



TDA10026HN

Single cable demodulator with Out-Of Band receiver

Rev. 1 — 6 October 2011

Product short data sheet

1. General description

The TDA10026HN is a Single Cable Downstream Processor.

The Cable Downstream Processor (CDP) implements the physical interfaces and protocols required to provide the highest quality services of an in-band DOCSIS, EuroDOCSIS, DVB and OpenCable Set-Top Box (STB). The downstream signals are digitized by 12-bit ADC and passed to the Demod and Forward Error Correction (FEC) blocks, which do all the cable physical layer processing. This processing includes demodulating and Annex A (Europe), Annex B (US) or Annex C (Japan) FEC for the in-band data.

The Out-Of Band (OOB) receiver consists of a QPSK demodulator with FEC, compliant to SCTE55-1 and SCTE55-2 standards, with either internal MAC or POD support. Data are digitized by a 10-bit ADC.

2. Features and benefits

- QPSK, 16 QAM, 32 QAM, 64 QAM, 128 QAM and 256 QAM Demodulator
- ITU-T J83 Annex A, B and C FEC
- Transport Stream Multiplex Frame (TSMF) module for Annex C compliance
- Time interleaved parallel mode or serial mode for Transport Stream (TS) interface
- On chip PLL for crystal frequency multiplication (16 MHz external)
- Reuse of the tuner clock, saving one crystal
- Embedded 12-bit ADC
- 3.3 V and 1.2 V power supplies
- Low power < 160 mW for dual stream operation
- Small size package
- Low cost Bill of Material
- OOB:
 - ◆ QPSK demodulator
 - ◆ SCTE55-1 and SCTE55-2 FEC
 - ◆ Embedded 10-bit ADC



3. Quick reference data

Table 1. Quick reference data

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|----------------------|--------------------------|---|------|--------------------|----------------------------|------|
| P | power dissipation | Standby mode: all 3 ADC in Power-down mode and all clocks disabled | - | 10 ^[1] | 30 ^[2] | mW |
| | | operation mode: 1.2 V supply voltage; 1 DVB-C demodulation (256 QAM 6.9 Msps) and 1 OOB SCTE55-1 | - | 130 ^[1] | 190 ^[2] | mW |
| | | 3.3 V supply voltage; 1 DVB-C demodulation (256 QAM 6.9 Msps) and 1 OOB SCTE55-1 | - | 30 ^[1] | 50 ^[2] | mW |
| P _{tot} | total power dissipation | 1 DVB-C demodulation (256 QAM 6.9 Msps) and 1 OOB SCTE55-1 | - | 160 ^[1] | 240 ^[2] | mW |
| V _{DD(1V2)} | supply voltage (1.2 V) | | 1.15 | 1.2 | 1.3 | V |
| V _{DD(3V3)} | supply voltage (3.3 V) | | 3.0 | 3.3 | 3.6 | V |
| V _{IH} | HIGH-level input voltage | V _{DD(3V3)} related input levels | 2.0 | - | V _{DD(3V3)} + 0.5 | V |
| V _{IL} | LOW-level input voltage | | -0.5 | - | +0.8 | V |

[1] T_{amb} = 25 °C, V_{DD(1V2)} and V_{DD(3V3)} typical.

[2] T_j = 120 °C, V_{DD(1V2)} and V_{DD(3V3)} maximum.

4. Ordering information

Table 2. Ordering information

| Type number | Package | | |
|---------------|---------|---|----------|
| | Name | Description | Version |
| TDA10026HN/C1 | HVQFN64 | plastic thermal enhanced very thin quad flat package; no leads; 64 terminals; body; 9 × 9 × 0.85 mm | SOT804-4 |

5. Block diagram

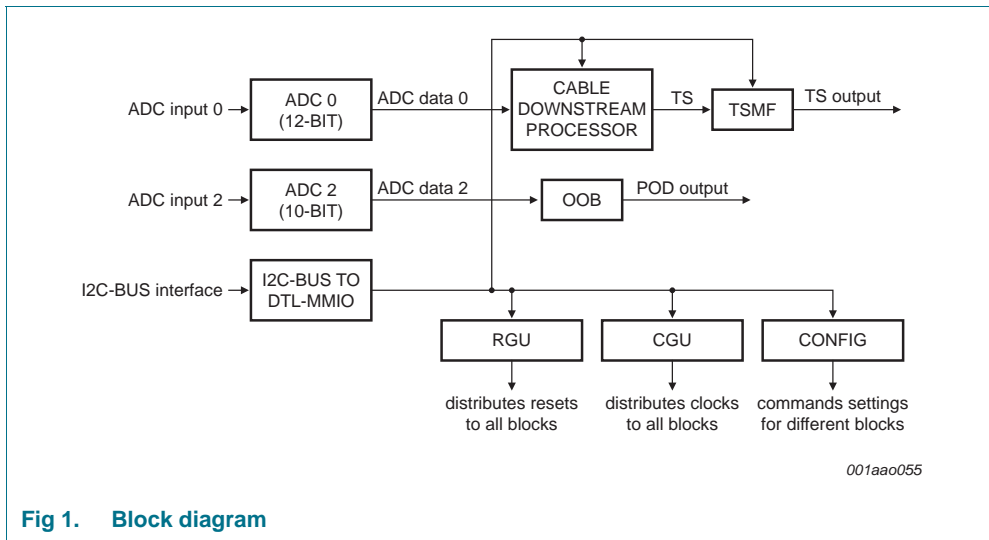


Fig 1. Block diagram

6. Limiting values

Table 3. Limiting values

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

| Symbol | Parameter | Conditions | Min | Max | Unit |
|------------------|---------------------------------|--------------------------|---------|------|------|
| T _{stg} | storage temperature | | -40 | +150 | °C |
| T _j | junction temperature | | - | 120 | °C |
| V _{ESD} | electrostatic discharge voltage | EIA/JESD22-A114 (HBM) | 2 | - | kV |
| | | EIA/JESD22-C101-C (FCDM) | [1] 0.5 | - | kV |

[1] It withstands class IV of JEDEC standard.

7. Abbreviations

Table 4. Abbreviations

| Acronym | Description |
|---------|--|
| ADC | Analog to Digital Converter |
| CDP | Cable Downstream Processor |
| CGU | Clock Generation Unit |
| DOCSIS | Data Over Cable Service Interface Specifications |
| DVB-C | Digital Video Broadcasting - Cable |
| DVD | Digital Versatile Disc |
| FCDM | Field-Induced Charged-Device Model |
| FEC | Forward Error Correction |
| HBM | Human Body Model |
| MAC | Media Access Control |

Table 4. Abbreviations ...continued

| Acronym | Description |
|---------|----------------------------------|
| MUX | MUltipleXer |
| OOB | Out-Of Band |
| PLL | Phase-Locked Loop |
| POD | Point Of Deployment |
| QAM | Quadrature Amplitude Modulation |
| QPSK | Quadrature Phase Shift Keying |
| RGU | Reset Generation Unit |
| STB | Set-Top Box |
| TS | Transport Stream |
| TSMF | Transport Stream Multiplex Frame |
| US | United States |

8. Revision history

Table 5. Revision history

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|--------------------|--------------|--------------------------|---------------|------------|
| TDA10026HN_SDS v.1 | 20111006 | Product 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. |
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