

# LAN9118 FAMILY OVERVIEW

## PERFORMANCE-ORIENTED, NON-PCI, 10/100 ETHERNET CONTROLLERS

The LAN9118 family is a collection of performance-oriented, non-PCI, 10/100 Ethernet controllers, providing a broad range of solutions and enabling a diverse set of performance-sensitive embedded applications. All family products incorporate advanced features and performance-enhancing technology.

Each Ethernet controller in the LAN9118 family is based on an enhanced architecture, which maximizes throughput and minimizes host processor overhead while virtually eliminating the possibility of lost packets. All family members share a common footprint\* and use the same set of software drivers, which provides system design flexibility. Designs can be scaled up or down in performance as needed, and one common design can support a spectrum of system products.

### The LAN9118 Family

- The LAN9118 is targeted for 32-bit applications requiring high performance, and provides the highest level of performance possible for a non-PCI 10/100 Ethernet controller.
- The LAN9117 is designed to provide the highest level of performance possible for 16-bit applications. It also has an external MII interface, which can be used to attach an external PHY.
- The LAN9116 and LAN9115 are designed for performance-sensitive applications with less intensive performance requirements. The LAN9116 is for 32-bit host processors, while the LAN9115 is for 16-bit applications, which may also require an external PHY. Both devices deliver superior levels of performance.

### Target Applications

The LAN9118 family is suitable for any application where traffic is continuously flowing into or out of the Ethernet port. It is ideal for applications using Ethernet to carry video, voice, or real-time data. Target applications include:

- Set-Top Boxes, Personal/Digital Video Recorders, Multi-Room PVR
- Digital TVs, DVD Recorders and Players
- Home and Media Gateways, Media Converters
- Video- and Voice-Over-IP Solutions, IP-PBX, Video Phones
- Audio Distribution Networks, Home-Entertainment Systems
- Printers
- Digital Cameras
- Security Systems
- Point-of-Sale Terminals and Kiosks
- Equipment Monitoring and Control, Instrumentation, Handheld Equipment
- Data Collection, Data Gathering, General Embedded Applications
- Wireless Access Points and Routers

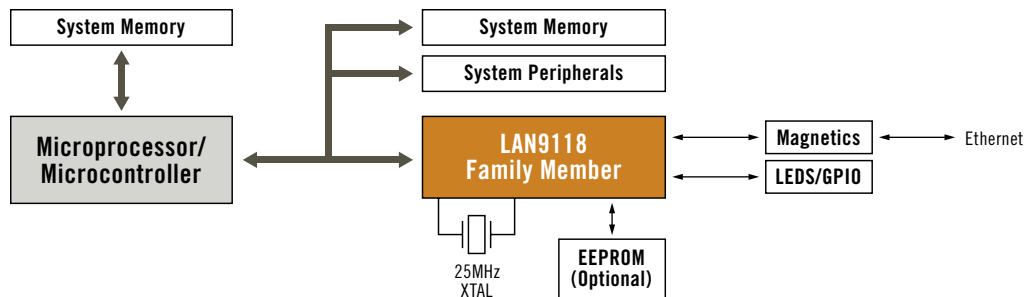
\*Please refer to application note AN12.19 on the SMSC Web site for more information

## Features

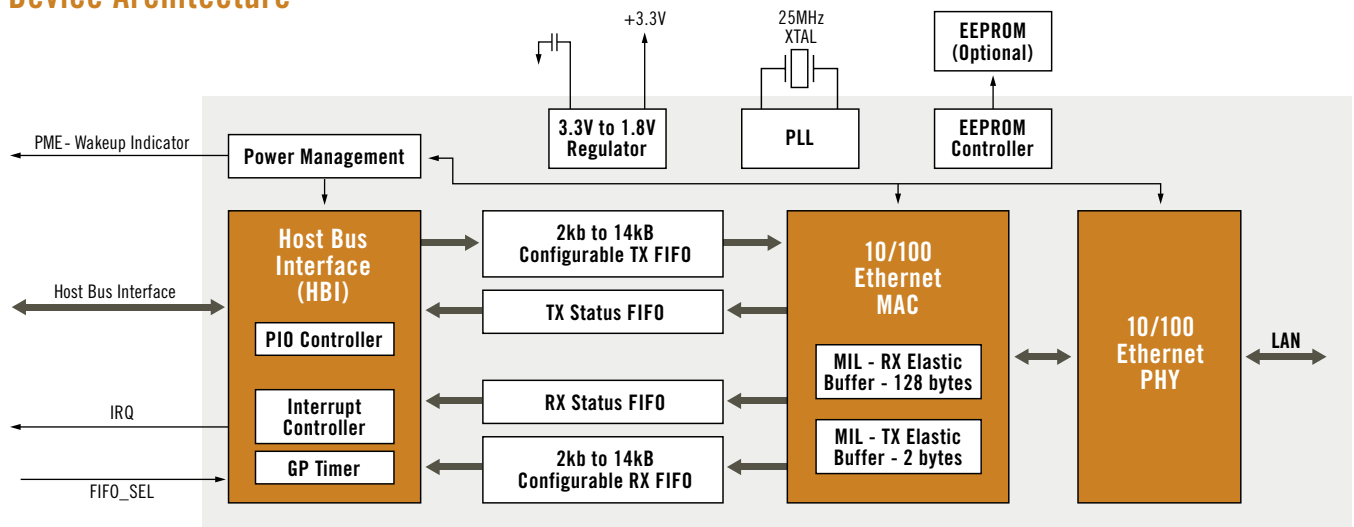
The LAN9118 family offers enhanced performance, technology and features. Some of the features and benefits include the following:

