

Technical Description (RFA-419T)

TRANSMITTER

1. Transmitter IC

The Transmitter IC Si4010 (IC2) is a fully integrated crystal-less CMOS SoC RF transmitter with an embedded CIP-51 8051 MCU designed for the sub 1 GHz ISM frequency bands. The signals are amplified by Internal PA, through the Balun, Filter and antenna transmit to space.

2. Power supply

The 6V battery follows the VOLTAGE REGULATOR (IC1) giving 3.0V output for the Transmitter IC (IC2) which can work at 1.8~3.6V

3. Crystal

The crystal oscillator Y1 10MHz produces an accurate clock reference for applications demanding a high-accuracy transmit carrier frequency and the output is connected to the frequency counter. The center frequency is determined by the programmable multiplier.

4. Modulation

The three switches S1, S2 and S3 are to choose the modulation signal

S1---Control Buzzer beep

S2--- Control Solenoid short spray

S3---Control Solenoid long spray

Antenna: Internal, Integral

Modulation: 916MHz; FSK; Single channel

Single Coin-cell Battery Transmitter

- Supply voltage: 1.8 to 3.6 V
- Standby current < 10 nA
- Crystal-less operation
- Temperature range -40 to +85 °C
- Automotive quality option, AEC-Q100
- 10-pin MSOP/14-pin SOIC
- Pb free/RoHS compliant

RF Transmitter

- Frequency range: 27—960 MHz
- +10 dBm output power, adjustable
- Automatic antenna tuning
- Symbol rate up to 100 kbps
- FSK/OOK modulation
- Manchester, NRZ, 4/5 encoder

Analog Peripherals

- LDO regulator with POR circuit
- Integrated temperature sensor
- Battery voltage monitor

High-Speed 8051 µC Core

- Pipeline instruction architecture
- 70% of instructions in 1 or 2 clocks
- Up to 24 MIPs with 24 MHz clock

Memory

- 4 kB RAM/8kB NVM
- 128 bit EEPROM
- 256 byte of internal data RAM
- 256 byte of external data RAM (XREG)
- 12 kB ROM embedded functions
- 8 byte low leakage RAM

Digital Peripherals

- 128 bit AES Accelerator
- 4/8 GPIO with wakeup functionality
- 1 LED driver
- Data serializer
- High-speed frequency counter
- RTC, Timers 2, 3
- On-chip debugging - C2

Clock Sources

- High-speed crystal-less VCO
- Programmable low-power osc - LPOSC
- Ultra low-power sleep timer
- Optional crystal oscillator input

Applications

- Garage and gate door openers
- Home automation and security
- Remote keyless entry

