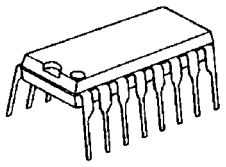
DUAL AUDIO POWER AMPLIFIER

■ GENERAL DESCRIPTION

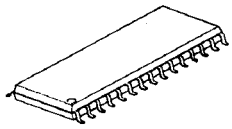
The NJW1105 is a dual audio amplifier which supplies 2.4W (1.2W/channel) to 8Ω loads at 5V.Its features are wide operating voltage range from 4V to 12V and low consumption output by Bi-MOS technology.

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.

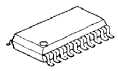
■ PACKAGE OUTLINE



NJW1105D



NJW1105M

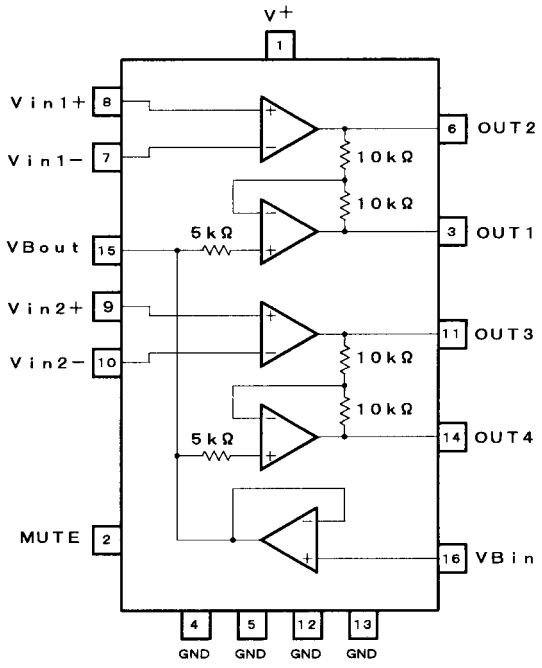


NJW1105VF1

■ FEATURES

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

■ BLOCK DIAGRAM



(Package DIP16)

■ 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

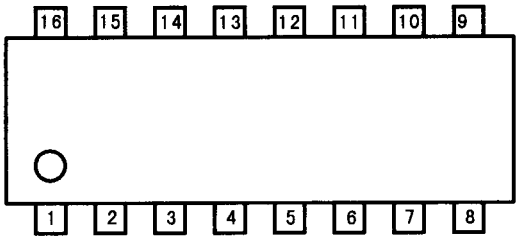
(note 1) At on PC board.

■ ELECTRICAL CHARACTERISTICS

(V^+=5.0V,Ta=25˚C)

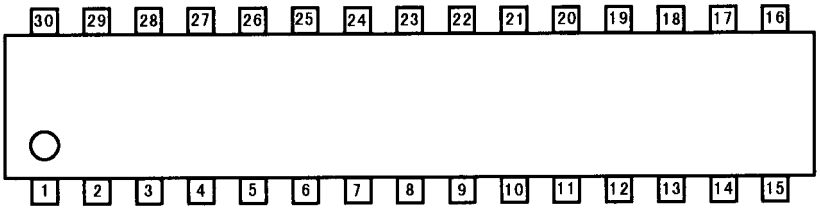
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
[ALL]						
Operating Supply Voltage Range	V^+		4	5	12	V
Mute OFF Current Dissipation	$I_{CC}1$	V_M=4.2V,V_{IN}=2.5V	-	20	35	mA
Mute ON Current Dissipation	$I_{CC}2$	V_M=0V,V_{IN}=2.5V	-	2	3.5	mA
[POWER AMPLIFIER]						
Output Offset Voltage	ΔV_O	R_L=8Ω	-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	mA
Input Voltage Range	V_{BI}		1.5	2.5	3.5	V
Output Voltage Range	ΔV_{BO}	I_L=-5mA,I_L=+5mA	-	-	-50	mA
[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



