

Figure 9. Supply Current vs. Shutdown Voltage

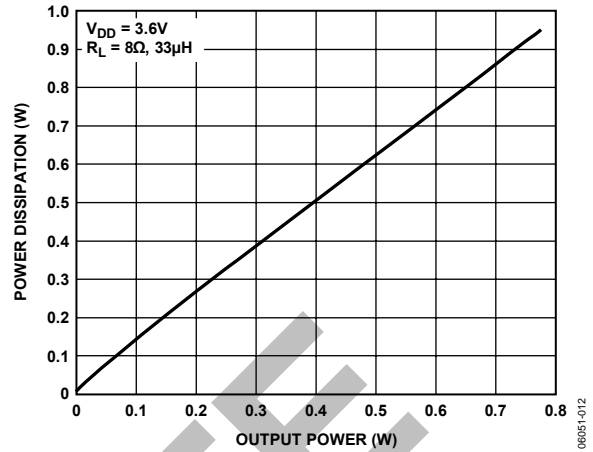


Figure 12. Power Dissipation vs. Output Power at $V_{DD} = 3.6V$

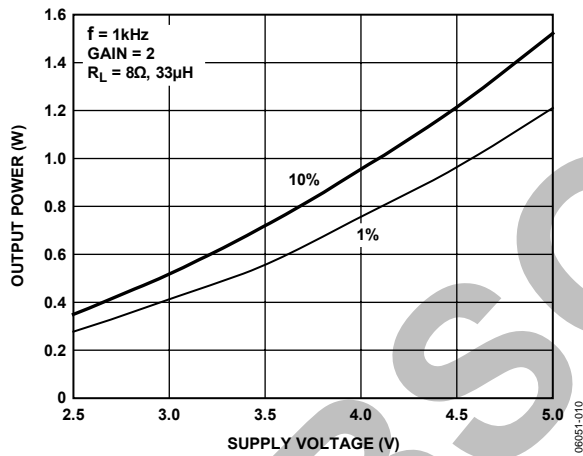


Figure 10. Maximum Output Power vs. Supply Voltage

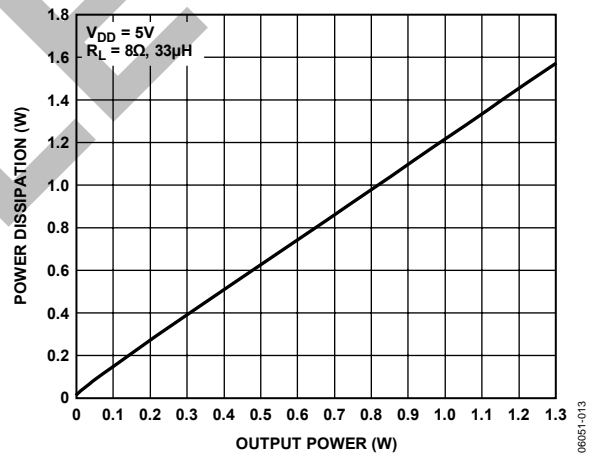


