

PORTABLE CONSUMER CODEC

CLASS-H DIRECTCONNECT™ HEADPHONE AMPLIFIER

TSDP1xx

DESCRIPTION

The TSDP1xx is a Class-H architecture Capless DirectConnect Ground-Referenced Output Headphone amplifier with independent left/right volume and GPIO control. It provides high-quality audio fidelity with an SNR of 104dB and output power of 170mW per channel into 16Ω. The differential inputs allow for flexible input configuration that maximizes noise rejection for best -in-class CMRR. At 10kΩ loads, 2Vrms output can be achieved, all without the need to change any output filters.

TARGET APPLICATIONS

- **Gaming-Class Motherboards**
- **Tablet Computers**
- **Gaming-class Laptops**
- **Portable Gaming Platforms**
- **Digital Audio Streaming / Connected Audio Accessories**
- **Bluetooth™-enabled Headphones / Headsets / Docking Stations / Adapters**
- **Wi-Fi (Miracast, Chromecast, AirPlay®)-enabled Headphones / Headsets / Docking Stations**
- **Lightning-enabled Headphones / Headsets / Docking Stations / Adapters**
- **Thunderbolt® I/II/III-enabled Headphones / Headsets / Docking Stations / Connectivity Expansion Hubs / Adapters**
- **HDMI™-enabled VR / AR Headphones and Headsets**
- **MHL™-enabled VR / AR Headphones and Headsets**
- **USB 1.1 / 2.0 / 3.0 / 3.1 Gen 1 / 3.1 Gen 2 / USB-C-enabled Headphones / Headsets / Docking Stations / Connectivity Expansion Hubs / Tablets / Mobile Phones / Tablet & Mobile Phone Cases / Portable Projectors**
- **Remote Controls / Gaming Controllers with Headphone Jacks**

FEATURES

- **Class-H TSDP1xx Capless DirectConnect Technology**
 - Eliminates Large Output DC Blocking Capacitors
 - Reduces Board Area
 - Reduces Component Height and Cost
 - Enables Full Bass Response Without Attenuation
 - Offers No Pop on Start-Up or Power-Down
 - Reduces Power consumption by as much as 45% at Typical Listening Levels
 - Low Quiescent Current
 - Up to 170mW Per Channel into 16Ω
 - Charge-pump allows for True Ground Centered Outputs
 - High Power Supply Rejection Ratio (>100 dB PSRR)
 - Differential Inputs for Maximum Noise Rejection Ratio (90 dB CMRR)
 - Optional register controlled High-Impedance Outputs When Disabled
- **Independent Left/Right Volume and Mute Control**
- **SNR of 106dB**
- **Power Supply Voltage Range: 2.5 V to 5.5 V**
- **GPIO Control for Hardware Shutdown**
- **Advanced Features Control via Register setting over I2C (TSDP1xx SKU Only)**
- **20 Pin, 4 mm x 4 mm QFN RoHS Package**
- **Commercial & Industrial Temp Offerings, with and without I2C Control**

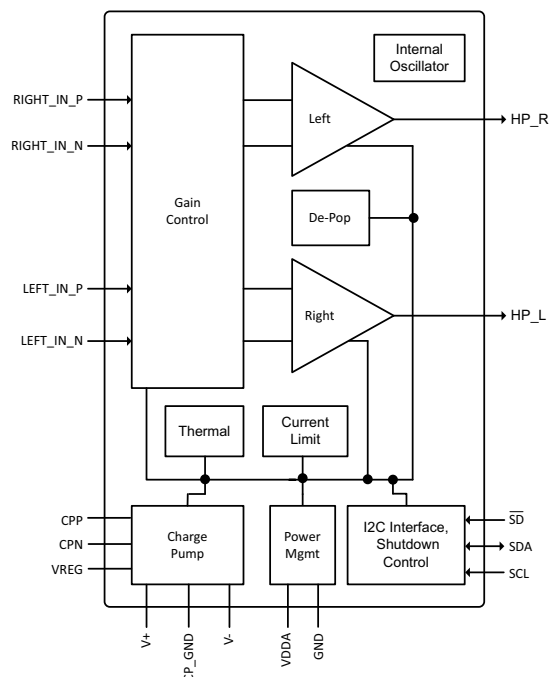


Figure 1. TSDP1xx Block Diagram

TSDP1xx

2Vrms DirectConnect Headphone Amplifier

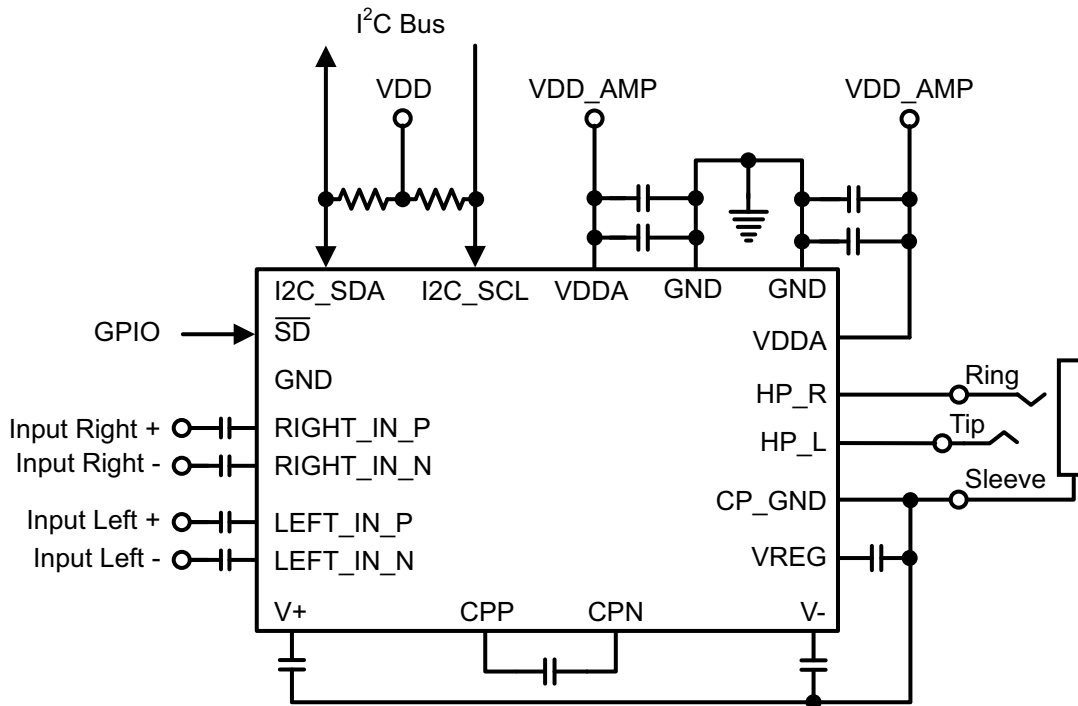


Figure 2. TSDP1xx Functional Diagram



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