

$\mu$ PC1277H

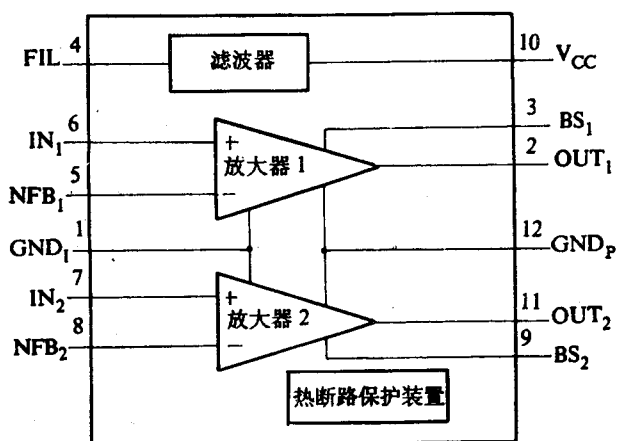
### 双音频功率放大器(2×4W)

#### 简要说明

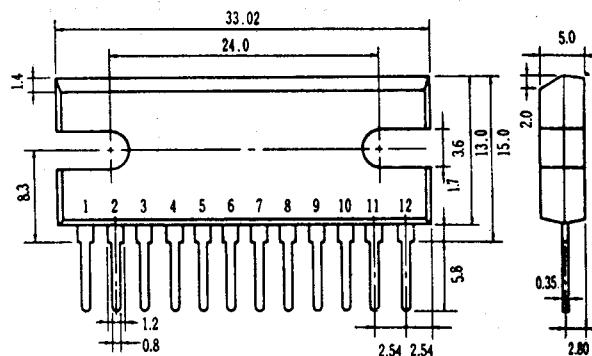
$\mu$ PC1277H 是为立体声收录机设计的双音频功率放大器。该电路具有两个音频功率放大器,每路输出功率 4W( $V_{CC} = 12V, R_L = 4\Omega$ )。

该电路的主要特点是:输出功率大,电源电压范围宽( $V_{CC} = 5 \sim 16V$ ),电源开关通断时无冲击噪声,电源电压抑制比高,电路内含热断路保护,外围元件数少。

电路框图 [ $V_{CC(max)}$ (应用) = 16V,  $P_{D(max)}$  = 13W]



