

STRADA431

Технические характеристики

По вопросам продаж и поддержки обращайтесь:

Алматы (7273)495-231	Калининград (4012)72-03-81	Омск (3812)21-46-40	Сыктывкар (8212)25-95-17
Ангарск (3955)60-70-56	Калуга (4842)92-23-67	Орел (4862)44-53-42	Тамбов (4752)50-40-97
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Россия +7(495)268-04-70	Киргизия +996(312)-96-26-47	Казахстан +7(7172)727-132	

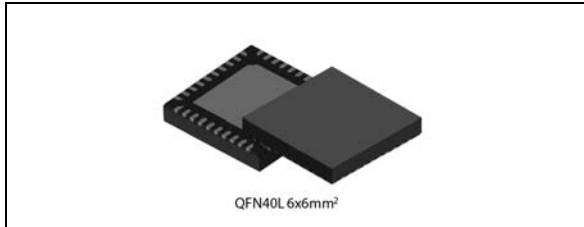
Automotive ADAS Devices/Automotive Radar Transceivers

Driver assistance systems use radar sensors in various counts and configurations. The data provided by the radar sensors is used in applications such as blind-spot detection, autonomous emergency braking, and adaptive cruise control, to increase safety by enabling vehicles to identify and avoid potentially dangerous situations. Radar systems in conjunction with other sensor systems will contribute to increasing automation levels right up to the completely autonomous vehicle.

Part Number	General Description	Package	At Frequency Range (GHz)	Grade	Operating Temperature (°C) max	Operating Temperature (°C) min	Automotive Grade	RoHS Compliance Grade
STRADA431	24-GHz Transceiver MMIC for Automotive Radar Sensor	VFQFPN 6X6	24	Automotive Safety	125	-40	Yes	Ecopack2

24 GHz Transceiver MMIC for Automotive Radar Sensor

Data brief



Applications

24 to 24.25 GHz automotive radar applications.

Features

- AEC-Q100 qualified
- Single-channel transmitter with differential output Pout: 13 dBm
- On-chip low phase noise VCO
- Three single-ended RX channels
- Low noise figure NF_{ssb}: 11 dB
- High programmable conversion gain up to 60 dB
- IF variable gain function
- IF switchable bandpass filters
- Rail-to-rail single-ended IF output
- Programmable VCO driver output at 750 MHz and 1.5 MHz or 23 kHz
- On-chip power and temperature sensors
- 3.3 V supply voltage
- 4-pin SPI for chip configuration
- QFN 6x6 mm² and 40 leads - wettable flanks



Table 1. Device summary

Package	Order code	
	Tray	Tape and reel
QFN-40L	STRADA431	STRADA431-TR

1 Description

STRADA431 is a single-chip transceiver for automotive radar able of covering the frequency band from 24 to 24.25 GHz in order to be compliant with ISM band applications.

STRADA431 can be operated by a single power supply at 3.3 V thanks to integrated LDOs.

The device consists of:

- One differential RF transmitter
- Three single-ended RF receivers

and it is full configurable via SPI.

The transmitter part is based on:

- On-chip voltage-controlled oscillator (VCO) controlled by an external fine tuning voltage (VTUNEF pin) and a coarse digital control driven via SPI;
- Two stages of Power amplifier (PA) digitally-controlled;
- Two output signals, proportional to VCO output frequency:
 - DIV_OUT pin with 2 possible frequency ranges: 1.5 MHz or 23 kHz dividing RF signal by 2^{14} or 2^{20}
 - HV_DIV_OUT with a frequency around 750 MHz dividing RF signal by 2^5 .

The transmitter delivers a typical output power of 13 dBm to the antenna.

Each receiver chain consists of:

- A high linearity down converter
- A VGA with 16 steps of programmable gain and band-pass filter with possibility to center the cut-off frequencies (High Pass filter = 60 kHz; Low Pass filter = 500 kHz or 1 MHz configurable via SPI).
- IF analog output

STRADA431 includes monitoring functions for compliancy to ISO-26262 Road Vehicles Functional Safety: junction temperature sensor, transmitted output power detector and complete Rx chain via Test-Tone.

Test-Tone can be used also for band pass filter calibration.

