PRODUCT SUMMARY

Si4684-A10 Single-Chip, FM/DAB/DAB+ Radio Receiver

The Si4684 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 Si4684 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 Si4688 supports DAB and DAB+ via an integrated source decoder that supports both MPEG Audio Layer 2 (DAB) and HE-AAC V2 (DAB+). The Si4684 supports data services, such as Dynamic Labels, Intellitext, Electronic Program Guide (EPG), Slideshow and Journaline® with the appropriate external decoders.

The Si4684 additionally supports worldwide FM radio reception and incorporates a fully integrated decoder for the European Radio Data System (RDS) and the North American Radio Broadcast Data System (RDBS) including all required symbol decoding, block synchronization, error detection, and error correction functions. For more information, visit the Skyworks Si468x Digital Radio Receivers page.

Applications

- Mobile phones and tablets
- Clock and tabletop radios
- Stereo boomboxes
- Mini/micro systems
- Docking stations
- Personal navigation devices

Features

- Worldwide FM band support (76 to 108 MHz)
- DAB/DAB+ Band III support (168 to 240 MHz)
- Advanced RDS/RBDS decoder
- Supports WorldDMB Receiver Profiles 1 and 2
- Integrated OFDM channel demodulator
- Integrated deinterleaving SRAM
- I^2S digital audio out with ASRC
- Integrated 97 dB stereo audio DAC
- Concurrent I^2S/L-R stereo audio out
- Full range of signal quality metrics
- Fully-integrated VCO/PLL/synthesizer
- SPI and I^2C 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.

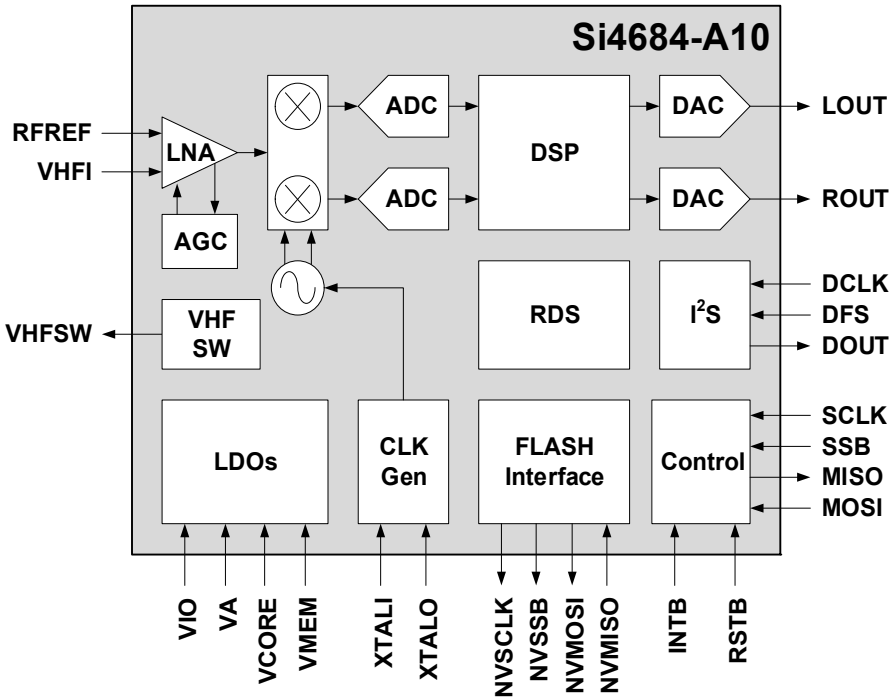

Figure 1. Functional Block Diagram

Table 1. Selected Electrical Specifications

Parameter	Symbol	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
DAB/DAB+					
Input frequency	F_{rf}	168	—	240	MHz
Ensemble acquisition time		—	—	940	ms

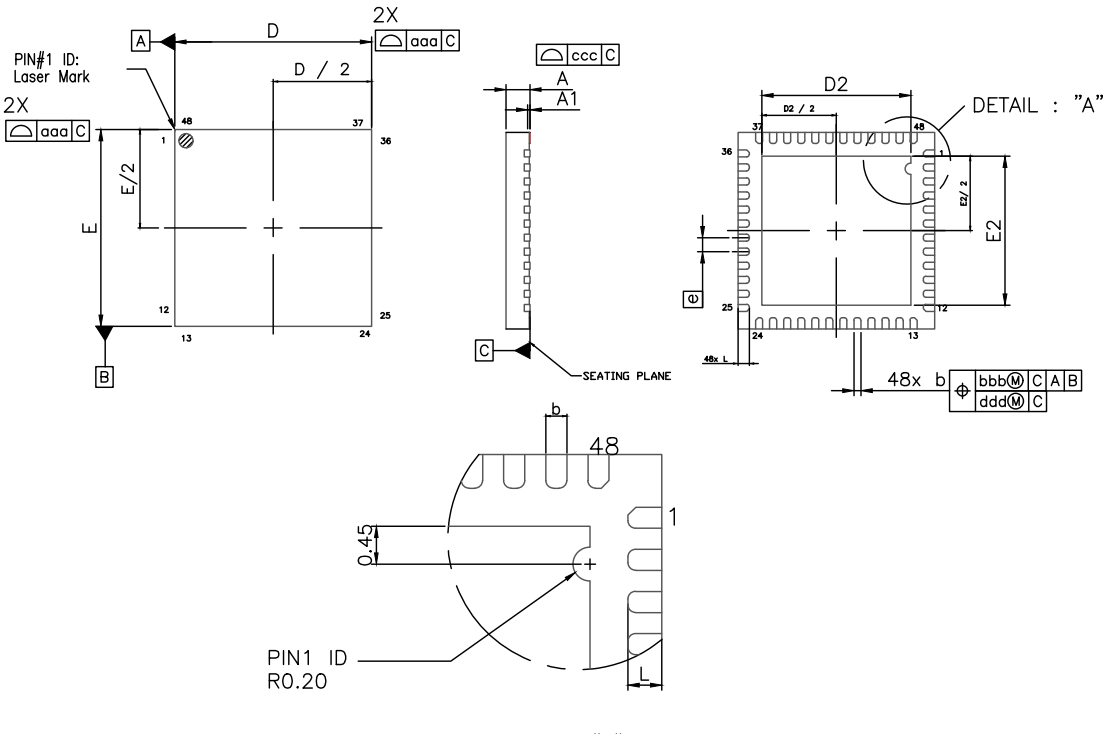

Figure 2. 7x7 mm 48-Pin QFN Package Diagram

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.

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