Figure 13. Power Dissipation vs. Output Power at $V_{DD} = 5.0V$

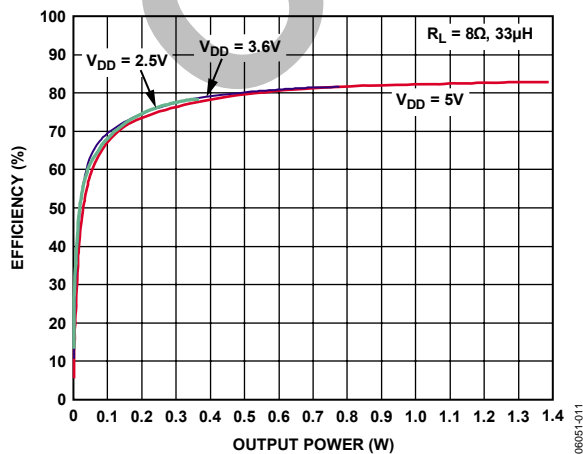


Figure 11. Efficiency vs. Output Power into 8Ω

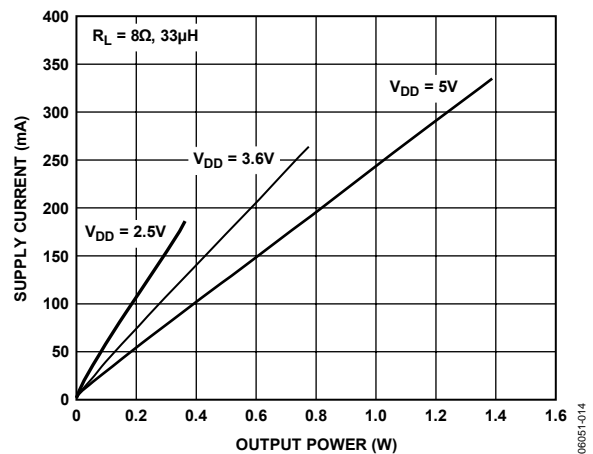


Figure 14. Output Power vs. Supply Current, One Channel

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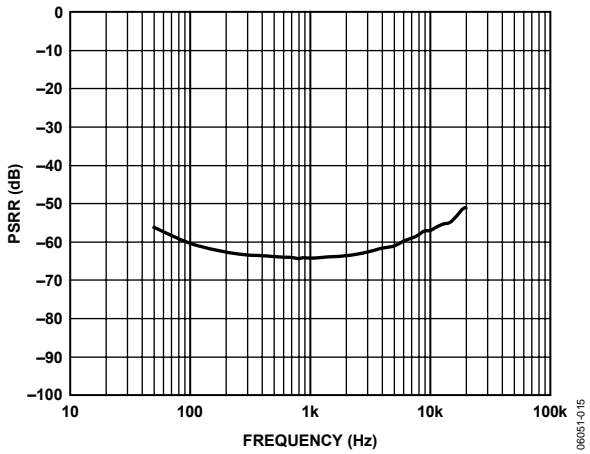


