EV7741-Q-01A

2 x 10W, Stereo, Single-Ended, Class-D Audio Amplifier Evaluation Board

DESCRIPTION

The EV7741-Q-01A evaluation board is designed to demonstrate the capabilities of the MP7741, a 10W mono Class-D audio amplifier. It is a fully integrated audio amplifier that can dramatically reduce solution size by integrating 250mΩ power MOSFETs, start-up/shutdown pop elimination, and short-circuit protection (SCP) circuits.

The MP7741 utilizes a single-ended output structure capable of delivering 10W into 8Ω speakers.

MPS's Class-D audio amplifiers exhibit the high fidelity of a Class-A/B amplifiers at high efficiencies. The circuit is based on MPS's proprietary variable-frequency topology, which delivers excellent linearity, fast response time, and operates from a single power supply.

The MP7741 is available in a QFN-10 (3mmx3mm) package.

PERFORMANCE SUMMARY (1)

Specifications are at T_A = 25°C, unless otherwise noted.

Parameters	Conditions	Value
Input voltage (V_{DD}) range		9.5V to 36V

EVALUATION BOARD

LxWxH (9cmx6.3cmx4cm)

Board Number	MPS IC Number
EV7741-Q-01A	MP7741DQ

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QUICK START GUIDE

The EV7741-Q-01A evaluation board is configured at the factory for 24V operation. To use the EV7741-Q-01A with a 36V (12V) power supply, adjust the components as specified in steps 3 and/or 4 below. Refer to the MP7741 datasheet for more details. For proper measurement equipment set-up, refer to Figure 1 on page 3 and follow the steps below:

1. Set the power supply to be between 9.5V to 36V, with a 3A maximum.
2. Set the audio signal source to be between $0V_{RMS}$ and $1.5V_{RMS}$ (max).
3. Set the speaker to 8Ω (typical).
4. For 24V operation, follow the steps below:
    a. Adjust the power supply to 24V, keeping the power supply turned off.
    b. Connect the outputs to the external speakers.
    c. Connect the power supply to the VDD terminals.
    d. Pull the SW1 pin to the down position.
    e. Connect the audio input signal source to the amplifier inputs (CN2 and CN3).
    f. After making the connections, turn on the power supply.
5. For 36V operation, follow the steps below:
    a. Set C6 to 8.2nF, and C7 to 6.8nF.
    b. Set R7 and R11 to 64.9kΩ to set the VDD shutdown voltage (V_{DD_SHDN}) to 30V.
    c. Adjust the power supply to 36V, keeping the power supply turned off.
    d. Follow steps 4b through 4f.
6. For 12V operation, follow the steps below:
    a. Set C6 to 3.3nF, and C7 to 2.2nF.
    b. Set R7 and R11 to 15kΩ to set V_{DD_SHDN} to 10V.
    c. Remove R18 to ensure that the enable (EN) signal is high enough when the VDD voltage (V_{DD}) is 12V.
    d. Adjust the power supply to 12V, keeping the power supply turned off.
    e. Follow steps 4b through 4f.
7. For the music turn-on sequence, pull the SW1 pin to the up position.
8. For the music turn-off sequence, pull the SW1 pin to the down position, then turn off the power supply.

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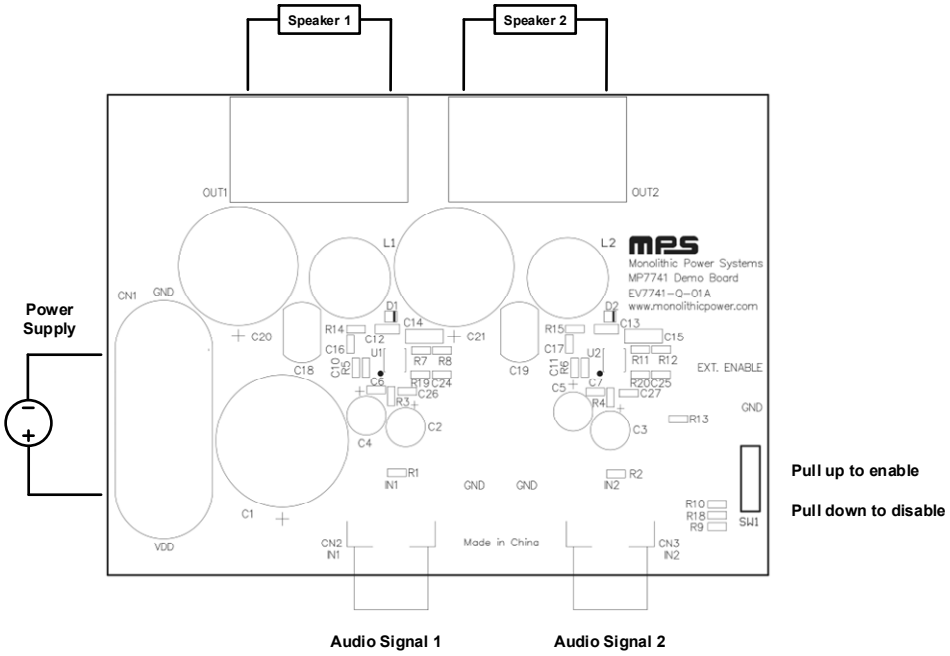

