Si4702/03-C19

Broadcast FM Radio Tuner for Portable Applications

Description

The Si4702/03-C19 extends Silicon Laboratories Si4700/01 FM tuner family and further increases the ease and attractiveness of adding FM radio reception to mobile devices through small size and board area, minimum component count, flexible programmability, and superior, proven performance. The Si4702/03 leverage Silicon Laboratories' highly successful and patented Si4700/01 FM tuner, and are pin and software compatible to existing Si4700/01 FM tuner designs. The Si4702/03 benefits from proven digital integration and 100% CMOS process technology, resulting in a completely integrated solution. The Si4702/03 proven and highly flexible functionality caters to the subjective nature of audio preferences and variable FM broadcast environments worldwide.

The Si4703-C19 incorporates a digital processor for the European Radio Data System (RDS) and the US Radio Broadcast Data System (RBDS) including all required symbol decoding, block synchronization, error detection, and error correction functions. RDS enables data such as station identification and song name to be displayed to the user. The Si4703 offers a detailed RDS view and a standard view, allowing adopters to selectively choose granularity of RDS status, data, and block errors. Si4703 software is backwards compatible to the proven Si4701, adopted by leading cell-phone, PND, and MP3 manufacturers worldwide.

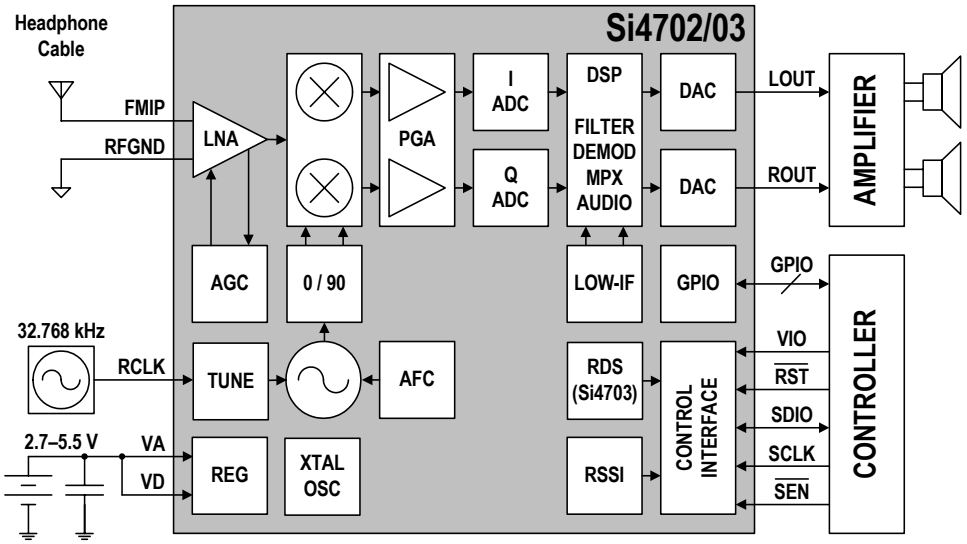
The Si4702/03 device's high level of integration and complete FM system increases quality to manufacturers, improves device yields, and simplifies device manufacturing and final testing.

Features

- Worldwide FM band support (76–108 MHz)
- Digital low-IF receiver
- Frequency synthesizer with integrated VCO
- Seek tuning
- Automatic frequency control (AFC)
- Automatic gain control (AGC)
- Excellent overload immunity
- Signal strength measurement
- Programmable de-emphasis (50/75 µs)
- Adaptive noise suppression
- Volume control
- Line-level analog output
- 32.768 kHz reference clock
- 2-wire and 3-wire control interface
- 2.7 to 5.5 V supply voltage
- Integrated LDO regulator allows direct connection to battery
- 3 x 3 mm 20-pin QFN package
  - Pb-free/RoHS compliant
- RDS/RBDS Processor (Si4703)
- Integrated crystal oscillator

Applications

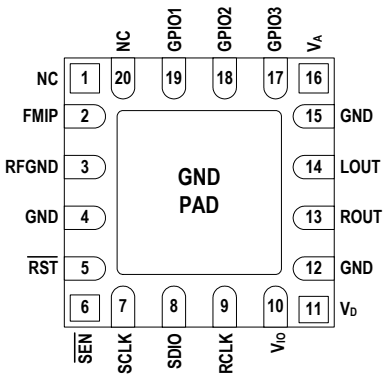
- Cellular handsets
- MP3 players
- Portable radios
- USB FM radio
- PDAs
- Notebook PCs
- Portable navigation
- Consumer electronics



Selected Electrical Specifications

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Input Frequency	f_{RF}		76	—	108	MHz
Sensitivity		(S+N)/N = 26 dB	—	1.1	—	µV EMF
Input IP3		$\|f_2 - f_1\| > 1$ MHz; $f_0 = 2 \times f_1 - f_2$ AGC disabled	—	106	—	dBµV EMF
Adjacent Channel Selectivity		±200 kHz	—	50	—	dB
Alternate Channel Selectivity		±400 kHz	—	70	—	dB
RCLK Frequency			—	32.768	—	kHz
RCLK Frequency Tolerance			–200	—	200	ppm
Audio Output Voltage			72	80	90	mVrms
Audio Band Limits		±1.5 dB	30	—	15k	Hz
Audio S/N			—	59	—	dB
Audio THD			—	0.1	0.5	%
Supply Voltage	V_D, V_A		2.7	—	5.5	V
Interface Supply Voltage	V_{IO}		1.5	—	3.6	V
Ambient Temperature	T_A		–20	25	85	°C
Supply Current	I_{AD}		—	14.4	—	mA
Powerdown Current	I_{PD}		—	8.5	12	µA
Seek/Tune Time			—	—	60	ms/channel
SCLK Frequency	f_{CLK}	3-wire operation	—	—	2.5	MHz
	f_{SCL}	2-wire operation	—	—	400	kHz
Powerup Time		From powerdown	—	—	110	ms

Pin Assignments



Package Information

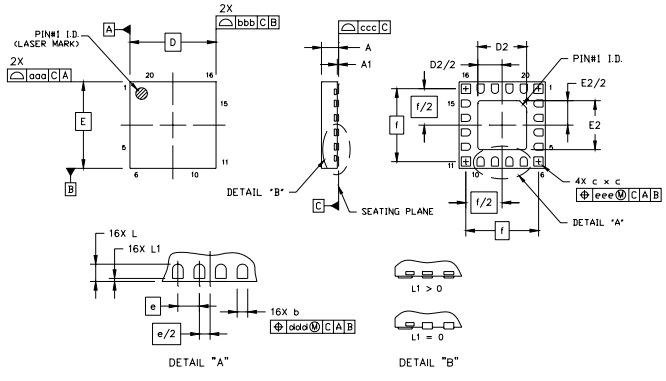


Table 1. Package Dimensions

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	1.65	1.70	1.75
e		0.50 BSC	
E		3.00 BSC	
E2	1.65	1.70	1.75

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