



The Future of Analog IC Technology™

EV0030 (MP7720DS)

20W Stereo Class D Single Ended Audio Amplifier

EVALUATION BOARD

GENERAL DESCRIPTION

The EV0030 is the evaluation board for the MP7720, a mono 20W 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
- Startup / Shutdown pop elimination
- Short circuit protection circuits
- Mute / Standby

The MP7720 utilizes a single ended output structure capable of delivering 20W into 4Ω speakers. MPS Class D Audio Amplifiers exhibit the high fidelity of a Class A/B amplifier at efficiencies greater than 90%. The circuit is based on the MPS' AAM™ proprietary variable frequency topology that delivers excellent PSRR, fast response time and operates on a single power supply.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Supply Voltage	V _{DD}	24	V

FEATURES

- 20W Output at V_{DD} = 24V into a 4Ω load
- THD+N = 0.04% at 1W, 8Ω
- 93% Efficiency at 20W
- Low Noise (190μV Typical)
- Switching Frequency Up to 1MHz
- 9.5V to 24V Operation from a Single Supply
- Integrated Startup and Shutdown Pop Elimination Circuit
- Thermal Protection
- Integrated 180mΩ Switches
- Mute/Standby Modes (Sleep)
- Available in Tiny 8-Pin SOIC and PDIP Packages

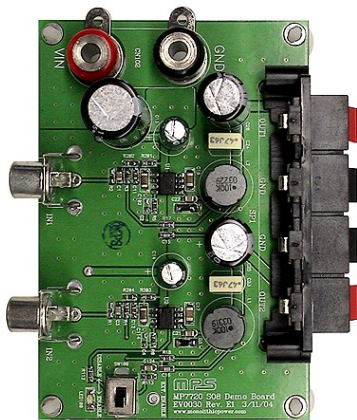
APPLICATIONS

- Surround Sound DVD Systems
- Televisions
- Flat Panel Monitors
- Multimedia Computers
- Home Stereo Systems

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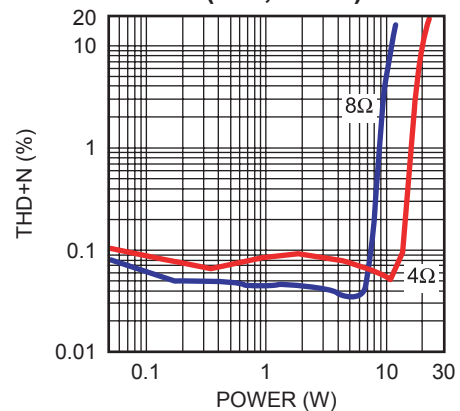
EV0030 EVALUATION BOARD



Dimensions (2.4"X x 3.5"Y x 1.2"Z)