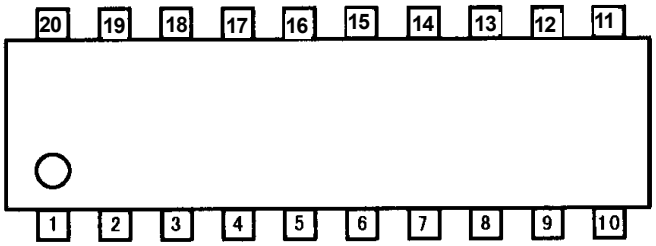
DIP16

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

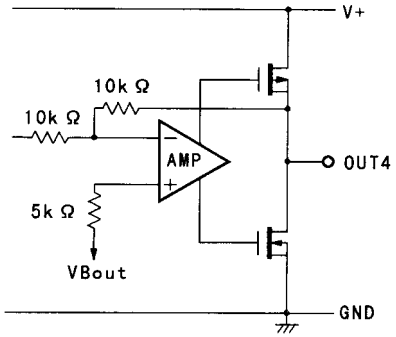
1.	GND	16.	GND
2.	GND	17.	GND
3.	OUT4	18.	OUT2
4.	NC	19.	NC
5.	NC	20.	NC
6.	VBout	21.	Vin1 (-)
7.	VBin	22.	Vin1 (+)
8.	NC	23.	NC
9.	V^+	24.	Vin2 (+)
10.	MUTE	25.	Vin2 (-)
11.	NC	26.	NC
12.	NC	27.	NC
13.	OUT1	28.	OUT3
14.	GND	29.	GND
15.	GND	30.	GND



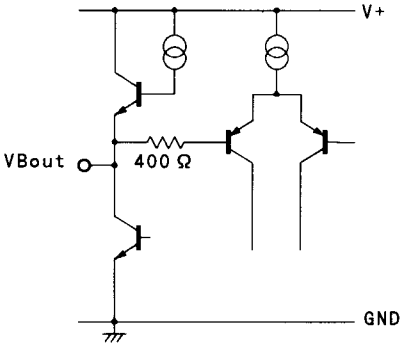
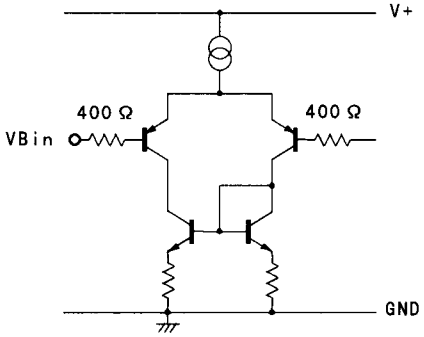
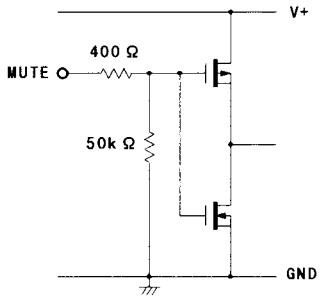
SSOP-20

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

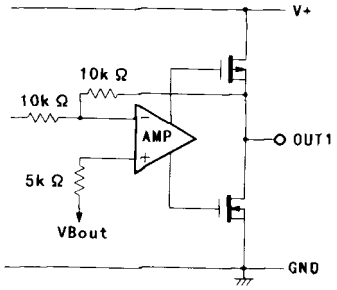
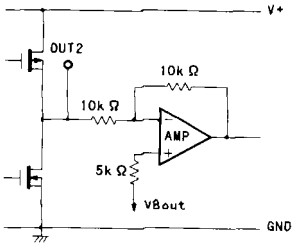
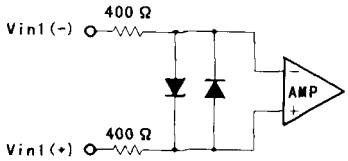
■ TERMINAL EXPLANATION

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 AMP.4. 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.	

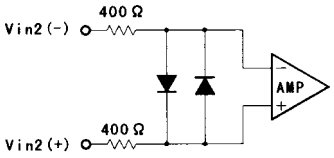
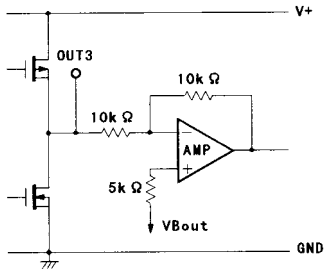
■ TERMINAL EXPLANATION

PIN NO.			PIN NAME	FUNCTION	INSIDE EQUIVALENT CIRCUIT
SSOP-20	DIP-16	SDMP-30			
19	15	6	VBout	An buffer amplifier output.	
20	16	7	VBin	An buffer amplifier input.	
1 2	1	9	V_{CC}	Supply Voltage.	
3	2	10	MUTE	A mute input. Pull down by 50kΩ (TYP) resistor.	

