Si2162

DVB Demodulator for DVB-C2/C/T2/T

Description

The Si2162 integrates digital demodulators for terrestrial and cable first and second generation DVB video broadcasting standards (DVB-T2/C2/T/C) in a single advanced CMOS die. Leveraging Silicon Labs' proven digital demodulation architecture, the Si2162 achieves excellent reception performance for each media while significantly minimizing front-end design complexity, cost, and power dissipation. Connecting the Si2162 to a terrestrial and cable hybrid TV tuner or digital only tuner, such as Silicon Labs' Si2178/58/48 devices, results in a high-performance and cost optimized TV front-end solution.

Silicon Labs' internally developed DVB-C2 demodulator can accept a standard IF (36 MHz) or low-IF input (differential) and support all modes specified by the DVB-C2 standard. The main features of the DVB-C2 mode are 4096-QAM, 6 or 8 MHz bandwidth, management of notch insertion (broadband and narrowband), and support of multiple data slices and PLPs. DVB-T/T2 and DVB-C demodulators are enhanced versions of proven and broadly-used Silicon Labs Si2169/68/67 devices. DVB-T2-Lite (ETSI EN 302 755-V1.3.1) compatibility is also supported as an added feature to the DVB-T2 standard.

The cable demodulation functionality allows demodulating widely deployed DVB-C legacy standard (ITU J.83 Annex A/C) and Americas' cable standard (ITU J.83 Annex B).

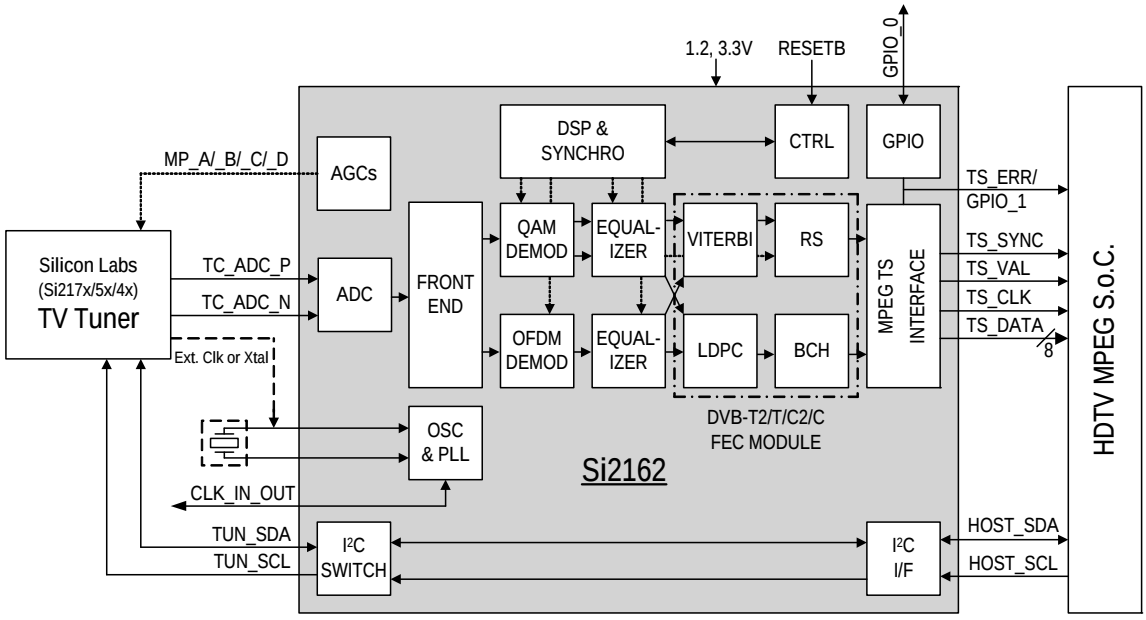
The Si2162 offers an on-chip blind scan algorithm for DVB-C/C2 standards, as well as a blind lock function. The Si2162 programmable transport stream output interface provides a flexible range of output modes and is fully compatible with all MPEG decoders or conditional access modules to support any customer application.

