

DUAL AUDIO POWER AMPLIFIER

■ GENERAL DESCRIPTION

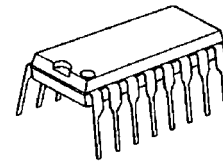
The NJW1105 is a dual audio amplifier which supplies 2.4W (1.2W/channel) to 8Ω loads at 5V. Its features are wide operating voltage range from 4V to 12V and low consumption output by Bi-MOS technology.

The NJW1105 is suitable for speaker amplifier required high output power, such as personal computers, camcorders, and others. It includes thermally protected and mute on/off circuit.

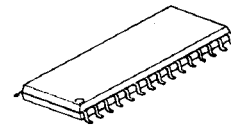
■ FEATURES

- Operating Voltage ($V^+ = 4V \sim 12V$)
- Output Power (1.2W/ch at $V^+ = 5V, R_L = 8\Omega$)
- Supply Current (35mA MAX.)
- Supply Current on Mute (3.5mA MAX.)
- Bi-MOS Technology
- Package Outline DIP16, SDMP30, SSOP20-F1

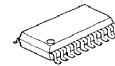
■ PACKAGE OUTLINE



NJW1105D

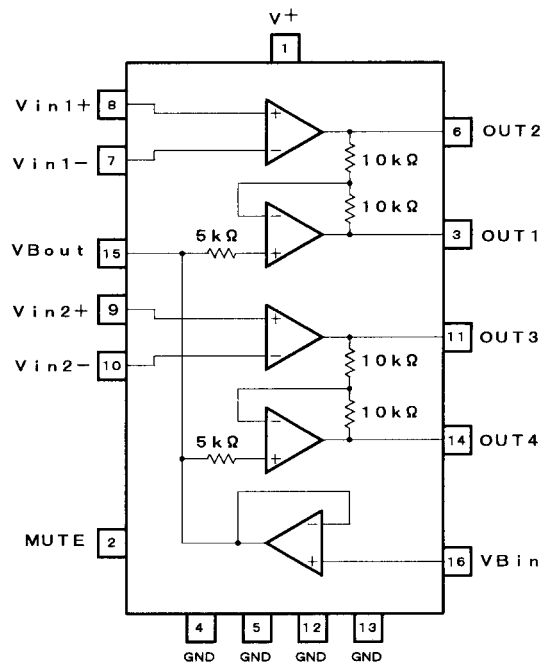


NJW1105M



NJW1105VF1

■ BLOCK DIAGRAM



(Package DIP16)

NJW1105

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V ⁺	15	V
Operating Current	I _o	1	A
Mute Terminal Current	I _M	1.0	mA
Power Dissipation	P _D	(SSOP20) 0.75 (DIP16) 1.9 (SDMP30) 1.8 (note1)	W
Operating Temperature Range	T _{opr}	-40~+85	°C
Storage Temperature Range	T _{stg}	-40~+150	°C

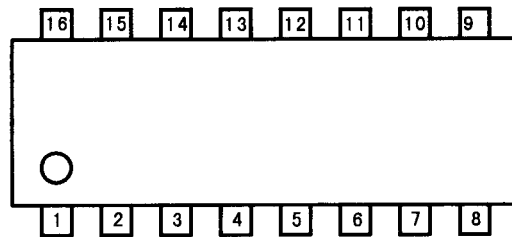
(note 1) At on PC board.

■ ELECTRICAL CHARACTERISTICS

(V⁺=5.0V, Ta=25°C)

