOLTAGE RANGE (V)	I ² C BUS VOLTAGE RANGE (V)	IRED PULSE CURRENT ⁽²⁾ (mA)	OUTPUT CODE	ADC RESOLUTION PROXIMITY / AMBIENT LIGHT
VCNL3030X01	0 to 300	2.5 to 3.6	1.8 to 5.5	200	16 bit, I ² C	16 bit / -

Notes

- ⁽¹⁾ Part should be operated in dark condition (not in direct sunlight)
⁽²⁾ Adjustable through I²C interface



ORDERING INFORMATION			
ORDERING CODE	PACKAGING	VOLUME ⁽¹⁾	REMARKS
VCNL3030X01-GS08	Tape and reel	MOQ: 3300 pcs	4.0 mm x 2.36 mm x 0.75 mm
VCNL3030X01-GS18		MOQ: 13 000 pcs	

Note

(1) MOQ: minimum order quantity

SLAVE ADDRESS OPTIONS	
ORDERING CODE	SLAVE ADDRESS (7 bit)
VCNL3030X01-GS08	0x41
VCNL3030X01-GS18	

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)					
PARAMETER	TEST CONDITION	SYMBOL	MIN.	MAX.	UNIT
Supply voltage		V_{DD}	2.5	3.6	V
Operation temperature range		T_{amb}	-40	+105	$^{\circ}\text{C}$
Storage temperature range		T_{stg}	-40	+110	$^{\circ}\text{C}$

RECOMMENDED OPERATING CONDITIONS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)					
PARAMETER	TEST CONDITION	SYMBOL	MIN.	MAX.	UNIT
Supply voltage		V_{DD}	2.5	3.6	V
Operation temperature range		T_{amb}	-40	+105	$^{\circ}\text{C}$
I ² C bus operating frequency		$f_{(I2CCLK)}$	10	400	kHz

PIN DESCRIPTIONS			
PIN ASSIGNMENT	SYMBOL	TYPE	FUNCTION
1	V_{DD}	-	Power supply input
2	SCL	I	I ² C digital bus clock input
3	GND	-	Ground
4	IR ANODE	I	Anode for IRED
5	IR CATHODE	I	Cathode (IRED) connection
6	LDR	I	IRED driver input
7	INT	O	Interrupt pin
8	SDA	I / O (open drain)	I ² C data bus data input / output