8/30/78

ADVANCED CIRCUITS

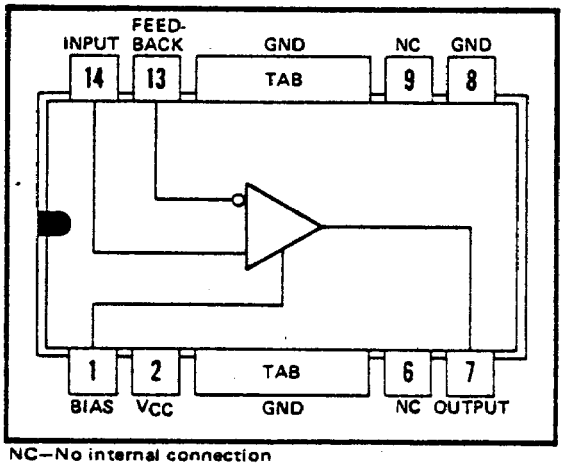
SN76002ND
2.5-WATT POWER AMPLIFIER

FOR AUDIO AND GENERAL PURPOSE APPLICATIONS

features

- 2.5W RMS Power into 8Ω with Typical THD = 0.7%
- Peak Output Current...1.2 A
- V_{CC} Range...9V to 24 V
- High Input Impedance
- Available in Dual-In-Line Package
- Package Design Facilitates Attachment of Heat Sinks

ND PLASTIC PACKAGE
(TOP VIEW)



NC—No internal connection

description

The SN76002ND amplifier is a monolithic integerated circuit designed for power amplifier applications at frequencies from 30 Hz to 100 kHz. The unit will deliver up to 4 watts rms output power into an 8-ohm load. High input impedance results from a high-gain differential input stage. Excellent high-frequency power-bandwidth performance provides optimum flexibility for critical system designs.

applications

- Radio/TV
- Phonographs
- Communications Systems
- Power Operational Amplifiers
- Servo Amplifiers

96 OR 16
002935
2935 TI

TEXAS INSTRUMENTS
INCORPORATED

absolute maximum ratings at 25°C free-air temperature (unless otherwise noted)

Supply voltage, V_{CC} (see Note 1).....26V

Output current.....1.2A

Continuous power dissipation at (or below) 70°C tab temperature (see Note 2)....5W

Operating tab temperature.....-55°C to 125°C

Storage temperature.....-65°C to 150°C

Lead temperature 1/16 inch from case for 10 seconds.....260°C

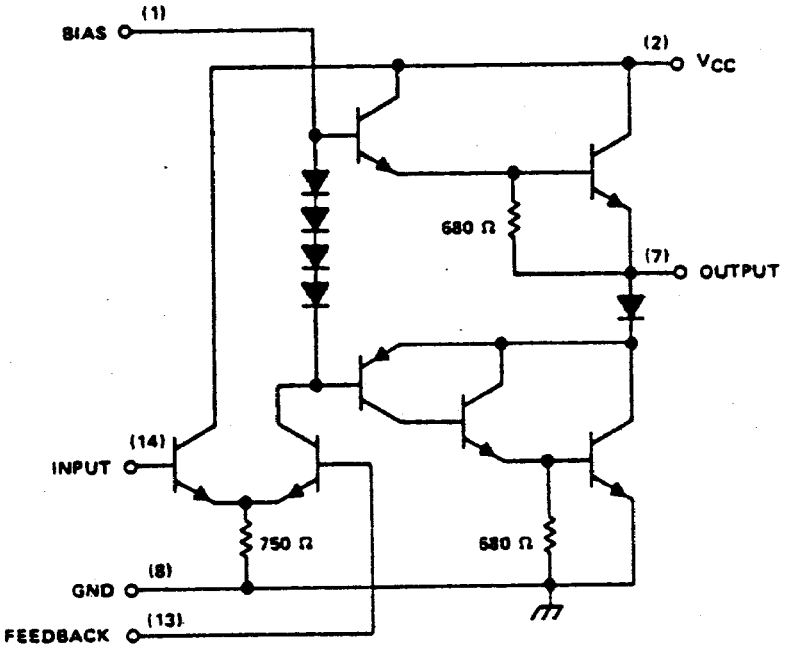
NOTES: 1. Voltage values are with respect to network ground terminal.
2. Derate linearly to 125°C tab temperature at the rate of 91mW/° or refer to dissipation derating curve, Figure 7.

operating characteristics (unless otherwise noted V_{CC} = 24V, T_A = 25°C, see Figure 1)

