

M83xxx Comcerto® 1000 Family of Low Power Embedded Packet Processors

Product Overview

To better address a wide variety of applications ranging from high-end VoIP enabled home gateways, small-to-midsized business (SMB) high performance security appliances to Ethernet powered 802.11n enterprise access points, Mindspeed is launching its next generation high-performance embedded low-power processor family.

The Comcerto 1000 series of processors delivers scalability, superior packet handling capabilities, vastly increased VPN and SSL throughput and industry leading quality of service hardware features.

Comcerto 1000 leverages ARM's energy efficient core technology and Mindspeed's low-power design process to achieve the lowest power consumption in its class (<2W typical @ 650MHz). Additionally, the companion board support package software provides a rich set of power management features to address the energy saving goals of service providers and product manufacturers worldwide.

Comcerto 1000 I/O interfaces in conjunction with Mindspeed's innovative multi-layer bus architecture allows non-blocking concurrent transactions across all data interfaces, thus minimizing on-chip packet processing latency. Moreover, the SoC data interfaces deliver a system BOM cost reduction by simplifying and thus minimizing PC board design requirements.

In order to provide performance scalability and maximum flexibility the Comcerto 1000 family of processors includes single and dual ARM11 core devices from 450MHz to 650MHz delivering up to 1600DMIPS.

The Comcerto 1000 OpenWRT Linux-based SDK is optimized for both single- and dual-core operation. The software deliverables for Comcerto 1000 dual core devices are backward compatible with the Comcerto 100.

Additionally, Mindspeed's OpenMind™ rich ecosystem delivers turnkey solutions that reduce time-to-market and lower development costs for VPN/SSL SMB routers, home gateway and enterprise access point manufacturers.

Key Comcerto 1000 on Chip Elements

- **Optimized single and dual core CPUs**
 - Single and dual CPU ARM 1136J core architectures available in 450MHz, 533MHz, and 650MHz
 - ARMv6 architecture compatible, supporting ARM, Thumb, and Java instruction sets
 - Eight-stage pipeline, 64 bit cache/bus interfaces, optimized latencies; pre-fetching, branch prediction, hit-under-miss data cache to minimize pipeline stalls
 - Advanced power management functions leveraging ARM's leadership and experience in the handheld market
 - DSP instruction set extensions (including MAC ops)
- **High-performance coherent memory subsystem**
 - 64KB data + 64KB instruction caches + L1-equivalent 32KB data tightly coupled memory (DTCM) per core
 - Integrated mainstream 16/32-bit DDR2 memory controller, up to DDR2-800
 - On-chip 128KB dual-access low-latency SRAM
- **Packet & QoS co-processor**
 - Layer 2/3/4 acceleration
 - Hardware assist for queuing, classification, marking, scheduling & rate limiting
- **Security co-processor**
 - Support for IPv4/v6 IPSec (full CPU offload) AH/ESP tunnel/transport modes, SSL/TLS/DTLS, DH, SRTP, DES, 3DES, AES, HMAC, MD5, SHA1, SHA-2 up to SHA-256, RSA, ECC, and TRNG
- **High-performance I/O data interfaces**
 - 2xEthernet MACs (RGMI; GMII; RMII; or MII)
 - 2xPCIe lanes root or end point
 - TDM/PCM interface for glue-less VoIP support
 - USB 2.0, high-speed, host/device with integrated PHY

Key Benefits

- **Best-in-class performance**
 - Up to 1600 DMIPS
 - < 2W typical for dual core devices at 650MHz
 - 2 Gbps NAT routing performance at 256B packet size
 - 1 Gbps IPSEC throughput for 256B packets
- **Integrated carrier-class VoIP solution**
 - Field hardened voice features
 - World class acoustic echo cancellation technology
 - Narrow and wideband codecs
 - G.711, G.729*, G.722, G.723.1, iLBC, T.38, G.729.1, G.722.2
 - Enhanced echo canceller, CID-I/II, VAD/CNG, AGC
 - 3-Way conferencing

* indemnified by Mindspeed
- **Reduced system BOM cost**
 - Glueless support for WiFi, voice DSP and video co-processors
 - High-speed USB 2.0 enables printer, storage and PC connectivity
 - Simplified PCB design
 - Uses low cost BOM components
- **Flexible software architecture**
 - Industry-standard and open SDK and tools
 - Full software compatible with the Comcerto 100
 - Rich 3rd party ecosystem for turnkey applications



Concerto 1000 Applications

- Intelligent and secure Triple-play wired and wireless broadband gateways
- Single or dual concurrent 802.11n enterprise access points (EAP) using POE
- Unified threat management (UTM) security appliances
- SMB router with IPSec VPN / SSL & firewall
- Maximum throughput SME & SOHO NAS with processing headroom for advanced RAID and management functions

OpenMind Ecosystem Partners

- OpenWRT Linux
- Wind River VxWorks & Linux
- Jungo Open RG
- TeamF1 Secure Gateway Solution
- Digion DLNA Technology Component
- Apogee Embedded Java VM and JIT Compiler
- Lionics A/V
- SiLabs & Legerity SLIC/SLAC
- Atheros & Ralink WiFi 802.11a/b/g/n

