
HA13155

33 W \times 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.

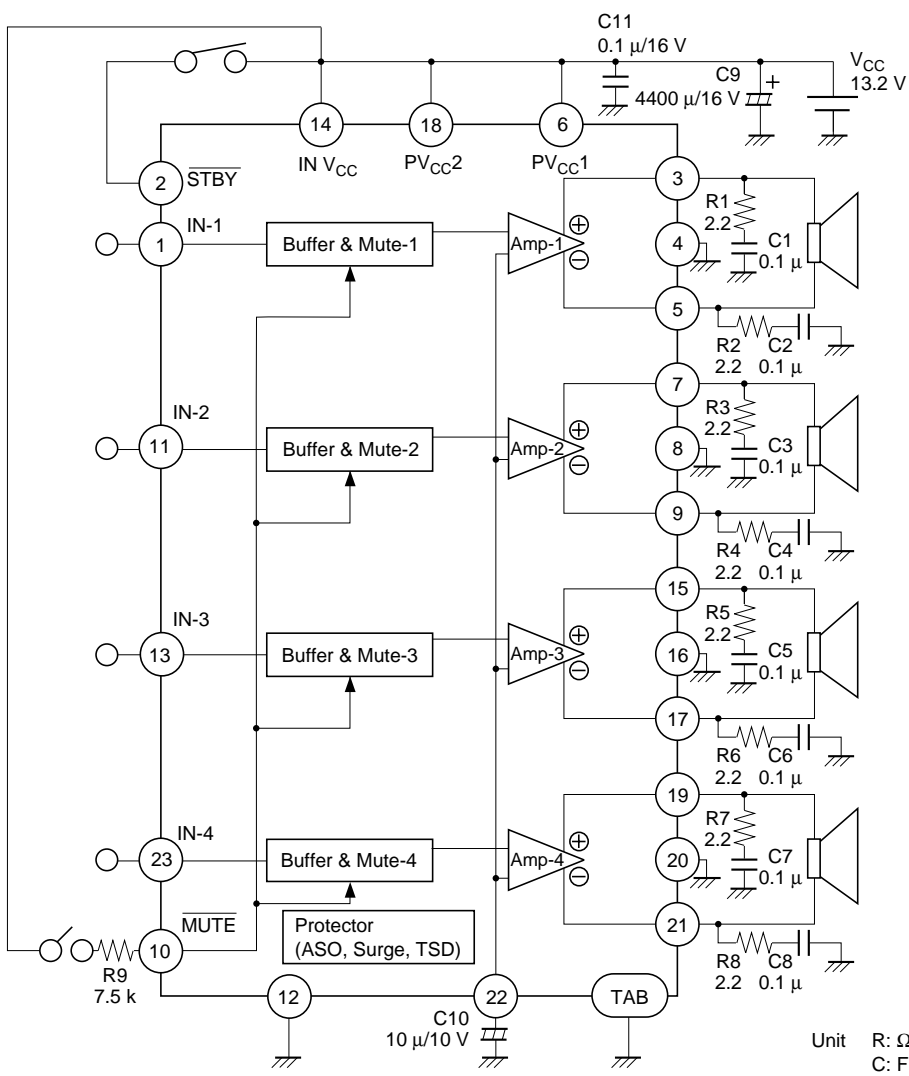
Functions

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

Features

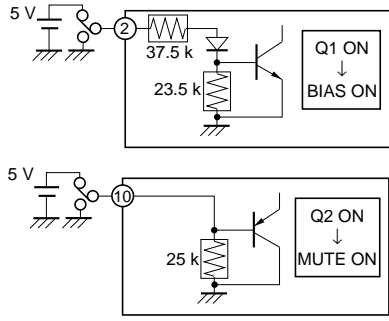
- Requires few external parts
- Popping noise minimized
- Low output noise
- Built-in high reliability protection circuit
- Pin to pin with HA13150A/HA13151/HA13152/HA13153

