MICROTUNE

Product Brief

MT3141
World-Standard Receiver

The MT3141, based on the MicroCeiver™ architecture, is a single chip receiver that integrates all the functions of the RF tuner, analog demodulator, IF filters, and amplifiers in a single IC.

Related Product Information:

- Press Release
- Related Products
- Order Information
- Cable Product Selector Guide

Description

The MT3141 receiver is a world-standard solution designed to ease implementation of high-performance terrestrial and Tru2Way™ television receivers. It also supports advanced analog/digital set-top boxes (STB) and home gateway applications.

The MT3141 was designed to deliver the best performance both in off air terrestrial and cable reception. The IC needs only a relatively simple bill of materials to make the required small PCB footprint for slimmer flat panel TVs. No balun or SAW filters are required.

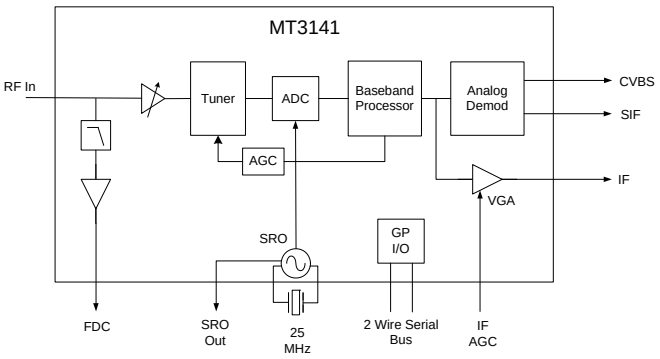
Applications

- Integrated Digital TV sets for terrestrial and cable reception
- Tru2Way iDTVs
- Hybrid (analog/digital) STBs and DVRs/PVRs
- Hybrid (analog/digital) home gateway applications
- Hybrid (analog/digital) PCTV applications
- Analog/Digital terrestrial or Tru2way cable DVR
- Analog/Digital ½ NIM, ¾ NIM or full NIMs

Features

- NTSC/PAL/SECAM synchronous demodulation with active carrier regeneration with composite video (CVBS) and sound intermediate frequency (SIF) outputs
- Flexible standard or low IF output that supports nearly all digital demodulators available
- Low external bill of materials: No balun, SAW filters or active components required.
- Single-ended RF input
- Integrated ClearTune™ RF filtering
- Fully integrated RF automatic gain control (AGC) simplifying digital demodulator interfaces
- 44 to 1002 MHz input frequency tuning range
- Integrated LNA for best-in-class terrestrial reception
- 3.3V (analog) and 1.8V (digital) power supply operation
- Exceeds requirements of ATSC, CTTB/DTMB, DVB-T, DVB-T2 and ISDB-T digital terrestrial broadcast standards
- Exceeds extended DVB-C requirements of China cable operators
- Fully complies with GB20600 China terrestrial DTV requirements
- On-chip amplifier for Forward Data Channel (FDC) with integrated low-pass filter
- ATSC A/74 Receiver Performance Guideline compliant
- NORDIG Unified and DTG version 6 compliant
- ARIB STD – B21 compliant
- Tru2Way OpenCable Host 2.0 and SCTE 40 compliant
- Co-exists with MoCA® in the same STB
- Low-noise VGA

Block Diagram



Recommended Operating Conditions

Parameter	Min	Typ	Max	Unit
Supply voltage (V_{CC}), 3.3 V		3.3		V
Supply voltage (V_{DD}), 1.8 V		1.8		V
Power, Standby Mode			36	mW
Supply voltage ripple			15	mV
Guaranteed performance die operating temperature			100	°C
VGA differential output load impedance		1000		Ω
FDC single-ended output load impedance	120			Ω
CVBS output load impedance		75		Ω
CVBS output source impedance		75		Ω
SIF output load impedance		1000		Ω
Serial control clock			400	kHz

Tuner Electrical Characteristics

Parameter	Min	Typ	Max	Unit
Power Supply				
Active current (I_{CC}) 3.3 V		400		mA
Active current (I_{CC}) 1.8 V		200		mA
RF Signal Path				
Input frequency range	44		1002	MHz
Noise figure (Off Air Mode)		3		dB
Noise figure (CATV Mode)		9		dB
Gain range		55		dB
Image rejection		80		dBc
Phase noise (10 kHz)		92		dBc/Hz
Phase noise (100 kHz)		108		dBc/Hz
LO step size		50		kHz

Parameter	Min	Typ	Max	Unit
IF VGA				
Frequency range (programmable)	1		60	MHz
Output voltage			2	Vp-p
Gain Range		20		dB
Out-of Band Amplifier (FDC)				
Frequency range	50		130	MHz
Voltage gain		5.5		dB
Analog TV Demodulation				
CVBS output level		1.0		Vp-p
Sound IF input range	-25		-6	dBc
Sound IF output voltage range		540		mVp-p
Sound IF output center frequency	4.5		6.5	MHz

Related Documents

- PB-00161 – MT3141 Product Brief (This document)
- DS-00101 – MT3141 Data Sheet
- UG-00406 – MT3141 EV Board User Guide
- Reference Group 406 – EV Board references including Schematic, Gerbers, PCB Layout, etc.

Contact and Ordering Information

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