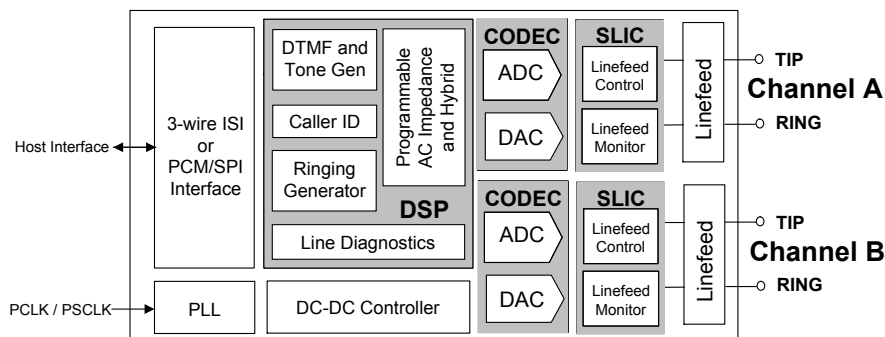


Si3228x Data Short: ProSLIC® Single-Chip Dual FXS Solution

The Si3228x Dual ProSLIC® devices, in a single package, implement two complete foreign exchange station (FXS) telephony interfaces. The Si3228x devices operate from a 3.3 V supply and have standard PCM/SPI or 3-wire ISI digital interfaces. A pair of built-in dc-dc converter controllers can be used to automatically generate the optimal battery voltage required for each line-state, optimizing efficiency and minimizing heat generation. The Si3228x devices are designed to operate with capacitive boost tracking battery supply for lower power, cost, and footprint vs. other tracking or shared battery supplies in the industry. Self-testing and metallic loop testing (MLT) is facilitated by the built-in DSP, monitor ADC, and test load. The devices are available with wideband audio for better than PSTN voice quality, DTMF detection, and Smart Ringing. Smart Ringing reduces the peak current with 2-channel ringing for lower-cost ac-dc adapters. The Si3228x devices are available in a 7 x 7 mm 48-pin QFN or 8 x 8 mm 56-pin QFN package.

Applications:

- VoIP gateways and routers
- xDSL IADs
- Optical Network Terminals/Units (ONT/U)
- Analog Terminal Adapters (ATA)
- Cable eMTA
- Wireless Fixed Terminals (WFT)
- Wireless Local Loop (WLL)
- WiMAX CPE
- Private Branch Exchange (PBX)
- VoIP MDU gateways



