

HA13119

T-74-05-01

Dual 5.5 W Audio Power Amplifier

The HA13119 is power IC designed for car radio and car stereo amplifiers. At 13.2 V to 4 Ω load, this power IC provides output power of 5.5 W with 10 % distortion.

It is easy to design as this IC employs internal each protection circuit and the new small package.

Features

- Low distortion
 THD = 0.1 % typ
 (Po = 0.5 W, f = 100 Hz to 10 kHz)
 THD = 1 % typ
 (Po = 3 W, f = 70 Hz to 40 kHz)
- Internal each protection circuits
 - Surge protection circuit (more than 50 V)
 - Thermal shut-down circuit
 - Ground fault protection circuit
 - Power supply fault protection circuit
- Low external components count

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	3
Power dissipation	Pr	15	W	4
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.
 3. Per channel
 4. Per package

Ordering Information

Type No.	Package
HA13119	SP-15T



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Table 2 Electrical Characteristics ($V_{CC} = 13.2 \text{ V}$, $f = 1 \text{ kHz}$, $R_L = 4 \Omega$, $T_a = 25^\circ \text{C}$)

1 channel operation

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Quiescent current	I_Q	—	80	160	mA	$V_{in} = 0 \text{ V}$
Input bias voltage	V_B	—	—	10	mV	$V_{in} = 0 \text{ V}$, $R_g = 10 \text{ k}\Omega$
Voltage gain	G_v	48	50	52	dB	$V_{in} = -50 \text{ dBm}$
Voltage gain difference	ΔG_v	—	—	+1.5	dB	$V_{in} = -50 \text{ dBm}$
Output power	P_{out}	5.0	5.5	—	W	$R_L = 4 \Omega$ $V_{CC} = 13.2 \text{ V}$
		—	6.5	—		THD = 10 % $V_{CC} = 14.4 \text{ V}$
Total harmonic distortion	THD	—	0.05	0.5	%	$P_{out} = 1.5 \text{ W}$
Wide band noise	WBN	—	0.6	1.2	mV	$R_g = 10 \text{ k}\Omega$, BW = 20 Hz to 20 kHz
Supply voltage rejection ratio	SVR	35	50	—	dB	$R_g = 600 \Omega$, $f = 500 \text{ Hz}$
Input impedance	R_{in}	—	33	—	$\text{k}\Omega$	$f = 1 \text{ kHz}$, $V_{in} = -50 \text{ dBm}$
Roll off frequency	f_L	—	55	—	Hz	$\Delta G_v = -3 \text{ dB}$ Low
	f_H	—	50	—	kHz	from $f = 1 \text{ kHz}$ Ref High
Cross-talk	C.T	40	55	—	dB	$R_g = 600 \Omega$, $V_{in} = -50 \text{ dBm}$

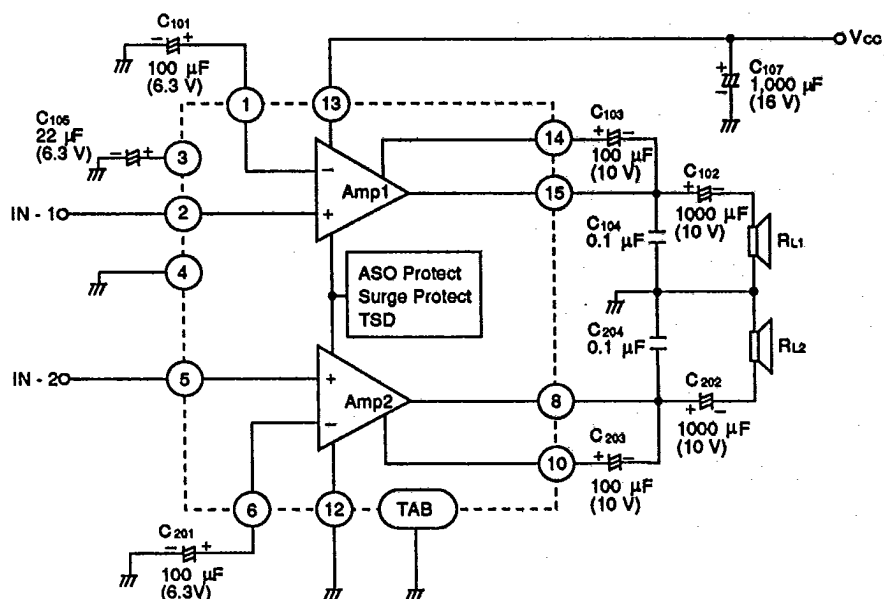
2 channel operation

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Output power	P_{out}	—	5.3	—	W	THD = 10 %
Total harmonic distortion	THD	—	0.10	—	%	$P_{out} = 1.5 \text{ W}$



Typical Application Circuit

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Note: C104, C204 must be non secondary resonance type (non inductive) polyester film capacitor for keeping stability.