Block Diagram



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

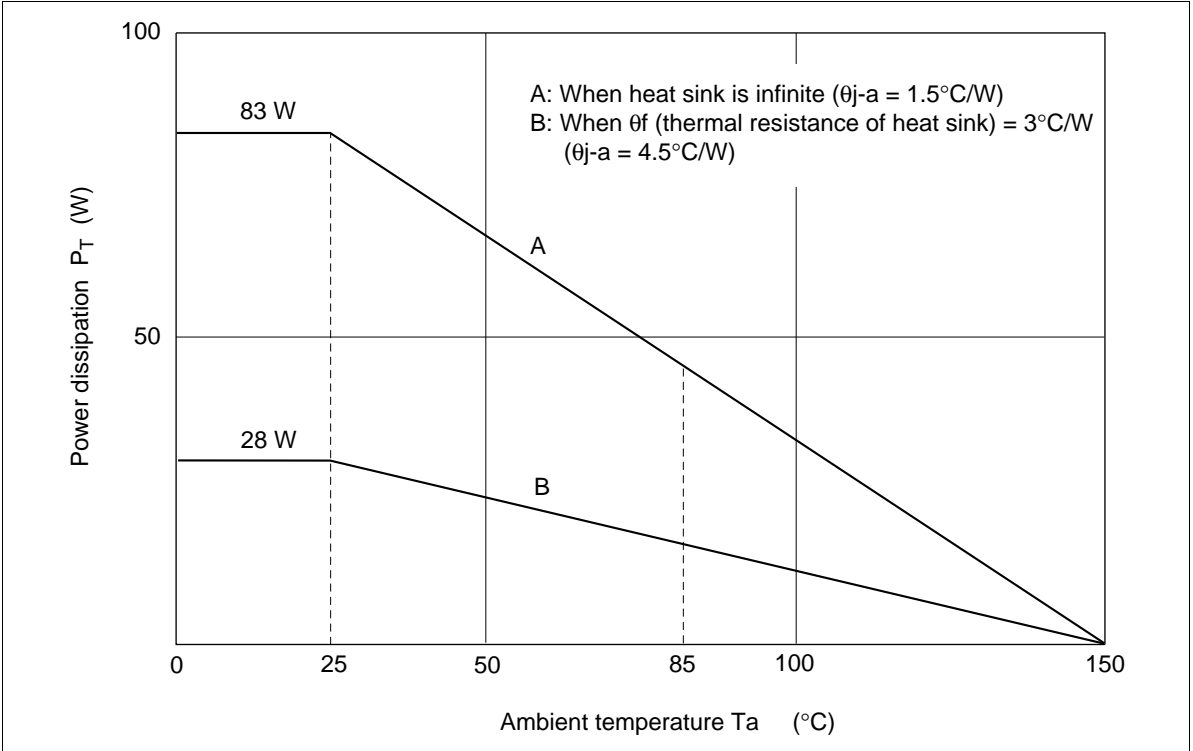
- Notes:
- 1. Standby
Power is turned on when a signal of 3.5 V or 0.05 mA is impressed at pin 2. When pin 2 is open or connected to GND, standby is turned on (output off).
 - 2. Muting
Muting is turned off (output on) when a signal of 3.5 V or 0.2 mA is impressed at pin 10. When pin 10 is open or connected 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_{CC}	18	V
Supply voltage when no signal* ¹	V_{CC} (DC)	26	V
Peak supply voltage* ²	V_{CC} (PEAK)	50	V
Output current* ³	I_o (PEAK)	4	A
Power dissipation* ⁴	P_T	83	W
Junction temperature	T_j	150	°C
Operating temperature	T_{opr}	−30 to +85	°C
Storage temperature	T_{stg}	−55 to +125	°C

