



TDA18250HN

Cable Silicon Tuner

Rev. 6 — 22 December 2011

Product short data sheet

1. General description

The TDA18250 is a silicon tuner IC designed specifically for high definition cable Set-Top Boxes (STB) supporting single streaming.

Used in conjunction with a digital channel demodulator, the TDA18250 covers all worldwide digital cable standards.

- The TDA18250 ensures a low system cost as:
 - Costly components such as low-noise amplifiers, Surface Acoustic Wave (SAW) filters are eliminated from the system BOM
- The TDA18250 high-performance silicon tuner meets today's digital cable TV reception needs with:
 - Low power consumption
 - High linearity
 - Low noise figure
- The TDA18250 ensures ease of use with:
 - Easy on-board integration
 - Efficient and effective PCB design
 - Reduced external components

2. Features and benefits

- RF frequency coverage up to 1002 MHz
- Integrated wideband gain control
- LOW IF (LIF) output
- Single 3.3 V power supply
- Low power consumption
- Multistandard cable receptions
- Fully integrated IF selectivity, eliminating the need for external SAW filters
- RF Loop-Through (LT)
- Enhanced RF and IF filters to increase selectivity and adjacent channels filtering
- Alignment free
- Fully integrated oscillators:
 - ◆ No external oscillator components for reduced cost
 - ◆ 16 MHz crystal oscillator output buffer for single crystal applications
- Supports 2 tuner functions specifically aimed for PVR boxes:
 - ◆ 1 × RF output to drive slave tuner



- I²C-bus provides:
 - ◆ 3.3 V microcontroller compatibility
 - ◆ Received Signal Strength Indicator (RSSI) data access
 - ◆ Die temperature sensor data access
- Lead-free (Pb) manufacturing

3. Quick reference data

Table 1. Quick reference data

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|------------------|---------------------|--------------------------------------|-----|------|------|------------|
| f_{RF} | RF frequency | edge | 42 | - | 1002 | MHz |
| $P_{i(max)}$ | maximum input power | | - | 106 | - | dB μ V |
| NF_{tun} | tuner noise figure | maximum gain | | | | |
| | | f_{RF} from 42 MHz to 862 MHz | - | 5 | 6 | dB |
| | | $f_{RF} > 862$ MHz | - | 5.5 | - | dB |
| ϕ_n | phase noise | worst case in the RF frequency range | | | | |
| | | 10 kHz | - | -85 | - | dBc/Hz |
| | | 100 kHz | - | -105 | - | dBc/Hz |
| P | power dissipation | | - | 0.91 | - | W |
| α_{image} | image rejection | | 50 | 62 | - | dB |

4. Ordering information

Table 2. Ordering information

| Type number | Package | | |
|---------------|---------|----------------------------------------------------------------------------------------------------|----------|
| | Name | Description | Version |
| TDA18250HN/C1 | HVQFN48 | plastic thermal enhanced very thin quad flat package; no leads; 48 terminals; body 7 × 7 × 0.85 mm | SOT619-1 |

