



TDA18212HN

Silicon Tuner for terrestrial and cable digital TV reception

Rev. 2 — 12 August 2010

Product data sheet

1. General description

The TDA18212HN is a Silicon Tuner designed for terrestrial and cable TV reception for digital signals. TDA18212HN/M (Master) is to be used as a stand-alone tuner IC or Master in dual tuner application. TDA18212HN/S (Slave) is only to be used as Slave Silicon Tuner in dual tuner application.

The TDA18212HN supports all digital TV standards and delivers a LOW IF (LIF) signal to a channel demodulator for digital TV.

The TDA18212HN facilitates design-ins by:

- Allowing easy on-board integration
- Drastically reducing the size of the tuner function
- Providing flexibility in system solution development
- Allowing straightforward dual tuner applications optimization

2. Features and benefits

- Fully integrated IF selectivity; eliminating the need for external SAW filters
- Worldwide digital terrestrial and cable including A74
- Fully integrated oscillators
- Alignment free
- Single 3.3 V supply voltage
- Low power consumption
- Integrated wideband gain control
- Crystal oscillator output buffer (16 MHz) for single crystal applications
- I²C-bus interface compatible with 3.3 V microcontrollers
- Slave tuner output function to drive second (slave) Silicon Tuner
- Easy programming
- 5 ms tuning time
- LIF channel center frequency output ranging from 3 MHz to 5 MHz
- 1.7 MHz, 6 MHz, 7 MHz, 8 MHz and 10 MHz channel bandwidths
- Ready for DVB-T2
- Loop-Through (LT)
- RoHS compliant



3. Quick reference data

Table 1. Quick reference data

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|------------------|------------------------------|--|-----|-----|-----|------------|
| f_{RF} | RF frequency | full range of RF input | 42 | - | 870 | MHz |
| NF_{tun} | tuner noise figure | 75 Ω source; maximum gain | - | 5.0 | 5.6 | dB |
| φ_{jit} | phase jitter | UHF; integrated from 250 Hz to 4 MHz | - | 0.4 | 0.6 | degree |
| α_{image} | image rejection | worst case for image rejection and 4 MHz IF frequency for levels above -50 dBm | 55 | 63 | - | dB |
| ICP_{1dB} | 1 dB input compression point | at tuner input and minimum gain | 124 | - | - | dB μ V |

4. Ordering information

Table 2. Ordering information

| Type number | Package | | |
|--------------------------------|---------|--|----------|
| | Name | Description | Version |
| TDA18212HN/M/C1 ^[1] | HVQFN40 | plastic thermal enhanced very thin quad flat package; no leads; 40 terminals; body 6 × 6 × 0.85 mm | SOT618-1 |
| TDA18212HN/S/C1 ^[2] | | | |

[1] M for master.

[2] S for slave.