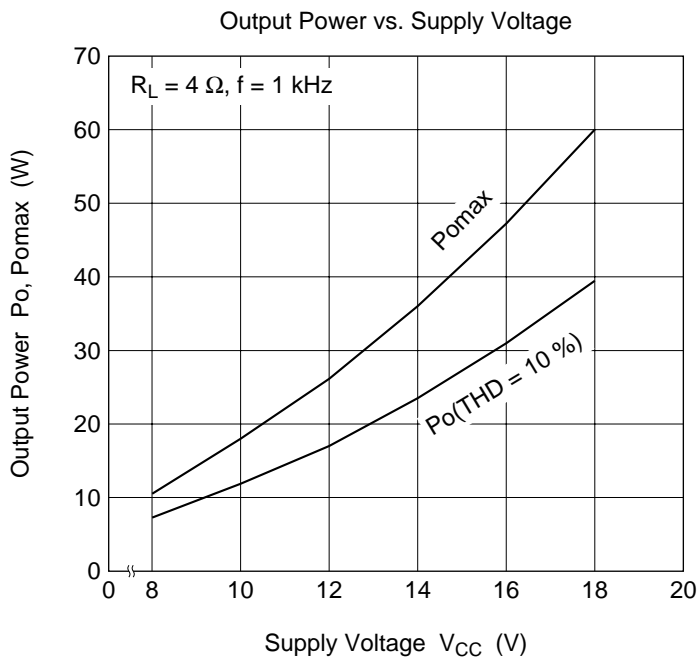
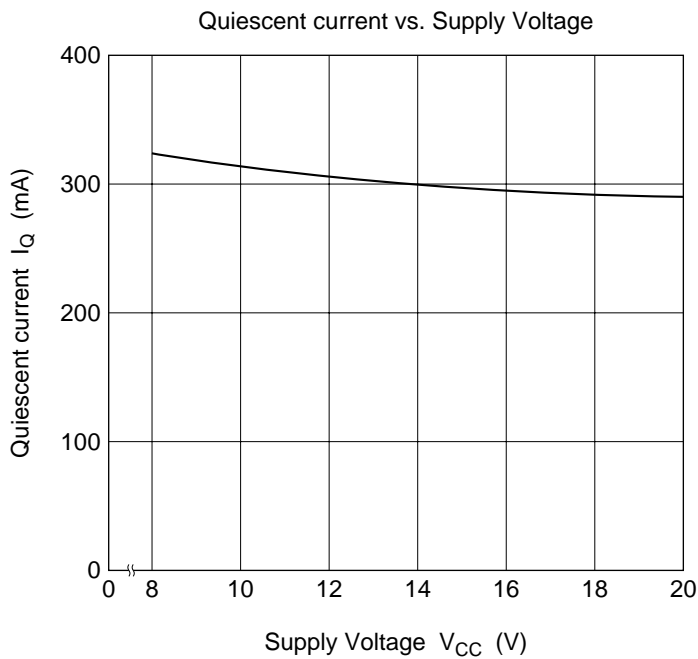
Notes: 1. Tolerance within 30 seconds.
2. Tolerance in surge pulse waveform.
3. Value per 1 channel.
4. Value when attached on the infinite heat sink plate at $T_a = 25\text{ °C}$.
The derating curve is as shown in the graph below.

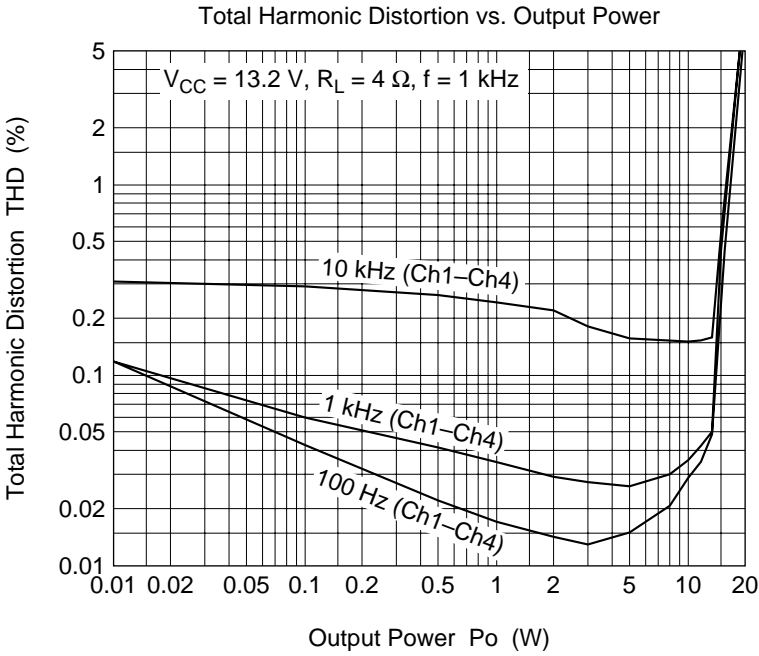
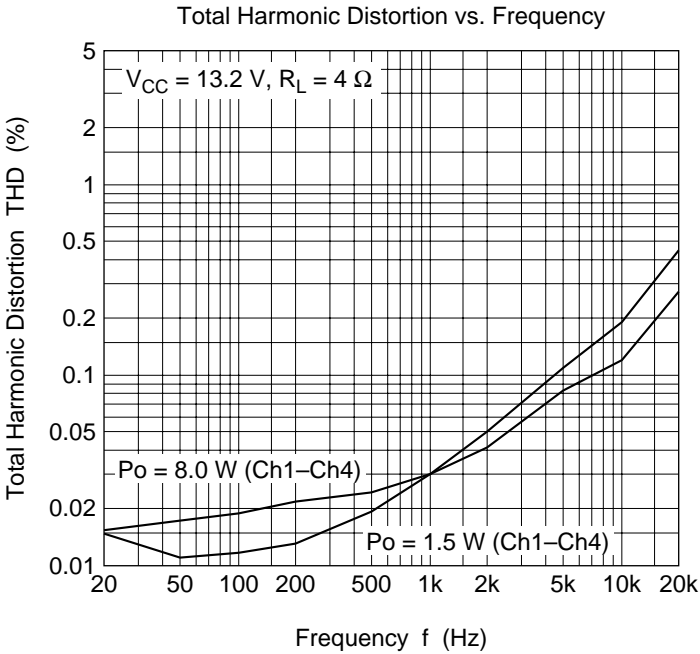


