

MM222**LIGHT-SENSE WITH LED DRIVER
(by external photo transistor)****DATA SHEET****FEATURES**

- Wide battery operating voltage range : 2.4V to 5.1V.
- Typical operating current : 100uA, $V_{DD} = 3.0V$.
- Flashing LED upon valid detection
- 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

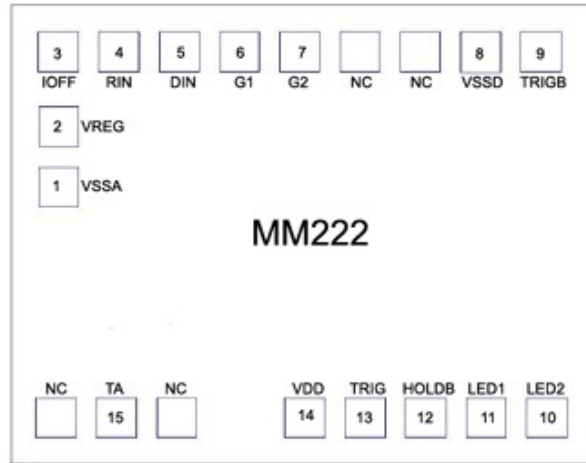
Light-Sense with built-in LED driver MM222 offers high sensitivity, simplicity and flexibility for applications on detecting small signal changes. The chip is a cost effective solution and enhances system performance with its stability and consistency characteristics.

Typical application is that by connecting an appropriate photo transistor as the input sensor to the pin RIN, a LED is connected directly to the output pin LED. MM222 detects for small light intensity changes caused by moving objects in the detection range, the LED will be flashing for a period of 4 seconds approximately upon valid detection, there is a half-second inhibit period after the LED finishes flashing. When power-up, an inhibit period of about 5 seconds is appended.

PIN DEFINITION

Pin #	Pin Name	Description
1	VSSA	analog ground connects to the negative terminal of the power source.
2	VREG	regulated power supply output
3	IOFF	current input connect to resistor ROFF for dark current adjustment the suggested value is 470Kohm (# check the application note for implementation)
4	RIN	analog input connect to the negative terminal of an electrolytic capacitor and the emitter of photo transistor
5	DIN	analog input connect to the positive terminal of an electrolytic capacitor
6	G1	gain control connect to capacitor
7	G2	gain control connect to capacitor
8	VSSD	negative power supply
9	TRIGB	trigger signal inverted output
10	LED2	LED output Flashing for 4 seconds upon triggering, flash rate = 2Hz
11	LED1	LED output Lighting(on) for 4 seconds upon triggering
12	HOLDB	connect to VSS to disable TRIG, TRIGB, LED1 and LED2 connect to VDD to enable TRIG, TRIGB, LED1 and LED2
13	TRIG	trigger signal output
14	VDD	positive power supply
15	TA	connect to VSS

PAD DIAGRAM



Substrate connects to VDD
Die Size = 1440 x 1150 um

ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings

V_{SS} = 0V, Ambient Temperature = 25°C

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	°C
Storage Temperature	T _{ST}	-	-25 to 125	°C

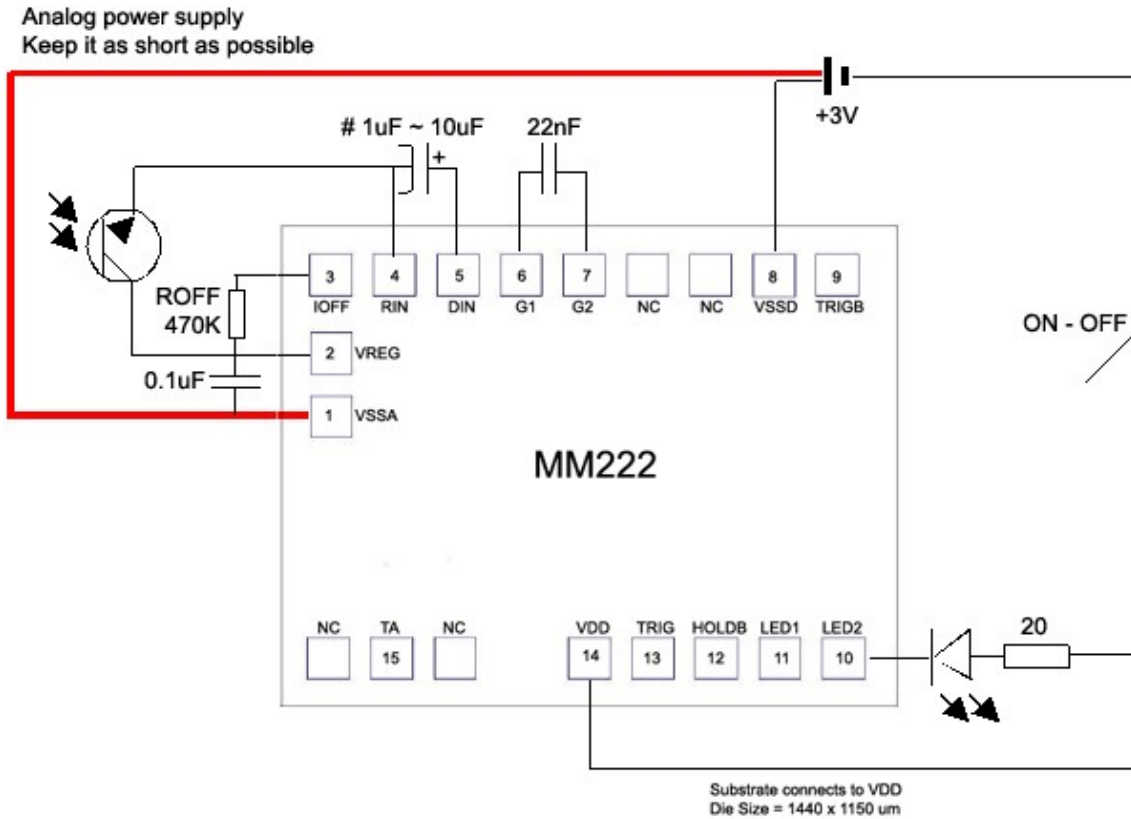
Absolute maximum ratings are the values beyond which the safety of the device cannot be guaranteed