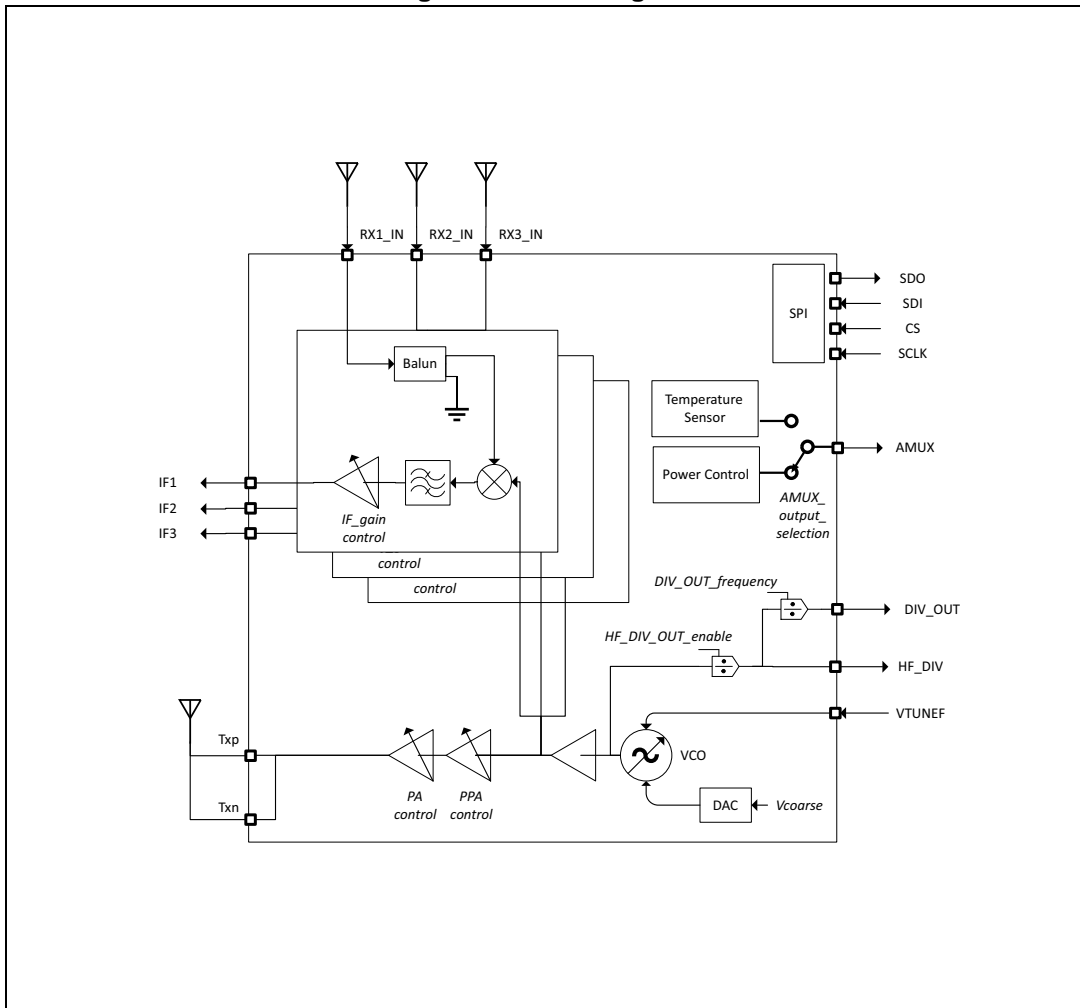
Table 2. Main parameters

Symbol	Parameter	Note/Test condition	Min	Typ	Max	Unit
V _{CC}	Supply voltage			3.3		V
I _{CCTot}	Current consumption	All blocks active at max gain with 3 Receivers powered		270		mA
P _{OUT}	Output power			13		dBm

Table 2. Main parameters (continued)

Symbol	Parameter	Note/Test condition	Min	Typ	Max	Unit
PN	Phase noise	VCO frequency = 24.15 GHz; Offset freq = 100 kHz for minimum digital control word achieve desired VCO frequency		-75		dBc/Hz
CG _{Max}	Maximum Conversion gain	VGA at max gain at 200 kHz IF frequency		60		dB
CG _{Min}	Minimum Conversion gain	VGA at max gain at 200 kHz IF frequency		43		dB
NF	Noise Figure	At 300 kHz IF frequency; VGA at max gain		11		dB
P _{1dBmaxG}	Input 1 dB compression point at maximum gain	max conversion gain at 200 kHz IF frequency		-47		dBm
P _{1dBminG}	Input 1 dB compression point at minimum gain	min conversion gain at 200 kHz IF frequency		-30		dBm
IF _{HP3dB}	High Pass filter 3 dB cut-off frequency			60		kHz
IF _{LP3dB}	Low Pass filter 3 dB cut-off frequency	2 programmable cut off frequency	0.5		1	MHz

Figure 1. Block diagram



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