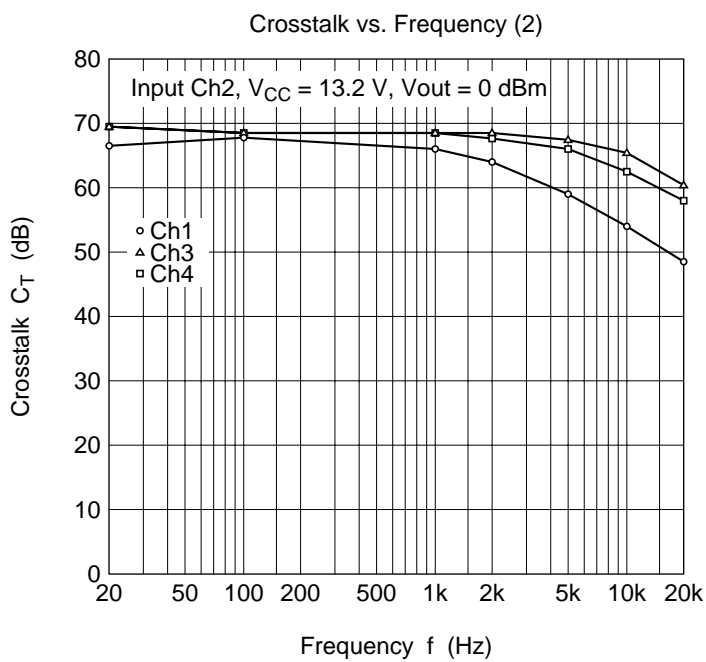
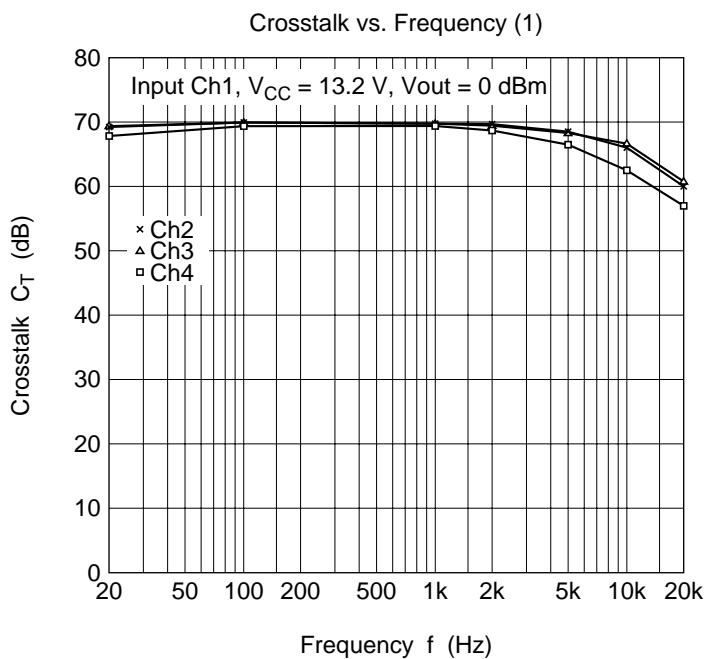
Electrical Characteristics (V_{CC} = 13.2 V, f = 1 kHz, R_L = 4 Ω, R_g = 600 Ω, Ta = 25°C)