PARAMETER	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Continuous rms power output	THD < 5%, R_L = 8Ω, f = 1kHz		4			W
Input voltage	P_O = 4W, R_L = 8Ω, f = 1kHz			30	46	mV
Total harmonic distortion	R_L = 8Ω, f = 1kHz	P_O = 0.05W		0.4%	2%	
		P_O = 4W		0.5%	2%	
Efficiency	V_{CC} = 22V, P_O = 4W, R_L = 8Ω, f = 1kHz			54%		
Lower cutoff frequency*	Reference P_O = 5W at 1kHz, R_L = 16Ω			30		Hz
Upper cutoff frequency*	Reference P_O = 5W at 1kHz, R_L = 16Ω			100		kHz
Input impedance*	Reference plane is device input terminal		27	100		kΩ
Output impedance*	Reference plane is device output terminal			0.6		Ω
Noise output level (unfiltered)	Reference P_O = 5W, Input open			-70		dB
Quiescent output voltage*	No signal			17		V
Quiescent supply current	No signal		3	7	20	mA

*Values of these parareters are partially determined by external components used in the test circuit.

schematic



Resistor values shown are nominal.

PARAMETER MEASUREMENT INFORMATION

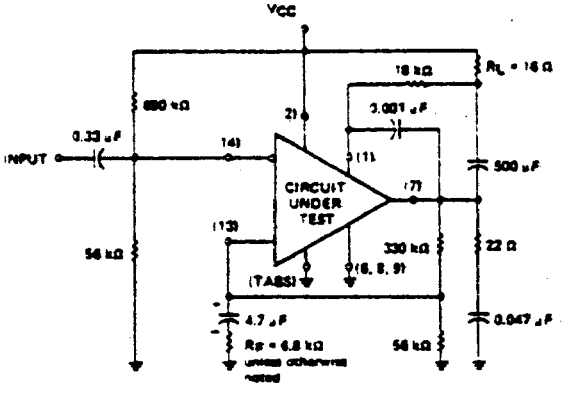
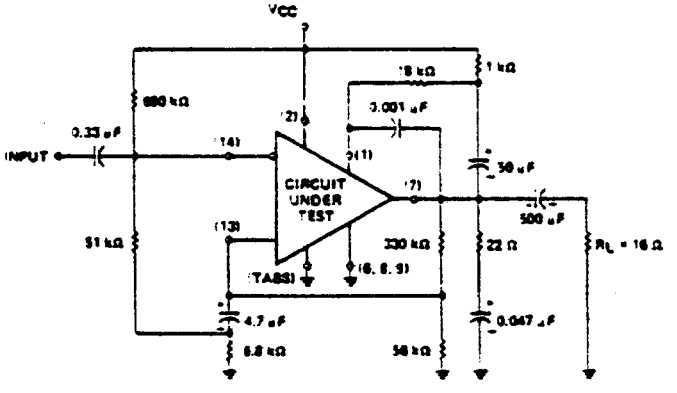


