Stereo DAC with 24-Bit, 192KHz Stereo D/A Converter

PRELIMINARY DATASHEET

Datasheet Brierf

DESCRIPTION

The FH54344 device is a low-cost stereo digital to analog converter, including interpolation, multi-bit D/A conversion and output analog filtering in a 10-pin package.

The device family can accept multiple audio formats up to 24-bit word length.

The device family is based on an advanced multi-bit Δ-Σ modulator to convert data into two channel analog outputs with a linear analog low-pass filter.

The multi-bit Δ-Σ modulator makes the device with very low sensitivity to clock jitter and very low out of-band noise. It also includes auto speed mode detection using both sample rate and master clock ratio as a method of auto-selecting sampling rates between 2kHz and 200kHz.

The device family contains on-chip digital deemphasis, operates from a single +3.3V or +5V power supply, and requires minimal support circuitry. These features are ideal for DVD players&recorders, digital televisions, home theater and set top box products, and automotive audio systems.

The device family is available in a 10-pin MSOP package.

KEY FEATURES

- Multiple audio data interface formats, up to 24-bit
- Automatically Detects Sample Rates up to 192kHz
- 105dB Dynamic Range
- -90dB THD+N
- Multi-bit Delta-Sigma Modulator
- 3.3V or 5.5V Single Power Supply
- Low Clock-Jitter Sensitivity
- Filtered Line-Level Outputs
- On-chip Digital De-emphasis
- Output pop-noise Minimization
- Small 10-pin MSOP Package

APPLICATIONS

- Speakers
- DVD Player/recorder
- Digital Photo Frame
- Automotive audio system

Typical Application Circuit

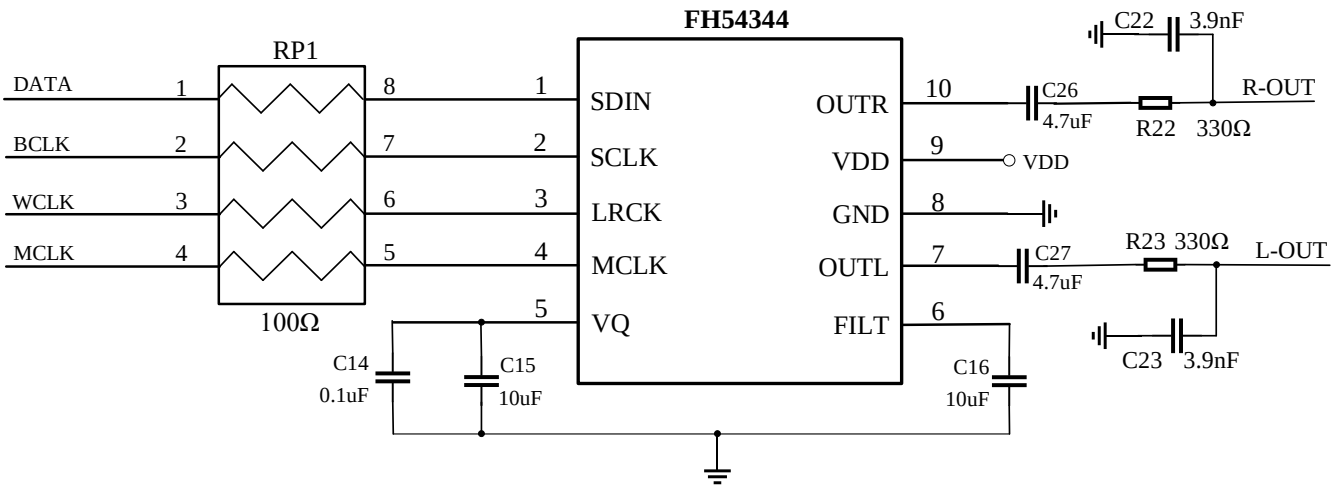
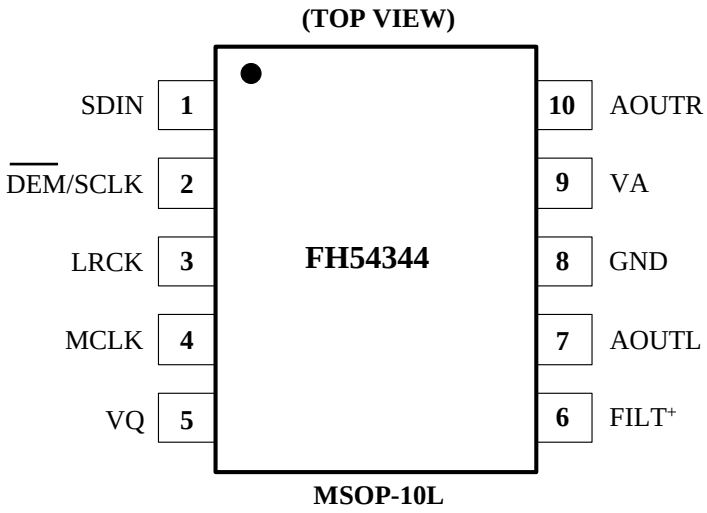


