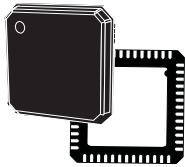



AM/FM/HD-Radio™ submicron technology automotive receiver


VFQFPN52 (8 x 8 x 1.0 mm)

Features

- AEC-Q100 qualified 
- AM/FM reception with digital IF processing
- Fully automotive grade CMOS design
- AM/FM Band
- Low-IF, DSP-based architecture
- Very high dynamic range built-in IF-ADC
- Minimum external component count
- Very small footprint package
- Multipath noise mitigation processing
- Compatible with HD-Radio™
- Digital Audio Output
- Fully RoHS-compliant

Description

The **TDA7708S** is a single chip fully-CMOS AM/FM tuner aimed at receivers for terrestrial radio broadcasting.

The TDA7708S combines state-of-art performance with minimum external component count, making it therefore ideal for integration into car radios and other radio devices with challenging performance, quality, reliability and, last but not least, cost requirements.

Such a low external component count is made possible by cutting-edge circuit and implementation techniques that overcome the major challenges affecting both very-low and zero IF receivers.

The TDA7708S features multiple front-end low-noise amplifiers (LNAs) to cover AM LW/MW/SW bands, and the entire FM band, with advanced automatic gain control (AGC) amplifier and mixer stages.

After on-chip IF filtering, the TDA7708S digitizes the signal with a very high dynamic range ADC; it processes the complex phase-quadrature baseband signal allowing applications like multipath noise mitigation, and integrated RDS decoding.

The TDA7708S furthermore integrates the HD-Radio™ channel filtering.

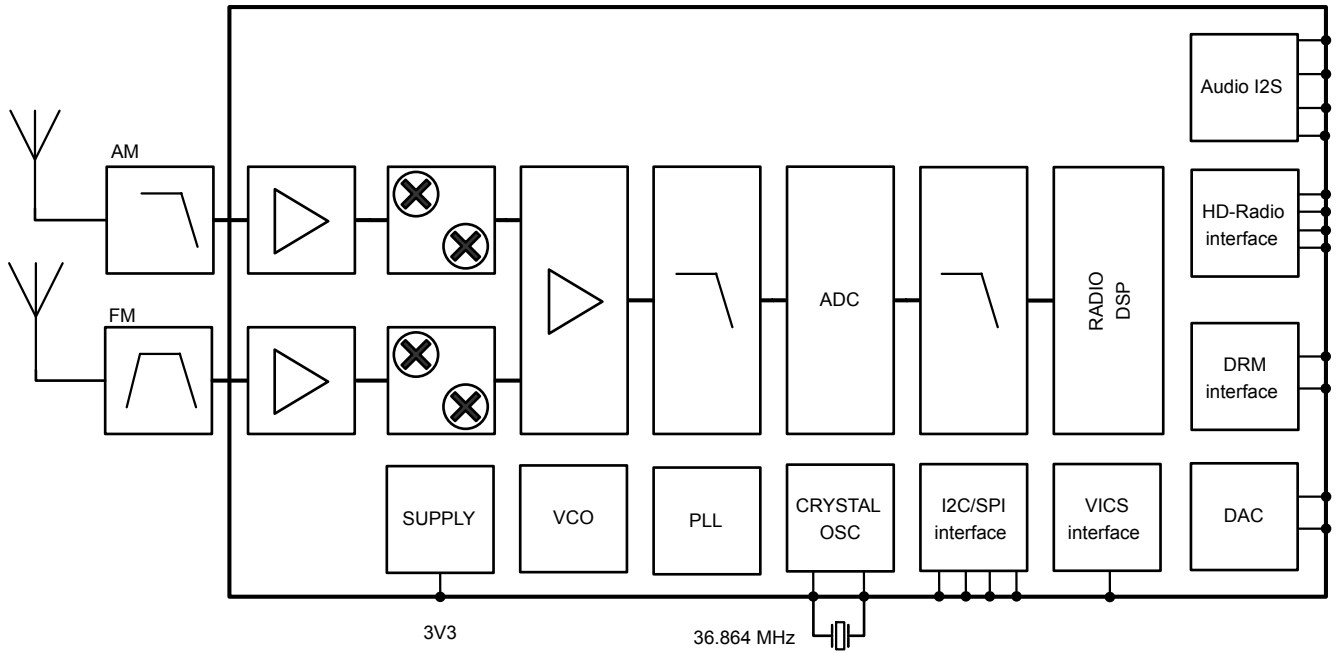
Besides providing optimal AM/FM quality reception, the TDA7708S makes it the ideal solution to realize a complete HD-Radio™ receiver solution (in combination with the external STA680D HD-Radio™ decoder), with a low bill of material, high performance and real automotive grade quality and reliability.

The TDA7708SCB requires a very small FW code to be downloaded for booting the IC, thus making it especially suited to systems whose microcontroller has limited code storage capability.

