

Single-Ended, Analog-Input 24Bit, 96kHz Stereo ADC

PRELIMINARY DATASHEET

DESCRIPTION

The **FH1808** device is a high-performance, low-cost, single-chip, stereo analog-to-digital converter (ADC) with single-ended analog voltage input. The FH1808 device uses a delta-sigma modulator with 64-times over sampling and includes a digital decimation filter and high-pass filter that removes the dc component of the input signal. For various applications, the FH1808 device supports master and slave mode and two data formats in serial audio interface.

The device is available in TSSOP-14L package.

APPLICATIONS

- Digital TV
- MD Player
- CD Recorder
- DVD Recorder
- Multitrack Receiver
- AV Amplifier or Receiver
- Electric Musical Instrument

Datasheet Brief

FEATURES

- 24Bit Delta-Sigma Stereo ADC
- Single-Ended Voltage Input: 3.0Vp-p
- High Performance
 - ▲ THD+N: -90dB (Typical)
 - ▲ SNR: 99dB (Typical)
 - ▲ Dynamic Range: 99dB (Typical)
- Flexible PCM Audio Interface
 - ▲ Master-or Slave-Mode Selectable
 - ▲ Data Formats: 24Bit I²S, 24Bit Left-Justified
- Power Down and Reset by Halting System Clock
- Analog Antialias LPF Included
- Sampling Rate: 8kHz - 96kHz
- System Clock: 256 f_S, 384 f_S, 512 f_S
- Resolution: 24Bits
- Dual Power Supplies
 - ▲ 5.0V for Analog
 - ▲ 3.3V for Digital
- Package type: TSSOP-14L

Typical Application

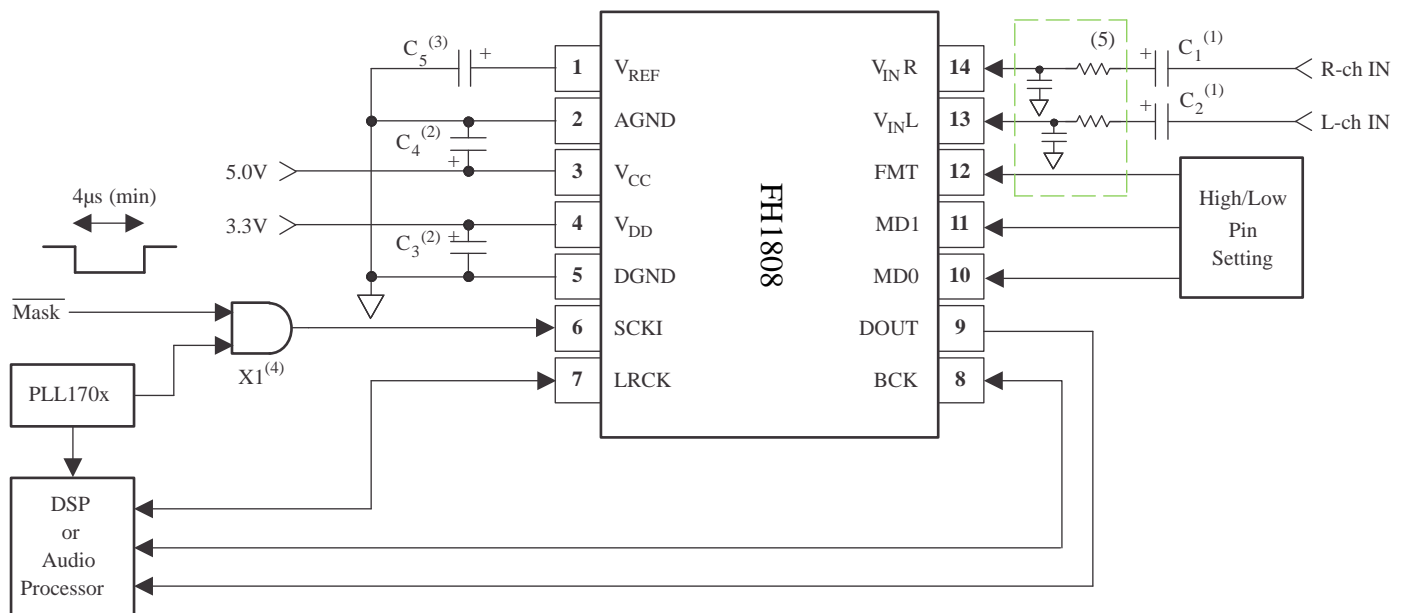
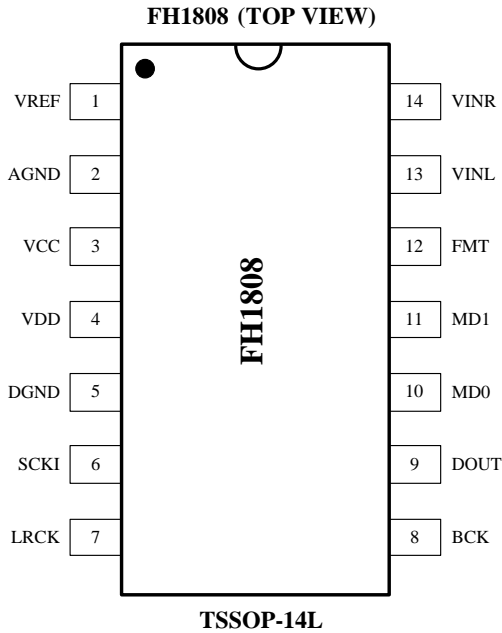


