R4a

MM216

LIGHT-SENSE ASIC
(by external photo transistor)

DATA SHEET

FEATURES

- Wide battery operating voltage range : 3.3V to 5.1V.
- Typical operating current : 150uA, V_{DD} = 4.5V.
- Trigger pulse with controlled width on valid detection
- HOLDB input for operation suspension
- High sensitivity (adjustable with external component)
- Adaptive to environmental background illumination
- Built in filter for rejecting power line frequencies (50/60Hz)
- Built in Voltage Regulator for stable operation

GENERAL DESCRIPTION

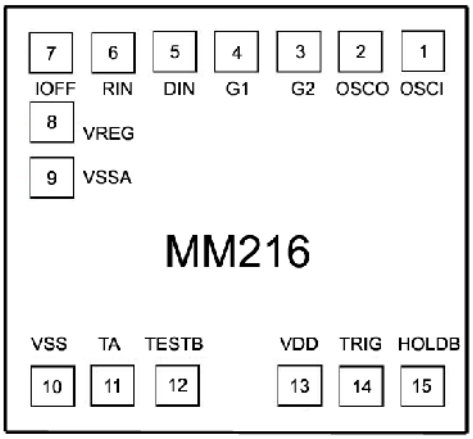
Light-Sense ASIC MM216 offers high sensitivity, simplicity and flexibility for applications on detecting small signal changes. The chip is a cost effective solution and enhances system performance with its stability and consistency characteristics.

Typical application is that by connecting an appropriate photo transistor as the input sensor to the pin DIN, MM216 detects for small light intensity changes caused by moving objects in the detection range and response with a Trigger pulse upon valid detection, the trigger pulse width is 125ms followed by a 500ms inhibit period. This trigger pulse can be used to trigger another device such as a voice chip, LED drivers, etc. The trigger output pulse is disable when a LOW signal is applied to the input pin HOLDB, the trigger output is also disable for a period of 3 to 5 sec straight after power-up.

PIN DEFINITION

Pin #	Pin Name	Description
1	OSCI	oscillator input connect to resistor ROSC
2	OSCO	oscillator output connect to resistor ROSC
3	G2	gain control connect to capacitor
4	G1	gain control connect to capacitor
5	DIN	analog input connect to the positive terminal of an electrolytic capacitor
6	RIN	analog input connect to the negative terminal of an electrolytic capacitor and the emitter of photo transistor
7	IOFF	current input connect to resistor ROFF for dark level adjustment the suggested value of ROFF is 470Kohm (# check the application note for implementation)
8	VREG	regulated power supply output
9	VSSA	analog ground connects to the negative terminal of the power source.
10	VSS	negative power supply
11	TA	connect to VSS
12	TESTB	test pin no connection
13	VDD	positive power supply
14	TRIG	trigger signal output
15	HOLDB	connect to VSS to disable TRIG connect to VDD to enable TRIG

PAD DIAGRAM



ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings

V_{SS} = 0V, Ambient Temperature = 25ºC

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS	UNIT
Supply Voltage	V_{DD}	-	5.5	V
Input Voltage	V_{IN}	-	-0.3 to V_{DD} +0.3	V
Operation Temperature	T_{OP}	-	0 to 55	ºC
Storage Temperature	T_{ST}	-	-25 to 125	ºC

