

BIPOLAR ANALOG INTEGRATED CIRCUITS

μ PC1181H3, μ PC1182H3

5.8 W AF POWER AMPLIFIER

SILICON BIPOLAR MONOLITHIC INTEGRATED CIRCUIT

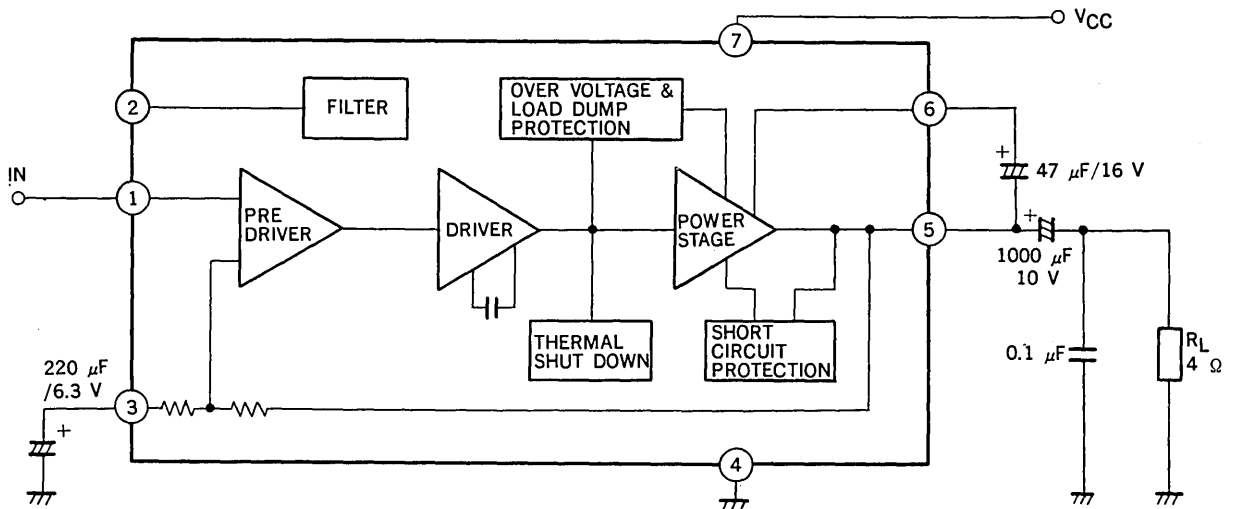
DESCRIPTION

The μ PC1181H3 and μ PC1182H3 are audio power amplifiers which is especially designed for car radio and car stereo. The devices are encapsulated in newly developed small packages featuring low thermal resistance, providing easy design for 2 Ω . At 14.4 V the devices give output power of 7 W with $R_L = 4 \Omega$ and 11 W $R_L = 2 \Omega$.

FEATURES

- High output power : $P_O = 7 \text{ W TYP.}$ $R_L = 4 \Omega$ at 14.4 V
 $P_O = 11 \text{ W}$ $R_L = 2 \Omega$ at 14.4 V
- Low transient noise at power supply switch-on.
- Few external components required (4 pieces)
- Assembly ease, due to 7 lead single in-line package with no insulation requirement.
- Pin orders of these types are symmetrical each other, which reduces the area of Printed Circuit Board effectively.
- Following protective circuits are provided
 - (1) Load dump protection
 - (2) Thermal shut down protection
 - (3) Over voltage protection
 - (4) Output terminal short circuit protection
- These ICs are not destroyed nor damaged even when any of neighboring two terminals are shorted to each other, or revere insertion into Printed Circuit Board is occurred.

BLOCK DIAGRAM



μ PC1181H3, μ PC1182H3

ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

Supply Voltage (Surge PW = 200 ms)	V_{CC} surge	40	V
Supply Voltage (Quiescent)	V_{CC1}	25*	V
Supply Voltage (Operational)	V_{CC2}	18	V
Circuit Current (Peak)	I_{CC} peak	4.5	A
Package Dissipation	P_D	12	W
Operating Temperature	T_{opt}	-30 to +75*	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

