

## 2W Stereo Audio Power Amplifier with Shutdown Mode

### General Description

The EMA1201 is a stereo bridged audio power amplifier capable of delivering 1.2W of continuous average power into a 8Ω load or 1.7W into 4Ω with less than 1% THD when powered by a 5V power supply. It does not require output coupling capacitors or bootstrap capacitors, and is ideal for mobile phone and other low voltage applications where minimal power consumption is a primary requirement.

The EMA1201 features a low-power consumption shutdown mode, and an internal thermal shutdown protection mechanism. Advanced pop & click circuitry is built in to eliminate noises that would otherwise occur during turn-on and turn-off transitions. The EMA1201 is unity-gain stable and can be configured by external gain-setting resistors.

EMP products are Pb-free and RoHS compliant.

### Key Specifications

- BTL mode  $P_{O}$  at THD+N=1%, f=1kHz,  $V_{DD}$  =5V  
1.7 W (typ) into 4Ω  
1.2 W (typ) into 8Ω
- BTL mode  $P_{O}$  at THD+N=10%, f=1kHz,  $V_{DD}$  =5V  
2 W (typ) into 4Ω  
1.5 W (typ) into 8Ω
- Shutdown current 0.1μA (typ)

### Features

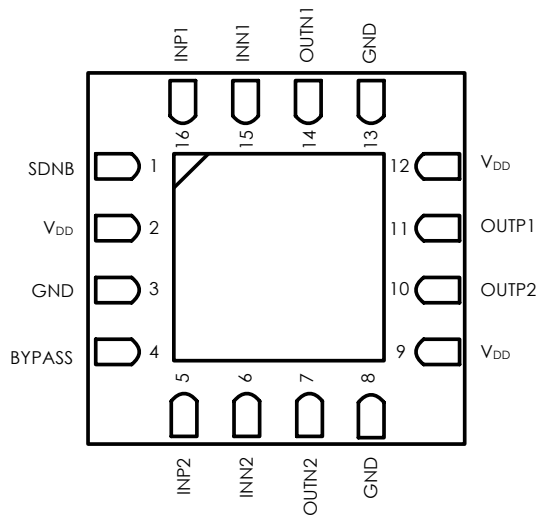
- No output coupling capacitors, bootstrap capacitors, or snubber circuits required
- Unity-gain stable
- TQFN
- External gain configuration capability

### Applications

- Portable Computers
- Desktop computers

## Connection Diagram

TQFN Package



## Order information

EMA1201-50HB16GRR/NRR

50 5.0V Operation  
 HB16 TQFN-16 Package  
 (EB16)  
 GRR RoHS (Pb Free)  
 Rating: -40 to 85°C  
 Package in Tape & Reel  
 NRR RoHS & Halogen free (By Request)  
 Rating: -40 to 85°C  
 Package in Tape & Reel

## Order, Mark & Packing Information

Package	Product ID	Marking	Packing
TQFN-16	EMA1201-50HB16GRR		5K units Tape & Reel