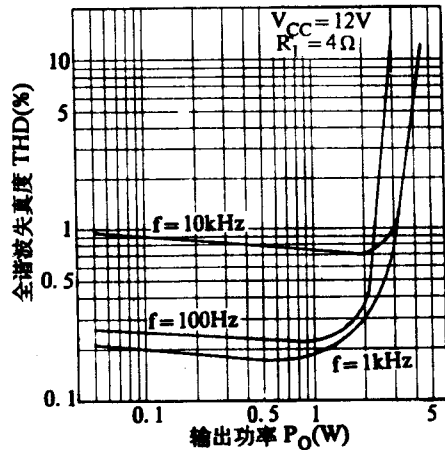
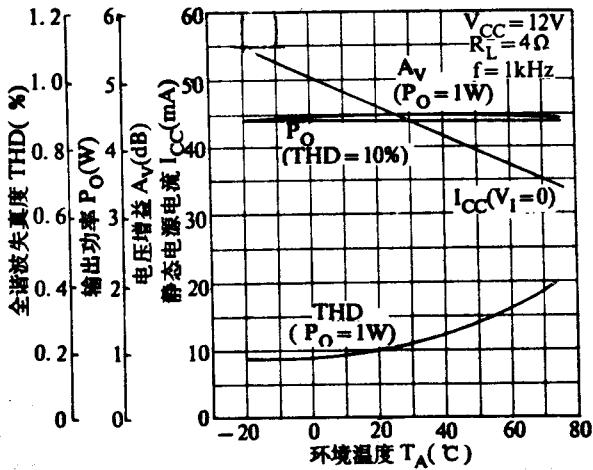
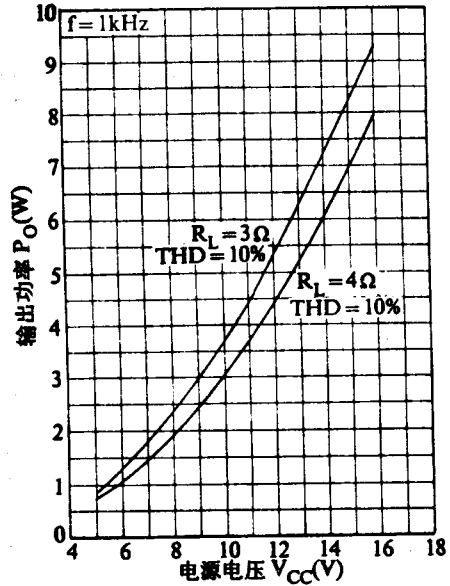
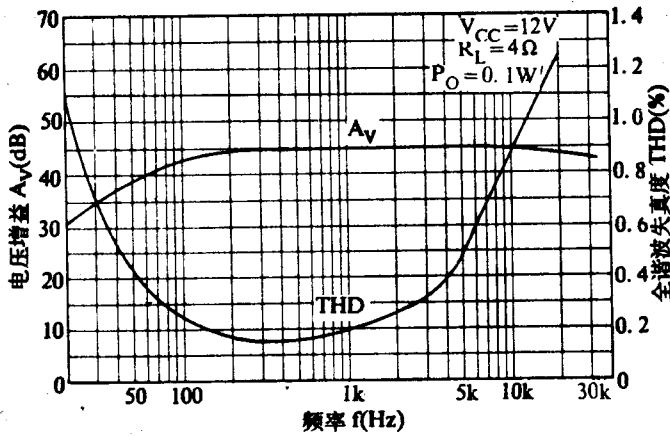
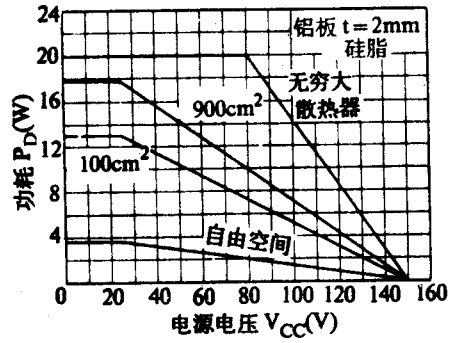
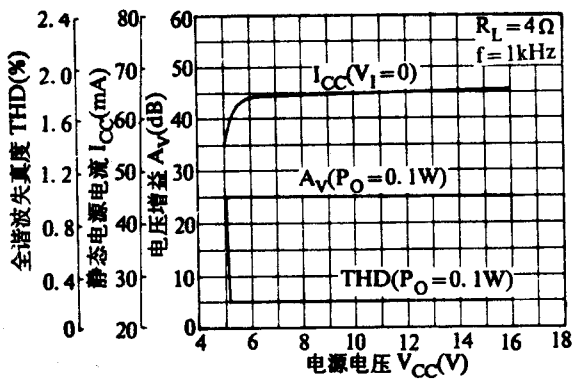
#### 外形图



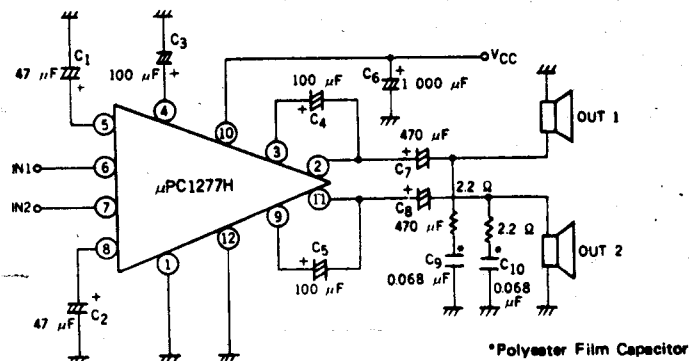
电参数 ( $V_{CC} = 12V, R_L = 4\Omega, f = 1kHz, 100 \times 100 \times 2mm$  铝板散热器)