■ TERMINAL EXPLANATION

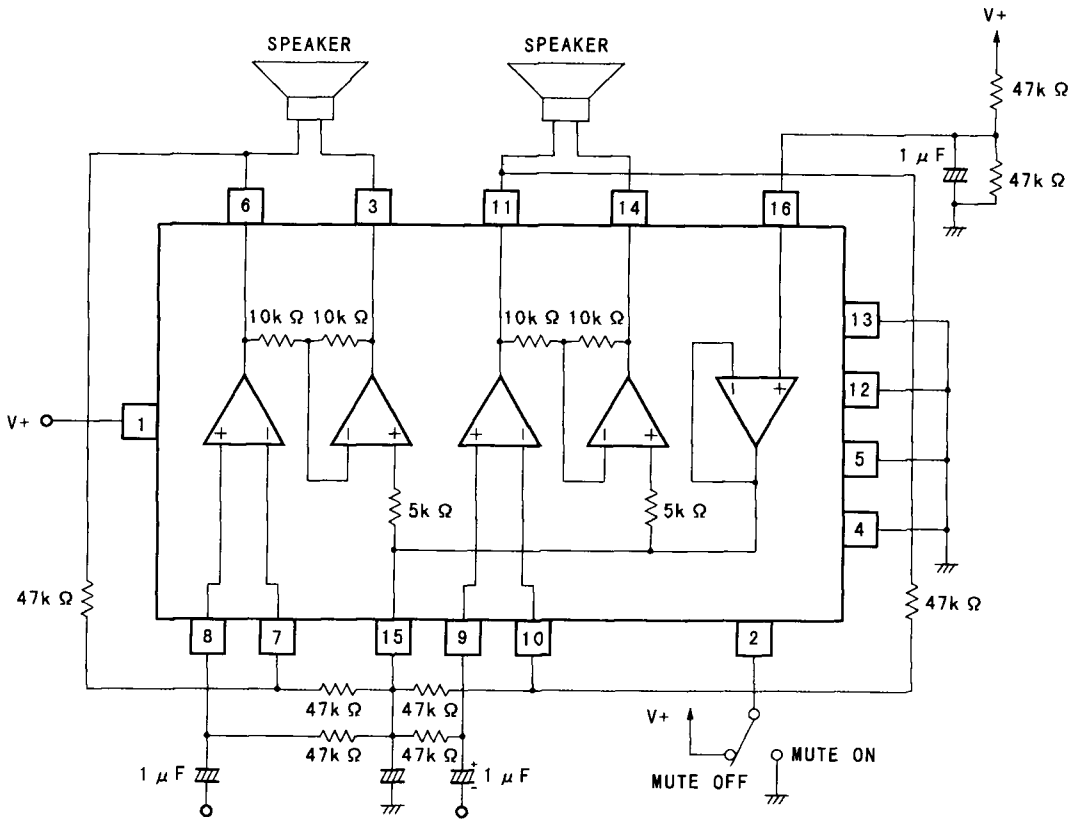
PIN NO.			PIN NAME	FUNCTION	INSIDE EQUIVALENT CIRCUIT
SSOP-20	DIP-16	SDMP-30			
4	3	13	OUT1	Output terminal of AMP.1. OUT1 signal is opposite phase against OUT2.	
7	6	18	OUT2	Output terminal of AMP.2.	
8	7	21	Vin1(-)	Inverting input terminal of AMP.2.	
9	8	22	Vin1(+)	Non-inverting input terminal of AMP.2.	