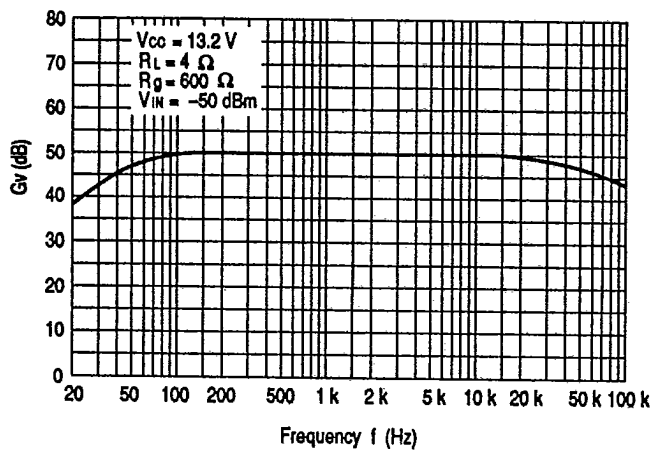


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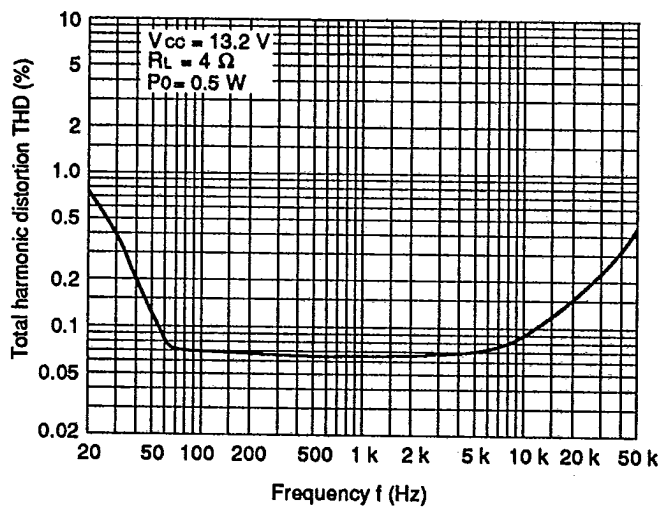
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Voltage Gain vs. Frequency

