
FSK LONG RANGE TRANSCEIVER MODULE

Description

ST-TR1100PN is an FSK Transceiver module, which is a true single-chip UHF transceiver. It is based on a 3-wire digital serial interface and an entire Phase-Locked Loop (PLL) for precise local oscillator generation. So the frequency could be set.

ST-TR1100PN is mainly developed by the Chipcon IC (CC1100) and added the PA & LNA circuit to the module and can be used with a long working distance.

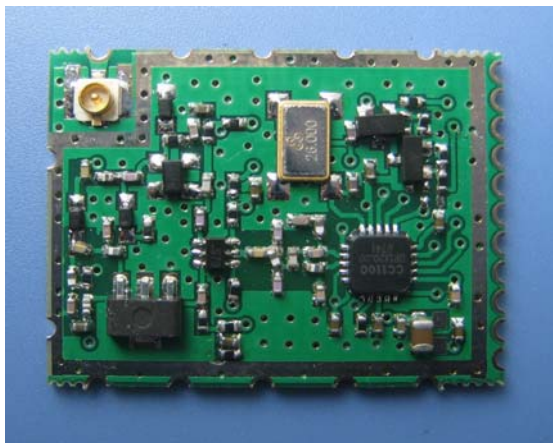
It can be used on a wireless security system or specific remote-control function and other wireless systems.

Applications

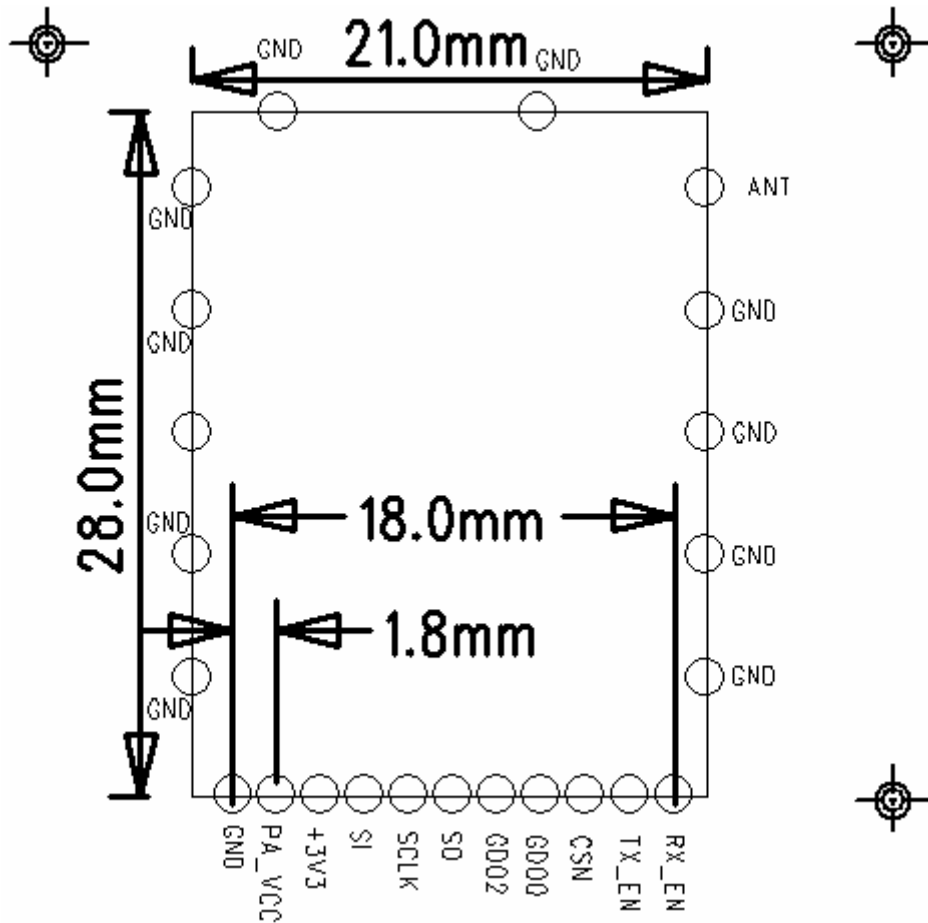
- Car security system
- Remote keyless entry
- Garage door controller
- Home security
- Wireless mouse
- Automation system