Figure 15. Power Supply Rejection Ratio vs. Frequency

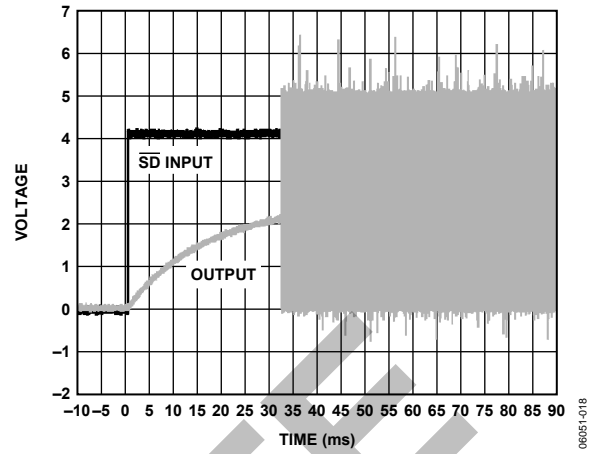


Figure 18. Turn-On Response

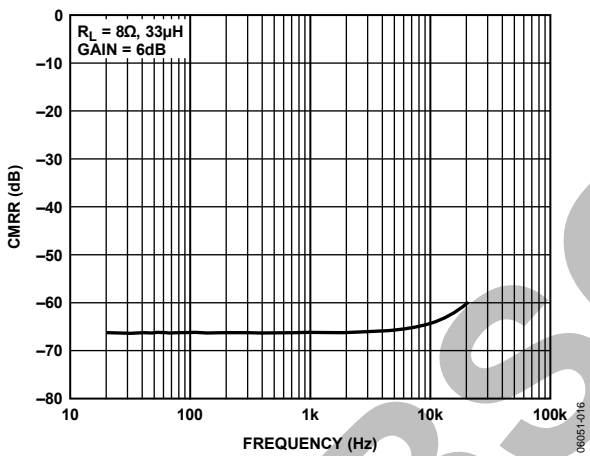


Figure 16. Common-Mode Rejection Ratio vs. Frequency

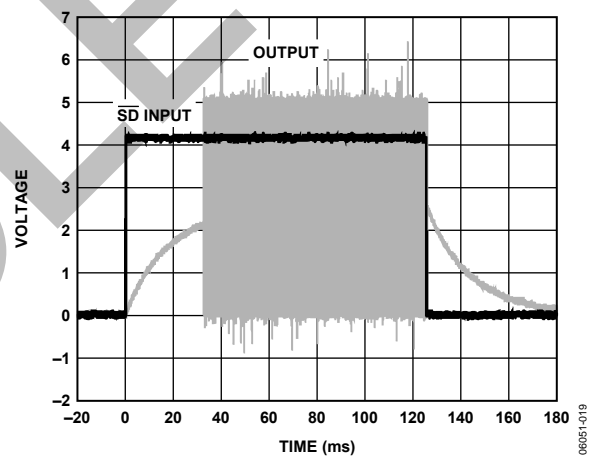


Figure 19. Turn-Off Response

