

CC1100

► MULTI-CHANNEL RF TRANSCEIVER

VERY LOW-COST UHF TRANSCEIVER

The CC1100 is a highly integrated multichannel RF Transceiver designed for low-power wireless applications. It is designed for the Industrial, Scientific and Medical (ISM) and Short Range Device (SRD) frequency bands at 315, 433, 868 and 915 MHz.

- VERY LOW TOTAL SYSTEM COST
- HIGH INTEGRATION LEVEL
- LOW POWER
- FLEXIBLE & ROBUST

► INTEGRATED SOLUTION PROVIDES LOW COST AND HIGH PERFORMANCE

Market's lowest system cost

- Very few external components required.
- Very small footprint. The CC1100 comes in a 4 x 4 mm, RoHS compliant 20-pin QLP package.
- Reference design with two-layer PCB and all components mounted on the same side.
- CC1100's many powerful digital features make it easy to build a high-performance RF system using an inexpensive microcontroller.

Very low power consumption

- RX: 15.6 mA and TX: 28.8 mA (+10 dBm) at 433 MHz.
- Burst mode data transmission with high over-the-air data rate reduces current consumption.
- Automatic RX polling using Wake-on-Radio: 1.8 μ A.

Excellent radio performance

- High sensitivity (-110 dBm at 1.2 kbps).
- Programmable data rate from 1.2 - 500 kbps.
- Robust solution with excellent selectivity and blocking performance.
- Programmable output power up to +10 dBm for all supported frequency bands.
- Ideal for multichannel operation (50-500 kHz channels).

► APPLICATIONS

The CC1100 can be used in a wide range of applications, such as:

- Home and building automation
- Automatic Meter Reading (AMR)
- Wireless alarm and security systems
- Industrial monitoring and control
- Wireless sensor networks
- Consumer Electronics
- Ultra low-power wireless applications operating in the 315/433/868/915 MHz ISM/SRD bands

GENERAL CHARACTERISTICS

| PARAMETER | MIN | TYP | MAX | UNIT | CONDITION |
|---|-----|------|-----|------|--|
| OPERATING CONDITIONS: | | | | | |
| Operating temperature range: | -40 | | +85 | °C | |
| Operating supply voltage | 1.8 | | 3.6 | V | |
| CURRENT CONSUMPTION | | | | | |
| Current consumption RX, 433 MHz | | 15.6 | | mA | |
| Current consumption TX (+10 dBm), 433 MHz | | 28.8 | | mA | |
| Current consumption, power down | | 400 | | nA | |
| RF CHARACTERISTICS | | | | | |
| Frequency range | 300 | | 348 | MHz | |
| | 400 | | 464 | MHz | |
| | 800 | | 928 | MHz | |
| Data rate (programmable) | 1.2 | | 500 | kbps | |
| Output power (programmable) | -30 | | +10 | dBm | GFSK, FSK & OOK |
| | -30 | | 0 | dBm | ASK |
| Sensitivity, 1.2 kbps | | -110 | | dBm | 2-FSK, 50 kHz channel spacing, 433 MHz |
| Sensitivity, 250 kbps | | -88 | | dBm | 2-FSK, 540 kHz channel, spacing, 433 MHz |



