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P2X50-2.0 Amplifier

Description and Specifications

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1. Introduction

The consumer audio market has yet to find a battery powered amplifier that can reproduce powerful sound and sustain a long battery life. With Audera's patented P2X and ClassHD amplifier technologies, a compromise is no longer necessary. It *is* possible to have both long play time and high output power from the same amplifier.

2. Features and Benefits

Taking advantage of music's inherently large peak-to-average power ratio, P2X technology stores enough energy to reproduce these peaks without exceeding the power ratings of the power-limited sources such as a DC wall adapter, small battery pack or USB port.

As a result, P2X amplifiers can produce five to eight times more power than a conventional Class D amplifier operating from the same power-limited source.

P2X works best when coupled with another patented Audera amplifier technology, ClassHD, which uses a Class D switching amplifier coupled with a tracking switch-mode power supply to greatly reduce switching losses. This can cut an amplifier's idle power by a factor of 5 to 10 and greatly improve efficiency with moderate levels of music, which extends battery life tremendously.

The combination of P2X and ClassHD enable large dynamic power and long battery life in low cost, low power systems.

The main features of the P2X50-2.0 amplifier are :

- Patented energy storage and smoothing circuitry extends battery life without compromising high power capability.
    - Low idle power: 300 mW (~ 50 hours typical battery life)
- 100W peak integrated ClassHD tracking power supply.
- Ultra-low standby power: 2.6 mW (extended battery life).
- Onboard compressor automatically adjusts gain to control output clipping during overdrive events.
- Onboard DC/DC power supply circuitry efficiently produces 3.3 V @ 350 mA max. and 5.0 V @ 750 mA max. for DSP, microcontroller, wireless receiver and/or other peripheral devices.

3. Applications

The combination of P2X and ClassHD delivers a no-compromise, low-cost solution for any battery powered portable or semi-portable audio system and truly wireless speakers. Long play-time, small size and high output power can now co-exist in your portable application.

4. Electrical Specifications

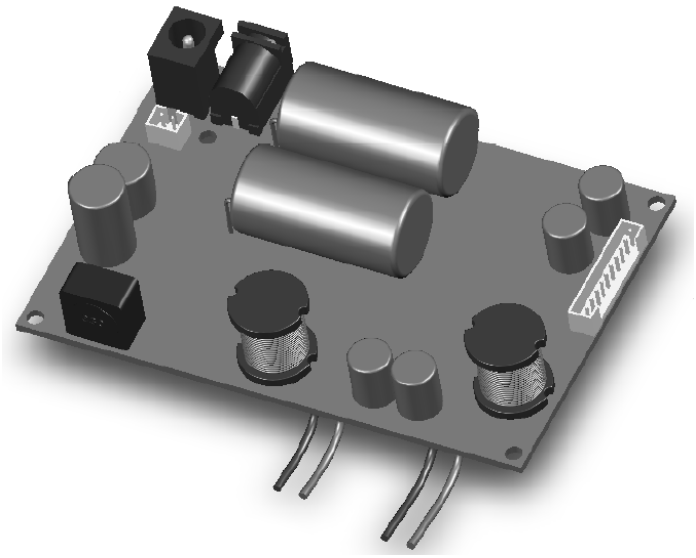
	Value	Comments/Notes
General		
Technology	P2X with Class**HD**	Switching amplifier with P2X energy storage and ClassHD tracking power supply.
Application	Portable Audio	
Configuration	Stereo (2 channel)	
Power Amplifier		
Output Stage Device Type	Discrete MOSFET	
FTC Power @ 10% THD	5 Wrms total	4 ohm resistive load (per ch.) 10% THD+n is not achievable due to compressor action.
Burst Power, 100 Hz	2 x 20 / 16 Wrms	>150 ms, 1.6 / 2.0 ohm loading (per channel).
Burst Power, 1 kHz	2 x 25 / 23 Wrms	>130 ms, 1.6 / 2.0 ohm loading (per channel).
Maximum Output Voltage Swing	20 Vpk	
Recommended Load Impedance (per channel)	2 ohm nominal	Higher impedances will result in lower burst power due to output voltage clipping.
Minimum Load Impedance (per channel)	1.5 ohm	Minimum at all frequencies between DC to 20 kHz.
Frequency Response	35 Hz – 20 kHz	+0 / -3 dB
THD+n @ 1 W, 100 Hz	< 0.20%	4 ohm/ch loading
THD+n @ 1 W, 1 kHz	< 0.15%	4 ohm/ch loading
SNR (22 - 22 kHz BW)	95 dB	Powered by 7.4V battery pack
Integral Pre-amp / Input Stage		
Filters	Analog / Op-amp	25 Hz HPF, 21 kHz LPF Additional filtering may be added external to power amp.
Compressor	Discrete JFET	Responds to clipping events below 700Hz
Input Impedance	4.75 k ohm	
Input Level for Rated Power	1.0 Vrms	For 25 Wrms total, 140 ms burst, at 1 kHz into 2 x 4 ohm load – visible onset of clipping during burst.
Maximum Input Level	1.2 Vrms	
Protection		
Over-Temperature Protection	n/a	None needed: Thermally safe by design.
Over-Current Protection	No	Fail safe
Short Circuit Protection	No	Fail safe

