Si4682-A10

Single-Chip, FM/HD Radio Receiver

Description

The Si4682 single-chip digital receiver is one member of a family of 100% CMOS digital radio broadcast receiver ICs from Silicon Labs. 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 Si4682 is compatible with the iBiquity Digital and NRSC-5 standards for FM 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 Si4682 is capable of tuning HD Radio™ reception to cover additional FM frequencies for future IBOC adoption outside of North America. The Si4682 additionally supports IBOC multicasting, as well as the full-range of HD Radio data services, such as PSD (Program Service Data), Artist Experience, iTunes® Tagging, Bookmark and real-time traffic, with the appropriate external decoders.

The Si4682 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.

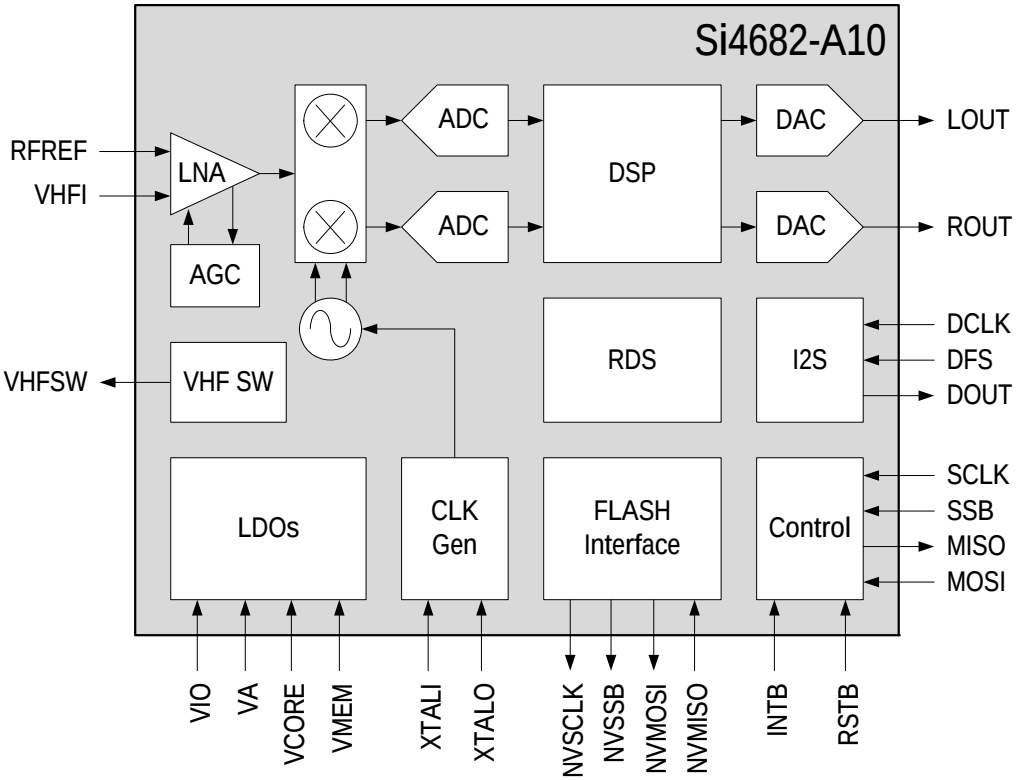
For more information, visit the Si468x Digital Radio Receivers web page.

Features

- Worldwide FM band support (76–108 MHz)
- Advanced RDS/RBDS decoder
- FM HD Radio™ support
- Integrated IBOC blend
- Advanced seek functionality
- Advanced audio DSP processing
- 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
- WLCSP 62-ball, 3.2x3.77x0.59 mm
- QFN 48-pin, 7x7x0.85 mm

Applications

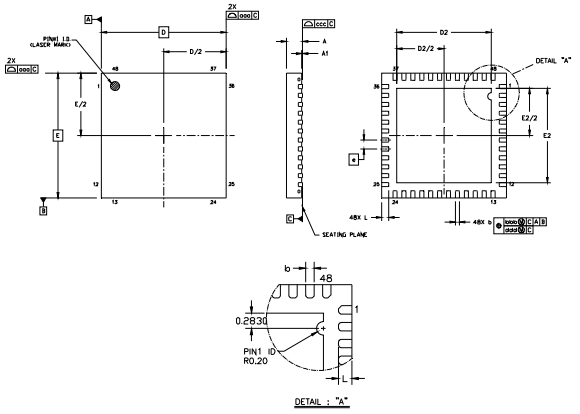
- Mobile phones and tablets
- Clock and tabletop radios
- Stereo boomboxes
- Mini/micro systems
- Docking stations
- Personal navigation devices



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 Time			—	—	60	ms/ch
FM HD						
Input Frequency	F_{rf}		87.5	—	108	MHz
Seek Time			—	—	120	ms/ch

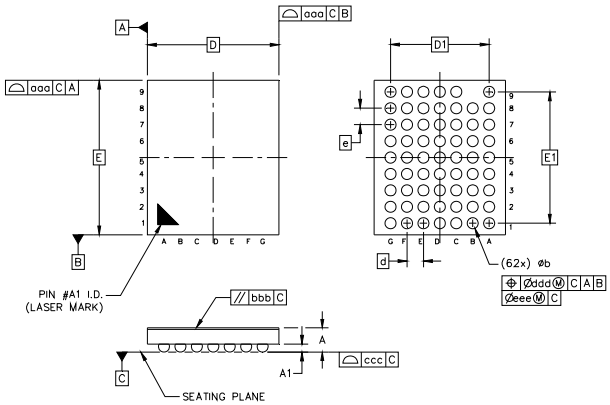
Si4682-A10-GM (QFN)



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	

Notes:
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.

Si4682-A10-GD (WLCSP)



Dimension	Min	Nom	Max
A	0.55	0.59	0.63
A1	0.18	0.20	0.22
b	0.22	0.27	0.32
D		3.20 BSC.	
E		3.77 BSC.	
d		0.40 BSC.	
e		0.40 BSC.	
D1		2.40 BSC.	
E1		3.20 BSC.	
aaa		0.10	
bbb		0.10	
ccc		0.03	
ddd		0.15	
eee		0.05	

Notes:
1. All dimensions shown are in millimeters (mm) unless otherwise noted.
2. Dimensioning and Tolerancing per ANSI Y14.5M-1994.
3. Primary datum "C" and seating plane are defined by the spherical crowns of the solder balls.
4. Dimension "b" is measured at the maximum solder bump diameter, parallel to primary datum "C".
5. Recommended card reflow profile is per the JEDEC/IPC J-STD-020 specification for Small Body Components.