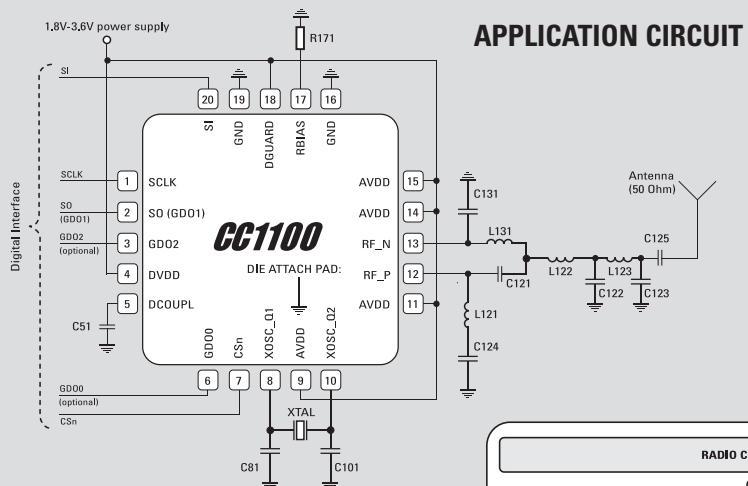
The SmartRF®04 Technology

The SmartRF®04 Technology is Chipcon's latest platform for product development. It is based on an advanced 0.18 μm CMOS technology facilitating superior RF performance in combination with high-density and low-power integration of digital modules.

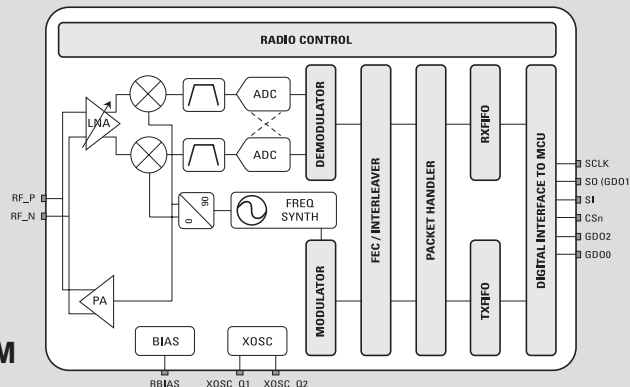
FEATURES

- SPI interface for configuration and data communication. Configuration data retained in power down
- Full packet handling including preamble generation, sync word insertion/detection, address check, flexible packet length and automatic CRC
- Separate 64-byte RX and TX data FIFOs for burst mode data transmission. No limit on packet length during transmission
- Programmable Carrier Sense indicator and digital RSSI output
- Wake-on-Radio functionality for automatic ultra low-power RX polling
- Optional Forward Error Correction with interleaving, for enhanced link reliability and reduced need to retransmit packets
- Optional data whitening/dewhitening
- Programmable receiver channel filter bandwidth
- Very fast startup time from power down (0.3 ms) reduces power consumption
- Ideal for frequency hopping systems due to a fast settling frequency synthesizer (hop time of 100 μs)
- 2-FSK, GFSK, MSK and ASK/OOK supported
- Programmable Preamble Quality Indicator for detecting preambles and improved protection against sync word detection in random noise
- Support for automatic Clear Channel Assessment (CCA) makes the CC1100 ideal for Listen-Before-Talk (LBT) systems
- Support for per-package Link Quality Indication
- Support for asynchronous transparent receive/transmit mode for backwards compatibility with existing radio communication protocols
- In a typical system, the CC1100 will be accompanied by an inexpensive microcontroller and low-cost passive components.
- Reference design compliant with ETSI EN 300 220 (Europe) and FCC CFR47, Part 15 (US)
- CC1100 is based on Chipcon's SmartRF®04 technology in 0.18 μm CMOS
- Pin and register compatible with its 2.4 GHz counterpart (the CC2500)
- RoHS compliant QLP16 package

APPLICATION CIRCUIT



BLOCK DIAGRAM



ABOUT CHIPCON

Chipcon is a leading international semiconductor company that designs, produces and markets high performance standard radio frequency integrated circuits (RF-ICs) for use in a variety of wireless applications in the 300 to 1000 MHz and 2.4 GHz frequency bands.

Chipcon targets both consumer electronics and home and building automation end markets and has a strong position within both proprietary and standards-based radio technologies.

Chipcon Group ASA is the parent company and holding company that controls the activities of its wholly owned subsidiaries Chipcon AS and Chipcon Inc. Chipcon's products are distributed worldwide and we are represented at 55 locations in 31 countries.

**TEXAS
INSTRUMENTS**

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