

3.1W小型便捷低功耗I²S输入单声道D类音频功率放大器

3.1W Tiny, Plug-and-Play, Low Consumption, I²S Input, Mono Class D Audio Amplifier

■ FEATURES

- Plug-and-Play with a single bypass capacitor
- Power Supply VDD: 2.5-5.5V;
- Low Quiescent Current: 2.5mA @VDD = 3.6V
- Low Output Noise: 15uV
- Low Pop Noise
- Flexible Audio I/O
 - I²S (Left, Right, or Left/2+Right/2 Output), 16bit, 24bit or 32 bit; TDM input, 16bit or 32bit
 - 8k, 16k, 32k, 44.1k, 48k, 88.2k, 96kHz Sample Rates
 - No MCLK Required
- Output Power
 - 1.5W (V_{DD}=3.6V, R_L=4Ω, THD+N=10%)
 - 3.1W (V_{DD}=5.0V, R_L=4Ω, THD+N=10%)
 - 200mW (V_{DD}=3.6V, R_L=32Ω, THD+N=1%)
- THD+N= 0.02% (P_o=1W, R_L=4Ω, V_{DD} = 3.7V)
- Adjustable Gain: -0.7, 5.3, 8.3, 11.3, 14.3dBV
- Clock Error, Over Current, Undervoltage, and Overtemperature Protection
- Pb-free Packages, WLCSP9, ESOP8, QFN3×3-16L
- 上电即用, 外围极简 (最少仅需一个电源滤波电容)
- 电源供电: VDD 2.5-5.5V;
- 低静态电流: 2.5mA @ VDD = 3.6V
- 低输出噪声: 15uV
- 低pop声
- 灵活的音频输入:
 - I²S (输出左、右或左/2+右/2可选择), 16bit, 24bit 或 32 bit; TDM 输入, 16bit或32bit
 - 8k, 16k, 32k, 44.1k, 48k, 88.2k, 96kHz 采样频率
 - 无需MCLK
- 输出功率:
 - 1.5W (V_{DD}=3.6V, R_L=4Ω, THD+N=10%)
 - 3.1W (V_{DD}=5.0V, R_L=4Ω, THD+N=10%)
 - 200mW (V_{DD}=3.6V, R_L=32Ω, THD+N=1%)
- THD+N= 0.02% (P_o=1W, R_L=4Ω, V_{DD} = 3.7V)
- 增益可调: -0.7, 5.3, 8.3, 11.3, 14.3dBV
- 保护: 时钟错误、过流、欠压、过温保护等
- WLCSP9, ESOP8, QFN3×3-16L封装

■ APPLICATIONS

- OWS and other earphone devices
- Smart Home
- IoT Devices
- Smart Speakers
- Smart Toys
- Gaming Devices
- Other Li-ion cell/5V Devices
- OWS耳机或其他耳机设备
- 智能家居
- 智能玩具
- IoT设备
- 游戏设备
- 智能音箱
- 其他锂电/5V设备

■ DESCRIPTION

The HT517 is an easy-to-use, low-cost, I²S input mono Class D audio amplifier that drives up to continuous 3.1W into 4ohm speaker with 5V power supply, and 180mW into 32ohm speaker with 3.7V power supply.

HT517 integrates an DA converter, the I²S interface supports up to 32bit width, 96kHz sample rate.

The built-in Class D amplifier also integrates spread spectrum function. The gain of the amplifier is also adjustable.

The Device is available in WLCSP9 and ESOP8 package.