## Typical Application

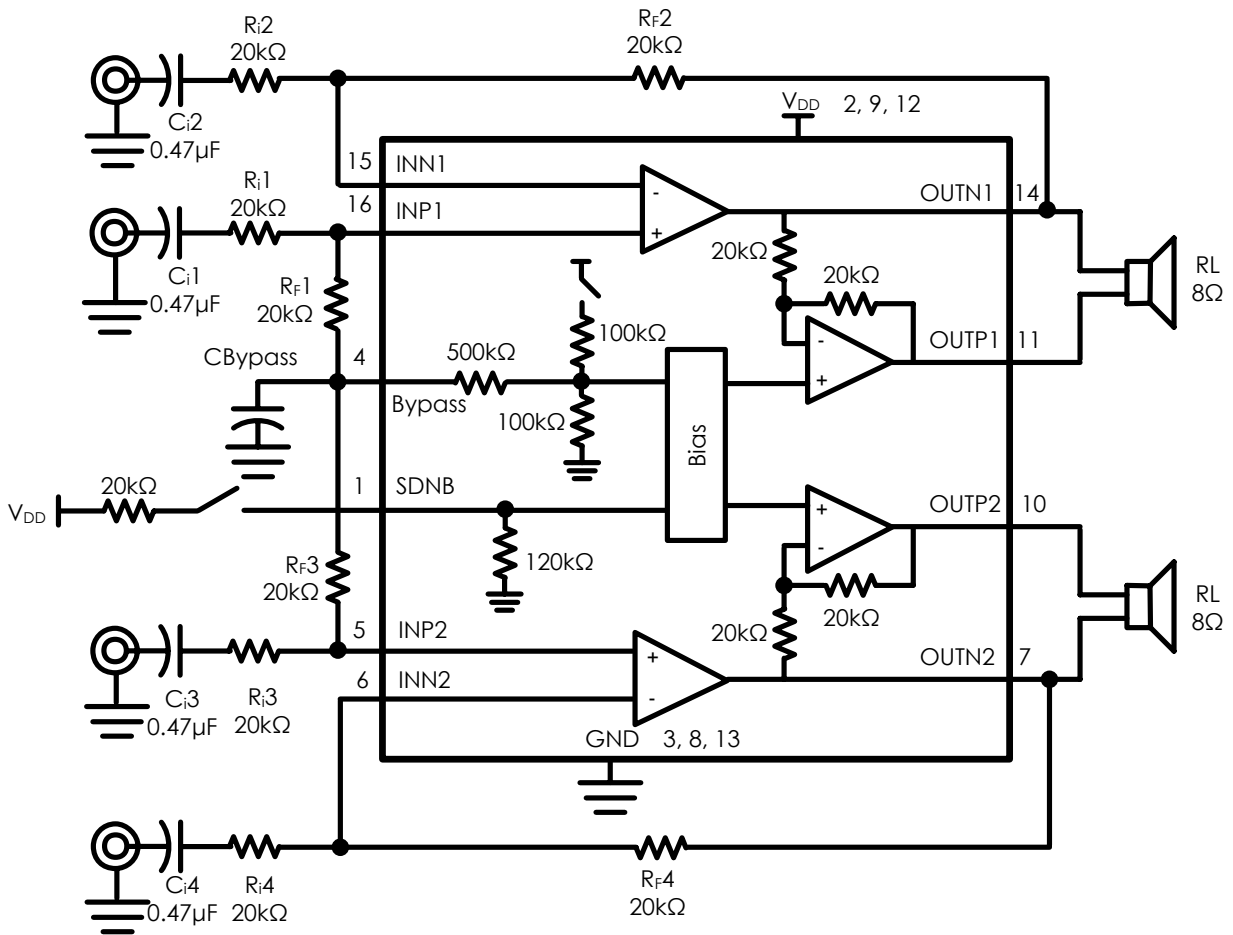


FIGURE 2. Typical Audio Amplifier Application Circuit with differential input

## Absolute Maximum Ratings

Supply Voltage	6.0V	Thermal Resistance	
Storage Temperature	-65°C to +150°C	$\theta_{JA}$ (TQFN)	190°C/W
Input Voltage	-0.3V to VDD +0.3V	Operating Ratings	
Power Dissipation	Internally Limited	Temperature Range	-40°C ≤ TA ≤ 85°C
ESD Susceptibility	HBM 2kV MM 200V	Supply Voltage	2.5V ≤ VDD ≤ 5.5V
Junction Temperature	150°C		

