HA13157

33 W × 4-Channel BTL Power IC

HITACHI

ADE-207-242
1st. Edition

Description

The HA13157 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

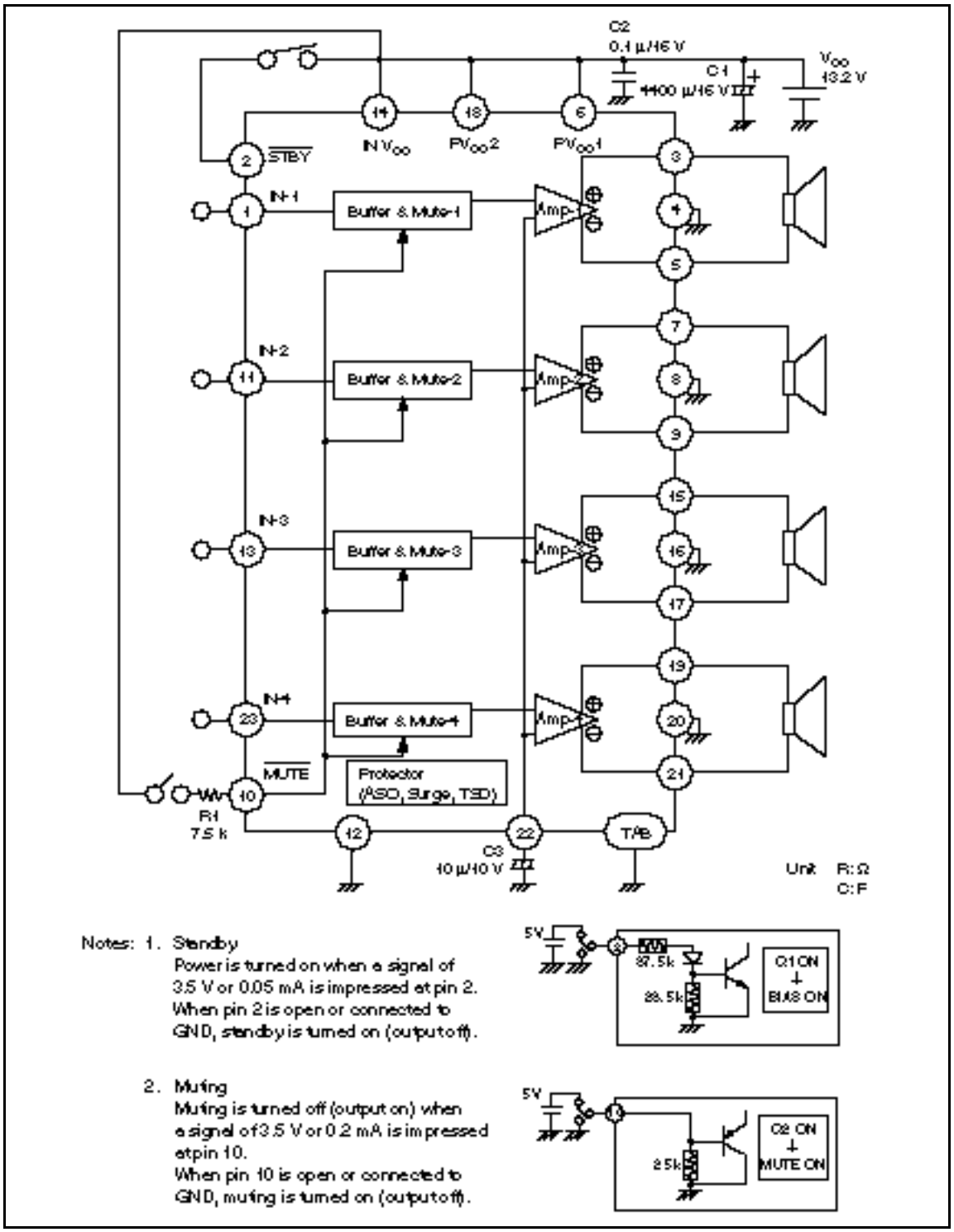
- 4 ch BTL power amplifiers
- Built-in standby circuit
- Built-in muting circuit
- Built-in protection circuit (surge, T.S.D, and ASO)

