

18W BTL Audio Power Amplifier

The HA13118 is power IC designed for component car stereo amplifiers. At 13.2 V to 4 Ω load, this power IC provides an output power of 18W with 10% distortion.

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

Features

- Small outline package, easy to mount
- Internal each protection circuits
 - Surge protection circuit
 - Thermal shut-down circuit
 - Ground fault protection circuit
 - Power supply fault protection circuit

Absolute Maximum Ratings ($T_a = 25^{\circ}\text{C}$)

Item	Symbol	Rating	Unit	Note
Operating supply voltage	V_{CC}	18	V	
DC supply voltage	V_{CC} (DC)	26	V	1
Peak supply voltage	V_{CC} (peak)	50	V	2
Output current	I_o (peak)	4	A	
Power dissipation	P_T	15	W	
Thermal resistance	$\theta_{j - c}$	3.5	°C/W	
Junction temperature	T_j	150	°C	
Operating temperature	T_{opr}	-30 to +80	°C	
Storage temperature	T_{stg}	-55 to +125	°C	

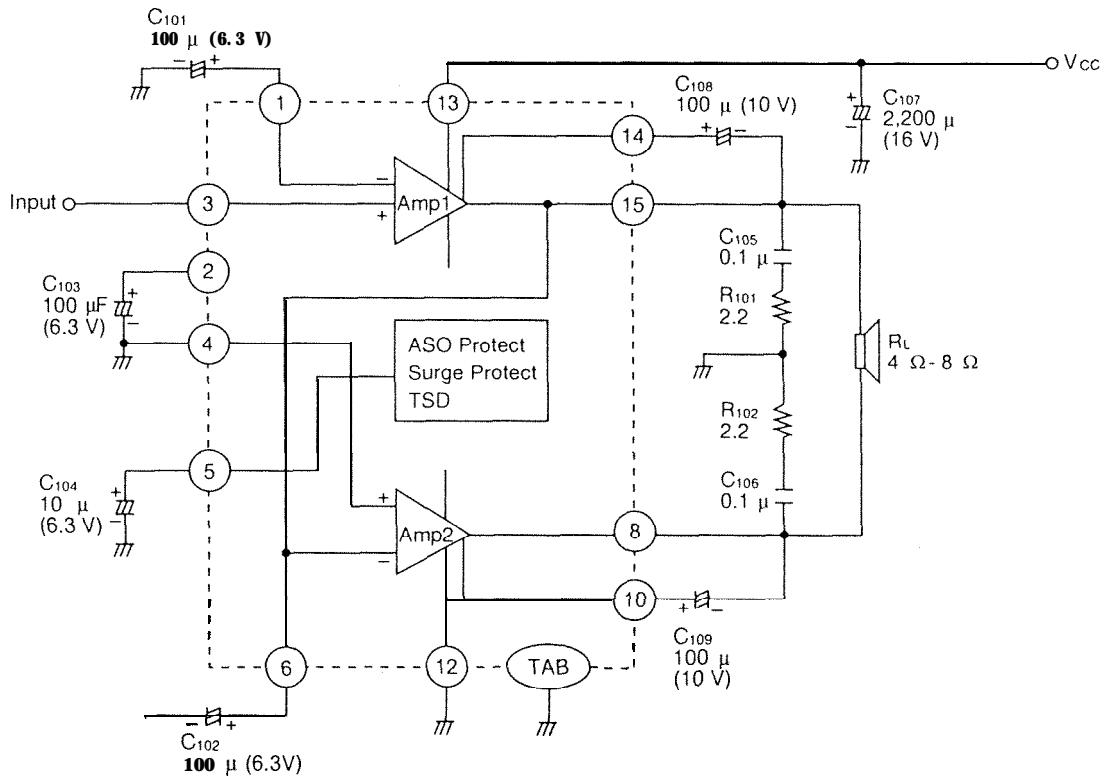
- Nbtes:
1. Value at $t = 30$ sec.
 2. Value at width $t_w = 200$ ms and rise time $t_r = 1$ ms.

