

EAS GaNAMP1002 Product Brief

Class-D High-Performance eGaN FET Amplifier Module



Gallium Nitride

Complete Class-D Amplifier Solution

- Differential Analog Audio Input
- Next Gen High-Side/Low-Side Driver
- GaN FET Half-Bridge Output Stages
- Half-Bridge or Bridge-Tied Load (BTL) Output Topology
- Easy Integration w/EAS SMPS Solutions

High-Performance Audio Reference

- 100W per Channel x 2 into 8 ohms
- 400W per Channel (BTL) into 8 ohms
- > 112dB SNR and Dynamic Range
- < 0.01% THD+N (8Ω, 1W, 20Hz to 20kHz)
- 20Hz-20kHz +/-0.5dB Frequency Response (8Ω)

96% Efficiency Reduces Heat and System Size

Graceful Protection and Auto Recovery

- Complete Non-Intrusive Short-Circuit, Thermal and Over-Current Protection
- Over-Voltage and Under-Voltage Protection
- Graceful Handling of Complex and Lower Impedance Loads

Package Configurations

- Complete GaN FET Class-D Amplifier Module
- Easy Heat Sink attachment w/Pedestal

The EAS™ eGaNAMP1002 is a self-contained 100 watts per channel Class-D Amplifier Module for manufacturers of Powered Loudspeakers and stand-alone Stereo and Multi-Channel Amplifiers. The eGaNAMP1002 is developed around the next-generation Driver technology and the new eGaN FET Power Device technology. These next-generation technologies are combined with highest quality Output Filters for uncompromised audio quality and sound. The eGaNAMP1002 is designed as two independent Half-Bridge Outputs, for use in both Stereo and Single-Channel applications. In a Single-Channel Bridge-Tied-Load configuration the eGaNAMP1002 will deliver 400W into 8 ohms.

The Module is designed with best-practices EMI considerations, and for compliance with FCC, UL, CSA and CE requirements.

EAS™ eGaNAMP1002

- Complete Stand-alone Class-D Amplifier Module
- 400 watts/channel, 8 ohms
- < 0.05% THD+N, > 105dB SNR
- Differential/Balanced Analog Input
- Dual Half-Bridge or Single Bridge-Tied-Load (BTL) Topology for Ground-Referenced Output
- Integrated, non-intrusive over-current, short-circuit and over-voltage protection



