farsens

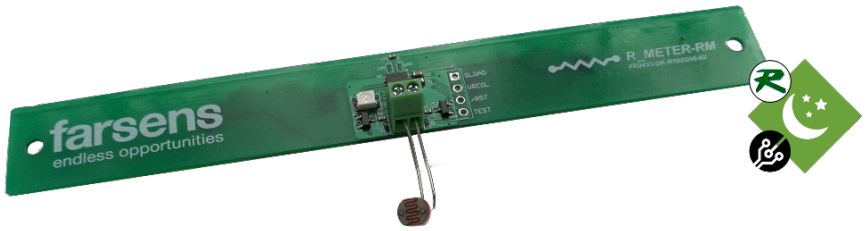
**EVAL01-SHADOW-RM-L108G**

*Datasheet*

Microtron®
Flexible electronic solutions

# EPC C1G2 BATTERYLESS CONTACT TEMPERATURE SENSOR

Check for samples: EVAL01-SHADOW-RM-L108G




## FEATURES

- **EPC C1G2 compliant**
- **ISO 18000-6 Type C compliant**
- **160-bit EPC Bank: Up to 128-bit EPC**
- **96-bit TID Bank: Up to 48-bit Serial Number**
- **Available User Memory: Up to 1008-bit Non Volatile User Data**
- **Long range in passive mode: 5m**
- **Extended range in battery assisted passive mode: 20m**
- **Light detection sensor**
- **Pick to light indicator for visual identification**

## DESCRIPTION

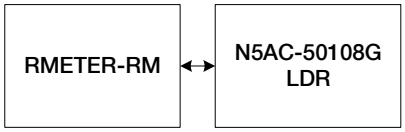
SHADOW-RM-L108G is an EPC Class-1 Generation-2 (C1G2) RFID tag based on Farsens' batteryless sensor technology. Built in a compact PCB format, the tag includes a light sensor.

These RFID sensor tags are compatible with commercial UHF RFID readers (EPC C1G2). With a 2W ERP setup the battery-less resistance meter can communicate to over 5 meters - 16 feet.

The SHADOW-RM-L108G can be customized with different antenna design and sizes, depending on the specific application. It can be encapsulated in an IP67 or IP68 casing for usage in harsh environments. It may also be possible to customize the specifications of the sensor upon request.

## BLOCK DIAGRAM

The SHADOW-RM-L108G tag consists of an RMETER-RM batteryless resistance metering device and a N5AC-50108G light dependent resistor (LDR).



# CHARACTERISTICS

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|
| **RFID** | | | | | |
| $r_{operation}$ | Operation range full passive | | 5 | | m |
| | Operation range BAP | | 15 | | m |
| | Operation range EBAP | | 20 | | m |
| **OPERATING CONDITIONS** | | | | | |
| $T_{OP\_TOP}$ | Operating temperature range | -40 | | 85 | °C |
| **LIGHT DEPENDENT RESISTOR** | | | | | |
| $R_{dark}$ | Resistance dark | | 10,000,000 | | Ω |
| $R_{bright}$ | Resistance bright | | 100 | | Ω |

## LIGHT CONVERSION

The resistance of the device connected to SHADOW-RM-L108G can be read using standard EPC read commands. Refer to the documentation of RMETER-RM for detailed instructions.

Once the resistance value of the LDR has been read, the value has to be converted to the equivalent light value. Given the characteristics of the LDR, the following equation can be used for an approximate conversion to luxes:

$$light\,[lx] = 4,000,000 \times resistance^{\left(-\frac{10}{9}\right)} \quad (1)$$

# DEMO SOFTWARE

Demonstration software to read and control the SHADOW-RM-L108G is available in the web. Download the latest software and user guide at: http://www.farsens.com/software.php. Check the website for updated reader compatibility list. Up to the date of writing this document, this is the status of the compatibility list:

| Fixed readers | | | |
|---|---|---|---|
| **Manufacturer** | **Model** | **Tested HW rev.** | **Tested FW rev.** |
| Impinj | R420 | HLA: 1.00 \| PCBA: 4.00 | 5.12.1 |
| Impinj | R220 | - | - |
| Impinj | R120 | - | - |
| Nordic ID | Sampo | PWM00282 | 5.4 A |
| Nordic ID | Stix | PWM00226 | 5.10 A |

# REFERENCES

The next table shows the available references of the SHADOW-RM-L108G.

| Ref. | Name | Description |
|---|---|---|
| 41002 | EVAL01-SHADOW-RM-L108G-DKWB | SHADOW-RM-L108G, dipole wideband antenna, PCB format |

For custom references with other antennas and housings, please contact us at sales@farsens.com.