**Si47920/21**

High-Performance Automotive AM/FM Radio Receiver and HD Radio™ Tuner with Audio System

### Features
- Worldwide FM band support (64–108 MHz)
- Worldwide AM band support (520–1710 kHz)
- LW band support (144–288 kHz)
- SW band support (2.3–30 MHz)
- On-chip soft-decision RDS/RDBS demodulator/decoder
- AM/FM:
  - Comprehensive AM/FM signal processing firmware
  - Integrated active FM buffer for background/data tuners
  - Analog FM phase diversity with two, three or four tuners (Si47921 Only)
  - Fully integrated AGC for AM and FM inputs
- HD Radio (Si47921 Only):
  - Digital I/Q interface to HD Radio Processor
  - AM/FM HD Radio IBOC blend
  - Fast FM HD Radio band scan

### Description
The Si47920/21 integrates AM/FM radio receiver with audio processing. The analog AM/FM receiver sets a new standard for automotive broadcast reception. The integrated audio processing sub-system enables to synchronize, process, aggregate and distribute all digital and analog audio signals in the head-unit.

The Si47920/21 is the most integrated monolithic IC in the industry with the smallest external bill of materials. Si47920/21 based systems can scale from low-cost single tuner AM/FM radio to highest performance systems with multiple tuners and multiple antennas, enabling the radio suppliers to reuse their R&D across multiple product lines, all with a common software API. The Si47920/21 meets rigorous automotive quality standards.

### Applications
- Automotive OEM infotainment systems
- Aftermarket car radio systems

---

Audio:
- HiFi2-EP Audio-DSP with 288 kB for program and data memory
- Seven analog audio inputs
- Four analog audio outputs
- Five digital audio ports (I²S)
- Up to 24 synchronous or asynchronous sample rate converters
- Multi-channel audio reference
design
- Frequency synthesizer with fully integrated PLL-VCO
- Integrated clock oscillator
- 1.8 V or 3.3 V digital power supply
- 3.3 V analog and 1.8 V digital power supplies
- QFN 84-pin, 12x12x0.85 mm
- Pb-free/RoHS compliant
- AEC-Q100 qualified
Pin Assignments

Package Information

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Min</th>
<th>Nom</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.80</td>
<td>0.85</td>
<td>0.90</td>
</tr>
<tr>
<td>A1</td>
<td>0.00</td>
<td>0.03</td>
<td>0.05</td>
</tr>
<tr>
<td>b</td>
<td>0.20</td>
<td>0.25</td>
<td>0.30</td>
</tr>
<tr>
<td>D</td>
<td></td>
<td>12.00 BSC.</td>
<td></td>
</tr>
<tr>
<td>D2</td>
<td>5.40</td>
<td>5.50</td>
<td>5.60</td>
</tr>
<tr>
<td>e</td>
<td></td>
<td>0.50 BSC.</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
<td>12.00 BSC.</td>
<td></td>
</tr>
<tr>
<td>E2</td>
<td>5.40</td>
<td>5.50</td>
<td>5.60</td>
</tr>
<tr>
<td>L</td>
<td>0.35</td>
<td>0.40</td>
<td>0.45</td>
</tr>
<tr>
<td>R</td>
<td>0.075</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>S</td>
<td>—</td>
<td>—</td>
<td>0.075</td>
</tr>
<tr>
<td>aaa</td>
<td>—</td>
<td>—</td>
<td>0.10</td>
</tr>
<tr>
<td>bbb</td>
<td>—</td>
<td>—</td>
<td>0.10</td>
</tr>
<tr>
<td>ccc</td>
<td>—</td>
<td>—</td>
<td>0.08</td>
</tr>
<tr>
<td>ddd</td>
<td>—</td>
<td>—</td>
<td>0.10</td>
</tr>
</tbody>
</table>

Notes:
1. All dimensions shown are in millimeters (mm) unless otherwise noted.
3. This drawing conforms to JEDEC outline MO-220, Variation VJJD-2
4. Recommended card reflow profile is per the JEDEC/IPC J-STD-020 specification for Small Body Components.
Disclaimer
Silicon Laboratories intends to provide customers with the latest, accurate, and in-depth documentation of all peripherals and modules available for system and software implementers using or intending to use the Silicon Laboratories products. Characterization data, available modules and peripherals, memory sizes and memory addresses refer to each specific device, and “Typical” parameters provided can and do vary in different applications. Application examples described herein are for illustrative purposes only. Silicon Laboratories reserves the right to make changes without further notice and limitation to product information, specifications, and descriptions herein, and does not give warranties as to the accuracy or completeness of the included information. Silicon Laboratories shall have no liability for the consequences of use of the information supplied herein. This document does not imply or express copyright licenses granted hereunder to design or fabricate any integrated circuits. The products must not be used within any Life Support System without the specific written consent of Silicon Laboratories. A “Life Support System” is any product or system intended to support or sustain life and/or health, which, if it fails, can be reasonably expected to result in significant personal injury or death. Silicon Laboratories products are generally not intended for military applications. Silicon Laboratories products shall under no circumstances be used in weapons of mass destruction including (but not limited to) nuclear, biological or chemical weapons, or missiles capable of delivering such weapons.

Trademark Information
Silicon Laboratories Inc., Silicon Laboratories, Silicon Labs, Silabs and the Silicon Labs logo, CMEMS®, EFM, EFM32, EFR, Energy Micro, Energy Micro logo and combinations thereof, “the world’s most energy friendly microcontrollers”, Ember®, EZLink®, EZMac®, EZRadio®, EZRadioPRO®, DSPLL®, ISOmodem®, Precision32®, ProSLIC®, SiPHY®, USBXpress® and others are trademarks or registered trademarks of Silicon Laboratories Inc. ARM, CORTEX, Cortex-M3 and THUMB are trademarks or registered trademarks of ARM Holdings. Keil is a registered trademark of ARM Limited. All other products or brand names mentioned herein are trademarks of their respective holders.