



TDA18219HN

Silicon tuner for terrestrial and cable digital TV reception

Rev. 6 — 13 July 2012

Product short data sheet

1. General description

The TDA18219HN supports all digital TV standards and delivers a LOW IF (LIF) signal to a channel demodulator for digital TV. Standards that are covered include DVB-T/T2, ISDB-T, DTMB, ATSC and DVB-C.

The TDA18219HN facilitates design-ins by:

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

2. Features and benefits

- Fully integrated IF selectivity; eliminating the need for external SAW filters
- 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
- 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
- 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 | 5.9 | dB |



Table 1. Quick reference data ...continued

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|--------------------|------------------------------|--|-----|-----|-----|------------|
| ϕ_{jit} | phase jitter | UHF; integrated from 1 kHz to 4 MHz | - | 0.5 | 0.7 | 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 |
| TDA18219HN/C1 | HVQFN40 | plastic thermal enhanced very thin quad flat package; no leads; 40 terminals; body 6 × 6 × 0.85 mm | SOT618-1 |

5. Block diagram

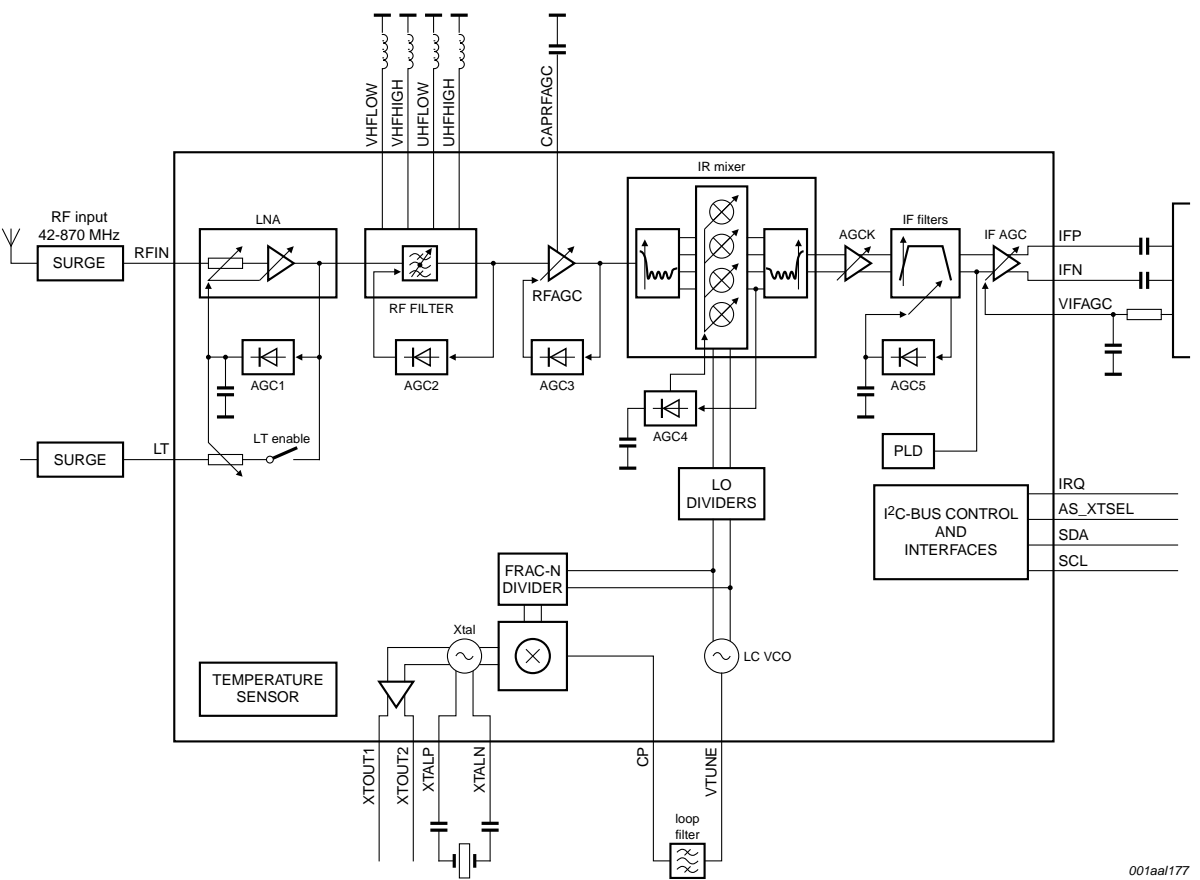


Fig 1. Block diagram

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 | 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} + ΔT_{j-c}, where ΔT_{j-c} = power × 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 step Killer |
| DTMB | Digital Terrestrial Multimedia Broadcast |
| DVB | Digital Video Broadcasting |
| DVB-T/C/H | DVB-Terrestrial/Cable/Handheld |
| ESD | ElectroStatic Discharge |
| FCDM | Field-induced Charged-Device Model |
| FRAC-N | FRActional-N |
| IC | Integrated Circuit |
| IF | Intermediate Frequency |
| IR | Image Rejection |
| IRQ | Interrupt ReQuest |
| 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 |
| RoHS | Restriction of Hazardous Substances |

Table 4. Abbreviations ...continued

| Acronym | Description |
|---------|-------------------------------|
| SAW | Surface Acoustic Wave |
| SCL | Serial CLock line |
| SDA | Serial DAta line |
| UHF | Ultra High Frequency |
| 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 |
|-----------------------------------|---|------------------------------|---------------|--------------------|
| TDA18219HN_SDS v.6 ^[1] | 20120713 | Product short data sheet | - | TDA18219HN_SDS v.4 |
| Modifications: | <ul style="list-style-type: none">• Section 1: updated• Table 3: updated T_j maximum value from 120 °C to 125 °C | | | |
| TDA18219HN_SDS v.4 | 20110329 | Product short data sheet | - | TDA18219HN_SDS v.3 |
| TDA18219HN_SDS v.3 | 20101001 | Product short data sheet | - | TDA18219HN_SDS v.2 |
| TDA18219HN_SDS v.2 ^[2] | 20100816 | Preliminary short data sheet | - | - |

[1] Revision 5 is not available.

[2] 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. |
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[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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