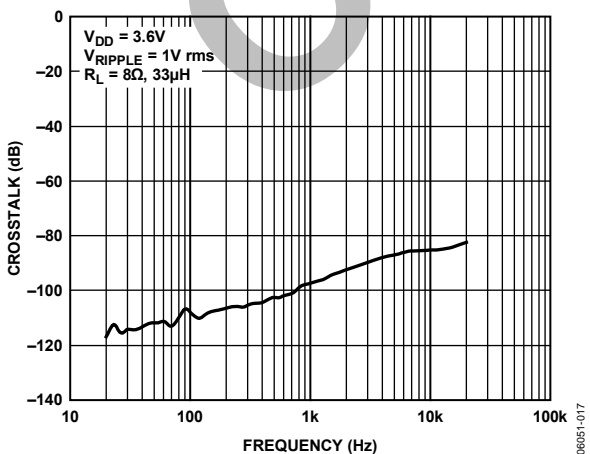


Figure 17. Crosstalk vs. Frequency

TYPICAL APPLICATION CIRCUITS

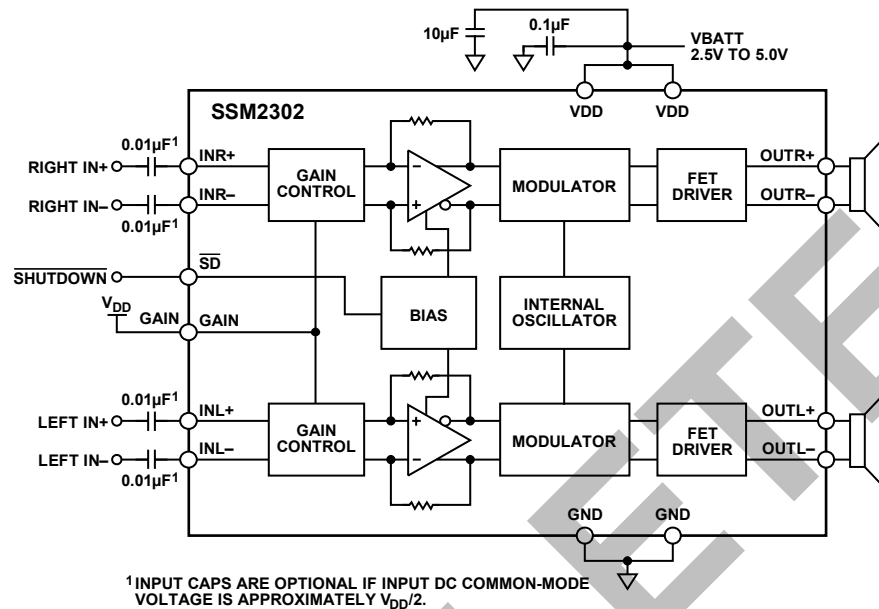


Figure 20. Stereo Differential Input Configuration, Gain = 12 dB

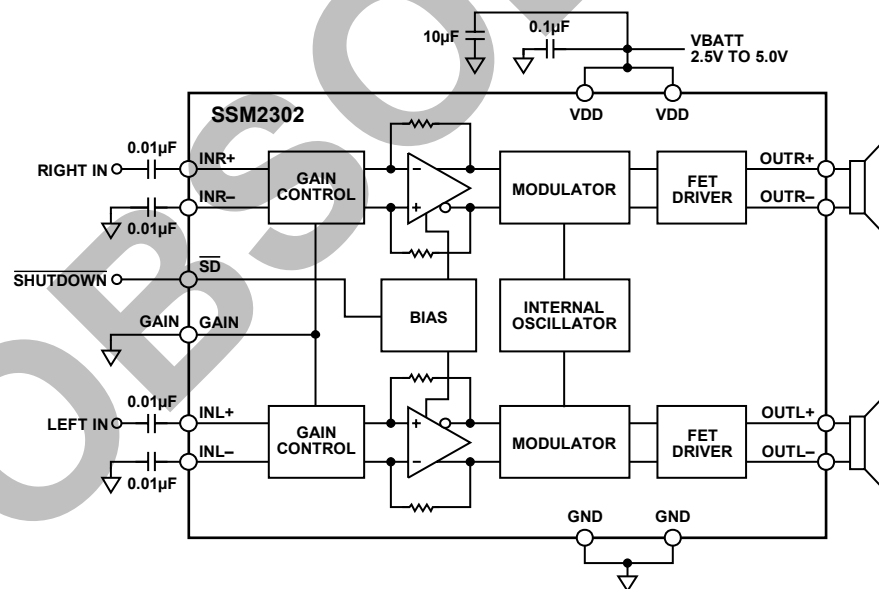
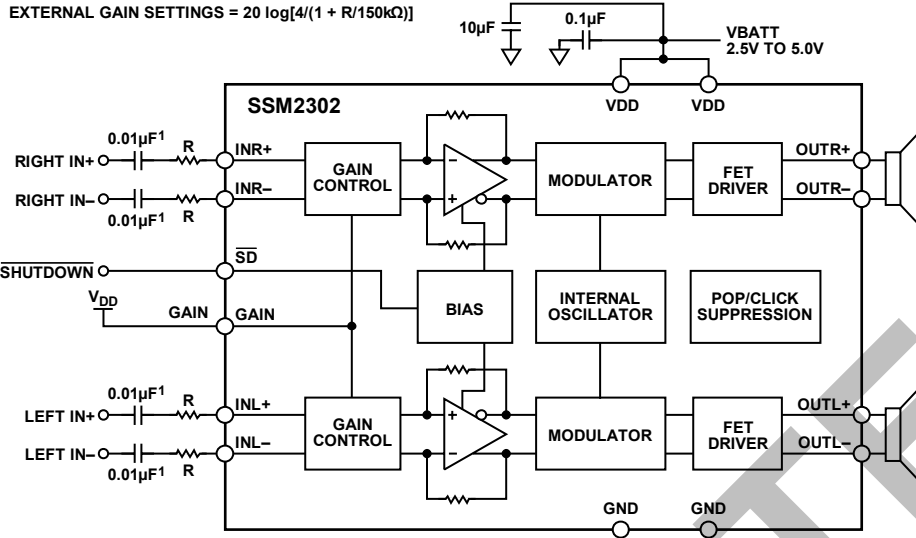