HT517是一款低成本的I²S输入单声道输出D类音频功率放大器。其在5V供电时可提供最大3.1W的输出功率; 在3.7V供电时可提供最大180mW的输出功率。

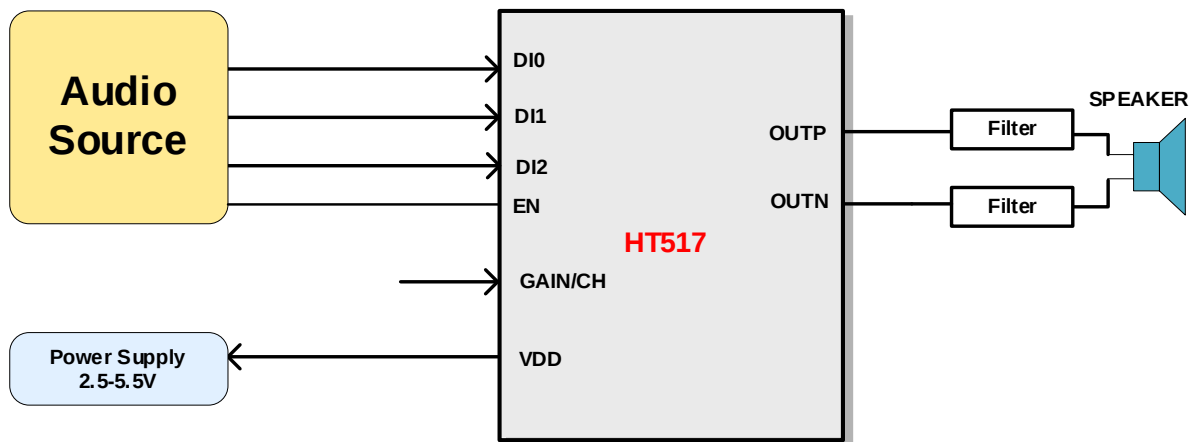
HT517内部集成了DA转换器, 其I²S输入最大支持32-bit字节, 并且可自动监测采样频率, 最高支持96kHz。

