

**PARADIGM Technologies (UK) Ltd**

*Electronic Kits and Modules*

Total Solder Joints: 70

Difficulty Level : *beginner* ■■■ *expert*

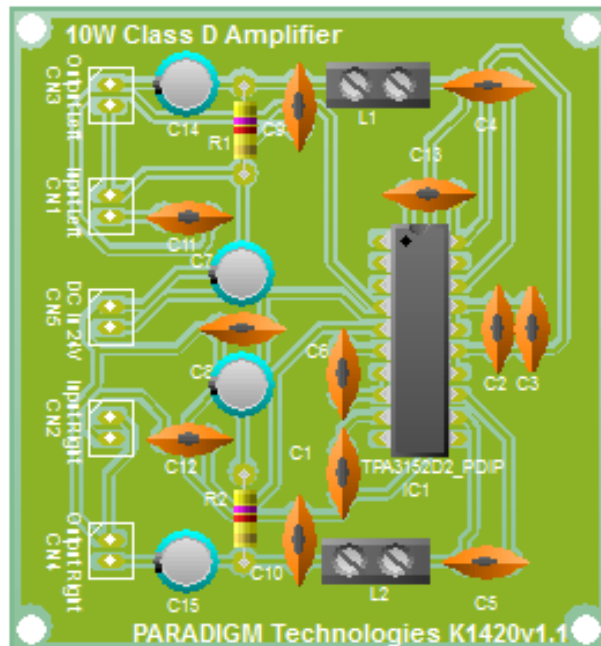
## 10W Class D Ultra Stereo Amplifier Kit

### K1421

High power / quality audio amplifier

### Specifications

- High power output – up to 10Wrms/channel into 8ohm
- Advanced Power-Off Pop Reduction
- Power Supply – 10V – 26V / 250mA
- Thermal and Short-Circuit Protection with Auto Recovery
- Dimensions – 68.6mm x 73.7mm ( 2.7" x 2.9" )



## Features and Specifications

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### Features

The kit uses a TPA3125D2 stereo audio power amplifier that is capable of delivering up to 10W per channel of continuous average power into a 8- $\Omega$  load at 10% THD+N or 8W per channel at 1% THD+N. The gain of each channel is fixed at 20dB. This kit uses the 20-pin thermally enhanced DIP package (NE).

The kit utilises a high quality PCB made from 1.6mm thick FR4 fibreglass along with specially selected components from highly regarded manufacturers such as Panasonic and Rohm.

Paradigm Technologies have designed a fully symmetrical PCB around the TPA3125D2 chipset to ensure that maximum performance is obtained. Fully symmetrical PCBs are usually only found in high end audio amplifier designs!! They are used to ensure that left and right channels have identical performance characteristics. This gives a rock solid stereo soundstage, through improved phase coherence compared to a standard layout PCB.

**Ultra Kit** - This kit upgrades the standard kit with higher quality passive components and also includes polypropylene bypass capacitors. Higher quality electrolytic capacitors, low temperature coefficient metal film resistors, alongside the high quality bypass capacitors, enables this kit to deliver greater performance and much improved sound quality over the standard kit.

### Specifications

- High power output – 10Wrms/channel into 8ohm
- Efficient Class-D Operation Eliminates Need for Heat Sinks
- Crosstalk = -70dB ( $P_o = 1W$ ,  $f = 1\text{ kHz}$ , gain = 20 dB)
- Power Supply – 10V – 26V / 250mA
- Thermal and Short-Circuit Protection with Auto Recovery
- Dimensions – 68.6mm x 73.7mm ( 2.7" x 2.9" )

## Assembly Hints and Tips

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**Assembly - Please read the following hints and tips carefully. They will help you to build this project successfully.**

### Tools Required

- A good quality soldering iron (25-40W) with a small tip
- During soldering, wipe the soldering iron tip often on a wet sponge/cloth, to keep the tip clean. Then apply solder to the tip, to give it a wet look. This is called “tinning” and will protect the tip and enables you to make good soldered connections. When solder rolls off the tip, it needs cleaning.
- Use thin resin-cored solder. Do **NOT** use any flux or grease.
- Diagonal cutters to trim excess leads. To avoid injury when cutting excess leads, hold the lead away from you when you cut to prevent the cut parts from flying towards your eyes.
- Needle nose pliers, for bending leads or to hold components in place.
- Small flat head and Philips head screwdrivers. A basic range is fine.
- A basic multi-meter will be required for some projects and could prove useful for identifying/measuring some components.

### Assembly Hints

- Ensure skill level required for this kit matches your own ability
- Follow the instructions carefully. Read and understand the entire step before you perform each operation.
- Perform the assembly in the correct order as stated in this manual.
- Position all parts on the PCB (Printed Circuit Board) as shown on the drawings
- Values on the circuit diagram are subject to change
- Values in this assembly guide are correct\*
- Use the check boxes to mark your progress
- Please read the included information on safety and customer service

\*Typographical inaccuracies excluded. Always check for possible last minute manual updates, indicated as (Note) on a separate leaflet

## Assembly Hints and Tips

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### Soldering Hints

- Mount the component against the PCB surface and carefully solder the leads.
- Make sure the solder joints are cone shaped and shiny.
- Trim excess leads as close as possible to the solder joint.

