

Description

The Si2167-B22 integrates DVB-T, DVB-C, DVB-S, DVB-S2 (AMC-compliant), and DSS digital demodulators into a single CMOS chip for terrestrial, cable, and satellite TV standards. Leveraging Silicon Labs' proven digital demodulation architecture, the Si2167-B22 achieves superior reception performance for each media while minimizing front-end design complexity and cost. Connecting the Si2167-B22 to a terrestrial and cable hybrid TV tuner, such as Silicon Labs' Si217x, results in a high performance and cost optimized TV front-end solution.

DVB-T and DVB-C demodulators are enhanced versions of proven and broadly used Si2169/68/67-A Silicon Labs devices. Furthermore, ITU 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 demodulation functionality allows demodulating widely deployed DVB-S, DIRECTV™ (DSS) legacy standards, and DVB-S2 satellite broadcast. A zero-IF interface 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.

The Si2167-B22 offers an on-chip blind scanning algorithm for DVB-S/S2 and DVB-C standards (as well as blind lock function). It also integrates DiSEqC™ 2.0 LNB interface for satellite dish control.

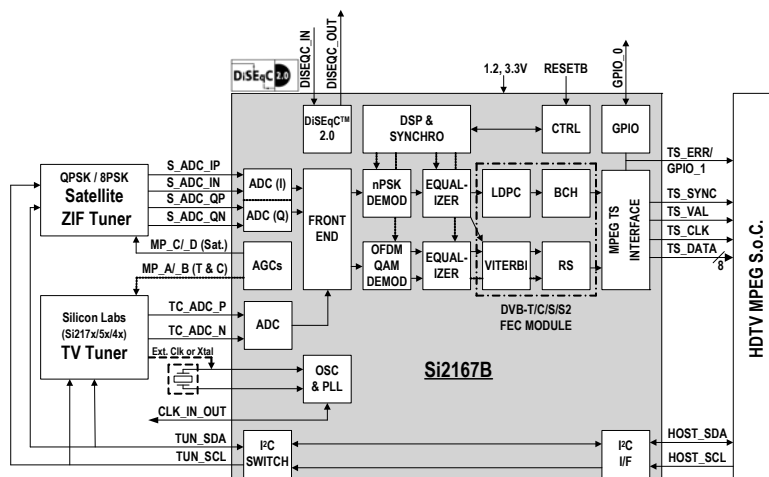
The Si2167-B22 programmable Transport Stream interface provides a flexible range of output modes and is fully compatible with all MPEG decoders or conditional access modules to support any customer application. Si2167-B22 is fully API compatible with Si2164/69/68/66.

Features

- DVB-T (ETSI EN 300 744)
 - COFDM demodulator and enhanced FEC decoder
 - Supports all C.R., G.I., LP, and HP streams
 - NorDig Test Spec 2.2.2, D-Book 7 V3 compliant
- DVB-C (ETSI EN 300 429) / ITU J.83 Annex A/B/C
 - QAM demodulator and FEC decoder
 - 1 to 7.2 MSymbol/s
 - C-Book compliant
- DVB-S2 (ETSI EN 302 307 & TR102-376)
 - QPSK/8PSK demodulator and FEC decoder
 - Broadcast profile: CCM, 64800 bits frame, single TS
 - 1 to 45 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
- I²C serial bus interfaces (master and host)
- Three ADCs with independent IF and ZIF (differential) inputs for terrestrial/cable and satellite
- 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 media
- Only two power supplies: 1.2 and 3.3 V
- Pin-to-pin and API compatibility with Si2164/69/68/66
- 7x7 mm, QFN-48 pin package, Pb-free/RoHS compliant

Applications

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

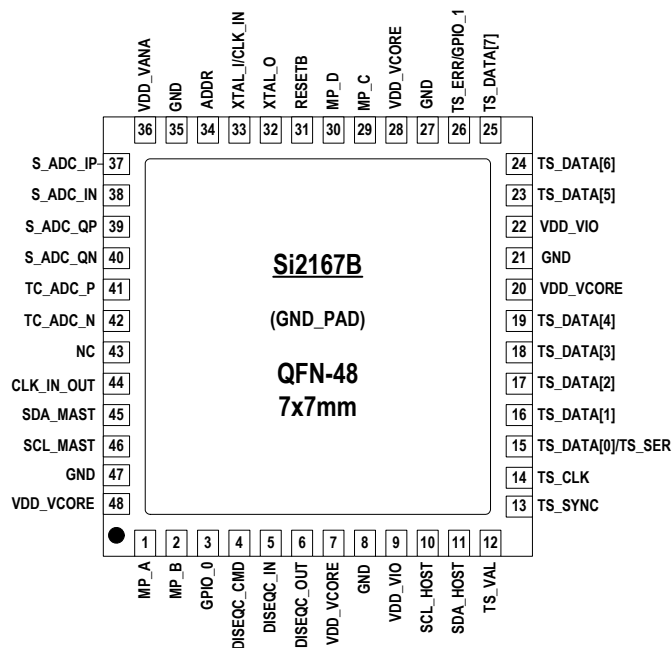


Selected Electrical Specifications

(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-T ¹ /DVB-C ² | — | 190/180 | — | mW |
| | DVB-S ³ | — | 230 | — | mW |
| | DVB-S2 ⁴ | — | 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: 8 MHz, 8K FFT, 64 QAM, parallel TS output. | | | | | |
| 2. Test conditions: 6.9 Mbaud, 256 QAM, parallel TS output. | | | | | |
| 3. Test conditions: 30 Mbaud, CR = 7/8, parallel TS (at QEF: BER = 2 · 10 ⁻⁴). | | | | | |
| 4. 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 |
|---------------|--|
| Si2167-B22-GM | Multimedia Digital TV Demodulator for DVB-T/C/S/S2, 7x7 mm QFN-48. |