

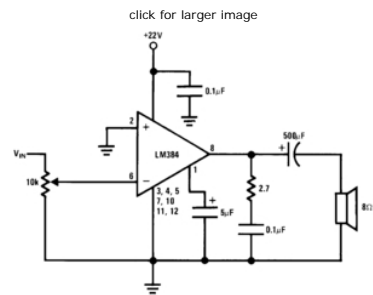


## LM384 - 5-W Audio Power Amplifier

### Features

- Wide supply voltage range: 12V to 26V
- Low quiescent power drain
- Voltage gain fixed at 50
- High peak current capability: 1.3A
- Input referenced to GND
- High input impedance: 150k $\Omega$
- Low distortion: 0.25% ( $P_o=4W$ ,  $R_L=8\Omega$ )
- Quiescent output voltage is at one half of the supply voltage
- Standard dual-in-line package

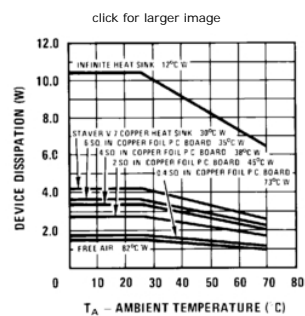
### Typical Application



### Parametric Table

Channels	1 Channels
Mono/Stereo	Mono
User Supply	26 Volt
Supply Range	+12 - +26 V
Power@ 8Ohms, 1% THD	6.5 Watt
Power@ 4Ohms, 10% THD	2.5 Watt
Power@ 8Ohms, 10% THD	8.5 Watt
THD	0.25 %
THD Conditions	$P_o=4W$ @ $V_s=22V$
Temperature Min	0 deg C
Temperature Max	70 deg C

### Typical Performance



## Datasheet

 RoHS Compliance Information
LM384 5W Audio Power Amplifier
<b>LM384 5W Audio Power Amplifier (Japanese)</b> 本网站の日本語版データシートは最新版ではない場合があります。ご検討 およびご採用に当たっては、最新の英語版データシートを必ずご確認ください。

## Package Availability, Models

Part Number	Package							Factory Lead Time		Models			Std Pack Size	Package Marking Format
	Type	Pins	Spec.	MSL Rating	Peak Reflow	RoHS Report	CAD Symbols	Weeks	Qty					
LM384N	MDIP	14	STD	1	NA	RoHS	N/A	Full production		N/A			rail of 25	NSUXYYTTE# LM384N
			NOPB	1	NA			6 weeks	1000					

## General Description

The LM384 is a power audio amplifier for consumer applications. In order to hold system cost to a minimum, gain is internally fixed at 34 dB. A unique input stage allows ground referenced input signals. The output automatically self-centers to one-half the supply voltage.

The output is short-circuit proof with internal thermal limiting. The package outline is standard dual-in-line. A copper lead frame is used with the center three pins on either side comprising a heat sink. This makes the device easy to use in standard p-c layout.

Uses include simple phonograph amplifiers, intercoms, line drivers, teaching machine outputs, alarms, ultrasonic drivers, TV sound systems, AM-FM radio, sound projector systems, etc. See AN-69 for circuit details.

## Reliability Metrics

Part Number	Process	EFR Reject	EFR Sample Size	PPM *	LTA Rejects	LTA Device Hours	FITS	MTTF (Hours)
LM384N	SLM	0	42786	0	0	3352500	2	951281028

Note: The Early Failure Rates were calculated as point estimates. The Long Term Failure Rates were calculated at 60% confidence using the Arrhenius equation at 0.7eV activation energy and derating the assumed stress temperature of 150°C to an application temperature of 55°C.

# LM384

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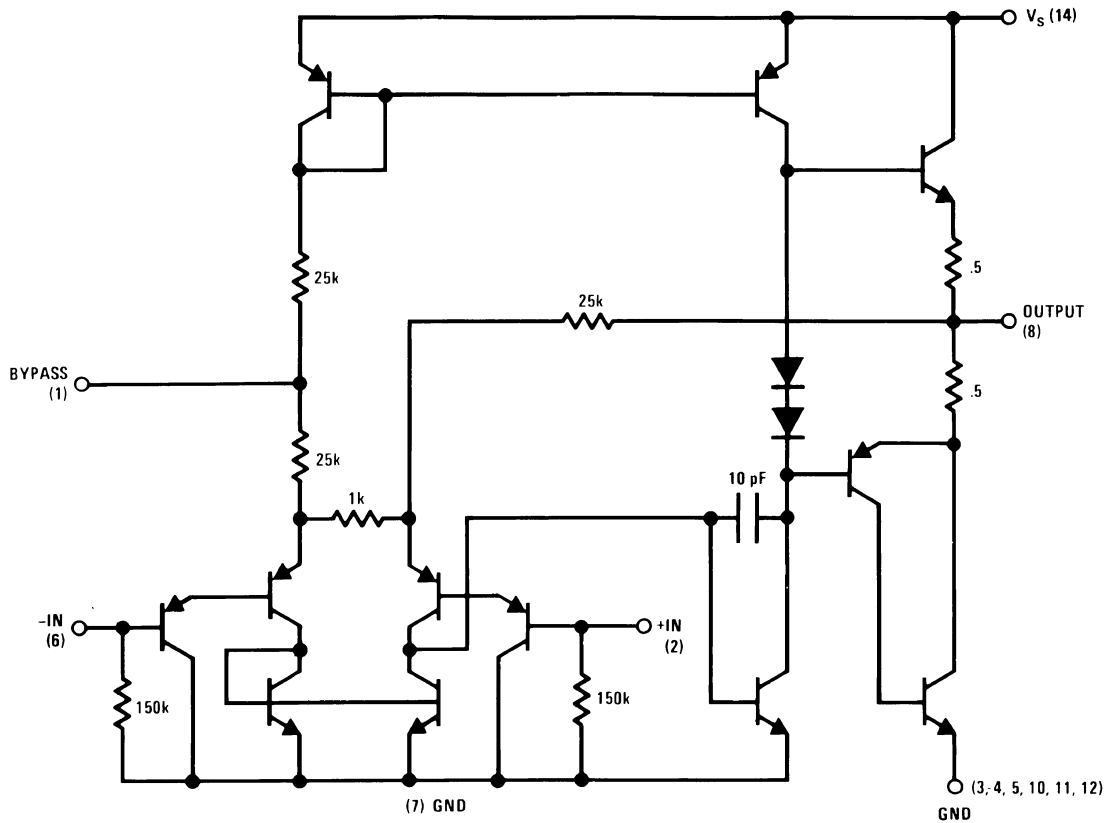
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### Schematic Diagram



