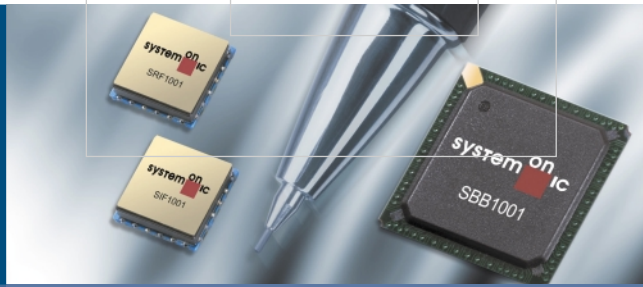


TONDELAYO™ 1



A Complete Dual-Band Wireless LAN Silicon System Solution

THE SYSTEMONIC TONDELAYO 1 DUAL-BAND CHIPSET OFFERS A TRULY DIFFERENTIATED PRODUCT THAT PROVIDES USERS WITH MULTI-PROTOCOL OPTIONS FOR OPERATING IN VARIOUS W-LAN ENVIRONMENTS. THE TONDELAYO 1 BASEBAND HAS AT ITS CORE A DSP ARCHITECTURE THAT IS OPTIMIZED TO MANAGE TRADEOFFS BETWEEN POWER DISSIPATION AND PROCESSING CAPACITY.

Overview

The Tondelayo family of chips are designed to support W-LAN solutions in the 2.4 GHz and 5 GHz frequency bands. The combined radio chipset and baseband makes for a solution that affords transparent connectivity, facilitating seamless roaming for the mobile user. Tondelayo 1 enables wireless LAN communications at up to 54 Mbps according IEEE 802.11a, in addition to providing backward compatibility to an installed base of 802.11b-compliant systems.

Tondelayo has been engineered with state-of-the-art technology to provide risk-free system platforms delivering full 64-QAM OFDM implementations of dual-band, multi-protocol solutions. The baseband chipset is an application-specific standard product (ASSP) designed in 0.18μ CMOS technology, and is based on a digital signal processor generated by means of Systemonic's

patented OnDSP™ platform. Tondelayo 1 combines the flexibility of a processor-oriented architecture with the efficiency of a highly integrated hardwired solution.

The Tondelayo 1 RF (SRF1001) and Tondelayo 1 IF (SIF1001) chips, based on Systemonic RFLex™ technology, use a superheterodyne architecture to offer superior receiver sensitivity and frequency selectivity over other competing architectures. They are designed in SiGe technology, which yields high levels of integration, good linearity and phase noise performance and wide-band operation.

Tondelayo 1-based systems allow for the quick launching of new protocols by way of firmware and software driver upgrades. This results in protecting customers' investment and increasing the life cycle of the products in the field.

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Benefits

- : Support for both 2.4 GHz and 5 GHz frequency bands with the same chipset.
- : In-field selectable 802.11a and 802.11b operation for seamless "detect and connect" roaming between legacy 2.4 GHz and the new 5 GHz wireless LAN networks.
- : Programmable architecture enables easy differentiation.
- : On-chip memory and flexible interfaces reduce overall system BoM.

- : Receive gain split between RF and IF chips minimizes layout and oscillation problems.
- : Front-end input and output impedances are matched on-chip for easy integration with external components.
- : Advanced SiGe process for the front-end chipset provides improved linearity and lower phase noise for a longer range.
- : Smart power save modes provides for longer battery life.
- : Suitable for both access points and client terminals.

W-LAN multi-protocol baseband integrated circuits silicon solutions multi-mode radio W-WAN

Features

- : Fully compliant to IEEE 802.11a 5 GHz and 802.11b 2.4 GHz standards.
- : Data rates up to 54 Mbps.
- : Firmware implementation of the complete physical layer provides support for multiple standards and "detect and connect" roaming.
- : Full digital synchronization for time, frequency, and phase.
- : Hardware accelerators for channel encoding/decoding and digital filters in the baseband for improved selectivity.
- : Highly integrated RF transceiver featuring SiGe process for enhanced efficiency and wide dynamic range.
- : Superheterodyne front-end architecture for superior receiver sensitivity and improved frequency selectivity.
- : Smart power management controlled by the baseband processor.
- : North American and European encryption schemes.
- : PCI bus and PC Card interfaces via SCC1001.
- : Complete reference design with sample software drivers and configuration utility.

Applications

- : 5 GHz and 2.4 GHz multi-protocol W-LAN Interface Cards and Access Points.
- : IEEE 802.11a+b CardBus wireless transceiver.
- : Enterprise Wireless LAN systems.
- : PDAs, Notebook Computers.
- : Protocol-configurable W-LAN Access Points and Bridges for "hot-spots" or public-area Wireless LANs.
- : Wireless Home Networking systems.
- : Consumer electronic devices for Wireless Digital, Audio, Video, Multimedia and Telephony.
- : Routers, cable modems, and television set-top boxes with wireless LAN capability.

SPECIFICATIONS

Frequency Bands	2.4–2.48 GHz and 5.15–5.825 GHz
Supported Standards	IEEE 802.11a and IEEE 802.11b
Modulations	802.11a: OFDM with BPSK, QPSK, 16-QAM and 64-QAM subcarrier modulation 802.11b: DBPSK, DQPSK, CCK
Media Access Technique	CSMA/CA
Data Rates	802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11b: 1, 2, 5.5, 11 Mbps
Encryption	40- and 128-bit WEP DES and Triple DES
Average Power Consumption	Transmit (Tx) mode: 2.0 W Receive (Rx) mode: 1.8 W
Antenna Diversity	Transmit and receive switched antenna diversity controlled by the baseband
Host Interface (SCC1001)	32-bit, 33 MHz PCI and CardBus
ADC and DAC resolution	10 bits
Intermediate Frequency	465 MHz
Built-in LNA	5 GHz, 4 dB Noise Figure, 28 dB gain
Attenuation/Gain	RF: Two 8-bit attenuators IF: Two attenuator blocks adding up to 34 dB in 2 dB steps
Transmit Power	Nominal: 16.5 dBm P1dB: 22.5 dBm
Range @ 54 Mbps	>30m @ 15 dBm RF power
Process Technology	SBB1001: 0.18µ CMOS SRF1001 and SIF1001: 0.35µ SiGe
Packaging	SBB1001: 176-pin µBGA SCC1001: 179-pin µBGA SRF1001 and SIF1001: 24-pin LTCC
Packaging Dimensions	SBB1001: 15mm x 15mm SRF1001 and SIF1001: 8mm x 8mm
Reference Design	Dual-mode PC Card form factor with sample Windows driver and configuration utility

DUAL-BAND 802.11 a+b W-LAN SOLUTION

