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SEMINAR

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A 60mW 1.15mA/Channel Class-G Stereo Headphone Driver with 111dB DR and 120dB PSRR

by

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Abstract: A 60 mW 1.15 mA/channel Class-G stereo headphone driver primarily designed for demanding applications in mobile phones and other portable communication devices is described. The architecture of the driver has been chosen to overcome the various design challenges for audio amplifiers in a wireless environment. A high-order feed-forward loop topology provides high immunity to battery disturbance with extended correction range. In addition, a Class-G amplifier with a Class-AB/B driving stage improves the small-signal efficiency and extends music playback time. Implemented in 0.18 μm CMOS technology, the stereo headphone driver achieves a DR of 111 dB and PSRR of 120 dB at the GSM TDMA frequency of 217 Hz while occupying an area of 2.3 mm².

Sherif Galal received the B.Sc. and M.Sc. degrees in electronics and communications engineering from Ain Shams University, Cairo, Egypt in 1994 and 1999, respectively, and the Ph.D. in electrical engineering from the University of California, Los Angeles, in 2003. From 1995 to 1999 he was a development engineer at Mentor Graphics, Egypt, where he was involved in designing analog and mixed-signal circuits and developing behavioral models using analog hardware description languages. From 2001 to 2002 he was a senior design engineer at Transpectrum Technologies, Los Angeles, where he designed 10 Gb/s integrated circuits for serial link transceivers. He joined Broadcom Corp., Irvine, in 2003 where he is currently a Sr. Principal Scientist. His research interests at Broadcom are focused on Audio and precision mixed-signal integrated circuits for cellular, power management and wireless connectivity applications. Dr. Galal was awarded the UCLA merit based fellowship for outstanding academic record in 2001 and the outstanding Doctor of Philosophy award in Electrical Engineering from UCLA in 2003.

