HA13116

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 Ω 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.

Ordering Information

Type No.	Package
HA13116	SP-15

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

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	θj – 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.

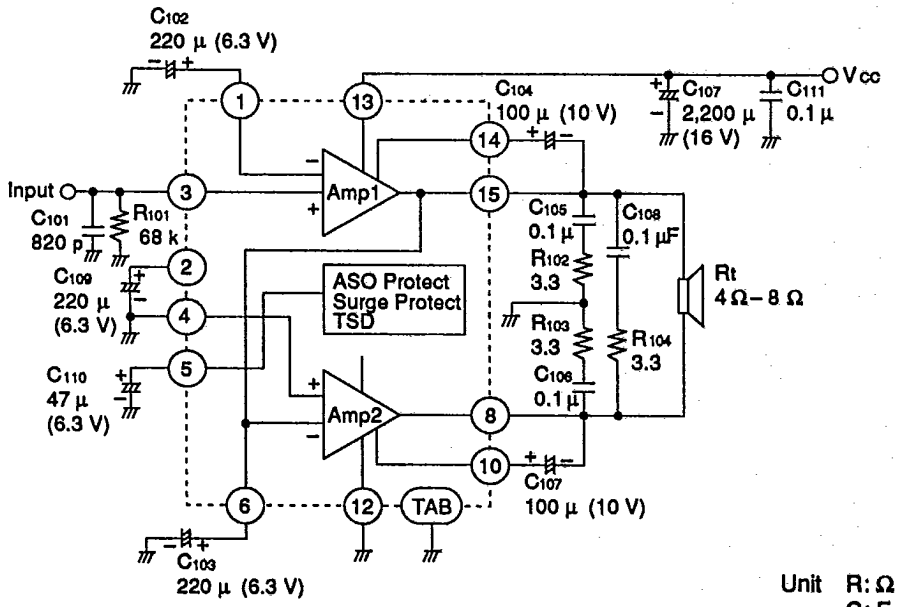
Table 2 Electrical Characteristics (Vcc = 13.2 V, f = 1 kHz, RL = 4 Ω, Ta = 25 °C)

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	ΔVQ	—	—	+330	mV	Vin = 0
Voltage gain	GV	37.5	40	42.5	dB	Vin = –30 dBm

Electrical Characteristics (Vcc = 13.2 V, f = 1 kHz, RL = 4 Ω, Ta = 25 °C) (cont)

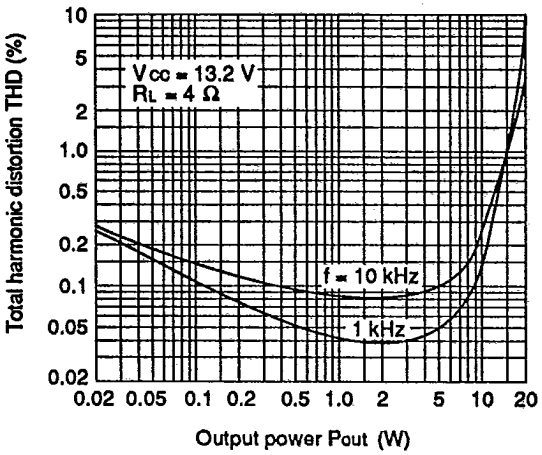
Output power	Pout	10	16	—	W	THD = 1 %	
		—	20	—		THD = 10 %	
Total harmonic distortion	THD	—	0.05	0.12	%	Pout = 1.5 W	
Output noise voltage	WBN	—	0.25	0.5	mV	Rg = 10 kΩ, BW = 20 Hz 20 kHz	
Supply voltage rejection ratio	SVR	40	50	—	dB	f = 500 Hz, Rg = 4.7 kΩ	
Input resistance	Rin	—	68	—	kΩ		
Rolloff frequency	fL	—	5	—	Hz	ΔGv = –3 dB from f = 1 kHz Ref.	Low
	fH	40	70	120	kHz		High

Typical Application Circuit

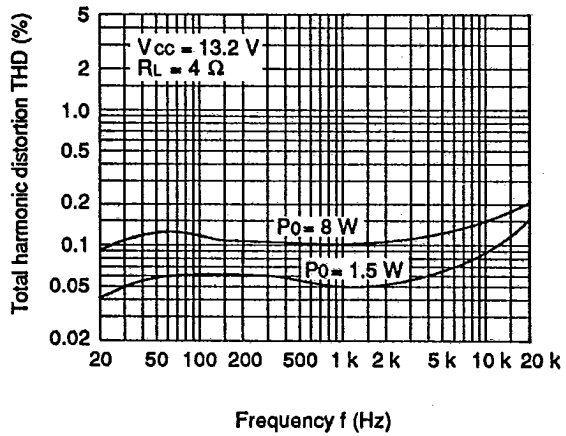


Unit R: Ω
C: F

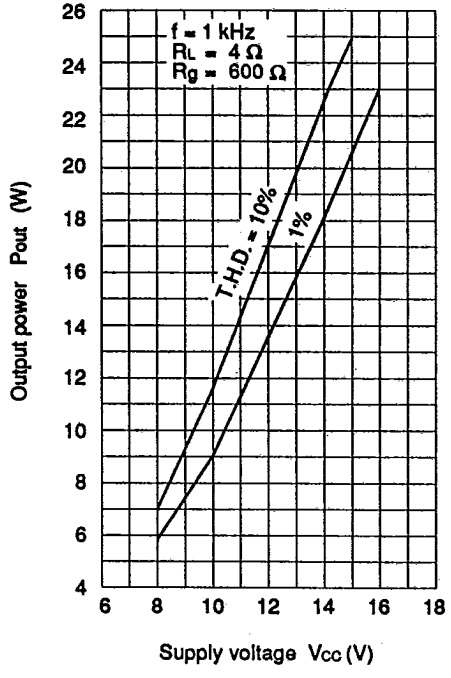
Note: C105, C106, C108 must be used non secondary resonance type (non inductive) polyester film capacitor for keeping stability.