Figure 21. Stereo Single-Ended Input Configuration, Gain = 6 dB

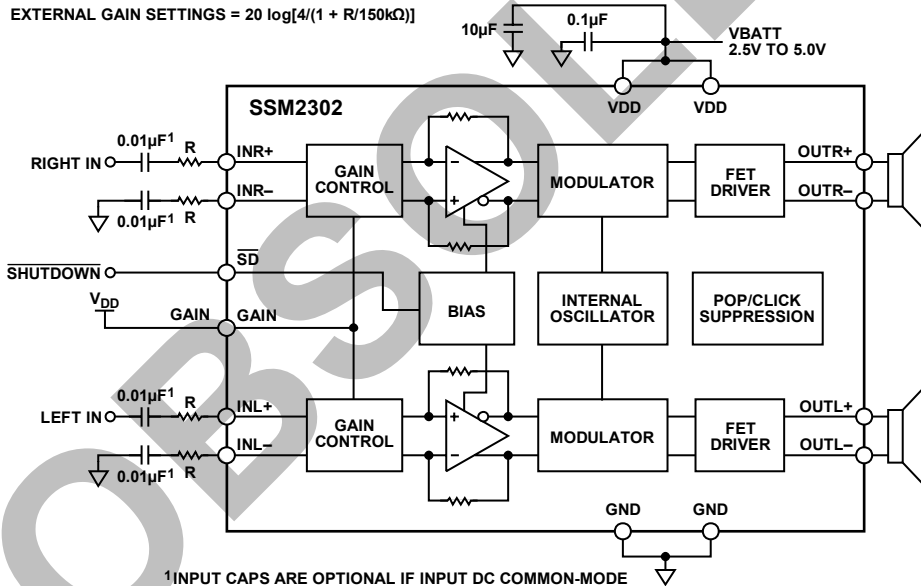
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¹ INPUT CAPS ARE OPTIONAL IF INPUT DC COMMON-MODE VOLTAGE IS APPROXIMATELY $V_{DD}/2$.

Figure 22. Stereo Differential Input Configuration, User-Adjustable Gain

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¹ INPUT CAPS ARE OPTIONAL IF INPUT DC COMMON-MODE VOLTAGE IS APPROXIMATELY $V_{DD}/2$.

Figure 23. Stereo Single-Ended Input Configuration, User-Adjustable Gain

06051-037

EVALUATION BOARD INFORMATION

INTRODUCTION

The SSM2302 audio power amplifier is a complete low power, Class-D, stereo audio amplifier capable of delivering 1.4 W/channel into 8 Ω load. In addition to the minimal parts required for the application circuit, measurement filters are provided on the evaluation board so that conventional audio measurements can be made without additional components.

This section provides an overview of Analog Devices SSM2302 evaluation board. It includes a brief description of the board as well as a list of the board specifications.

Table 5. SSM2302 Evaluation Board Specifications

Parameter	Specification
Supply Voltage Range, V_{DD}	2.5 V to 5.0 V
Power Supply Current Rating	1.5 A
Continuous Output Power, P_o ($R_L = 8 \Omega$, $f = 1 \text{ kHz}$, 22 kHz BW)	1.4 W
Minimum Load Impedance	8 Ω

OPERATION

Use the following steps when operating the SSM2302 evaluation board.

Power and Ground

1. Set the power supply voltage between 2.5 V and 5.0 V. When connecting the power supply to the SSM2302 evaluation board, make sure to attach the ground connection to the GND header pin first and then connect the positive supply to the VDD header pin.

Inputs and Outputs

1. Ensure that the audio source is set to the minimum level.
2. Connect the audio source to Inputs INL \pm and INR \pm .
3. Connect the speakers to Outputs OUTL \pm and OTR \pm .

Gain Control

The gain select header controls the gain setting of the SSM2302.

1. Select jumper to LG for 6 dB gain.
2. Select jumper to HG for 12 dB gain.

External Gain Settings

It is possible to adjust the SSM2302 gain using external resistors at the input. To set a gain lower than 12 dB refer to Figure 22 and Figure 23 on the product data sheet for proper circuit configuration. For external gain configuration from a fixed 12 dB gain, use the following formula:

$$\text{External Gain Settings} = 20 \log[4/(1 + R/150 \text{ k}\Omega)]$$

To set a gain lower than 6 dB refer to Figure 24 and Figure 25 on the product data sheet for proper circuit configuration. For external gain configuration from a fixed 6 dB gain, use the following formula:

$$\text{External Gain Settings} = 20 \log[2/(1 + R/150 \text{ k}\Omega)]$$

Shutdown Control

The shutdown select header controls the shutdown function of the SSM2302. The shutdown pin on the SSM2302 is active low, meaning that a low voltage (GND) on this pin places the SSM2302 into shutdown mode.