5. Block diagram

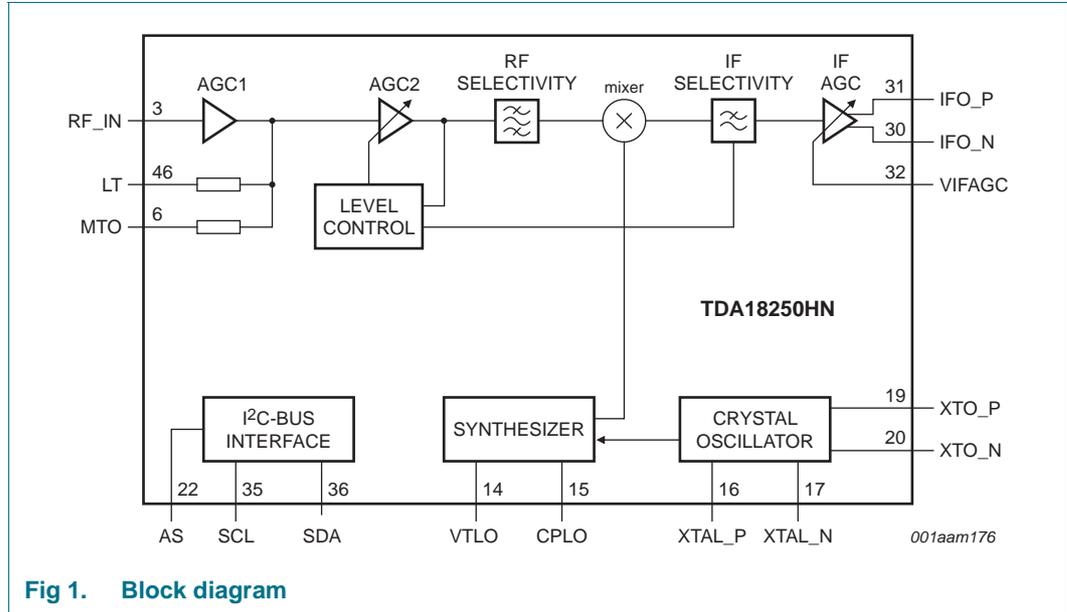


Fig 1. Block diagram

6. Limiting values

Table 3. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

| Symbol | Parameter | Conditions | Min | Max | Unit |
|-----------|---------------------------------|------------------------------|------|----------------|------|
| V_{CC} | supply voltage | | -0.3 | +3.6 | V |
| V_I | input voltage | $V_{CC} < 3.3\text{ V}$ | -0.3 | $V_{CC} + 0.3$ | V |
| | | $V_{CC} > 3.3\text{ V}$ | -0.3 | +3.6 | V |
| V_{ESD} | electrostatic discharge voltage | EIA/JESD22-A114 (HBM) | 2 | - | kV |
| | | EIA/JESD22-C101-C (FCDM) [1] | 1.5 | - | kV |

[1] It withstands class IV of JEDEC standard.

7. Abbreviations

Table 4. Abbreviations

| Acronym | Description |
|---------|-------------------------------------------|
| AGC | Automatic Gain Control |
| BOM | Bill Of Materials |
| FCDM | Field-induced Charged Device Model |
| HBM | Human Body Model |
| IC | Integrated Circuit |
| IF | Intermediate Frequency |
| JEDEC | Joint Electron Device Engineering Council |
| LIF | LOW IF |

Table 4. Abbreviations ...continued

| Acronym | Description |
|---------|------------------------------------|
| LT | Loop-Through |
| PCB | Printed-Circuit Board |
| PVR | Personal Video Recorder |
| RF | Radio Frequency |
| RSSI | Received Signal Strength Indicator |
| SAW | Surface Acoustic Wave |
| SCL | Serial CLock |
| SDA | Serial DAta |
| STB | Set-Top Box |

8. Revision history

Table 5. Revision history

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|---------------|--------------------|
| TDA18250HN_SDS v.6 | 20111222 | Product short data sheet | - | TDA18250HN_SDS v.5 |
| Modifications: | <ul style="list-style-type: none"> • Section 1: updated • Section 2: updated • Table 1: updated | | | |
| TDA18250HN_SDS v.5 | 20110615 | Product short data sheet | - | TDA18250HN_SDS v.4 |
| TDA18250HN_SDS v.4 | 20110504 | Preliminary short data sheet | - | TDA18250HN_SDS v.3 |
| TDA18250HN_SDS v.3 | 20110413 | Preliminary short data sheet | - | TDA18250HN_SDS v.2 |
| TDA18250HN_SDS v.2 | 20110114 | Preliminary short data sheet | - | TDA18250HN_SDS v.1 |
| TDA18250HN_SDS v.1 | 20100812 | Objective short data sheet | - | - |

9. Legal information

9.1 Data sheet status

| Document status ^{[1][2]} | Product status ^[3] | Definition |
|-----------------------------------|-------------------------------|---------------------------------------------------------------------------------------|
| Objective [short] data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet | Qualification | This document contains data from the preliminary specification. |
| Product [short] data sheet | Production | This document contains the product specification. |

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

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11. Tables

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Date of release: 22 December 2011

Document identifier: TDA18250HN_SDS

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