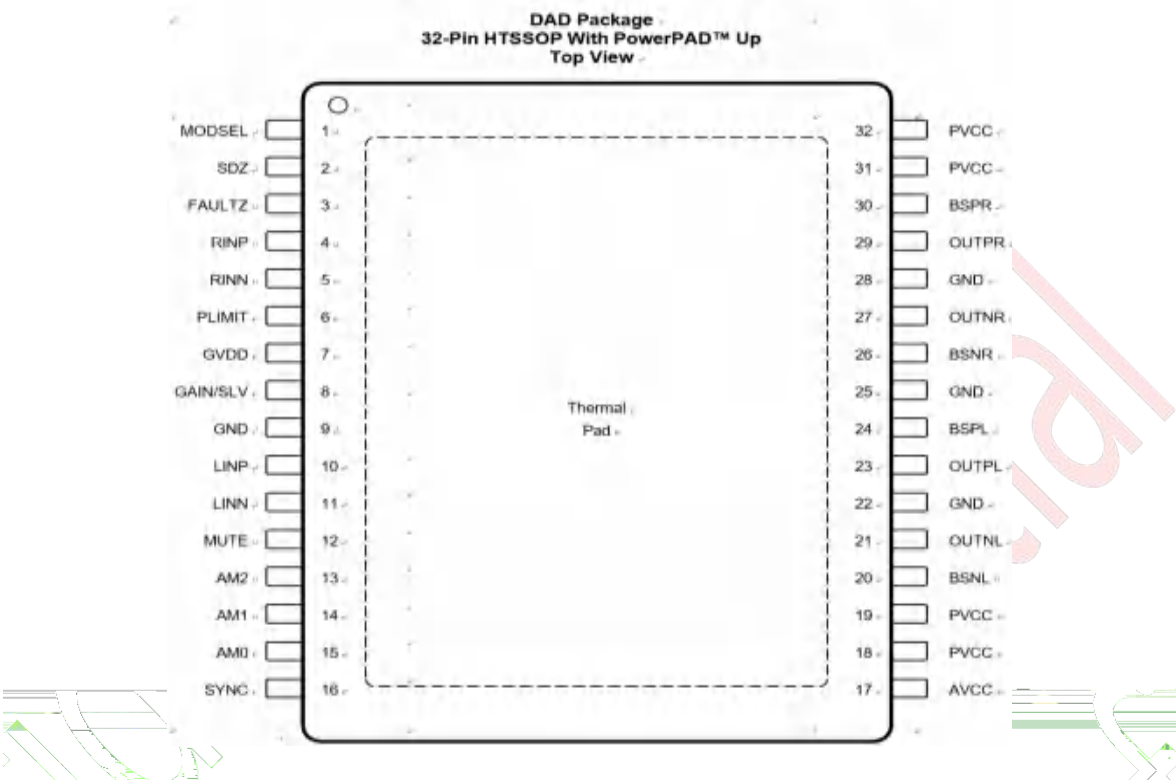


## Description

is a 2D polygon in a

Pin Configuration and Functions



| PIN |      | TYPE <sup>(1)</sup> | DESCRIPTION |
|-----|------|---------------------|-------------|
| NO. | NAME |                     |             |

