

## General Description

The EV0045 is a stereo evaluation board featuring MPS' MP7731 Class D Full Bridge Audio Amplifier. The EV0045 can deliver 25W into a 4Ω load with a 14.5V input supply.

The MP7731 is a mono 30W Class D Audio Amplifier. It is one of MPS' second generation of fully integrated audio amplifiers which dramatically reduces solution size by integrating the following:

- **180mΩ power MOSFETs**
- **Start up / shut down pop elimination**
- **Short circuit protection circuits**
- **Mute / Standby Mode**

The MP7731 utilizes a full bridge output structure capable of delivering 30W into 4Ω speakers. As in all other MPS Class D Audio Amplifiers, this device exhibits the high fidelity of a Class A/B amplifier at efficiencies greater than 90%.

## Ordering Information

Board Number	MPS IC Number
EV0045	MP7731DF

**Figure 1: EV0045 Evaluation Board**



Actual Size Shown (2.5"X x 1.5"Y x 0.2"Z)

## Absolute Maximum Ratings

Supply Voltage $V_{IN}$	18V
Enable Voltage	-0.3 to 6V
$V_{SW}$ , $V_{PIN}$ , $V_{NIN}$	-1V to $V_{IN} + 1V$

## Recommended Operating Conditions

Input Voltage $V_{IN}$	7.5V to 14.5V
------------------------	---------------

## Features

- 25W into 4Ω with 14.5V Input
- 90% Efficiency at 5W
- 7.5V to 14.5V input voltage operation
- Full Bridge output drive
- Integrated 180mΩ switches
- Turn On / Turn Off Click and Pop Suppression
- Integrated Short Circuit Protection
- Integrated Thermal shutdown
- Mute / Standby Mode

## Applications

- Notebook and Multimedia Computers
- Television, Home Stereo
- DVD and VCD players

