

Description

The Si21672-B integrates two separate high-performance DVB-T, DVB-C, DVB-S, and DVB-S2 digital demodulators into a single compact package for terrestrial, cable, and satellite TV standards. Leveraging Silicon Labs' proven digital demodulation architecture, each embedded demodulator achieves excellent reception performance for each media while significantly minimizing front-end design complexity and cost. Connecting the Si21672-B to both a dual terrestrial/cable TV tuner, and a dual satellite tuner, results in a high-performance and cost optimized TV front-end solution. The DVB-T and DVB-C demodulators are enhanced versions of proven and broadly used Si2167/68/69 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.

The satellite demodulation functionality allows demodulating widely deployed DVB-S, DIRECTV™ (DSS) legacy standards, and DVB-S2 (AMC compliant) satellite broadcasts. A zero-IF interface allows for a seamless connection to market proven satellite silicon tuners.

The Si21672-B offers an on-chip blind scanning algorithm for DVB-S/S2 and DVB-C standards (as well as blind lock). It also integrates two DiSEqC™ 2.0 LNB interfaces for satellite dish control and, for each satellite demodulator, an equalizer to compensate for echoes in long cable feeds from the LNB to the satellite tuner RF input.

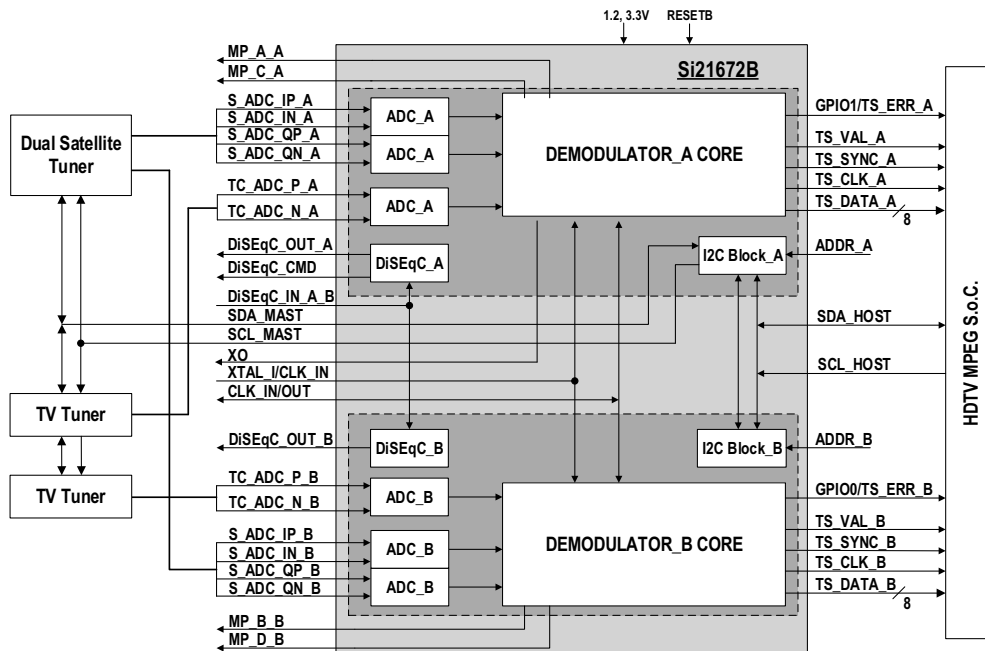
The Si21672-B embeds two independent programmable transport stream interfaces which provide a flexible range of output modes and are fully compatible with all MPEG decoders or conditional access modules to support any customer application.

Features

- DVB-T (ETSI EN 300 744)
 - COFDM demodulator and enhanced FEC decoder
 - 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 and 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) and DSS supported
 - QPSK demodulator and enhanced FEC decoder
 - 1 to 45 MSymbol/s
- Dual DiSEqC™ 2.x interface, Unicable support
- I²C serial bus interfaces (master and host)
- Dual independent differential IF input for T/C tuners and differential ZIF I/Q inputs for satellite tuners
- GPIOs and multi-purpose ports (two per demodulator)
- Firmware control for upgradeability
- Separate flexible TS interfaces with serial or parallel outputs
- Fast lock times for all standards
- Only two power supplies: 1.2 and 3.3 V
- 8x8 mm, QFN-68 pin package, Pb-free/RoHS compliant
- Pin-to-pin compatible with all dual demodulator family: Si216x2
- API compatible with all single and dual demodulator families

Applications

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

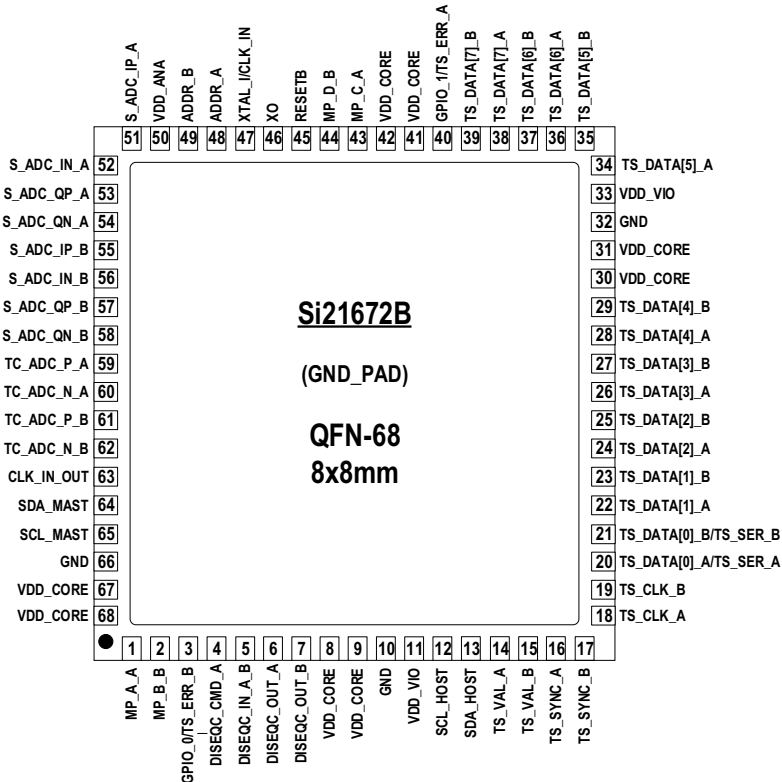


Selected Electrical Specifications

(T_A = -10 to 70 °C).

| Parameter | Test Condition | Min | Typ | Max | Unit |
|--|---|------|---------|------|------|
| General | | | | | |
| Input clock reference | | 4 | — | 30 | MHz |
| Supported XTAL frequency | | 16 | — | 30 | MHz |
| Total power consumption for each demodulator | DVB-T ¹ /DVB-C ² | — | 172/161 | — | mW |
| | DVB-S ³ /DVB-S2 ⁴ | — | 240/465 | — | mW |
| Thermal resistance (θ _{JA}) | 4 layer PCB | — | 42 | — | °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 # | Description |
|------------------|---|
| Si21672-B22-GM/R | Dual Digital TV Demodulator for DVB-T/C/S/S2, 8x8 mm QFN-68 |