**Follow the order of build and check component values before fitting – consult resistor / capacitor charts if unsure of component value!**

## Construction

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**PCB = K1420v1.1**

**Inductors**

**L1, L2 = 22 $\mu$ H**

**Resistors**

**R1, R2 = 4.7k $\Omega$**

**IC1 = TPA3125D2**

**Capacitors**

**C2, C13, C16 = 0.1 $\mu$ F Polypropylene**

**C4, C5 = 0.22 $\mu$ F Electrolytic**

**C9, C10 = 0.68 $\mu$ F Electrolytic**

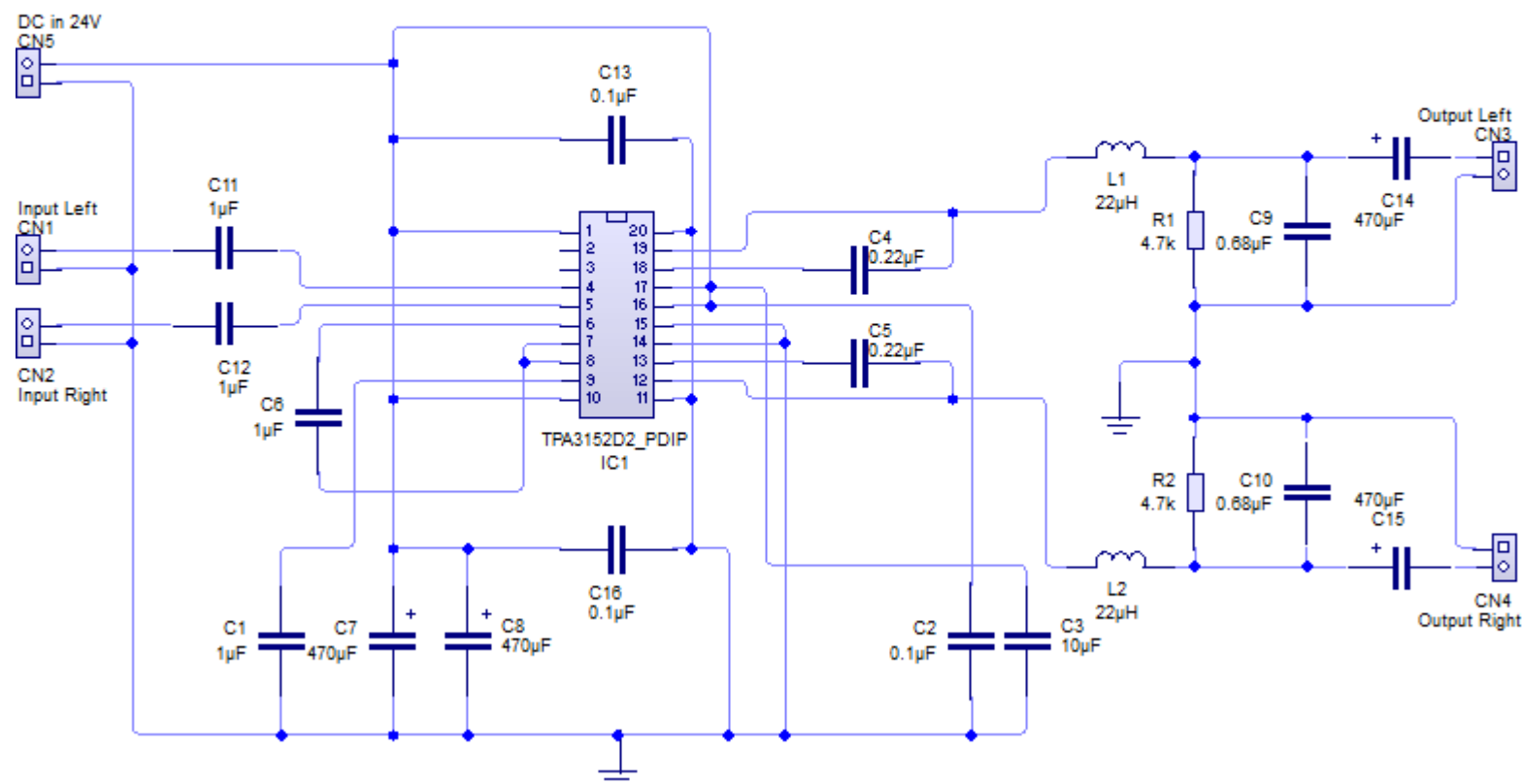
**C1, C6, C11, C12 = 1 $\mu$ F Electrolytic**

**C3 = 10 $\mu$ F Electrolytic**

**C7, C8, C14, C15 = 470 $\mu$ F Electrolytic**

## Circuit Diagram

Paradigm Technologies Kit  
10W Class D Ultra Stereo Amplifier



## Wiring Diagram