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32



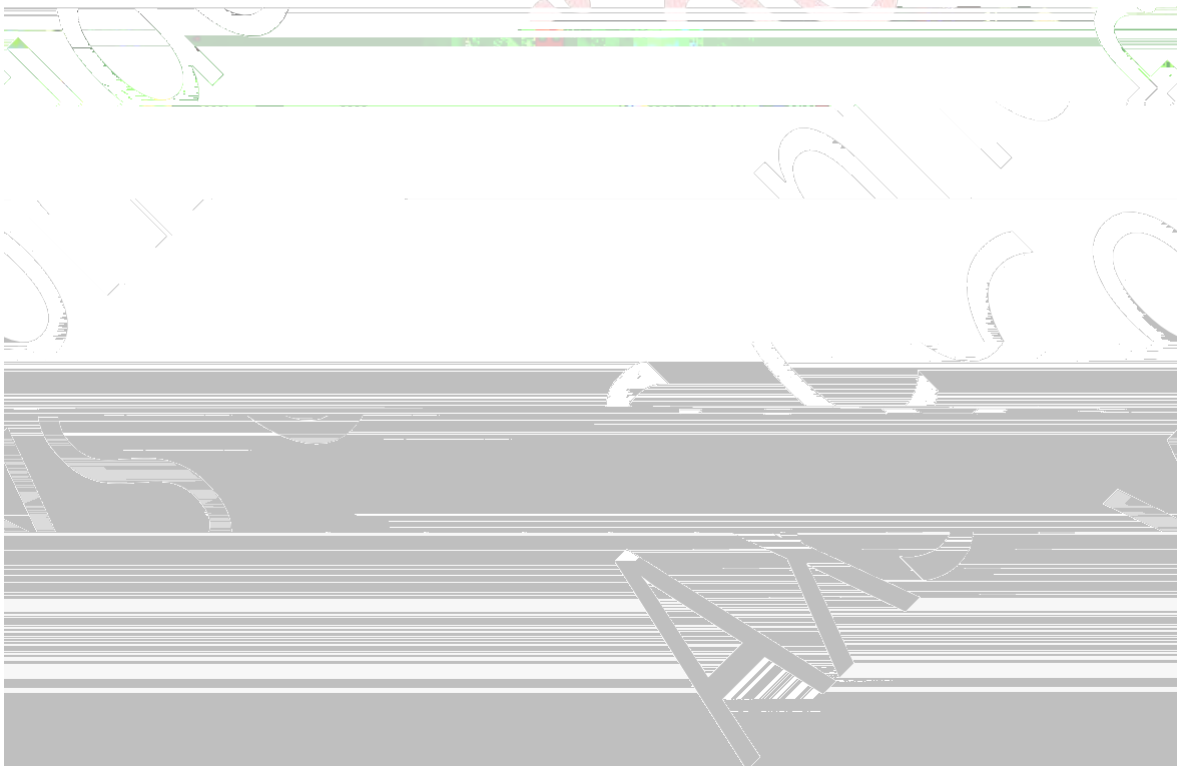
3. Recommended Operating Conditions

over operating free-air temperature range (unless otherwise noted)

|                |    |    |    |    |    |    |    |    |    |    | MIN | NOM | MAX | UNIT |
|----------------|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|------|
| V <sub>C</sub> | 5  | 12 |    |    |    |    |    |    |    |    | 5   |     | 12  | V    |
| V <sub>H</sub> | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |     |     |     |      |

