

Description

The Si4707 is the industry's first weather band (WB) radio receiver IC to include a specific area message encoding (SAME) processor. Offering unmatched integration and PCB space savings, the Si4707 requires only one external component and less than 15 mm² of board area. Available in a tiny 3 x 3 mm QFN package, it eliminates the need for a front-end tuner IC, external ADC, DSP processor, RAM, and numerous discrete components found in traditional SAME weather band radios. The Si4707 weather band receiver provides the space savings and low power consumption necessary for portable devices while delivering the high performance and design simplicity desired for all weather alert radios.

Leveraging Silicon Laboratories' proven and patented Si4700/01 FM tuner's digital low intermediate frequency (low-IF) receiver architecture, the Si4707 delivers superior RF performance combined with sophisticated digital processing to yield best-in-class audio quality and SAME data sensitivity.

The high integration and complete system production test simplifies design in, increases system quality, and improves manufacturability.

The Si4707 is a feature-rich solution including 1050 Hz tone detection, automatic frequency control, dynamic channel bandwidth filters, and digital tuning. In addition, the Si4707 provides a programmable reference clock and supports an I²C compatible 2-wire control interface, SPI, and a Si4700/01 backwards compatible 3-wire control interface.

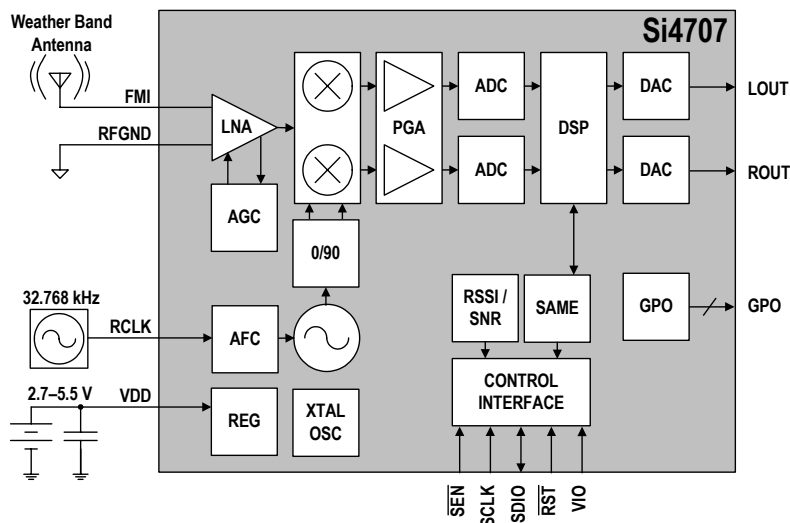
The Si4707 incorporates a digital processor to provide SAME data, advance error correction, and SAME data quality metrics. Using this feature, the Si4707 enables broadcast alert data such as severe thunderstorm warning or flash flood watch to be displayed to the user.

Features

- Weather band support (162.4–162.55 MHz)
- SAME processor
 - Excellent SAME sensitivity
 - Byte-wise data quality metrics
 - Advanced error correction
- 1050 Hz alert tone detection
- Excellent real-world performance
- Freq synthesizer with integrated VCO
- Automatic frequency control (AFC)
- Automatic gain control (AGC)
- Adaptive noise suppression
- WB digital tuning
- Low-IF direct conversion with no external ceramic filters
- Programmable reference clock
- Volume control
- Receive signal quality indicators (RSSI and SNR)
- 2-wire and 3-wire control interface
- Integrated LDO regulator
- 2.7 to 5.5 V supply voltage
- Firmware upgradeable
- 3 x 3 x 0.55 mm 20-pin QFN package
 - Pb-free/RoHS compliant

Applications

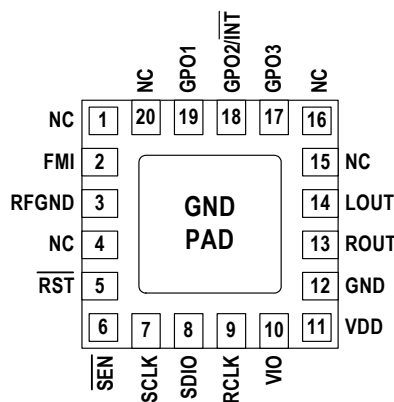
- Emergency radios
- Table and portable radios
- Stereos
- Mini/micro systems
- Portable media players
- Boom boxes
- Cellular handsets
- Modules
- Clock radios
- Mini HiFi



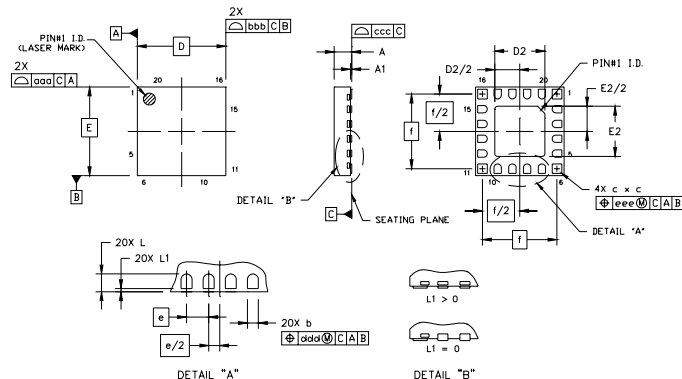
Selected Weather Band Electrical Specifications

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Input Frequency	f_R		162.4	—	162.55	MHz
Sensitivity		SINAD = 12 dB	—	0.9	—	μ V EMF
Adjacent Channel Selectivity		± 25 kHz	—	52	—	dB
Audio S/N			—	45	—	dB
AFSK Trip Sensitivity		100% of message correctly received	—	0.7	—	μ V EMF
Supply Voltage	V_D, V_A		2.7	—	5.5	V
Interface Supply Voltage	V_{IO}		1.5	—	3.6	V
Supply Current	I_{FM}					
Powerdown Current	I_{PD}		—	19.1	—	μ A
Audio Frequency Response Low		-3 dB	—	—	300	Hz
Audio Frequency Response High		-3 dB	3	—	—	kHz

Pin Assignments



3 x 3 x 0.55 mm, 20-pin QFN Package Information



Symbol	Millimeters		
	Min	Nom	Max
A	0.50	0.55	0.60
A1	0.00	0.02	0.05
b	0.18	0.25	0.30
c	0.27	0.32	0.37
D	3.00 BSC		
D2	1.60	1.70	1.80
e	0.50 BSC		
E	3.00 BSC		
E2	1.60	1.70	1.80

Symbol	Millimeters		
	Min	Nom	Max
f	2.53 BSC		
L	0.35	0.40	0.45
L1	0.00	—	0.10
aaa	—	—	0.10
bbb	—	—	0.10
ccc	—	—	0.08
ddd	—	—	0.10
eee	—	—	0.10