

### DESCRIPTION

The EV1740EC-00A is the evaluation board for the MP1740, a low-power mono BTL class-D audio amplifier. It is one of MPS's products in a very small WLCSP package, high efficiency, and full bridge output structure capable of delivering 3W into 4Ω speaker.

The gain of this module is set at 2V/V, and can be easily programmed by changing the input resistors.

### ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Supply Voltage	VIN	2.5 – 5.5	V

### FEATURES

- 3W Into 4Ω with 5 V VIN @ 10% THD+N
- Up to 90% Efficiency
- 2.5V~5.5V Operation from a Single Supply
- Module gain is set at 2V/V
- THD+N = 0.1% @ 1.8W, 5V, 4Ω
- Internal 250kHz Switching frequency
- Low Noise (53μV Typical) with 5V VCC
- 2mA Quiescent Current and 0.5μA Shutdown Current
- Internal thermal and short-circuit protection
- Internal depop circuitry

### APPLICATIONS

- Wireless or Cellular Handsets
- PDAs
- Portable Audio

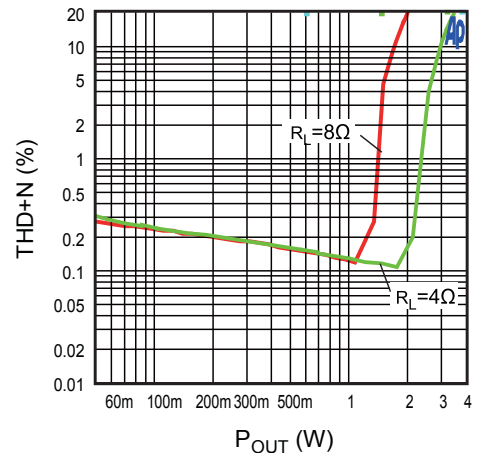
### EV1740EC-00A EVALUATION BOARD



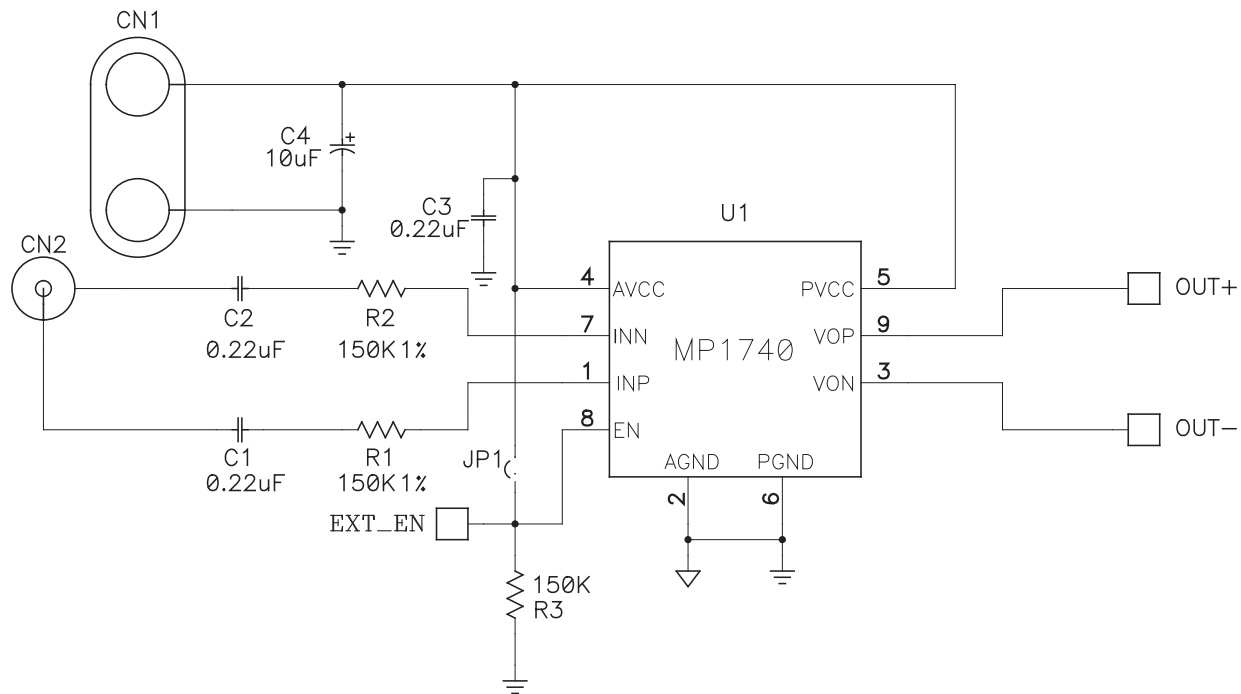
(L x W x H) 1.86" x 1.86" x 0.78"  
(4.72cm x 4.72cm x 2.0cm)

