

TOSHIBA Bipolar Linear Integrated Circuit Silicon Monolithic

# TA8273H

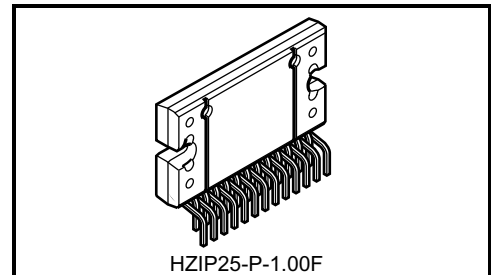
Max Power 47 W BTL × 4 ch Audio Power IC

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

This IC can generate more high power:  $POUT_{MAX} = 47\text{ W}$  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 are built-in.

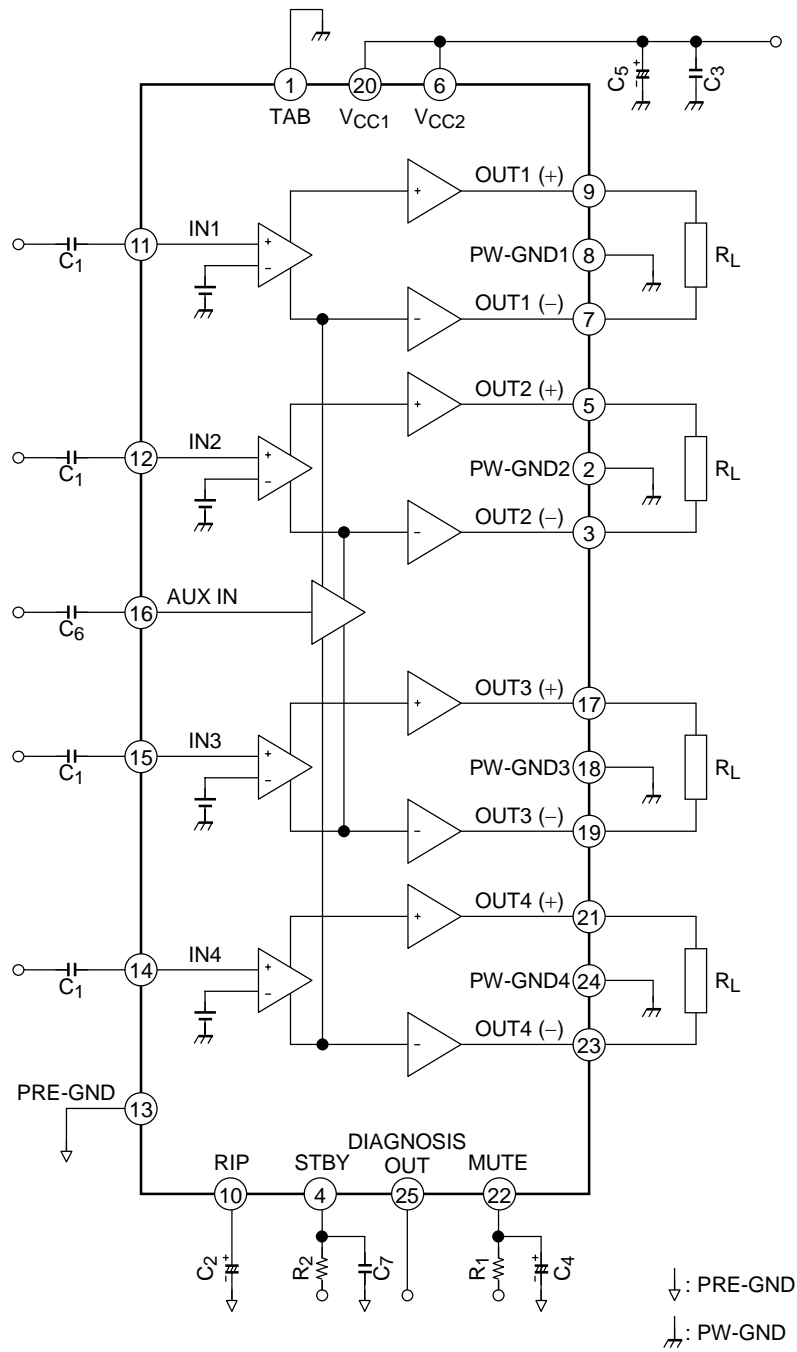


Weight: 7.7 g (typ.)

