

SPS1M002

Smart Passive Sensor

Moisture Level Detection Sensor Tag

ON Semiconductor's moisture sensing family of Smart Passive Sensors are UHF RFID wireless sensors that allow the passive sensing of moisture in a variety of applications where size and accessibility is at a premium.

The moisture level detection sensor tag is specifically designed for the passive sensing of moisture on various surfaces and finished goods such as plastics, wood, and plaster. The tag digitizes sensed moisture detection/level information which can be read by a standard UHF RFID Gen 2 compliant reader. This Smart Passive Sensor can greatly enhance the reliability of the end product and offers many benefits for deployment in industrial settings.

Features

- Single IC Wireless, Passive Moisture Sensing
- Small form factor package: 89 x 24 mm
- 64 bit TID and 128 bit EPC + 144 bit User Defined Memory
- EPC Class 1 Gen 2 v.2.0.0 ISO 18 000–6C Compliant
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Rating	Symbol	Max	Unit
Human Body Model (Note 1)	ESD	± 1	kV

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Junction and Storage Temperature Range (Note 2)	T_J, T_{stg}	-40 to +85	$^\circ\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

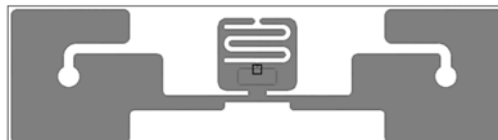
1. Non-repetitive current pulse at $T_A = 25^\circ\text{C}$, per JS-001 waveform.
2. Shelf Life – minimum 2 years from date of manufacturing.



ON Semiconductor®

www.onsemi.com

Sensing Function: Moisture



RF Tag
CASE 888AA

ORDERING INFORMATION

Device	Package	Shipping
SPS1M002A	Clear Dry PET Inlay (Pb-Free)	500 / Reel
SPS1M002B		500 / Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

SPS1M002

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Frequency	f	860		960	MHz
Read Sensitivity	R _{sens}	-24			dBm
Read Range					
Identification	TID EPC ROM	64 128 144			Bit
Read Range	RR	2			m
Wet/Dry Trip Level	Code _{trip}		15		Code

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

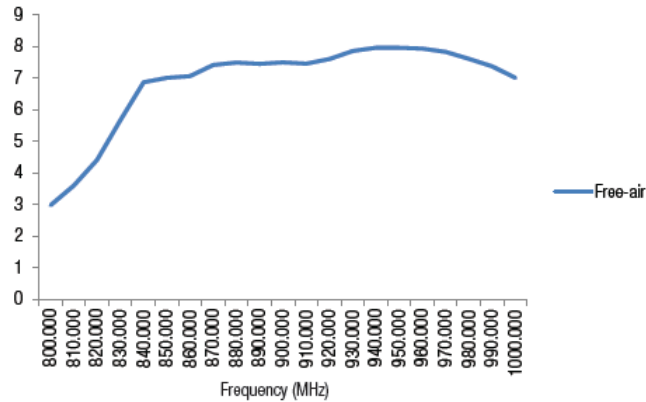


Figure 1. Read Range (m) in Free Air

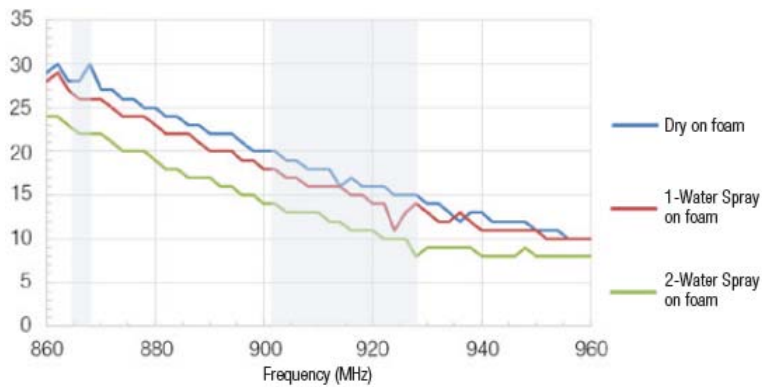
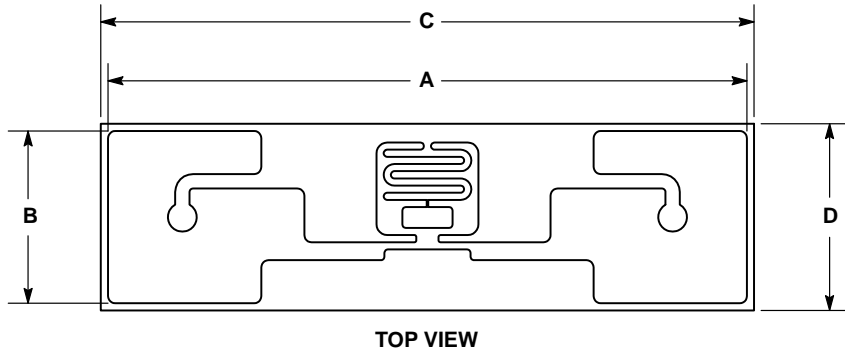


Figure 2. Sensor Code Value

SPS1M002

PACKAGE DIMENSIONS


RF TAG 91x26mm
CASE 888AA
ISSUE O



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. ANTENNA SIZE DETERMINED BY DIMENSIONS A AND B.
4. LABEL SIZE DETERMINED BY DIMENSIONS C AND D.
5. LABEL IS 0.076 THICK PET TAPE. ANTENNA IS 0.009 THICK ALUMINUM.

DIM	MILLIMETERS	
	MIN	MAX
A	88.90	89.10
B	23.90	24.10
C	90.50	91.50
D	25.50	26.50

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