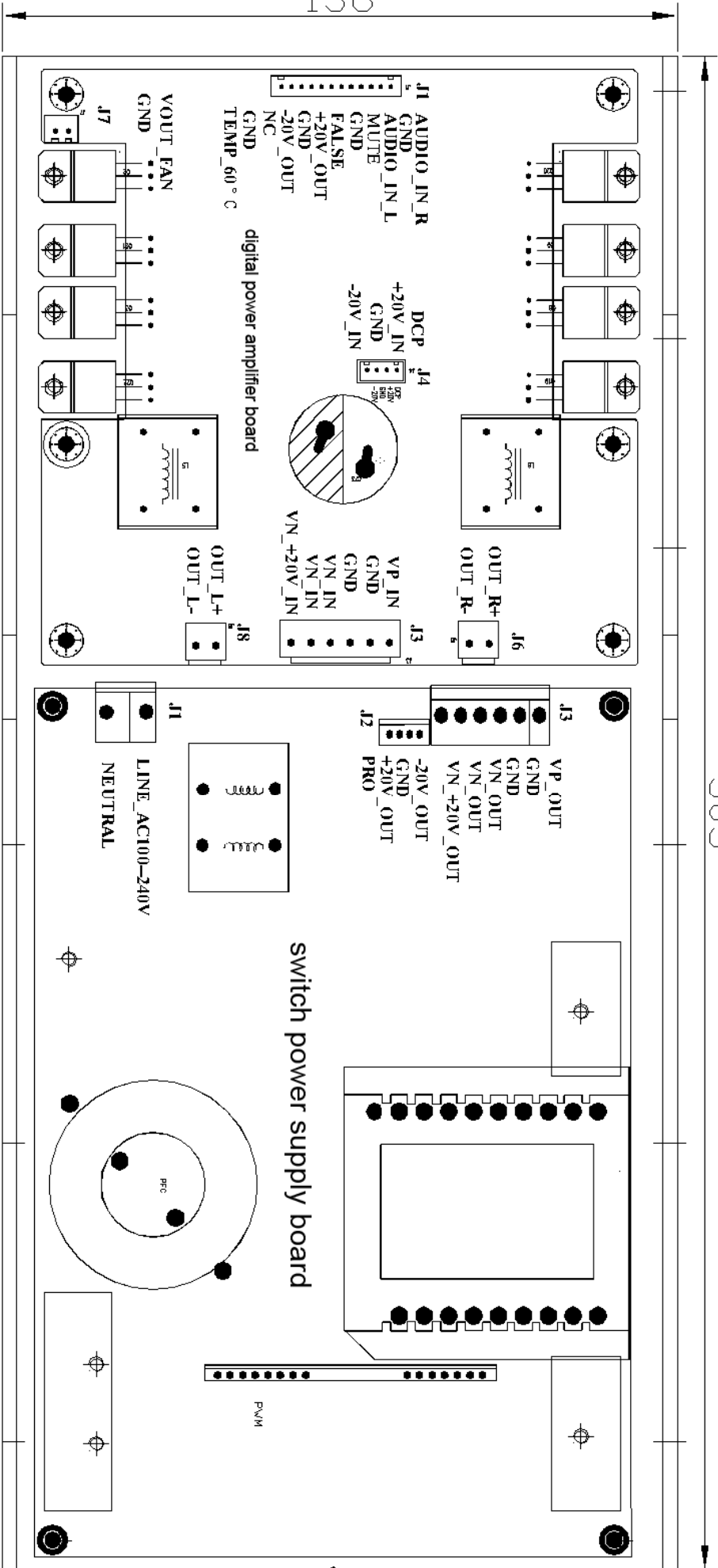


Shenzhen Bao Ye Heng M2300 Digital Power Amplifier Module Specifications

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1、Features

Output Topology Structure output	Half-bridge	Bridgeable
Modulation method	Analog input, PWM	
Output Power	300W+300W 500W+500W (music power) Bridge mode: >700 W	1kHz, THD+N=1%@8Ω 1kHz, THD+N=1%@4Ω 1kHz, THD+N=1%@8Ω
THD+N	0.01%	1kHz, 1w
Efficiency	90%	1kHz, 500w
S/N	>110dB (Full power)	A weighted Band width 22kHz
Frequency Response	<+/-1.5dB	20~20kHz@8Ω
Minimum Load Impedance	4Ω	Stereo, Mono
Power supply	AC100v--240v	±10%
Quiescent Power Dissipation	<25w	
External dimension	305×136×64(mm)	

Other Features

- Mute Control
- Faulty indicate
- With PFC switch power supply, input voltage (100v--240vAC)
- Late start after temperature protection (module starts to work at 60°C lower than the set thermal limit to avoid heat surge)
- Thermal power control
- Output short-circuit, overload protection
- Output DC protection
- Temperature-controlled fan interface available

Brief Principles Introduction

M2300 is composed of high-efficient, excellent sound digital amplifier module and switch power supply with high peak power, low electromagnetic interference.

Power amplifier part mainly works for audio signal output amplifying, and provides various protecting functions for amplifier itself and speakers.

The amplifier adopts digital audio processing technology of BYH patent, which has below advantages:

- Noise & distortion self-adaptive erasing

- Favorable electromagnetic compatibility
- Minimum idle current, high efficiency
- Switch bridge amplifier uses half bridge structure, imbalance output, can be bridged
- Demodulation filter uses second-order Butterworth low pass filter, reproduce audio signal

Switch power supply changes AC city electricity to DC for amplifier, and provide enough current. And because the module is designed for international market, the module is self-adaptive to 100VAC—220VAC

