

TOSHIBA Bipolar Linear Integrated Circuit Silicon Monolithic

# TA8215H, TA8215L

## 18W BTL x 2CH Audio Power Amplifier

The thermal resistance  $\theta_{j-T}$  of TA8215H and TA8215L package designed for low thermal resistance, has a high efficiency of heat radiation.

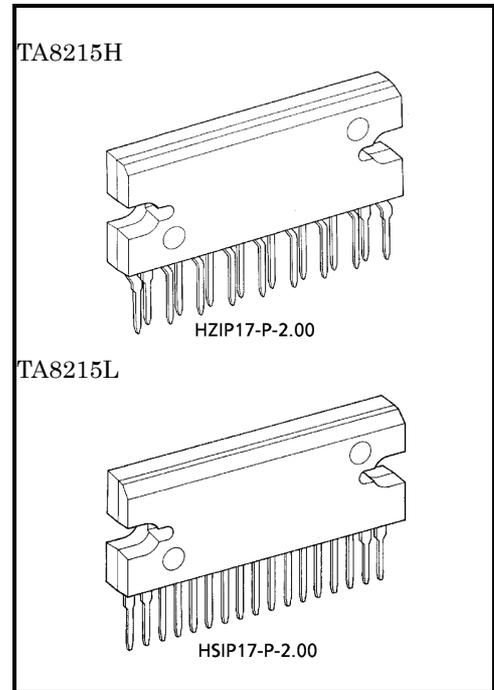
The temperature rise of chip can be reduced, and the influence from the degradation of the features due to the temperature rise at the high output can also be reduced.

This stereo audio power IC, designed for car audio use, has two built-in channels to reduce the characteristic difference between L and R channels.

In addition, the functions of stand-by and muting, and a variety of protection circuits are involved.

### Features

- High power
  - :  $P_{OUT(1)} = 18W$  (typ.) / channel  
( $V_{CC} = 14.4V$ ,  $f = 1kHz$ ,  $THD = 10\%$ ,  $R_L = 4\Omega$ )
  - :  $P_{OUT(2)} = 15W$  (typ.) / channel  
( $V_{CC} = 13.2V$ ,  $f = 1kHz$ ,  $THD = 10\%$ ,  $R_L = 4\Omega$ )
- Low distortion ratio
  - :  $THD = 0.04\%$  (typ.)  
( $V_{CC} = 13.2V$ ,  $f = 1kHz$ ,  $P_{OUT} = 1W$ ,  $R_L = 4\Omega$ ,  $G_V = 50dB$ )
- Low noise
  - :  $V_{NO} = 0.30mV_{rms}$  (typ.)  
( $V_{CC} = 13.2V$ ,  $R_L = 4\Omega$ ,  $G_V = 50dB$ ,  $R_g = 0\Omega$ ,  $BW = 20Hz \sim 20kHz$ )
- Built-in stand-by function (with pin (4) set at low, power is turned off.)
  - :  $I_{SB} = 1\mu A$  (typ.)
- Built-in muting function (with pin (1) set at low, power is turned off.)
  - :  $V_{(mute)} = 1V$  (typ.)
- Built-in various protection circuits
  - Protection circuits : Thermal shut down, Over voltage, Out  $\rightarrow$   $V_{CC}$  short, Out  $\rightarrow$  GND short and Out-  
Out short.
- Operating supply voltage :  $V_{CC} = 9 \sim 18V$



