HA13119

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	P_T	15	W	4
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.
3. Per channel
4. Per package

Ordering Information

Type No.	Package
HA13119	SP-15T

Table 2 Electrical Characteristics (V_{CC} = 13.2 V, f = 1 kHz, R_L = 4 Ω, Ta = 25 °C)

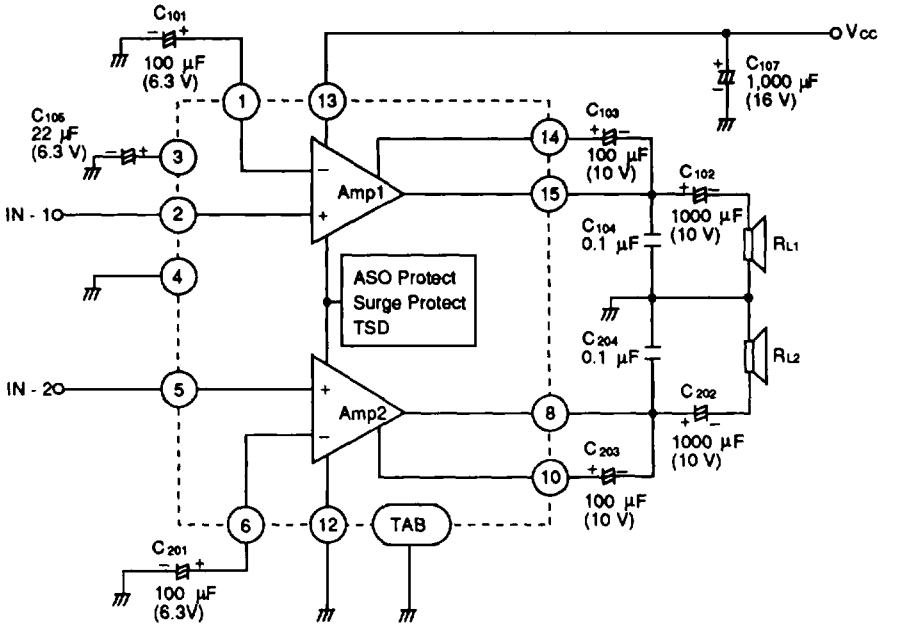
1 channel operation

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Quiescent current	I_Q	—	80	160	mA	Vin = 0 V
Input bias voltage	V_B	—	—	10	mV	Vin = 0 V, Rg = 10 kΩ
Voltage gain	Gv	48	50	52	dB	Vin = –50 dBm
Voltage gain difference	ΔGv	—	—	+1.5	dB	Vin = –50 dBm
Output power	Pout	5.0	5.5	—	W	R_L = 4 Ω Vcc=13.2 V THD = 10 %
		—	6.5	—		Vcc=14.4 V
Total harmonic distortion	THD	—	0.05	0.5	%	Pout = 1.5 W
Wide band noise	WBN	—	0.6	1.2	mV	Rg = 10 kΩ, BW = 20 Hz to 20 kHz
Supply voltage rejection ratio	SVR	35	50	—	dB	Rg = 600 Ω, f = 500 Hz
Input impedance	Rin	—	33	—	kΩ	f = 1 kHz, Vin = –50 dBm
Roll off frequency	f_L	—	55	—	Hz	ΔGv = –3 dB from f = 1 kHz Ref Low
	f_H	—	50	—	kHz	High
Cross-talk	C.T	40	55	—	dB	Rg = 600 Ω, Vin = –50 dBm

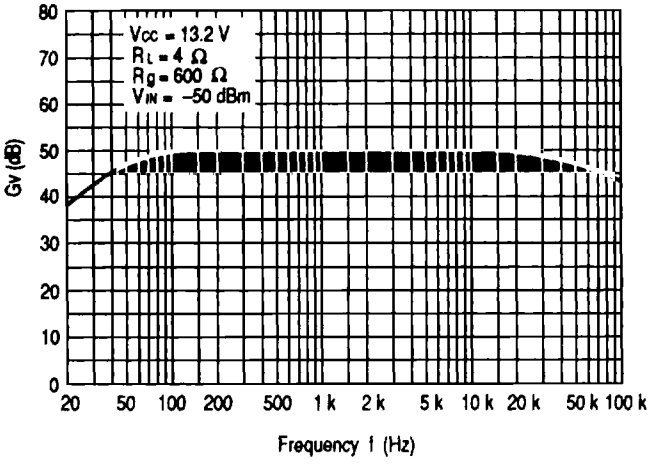
2 channel operation

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Output power	Pout	—	5.3	—	W	THD = 10 %
Total harmonic distortion	THD	—	0.10	—	%	Pout = 1.5 W

