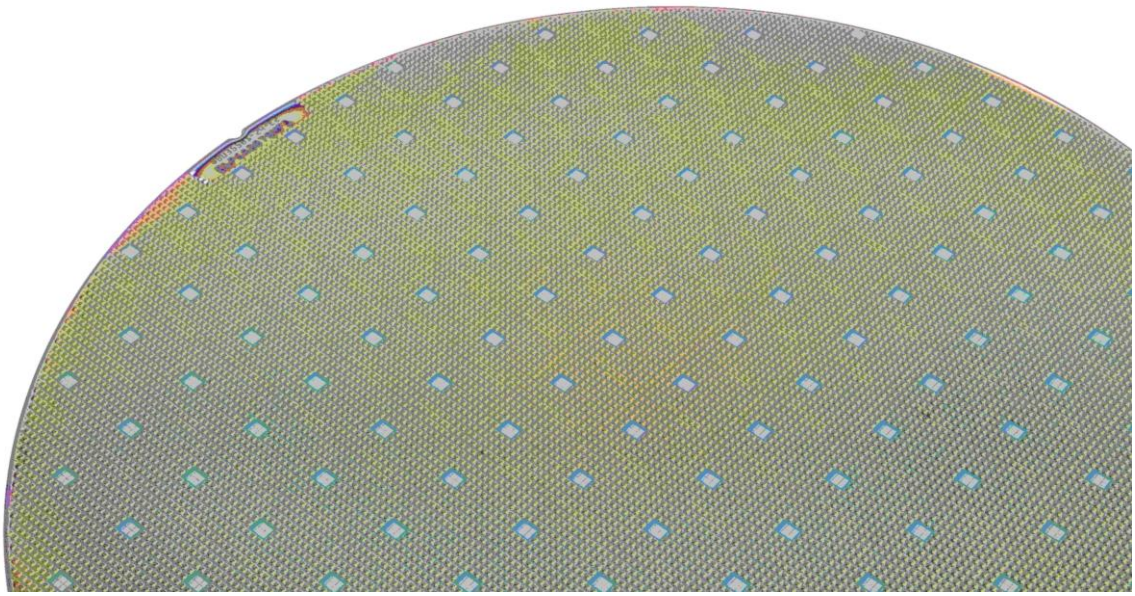
NMV2D

Passive UHF RFID 915MHz, EPC Gen2v2 and ISO/IEC 29167-10 with I²C Interface and Temperature Sensor



SEMICONDUCTOR DEVICE FOR RFID APPLICATIONS, WITH SECURITY AND TEMPERATURE SENSOR FEATURES

NMV2D is a semiconductor device compatible with EPCglobal ® Gen2v2 – the most recent industry international standard for RFID applications with security features, oriented to goods, identification, tracking and authentication.

The cryptographic operations embedded in the Gen2v2 protocol allow product authentication according to ISO/IEC 29167-10 standard, which is based on AES-128 cryptography. In addition, this integrated circuit complies with the Brazil-ID program for Brazilian market, as it has two custom commands (ReadSec and WriteSec) for secure data read and write with authentication of reader and data confidentiality.

To establish a wired communication with other electronic devices, it has also available the I²C interface. This communication channel is used following secured standards.

NMV2D INFORMATION

GENERAL DESCRIPTION	Passive UHF semiconductor device compatible with RAIN RFID and EPCglobal® Gen2v2. The cryptographic operations allow the authentication of items according to the ISO/IEC 29167-10 standard, which is based on encryption using the AES-128 algorithm (ECB, CBC and CMAC).

MEMORY CHARACTERISTICS

DATA RETENTION (minimum)	10 years
WRITE ENDURANCE (minimum)	10.000 write cycles
MEMORY BANKS (according to Gen2 protocol)	• **EPC** with 192-bit: one CRC 16-bit word, one PC 16-bit word, 128-bit Electronic Product Code (EPC), one XPC_W1 16-bit word and one reserved 16-bit word; • **TID** with 112-bit: 48-bit manufacturer data and 64-bit serial number; • **USER** with 512-bit for File_0; • **RESERVED** with 112-bit: for Kill password, access password and three special read-only words for the general interface through the I/O pins; • **Secure Segment** with 512-bit: 256-bit for keys and 256-bit for data of custom secure protocol.