Figure 1. Typical Circuit Connection Diagram

PIN CONFIGURATION



Note:

1. I: input O: output G: GND P: Power
2. Schmitt-trigger input, 5.0V tolerant
3. Schmitt-trigger input with internal pull-down (100kΩ, typical)
4. Schmitt-trigger input with internal pull-down (100kΩ, typical), 5.0V tolerant

PIN FUNCTION

PIN No.	NAME	I/O ¹	Description
1	VREF	-	Reference-voltage decoupling (= 0.5VCC).
2	AGND	-	Analog GND
3	VCC	-	Analog power supply, 5.0V
4	VDD	-	Digital power supply, 3.3V
5	DGND	-	Digital GND
6	SCKI	I	System clock input; 256fs, 384fs or 512fs ²
7	LRCK	I/O	Audio-data latch-enable input or output ³
8	BCK	I/O	Audio-data bit-clock input or output ³
9	DOUT	O	Audio-data digital output
10	MD0	I	Audio-interface mode select 0 ⁴
11	MD1	I	Audio-interface mode select 1 ⁴
12	FMT	I	Audio-interface format select ⁴
13	INL	I	Analog input, L-channel
14	INR	I	Analog input, R-channel

产品简述

FH1808 是带有采样速率 8kHz~96kHz 的立体声A/D 转换器，适合于面向消费者的专业音频系统。

FH1808 通过使用增强型双位 $\Delta\Sigma$ 技术来实现其高精度的特点。FH1808 是单端的模拟输入所以以不需要外部器件。音频接口有两种类型（最高有效位左对齐，IPS）适合用于像 DVT, DVR 和 AV 接收器的系统。

主要特点

- 线性相位抗混叠数字滤波器
- 单端输入
- 带失调电压消除的数字高通滤波器
- 信噪失真比: -90dB
- 动态范围: 99dB
- 信噪比: 99dB
- 采样速率 8kHz 到 96kHz
- 主时钟: 256fs/384fs/512fs/768fs (8kHz~48kHz)
256fs/384fs (48kHz~96kHz)
- 主机/从机模式
- 音频接口: 24 位最高有效位左对齐/IPS
- 电源: 4.5~5.5V 模拟, 2.7~5.5V 数字
- 温度范围: -40°C ~ 100°C
- TSSOP-14L 封装

极限参数

芯片使用中，任何超过极限参数的应用方式会对器件造成永久的损坏，芯片长时间处于极限工作状态可能会影响器件的可靠性。极限参数只是由一系列极端测试得出，并不代表芯片可以正常工作在此极限条件下。

参数		符号	参数范围	单位
供电电压	模拟	VCC	-0.3 ~ 6.0	V
	数字	VDD	-0.3 ~ 6.0	V
	AGND - DGND ⁽¹⁾	Δ GND	0.3	V
除了电源之外，任何引脚的输入电流		IIN	± 10	mA
模拟输入电压(VINL、VINR 引脚)		VINA	-0.3 ~ VCC+0.3	V
数字输入电压 ⁽²⁾		VIND	-0.3 ~ VDD+0.3	V
环境温度		Ta	-40 ~ 100	°C
存储温度		Tstg	-65 ~ 150	°C