静态电源电流	$I_{CC0}$	无信号	45mA
电压增益	$A_v$	$P_0 = 1W$	45dB
输出功率	$P_{O1}$	THD = 10%, $V_{CC} = 9V, R_L = 4\Omega$	$\geq 1.8W$
	$P_{O2}$	THD = 10%, $V_{CC} = 9V, R_L = 3\Omega$	$\geq 2.5W$
	$P_{O3}$	THD = 10%, $V_{CC} = 12V, R_L = 4\Omega$	$\geq 3.2W$
	$P_{O4}$	THD = 10%, $V_{CC} = 12V, R_L = 3\Omega$	$\geq 4W$
全谐波失真度	THD	$P_0 = 1W$	$\leq 1\%$
输出噪声电压	NL	$R_g = 10k\Omega$	$\leq 2mV$
串音	CT	$P_0 = 1W$ , 其它声道 $R_g = 10k\Omega$	$\geq 45dB$
声道平衡度	CB	$P_0 = 1W$	0dB
纹波抑制	R.R	$R_g = 0, f = 100Hz, V = 0.3V$	$\geq 40dB$
输入阻抗	$Z_i$		$\geq 30k\Omega$

特点与性能



典型应用



# BIPOLAR ANALOG INTEGRATED CIRCUIT

## $\mu$ PC1277H

### 4.2 W DUAL AUDIO POWER AMPLIFIER

#### DESCRIPTION

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

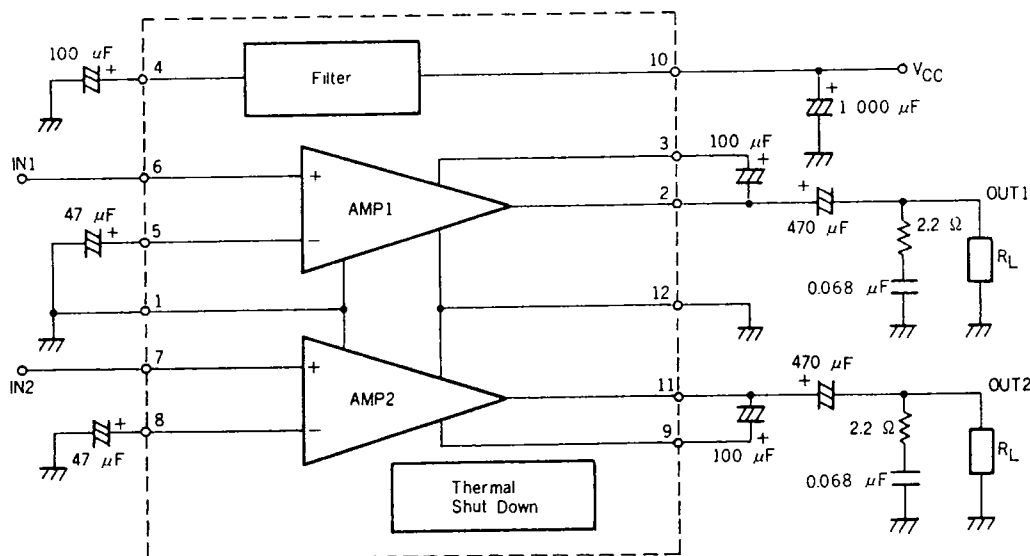
The  $\mu$ PC1277H has two audio power amplifiers and each of the two provides 4.2 W output power at 12 V/4 ohms.

#### 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

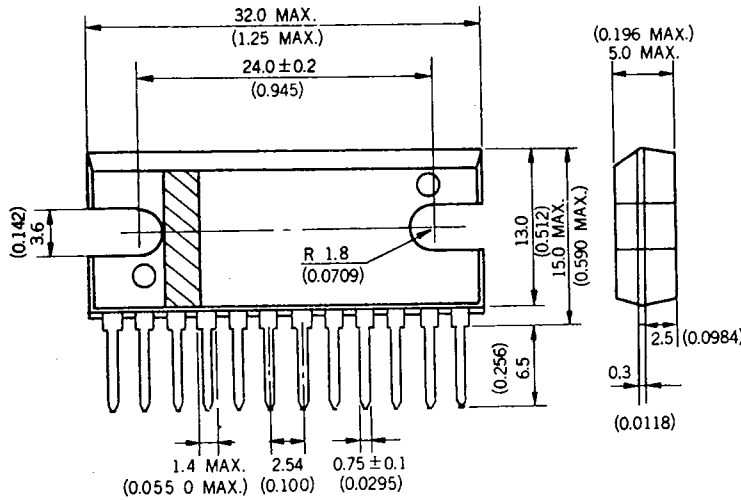


**μPC1277H**

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 <sub>CC</sub>
11	Output 2
12	GND (Output)