DC & Operating Characteristics

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

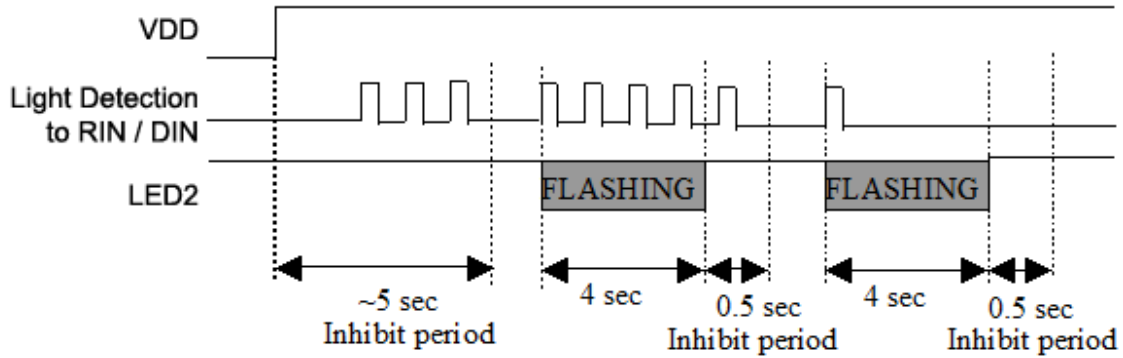
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
Operating Voltage	V _{DD} - V _{SS}	-	3.3	4.5	5.1	V
Operating Current	I _{DD}	No Load	-	-	200	μA
Oscillation Frequency	F _{OSC}	-	-	64	-	KHz
LED2 Frequency	F _{LED}	-	-	2	3	Hz
Input High Voltage	V _{IH}	-	V _{DD} -0.3	-	V _{DD}	V
Input Low Voltage	V _{IL}	-	V _{SS}	-	V _{SS} +0.3	V
Output Low Voltage	V _{OL}	I _{OL} = -15μA	-	-	V _{SS} +0.4	V

TYPICAL APPLICATION CIRCUIT



the electrolytic capacitor across RIN and DIN is used for motion sensitivity adjustment. 1uF is less sensitive than 10uF, i.e. less sensitive to fast motion.

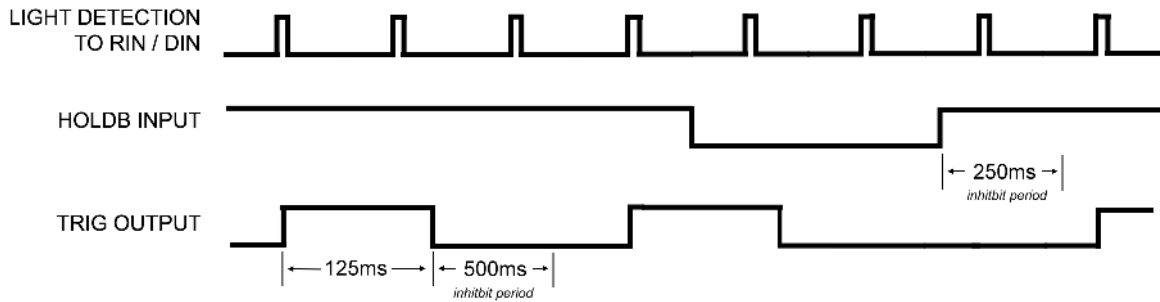
TIMING DIAGRAM



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

On detection, TRIG/TRIGB/LED1/LED2 is active for about 4 sec. Following, the device deactivates itself for about 500ms and does not respond to detection within this inhibit period.

After power up, TRIG/TRIGB/LED1/LED2 is automatically disabled for about 5 seconds in order to avoid mis-triggering.



HOLDB can disable TRIG/TRIGB/LED1/LED2 , and HOLDB=0 is recognized only when TRIG=1. HOLDB=1 is always recognized.

IMPORTANT NOTICE

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