Figure 2: EV0045 Stereo Full Bridge Schematic

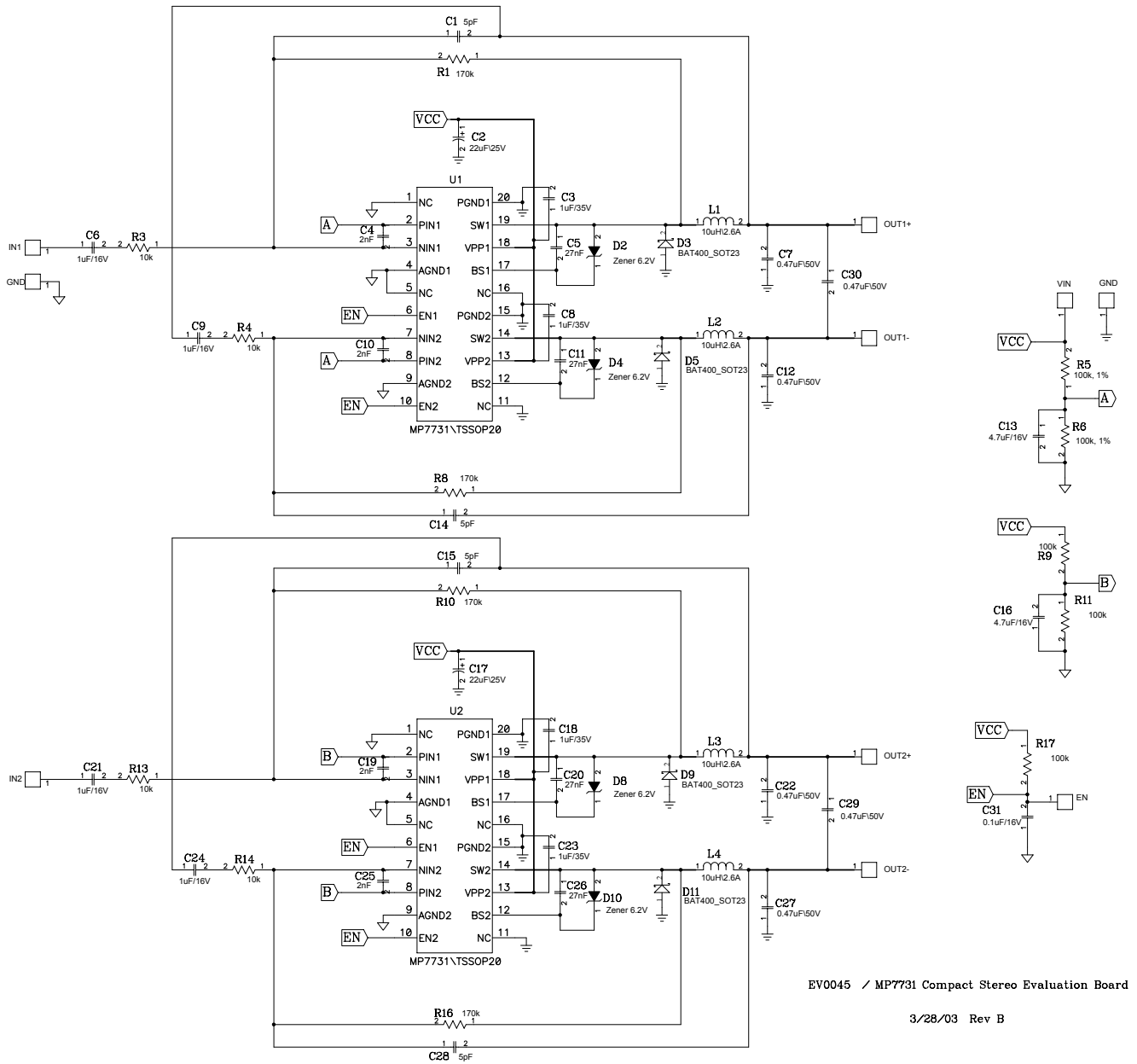
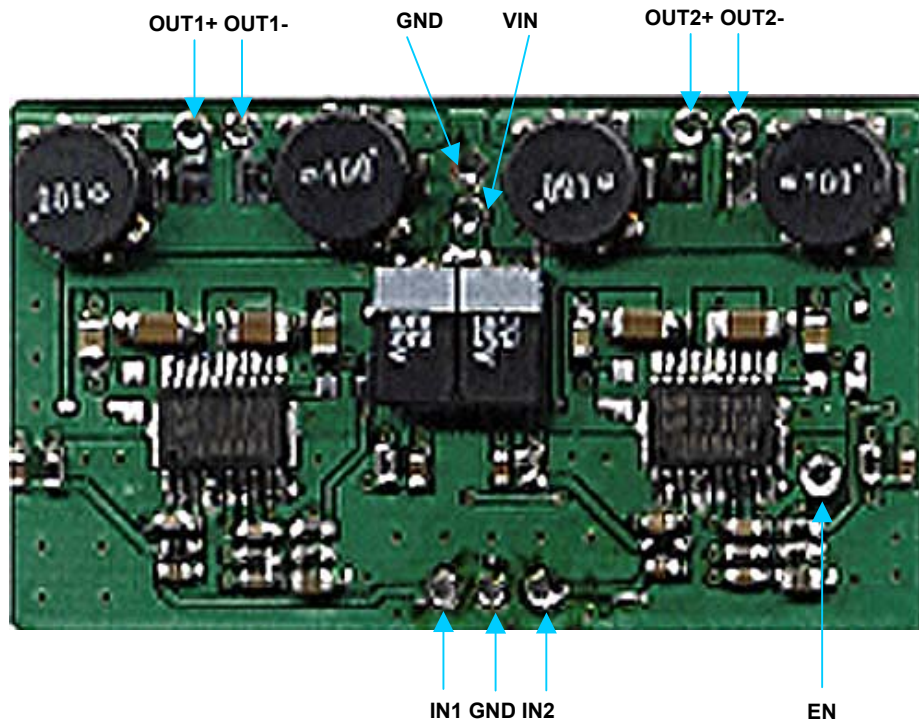


Table 1: EV0045 Stereo Full Bridge Bill of Materials

Component	Description	Package	Qty
U1, U2	MP7731DF	TSSOP20	2
D3, D5, D9, D11	BAT400	SOT23	4
C6, C9, C21, C24	1 $\mu$ F, 16V	0603	4
C4, C10, C19, C25	2nF	0603	4
C1, C14, C15, C28	5pF	0603	4
C31	0.1 $\mu$ F	0603	1
C13, C16	4.7 $\mu$ F, 16V	0805	2
C5, C11, C20, C26	27nF	0805	4
C3, C8, C18, C23	1 $\mu$ F, 35V	1206	4
C7, C12, C22, C27, C29, C30	0.47 $\mu$ F, 50V, Meta	1210	6
L1, L2, L3, L4	10 $\mu$ H, 2.6A, Toko 8RDY	D300\P200	4
R3, R4, R13, R14	10K $\Omega$	0603	4
R5, R6, R9, R11, R17	100K $\Omega$	0603	5
R1, R8, R10, R16	170K $\Omega$	0603	4
C2, C17	22 $\mu$ F, 25V, Tantalum	7343	2
D2, D4, D8, D10	Zener	SOD323	4
		<b>Total</b>	<b>58</b>

