

Description

The Si2170/1/2 integrates a complete hybrid TV tuner with analog TV demodulator supporting all worldwide analog and digital standards for terrestrial and cable broadcast applications. Leveraging Silicon Labs' proven digital low-IF architecture, the Si2170/1/2 achieves unmatched performance while minimizing design complexity and cost. No external LNAs, tracking filters or SAW filters are used.

The Si2170/1/2 is the industry's first silicon tuner to exceed the performance of traditional discrete tuner implementations, delivering superior picture quality and a higher number of received stations in real-world reception conditions. The highly linear front-end architecture delivers superior blocking performance resulting in higher sensitivity in crowded and near/far reception conditions with strong undesired channels and interference.

The Si2170 integrates the complete signal path from antenna input to IF or analog video and sound outputs. Compared to traditional discrete tuner implementations, hundreds of external components are eliminated including external LNAs, tracking filters including discrete varactors and hand-tuned inductors, two or three SAW filters, and the analog TV demodulator, resulting in the simplest, lowest-cost BOM for a hybrid tuner.

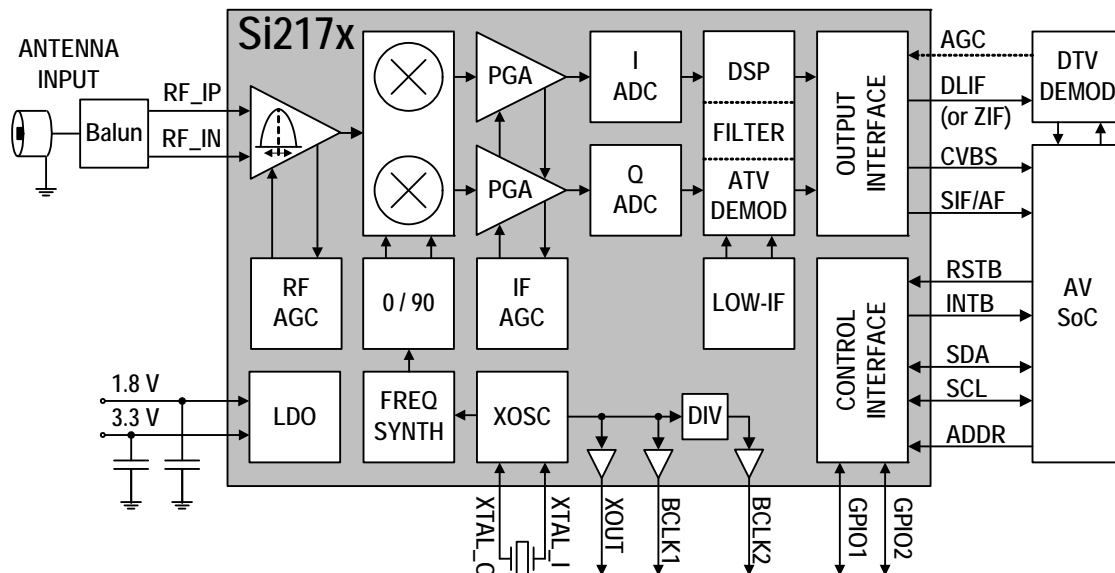
Interfacing the Si2170/1 seamlessly with the Si2165 DVB-T/C demodulator creates a complete terrestrial and cable hybrid PAL/SECAM and DVB-T/C receiver.

Features

- Worldwide hybrid TV tuner
 - Analog TV (NTSC, PAL/SECAM)
 - Digital TV (ATSC/QAM, DVB-T/C, ISDB-T/C)
- High performance
 - Significant margin to A/74, NorDig, ARIB, CENELEC, OpenCable™ specifications
 - Best-in-class real-world reception
- Highly integrated, lowest BOM
 - No RF or IF SAW filters required
 - Integrated LNA and tracking filters
- No alignment, tuning or calibration required
- Analog TV demodulator
 - Superior video SNR
 - Customizable video filters (gain and group delay)
 - Overmodulation and ICPM tolerance
- Flexible output interface
 - CVBS + SIF/AF to AV processor
 - LIF or ZIF I/Q to digital TV demodulator
- 3.3 and 1.8 V power supplies
- Standard CMOS process technology
- 7 x 7 mm, 48-pin, QFN package
- Pb-free/RoHS compliant

