

Module Platform Solution Guide





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COMPUTER OF MODULE

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Intel® Atom® E3800 series SoC based on Type 10 Mini COM-Express® module with DDR3L SDRAM, NANDrive and USB 3.0



23-24 PCOM-B651

Intel® Coffee Lake-H Core™ Processor based on Type VI COM Express module with dualDDR4 SO-DIMM, DDI, LVDS, Gigabit Ethernet, SATA III, and USB 3.1 Gen2



15-16 PCOM-BA01

Intel® Atom® E3900 series SoC based on Type 10 Mini COM-Express® module with LPDDR4 SDRAM, NANDrive and USB 3.0



25-26 PCOM-B653

Intel® Whiskey Lake-U Core™ Processor based on Type VI COM Express module with dualDDR4 SO-DIMM, DDI, eDP, Gigabit Ethernet, SATA 3.0, and USB 3.1



17-18 PCOM-B632VG

Intel® Atom® E3800 series SoC based on Type 6 COM-Express® module with DDR3L 1 x SD-DIMM Socket, VGA, HDMI, DP, eDP, STAT II and USB 3.0



27-28 PCOM-B654

Intel® Coffee Lake-S Core™ Processor based on Type VI COM Express module with dualDDR4 SO-DIMM, DDI, LVDS, Gigabit Ethernet, SATA III, and USB 3.1 Gen2



19-20 PCOM-B634VG

Intel® Pentium® / Xeon® D-1500 series Processor based on Type 6 COM Express® 2.0 module with DDR4 ECC/Non-ECC 3x SO-DIMM sockets, VGA, DDI, PCIe 16, USB 3.0, and SATA 6 Gb/s



29-30 PCOM-B655

Intel® Comet Lake-S Core™ Processor based on Type VI COM Express module with dualDDR4 SO-DIMM, DDI, LVDS, VGA, Gigabit Ethernet, SATA III, and USB 3.1 Gen2



21-22 PCOM-B641VG

Intel® Atom® E3900 series SoC based on Type 6 COM-Express® module with DDR3L 2 x SD-DIMM Socket, VGA, HDMI, DP, eDP/LVDS, SATAIII, TPM



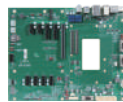
31-32 PCOM-B656

Intel® Tiger Lake-UP3 Core™ Processor based on Type VI COM Express module with dual DDR4 SO-DIMM, DDI, eDP, Gigabit Ethernet, SATA 3.0, and USB 3.1



33-34 PCOM-B700G

Intel® Pentium® and Xeon® processor D-1500 Series with DDR4 ECC up to 96GB 2400 MT/s on Three SO-DIMM Sockets with 31 PCIe Lanes, 2x KR to support 10G, NC-SI Interface, SATA III, USB 2.0 and 3.0



43-44 PCOM-C60B

PCOM-C60B is ATX Form Factor Evaluation Carrier Board for COM Express® Revision 3.0 Type VI Module. PCOM-C60B follows standard COM Express 2.0 carrier board specification



35-36 PCOM-B701GT

Intel® Atom® processor C3000 Series with DDR4 ECC up to 96GB 2400 MT/s on Three SO-DIMM Sockets with up to 20 HSIO Lanes, 4x KR to support 10G, NC-SI Interface, SATA III, TPM 2.0, USB 2.0 and 3.0



45-46 PCOM-C701

ATX Form Factor Evaluation Carrier Board for COM Express Revision 3.0 Type VII Module with 4x 10GbE Support with Inphi CS4227 PHY



37-38 PCOM-B702G

Intel® Atom® processor C3000 Series with DDR4 ECC up to 64GB 2133 MT/s on Two SO-DIMM Sockets with up to 12 HSIO Lanes, 4x KR to support 10G, NC-SI Interface, SATA III, USB 2.0 and 3.0



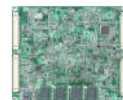
47-48 PCOM-C702

ATX Form Factor Evaluation Carrier Board for COM Express Revision 3.0 Type VII Module with 4x 10GbE Support with Inphi CS4223 PHY



39-40 PCOM-C605

PCOM-C605 is Mini-ITX Form Factor Evaluation Carrier Board COM Express® Revision 2.0 Type VI Module



49-50 PEM-E203VLA

Intel® ATOM® E3800 series processor based on form factor module ETX® 3.0 specification with DDR3 optional ECC/Non-ECC Memory down, VGA, LVDS, Gigabit Ethernet, IDE, PCI, ISA, Parallel Port, SATA and USB



41-42 PCOM-C615

PCOM-C615 is PICMG 1.3 Full Size Form Factor Evaluation Carrier Board for COM Express® Revision 2.0 Type VI Module. PCOM-C615 follows standard PICMG 1.3 golden fingerpin definition and let customer save system total cost for easily upgrading modules

- | | | | |
|----|---|----|---|
| 51 | Signal integrity is tested and assured | 57 | Silence is a signature of our modules |
| 52 | Power & energy use confirmed stable and efficient | 58 | The noise emission meet ISO Standards |
| 53 | Our modules are resistant to rapidly changing electrical currents | 59 | Breaking the module to be stronger |
| 54 | Our modules are compliant with EMS standards | 60 | Super-aging our modules to unveil weaknesses |
| 55 | A farm of chambers for module testing | 61 | Undergo shipping simulation to ensure intact transportation |
| 56 | Bringing thermal validation expertise to module development | 62 | Portwell superior service |



About Portwell

Portwell, Inc. was founded in 1993 and entered the Industrial PC market in 1995 by developing single-board computers. Today, our continuous development of leading-edge products has not only resulted in strong growth in market shares and revenue but established Portwell as a major worldwide supplier of specialty computing application platforms and services. Portwell, Inc. is an Associate member of the Intel® Partner Alliance. From modular components to market-ready systems,

Intel® and the 250+ global member companies of the Intel® Partner Alliance, provide scalable, interoperable solutions that accelerate deployment of intelligent devices and end-to-end analytics. Portwell, Inc. is also a member of the selected group of Intel® Applied Computing Platform Providers (IACPP), as well as Advanced Telecom Computing Architecture (ATCA) and an executive member of PCI Industrial Computer Manufacturing group (PICMG).



Portwell Engine (PE) Building

Portwell, Inc. has worldwide operations in the U.S.A., Taiwan, Japan, Korea, China, Netherlands, United Kingdom, Germany and India. Whether you are working on a computer board or turnkey system, Portwell is the perfect partner to help you deliver your products to the market on time as well as maintain longevity of product. With 28 years experience in the design and manufacturing of specialty computer boards and systems, Portwell not only provides a one-stop resource for off-the-shelf products, but also supplies custom-built solutions and a global logistics services to suit your needs.