Board Number	IC Number
EV1740EC-00A	MP1740

**THD+N vs. P<sub>OUT</sub>**  
fs=1kHz, V<sub>CC</sub>=5V, Gain=2V/V  
No Weighting



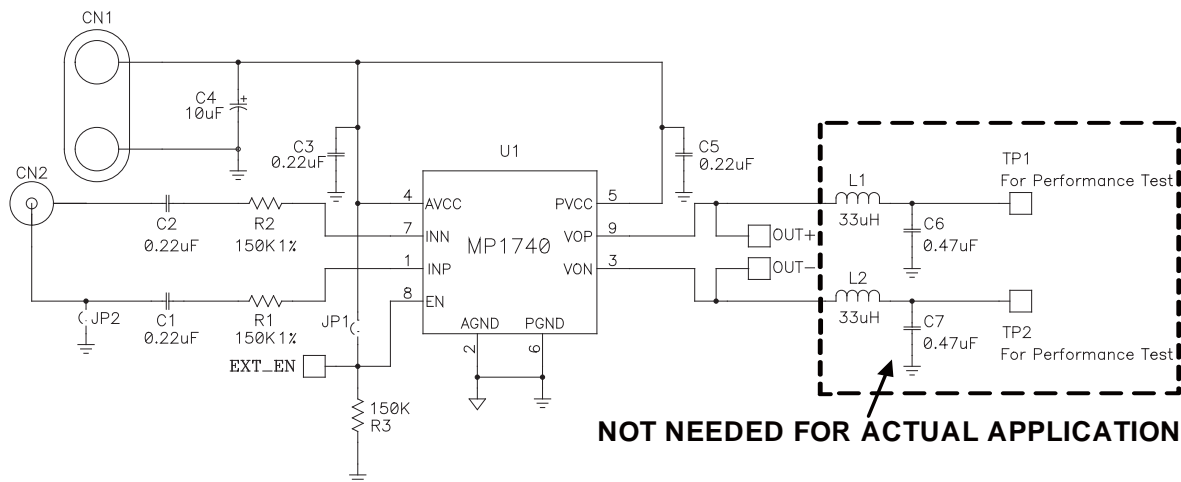
**SCHEMATICS FOR ACTUAL APPLICATION**



**BILL OF MATERIALS FOR ACTUAL APPLICATION**

Qty	Ref	Value	Description	Package	Manufacture	Part Number
2	C1, C2	0.22uF	Ceramic Cap, X7R, 16V	0603	muRata	GRM188R71C224KA01
1	C3	0.22uF	Ceramic Cap, X7R, 50V	0805	TDK	C2012X7R1H224K
1	C4	10uF	Electrolytic Cap, 50V	Radial	Rubycon	
2	R1, R2	150kΩ	Ceramic Res, 1%	0603	Yageo	RC0603FR-07150KL
1	R3	150kΩ	Ceramic Res, 5%	0603		0603SAJ01154TSE
1	U1		Amplifier	WLCSP	MPS	MP1740EC

### SCHEMATICS FOR TEST



### BILL OF MATERIALS FOR TEST

Qty	Ref	Value	Description	Package	Manufacture	Part Number
2	C1, C2	0.22uF	Ceramic Cap, X7R, 16V	0603	muRata	GRM188R71C224KA01
2	C3, C5	0.22uF	Ceramic Cap, X7R, 50V	0805	TDK	C2012X7R1H224K
1	C4	10uF	Electrolytic Cap, 50V	Radial	Rubycon	
2	C6, C7 <sup>(1)</sup>	0.47uF	Ceramic Cap, X7R, 16V	0603	muRata	GRM188R71C474KA88D
2	R1, R2	150kΩ	Ceramic Res, 1%	0603	Yageo	RC0603FR-07150KL
1	R3	150kΩ	Ceramic Res, 5%	0603		0603SAJ01154TSE
2	L1, L2 <sup>(1)</sup>	33uH	Inductor 1.3A	DS75LC	TOKO	DS75LC-B1047AS-330M
1	CN1		CONN/4PIN/0.100			
1	CN2		Phono Jack, Female	RCA Jack		
1	SP1		Speaker Connector/1CH			
1	JP1		JUMPER/2PIN			
1	JP2		JUMPER/2PIN			
1	U1		Amplifier	WLCSP	MPS	MP1740EC

Note:

1). These external components are used for performance test. For audio performance test, a LC low-pass filter is required even if the analyzer has a low-pass filter. They are not needed for actual application..