HT517集成的D类音频功放还具有增益可调、扩频等功能。

该产品提供WLCSP9和ESOP8封装。

■ TYPICAL APPLICATION

单声道应用 Mono Operation



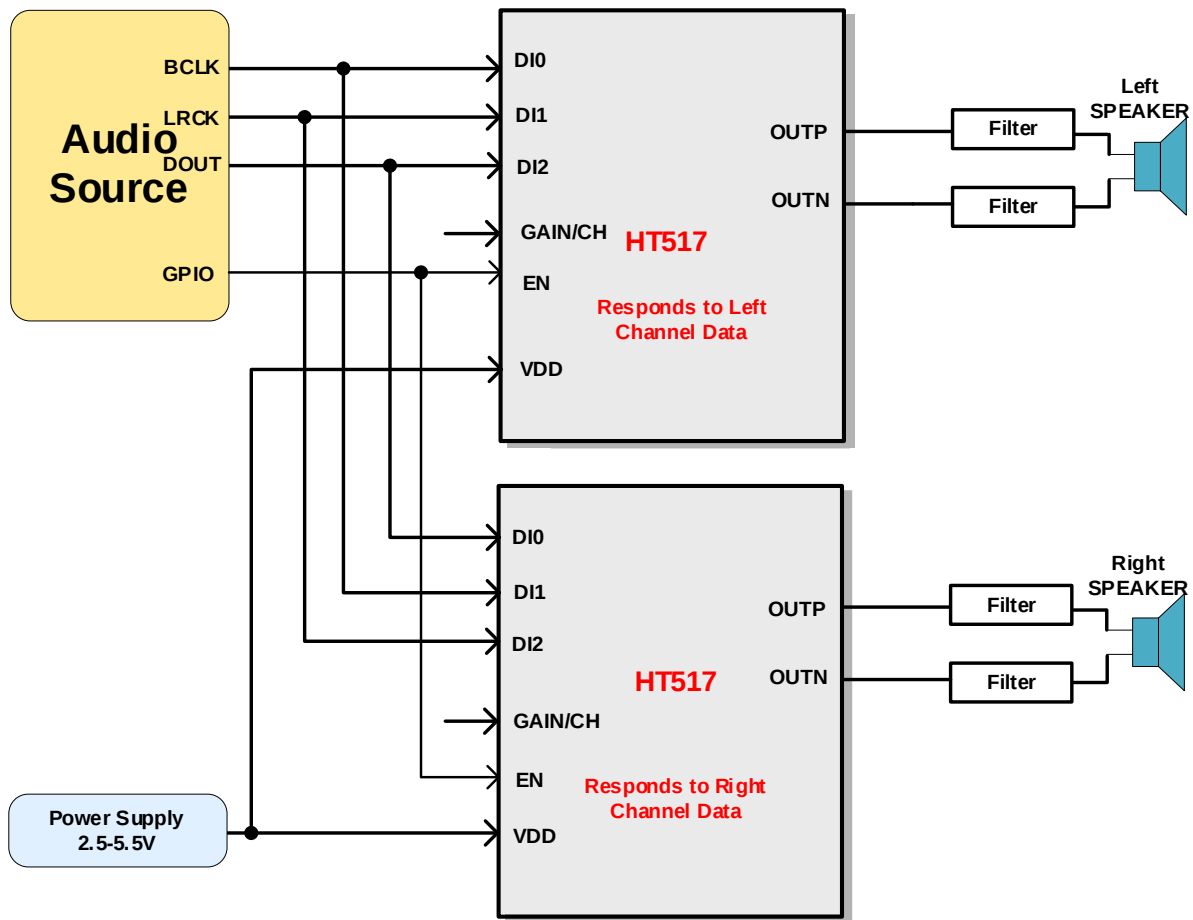
1. DIx模式设置，通道选择

BCLK	LRCK	SDIN	DIx Mode	Channel Selection
DI0	DI1	DI2	A	Left
DI1	DI2	DI0	B	Right
DI2	DI0	DI1	C	Left/2+Right/2

2. GAIN/CH脚设置，增益选择

GAIN/CH pin	System Gain
Directly connected to GND	14.3dBV
Floating	11.3dBV
Directly connected to VDD	8.3dBV
Connected to VDD thru 100k resistor	5.3dBV
Connected to GND thru 100k resistor	-0.7dBV