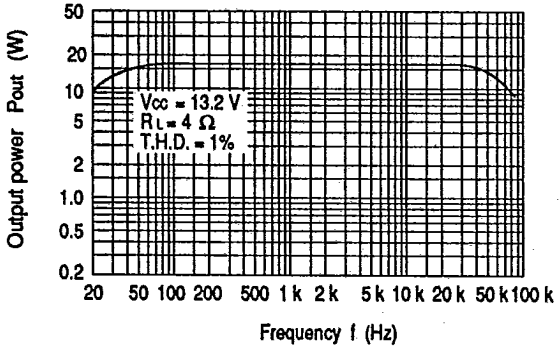
Total Harmonic Distortion vs. Output Power



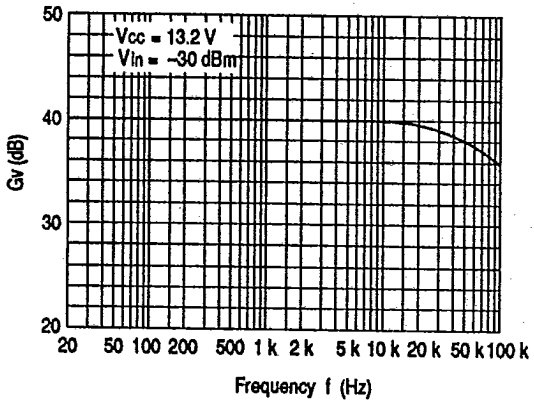
Total Harmonic Distortion vs. Frequency



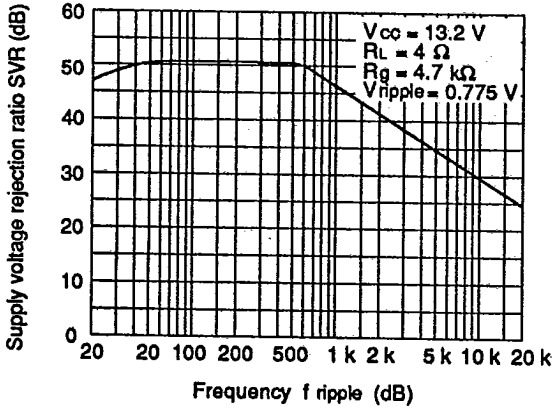
Output Power vs. Supply Voltage



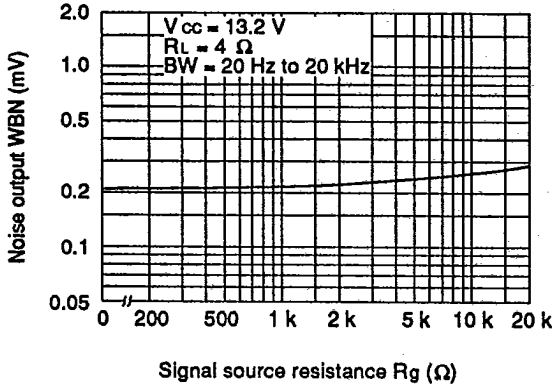
Output Power vs. Frequency



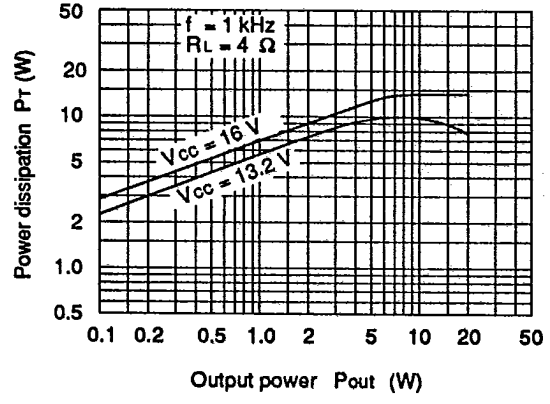
Voltage Gain vs. Frequency



Supply Voltage Rejection Ratio vs. Frequency



Noise Output vs. Signal Source Resistance



Power Dissipation vs. Output Power

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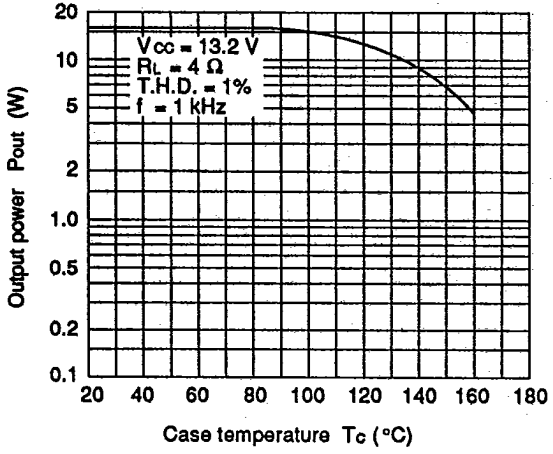

Output Power vs. Case Temperature