

Description

The Si4704/05 enhanced FM receiver is the most advanced portable solution available today offering embedded antenna support, digital audio out, worldwide FM band support, and highly flexible, mature, and proven FM functionality in a simple API. The Si4704/05 incorporates Skyworks' tuned-resonance antenna technology for crystal clear FM reception in wire-free device enclosures. Skyworks' internationally patented tuned-resonance technology allows embedded FM antennas such as PCB traces, loops, stubs, or other devices to perform exceptionally well, enabling devices with integrated Bluetooth to receive FM transmissions without an external FM antenna, and transmit the FM content to Bluetooth-enabled headsets. This is the best, most cost-effective solution to enable wire-free FM reception.

The Si4705 also offers digital audio out for FM recording. Content recorded over the Si4705 can be shared with friends or played at a later time in MP3 format. The content can also be tagged with RDS information, allowing song name and artist labels to be displayed as is done with MP3 meta data. Using the digital audio out, the Si4705 can also reduce total system power consumption by avoiding unnecessary ADC/DAC conversions between the FM receiver and the host processor.

The Si4704/05 truly supports worldwide FM bands, starting at 64 MHz for Eastern European countries and extending all the way to 108 MHz for the rest of the world. The device supports channel spacing down to 10 kHz, and includes advanced, proven seek functionality. All the Skyworks proven FM receiver expertise is incorporated in the Si4704/05, gained through thousands of designs with almost every OEM and ODM in the world and over 100 million devices shipped.

The Si4704/05 leverage Skyworks' internationally patented and proven digital low-IF architecture, offering proven functionality in a simple and mature API. The device is offered in a highly reliable, ultra-small 3 x 3 x 0.55 mm 20-pin QFN and is layout compatible with the full suite of

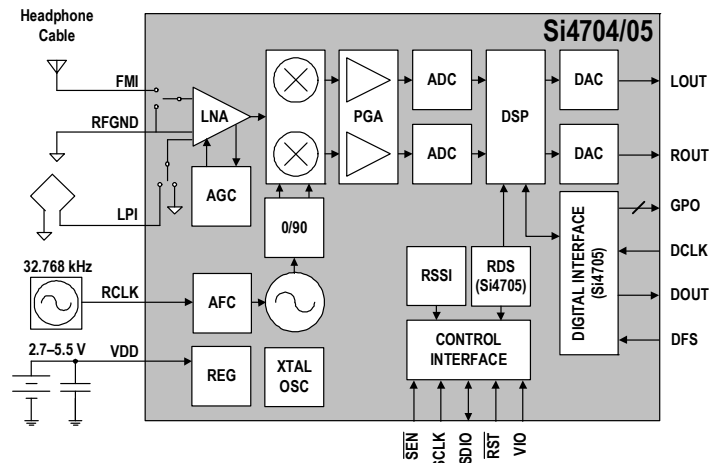
Skyworks broadcast offerings including FM transmit, AM/FM/SW receive, weather band receive and SAME decode, and unparalleled RDS data receivers. The complete solution, including a minimal BOM, requires less than 15 mm² board area, or less than half that of other competing solutions. The Si4705 incorporates Skyworks' proven and widely adopted RDS processor, including worldwide compliance, all symbol decoding, error detection, error correction, and other RDS functions. The Si4705 RDS functionality is unmatched in the industry for performance, on-chip processing, and worldwide adoption.

Features

- Worldwide FM band support (64~108 MHz)
- Supports integrated antenna
- Digital low-IF receiver
- Excellent real-world performance
- Frequency synthesizer with integrated VCO
- Seek tuning
- Automatic frequency control (AFC)
- Automatic gain control (AGC)
- Integrated LDO regulator
- Minimal BOM
- Adjustable seek parameters
- Adjustable mono/stereo blend
- Adjustable soft mute
- RDS/RBDS decoder(Si4705 only)
- Optional digital audio output (Si4705 only)
- Programmable de-emphasis(50/75us)
- Programmable reference clock input
- Signal quality measurement
- 3 x 3 x 0.55 mm 20-pin Pb-free QFN package

Applications

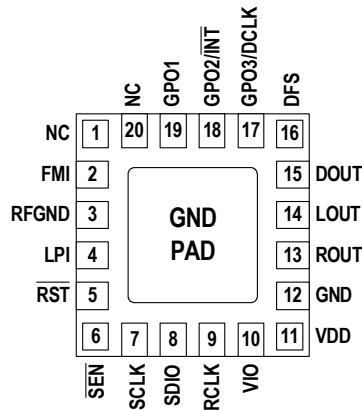
- Cellular handsets
- MP3 players
- Portable media players
- Personal computers
- Portable navigation devices
- Consumer electronics



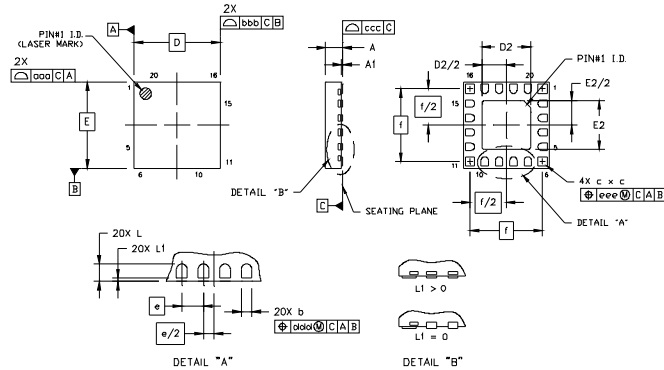
Selected Electrical Specifications

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Input Frequency	f_{RF}		64	—	108	MHz
Sensitivity (76–108 MHz)		(S+N)/N = 26 dB	—	1.1	—	$\mu\text{V EMF}$
Input IP3		$ f_2 - f_1 > 1 \text{ MHz}; f_0 = 2 \times f_1 - f_2$ AGC disabled	—	105	—	$\text{dB}\mu\text{V EMF}$
Adjacent Channel Selectivity		$\pm 200 \text{ kHz}$	—	50	—	dB
Alternate Channel Selectivity		$\pm 400 \text{ kHz}$	—	70	—	dB
RCLK Frequency			—	32.768	—	kHz
RCLK Frequency Tolerance			-100	—	100	ppm
Audio Output Voltage			72	80	90	mVrms
Audio Mono S/N			55	63	—	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	$^{\circ}\text{C}$
Supply Current	I_{AD}		—	19.2	—	mA
Powerdown Current	I_{PD}		—	10	12	μA
Seek/Tune Time			—	—	80	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



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

Notes:

- All dimensions are shown in millimeters unless otherwise noted.
- Dimensioning and tolerancing per ANSI Y14.5M-1994.



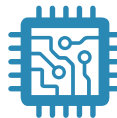
SKYWORKS®

**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.

Skyworks Solutions, Inc. | Nasdaq: SWKS | sales@skyworksinc.com | www.skyworksinc.com

USA: 781-376-3000 | Asia: 886-2-2735 0399 | Europe: 33 (0)1 43548540 | [in](https://www.linkedin.com/company/skyworks) [f](https://www.facebook.com/skyworks) [t](https://twitter.com/skyworks) [y](https://www.youtube.com/skyworks)