## Electrical Characteristics

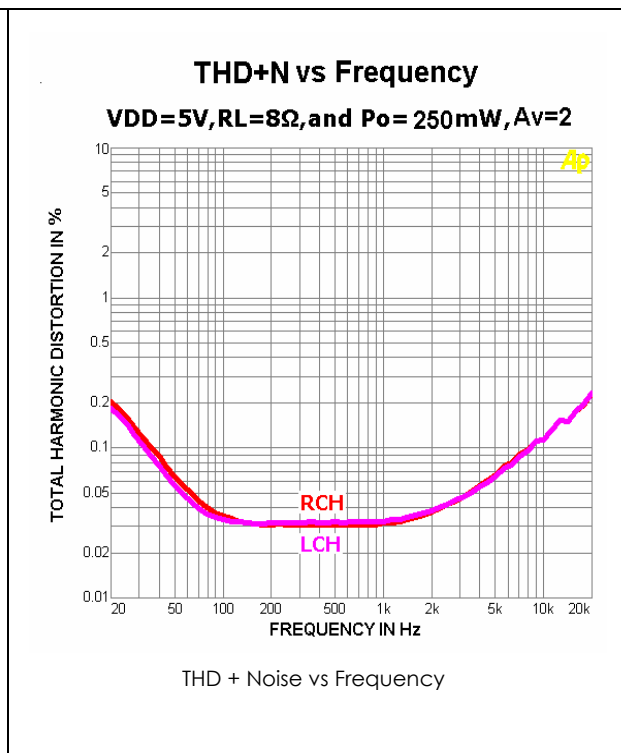
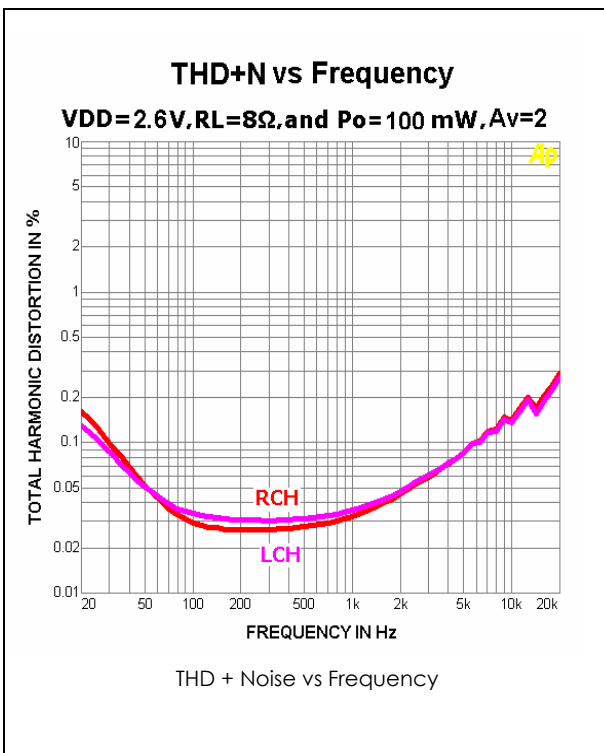
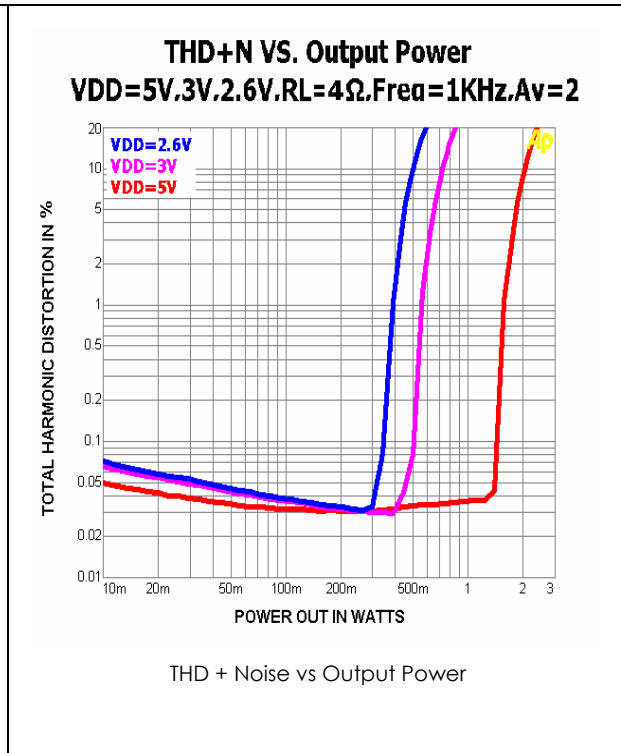
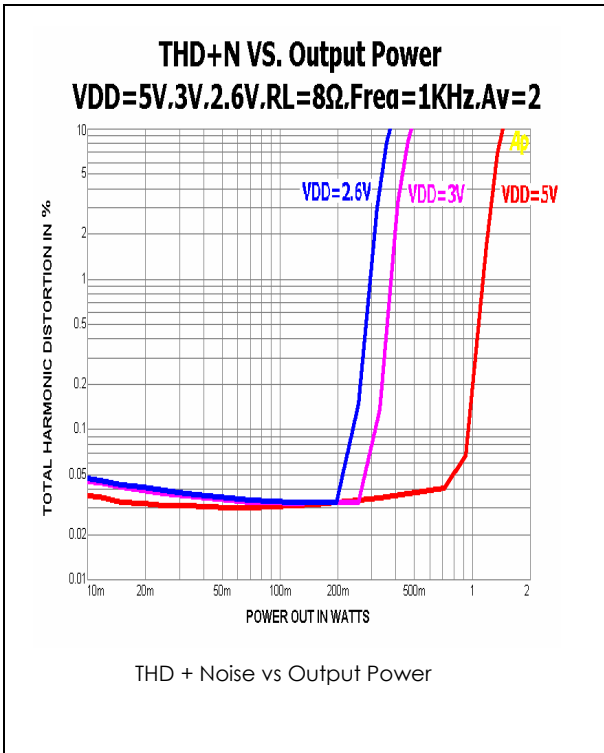
The following specifications apply for VDD = 5V and RL = 8Ω unless otherwise specified. Limits apply for TA = 25°C.

