Zarlink portfolio of highly integrated VECs (voice echo cancellers) that optimize call quality in a wide range of low- to mid-density wireless and telephony equipment. Zarlink's off-the-shelf VECs support from 2 to 288 voice channels while cancelling echo tails of 64 milliseconds (ms) or 128 ms.

Zarlink VECs help ensure carrier-grade voice connections and improve subjective voice quality by removing echoes, clicks and hisses caused by user environment, network conditions, and round-trip delays. The devices use an efficient architecture that reduces board space and development resource requirements.

Please see the back page selector guide for details on the complete Zarlink VEC portfolio.

ZL38065 Voice Echo Canceller

32-Channel Echo Canceller
ECG 1 ... ECG 16

ECG n 2-Channel Echo Canceller Group

Signal PCM Input Stream

Signal With Echo → **Echo Removal** → Signal With Residual Echo → **Non-Linear Processor** with Advanced Noise Matching → Signal Without Echo

Signal PCM Output Stream

Adaptive Filter ← **G.165/168 Detectors** Disable tone, Narrow-Band Double Talk, Path Change Instability

Reference PCM Output Stream ← Reference Signal ← Reference PCM Input Stream

2 Channels at 64 ms or 1 Channel at 128 ms or Bi-directional

Microprocessor Access and Control A12-A0   D7-D0

Test Port

ZL38065 VEC—Highest Voice Quality 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, bidirectional 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 powerdown 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

Customer Support

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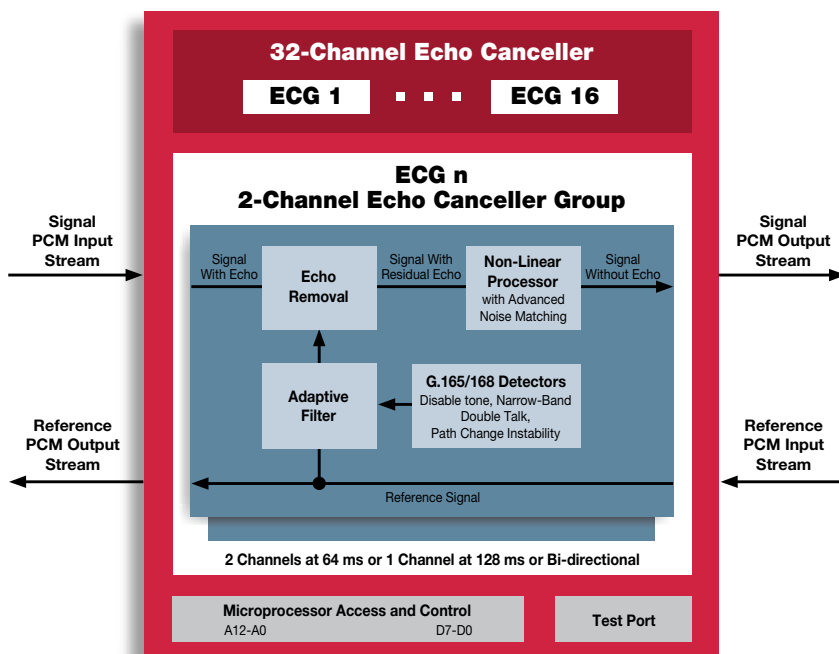
Applications

➜ VoIP gateways

➜ Wireless local loop base stations & controllers (PHS/DECT)

➜ Voice/telephony gateways

➜ Converged PBXs

➜ Integrated access devices

➜ Media gateways

ZARLINK SEMICONDUCTOR

VOICE ECHO CANCELLATION

Features	ZL50212	ZL38070	ZL50211	MT93L04	ZL38065	ZL50232	ZL50235	ZL50234	ZL50233	MT9123	MT9122
# of Channels	288(144)	256(128)	256(128)	128(64)	32(16)	32(16)	16(8)	8(4)	4(2)	4(2)	2(1)
Amount of echo cancellation in ms	64(128)	64(128)	64(128)	64(128)	64(128)	64(128)	64(128)	64(128)	64(128)	64(128)	64(128)
G.164/G165 compliant	•	•	•	•	•	•	•	•	•		
G.168 (1997) compliant	•	•	•	•	•	•	•	•	•		
G.168 (2000) compliant	•	•	•	•	•	•	•	•	•		
Double-talk compensation	•	•	•	•	•	•	•	•	•	•	•
Narrow band signal protection	•	•	•	•	•	•	•	•	•	•	•
Per-channel echo canceller control	•	•	•	•	•	•	•	•	•	•	•
Programmable convergence speed	•	•	•	•	•	•	•	•	•		
Advanced near-end echo suppression	•	•	•		•	•	•	•	•		
Advanced background noise insertion	•	•	•		•	•	•	•	•		
Advanced noise matching	•				•	•					
Audio level adjusters at all signal ports	•	•	•	•	•	•	•	•	•		
Independent power down mode	•	•	•	•	•	•	•	•	•	•	•
2 Mbps ST-BUS & CGI interface	•	•	•	•	•	•	•	•	•	•	•
Controller-less mode										•	•
IEEE-1149.1 (JTAG) port	•	•	•	•	•	•	•	•	•		
All channel active power dissipation (Wtyp.)	1.35	1.2	1.2	0.6	0.15	0.15	0.088	0.056	0.04	0.25	0.35
5 V										•	•
3.3 V with tolerent I/O	•	•	•	•	•	•	•	•	•		
1.8 V core	•	•	•	•	•	•	•	•	•		
Packaging	535 ball BGA	535 ball BGA	535 ball BGA	365 ball BGA	100 pin LQFP, 208 ball LBGA	100 pin LQFP, 208 ball LBGA	100 pin LQFP, 208 ball LBGA	100 pin LQFP, 208 ball LBGA	100 pin LQFP, 208 ball LBGA	28 pin PLCC, PDIP	28 pin PLCC, PDIP

ZARLINK SEMICONDUCTOR

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