

## Features

- **Single channel population option for Le9652 two channel, 150 V maximum battery designs**
- **Pin-Selectable PCM/SPI or ZSI Interfaces**
  - Single port 4-wire ZSI control compatible with numerous VoIP processors and SoC solutions
  - Less expensive isolation than multi-port control, simplifies board routing
- **48-pin 7x7 mm QFN package**
- **Economical, fifth-generation line interface solution for VoIP processors and SoCs**
- **VoicePath SDK and VP-API-II Software available to implement FXS functions**
- **VeriVoice Professional Test Suite Software**
  - Comprehensive subscriber loop testing, including *Telcordia GR-909-CORE / TIA-1063* diagnostic testing
  - Industry leading advanced test software
- **VeriVoice Manufacturing Test Package (VVMT)**
  - Facilitates factory testing and calibration of assembled boards
- **High Voltage Tracking Ringing capability**
  - Minimized power dissipation in all states
  - 5 REN, up to 140-V<sub>PK</sub> open circuit ringing
  - Programmable DC offset
  - Adaptive ringing power management
  - Voltage management of control circuitry supplies
- **Low cost, 2-Layer PCB Reference Designs**
- **Complete Wideband BORSCHT functionality**
- **Worldwide Programmability**
- **Narrowband or Wideband operation**

## Applications

- **Fixed Wireless (LTE) Gateways**
- **DSL Residential Gateways and Integrated Access Devices (IADs)**
- **Cable Embedded Multimedia Terminal Adapters (eMTAs)**
- **PON Single Family Units (SFU)**
- **Fiber-to-the-premise (FTTX) solutions**

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### Ordering Information

Device OPN	Device Type	Package	Packing
Le9651PQCT	SLIC, 150V-Tracker	48-pin QFN	Tape&Reel
Le9651PQC	SLIC, 150V-Tracker	48-pin QFN	Tray

*These Green packages meet RoHS 2 Directive 2011/65/EU of the European Council to minimize the environmental impact of electrical equipment.*

## Description

The miSLIC™ Series Line Circuits together with a VoIP processor or SoC, provides an economical turn-key solution for derived voice applications. The versatile Le9651 miSLIC can be controlled via a PCM/SPI or ZSI interface.

The Le9651 miSLIC 1 FXS Tracking device is a drop-in pin compatible device to the miSLIC 2 FXS Le9652 device when using the ZSI interface. Tracking battery architectures are supported with ringing capability up to 140-V<sub>PK</sub>. The supply is highly efficient and minimizes power dissipation in all states. Ringing and system power management are supported to limit the peak power requirements of the telephone line FXS port. The Le9651 features wideband clarity and complete BORSCHT functionality.

Manufacturing self test and subscriber line diagnostics are available features. All AC, DC, and power parameters are programmable making the Le9651 device suitable for any short loop application requiring SLIC functionality.

