

BIPOLAR ANALOG INTEGRATED CIRCUIT

μ PC1277H

4.2 W DUAL AUDIO POWER AMPLIFIER

DESCRIPTION

The μ PC1277H is a dual audio power amplifier designed for a stereo radio cassette and in a 12-pin power single in line plastic package.

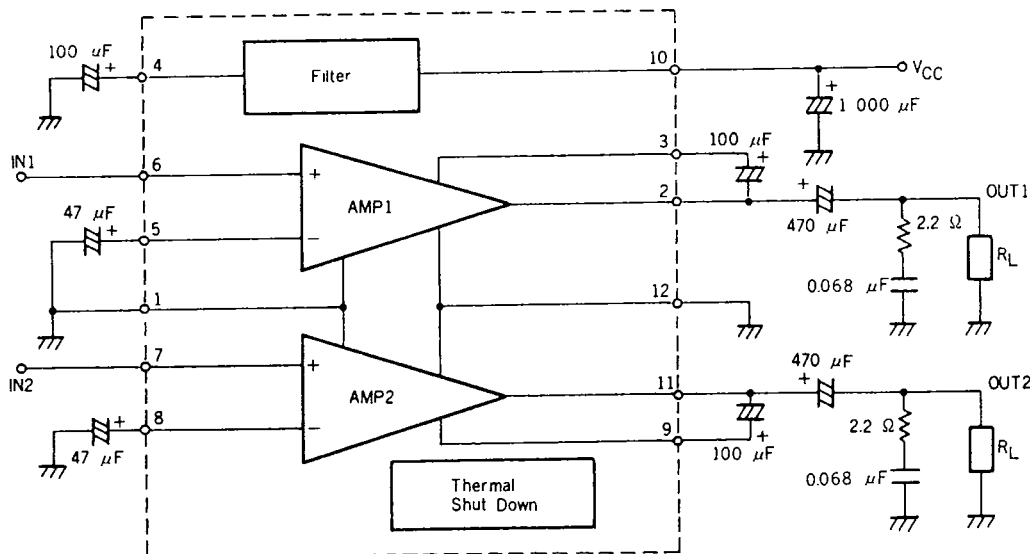
The μ PC1277H has two audio power amplifiers and each of the two provides 4.2 W output power at 12 V/4 ohms.

FEATURES

- High output power.

4.2 W/ch (TYP.)	$V_{CC} = 12\text{ V}, R_L = 4\text{ ohms}$
5 W/ch (TYP.)	$V_{CC} = 12\text{ V}, R_L = 3\text{ ohms}$
2.2 W/ch (TYP.)	$V_{CC} = 9\text{ V}, R_L = 4\text{ ohms}$
3 W/ch (TYP.)	$V_{CC} = 9\text{ V}, R_L = 3\text{ ohms}$
- Wide operating voltage range. $V_{CC} = 5\text{ to }16\text{ V}$
- No shock noise at power supply switch on and off.
- Soft clipping wave form.
- High ripple rejection ratio. R.R.R. = 50 dB (TYP.)
- Few external components. 12 parts
- Thermal shut'down circuit is built in.
- A 12-pin power SIP can easily be mounted on PCB and a external heat sink can easily be attached.

BLOCK DIAGRAM

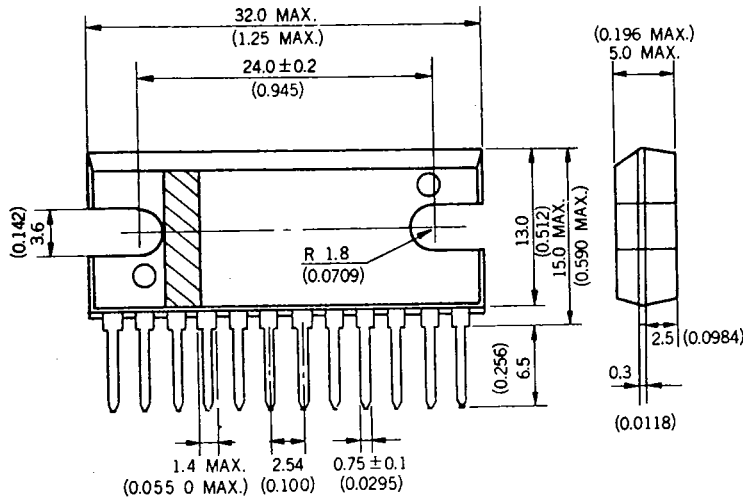


μPC1277H

6427525 N E C ELECTRONICS INC

72C 08667 D T-74-05-01

PACKAGE DIMENSIONS in millimeters (inches)



