



SKYWORKS®

PRODUCT SUMMARY

Si4685-A10 Single-Chip, AM/FM/DAB/DAB+ Radio Receiver

The Si4685 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 Si4685 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 Si4685 supports DAB and DAB+ via an integrated source decoder that supports both MPEG Audio Layer 2 (DAB) and HE-AAC V2 (DAB+). The Si4685 supports data services such as Dynamic Labels, Intellitext, Electronic Program Guide (EPG), Slideshow and Journaline® with the appropriate external decoders.

The Si4685 additionally supports worldwide AM/FM radio reception and incorporates a fully integrated decoder for the European Radio Data System (RDS) and the North American Radio Broadcast Data System (RBDS) 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

- 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
- Supports WorldDMB Receiver Profiles 1 and 2
- 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.

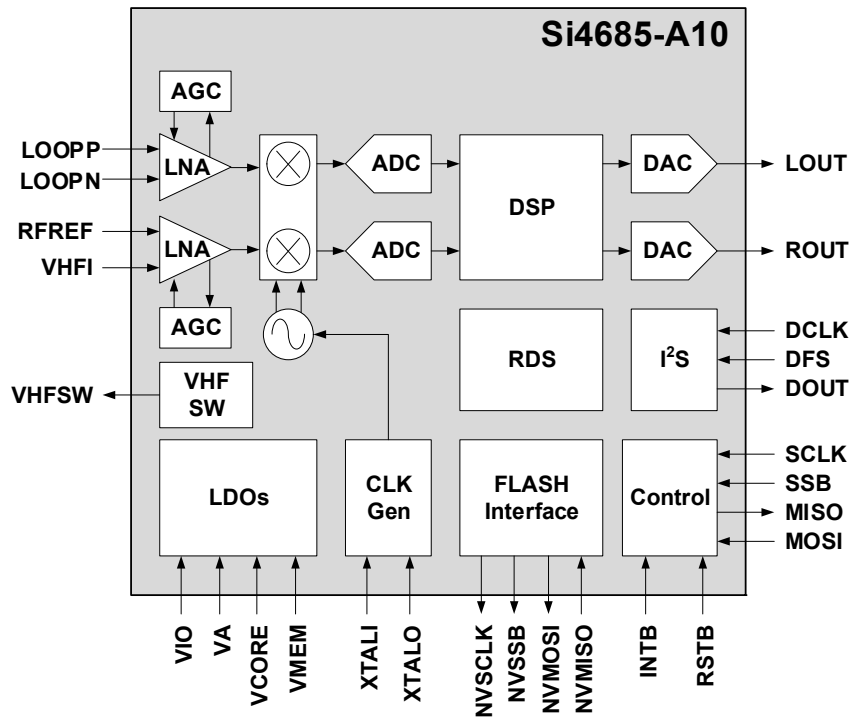


Figure 1. Functional Block Diagram

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
Analog AM						
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

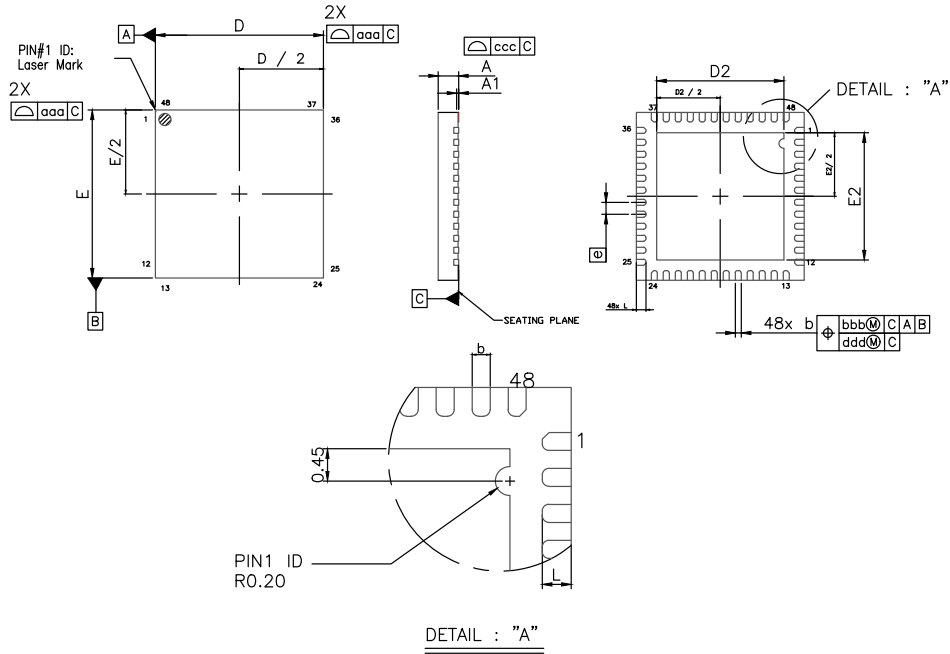


Figure 2. 7x7 mm 48-Pin QFN Package Diagram

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.

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