# HA13155

33 W × 4-Channel BTL Power IC

# **HITACHI**

ADE-207-187A (Z) 2nd Edition Jul. 1999

### **Description**

The HA13155 is four-channel BTL amplifier IC designed for car audio, featuring high output and low distortion, and applicable to digital audio equipment. It provides 33 W output per channel, with a 13.7 V power supply and at Max distortion.

#### **Functions**

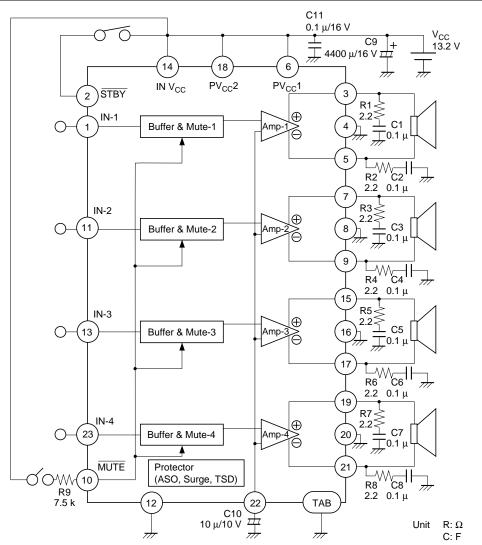
- 4 ch BTL power amplifiers
- Built-in standby circuit
- Built-in muting circuit
- Built-in protection circuit (surge, T.S.D, and ASO)

#### **Features**

- Requires few external parts
- Popping noise minimized
- Low output noise
- Built-in high reliability protection circuit
- Pin to pin with HA13150A/HA13151/HA13152/HA13153



### **Block Diagram**



C1 to C8 should be polyester film capacitors with no secondary resonance (non-inductive), to assure stable operation.

Notes: 1. Standby

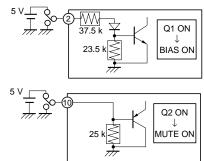
Power is turned on when a signal of 3.5 V or 0.05 mA is impressed at pin 2. When pin 2 is open or connected to GND, standby is turned on (output off).

2. Muting

Muting is turned off (output on) when a signal of 3.5 V or 0.2 mA is impressed at pin 10.

When pin 10 is open or connected to GND, muting is turned on (output off).

3. TAB (header of IC) connected to GND.

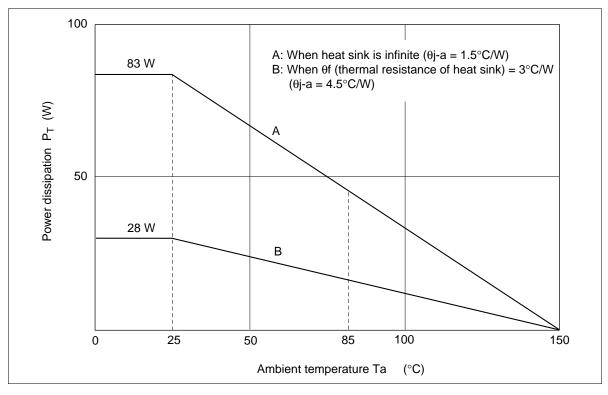


## **Absolute Maximum Ratings**

Item	Symbol	Rating	Unit
Operating supply voltage	V <sub>cc</sub>	18	V
Supply voltage when no signal*1	V <sub>cc</sub> (DC)	26	V
Peak supply voltage*2	V <sub>cc</sub> (PEAK)	50	V
Output current*3	I <sub>o</sub> (PEAK)	4	A
Power dissipation*4	P <sub>T</sub>	83	W
Junction temperature	Tj	150	°C
Operating temperature	Topr	-30 to +85	°C
Storage temperature	Tstg	-55 to +125	°C

Notes: 1. Tolerance within 30 seconds.

- 2. Tolerance in surge pulse waveform.
- 3. Value per 1 channel.
- 4. Value when attached on the infinite heat sink plate at Ta = 25  $^{\circ}$ C. The derating carve is as shown in the graph below.