Si3228x

Functional Block Diagram

KEY FEATURES

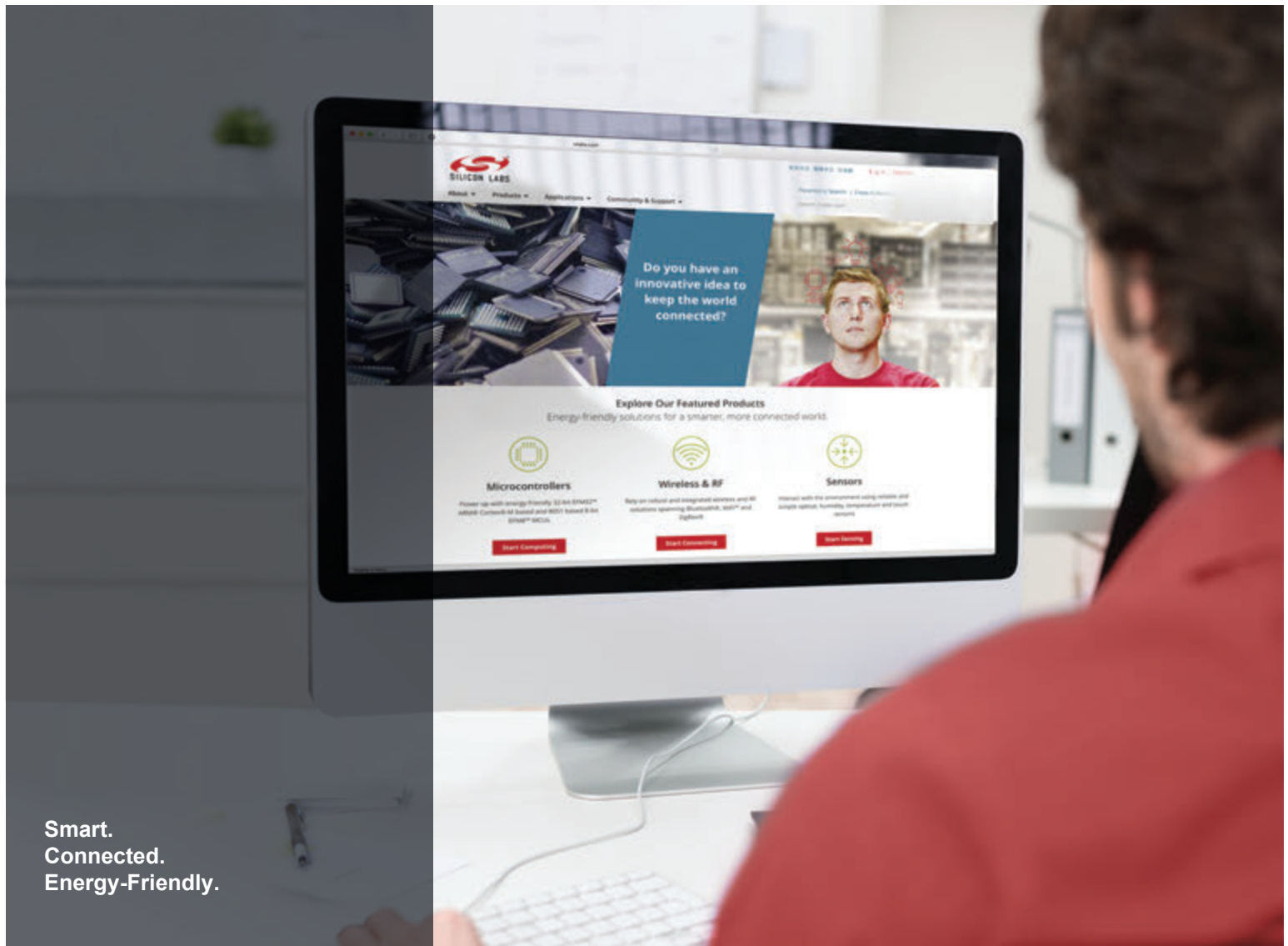
- Two complete FXS channels in a single 7x7 or 8x8 mm package
- Performs all BORSCHT functions
- Ideal for short- or medium-loop applications
- Ultra-low power consumption
- Patented low-power ringing
- Patent-pending Smart Ringing
 - Reduces peak current with 2-channel ringing
- Adaptive ringing
- Simplified configuration and diagnostics
 - Supported by ProSLIC API
 - Audio diagnostics with loopback
 - Integrated test load
- Wideband voice support
- On-hook transmission
- Loop or ground start operation
- Smooth polarity reversal
- Programmable interrupts
- Software-programmable parameters:
 - Ringing frequency, amplitude, cadence, and waveshape
 - Two-wire ac impedance
 - Transhybrid balance
 - DC current loop feed (10–45 mA)
 - Loop closure and ring trip thresholds
 - Ground key detect threshold
- Flexible integrated tracking DC-DC controller supporting patent-pending low-cost capacitive boost configuration
- DTMF Generation
- DTMF Detection (Si32281/3/5/7)
- 3-wire Integrated Serial Interface (ISI) or PCM interface
- A-Law/μ-Law companding, linear PCM
- Pulse metering
- 3.3 V operation
- Pb-free/RoHS-compliant packaging