Applications

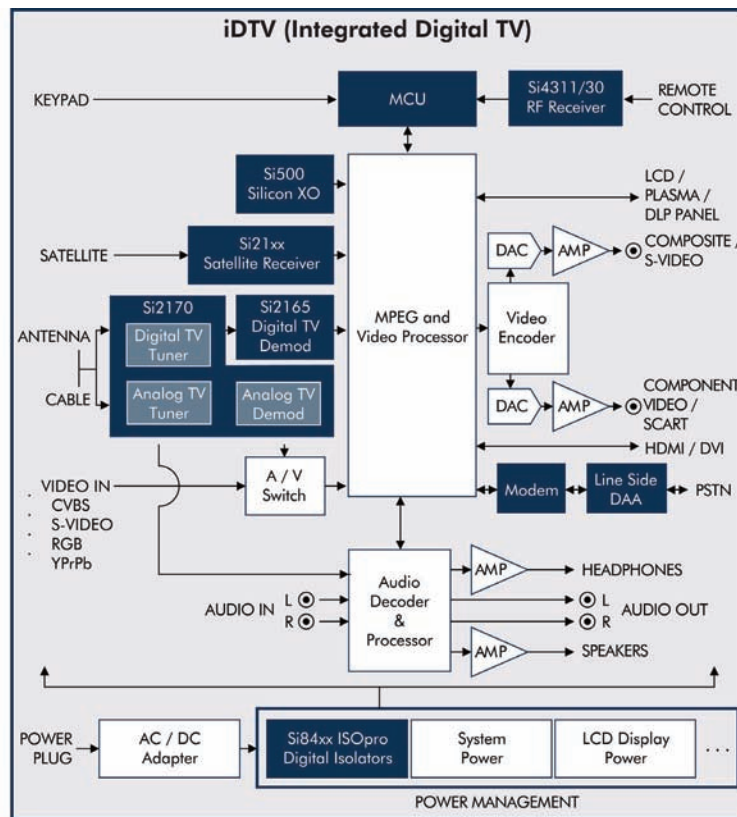
- Hybrid ½-NIM, ¾-NIM and full-NIM
- iDTV (Integrated Digital TV)
- Digital terrestrial or cable STB
- PC-TV card and USB dongle
- Hybrid PVR and DVD recorder



Selected Electrical Specifications

Parameter	Test Condition	Typ	Unit
Supply Voltage		1.8 and 3.3	V
Total Power Consumption	NTSC, PAL/SECAM	1.0	W
RF Input Frequency Range		43 to 1002	MHz
Noise Figure	max gain	4.0	dB
Wideband IIP3	$N \pm 18, \pm 36$; max RF gain	+23	dBm
Inband IIP3	$N \pm 1, \pm 2$; max RF gain	-2	dBm
Receiver Sensitivity (tuner + demod)	NTSC PAL/SECAM; 30 dB video SNR	-68 -67.5	dBm
Receiver Unweighted Video SNR	NTSC, PAL/SECAM; all video standards	54	dB
Adjacent Channel Attenuation	$N \pm 1$; DTV modes; RF input to DLIF output	80	dB
LO Phase Noise at 860 MHz	1 kHz 10kHz 100kHz offset; DTV modes	-96 -95 -104	dBc/Hz

Application Example: Integrated Digital TV (iDTV)



Selection Guide

Part #	Description
Si2170	Worldwide hybrid TV tuner with ATV demod for NTSC, PAL/SECAM, ATSC/QAM, DVB-T/C, ISDB-T/C
Si2171	Hybrid TV tuner with ATV demod for PAL/SECAM, DVB-T/C
Si2172	Hybrid TV tuner with ATV demod for NTSC, ATSC/QAM, ISDB-T/C