Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

Si2169-A20

Combo DVB-T2/T/C/S/S2 Digital TV Demodulator

Description

The Si2169 integrates DVB-T2, DVB-T, DVB-C, DVB-S, and DVB-S2 digital demodulators into a single advanced CMOS technology mixed-signal die for next generation terrestrial, cable, and satellite TV standards. Leveraging Silicon Labs' proven digital demodulation architecture, the Si2169 achieves excellent reception performance for each media while significantly minimizing front-end design complexity, cost, and power dissipation. Connecting the Si2169 to a terrestrial and cable hybrid TV tuner or digital only tuner, such as Silicon Labs' Si2176/56/46 devices, results in a high-performance and cost optimized TV front-end solution.

Silicon Labs internally developed DVB-T2 demodulator can accept a standard IF (36 MHz) or low-IF input and support all modes specified by the DVB-T2 standard. Main features of the DVB-T2 mode are 256 QAM with rotated constellations, SISO and MISO support, FEF management, fully autonomous signal acquisition including automatic L1 signalling parsing, 600 kHz acquisition range, support for all pilot patterns, and DVB-T2/T auto-detection. The DVB-T and DVB-C demodulators are enhanced versions of proven and broadly used Si2161/63/65/67 Silicon Labs devices.

The satellite demodulation functionality allows demodulating widely deployed DVB-S, DIRECTV™ (DSS) legacy standards, and next generation DVB-S2 and DIRECTV™ (AMC) satellite broadcasts. A zero-IF interface allows for a seamless connection to market proven satellite silicon tuners. Constant coding modulation (CCM), 64800 bits frame, and single TS (broadcast profile) are the main specifications of the DVB-S2 demodulator.

The Si2169 offers an on-chip blind scanning algorithm for DVB-S/S2 and DVB-C standards (as well as blind lock). It also integrates DiSEqC™ 2.0 LNB interface for satellite dish control and an equalizer to compensate for echoes in long cable feeds from the LNB to the satellite tuner RF input.

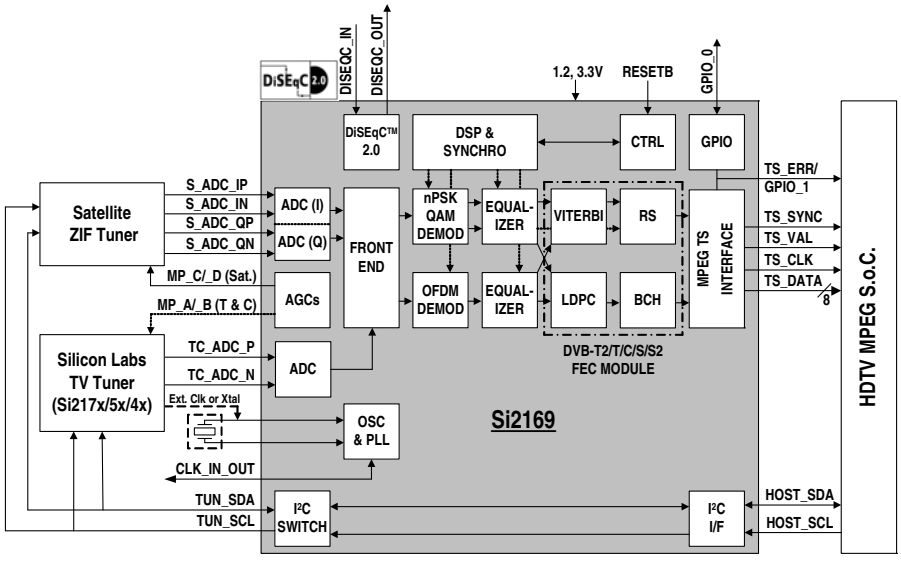
The Si2169 programmable transport stream interface provides a flexible range of output modes and is fully compatible with all MPEG decoders or conditional access modules to support any customer application.

