

“Earphone Microphone IC” developed

Released on March 18, 2009

Now you can use your ear to talk !

Mounting area reduced by **82%**

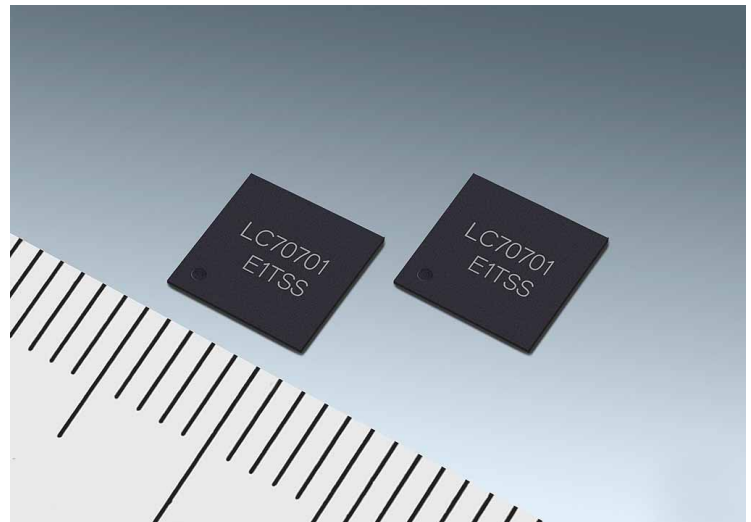
“Earphone microphone IC” that enable hands-free calls using only an earphone

LC70701LG

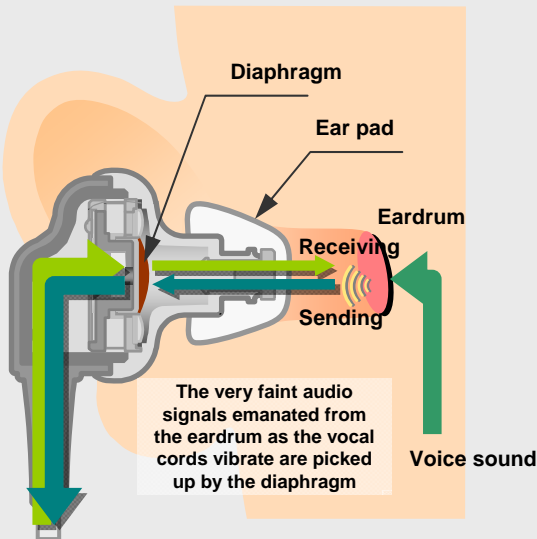
Sample shipment will begin in March 2009.
 Production plan : 100,000pcs/month
 Sample price : 800 yen



Enable high-density mounting of small-sized mobile devices



Overview of earphone microphone



What the “earphone microphone” does

Making use of the fact that very faint sounds emanate from the eardrum while we are taking, the earphone microphone combines the expected functions of an earphone that outputs sound with the microphone function that collects sound. Since the unit collects the sound inside the ear, this has the advantage of keeping out exterior sounds, making it easy to hold conversations even in noisy conditions.

Reduced package footprint

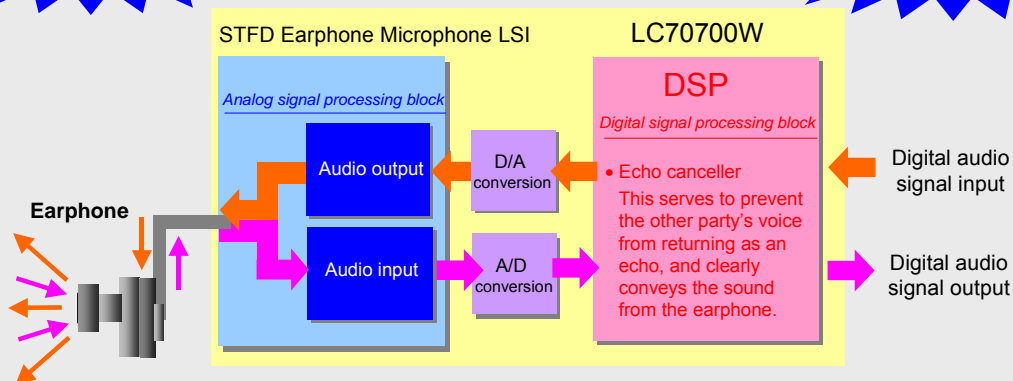


*The information presented in this product topics, including devices specifications, is current as of the date of the press release. Note, however, that this information is subject to change without notice and thus at later dates the current state may differ in certain details from the content presented here.

How the earphone microphone IC works

Earphone microphone and noise canceller functions integrated on a single chip!

Current consumption slashed from 70mA to 18mA!



This single IC performs a series of operations: As the user speaks, it uses the analog signal processor to amplify the very faint audio signals arising from his or her eardrum, converts them into digital signals, and then subjects them to echo canceling and other processes in the DSP, after which it converts the signals back into analog signals and outputs audio sounds.

Features

- DSP :
 - 16-bit DSP core
 - STFDF processing ^{*1}, Filter processing, Noise cancellation processing, Various voice processing (voice emphasis, voice speed conversion)
 - Power save mode (oscillation stopped, PLL stopped, high-speed operation/low-speed operation switching)
- Host CPU interface (4-wire system): Slave (multiplexed with GPIO0-3)
- Serial PCM interface (4-wire system): Master/slave: 2 systems (Multiplexed with GPIO4-7 and GPIO8-11)
 - I²S, long frame synchronization, short frame synchronization: supports Fs=8kHz
- GPIO: 16 ports (GPIO1-12 multiplexed with host CPU interface and serial PCM interface)
- A/D Converter ($\Delta\Sigma$ method 16bit/8kHz)
- D/A Converter ($\Delta\Sigma$ method 16bit/8kHz)
- Built-in microphone amplifier
- Package: FLGA 68 pins (6.0mm x 6.0mm x 0.8mm)
- Power supply (voltage): Three power supplies (1.8V/2.8V: 1.7V to 3.6V (IO), 2.8V: 2.7V to 3.6V (analog), 1.1V \pm 10% (internal logic))

*1 : "STFDF (Single Transducer Full Duplex) signal processing" refers to a series of signal processes, including analog signal processing and echo canceling to collect the sound inside the ear, for enabling two-way communication with a single diaphragm.