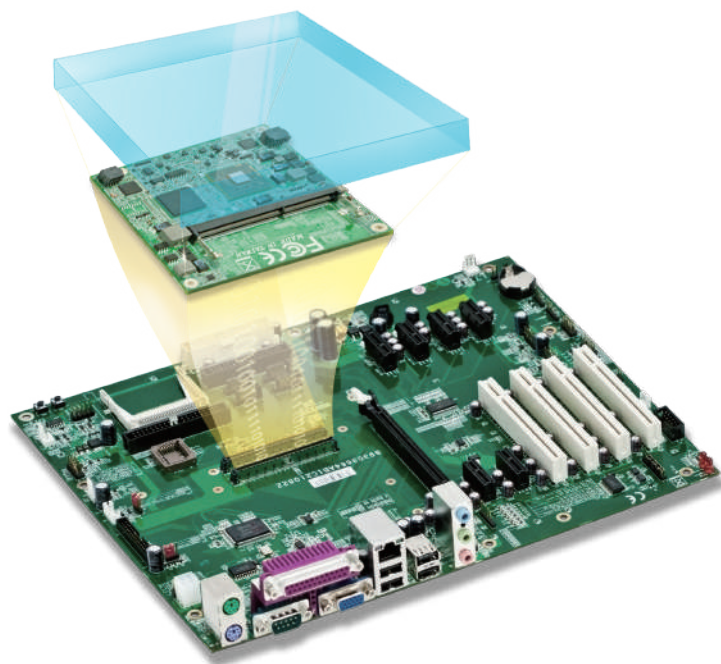
Portwell OEM and ODM solutions satisfy your needs in retail automation, medical equipment, industrial automation, infotainment, communication, and network security markets. Encouraged by our flexible business

support, manufacturing excellence, and compliance with high quality and environmental standards such as ISO 14001/13485/9001/45001/28000, OHSAS and RoHS, customers have taken advantage of our dedicated and sophisticated engineering resource to satisfy their requirements for the design, manufacturing and logistics of application-specific computer boards, customized computer chassis, and specific computer system configurations. Whether you are working on a Medical Single Board Computer or Internet Security Appliance, Portwell is, again, the perfect partner to help you deliver your products to the market on time and stay one step ahead of the competition.



Focus on your core competencies

Design for Extreme Reliability Time To Market



COM 
Express

 **Q S E V E N**

ETX[®] 3.0
Long Term Support

 **SMARC**

Baseboard — **SAFE, RELIABLE, SECURE**

Portwell designs competence for your market! As a worldwide technology leader in the embedded industry and also a leading outsourcing partner for OEMs in different markets, Portwell's boards can give you the most dependable, powerful and economic basis to meet your carrier board design. You may take a big step forward into a successful future with our proactive project management and ISO 9001:2000 certificate. Portwell provides one-stop shopping so that you can get to the markets faster with complete assemblies including housings and keep your products available for many years with life cycle management.

Module — **Solutions That Grow With You**

The CPU module delivers the core functionality while all of the application-specific features are designed into the baseboard creating a semi-custom embedded PC solution.

How to enable faster time-to-market and cost-effective customization alternatives? COM (Computer-On-Module) is the answer.

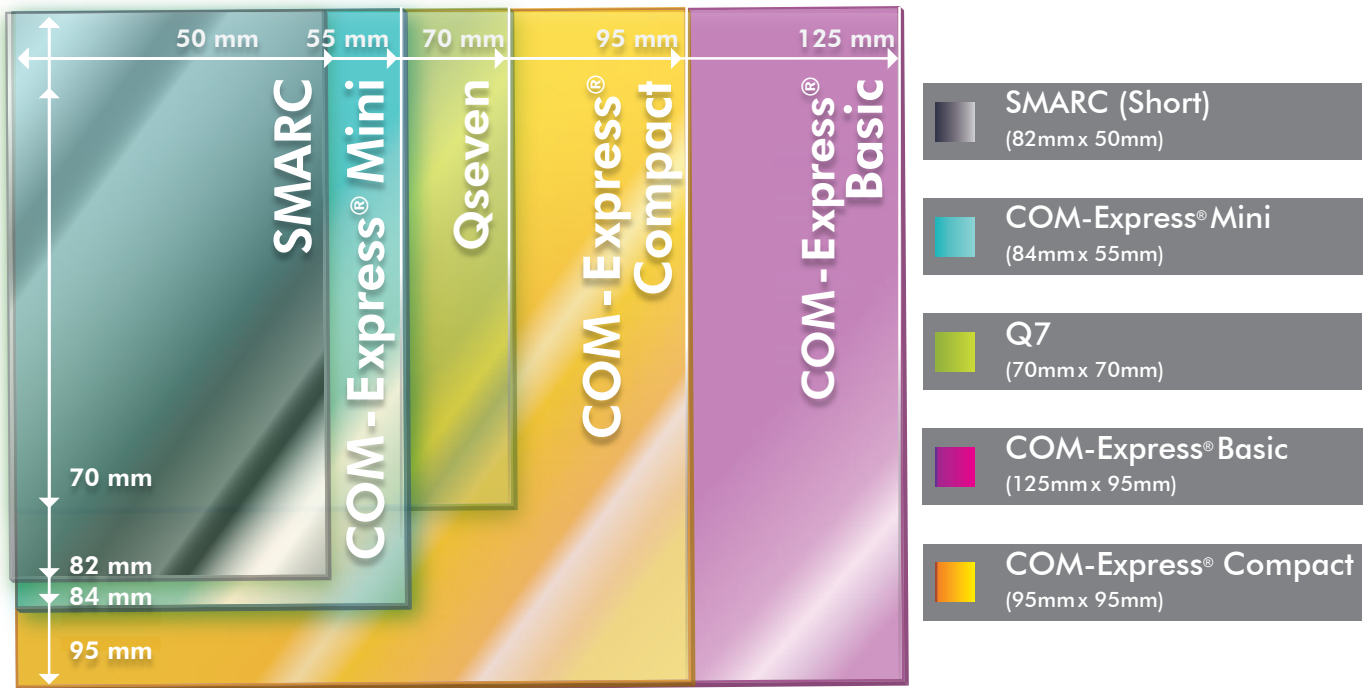
COMs are not only highly integrated component SBCs that support system expansion and application-specific customizations but also improving form, fit and function, minimizing current and future design risks. As well as providing lower product lifecycle costs through module scalability and interchangeability.

Module



Computer-On-Module

Various off-the-shelf core module with additional functionality that is required for specific applications