Features

- DVB-T2 (ETSI EN 302 755)
  - COFDM demodulator and FEC (LDPC/BCH) decoder
  - Bandwidth: 1.7, 5, 6, 7 or 8 MHz (and extended BW)
  - Supports up to 255 PLP(s) and outputs the data PLP plus the common PLP (on a single TS)
  - NorDig Unified 2.2.1, D-Book 7.0 compliant
  - Firmware control (loaded in ROM)
- DVB-T (ETSI EN 300 744)
  - COFDM demodulator and FEC decoder
  - NorDig Unified 2.2.1, D-Book 7.0 compliant
- DVB-C (ETSI EN 300 429) / ITU J.83 Annex A/C
  - QAM demodulator and FEC decoder
  - 1 to 7.2 MSymbol/s
  - C-Book compliant
- DVB-S2 (ETSI EN 302 307 and TR102-376)
  - QPSK/8PSK demodulator and FEC (LDPC) decoder
  - 1 to 45 MSymbol/s
- DVB-S (ETSI EN 300 421)
  - QPSK demodulator and FEC decoder
  - 1 to 45 MSymbol/s
- DiSEqC™ 2.0 interface
- I^2C serial bus interfaces (master and host)
- Independent differential IF input for T/C tuner and differential ZIF I/Q inputs for satellite tuner
- GPIOs and multi-purpose ports for independent AGCs (up to 4) to control satellite and T/C tuners
- Firmware control for upgradeability
- Flexible TS interface with serial or parallel single output
- Fast lock times for all standards including DVB-T2
- Only two power supplies: 1.2 and 3.3 V
- 7x7 mm, QFN-48 pin package, Pb-free/RoHS compliant

Applications

- iDTV: on-board or in a NIM
- Advanced multimedia STB
- PC-TV accessories
- PVR, DVD, and Blu-Ray disc recorders



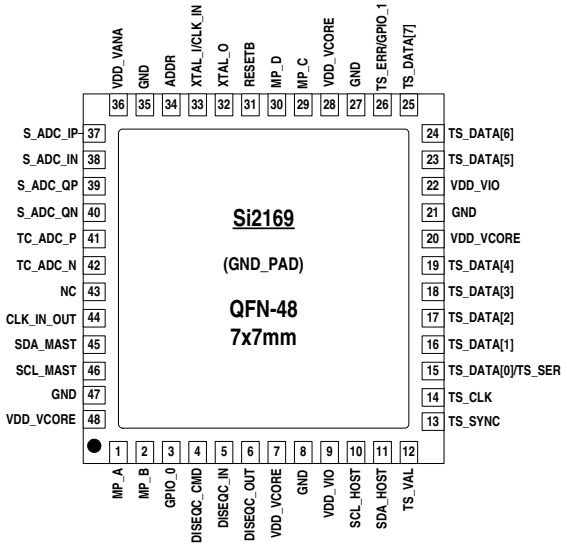
Selected Electrical Specifications

(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]/DVB-C[3]	—	190/180	—	mW
	DVB-S[4]/DVB-S2[5]	—	230/465	—	mW
Thermal resistance (θ_{JA})	2 layer PCB	—	35	—	°C/W
	4 layer PCB	—	23	—	°C/W
Input ADC Sampling Clock					
Satellite DVB-S	45 MBaud	91	94	101	MHz
Satellite DVB-S2	32 MBaud	65	70	101	MHz
DVB-T2/T/C	36 MHz IF/low-IF	—	56	65	MHz
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, C/N at picture failure.
2. Test conditions: 8 MHz, IF mode, 8K FFT, 64 QAM, parallel TS output.
3. Test conditions: 6.9 Mbaud, IF mode, 256 QAM, parallel TS output.
4. Test conditions: 30 MBaud, CR=7/8, parallel TS (at QEF: BER = 2. 10^{-4}).
5. Test conditions: 32 MBaud, 3/5 Code Rate, 8PSK, pilots On, parallel TS, C/N at picture failure (PER = 10^{-4}).

Pin Assignments (Pin-to-Pin Compatible with the Si2167 and Si2168)



Selection Guide

Part #	Description
Si2169-A20-GM/R	Multimedia Digital TV Demodulator for DVB-T2/T/C/S/S2, 7x7 mm QFN-48