■ TERMINAL EXPLANATION

PIN NO.			PIN NAME	FUNCTION	INSIDE EQUIVALENT CIRCUIT
SSOP-20	DIP-16	SDMP-30			
11	9	24	Vin2(+)	Inverting input terminal of AMP.3.	
12	10	25	Vin2(-)	Non-inverting input terminal of AMP.3.	
13	11	28	OUT3	Output terminal of AMP.3.	

■ APPLICATION CIRCUIT

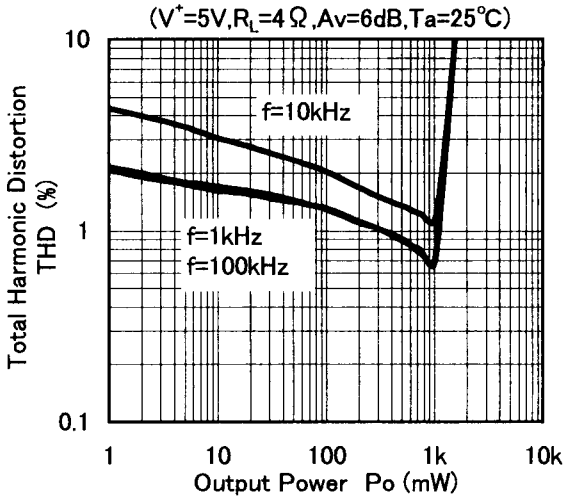
(1) BTL



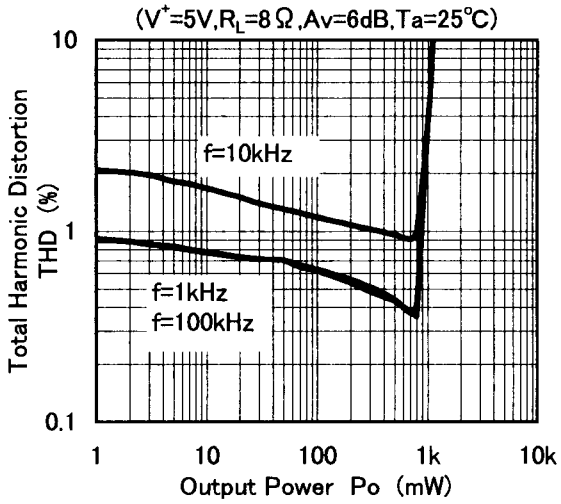
(The number in "( )" indicates a pin number of SDMP.)

■ TYPICAL CHARACTERISTICS

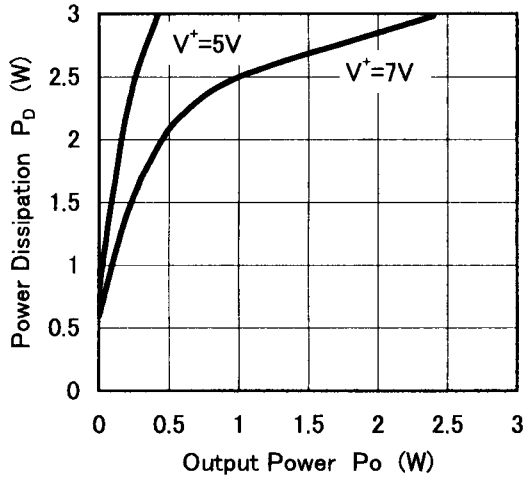
Total Harmonic Distortion VS.
Output Power
(V^+=5V,R_L=4Ω,Av=6dB,Ta=25°C)



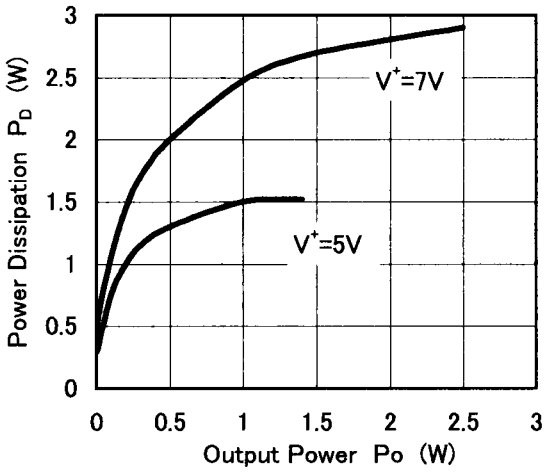
Total Harmonic Distortion VS.
Output Power
(V^+=5V,R_L=8Ω,Av=6dB,Ta=25°C)



