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# HA13118

## 18 W BTL Audio Power Amplifier

# HITACHI

ADE-207-329 (Z)

1st Edition  
Dec. 2000

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### Description

The HA13118 is power IC designed for component car stereo amplifiers. At 13.2 V to 4  $\Omega$  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 (Ta = 25°C)

Item	Symbol	Rating	Unit	Note
Operating supply voltage	V <sub>CC</sub>	18	V	
DC supply voltage	V <sub>CC</sub> (DC)	26	V	1
Peak supply voltage	V <sub>CC</sub> (peak)	50	V	2
Output current	I <sub>o</sub> (peak)	4	A	
Power dissipation	P <sub>T</sub>	15	W	
Thermal resistance	$\theta_j - c$	3.5	°C/W	
Junction temperature	T <sub>j</sub>	150	°C	
Operating temperature	T <sub>opr</sub>	-30 to +80	°C	
Storage temperature	T <sub>stg</sub>	-55 to +125	°C	

Notes: 1. Value at t = 30 sec.

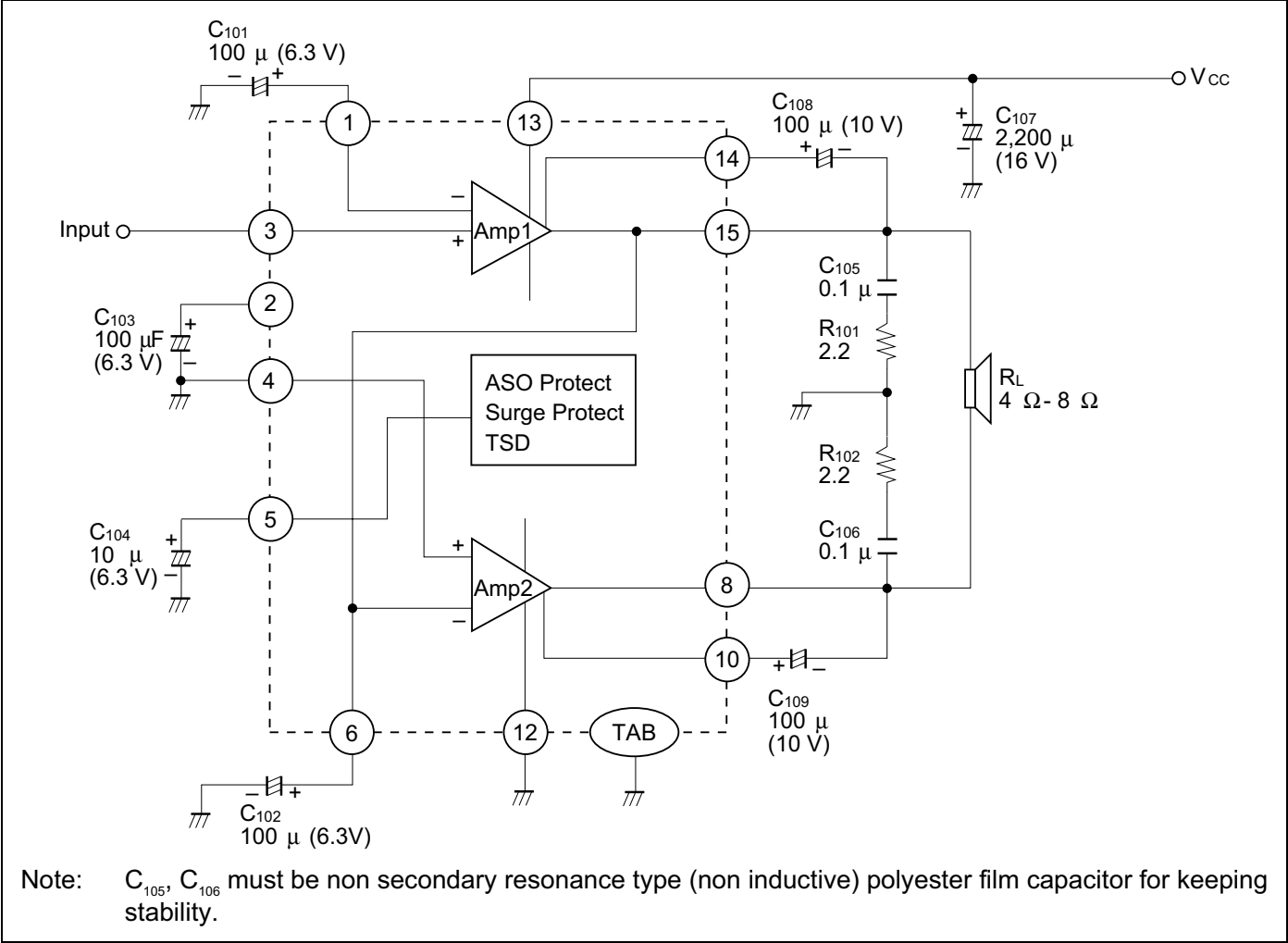
2. Value at width tw = 200 ms and rise time tr = 1 ms.

