

LM383/LM383A 7W Audio Power Amplifier

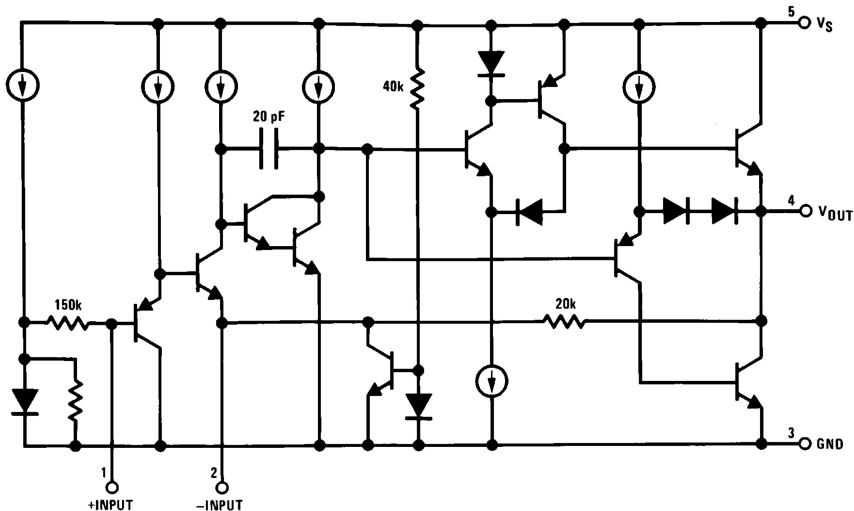
General Description

The LM383 is a cost effective, high power amplifier suited for automotive applications. High current capability (3.5A) enables the device to drive low impedance loads with low distortion. The LM383 is current limited and thermally protected. High voltage protection is available (LM383A) which enables the amplifier to withstand 40V transients on its supply. The LM383 comes in a 5-pin TO-220 package.

Features

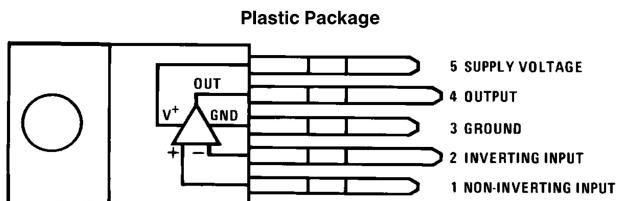
- High peak current capability (3.5A)
- Large output voltage swing
- Externally programmable gain
- Wide supply voltage range (5V–20V)
- Few external parts required
- Low distortion
- High input impedance
- No turn-on transients
- High voltage protection available (LM383A)
- Low noise
- AC short circuit protected

Equivalent Schematic



TL/H/7145-1

Connection Diagram



TL/H/7145-2

Order Number LM383T or LM383AT
See NS Package Number T05B

Absolute Maximum Ratings

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

Peak Supply Voltage (50 ms)		Input Voltage	$\pm 0.5V$
LM383A (Note 2)	40V	Power Dissipation (Note 3)	15W
LM383	25V	Operating Temperature	0°C to +70°C
Operating Supply Voltage	20V	Storage Temperature	-60°C to +150°C
Output Current		Lead Temperature (Soldering, 10 sec.)	260°C
Repetitive	3.5A		
Non-repetitive	4.5A		

Electrical Characteristics $V_S = 14.4V$, $T_{TAB} = 25^\circ C$, $A_V = 100$ (40 dB), $R_L = 4\Omega$, unless otherwise specified

