

TCB702FNG

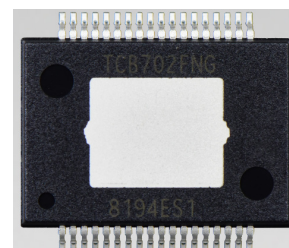
Under development

4 ch High-Efficiency Linear Power Amplifier IC for Car Audio

New 4-channel high-efficiency linear power amplifier "TCB702FNG" for car audios is launched to meet the current market requirement for high efficiency. Sample shipment will start in the first quarter of 2019.

This product realizes the high efficiency that is equivalent to the digital one, class D amplifier in the actual operating range (0 to 4W) by improving on our technology. In addition, the power consumption can be reduced by up to 80% compared with a typical class AB amplifier.

TCB702FNG has the maximum output power of 45W and is pin compatible with the high-efficiency linear power amplifier "TCB701FNG" whose maximum output power is 49W.



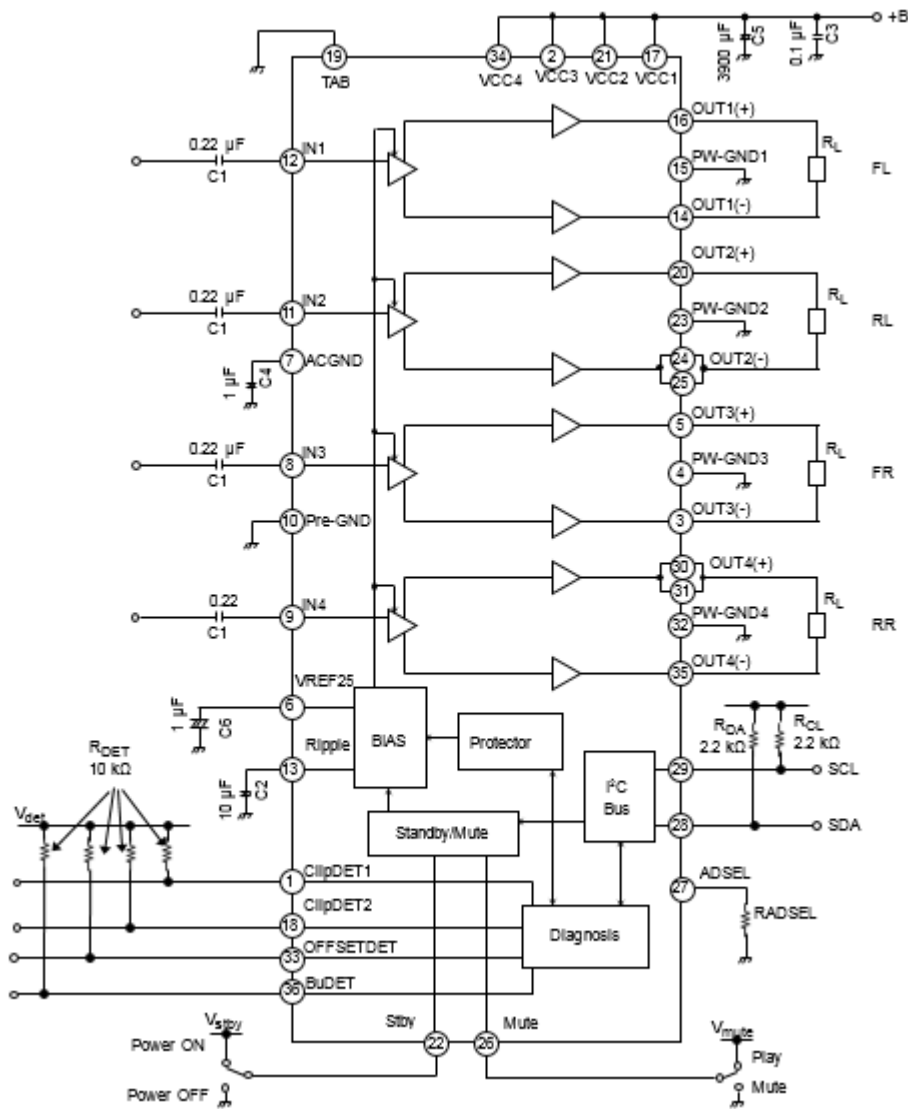
Three Features

- Our original technology for reducing heat generation: The power consumption is cut by up to 80% compared with the typical class AB amplifier, and cut by half at most compared with the conventional linear high-efficiency amplifier. Therefore, suppressing a heat generation is possible.
- Full-time error detection of output DC offset voltage: The output DC offset voltage is always detected and the abnormality is notified to the microcomputer quickly. This prevents a speaker burnout, improving set reliability.
- Self-diagnosis function with I²C bus: Built-in self-diagnosis function with I²C bus control allows error diagnosis, and contributes to a suitable set design by changing a detection setting for gain or time constants.