1. PERFORMANCE PLOTS

Test Conditions: Topward 6306D Power Supply, 25 degrees C Ambient

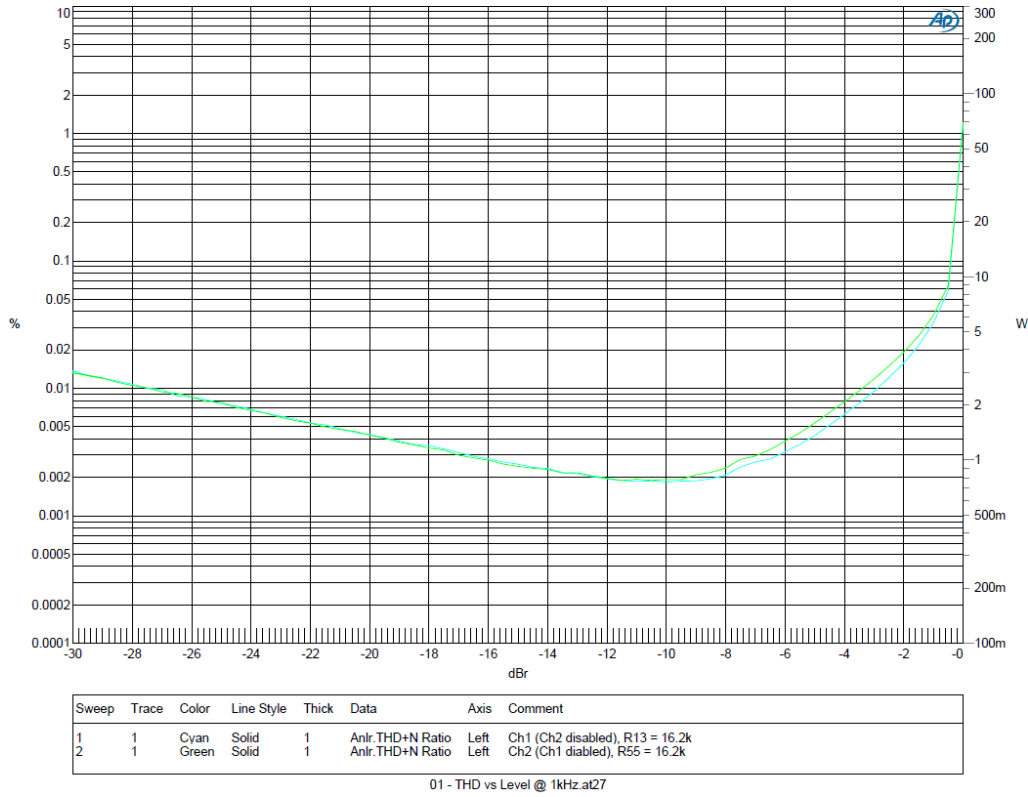


Figure 1-1 THD+N vs. Power

Audio Precision

EPC CLAM RevC