COM-Express® —

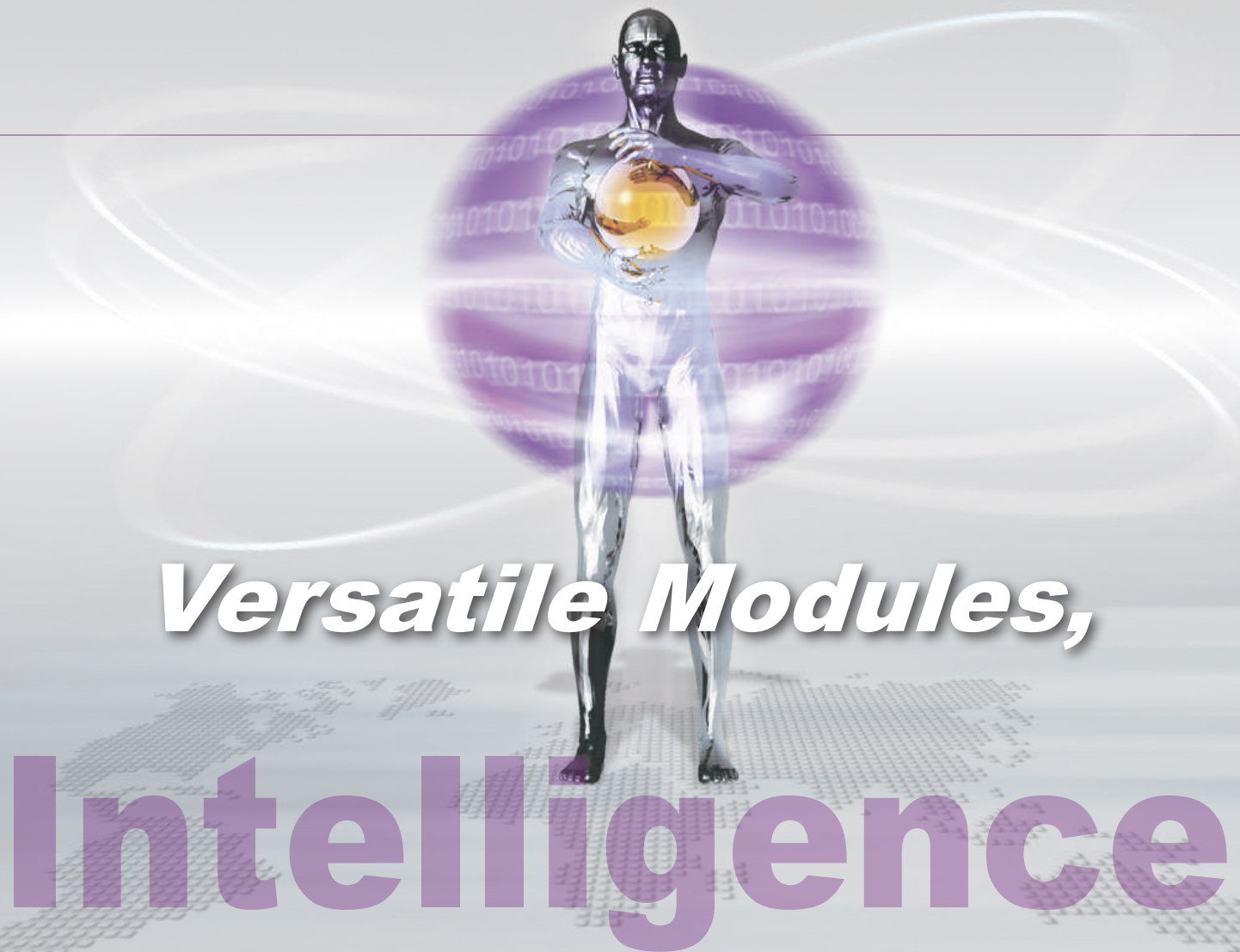
COM Express® defines standardized form factors and pin-outs for Computer-on-Modules. The standard includes the mini form factor (84 x 55mm), the compact form factor (95 x 95mm) and the basic form factor (125 x 95mm). To serve industry requirements, the Digital Display Interfaces (DisplayPort, HDMI) and super-fast USB 3.0 were recently added to the pin-out definitions for COM Express® modules.

Qseven® —

This standard platform has been developed with performance and flexibility in mind, allowing various processor configurations to maximize passive cooling technology. With a maximum power consumption of around 12W specified in the standard, the new form factor is expected to appeal to manufacturers of applications that require fanless operation.

SMARC—

The SMARC ("Smart Mobility ARChitecture") is a versatile small form factor computer Module definition targeting applications that require low power, low costs, and high performance. Module sizes are defined: 82mm x 50mm and 82mm x 80mm with 314 edge fingers that mate with a low profile 314 pin 0.5mm pitch right angle connector.



Versatile Modules,

Intelligence

What Portwell distributed Intelligence?

Portwell provides remote technology to oversee the world. Portwell distributed intelligence is essential for increasing the capabilities – Remote diagnostic and repair , helping to increase equipment availability. Software reliability by isolating application code and helping to prevent dangerous interactions and security by preventing any node from executing malicious software.

Start-Up Intelligent Technology by Portwell Computer-On-Module Solution

With energy demand growing, the smart grid provides opportunities for utility operators to transform their electrical networks. By using Portwell technologies, which provide higher levels of scalability, performance, energy-efficiency and serviceability, next-generation equipment can offer utilities improved energy management and lower operating costs.



Flexible and Scalable Modular Platforms

Each element on the grid will demand a particular set of features; however, most elements can often be designed using a single-processor architecture with exceptional scalability, upgradeability and flexibility.

- Large processor selection: With a wide choice of processors, it's straightforward to scale designs to meet the right price-performance.
- Single code base: Equipment manufacturers can easily upgrade designs when the processor family is completely code compatible.
- I/O flexibility: Open modular systems, supporting multiple standard busses, allow designers to satisfy a wide range of I/O requirements.
- Reliable supplier: Chip manufacturers, with a reputation for delivering long life cycle products, help preserve equipment manufacturers' development investments.

Easy to increase Embedded Computing Requirements

Regulatory and market realities are requiring a new way of thinking for utilities, and the use of standards-based building blocks to build out the grid will drive greater plant efficiency, higher renewable energy production and more advanced conservation programs.

PCOM Interface

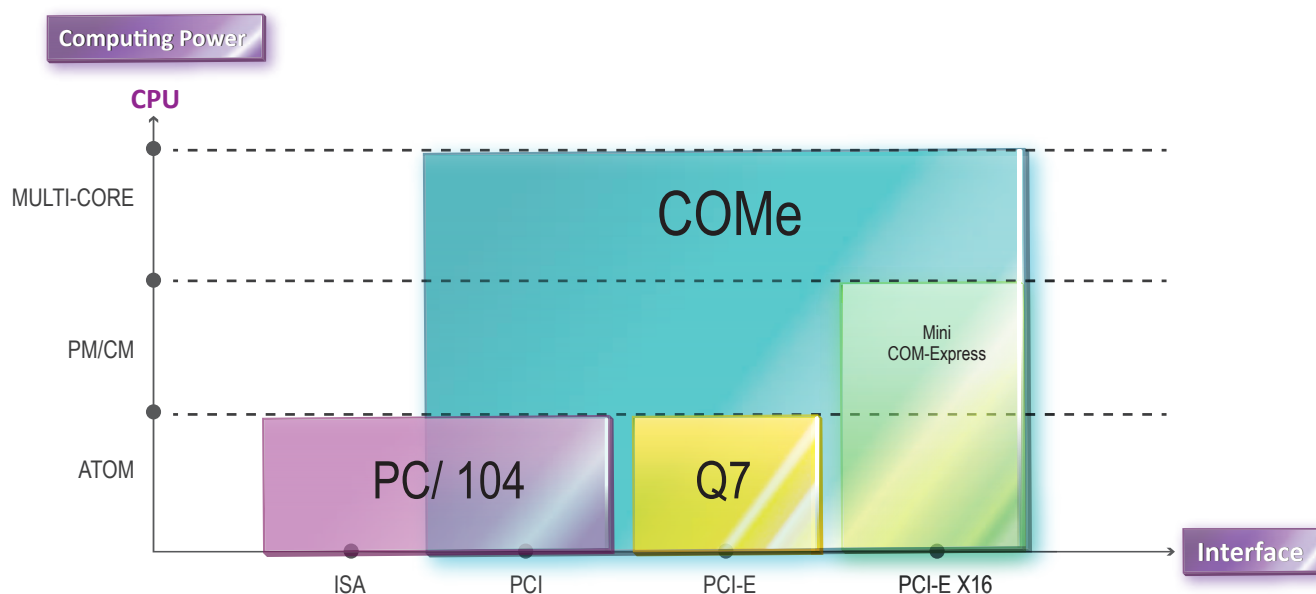
COM Express® specification adopted in July, 2005, redefined electrical, mechanical and thermal requirements for a highly integrated Computer On Module (COM) supporting rich combinations of high-speed I/O interfaces while keeping key legacy interface technologies enabling a smooth migration of interface technologies at once. The primary new technology behind COM Express® R3.0 is the support of a few new interfaces such as USB 3.0 and Digital Display Interfaces (DDI). The new technology also provides additional PCI Express lanes, high definition audio, and SPI for BIOS access. The new PCOM Interface has additional pin definitions such as Pulse Width Modulation (PWM) for fan control and TPM support for security and management. The evolution of the PCOM Module has adopted a Mini module of 84 x 55mm which is also more energy efficient under 12W.