Features

- Integrated bit synchronizer.
- Integrated IF and data filters.
- High sensitivity (type -115dBm at 2.4kbps)
- Programmable output power -20dBm~30dBm
- Operation temperature range : -40°C ~ +85°C
- Operation voltage: 5Volts.
- Available frequency at : 408~464 MHz
- Digital RSSI
- Digital function for package format



Mechanical Dimension



Pin Description

PIN#	Pin name	Pin type	Description
1	GND	Ground	GND
2	PA_VCC	PA power	3.3-9V PA power
3	+3V3	power	3.3V
4	SI	Digital input	Serial configuration interface, data input
5	SCLK	Digital input	Serial configuration interface, clock input
6	SO	Digital Output	Serial configuration interface, clock input Optional general output pin when CSN is high
7	CSN	Digital input	Serial configuration interface ,chip select
8	GND		GND
9	TX-EN	TX_EN	TX enable
10	RX-EN	RX-EN	RX enable

Electrical Specifications

Tc = 25°C, VDD = 5.0V

Parameter	Min	Typ	Max	Unit	Condition
Current consumption, TX	300	350	380	mA	Transmit mode, +30dBm output power 9V PA_VCC
Current consumption, TX	100	150	180	mA	Transmit mode, +20dBm output power 3.3V PA_VCC
Current consumption, RX	15	20	30		receiver
Current consumption,STB		TAB			Stand by

General Characteristics

Parameter	Min	Typ	Max	Unit	Condition/Note
Frequency range	408	433	464	MHz	
Data rate	1.2	----	500	kbps	Modulation formats supported: (Shaped) MSK (also known as differential offset QPSK) up to 500kbps 2-FSK up to 500kbps GFSK and OOK/ASK (up to 250kbps) Optional Manchester encoding (halves the data rate).

RF Receive Section

T_c = 25°C, VDD = 3.0V

Parameter	Min	Typ	Max	Unit	Condition/Note
Differential input impedance		TBD		Ω	Follow CC1100EM reference design
Receiver sensitivity 434MHz	110	-115		dBm	2-FSK, 1.2kbps, 5.2kHz deviation, 1% packet error rate, 62 bytes packet length, 58kHz digital channel filter bandwidth
	100	-105		dBm	2-FSK, 38.4kbps, 20kHz deviation, 1% packet error rate, 62 bytes packet length, 100kHz digital channel filter bandwidth
	89	-92		dBm	2-FSK, 250kbps, 127kHz deviation, 1% packet error rate, 62 bytes packet length, 540kHz digital channel filter bandwidth
	89	-92		dBm	OOK, 250kbps OOK, 1% packet error rate, 62 bytes packet length, 540kHz digital channel filter bandwidth
Saturation		-15		dBm	
Digital channel filter bandwidth	58		650	kHz	User programmable. The bandwidth limits are proportional to crystal frequency (given values assume a 26.0MHz crystal).

RF Transmit Section

Tc = 25°C, VDD = 3.0V, +10dBm if nothing else stated. Measured on Chipcon's CC1100EM reference design.

Parameter	Min	Typ	Max	Unit	Condition/Note
Differential load impedance		TBD		Ω	Follow CC1100EM reference design
Output power, highest setting		10		dBm	Output power is programmable, and full range is available in all frequency bands. Delivered to a 50Ω single-ended load via Chipcon reference RF matching network.
Output power, lowest setting		-30		dBm	Output power is programmable, and full range is available in all frequency bands. Delivered to a 50Ω single-ended load via Chipcon reference RF matching network.
Spurious emissions and harmonics, 433/868MHz			-36	dBm	25MHz – 1GHz
			-54	dBm	47-74, 87.5-118, 174-230, 470-862MHz
			-47	dBm	1800MHz-1900MHz (restricted band in Europe), when the operating frequency is below 900MHz (2 nd harmonic can not fall within this band when used in Europe)
			-30	dBm	Otherwise above 1GHz
Spurious emissions, 315/915MHz			-49.2	dBm EIRP	<200μV/m at 3m below 960MHz.
			-41.2	dBm EIRP	<500μV/m at 3m above 960MHz.
Harmonics 315MHz			-20	dBc	2 nd , 3 rd and 4 th harmonic when the output power is maximum 6mV/m at 3m. (-19.6dBm EIRP)
			-41.2	dBm	5 th harmonic
Harmonics 915MHz			-20	dBc	2 nd harmonic
			-41.2	dBm	3 rd , 4 th and 5 th harmonic