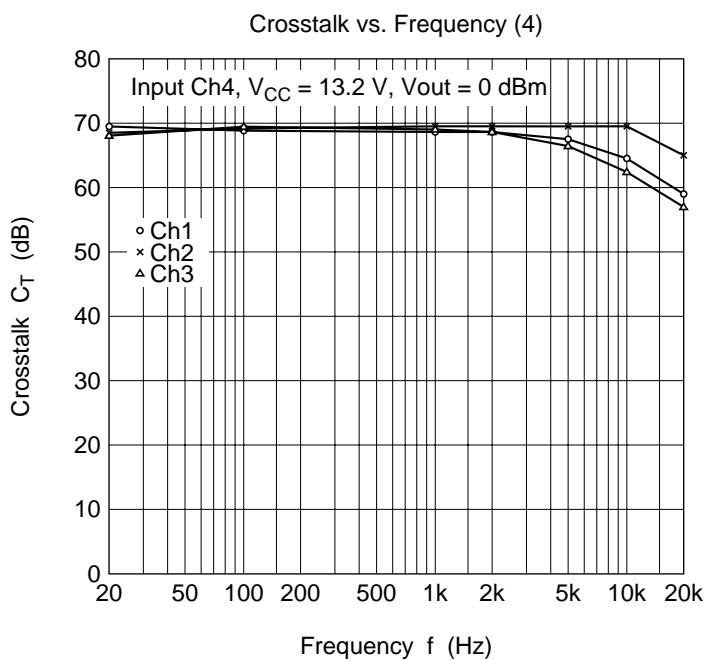
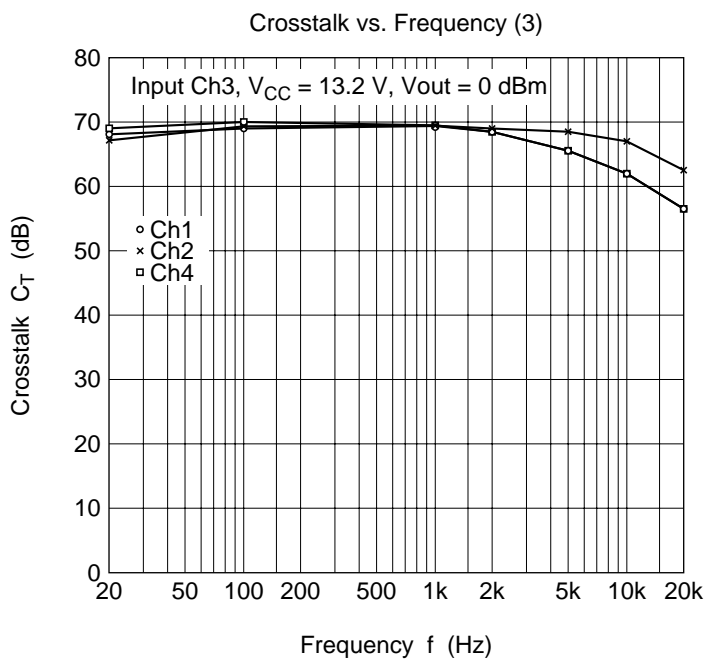
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Quiescent current	I _{Q1}	—	300	—	mA	V _{in} = 0
Output offset voltage	ΔV _Q	−250	0	+250	mV	
Gain	G _V	30.5	32	33.5	dB	
Gain difference between channels	ΔG _V	−1.0	0	+1.0	dB	
Rated output power	P _o	—	19	—	W	V _{CC} = 13.2 V THD = 10%, R _L = 4 Ω
Max output power	P _{omax}	—	33	—	W	V _{CC} = 13.7 V, R _L = 4 Ω
Total harmonic distortion	T.H.D.	—	0.02	—	%	P _o = 3 W
Output noise voltage	WBN	—	0.15	—	mVrms	R _g = 0 Ω BW = 20 to 20 kHz
Ripple rejection	SVR	—	55	—	dB	R _g = 600 Ω, f = 120 Hz
Channel cross talk	C.T.	—	70	—	dB	R _g = 600 Ω V _{out} = 0 dBm
Input impedance	R _{in}	—	25	—	kΩ	
Standby current	I _{Q2}	—	—	10	μA	
Standby control voltage (high)	V _{STH}	3.5	—	V _{CC}	V	
Standby control voltage (low)	V _{STL}	0	—	1.5	V	
Muting control voltage (high)	V _{MH}	3.5	—	V _{CC}	V	
Muting control voltage (low)	V _{ML}	0	—	1.5	V	
Muting attenuation	ATTM	—	70	—	dB	V _{out} = 0 dBm