**ABSOLUTE MAXIMUM RATINGS** (T<sub>a</sub> = 25 °C)

Supply Voltage (No Signal)	V <sub>CC1</sub>	20	V
Supply Voltage (Operating)	V <sub>CC2</sub>	16	V
Allowable Power Dissipation	P <sub>D</sub>	13*	W
Operating Temperature	T <sub>opt</sub>	-20 to +75	°C
Storage Temperature	T <sub>stg</sub>	-40 to +150	°C

\* 100 x 100 x 2 mm<sup>3</sup> Al heat sink

**RECOMMENDED OPERATING CONDITIONS** (T<sub>a</sub> = 25 °C)

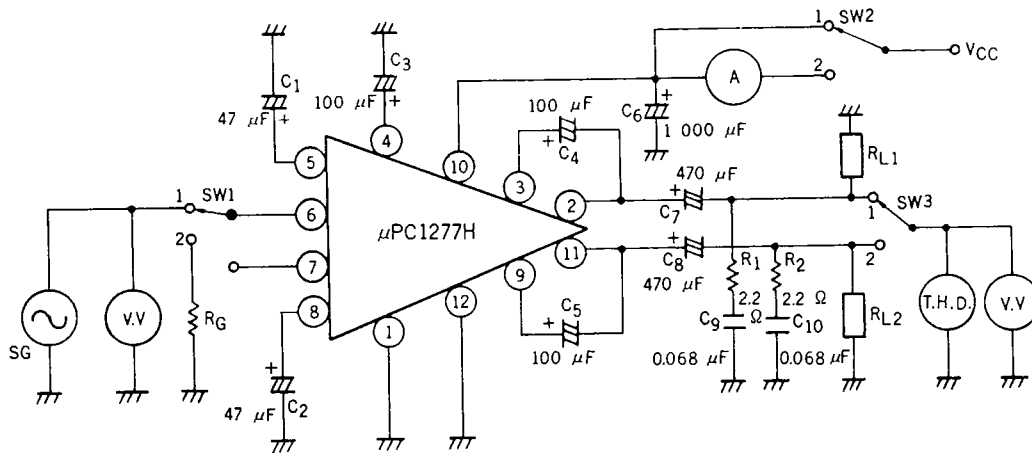
Supply Voltage	V <sub>CC</sub>	5 to 12 to 16	V
Load Impedance	R <sub>L</sub>	3 to 4 to 8	ohms

**ELECTRICAL CHARACTERISTICS**

(V<sub>CC</sub> = 12 V, R<sub>L</sub> = 4 ohm, f = 1 kHz, T<sub>a</sub> = 25 °C,  
100 x 100 x 2 mm Al Panel Heat Sink)

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

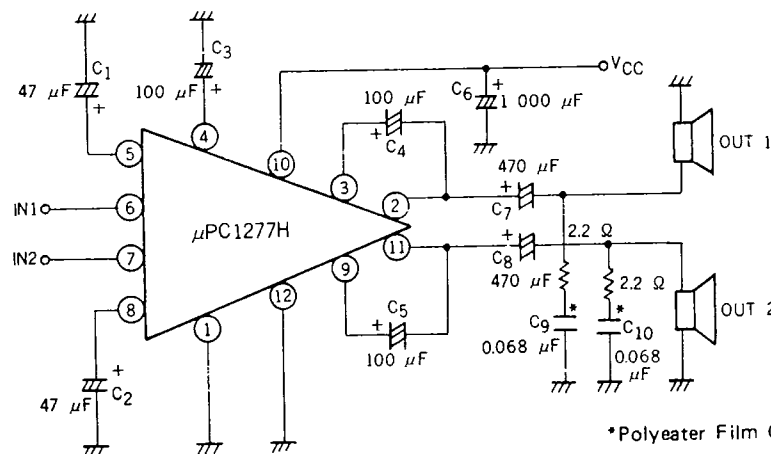
TEST CIRCUIT



SWITCH POSITION  
(AMP 1 : TEST)