CONNECTION DIAGRAM

Pin No.	Connection
1	GND (Input)
2	Output 1
3	Boot Strap 1
4	Filter
5	NFB 1
6	Input 1
7	Input 2
8	NFB 2
9	Boot Strap 2
10	V _{CC}
11	Output 2
12	GND (Output)

ABSOLUTE MAXIMUM RATINGS (T_a = 25 °C)

Supply Voltage (No Signal)	V _{CC1}	20	V
Supply Voltage (Operating)	V _{CC2}	16	V
Allowable Power Dissipation	P _D	13*	W
Operating Temperature	T _{opt}	-20 to +75	°C
Storage Temperature	T _{stg}	-40 to +150	°C

* 100 x 100 x 2 mm³ Al heat sink

RECOMMENDED OPERATING CONDITIONS (T_a = 25 °C)

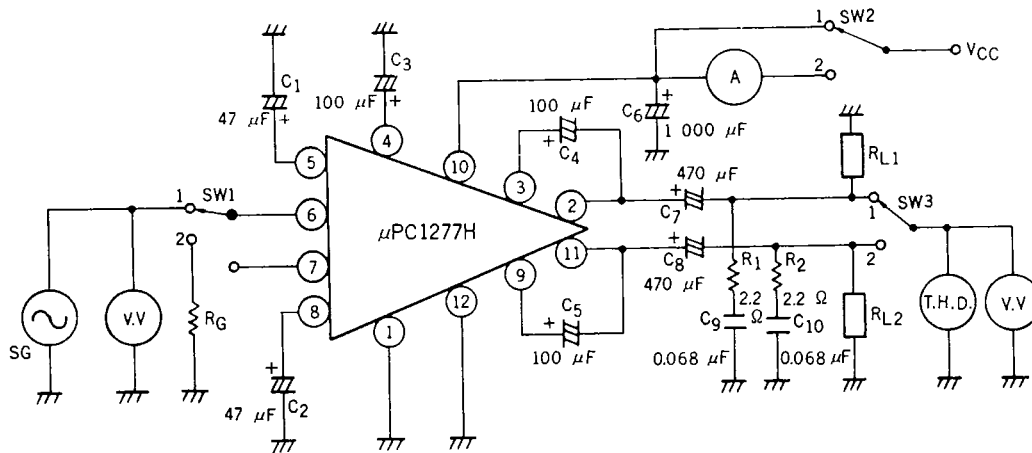
Supply Voltage	V _{CC}	5 to 12 to 16	V
Load Impedance	R _L	3 to 4 to 8	ohms

ELECTRICAL CHARACTERISTICS

(V_{CC} = 12 V, R_L = 4 ohm, f = 1 kHz, T_a = 25 °C,
100 x 100 x 2 mm Al Panel Heat Sink)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Circuit Current	I _{CC}	20	45	90	mA	No Signal
Voltage Gain	A _v	42	45	48	dB	P _o = 1 W
Output Power	P _{o1}	1.8	2.2		W	T.H.D. = 10 % V _{CC} = 9 V, R _L = 4 ohm
	P _{o2}	2.5	3		W	T.H.D. = 10 % V _{CC} = 9 V, R _L = 3 ohm
	P _{o3}	3.2	4.2		W	T.H.D. = 10 % V _{CC} = 12 V, R _L = 4 ohm
	P _{o4}	4	5		W	T.H.D. = 10 % V _{CC} = 12 V, R _L = 3 ohm
Total Harmonic Distortion	T.H.D.		0.2	1	%	P _o = 1 W
Output Noise Voltage	NL		0.6	2	mVr.m.s.	R _G = 10 kohm
Cross Talk	C.T.	45	55		dB	P _o = 1 W other ch. R _G = 10 kohm
Channel Balance	Ch. B.	-2	0	+2	dB	P _o = 1 W
Ripple Rejection	R.R.	40	50		dB	R _G = 0, f = 100 Hz v = 0.3 Vr.m.s.
Input Impedance	Z _{in}	30	50		kohm	

