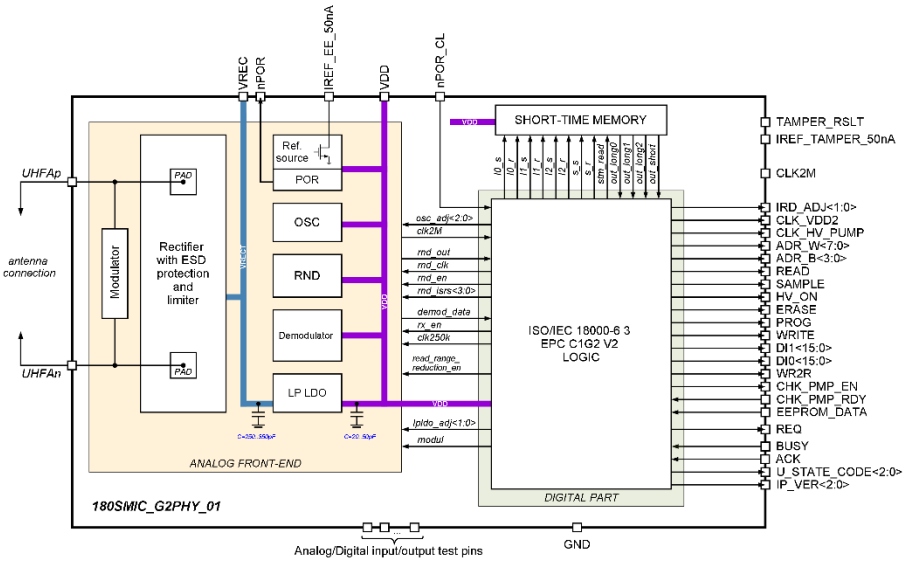
UHF RFID EPC Gen2V2 physical interface

OVERVIEW

180SMIC_G2PHY_01 is an IP intended for use in passive UHF transponder applications. IP derives its operating power from an RF electromagnetic field generated by a reader, which is received and rectified. The IP contains two UHFAp and UHFAn antenna pads. The IP sends the answer back to the reader using a backscatter modulation technique. 180SMIC_G2PHY_01 provides a fast and flexible anti-collision protocol based on internal random number generator according to EPC standard. The IP supports all EPC C1G2 V2 mandatory commands. Short-time memory block provides 4-bit storage with persistence values according to EPC C1G2 V2 standard. The operation of the IP-block must be carried out in conjunction with external non-volatile memory. The ability to access external memory for a third-party user (for example, through the HF NFC interface) is implemented according to the "First in and First Served" principle.



IP technology: SMIC EEPROM CMOS 0.18um.

IP status: silicon proven.

Total area: 0.196mm^2

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Conditions	Value			Unit
			min	typ.	max	
Operating temperature	Tj	-	-40	25	+85	°C
Operating carrier frequency	Fc	-	860	-	960	MHz
Output clock frequency	Fosc	-	-	2	-	MHz
LPLDO output voltage	VDD	*nPOR = 0*	-	1.15	-	V
		lpldo = "00"	-	1.05	-	
		lpldo = "01"	-	1.15	-	
		lpldo = "10"	-	1.25	-	
		lpldo = "11"	-	bypass	-	
POR threshold level	PORr	Released level	0.70	0.80	0.90	V
	PORa	Reset-reactive level	0.62	0.70	0.78	V
Minimum input power*	P_{min}	READ sensitivity	-	-20	-	dBm
		WRITE sensitivity	-	-18	-	
ESD	VESD	Human body model	-	2	-	kV
Chip impedance	Z	Fc = 868MHz	-	20-j307	-	Ω
		Fc = 915MHz	-	18-j292	-	
		Fc = 953MHz	-	17-j280	-	
Typical assembled impedance	Z_A	Fc = 915MHz; antenna shall be matched to this impedance assuming 50fF additional assembly capacitance at IP bumping	-	19-j270	-	Ω

Note: *measured with the 180SMIC_EEPROM_09