Figure 1: Measurement Equipment Set-Up

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EVALUATION BOARD SCHEMATIC

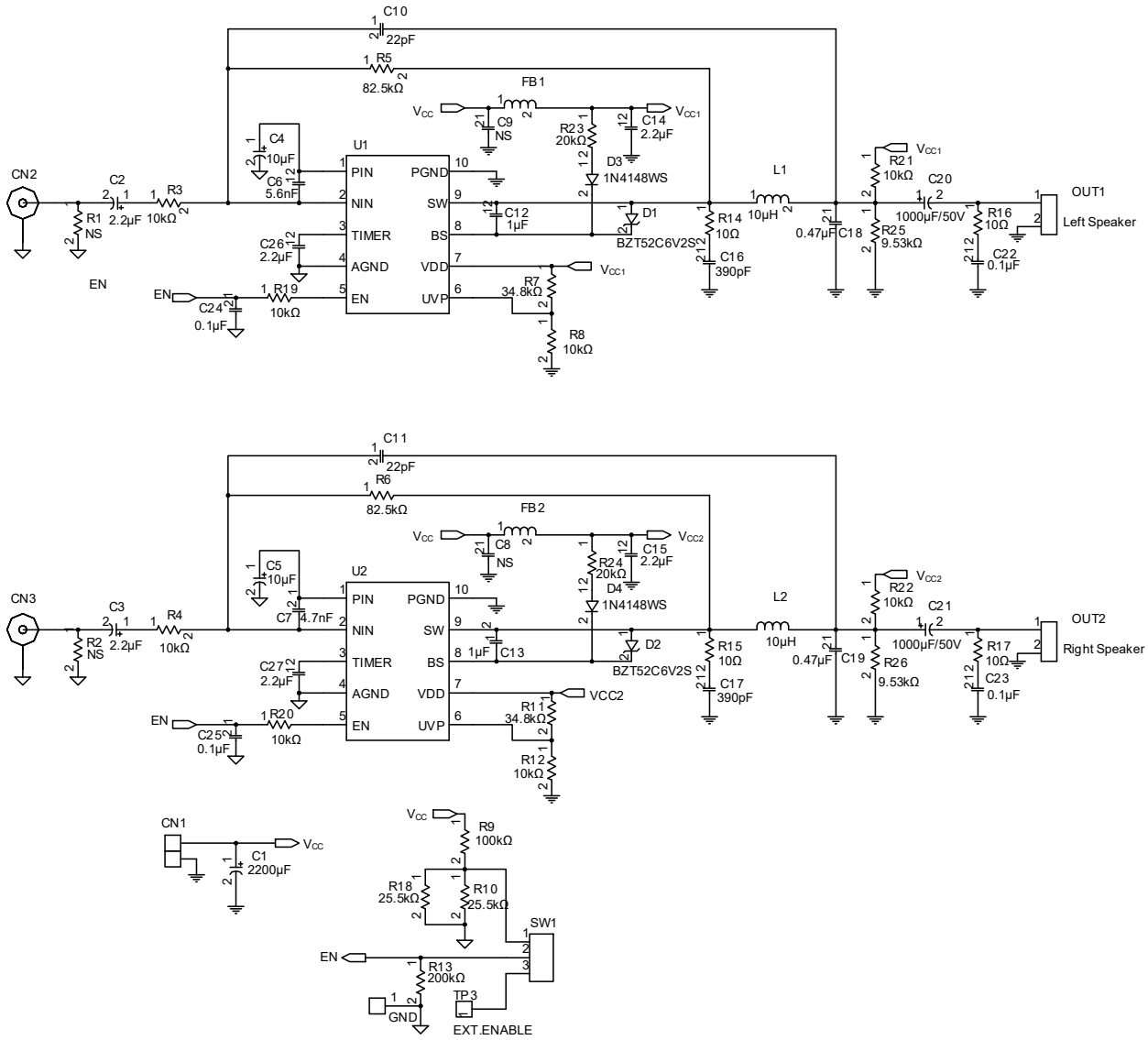

Figure 2: Evaluation Board Schematic

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EV7741-Q-01A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer PN
1	C1	2200μF	Electrolytic capacitor, 50V, 18mmx36mm, 7.5mm foot pitch	DIP	Jianghai	CD28L-50V2200
2	C2, C3	2.2μF	Electrolytic capacitor, 50V, 5mmx11mm, 2mm foot pitch	DIP	Rubycon	50YXF2R2MEFC5X11
2	C4, C5	10μF	Electrolytic capacitor, 50V, 5mmx11.5mm, 2.5mm foot pitch	DIP	Jianghai	CD287-50V10
1	C6	5.6nF	Ceramic capacitor, 50V, X7R	0603	Murata	GRM188R71H562KA01D
1	C7	4.7nF	Ceramic capacitor, 50V, X7R	0603	TDK	C1608X7R1H472KT000N
2	C8, C9	NS				
2	C10, C11	22pF	Ceramic capacitor, 50V, C0G	0603	Murata	GRM1885C1H220JA01D
2	C12, C13	1μF	Ceramic capacitor, 16V, X7R	0805	Murata	GCM21BR71C105KA58L
2	C14, C15	2.2μF	Ceramic capacitor, 50V, X7R	1206	Murata	GCM31CR71H225KA55L
2	C16, C17	390pF	Ceramic capacitor, 50V, C0G	0603	Murata	GRM1885C1H391JA01D
2	C18, C19	0.47μF	CBB capacitor, 50V, 5mm foot pitch	DIP	Panasonic	ECQV1H474JL(50V)