FEATURES	BENEFITS	LAN9118 Family			
		9118	9117	9116	9115
32-bit Host Interface	Provides high performance	X		X	
16-bit Host Interface	Interfaces to legacy 16-bit processors	X	X	X	X
External MII Interface	Allows use of external PHY in place of integrated PHY		X		X
16kb Internal SRAM	Can store over 200 packets; prevents dropped packets	X	X	X	X
Support for DMA Controllers	Provides high performance; reduces CPU overhead	X	X	X	X
MAT™ (Memory Alignment Technology)	Reduces CPU overhead by eliminating the need for buffer copying to align packets to memory boundaries	X	X	X	X
Automatic Flow Control (PAUSE or Backpressure)	Eliminates dropped packets	X	X	X	X
Wake-on-LAN / Magic Packet Support	Allow low-power modes of operation for handheld applications	X	X	X	X
Reduced Power Modes		X	X	X	X
Simple SRAM Interface	Interfaces to any host processor	X	X	X	X
Programmable Interrupt Hold-Off Timer	Reduces CPU overhead by allowing CPU to control frequency of interrupts	X	X	X	X

## System Block Diagram



## Device Architecture



## Software Drivers

A wide range of software drivers are already available on SMSC's Web site for the LAN9118 family, with more to come. Currently available drivers include:

- Linux 2.6 for X-Scale
- Linux 2.6 for SH3
- Linux 2.6 for PowerPC
- Linux 2.6 – simple driver for porting
- WinCE 5.0 for X-Scale

## Which LAN9118 Family Device is Right for Your Application?

DEVICE	TARGET APPLICATIONS	CHARACTERISTICS
LAN9118	Set-Top Boxes, PVRs, Video/VoIP	32-bit, Highest Performance
LAN9117	Media Converters/Gateways, DTVs, etc.	16-bit, Highest Performance, External PHY Support
LAN9116	Printers, Audio Systems, Cameras	32-bit, Superior Performance
LAN9115	Security Systems, General Embedded Applications	16-bit, Superior Performance, External PHY Support

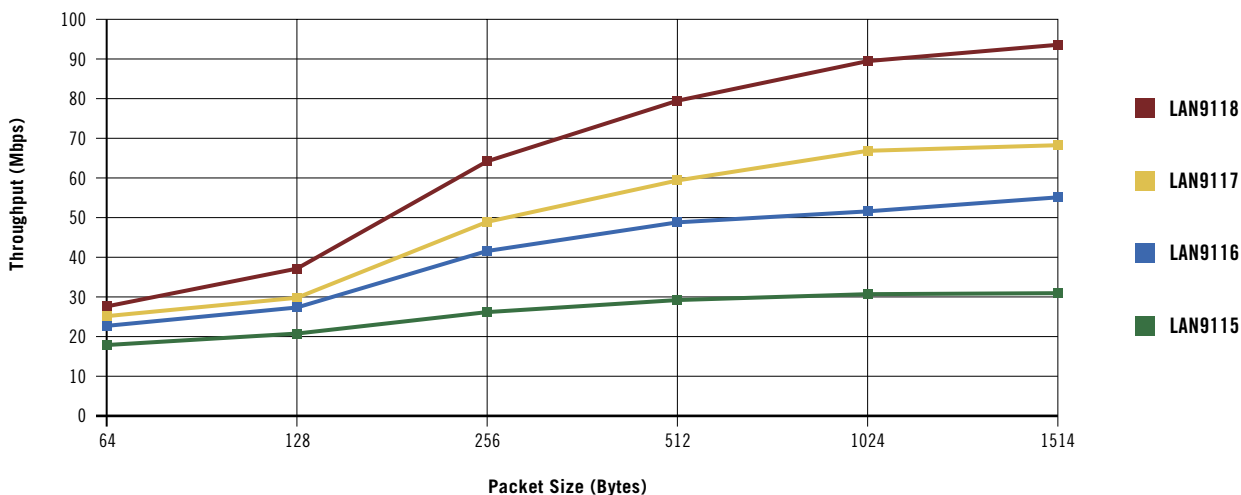
## Performance Table

	X-Scale/Linux	SH3/Linux
LAN9118	90 Mbps	45 Mbps
LAN9117	70 Mbps	35 Mbps
LAN9116	50 Mbps	35 Mbps
LAN9115	30 Mbps	25 Mbps

Note: The performance results shown in the table to the left and graph below are based on actual measurements on evaluation platforms developed by SMSC, and are meant only as a general guideline, not as a guarantee. Actual customer results may vary based on a number of factors, including exact processor model, speed, system architecture, application software, variances in operating system and network stack and measurement technique.

## Performance Chart

LAN9118 Family Comparison



Results are based on the target device installed on an Intel X-Scale PXA270 platform, running under a Linux O/S, connected via a full-duplex link to a Smartbits tester running an ICMP echo test.

## SMSC Experience, Support and Reliability

SMSC has been a leading supplier of Ethernet solutions for embedded and general applications for the past 10 years. SMSC offers worldwide technical support through its field application engineers, as well as reference designs of software drivers for all of its Ethernet controllers. SMSC also provides a free LANCheck service through its website. This service offers design and layout guidelines and checklists, and a free schematic/layout review for all customers who register for an e-Services account. SMSC is dedicated to providing a stable, long-term supply of products for the embedded market. All products are backed by SMSC's ISO9001:2000 certified quality assurance system.

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