# 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 | - | dBμV |
| $NF_{tun}$ | tuner noise figure | maximum gain | | | | |
| | | $f_{RF}$ from 42 MHz to 862 MHz | - | 5 | 6 | dB |
| | | $f_{RF}$ > 862 MHz | - | 5.5 | - | dB |
| $\varphi_n$ | 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 |
| $\alpha_{image}$ | 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

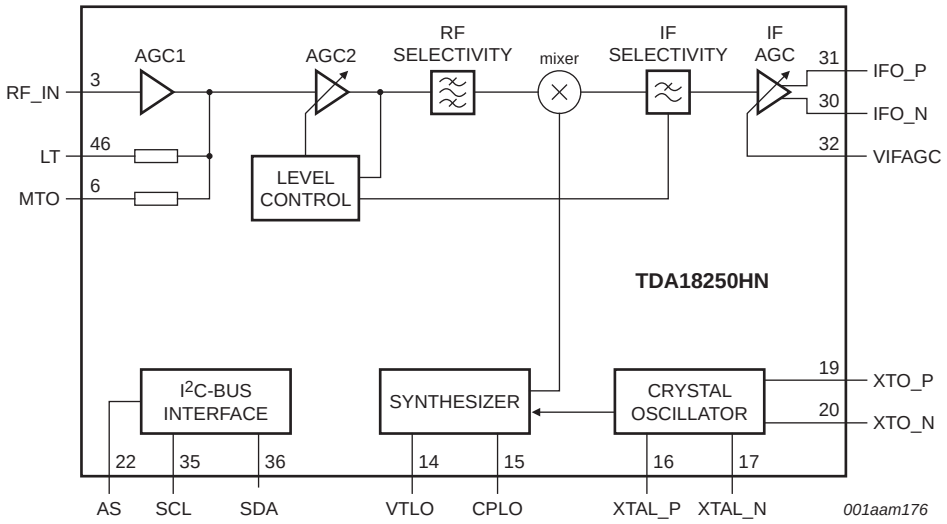


**Fig 1. Block diagram**

## 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 V | | –0.3 | $V_{CC}$ + 0.3 | V |
| | | $V_{CC}$ > 3.3 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: | • Section 1: updated<br>• Section 2: updated<br>• 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".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nxp.com.

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