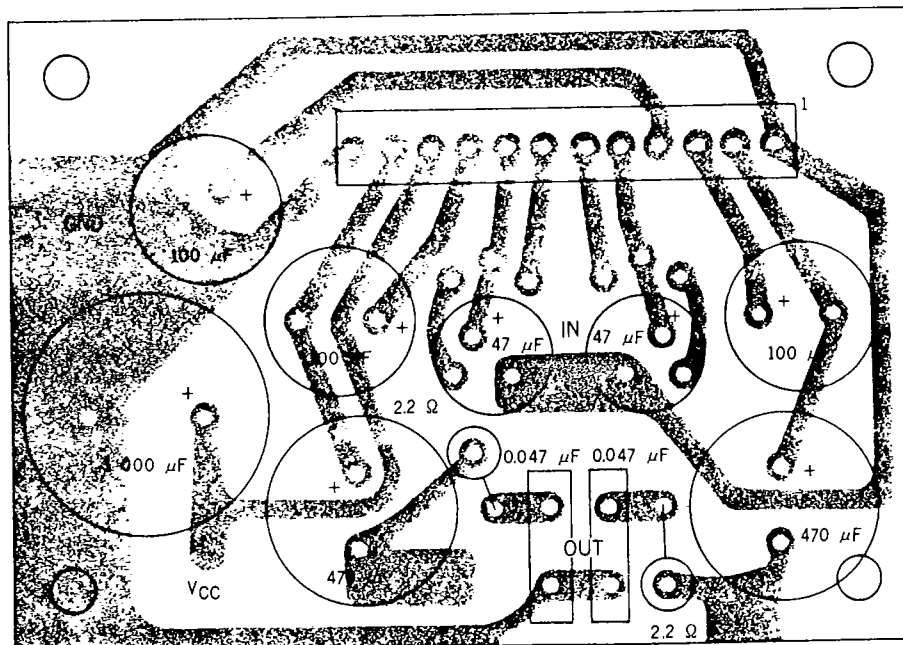
ITEM	SYMBOL	SW 1	SW 2	SW 3
Circuit Current	$I_{CC}$	2	2	1
Voltage Gain	$A_V$	1	1	1
Output Power	$P_O$	1	1	1
Total Harmonic Distortion	T.H.D.	1	1	1
Output Noise Voltage	NL	2	1	1

TYPICAL APPLICATION



\*Polyester Film Capacitor

TYPICAL PCB  
(COPPER SIDE)