*Using an aluminum heat sink 100 x 100 x 1 mm

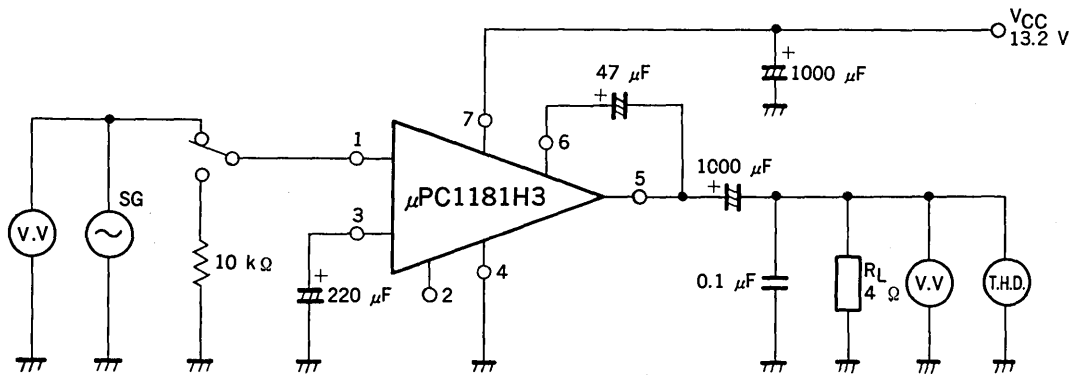
RECOMMENDED CONDITIONS ($T_a = 25^\circ\text{C}$)

Supply Voltage Range	9.5 to 16	V
Load Impedance	4 to 2	V

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$, $f = 1\text{ kHz}$, $R_L = 4\ \Omega$)

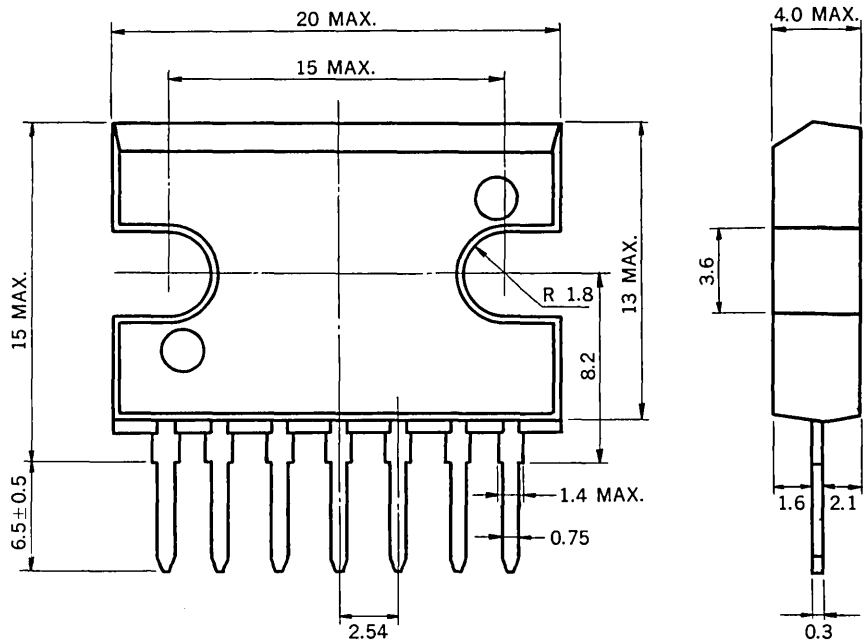
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Circuit Current	I_{CC}	23	45	80	mA	$v_{in} = 0$, $V_{CC} = 13.2\text{ V}$
Output Power	P_O	5.0	5.8		W	$R_L = 4\ \Omega$, T.H.D. = 10%, $V_{CC} = 13.2\text{ V}$
			7		W	$R_L = 4\ \Omega$, T.H.D. = 10%, $V_{CC} = 14.4\text{ V}$
			9.2		W	$R_L = 2\ \Omega$, T.H.D. = 10%, $V_{CC} = 13.2\text{ V}$
			11		W	$R_L = 2\ \Omega$, T.H.D. = 10%, $V_{CC} = 14.4\text{ V}$
Total Harmonic Distortion			0.3	1	%	$P_O = 0.5\text{ W}$
Voltage Gain	A_v	51	53.5	56	dB	$P_O = 0.5\text{ W}$
Output Noise Level	v_n		1.4	4.0	mVr.m.s.	$R_g = 10\text{ k}\Omega$