FIGURE 1—AMPLIFIER TEST CIRCUIT

TYPICAL APPLICATION DATA



AMPLIFIER TEST CIRCUIT MODIFIED FOR GROUNDED LOAD AND INPUT BOOTSTRAPPING

TYPICAL CHARACTERISTICS

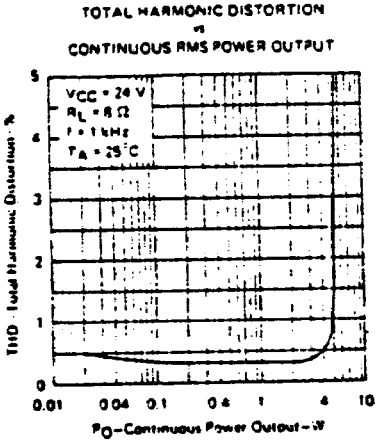


FIGURE 2

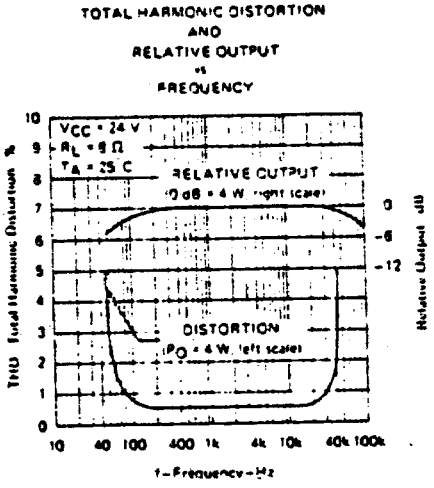


FIGURE 3

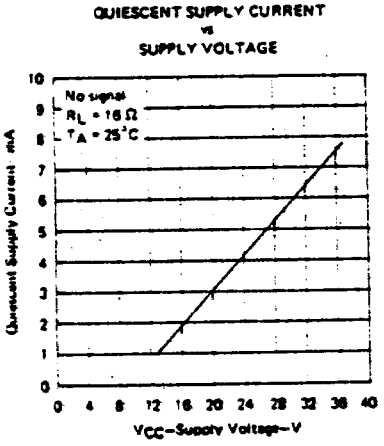


FIGURE 4

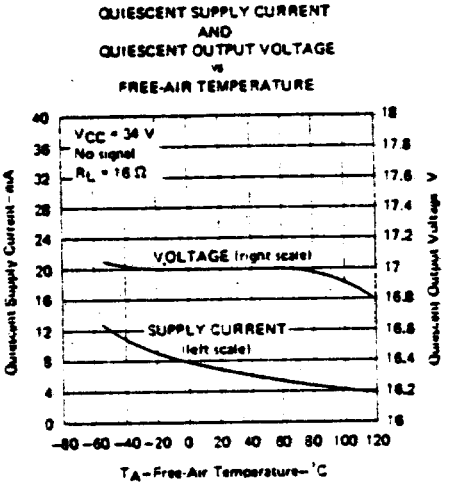


FIGURE 5

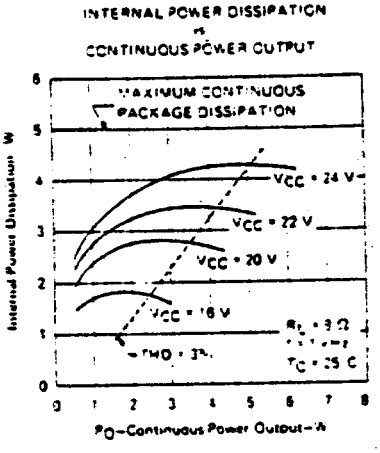


FIGURE 6

THERMAL INFORMATION

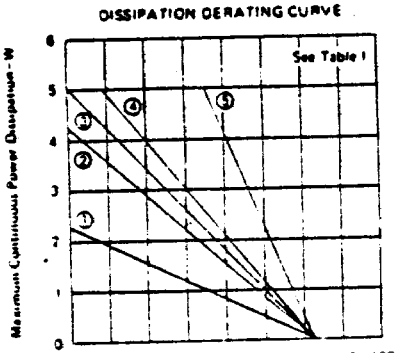


TABLE I

CURVE	DESCRIPTION†	TEMPERATURE REFERENCE
1	Package in free-air (no heat sink)	Free-Air
2	1-in² heat sink per tab	Free-Air
3	2-in² heat sink per tab	Free-Air
4	4-in² heat sink per tab	Free-Air
5	Both tabs at reference temperature	Tab

†Specified areas apply to one side of a 0.015-inch-thick copper sheet soldered to each tab.

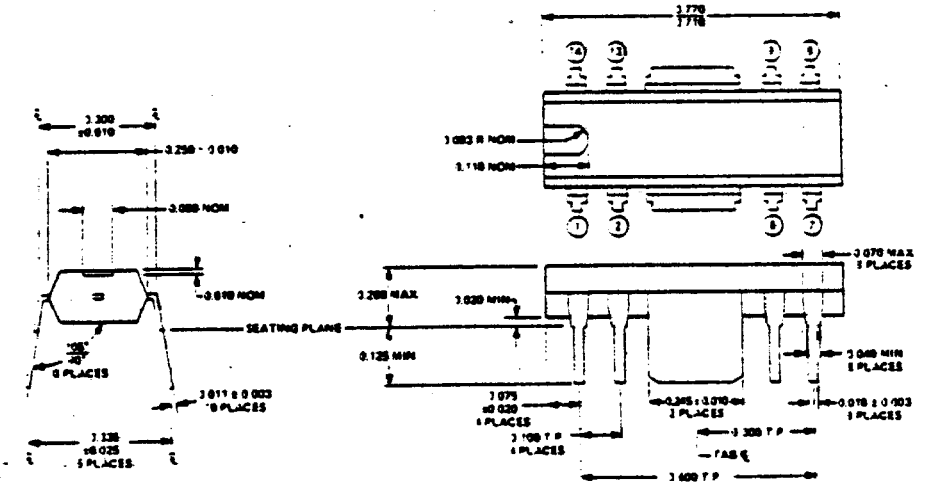
general

The SN76002ND is in a plastic dual-in-line package (outline ND). Orders for these devices should include the package outline letter at the end of the type number.

ND-package

This dual-in-line package consists of a circuit mounted on an 8-lead, 2-tab frame and encapsulated within a plastic compound. The compound will withstand soldering temperature with no deformation and circuit performance characteristics remain stable when operated in high-humidity conditions. These packages are intended for insertion in mounting-hole rows on 0.300-inch centers. Once the leads are compressed to 0.300-inch seperation and inserted, sufficient tension is provided to secure the package in the board during soldering. Pin positions 3, 4, 5, 10, 11, and 12 are occupied by two tabs which facilitate attachment of heat sinks. Silver-plated leads require no additional cleaning or processing when used in soldering assembly.

ND PLASTIC DUAL-IN-LINE PACKAGE OUTLINE



NOTES: a. Each pin (or tab) centerline is located within 0.005 of its true longitudinal position (T.P.).
b. All dimensions are in inches unless otherwise noted.