

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.

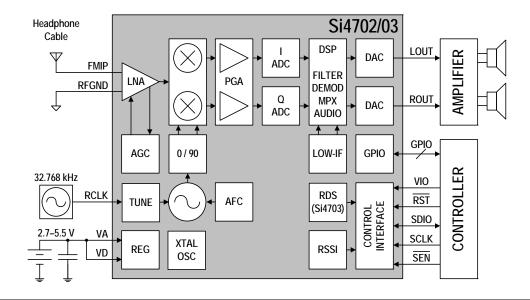
The Si4702/03 device's high level of integration and complete FM system increases quality to manufacturers, improves device yields, and simplifies device manufacturing and final testing.

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



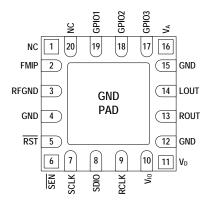


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Selected Electrical Specifications

| Parameter | Symbol | Test Condition | Min | Тур | 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 \text{ MHz}; f_0 = 2 \text{ x } 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

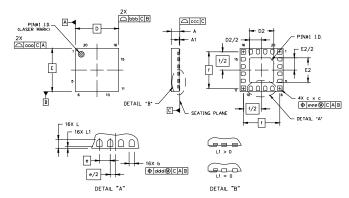
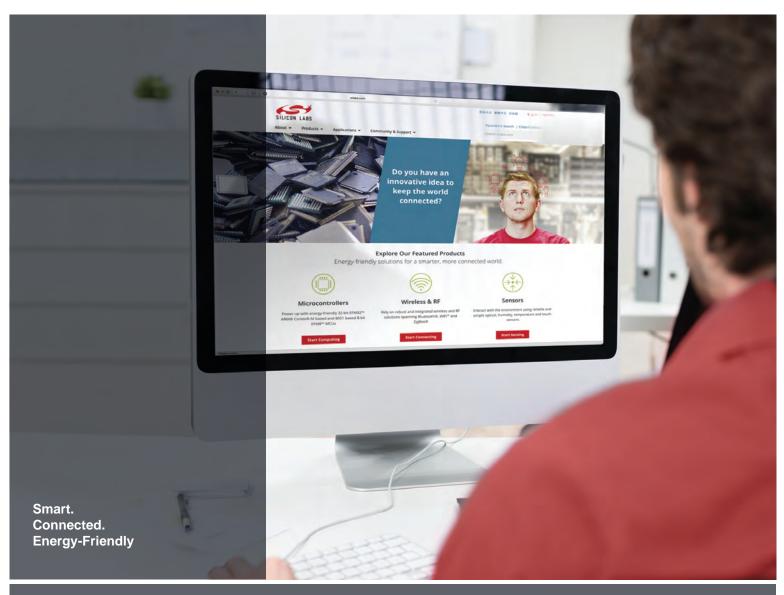


Table 1. Package Dimensions

| Symbol | Millimeters | | | | |
|--------|-------------|------|------|--|--|
| | Min | Nom | Max | | |
| Α | 0.50 | 0.55 | 0.60 | | |
| A1 | 0.00 | 0.02 | 0.05 | | |
| b | 0.18 | 0.25 | 0.30 | | |
| С | 0.27 | 0.32 | 0.37 | | |
| D | 3.00 BSC | | | | |
| D2 | 1.65 | 1.70 | 1.75 | | |
| е | 0.50 BSC | | | | |
| Е | 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 | | | |









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