TEST CIRCUIT & TYPICAL APPLICATIONS

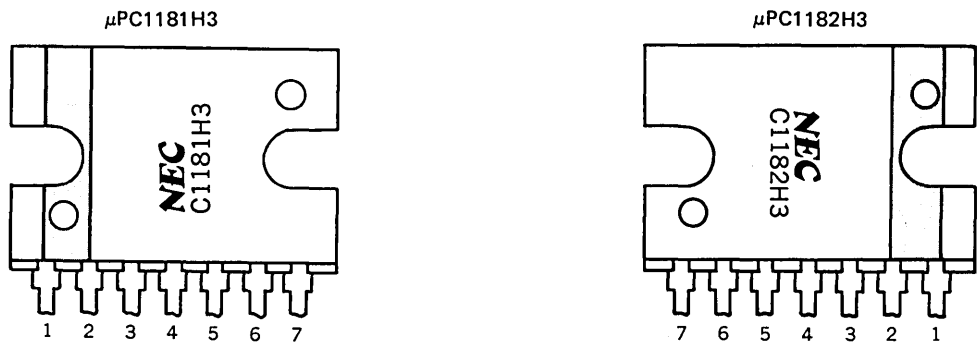


*Mylar Film Capacitor

PACKAGE DIMENSIONS (in millimeters)

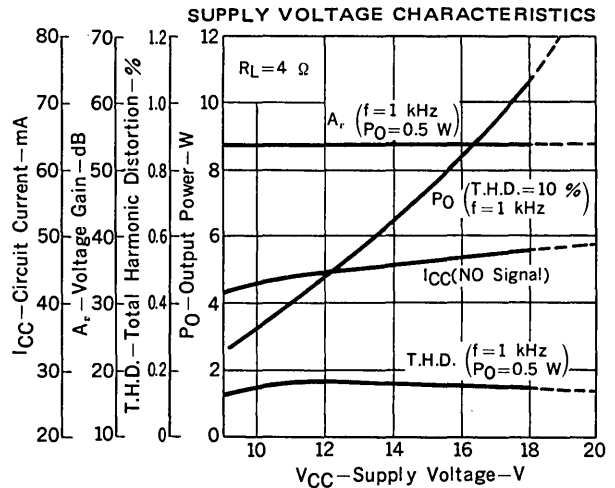
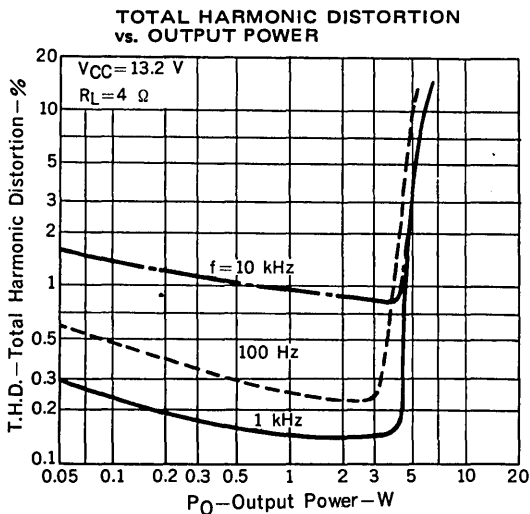
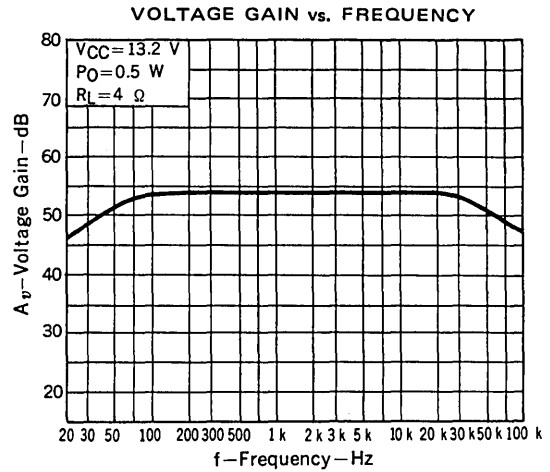
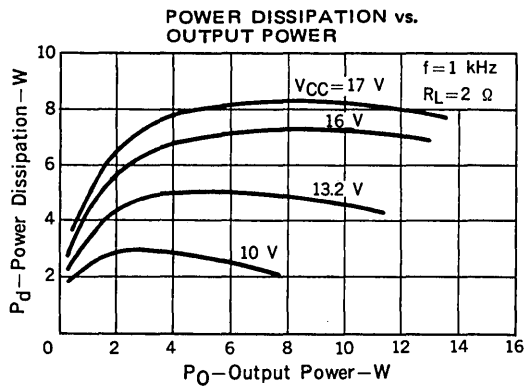
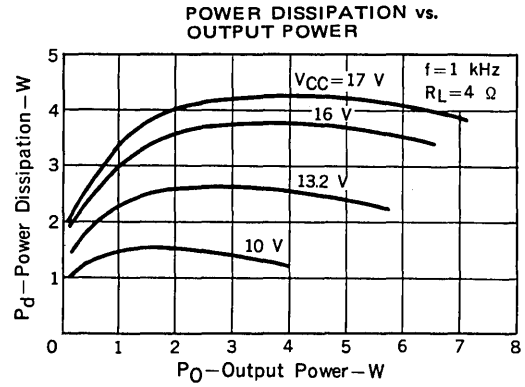
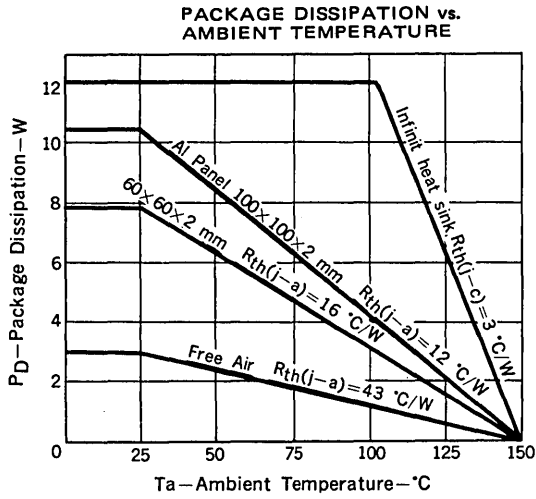


