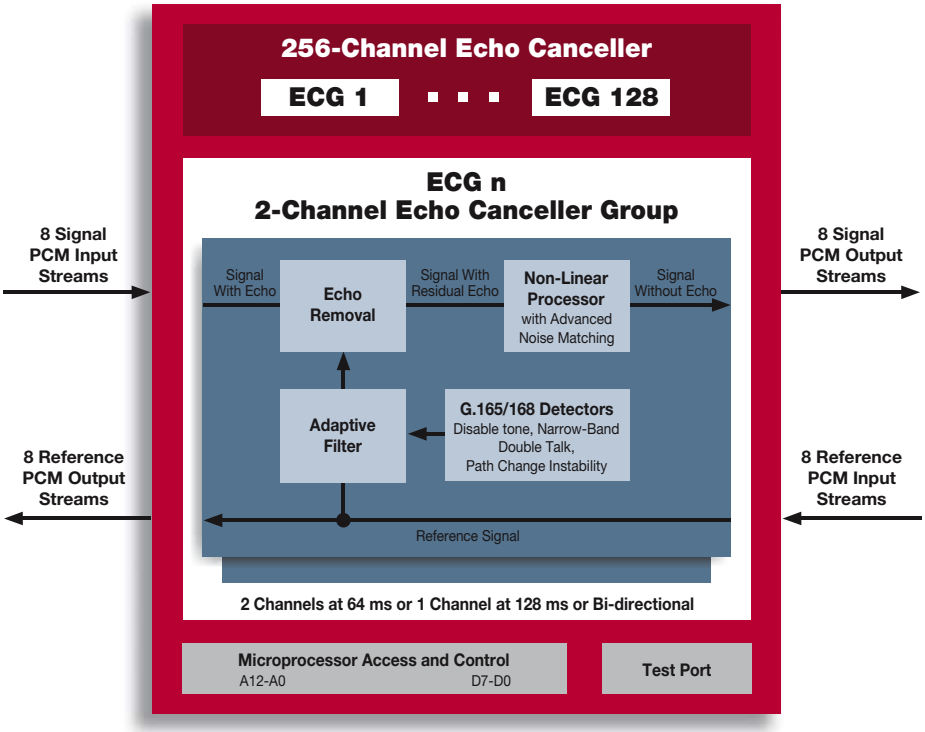
256-CHANNEL VOICE ECHO CANCELLER ZL38070

PRODUCT PREVIEW

The ZL™38070 is a highly integrated VEC (voice echo canceller) that optimizes call quality in a wide range of high-density wireless and telephony equipment. The off-the-shelf device supports 256 voice channels, and cancels echo tails of 64 milliseconds or 128 ms.

The VEC chip utilizes a patented NLP (non-linear processing) technology that outperforms competing devices in the presence of intense background noises. These features help ensure carrier-grade voice connections and improve subjective voice quality by removing echoes, clicks, and hisses caused by the user environment, network conditions and round-trip delays in speech signals.

The device uses an efficient architecture that reduces board space and development resource requirements.



High-Density VEC with Advanced Noise Matching

- NLP with adaptive suppression threshold and spectrally matched comfort noise injection removes residual echo and minimizes switching effects
- Full band convergence allows multiple echo reflection cancellation
- Fast re-convergence on echo path changes
- Fully programmable convergence speeds per-channel improves performance during double-talk
- Adjustable signal gain/loss improves ERL performance and flexibility for system gains
- Protection against narrowband signal divergence in high echo environments or in the presence of DTMF or other tones

Flexibility and Ease-of-Use

- Configurable to allow simultaneous operation of dual channel ECG (echo canceller group) at 64 ms, bi-directional 64 ms or 128 ms
- Each ECG offers parallel DSP processing without resource sharing limitations
- Low-power operation (4.6 mW per channel) with independent power-down mode
- Compatible pin-outs simplify system upgrades

Standards Compliant

- ITU-T G.168 (2000), G.168 (2002) and ITU-T G.165
- Fax/modem G.164 2100 Hz Tone Disable
- Streamlines AT&T equipment certifications

Applications

- Media access gateways
- T1/E1 multi-channel echo cancellation pools
- Wireless CDMA/GSM networks
- Interactive voice response systems

Packaging and Availability

- 535-ball BGA
- In volume production

Customer Support

The ZL38070 VEC is supported by Zarlink's network of in-house field application and design engineers. Evaluation boards with full design and applications documentation are available.