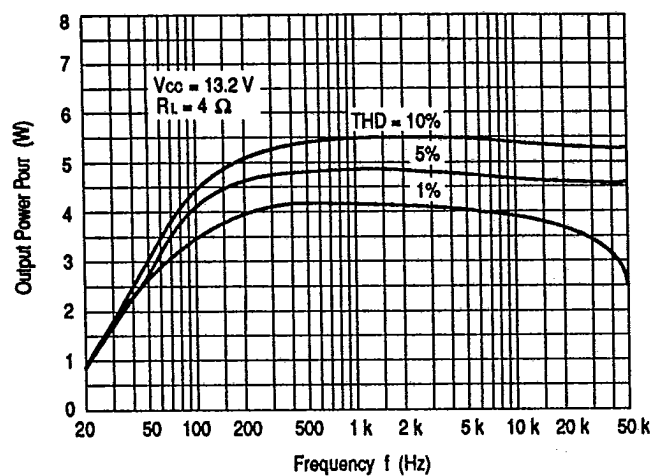


Total Harmonic Distortion vs. Frequency

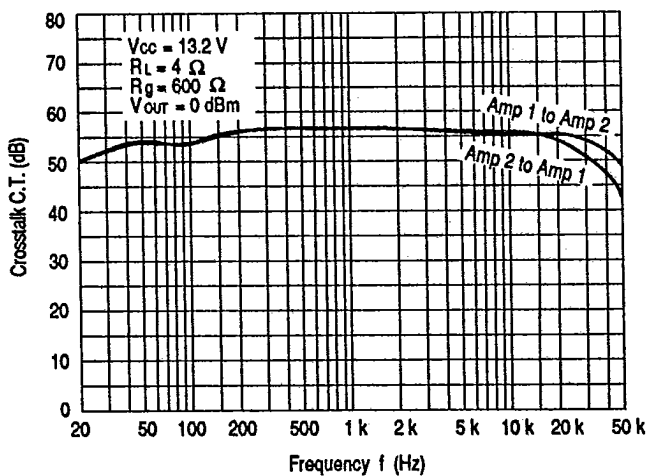


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Output Power vs. Frequency



Cross-talk vs. Frequency

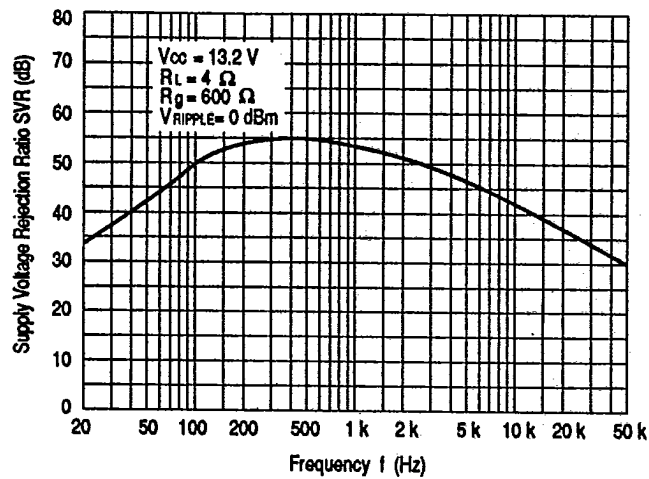


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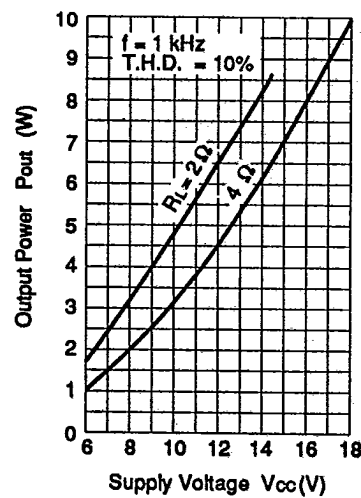
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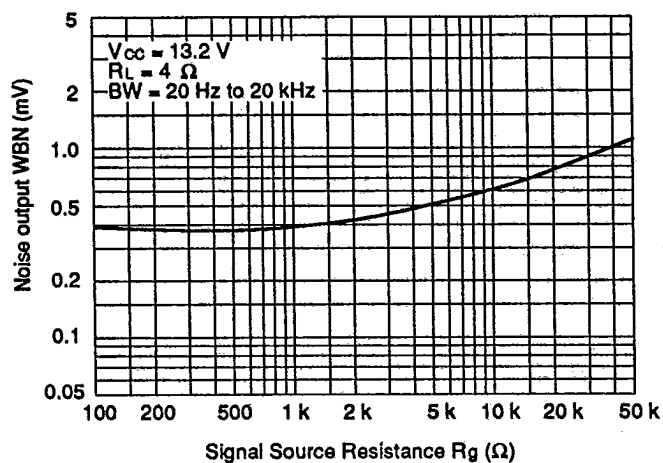
Supply Voltage Rejection Ratio vs. Frequency



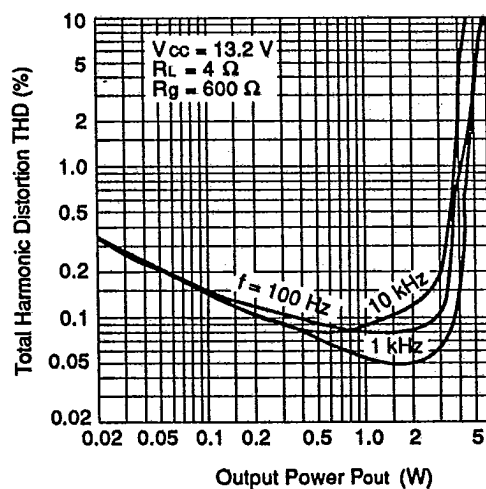
Output Power vs. Supply Voltage



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Noise Output vs. Signal Source Resistance



Total Harmonic Distortion vs. Output Power

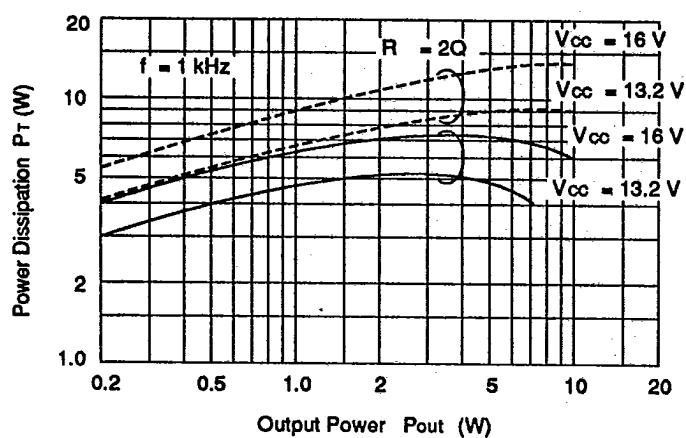


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Power Dissipation vs. Output Power



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