Naming Guide - Line of Portwell Com Express

PCOM Series	PCOM	Portwell COM Express
Carrier or Module	X ₁	B Module Board, Portwell Design
		C Carrier board, Portwell Desing
COM Express Pin Type	X ₂	1 Type 1 Pin-Out
		2 Type 2 Pin-Out
		3 Type 3 Pin-Out
		4 Type 4 Pin-Out
		5 Type 5 Pin-Out
		6 Type 6 Pin-Out
		7 Type 7 Pin-Out
		A Type 10 Pin-Out

PCOM Series	PCOM	Portwell COM Express
Serial Number	X ₃ ~X ₄	0-9 TBD
VGA support	Y ₅	V VGA support
		L LVDS support
Ethernet	Y ₆	G Gigabit Ethernet
		L Fast Ethernet
TPM support	Y ₇	T TPM support
Customized abbreviation	YY	

EX: PCOM-X₁X₂X₃X₄Y₅Y₆Y₇-YY





COM Express[®] Standard

Types	Connector Rows	PCI Express	PEG	SATA Ports	LAN Ports	USB 2.0 Ports	USB 3.0 Ports	Display Interface
Type 6	AB & CD	Up to 24	1	4	1x GbE	8	4	VGA LVDS/eDP PEG 3x DDI
Type 7	AB & CD	Up to 32	NA	2	1x GbE 4x 10GbE	4	4	NA
Type 10	AB	Up to 4	NA	2	1x GbE	8	2	LVDS/eDP 1x DDI

System I/O

PCI-E Lanes
Serial
SATA/SAS
USB 2.0
LAN
LVDS/VGA
TV-Out/DDI
Express Card
HDA
LPC

System I/O

PCI-E Lanes
PCI-E Graphics (PEG)
SDVO
PCI Bus
PATA Port
LAN Port
DDI Interface
USB 3.0

System Management

SDIO
GPIO
SMBUS
I2C
Watchdog Timer
Speaker Out
Reset

Power Management

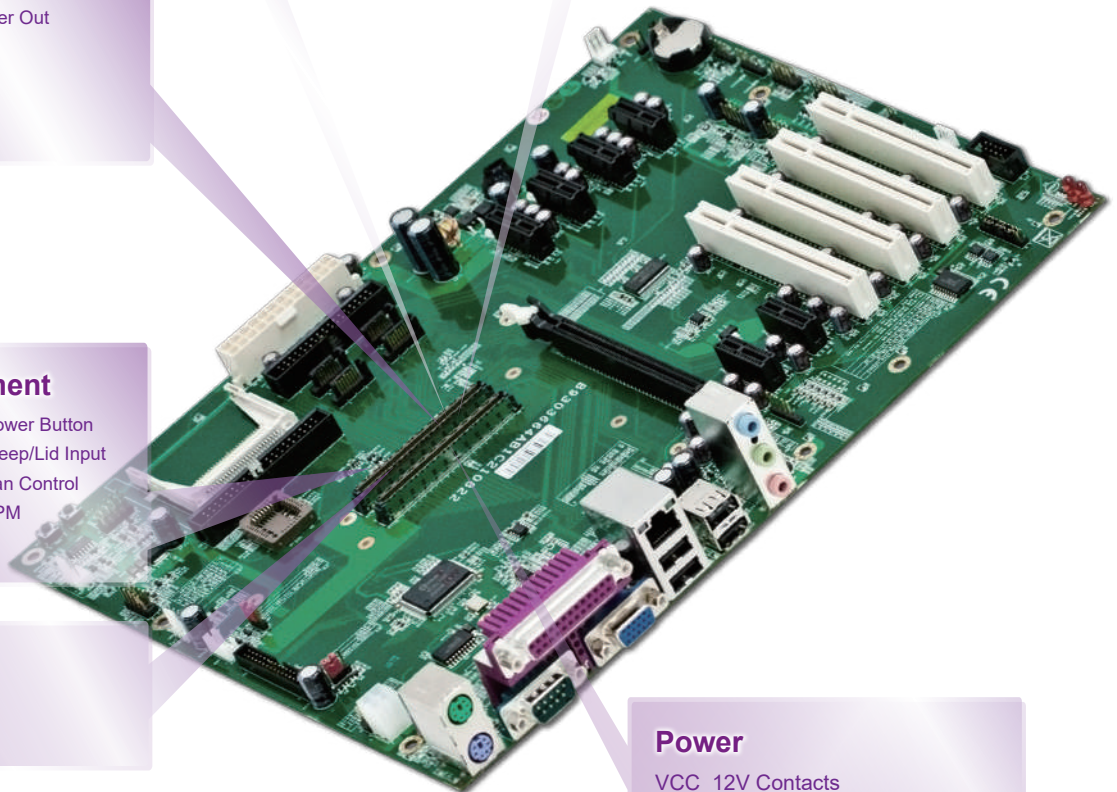
Thermal Protection
Low Battery Alarm
Suspend/Wake Signals
Optimal Power
VCC_5V_SBY Contacts
Power Button
Sleep/Lid Input
Fan Control
TPM

Power

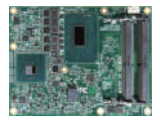
VCC_12V Contacts

Power

VCC_12V Contacts



PCOM Solution Guide



	PCOM-BA00	PCOM-BA01	PCOM-B632VG	PCOM-B634VG	PCOM-B641VG	PCOM-B651VGL
Form Factor (mm)	COM Express® Mini (84 x 55mm)	COM Express® Mini (84 x 55mm)	COM Express® Compact (95 x 95mm)	COM Express® Basic (125 x 95mm)	COM Express® Compact (95 x 95mm)	COM Express® Basic (125 x 95mm)
COM Type	Type 10	Type 10	Type 6	Type 6	Type 6	Type 6
CPU/ Clock/ Cache	<ul style="list-style-type: none"> * Intel® E3845/ E3827/E3825/ E3815 /E3805 * 1.33 GHz to 1.91 GHz * 1MB to 2MB cache 	<ul style="list-style-type: none"> * Intel® E3950/ E3940/E3930/ N4200/N3350 * 1.80 GHz to 2.50 GHz (Turbo) * 2MB cache 	<ul style="list-style-type: none"> * Intel® E3845/ E3827/E3826/ E3825/E3815 * 1.33GHz up to 1.91GHz * 1MB to 2MB cache 	<ul style="list-style-type: none"> * Intel® Xeon® D Processor * D1577/D1548/ D1539/D1527/ D1519/D1517/ D1508 * Up to 16 CPU Cores * 12M L2 Cache 	<ul style="list-style-type: none"> * Intel® E3950/ E3940/E3930/ N4200/N3350 * 1.80 GHz to 2.50 GHz (Turbo) * 2MB cache 	<ul style="list-style-type: none"> * Intel® 8th Generation Core™ E-2176M i7-8850H i5-8400H i3-8100H * Up to 6 CPU cores * 6MB to 12MB cache
Chipset	SoC	SoC	SoC	SoC	SoC	QM370/CM246
Memory	<ul style="list-style-type: none"> * DDR3L 1067/1333 MT/s * Non-ECC/ECC * Single Channel 	<ul style="list-style-type: none"> * LPDDR4 2133 MT/s * Non-ECC * Dual Channel 	<ul style="list-style-type: none"> * DDR3L 1067/1333 MT/s * Non-ECC * Single Channel 	<ul style="list-style-type: none"> * DDR4 2400 MT/s * 3 SO-DIMM Sockets * Non-ECC/ ECC * Dual Channel 	<ul style="list-style-type: none"> * DDR3L 1866 MT/s Non-ECC * Dual Channel 	<ul style="list-style-type: none"> * DDR4 2666MT/s * Non-ECC/ECC * Dual Channel
USB	1x USB 3.0 4x USB 2.0	2x USB 3.0 8 x USB 2.0, (Option 1 x OTG)	1x USB 3.0 4x USB 2.0	4x USB 3.0 7x USB 2.0	2x USB 3.0 8 x USB 2.0, (Option 1 x OTG)	4x USB 3.1 Gen2 8x USB 2.0
PCI Express	3 x PCIe 2.0 x 1 (Option 4 x PCIe 2.0 x1)	4 x PCIe 2.0 x 1	3x PCIe 2.0 x1	1x PCIe 3.0 x16 8x PCIe 2.0 x1	4 x PCIe 2.0 x 1	1x PCIe 3.0 x16 8x PCIe 3.0 x1
Ethernet	Intel® I210IT	Intel® I210IT	Intel® I210IT	Intel® I210IT 2x KR(10GbE)	Intel® I210IT	Intel® I210IT
Sound	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio
Graphic Controller	Intel® HD Graphics	<ul style="list-style-type: none"> * Intel® HD Graphics 505 * Intel® HD Graphics 500 	Intel® HD Graphic	SM750	<ul style="list-style-type: none"> * Intel® HD Graphics 505 * Intel® HD Graphics 500 	<ul style="list-style-type: none"> * Intel® UHD Graphics P630 * Intel® UHD Graphics 630
Carrier Board	PCOM-CA00 (Type 10)	PCOM-CA00 (Type 10)	PCOM-C605 (Type 6)	PCOM-C609 (Type 6)	PCOM-C605 (Type 6)	PCOM-C60B (Type 6)

