OKI Open up your dreams

OKI Semiconductor

FEDL8511-01
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ML8511-00FC

UV Sensor IC with Voltage Output

GENERAL DESCRIPTION

The ML8511 is a UV light sensor, which is suitable for acquiring UV intensity indoors or outdoors. The ML8511 is equipped with an internal amplifier, which converts photo-current to voltage depending on the UV intensity. This unique feature offers an easy interface to external circuits such as ADC. In the power down mode, typical standby current is 0.1μA, thus enabling a longer battery life.

Features

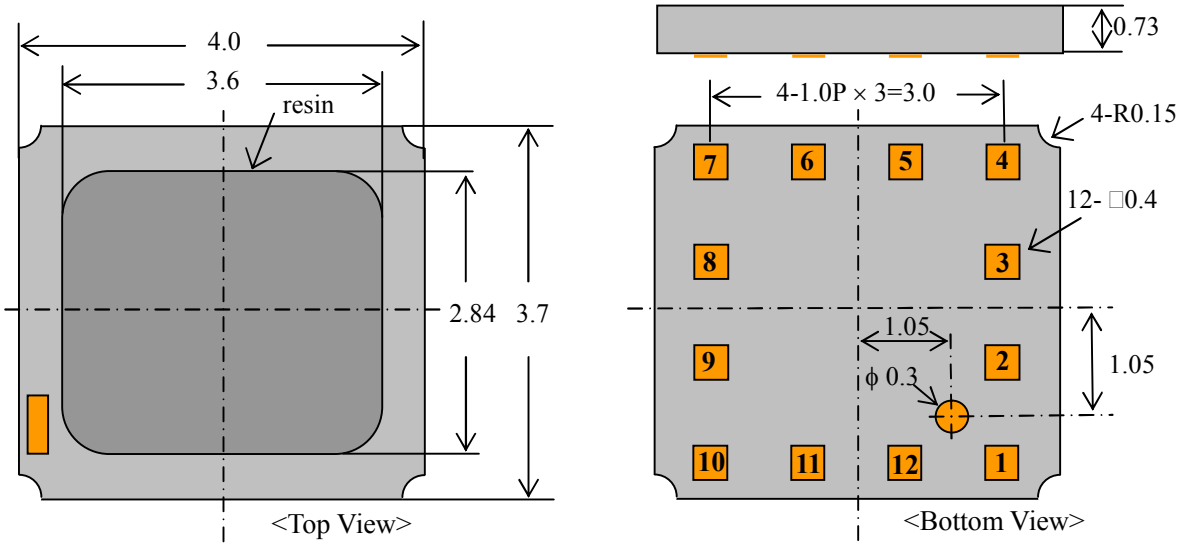
- Optical sensor for UV-A and UV-B
- Analog voltage output
- Low supply current (300μA typ.)
- Low standby current (0.1μA typ.)
- Small and thin surface mount package

Functions

- UV sensor (PN-photodiode)
- Current-to-voltage converting amplifier

Package

12-pin QFN SMD (1.0mm terminal pitch)



Notice:

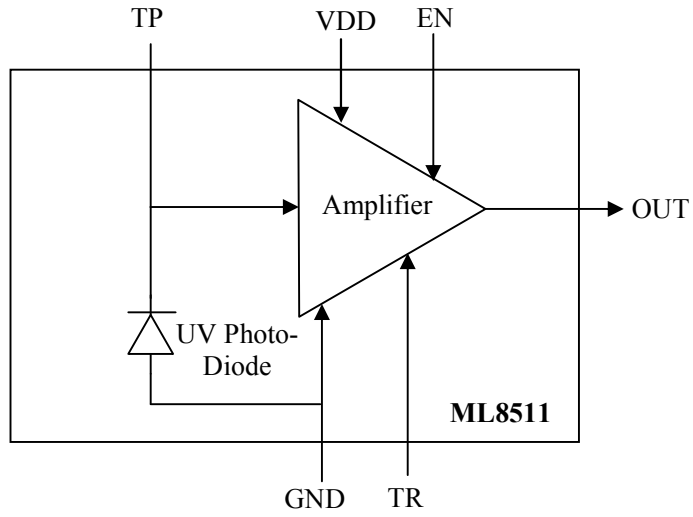
The specification is defined without considering the UV absorption by an external cover material. Please contact us when the cover material is applied.

Precaution:

• Never use ML8511 for an application involving serious risk for life, beauty or property without ensuring that the system as a whole has been designed to address the risks, and that ML8511 is properly rated and installed for the intended use within the overall equipment or system.

• Do not press the surface of the resin, which is on the UV light received side.

BLOCK DIAGRAM



PIN CONFIGRATION

Pin	Symbol	I/O	Function
7	VDD	PW	External power supply pin
5	GND	PW	Ground pin
4	EN	I	Enable pin. When EN is low, power is down and it is standby mode. When EN is high, it is active mode.
8	OUT	O	Output pin
9	TP	I/O	Test pin. Leave it open, not connect to any circuit.
10	TR	I/O	Test pin. Leave it open, not connect to any circuit.
1,2,3, 6,11,12	NC	-	No Connection. Leave it open, not connect to any circuit.

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Condition	Rating	unit
Supply Voltage	V_{DD}	Ta=25 °C	-0.3 to +4.6	V
Input Voltage	V_I	Ta=25 °C	-0.3 to +4.6	V
Output Short Current	I_{OS}	Ta=25 °C	5	mA
Power Dissipation	P_D	Ta=25 °C	30	mW
Storage Temperature	T_{stg}	-	-30 to +85	°C

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min.	Typ.	Max.	unit
Operating Voltage	V_{DD}	2.7	3.3	3.6	V
Input Voltage(High Level)	V_{IH}	2.16	-	V_{DD} + 0.3	V
Input Voltage(Low Level)	V_{IL}	-0.2	-	0.72	V
Operating Temperature	Ta	0	-	70	°C

ELECTRO-OPTICAL CHARACTERISTICS

(VDD=+2.7 to +3.6V, Ta= 0 to +70°C)

Parameter	Symbol	Min.	Typ.	Max.	unit
Supply Current (active mode) *	I_{DDA}	-	300	500	μA
Supply Current (standby mode) *	I_{DDS}	-	0.1	1	μA
Wavelength of max. sensitivity	λp	-	365	-	nm
Output Voltage (Shading) * *	V_{ref}	0.95	1.0	1.05	V
Output Voltage (10mW/cm^2 at λp) **	V_O	2.08	2.2	2.32	V
UV-index / (V_O – V_{ref})	-	-	12.5	-	UVI*** / V

* Supply currents of active mode and standby mode are specified, when EN pin is applied VDD and 0V, respectively.
** Output Voltage is specified under room temperature. Temperature coefficient is typically -1.0mV/°C.
Load resistance of OUT port is recommended more than 500 kΩ.
*** UVI : UV-index

REVISION HISTORY

Document No.	Date	Page		Description
		Previous Edition	Current Edition	
FEDL8511-01	Sep. 27, 2007	-		Preliminary edition 1

NOTICE

1. The information contained herein can change without notice owing to product and/or technical improvements. Before using the product, please make sure that the information being referred to is up-to-date.

2. The outline of action and examples for application circuits described herein have been chosen as an explanation for the standard action and performance of the product. When planning to use the product, please ensure that the external conditions are reflected in the actual circuit, assembly, and program designs.

3. When designing your product, please use our product below the specified maximum ratings and within the specified operating ranges including, but not limited to, operating voltage, power dissipation, and operating temperature.

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