EV8042DF-00C

High Current, Dual Channel Power Half-Bridge Evaluation Board

The Future of Analog IC Technology

GENERAL DESCRIPTION

The EV8042DF-00C is the evaluation board for the MP8042, a high current, dual channel power half-bridge. It accepts PWM modulated inputs for operation.

The MP8042 features a low current shutdown mode, standby mode, input under voltage protection, thermal shutdown and fault flag signal output. Each channel can be driven independently as stereo single-ended audio amplifiers, or driven complementary in a bridge-tied load (BTL) audio amplifier configuration. Both channels of the driver interface with standard logic signals. The MP8042 is available in a 20-pin TSSOP (with Exposed Pad) package.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Supply Voltage	V_{DD}	7.5 – 24	V
Peak Output Current	I_{PEAK}	5	A

FEATURES

- ±5A Peak Current Output
- Up to 600KHz Switching Frequency
- Protected Integrated Power 150mΩ Switches
- 30ns Switch Dead Time
- All Switches Current Limited
- Under Voltage Protection
- Thermal Protection
- 4μA Quiescent Current at Shutdown
- Fault Output Flag
- Stereo Single-Ended: 20W/Channel, 4Ω Load
- Bridge Tied-Load Output Power: 40W, 8Ω Load

APPLICATIONS

- Class D Audio Drivers

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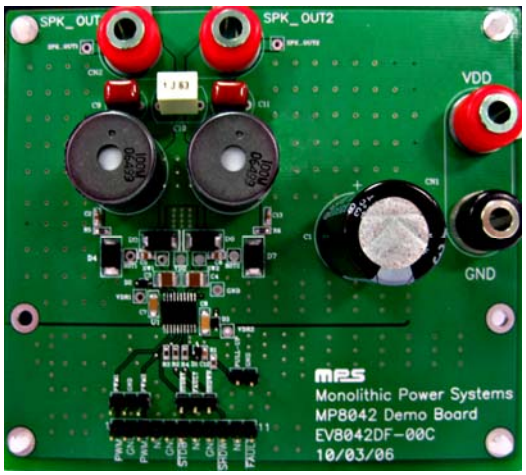
EV8042DF-00C EVALUATION BOARD



(L x W x H) 4.1" x 3.6" x 1.1"
(10.2cm x 9.0cm x 2.8cm)