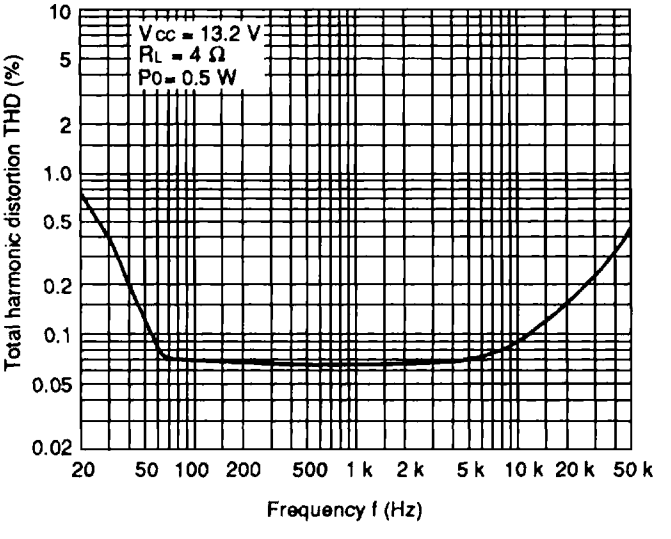
Typical Application Circuit



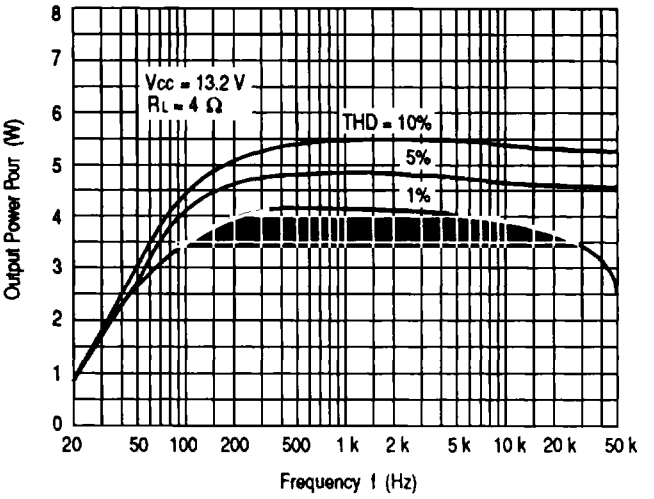
Note: C_{104}, C_{204} must be non secondary resonance type (non inductive) polyester film capacitor for keeping stability.