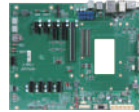


PCOM Solution Guide



	PCOM-B653VGL	PCOM-B654GL	PCOM-B655VGL	PCOM-B656VGL	PCOM-B700G	PCOM-B701GT
Form Factor (mm)	COM Express® Compact (95 x 95mm)	COM Express® Basic (125 x 95mm)	COM Express® Basic (125 x 95mm)	COM Express® Compact (95 x 95mm)	COM Express® Basic (125 x 95mm)	COM Express® Basic (125 x 95mm)
COM Type	Type 6	Type 6	Type 6	Type 6	Type 7	Type 7
CPU/ Clock/ Cache	<ul style="list-style-type: none"> * Intel® 8th Generation Core™ ULT i7-8665UE i5-8365UE i3-8145UE Celeron® 4305UE * Up to 4 CPU cores * 2MB to 8MB cache 	<ul style="list-style-type: none"> * Intel® 8th Generation Core™ 35W Desktop processor i7-8700T i5-8500T i3-8100T * Celeron® G4900T * Up to 6 CPU cores * 2MB to 12MB cache 	<ul style="list-style-type: none"> * Intel® 10th Generation Core™ 35W Desktop processor i9-10900TE i7-10700TE i5-10500TE i3-10100TE * Up to 10 CPU cores * 6MB to 20MB cache 	<ul style="list-style-type: none"> * Intel® 11th Generation Core™ i7-1185GRE/i7-1185G7E i5-1145GRE/i5-1145G7E i3-1115GRE/i3-1115G4E * Celeron® 6305E * Up to 4 CPU cores * 4MB to 12MB cache 	<ul style="list-style-type: none"> * Intel® Pentium® and Xeon® Processors D1508 D1517 D1539 D1548 D1559 D1577 * Up to 16 CPU cores * 3MB to 24MB cache 	<ul style="list-style-type: none"> * Intel® Atom® Processor C3308 C3338 C3508 C3538 C3708 C3758 C3808 * Up to 12 CPU cores * 4MB to 16MB cache
Chipset	SoC	Q370/C246	Q470E/W480E	SoC	SoC	SoC
Memory	<ul style="list-style-type: none"> * DDR4 2400MT/s * Non-ECC * Dual Channel 	<ul style="list-style-type: none"> * DDR4 2400MT/s * Non-ECC/ECC * Dual Channel 	<ul style="list-style-type: none"> * DDR4 2933MT/s * Non-ECC/ECC * Dual Channel 	<ul style="list-style-type: none"> * DDR4 3200 MT/s * Non-ECC * Dual Channel 	<ul style="list-style-type: none"> * DDR4 1866/2133/2400 MT/s * Non-ECC/ECC * Dual Channel 	<ul style="list-style-type: none"> * DDR4 1866/2133/2400 MT/s * Non-ECC/ECC * Single/Dual Channel
USB	4x USB 3.1 Gen2 8x USB 2.0	4x USB 3.1 Gen2 8x USB 2.0	4x USB 3.1 Gen2 8x USB 2.0	4x USB 3.1 Gen2 8x USB 2.0	4x USB 3.0 4x USB 2.0	4x USB 3.0 4x USB 2.0
PCI Express	1x PCIe 3.0 x4 (PEG) 1x PCIe 3.0 x4 1x PCIe 3.0 x1 1x PCIe 3.0 x1(optional)	1x PCIe 3.0 x16 8x PCIe 3.0 x1	1x PCIe 3.0 x16 8x PCIe 3.0 x1	1x PCIe Gen3 x4 2x PCIe Gen3 x2	1x PCIe Gen3 x16 (PEG) 1x PCIe Gen3 x4 (PE2) 8x PCIe Gen2 x1	Up to 1x PCIe Gen3 x8 3x PCIe Gen3 x2 3x PCIe Gen3 x1 3x PCIe Gen2 x1
Ethernet	Intel® I219LM	Intel® I219LM	Intel® I219LM	Intel® I210IT	Intel® I210AT 2x KR (10GbE)	Intel® I210IT 4x KR (10GbE)
Sound	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio	N/A	N/A
Graphic Controller	<ul style="list-style-type: none"> * Intel® UHD Graphics 620 * Intel® UHD Graphics 610 	<ul style="list-style-type: none"> * Intel® UHD Graphics 630 * Intel® UHD Graphics 610 	<ul style="list-style-type: none"> * Intel® UHD Graphics 630 	<ul style="list-style-type: none"> * Intel® Iris® Xe Graphics * Intel® UHD Graphics 	N/A	N/A
Carrier Board	PCOM-C60B (Type 6)	PCOM-C60B (Type 6)	PCOM-C60B (Type 6)	PCOM-C60B (Type 6)	PCOM-C701 (Type 7) PCOM-C702 (Type 7)	PCOM-C701 (Type 7) PCOM-C702 (Type 7)

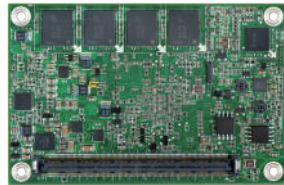
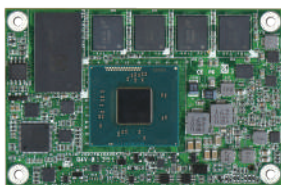
PCOM Solution Guide