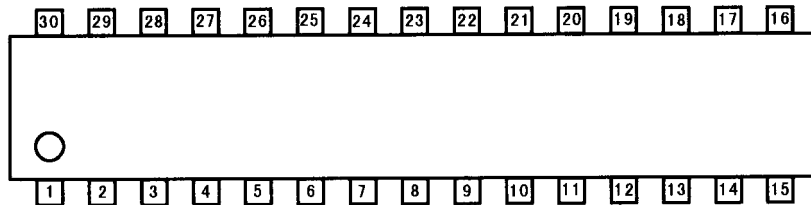
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
[ALL]						
Operating Supply Voltage Range	V ⁺		4	5	12	V
Mute OFF Current Dissipation	I _{cc1}	V _M =4.2V, V _{IN} =2.5V	-	20	35	mA
Mute ON Current Dissipation	I _{cc2}	V _M =0V, V _{IN} =2.5V	-	2	3.5	mA
[POWER AMPLIFIER]						
Output Offset Voltage	ΔV _O	R _L =8Ω	-50	-	50	mV
Input Bias Current	I _B		-	-	300	nA
Output Power	P _{O1}	THD=10%, f=1kHz, R _L =8Ω	-	1.2	-	W
	P _{O2}	THD=10%, f=1kHz, R _L =8Ω, V ⁺ =7V	-	2.5	-	W
Total Harmonic Distortion	THD	R _L =8Ω, P _O =800mW, f=1kHz	-	0.35	-	%
Power Supply Rejection Ratio	PSRR	f=1kHz	-	45	-	dB
Voltage Gain	A _V	AMP2, AMP3, R _L =2kΩ, V _{IN} =2.5V	35	50	-	dB
[BUFFER AMPLIFIER]						
Input Output Potential Difference	V _{BO}		-30	0	30	mV
Input Voltage Range	V _{BI}		1.5	2.5	3.5	V
Output Voltage Range	ΔV _{BO}	I _L =-5mA, I _L =+5mA	-	-	-50	mV
[MUTING]						
Mute OFF Voltage	V _{MH}		3.5	4.2	-	V
Mute ON Voltage	V _{ML}		-	0.8	1.0	V
Mute Sink Current	I _M	V _M =5V	70	100	130	μA

■ PIN CONFIGURATION



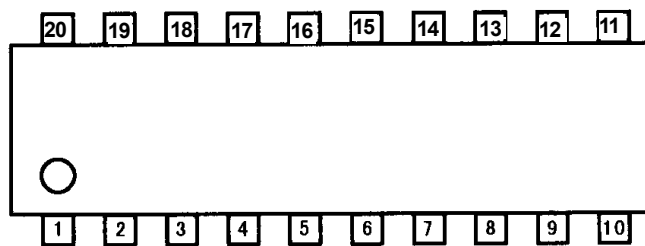
DIP16

- | | |
|-------------------|--------------|
| 1. V ⁺ | 9. Vin2 (+) |
| 2. MUTE | 10. Vin2 (-) |
| 3. OUT1 | 11. OUT3 |
| 4. GND | 12. GND |
| 5. GND | 13. GND |
| 6. OUT2 | 14. OUT4 |
| 7. Vin1 (-) | 15. VBout |
| 8. Vin1 (+) | 16. VBin |



SDMP30

- | | |
|-------------------|--------------|
| 1. GND | 16. GND |
| 2. GND | 17. GND |
| 3. OUT4 | 18. OUT2 |
| 4. NC | 19. NC |
| 5. NC | 20. NC |
| 6. VBout | 21. Vin1 (-) |
| 7. VBin | 22. Vin1 (+) |
| 8. NC | 23. NC |
| 9. V ⁺ | 24. Vin2 (+) |
| 10. MUTE | 25. Vin2 (-) |
| 11. NC | 26. NC |
| 12. NC | 27. NC |
| 13. OUT1 | 28. OUT3 |
| 14. GND | 29. GND |
| 15. GND | 30. GND |



SSOP-20

- | | |
|-------------------|-------------|
| 1. V ⁺ | 11. Vin2(+) |
| 2. V ⁺ | 12. Vin2(-) |
| 3. MUTE | 13. OUT3 |
| 4. OUT1 | 14. GND |
| 5. GND | 15. GND |
| 6. GND | 16. OUT4 |
| 7. OUT2 | 17. NC |
| 8. Vin1(-) | 18. NC |
| 9. Vin1(+) | 19. VBout |
| 10. NC | 20. VBin |

■ TERMINAL EXPLANATION

PIN NO.			PIN NAME	FUNCTION	INSIDE EQUIVALENT CIRCUIT
SSOP-20	DIP-16	SDMP-30			
5 6 14 15	4 5 12 13	1 2 14 15 16 17 29 30	GND	Recommend expanding the island in order to heat radiation properties.	
16	14	3	OUT4	Output terminal of AMP4. OUT4 signal is opposite phase against OUT3.	
10 17 18	-	4 5 8 11 12 19 20 23 26 27	NC	Non-connection terminal. Recommend connecting to GND.	