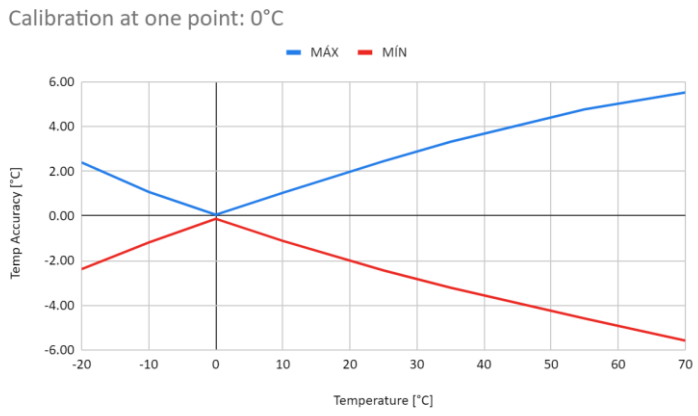
RF CHARACTERISTICS

IMPEDANCE (at minimum read sensitivity, 921MHz and 25°C, ANT and GND pads)		Rp 3.1729k // Cp 657.8fF Re + Im: 21.62 – j260.93
CARRIER FREQUENCY		860MHz to 960MHz
INPUT SIGNAL	**MODULATION**	DSB-ASK, SSB-ASK or PR-ASK
	DATA ENCODING	Pulse Interval Encoding (PIE)
OUTPUT SIGNAL	**MODULATION**	ASK
	DATA ENCODING	FM0 or MILLER
TURN-ON POWER (at 915MHz)		-16dBm
GEN2V2 COMMANDS		*Select*, *Query*, *QueryAdjust*, *QueryRep*, *ACK*, *NAK*, *Req_RN*, *Read*, *Write*, *Kill*, *Lock*, *Authenticate*, *TAM1*, *TAM2*, *ReadBuffer* and *Untraceable*.
CUSTOM COMMANDS*		*ReadSec* and *WriteSec*

OPERATION CHARACTERISTICS

TEMPERATURE	**OPERATION**	-25°C to +75°C
	STORAGE	-30°C to +85°C

TEMPERATURE SENSOR CHARACTERISTICS

RANGE	-25°C to +75°C	
ACCURACY (at calibration temperature)	± 0.2°C	

* For more details about custom commands, contact us.

NMV2D WAFER INFORMATION

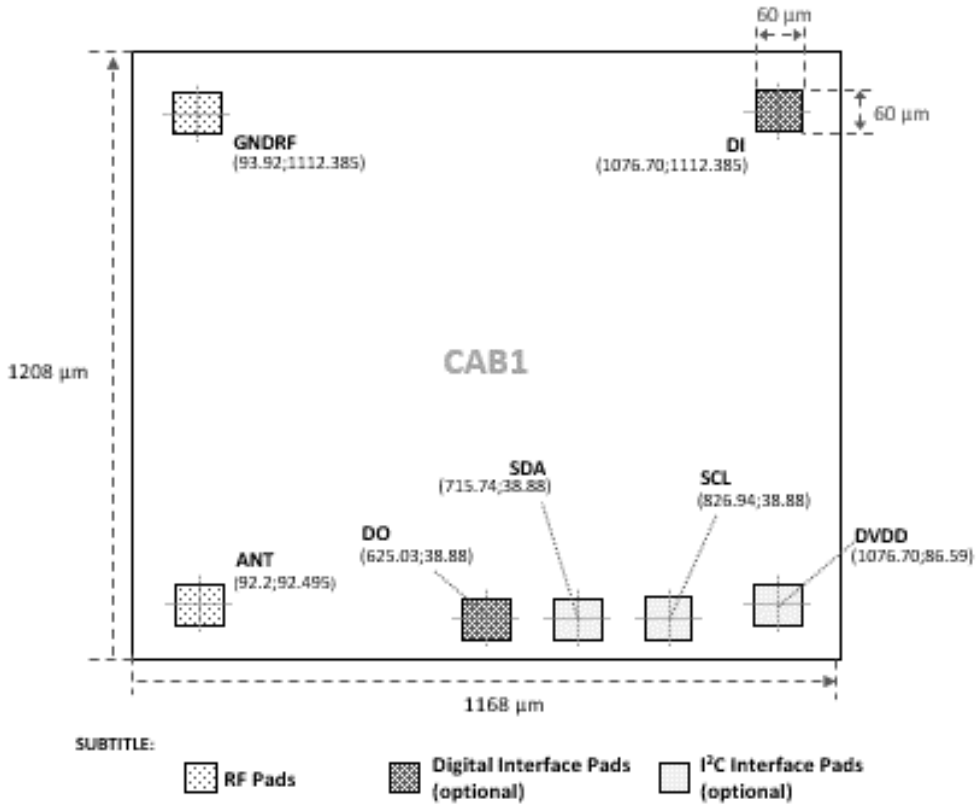
DIE PIN DESCRIPTION

#1	**ANT**	Antenna interface
#2	**DO**	Digital Output, special function
#3	**SDA**	I²C interface, data exchange function
#4	**SCL**	I²C interface, clock synchronization function
#5	**DVDD**	Power input, typical 2.5V to 3.3V
#6	**DI**	Digital input, special function
#7	**GNDRF**	Ground connection

WAFER/DIE PREPARATION

DIE SIZE AFTER DICING	1.116 x 1.063 mm
TARGET THICKNESS	0.150 mm

DIE PADS



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NOTICES