5. Block diagram

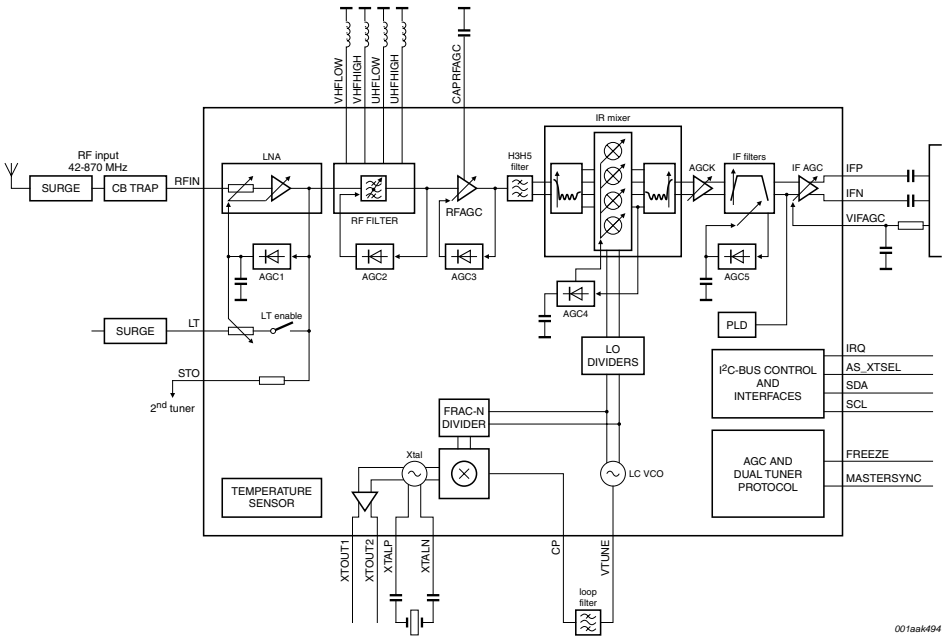


Fig 1. Block diagram TDA18212HN/M

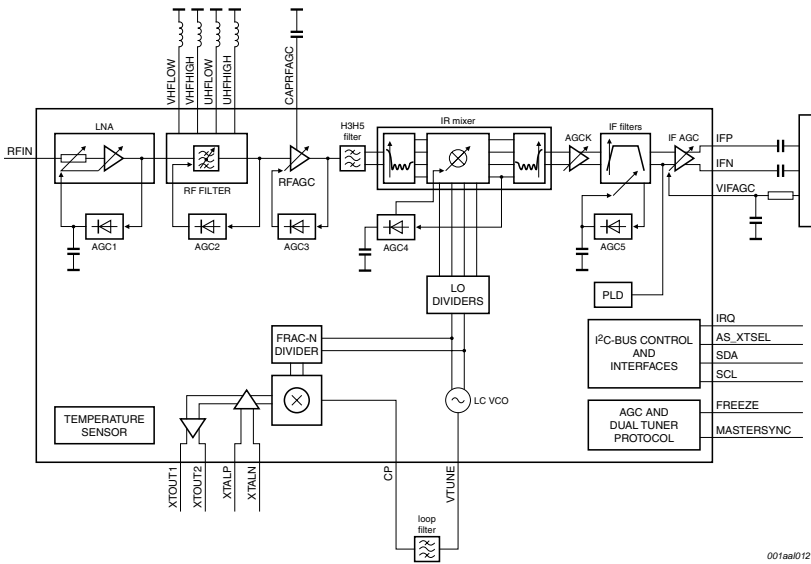


Fig 2. Block diagram TDA18212HN/S

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 | pins SDA and SCL | -0.3 | +3.6 | V |
| | | all other pins: | | | |
| | | $V_{CC} < 3.3$ V | -0.3 | $V_{CC} + 0.3$ | V |
| | | $V_{CC} > 3.3$ V | -0.3 | +3.6 | V |
| T_{stg} | storage temperature | | -40 | +150 | °C |
| T_j | junction temperature | | - | 125 | °C |
| T_{amb} | ambient temperature | | -20 | [1] | °C |
| V_{ESD} | electrostatic discharge voltage | EIA/JESD22-A114 (human body model) | -2 | +2 | kV |
| | | EIA/JESD22-C101-C (FCDM) class III[2] | 750 | - | V |

[1] The maximum allowed ambient temperature $T_{amb(max)}$ depends on the assembly conditions of the package and especially on the design of the Printed-Circuit Board (PCB) and die connection. The application mounting must be done in such a way that the maximum junction temperature is never exceeded. The junction temperature can be obtained by reading the temperature sensor bit via I²C-bus. The junction temperature: $T_j = T_{amb} + \Delta T_{j-c}$, where $\Delta T_{j-c} = power \times R_{th}$.

[2] Class III: 500 V to 1000 V

7. Abbreviations

Table 4. Abbreviations

| Acronym | Description |
|--------------|--|
| AGC | Automatic Gain Control |
| AGCK | Automatic Gain Control number K |
| CB | Citizens' Band |
| DTMB | Digital Terrestrial Multimedia Broadcast |
| DVB | Digital Video Broadcasting |
| DVB-T/T2/C/H | DVB-Terrestrial/Terrestrial second generation/Cable/Handheld |
| ESD | ElectroStatic Discharge |
| EU | European Union |
| FCDM | Field-Induced Charged-Device Model |
| FRAC-N | FRActional-N |
| IC | Integrated Circuit |
| IF | Intermediate Frequency |
| IR | Image Rejection |
| ISDB-T | Integrated Services Digital Broadcasting - Terrestrial |
| LC-VCO | Inductors and Capacitors - Voltage Controlled Oscillator |
| LNA | Low-Noise Amplifier |
| LO | Local Oscillator |
| LT | Loop-Through |
| RF | Radio Frequency |

Table 4. Abbreviations ...continued

| Acronym | Description |
|---------|-------------------------------------|
| RoHS | Restriction on Hazardous Substances |
| SAW | Surface Acoustic Wave |
| STO | Slave Tuner Output |
| UHF | Ultra High Frequency |
| US | United States |
| VCO | Voltage Controlled Oscillator |
| VHF | Very High Frequency |

8. Revision history

Table 5. Revision history

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|-----------------------------------|--------------|--------------------|---------------|------------|
| TDA18212HN_SDS v.2 ^[1] | 20100812 | Product data sheet | - | - |

[1] Revision 1 is not available.

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.

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11. Tables

| | | | |
|---|---|-------------------------------------|---|
| Table 1. Quick reference data | 2 | Table 4. Abbreviations | 5 |
| Table 2. Ordering information | 2 | Table 5. Revision history | 6 |
| Table 3. Limiting values | 5 | | |

12. Figures

| | |
|--|---|
| Fig 1. Block diagram TDA18212HN/M. | 3 |
| Fig 2. Block diagram TDA18212HN/S. | 4 |

13. Contents

| | | |
|-----------|------------------------------------|-----------|
| 1 | General description | 1 |
| 2 | Features and benefits | 1 |
| 3 | Quick reference data | 2 |
| 4 | Ordering information | 2 |
| 5 | Block diagram | 3 |
| 6 | Limiting values | 5 |
| 7 | Abbreviations | 5 |
| 8 | Revision history | 6 |
| 9 | Legal information | 7 |
| 9.1 | Data sheet status | 7 |
| 9.2 | Definitions | 7 |
| 9.3 | Disclaimers | 7 |
| 9.4 | Licenses | 8 |
| 9.5 | Trademarks | 8 |
| 10 | Contact information | 8 |
| 11 | Tables | 9 |
| 12 | Figures | 9 |
| 13 | Contents | 10 |

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