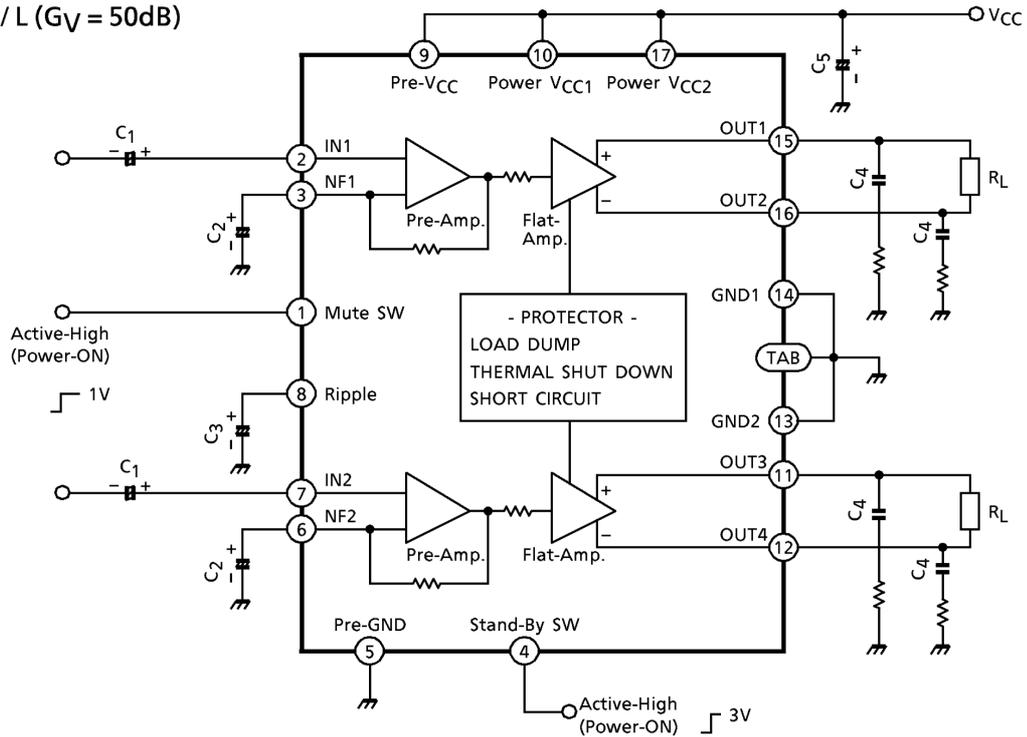
Weight

HZIP17-P-2.00 : 9.8g (typ.)

HSIP17-P-2.00 : 9.8g (typ.)

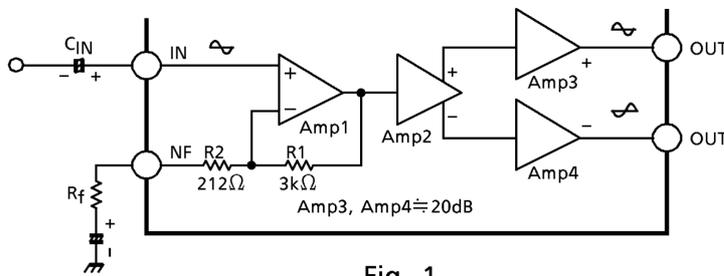
**Block Diagram**

TA8215H / L ( $G_V = 50\text{dB}$ )



**Cautions And Application Method**  
(description is made only on the single channel.)

1. Voltage gain adjustment



- Amp1 : Pre-Amp
- Amp2 : Phase Amp
- Amp3 : Power Amp (Flat-Amp)
- Amp4 : Power Amp (Flat-Amp)

Fig. 1

This IC has the amplifier construction as shown in Fig.1. The Pre-Amp Amp1 is provided to the primary stage, and the input voltage is amplified by the Flat Amps, Amp3 and Amp4 of each channel through the phase Amp. (Amp2) .

Since the input offset is prevented by Pre-Amp when VCC is set to on, this circuit can remarkably reduce the pop noise.

## Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Peak supply voltage (0.2s)	V <sub>CC surge</sub>	50	V
DC supply voltage	V <sub>CC DC</sub>	25	V
Operating supply voltage	V <sub>CC opr</sub>	18	V
Output current (peak)	I <sub>O (peak)</sub>	9	A
Power dissipation	P <sub>D</sub>	50	W
Operating temperature	T <sub>opr</sub>	-30~85	°C
Storage temperature	T <sub>stg</sub>	-55~150	°C

## Electrical Characteristics

(Unless otherwise specified, V<sub>CC</sub> = 13.2V, R<sub>L</sub> = 4Ω, f = 1kHz, Ta = 25°C)

Characteristic	Symbol	Test Circuit	Test Condition	Min.	Typ.	Max.	Unit
Quiescent supply current	I <sub>CCQ</sub>	—	V <sub>IN</sub> = 0	—	120	250	mA
Output power	P <sub>OUT (1)</sub>	—	V <sub>CC</sub> = 14.4V, THD = 10%	—	18	—	W
	P <sub>OUT (2)</sub>	—	THD = 10%	11	15	—	
Total harmonic distortion	THD	—	P <sub>OUT</sub> = 1W	—	0.04	0.4	%
Voltage gain	G <sub>V</sub>	—	—	48	50	52	dB
Output noise voltage	V <sub>NO</sub>	—	R <sub>g</sub> = 0Ω, BW = 20Hz~20kHz	—	0.30	0.70	mV <sub>rms</sub>
Ripple rejection ratio	R.R.	—	fripple = 100Hz, R <sub>g</sub> = 600Ω	40	54	—	dB
Input resistance	R <sub>IN</sub>	—	—	—	30	—	kΩ
Output offset voltage	V <sub>offset</sub>	—	V <sub>IN</sub> = 0	-0.3	0	0.3	V
Current at stand-by state	I <sub>SB</sub>	—	—	—	1	10	μA
Cross talk	C.T.	—	R <sub>g</sub> = 600Ω, V <sub>OUT</sub> = 0.775V <sub>rms</sub> (0dBm)	—	60	—	dB
Pin (4) control voltage	V <sub>(SB)</sub>	—	Stand-by → off (power → on)	2.5	—	V <sub>CC</sub>	V
Pin (1) control voltage	V <sub>(MUTE)</sub>	—	Mute → on (power → off)	—	1.0	2.0	V