Board Number	MPS IC Number
EV8042DF-00C	MP8042DF

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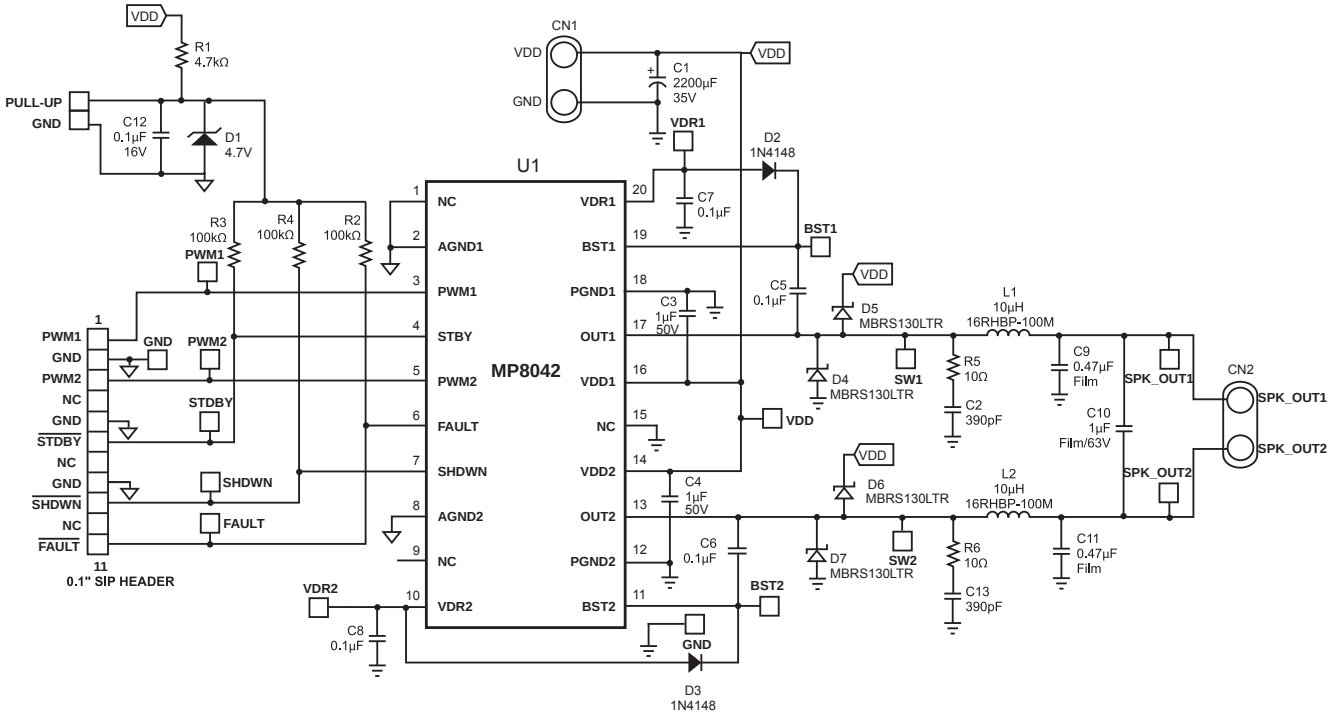
EVALUATION BOARD SCHEMATIC



EV8042DF-00C BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
1	C1	2200µF	Electrolytic Cap., 35V, NHG	Radial	Panasonic	ECA-1VHG222
2	C2, C13	390pF	Ceramic Cap., 50V, X7R	0805	Panasonic	ECU-V1H391KBN
2	C3, C4	1µF	Ceramic Cap., 50V, X7R	1210	TDK	C3225X7R1H105K
2	C5, C6	0.1µF	Ceramic Cap., 50V, X7R	0805	TDK	C2012X7R1H104K
2	C7, C8	0.1µF	Ceramic Cap., 25V, X7R	1206	Panasonic	ECJ-3VB1E104K
2	C9, C11	0.47µF	Cap., 50V, Stack Metal Film	Radial	Panasonic	ECQ-V1H474JL
1	C10	1µF	Cap., 63V, Stack Metal Film	Radial	Panasonic	ECQ-V1J105JM
1	C12	0.1µF	Ceramic Cap., 16V, X7R	0603	TDK	C1608X7R1C104K
2	CN1		Banana Jacks, Red and Black			
2	CN2		2 Red Banana Jacks			
1	D1		Diode Zener, 4.7V, 200mW	SOD-323	Diodes Inc.	BZT52C4V7S-7
2	D2, D3		Diode Switch, 75V, 200mW	SOD-323	Diodes Inc.	1N4148WS-7
4	D4, D5, D6, D7		Diode Schottky, 30V, 1A	SMB	IR	MBRS130LTR
2	L1, L2	10µH	Power Inductor, 7A, 16RHBP	Radial	Toko	16RHBP-100M
1	R1	4.7kΩ	Film Res., 5%	0603	Panasonic	ERJ-3GEYJ472V
3	R2, R3, R4	100kΩ	Film Res., 5%	0603	Panasonic	ERJ-3GEYJ104V
2	R5, R6	10Ω	Ceramic Res, 5%	0805	Panasonic	ERJ-6GEYJ100V
29			29-Pins Sip Header, 0.1"		Keystone	5000
1	U1		Class D Audio Amplifier	TSSOP-20	MPS	MP8042DF

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PRINTED CIRCUIT BOARD LAYOUT