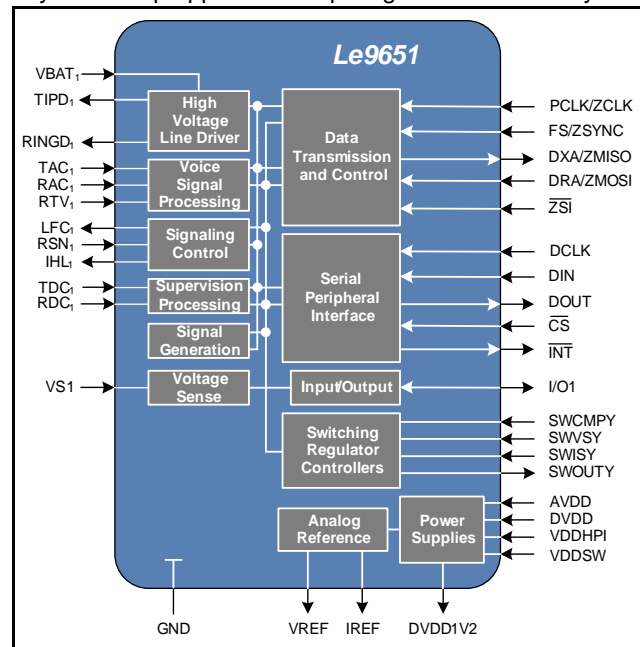


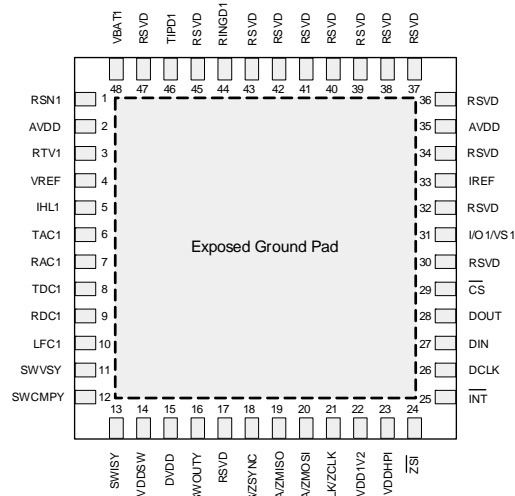
Figure 1 - Le9651 Block Diagram

### Selected Electrical Specifications

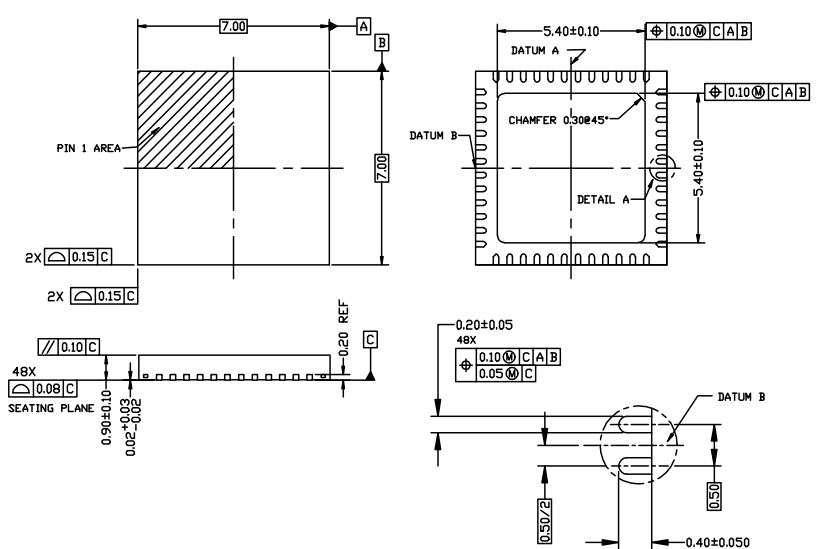
Description	Symbol	Test Conditions	Min	Typ	Max	Unit
Ambient Temperature, under Bias	$T_A$		-40		+85	°C
Digital and Analog Supply Voltages	DVDD, AVDD		3.135	3.3	3.465	$V_{DC}$
Operating Limits: $V_{BAT1}$ (in active state)			-105 $V_{DC}$ to -12 $V_{DC}$			$V_{DC}$
Line Current:	ILA		18	25	49	mA
Ringing Voltage	$V_{RING}$	5 REN		65	99	$V_{RMS}$
Two-Wire Return Loss	$R_L$	200 to 3400 Hz		30		dB
Longitudinal Balance		1 kHz		58		dB
Device Power Dissipation, Continuous	$P_{D(max)}$	$T_A = 85^\circ\text{C}$		1.5		W
Junction to Ambient Thermal Resistance	$\theta_{JA}$			29		°C/W

Device Power Consumption (Flyback)	Symbol	Test Conditions	Typ	Unit
Shutdown	$P_D$	Switcher off	8	mW
Disconnect			37	
Low Power Idle Mode		On-Hook	52	
Idle		On-Hook	98	
Active		Off-Hook, 300 $\Omega$ , ILA = 25 mA	324	
Ringing		50 $V_{RMS}$ , 1 REN	462	

### Device Pinout



### Package Drawings



### Related Collateral

[www.microsemi.com/voice-line-circuits](http://www.microsemi.com/voice-line-circuits)

- *Le9651 Tracking Battery miSLIC™ Line Circuit Preliminary Data Sheet*, Document ID# 148707
- *Le9652 Shared Battery Dual miSLIC™ Line Circuit Preliminary Data Sheet*, Document ID# 148708
  - *ZLR965221H SM2 Line Module, ZSI, 2 FXS, Flyback, 140- $V_{PK}$ , 5 REN*
  - *ZLR965222H SM2 Line Module, ZSI, 2 FXS Inverting-Boost, 140- $V_{PK}$ , 5 REN*

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