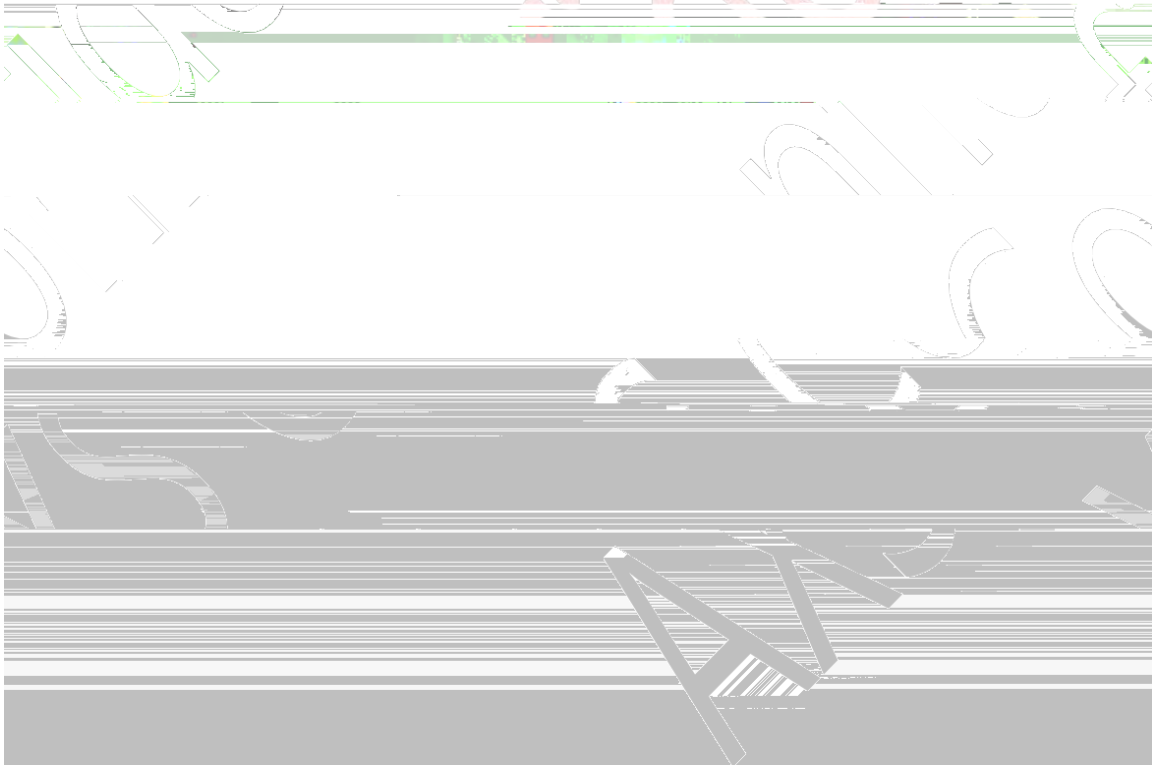
## 6. AC Electrical Characteristics

$T_A = 25^{\circ}\text{C}$ ,  $V_{CC} = P_{V_{CC}} = 12\text{ V to } 24\text{ V}$ ,  $R_L = 4\ \Omega$  (unless otherwise noted)



## 7. Typical Characteristics

$f_s = 400\text{kHz}$  (unless otherwise noted)

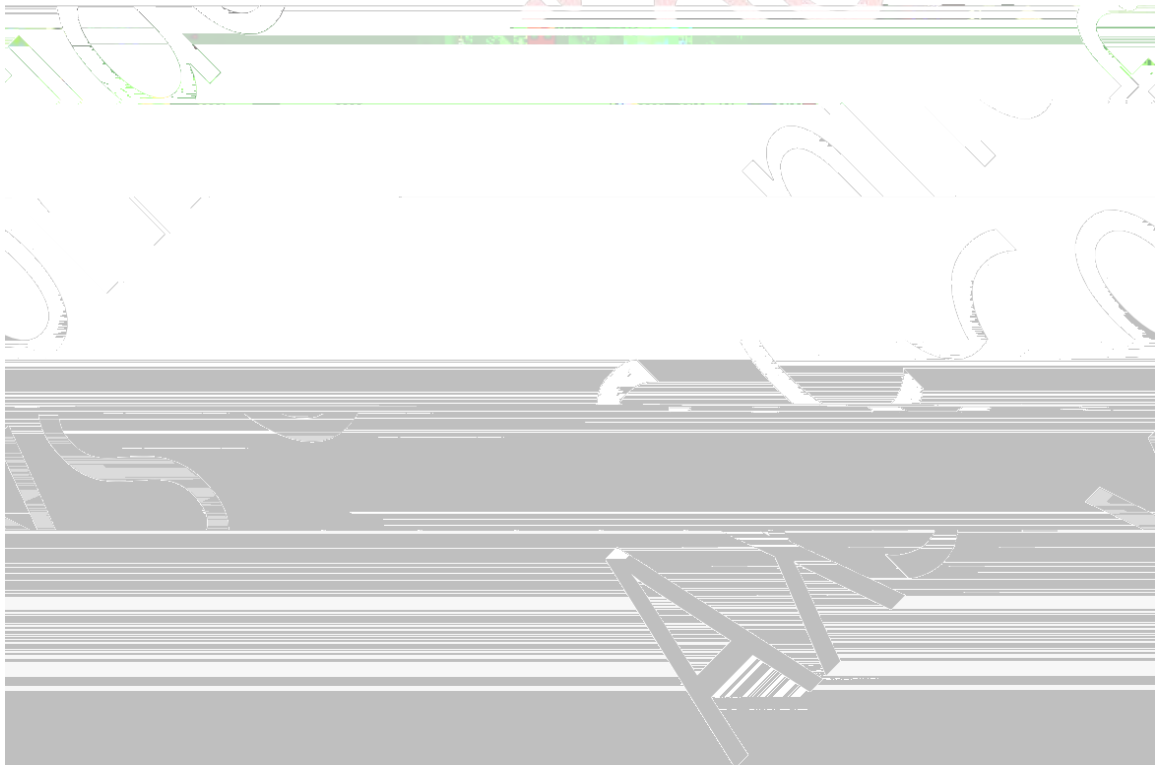






**Typical Characteristics (continued)**

$f_s = 400\text{kHz}$  (unless otherwise noted)





