

## **Audio Amplifier for Flat Panel TVs with Digital Power Limit and Selectable Gain**



ON Semiconductor has introduced the NCS8353 stereo audio amplifier, a Class D device with high efficiency levels (>87%), that climates the need for the inclusion of a heatsink in the system design.

Aimed at the flat panel TV market the device can be powered from the existing 24 volt (V) backlight rail in the TV system and is capable of delivering a continuous output power of up to 20 watts (W) per-channel into an 8 ohm (?) bridge tied load (BTL).

The Pulse Width Modulation (PWM) technique utilized within the Class-D architecture permits filter-less operation in certain circumstances by using the speakers themselves as an LC filter. This can significantly improve total bill of material costs as the additional components typically required to filter Electro-Magnetic Interference (EMI) can be omitted.

“The flat panel TV market is highly competitive and manufacturers need to be able to differentiate themselves from their rivals,” says Josh Warner, marketing manager for signal and interface products at ON Semiconductor, “Highly integrated, featured packed amplifier devices, such as the NCS8353, facilitate more streamlined TV designs and offer development teams a greater degree of flexibility, as well as making sure the system is better protected from short circuits or extreme temperatures.”

Four selectable gain ranges are supported: 20 decibels (dB), 26 dB, 32 dB, and 36

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dB. An integrated digital power limiter can be set, using two external bits, to deliver a specific output (10 W, 12 W, 15 W, or 20 W). This protects the TV speakers from high amplitude input spikes. A shutdown function reduces the quiescent current drawn by the amplifier to 100 microamps ( $\mu\text{A}$ ) typical, while the mute feature ensures that audio is not present at the output during audio source switching.

In order to permit uninterrupted audio operation at lower output powers, should the internal temperature rise above the junction threshold of 150 °C, the internal gain of the device is slowly reduced. The combination of gain reduction and internal power dissipation results in a stable maximum junction temperature of approximately 140 °C. The output stage will completely shut down if the junction temperature rises above 160 °C. The power stage is re-enabled once the device junction temperature cools to below 130 °C.

If a short circuit event is detected, the output stage of the devices is completely disabled and an internal counter activated. After a 100 millisecond (ms) period the output stage will attempt to reactivate, with the cycle continuing until the short is removed.

The NCS8353 is housed in a compact 5 mm x 5 mm, Pb-Free, 32-pin QFN package and is priced at \$0.78 per unit in 10,000 unit quantities.

For more information, visit <http://www.onsemi.com> [1].

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[1] <http://www.onsemi.com>