

# HA13116

T-74-05-01

## 20 W BTL Audio Power Amplifier

The HA13116 is a high output and low distortion power IC designed for component car stereo amplifiers. At 13.2 V to 4  $\Omega$  load, this power IC provides an output power of 16 W with 1 % distortion and 20 W with 10 % distortion. It is easy to design as this IC employs internal each protection circuit and the new small package.

### Features

- Low external components count
- Small outline package, easy to mount
- Internal each protection circuits
  - Surge protection circuit
  - Thermal shut-down circuit
  - Ground fault protection circuit

### Ordering Information

Type No.	Package
HA13116	SP-15

**Table 1 Absolute Maximum Ratings (Ta = 25 °C)**

Item	Symbol	Rating	Unit	Note
Operating supply voltage	Vcc	18	V	
DC supply voltage	Vcc (DC)	26	V	1
Peak supply voltage	Vcc (peak)	50	V	2
Output current	Io (peak)	4	A	
Power dissipation	PT	15	W	
Thermal resistance	$\theta_j - c$	3.5	°C/W	
Junction temperature	Tj	150	°C	
Operating temperature	Topr	-30 to +80	°C	
Storage temperature	Tstg	-55 to +125	°C	

Notes: 1. Value at t = 30 sec.

2. Value at width tw = 200 ms and rise time tr = 1 ms.

**Table 2 Electrical Characteristics (Vcc = 13.2 V, f = 1 kHz, RL = 4  $\Omega$ , Ta = 25 °C)**

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Quiescent current	IQ	40	80	180	mA	Vin = 0
Input bias voltage	VB	—	20	70	mV	Vin = 0
Output offset voltage	$\Delta VQ$	—	—	+330	mV	Vin = 0
Voltage gain	GV	37.5	40	42.5	dB	Vin = -30 dBm



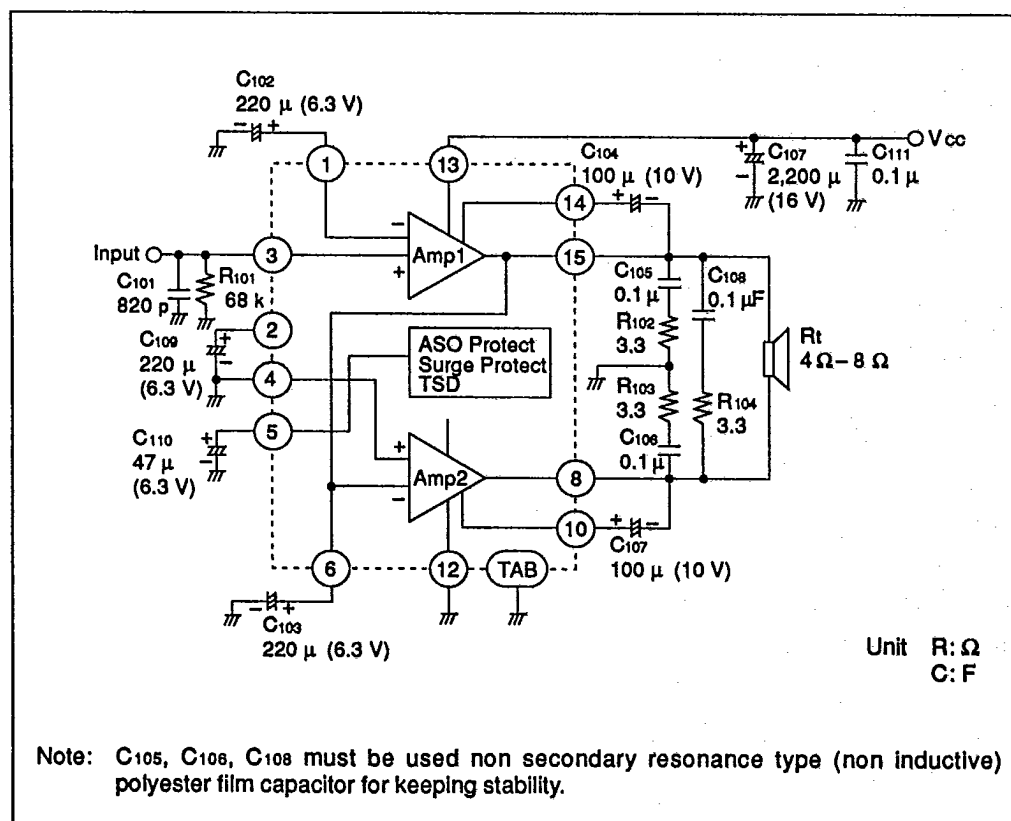
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Electrical Characteristics ( $V_{CC} = 13.2 \text{ V}$ ,  $f = 1 \text{ kHz}$ ,  $R_L = 4 \Omega$ ,  $T_a = 25^\circ \text{C}$ ) (cont) T-74-05-01