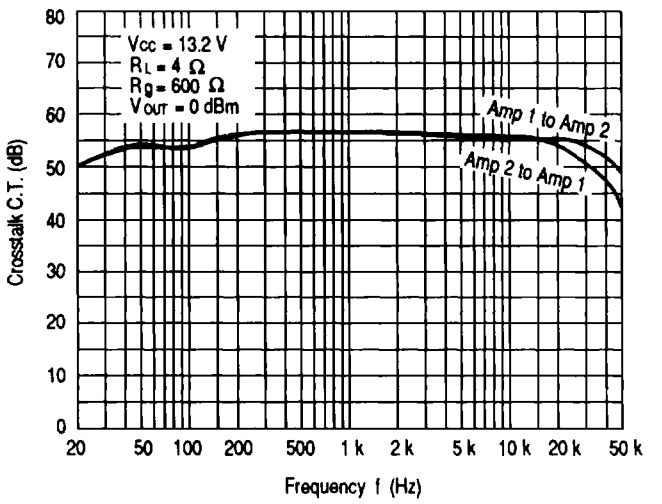
Voltage Gain vs. Frequency



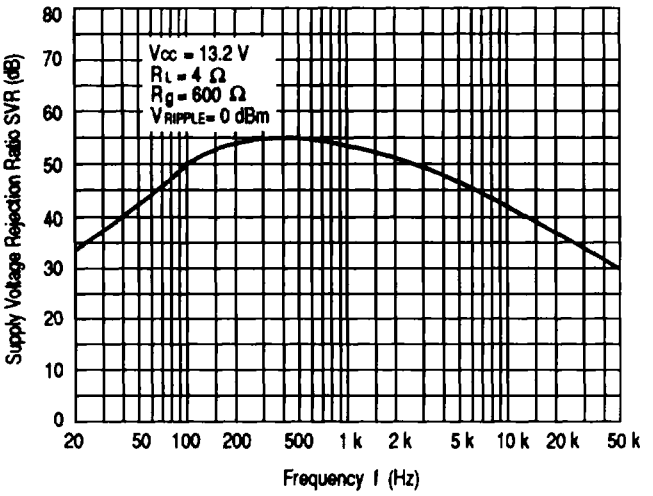
Total Harmonic Distortion vs. Frequency



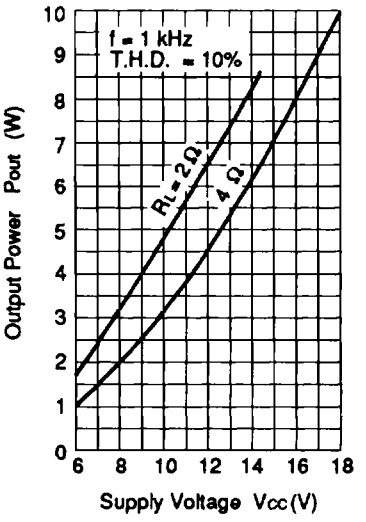
Output Power vs. Frequency



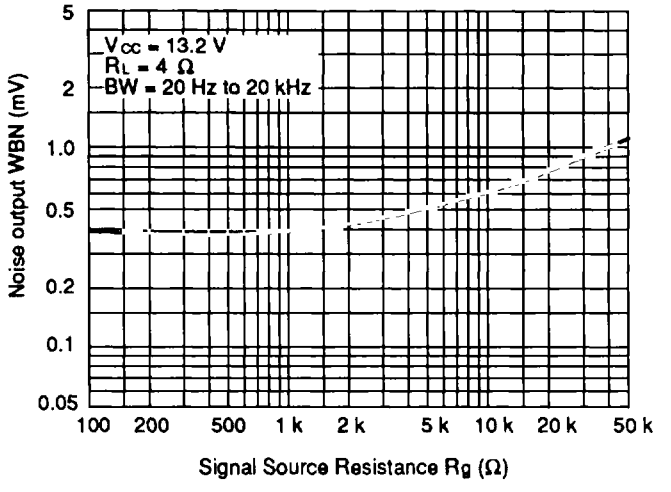
Cross-talk vs. Frequency



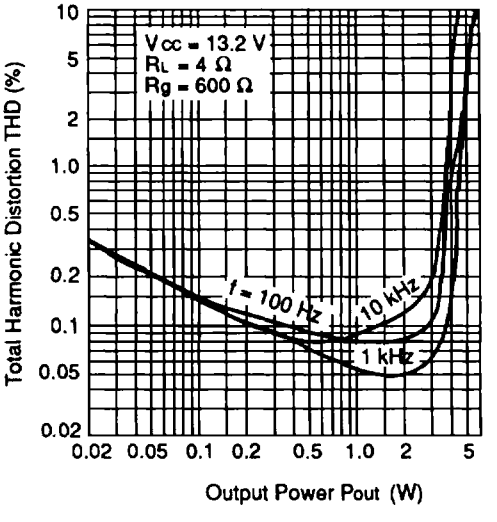
Supply Voltage Rejection Ratio vs. Frequency



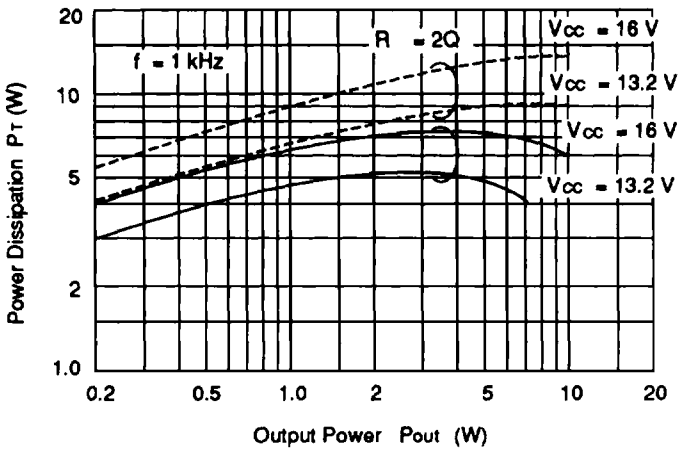
Output Power vs. Supply Voltage



Noise Output vs. Signal Source Resistance



Total Harmonic Distortion vs. Output Power



Power Dissipation vs. Output Power