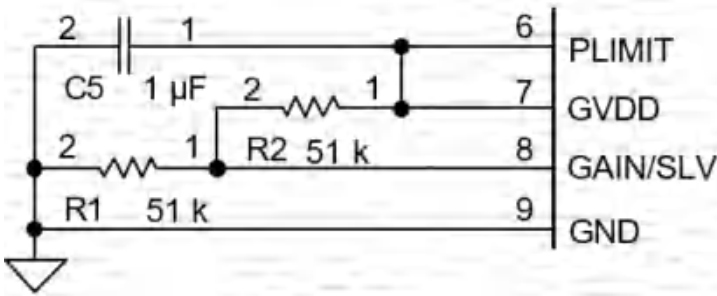
3. Feature Description

3.1 Gain Setting and Master and Slave

The AXS2050 is a 2x50W Class-D Audio Amplifier with AM Avoidance. It is designed to provide high power output and low distortion. The device is available in two versions: Master and Slave. The Master version has a gain of 20dB and an input impedance of 10kΩ. The Slave version has a gain of 0dB and an input impedance of 10kΩ. The gain can be set by connecting a resistor R1 to GND and a resistor R2 to GVDD. The input impedance can be set by connecting a resistor R3 to GND. The device is designed to be used in a push-pull configuration. The output power is 50W per channel. The total harmonic distortion (THD) is less than 0.1%. The device is designed to be used in a wide range of applications, including car audio, home audio, and industrial audio.

Table 1. Gain and Master/Slave

| MASTER / SLAVE<br>MODE | GAIN | R1 (to GND) <sup>(1)</sup> | R2 (to GVDD) <sup>(1)</sup> | INPUT IMPEDANCE |
|------------------------|------|----------------------------|-----------------------------|-----------------|
|------------------------|------|----------------------------|-----------------------------|-----------------|



# AXS2050

## 2x50W Class-D Audio Amplifier with AM Avoidance



AXS2050 is a 2x50W Class-D Audio Amplifier with AM Avoidance. It is designed for high-fidelity audio reproduction and is suitable for a wide range of applications.

AXS2050 is a 2x50W Class-D Audio Amplifier with AM Avoidance. It is designed for high-fidelity audio reproduction and is suitable for a wide range of applications.

Table2. Recommended Input AC-Coupling Capacitors

| GAIN | INPUT IMPEDANCE | INPUT CAPACITANCE | HIGH-PASS FILTER |
|------|-----------------|-------------------|------------------|
| 0 dB | 6 k             | 5 $\mu$ F         | 2 Hz             |
| 0 dB | 2 k             | 3 $\mu$ F         | 9 Hz             |
| 2 dB | 2 k             | 6 $\mu$ F         | 2 Hz             |
| 6 dB | 3 k             | 10 $\mu$ F        | 2 Hz             |

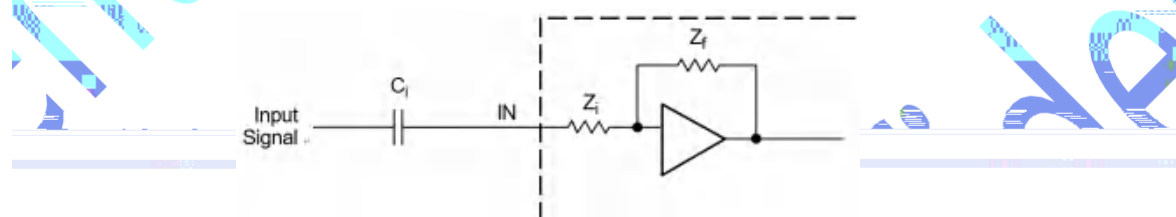


Figure 26. Input Impedance

AXS2050 is a 2x50W Class-D Audio Amplifier with AM Avoidance. It is designed for high-fidelity audio reproduction and is suitable for a wide range of applications.

### 3.3 Startup and Shutdown Operation

AXS2050 is a 2x50W Class-D Audio Amplifier with AM Avoidance. It is designed for high-fidelity audio reproduction and is suitable for a wide range of applications.