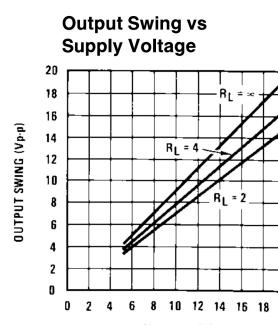
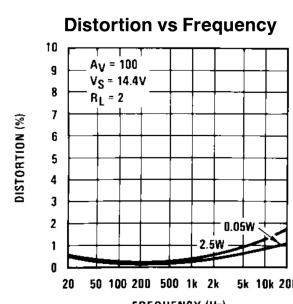
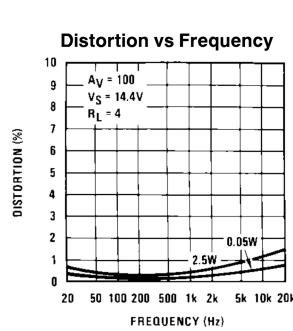
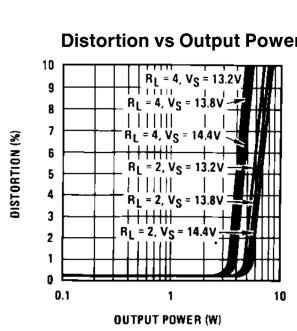
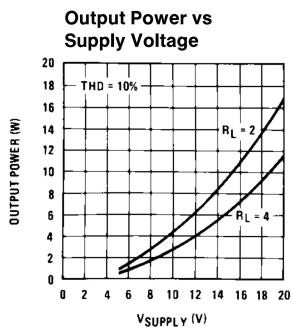
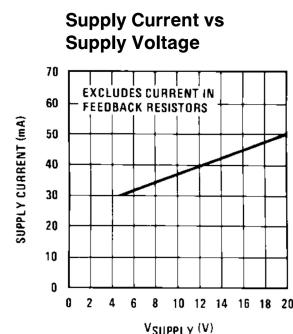
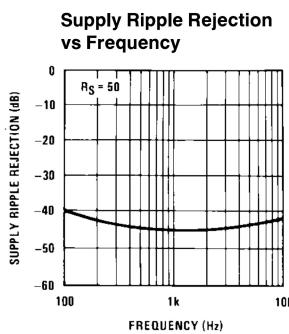
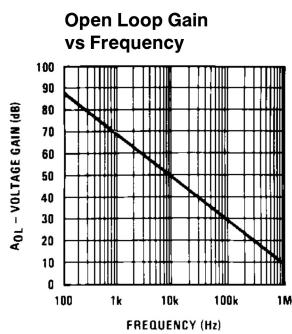
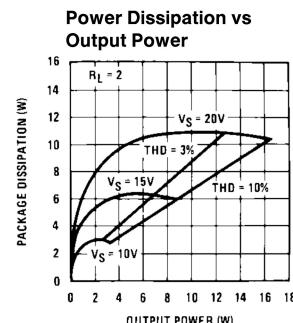
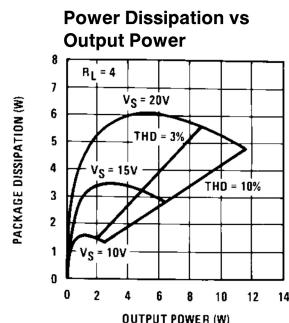
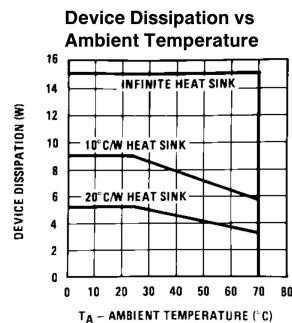
Parameter	Conditions	Min	Typ	Max	Units
DC Output Level		6.4	7.2	8	V
Quiescent Supply Current	Excludes Current in Feedback Resistors		45	80	mA
Supply Voltage Range		5		20	V
Input Resistance			150		k Ω
Bandwidth	Gain = 40 dB		30		kHz
Output Power	$V_S = 13.2V, f = 1 \text{ kHz}$ $R_L = 4\Omega, \text{THD} = 10\%$ $R_L = 2\Omega, \text{THD} = 10\%$ $V_S = 13.8V, f = 1 \text{ kHz}$ $R_L = 4\Omega, \text{THD} = 10\%$ $R_L = 2\Omega, \text{THD} = 10\%$ $V_S = 14.4V, f = 1 \text{ kHz}$ $R_L = 4\Omega, \text{THD} = 10\%$ $R_L = 2\Omega, \text{THD} = 10\%$ $R_L = 1.6\Omega, \text{THD} = 10\%$ $V_S = 16V, f = 1 \text{ kHz}$ $R_L = 4\Omega, \text{THD} = 10\%$ $R_L = 2\Omega, \text{THD} = 10\%$ $R_L = 1.6\Omega, \text{THD} = 10\%$		4.7 7.2 5.1 7.8 4.8 7		W W W W W W W W W W W W W W
THD	$P_o = 2W, R_L = 4\Omega, f = 1 \text{ kHz}$ $P_o = 4W, R_L = 2\Omega, f = 1 \text{ kHz}$		0.2 0.2		% %
Ripple Rejection	$R_S = 50\Omega, f = 100 \text{ Hz}$ $R_S = 50\Omega, f = 1 \text{ kHz}$	30	40 44		dB dB
Input Noise Voltage	$R_S = 0, 15 \text{ kHz}$ Bandwidth		2		μV
Input Noise Current	$R_S = 100 \text{ k}\Omega, 15 \text{ kHz}$ Bandwidth		40		pA

Note 1: A 0.2 μF capacitor in series with a 1Ω resistor should be placed as close as possible to pins 3 and 4 for stability.

Note 2: The LM383 shuts down above 25V.

Note 3: For operating at elevated temperatures, the device must be derated based on a $150^\circ C$ maximum junction temperature and a thermal resistance of $4^\circ C/W$ junction to case.