Figure 1. FH54344 Typical Application

PIN CONFIGURATION



PIN DESCRIPTION

PIN NO	NAME	I/O	DESCRIPTION
1	SDIN	I	Serial Audio Data Input - Input for two's complement serial audio data.
2	SCLK	I	Serial Clock - Serial clock for the serial audio interface.
3	LRCK	I	Left / Right Clock - Determines which channel, Left or Right, is currently active on the serial audio data line.
4	MCLK	I	Master Clock - Clock source for the delta-sigma modulator and digital filters.
5	VQ	O	Quiescent Voltage - Filter connection for internal quiescent voltage.
6	FILT+	O	Positive Voltage Reference - Positive reference voltage for the internal sampling circuits.
7	AOUTL	O	Analog L Outputs - The full-scale analog line output level is specified in the Analog Characteris.
8	GND	I	Ground - Ground reference.
9	VA	O	Analog Power - Positive power supply for the analog and regulator for the digital core logic sections.
10	AOUTR	O	Analog R Outputs - The full-scale analog line output level is specified in the Analog Characteris.

24Bit, 192kHz 立体声 D/A 转换器

器件描述

FH54344 产品是一款低成本的立体声 D/A 转换器，内部集成了内插滤波器、DA 转换器和输出模拟滤波等电路。其可支持多种音频数字输入格式，最大支持 24bit 字节。

FH54344 基于一个多比特位的Δ-Σ调制器，将数字信号转化成两个声道的模拟信号并经过模拟滤波器滤波。该Δ-Σ调制器对时钟抖动的敏感度很低，且在带宽范围外具有极低的噪声。其还可使用采样率和主时钟比作为自采样率（2kHz ~ 200kHz），从而实现自动检测采样频率的功能。

该系列产品还集成了数字去重，3.3V/5V 单电源供电，无需外部 SCLK，简化了外围电路，适用于 DVD、数字电视、家庭影院、机顶盒等。

FH54344 为 MSOP-10L 封装。

电气特性

- 支持多种音频数字输入格式，最大支持 24-bit 字节
- 可自动检测采样频率，最高 192kHz
- 105dB 动态范围
- -90dB THD+N
- 集成多比特位的Δ-Σ调制器
- 支持 3.3V/5.0V 单电源供电
- 具有强抗时钟抖动能力
- 内部集成输出滤波
- 集成数字去重，外部无需 SCLK
- 输出 pop 声抑制
- MSOP-10L 封装形式