	PCOM-B702G	PCOM-C605	PCOM-C615	PCOM-C60B	PCOM-C701	PCOM-C702
Form Factor (mm)	COM Express® Compact (95 x 95mm)	Mini-ITX (170 x 170mm)	PICMG 1.3 (338.5 x 126.39mm)	ATX (305 x 244mm)	ATX (305 x 244mm)	ATX (305 x 244mm)
COM Type	Type 7	Type 6	Type 6	Type 6	Type 7	Type 7
CPU/ Clock/ Cache	* Intel® Atom® Processors C3308 C3338 C3508 C3558 * Up to 4 CPU cores * 4MB to 8MB cache					
Chipset	SoC	N/A	N/A	N/A	N/A	N/A
Memory	* DDR4 1866/2133 MT/s * Non-ECC/ECC * Single/Dual Channel					
USB	2x USB 3.0 4x USB 2.0	4x USB 3.0 4x USB 2.0	2 x USB3.1 Gen2 2 x USB3.1 Gen1 4 x USB2.0 (through backplane)	4x USB 3.1 Gen2 8x USB 2.0	4x USB 3.0 4x USB 2.0	4x USB 3.0 4x USB 2.0
PCI Express	Up to 1x PCIe Gen3 x4 4x PCIe Gen3 x1	1x PCIe x16 2x PCIe x1 Golden Finger	1x PCIe x16 4x PCIe x1	1x PCIe x16 8x PCIe x1	1x PCIe Gen3 x16 3x PCIe Gen3 x4 4x PCIe Gen3 x1	1x PCIe Gen3 x16 3x PCIe Gen3 x4 4x PCIe Gen3 x1
Ethernet	Intel® I210IT 4x KR (10GbE)	2 x GbE	2x GbE	1x GbE	Inphi CS4227 1x GbE, 4x 10GbE SFP+	Inphi CS4223 1x GbE, 4x 10GbE SFP+
Sound	N/A	N/A	N/A	N/A	N/A	N/A
Graphic Controller	N/A	N/A	N/A	N/A	N/A	N/A
Carrier Board	PCOM-C701 (Type 7) PCOM-C702 (Type 7)	N/A	N/A	N/A	N/A	N/A

PCOM-BA00

Intel® Atom® E3800 series SoC based on Type 10 Mini COM-Express® module with DDR3L SDRAM, NANDrive and USB 3.0



FEATURES

- Intel® Atom® Processor E3800 Series (Bay Trail)
- On Board DD3L SDRAM up to 4GB, On Board SSD up to 64GB
- Low Power Consumption (3 to 10W)
- Supports Wide Operating Temperature and Wide Voltage
- Support VGA, LVDS, DP, eDP and USB 3.0



PCOM-BA00, a Type 10 Mini COM Express® (84 x 55 mm) module which based on Intel® Bay Trail Atom® E3800 series SoC. In this architecture, it could provide VGA, LVDS, eDP and DP multiple displays, and expandability I/O interfaces, including 3 x PCIe 2.0 x 1, 1 x USB 3.0, 4 x USB 2.0, 2 serial ports and 2 x SATA II devices. With ultra low power consumption(3 to 10W), wide-temp support, it could provide very energy saving and high effective performance. Portwell want to promotes PCOM-BA00 as vertical solution to aim in the different versatile applications.

General

Product	PCOM-BA00				
Form Factor	Type 10, Mini Form Factor COM-Express® (84 x 55 mm)				
Processor	Intel®				
	E3845	E3827	E3825	E3815	E3805
Core	4	2	2	1	2
Freq.	1.91 GHz	1.75 GHz	1.33 GHz	1.46 GHz	1.33 GHz
Turbo	N/A				
Cache	2MB	1MB	1MB	512KB	1MB
Processor Graphics	Intel® HD Graphics for Intel Atom® Processor Z3700 Series, not Include E3805				N/A
Graphics Base Frequency	542 MHz	542 MHz	533 MHz	400 MHz	533 MHz
Graphics Max Dynamic Frequency	792 MHz	792 MHz	533 MHz	400 MHz	533 MHz
HW Encoding	H.264 and MPEG2				
HW Decoding	H.264, MPEG2, MVC, VC-1, WMV9, JPEG/MKPEG, VP8				
HW Acceleration	Gen7LP, DirectX 11, OpenGL 3.2, OpenCL 1.2, OGL ES Haili/2.0/1.1				
Processor TDP	10W	8W	6W	5W	3W
BIOS	AMI BIOS				
ECC Memory Supported	YES				
Memory	On board DDR3L SDRAM up to 4GB 1333 MT/s				

I/O Interface

I/O Interface			
SATA	2x SATA II		
USB	1 x USB 3.0 4 x USB 2.0		
Ethernet	Intel® Ethernet Controller I210T		
Serial I/O	GPIO	8 GPIO	
	I²C	Baud Rate: 400KHz	
	SMBus	Baud Rate: 100KHz	
	UART	2 Serial Port (Tx/Rx)	
PEG	N/A		
PCI Express	3 x PCIe 2.0 x 1 (Option 4 x PCIe 2.0 x1)		
Display	Default	Options	Resolution
	DP	DP	up to 2560x 1600 @ 60Hz
		VGA	up to 2560x 1600 @ 60Hz
		HDMI	up to 1920x 1080 @ 60Hz
	eDP	eDP	up to 2560x 1600 @ 60Hz
		LVDS(24bit, dual channel)	up to 1920x 1200 @ 60Hz
Security	Intel® AES		

MECHANICAL & ENVIRONMENT

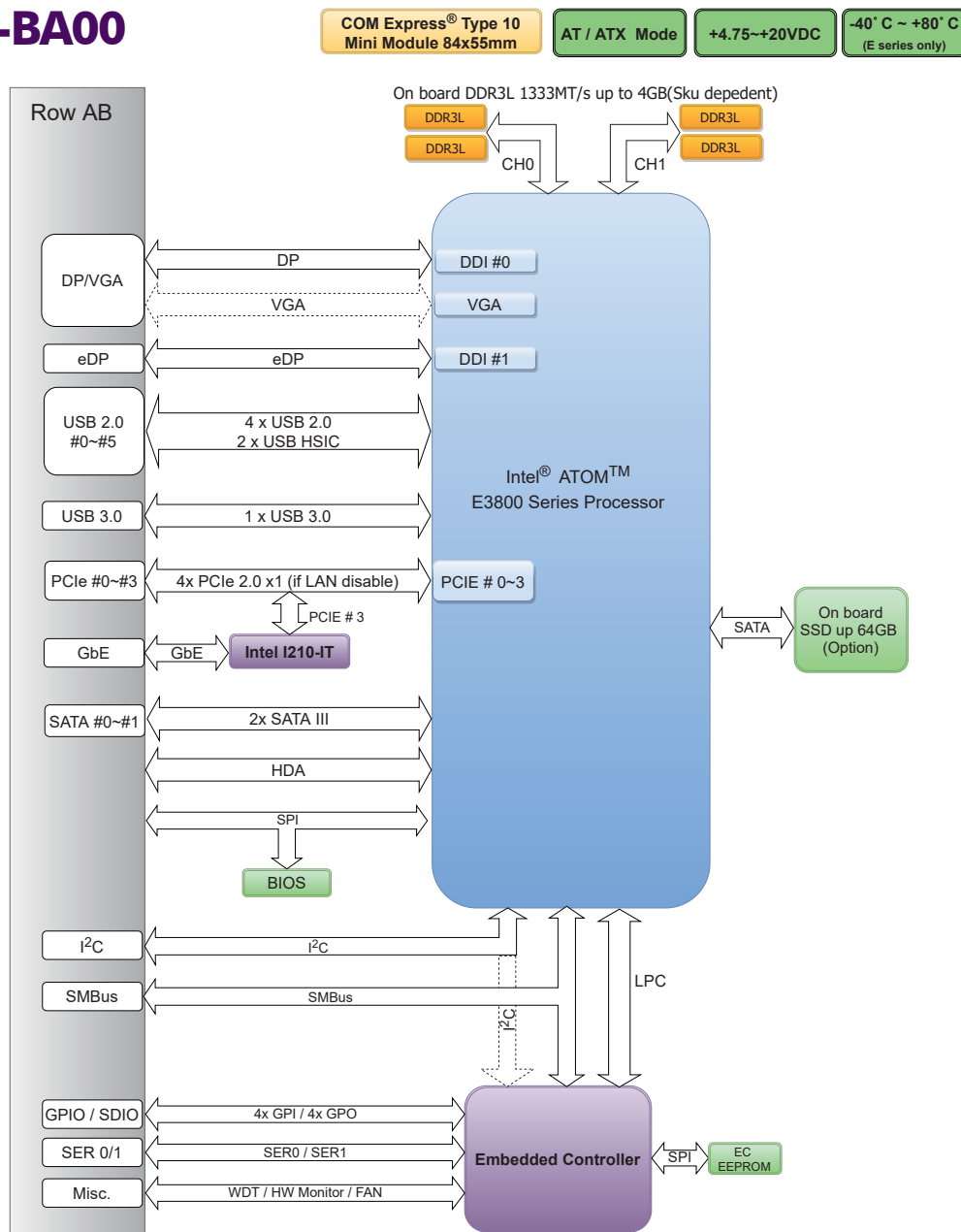
Dimension	84 x 55 mm
Power DC IN	+4.75VDC to +20VDC, AT/ATX Mode
Storage Temperature	-40°C to 80°C
Operation Temperature	-40°C to 80°C
Certification	Contact us
MTBF	Over 120,000 hours at 40°C
Vibration	Contact us
OS	Windows 7, WEST/8, Embedded Compact7 Linux Fedora/Tizen/Yocto RTOS Windriver

