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# TDA10027HN

Dual cable demodulator with Out-Of Band receiver

Rev. 1 — 8 November 2011

Product short data sheet

## 1. General description

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The TDA10027 is a Dual 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

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- 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 < 260 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 <sup>[1]</sup>	30 <sup>[2]</sup>	mW
		operation mode: 1.2 V supply voltage; 2 simultaneous DVB-C demodulations (256 QAM 6.9 Msps) and 1 OOB SCTE55-1	-	225 <sup>[1]</sup>	305 <sup>[2]</sup>	mW
		3.3 V supply voltage; 2 simultaneous DVB-C demodulations (256 QAM 6.9 Msps) and 1 OOB SCTE55-1	-	35 <sup>[1]</sup>	55 <sup>[2]</sup>	mW
P <sub>tot</sub>	total power dissipation	2 simultaneous DVB-C demodulations (256 QAM 6.9 Msps) and 1 OOB SCTE55-1	-	260 <sup>[1]</sup>	360 <sup>[2]</sup>	mW
V <sub>DD(1V2)</sub>	supply voltage (1.2 V)		1.15	1.2	1.3	V
V <sub>DD(3V3)</sub>	supply voltage (3.3 V)		3.0	3.3	3.6	V
V <sub>IH</sub>	HIGH-level input voltage	V <sub>DD(3V3)</sub> related input levels	2.0	-	V <sub>DD(3V3)</sub> + 0.5	V
V <sub>IL</sub>	LOW-level input voltage		-0.5	-	+0.8	V

[1] T<sub>amb</sub> = 25 °C, V<sub>DD(1V2)</sub> and V<sub>DD(3V3)</sub> typical.

[2] T<sub>j</sub> = 120 °C, V<sub>DD(1V2)</sub> and V<sub>DD(3V3)</sub> maximum.

### 4. Ordering information

**Table 2. Ordering information**

Type number	Package		Version
	Name	Description	
TDA10027HN/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

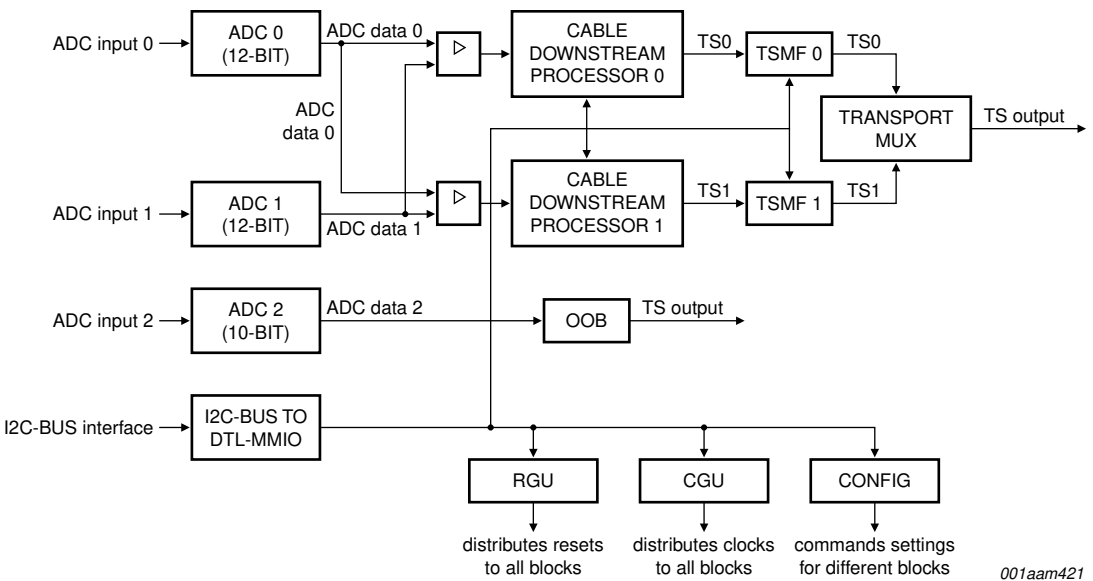


Fig 1. Block diagram

## 6. Limiting values

**Table 3. Limiting values**

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

Symbol	Parameter	Conditions	Min	Max	Unit
T <sub>stg</sub>	storage temperature		-40	+150	°C
T <sub>j</sub>	junction temperature		-	120	°C
V <sub>ESD</sub>	electrostatic discharge voltage	EIA/JESD22-A114 (human body model)	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
FCDM	Field-Induced Charged-Device Model
FEC	Forward Error Correction
MAC	Media Access Control
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
TDA10027HN_SDS v.1	20111108	Product short 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.

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[2] The term 'short data sheet' is explained in section "Definitions".

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Date of release: 8 November 2011

Document identifier: TDA10027HN\_SDS