

Description

The Si4749 is a 100% CMOS receiver integrated circuit (IC), offering the full receive functionality from antenna to RDS/RBDS* data for use in the automotive and personal navigation markets. It is an ideal companion RDS background data receiver for Traffic Message Channel (TMC) and Open Data Applications (ODA) applications frequently used in conjunction with GPS functionality or as an alternate frequency (AF) scanner in automotive radios. It offers a fully-integrated advanced decoder for the European RDS* and the North American RBDS. It includes demodulation, symbol decoding, advanced error correction, detailed visibility to block-error rates (BLER), and decoder reliability, synchronization status, and times. The Si4749 provides complete, decoded, and error-corrected RDS groups, up to 25 groups at a time with associated BLER.

The Si4749 incorporates a high performance RDS decoder based on patented methodologies, and delivers excellent RDS sensitivity performance, synchronization to RDS at high BLER levels, and RDS data decoding with superior decoder reliability. The Si4749 draws on Skyworks' broadcast audio and corresponding patent portfolio using a digital low intermediate frequency (low-IF) receiver architecture proven by hundreds of millions broadcast audio receivers shipped worldwide. The low-IF architecture allows the Si4749 to deliver superior performance while integrating the great majority of external components required by competing solutions.

The Si4749 is feature-rich, providing both highly automated performance, according to Skyworks' recommended settings, or extensive programmability and flexibility for customized system performance. The part accepts programmable reference clock values. The Si4749 offers several modes of operation for various applications which provide more or less visibility to the RDS status and group

data. The Si4749 is offered in a compact 4 x 4 x 0.85 mm 24-pin Quad Flat No-Lead (QFN) package.

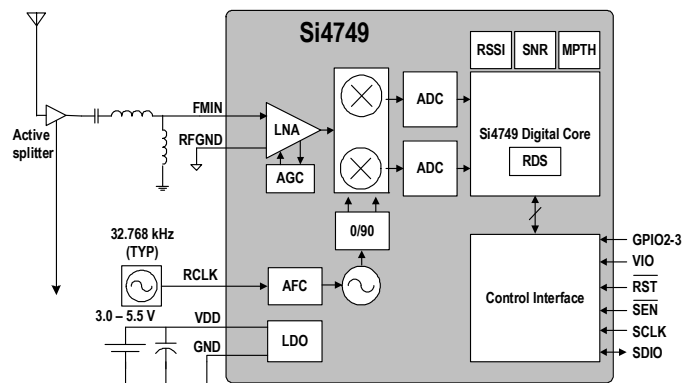
***Note:** The term “RDS” will be used to mean “RDS/RBDS” throughout this document.

Features

- Worldwide FM band support (76–108 MHz)
- Advanced patented RDS/RBDS Forward Error Correction (FEC) engine
 - Highest RDS Decoder Reliability
 - Robust synchronization at high BLER
- RDS reception with FM mono broadcast
- Fully configurable RDS data quality visibility and associated interrupts
- On-chip memory for up to 25 RDS groups
- Multi-path interference detection
- Received signal quality indicators (RSSI, SNR, wideband AM)
- Automatic frequency control (AFC)
- Automatic gain control (AGC)
- Image-rejection mixer
- Frequency synthesizer with integrated VCO
- Low-IF direct conversion; no external ceramic filters
- 3.0 to 5.5 V supply voltage
- Programmable reference clock
- AECQ-100 qualified
 - –40 to 85 °C operation
- 24-pin 4 x 4 mm QFN package
 - Pb-free/RoHS compliant

Application

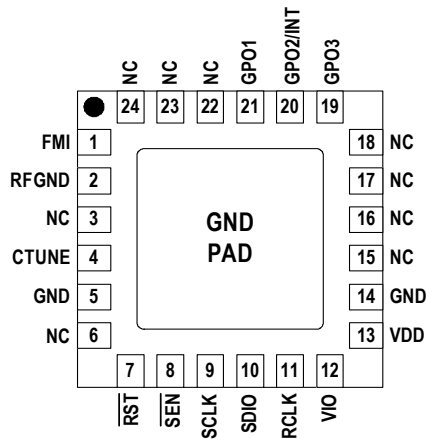
- OEM car audio systems
- After-market car audio systems
- Telematics
- Personal navigation system (PND)
- GPS-enabled devices



