

TOSHIBA Bipolar Linear Integrated Circuit Silicon Monolithic

TA8272H

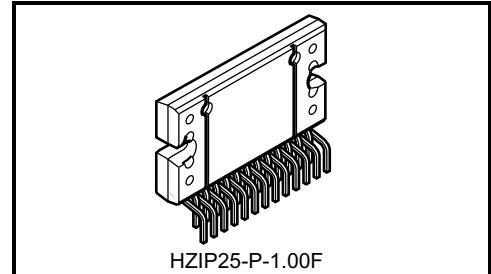
Max Power 43 W BTL × 4 ch Audio Power IC

The TA8272H is 4 ch BTL audio power amplifier for car audio application.

This IC can generate more high power: $POUT_{MAX} = 43\text{ W}$ 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 is built-in.

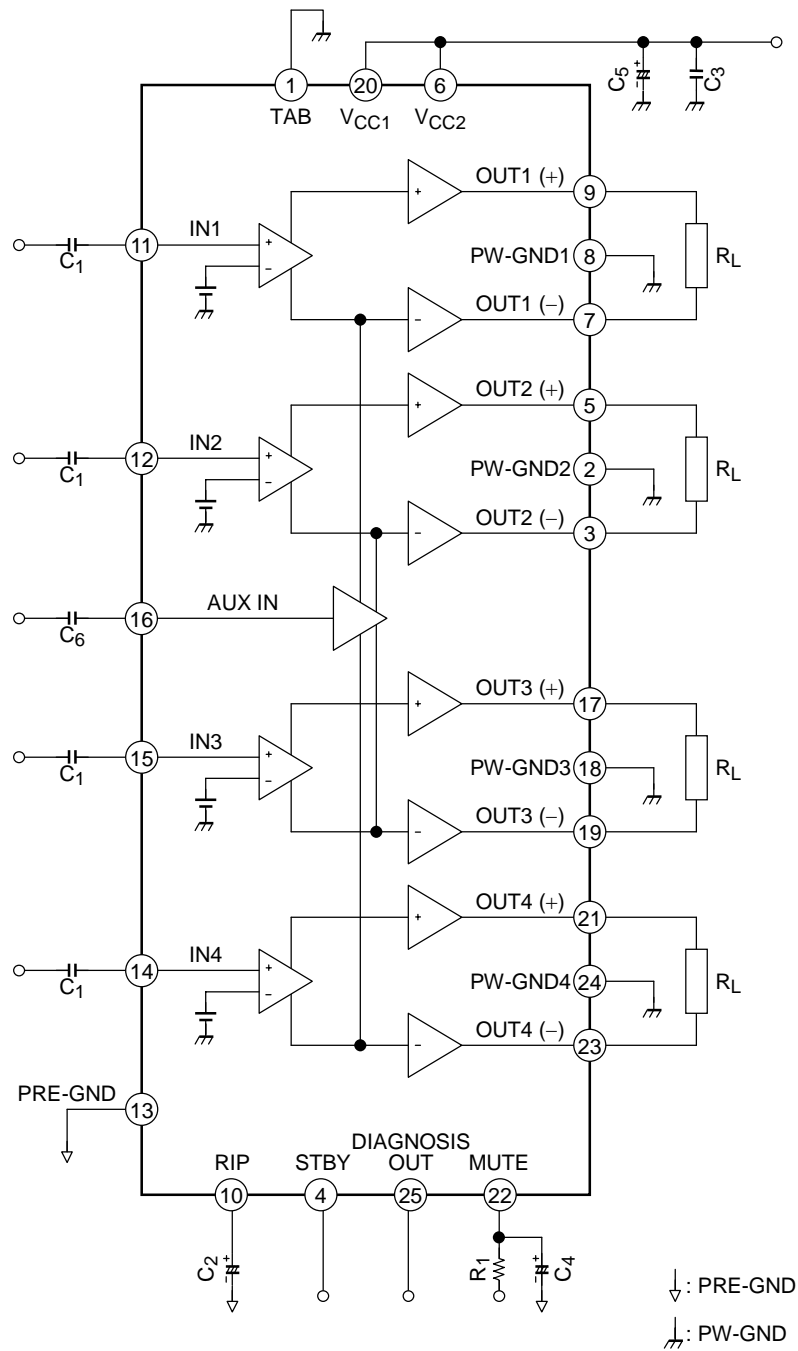


Weight: 7.7 g (typ.)

Features

- High power: $POUT_{MAX} (1) = 43\text{ W (typ.)}$
 ($V_{CC} = 14.4\text{ V}$, $f = 1\text{ kHz}$, EIAJ max, $R_L = 4\ \Omega$)
 : $POUT_{MAX} (2) = 40\text{ W (typ.)}$
 ($V_{CC} = 13.7\text{ V}$, $f = 1\text{ kHz}$, EIAJ max, $R_L = 4\ \Omega$)
 : $POUT (1) = 28\text{ W (typ.)}$
 ($V_{CC} = 14.4\text{ V}$, $f = 1\text{ kHz}$, THD = 10%, $R_L = 4\ \Omega$)
 : $POUT (2) = 24\text{ W (typ.)}$
 ($V_{CC} = 13.2\text{ V}$, $f = 1\text{ kHz}$, THD = 10%, $R_L = 4\ \Omega$)
- Built-in diagnosis circuit (pin 25)
- Low distortion ratio: THD = 0.02% (typ.)
 ($V_{CC} = 13.2\text{ V}$, $f = 1\text{ kHz}$, $POUT = 5\text{ W}$, $R_L = 4\ \Omega$)
- Low noise: $V_{NO} = 0.10\text{ mV}_{rms}$ (typ.)
 ($V_{CC} = 13.2\text{ V}$, $R_g = 0\ \Omega$, $GV = 26\text{ dB}$, $BW = 20\text{ Hz} \sim 20\text{ kHz}$)
- 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: $V_{CC (opr)} = 9 \sim 18\text{ V}$

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)}	18	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 $\theta_{j-T} = 1^{\circ}\text{C/W}$ (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	—	43	—	W
	P _{OUT MAX (2)}	—	V _{CC} = 13.7 V, max Power	—	40	—	
	P _{OUT (1)}	—	V _{CC} = 14.4 V, THD = 10%	—	28	—	
	P _{OUT (2)}	—	THD = 10%	22	24	—	
Total harmonic distortion	THD	—	P _{OUT} = 5 W	—	0.02	0.2	%
Voltage gain	G _V	—	V _{OUT} = 0.775 V _{rms} (0dBm)	24	26	28	dB
Voltage gain ratio	ΔG _V	—	V _{OUT} = 0.775 V _{rms} (0dBm)	-1.0	0	1.0	
Output noise voltage	V _{NO (1)}	—	R _g = 0 Ω, DIN45405	—	0.12	—	mV _{rms}
	V _{NO (2)}	—	R _g = 0 Ω, BW = 20 Hz~20 kHz	—	0.10	0.35	
Ripple rejection ratio	R.R.	—	f _{rip} = 100 Hz, R _g = 620 Ω V _{rip} = 0.775 V _{rms} (0dBm)	40	50	—	dB
Cross talk	C.T.	—	R _g = 620 Ω V _{OUT} = 0.775 V _{rms} (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 V _{rms} (20dBm) at Mute: OFF.	80	90	—	dB

Note2: 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

