CM36682E

Proximity and Ambient Light Sensor with Interrupt in Single Package

Rev: 1.0 Revised 25th-Mar-2013

Description

CM36682E integrates a proximity sensor (PS), ambient light sensor (ALS) and a high power IR LED into one small package. It incorporates photodiodes, amplifiers and analog to digital converting circuits into a single chip by CMOS process. The 16-bit resolution ALS offers excellent sensing capabilities with sufficient selections to fulfill most applications irrespective of the lighting enviroment. Both ALS and PS have programmable interrupt of individual high and low thresholds offering the best utilization of resources and power savings on the microcontroller.

The 8-bit proximity sensing function uses an intelligent cancellation scheme, so that cross talk phenomenon is eliminated effectivitely. To accelerate the PS response time, Smart Persistence prevents the misjudgment of proximity sensing but also keeps a fast response time. Active Force mode, one time trigger by one instruction, is another good approach for more design flexibility to address different applications and to offer more power savings.

The adoption of Capella's patented Filtron™ technology achieves the closest ambient light spectral sensitivity to human eye responses and offers the best background light cancellation capability (including sunlight) without utilizing the microcontrollers' resources. CM36682E provides an excellent temperature compensation capability for keeping output stable under various temperature configurations. ALS and PS functions are easily operated via the simple command format of I^2C (SMBus compatible) interface protocol. Operating voltage ranges from 2.5 V to 3.6 V. CM36682E is packaged in a lead-free 8 pin molding package, which offers the best market-proven reliability.

Applications

- Handheld device
- Notebook/Tablet PC
- Consumer device
- Industrial application

Features

- Operates ALS and PS in parallel structure
- Filtron™ technology for robust background light cancellation
- Immunity to red glow issue (940 nm)

Ambient Light Sensor

- High accuracy ALS of ±10% tolerance
- Fluorescent light flicker immunity
- Spectrum close to human eye responses
- Selectable maximum detection range (855\1310\2620\5240) lux with highest sensitivity 0.01lux/step

Proximity Sensor

- One time trigger Active Force Mode
- Intelligent cancellation to reduce cross talk phenomenon
- Smart persistence scheme to reduce PS response time

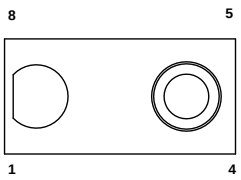
Interrupt

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

Additional Features

- Temperature compensation over -40°C to 85°C
- Low power consumption I^2C (SMBus Compatible) Interface
- Output type: I^2C Bus (ALS/PS)
- Operation voltage of 2.5 V to 3.6 V
- Package: Molding Package (4 x 2 x 1.1 mm)
- Lead-free package (RoHS compliant)

Pin Definition



1	GND	5	Cathode
2	Cathode	6	INT
3	VDD	7	SDAT
4	Anode	8	SCLK

<Top View>

Ordering Information

PART NUMBER	PACKING	PACKAGE	PIN NO.	QUANTITY	LEAD FREE	REMARK
CM36682EM3OE	Tape and Reel	4 x 2 x 1.1 mm	8	2500	Compliant	

Absolute Maximum Ratings

PARAMETER	SYMBOL	MIN.	MAX.	UNIT	CONDITION
Storage temperature	T_S	-40	+100	°C	
Operating temperature	T_A	-40	+85	°C	
Supply voltage	V_{DD}	2.5	3.6	V	

Recommended Operating Conditions

PARAMETER	SYMBOL	MIN.	MAX.	UNIT	CONDITION
Operating temperature	T_A	-40	+85	°C	
Supply voltage	V_{DD}	2.5	3.6	V	
I^2C Bus operating frequency	$f_{(I2CCLK)}$	10	400	kHz	

Pin Descriptions

PIN ASSIGNMENT	SYMBOL	TYPE	FUNCTION
1	GND	I	Ground
2	LED_CATHODE	I	IR LED cathode connection
3	V_{DD}	I	Power supply input
4	Anode	I	Anode of IR LED
5	LED_CATHODE	I	IR LED cathode connection
6	INT	O	Interrupt pin
7	SDAT	I/O (Open Drain)	I^2C data bus data in/output
8	SCLK	I	I^2C digital bus clock input

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