Features

- DVB-C2 (ETSI EN 302 769)
  - 16-QAM to 4096-QAM OFDM demodulation
  - 6 MHz and 8 MHz bandwidth
  - Notch management
- DVB-T2 (ETSI EN 302 755-V1.3.1) with T2-Lite (Annex I)
  - Bandwidth: 1.7, 5, 6, 7, or 8 MHz and extended BW
  - Supports up to 255 PLPs
  - FEF management
  - NorDig Unified 2.4 and D-Book 7 V2 compliant
  - Scrambling of L1 post-signaling supported
- DVB-C (ETSI EN 300 429) and ITU J.83 Annex A/B/C
  - QAM demodulator and FEC decoder
  - 1 to 7.2 MSymbol/s
- DVB-T (ETSI EN 300 744)
  - OFDM demodulator and enhanced FEC decoder
  - NorDig Unified 2.4 and D-Book 7 V2 compliant
- LDPC and BCH FEC decoding for C2/T2 standards
- I^2C serial bus interfaces (master and host)
- Firmware control for upgradeability
- Flexible TS output interface (serial, parallel, and slave)
- Fast lock times for all media including DVB-C2 and DVB-T2
- Low power consumption
- Two power supplies: 1.2 and 3.3 V
- 7x7 mm, QFN-48 pin package, Pb-free/RoHS compliant
- Pin-to-pin and API compliant with Si2166/67/68/69/60/64 Silicon Labs' devices

Applications

- iDTV: on-board design or in a NIM
- Advanced multimedia STB, PVR, and Blu-ray recorder
- PC-TV accessories



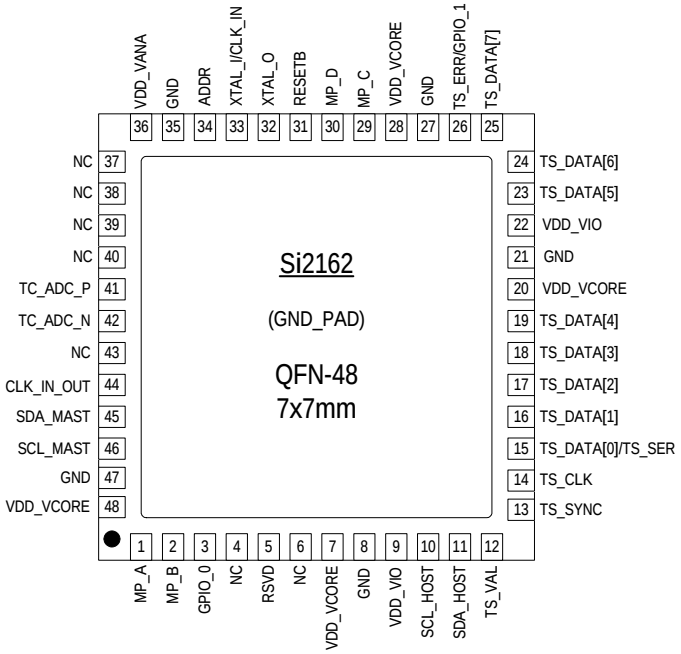
Selected Electrical Specifications

(T_A = –10 to 75 °C)

Parameter	Test Condition	Min	Typ	Max	Unit
General					
Input clock reference		4	—	30	MHz
Supported XTAL frequency		16	—	30	MHz
Total power consumption	DVB-T2[1]	—	420	—	mW
	DVB-T[2]	—	190	—	mW
	DVB-C2[3]	—	350	—	mW
	DVB-C[4]	—	180	—	mW
Thermal resistance	2 layer PCB	—	35	—	°C/W
	4 layer PCB	—	23	—	°C/W
Power Supplies					
V_{DD_VCORE}		1.14	1.20	1.30	V
V_{DD_VANA}		3.00	3.30	3.60	V
V_{DD_VIO}		3.00	3.30	3.60	V

Notes:
1. Test conditions: 8 MHz, 256-QAM, 32K FFT, CR = 3/5, GI = 1/128, PP7, parallel TS, C/N at picture failure.
2. Test conditions: 8 MHz, IF mode, 8K FFT, 64-QAM, parallel TS.
3. Test conditions: 4096-QAM, CR = 5/6, GI = 1/128, C/N = 34 dB (at picture failure).
4. Test conditions: 6.9 Mbaud, IF mode, 256-QAM, parallel TS.

Pin Assignments



Selection Guide

Part Number	Description
Si2162-A40-GM	DVB Demodulator for DVB-C2/C/T2/T, 7x7 mm QFN-48