立体声应用 Stereo Operation

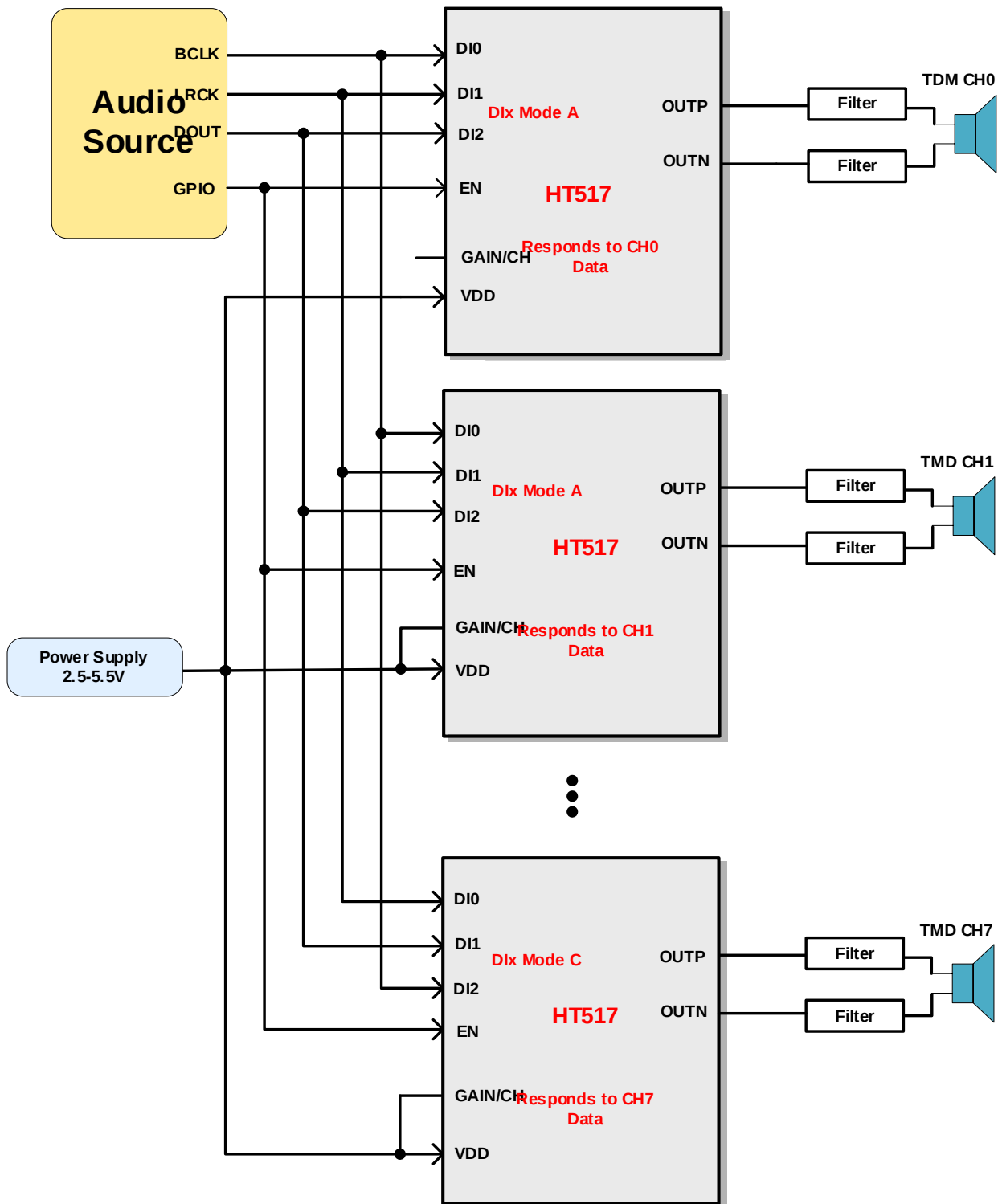


3. GAIN/CH脚设置，增益选择

GAIN/CH pin	System Gain
Directly connected to GND	14.3dBV
Floating	11.3dBV
Directly connected to VDD	8.3dBV
Connected to VDD thru 100k resistor	5.3dBV
Connected to GND thru 100k resistor	-0.7dBV

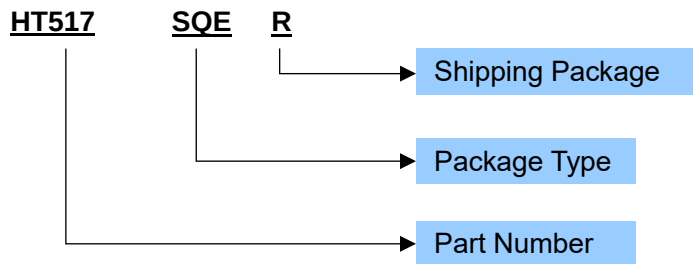
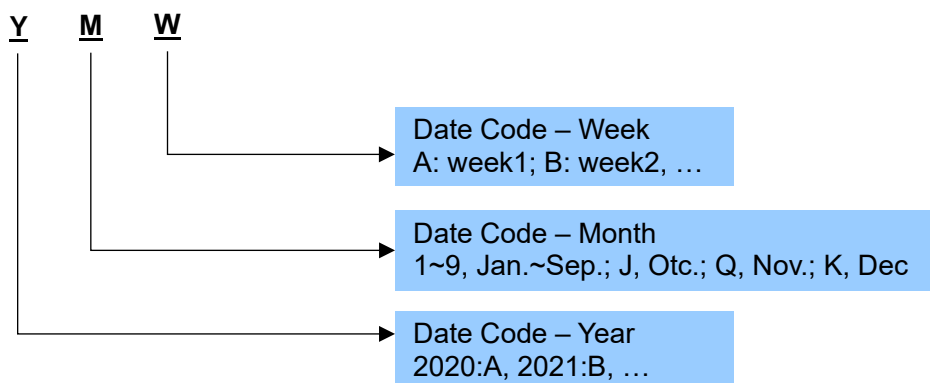
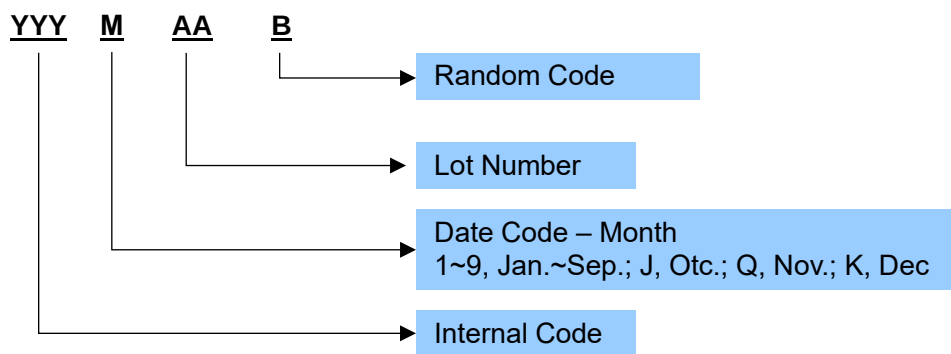
TDM应用（见下页图），增益固定在14.3dBV TDM Operation, Gain is fixed at 14.3dBV