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■ TERMINAL EXPLANATION

PIN NO.			PIN NAME	FUNCTION	INSIDE EQUIVALENT CIRCUIT
SSOP-20	DIP-16	SDMP-30			
19	15	6	VBout	An buffer amplifier output.	<p>The diagram shows a push-pull output stage. The output node is connected to a 400Ω resistor. The circuit is powered by V+ and GND.</p>
20	16	7	VBin	An buffer amplifier input.	<p>The diagram shows a differential input stage. The input nodes are connected to 400Ω resistors. The circuit is powered by V+ and GND.</p>
1 2	1	9	Vcc	Supply Voltage.	
3	2	10	MUTE	A mute input. Pull down by 50kΩ (TYP) resistor.	<p>The diagram shows a mute input stage. The input node is connected to a 400Ω resistor and a 50kΩ pull-down resistor. The circuit is powered by V+ and GND.</p>

■ TERMINAL EXPLANATION

PIN NO.			PIN NAME	FUNCTION	INSIDE EQUIVALENT CIRCUIT
SSOP-20	DIP-16	SDMP-30			
4	3	13	OUT1	Output terminal of AMP.1. OUT1 signal is opposite phase against OUT2.	
7	6	18	OUT2	Output terminal of AMP.2.	
8	7	21	Vin1(-)	Inverting input terminal of AMP.2.	
9	8	22	Vin1(+)	Non-inverting input terminal of AMP.2.	

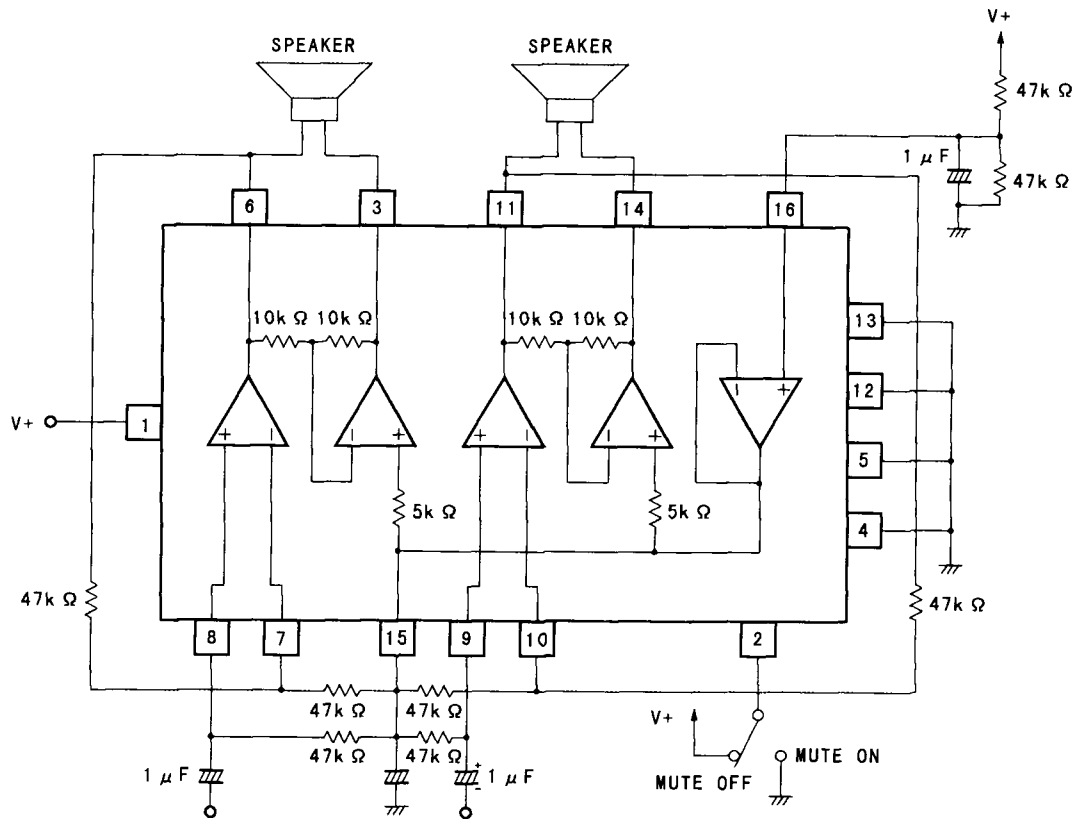
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■ TERMINAL EXPLANATION

PIN NO.			PIN NAME	FUNCTION	INSIDE EQUIVALENT CIRCUIT
SSOP-20	DIP-16	SDMP-30			
11	9	24	Vin2(+)	Inverting input terminal of AMP3.	
12	10	25	Vin2(-)	Non-inverting input terminal of AMP3.	
13	11	28	OUT3	Output terminal of AMP3.	