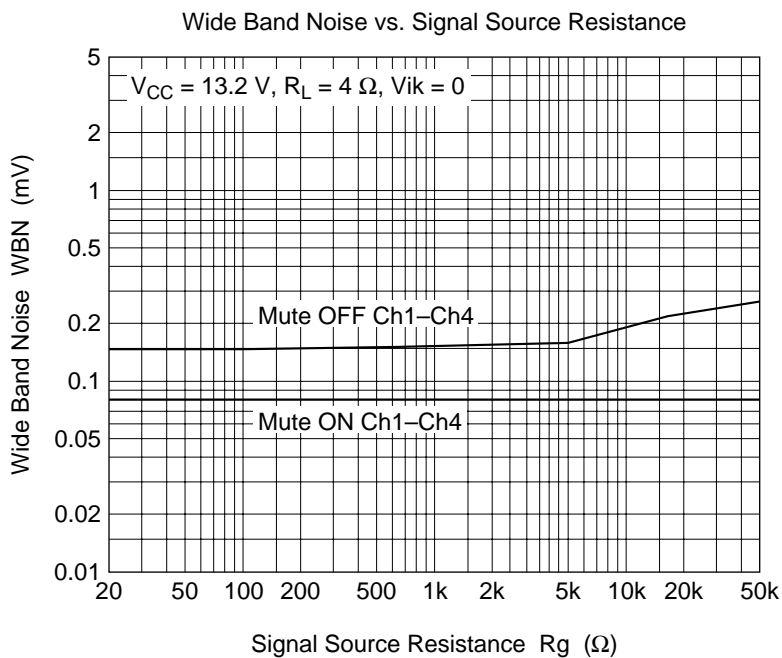
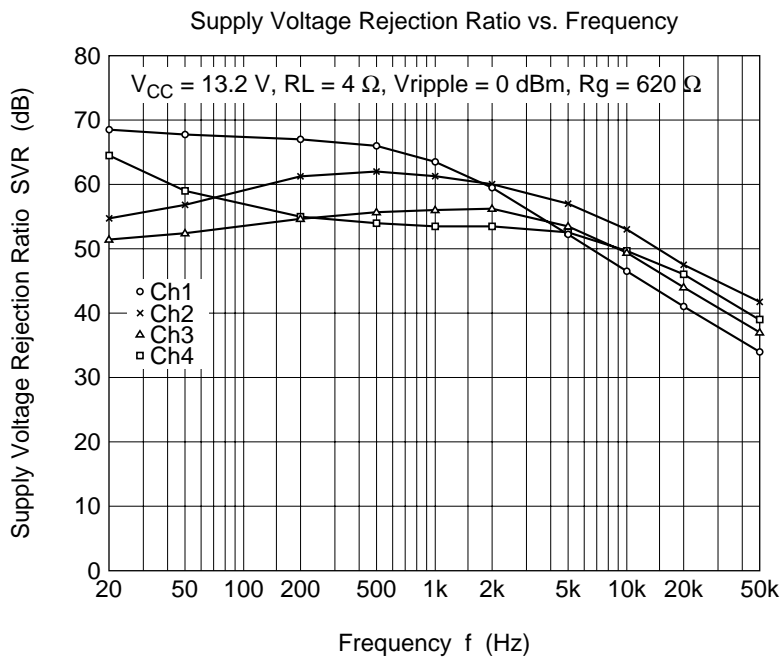
Characteristics Curve

