

Description

The Si2167D integrates digital demodulators for first and second generation DVB standards (DVB-T/C/S/S2 and S2X) in a single advanced CMOS die. Leveraging Silicon Labs' proven digital demodulation architecture, the Si2167D achieves excellent reception performance for each media while significantly minimizing front-end design complexity, cost, and power dissipation. Connecting the Si2167D to a hybrid TV tuner or digital only tuner, such as Silicon Labs' Si217x/5x/4x devices, results in a high-performance and cost optimized TV or STB front-end solution.

DVB-T and DVB-C demodulators are enhanced versions of proven and broadly used Si2169/68/67/64/62/60 Silicon Labs devices. Furthermore, ITU-T J.83 Annex B is also supported for US and South American cable networks. The IF input supports standard IF (36 MHz) or low-IF.

For DVB-T and DVB-S/DSS, an innovative and advanced FEC decoding scheme is implemented resulting in higher performance..

The satellite reception allows demodulating widespread DVB-S, DIRECTV™ (DSS), DVB-S2, DIRECTV™ (AMC) legacy standards, and new Part II of DVB-S2 (S2X) satellite broadcast standard. A zero-IF interface (differential) allows for a seamless connection to market proven satellite silicon tuners. Si2167D embeds DiSeq™ 2.0 LNB interface for satellite dish control and an equalizer to compensate for echoes in long cable feeds from the antenna to the satellite tuner input.

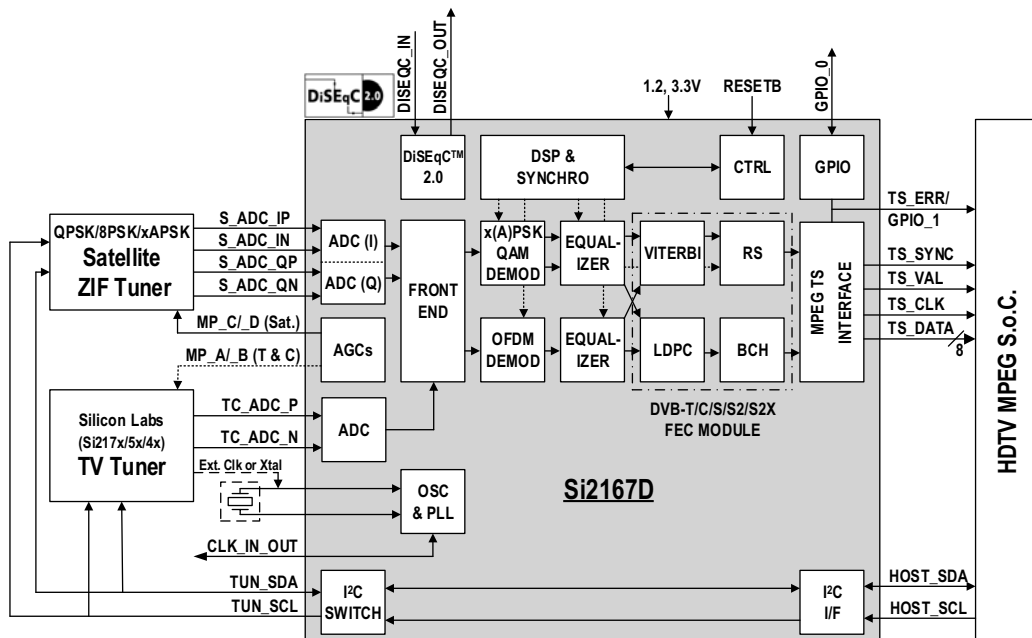
The Si2167D offers an on-chip blind scan algorithm for DVB-S/S2/S2X and DVB-C standards, as well as a blind lock function. The Si2167D programmable transport stream output interface provides a flexible range of output modes and is fully compatible with all MPEG decoders or conditional access modules to support any customer application.

Features

- Pin-to-pin compatible with all Si216x/8x single demods family
- API compatible with all single and dual demods families
- DVB-S2 (ETSI EN 302 307-1 V1.4.1)
 - QPSK/8PSK demodulator
- DVB-S2X (ETSI EN302 307-2 V1.1.1)
 - Broadcast services supported
 - QPSK/8PSK, 8/16/32APSK demodulator
 - Roll-off factors from 0.05 to 0.35
- DVB-T (ETSI EN 300 744)
 - OFDM demodulator and enhanced FEC decoder
 - NorDig Unified 2.5 and D-Book 8 compliant
- DVB-C (ETSI EN 300 429) and ITU-T J.83 Annex A/B/C
 - QAM demodulator and FEC decoder
 - 1 to 7.2 MSymbol/s
- DVB-S and DSS supported
 - QPSK demodulator and enhanced FEC decoder
 - 1 to 45 MSymbol/s for all satellite standards (<40 MSps in 32APSK)
- LDPC and BCH FEC decoding for DVB-S2/S2X standard
- I²C serial bus interfaces (master and host)
- Firmware control (embedded ROM/NVM)
- Upgradeable with patch download via I²C or fast SPI
- Flexible TS output interface (serial, parallel, and slave)
- DiSeq™ 2.0 interface and Unicable™ support for satellite
- Fast lock times for all media
- Low power consumption
- Two power supplies: 1.2 and 3.3 V
- 7x7 mm, QFN-48 pin package, Pb-free/RoHS compliant

Applications

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

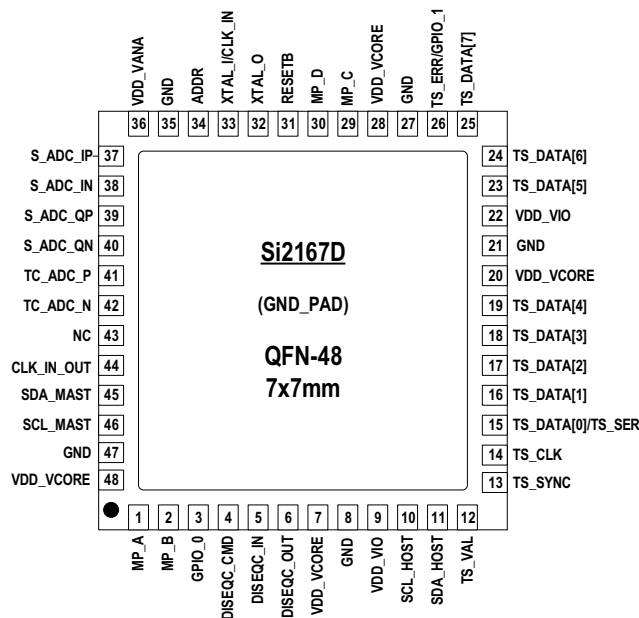


Selected Electrical Specifications

(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-T ¹	—	182	—	mW
	DVB-C ²	—	142	—	mW
	DVB-S2 ³	—	421	—	mW
	DVB-S ⁴	—	230	—	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, 8K FFT, 64-QAM, parallel TS.					
2. Test conditions: 6.9 Mbaud, 256-QAM, parallel TS.					
3. Test conditions: 32 Mbaud, CR = 3/5, 8PSK, pilots On, parallel TS, C/N at picture failure.					
4. Test conditions: 30 Mbaud, CR = 7/8, parallel TS, at QEF: BER = 2 x 10 ⁻⁴ .					

Pin Assignments



Selection Guide

Part Number	Description
Si2167-D60-GM	DVB-T/C/S/S2/S2X Digital TV Demodulator, 7x7 mm QFN-48