Figure 27. Power Limit Example

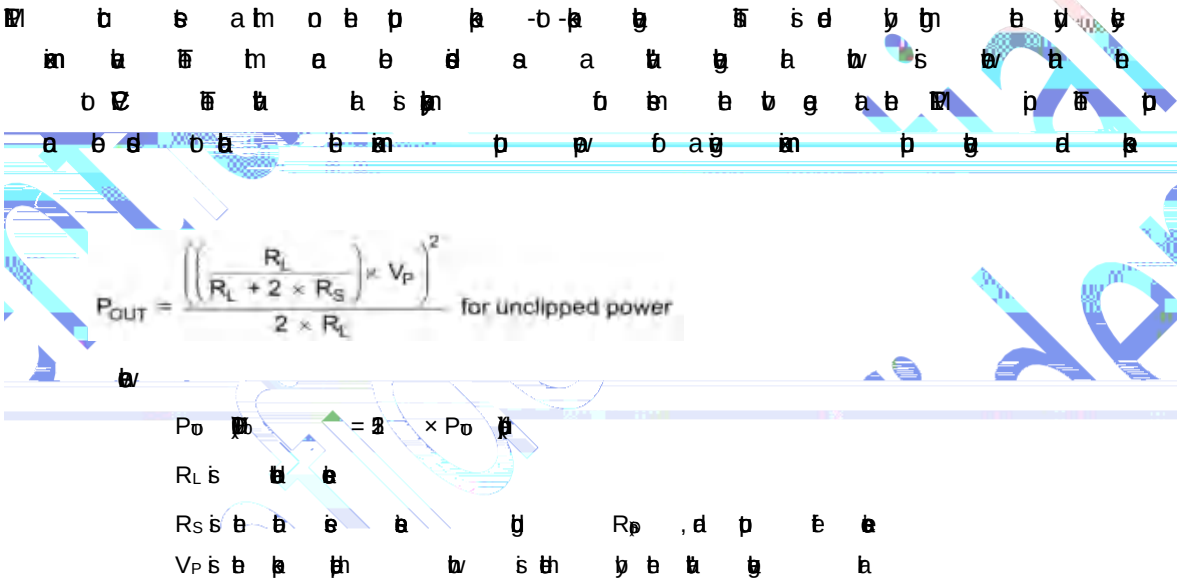


Table 3. Power Limit Example

| PV <sub>CC</sub> (V) | PLIMIT VOLTAGE (V) <sup>(1)</sup> | R to GND | R to GVDD |
|----------------------|-----------------------------------|----------|-----------|
|----------------------|-----------------------------------|----------|-----------|