2	C20, C21	1000μF	Electrolytic capacitor, 50V, 16mmx31.5mm, 7.5mm foot pitch	DIP	Rubycon	CD287-50V1000
2	C22, C23	0.1μF	Ceramic capacitor, 50V, X7R	0603	Wurth	885012206095
2	C24, C25	0.1μF	Ceramic capacitor, 16V, X7R	0603	Murata	GRM188R71C104KA01D
2	C26, C27	2.2μF	Ceramic Capacitor, 10V, X7R	0603	Murata	GRM188R71A225KE15
2	R1, R2	NS				
8	R3, R4, R8, R12, R19, R20, R21, R22	10kΩ	Film resistor, 1%	0603	RoyalOhm	RC0603FR-0710KL
2	R5, R6	82.5kΩ	Film resistor, 1%	0603	Yageo	RC0603FR-0782K5L
2	R7, R11	34.8kΩ	Film resistor, 1%	0603	Yageo	RC0603FR-0734K8L
1	R9	100kΩ	Film resistor, 1%	0603	RoyalOhm	RC0603FR-07100KL
2	R10, R18	25.5kΩ	Film resistor, 1%	0603	Yageo	RC0603FR-0725K5L
1	R13	200kΩ	Film resistor, 1%	0603	Yageo	RC0603JR-07200KL
2	R14, R15	10Ω	Film resistor, 1%	0603	Yageo	RC0603FR-0710RL
2	R16, R17	10Ω	Film resistor, 1%	1206	Yageo	RC1206FR-0710RL
2	R23, R24	20kΩ	Film resistor, 1%	0603	Yageo	RC0603FR-0720KL
2	R25, R26	9.53kΩ	Film resistor, 1%	0603	Yageo	RC0603FR-079K53L

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EV7741-Q-01A BILL OF MATERIALS *(continued)*