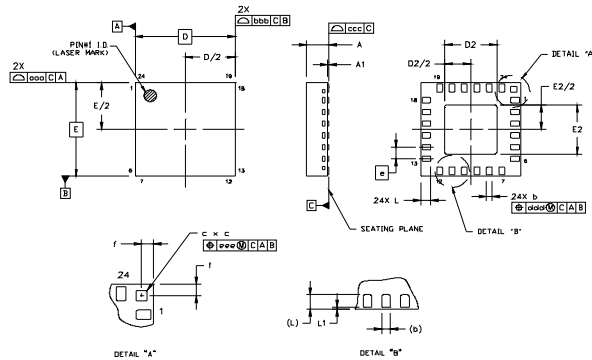
Selected Electrical Specifications

Parameter	Test Conditions	Min	Typ	Max	Units
Input Frequency		76	—	108	MHz
Frequency Steps		10	—	200	kHz
RDS Sensitivity	$\Delta f = 2 \text{ kHz}$, RDS BLER < 5%	—	8	—	$\mu\text{V emf}$
Input IP3	400 and 800 kHz blockers	—	105	—	$\text{dB}\mu\text{V emf}$
Image Rejection		—	55	—	dB
Adjacent Channel Selectivity	$\pm 200 \text{ kHz}$	—	50	—	dB
Alternate Channel Selectivity	$\pm 400 \text{ kHz}$	—	70	—	dB
RCLK Frequency		31.13	32.768	40,000	kHz
RCLK Tolerance		-100	—	100	ppm
Supply Voltage		3	—	5.5	V
Interface Supply Voltage		1.5	—	3.6	V
Supply Current		—	24	—	mA
Ambient Temperature		-40	—	85	C
Seek/Tune Time	RCLK tolerance = 100 ppm	—	40	60	ms/channel
Powerup Time	From powerdown	—	—	110	ms

Pin Assignments



Package Information



Symbol	Millimeters		
	Min	Nom	Max
A	0.80	0.85	0.90
A1	0.00	0.02	0.05
b	0.18	0.25	0.30
c	0.19	0.24	0.29
D	4.00 BSC		
D2	2.00	2.10	2.20
e	0.50 BSC		
f	0.27 BSC		
E	4.00 BSC		

Symbol	Millimeters		
	Min	Nom	Max
E2	2.00	2.10	2.20
L	0.30	0.40	0.50
L1	0.03	0.05	0.08
aaa	—	—	0.10
bbb	—	—	0.10
ccc	—	—	0.08
ddd	—	—	0.10
eee	—	—	0.10

Notes:

- All dimensions are shown in millimeters unless otherwise noted.
- Dimensioning and tolerancing per ANSI Y14.5M-1994.
- This drawing conforms to the JECEC Solid State Outline MO-220, Variation VGGD-8.
- Recommended card reflow profile is per the JEDEC/IPC J-STD-020C specification for Small Body Components.
- Lead-free/RoHS compliant.



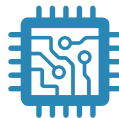
SKYWORKS®

**Connecting Everyone
and Everything,
All the Time**



Portfolio

www.skyworksinc.com



Quality

www.skyworksinc.com/quality



Support & Resources

www.skyworksinc.com/support

Copyright © 2021 Skyworks Solutions, Inc. All Rights Reserved.

Information in this document is provided in connection with Skyworks Solutions, Inc. ("Skyworks") products or services. These materials, including the information contained herein, are provided by Skyworks as a service to its customers and may be used for informational purposes only by the customer. Skyworks assumes no responsibility for errors or omissions in these materials or the information contained herein. Skyworks may change its documentation, products, services, specifications or product descriptions at any time, without notice. Skyworks makes no commitment to update the materials or information and shall have no responsibility whatsoever for conflicts, incompatibilities, or other difficulties arising from any future changes.

No license, whether express, implied, by estoppel or otherwise, is granted to any intellectual property rights by this document. Skyworks assumes no liability for any materials, products or information provided hereunder, including the sale, distribution, reproduction or use of Skyworks products, information or materials, except as may be provided in Skyworks' Terms and Conditions of Sale.

THE MATERIALS, PRODUCTS AND INFORMATION ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, WHETHER EXPRESS, IMPLIED, STATUTORY, OR OTHERWISE, INCLUDING FITNESS FOR A PARTICULAR PURPOSE OR USE, MERCHANTABILITY, PERFORMANCE, QUALITY OR NON-INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHT; ALL SUCH WARRANTIES ARE HEREBY EXPRESSLY DISCLAIMED. SKYWORKS DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. SKYWORKS SHALL NOT BE LIABLE FOR ANY DAMAGES, INCLUDING BUT NOT LIMITED TO ANY SPECIAL, INDIRECT, INCIDENTAL, STATUTORY, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS THAT MAY RESULT FROM THE USE OF THE MATERIALS OR INFORMATION, WHETHER OR NOT THE RECIPIENT OF MATERIALS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Skyworks products are not intended for use in medical, lifesaving or life-sustaining applications, or other equipment in which the failure of the Skyworks products could lead to personal injury, death, physical or environmental damage. Skyworks customers using or selling Skyworks products for use in such applications do so at their own risk and agree to fully indemnify Skyworks for any damages resulting from such improper use or sale.

Customers are responsible for their products and applications using Skyworks products, which may deviate from published specifications as a result of design defects, errors, or operation of products outside of published parameters or design specifications. Customers should include design and operating safeguards to minimize these and other risks. Skyworks assumes no liability for applications assistance, customer product design, or damage to any equipment resulting from the use of Skyworks products outside of Skyworks' published specifications or parameters.

Skyworks, the Skyworks symbol, Sky5®, SkyOne®, SkyBlue™, Skyworks Green™, Clockbuilder®, DSPLL®, ISOModem®, ProSLIC®, and SiPHY® are trademarks or registered trademarks of Skyworks Solutions, Inc. or its subsidiaries in the United States and other countries. Third-party brands and names are for identification purposes only and are the property of their respective owners. Additional information, including relevant terms and conditions, posted at www.skyworksinc.com, are incorporated by reference.