THD vs Freq @ -9dBm, +/-32V Rails, 8-Ohm Load

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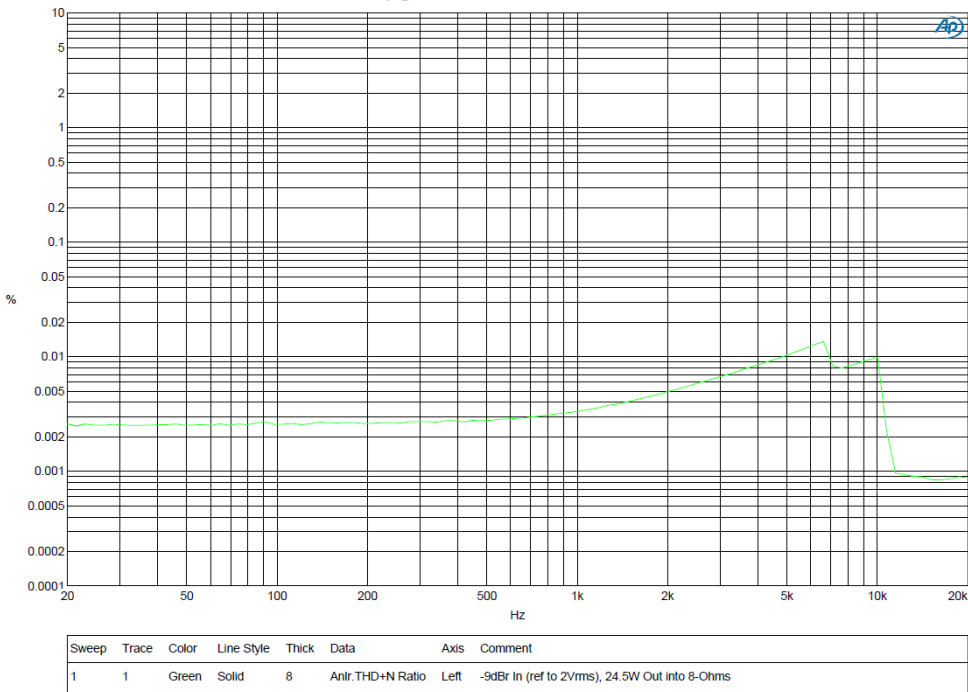
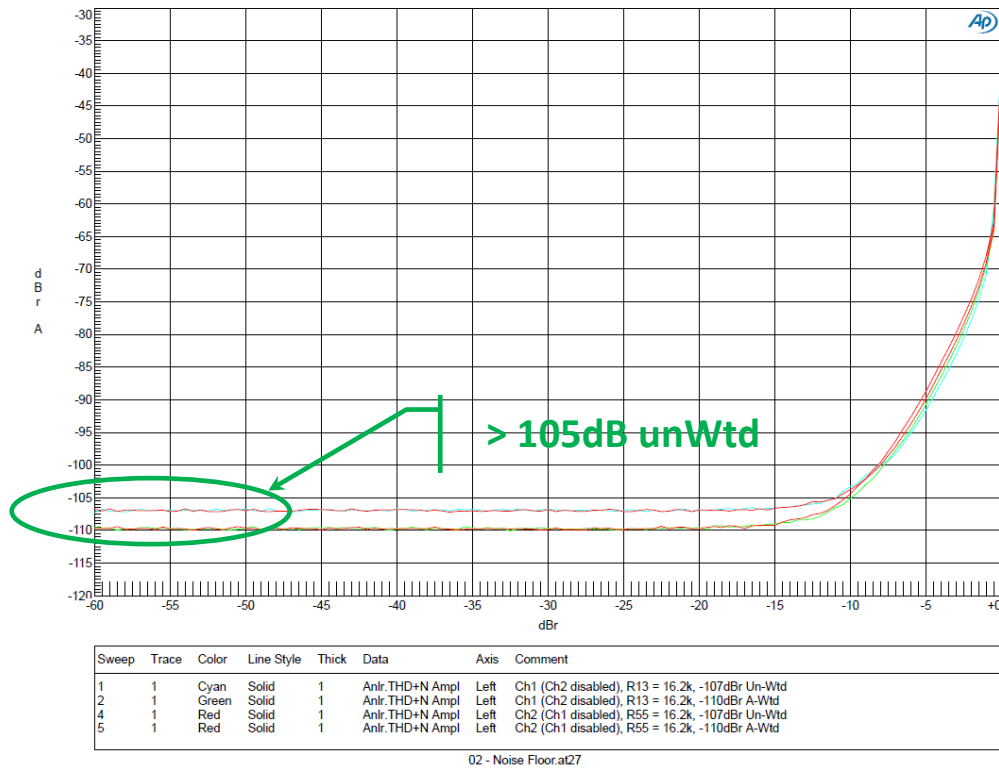