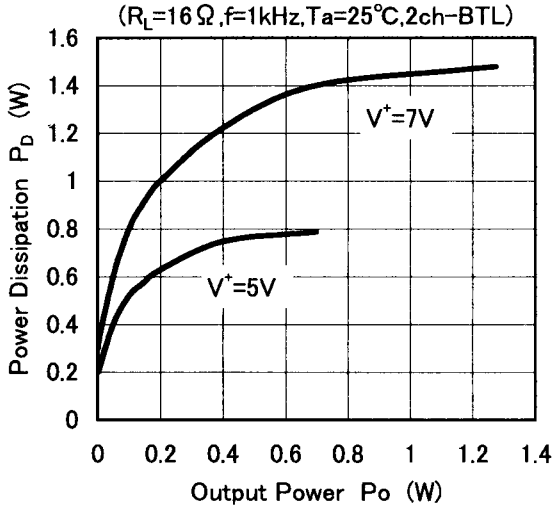
Power Dissipation VS. Output Power
(R_L=4Ω,f=1kHz,Ta=25°C,2ch-BTL)



Power Dissipation VS. Output Power
(R_L=8Ω,f=1kHz,Ta=25°C,2ch-BTL)

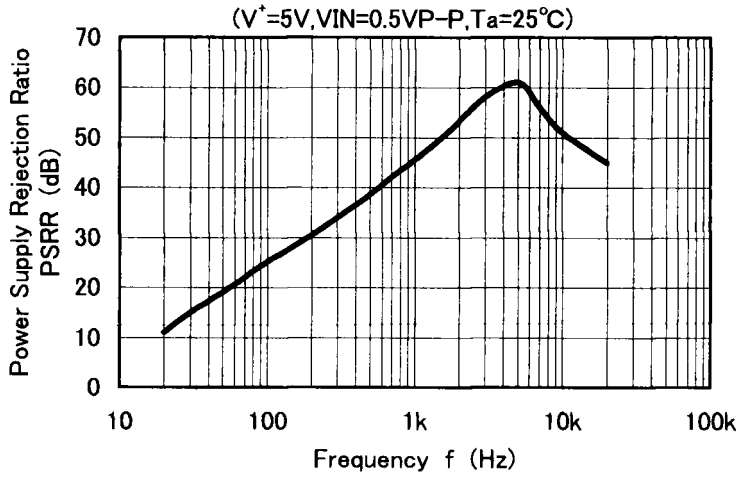


Power Dissipation VS. Output Power
(R_L=16Ω,f=1kHz,Ta=25°C,2ch-BTL)

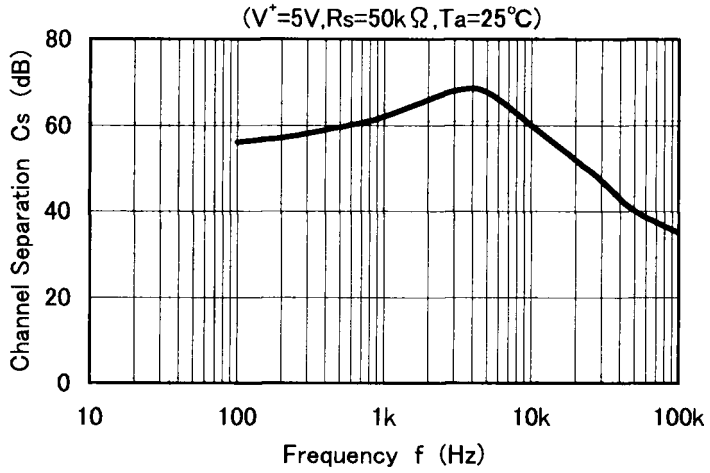


■ TYPICAL CHARACTERISTICS

Power Supply Rejection Ratio VS. Frequency
(V^+=5V,VIN=0.5VP-P,Ta=25°C)



Channel Separation VS. Frequency
(V^+=5V,Rs=50kΩ,Ta=25°C)



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