TOSHIBA Bipolar Linear Integrated Circuit Silicon Monolithic

T A 8 2 7 3 H

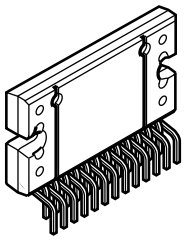
Max Power 47 W BTL × 4 ch Audio Power IC

The TA8273H is 4 ch BTL audio power amplifier for car audio application.

This IC can generate more high power: $P_{OUT}MAX$ = 47 W as it is included the pure complementary PNP and NPN transistor output stage.

It is designed low distortion ratio for 4 ch BTL audio power amplifier, built-in stand-by function, muting function, and diagnosis circuit which can detect output to V_{CC}/GND short, output offset voltage and over voltage input mode.

Additionally, the AUX amplifier and various kind of protector for car audio use are built-in.



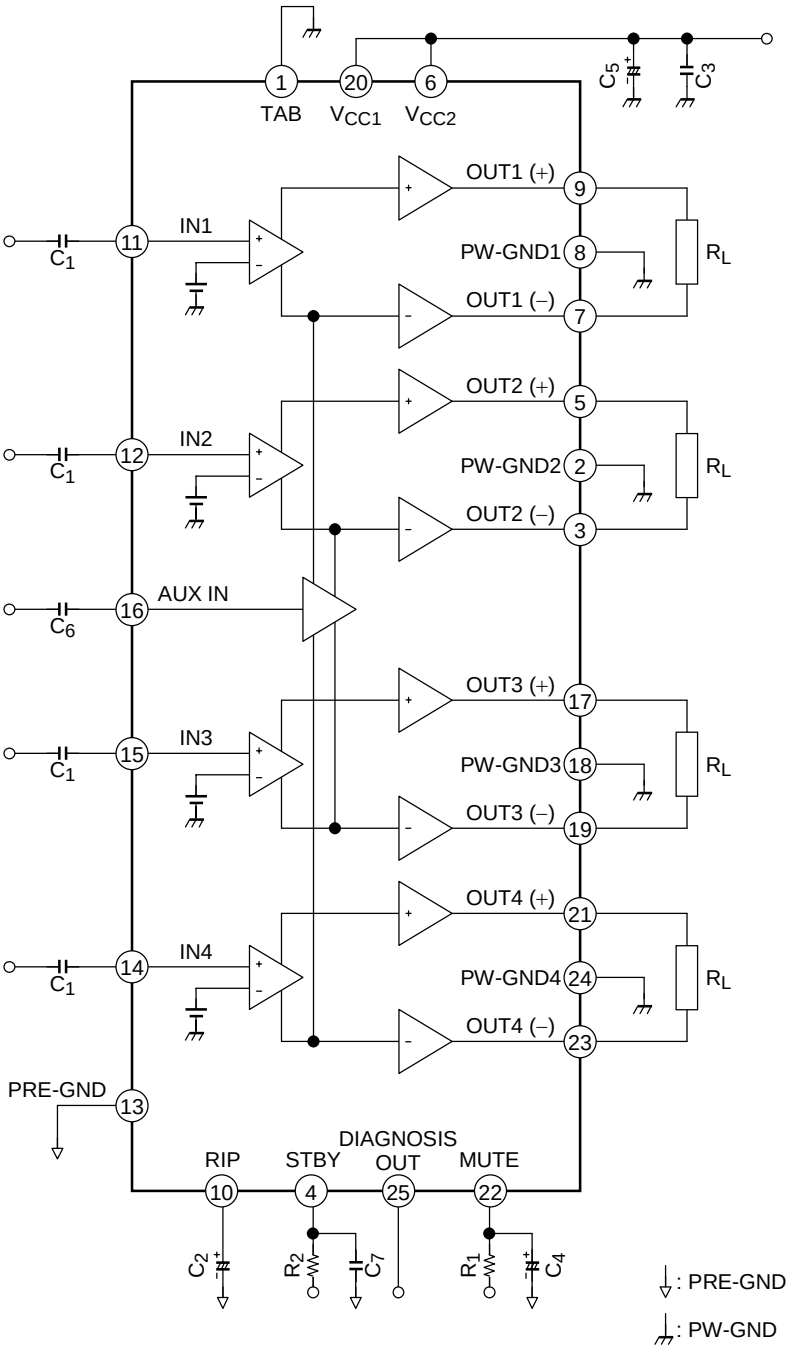
HZIP25-P-1.00F

Weight: 7.7 g (typ.)