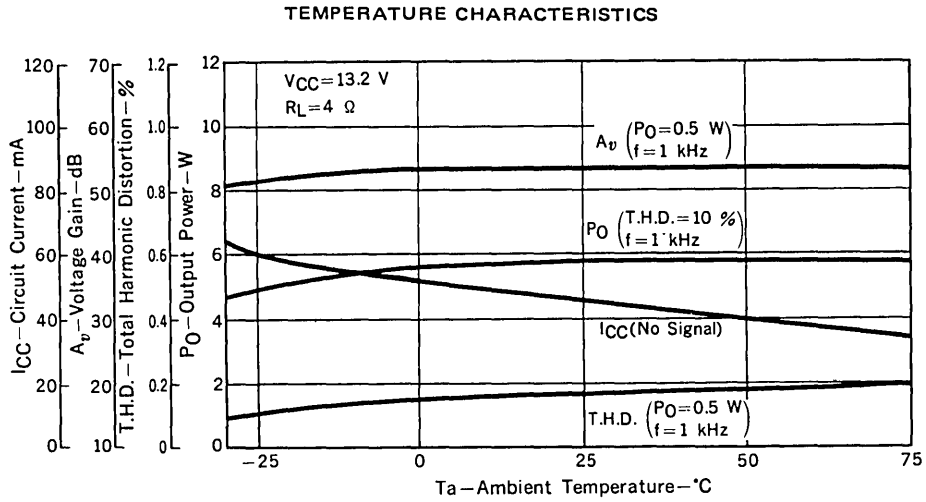
CONNECTION DIAGRAM



Pin No.	μ PC1181H3 μ PC1182H3
1	Input
2	Bypass
3	Feedback
4	GND
5	Output
6	Boot strap
7	Power supply

TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)





TYPICAL APPLICATIONS

(1) Circuit Example

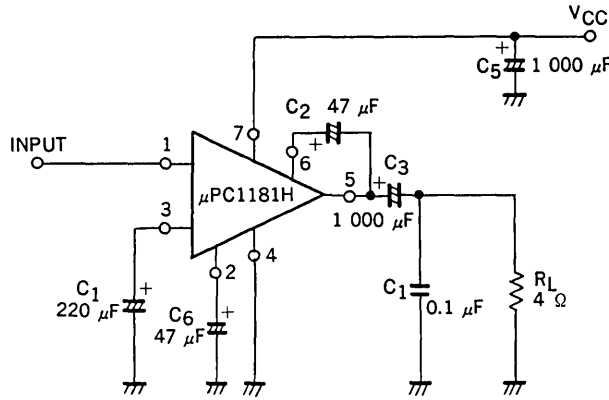


Fig. A

- The supply ripple rejection ratio is improved by C_6 .