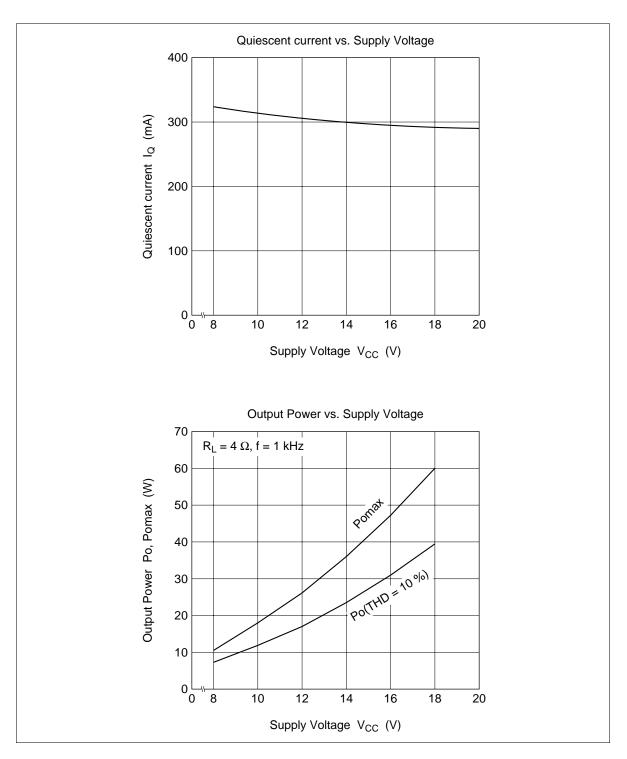


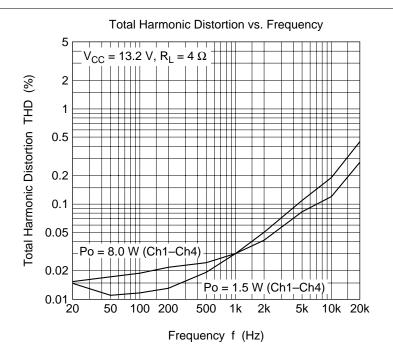
## HA13155

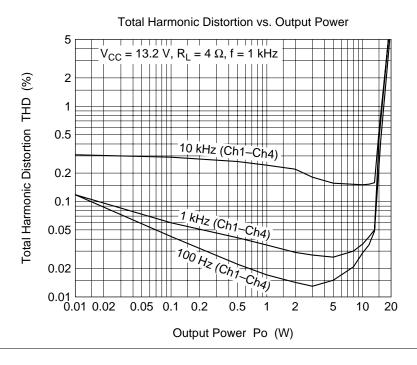
# Electrical Characteristics (V $_{CC}$ = 13.2 V, f = 1 kHz, $R_{L}$ = 4 $\Omega,\,Rg$ = 600 $\Omega,\,Ta$ = 25°C)