ORDERING GUIDE

Product	Ordering P/N	Status
PCOM-BA00-E3845-2G	AB1-3B51	Available
PCOM-BA00-E3827-2G	AB1-3B50	Available
PCOM-BA00-E3825-2G	AB1-3B47	Available
PCOM-BA00-E3815-2G	AB1-3B49	Available
PCOM-BA00-E3805-2G	AB1-3C19	Available
PCOM-BA00-E3845-4G	AB1-3B48	Available
Accessory	Ordering P/N	Status
Heat Spreader	B8306940	Available
PCOM-CA00 (uATX Carrier Board)	AB1-3917	Available

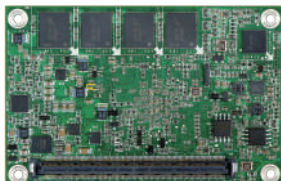
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PCOM-BA00



PCOM-BA01

Intel® Atom® E3900 series SoC based on Type 10 Mini COM-Express® module with LPDDR4 SDRAM, NANDrive and USB 3.0



FEATURES

- Intel® Atom® Processor E3900 Series (Apollo Lake)
- On Board LPDDR4 SDRAM up to 8GB, On Board eMMC up to 64GB
- Low Power Consumption (6 to 12W)
- Supports Wide Operating Temperature and Wide Voltage
- Support LVDS, eDP, DP, HDMI and Turbo mode up to 2.5GHz



PCOM-BA01, a Type 10 Mini COM Express® (84 x 55 mm) module which based on Intel® Apollo Lake Atom® E3900 series SoC. In this architecture, it could provide VGA, LVDS, and high quantity HDMI, eDP, DP with 4K resolution. And it also provide turbo mode up to 2.5GHz, with extending 4 x PCIe 2.0 x 1, 2 x USB 3.0, 8 x USB 2.0, and 2 x SATA III devices. With ultra low power consumption(6 to 12W), wide-temp support, it could provide very energy saving and high effective performance. Portwell want to promotes PCOM-BA01 as vertical solution to aim in the different versatile applications.

General

Product	PCOM-BA01				
Form Factor	Type 10, Mini Form Factor COM-Express® (84 x 55 mm)				
Processor	Intel® Atom®			Intel® Pentium®	Intel® Celeron®
	E3950	E3940	E3930	N4200	N3350
Core	4	4	2	4	2
Freq.	1.60 GHz	1.60 GHz	1.30 GHz	1.10 GHz	1.10 GHz
Turbo	2.00 GHz	1.80 GHz	1.80 GHz	2.50 GHz	2.40 GHz
Cache	2MB	2MB	2MB	2MB	2MB
Processor Graphics	Intel® HD Graphics 505	Intel® HD Graphics 505	Intel® HD Graphics 500	Intel® HD Graphics 505	Intel® HD Graphics 500
Graphics Base Frequency	500 MHz	400 MHz	400 MHz	200 MHz	200 MHz
Graphics Max Dynamic Frequency	650 MHz	600 MHz	550 MHz	750 MHz	650 MHz
HW Encoding	HEVC/H.265, H.264, MVC, VPS, VP9, JPEG MJPEG				
HW Decoding	HEVC/H.265, H.264, MVC, VPS, MPEG2, VC-1, WMV9, JPEG MJPEG				
HW Acceleration	Gen9LP, DirectX 12, OpenGL 4.3, OpenCL 1.2, PAVP 2.0, OGL ES 3.0				
Processor TDP	12W	9.5W	6.5W	6W	6W
BIOS	AMI BIOS				
ECC Memory Supported	No				
Memory	On board LPDDR4 SDRAM up to 8GB 2133 MT/s				

I/O Interface

SATA	2 x SATA III		
USB	2 x USB 3.0 8 x USB 2.0, (Option 1 x OTG)		
Ethernet	Intel® Ethernet Controller I210T		
Serial I/O	GPIO		8 GPIO
	I²C		Baud Rate: 400KHz
	SMBus		Baud Rate: 100KHz
	UART		2 Serial Port (Tx/Rx)
PEG	N/A		
PCI Express	4 x PCIe 2.0 x 1, or 1 x PCIe 2.0 x 4		
Display	Default	Options	Resolution
	DP	DP	up to 4096x 2160 @ 60Hz
		HDMI	up to 3840x 2160 @ 30Hz
	eDP	LVDS(24bit, dual channel)	up to 1920x 1200 @ 60Hz
		eDP	up to 4096x 2160 @ 60Hz
Security	Intel® AES		

