

**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 0.1 $\mu$ A, thus enabling a longer battery life.

**Features**

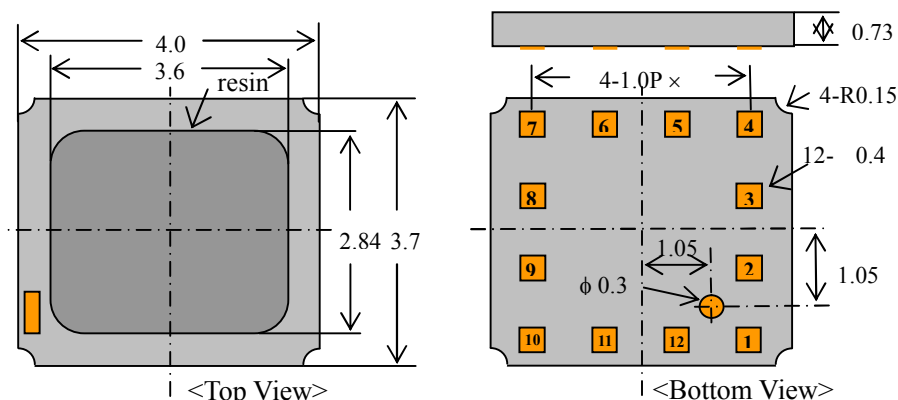
- Optical sensor for UV-A and UV-B
- Analog voltage output
- Low supply current ( 300 $\mu$ A typ. ) and Low standby current ( 0.1 $\mu$ A typ. )
- Small and thin surface mount package

**Functions**

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

**Package**

12-pin QFN SMD (1.0mm terminal pitch)

**Notice:**

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

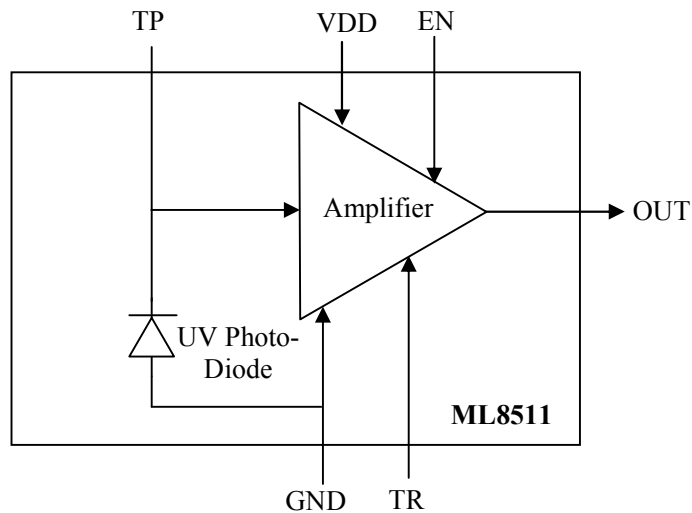
**Precaution:**

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

**Disclaimer**

Oki expressly disclaims any liability for incidental, special or consequential damages of any nature relating to the use of this device. This device is NOT designed for any clinical or medical applications, and should only be used in accordance with the instructions and when obeying all precautions and warnings. This product is not designed, intended, authorized or warranted for use as components in systems designed for surgical implant into the body, or in other applications intended to support or sustain life, or in any other applications in which the failure of the product could create a situation where personal injury, death or severe property damage may occur.

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**BLOCK DIAGRAM****PIN CONFIGURATION**

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 <sub>DD</sub>	Ta=25 °C	-0.3 to +4.6	V
Input Voltage	V <sub>I</sub>	Ta=25 °C	-0.3 to +4.6	V
Output Short Current	I <sub>OS</sub>	Ta=25 °C	5	mA
Power Dissipation	P <sub>D</sub>	Ta=25 °C	30	mW
Storage Temperature	T <sub>stg</sub>	-	-30 to +85	°C

**RECOMMENDED OPERATING CONDITIONS**

Parameter	Symbol	Min.	Typ.	Max.	unit
Operating Voltage	V <sub>DD</sub>	2.7	3.3	3.6	V
Input Voltage(High Level)	V <sub>IH</sub>	2.16	-	V <sub>DD</sub> + 0.3	V
Input Voltage(Low Level)	V <sub>IL</sub>	-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 <sub>DDA</sub>	-	300	500	μA
Supply Current (standby mode) *	I <sub>DDS</sub>	-	0.1	1	μA
Wavelength of max. sensitivity	λ <sub>p</sub>	-	365	-	nm
Output Voltage (Shading) * *	V <sub>ref</sub>	0.95	1.0	1.05	V
Output Voltage (10mW/cm <sup>2</sup> at λ <sub>p</sub> ) **	V <sub>O</sub>	2.08	2.2	2.32	V
UV-index / (V <sub>O</sub> - V <sub>ref</sub> )	-	-	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
FEDL8511-02	Jan. 24, 2008	-	-	Added disclaimer

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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.
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