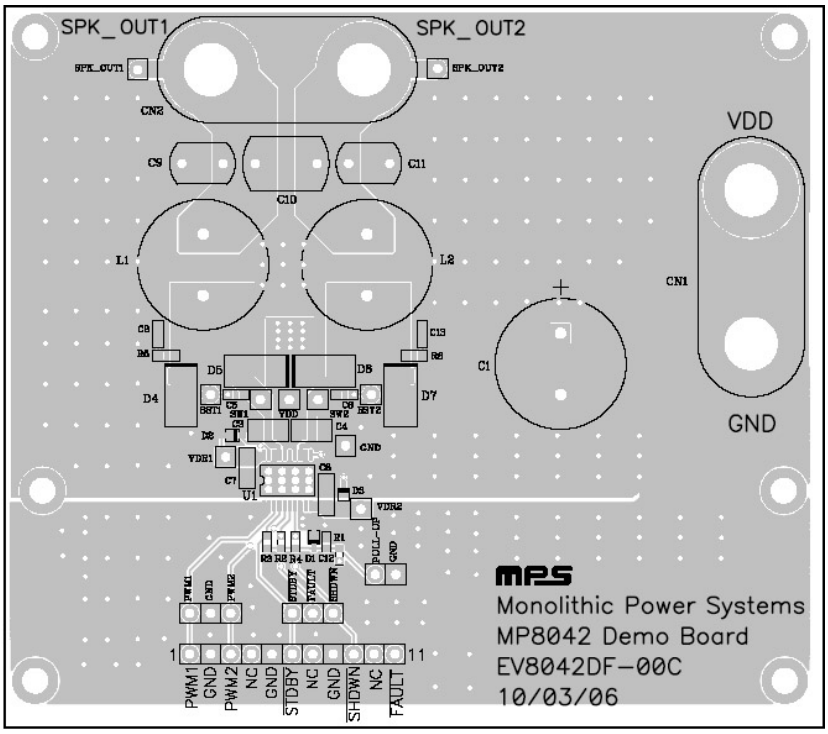

Figure 1—Top Silk Layer

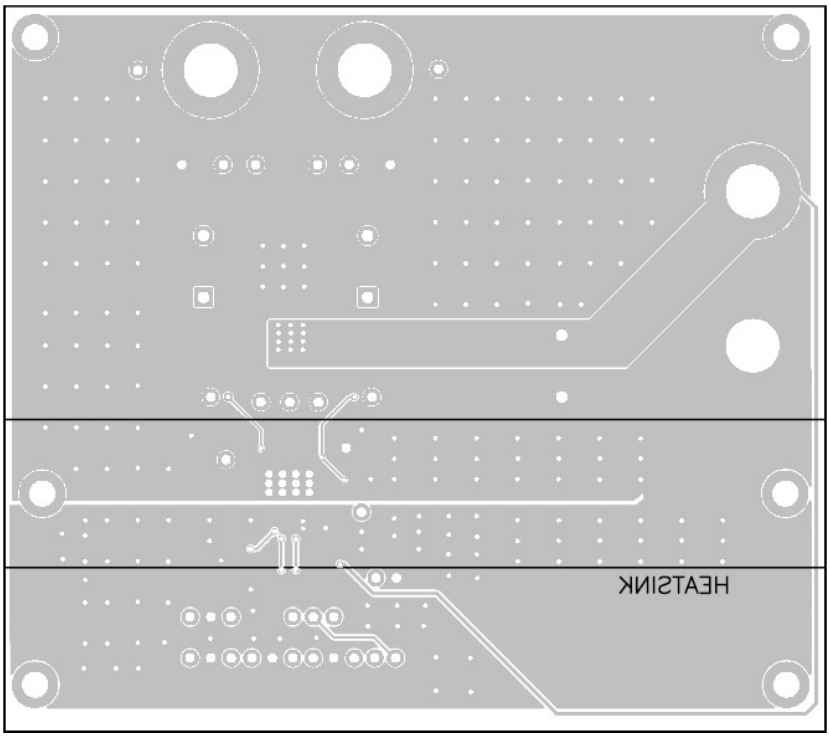

Figure 2— Bottom Silk Layer

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QUICK START GUIDE

The EV8042DF-00C comes pre-configured to operate as a BTL (Bridge-Tied Load) audio power driver, where a complementary PWM modulated audio signal (PWM and $\overline{PWM}$) is used an input, and music is played to a speaker connected to the output. For BTL operation, follow the steps in the Quick Start Guide for BTL Operation section. For Single-Ended operation, make modifications and follow the steps as described in the Quick Start Guide for Single-Ended Operation section.

Quick Start Guide for BTL (Bridge-Tied Load) Operation

Input/Output Requirements

1. Power supply: 7.5V to 24V.
2. Complementary PWM Signal Source (PWM, $\overline{PWM}$).
3. Speaker Load: 4Ω or 8Ω.

Setup Condition for Operation

4. Connect the speaker between SPK_OUT1 and SPK_OUT2 terminals.
