GE
Intelligent Platforms

ACR301

Intel Atom Based Rugged 3U CompactPCI Single Board Computer

Features

- 3U CompactPCI Rugged Single Board Computer
- Ultra Low Power Intel® Atom Processor up to 1.6 GHz
- Integrated DDR2 memory controller as well as 3D graphics engine
- 512 KByte L2 Cache
- 1 GByte soldered DDR2 SDRAM
- Up to 8 GByte NAND Flash (soldered)
- Rear IO:
  - 2x Gigabit Ethernet ports
  - 1x PMC I/O
  - 1x VGA
  - 1x SATA port
  - 2x COM ports
  - 2x USB ports
  - 8x GPIO
- Optional BIOS backup Flash
- Optional conduction cooling
- Optional extended operating temperature range
- Operating system support for VxWorks®, Linux®, and Windows®

The ACR301 Rugged Single Board Computer (SBC) from GE Intelligent Platforms features the ultra low power Intel Atom processor platform. Atom offers integrated graphics and memory controller plus processing up to 1.6 GHz.

Features of the ACR301 Include:

- Low power performance
- 400 MHz Graphics clock
- Four PCIe x1

The low power processor allows the ACR301 to provide substantial computing power in a compact form factor that fits into the sub10W application space.

The ACR301 is designed to meet the requirements of a wide range of applications from industrial through to fully rugged Defense and Aerospace programs. It offers extended temperature capability and a range of air and conduction cooled build levels.

Available in five air- and conduction-cooled build levels, the ACR301 is fully supported by comprehensive Deployed Test Software (BIT and BCS) and OS support for VxWorks, Windows and Linux.

ACR301 Intel Atom Based Rugged 3U CompactPCI Single Board Computer

Specifications

Processor
- Intel Atom E6xx Series Processor
  - 0.6 GHz (E620T)
  - 1.0 GHz (E640T)
  - 1.3 GHz (E660T)
  - 1.6 GHz (E680T)
- 512 KBytes L2 cache
- Integrated DDR2 memory controller
- Integrated 3D graphics engine

Chipset
- Intel Platform Controller Hub EG20T

SDRAM
- 1 GByte DDR2 SDRAM soldered

Flash Memory
- Soldered NAND Flash 8 GBytes

BIOS
- The ACR301 BIOS and Video BIOS are provided in reprogrammable flash memory

PMC
- Up to 64 pins of PMC I/O
- 32-bit PCI bus
- See Power Allowances section for voltage information

Gigabit Ethernet
- Two Gigabit Ethernet interfaces (One via Intel 82574 Gigabit Ethernet controller and one via I/O Chipset)
- Both ports are routed to J2

USB
- Two USB 2.0 ports routed to J2
- Keyboard and mouse (PS2) emulation via USB

Fabric Interface
- 32-bit/66 MHz cPCI data transfers

Serial Ports
- Two 16550 compatible full duplex async serial ports
- COM1 and COM2 routing to J2
- Ports feature independent 16 byte FIFOs supporting baud rates up to 115 Kbaud

SATA
- One Gen 2 (3 GB/s) SATA port to J2

GPIO
- Eight GPIO pins – software configurable – to J2

Video
- Integrated Intel 3D Graphics Engine
- SVGA: 640x480 to 1600x1200 (UXGA) pixel field, 32 bits/pixel

Power Requirements
- +5 V, +3.3V
- +3.3V (required on cPCI_J2 VBATT for RTC battery backup)

Watchdog/Timers/RTC/Temp Sensors
- Two 16-bit timers and two 32-bit timers – software programmable and capable of generating PCI bus interrupts
- RTC 146818 compatible with Li
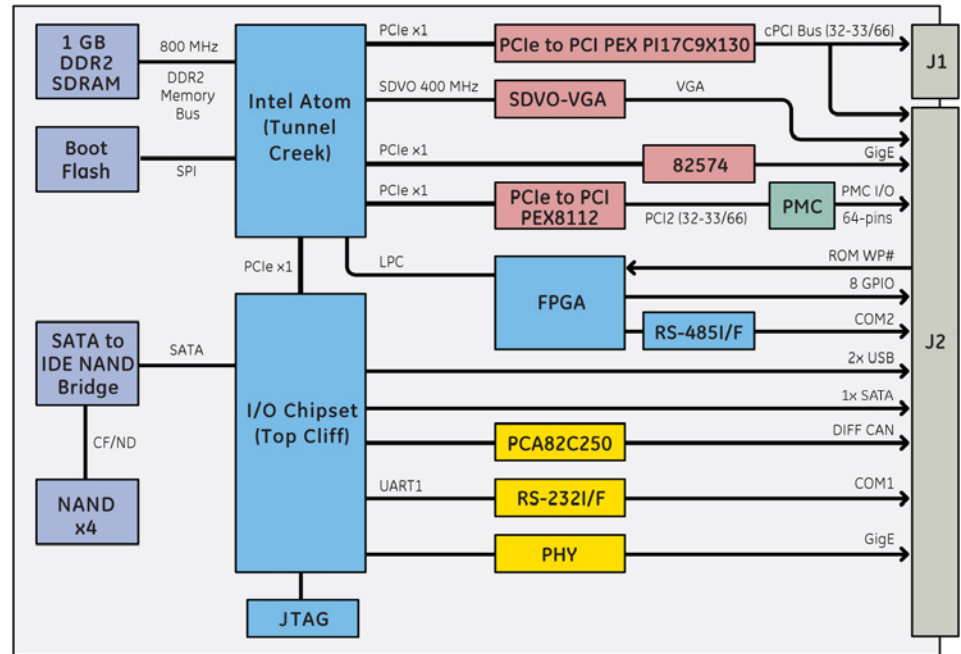- CPU die and Chipset die, software readable

Transition Module
- ACR301-RTM

Software
- VxWorks
- Linux
- Windows
- Deployed Test Software (BIT and BCS)

Block Diagram

Environmental

	Level 1	Level 2	Level 3	Level 4	Level 5
Cooling Method	Convection	Convection	Convection	Conduction	Conduction
Conformal Coating	Optional	Standard	Standard	Standard	Standard
High/Low Temp	0 to +55° C	-20 to +65° C	-40 to +75° C	-40 to +75° C	-40 to +85° C
Operational	(300 ft/m)	(300 ft/m)	(600 ft/m)	At cold wall	At cold wall
Random Vibration	$0.002g^2$/Hz*	$0.002g^2$/Hz*	$0.04g^2$/Hz**	$0.1g^2$/Hz**	$0.1g^2$/Hz**
Shock	20g***	20g***	20g***	40g***	40g***

 * With a flat response to 1000 Hz, 6 dB/Oct roll-off from 1000 to 2000 Hz

 ** From 10 to 1000 Hz

 *** Peak sawtooth 11 ms duration

About GE Intelligent Platforms

GE Intelligent Platforms, a General Electric Company (NYSE: GE), is an experienced high-performance technology company and a global provider of hardware, software, services, and expertise in automation and embedded computing. We offer a unique foundation of agile, advanced and ultra-reliable technology that provides customers a sustainable advantage in the industries they serve, including energy, water, consumer packaged goods, government and defense, and telecommunications. GE Intelligent Platforms is a worldwide company headquartered in Charlottesville, VA and is part of GE Home and Business Solutions. For more information, visit www.ge-ip.com.

GE Intelligent Platforms Contact Information

Americas: **1 800 433 2682** or **1 434 978 5100**

Global regional phone numbers are listed by location on our web site at **www.ge-ip.com/contact**

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