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 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	lo (peak)	lo (peak) 4			
Power dissipation	PT	15			
Thermal resistance	θj — c	3.5			
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.

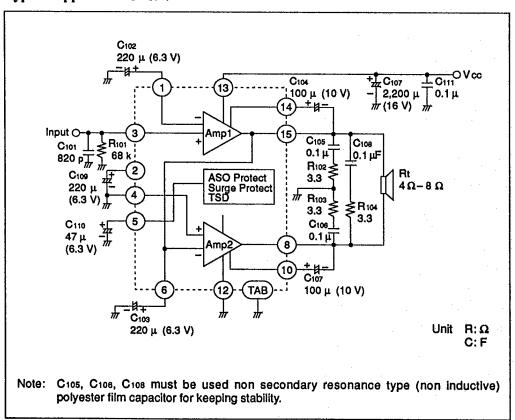
Table 2 Electrical Characteristics (Vcc = 13.2 V, f = 1 kHz, RL = 4Ω , Ta = $25 ^{\circ}$ C)

Item	Symbol	Min	Тур	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

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						HA13116
Electrical Characteristics (Vo	c = 13.2 V,	f = 1 kHz,	RL = 4	Ω, Ta = :	25 °C) (cont) T-74-05-0
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 Low
	fH	40	70	120	kHz	from ———— f = 1 kHz Ref. High

Typical Application Circuit

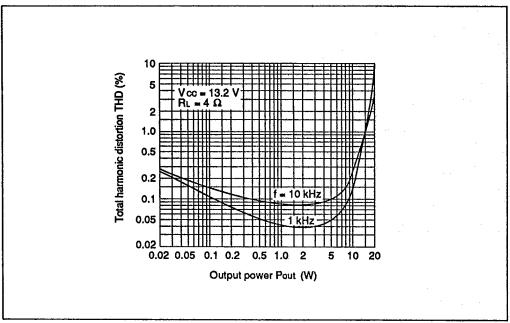


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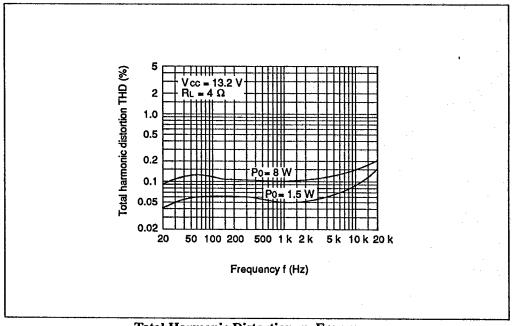
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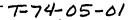


Total Harmonic Distortion vs. Output Power

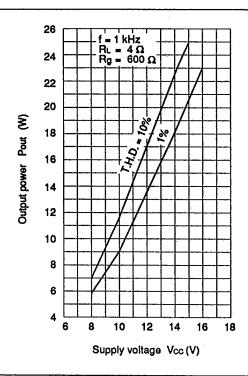


Total Harmonic Distortion vs. Frequency

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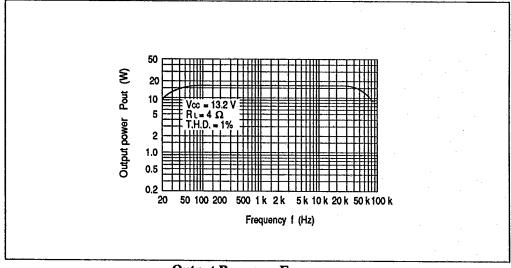


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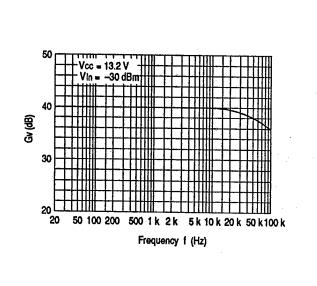
Output Power vs. Supply Voltage



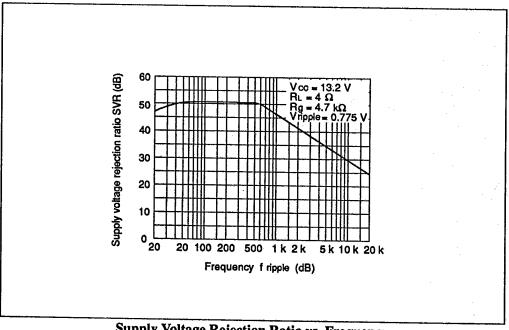
Output Power vs. Frequency

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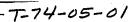
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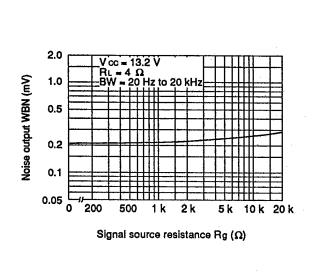


Voltage Gain vs. Frequency



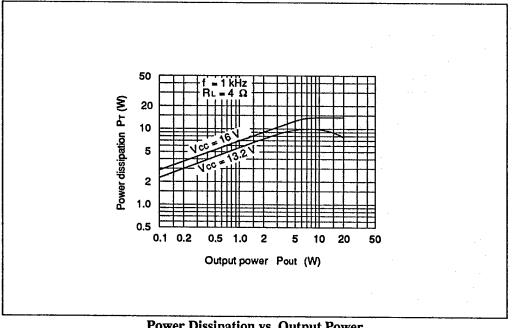
Supply Voltage Rejection Ratio vs. Frequency





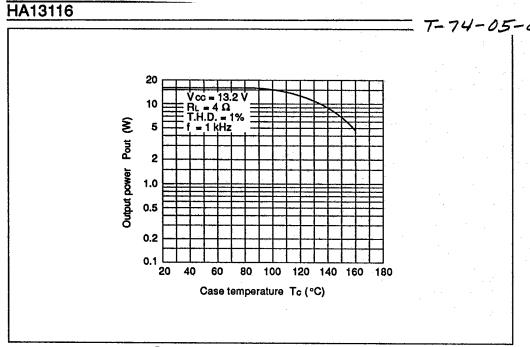
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Noise Output vs. Signal Source Resistance



Power Dissipation vs. Output Power

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Output Power vs. Case Temperature

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