Features

- High power : $P_{OUT}MAX$ (1) = 47 W (typ.)
  (V_{CC} = 14.4 V, f = 1 kHz, EIAJ max, R_L = 4 Ω)
  : $P_{OUT}MAX$ (2) = 43 W (typ.)
  (V_{CC} = 13.7 V, f = 1 kHz, EIAJ max, R_L = 4 Ω)
  : P_{OUT} (1) = 29 W (typ.)
  (V_{CC} = 14.4 V, f = 1 kHz, THD = 10%, R_L = 4 Ω)
  : P_{OUT} (2) = 25 W (typ.)
  (V_{CC} = 13.2 V, f = 1 kHz, THD = 10%, R_L = 4 Ω)
- Built-in diagnosis circuit (pin 25)
- Low distortion ratio: THD = 0.02% (typ.)
  (V_{CC} = 13.2 V, f = 1 kHz, P_{OUT} = 5 W, R_L = 4 Ω)
- Low noise: V_{NO} = 0.10 mV_{rms} (typ.)
  (V_{CC} = 13.2 V, R_g = 0 Ω, G_V = 27dB, BW = 20 Hz~20 kHz)
- Built-in stand-by switch function (pin 4)
- Built-in muting function (pin 22)
- Built-in AUX amplifier from single input to 4 channels output (pin 16)
- Built-in various protection circuit
  : Thermal shut down, over voltage, out to GND, out to V_{CC}, out to out short
- Operating supply voltage: $V_{CC\ (opr)}$ = 9~16 V

Block Diagram



Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Peak supply voltage (0.2 s)	$V_{CC\ (surge)}$	50	V
DC supply voltage	$V_{CC\ (DC)}$	25	V
Operation supply voltage	$V_{CC\ (opr)}$	16	V
Output current (peak)	$I_{O\ (peak)}$	9	A
Power dissipation	P_D (Note1)	125	W
Operation temperature	T_{opr}	−40~85	°C
Storage temperature	T_{stg}	−55~150	°C

Note1 : Package thermal resistance $\theta j\text{-}T$ = 1°C/W (typ.)
(Ta = 25°C, with infinite heat sink)

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

Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Quiescent current	I_{CCQ}	—	V_{IN} = 0	—	200	400	mA
Output power	P_{OUT} MAX (1)	—	V_{CC} = 14.4 V, max Power	—	47	—	W
	P_{OUT} MAX (2)	—	V_{CC} = 13.7 V, max Power	—	43	—	
	P_{OUT} (1)	—	V_{CC} = 14.4 V, THD = 10%	—	29	—	
	P_{OUT} (2)	—	THD = 10%	23	25	—	
Total harmonic distortion	THD	—	P_{OUT} = 5 W	—	0.02	0.2	%
Voltage gain	G_V	—	V_{OUT} = 0.775 Vrms (0dBm)	25	27	29	dB
Voltage gain ratio	ΔG_V	—	V_{OUT} = 0.775 Vrms (0dBm)	−1.0	0	1.0	
Output noise voltage	V_{NO} (1)	—	Rg = 0 Ω, DIN45405	—	0.12	—	mVrms
	V_{NO} (2)	—	Rg = 0 Ω, BW = 20 Hz~20 kHz	—	0.10	0.35	
Ripple rejection ratio	R.R.	—	f_{rip} = 100 Hz, Rg = 620 Ω V_{rip} = 0.775 Vrms (0dBm)	40	50	—	dB
Cross talk	C.T.	—	Rg = 620 Ω V_{OUT} = 0.775 Vrms (0dBm)	—	65	—	dB
Output offset voltage	V_{OFFSET}	—	—	−150	0	+150	mV
Input resistance	R_{IN}	—	—	—	90	—	kΩ
Stand-by current	I_{SB}	—	Stand-by condition	—	2	10	μA
Stand-by control voltage	V_{SB} H	—	Power: ON	3.0	—	V_{CC}	V
	V_{SB} L	—	Power: OFF	0	—	1.5	
Mute control voltage (Note2)	V_M H	—	Mute: OFF	Open			—
	V_M L	—	Mute: ON, R_1 = 10 kΩ	0	—	0.5	V
Mute attenuation	ATT M	—	Mute: ON, V_{OUT} = 7.75 Vrms (20dBm) at Mute: OFF.	80	90	—	dB

Note 2: Muting function have to be controlled by open and low logic, which logic is a transistor, FET and μ-COM port of I_{MUTE} > 250 μA ability.
This means than the mute control terminal : pin 22 must not be pulled-up.

Test Circuit