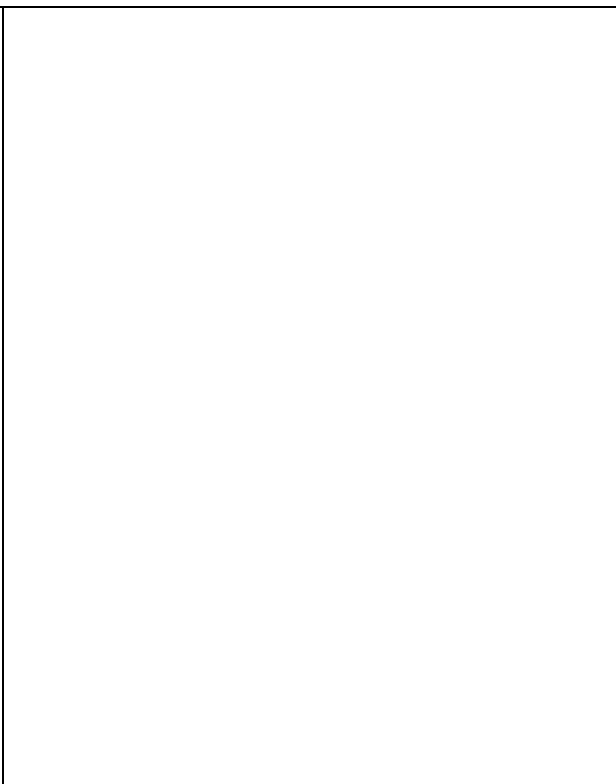
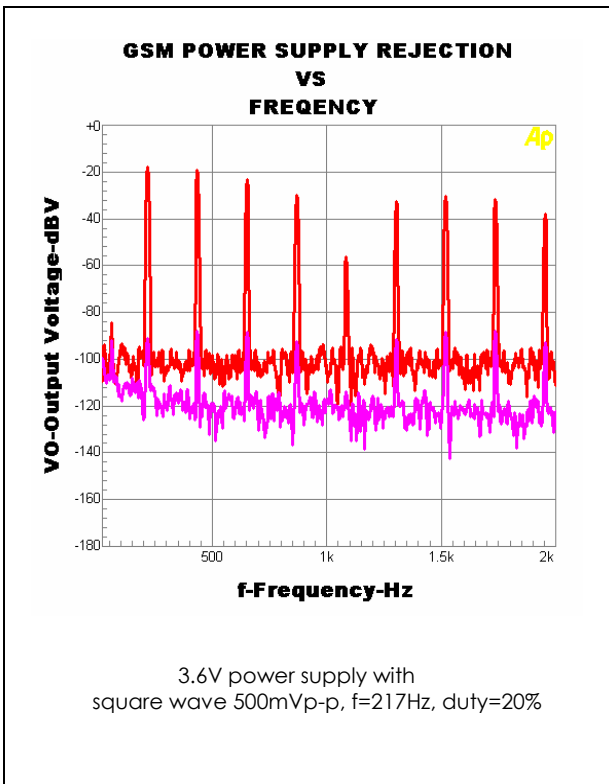
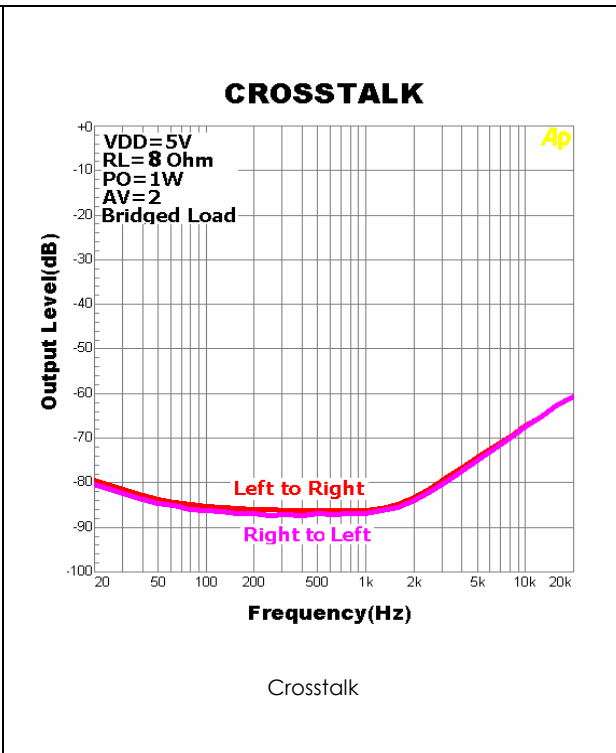
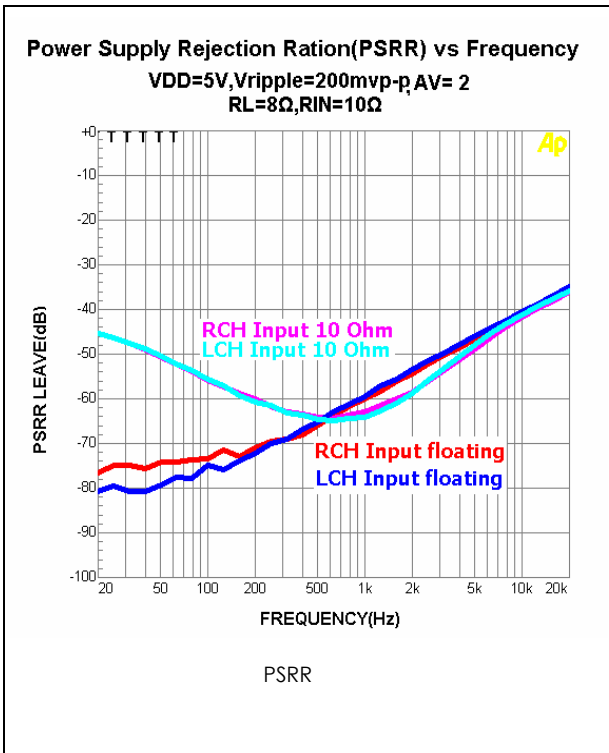
Symbol	Parameter	Conditions	Conditions			Units (Limits)
			Min	Typical	Limit	
IDD	Quiescent Power Supply Current	VIN = 0V, IO = 0A		3.5	8.0	mA
ISD	Shutdown Current	VSDNB = GND		0.1	1.0	μA
VOs	Output Offset Voltage	VIN = 0V		5.0	50	mV
PO	Output Power	THD + N = 1 %, f = 1kHz RL = 4Ω RL = 8Ω		1.7 1.2		W
		THD + N = 10 %, f = 1kHz RL = 4Ω RL = 8Ω		2.0 1.5		W
THD+N	Total Harmonic Distortion + Noise	f = 1kHz, AV=2, PO=0.25W RL = 8Ω		0.03		%
PSRR	Power Supply Rejection Ratio	VRIIPPLE=200mV, sine p-p at 217Hz, input 10Ω to GND		60	55	dB

