

### Single Coin-cell Battery Transmitter

- Supply voltage: 1.8 to 3.6 V
- Standby current < 10 nA
- Crystal-less operation:
  - $\pm 150$  ppm 0 to  $+70^{\circ}\text{C}$
  - $\pm 250$  ppm  $-40$  to  $+85^{\circ}\text{C}$
- Temperature range  $-40$  to  $+85^{\circ}\text{C}$
- Automotive grade available
- 10P MSOP/14P 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 kBAud
- FSK/OOK modulation
- Manchester, NRZ, 4/5 encoder

### Analog Peripherals

- LDO regulator with POR circuit
- Integrated temperature sensor
- Low battery detector

### High-Speed 8051 $\mu\text{C}$ Core

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

### Memory

- 4 kB RAM/8K 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 (preserved in standby)

### Digital Peripherals

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

### Clock Sources

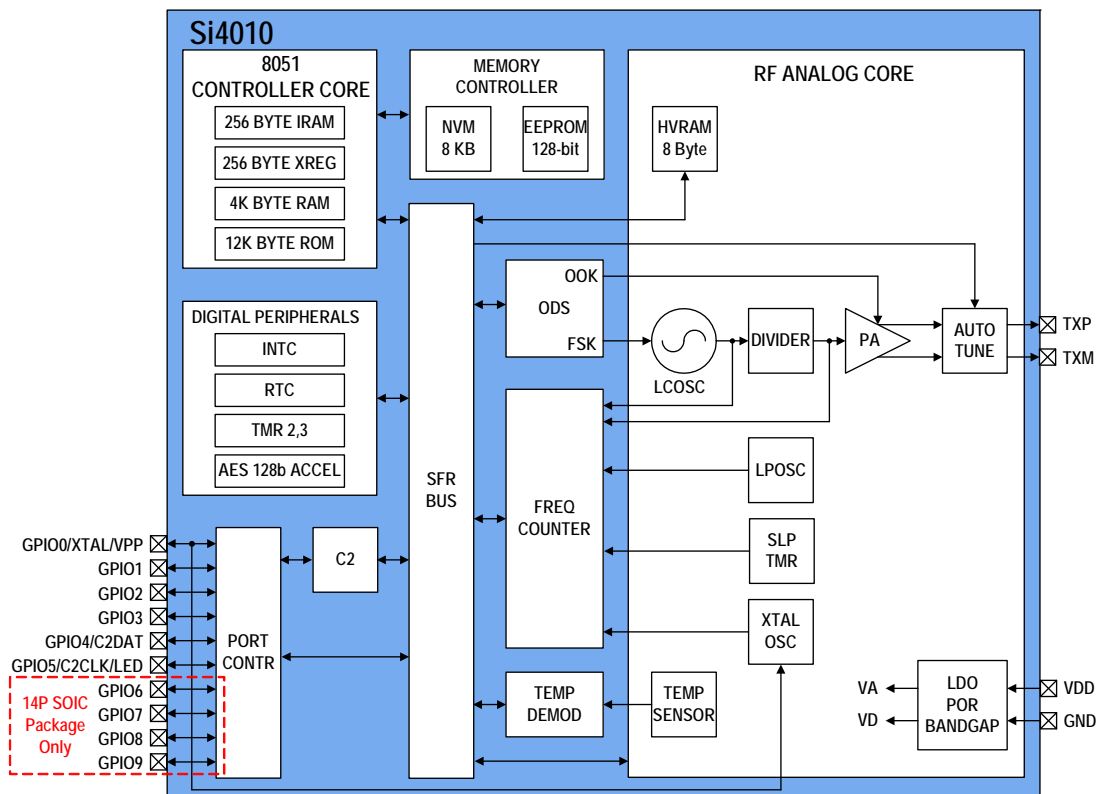
- High-speed crystal-less VCO
- Programmable low-power osc-LPOSC
- Ultra low-power sleep timer
- Optional crystal input for tighter tolerances

### Minimal External BOM

- Only one external component required

### Applications

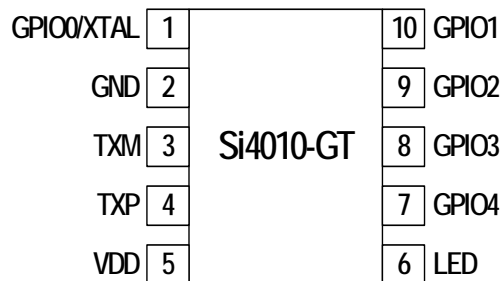
- Garage and gate door openers
- Home automation and security
- Remote keyless entry



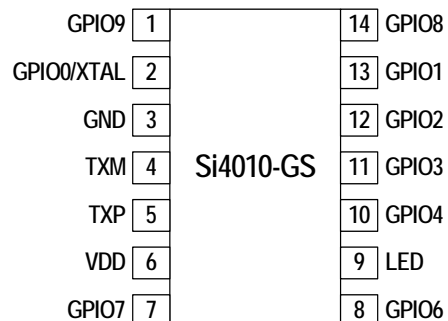
### Selected Electrical Specifications

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Supply Voltage	V <sub>DD</sub>		1.8	—	3.6	V
Supply Current	I <sub>VDD</sub>	+10 dBm output, OOK, Manchester	—	14.2	—	mA
		+6.5 dBm output, OOK, Manchester	—	11.3	—	mA
		+10 dBm, FSK	—	19.8	—	mA
		+6.5 dBm output, FSK	—	14.1	—	mA
Sleep Timer Mode	I <sub>ST</sub>	Only sleep timer is enabled	—	700	—	nA
Standby Current	I <sub>SB</sub>	All GPIO floating or held high	—	10	—	nA
Frequency Range	F <sub>RF</sub>		27		960	MHz
Frequency Noise (rms)		Allen deviation measured across 1ms interval	—	0.3	—	ppm
Frequency Tuning Time			—	5	—	ms
Carrier Frequency Accuracy		27 MHz ≤ F <sub>RF</sub> ≤ 960 MHz 0°C ≤ T <sub>A</sub> ≤ 70° C	-150	—	+150	ppm
		27 MHz ≤ F <sub>RF</sub> ≤ 960 MHz -40°C ≤ T <sub>A</sub> ≤ 85° C	-250	—	+250	ppm
		Error contribution using optional crystal input	-10	—	+10	ppm
Transmit Power		Maximum programmed transmit power	—	10	—	dBm
		Minimum programmed transmit power	—	-13	—	dBm
		Power variation vs temp and supply, with optimum load and V <sub>dd</sub> > 2.2V	-1.0	—	+0.5	dB
		Power variation vs temp and supply, with optimum load and V <sub>dd</sub> > 1.8V	-2.5	—	+0.5	dB
		Step size from -13 to +6.5 dBm	—	0.25	—	dB
PA Edge Ramp Rate Programmable Range		OOK mode	0.34	—	10.7	µs
Data Rate		FSK	0.1	—	100	kBaud
		OOK (Manchester)	0.1	—	50	kBaud

### 10-pin MSOP Package



### 14-pin SOIC Package





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