
PRODUCT INFORMATION

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Power Amplifier ICs for Home Theater Systems Developed

Delivers a high output power of 450 W in a single package

SANYO Semiconductor Company has recently developed two series of audio power amplifier IC chips, which were designed for use in home theater audio systems with high output power. These chips integrate, in a single package, power amplifiers for three channels, each with a 150 W output, so that they are capable of delivering a total output power of 450 W.

STK416-100 series, STK433-300 series



Overview

SANYO Semiconductor, with its impressive track record on the audio amplifier market thanks to its original Insulated Metal Substrate Technology (IMST™) [*1], recently developed hybrid IC substrates featuring heat dissipation characteristics that are among the highest of their kind in the industry (25% less heat resistance compared with the company's existing substrates). Using these substrates, the company came up with the STK433-300 series of hybrid ICs for audio power amplifiers with class AB [*2] specifications, as well as the STK416-100 series with a class H [*3] power-switching system. These compact, single-package chips incorporate audio power amplifiers that deliver a maximum of 150 W × 3 channels.

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Two factors are responsible for the company's success in reducing the size of the packages used for the STK433-300 series to about two-thirds that of its previous products: 1) substrates with a high heat dissipation have been used, and 2) a newly developed voltage amplification stage IC is now featured. Furthermore, the incorporation of a standby circuit has made it possible to reduce the number of peripheral circuit components by about 10% (compared with the company's previous products).

Although the STK416-100 series has the same characteristics as the STK433-300 series, power consumption can be reduced by up to 45% thanks to the class H power-switching system, thus supporting the requirements of systems with high-end specifications.

The models just developed have been given the same pin layout as the currently mass-produced STK433-*00 series (class AB, 30 W to 150 W \times 2 channels, 30 W to 60 W \times 3 channels) and the STK415-100 series (class H, 80 W to 150 W \times 2 channels) to make it easier to introduce common designs for many and varied multi-channel products. This feature makes the products ideally suited to home theater systems, DVD receivers and other products that are required to have compact and slim dimensions to suit user applications.

By drawing on its circuit technology, which is capable of creating a rich array of sound with linearity and in which the company has built up an impressive track record in the field of hi-fi audio power amplifier ICs over many years, SANYO Semiconductor opens the door for users to enjoy a sound that cannot be compared with anything they have heard in the past from products with a compact size.

*1: IMST™ is a trademark of SANYO Electric Co., Ltd.

*2: "Class AB" is an audio signal amplification system. A constant current continues to flow even under no-signal conditions.

*3: "Class H" is an audio signal amplification system--it is also referred to as a power-switching system. By switching the power supplied to the power amplifier in accordance with the output signal level, loss caused by heat is reduced and power is conserved.

Features

1) Industry's highest output power of 450 W in a single package (as of December 6, 2006)

Thanks to the company's development of hybrid IC substrates featuring heat dissipation characteristics that are among the highest of their kind in the industry (25% less heat resistance compared with the company's existing substrates), the new ICs chips achieve a maximum output power of 450 W in a package size that previously managed a maximum output power of only 300 W (150 W \times 2 channels).

2) Specifications calling for pin compatibility with existing chips

The new IC chips have been given the same pin layout as the currently mass-produced STK433-*00 series (30 W to 150 W \times 2 channels, 30 W to 60 W \times 3 channels) and the STK415-100 series (80 W to 150 W \times 2 channels) to make it possible to introduce common PCB designs in the wide output power band ranging from 30 W to 150 W.

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3) Lineup of class H power switching system chips also available

Although equipped with the same characteristics as the class AB series, the class H specification chips enable power consumption to be reduced by up to 45% thanks to the power-switching system, and a lineup of these chips is now available to support requirements in high-end systems.

Specifications

STK433-300 series

Model	STK433-290	STK433-300	STK433-320	STK433-330
Output1 (10%/1kHz)	80W×3ch	100W×3ch	120W×3ch	150W×3ch
Output2 (0.4%/20Hz to 20kHz)	50W×3ch	60W×3ch	80W×3ch	100W×3ch
V _{CC} max (with no signal)	±54V	±57V	±65V	±71.5V
V _{CC} max (6Ω)	±47V	±50V	±57V	±63V
Recommended Operating V _{CC} (6Ω)	±33V	±36V	±41V	±44V
Package size	64.0mm×36.6mm×9.0mm			

STK416-100 series

Model	STK416-090	STK416-100	STK416-120	STK416-130
Output1 (10%/1kHz)	80W×3ch	90W×3ch	120W×3ch	150W×3ch
Output2 (0.4%/20Hz to 20kHz)	50W×3ch	60W×3ch	80W×3ch	100W×3ch
V _H max (with no signal)	±60V	±65V	±73V	±80V
V _L max (with no signal)	±41V	±42V	±45V	±46V
Recommended Operating V _H (8Ω)	±37V	±39V	±45V	±51V
Recommended Operating V _L (8Ω)	±27V	±29V	±32V	±34V
Package size	78.0mm×44.1mm×9.0mm			

Applications

Home theater systems, DVD receiver amplifiers

Sample Availability

The STK433-300 and STK416-100 Series are available in sample quantities in October 2006 and will be available in production quantities in the second quarter of 2007.

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