5. Connect a PWM signal source to PWM1 and the complementary signal source $\overline{PWM}$ to PWM2, respectively. Use the GND terminal between PWM1 and PWM2 as the ground connection for the PWM inputs.
6. Apply power to the board.
7. Audio should be heard through the speaker.

Quick Start Guide for SE (Single-Ended) Operation

Input/Output Requirements

1. Power supply: 7.5V to 24V.Stereo PWM Signal Source.
2. Two Speaker Loads: 4Ω or 8Ω each.

Setup Condition for Operation

3. Remove C10 and connect the speakers as shown in Figure 3.
4. Connect the stereo PWM signal source to the EV board. Connect channel 1 to PWM1 and channel 2 to PWM2, respectively. Use the GND terminals between PWM1 and PWM2 as the ground connections for the PWM inputs.
5. Apply power to the board.
6. Audio should be heard through the speakers.

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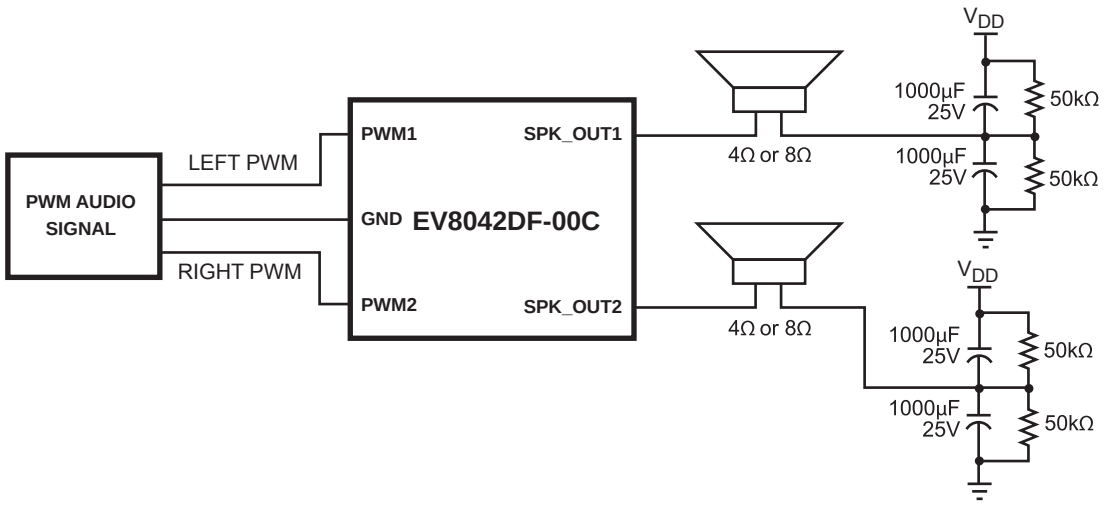

Figure 3—Setup for Single-Ended Operation

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