# **Description**

The Si4689 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 Si4689 is compatible with the iBiguity Digital and NRSC-5 standards for In-Band-On-Channel (IBOC) digital 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 (168-240 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.

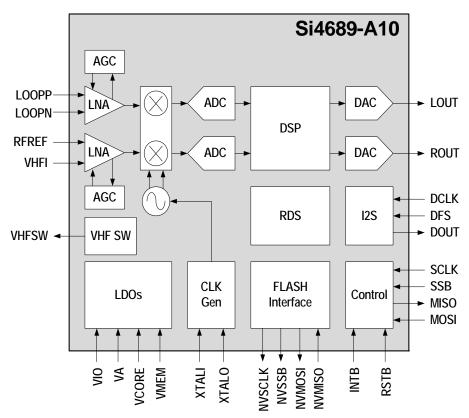
For more information, visit the Si468x Digital Radio Receivers web page.

#### **Features**

- Worldwide FM band support (76–108 MHz)
- Worldwide AM band support (520–1710 kHz)
- Advanced RDS/RBDS decoder
- FM HD Radio™ support with on-chip IBOC blend
- DAB, DAB+ Band III support (168–240 MHz)
- Supports WorldDMB Receiver Profile 1
- Integrated OFDM channel demodulator
- Integrated de-interleaving SRAM
- I<sup>2</sup>S digital audio out with ASRC
- Integrated 97 dB stereo audio DAC
- Concurrent I<sup>2</sup>S/L-R stereo audio out
- Full range of signal quality metrics
- Fully-integrated VCO / PLL / synthesizer
- SPI and I<sup>2</sup>C host control interfaces
- QFN 48-pin, 7x7x0.85 mm

## **Applications**

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



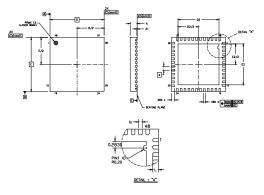


# Single-Chip, AM/FM/HD/DAB/DAB+ Radio Receiver

# **Selected Electrical Specifications**

Parameter	Symbol	Test Conditions	Min	Тур	Max	Units
Ambient Temperature	T <sub>A</sub>		-40	25	85	°C
Analog Supply Voltage	V <sub>A</sub>		1.71	1.8	2.0	V
Interface Supply Voltage	V <sub>IO</sub>		1.62	1.8	3.6	V
Core Digital Supply Voltage	V <sub>CORE</sub>		1.62	1.8	2.0	V
Memory Supply Voltage	$V_{MEM}$		1.62	1.8	2.0	V
Analog FM	•			•		
Input Frequency	F <sub>rf</sub>		76	_	108	MHz
Seek/Tune Time			_	_	60	ms/ch
FM HD						•
Input Frequency	F <sub>rf</sub>		87.5	_	108	MHz
Seek/Tune Time			_	_	60	ms/ch
Analog AM	•			•		
Input Frequency	F <sub>rf</sub>		520	_	1710	kHz
Seek/Tune Time			_	_	60	ms/ch
AM HD	•			•		
Input Frequency	F <sub>rf</sub>		520	_	1710	kHz
Seek/Tune Time			_	_	60	ms/ch
DAB/DAB+	•	•		•	•	•
Input Frequency	F <sub>rf</sub>		168	_	240	MHz
Ensemble Acquisition Time		For a valid channel, after power-up RF level = -47 dBm	_	710	_	ms

### Si4689-A10-GM

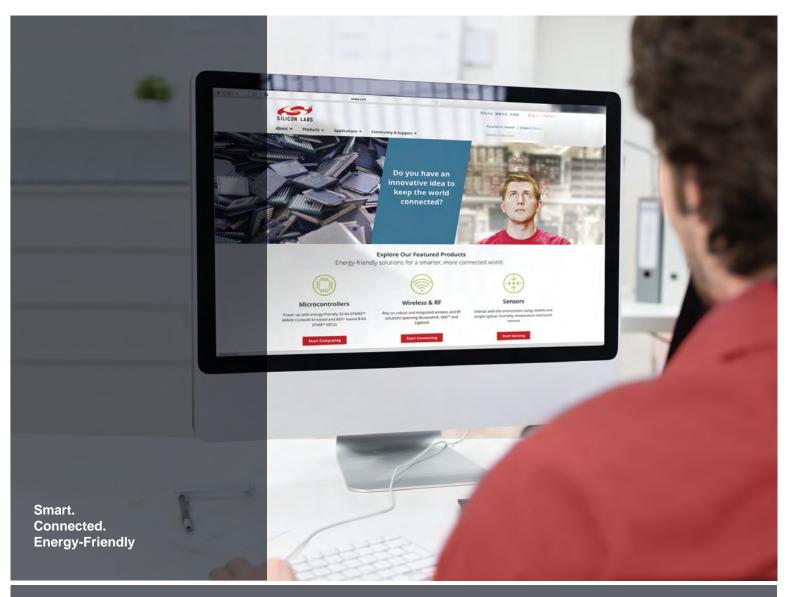


Dimension	Min	Nom	Max		
А	0.80	0.85	0.90		
A1	0.00	0.02	0.05		
b	0.18	0.25	0.30		
D	7.00 BSC				
D2	5.20	5.30	5.40		
е	0.50 BSC				
Е	7.00 BSC				
E2	5.20	5.30	5.40		
L	0.30	0.40	0.50		
aaa	0.15				
bbb	0.10				
ddd	0.05				
eee	0.08				

### Notes:

- All dimensions are shown in millimeters (mm) unless otherwise noted.

- Dimensioning and tolerancing per ASME Y14.5M-1994.
  This drawing conforms to JEDEC Outline MO-220, Variation VKKD-4.
  Recommended card reflow profile is per the JEDEC/IPC J-STD-020 specification for Small Body Components.









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Silicon Laboratories Inc. 400 West Cesar Chavez Austin, TX 78701 USA