



Infineon 5KW Class D Audio Amplifier Reference Design Uses CODACA High Performance Power Inductor

Infineon is leading amplifier technology innovation in terms of power efficiency to enable optimized audio systems for performance, size and cost through its advanced semiconductors. CODACA has focused on power inductor technology and manufacturing for over 22 years. We serve global tier-one semiconductor companies' reference designs like Infineon through our innovative high performance power inductors.

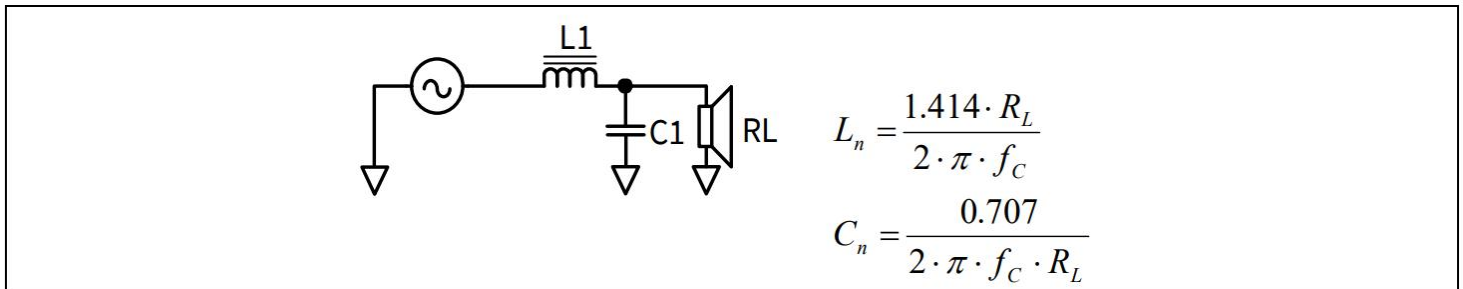
Select effective power inductors for Infineon 5KW Class D audio amplifier reference design is very critical to enable efficient operation of Infineon 5KW audio Class D amplifier during the output low pass filter (LPF) to transfer of the amplified audio signal and to ensure audio performance. CODACA 8μH inductor CPD3122SA-8R2M has satisfied needs for high performance power inductor of this reference design and has been selected for Infineon IC reference design IRS2461S 2.5kW x 2 channel Class D audio amplifier.

Figure 1 explains how to calculate the component values for a load impedance. A corner frequency of 40 kHz would be a good trade off point between 20 kHz bandwidth, inductor ripple current, and inductance in other words the size of the inductor and the PWM carrier leak amplitude in the output. Concerning the higher the corner frequency the higher the switching carrier leakage, and the lower the corner frequency the bigger the inductor size, the inductance of the inductor changes with load current bias, causing distortion in audio output. Core saturation increases the inductor ripple significantly which could trigger the over current protection immediately.

This is a challenge for REF_IRS2461S_5KW design. Infineon engineers need high current power inductors with higher saturation points than the peak load current to eliminate the distortion in audio output and to enable. CODACA CPD3122SA-8R2M inductors perfectly satisfy above requirements. Meanwhile, CODACA CPD3122SA-8R2M inductors have small size, low Rdc and the best electronic performance of SAT (>52A) and IRMS (>36A) ratings. So CODACA CPD3122SA-8R2M power inductors were selected to use at Infineon reference design of IRS2461S_5KW Class D audio amplifier.

Figure 1: Output LPF design for a Low pass filter selection:

Source: [Microsoft Word - REF_IRS2461S_5kW_UserManual_v1.1 \(infineon.com\)](#)



CODACA [CPD3122SA-8R2M](#) major features:

- High saturation up to 72A
- Oxygen-free copper flat wire, high-speed signal transmission ability
- Ultra-low Rdc and low power loss
- Closed magnetic circuit minimized buzz noise

CODACA [CPD3122SA-8R2M](#) Applications:

- After-market car audio applications
- High power audio systems

Operating temperature:

-55°C ~ +150°C (including coil heating).

Environment requirement:

CODACA [CPD3122SA-8R2M](#) series high current power inductors feature RoHs/REACH compliant and halogen-free.

Production status

CODACA fixed inductors of CPD3122SA-8R2M series have been in mass production with only 12 weeks' lead time.

Samples and online design tools

Samples of this product are available to purchase at [www.digikey.com /xxxx](http://www.digikey.com/xxxx). We have [online design tools](#) to help you quickly select suitable power inductors for your product innovation. Please contact us today or visit our website: www.codaca.com for more information.