Transceiver Module

10.7-12.7 & 12.75-14.75 GHz

Product Datasheet

UDC200

Integrated transceiver module for Ku-band frequencies.

Overview

UDC200 is a fully integrated stand-alone transceiver module designed for Ku band communication systems. Designed to operate in Low Earth Orbit (LEO) with an on-board 1U stackable enclosure.

The transmitter has an IF input frequency range of 1-3 GHz with an output range of 10.7-12.7 GHz, having an LO Frequency of 13.7 GHz and Output Power of >20 dBm.

The receiver has an IF output frequency range of 1-3 Ghz with an input range of 12.75-14.75 GHz, having an LO Frequency of 11.7 GHz and LO Power of >15 dBm.

*Gold and other plating options available on request

Features

- Tx output frequency range 10.7 - 12.7 GHz
- Rx input frequency range 12.75 - 14.75 GHz
- Tx LO frequency 13.7 GHz
- Rx LO frequency 11.75 GHz

Applications

- High speed data communiactions
- Space communications
- IOT
- Security

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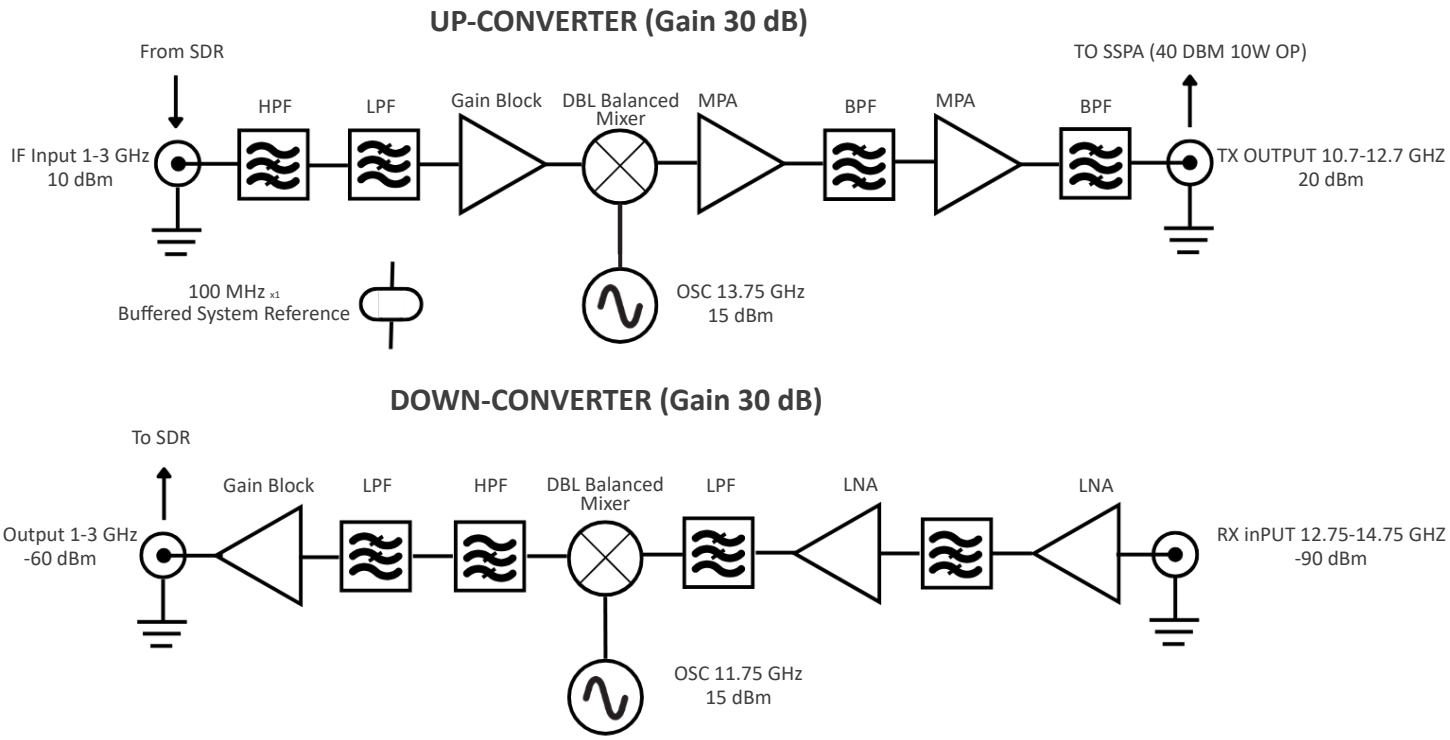
Product Datasheet