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/HA13155

Hitachi semiconductor

Block Diagram



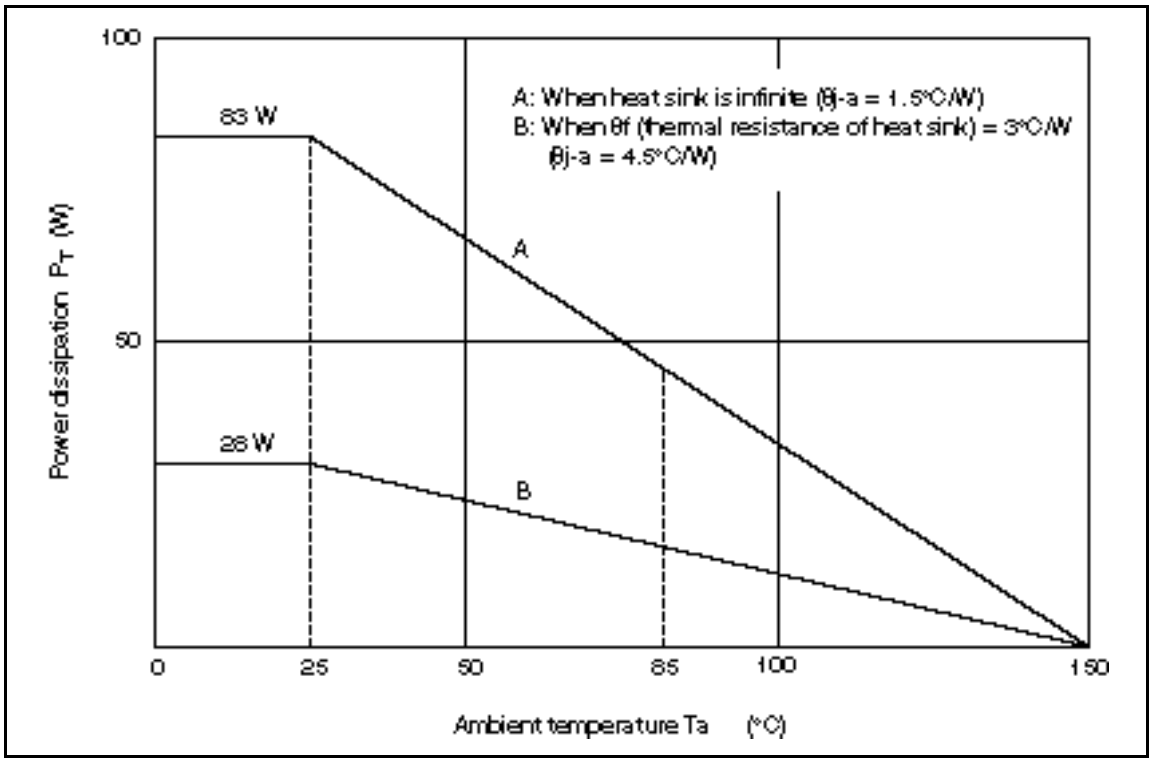
Notes: 1. Standby
Power is turned on when a signal of 3.5 V or 0.05 mA is impressed at pin 2.
When pin 2 is open or connected to GND, standby is turned on (output off).

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).

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	Tj	150	°C
Operating temperature	Topr	–30 to +85	°C
Storage temperature	Tstg	–55 to +125	°C

Note: 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 °C.
The derating carve is as shown in the graph below.

