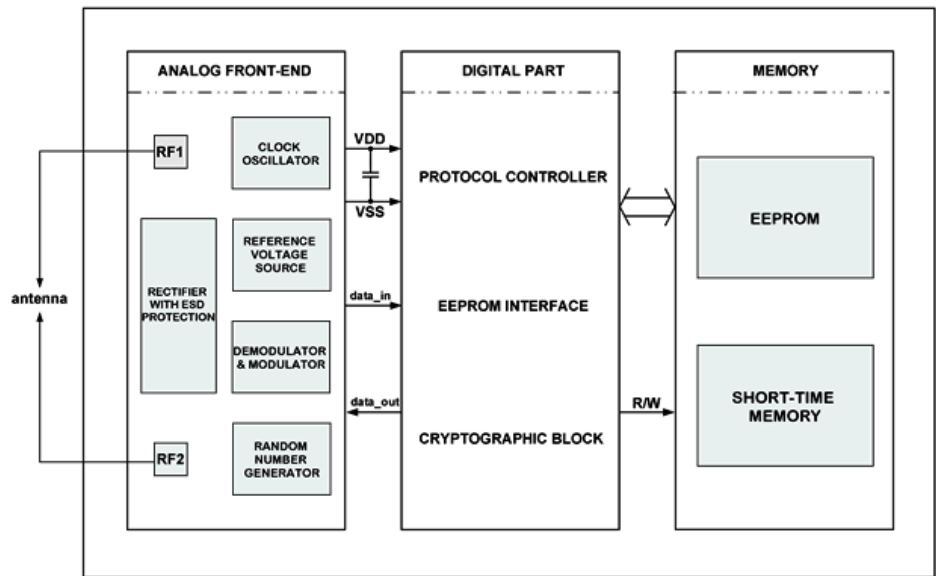


## UHF RFID tag IC with cryptographic authentication

### OVERVIEW

The chip is intended for use in passive UHF transponder applications. IC derives its operating power from an RF electromagnetic field generated by a reader, which is received and rectified by the chip. The chip sends the answer back to the reader using a backscatter modulation technique. NT1025\_4E4 provides a fast and flexible anti-collision protocol based on internal random number generator according to EPC standard. NT1025\_4E4 supports all EPC C1G2 mandatory



commands. NT1025\_4E4 has a 480 bit EEPROM organized in 4 banks. NT1025\_4E4 provides an authentication procedure based on the GOST 28147-89 cryptographic algorithm. For implementation of the algorithm, an additional 128-bit nonvolatile memory bank is used to store a secret key (Key128).

IP technology: SMIC EEPROM CMOS 180 nm.

IP status: silicon verification.

Total area: 0.316 mm<sup>2</sup>.

Sample for evaluation available.

### ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Conditions	Value			Unit
			min	typ.	max	
Operating temperature	T <sub>A</sub>	-	-40	25	+65	°C
Operating carrier frequency	F <sub>c</sub>	-	860	-	960	MHz
RC oscillator frequency	F <sub>osc</sub>	-	1.8	2.0	2.5	MHz
EEPROM retention time	t <sub>ret</sub>	-	-	10	-	year
EEPROM write endurance	N <sub>end</sub>	-	-	100k	-	cycle
Read sensitivity <sup>1</sup>	P <sub>rd_min</sub>	T <sub>A</sub> = 25 °C	-	-15	-	dBm
Write sensitivity <sup>1</sup>	P <sub>wr_min</sub>	T <sub>A</sub> = 25 °C	-	-13	-	dBm
Impedance	Z	F <sub>c</sub> = 867 MHz	-	14-j580	-	Ω
		F <sub>c</sub> = 915 MHz	-	14.3-j590	-	
		F <sub>c</sub> = 960 MHz	-	14.7-j600	-	

Note:\* 1 – Value from simulation without mismatch losses