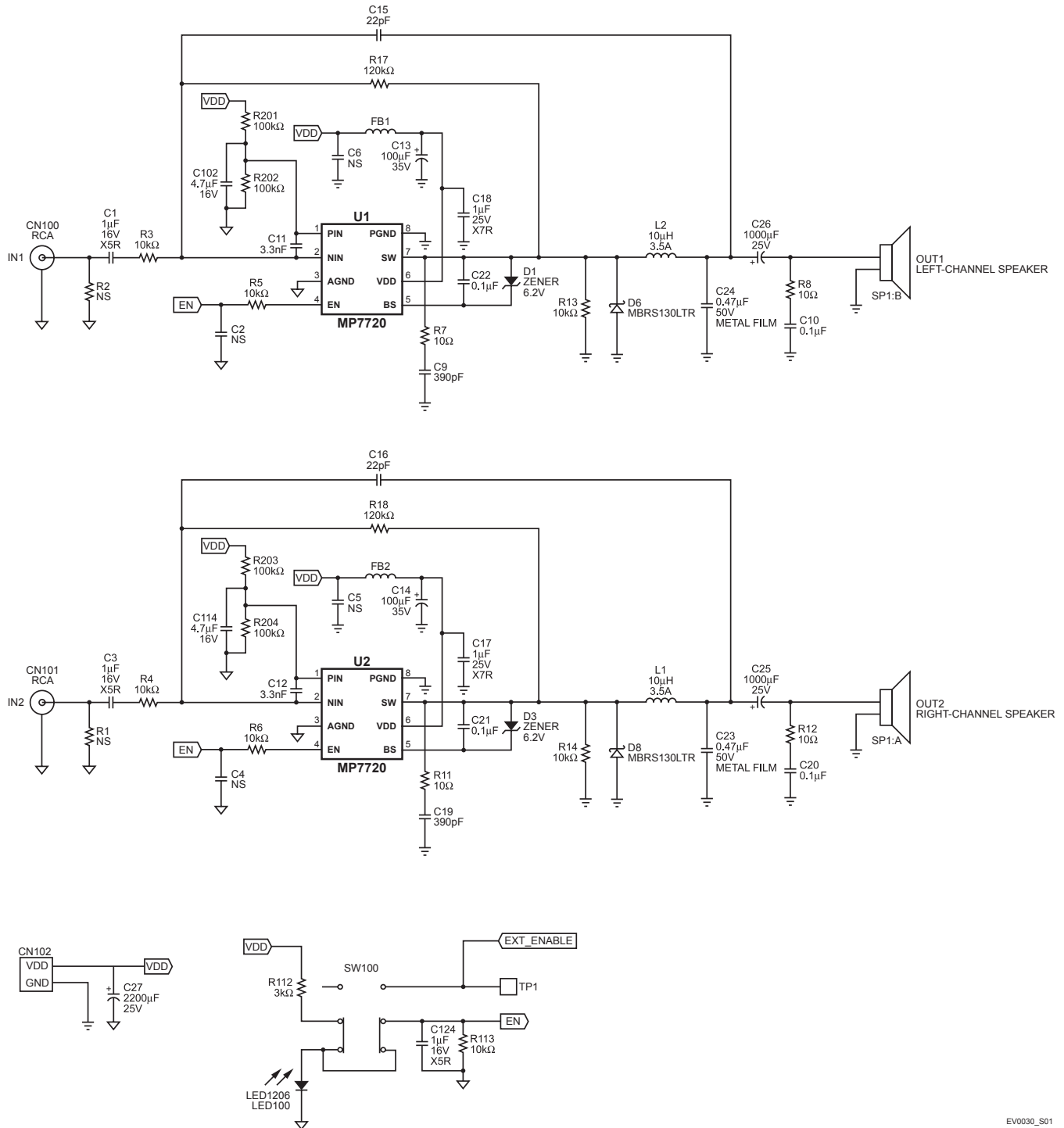
Board Number	MPS IC Number
EV0030	MP7720DS

THD+N vs Power (24V, 1KHz)