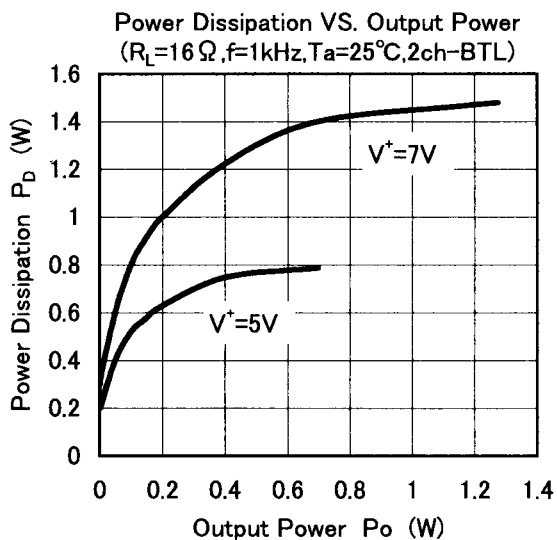
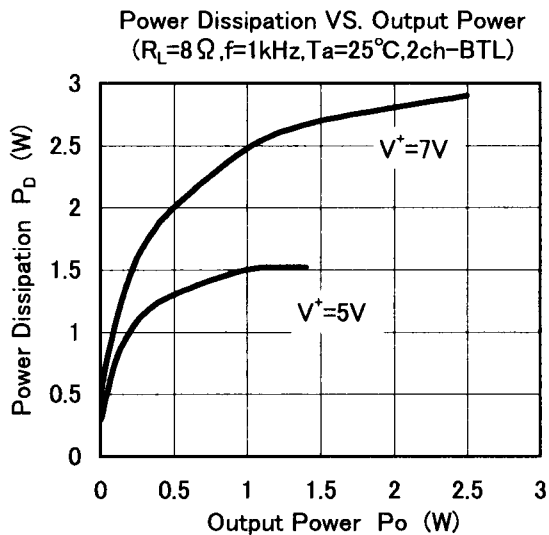
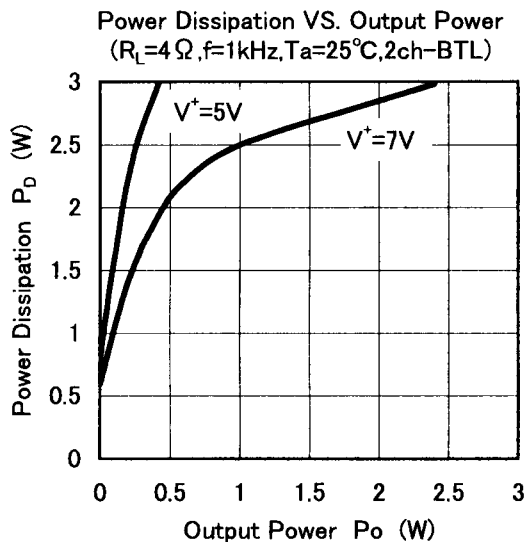
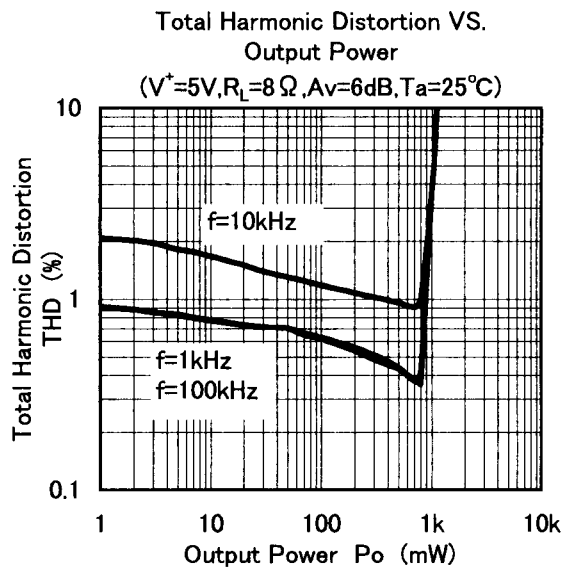
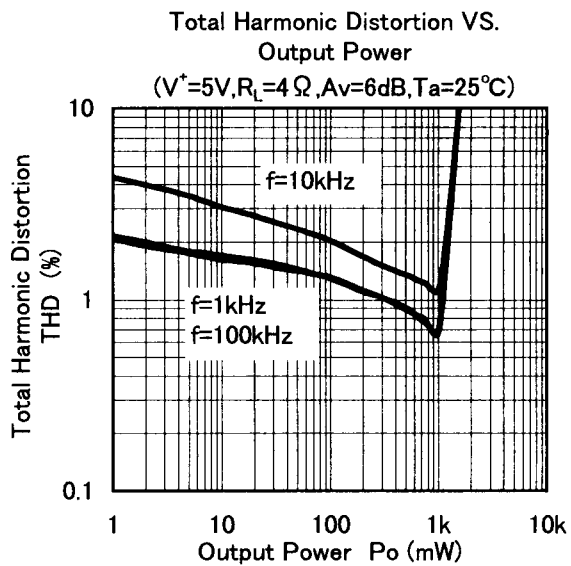
APPLICATION CIRCUIT