High efficient PFC technology

- Peak output power vs continuous output power is up to 3:1
- Uses low EMI frequency modulated oscillator

Input/output Interface Description

Interface Diagram:

The input/output plug of M2300 has 9 standard industry sockets selected for long term reliability.

Pins on Socket description:

J1	Audio Input, power supply output, control, indicate
J8	Left channel audio output
J6	Right channel audio output
J3	Power supply Input
J4	Aux power supply input, DC protection output
J7	Temperature-controlled fan interface

J1:

Package: CON-2.0-12			
Pin	Symbol	Description	Type
1	AUDIO_IN_R	R channel audio input (imbalanced)	input
2	GND	Input signal ground	GND
3	AUDIO_IN_L	L channel audio input (imbalanced)	input
4	MUTE	Mute control (effective for high level. Remark: available if needed)	input
5	GND	Ground	GND
6	FALSE	Faulty Indicate (effective for high level))	output
7	+20V	+20V voltage	output
8	GND	Power supply ground	GND
9	-20V	-20V voltage	output
10	NC	NON	n/a
11	GND	Ground	GND
12	TEMP_60°C	Module temperature to 60°C (effective for high level)	output

J8:

package: CON-3.96-2			
pin	symbol	description	type
1	OUT_L+	R channel output terminal +	output
2	OUT_L-	R channel output terminal -	output

J6:

package: CON-3.96-2			
pin	symbol	description	type
1	OUT_R+	R channel output +terminal	output
2	OUT_R-	R channel output -terminal	output

J4:

package: CON-2.0-4			
pin	symbol	description	type
1	DCP	DC protection	output
2	+20V_IN	+20V voltage	input
3	GND	Power supply ground	GND
4	-20V_IN	-20Vinput	input

J3:

package: CON-3.96-6			
pin	symbol	description	type
1	VP_IN	Positive power supply	input
2	GND	Power ground	GND
3	GND	Power ground	GND
4	VN_IN	Negative power supply	input
5	VN_IN	Negative power supply	input
6	VN_+20V_IN	Float 20V voltage	input

J7:

package: CON-2.54-2			
pin	symbol	description	type
1	VOUT_FAN	Temperature-controlled Fan power supply	output
2	GND	Temperature-controlled fan ground	GND

