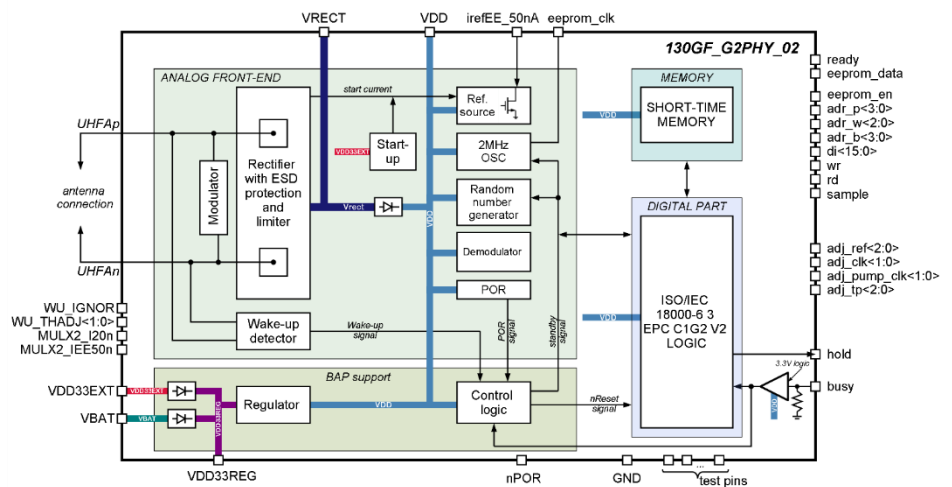


UHF RFID EPC Gen2 physical interface

OVERVIEW

130GF_G2PHY_02 is the 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 maximum output voltage of the rectifier (VRECT) does not exceed the threshold value of the DC limiter. Also, the IP can operate in battery assisted mode with improved



sensitivity. The IP contains two UHF_{Ap} and UHF_{An} antenna pads. The IP sends the answer back to the reader using a backscatter modulation technique. G2PHY IP provides a fast and flexible anti-collision protocol based on internal random number generator according to EPC standard. G2PHY IP supports all EPC C1 G2 mandatory commands. Short-time memory block provides 4-bit storage with persistence values according to EPC C1 G2 standard. The operation of the IP-block must be carried out in conjunction with external non-volatile memory (130GF_EEPROM_05 IP). Implemented the ability to access external memory for a third-party user (for example, through the HF NFC interface) according to the "First in and First Served" principle.

IP technology: Global Foundries Embedded EEPROM 0.13 um.

IP status: pre-silicon verification

Total area: 0.192mm²

ELECTRICAL CHARACTERISTICS

| Parameter | Symbol | Conditions | Value | | | Unit |
|-------------------------------------|----------------------|---|-------|---------|-----|------|
| | | | min | typ. | max | |
| Battery voltage | VBAT | - | 2.4 | 3 | 3.6 | V |
| External supply | VBB33EXT | - | 2.4 | 3 | 3.6 | V |
| VDD power supply | VDD | - | 0.8 | 1.2 | 1.8 | V |
| Operating temperature | T _A | - | -40 | 25 | +85 | °C |
| Operating carrier frequency | F _C | - | 860 | - | 960 | MHz |
| RC oscillator frequency | F _{OSC} | - | 1.5 | 2.0 | 2.9 | MHz |
| External supply current consumption | I _{VDDDE33} | Extra current for start-up circuit | - | 2 | 5 | uA |
| Battery current consumption | I _{BAT} | Woken up, reading EEPROM | - | 4.5 | - | uA |
| | | Standby mode | - | 1.6 | - | |
| Reverse (charging) battery current | I _{BATRVRS} | - | - | - | 0.1 | uA |
| Pull-down current | I _{PD} | For busy="1" | 0.5 | 0.7 | 1.2 | uA |
| | | For WU_IGNOR/THADJ, MULX2_I20n/IEE50n="1" | 1.8 | 2.5 | 3.9 | |
| Minimum input power | P _{MIN} | READ sensitivity | - | -18* | - | dBm |
| | | WRITE sensitivity | - | -12* | - | |
| | | READ and WRITE sensitivity in BAP mode | - | -22* | - | |
| Impedance | Z | F _C = 860 MHz | - | 30-j340 | - | Ω |
| | | F _C = 915 MHz | - | 26-j320 | - | |
| | | F _C = 960 MHz | - | 24-j305 | - | |

Note: *with the 130GF_EEPROM_05