PROBLEM HARD COPY

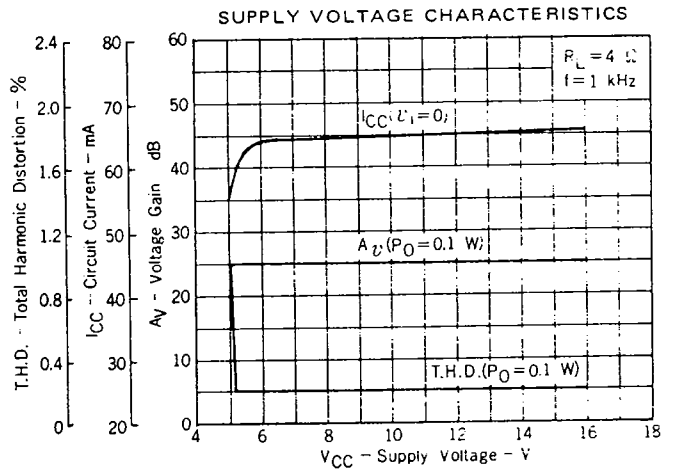
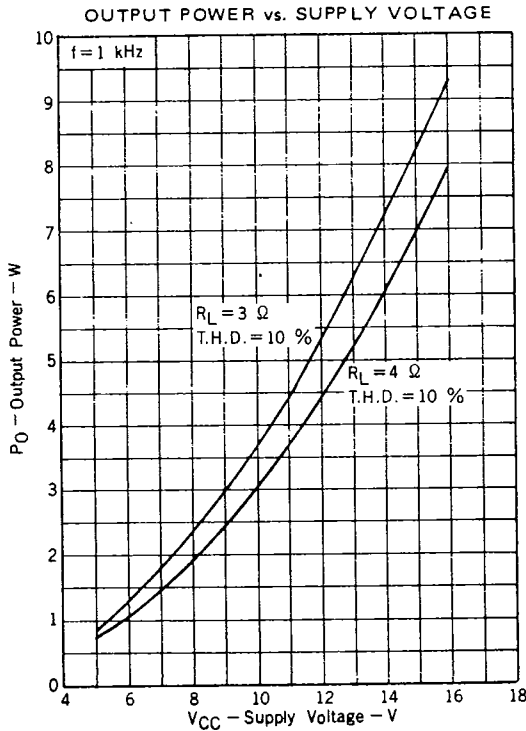
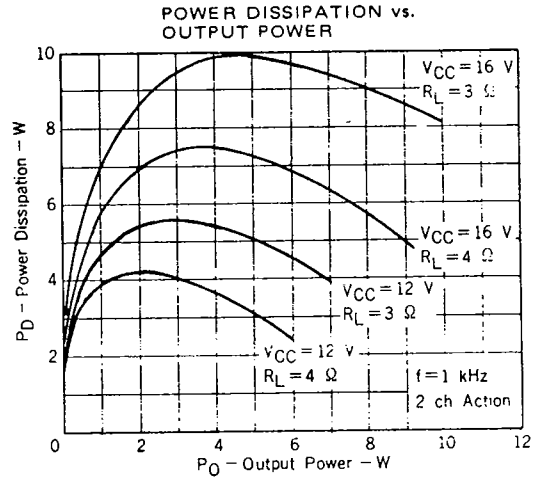
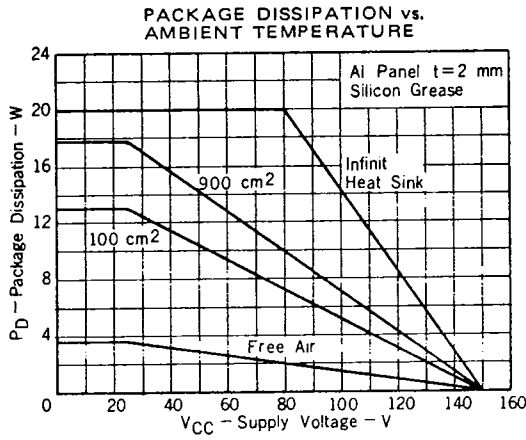
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**μPC1277H**

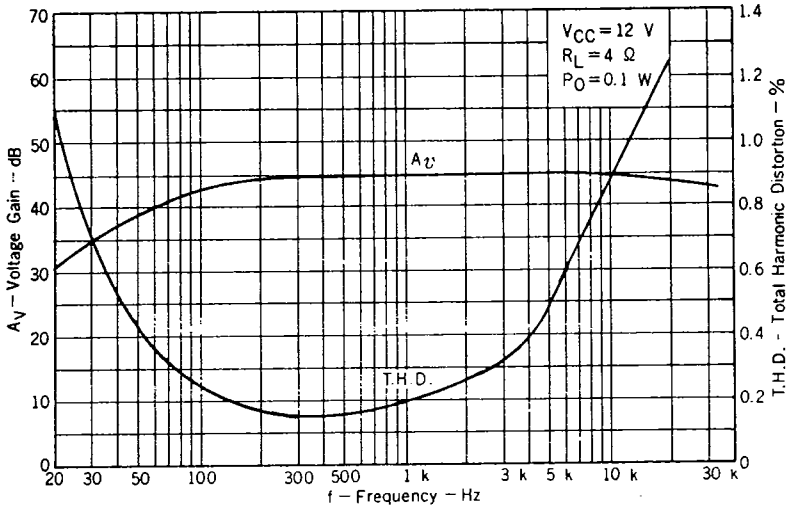
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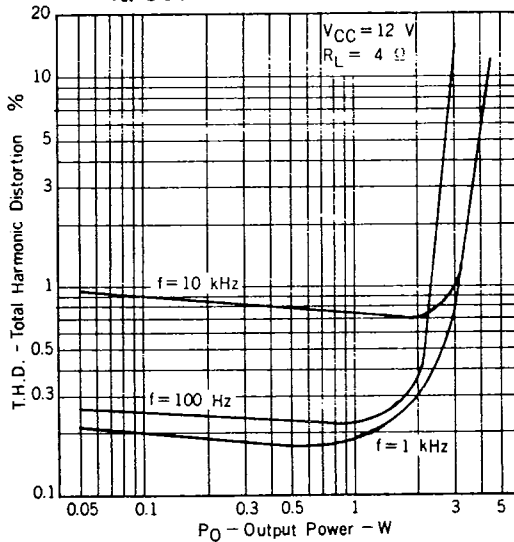
TYPICAL CHARACTERISTICS (Ta = 25 °C)



