

### 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.

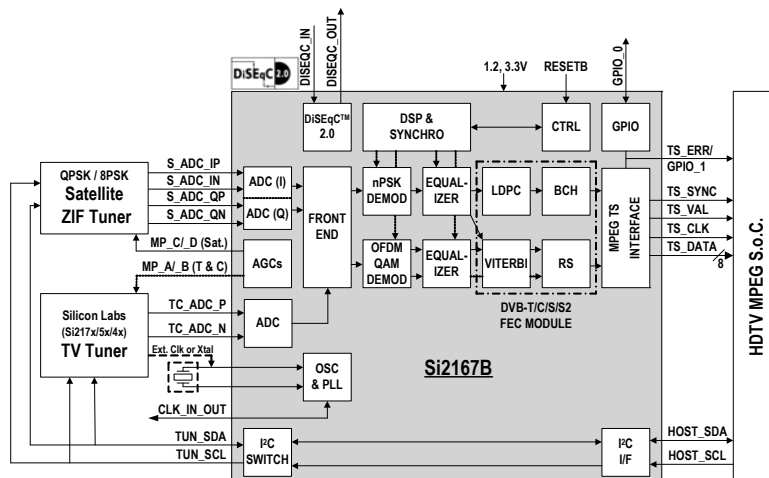
The Si2167-B22 programmable Transport Stream interface provides a flexible range of output modes and is fully compatible with all MPEG decoders or conditional access modules to support any customer application. Si2167-B22 is fully API compatible with Si2164/69/68/66.

### 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
- I<sup>2</sup>C 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

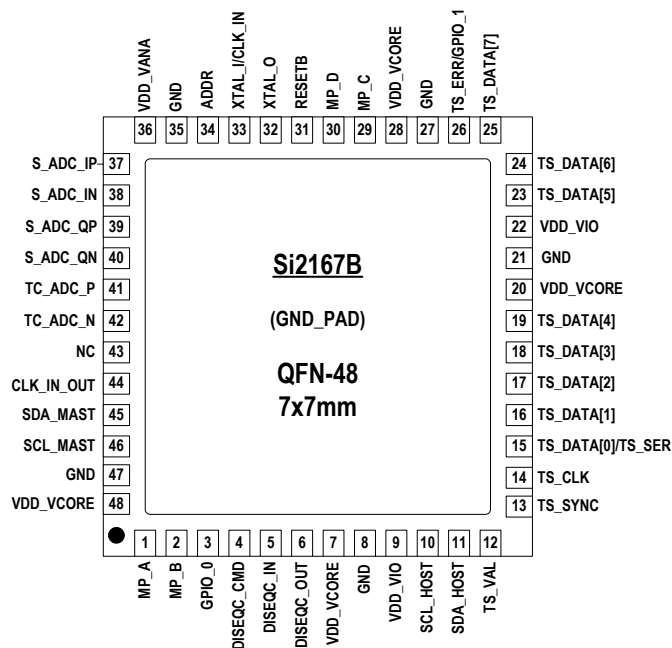


### Selected Electrical Specifications

(T<sub>A</sub> = -10 to 75 °C)

Parameter	Test Condition	Min	Typ	Max	Unit
<b>General</b>					
Input clock reference		4	—	30	MHz
Supported XTAL frequency		16	—	30	MHz
Total power consumption	DVB-T <sup>1</sup> /DVB-C <sup>2</sup>	—	190/180	—	mW
	DVB-S <sup>3</sup>	—	230	—	mW
	DVB-S <sup>2</sup> <sup>4</sup>	—	465	—	mW
Thermal resistance, θ <sub>JA</sub>	2 layer PCB	—	32	—	°C/W
	4 layer PCB	—	23	—	°C/W
<b>Power Supplies</b>					
V <sub>DD_VCORE</sub>		1.14	1.20	1.30	V
V <sub>DD_VANA</sub>		3.00	3.30	3.60	V
V <sub>DD_VIO</sub>		3.00	3.30	3.60	V
<b>Notes:</b>					
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 <sup>-4</sup> ).					
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.