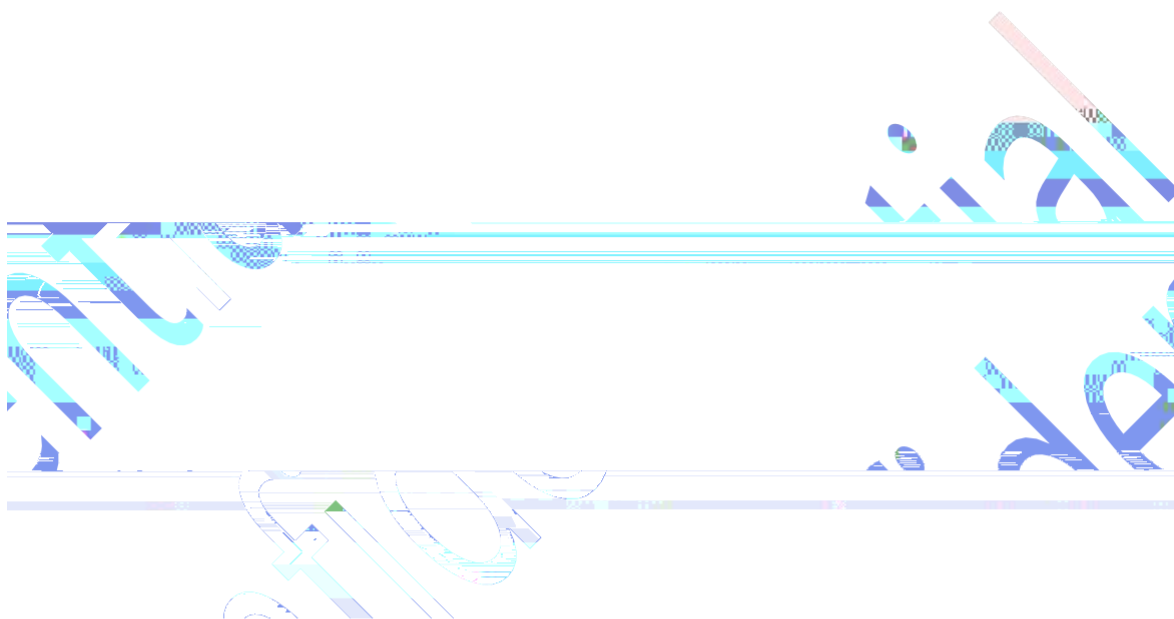
**AXS2050**

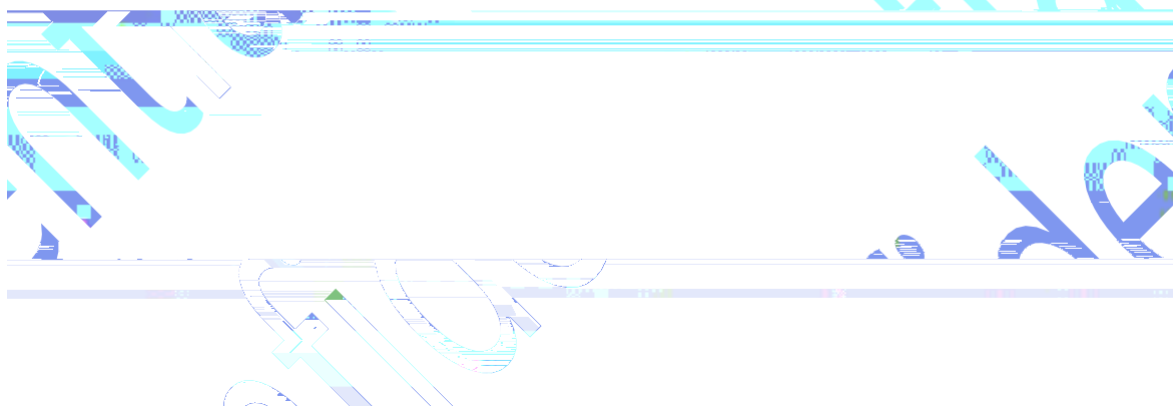
**2x50W Class-D Audio Amplifier with AM Avoidance**



### 3.9 DC Detect Protection

When the input signal is a DC signal, the amplifier will detect the DC signal and stop the output signal to protect the speaker. The output signal will be in a high-impedance state. When the input signal is an AC signal, the amplifier will output the signal normally.



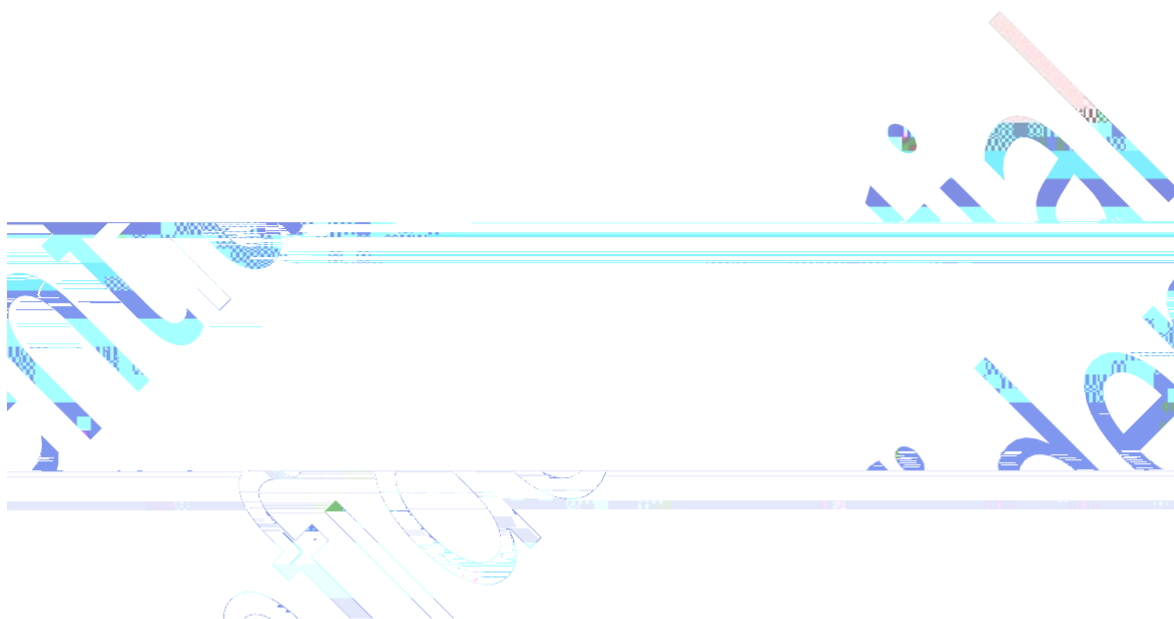
[illegible]

# AXS2050

## 2x50W Class-D Audio Amplifier with AM Avoidance



AXS2050 is a 2x50W Class-D Audio Amplifier with AM Avoidance. It is designed for high-fidelity audio reproduction and is suitable for a wide range of applications. The amplifier features a built-in AM Avoidance function to prevent distortion and ensure clear sound. It also includes a variety of protection features to ensure reliable operation. The AXS2050 is a versatile and powerful audio amplifier that meets the needs of many different markets.