System Diagrams



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Product Datasheet

Requirements Specification

Transmitter

Parameter	Typical	Units
TX Output Frequency Range	10.7 - 12.7	GHz
TX Output Linear Power	20+	dBm
IF Input Frequency Range	1 - 3	GHz
IF Input Power	-30 - 0	dBm
Reference Frequency*	100 (onboard or external)	MHz
Reference Phase Noise	-145	dBc/Hz
Reference Signal Characteristics	Square Input: 0.6Vpp (min)/ 2.5Vpp (max)- Slew Rate>0.5V/ns Sinewave:+5dBm (min)/+15dBm (max)	dB
Reference Stability	< 25	PPM
Conversion Gain	30 (extended 50 50dB with SSPA)	dB
Gain Flatness Overtypical Channel Bandwidth from SDR (250MHz)	3 (speciified over max channel bandwidth (250MHz) accross entire 4GHz) RX bandwidth. (SDR input channel band)	dB
Phase Noise		
10Hz	-40	dBc/Hz
100Hz	-60	dBc/Hz
1kHz	-70	dBc/Hz
10kHz	-80	dBc/Hz
100kHz	-100	dBc/Hz
1MHz	-123	dBc/Hz
10MHz	-140	dBc/Hz
Spurious	-50	dBc
Supply Voltage Range	8 - 42	Vdc
DC Current	1	Amp
DC Power	<6	Watts

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Transceiver Module

10.7-12.7 & 12.75-14.75 GHz

Product Datasheet

Requirements Specification

Receiver

Parameter	Typical		Units
RX Input Frequency Range	12.75 - 14.75		GHz
RX Input Power Range	-90 to -300 (LNA dependant)		dBm
IF Output Frequency Range	1 - 3		GHz
IF Output Range	-60 to 0		dBm
Reference Frequency	100	(onboard or external)	MHz
Reference Phase Noise	-100		dBc/Hz
Reference Signal Characteristics	Square Input: 0.6Vpp (min)/ 2.5Vpp (max)- Slew Rate>0.5V/ns Sinewave:+5dBm (min)/+15dBm (max)		
Reference Stability	< 25		PPM
Conversion Gain	30	(extended 50 50dB with SSPA)	dB
Gain Flatness Over Typical Channel Bandwidth from SDR (250MHz)	3	(speciified over max channel bandwidth (250MHz) accross entire 4GHz) RX bandwidth. (SDR input channel band)	dB
Phase Noise			
10Hz	-40		dBc/Hz
100Hz	-40		dBc/Hz
1kHz	-70		dBc/Hz
10kHz	-80		dBc/Hz
100kHz	-100		dBc/Hz
1MHz	-123		dBc/Hz
10MHz	-140		dBc/Hz
Spurious	-60		dBc
Noise Figure	<2.5		dB
Supply Voltage Range	8 - 42		Vdc
DC Current	1		Amp
DC Power	<6		Watts

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Mechanical and Environmental

Mechanical

Parameter	Typical	Units
PCB Dimensions	92 x 96 x 20 (PC-104 form factor)	mm
Mechanical Enclosure Required	Customer requirement	Yes/No
Mechanical Enclosure Dimensions	1U Cubesat (100 x 100 x 100)	mm
Total Mass	<1	kg
Form Factor Requirement	PC-104	
Enclosure Material Requirement	>2.54mm Aluminium	mm
Enclosure Material Requirement	Gold	
RF Connector Types	SMA	
DC Connector Types	DC Feedthrough or alt. high tel. panel mount	
IF Signal Connector Types	SMA	