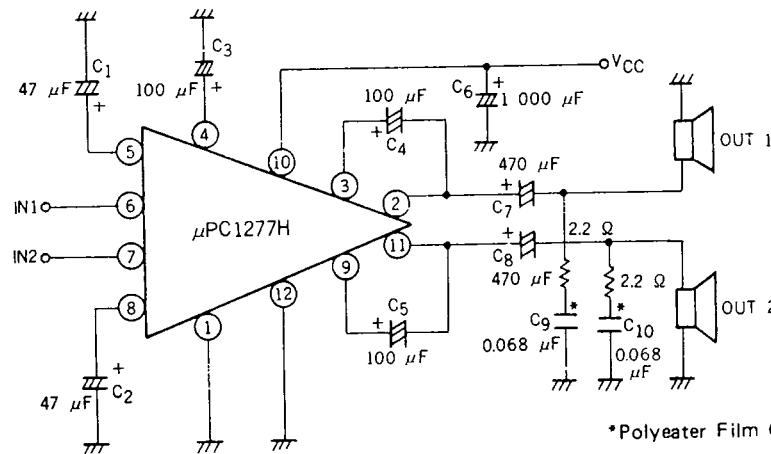
TEST CIRCUIT



SWITCH POSITION
(AMP 1 : TEST)

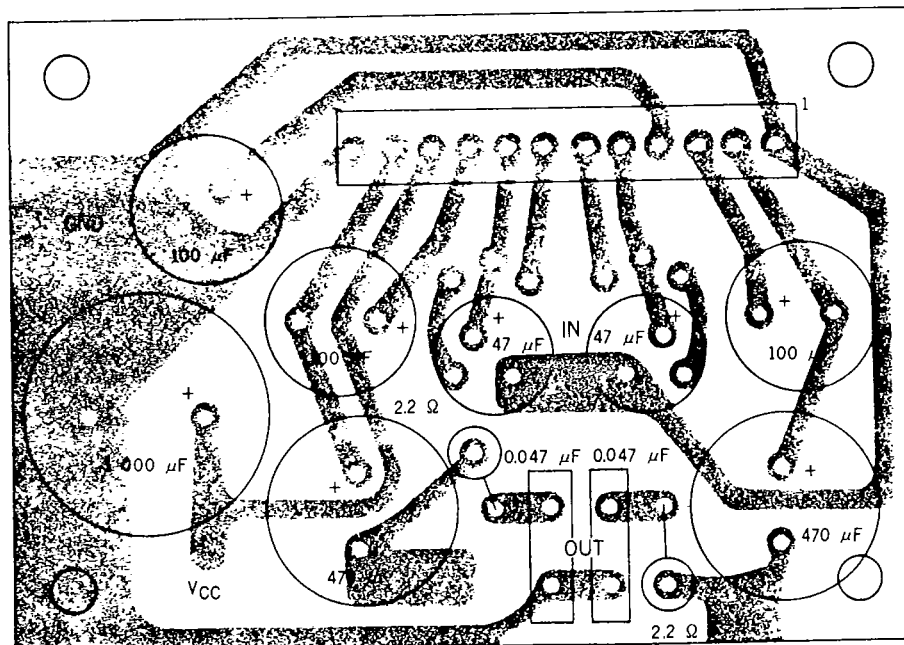
ITEM	SYMBOL	SW 1	SW 2	SW 3
Circuit Current	I_{CC}	2	2	1
Voltage Gain	A_V	1	1	1
Output Power	P_O	1	1	1
Total Harmonic Distortion	T.H.D.	1	1	1
Output Noise Voltage	NL	2	1	1

TYPICAL APPLICATION



*Polyester Film Capacitor

TYPICAL PCB
(COPPER SIDE)



