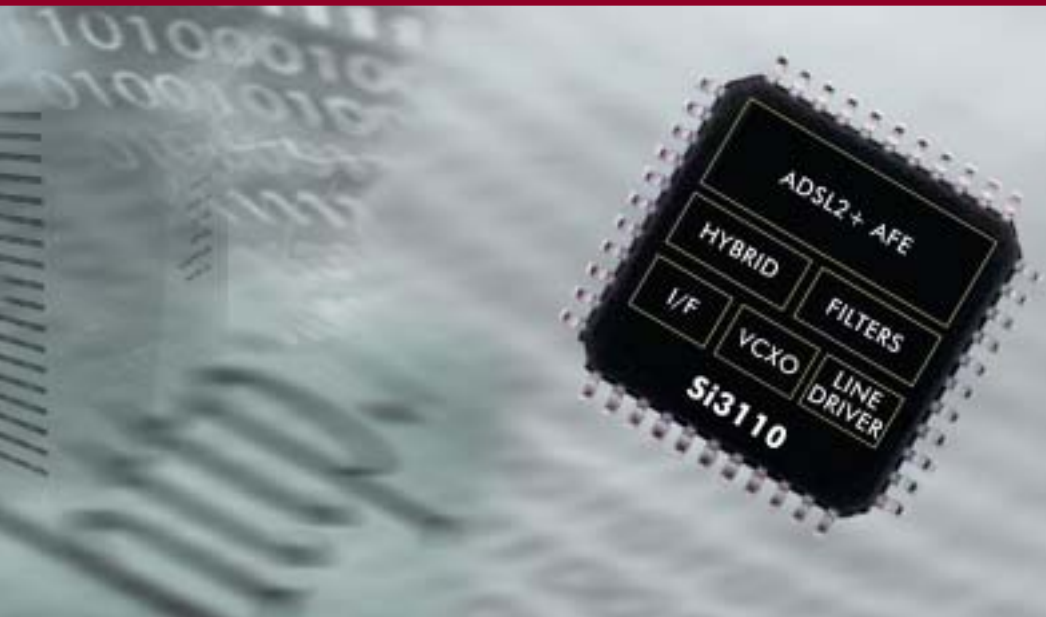


ADSL/ADSL2+ AFE Solutions

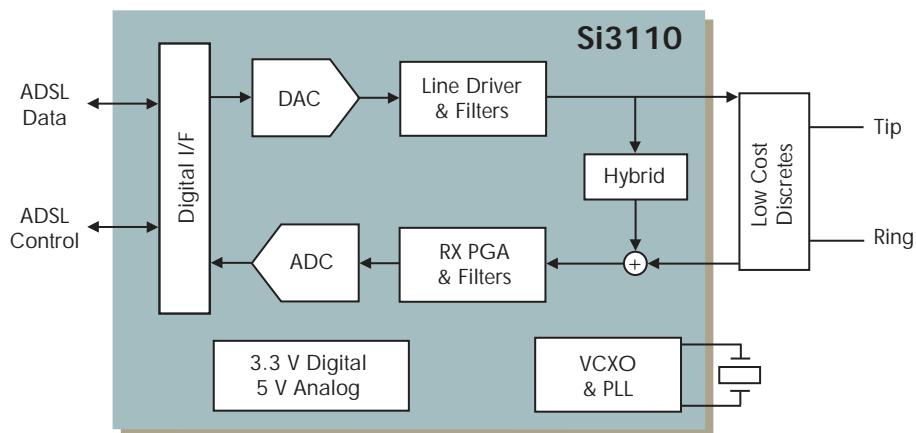
INTEGRATED ADSL ANALOG FRONT END



Si3101/3110 PRODUCT DESCRIPTION

The Si3101 (ADSL/ADSL2) and the Si3110 (ADSL2+) provide a complete AFE in only 12 cm² of board space and eliminate one third of the components required by competing solutions. High performance is achieved with a patented architecture that includes a programmable DSL hybrid for echo cancellation and noise reduction, resulting in higher data rates and longer loop reaches over real-world phone lines. Due to high integration and leading performance, both the Si3101 and Si3110 dramatically simplify modem design and are ideal solutions for business and residential ADSL, ADSL2 or ADSL2+ customer premises equipment (CPE). The Si3110 reduces the board space and cost required to implement a complete ADSL2+ AFE by integrating the 14-bit linear digital-to-analog converter (DAC), 14-bit linear analog-to-digital converter (ADC), voltage-controlled crystal oscillator (VCXO), line driver, programmable DSL hybrid, programmable gain amplifier (PGA), precision analog filters and high-speed digital interface. The complete solution requires only a single 5 V analog and 3.3 V digital power supply, thereby eliminating the 12 V supply.