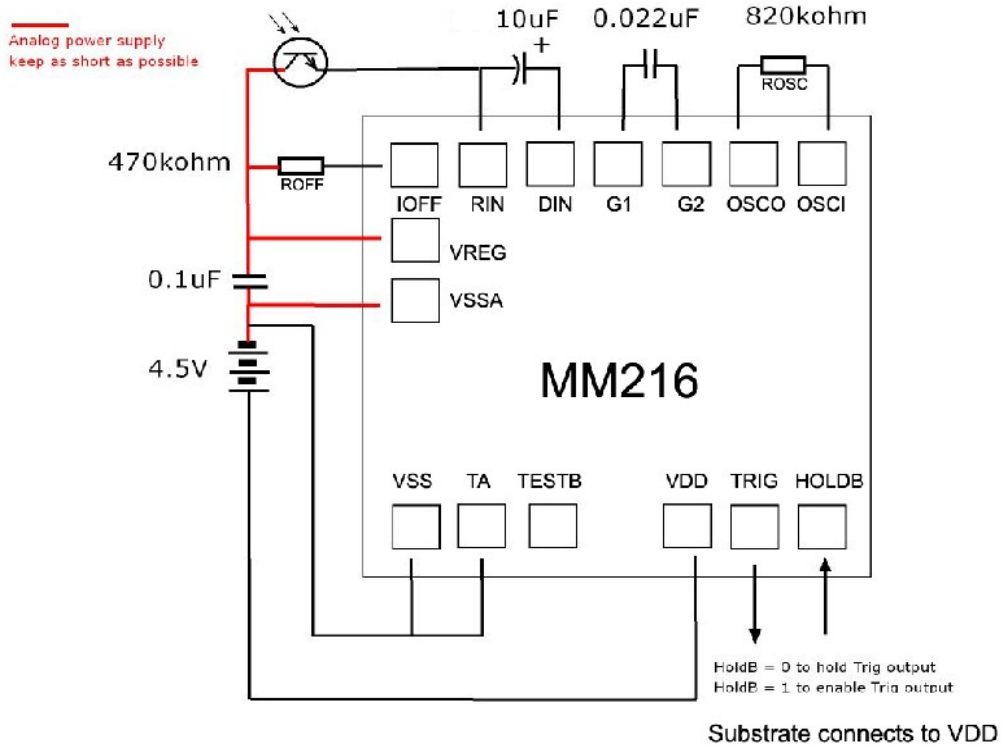
Absolute maximum ratings are the values beyond which the safety of the device cannot be guaranteed

DC & Operating Characteristics

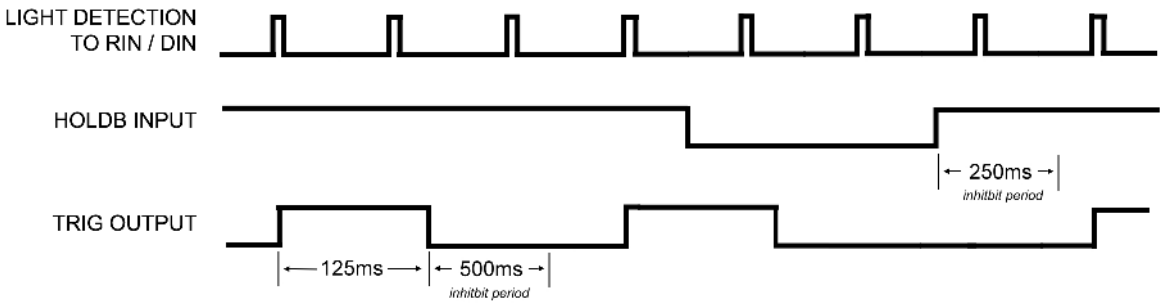
V_{SS} = 0V, V_{DD} = 4.50V, Ambient Temperature = 25ºC (unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
Operating Voltage	V_{DD} - Vss	-	3.3	4.5	5.1	V
Operating Current	I_{DD}	No Load	-	-	200	µA
Oscillation Frequency	F_{OSC}	R_{OSC} =820Kohm	51	64	77	KHz
Input High Voltage	V_{IH}	-	V_{DD} -0.3	-	V_{DD}	V
Input Low Voltage	V_{IL}	-	V_{SS}	-	V_{SS} +0.3	V
Output High Voltage	V_{OH}	I_{OH} = 10µA	V_{DD} -0.3	-	-	V
Output Low Voltage	V_{OL}	I_{OL} = -10µA	-	-	V_{SS} +0.3	V

TYPICAL APPLICATION CIRCUIT



TIMING DIAGRAM



* not to scale , and the figures represent the typical values only

On detection, TRIG rises and hold for about 125ms. Following, the device deactivates itself for about 500ms and does not respond to detection within this inhibit period.

HOLDB can disable TRIG, and HOLDB=0 is recognized only when TRIG=1. HOLDB=1 is always recognized.

After power up, TRIG is automatically disabled for 3 to 5 seconds in order to avoid mis-triggering.

IMPORTANT NOTICE

AMOS Technology Limited reserves the right to make changes in the circuity and the specification of this chip without prior notice. Customers are advised to check AMOS for the latest information.