Description

The Si2180 integrates digital demodulators for the Japanese and South American terrestrial ISDB-T standard and for the DVB-T and DVB-C standards in a single advanced CMOS die. Leveraging Silicon Labs' proven digital demodulation architecture, the Si2180 achieves excellent reception performance for each media while significantly minimizing front-end design complexity, cost, and power dissipation. Connecting the Si2180 to a hybrid TV tuner or digital only tuner, such as Silicon Labs' Si217x/5x/4x devices, results in a high-performance and cost optimized TV or STB front-end solution.

Leveraging significant field experience in DVB terrestrial demodulation (DVB-T), Silicon Labs' internally-developed ISDB-T demodulator can accept standard or low-IF inputs (differential) and complies with the Brazilian SBTVD-T terrestrial specifications (ABNT NBR 16.601 and 15.604). Main features include fast channel scan, very short lock times, state of the art CCI performance, partial reception, and auxiliary channels decoding. DVB-T and DVB-C demodulators are next-generation enhanced versions of proven and broadly-used Silicon Labs' Si2169/68/67/66/64/62/60 devices.

The cable reception allows demodulating widely deployed DVB-C legacy standard (ITU J.83 Annex A/C) and the Americas' cable standard (ITU J.83 Annex B).
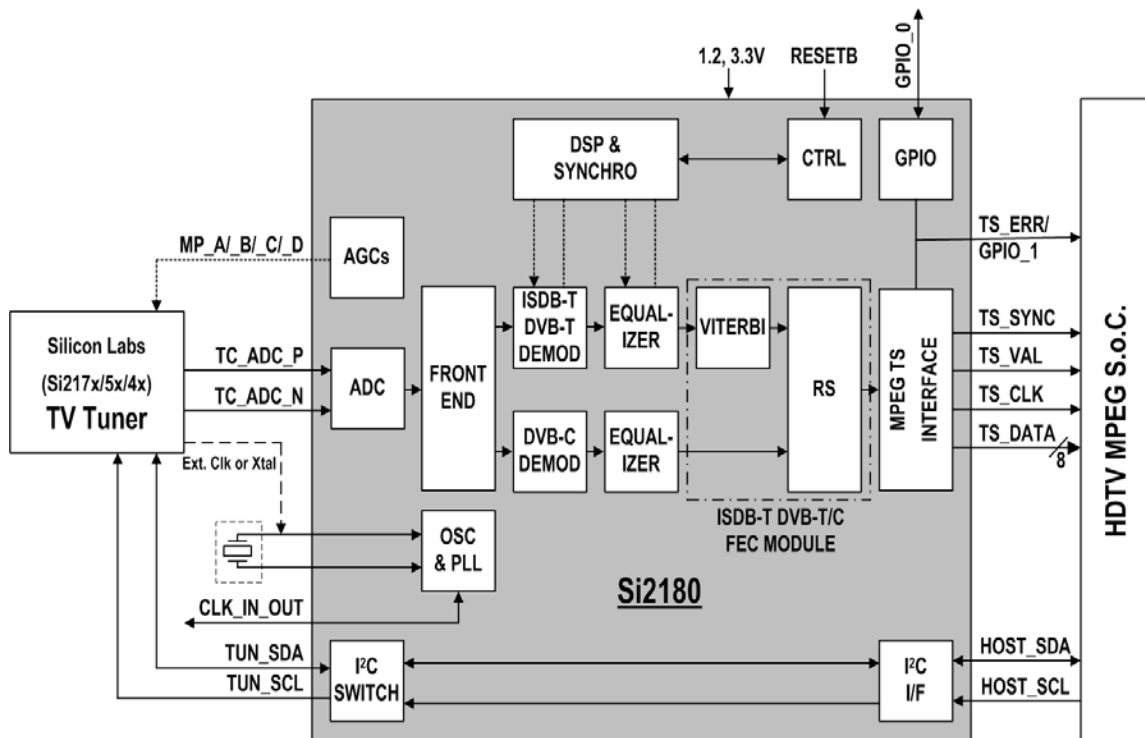
The Si2180 offers an on-chip blind scan algorithm for DVB-C standard, as well as a blind lock function. The Si2180 programmable transport stream output interface provides a flexible range of output modes and is fully compatible with all MPEG decoders or conditional access modules to support any customer application.

