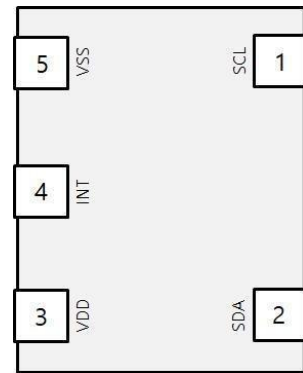


## 1. Features

- Full proximity sensor feature in tiny package size
  - 16-bit ADC
  - Integrated 940nm, 5mW VCSEL
- Programmable Proximity Detection and Interrupt
  - Programmable ADC, LED driver parameters
  - Programmable Interrupt generation conditions
- I2C Interface Compatible
  - Up to 400kHz (I2C Fast Mode)
  - OTP select able device address. : 0x39, 0x3D (7bit)
  - I2C H-level range: 1.8V to 5V
- Power Management
  - Supply voltage range: 2.5V to 5V
  - Low Power 1uA Sleep State
  - 70uA Wait State with Programmable Wait Time



**Bottom View**

(2.0mm x 1.6mm x 0.75mm)

## 2. Applications

- Contact less devices (dispenser, thermometer)
- TWS(True Wireless Stereo) blue tooth headset
- Other wearable devices

Operating Voltage Range [V]	No. of Connection	I2C BUS Voltage Range [V]	LED PULSE Current [mA]	Output Resolution [bit]
2.5 to 5	5	1.8 to 5	5 to 125	16

## 4. Pin Configuration and Functions

### Pin Functions

#	PIN	I/O/P/G	DESCRIPTION
1	SCL	I	I2C serial clock input terminal
2	SDA	I/O	I2C serial data input/output terminal
3	VDD	P	Supply voltage
4	INT	O	Interrupt – open drain (active low)
5	VSS	G	Supply Ground

## 5. Specifications

### 5.1 Absolute Maximum Ratings

SYMBOL	PARAMETER	MIN	MAX	UNIT
VDD	Power Supply Voltage	-0.3	6	V
Vin	Input Voltage	-0.3	VDD	V
Vout	Output Voltage	-0.3	VDD	V
Tj	Junction Temperature	-40	125	°C

### 5.2 ESD Ratings

SYMBOL	PARAMETER	VALUE	UNIT
VESD	Human-Body Model (HBM)	+/- 2000	V
	Machine Model (MM)	+/- 200	

### 5.3 Recommended Operating Conditions

SYMBOL	PARAMETER	MIN	TYP	MAX	UNIT
VDD	Power Supply Voltage	2.5	3.0	5	V
Vin	Input Voltage	0		VDD	V
Vout	Output Voltage	0		VDD	V
TA	Operating ambient temperature	-40		85	°C

### 5.4 Electrical Characteristics ( VDD = 3V, Ta = 25°C)

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Current	Active – LDR pulses off		265		uA
	Wait state		55		
	Sleep state		1	10	
	PWIDTH =17.4us, PPULSE=1, PDRIVE=5mA, PTIME=185us, WTIME=4.07ms		75		
Max. Supply Current	PWIDTH =4.4ms, PPULSE=255, PDRIVE=5mA,		2.64		mA
INT, SDA output low voltage	3mA sink current	0		0.4	V
	6mA sink current	0		0.6	
Low Level Input Voltage				0.3VDD	V
High Level Input Voltage		0.7VDD			V

### 5.5 Data Transmission Timing Requirements

PARAMETER	Symbol	CONDITIONS	MIN	MAX	UNIT
Output Low Level (SDA)	$V_{OL}$	IOL = 4mA		0.5	V
SCLK Operating Frequency	$f_{SCLK}$			400	kHz
Stop and Start Condition	$t_{BUF}$		1.3		us
Hold Time After Repeated Start Conditions	$t_{HD;STA}$		0.6		us
SCLK Clock Low Period	$t_{LOW}$		1.3		us
SCLK Clock High Period	$t_{HIGH}$		0.6		us
Repeated Start Condition Setup Time	$t_{SU;STA}$		0.6		us
Data Hold Time	$t_{HD;DAT}$		0	0.9	us
Data Setup Time	$t_{SU;DAT}$		100		ns
Clock/Data Fall Time	$t_F$			300	ns
Clock/Data Rise Time	$t_R$			300	ns
Stop Condition Setup Time	$t_{SU;STO}$		0.6		us