Applications

- Power amplifier for car audios

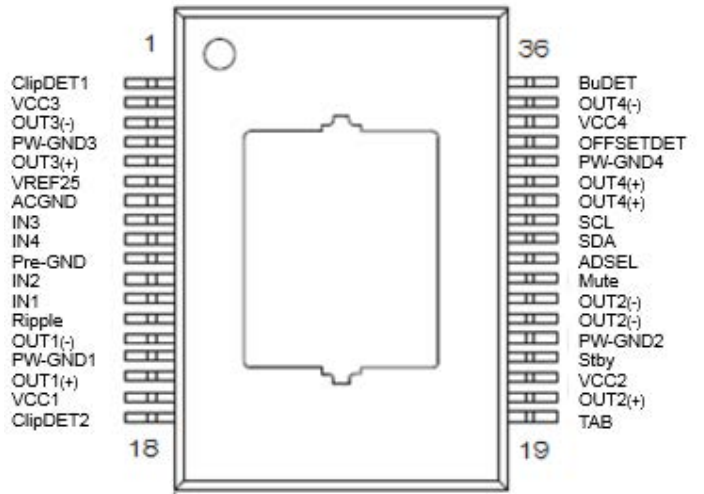
Block Diagram



Note: Some of the functional blocks, circuits, or constants in the block diagram may be omitted or simplified for explanatory purposes.

Product Specifications

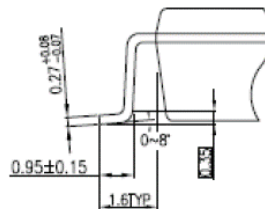
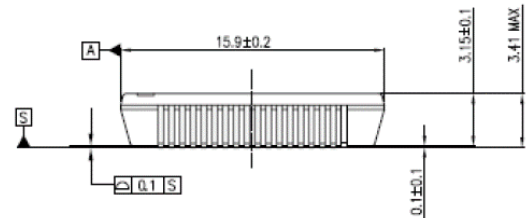
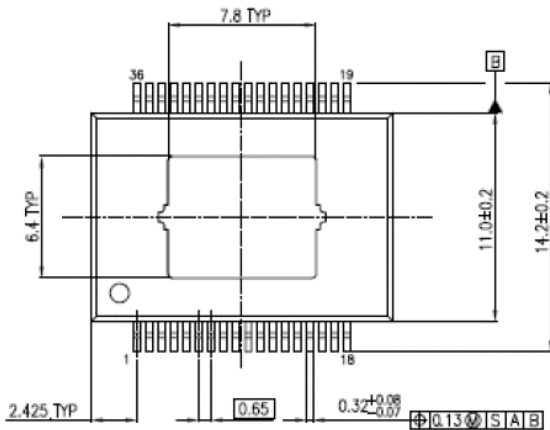
Characteristics	Specifications
Maximum output power	45W×4ch (Vcc=15.2V, RL=4Ω, MaxPower)
Total harmonic distortion (THD)	0.02% (Pout=0.4W)
Operating supply voltage	6V to 18V
Output noise voltage	60μVrms (BW=DIN AUDIO)
Power consumption	Up to 80% lower than a typical class AB amplifier (supply voltage=14.4V, in case of 0.8W output)
Package	P-HSSOP36-1116-0.65-001
Operating temperature range	-40°C to 85°C



Pin assignment (Top View)

Package Dimensions

unit: mm



Information of Technology and Characteristics

■ High-efficiency linear power amplifier

Our original high-efficiency linear power amplifier:
Class TB (Tied BTL)
 Suppressing heat generation and temperature rise.

■ Improving high-frequency noise immunity

Capability for eliminating high-frequency noise on GSM^[Note] and +B/Output is high, allowing reduction of external components.

■ Full-time error detection of output DC offset voltage

Always detecting the output DC offset voltage and notifying the abnormality to the microcomputer.
 →Preventing a speaker burnout is possible.

■ +B low voltage detection

Built-in +B low voltage detection circuit

Detection voltage of 6V to 8.5V (0.5V intervals) is possible by using the I²C bus.

■ 6 V operation

Pop-sound control system at changing the supply voltage is implemented to support vehicles with engine idling reduction capability.

Note: GSM: Global system for mobile communications

■ Comparison with various amplifiers

	Conventional amplifier (Class AB)	High-efficiency linear amplifier (Class TB)	Digital amplifier (Class D)
Power consumption (Pout=0.8W*)	20W	4W	4W
Unnecessary radiation	None	None	Required measures
Cost for external parts	Low	Low	High

* Vcc = 14.4V, f = 1kHz, RL = 4Ω x 4ch driving

■ Difference from high-efficiency linear power amplifier TCB701FNG

- Maximum output power TCB701FNG(49W), TCB702FNG(45W)
- TCB702FNG does not support 2Ω-drive, while TCB701FNG supports it.
- TCB702FNG is pin compatible with TCB701FNG.

This product is under development as of the release date of this document. Please note that the development may stop or change without any prior notice for any reason. At this time, we are unable to provide samples or sell mass production versions of this product. Due to the ongoing development of the product, the product descriptions listed herein may differ from the specifications of sample or mass production versions of this product that may be released. In particular, we neither guarantee any of the characteristics, features and performance data outlined in this document nor shall any deviation between the information contained in this document and the final specifications of the product entitle you to any compensation claim. Please contact our sales representatives for details of development progress and the latest versions of relevant product information.