1. Select jumper to 1-2 position. Shutdown pulled to V_{DD} .
2. Select jumper to 2-3 position. Shutdown pulled to GND.

Input Configurations

1. For differential input configuration with input capacitors do not place a jumper on JP8, JP9, JP10, and JP11.
2. For differential input configuration without input capacitors place a jumper on JP8, JP9, JP10, and JP11.

SSM2302 APPLICATION BOARD SCHEMATIC

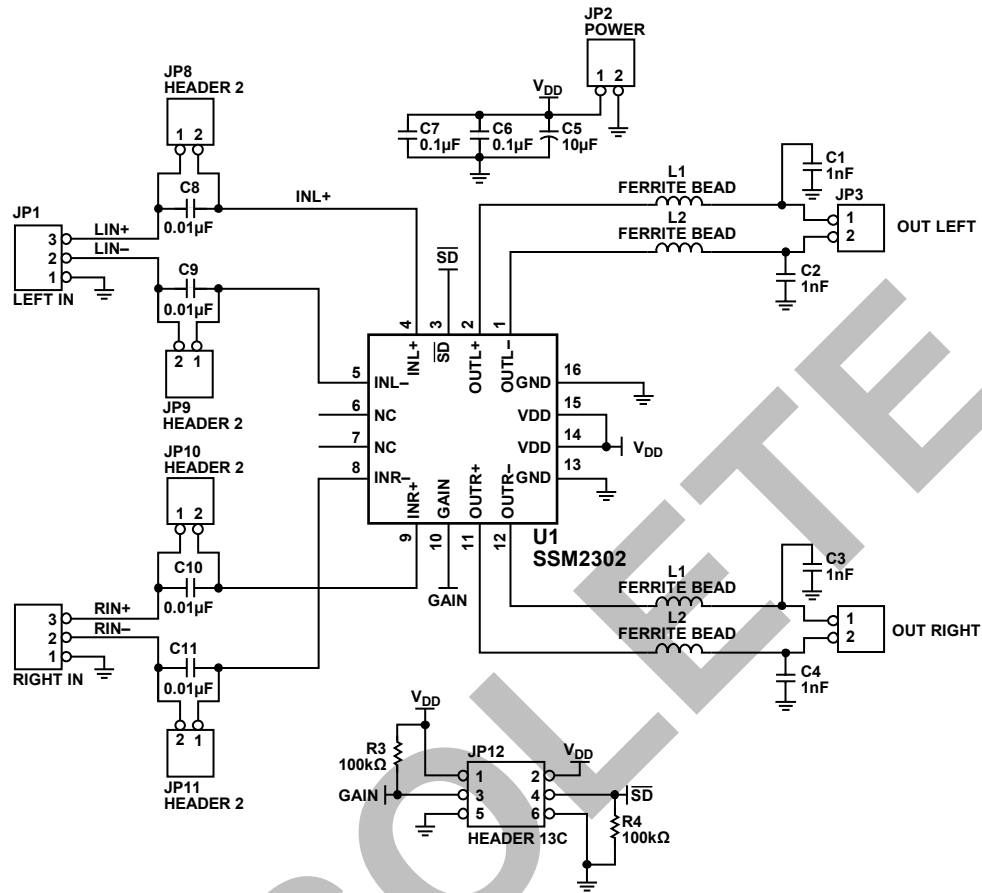


Figure 28. SSM2302 Application Board Schematic

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SSM2302

SSM2302 STEREO CLASS-D AMPLIFIER EVALUATION MODULE COMPONENT LIST

Table 6.