MP7720-TPC01

EVALUATION BOARD SCHEMATIC

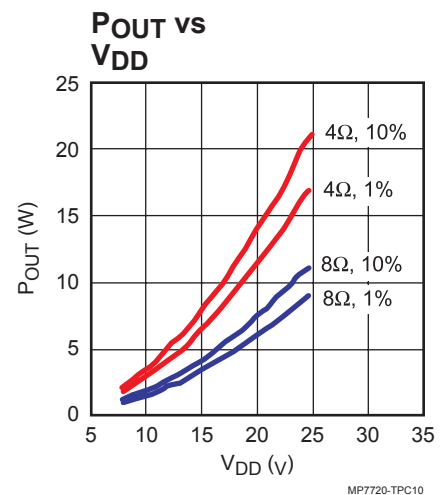
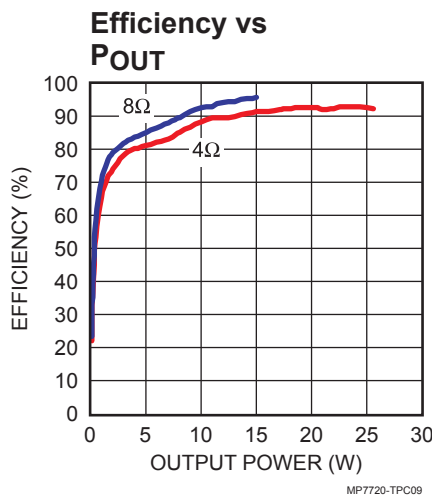
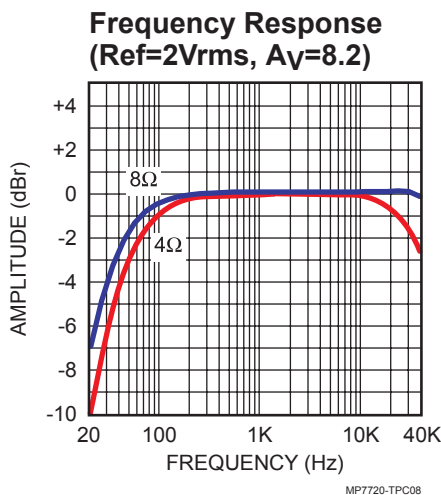
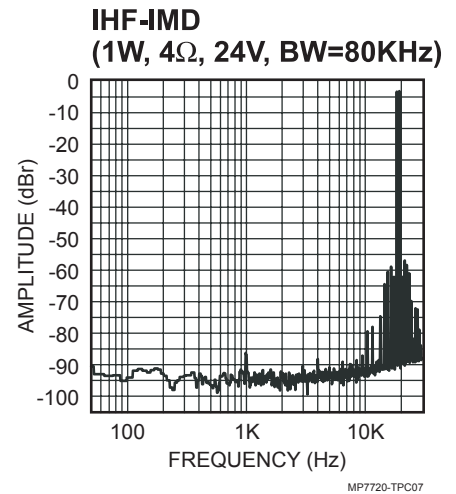
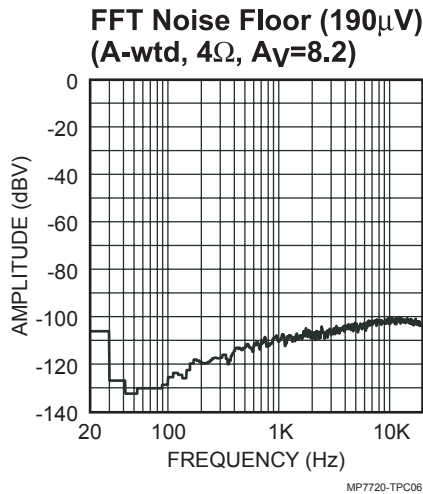
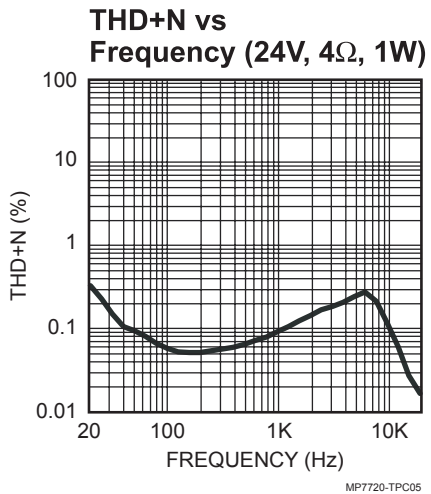
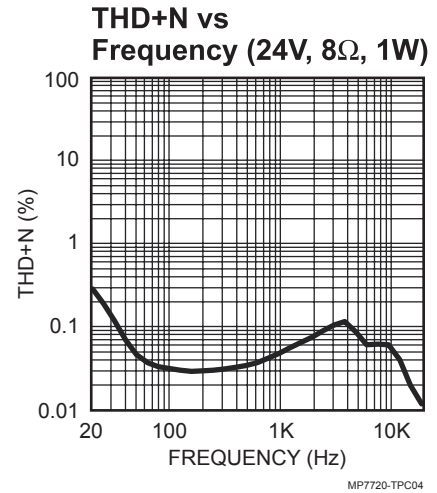
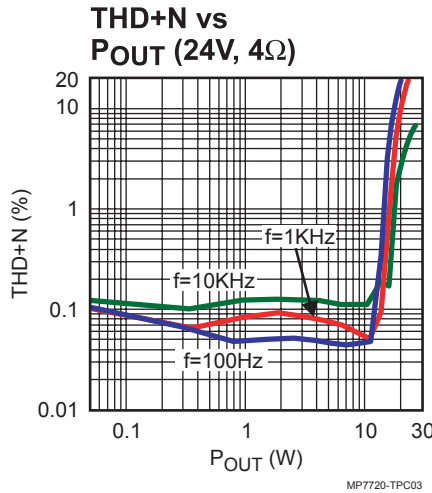
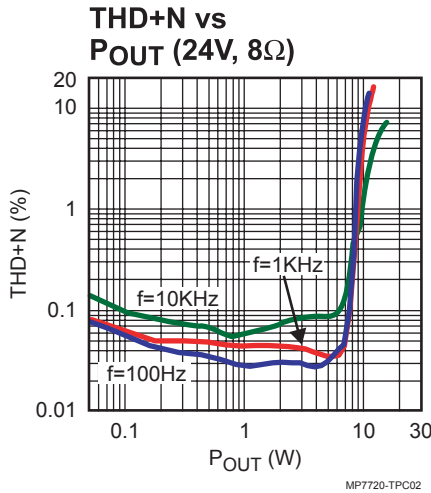