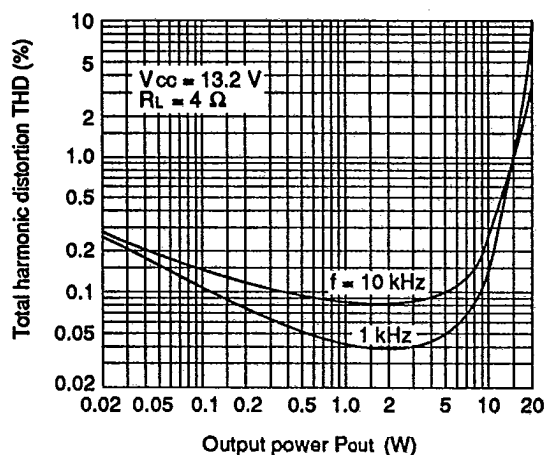
Output power	$P_{out}$	10	16	—	W	THD = 1 %
		—	20	—		THD = 10 %
Total harmonic distortion	THD	—	0.05	0.12	%	$P_{out} = 1.5 \text{ W}$
Output noise voltage	WBN	—	0.25	0.5	mV	$R_g = 10 \text{ k}\Omega$ , BW = 20 Hz 20 kHz
Supply voltage rejection ratio	SVR	40	50	—	dB	$f = 500 \text{ Hz}$ , $R_g = 4.7 \text{ k}\Omega$
Input resistance	$R_{in}$	—	68	—	$\text{k}\Omega$	
Rolloff frequency	$f_L$	—	5	—	Hz	$\Delta G_v = -3 \text{ dB}$ Low from
	$f_H$	40	70	120	kHz	$f = 1 \text{ kHz}$ Ref. High

## Typical Application Circuit

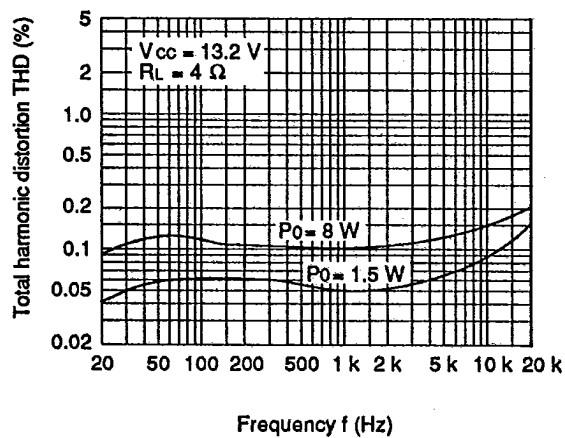


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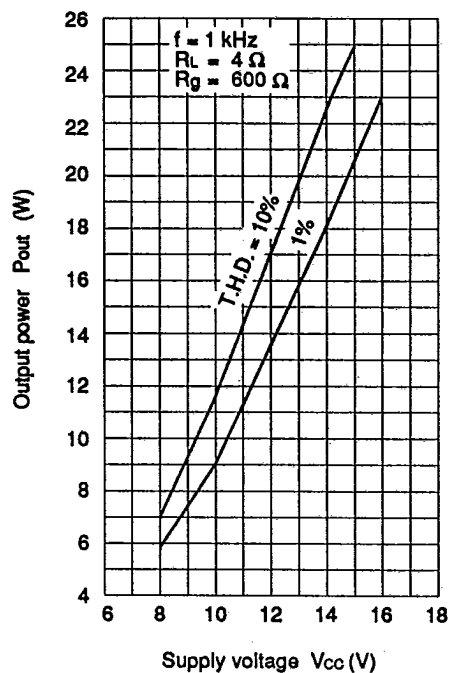
Total Harmonic Distortion vs. Output Power