Environmental

Parameter	Typical
Operating Temperature Range	-40°C to +70 °C
Operating Environment	-
Radiation Tolerance (kRad)	-
Vibration Requirement	-
Vacuum Requirement	-
Compliance Standards	-

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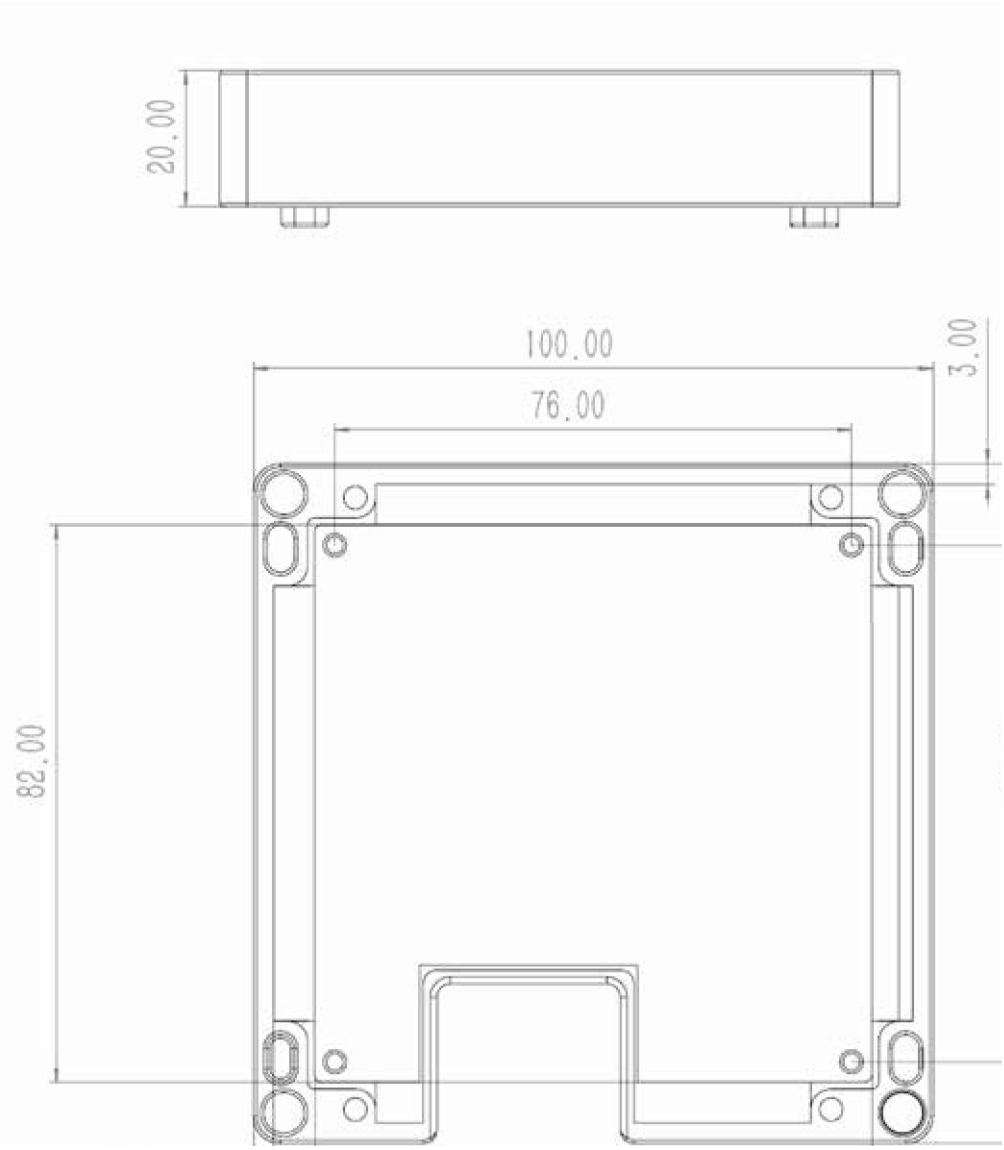
3. Requirements Specification

3.4 Mechanical Enclosure Preliminary Dimensions



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