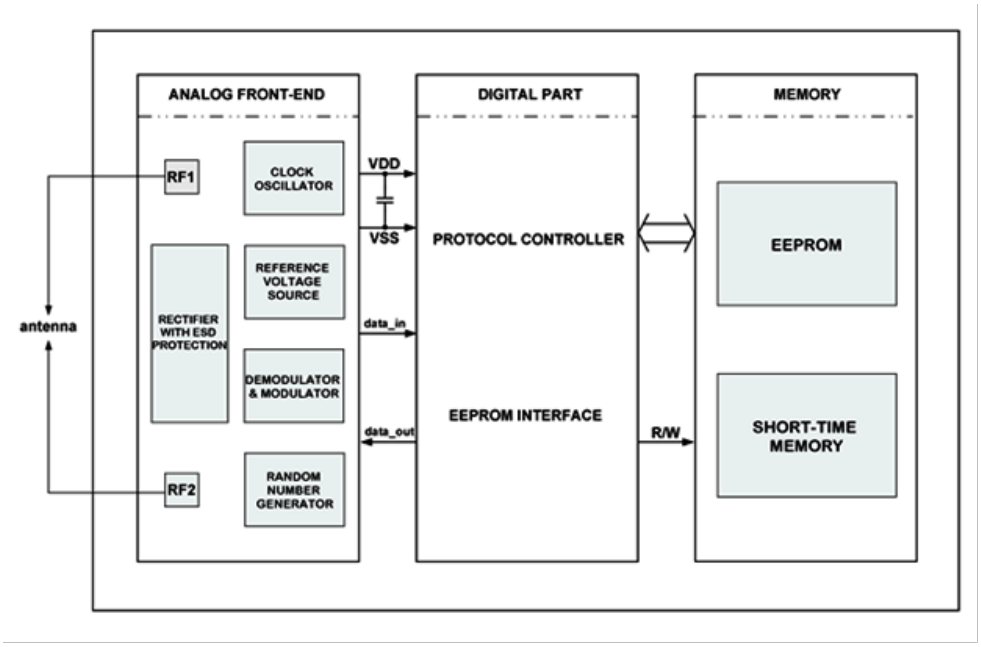
UHF RFID tag IC with cryptographic authentication

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. NT1025X provides a fast and flexible anti-collision protocol based on internal random number generator according to EPC standard. NT1025X supports all EPC C1G2 mandatory commands. NT1025X has a 480 bit EEPROM organized in 4 banks. NT1025X 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 proven.
Total area: 0.3 mm^2.

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Conditions	Value			Unit
			min	typ.	max	
Operating temperature	TA	-	-40	25	+65	°C
Operating carrier frequency	Fc	-	860	-	960	MHz
RC oscillator frequency	Fosc	-	1.8	2.0	2.5	MHz
EEPROM retention time	t_{ret}	-	-	10	-	year
EEPROM write endurance	N_{end}	-	-	100k	-	cycle
Read sensitivity[1]	Prd_min	TA = 25 °C	-	-18	-	dBm
Write sensitivity[1]	Pwr_min	TA = 25 °C	-	-16	-	dBm
Impedance	Z	Fc = 867 MHz	-	13-j250	-	Ω
		Fc = 915 MHz	-	12.5-j252	-	
		Fc = 960 MHz	-	12.1-j255	-	

Note:* 1 – Value from simulation without mismatch losses