

Description

The Si2167-B20 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-B20 achieves superior reception performance for each media while minimizing front-end design complexity and cost. Connecting the Si2167-B20 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 Si2167-A10 and Si2169/68 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 new generation 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-B20 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.

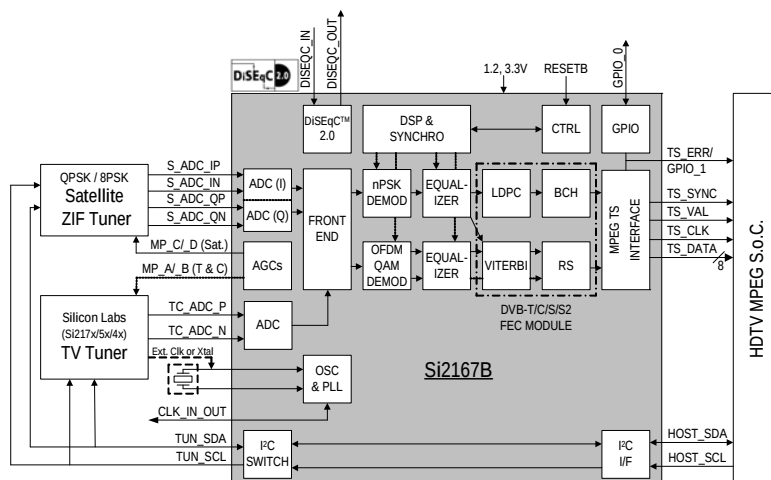
The Si2167-B20 programmable Transport Stream interface provides a flexible range of output modes and is fully compatible with all MPEG decoders or conditional access modules to support any customer application. Si2167-B20 is software compatible with Si2167-A10 and is also fully API compatible with Si2166-B and Si2168/69.

Features

- DVB-T (ETSI EN 300 744)
 - COFDM demodulator and enhanced FEC decoder
 - NorDig Unified 2.2.1, D-Book 7.0 compliant
 - Supports all C.R., G.I., LP, and HP streams
- 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 (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 compliant
- 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 compatibility with former Si2167/66-A10, Si2166-B, and Si2168/69
- 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

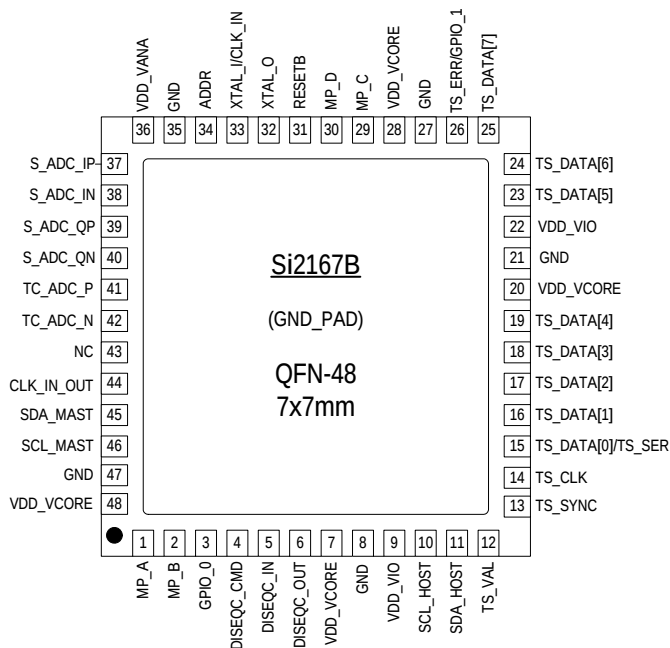


Selected Electrical Specifications

(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
Input ADC Sampling Clock					
Satellite DVB-S	45 MBaud	91	94	101	MHz
Satellite DVB-S2	32 MBaud	65	70	101	MHz
DVB-T/C	36 MHz standard IF/low-IF	—	56	65	MHz
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, IF mode, 8K FFT, 64 QAM, parallel TS output.					
2. Test conditions: 6.9 Mbaud, IF mode, 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 (PER = 10 ⁻⁴).					

Pin Assignments



Selection Guide

Part Number	Description
Si2167-B20-GM	Multimedia Digital TV Demodulator for DVB-T/C/S/S2, 7x7 mm QFN-48.