**COGENT***"ALWAYS COMPLETE"*

Cogent Computer Systems, Inc.

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CSB1690SM1 - SMARC System On a Module

The CSB1690SM1, designed, developed and manufactured by Cogent Computer Systems, Inc., is a high performance, Multimedia oriented, AMD G-Series SoC based COM Express[®] Module. The CSB1690SM1 provides an ultra-compact, powerful and flexible 64-Bit x86 engine for embedded multimedia applications of all kinds.

Specifications and Features

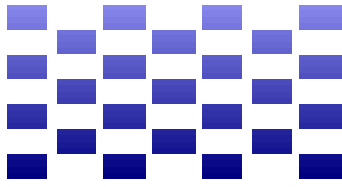
- **CPU** - AMD GX-210JA, 1.0Ghz Dual, 64-Bit x86 compatible "Jaguar" Cores
- **CACHE** - 32KByte Instruction and Data Caches; 2MByte L2 Cache
- **FPU** - IEEE 754 Compliant Single/Double Precision Floating Point Unit
- **SDRAM** - 4GByte 64-Bit Wide DDR3L-1066 Memory
- **FLASH** - On-Board 4MByte SPI NOR
- **PCI EXPRESS** - Three x1 GEN II (5G/s) Ports
- **ETHERNET** - Single 10/100/1000 Copper Port
- **DISPLAY PORTS** - Dual Simultaneous Display via HDMI and eDP/LVDS
- **VIDEO DECODE** - UVD Engine 4.2 supporting: Direct X11.1; Dual HD Video Decode (MPEG-2, H.264, WMV, VC-1, Blu-ray 3D); Dual HD Stream (1080p + 1080i)
- **VIDEO DECODE** - VCE 2.0 Supporting H.264 Video Encode
- **2D/3D GPU** - 225Mhz Radeon HD8180E GPU supporting OpenGL 4.2 and OpenCL 1.2
- **SATA** - SATA Gen 2 Controller (1.5Gbit and 3Gbit/sec)
- **USB** - Three 480Mbit USB 2.0 Host Ports
- **SD CARD** - 4-Bit Interface, supporting SDXC (up to 2TByte), UHS-I (104Mb/sec) and SDIO
- **SERIAL I/O** - I2C x 2, SPI x 1, 4-wire x2 and 2-wire x2 TTL UARTS
- **OPERATING VOLTAGE** - +5V +/-5% Input; On-Board I/O, SDRAM and CPU Power Supplies
- **OPERATING TEMPERATURE** - 0C to +70C Standard, -40C to +85C optional (est. Q1'2014)
- **POWER CONSUMPTION** - 4W typ., 8W Max and <100mw Power Down (S5 State)
- **SMARC COMPATIBLE** - Industry Standard SMARC, 82mm x 50mm
- **BIOS** - Open Source Coreboot with SeaBIOS supporting, Linux and Windows

Introduction and Overview

Ultra small size, high performance, low power Dual 64-Bit "Jaguar" x86 cores, multiple high-speed serial interfaces, generous memory size, 10/100/1000 Ethernet and single 5V input all combine to make the CSB1690SM1 an excellent choice for any size restricted, low power embedded device. In addition, the powerful on-chip Radeon[™] HD8180E GPU with Hardware Video Decode allows the CSB1690SM1 to excel at Multi-Head Digital Display applications.

The CSB1690SM1 complies with SMARC Standard Revision 1.0. This allows the CSB1690SM1 to be used in all industrial, military and medical applications that require adherence to the SMARC industry standard. In addition, the use of open source Coreboot and SeaBIOS gives the CSB1690SM1 the ability to boot most standard x86 operating systems, including Microsoft Windows 7/8, Windows Embedded, VxWorks and Linux.

Constructed using state of the art PCB layout and packaging technology such as: 1Ghz DDR3 balanced routing; 5GHZ+ high-speed differential signaling; 18 Amp peak switching regulators; and 8-layer, low EMI, impedance controlled stackup, the CSB1690SM1 gives you access to this technology without the learning curve or the risk. You can integrate the CSB1690SM1 using a simple, low cost 4-layer PCB, in just weeks, not months! We can even do it for you through our custom design services group.