Power Supply board pin description:

J1	City electricity input
J2	Aux. power supply output、 protection input
J3	Power supply output

J1:

package: CON-3.96-3(1,3,)			
pin	symbol	description	type
1	NEUTRAL	Neutral AC	input
2	LINE_AC100—240V	Line AC	input

J2

package: CON-2.0-4			
pin	symbol	description	type
1	PRO	DC protection	input
2	+20V_OUT	+20V voltage	output
3	GND	Power supply ground	GND
4	-20V_OUT	-20Vinput	output

J3:

package: CON-3.96-6			
pin	symbol	description	type
1	VP_OUT	Positive power supply	output
2	GND	Power ground	GND
3	GND	Power ground	GND
4	VN_OUT	Negative power supply	output
5	VN_OUT	Negative power supply	output
6	VN_+20V_OUT	Float 20V voltage	output

Absolute Maximum Ratings

Warning: Absolute maximum ratings indicated limits beyond which damage or protection may occur.

Power supply input:

symbol	description	Min.	Max.	Unit
I _{FUSE}	100V--220v fuse current	8A	12A	Ampere
F	AC frequency	45	65	Hz

Audio, control input:

symbol	description	Min.	Max.	Unit
AUDIO_IN_R	R channel audio input	0	3.4(rms)	Volt
AUDIO_IN_L	L channel audio input	0	3.4(rms)	Volt
Input Impedance		4.7k		Ω
V _{MUTE}	Mute control low voltage	-0.3	3V	Volt
	Mute control high voltage	4	5.3	Volt

Audio, control, Synchronization signal output:

symbol	description	Min.	Max.	Unit
R _L	Load impedance (imbridged)	4	∞	Ω
	Load impedance (bridged)	8	∞	Ω
I _{out}	audio output terminal	0	12	Ampere
V _{FALSE}	Faulty indicates	0	5	Volt
V _{TEMP_60°C}	60°C temperature indicate output	0	5(>60°C)	Volt

Temperature:

symbol	description	Min.	Max.	Unit
T _a	Operating ambient	0	50	°C

	temperature			
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Power supply output

symbol	Spec.	Status	Min.	Typical value	Max.	Unit
I _{+15V}	+20V current	-	-	1		Ampere
I _{-15V}	-20V current	-	-	1		Ampere
I _{VN15V}	Float 20V current	-	-	1		Ampere
I _{VP}	Positive power supply	-	-	6		Ampere
I _{VN}	Negative power supply	-	-	6		Ampere

Power specifications

Testing condition: working at temperature of 25°C, input signal should be 1kHz Sine wave, load impedance at 8Ω, AC220V

Symbol	Specifications	Status	Min.	Typical value	Max.	Unit
T _{max}	Longest time on full load	-	-	15	-	s
P _t	continuous output power	-	-	300	-	Watt
P _q	Quiescent Power Dissipation	P _o =0W	-	25	-	Watt
η	efficiency	P _o =200w P _o =700w	- -	90 90	- -	% %

Audio Specifications

Testing condition: working at temperature of 25°C, input signal should be 1kHz Sine wave, AC220V

symbol	Spec.	Status	Min.	Typical Value	Max.	Unit
P _o		R _L =4Ω	-	500	-	Watt
P _o		R _L =8Ω	-	300	-	Watt