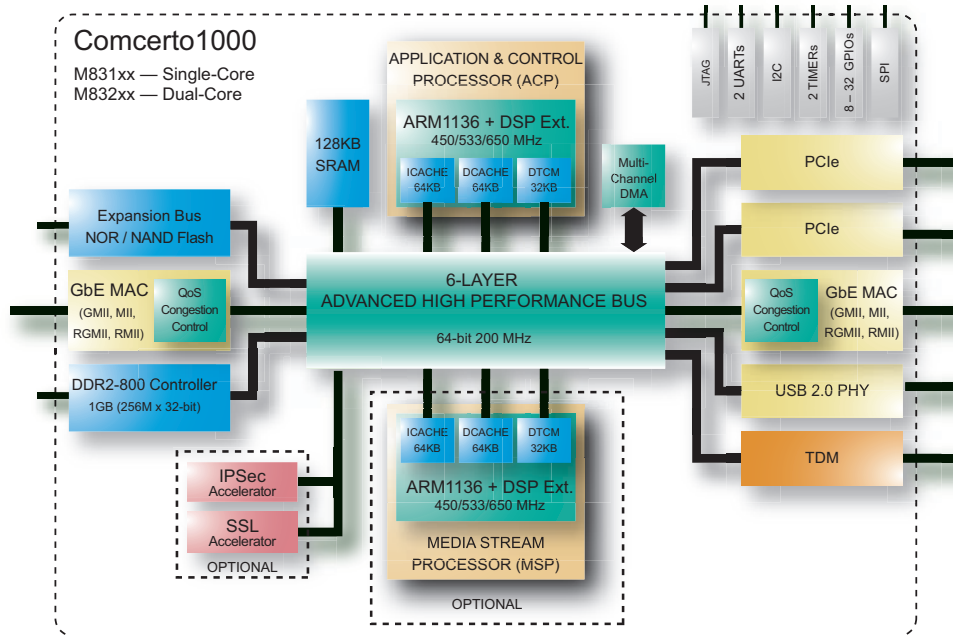


Figure 1 - Concerto M83xxx Block Diagram

Speed	# Cores	VoIP	Security Engine	Part #	Package	TDM	USB 2.0 PHY	PCIe	SRAM	RGMI/ RMII	SDRAM	L1 Cache
650 MHz	2	Y	Y	M83263G-11	448HSBGA	Y	Y	2	128KB	2	16/32 bit DDR2-800/667/533	2x(64K D\$/64K I\$)
	2	Y	N*	M83261G-11	448HSBGA	Y	Y	2	128KB	2	16/32 bit DDR2-800/667/533	2x(64K D\$/64K I\$)
	2	N	Y	M83262G-11	448HSBGA		Y	2	128KB	2	16/32 bit DDR2-800/667/533	2x(64K D\$/64K I\$)
	1	N	N*	M83160G-11	448HSBGA		Y	2	128KB	2	16/32 bit DDR2-800/667/533	64K D\$/64K I\$
533 MHz	2	Y	N*	M83251G-11	448HSBGA	Y	Y	2	128KB	2	16/32 bit DDR2-667/533/400	2x(64K D\$/64K I\$)
	2	N	Y	M83252G-11	448HSBGA		Y	2	128KB	2	16/32 bit DDR2-667/533/400	2x(64K D\$/64K I\$)
	1	N	N*	M83150G-11	448HSBGA		Y	2	128KB	2	16/32 bit DDR2-667/533/400	64K D\$/64K I\$
450 MHz	2	Y	N*	M83241G-11	448HSBGA	Y	Y	2	128KB	2	16/32 bit DDR2-667/533/400	2x(64K D\$/64K I\$)
	2	N	Y	M83242G-11	448HSBGA		Y	2	128KB	2	16/32 bit DDR2-667/533/400	2x(64K D\$/64K I\$)
	2	N	N*	M83240G-11	448HSBGA		Y	2	128KB	2	16/32 bit DDR2-667/533/400	2x(64K D\$/64K I\$)
	1	N	N*	M83140G-11	448HSBGA		Y	2	128KB	2	16/32 bit DDR2-667/533/400	64K D\$/64K I\$

* Security VPN feature available with limited performance of up to 300Mbps.

For more product information, please visit www.mindspeed.com

www.mindspeed.com/salesoffices

General Information: (949) 579-3000

Headquarters – Newport Beach

4000 MacArthur Blvd., East Tower

Newport Beach, CA 92660-3007

M83xxx-BRF-001-E.pdf

© 2009 Mindspeed Technologies, Inc. All rights reserved. Mindspeed and the Mindspeed logo are trademarks of Mindspeed Technologies. All other trademarks are the property of their respective owners. Although Mindspeed Technologies strives for accuracy in all its publications, this material may contain errors or omissions and is subject to change without notice. This material is provided as is and without any express or implied warranties, including merchantability, fitness for a particular purpose and non-infringement. Mindspeed Technologies shall not be liable for any special, indirect, incidental or consequential damages as a result of its use.

MINDSPEED
BUILD IT FIRST®