

Description

The Si4700 is the industry's first FM radio tuner IC to leverage digital integration and 100% CMOS process technology, resulting in a completely integrated solution that requires only one external supply bypass capacitor and less than 20 mm² of board space. Offering unmatched integration, the Si4700 allows FM radio reception to be added to a variety of portable devices where board space, performance, low power consumption, and ease of use are essential.

Leveraging Silicon Laboratories' proven Aero[®] digital low intermediate frequency (low-IF) receiver architecture and frequency synthesizer technology, the Si4700 delivers superior RF performance and interference rejection. Digital signal processing is utilized to provide optimum sound quality with varying reception conditions.

The high integration and complete system production test simplifies design-in, increases quality, and improves manufacturing. The Si4700 also uses a streamlined programming model, which further reduces product development time. Power management is also simplified with an integrated regulator allowing direct connection to a 2.7 to 5.5 V battery.

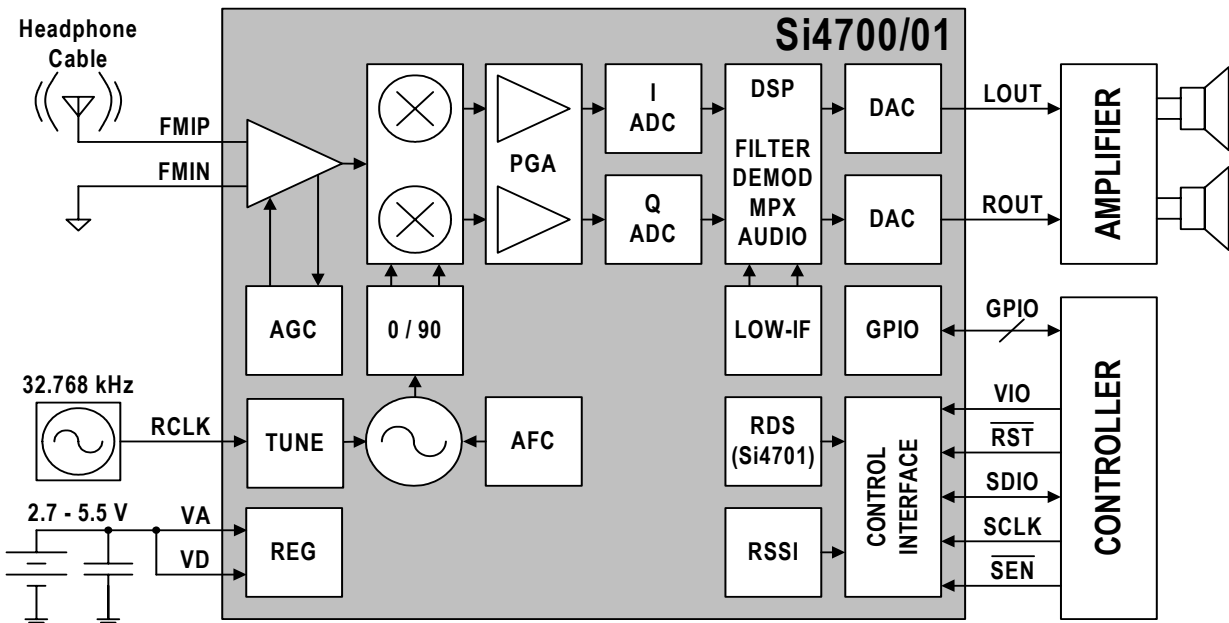
The Si4701 incorporates a digital processor for the European Radio Data System (RDS) and the US Radio Broadcast Data System (RBDS) including all required symbol decoding, block synchronization, error detection, and error correction functions. Using this feature, the Si4701 enables data such as station identification and song name to be displayed to the user.

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
- RDS/RBDS processor (Si4701 only)
- 2-wire and 3-wire control interface
- 2.7 to 5.5 V supply voltage
- Integrated LDO regulator allows direct connection to battery
- 4x4 mm 24-pin QFN package
 - Lead-free/RoHS compliant

Applications

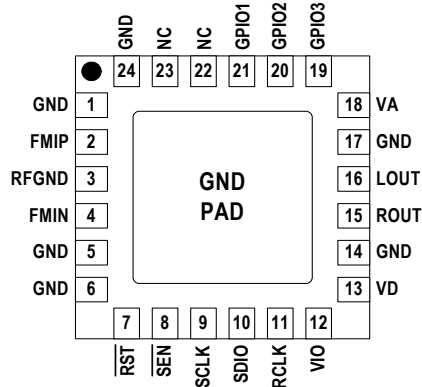
- Cellular handsets
- MP3 players
- PDAs, Notebook PCs
- Portable radios
- USB FM radio



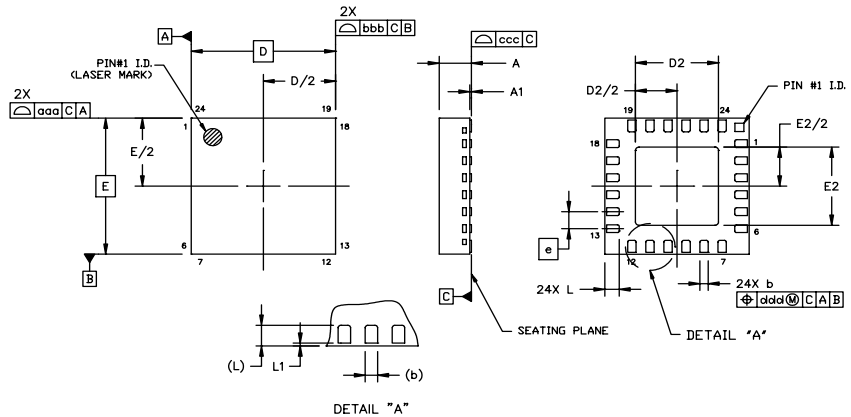
Selected Electrical Specifications

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Input Frequency	f_{RF}		76	—	108	MHz
Sensitivity		(S+N)/N = 26 dB	—	2.5	3.5	μV EMF
RDS Sensitivity		$\Delta f = 2$ kHz, RDS BLER = 5%	—	15	—	μV EMF
Input IP3		$ f_2 - f_1 > 1$ MHz; $f_0 = 2 \times f_1 - f_2$ AGC disabled	—	108	—	$\text{dB}\mu\text{V}$
Adjacent Channel Selectivity		± 200 kHz	35	50	—	dB
Alternate Channel Selectivity		± 400 kHz	60	70	—	dB
RCLK Frequency			—	32.768	—	kHz
RCLK Frequency Tolerance			-200	—	200	ppm
Audio Output Voltage			72	80	90	mVrms
Audio Band Limits		0 to -3 dB	30	—	15k	Hz
Audio S/N			—	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}		—	17.6	—	mA
Powerdown Current	I_{PD}		—	4	20	μA
Seek Time			—	—	60	ms/channel
SCLK Frequency	f_{CLK}	3-wire operation	0	—	2.5	MHz
	f_{SCL}	2-wire operation	0	—	400	kHz
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
D, E	4.00 BSC		
D2, E2	2.20	2.30	2.40
e	0.50 BSC		

Symbol	Millimeters		
	Min	Nom	Max
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