The following specifications apply for VDD = 2.6V and RL = 8Ω unless otherwise specified. Limits apply for TA = 25°C.

Symbol	Parameter	Conditions	Conditions			Units (Limits)
			Min	Typical	Limit	
IDD	Quiescent Power Supply Current	VIN = 0V, IO = 0A		2.5	5.0	mA
ISD	Shutdown Current	VSDNB = GND		0.1	1.0	μA
VOs	Output Offset Voltage	VIN = 0V		5.0	50	mV
PO	Output Power	THD + N = 1 %, f = 1kHz RL = 4Ω RL = 8Ω		0.4 0.3		W
		THD + N = 10 %, f = 1kHz RL = 4Ω RL = 8Ω		0.5 0.38		W
THD+N	Total Harmonic Distortion + Noise	f = 1kHz, AV=2, PO=0.1W RL = 8Ω		0.03		%
PSRR	Power Supply Rejection Ratio	VRIIPPLE=200mV, sine p-p at 217Hz, input 10Ω to GND		60	55	dB

## Typical Performance Characteristics

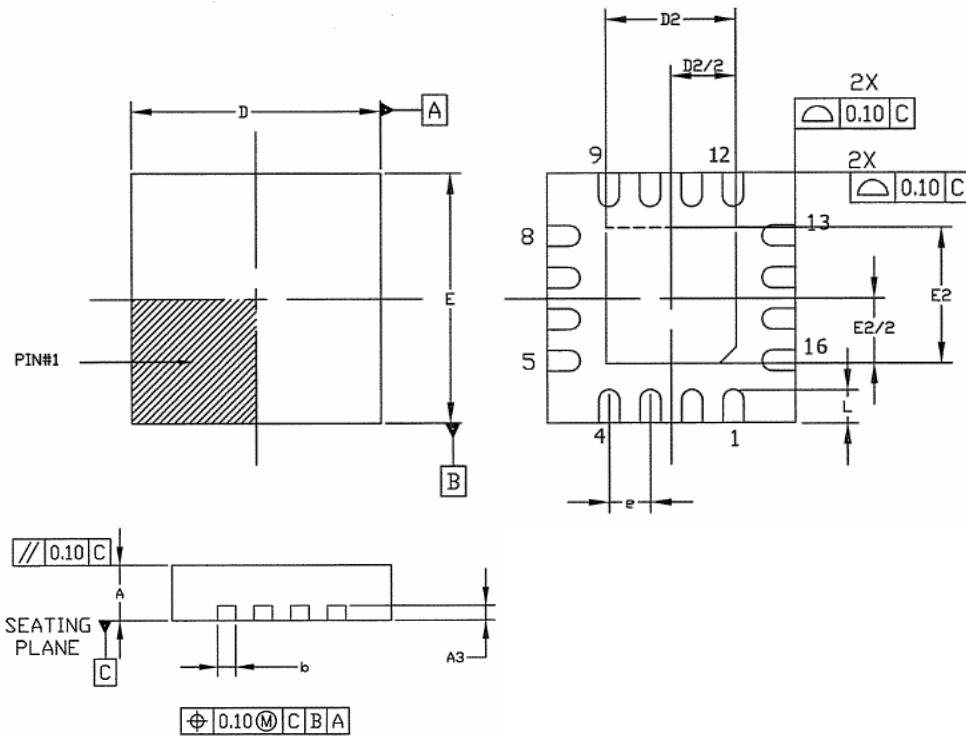




## TQFN-16 Outline Dimension

TOP VIEW

BOTTOM VIEW



SIDE VIEW

SYMBOL	COMMON					
	DIMENSIONS MILLIMETER			DIMENSIONS INCH		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.70	0.75	0.80 ✓	0.027	0.029	0.031
A3	0.195	0.203	0.211 ✓	0.0077	0.008	0.0083
b	0.18	0.23	0.30	0.007	0.009	0.012
D	2.95	3.0 ✓	3.05	0.116	0.118	0.120
E	2.95	3.0 ✓	3.05	0.116	0.118	0.120
e	0.50 BSC			0.020 BSC		
L	0.35	0.40	0.45	0.014	0.016	0.018

SYMBOL	D2/E2			D2/E2		
	DIMENSIONS MILLIMETER			DIMENSIONS INCH		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
OPTION 1	1.50/1.50	1.625/1.625	1.75/1.75	0.059/0.059	0.064/0.064	0.069/0.069

## Revision History

Revision	Date	Description
4.0	2009.06.05	EMP transferred from version 3.0



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