

PRODUCT SUMMARY

Si4689-A10 Single-Chip, AM/FM/HD/DAB/DAB+ Radio Receiver

The Si4689 single-chip digital receiver is one member of a family of 100% CMOS digital radio broadcast receiver ICs from Skyworks. The Si468x family offers a complete and cost-effective digital radio solution integrating the RF tuner, baseband, and audio processing on a single die. The high level of integration provides significant customer benefits compared to traditional digital radio solutions, including a reduction in system implementation complexity, validation and testing, and improved reliability and manufacturability.

The Si4689 is compatible with the iBiquity Digital and NRSC-5 standards for In-Band-On-Channel (IBOC) digital radio broadcasting, integrating digital channel demodulation and decoding functions, along with audio decoding and IBOC analog-digital blend. The Si4689 supports IBOC multicasting, as well as the full-range of HD Radio data services, such as PSD, Artist Experience, iTunes® Tagging, Bookmark and real-time Traffic, with the appropriate external decoders.

The Si4689 also offers VHF Band III (168 to 240 MHz) reception capability and is fully compliant with ETSI EN 300 401 and ETSI TS 102 563. The Si4689 delivers DAB and DAB+ via an integrated source decoder that supports both MPEG Audio Layer 2 (DAB) and HE-AAC V2 (DAB+). The Si4689 supports data services such as Dynamic Labels, Intellitext, Electronic Program Guide (EPG), Slideshow, and Journaline® with the appropriate external decoders. For more information, visit the [Skyworks Si468x Digital Radio Receivers page](#).

Applications

- Clock and tabletop radios
- Stereo boomboxes
- Mini/micro systems
- Docking stations

Features

- Worldwide FM band support (76 to 108 MHz)
- Worldwide AM band support (520 to 1710 kHz)
- DAB, DAB+ Band III support (168 to 240 MHz)
- Advanced RDS/RBDS decoder
- FM HD Radio™ support with on-chip IBOC blend
- Supports WorldDMB Receiver Profile 1
- Integrated OFDM channel demodulator
- Integrated de-interleaving SRAM
- I²S digital audio out with ASRC
- Integrated 97 dB stereo audio DAC
- Concurrent I²S/L-R stereo audio out
- Full range of signal quality metrics
- Fully-integrated VCO/PLL/synthesizer
- SPI and I²C host control interfaces
- QFN 48-pin, 7 x 7 x 0.85 mm



Skyworks Green™ products are compliant with all applicable legislation and are halogen-free. For additional information, refer to *Skyworks Definition of Green™*, document number SQ04-0074.

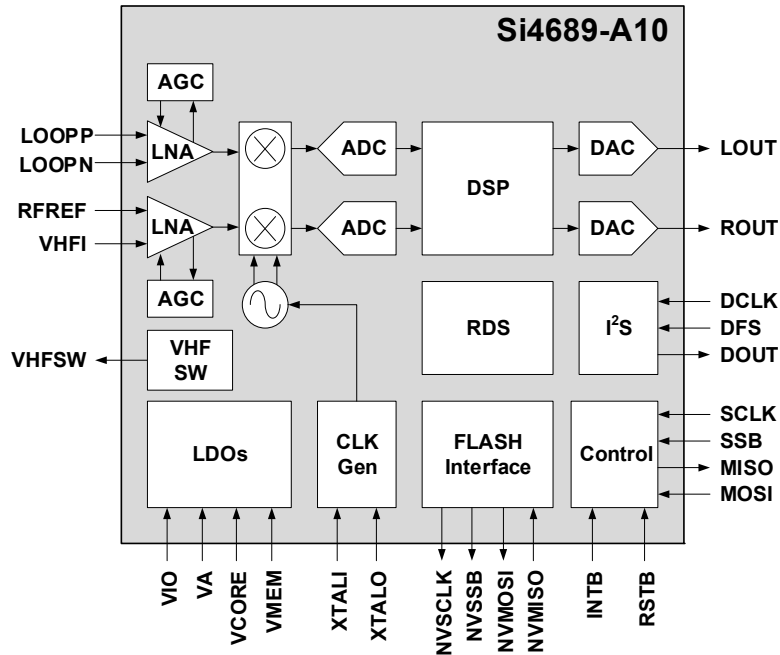


Figure 1. Functional Block Diagram

Table 1. Selected Electrical Specifications

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Ambient temperature	T_A		-40	25	85	°C
Analog supply voltage	V_A		1.71	1.8	2.0	V
Interface supply voltage	V_{IO}		1.62	1.8	3.6	V
Core digital supply voltage	V_{CORE}		1.62	1.8	2.0	V
Memory supply voltage	V_{MEM}		1.62	1.8	2.0	V
Analog FM						
Input frequency	F_{rf}		76	—	108	MHz
Seek/tune time			—	—	60	ms/ch
FM HD						
Input frequency	F_{rf}		87.5	—	108	MHz
Seek/tune time			—	—	60	ms/ch
Analog AM						
Input frequency	F_{rf}		520	—	1710	kHz
Seek/tune time			—	—	60	ms/ch
AM HD						
Input frequency	F_{rf}		520	—	1710	kHz
Seek/tune time			—	—	60	ms/ch
DAB/DAB+						
Input frequency	F_{rf}		168	—	240	MHz
Ensemble acquisition time		For a valid channel, after power-up RF level = -47 dBm	—	710	—	ms