Figure 1-2 THD+N vs. Frequency



Audio Precision

EPC CLAM RevC
 Freq Response @ -9dB, +/-32V Rails, 8-Ohm Load

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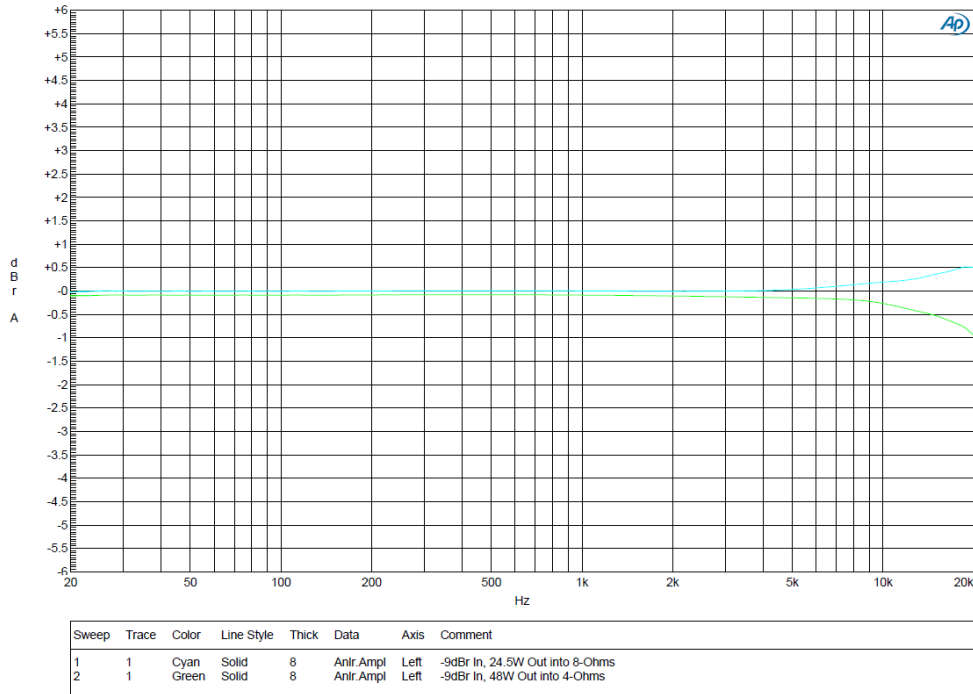
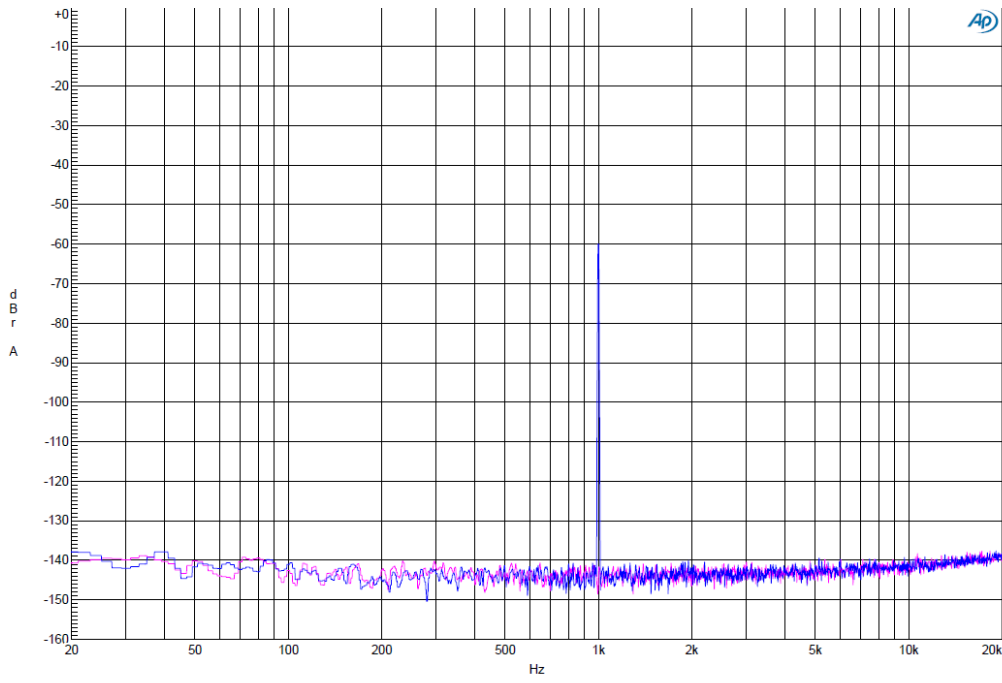


Figure 1-3 Noise Floor

Figure 1-4 Frequency Response



Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
3	1	Magenta	Solid	1	Fft.Ch.1 Ampl	Left	Ch1 (Ch2 disabled), R13 = 16.2k, No Input
6	1	Blue	Solid	1	Fft.Ch.1 Ampl	Left	Ch2 (Ch1 disabled), R55 = 16.2k, -60dB In

05 - FFT.at27

Figure 1-5 FFT with and without Audio Input Signal

PERFORMANCE DATA

Power Supply = +/-42VDC, Load = 8Ω

Parameter	Min	Typical	Max	Units	Comments
Output Power	400W			W	THD < 0.05%
Distortion	-	-	0.02	%	THD+N, 1kHz, 25W
Output Noise	105	-	-	dB	Unwtd, 400W/8Ω
Frequency Response	10	-	20k	Hz	+/- 0.5dB
Voltage Gain	+25.5	+26	+26.5	dB	
Current Limit	24	26	28	A	
Power Supply Rejection	+65			dB	Either Rail

AUDIO INPUT CHARACTERISTICS

Parameter	Min	Typical	Max	Units	Comments
Input Impedance	-	100k	-	Ω	Either Input to Ground
Common-Mode Rejection	-	75	-	dB	20Hz to 20kHz