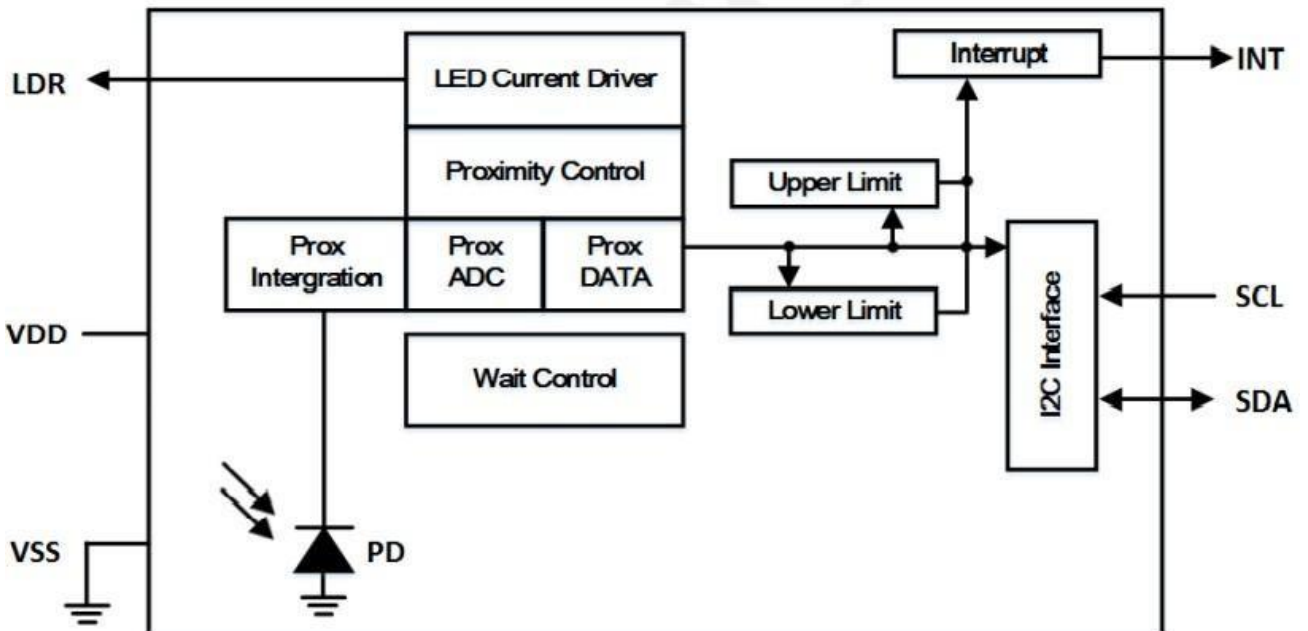
### 5.6 Proximity Characteristics ( VDD = 3V, Ta = 25°C, PEN = 1)

PARAMETER	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Prox. Full count value					65535	counts
LED drive current	PDH = 0	PDRIVE = 0 PDRIVE = 1 PDRIVE = 2 PDRIVE = 3		125 100 75 50		mA
	PDH = 1	PDRIVE = 0 PDRIVE = 1 PDRIVE = 2 PDRIVE = 3		12.5 10 7.5 5		mA
Prox. offset	PDRIVE = 0				4	counts

**5.7 Electro-Optical Characteristics**

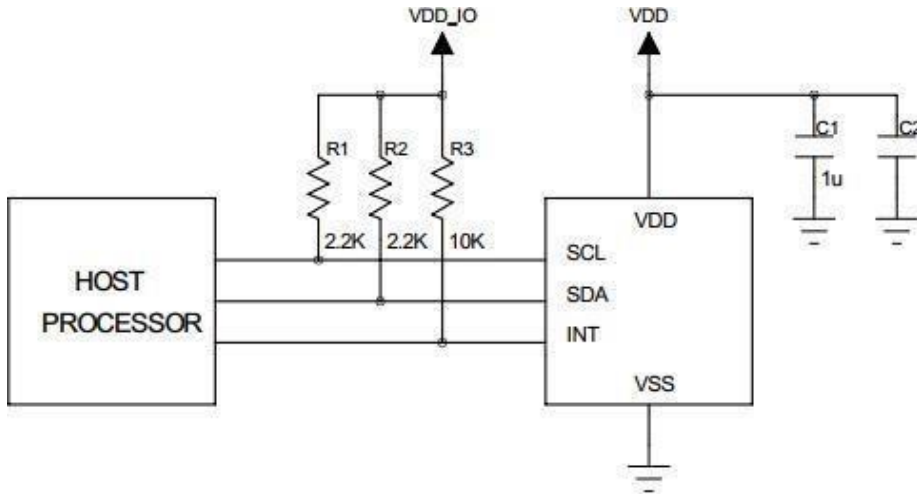
PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Optical Output Power	CW, 7.0mA 25°C	5	6	-	mW
Operating Current	CW, 25°C	-	7	-	mA
Power Conversion Efficiency	CW, 7.0mA 25°C	38	41	-	%
Wavelength	CW, 7.0mA 25°C	930	940	950	

**6. Block Diagram**



<Functional Block Diagram>

## 7. Application



## 8. Package Dimension

Units [mm]