Si3110 BLOCK DIAGRAM



FEATURES

- Meets G.992.1 (G.DMT) and G.992.2 (G.lite) standards, with Annex A, B, C
- Meets G.992.3 (ADSL2), G.992.5 (ADSL2+) and reach extended ADSL (RE-ADSL) standards
- Meets TR-048 and WT-085 performance
- Supports 12 Mbps (Si3101) and 24 Mbps (Si3110) downstream data rates
- Integrated 14-bit linear ADC/DAC, VCXO and line driver
- Integrated self-calibrated, precision analog filters
- Programmable DSL hybrid
- Programmable out-of-band transmit and receive low-pass filters (Si3101)
- Digital power spectral density (PSD) filters (Si3101)
- Receive PSD -150 dBm/Hz at 250 kHz and above
- Serial (Si3101) and nibble data interfaces
- 1.86 in² (12 cm²) of total board space
- Single, low-cost external AFE BOM
- 5 V analog and 3.3 V digital power
- 44-pin TQFP, 0 to 70 °C

APPLICATIONS

- Internal and external DSL modems
- Residential gateways
- Integrated access devices

PRODUCT BRIEF

SMALLEST, BEST PERFORMING
INTEGRATED ANALOG FRONT END
FOR ADSL CPE APPLICATIONS



INDUSTRY LEADING PERFORMANCE

Performance

The Si3101 and the Si3110 are 100% CMOS, resulting in small size and reduced cost, and the minimal board space enables small form factor applications. For USB powered applications, the typical operating power of 1 W is ideal. The performance meets DSL Forum TR-048 and WT-085 requirements and supports the latest DSL standards, including ADSL2+.

Global Design

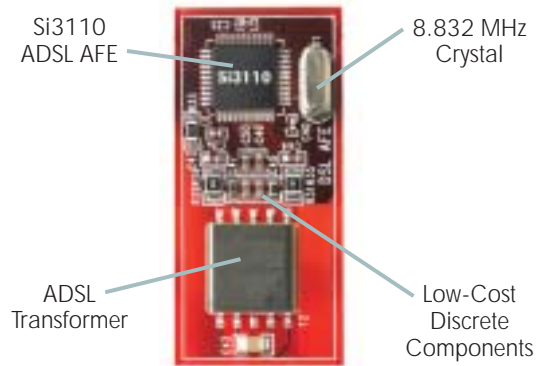
The Si3101 and Si3110 are fully software programmable with a single BOM for G.DMT Annex A, B and C. Both solutions are also pin compatible and software compatible.

Integrated Hybrid

Silicon Laboratories solves performance issues over long loop phone lines with a patented programmable DSL hybrid that provides up to 20 dB greater near-end echo cancellation performance than typical discrete external hybrid implementations. This translates into an ADSL modem that reaches more customers (at longer loop lengths) and provides all customers with higher data rates.

Fewest Components and Smallest Size

Si3110 Solution
(Actual Size)
1.86 in²; 12 cm²



Si3110 ADSL2+ AFE

Provides higher data transfer rates and longer reach for ADSL applications.

Si3101/Si3110 Comparison Table		
Feature	Si3101	Si3110
ADSL2+	-	✓
ADSL/ADSL2	✓	✓
8.8 MHz Nibble Interface Modes	1	3
4.4 MHz Nibble Interface Modes	1	-
Serial Interface Modes	2	-
Digital RX PGA	-	✓
Digital TX/RX PSD Filter	✓	-

CONTACT INFORMATION



SILICON LABORATORIES

Silicon Laboratories Inc.

4635 Boston Lane • Austin, TX 78735

Phone: (512) 416-8500

Toll Free: (877) 444-3032

Email: ADSLinfo@silabs.com

Web site: www.silabs.com

Silicon Laboratories and the Silicon Laboratories logo are trademarks of Silicon Laboratories Inc.
A, 5000, April 04, Rev C

ORDERING INFORMATION

Product	Description
Si3101-FQ	ADSL/ADSL2 AFE
Si3110-FQ	ADSL2+ AFE
Data Sheet	
Si3101-DS	ADSL AFE Data Sheet
Si3110-DS	ADSL2+ AFE Data Sheet
Evaluation Boards	
Si3101PCI-EVB	ADSL PCI Evaluation Board
Si3101DCDEV-EVB	ADSL Daughtercard for Development Systems
Si3110PCI-EVB	ADSL2+ PCI Evaluation Board
Si3110DCDEV-EVB	ADSL2+ Daughtercard for Development Systems