Product status		
TDA7708S		
Device summary		
Order code	Package	Packing
TDA7708S	VFQFPN52 (8 x 8 x 1.0 mm)	Tray
TDA7708SCB		
TDA7708STR		Tape & Reel
TDA7708SCBTR		

1 Block diagram

Figure 1. Block diagram



2 Electrical specification

2.1 Absolute maximum ratings

Table 1. Absolute maximum ratings

Symbol	Parameter	Test condition	Min	Typ	Max	Units
V _{CC}	Abs. supply voltage	-	-0.5	-	3.6	V
T _{stg}	Storage temperature	-	-55	-	150	°C
V _{ESD}	ESD absolute minimum withstand voltage	Human Body model	> ±2000 ⁽¹⁾			V
		Charged device model	> ±500 ⁽²⁾			
		Charged device model, corner pins	> ±750			
-	Max. input current at any pin (latch-up characteristic)	I _{INMAX}	±100			mA

1. |±1000| on AM_IN pin

2. |±400| on AM_IN pin

2.2 Thermal data

Table 2. Thermal data

Symbol	Parameter	Test condition	Value	Units
R _{th j-amb}	Thermal resistance junction-to-ambient	Multilayer 2s2p as per JEDEC JESD51-7	40	°C/W

2.3 General key parameters

Table 3. General key parameters

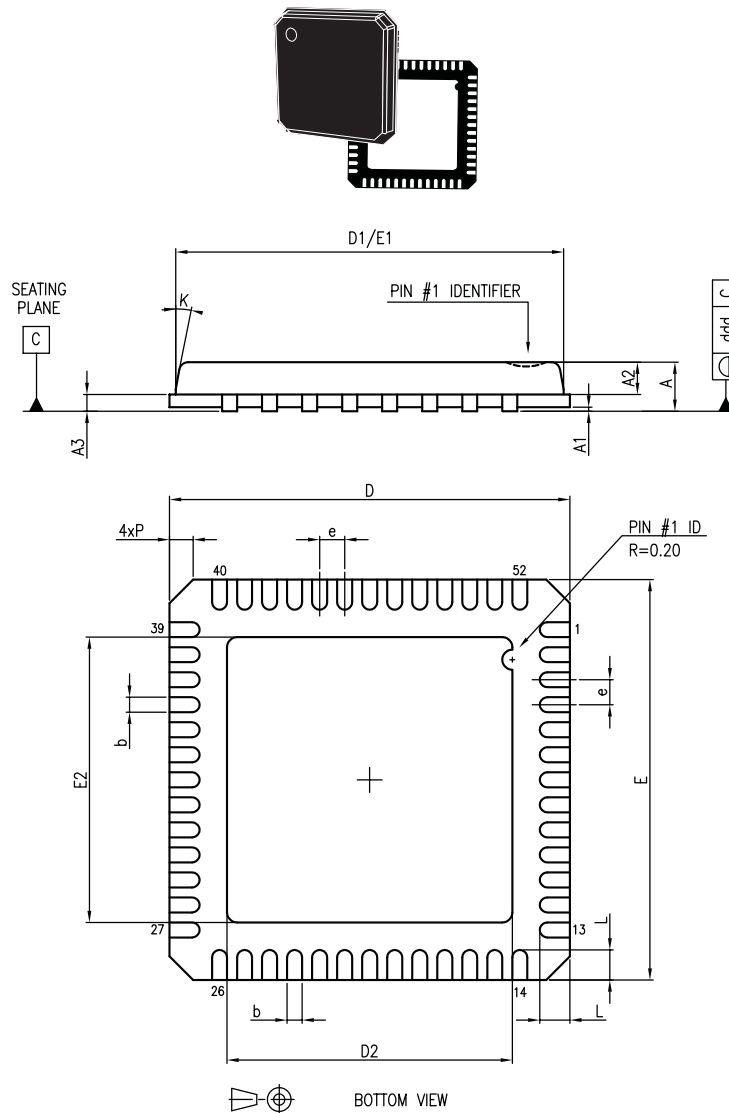
Symbol	Parameter	Test condition	Min	Typ	Max	Units
V _{CC}	3.3 V supply voltage	-	3.15	3.3	3.45	V
I _{CC}	Supply current	FM @108 MHz, active interfaces (10 pF load)	-	-	350	mA
T _{amb}	Ambient temperature range	-	-40	-	85	°C
T _{j_oper}	Operative junction temp	-	-	-	125	°C
P _{diss}	Dissipated power	R _{ext} = 12 Ohm	-	-	1	W

3 Package information

In order to meet environmental requirements, ST offers these devices in different grades of **ECOPACK** packages, depending on their level of environmental compliance. ECOPACK specifications, grade definitions and product status are available at: www.st.com. ECOPACK is an ST trademark.

3.1 VFQFPN-52 (8x8x1.0 mm) package information

Figure 2. VFQFPN-52 (8x8x1.0 mm) package outline



7740640_D_90

GAPG0104160722PS

Table 4. VFQFPN-52 (8x8x1.0 mm) package mechanical data

Ref.	Dimensions in mm		
	Min.	Typ.	Max.
A	0.8	0.9	1

Ref.	Dimensions in mm		
	Min.	Typ.	Max.
A1	-	0.02	0.05
A2	-	0.65	1
A3	-	0.2	-
b	0.18	0.25	0.3
D	7.85	8	8.15
D1	-	7.75	-
D2	6.4	6.5	6.6
D3	-	5.9	-
E	7.85	8	8.15
E1	-	7.75	-
E2	6.4	6.5	6.6
E3	-	5.9	-
e	-	0.5	-
L	0.35	0.55	0.75
P	-	-	0.6
K	12° Max.		
ddd	-	-	0.08

Revision history

Table 5. Document revision history

Date	Revision	Changes
29-Nov-2016	1	Initial release.
25-Jan-2018	2	Updated Section Description and Device summary table on cover page.
25-Nov-2019	3	Updated Figure 1. Block diagram .

IMPORTANT NOTICE – PLEASE READ CAREFULLY

STMicroelectronics NV and its subsidiaries (“ST”) reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST’s terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers’ products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. For additional information about ST trademarks, please refer to www.st.com/trademarks. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2019 STMicroelectronics – All rights reserved