# HA13118

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

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	$\Delta V_Q$	—	—	+330	mV	$V_{in} = 0$	
Voltage gain	$G_V$	53	55	57	dB	$V_{in} = -55 \text{ dBm}$	
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	%	$P_{out} = 1.5 \text{ W}$	
Output noise voltage	WBN	—	1.0	2.0	mV	$R_g = 10 \text{ k}\Omega$ , BW = 20 Hz 20 kHz	
Supply voltage rejection ratio	SVR	33	44	—	dB	$f = 500 \text{ Hz}$	
Input resistance	$R_{in}$	20	30	40	$\text{k}\Omega$		
Rolloff frequency	$f_L$	—	20	—	Hz	$\Delta G_v = -3 \text{ dB}$	Low
	$f_H$	10	20	40	kHz	from $f = 1 \text{ kHz}$ Ref.	High

Block Diagram



Note: C<sub>105</sub>, C<sub>106</sub> must be non secondary resonance type (non inductive) polyester film capacitor for keeping stability.

Figure 1 Typical Application Circuit

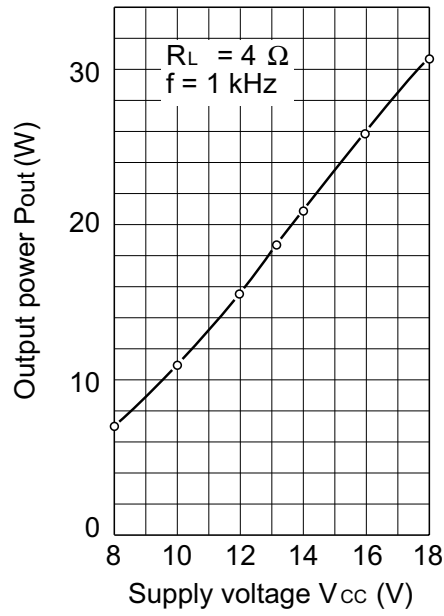


Figure 2 Output Power vs. Supply Voltage

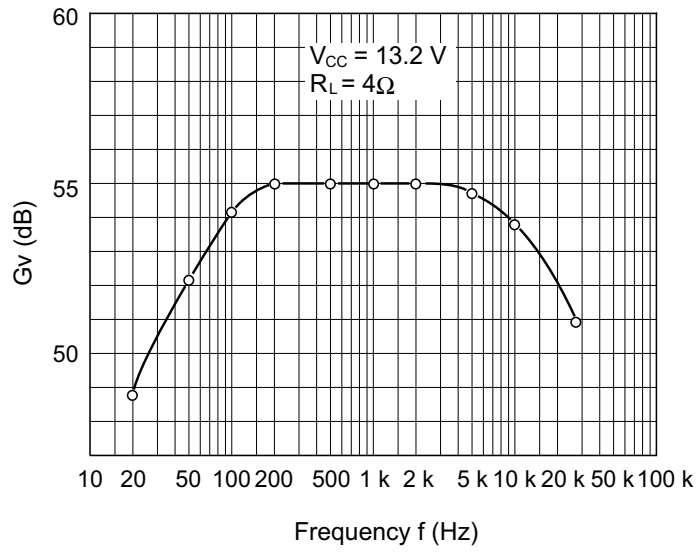


Figure 3 Voltage Gain vs. Frequency