ZARLINK SEMICONDUCTOR

256-CHANNEL

ZL38070 VOICE ECHO CANCELLER

APPLICATION

3G Mobile Switching Centre

The ZL38070 high-density VEC improves voice quality in the wireless telephony network infrastructure, where longer signal processing and transmission delays may emphasize voice echo issues. These problems are further compounded by excessive background noise that impacts call quality.

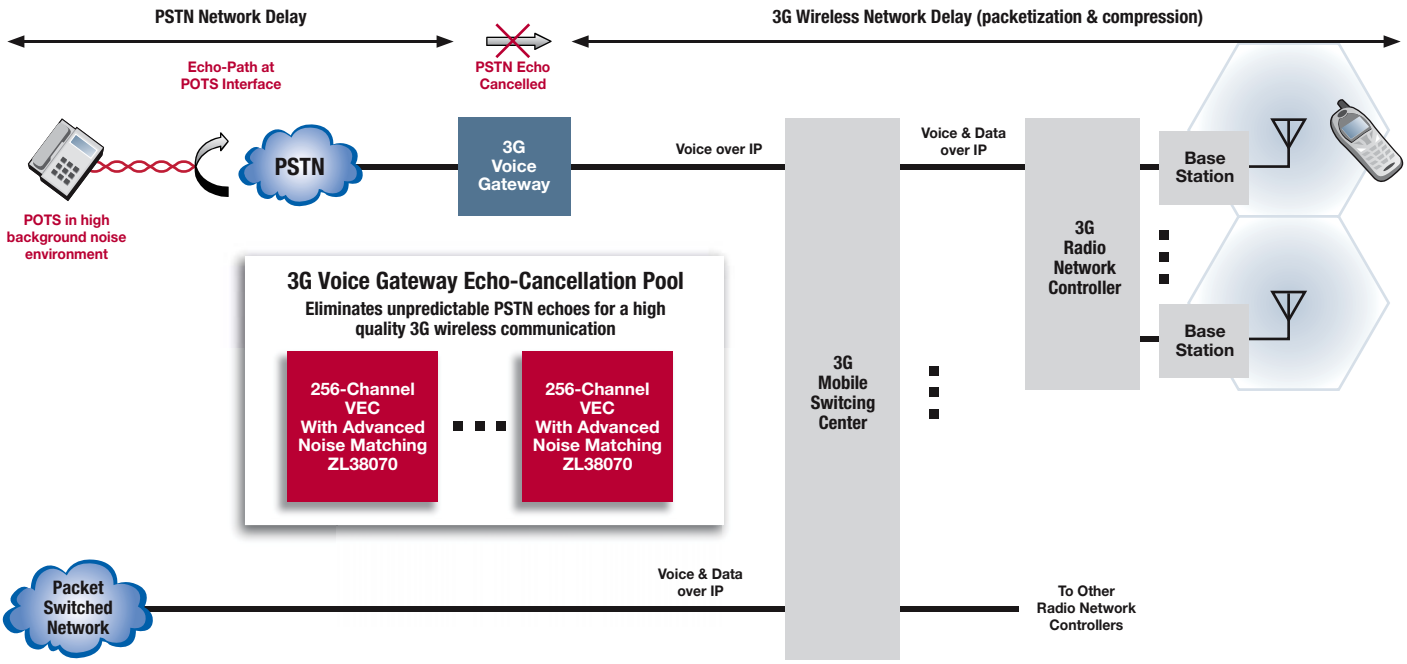
The ZL38070 reduces the effects of this delay by using a patented NLP software algorithm that includes several features to improve voice quality. The device offers an ideal solution for equipment such as a 3G Voice Gateway in a 3G Mobile Switching Center, as illustrated below.

When removing residual echoes, the ZL38070 uses a patented software algorithm that injects spectrally matched "comfort noise" onto the line to eliminate noise gating when echoes from a POTS (plain old telephone system) are cancelled. Superior noise matching capabilities offered by Zarlink's high-density VEC ensures carrier grade voice quality throughout the wireless network, even in high-noise situations. In comparison, less effective noise matching results in background noise on the line that sounds "choppy" to cell phone users.

The device also improves performance during double-talk conditions. Zarlink's algorithm adjusts to a slow convergence speed once double-talk is detected. The convergence speed can be slowed by as much as 128 times that of the fast convergence mode to dramatically improve stability.

The VEC provides several advantages over alternative integrated voice/packet processor and DSP approaches. Most integrated processors encounter latency problems, while DSP solutions compromise size, cost and performance once density increases to more than 32 channels.

The ZL38070 consumes only 4.68 mW of power per-channel. Individual blocks can be turned off when not all channels are in use to further reduce power consumption. In a mobile switching center, where overall power consumption is a critical design concern, the ZL38070 VEC delivers power efficiency advantages.



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