### PRINTED CIRCUIT BOARD LAYOUT

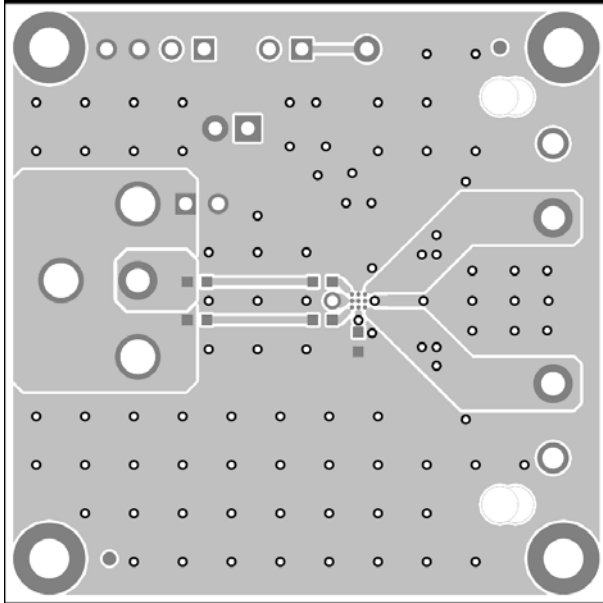


Figure 1—Top Layer

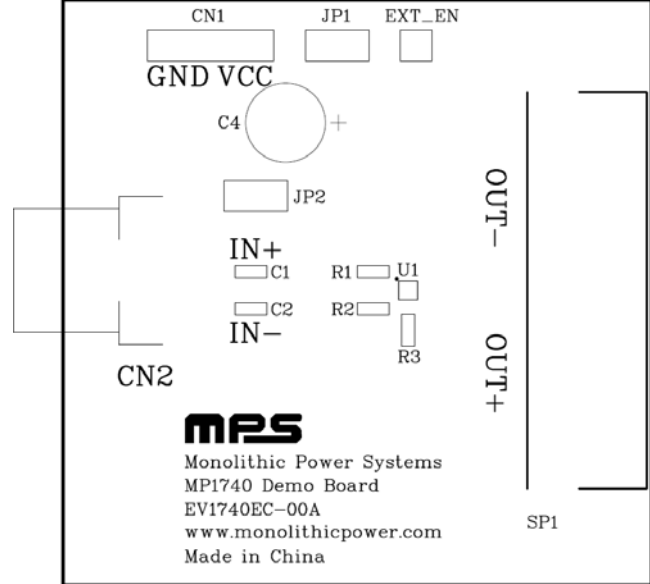


Figure 2—Top silk Layer

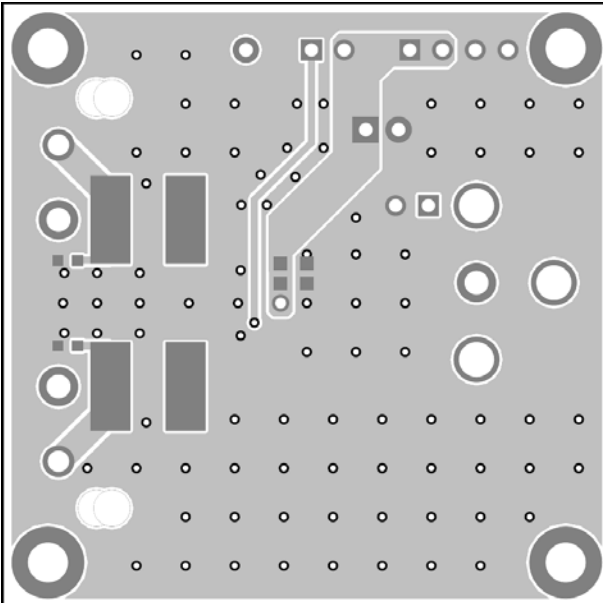


Figure 3—Bottom Layer

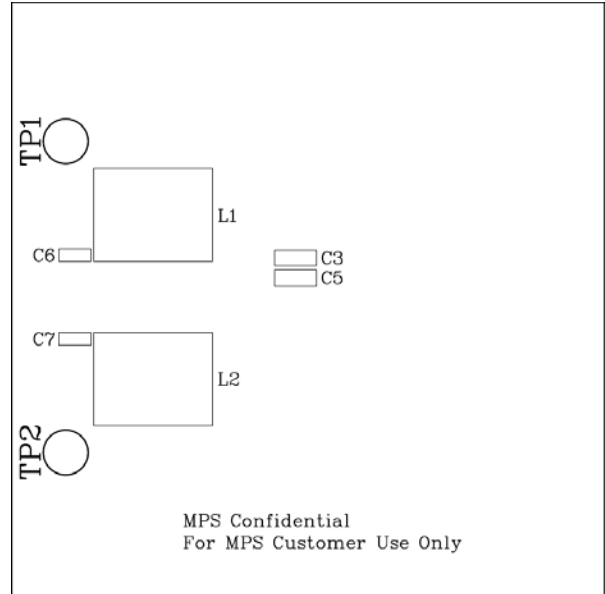


Figure 4—Bottom Silk Layer

## QUICK START GUIDE

This board is set up from the factory for MP1740EC evaluation, which is a mono BTL low-power class-D audio amplifier (see Figure 5).