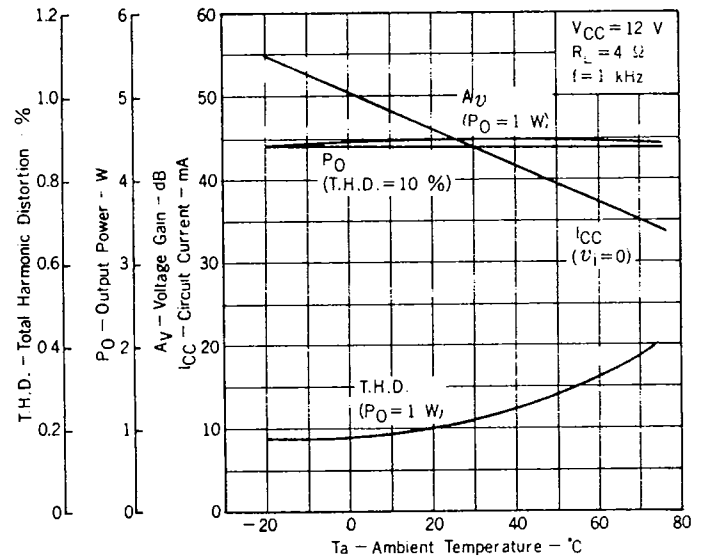
VOLTAGE GAIN, TOTAL HARMONIC DISTORTION vs. FREQUENCY



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  $\mu$ PC1277H 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 polyester Film capacitor as a phase compensated capacitance (0.068  $\mu F$ ). Choose larger capacity in case that a long power supply line on a PCB causes the IC a parasitic oscillation.

低周波電力増幅器 (デュアル, BTL)

μ PC1218HA (250mW, BTL)

動作電源電圧: 1.8~5V (3V)

標準負荷: 8Ω

■特徴

- ・ ミューティング機能内蔵
- ・ 電源オン・オフ時の過渡音が少ない

■最大定格 (TA=25°C)

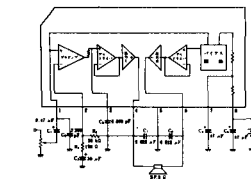
記号	定格	単位
V <sub>CC</sub>	10	V
P <sub>D</sub>	830	mW
T <sub>opsi</sub>	-20/75	°C
T <sub>stg</sub>	-40/150	°C

■電気的特性 (V<sub>CC</sub>=3V, R<sub>L</sub>=8Ω, G<sub>v</sub>=45dB)

記号	測定条件	最小	標準	最大	単位
I <sub>q</sub>		7	11	25	mA
G <sub>vo</sub>	P <sub>OUT</sub> =50mW	65	75		dB
G <sub>v</sub>	P <sub>OUT</sub> =50mW		45		dB
P <sub>OUT</sub>		200	250		mW
THD	P <sub>OUT</sub> =50mW		1.3	3.0	%
N <sub>OUT</sub>	R <sub>o</sub> =2.2kΩ, 条件C		0.2	0.8	mV
R <sub>IN</sub>		10	17		kΩ
I <sub>CCMT</sub>	端子7を接地	0.17	0.6		mA