Table 1.1. Si3228x Ordering Guide

P/N	Description	Package Type	Max V _{BAT}	Temperature
Si32280-A-FM	Wideband Dual FXS, ISI interface	QFN48 ²	–106 V	0 to 70 °C
Si32280-A-GM	Wideband Dual FXS, ISI interface	QFN48 ²	–106 V	–40 to 85 °C
Si32281-A-FM	Wideband Dual FXS, ISI interface, DTMF detection	QFN48 ²	–106 V	0 to 70 °C
Si32281-A-GM	Wideband Dual FXS, ISI interface, DTMF detection	QFN48 ²	–106 V	–40 to 85 °C
Si32282-A-FM	Wideband Dual FXS, PCM interface, daisy-chain mode	QFN56 ²	–106 V	0 to 70 °C
Si32282-A-GM	Wideband Dual FXS, PCM interface, daisy-chain mode	QFN56 ²	–106 V	–40 to 85 °C
Si32283-A-FM	Wideband Dual FXS, PCM interface, DTMF detection, daisy-chain mode	QFN56 ²	–106 V	0 to 70 °C
Si32283-A-GM	Wideband Dual FXS, PCM interface, DTMF detection, daisy-chain mode	QFN56 ²	–106 V	–40 to 85 °C
Si32284-A-FM	Wideband Dual FXS, ISI interface, Smart Ringing	QFN48 ²	–106 V	0 to 70 °C
Si32284-A-GM	Wideband Dual FXS, ISI interface, Smart Ringing	QFN48 ²	–106 V	–40 to 85 °C
Si32285-A-FM	Wideband Dual FXS, ISI interface, DTMF detection, Smart Ringing	QFN48 ²	–106 V	0 to 70 °C
Si32285-A-GM	Wideband Dual FXS, ISI interface, DTMF detection, Smart Ringing	QFN48 ²	–106 V	–40 to 85 °C
Si32286-A-FM	Wideband Dual FXS, PCM interface, daisy-chain mode, Smart Ringing	QFN56 ²	–106 V	0 to 70 °C
Si32286-A-GM	Wideband Dual FXS, PCM interface, daisy-chain mode, Smart Ringing	QFN56 ²	–106 V	–40 to 85 °C
Si32287-A-FM	Wideband Dual FXS, PCM interface, DTMF detection, daisy-chain mode, Smart Ringing	QFN56 ²	–106 V	0 to 70 °C
Si32287-A-GM	Wideband Dual FXS, PCM interface, DTMF detection, daisy-chain mode, Smart Ringing	QFN56 ²	–106 V	–40 to 85 °C

Note:

1. Adding the suffix "R" to the part number (e.g., Si32282-C-FMR) denotes tape and reel.
2. QFN - Quad-Flat No-leads



Smart.
Connected.
Energy-Friendly.



Products

www.silabs.com/products



Quality

www.silabs.com/quality



Support and Community

community.silabs.com

Disclaimer

Silicon Laboratories intends to provide customers with the latest, accurate, and in-depth documentation of all peripherals and modules available for system and software implementers using or intending to use the Silicon Laboratories products. Characterization data, available modules and peripherals, memory sizes and memory addresses refer to each specific device, and "Typical" parameters provided can and do vary in different applications. Application examples described herein are for illustrative purposes only. Silicon Laboratories reserves the right to make changes without further notice and limitation to product information, specifications, and descriptions herein, and does not give warranties as to the accuracy or completeness of the included information. Silicon Laboratories shall have no liability for the consequences of use of the information supplied herein. This document does not imply or express copyright licenses granted hereunder to design or fabricate any integrated circuits. The products are not designed or authorized to be used within any Life Support System without the specific written consent of Silicon Laboratories. A "Life Support System" is any product or system intended to support or sustain life and/or health, which, if it fails, can be reasonably expected to result in significant personal injury or death. Silicon Laboratories products are not designed or authorized for military applications. Silicon Laboratories products shall under no circumstances be used in weapons of mass destruction including (but not limited to) nuclear, biological or chemical weapons, or missiles capable of delivering such weapons.

Trademark Information

Silicon Laboratories Inc.®, Silicon Laboratories®, Silicon Labs®, SiLabs® and the Silicon Labs logo®, Bluegiga®, Bluegiga Logo®, Clockbuilder®, CMEEMS®, DSPLL®, EFM®, EFM32®, EFR®, Ember®, Energy Micro, Energy Micro logo and combinations thereof, "the world's most energy friendly microcontrollers", Ember®, EZLink®, EZRadio®, EZRadioPRO®, Gecko®, ISOModem®, Precision32®, ProSLIC®, Simplicity Studio®, SiPHY®, Telegesis, the Telegesis Logo®, USBXpress® and others are trademarks or registered trademarks of Silicon Laboratories Inc. ARM, CORTEX, Cortex-M3 and THUMB are trademarks or registered trademarks of ARM Holdings. Keil is a registered trademark of ARM Limited. All other products or brand names mentioned herein are trademarks of their respective holders.



Silicon Laboratories Inc.
400 West Cesar Chavez
Austin, TX 78701
USA

<http://www.silabs.com>