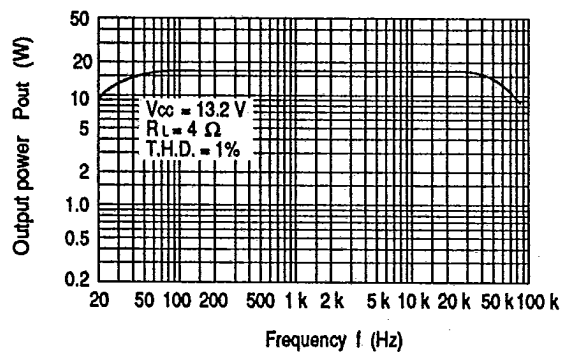
Total Harmonic Distortion vs. Frequency



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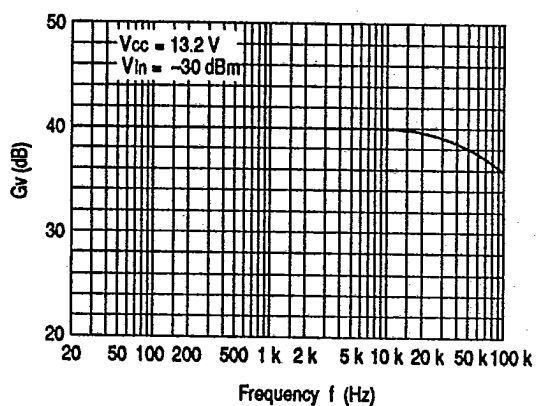
Output Power vs. Supply Voltage



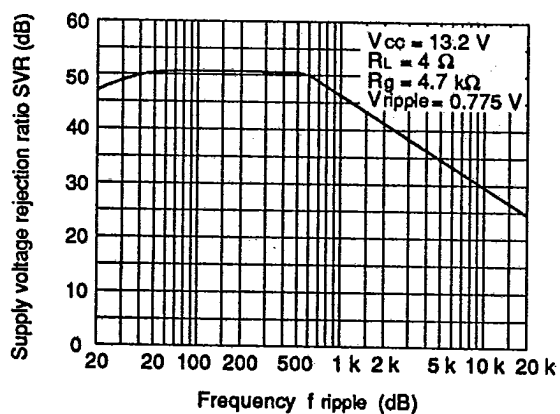
Output Power vs. Frequency



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Voltage Gain vs. Frequency

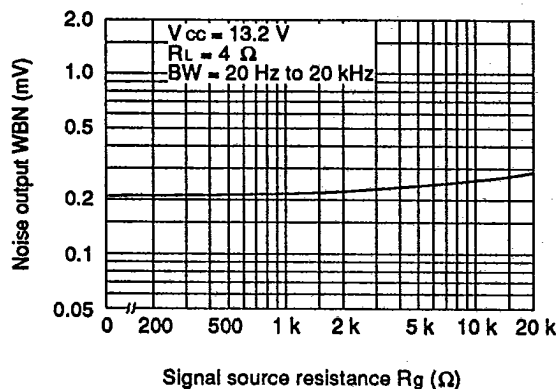


Supply Voltage Rejection Ratio vs. Frequency

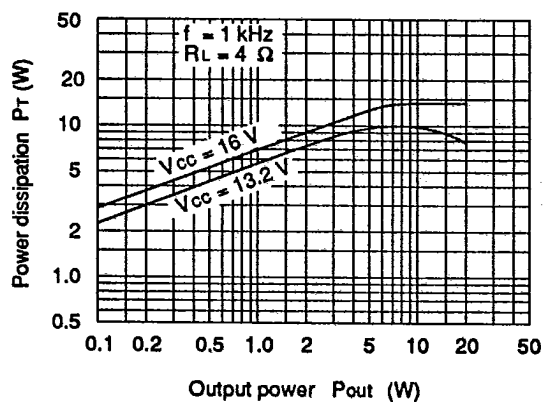


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Noise Output vs. Signal Source Resistance

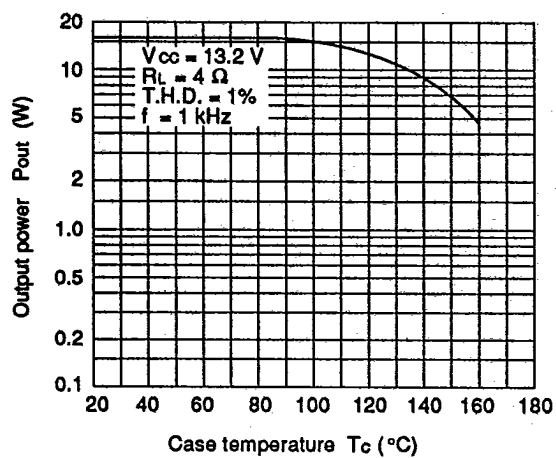


Power Dissipation vs. Output Power



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Output Power vs. Case Temperature

