Si4622-A10

High-Performance, Single-Chip FM HD-Radio™/RDS/RBDS Data Receiver

Description

The Si4622 single-chip digital receiver is a 100% CMOS digital radio broadcast receiver IC from Silicon Labs. It provides significant advances in size, power consumption, and performance to enable HD Radio data services reception in automotive infotainment systems and car radios.

The Si4622 HD Radio data receiver offers a complete and cost-effective solution to support HD Radio data services reception by integrating a multiband RF tuner, demodulator, and channel decoder on a single die. The high level of integration and complete system production test simplifies design-in, increases system quality, and improves reliability and manufacturability.

The Si4622 also 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.

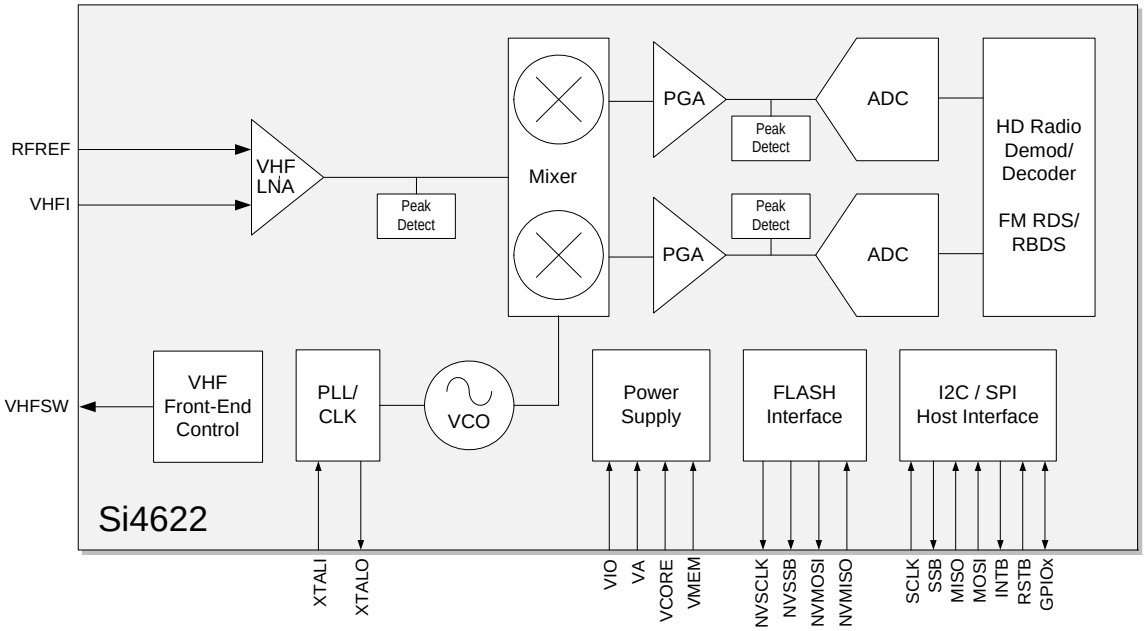
Leveraging Silicon Laboratories' proven and patented digital low-intermediate-frequency (Low-IF) receiver architecture, the Si4622 delivers superior RF performance and interference rejection. The solution offers dynamic FM channel bandwidth control, auto-calibrated digital tuning, and proven FM seek functionality based on multiple signal quality and band parameters. In addition, the Si4622 provides an integrated clock oscillator or accepts a reference clock and supports a selectable control interface (SPI or I^2C). The Si4622 receiver system specifies a minimal bill of materials and requires less than 100 mm^2 of PCB space, excluding the antenna inputs, making the solution ideal for today's infotainment systems.

Features

- Worldwide FM band support (76–108 MHz)
- Advanced RDS / RBDS decoder
- FM HD Radio channel decoder
- Advanced seek functionality
- Complete on-chip channel decode
- Station Information Service (SIS) and Program Service Data (PSD) support
- Advanced Application Services (AAS) Payload for data applications
- Full range of analog and digital signal quality metrics
- Fully-integrated VCO/PLL synthesizer
- Fully-integrated advanced AGC and alignment
- SPI, I^2C control interfaces
- No external RAM required for channel decoding
- Flash memory interface for application program load
- 7x7 mm 48-pin QFN package
- Pb-free/RoHS compliant
- AEC-Q100 qualified

Applications

- OEM automotive infotainment systems
- Aftermarket car radio systems
- OEM automotive PND docking systems



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Selected Electrical Specifications

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Input Frequency	F_{rf}	—	76	—	108	MHz
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

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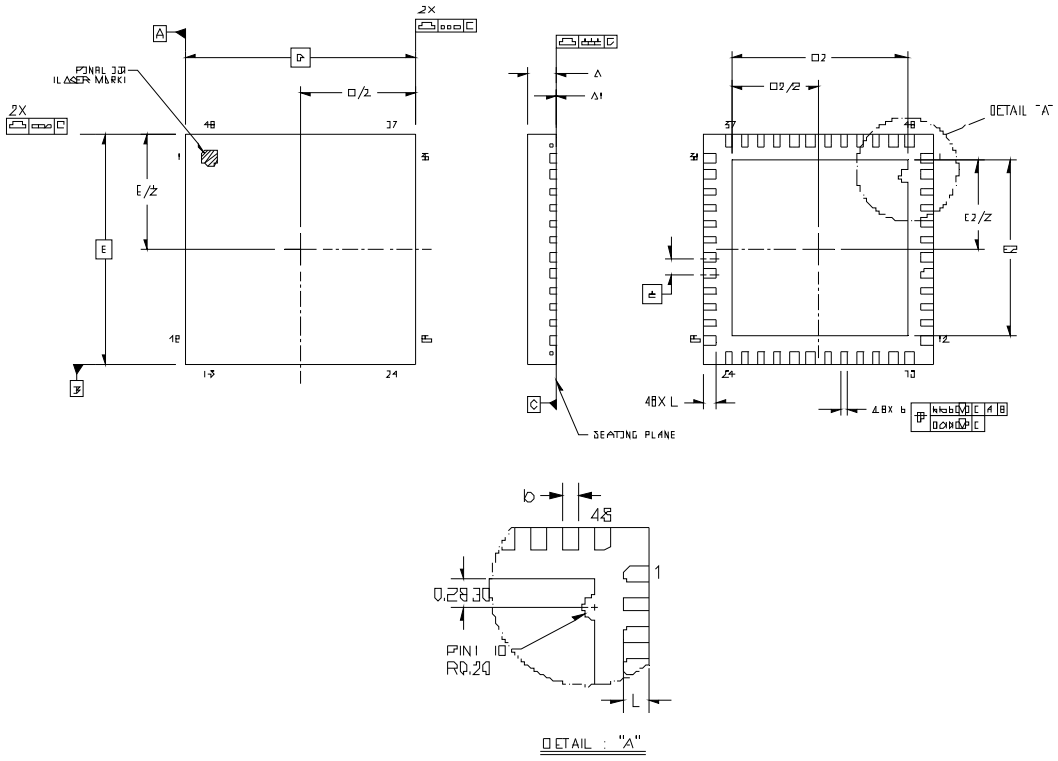

Dimension	Min	Nom	Max
A	0.80	0.85	0.90
A1	0.00	0.02	0.05
b	0.18	0.25	0.30
D		7.00 BSC	
D2	5.20	5.30	5.40
e		0.50 BSC	
E		7.00 BSC	
E2	5.20	5.30	5.40
L	0.30	0.40	0.50
aaa		0.15	
bbb		0.10	
ddd		0.05	
eee		0.08	

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 the JEDEC Solid State 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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