7. When to Use an Output Filter for EMI Suppression

When using the AXS2050, it is recommended to use an output filter to suppress EMI. The filter should be placed between the amplifier output and the load. The filter should be designed to pass the audio signal and block the EMI. The filter should be designed to pass the audio signal and block the EMI. The filter should be designed to pass the audio signal and block the EMI.

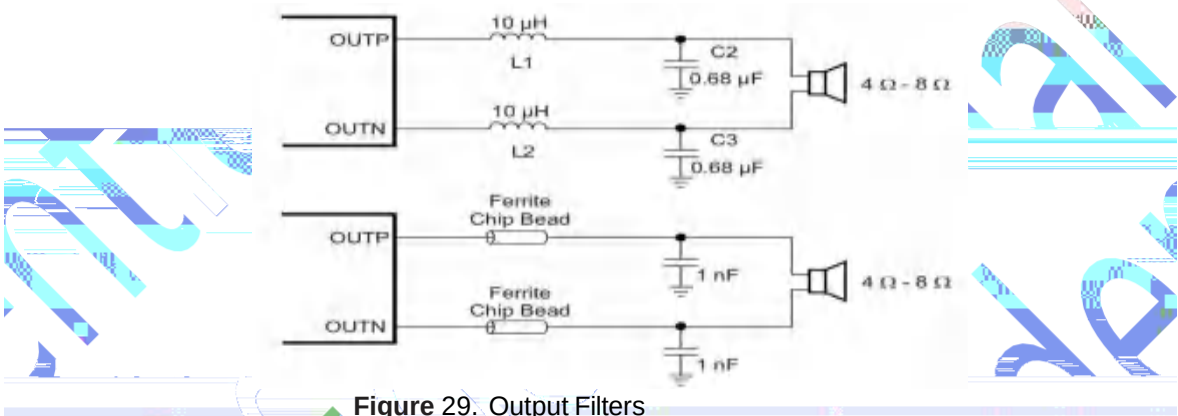


Figure 29. Output Filters

8. AM Avoidance EMI Reduction

Table 6. AM Frequencies

| US                 | EUROPEAN           | SWITCHING FREQUENCY (kHz) | AM2 | AM1 | AM0 |
|--------------------|--------------------|---------------------------|-----|-----|-----|
| AM FREQUENCY (kHz) | AM FREQUENCY (kHz) |                           |     |     |     |
| 6 - 12             | 6 - 12             | 6                         | 0   | 0   | 1   |
| 12 - 18            | 12 - 18            | 6, 9, 12                  | 0   | 1   | 0   |
| 18 - 24            | 18 - 24            | 6                         | 0   | 0   | 1   |
| 24 - 30            | 24 - 30            | 6, 9, 12                  | 0   | 1   | 0   |
| 30 - 40            | 30 - 40            | 6, 9, 12                  | 0   | 0   | 0   |
| 40 - 50            | 40 - 50            | 6, 9, 12                  | 0   | 1   | 0   |
|                    |                    |                           | 0   | 0   | 1   |

9. Device Functional Modes

The device can be configured for different functional modes. The device can be configured for different functional modes. The device can be configured for different functional modes.

h m B ch e e a e p b-W p w g p b m B  
ch a a by

6. The National Security Council is named  
 after the person who was the first  
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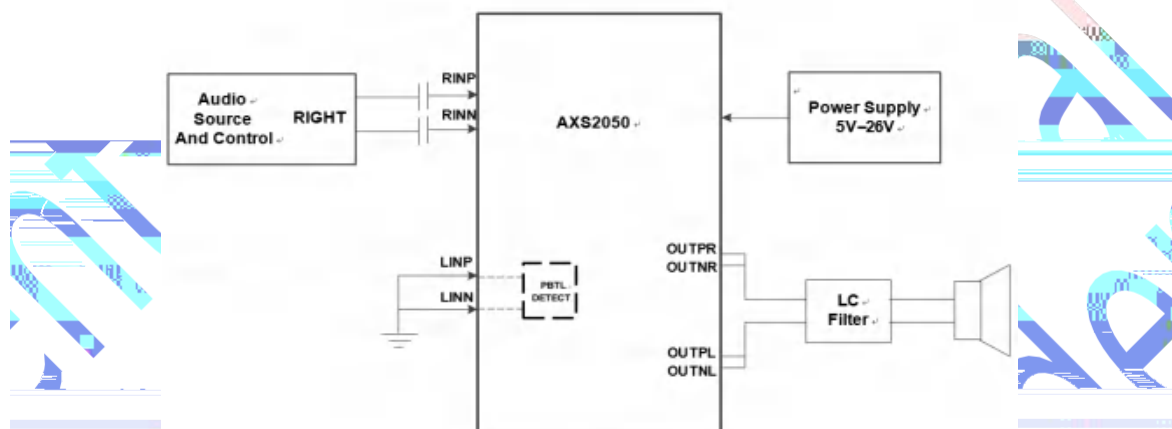


**Figure 30. Mono PBTL Mode**

### Mode (Single Channel Mode)

and a belief in the ability to help or harm others.