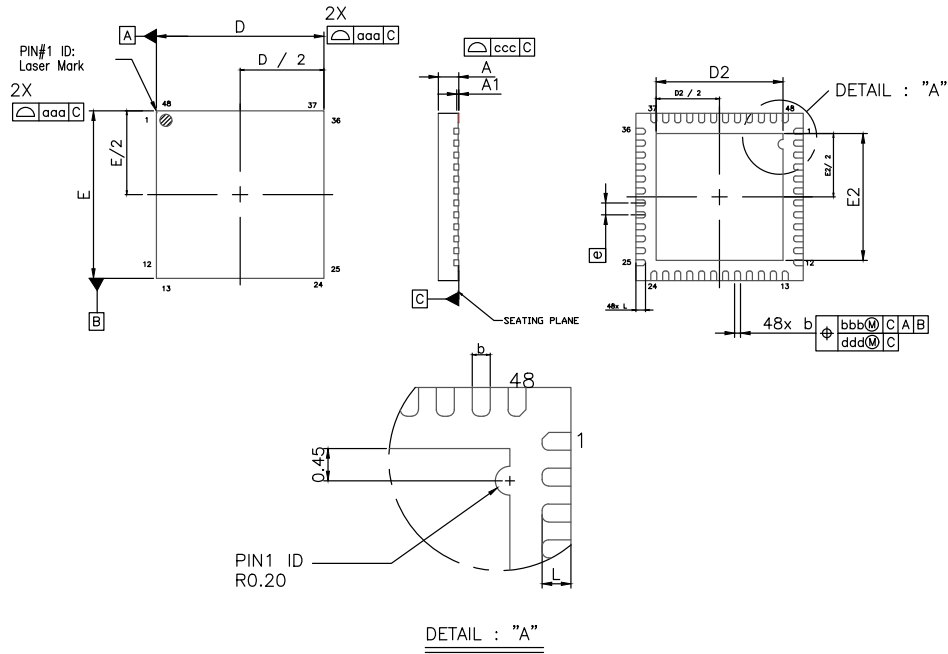


Figure 2. 7x7 mm 48-Pin QFN Package Diagram

Table 2. Package Diagram Dimensions^{1,2,3,4}

Dimension	Min	Nom	Max
A	0.80	0.85	0.90
A1	0.00	0.02	0.05
b	0.18	0.25	0.30
D	7.00 BSC		
D2	5.20	5.30	5.40
e	0.50 BSC		
E	7.00 BSC		
E2	5.20	5.30	5.40
L	0.30	0.40	0.50
aaa	0.15		
bbb		0.10	
ddd		0.05	
eee		0.08	

1. All dimensions are shown in millimeters (mm) unless otherwise noted.
2. Dimensioning and tolerancing per ASME Y14.5M-1994.
3. This drawing conforms to JEDEC Outline MO-220, Variation VKKD-4.
4. Recommended card reflow profile is per the JEDEC/IPC J-STD-020 specification for Small Body Components.

Copyright © 2023, Skyworks Solutions, Inc. All Rights Reserved.

Information in this document is provided in connection with Skyworks Solutions, Inc. ("Skyworks") products or services. These materials, including the information contained herein, are provided by Skyworks as a service to its customers and may be used for informational purposes only by the customer. Skyworks assumes no responsibility for errors or omissions in these materials or the information contained herein. Skyworks may change its documentation, products, services, specifications or product descriptions at any time, without notice. Skyworks makes no commitment to update the materials or information and shall have no responsibility whatsoever for conflicts, incompatibilities, or other difficulties arising from any future changes.

No license, whether express, implied, by estoppel or otherwise, is granted to any intellectual property rights by this document. Skyworks assumes no liability for any materials, products or information provided hereunder, including the sale, distribution, reproduction or use of Skyworks products, information or materials, except as may be provided in Skyworks' Terms and Conditions of Sale.

THE MATERIALS, PRODUCTS AND INFORMATION ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, WHETHER EXPRESS, IMPLIED, STATUTORY, OR OTHERWISE, INCLUDING FITNESS FOR A PARTICULAR PURPOSE OR USE, MERCHANTABILITY, PERFORMANCE, QUALITY OR NON-INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHT; ALL SUCH WARRANTIES ARE HEREBY EXPRESSLY DISCLAIMED. SKYWORKS DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. SKYWORKS SHALL NOT BE LIABLE FOR ANY DAMAGES, INCLUDING BUT NOT LIMITED TO ANY SPECIAL, INDIRECT, INCIDENTAL, STATUTORY, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS THAT MAY RESULT FROM THE USE OF THE MATERIALS OR INFORMATION, WHETHER OR NOT THE RECIPIENT OF MATERIALS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Skyworks products are not intended for use in medical, lifesaving or life-sustaining applications, or other equipment in which the failure of the Skyworks products could lead to personal injury, death, physical or environmental damage. Skyworks customers using or selling Skyworks products for use in such applications do so at their own risk and agree to fully indemnify Skyworks for any damages resulting from such improper use or sale.

Customers are responsible for their products and applications using Skyworks products, which may deviate from published specifications as a result of design defects, errors, or operation of products outside of published parameters or design specifications. Customers should include design and operating safeguards to minimize these and other risks. Skyworks assumes no liability for applications assistance, customer product design, or damage to any equipment resulting from the use of Skyworks products outside of Skyworks' published specifications or parameters.

Skyworks, the Skyworks symbol, Sky5®, SkyOne®, SkyBlue™, Skyworks Green™, ClockBuilder®, DSPLL®, ISOmodem®, ProSLIC®, SiPHY®, and RFelC® are trademarks or registered trademarks of Skyworks Solutions, Inc. or its subsidiaries in the United States and other countries. Third-party brands and names are for identification purposes only and are the property of their respective owners. Additional information, including relevant terms and conditions, posted at www.skyworksinc.com, are incorporated by reference.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Skyworks:](#)

[SI4689-A10-GM](#) [SI4689-A10-GMR](#) [SI4689-QFN-EVB](#)