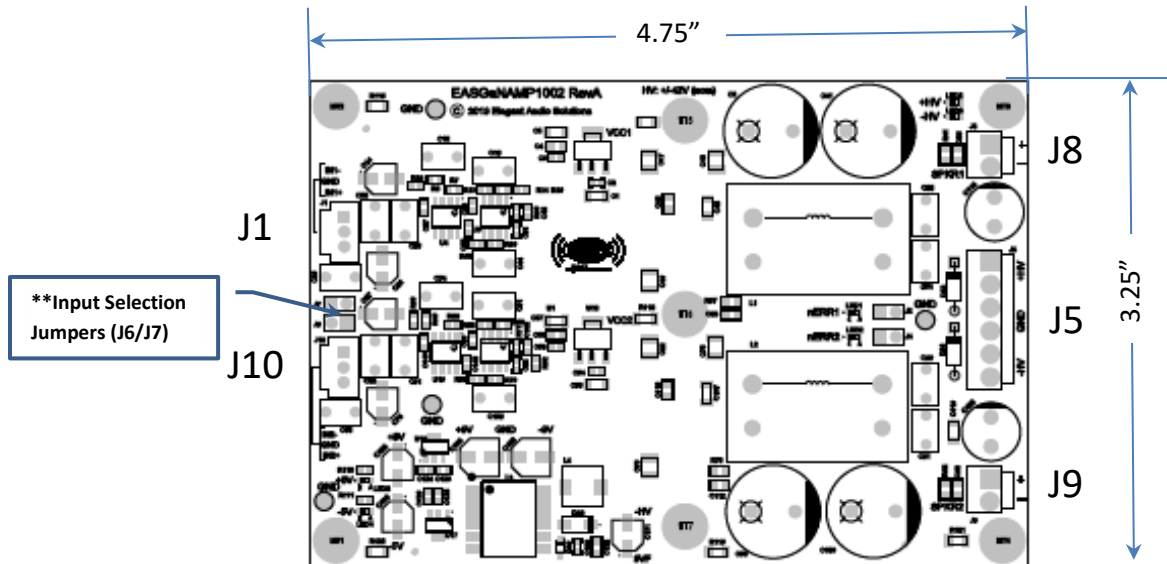
ABSOLUTE MAXIMUM RATINGS

Operation beyond these limits may cause catastrophic and irreversible damage

Parameter	Rating	Units	Comments
Power Supply Voltage	+/- 42	V	Over-Voltage will Shut-Down Unit
Peak Output Current	26	A	Maximum Current Limit @ 28A
Ambient Temperature	25	°C	Normal Operation w/o Heat Sink
Heat Sink Temperature	90	°C	

RECOMMENDED OPERATING CONDITIONS

Parameter	Min	Typical	Max	Units	Comments
Power Supply Voltage	+/- 20	-	+/- 42	V	UnderVoltage @ +/-18V
Load Impedance	2	-	-	Ω	
Source Impedance	-	-	10k	Ω	
Effective Power Supply Capacitance	1000 μ	-	-	F	Per rail, per attached Amplifier Module



****NOTE:** With Jumpers (J6/J7) shorted, either Input Connection (J1 or J10) will source both Channels with the same Input Signal for Bridge-Tied-Load (BTL) applications. BTL Output Connection is between J8/Pin #2 and J9/Pin #1.

2. CONNECTIVITY

Connector: J5 (Mating JST Connector: VHR-6N; Pin: SVH-41T-P1.1)

Pin	Type	Description
1, 2	Input	+HV Power Supply Rail
3, 4	Input	Power Supply Ground
5, 6	Input	-HV Power Supply Rail

Connector: J1 (Mating Molex Connector: 50-57-9403; Pin: 0430300007)

Pin	Type	Description
1	Input	Negative Audio Signal Input #1
2	Input	Signal Input Ground #1
3	Input	Positive Audio Signal Input #1

Connector: J10 (Mating Molex Connector: 50-57-9403; Pin: 0430300007)

Pin	Type	Description
1	Input	Negative Audio Signal Input #2
2	Input	Signal Input Ground #2
3	Input	Positive Audio Signal Input #2

Connector: J8 (Mating JST Connector: VHR-2N; Pin: SVH-41T-P1.1)

Pin	Type	Description
1	Output	Positive Audio Amplifier #1 Output (BTL Out '+')
2	Output	Negative Audio Amplifier #1 Output

Connector: J9 (Mating JST Connector: VHR-2N; Pin: SVH-41T-P1.1)

Pin	Type	Description
1	Output	Positive Audio Amplifier #2 Output
2	Output	Negative Audio Amplifier #2 Output (BTL Out '-')