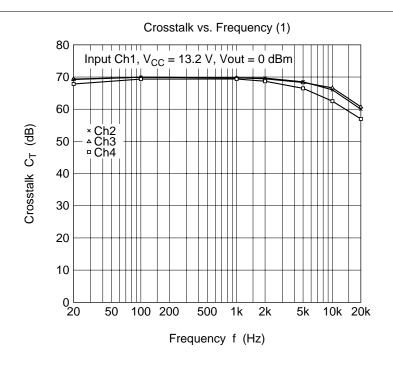
Item	Symbol	Min	Тур	Max	Unit	Test Conditions
Quiescent current	I <sub>Q</sub> 1	_	300	_	mA	Vin = 0
Output offset voltage	$\Delta V_{Q}$	-250	0	+250	mV	
Gain	G <sub>v</sub>	30.5	32	33.5	dB	
Gain difference between channels	$\Delta G_{V}$	-1.0	0	+1.0	dB	
Rated output power	Ро	_	19	_	W	$V_{CC} = 13.2 \text{ V}$ THD = 10%, $R_L = 4 \Omega$
Max output power	Pomax	_	33	_	W	$V_{CC}$ = 13.7 V, $R_L$ = 4 $\Omega$
Total harmonic distortion	T.H.D.	_	0.02	_	%	Po = 3 W
Output noise voltage	WBN	_	0.15	_	mVrms	Rg = 0 $\Omega$ BW = 20 to 20 kHz
Ripple rejection	SVR	_	55	_	dB	Rg = 600 Ω, f = 120 Hz
Channel cross talk	C.T.	_	70	_	dB	Rg = $600 \Omega$ Vout = $0 \text{ dBm}$
Input impedance	Rin	_	25	_	kΩ	
Standby current	I <sub>Q</sub> 2	_	_	10	μΑ	
Standby control voltage (high)	V <sub>STH</sub>	3.5	_	V <sub>cc</sub>	V	
Standby control voltage (low)	V <sub>STL</sub>	0	_	1.5	V	
Muting control voltage (high)	$V_{MH}$	3.5	_	V <sub>cc</sub>	V	
Muting control voltage (low)	$V_{ML}$	0	_	1.5	V	
Muting attenuation	ATTM	_	70	_	dB	Vout = 0 dBm