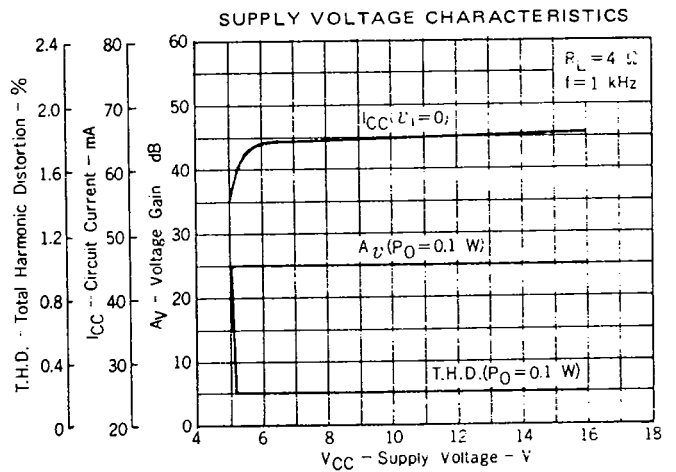
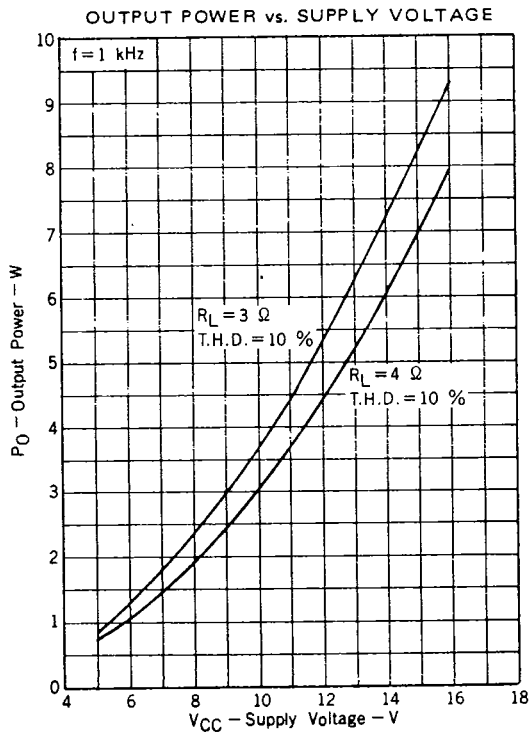
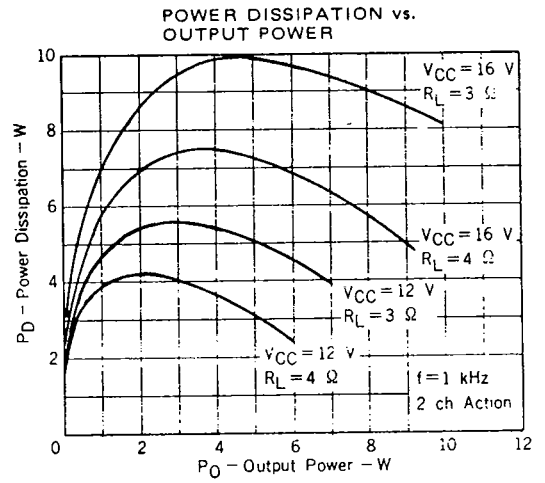
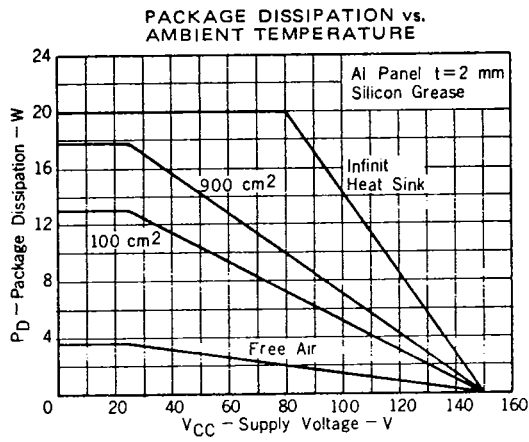
295