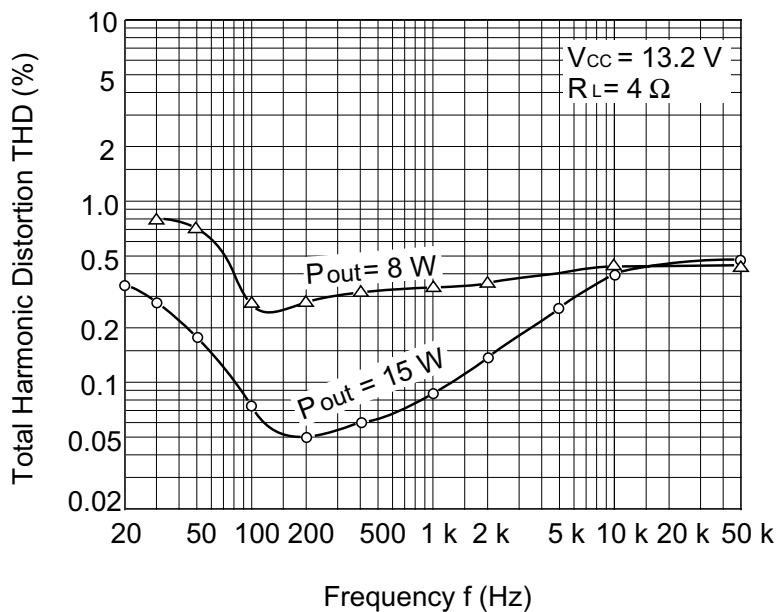


Figure 4 Total Harmonic Distortion vs. Frequency

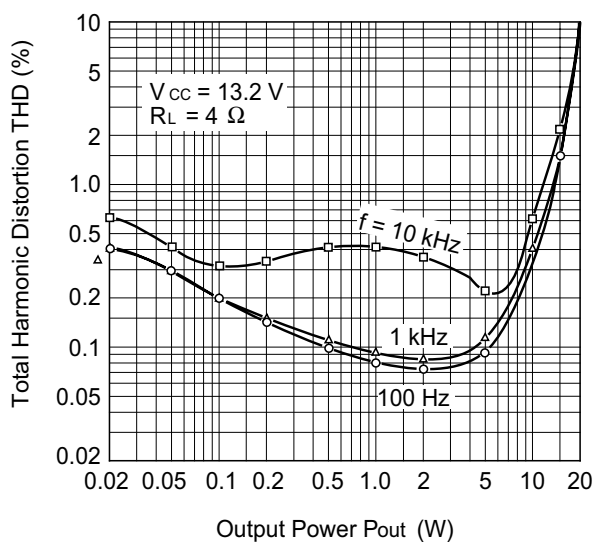


Figure 5 Total Harmonic Distortion vs. Output Power

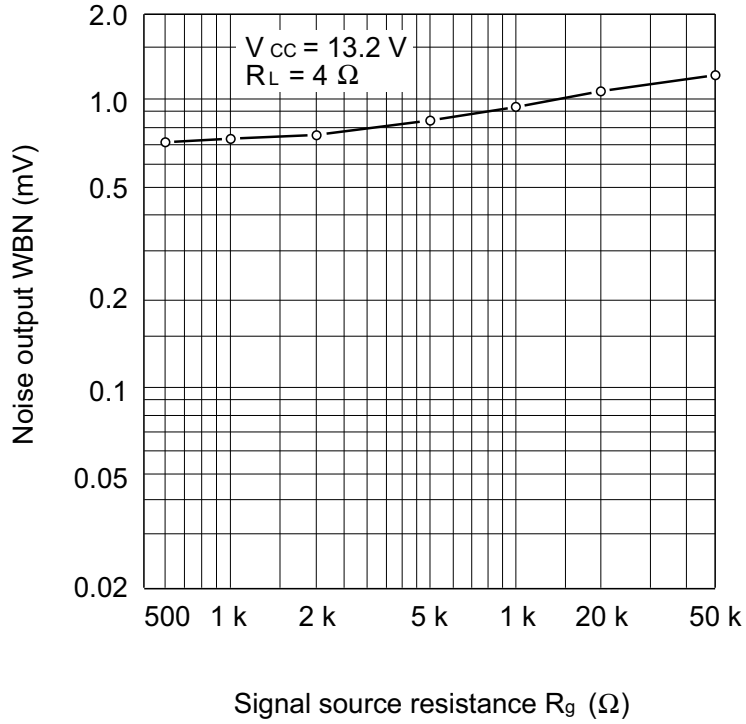


Figure 6 Noise Output vs. Signal Source Resistance

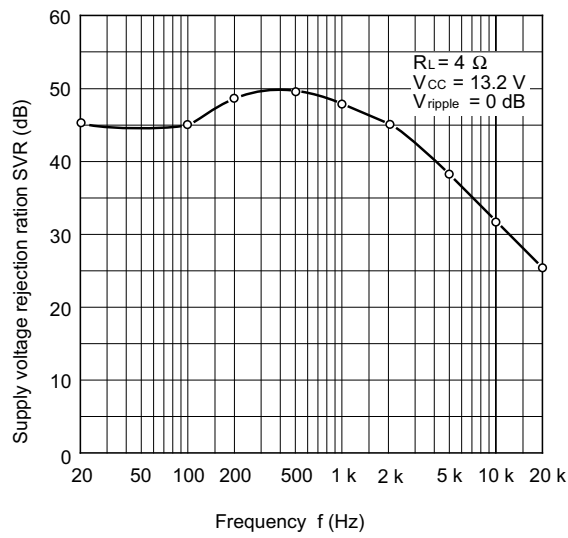
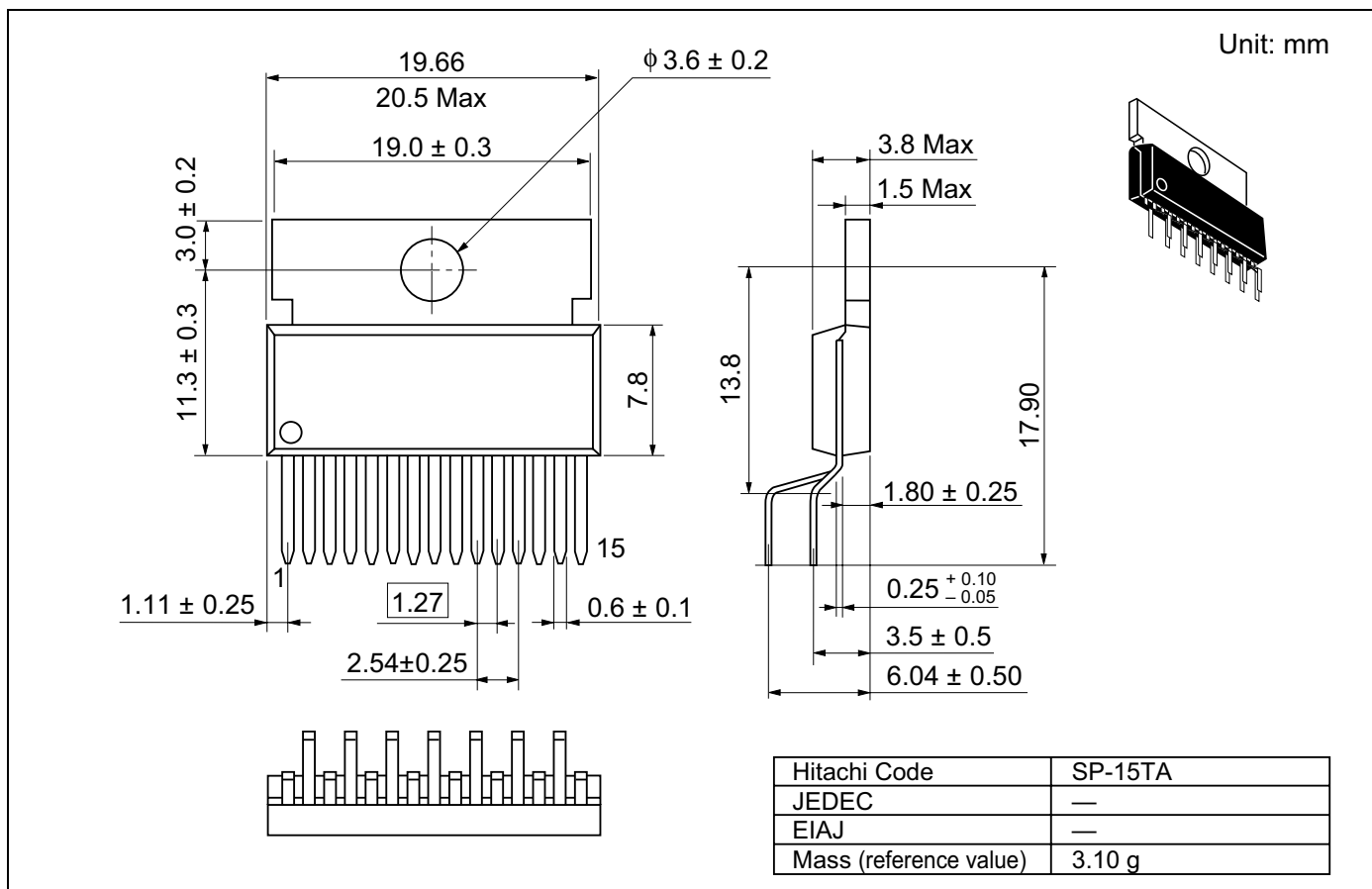


Figure 7 Supply Voltage Rejection Ratio vs. Frequency

Package Dimensions



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