00784303

**Absolute Maximum Ratings** (Note 1)

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Supply Voltage	28V
Peak Current	1.3A
Power Dissipation (See (Notes 4, 5))	1.67W
Input Voltage	±0.5V
Storage Temperature	-65°C to +150°C

Operating Temperature	0°C to +70°C
Lead Temperature (Soldering, 10 sec.)	260°C
Thermal Resistance	
$\theta_{JC}$	30°C/W
$\theta_{JA}$	79°C/W

**Note 1:** Absolute Maximum Ratings indicate limits beyond which damage to the device may occur. Operating Ratings indicate conditions for which the device is functional, but do not guarantee specific performance limits.

**Electrical Characteristics** (Note 2)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
$Z_{IN}$	Input Resistance			150		k $\Omega$
$I_{BIAS}$	Bias Current	Inputs Floating		100		nA
$A_V$	Gain		40	50	60	V/V
$P_{OUT}$	Output Power	THD = 10%, $R_L = 8\Omega$	5	5.5		W
$I_Q$	Quiescent Supply Current			8.5	25	mA
$V_{OUT Q}$	Quiescent Output Voltage			11		V
BW	Bandwidth	$P_{OUT} = 2W, R_L = 8\Omega$		450		kHz
$V^+$	Supply Voltage		12		26	V
$I_{SC}$	Short Circuit Current (Note 6)			1.3		A
$PSRR_{RTO}$	Power Supply Rejection Ratio (Note 3)			31		dB
THD	Total Harmonic Distortion	$P_{OUT} = 4W, R_L = 8\Omega$		0.25	1.0	%

**Note 2:**  $V^+ = 22V$  and  $T_A = 25^\circ C$  operating with a Staver V7 heat sink for 30 seconds.

**Note 3:** Rejection ratio referred to the output with  $C_{BYPASS} = 5 \mu F$ , freq = 120 Hz.

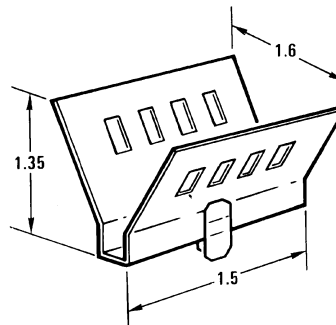
**Note 4:** The maximum junction temperature of the LM384 is 150°C.

**Note 5:** The package is to be derated at 15°C/W junction to heat sink pins.

**Note 6:** Output is fully protected against a shorted speaker condition at all voltages up to 22V.

**Heat Sink Dimensions**

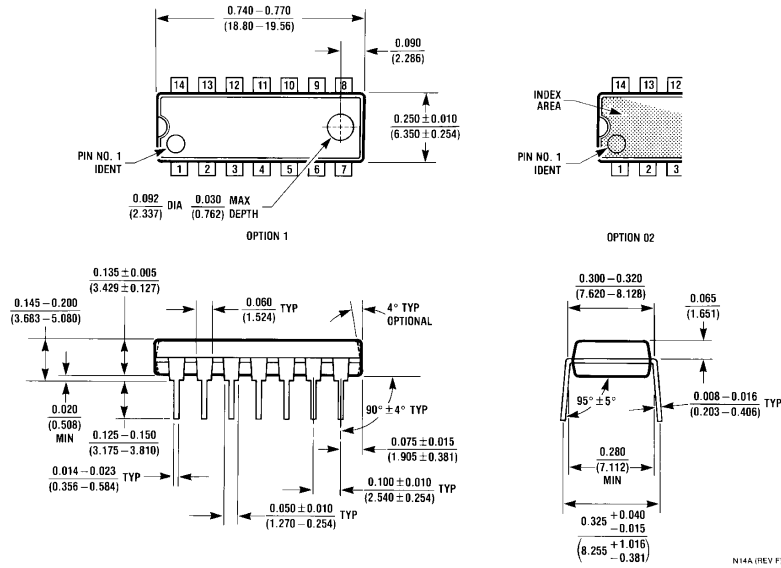
Staver "V7" Heat Sink



00784304

Staver Company  
41 Saxon Ave.  
P.O. Drawer H  
Bay Shore, N.Y.  
Tel: (516) 666-8000

**Physical Dimensions** inches (millimeters) unless otherwise noted



**Molded Dual-In-Line Package (N)**  
**Order Number LM384N**  
**NS Package Number N14A**