Electrical Audio Specification

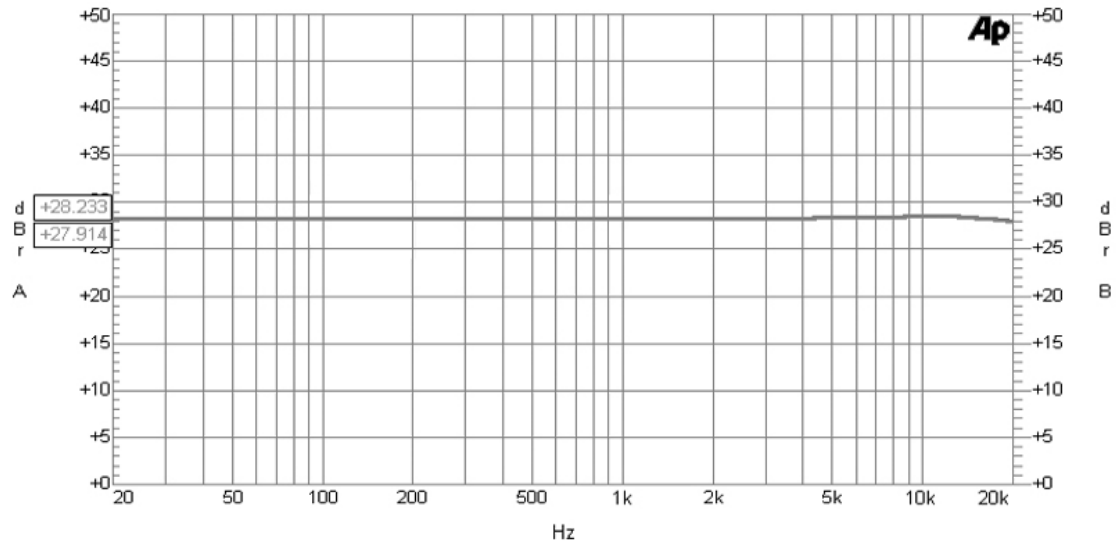
Testing condition: f=1kHz, P_o=1W, R_L=8Ω, T_a=25°C

symbol	description	Min.	Typical value	Max.	Unit
THD+N	Distortion	-	0.05	-	%

$V_{n,o}$	Output Noise	-	130	-	μV
A_v	Voltage Gain	-	-	31	dB
F	Frequency Response	-	-0.1~0.35	-	dB
F_u	High frequency limit	-	22	-	kHz
F_l	Low frequency limit	-	10	-	Hz
Z_l	Load Impedance	-	8	-	Ω
D	Dynamic Range	-	106	-	dB

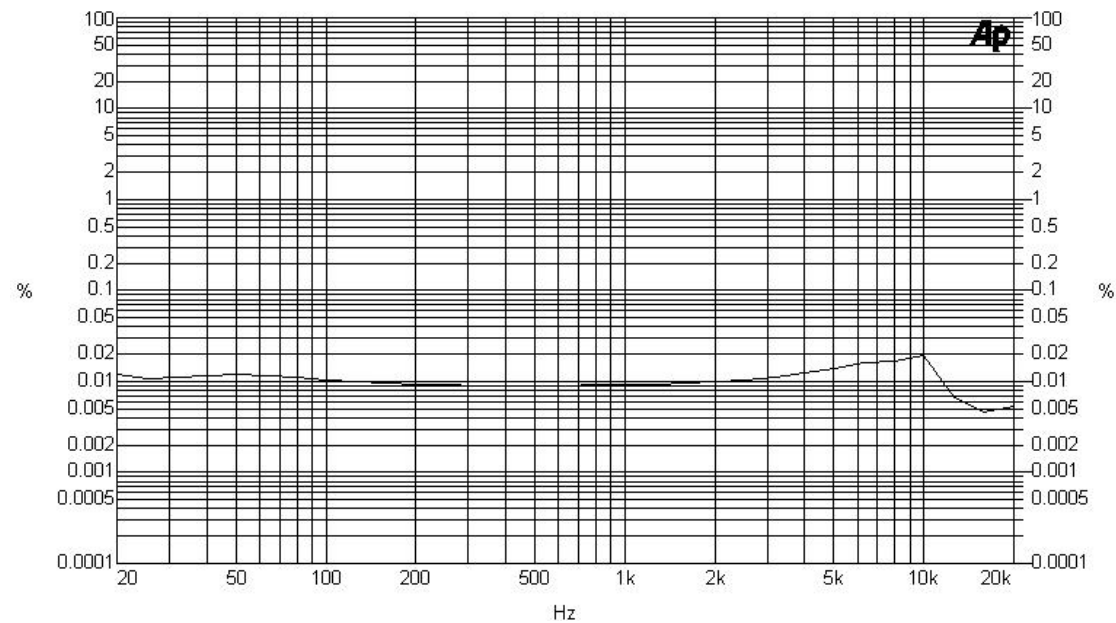
Typical Performance Characteristics:

1, Frequency Response



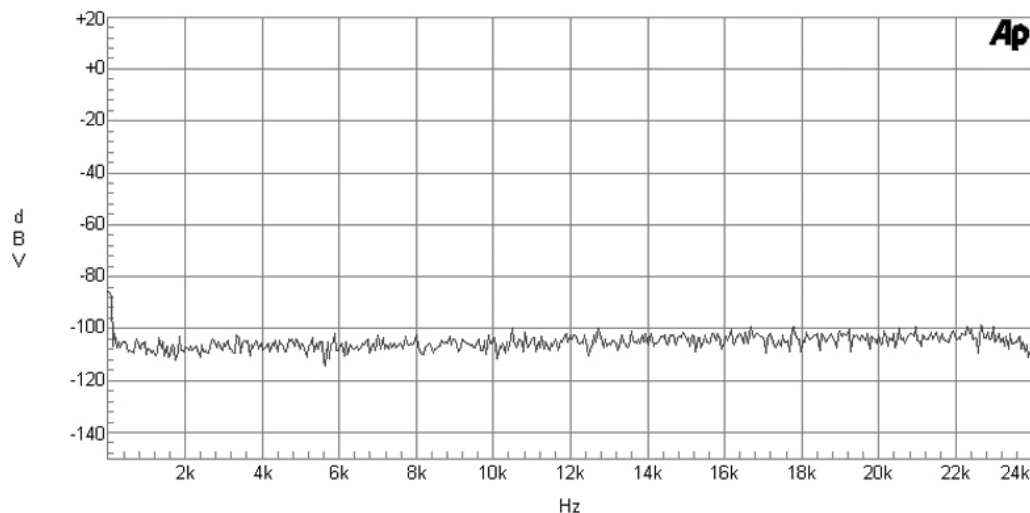
Frequency Response Curve (8Ω)

2, THD+N



Distortion-Frequency Curve ($P_o=1\text{w}$)

3, Bottom Noise



Bottom Noise Curve

Protection Features

- Overheat Protection

The module M2300 digital power amplifier is equipped with over heat protection. The protection circuit monitors the temperature of the MOS-FET, if the temperature goes too high ($>70^{\circ}\text{C}$), the protection circuit will put the module into protection status. When temperature goes down, module starts to work automatically.

- Over current surge protection

When current is over the Max. limit, the protection circuit starts to work. It'll cut off output and goes into being protected status. When short-circuit trouble solved, module resumes working automatically.

Thermal Design

Traditional amplifiers (such as A/B class) have a rather high requirement of thermal design to keep the transistor junction temperature low. The module M2300 is based on the very efficient switch power technology providing high efficiency, which needs no special process on thermal design. If working temperature comes to 60°C , power limit function will be activated, now module output will be limited. If outside condition is abnormal or heat sink not good, temperature comes over 70°C , module will be protected till temperature goes down to normal.

Testing Method

Because the average efficient power of music signal is 1/7 of power RMS, so, it can be tested with 2*300W ultra power test on dual 8 ohm load, while on dual 4 ohm load, one channel can be tested with full power, the other channel is tested at 1/8 power. Ultra power test should be longer than 10 minutes.

Package & Storage

Each module should be packed separately and can not put together directly
Should be used in temperature from $-10\sim 50^{\circ}\text{C}$ in humidity level of 20~85%
Stored in temperature from $-20\sim 80^{\circ}\text{C}$, humidity less than 90%