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Si2166-B22

DVB-S/S2 Satellite TV Demodulator

Description

The Si2166-B22 integrates DVB-S, DVB-S2 (AMC-compliant), and DSS digital demodulators into a single CMOS chip for the broadest range of satellite TV standards. Leveraging Silicon Labs' proven digital demodulation architecture, the Si2166-B22 achieves superior satellite reception performance while minimizing front-end design complexity and cost.

The satellite demodulation functionality allows demodulating widely deployed DVB-S, DIRECTV™ (DSS) legacy standards, and DVB-S2 satellite broadcast. A zero-IF interface with two high-speed ADCs allows for a seamless connection to market proven satellite silicon tuners. Constant Coding Modulation (CCM), QPSK/8PSK demodulation schemes and broadcast profile are the main specifications of the DVB-S2 demodulator. Silicon Labs' innovative LDPC and BCH decoding architecture delivers best-in-class reception while exhibiting low power dissipation.

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

The Si2166-B22 offers an on-chip blind scanning algorithm for DVB-S and DVB-S2 standards (as well as blind lock function). It also integrates DiSEqC™ 2.0 LNB interface for satellite dish control.

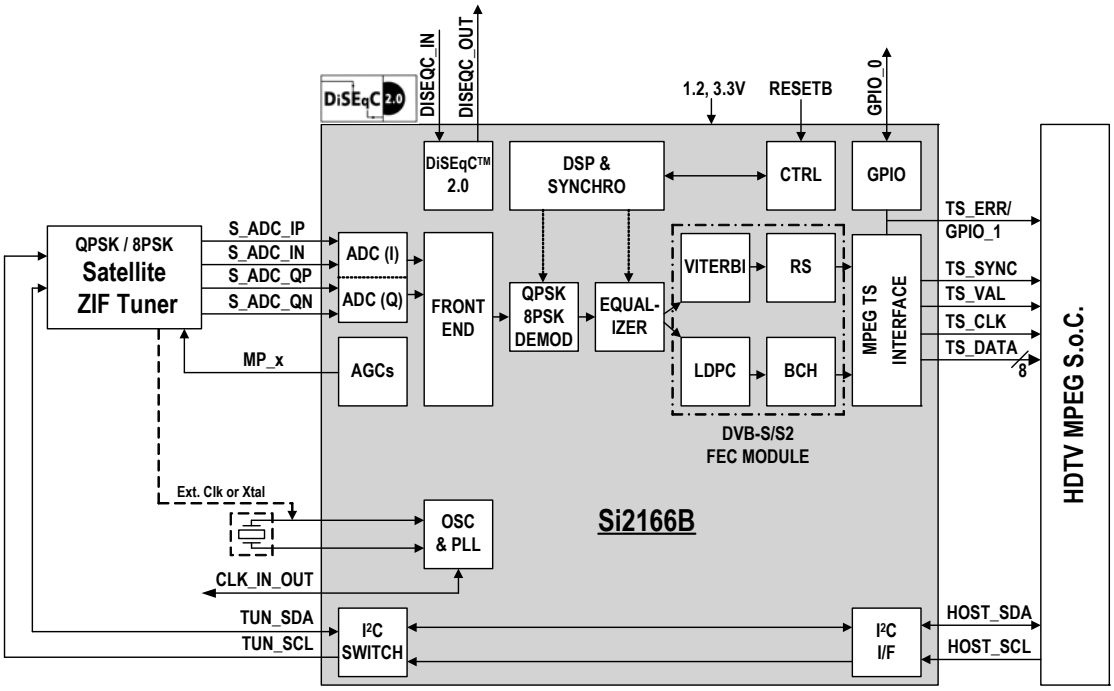
The Si2166-B22 programmable Transport Stream interface provides a flexible range of output modes and is fully compatible with all MPEG decoders or conditional access modules to support any customer application. Si2166-B22 is fully API compatible with Si2164/69/68/67.

Features

- DVB-S2 (ETSI EN 302 307 and TR102-376)
  - QPSK/8PSK demodulator and FEC decoder
  - Broadcast profile: CCM, 64800 bits frame, single TS
  - 1 to 45 MSymbol/s (optimized for 2 to 32 MSymbol/s)
  - DIRECTV™ AMC compatible
- DVB-S (ETSI EN 300 421)
  - QPSK demodulator and enhanced FEC decoder
  - 1 to 45 MSymbol/s
- DIRECTV™ DSS supported
- DiSEqC™ 2.0 interface and Unicable support
- I^2C serial bus interfaces (master and host)
- Two ADCs with differential inputs (ZIF input)
- GPIOs and multi-purpose ports for independent AGCs (up to 4) to control satellite tuner
- Firmware control for upgradeability
- Flexible TS interface with serial or parallel single output
- Fast lock times for all media
- Only two power supplies: 1.2 and 3.3 V
- Pin-to-pin and API compatibility with Si2164/69/68/67
- 7x7 mm, QFN-48 pin package, Pb-free/RoHS compliant

Applications

- Full-NIM
- iDTV (integrated Digital TV)
- Digital satellite STB
- PC-TV accessories
- PVR, DVD, and Blue Ray disc recorders



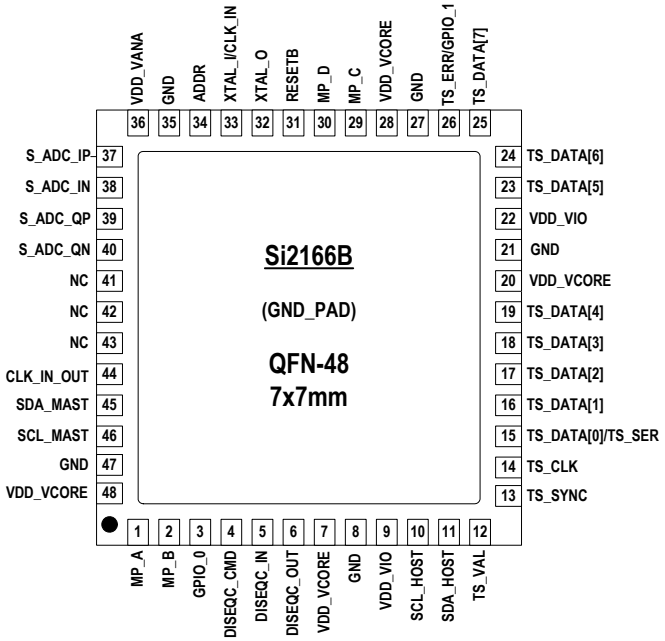
Selected Electrical Specifications

(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-S[1]	—	230	—	mW
	DVB-S2[2]	—	465	—	mW
Thermal resistance, θ_{JA}	2 layer PCB	—	32	—	°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: 30 MBaud, CR = 7/8, parallel TS (at QEF: BER = 2. 10^{-4}).
2. Test conditions: 32 MBaud, 3/5 Code Rate, 8PSK, pilots On, parallel TS, C/N at picture failure.

Pin Assignments



Selection Guide

Part Number	Description
Si2166-B22-GM	Satellite TV Demodulator for DVB-S/S2, 7x7 mm QFN-48.