DIx Mode	GAIN/CH	Selected Channel
A	GND	0
A	VDD	1
A	Floating	2
B	VDD	3
B	GND	4
C	GND	5
C	Floating	6
C	VDD	7



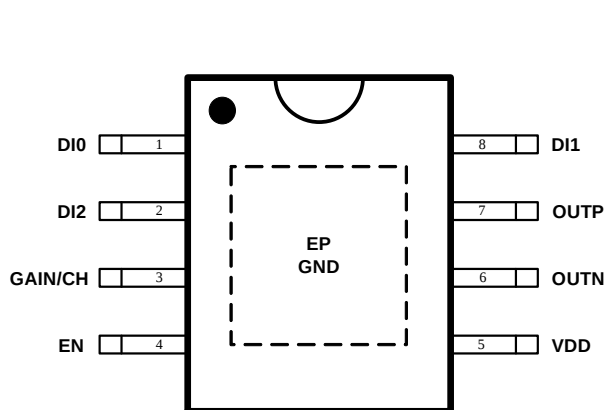
ORDERING INFORMATION

Part Number	Package Type	Marking	Operating Temperature Range	MOQ/Shipping Package
HT517WCSR	WLCSP9	517 YMW ¹	-40℃~85℃	5000 / Tape and Reel
HT517SQER	QFN3×3-16L	HT517 YYYMAAB	-40℃~85℃	5000 / Tape and Reel
HT517SPER	ESOP8	HT517 YYYMAAB ²	-40℃~85℃	2500 / Tape and Reel

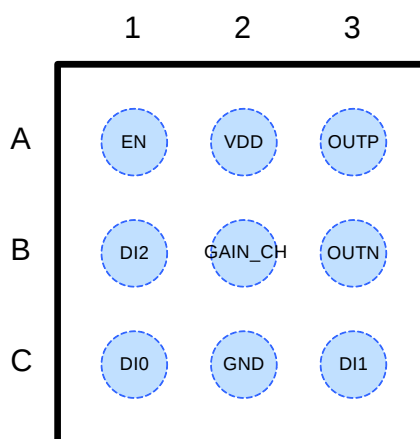
Ordering Number

Production Tracking Code

¹ YMW is production tracking code

² YYYMAAB is production tracking code

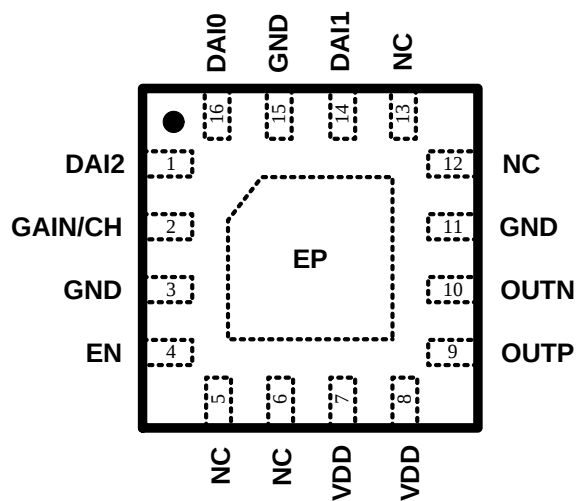
■ TERMINAL CONFIGURATION



ESOP8 Top View



WLCSP9 Top View



QFN3x3-16L Top View

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