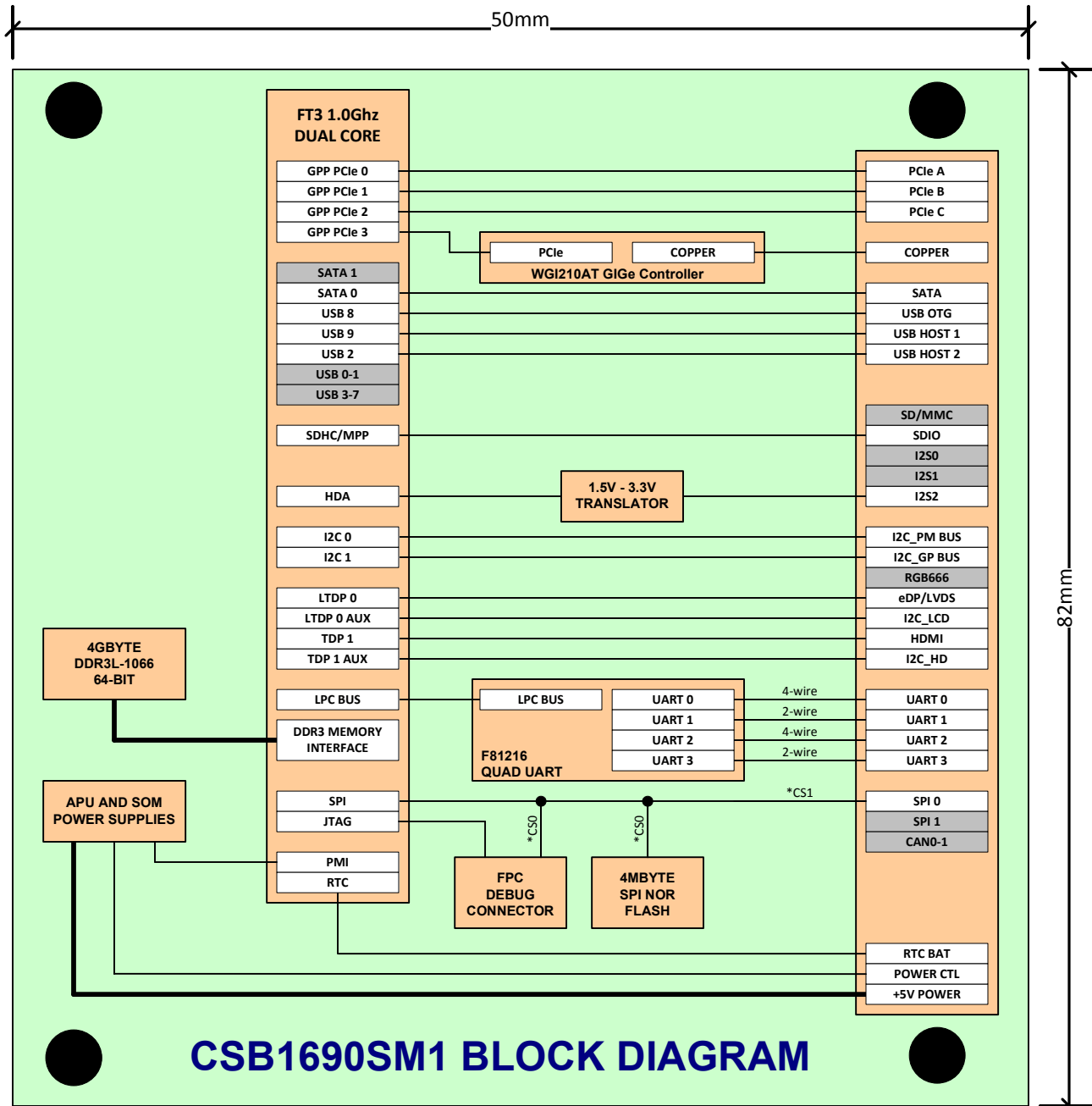
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CSB1690SM1 BLOCK DIAGRAM

Development Boards and I/O Expansion

The CSB1690SM1 is fully compatible with the CSB1602SM Development Platform. This Thin Mini-ITX size platform provides an SMARC Compatible MXM3 Socket supporting 82mm x 50mm and 82mm x 80mm sizes, plus: USB to Serial COM Port; Gigabit Ethernet Jack; Dual USB2.0 Connector; HDMI and LVDS Connectors; HDA and I2S Audio Codec with Headphone Out and Line in; and one SATA Connector with Power. This platform also provides one PCIe Slot (x1) and two Mini-PCIe Sockets (x1). The KIT1690SM1 consists of the CSB1690SM1, CSB1602SM and a 60W Desktop style Power Supply. Contact Cogent for pricing and availability.