(2) Circuit Example

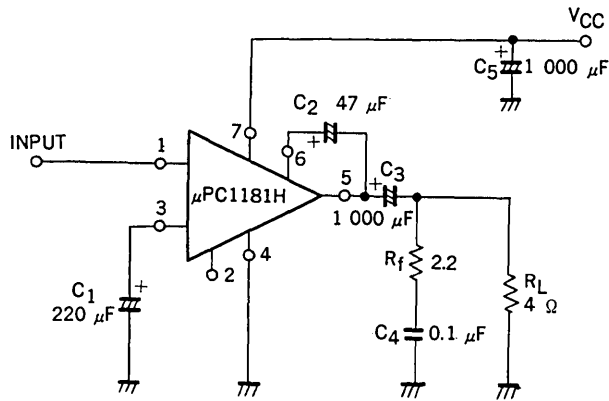


Fig. B

- The capacitor C_4 is for preventing a parasitic oscillation.
A mylar film capacitor is recommended.
If an oscillation occurs, increase capacitance of C_4 , or connect an additional resistor R_1 as shown in Fig. B.



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NTE1285 & NTE1286 Integrated Circuit Audio Power Amplifier, 5.8W

Description:

The NTE1285 and NTE1286 are audio power amplifiers in a 7-Lead SIP type package designed especially for car radio and car stereo applications. These devices are encapsulated in newly developed small packages featuring low thermal resistance, providing easy design for 2Ω. At 14.4V the devices give output power of 7W with R_L = 4Ω and 11W with R_L = 2Ω.

Features:

- High Output Power
- Low Transient Noise at Power Supply Switch ON
- Mirror Image Pin Configurations
- Protection Circuits are Provided for the Following:
 - Load Dump Protection
 - Thermal Shut-Down Protection
 - Overvoltage Protection
 - Output Terminal Short-Circuit Protection

Absolute Maximum Ratings: (T_A = +25°C unless otherwise specified)

Supply Voltage (Surge PW = 200ms), V _{CCsurge}	40V
Supply Voltage (Quiescent, Note 1), V _{CC1}	25V
Supply Voltage (Operational), V _{CC2}	18V
Peak Circuit Current, I _{CCpeak}	4.5A
Packag Dissipation, P _D	12W
Operating Temperature Range (Note 1), T _{opr}	-30° to +75°C
Storage Temperature Range, T _{stg}	-55° to +150°C

Note 1. Using an aluminum heat sink 100mm x 100mm x 1mm.

Recommended Operating Conditions: (T_A = +25°C unless otherwise specified)

Supply Voltage Range, V _{CC}	9.5V to 16V
Load Impedance, R _L	4Ω to 2Ω

Electrical Characteristics: ($T_A = +25^\circ\text{C}$, $f = 1\text{kHz}$, $R_L = 4\Omega$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Circuit Current	I_{CC}	$v_{in} = 0$, $V_{CC} = 13.2\text{V}$	23	45	80	mA
Output Power	P_O	$R_L = 4\Omega$, THD = 10%, $V_{CC} = 13.2\text{V}$	5.0	5.8	–	W
		$R_L = 4\Omega$, THD = 10%, $V_{CC} = 14.4\text{V}$	–	7.0	–	W
		$R_L = 2\Omega$, THD = 10%, $V_{CC} = 13.2\text{V}$	–	9.2	–	W
		$R_L = 2\Omega$, THD = 10%, $V_{CC} = 14.4\text{V}$	–	11.0	–	W
Total Harmonic Distortion	THD	$P_O = 0.5\text{W}$	–	0.3	1.0	%
Voltage Gain	A_v	$P_O = 0.5\text{W}$	51.0	53.5	56.0	dB
Output Noise Level	v_n	$R_g = 10\text{k}\Omega$	–	1.4	4.0	mV_{rms}