Power Source		
Voltage Range	6.0 - 8.4 V	2 x 3.7 V Li-ion in series, or 6 x AA in series, or 8 V / 1 A AC Adapter.
Maximum Current	1.05 A	Max. value can be set with resistor value change
Standby Power Consumption	2.6 mW / 17 mW	Dependent on integral 3.3 / 5.0 V auxiliary power supply configuration.
Idle Power Consumption	300 mW	7.4V battery pack, amp running, input signal = 0V
Battery Life	Up to 50 hours playing, and up to 5600 hours in standby.	7.4 V / 2000 mAh battery pack. Dependent on level and type of program material and configuration of buck regulator.
EMC Standards	EN-61000-4-2 EN-61000-4-3 EN-61000-4-4 EN61000-4-5 EN-61000-4-6 EN-61000-4-11 EN-55013 FCC part 15-B	By Design
Safety Standards	IEC-60065 IEC-60950	Designed to work with pre-approved AC-DC adapter to expedite safety approvals process.
Meets Energy Star and EU 0.5W standby power requirements.	Yes	In standby mode.

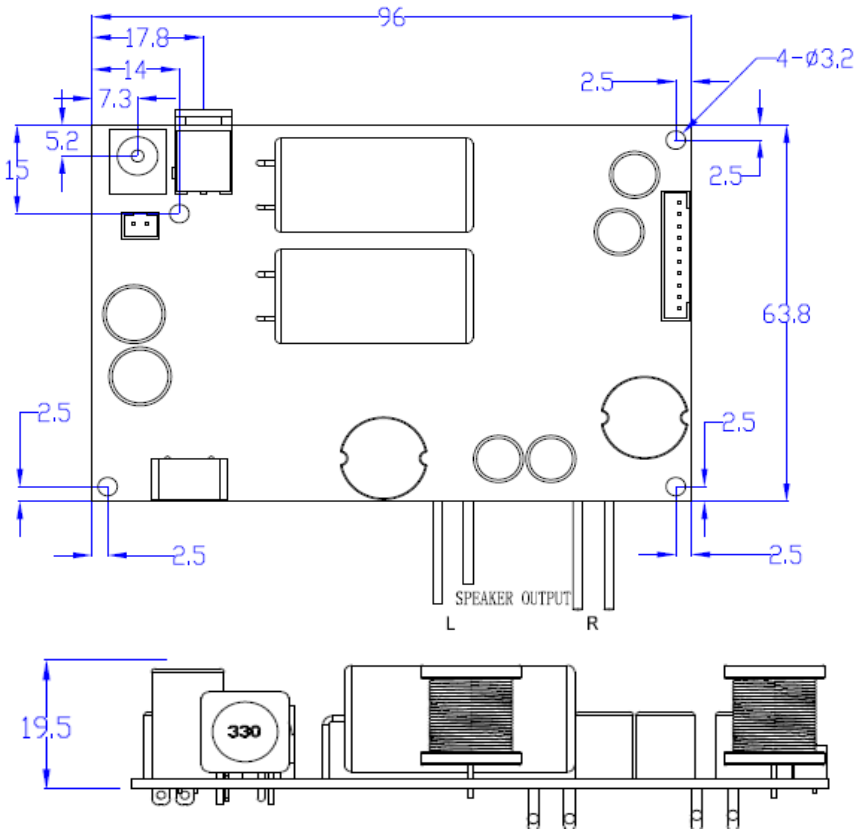
5. Mechanical Specifications

Parameter	Value	Comments/Notes
Physical Dimensions L x W x H [mm]	95 x 65 x 27	
Weight [grams]	88	
Vibration	TBD	

6. Mechanical Drawings



Amplifier board



Amplifier board assembly drawing