注：1. AGND和DGND必须连接到同一个模拟地。

2.FMT、SCKI、BCK、LRCK、MD1、MD0引脚。

推荐工作条件

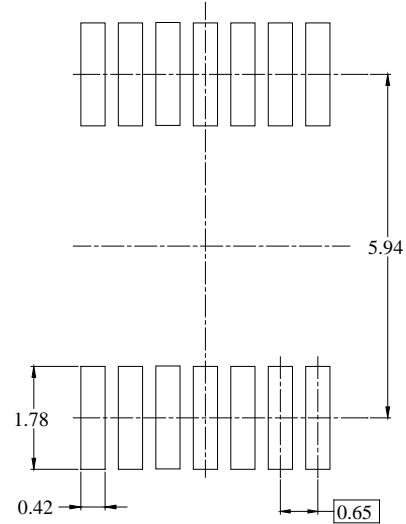
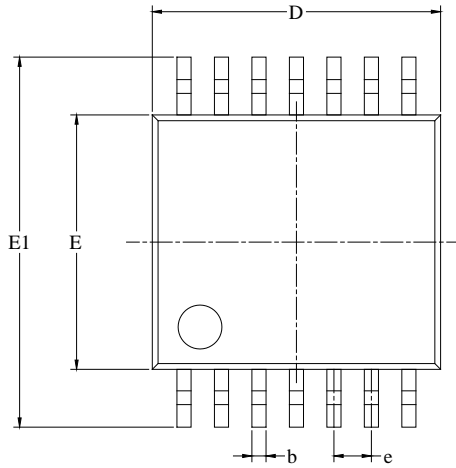
AGND, GND = 0V

参数		符号	参数范围	单位
供电电压 ⁽¹⁾	模拟	VCC	4.5 ~ 5.5	V
	数字	VDD	2.7 ~ VCC	V

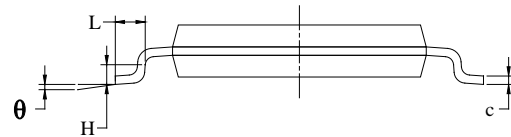
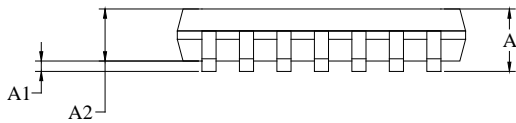
注1: VCC和VDD的上电顺序没有明确要求。

PACKAGE OUTLINE

Type: TSSOP-14L



RECOMMENDED LAND PATTERN(Unit: mm)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A		1.200		0.047
A1	0.050	0.150	0.002	0.006
A2	0.800	1.050	0.031	0.041
b	0.190	0.300	0.007	0.012
c	0.090	0.200	0.004	0.008
D	4.860	5.100	0.191	0.201
E	4.300	4.500	0.169	0.177
E1	6.250	6.550	0.246	0.258
e	0.650 BSC		0.026 BSC	
L	0.500	0.700	0.02	0.028
H	0.25 TYP		0.01 TYP	
θ	1°	7°	1°	7°

ORDERING INFORMATION

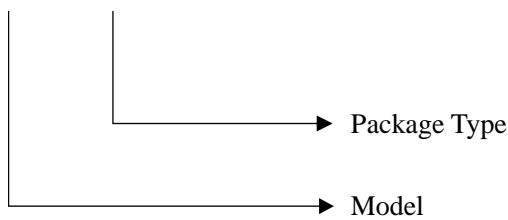
Part Number	Voltage Range	Features	Operating Temperature	Package Type	Top Mark	SPQ
FH1808TS14	4.5~5.0V(Analog) 2.7~3.6V(Digital)	<ul style="list-style-type: none"> • 24Bit ADC • THD+N: -90dB • SNR: 99dB • Dynamic Range: 99dB • Rate: 8kHz ~ 96kHz • Clock: 256fs/384fs/512fs 	-40°C to 85°C	TSSOP-14L	FH1808 YY MM LL	3000PCS/Reel

Note:

- **FH1808** devices are Pb-free and RoHs compliant.
- The surface prints of our semiconductor devices are subject to change during the production process and do not involve changes in electrical parameters, and we will not separately state the notice.
- If you have any other custom purchase needs, please contact our sales department.
- ForDevices reserves the right to amend and legally interpret the electrical parameters of this chip device.

Part Number

FH1808 TS14



ESD SENSITIVITY CAUTION

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.



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▲ Update by Sep.2022