Stereo Headphone Power Amplifier

Features

- **Class AB amplifier**
- **High performance**
- **High signal-to-noise ratio**
- **Low distortion**
- **Low power consumption**
- **Large output voltage swing**
- **Excellent power supply ripple rejection**
- **3.0V to 7.0V supply voltage range**
- **Surface-Mount package-SOP 8**

Applications

- **CD-ROM**
- **DVD-ROM**
- **CD-R/W**
- **MP3**
- **Portable Stereo**
- **Earphone for cellular phone**

General Description

The G1401 is a stereo audio power amplifier housed in a 8-pin SOP package capable of delivering 135mW of continuous power per channel into 16Ω loads.

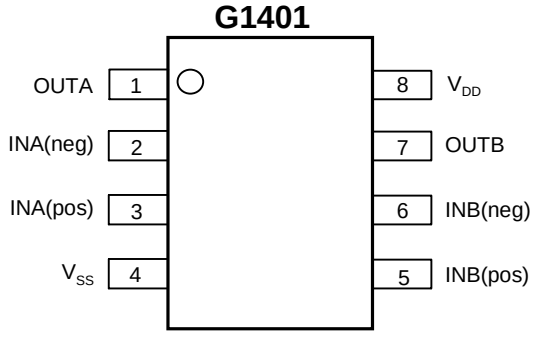
Amplifier gain is externally configured by means of two resistors per input channel.

The G1401 is a dual channel, low voltage, low power, performance OP amps that can be designed into a wide range of headphone driving applications, at an economical price.

Ordering Information

PART	TEMP. RANGE	PIN-PACKAGE
G1401P1	0°C to +70°C	8 SOP

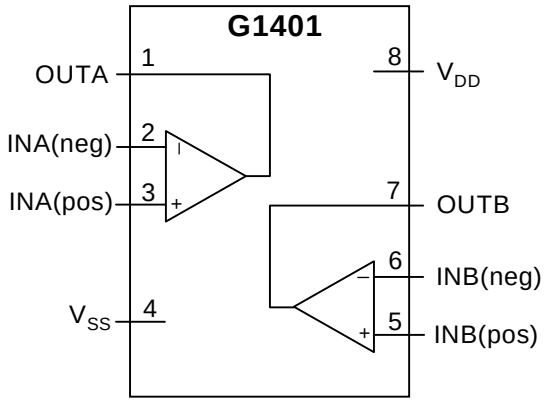
Pin Configuration



Pinning

SYMBOL	PIN	DESCRIPTION
OUTA	1	output A
INA(neg)	2	inverting input A
INA(pos)	3	non-inverting input A
V_{SS}	4	negative supply
INB(pos)	5	non-inverting input B
INB(neg)	6	inverting input B
OUTB	7	output B
V_{DD}	8	positive supply

Block Diagram



Absolute Maximum Ratings (Note1)

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{DD}	Supply voltage		0	7.0	V
T_{stg}	Storage temperature		-65	+150	°C
T_{amb}	Operating ambient temperature		0	+70	°C
ESD	ESD voltage	HBM	-	2	KV

Notes:
1. Absolute Maximum Ratings are limits beyond which damage to the device may occur.

Thermal Characteristics

SYMBOL	PARAMETER	VALUE	UNIT
$R_{th\ j\text{-}a}$	Thermal resistance from junction to ambient in free air SO8	210	°C/W

Test and Application Information

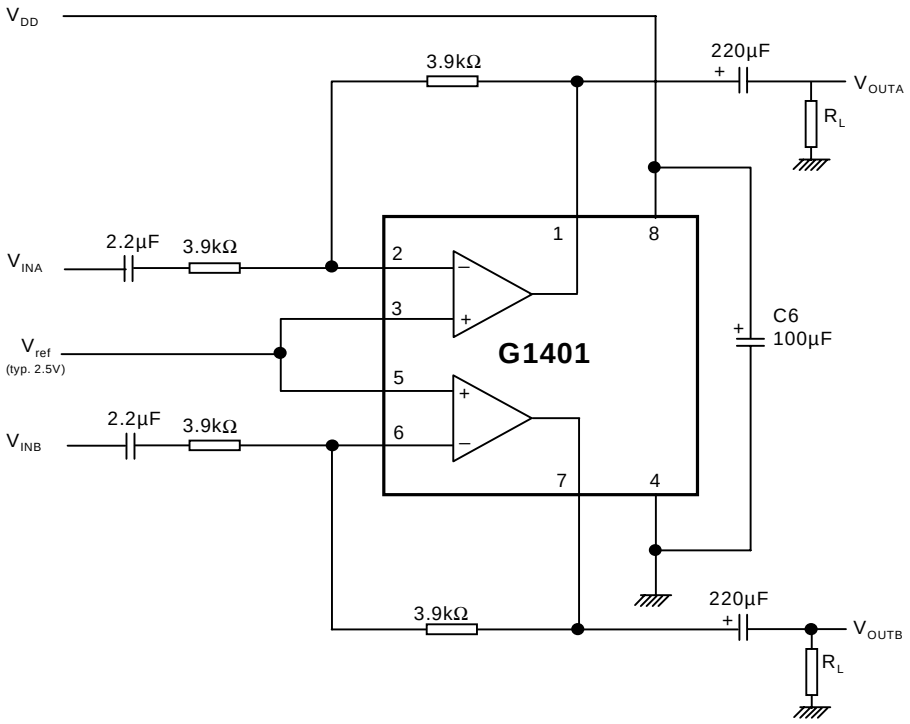


Fig.1 Measurement circuit for inverting application

Electrical Characteristics

V_{DD} = 5V; V_{SS} = 0V ; T_{amb} = 25°C; f_i = 1kHz; R_L = 32Ω; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Supplies						
V_{DD}	Supply voltage		3.0	5.0	7.0	V
	Single		3.0	5.0	7.0	V
	Dual		1.5	2.5	3.5	V
V_{SS}	Negative supply voltage		-1.5	-2.5	-3.5	V
I_{DD}	Supply current	no load	-	3.0	5.5	mA
P_{tot}	Total power dissipation	no load	-	15	28	mW
DC Characteristics						
$V_{I(OS)}$	Input offset voltage		-15	-	15	mV
V_{CM}	Common mode voltage		0	-	4.0	V
CMRR	Common-Mode Rejection Ratio	V_{CM} = 0V to 5V	40	60		dB
G_V	Open-loop voltage gain	R_L = 5kΩ	70	90	-	dB
I_O	Maximum output current	THD<0.1%	-	100	-	mA
R_O	Output resistance	open-loop R_L= 20Ω	-	1.78	-	Ω
V_O	Output voltage swing	R_L = 32Ω note 1	1.0	-	4.0	V
		R_L = 5kΩ note 1	0.1	-	4.9	V
PSRR	Power supply rejection ratio	fi = 1kHz; $V_{ripple(peak)}$ = 1V	50	62	-	dB
α_{CS}	Channel separation		-	70	-	dB
AC Characteristics						
THD	Total harmonic distortion	note 2	-	< 0.1	-	%
		R_L = 5kΩ note 2				
f_G	Unity gain frequency	open-loop; R_L = 5kΩ	2.5	3.7	5.0	MHz
P_O	Maximum output power	note 1; R_L = 16Ω	-	135	-	mW
B	Power bandwidth	unity gain inverting	-	30	-	kHz

Notes:

1. Values are proportional to V_{DD}; THD < 0.1%
2. V_{DD} = 5.0V; $V_{O(P-P)}$ = 4.0V (at 0 dB)