μPC1277H

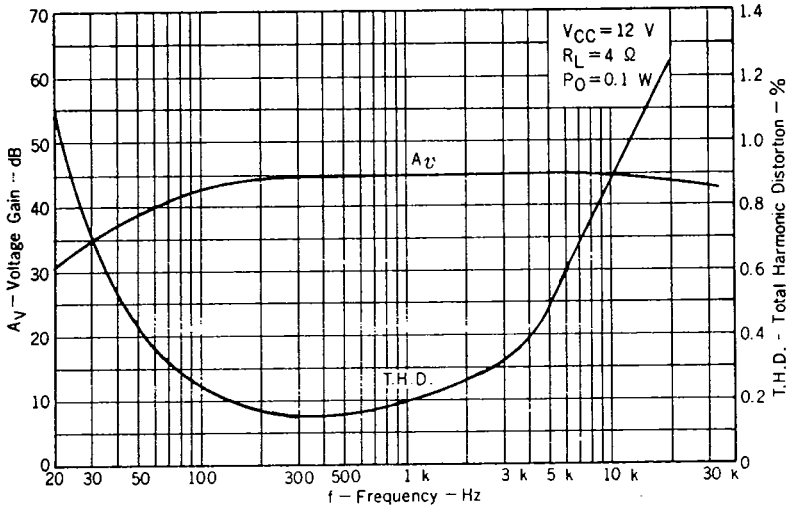
6427525 N E C ELECTRONICS INC

72C 08669 DT-74-05-01

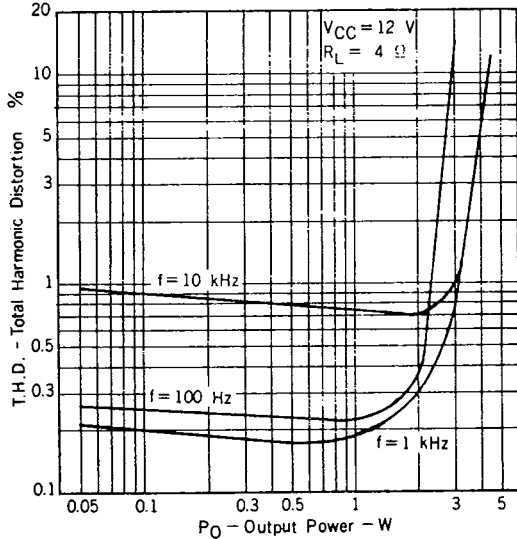
TYPICAL CHARACTERISTICS (Ta = 25 °C)



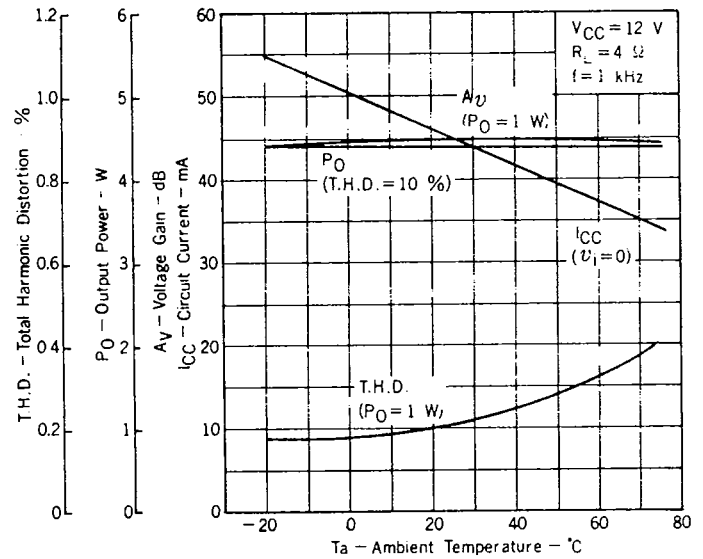
VOLTAGE GAIN, TOTAL HARMONIC DISTORTION vs. FREQUENCY



TOTAL HARMONIC DISTORTION vs. OUTPUT POWER



THERMAL CHARACTERISTICS



Note 1) An inverse connection of the supply voltage pin and the GND pin or a connection of the output pin and either the supply voltage line or GND sometimes causes μPC1277H to break down immediately. Handle it with care.

Note 2) GND pins #1 (input side GND) and #12 (output side GND) are separated inside of the IC, therefore connect them on a PCB. Make the input and output common impedance least when designing a PCB.

Note 3) Recommend a polyeter Film capacitor as a phase compasated capacitance (0.068 μF). Choose larger capacity in case that a long power supply line on a PCB causes the IC a parasitic oscillation.