Application Information

1. Typical Application

The typical application circuit for the AXS2050 in a 2.1 Mode is shown in Figure 32. The circuit includes a power supply, a volume control potentiometer, and two output channels connected to a speaker and a subwoofer.

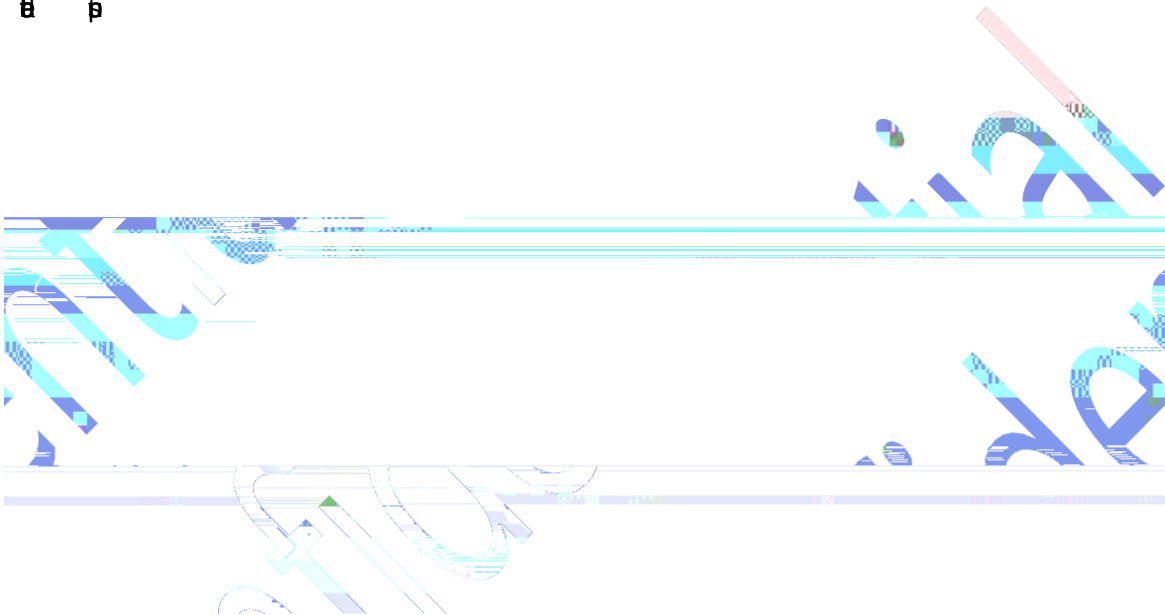


Figure 32. AXS2050 in a 2.1 Mode Application

2. Design Requirements

| DESIGN PARAMETERS | EXAMPLE VALUE |
|-------------------|---------------|
| V <sub>DD</sub>   | 5 V           |
| I <sub>DD</sub>   | 0.0           |

### 3. Detailed Design Procedure

The detailed design procedure for the AXS2050 is as follows:

1. Select the PWM Frequency
2. Select the Amplifier Gain and Master/Slave Mode
3. Select Input Capacitance
4. Select Decoupling Capacitors
5. Select Bootstrap Capacitors

#### 3.1 Select the PWM Frequency

The PWM frequency is selected based on the following factors:

#### 3.2 Select the Amplifier Gain and Master/Slave Mode

The amplifier gain and Master/Slave mode are selected based on the following factors:

#### 3.3 Select Input Capacitance

The input capacitance is selected based on the following factors:

#### 3.4 Select Decoupling Capacitors

The decoupling capacitors are selected based on the following factors:

#### 3.5 Select Bootstrap Capacitors

The bootstrap capacitors are selected based on the following factors:



**AXS2050**

**2x50W Class-D Audio Amplifier with AM Avoidance**

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6. Heat Sink Used on the EVM

AXS2050 2x50W Class-D Audio Amplifier with AM Avoidance