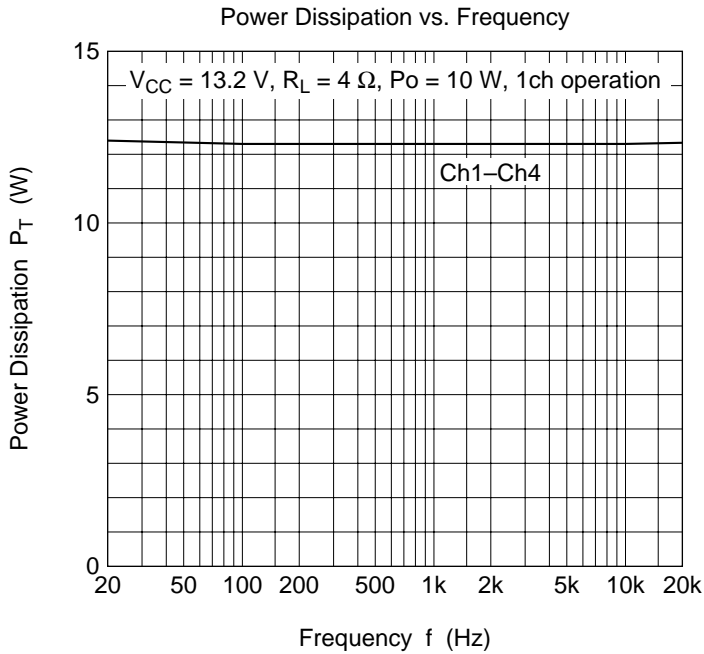
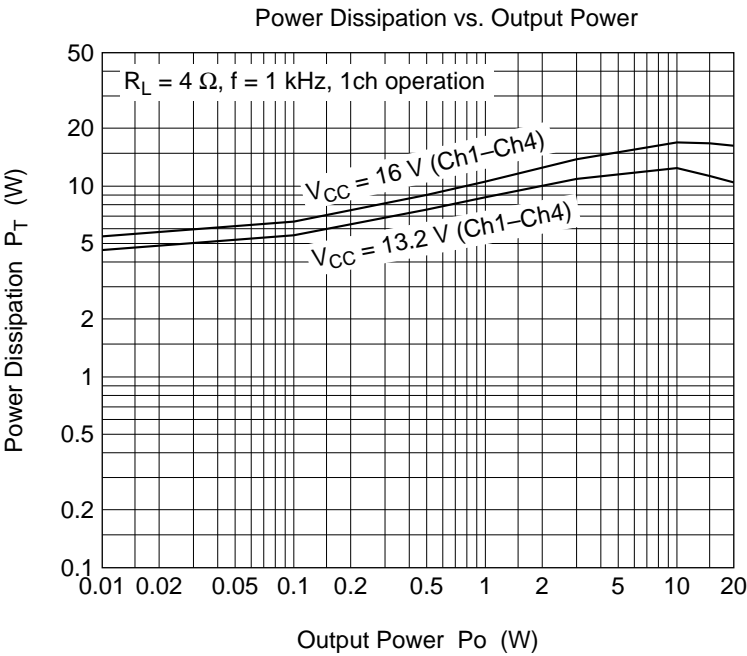