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer PN
2	D1, D2	6.2V	Zener diode, 5mA/200mW	SOD-323	Diodes, Inc.	BZT52C6V2S-7-F
2	D3, D4	75V	Diode, 0.15A	SOD-323	Diodes, Inc.	1N4148WS-7-F
2	FB1, FB2	6A	Magnetic bead, 6A	1206	Lion	PB321611-320
2	L1, L2	10μH	Inductor, 24mΩ, 5A	DIP	Wurth	7447471100
1	SW1	10mm	Button	DIP	Wurth	450301014042
4	EXT.ENABLE, GND, GND, GND	1mm	Connector, 1.0mm needle	DIP	Any	
2	CN2, CN3	12mm	Connector, RCA jack, R/A	DIP	Any	
2	OUT1, OUT2	25mm	Connector, two terminal posts (left)	DIP	Any	
1	VDD	11mm	Female banana connector, red	DIP	Any	
1	GND	11mm	Female banana connector, black	DIP	Any	
2	U1, U2	MP7741	2 x 10W, stereo, single-ended, Class-D audio amplifier	QFN-10 (3mmx 3mm)	MPS	MP7741DQ

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PCB LAYOUT

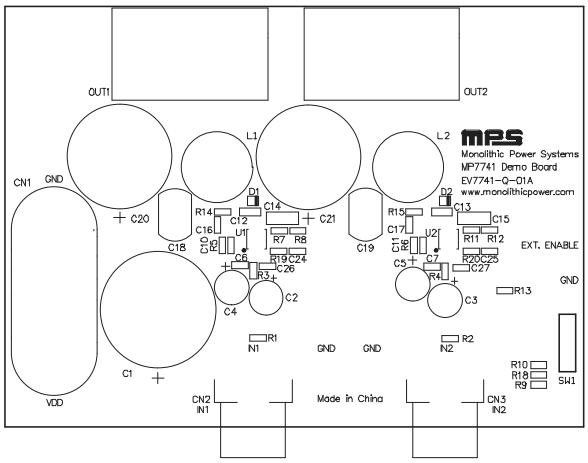

Figure 3: Top Silk

Figure 4: Top Layer

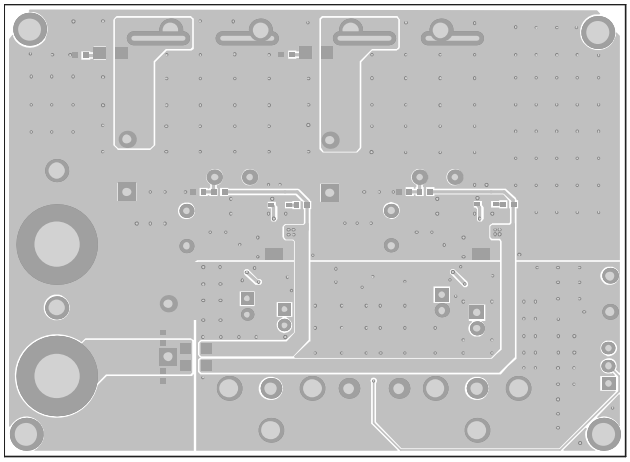

Figure 5: Bottom Layer

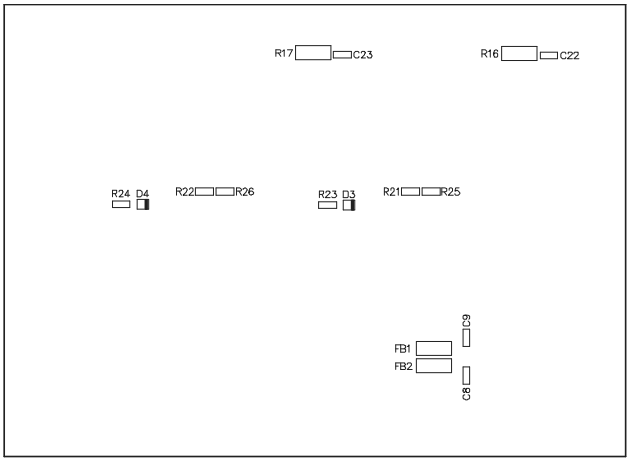

Figure 6: Bottom Silk

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REVISION HISTORY

Revision #	Revision Date	Description	Pages Updated
1.0	3/11/2026	Initial Release	-

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