HA13118

Electrical Characteristics ($V_{CC} = 13.2$ V, $f = 1$ kHz, $R_L = 4 \Omega$, $T_a = 25$ °C)

Item	Symbol	Min	Typ	Max	Unit	Test	Conditions
Quiescent current	I_Q	40	80	160	mA	$V_{in} = 0$	
Input bias voltage	V_B	—	20	40	mV	$V_{in} = 0$	
Output offset voltage	ΔV_O	—	—	+330	mV	$V_{in} = 0$	
Voltage gain	G_V	53	55	57	dB	$V_{in} = -55$ dBm	
Output power	P_{out}	15	18	—	W	$THD = 10\%$	$R_L = 4 \Omega$
		—	11	—			$R_L = 8 \Omega$
Total harmonic distortion	THD	—	0.2	1.0	%	$P_{out} = 1.5$ w	
Output noise voltage	WBN	—	1.0	2.0	mV	$R_g = 10$ kΩ, BW = 20 Hz 20kHz	
Supply voltage rejection ratio	SVR	33	44	—	dB	$f = 500$ Hz	
Input resistance	R_{in}	20	30	40	kΩ		
Rolloff frequency	f_L	—	20	—	Hz	$\Delta G_V = -3$ dB Low	
	f_H	10	20	40	kHz	from $f = 1$ kHz Ref. High	