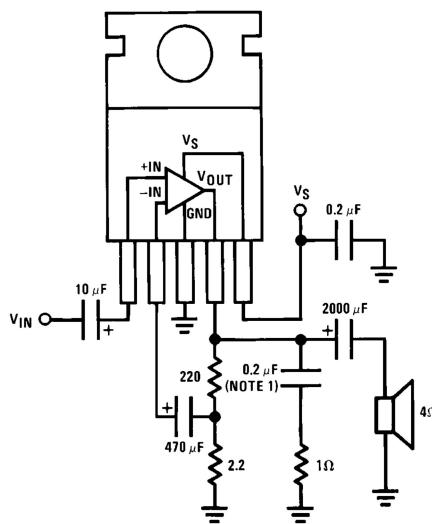
Typical Performance Characteristics



TL/H/7145-4

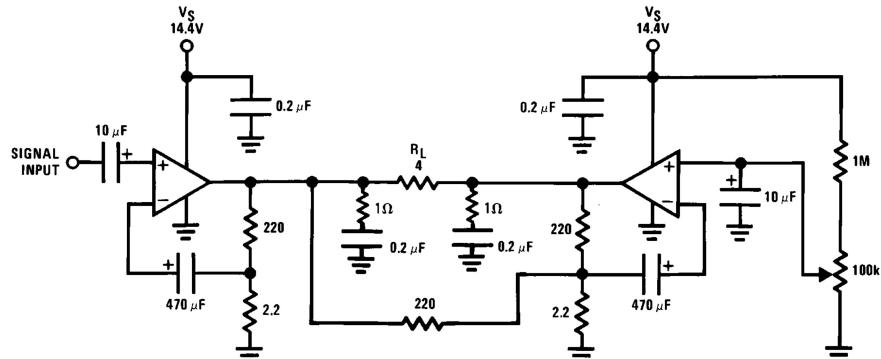
Typical Applications

Single Amplifier



TL/H/7145-3

16W Bridge Amplifier



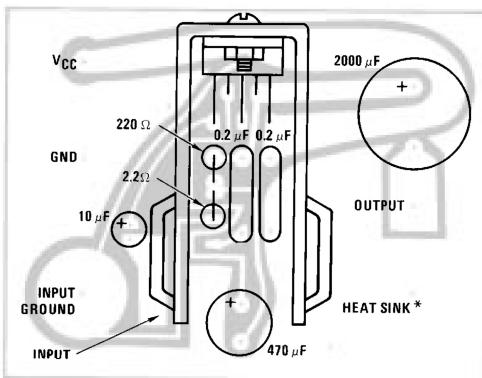
TL/H/7145-5

Component Layout

Single Amplifier

$V_S = 20V$

$R_L = 4\Omega$



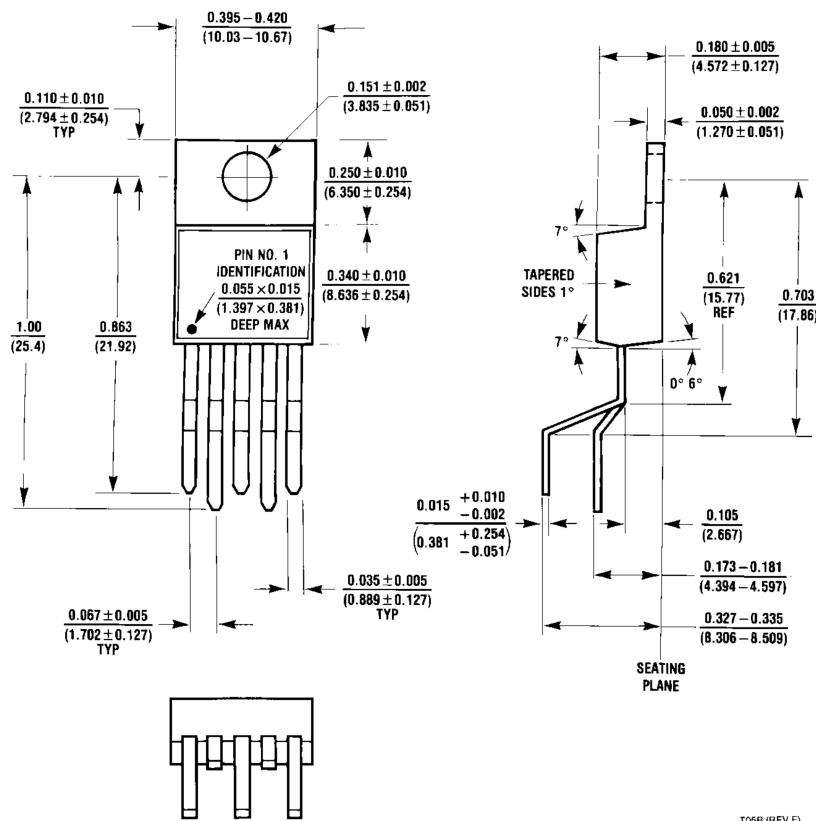
* Staver V-5

Heatsink from:
Staver Company
41 Saxon Ave.
P.O. Drawer H
Bay Shore, NY 11706
Tel: (516) 666-8000

TL/H/7145-6

LM383/LM383A 7W Audio Power Amplifier

Physical Dimensions inches (millimeters)



Order Number LM383T or LM383AT
NS Package Number T05B

T05B (REV F)

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