应用领域

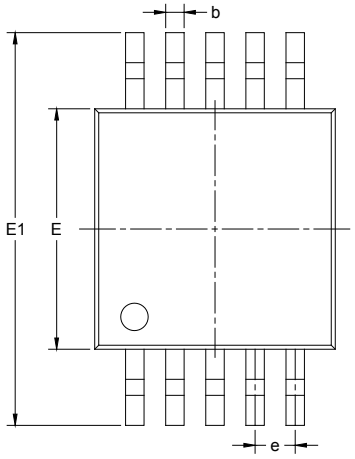
- 音响
- DVD 播放器
- 数码相框
- 电视机
- 机顶盒
- 家庭影院

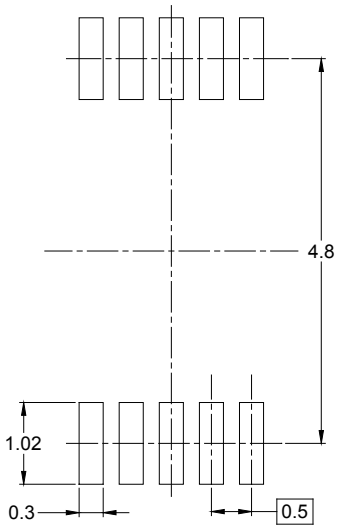
极限参数 (AGND=0V)

参数	符号	最小值	最大值	单位
DC 工作电压	VA	-0.3	6.0	V
输入电流	I_{IN}	-	±10	mA
数字输入电压	V_{IND}	-0.3	VA +0.4	V
工作温度	T_A	-40	+85	℃
存储温度	T_{STG}	-65	+150	℃
推荐工作条件				
DC 工作电压	VA	4.75	5.5	V

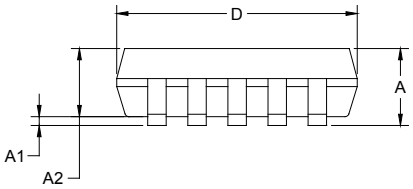
PACKAGE OUTLINE DIMENSIONS

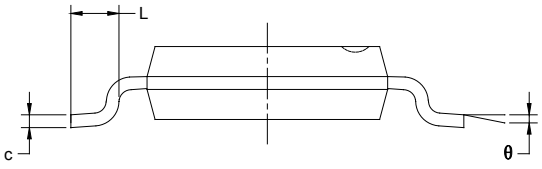
Type: MSOP-10L





RECOMMENDED LAND PATTERN (Unit: mm)





Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.820	1.100	0.032	0.043
A1	0.020	0.150	0.001	0.006
A2	0.750	0.950	0.030	0.037
b	0.180	0.280	0.007	0.011
c	0.090	0.230	0.004	0.009
D	2.900	3.100	0.114	0.122
E	2.900	3.100	0.114	0.122
E1	4.750	5.050	0.187	0.199
e	0.500 BSC		0.020 BSC	
L	0.400	0.800	0.016	0.031
θ	0°	6°	0°	6°

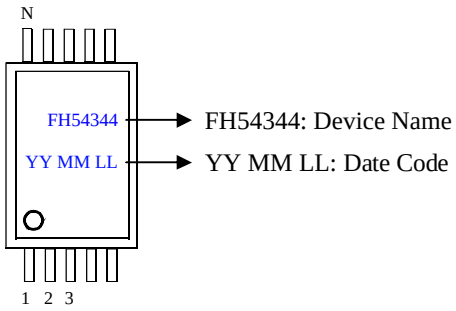
ORDERING INFORMATION

Part Number	Input Voltage	Features	Operating Temperature	Package Type	Top Mark	SPQ
FH54344MS10	3.3V or 5.5V	● 24bit I²S, D/A Converter ● Sample rates up to 192KHz ● -92dB THD+N ● DAC SNR 96dB ● 105dB Dynamic Range	-40℃ to +85℃	MSOP-10L	FH54344 YY WW LL	4000EA/Reel

Note:

- **FH54344** 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.
- FOCMCU Inc. reserves the right to amend and legally interpret the electrical parameters of this chip device. (http://www.fordevices.com)

Device Name: MSOP-10L



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 Jun.2021