■パッケージ: 8ピン プラスチック SIL

■ブロック図



※動作電源電圧: 1.8V~5V (推奨動作電圧: 3V)  
 ※出力電圧: 最大出力時、V<sub>CC</sub>の約1/2程度まで出力可能。  
 ※出力電流: 最大出力時、V<sub>CC</sub>の約1/2程度まで出力可能。  
 ※動作温度: -20°C~75°C (保存温度: -40°C~150°C)

μ PC1230H2 (20W, BTL)

動作電源電圧: 9~16V (13.2V)

負荷抵抗: 3.2~16Ω

■特徴

- ・ 各種保護回路内蔵
- ・ サージ保護, 過電圧, 熱遮断
- ・ DC短絡 (出力-GND間) スピーカ保護

■最大定格 (TA=25°C)

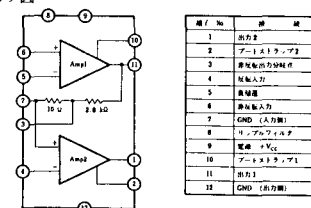
記号	定格	単位
V <sub>CCSU</sub>	50	V
V <sub>CCNS</sub>	25	V
V <sub>CCOP</sub>	18	V
I <sub>OPK</sub>	4.5	A
P <sub>D</sub>	20	W
θ <sub>J-c</sub>	2.5	°C/W
T <sub>opsi</sub>	-30/75	°C
T <sub>stg</sub>	-55/150	°C

■電気的特性 (V<sub>CC</sub>=13.2V, R<sub>L</sub>=4Ω, R<sub>o</sub>=600Ω)

記号	測定条件	最小	標準	最大	単位
I <sub>q</sub>		35	90	180	mA
ΔV <sub>q</sub>	V <sub>IN</sub> =0V			±150	mV
G <sub>v</sub>	P <sub>OUT</sub> =2W	53	54	56	dB
P <sub>OUT</sub>		16	20		W
THD	P <sub>OUT</sub> =2W		0.15	1.0	%
N <sub>OUT</sub>	R <sub>o</sub> =10kΩ, 条件A		1.2	4	mV
SVR	f=100Hz, 0.5V	34	45		dB
f <sub>L</sub>	P <sub>OUT</sub> =2W		15		Hz
f <sub>H</sub>	1kHz基準, -3dB		90		kHz

■パッケージ: 12ピン プラスチック SIL

■ブロック図



μ PC1277H (4.2W, デュアル)

動作電源電圧: 12V

標準負荷: 4Ω

■特徴

- ・ 熱保護回路内蔵
- ・ 電源オン・オフ時の過渡音が少ない

■最大定格 (TA=25°C)

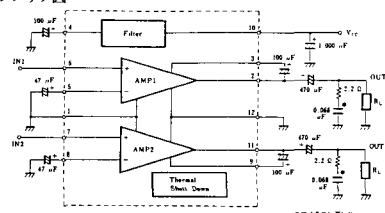
記号	定格	単位
V <sub>CCNS</sub>	20	V
V <sub>CCOP</sub>	16	V
P <sub>D</sub> *	13	W
T <sub>opsi</sub>	-20/75	°C
T <sub>stg</sub>	-40/150	°C

■電気的特性 (V<sub>CC</sub>=12V, R<sub>L</sub>=4Ω, 100cm<sup>2</sup> 放熱板付)

記号	測定条件	最小	標準	最大	単位
I <sub>q</sub>		20	45	90	mA
G <sub>v</sub>	P <sub>OUT</sub> =1W	42	45	48	dB
ΔG <sub>v</sub>	P <sub>OUT</sub> =1W			±2	dB
P <sub>OUT</sub>		3.2	4.2		W
THD	P <sub>OUT</sub> =1W		0.2	1.0	%
N <sub>OUT</sub>	R <sub>o</sub> =10kΩ		0.6	2.0	mV
SVR	f=100Hz, 0.3V	40	50		dB
R <sub>IN</sub>		30	50		kΩ
C <sub>T</sub>	P <sub>OUT</sub> =1W	45	55		dB

■パッケージ: 12ピン プラスチック SIL (TAB付)

■ブロック図



※V<sub>CC</sub>はコンパチブル