Block Diagram



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

Figure 1 Typical Application Circuit

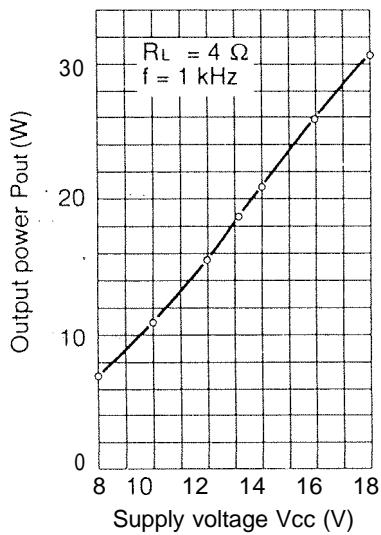


Figure 2 Output Power vs. Supply Voltage

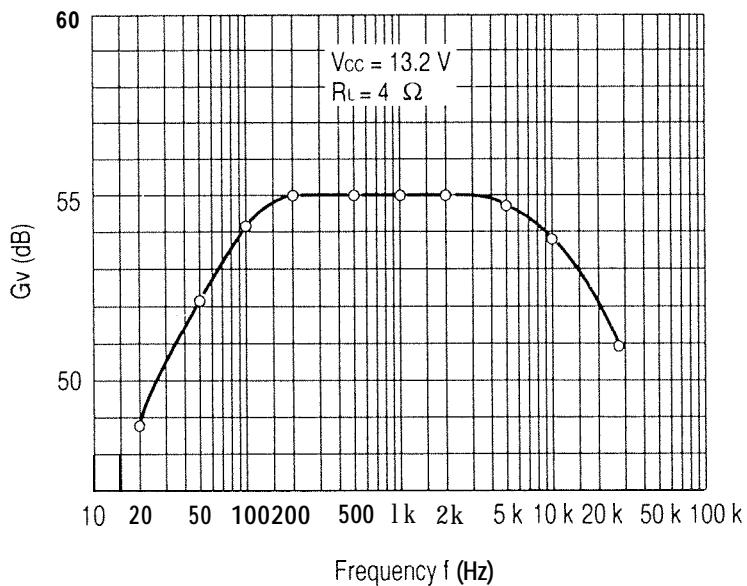


Figure 3 Voltage Gain vs. Frequency

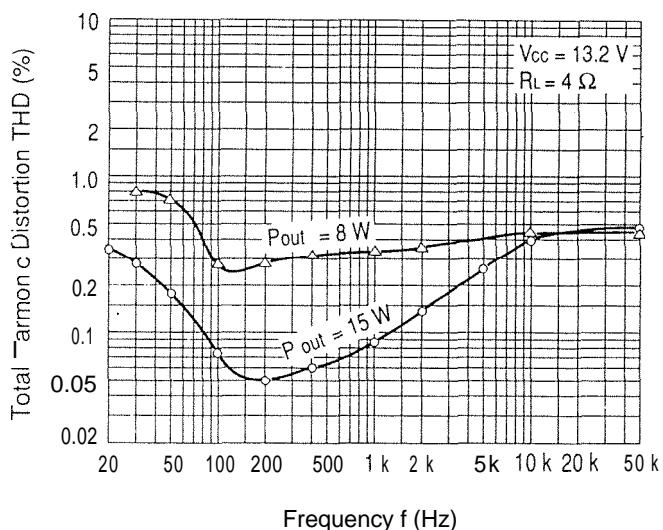


Figure 4 Total Harmonic Distortion vs. Frequency

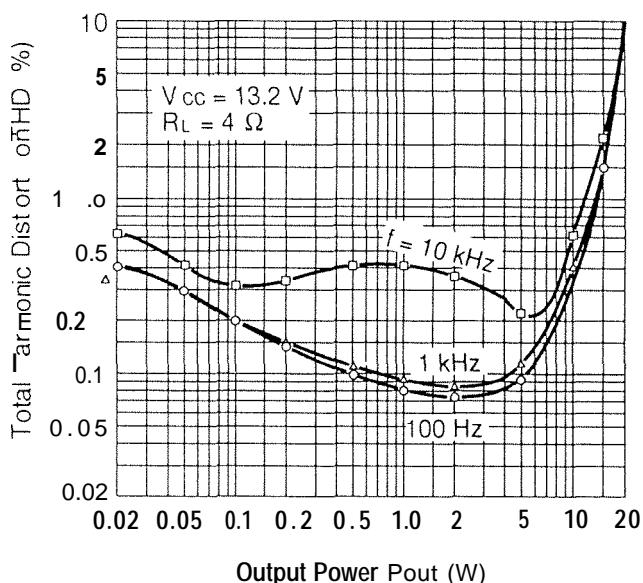


Figure 3 Total Harmonic Distortion vs. Output Power

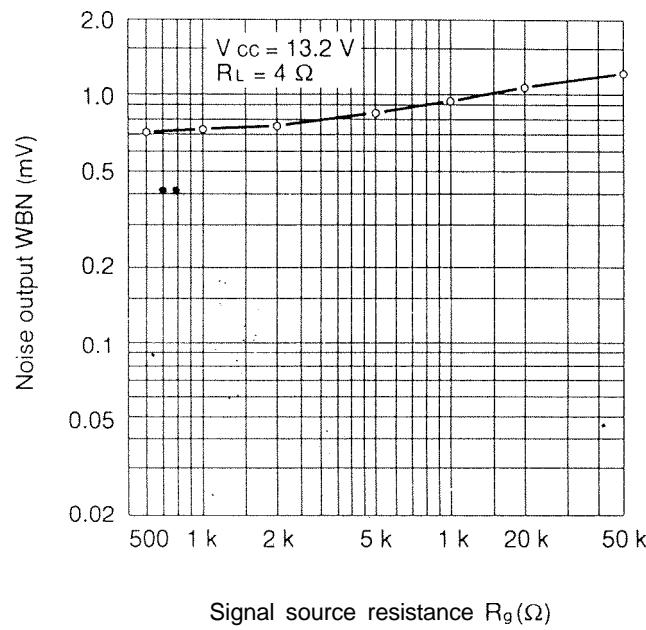


Figure 6 Noise Output vs. Signal Source Resistance

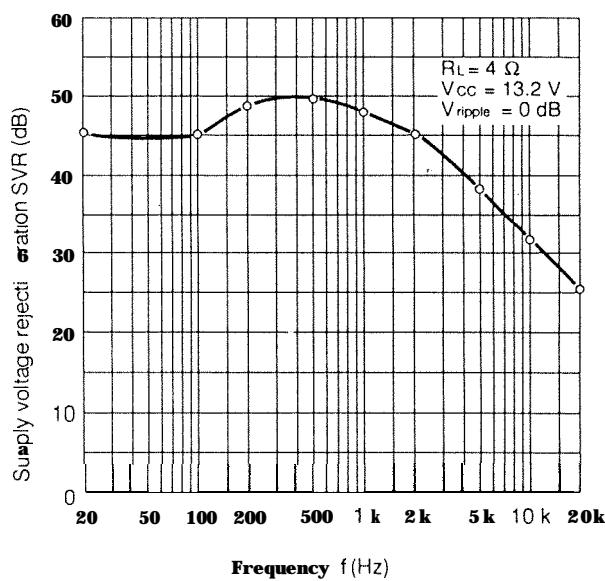


Figure 7 Supply Voltage Rejection Ratio vs. Frequency