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# HD155131TF

RF Transceiver IC for GSM, DCS1800/1900 Dual band cellular systems

## HITACHI

Target Specification

Rev 2.1 Sept. 99

### Description

The HD155131TF is a RF transceiver IC for GSM, DCS1800/1900 dual band cellular systems, and integrates most of the low power silicon functions of a transceiver. The HD155131TF incorporates dual RF LNAs, dual first mixers, a second mixer, a programmable gain amplifier, and an IQ demodulator for the receiver, and an IQ modulator and offset PLL for the dual band transmitter, and an IF synthesizer, and a RF synthesizer. Also, on chip are dividers for the phase splitter. Moreover the HD155131TF includes power mode controller to optimize the power consumption. These functions can operate down to 2.7V and are housed in a 56-pin TQFP SMD package.

Hence the HD155131TF can form a small size transceiver handset for dual band by adding power amplifiers and some external components.

The HD155131TF is fabricated using a 0.35 $\mu$ m deep trench+SOI Bi-CMOS process.

### Functions

- Receiver(RX)
  - Low Noise Amplifier(LNA)
  - first mixer
  - IF amplifier and second mixer
  - Programmable gain amplifier(PGA)
  - IQ demodulator with 90 degree phase splitter

- Transmitter(TX)
  - IQ modulator with 90 degree phase splitter
  - Offset PLL
    - Down converter
    - Phase comparator
    - TXVCO driver

- PLL Synthesizer
  - RF Synthesizer for RX/TX RF local
  - IF Synthesizer for RX/TX IF local

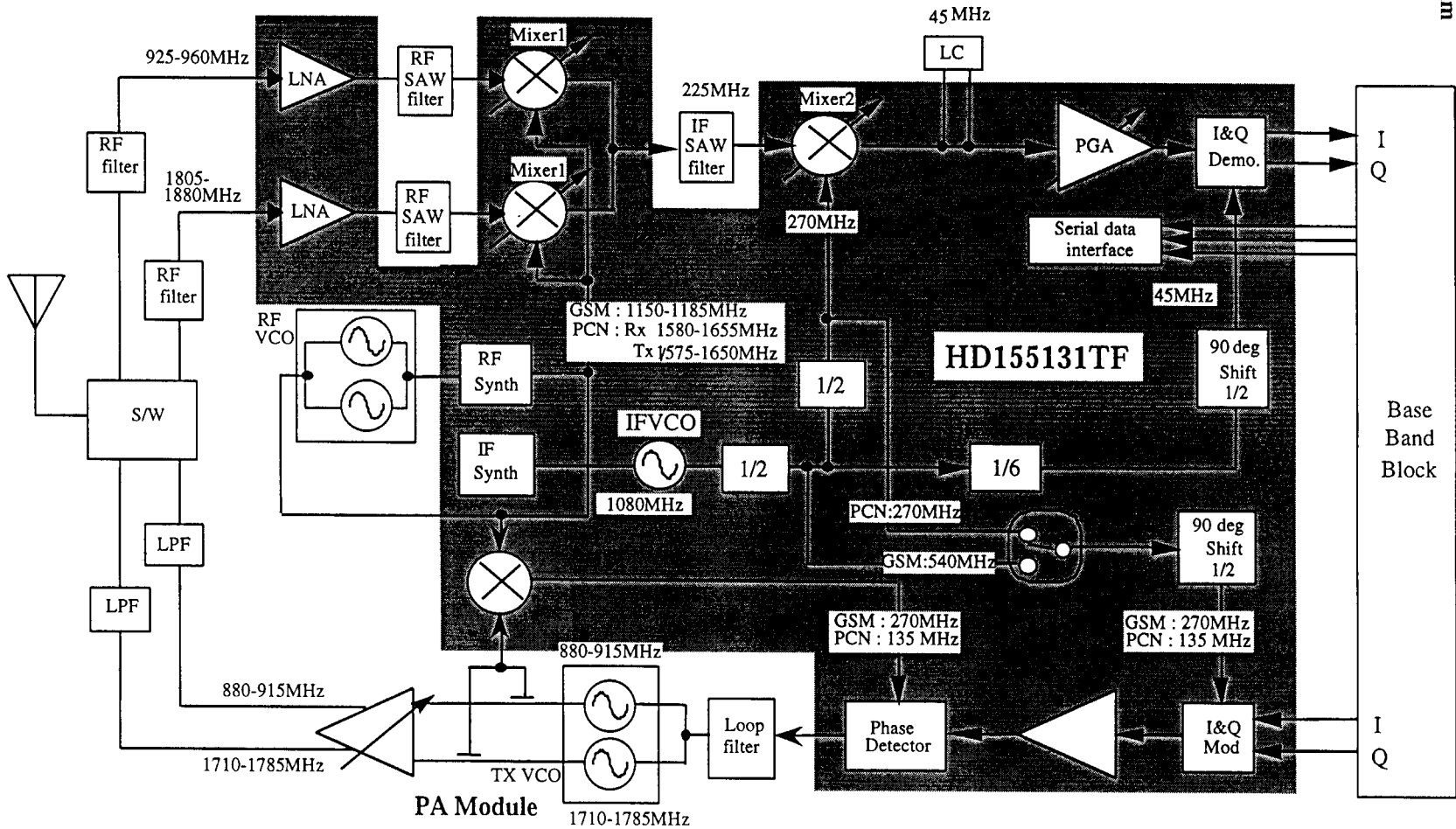
- Others
  - IF dividers
  - Power mode control circuit
  - IFVCO

### Features

- Highly integrated RF processing for hand-portables
- Operating supply voltage
  - VCC : 2.7 to 3.3 V
- Current consumption
  - Rx mode : 60mA(typ)
  - Tx mode : 45mA(typ)
  - Wait mode : 10mA(typ)
  - Idle mode : 1 $\mu$ A(typ)
- Operating temperature :-20 to +75 degree
- TQFP 56pin SMD (Low Profile Quad Flat Package)
- Wide operating frequencies
 

- Rx	RF	GSM:925 - 960MHz
		DCS1800/1900:1805 - 1990MHz
	1st IF	:225MHz
	2nd IF	:45MHz
- Tx	RF	GSM:880 - 915MHz
		DCS1800/1900:1710 - 1910MHz
	IF	GSM:270MHz
		DCS1800/1900:135MHz
- Offset PLL architecture for Transmitter
- High dynamic range Programmable Gain Amplifier (PGA)

The Configuration of HD155131TF



Block Diagram

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