PRODUCT INFORMATION

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Class D Amplifier Modules with Built-in Controller Developed

New devices implement 100 to 200 W × 2 channels in a single package

SANYO has developed the STK428-600 series of class D amplifier modules that integrate a 100 to 200 W by two-channel audio power amplifier in a single package. These devices feature superb audio quality and a previously unavailable high efficiency. Sample shipment will begin in December 2004.

STK428-600 Series

Overview

Within the current trend towards the increasing use of digital technology in all types of audio and video equipment, the shift to digital is advancing in the power amplifier as well and thus there are increasing market needs for the ability to provide fully digital systems. In the class D amplifier, which is a digital processing power amplifier, the power loss due to heat generation during speaker drive, can be reduced to an extremely low level, about 10% of that of conventional analog amplifiers. As a result, the heat sinks that were indispensable in analog amplifiers have become nearly superfluous, and use of this technique can achieve both end product miniaturization and significantly lower power. Furthermore, design flexibility is increased as well. Thus this technology is seen as having the potential to revolutionize audio and video equipment.

SANYO has now, under a comprehensive tie-up with Bang & Olufsen ICEpower a/s, organically combined SANYO's audio semiconductor system know-how with the Bang & Olufsen ICEpower a/s developed signal modulation and signal feedback technologies, which are unique class D amplifier technologies. This has allowed SANYO to develop the STK428-600 series of superb audio quality class D amplifier modules that achieve a previously unknown high efficiency.

The STK428-600 series modules integrate a controller IC, a half-bridge driver IC to drive the power device, power MOSFETs, and a bootstrap circuit to drive the high side MOSFETs and can implement a class D power amplifier with a minimum number of external components. Since all the internal semiconductor devices are mounted as bare chips, the STK428-600 series can be provided in a miniature package: a 28-pin SIP measuring a mere 78 × 320 × 9 mm. These modules are optimal for end products that want to take advantage of the merits of miniaturization and light weight afforded by the class D amplifier technology. The STK428-600 series consists of three products: the 100 W by 2-channel STK428-610, the 150 W by 2-channel STK428-630, and the 200 W by 2-channel STK428-640.

PRODUCT INFORMATION

Since class D amplifier operation can influence audio performance depending on the layout of components and the wiring pattern on the printed circuit board, SANYO is prepared to support STK428-600 series customers with advice during customer's PCB design phase, provision of external synchronization and BTL applications, and other support for circuits related to these hybrid ICs.

Features

- Output power: 100, 150, and 200 W (RL = 4 Ω), two channels (separate outputs)
- Full complement of built-in protection circuits. Low voltage and overvoltage protection circuit for the power stage supply voltage, load short protection circuit, and thermal protection circuit.
- Bus signals can be shared when multiple hybrid ICs are used for multichannel systems (standby signal, overcurrent signal, and excessive temperature detection signal)
- Extremely high design flexibility due to the miniature package. These devices can also contribute to end product miniaturization.
- High efficiency: output power efficiencies of 95% (8 Ω, 100 W) and 89% (4 Ω, 100 W)

Specifications

Outputs: 100 W, 150 W, 200 W × 2 channels (4 Ω, THD = 10%)

Supply voltage: ±28 V, ±33 V, ±40 V

Predriver block supply voltage: VS + 10 V

Controller supply voltage: ±5 V

Operating IC substrate temperature: +105˚C maximum

Package: SIP28 (78 mm × 32 mm × 9 mm)

Applications

DVD players, AV receivers, home theater systems, active speakers

PRODUCT INFORMATION

Sample Availability

The STK428-600 series will be available in sample quantities in December 2004 and in production quantities in the first quarter of 2005.

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