Features

- Pin-to-pin compatible with all Si216x/8x single demods family
- API compatible with all single and dual demods families
- ISDB-T (ABNT NBR 16.601 and 15.604)
  - 6, 7, and 8 MHz bandwidth
  - Partial reception supported (reception of only one OFDM segment at the center of a group of segments)
  - AC1 and AC2 decoding
- DVB-T (ETSI EN 300 744)
  - OFDM demodulator and enhanced FEC decoder
  - NorDig unified 2.5 and D-Book 8 compliant
- DVB-C (ETSI EN 300 429) and ITU-T J.83 Annex A/B/C
  - QAM demodulator and FEC decoder
  - 1 to 7.2 MSymbol/s
- I^2C serial bus interfaces (master and host)
- Firmware control (embedded ROM/NVM)
- Upgradeable with patch download via I^2C or fast SPI
- Flexible TS output interface (serial, parallel, and slave)
- Fast lock times for all media
- Low power consumption
- Two power supplies: 1.2 and 3.3 V
- 7x7 mm, QFN-48 pin package, Pb-free/RoHS compliant

Applications

- iDTV: on-board design or in a NIM
- Advanced multimedia STB, PVR, and Blu-ray recorders
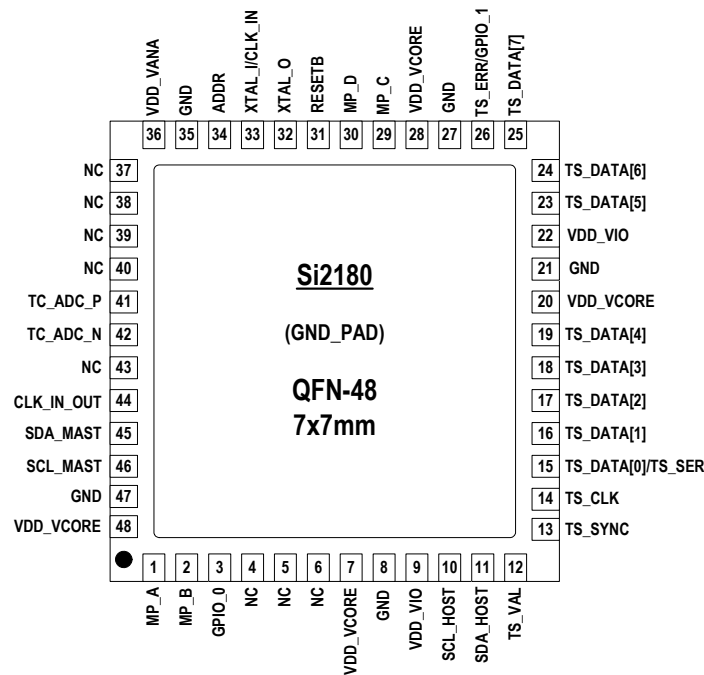- PC-TV accessories

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	ISDB-T[1]		168		mW
	DVB-T[2]	—	182	—	mW
	DVB-C[3]	—	142	—	mW
Thermal resistance	2 layer PCB	—	35	—	°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: 8K, 64-QAM, CR = 7/8, GI = 1/32, 13 segments
2. Test conditions: 8 MHz, 8K FFT, 64-QAM, parallel TS.
3. Test conditions: 6.9 Mbaud, 256-QAM, parallel TS.

Pin Assignments

Selection Guide

Part Number	Description
Si2180-B60-GM	ISDB-T and DVB-T/C Demodulator, 7x7 mm QFN-48