

Zetex ZXCD Class D Solution

Specification for output inductors to match Zetex 25W to 50W reference design as represented in the attached circuit diagram. These inductors may be used in either mono or stereo solutions.

The following guidelines enable users of the Zetex 25W to 50W class D solution to source inductors from their chosen suppliers:

1. Inductance

The intrinsic inductance should be 20 μ H at zero current

2. Tolerance

The inductor should have an initial zero current tolerance of $\pm 1\mu$ H

3. Variation with current

The inductor value should vary by no more than 1% over the full peak current range in the application. Further improvement can be made if a tighter tolerance can be achieved, e.g. 0.5%.

- a) 50W solution requires a maximum drop of 0.2 μ H over the 0 to 5A range based on a 1% tolerance
- b) 25W solution requires a maximum change of 0.2 μ H over the 0 to 3.5A range based on a 1% tolerance

4. Series resistance

Should be a minimised. For solutions only dealing with music power a target maximum is 100m Ω . There is some latitude here, a range of 50m Ω to 100m Ω is recommended

5. Core losses

Should be minimised. At 200kHz typical switching frequency there should be a maximum temperature rise of 15°C resulting from core losses. This should be with no audio input.

6. EMI

Radiated fields need to be contained within the magnetic structure in order to meet UL, VDE and CSE standards for radiation. For example toroidal cores will be significantly better than drum cores.

7. Audio resonance

Audio resonance is an area of concern with inductors in class D applications. Any possible problems can be taken account of with appropriate coatings on the magnetic core and coil windings. Your chosen supplier will advise further on issues in this area.

It should be noted that these inductors will be used in class D audio solutions. Requirements in these applications can be different to conventional DC-DC applications. Care must be taken to ensure that inductor performance is matched to these audio applications. Your chosen inductor supplier will be able to advise on any specific inductor features required.

Recommendations of suitable suppliers of inductors are available through your local Zetex office.