For audio performance test, the LC low-pass filter is required even if the analyzer has a low-pass filter. So please use TP1 and TP2 for output terminals (see Figure 6).

For more information, consult the MP1740 datasheet.

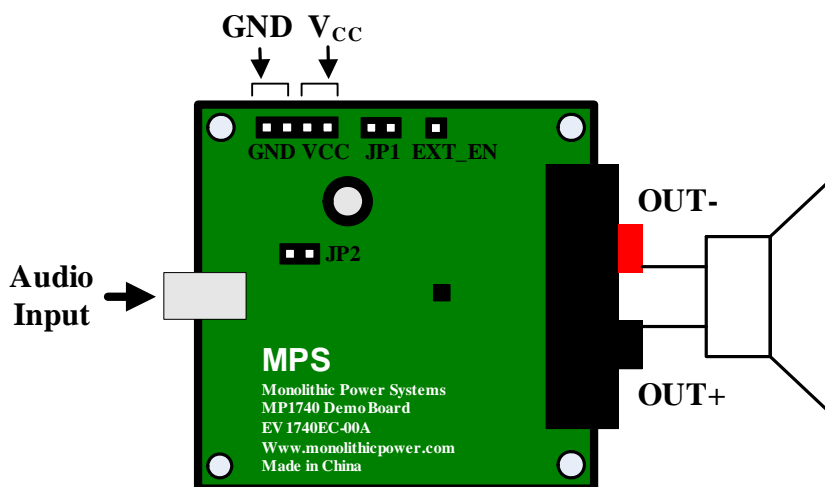


Figure 5. Connection for Mono BTL output (Top viewer)

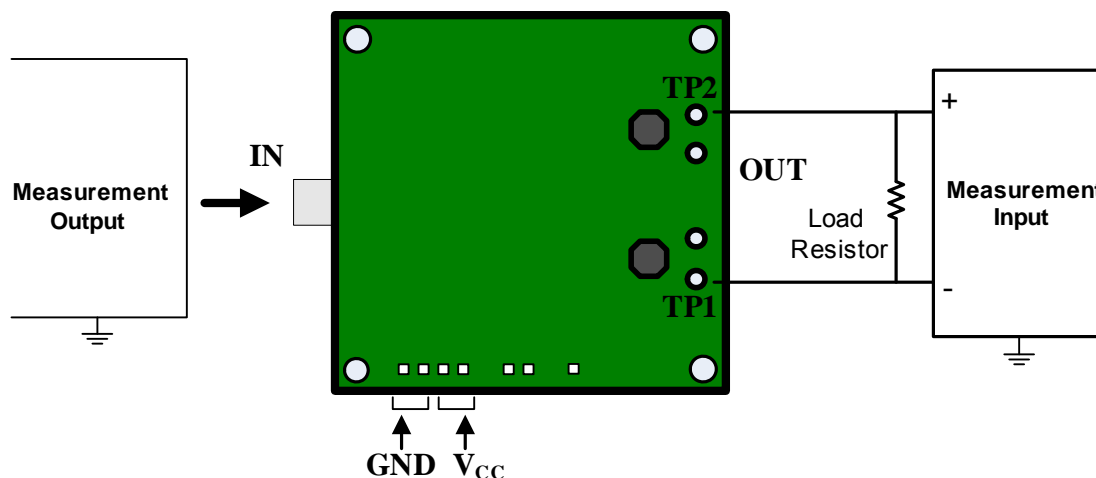


Figure 6. Connection for Audio Performance Test measure (Bottom viewer)

### 1. Setup Condition for 5V Operation

- a Ensure that all external power sources are set to off.
- b Adjust the power supply to 5V (do not turn on).
- c Connect the power supply to the VCC terminals.
- d Ensure that the audio input signal source level is set to minimum.
- e Connect the audio input signal source to the amplifier inputs.

- f Connect the outputs to the external speakers.
- g Ensure that the jumper JP1 is installed for active mode, or leave JP1 open and drive EN pin with the external TTL level logic.
- h Verify that no shunt is across jumper JP2 for differential input mode, it's installed only for single-ended input.

## **2. Power on**

- a Verify correct voltage and input polarity and set the external power supply to on
- b Adjust the input signal source level as needed. Then audio should be heard from the speaker.

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