Reference	Description	Footprint	Quantity	Manufacturer/Part Number
C8, C9, C10, C11	Capacitors, 0.01 μ F	0402	4	Murata Manufacturing Co., Ltd./GRM15
C6, C7	Capacitor, 0.1 μ F	0603	2	Murata Manufacturing Co., Ltd./GRM18
C5	Capacitor, 10 μ F	0805	1	Murata Manufacturing Co., Ltd./GRM21
C1, C2, C3, C4	Capacitor, 1 nF	0402	4	Murata Manufacturing Co., Ltd./GRM15
R3, R4	Resistor, 100 k Ω	0603	2	Vishay/CRCW06031003F
L1, L2, L3, L4	Ferrite bead	0402	4	Murata Manufacturing Co., Ltd./BLM15EG121
U1	IC, SSM2302	3.0 mm \times 3.0 mm	1	SSM2302CSPZ
EVAL BOARD	PCB evaluation board		1	

OBSOLETE

SSM2302 APPLICATION BOARD LAYOUT

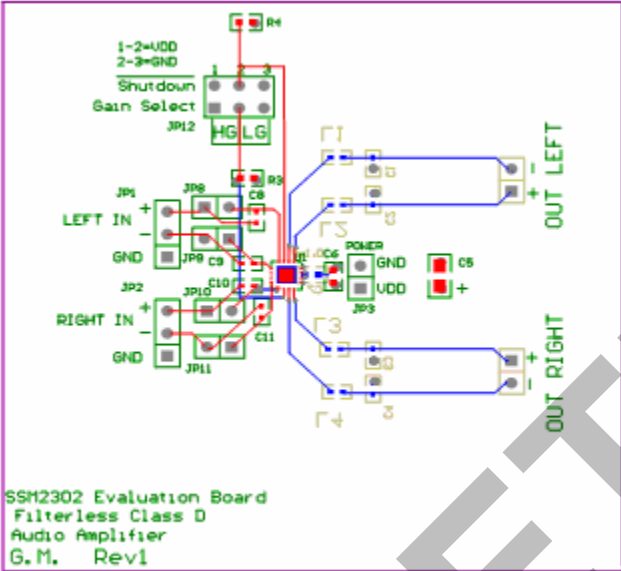
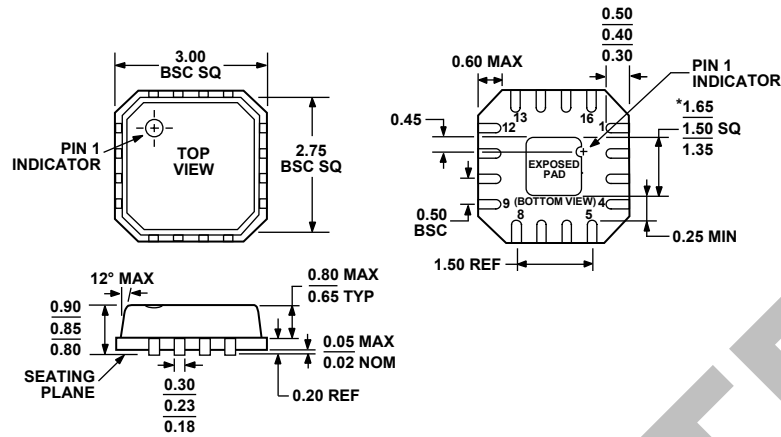


Figure 29. SSM2302 Application Board Layout

SSM2302

OUTLINE DIMENSIONS



*COMPLIANT TO JEDEC STANDARDS MO-220-VEED-2 EXCEPT FOR EXPOSED PAD DIMENSION.

Figure 30. 16-Lead Lead Frame Chip Scale Package [LFCSP_VQ]
 3 mm x 3 mm Body, Very Thin Quad
 (CP-16-3)
 Dimensions shown in millimeters

ORDERING GUIDE

Model	Temperature Range	Package Description	Package Option	Branding
SSM2302CPZ-R2 ¹	-40°C to +85°C	16-Lead Lead Frame Chip Scale Package [LFCSP_VQ]	CP-16-3	A15
SSM2302CPZ-REEL ¹	-40°C to +85°C	16-Lead Lead Frame Chip Scale Package [LFCSP_VQ]	CP-16-3	A15
SSM2302CPZ-REEL7 ¹	-40°C to +85°C	16-Lead Lead Frame Chip Scale Package [LFCSP_VQ]	CP-16-3	A15

¹ Z = Pb-free part.

NOTES

OBSOLETE

NOTES

OBSOLETE