



# VE880 Series

## Dual Channel Automatic Battery Switching (ABS) VoicePort™ Device Le88221/241

### APPLICATIONS

- Voice enabled Cable and DSL Modems
- Voice over IP/ATM - Integrated Access Devices (IAD)
- Smart Residential Gateways (SRG) and Routers
- Media Terminal Adapters (MTA) Standalone & Embedded
- Fiber to the User/Premise/Home (FTTH/P/H), Fiber in the Loop (FITL) Optical Network Terminals (ONT)
- Wireless Local Loop (WLL), PBX, ISDN NT1/TA
- Set-Top Box, Home Side Box

### FEATURES

- **Complete BORSCHT function in a single VoicePort™ device for two channels**
  - Battery Feed, Over-voltage support, integrated Ringing, line Supervision, Codec, Hybrid (2W/4W), Test
  - Small footprint package - Exposed pad 80-pin LQFP
  - Minimal external discrete components required
- **Integrated Power Management**
  - Integrated high voltage switching regulator controllers
    - Wide input voltage range (VSW = +3.3V to +35 V)
    - Generates supplies for VBH, VBM & VBL
  - Low power Idle and On-hook transmission states
- **Ringing**
  - 5 REN with pin for pin compatible 100-V (Le88221) and 120-V (Le88241) devices
  - Up to 110-Vpk internal balanced sinusoidal or trapezoidal ringing with programmable DC offset
  - Unbalanced ringing for PBX trunk compatibility (Le88241 device)
- **Pin selectable PCM/MPI or GCI interface**
- **Worldwide Programmability**
  - Two-wire AC impedance, Balance Impedance, Gain
  - DC feed voltage and current limit
  - Ringing frequency, voltage and current limit
  - 12 kHz and 16 kHz Metering
  - Programmable loop closure and ring trip thresholds
- **G.711  $\mu$ -law, A-law, or 16 bit linear coding**
- **Powerful signal generator**
  - Universal Caller ID generation
  - Up to 4 simultaneous tones
  - Automatic cadencing feature
- **Subscriber Loop Test/Self Test support**
  - Comprehensive line sensing
  - Integrated self test capabilities
  - Line fault detection and reporting
    - Loop supervision, AC/DC faults
  - Test load switch (Le88241)
- **Integrated 150 mW 3-V or 5-V Relay Driver**
- **Pin-compatible wide band version available (16-kHz sampling mode)**

### ORDERING INFORMATION

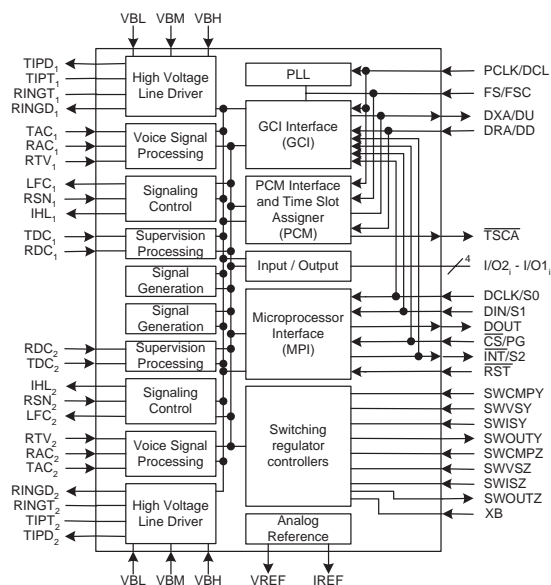
| Device     | Package                       |
|------------|-------------------------------|
| Le88221DLC | 80-pin eLQFP (Green package*) |
| Le88241DLC |                               |

\*Green package meets RoHS Directive 2002/95/EC of the European Council to minimize the environmental impact of electrical equipment.

### DESCRIPTION

Legerity's dual-channel Le88221/241 Automatic Battery Switching (ABS) VoicePort™ device implements a dual-channel telephone line interface by providing all the necessary voice interface functions from the high voltage subscriber line to the  $\mu$ P/DSP digital interface. The ABS device can operate from external battery supplies, or from supplies generated by the on chip switching regulator controllers. This device reduces system level cost, space, and power by achieving the highest level of voice integration possible. Designers benefit by having a simple, cost effective, low power and dense, interface design without sacrificing features or functionality. The programmable, feature rich VoicePort devices provide a highly functional line interface which meets the requirements of short and medium loop (up to 1500 Ohms total at 1 REN) applications. Features include: high voltage switching regulator, self-test, line test capabilities, integrated ringing (up to 110-Vpk), worldwide software programmability, flexible signal generator with tone cadencing, caller ID generation and all BORSCHT functions. These VoicePort device features are crucial for designing cost-effective, full-featured Voice over Broadband solutions.

### VOICEPORT™ DEVICE BLOCK DIAGRAM



The information in this document is Preliminary and may be changed in whole or in part without notice. Legerity makes no guarantee that the device(s) described herein will ever be considered for commercialization or mass production. If you are considering using the proposed device(s) or doing any related design work, please call a Legerity sales representative for current information.

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| FEATURES   | BENEFITS   |
|--|--|
| • Highest level of integration                       | • Reduces system BOM and discrete component count  |
| • Smallest footprint                                 | • Saves board space  |
| • Pin-compatible options                             | • Provides design flexibility to develop one design and populate the voice socket with the right features for a given market—100 V or 120 V, narrow band or wide band, internal balanced (sinusoidal or trapezoidal) or unbalanced ringing |
| • Lowest power solution across all operating modes   | • Provides best solution for battery-backed and power-sensitive applications   |
| • Highly programmable                                | • Offers design flexibility to develop one application for worldwide markets   |
| • Integrated ring cadencing and system state control | • Reduces real-time software overhead  |
| • Comprehensive line sensing                         | • Enables high performance 909 diagnostics and subscriber loop test and self test support  |
| • Integrated switching regulator                     | • Enables lowest component count and highest efficiency in all states of operation   |

## Related Literature

- **081265 - Le88221/241 Dual-Channel ABS Narrow band VoicePort Device Data Sheet\***
- **081307 - Le88226/246 Dual-Channel ABS Wide band VoicePort™ Device Data Sheet\***
- **081206 - Le88116/136 Single-Channel Tracking Battery Wide Band VoicePort™ Device Data Sheet\***
- **Le71HR0824 - VE880 Series Line Module (Supports 2FXS ABS up to 120-V ringing with a 12-V Flyback Automatic Battery Switching Power Supply)**

*\*Contact your Legerity Sales Representative to obtain the data sheet.*

## Packaging and Availability

See *Ordering Information* on first page.

## For More Information:

To find the Legerity Sales Office nearest you, visit our website at: [www.legerity.com/contact/](http://www.legerity.com/contact/)

To download or order data sheets, application notes, or evaluation tools, go to: [www.legerity.com/literature/](http://www.legerity.com/literature/)

For all other technical inquiries, please contact Legerity Tech Support at: [techsupport@Legerity.com](mailto:techsupport@Legerity.com)

or call +1 512.228.5400

*Legerity provides system solutions that accelerate the deployment of integrated voice and data networks. By combining semiconductor design expertise and advanced process technology with global applications support, Legerity develops voice and data IC solutions that enhance the performance, increase the density, reduce the power and lower the system cost of communication equipment products. In addition to providing chip sets for voice applications, Legerity offers IC solutions for Voice Over Broadband (VoB) and Integrated Voice + Data, as well as line drivers and transceivers for broadband equipment. Legerity is headquartered in Austin, Texas with offices throughout North America, Europe and Asia.*



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Электрон  
Связь**

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