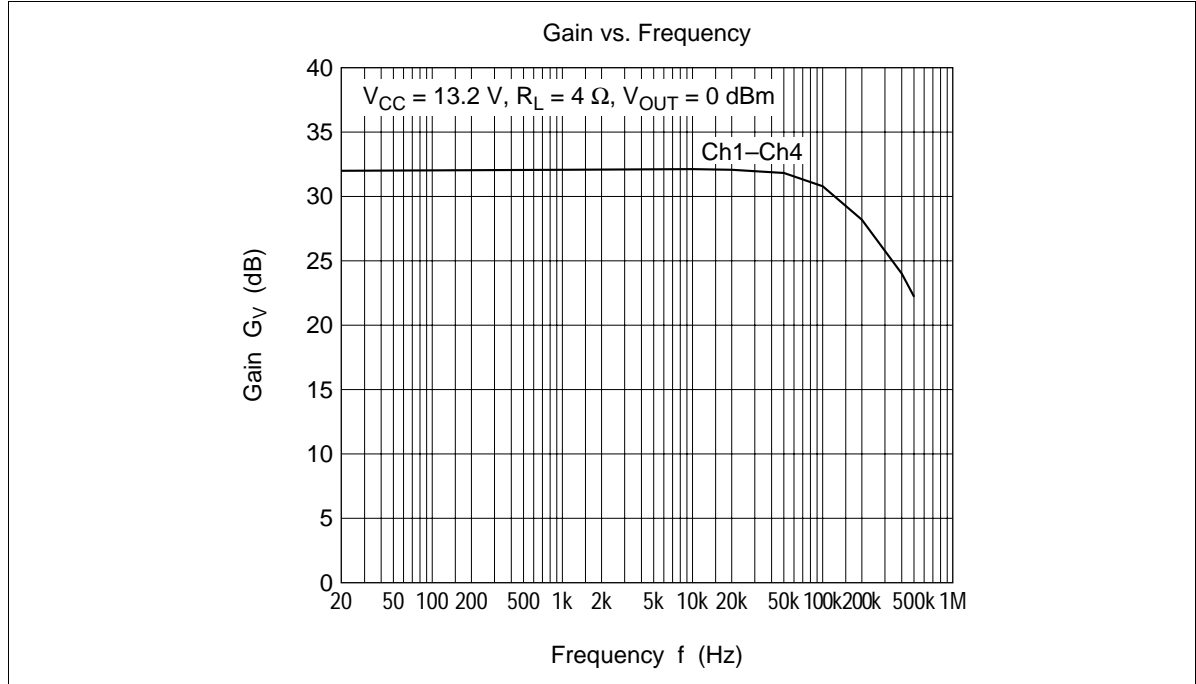






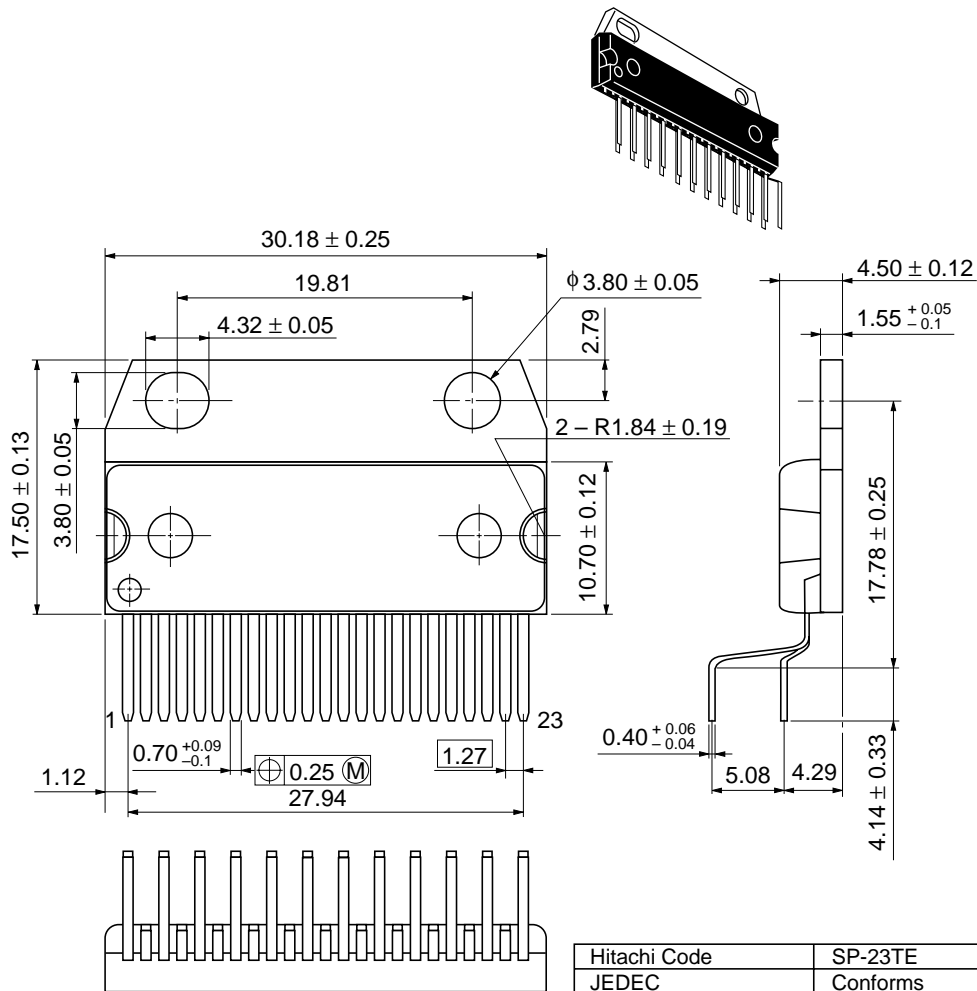






Package Dimensions

Unit: mm



Hitachi Code	SP-23TE
JEDEC	Conforms
EIAJ	—
Weight (reference value)	8.5 g

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