### Evaluation Board Operation



#### Power Requirements

1. Power supply: 18V
2. 0 -1V<sub>RMS</sub> (max) audio signal source, ≤ 600Ω
3. Speaker: 4Ω or 8Ω:

#### Setup Condition for 12V Operation

1. Connect speaker outputs to OUT1+, OUT-, OUT2+, OUT2- respectively.
2. Connect the audio inputs to IN1, GND, IN2 respectively.
3. Adjust the power supply to  $7.5V \leq V_{IN} \leq 14.5V$ , (do not turn on)
4. Connect the power supply to the VIN, GND terminals
5. Connect a logic signal to the EN pin (do not turn on)
6. Apply power to the board
7. Apply a voltage >2V to the EN pin to enable the MP7731.
8. Audio should be heard from the speaker(s)
9. Disconnect the supply to the EN pin to disable the MP7731.

Figure 3: Top Silkscreen Layer

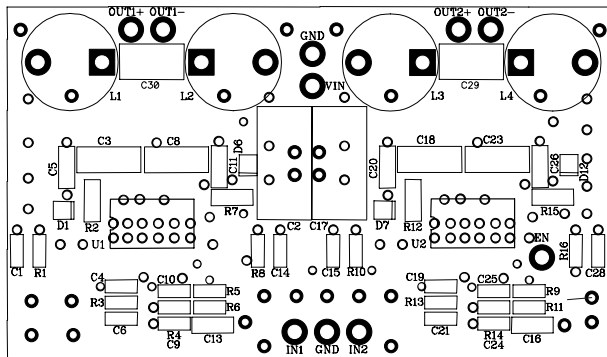


Figure 4: Top Layer

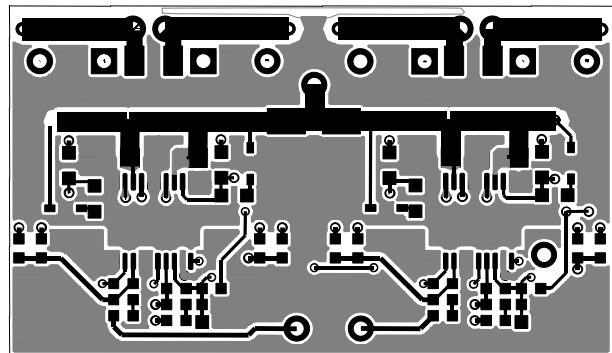


Figure 5: Bottom Layer

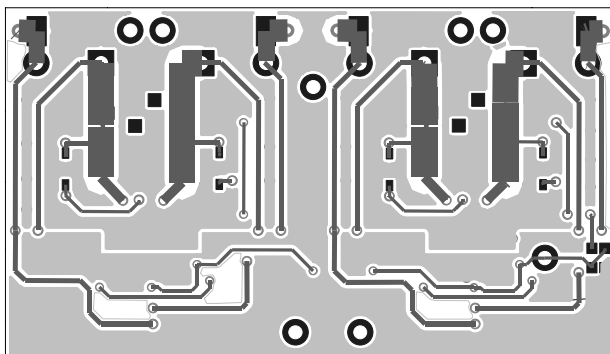
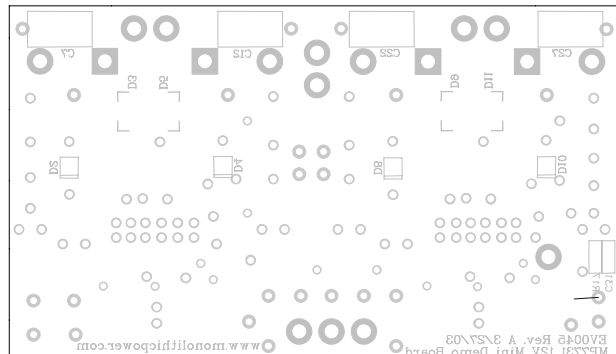


Figure 6: Bottom Silkscreen Layer



**NOTICE:** MPS believes the information in this document to be accurate and reliable. However, it is subject to change without notice. Please contact the factory for current specifications. No responsibility is assumed by MPS for its use or fit to any application, nor for infringement of patent or other rights of third parties.