## Features

- High power:  $POUT_{MAX}(1) = 47\text{ W}$  (typ.)  
 ( $V_{CC} = 14.4\text{ V}$ ,  $f = 1\text{ kHz}$ , EIAJ max,  $R_L = 4\ \Omega$ )  
 :  $POUT_{MAX}(2) = 43\text{ W}$  (typ.)  
 ( $V_{CC} = 13.7\text{ V}$ ,  $f = 1\text{ kHz}$ , EIAJ max,  $R_L = 4\ \Omega$ )  
 :  $POUT(1) = 29\text{ W}$  (typ.)  
 ( $V_{CC} = 14.4\text{ V}$ ,  $f = 1\text{ kHz}$ , THD = 10%,  $R_L = 4\ \Omega$ )  
 :  $POUT(2) = 25\text{ W}$  (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.)  
 ( $V_{CC} = 13.2\text{ V}$ ,  $R_g = 0\ \Omega$ ,  $GV = 27\text{ dB}$ ,  $BW = 20\text{ Hz} \sim 20\text{ kHz}$ )
- 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:  $V_{CC(opr)} = 9 \sim 16\text{ V}$

## Block Diagram



## Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Peak supply voltage (0.2 s)	V <sub>CC</sub> (surge)	50	V
DC supply voltage	V <sub>CC</sub> (DC)	25	V
Operation supply voltage	V <sub>CC</sub> (opr)	16	V
Output current (peak)	I <sub>O</sub> (peak)	9	A
Power dissipation	P <sub>D</sub> (Note1)	125	W
Operation temperature	T <sub>opr</sub>	-40~85	°C
Storage temperature	T <sub>stg</sub>	-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<sub>CC</sub> = 13.2 V, f = 1 kHz, R<sub>L</sub> = 4 Ω, Ta = 25°C)

Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Quiescent current	I <sub>CCQ</sub>	—	V <sub>IN</sub> = 0	—	200	400	mA
Output power	P <sub>OUT</sub> MAX (1)	—	V <sub>CC</sub> = 14.4 V, max Power	—	47	—	W
	P <sub>OUT</sub> MAX (2)	—	V <sub>CC</sub> = 13.7 V, max Power	—	43	—	
	P <sub>OUT</sub> (1)	—	V <sub>CC</sub> = 14.4 V, THD = 10%	—	29	—	
	P <sub>OUT</sub> (2)	—	THD = 10%	23	25	—	
Total harmonic distortion	THD	—	P <sub>OUT</sub> = 5 W	—	0.02	0.2	%
Voltage gain	G <sub>V</sub>	—	V <sub>OUT</sub> = 0.775 V <sub>rms</sub> (0dBm)	25	27	29	dB
Voltage gain ratio	ΔG <sub>V</sub>	—	V <sub>OUT</sub> = 0.775 V <sub>rms</sub> (0dBm)	-1.0	0	1.0	
Output noise voltage	V <sub>NO</sub> (1)	—	R <sub>g</sub> = 0 Ω, DIN45405	—	0.12	—	mV <sub>rms</sub>
	V <sub>NO</sub> (2)	—	R <sub>g</sub> = 0 Ω, BW = 20 Hz~20 kHz	—	0.10	0.35	
Ripple rejection ratio	R.R.	—	f <sub>rip</sub> = 100 Hz, R <sub>g</sub> = 620 Ω V <sub>rip</sub> = 0.775 V <sub>rms</sub> (0dBm)	40	50	—	dB
Cross talk	C.T.	—	R <sub>g</sub> = 620 Ω V <sub>OUT</sub> = 0.775 V <sub>rms</sub> (0dBm)	—	65	—	dB
Output offset voltage	V <sub>OFFSET</sub>	—	—	-150	0	+150	mV
Input resistance	R <sub>IN</sub>	—	—	—	90	—	kΩ
Stand-by current	I <sub>SB</sub>	—	Stand-by condition	—	2	10	μA
Stand-by control voltage	V <sub>SB</sub> H	—	Power: ON	3.0	—	V <sub>CC</sub>	V
	V <sub>SB</sub> L	—	Power: OFF	0	—	1.5	
Mute control voltage (Note2)	V <sub>M</sub> H	—	Mute: OFF	Open			—
	V <sub>M</sub> L	—	Mute: ON, R <sub>1</sub> = 10 kΩ	0	—	0.5	V
Mute attenuation	ATT M	—	Mute: ON, V <sub>OUT</sub> = 7.75 V <sub>rms</sub> (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<sub>MUTE</sub> > 250 μA ability.

This means than the mute control terminal : pin 22 must not be pulled-up.

## Test Circuit