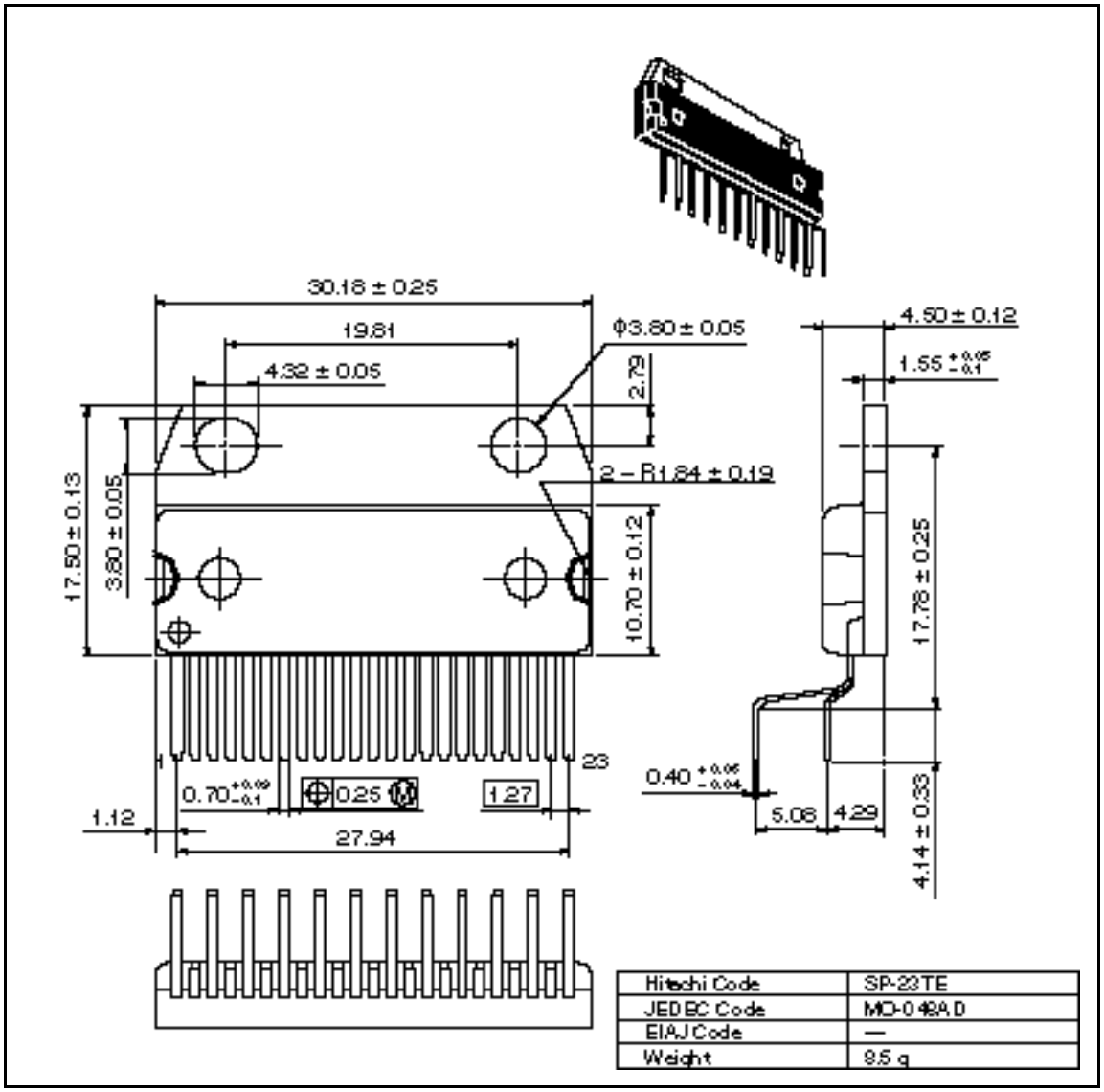


Electrical Characteristics (V_{CC} = 13.2 V, f = 1 kHz, R_L = 4 Ω, Rg = 600 Ω, Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Quiescent current	I_{Q1}	—	350	—	mA	Vin = 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	–1.5	0	1.5	dB	
Rated output power	P_O	—	20	—	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	—	%	Po = 3 W
Output noise voltage	WBN	—	0.15	—	mVrms	Rg = 0 Ω, BW = 20 to 20 kHz
Ripple rejection	SVR	—	55	—	dB	f = 120 Hz
Channel cross talk	C.T.	—	70	—	dB	Vout = 0 dBm
Input impedance	Rin	—	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	Vout = 0 dBm

Package Dimensions

Unit: mm



Hitachi Code	SP-23TE
JEDEC Code	MO-048AD
EIAJ Code	—
Weight	9.5 g