



# TDA18250HN

## Cable Silicon Tuner

Rev. 2 — 14 January 2011

Preliminary data sheet

## 1. General description

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The TDA18250HN is a Silicon Tuner IC designed specifically for high definition cable Set Top Boxes (STB) supporting single streaming.

Used in conjunction with the TDA10024HN (digital channel demodulator), the TDA18250HN covers all worldwide digital cable standards.

- The TDA18250HN 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 TDA18250HN high-performance Silicon Tuner meets today's digital cable TV reception needs with:
  - Low power consumption
  - High linearity
  - Low noise figure
- The TDA18250HN ensures ease of use with:
  - Easy on-board integration
  - Efficient and effective PCB design
  - Reduced external components

## 2. Features and benefits

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- RF frequency coverage up to 860 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
- I<sup>2</sup>C-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  | -    | 862 | MHz        |
| $P_{i(max)}$     | maximum input power |                                      | -   | 106  | -   | dB $\mu$ V |
| $NF_{tun}$       | tuner noise figure  | maximum gain                         | -   | 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     |                                      | 52  | 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 $7 \times 7 \times 0.85$ mm | SOT619-1 |

### 5. Block diagram

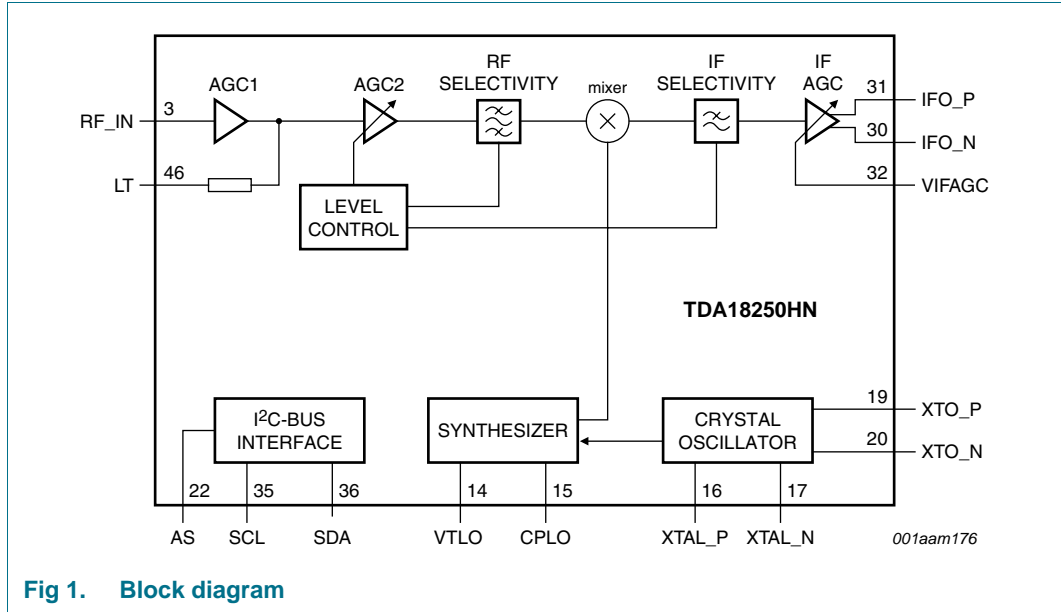


Fig 1. Block diagram

### 6. Limiting values

Table 3. Limiting values

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

| Symbol           | Parameter                       | Conditions                                   | Min  | Max                   | Unit |
|------------------|---------------------------------|--|------|-----------------------|------|
| V <sub>CC</sub>  | supply voltage                  |  | -0.3 | +3.60                 | V    |
| V <sub>I</sub>   | input voltage                   | V <sub>CC</sub> < 3.3 V                      | -0.3 | V <sub>CC</sub> + 0.3 | V    |
|                  |                                 | V <sub>CC</sub> > 3.3 V                      | -0.3 | +3.6                  | V    |
| V <sub>ESD</sub> | electrostatic discharge voltage | EIA/JESD22-A114 (HBM)                        | 2    | -                     | kV   |
|                  |                                 | EIA/JESD22-C101-C (FCDM) <a href="#">[1]</a> | 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                        |
|---------|------------------------------------|
| PCB     | Printed Circuit Board              |
| 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.2 | 20110114                            | Preliminary data sheet | -             | TDA18250HN_SDS v.1 |
| Modifications:     | • <a href="#">Table 3</a> : updated |                        |               |                    |
| TDA18250HN_SDS v.1 | 20100812                            | Objective data sheet   | -             | -                  |

## 9. Legal information

### 9.1 Data sheet status

| Document status <sup>[1][2]</sup> | Product status <sup>[3]</sup> | 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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