(1) BTL

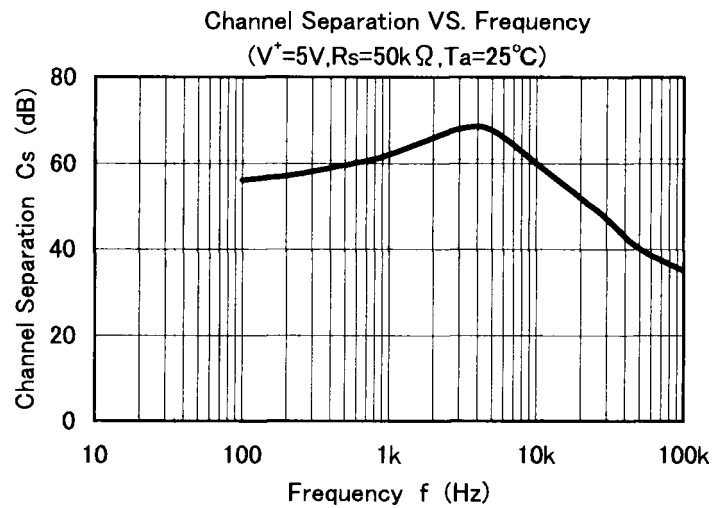
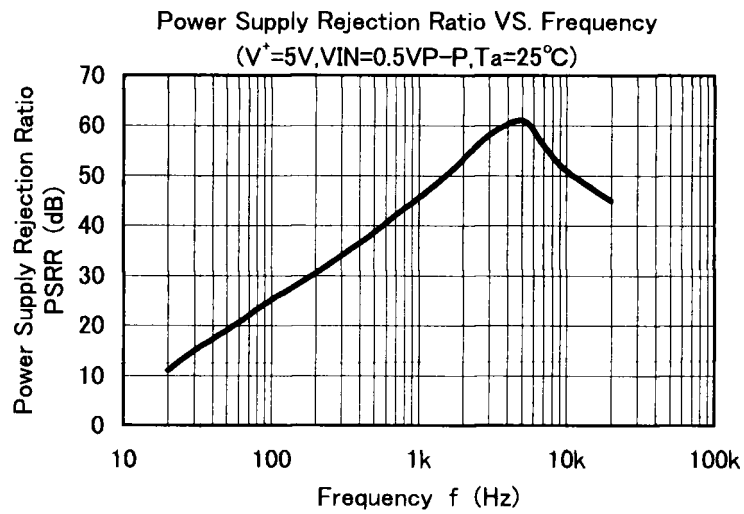


(The number in "()" indicates a pin number of SDMP.)

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS



[CAUTION]

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