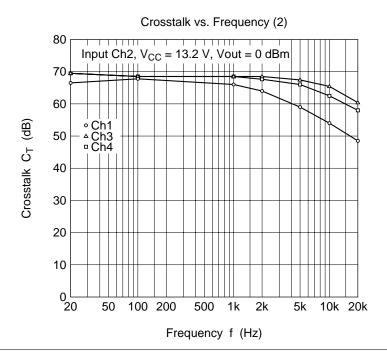
### **Characteristics Curve**

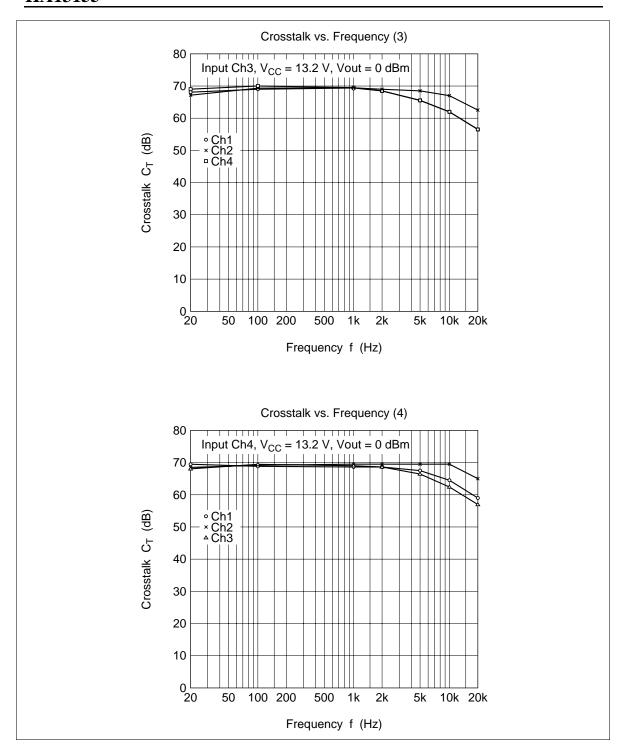


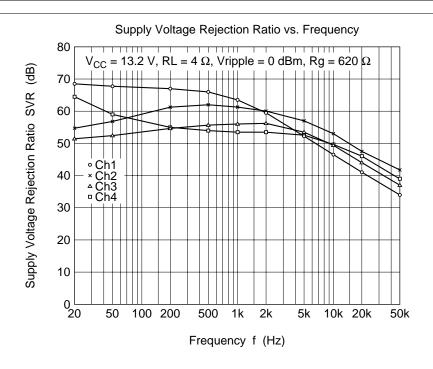


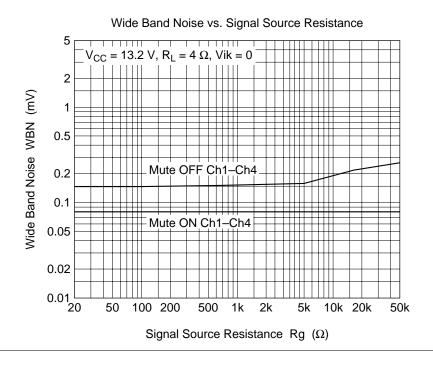


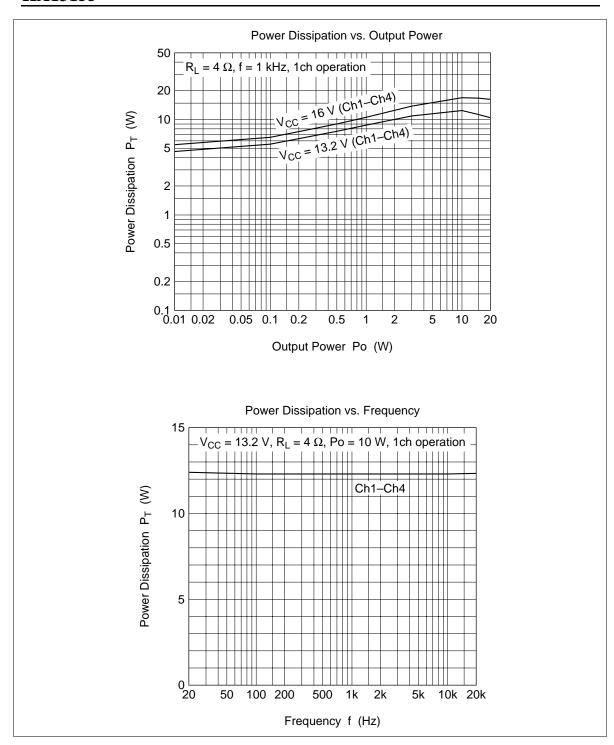


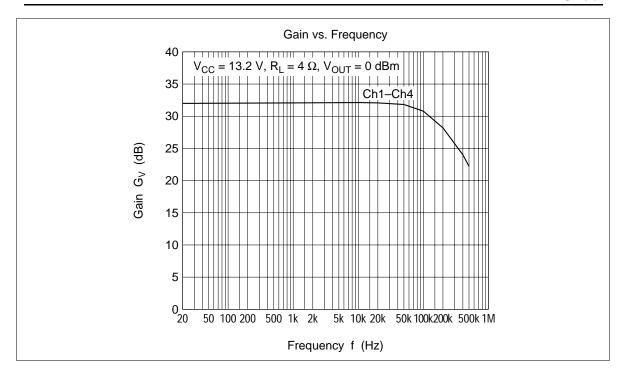






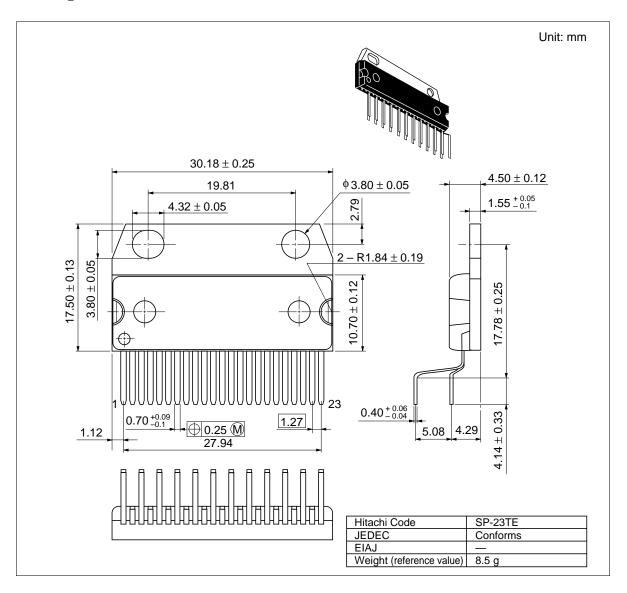






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## **Package Dimensions**



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