EV0030_S01

EV0030 BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
3	C1, C3, C124	1 μ F	Ceramic Capacitor, X5R, 16V	SM0805	Panasonic	ECJ-2FB1C105K
4	C2, C4, C5, C6	NS	Not Stuffed			
2	C9, C19	390pF	Ceramic Capacitor, X7R, 50V	SM0805	Panasonic	ECU-V1H391KBN
2	C11, C12	3.3nF	Ceramic Capacitor, X7R, 50V	SM0805	Panasonic	ECJ-2VB1H472K
2	C13, C14	100 μ F	Electrolytic Capacitor, 35V	Radial	Panasonic	EEU-FC1V101
2	C15, C16	22pF	Ceramic Capacitor, NPO, 50V	SM0805	Panasonic	ECJ-2VC1H220J
2	C17, C18	1 μ F	Ceramic Capacitor, X7R, 25V	SM1206	Panasonic	ECJ-3YB1E105K
2	C21, C22	0.1 μ F	Ceramic Capacitor, X7R, 50V	SM0805	Panasonic	ECJ-2YB1H104K
2	C23, C24	0.47 μ F	Metallized Film Capacitor, 50V	Radial	Panasonic	ECQ-V1H474JL
2	C25, C26	1000 μ F	Electrolytic Capacitor, 25V	Radial	Panasonic	ECA-1EHG102
1	C27	2200 μ F	Electrolytic Capacitor, 25V	Radial	Panasonic	EEU-FC1E222
2	C102, C114	4.7 μ F	Ceramic Capacitor, X5R, 16V	SM1206	Panasonic	ECJ-3YB1C475M
2	D1, D3		Zener Diode, 6.2V	MINIMELF	Diodes Inc	ZMM5234B-7
2	D6, D8		Schottky Diode, 30V, 1A	SMB	IRF	MBRS130LTR
2	FB1, FB2		Ferrite Bead	SM1210	FAIR-RITE	2512067007Y3
2	L1, L2	10 μ H	Inductor, 3.5A	Radial/10RYTL	Toko	A7024LYF-100K
2	R1, R2	NS	Not Stuffed			
7	R3, R4, R5, R6, R13, R14, R113	10k Ω	Ceramic Resistor, 1%	SM0805	Panasonic	ERJ-6ENF1002V
2	R7, R11	10 Ω	Ceramic Resistor, 5%	SM0805	Panasonic	ERJ-6GEYJ100V
2	R8, R12	10 Ω	Ceramic Resistor, 5%	SM1206	Panasonic	ERJ-8GEYJ100V
2	R17, R18	120k Ω	Ceramic Resistor, 5%	SM0805	Panasonic	ERJ-6GEYJ124V
1	R112	3k Ω	Ceramic Resistor, 5%	SM0805	Panasonic	ERJ-6GEYJ302V
4	R201, R202, R203, R204	100k Ω	Ceramic Resistor, 1%	SM0805	Panasonic	ERJ-6ENF1003V
2	U1, U2		Amplifier	SOIC8	MPS	MP7720

TYPICAL PERFORMANCE CHARACTERISTICS



QUICK START GUIDE

This board is set up from the factory for 24V operation. To use with a 12V power supply adjust the components as specified in the 12V operation Section 3 below. For more information, consult the MP7720 datasheet.

1. Power Requirements

- a. Power supply: 24V, 6A maximum.
- b. 0V to 1V_{RMS} (max) audio signal source.
- c. Speaker: 4Ω or 8Ω.

2. Setup Condition for 24V Operation

- a. Connect the outputs to the external speakers.
- b. Adjust the power supply to 24V (do not turn on).
- c. Connect the power supply to the V_{DD} terminals.
- d. Set the enable switch to the DISABLE position.
- e. Connect the audio input signal source to the amplifier inputs (IN1, IN2).
- f. Turn on the power supply to apply power to the board.

3. 12V Operation Modifications

- a. Change C11 and C12 to 2.2nF components. Change R13 and R14 to 2kΩ (consult the MP7720 datasheet for more details).
- b. Adjust the power supply to 12V (do not turn on).
- c. Use same procedure for turn on as specified in Section 2.

4. Music Turn-On Sequence

- a. Set the enable switch to the ENABLE position.
- b. Audio should be heard from the speaker(s).

5. Music Turn-Off Sequence

- a. Set the enable switch to the DISABLE position.

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