

EV8046DF-00A

High Current, Dual Channel Power Half-Bridge Evaluation Board

GENERAL DESCRIPTION

The EV8046DF-00A is the evaluation board for the MP8046, a high current, dual channel power half-bridge. It accepts PWM modulated inputs for operation.

The MP8046 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 bridgetied load (BTL) audio amplifier configuration. Both channels of the driver interface with standard logic signals. The MP8046 is available in a 20-pin TSSOP (with Exposed Pad) package.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Supply Voltage	V_{DD}	7.5 – 26	V
Peak Output Current	I _{PEAK}	5	Α

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: 21W/Channel, at V_{DD} =26V, 4Ω Load
- Bridge Tied-Load Output Power: 43W, at V_{DD}=26V, 8Ω Load

APPLICATIONS

Class D Audio Drivers

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EV8046DF-00A EVALUATION BOARD

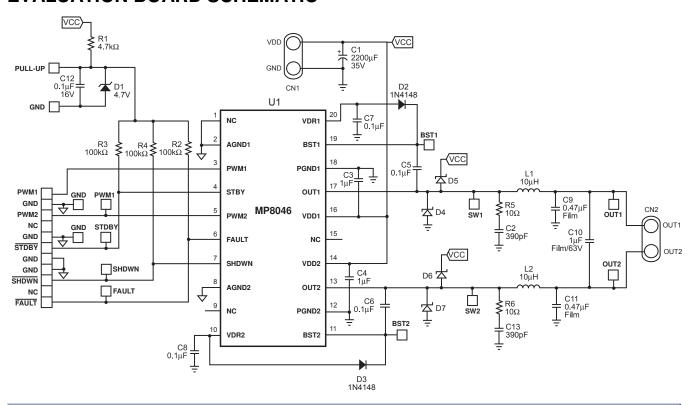


(L x W x H) 4.1" x 3.6" x 1.1" (10.2cm x 9.0cm x 2.8cm)

Board Number	MPS IC Number		
EV8046DF-00A	MP8046DF		



EVALUATION BOARD SCHEMATIC



EV8046DF-00A BILL OF MATERIALS

Qty	RefDes	Value	Description	Package	Manufacturer	Manufacturer P/N
1	C1	2200uF	Electrolytic Cap., 35V, NHG	Radial	Panasonic	ECA-1VHG222
2	C2, C13	390pF	Ceramic Cap, X7R, 50V	0805	Panasonic	ECU-V1H391KBN
2	C3, C4	1uF	Ceramic Cap., 50V, X7R	1210	TDK	C3225X7R1H105K
2	C5, C6	0.1uF	Ceramic Cap., 50V, X7R	0805	TDK	C2012X7R1H104K
2	C7, C8	0.1uF	Ceramic Cap., 25V, X7R	1206	Panasonic	ECJ-3VB1E104K
2	C9, C11	0.47uF	Cap., 50V, Stack Metal Film	Radial	Panasonic	ECQ-V1H474JL
1	C10	1uF	Cap., 63V, Stack Metal Film	Radial	Panasonic	ECQ-V1J105JM
1	C12	0.1uF	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,		Diode Schottky, 30V, 1A	SMB	IR	MBRS130LTR
	D6, D7		Diode Schottky, 40V, 1A	SMA	Diodes Inc.	B140-13-F
2	L1, L2	10uH	Power Inductor, 7A, 16RHBP	Radial	Toko	16RHBP-100M
1	R1	4.7k	Film Res., 5%	0603	Panasonic	ERJ-3GEYJ472V
3	R2, R3, R4	100k	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 Amplifier	TSSOP-20	MPS	MP8046DF-R10



PRINTED CIRCUIT BOARD LAYOUT

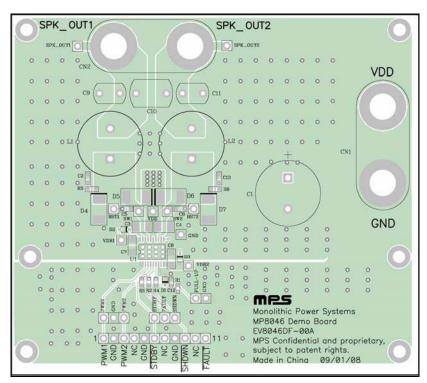


Figure 1—Top Silk Layer

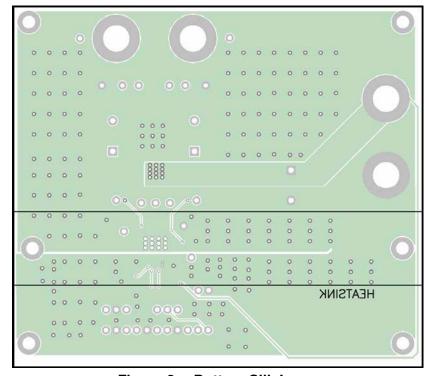


Figure 2— Bottom Silk Layer



QUICK START GUIDE

The EV8046DF-00A comes pre-configured to operate as a BTL (Bridge-Tied Load) audio power driver, where a complementary PWM modulated audio signal (PWM and 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 26V.
- 2. Complementary PWM Signal Source (PWM, PWM).
- 3. Speaker Load: 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 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 26V.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.

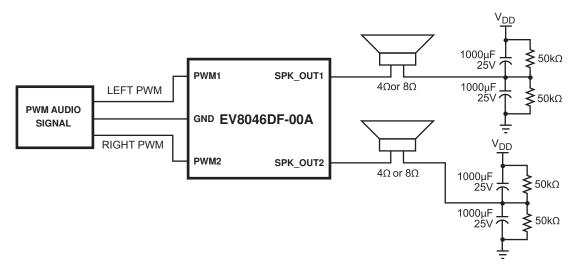


Figure 3—Setup for Single-Ended Operation

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