MECHANICAL & ENVIRONMENT

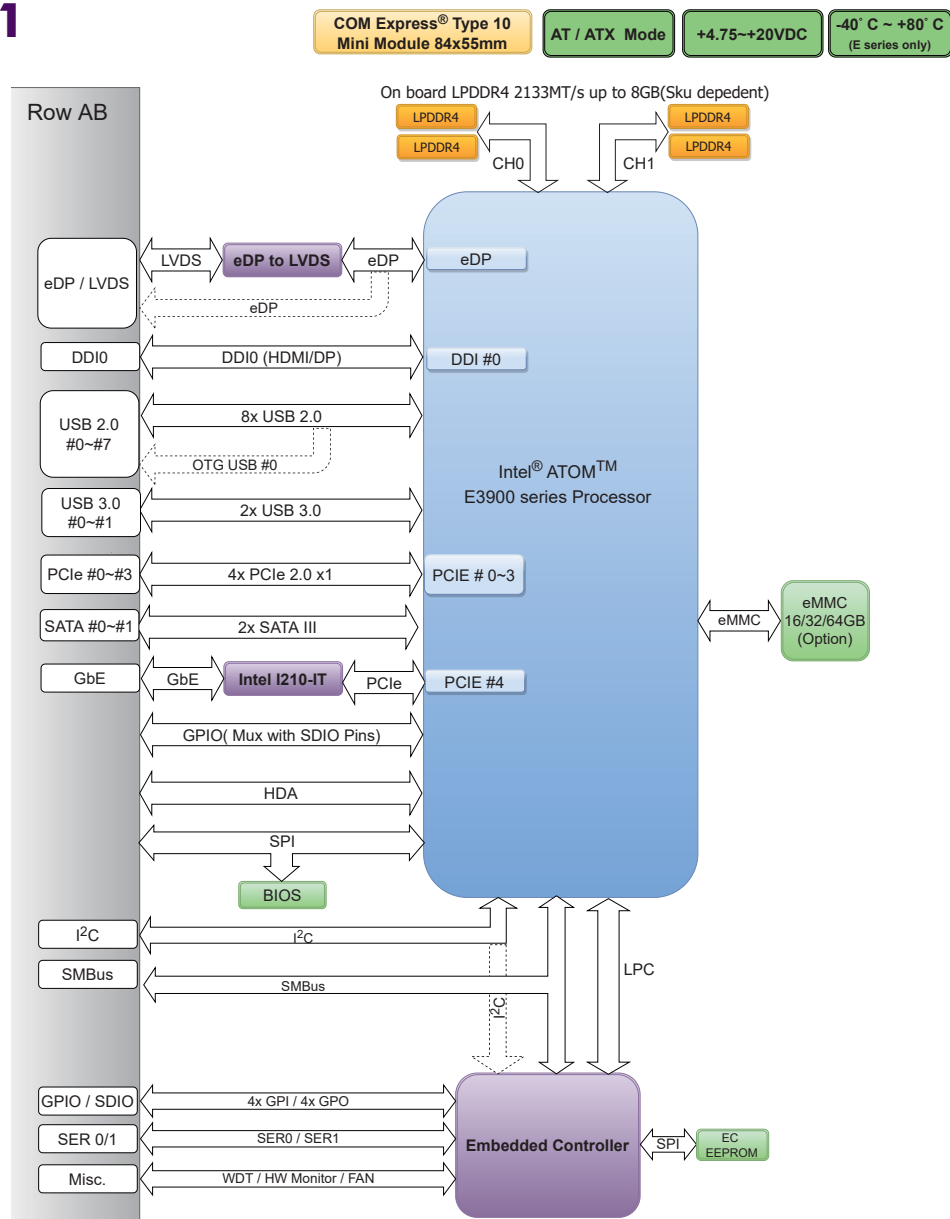
Dimension	84 x 55 mm
Power DC IN	+4.75VDC to +20VDC, AT/ATX Mode
Storage Temperature	-40°C to 80°C
Operation Temperature	-40°C to 80°C
Certification	Contact us
MTBF	Over 120,000 hours at 40°C
Vibration	Contact us
OS	Windows 7/10, WES7/8 Linux Fedora/Tizen/Yocto RTOS Windriver

ORDERING GUIDE

Product	Ordering P/N	Status
PCOM-BA01-E3950-4G	AB1-3G73	Available
PCOM-BA01-E3940-4G	AB1-3G74	Available
PCOM-BA01-E3930-4G	AB1-3H32	Available
PCOM-BA01-N4200-4G	AB1-3H13	Available
PCOM-BA01-N3350-4G	AB1-3K20	Available
PCOM-BA01-E3950-8G	AB1-3F36	Available
PCOM-BA01-E3940-8G	AB1-3K21	Available
PCOM-BA01-E3930-8G	AB1-3G27	Available
PCOM-BA01-N4200-8G	AB1-3H91	Available
PCOM-BA01-N3350-8G	AB1-3K22	Available
Accessory	Ordering P/N	Status
Heat Sink (E-sku)	B8309590	Available
Heat Sink (N-sku)	B8309960	Available
PCOM-CA00 (uATX Carrier Board)	AB1-3917	Available

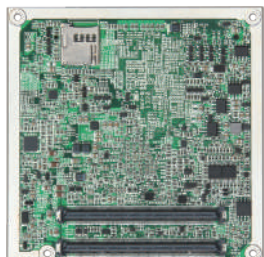
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PCOM-BA01



PCOM-B632VG

Intel® Atom® E3800 series SoC based on Type 6 COM-Express® module with DDR3L 1 x SD-DIMM Socket, VGA, HDMI, DP, eDP, STAT II and USB 3.0



FEATURES

- Intel® Atom® Processor E3800 Series (Bay Trail)
- Supports 1 x DDR3L SO-DIMM up to 4GB 1333 MT/s
- Low Power Consumption (5 to 10W)
- Supports Wide Operating Temperature and Wide Voltage
- Support VGA, DP, eDP and USB 3.0



PCOM-B632VG, a Type 6 compact COM Express® (95 x 95 mm) module which based on Intel® Bay Trail Atom® E3800 series SoC. In this architecture, it could provide VGA, eDP and DP multiple displays, and expandability I/O interfaces, including 3 x PCIe 2.0 x 1, 1 x USB 3.0, 4 x USB 2.0, 2 serial ports and 2 x SATA II devices. With ultra low power consumption (5 to 10W), wide-temp support, it could provide very energy saving and high effective performance. Portwell want to promote PCOM-B632VG as vertical solution to aim in the different versatile applications.

General

Product	PCOM-B632VG				
Form Factor	Type 6, Compact Form Factor COM-Express® (95 x 95 mm)				
Processor	Intel®				
	E3845	E3827	E3826	E3825	E3815
Core	4	2	2	2	1
Freq.	1.91 GHz	1.75 GHz	1.46 GHz	1.33 GHz	1.46 GHz
Turbo	N/A				
Cache	2MB	1MB	1MB	1MB	512KB
Processor Graphics	Intel® HD Graphics for Intel Atom® Processor Z3700 Series				
Graphics Base Frequency	542 MHz	542 MHz	533 MHz	533 MHz	400 MHz
Graphics Max Dynamic Frequency	792 MHz	792 MHz	667 MHz	533 MHz	400 MHz
HW Encoding	H.264 and MPEG2				
HW Decoding	H.264, MPEG2, MVC, VC-1, WMV9, JPEG/MKPEG, VP8				
HW Acceleration	Gen7LP, DirectX 11, OpenGL 3.2, OpenCL 1.2, OGL ES Haili/2.0/1.1				
Processor TDP	10W	8W	7W	6W	5W
BIOS	Phoenix BIOS				
ECC Memory Supported	No				
Memory	Supports 1 x DDR3L SO-DIMM up to 4GB 1333 MT/s				

I/O Interface

SATA	2 x SATA II		
USB	1 x USB 3.0 4 x USB 2.0		
Ethernet	Intel® Ethernet Controller I210T		
Serial I/O	GPIO		8 GPIO
	I ² C		Baud Rate: 400KHz
	SMBus		Baud Rate: 100KHz
	UART		2 Serial Port (Tx/Rx)
PEG	N/A		
PCI Express	3 x PCIe 2.0 x 1 (Option 4 x PCIe 2.0 x1)		
Display	Default	Options	Resolution
	VGA	VGA	up to 2560x 1600 @ 60Hz
	eDP	eDP	up to 2560x 1600 @ 60Hz
	DP	DP	up to 2560x 1600 @ 60Hz
Security	HDMI		up to 1920x 1080 @ 60Hz
	Intel® AES		

MECHANICAL & ENVIRONMENT

Dimension	95 x 95 mm
Power DC IN	Normal : +12V Wide Range : +8VDC - +16VDC AT/ATX Mode
Storage Temperature	-40°C to 80°C
Operation Temperature	-40°C to 80°C
Certification	Contact us
MTBF	Over 120,000 hours at 40°C
Vibration	Contact us
OS	Windows 7, WES7/8, Embedded Compact7 Linux Fedora/Tizen/Yocto RTOS Windriver

ORDERING GUIDE

Product	Ordering P/N	Status
PCOM-B632VG-E3845	AB1-3A36	Available
PCOM-B632VG-E3827	AB1-3A33	Available
PCOM-B632VG-E3826	AB1-3A34	Available
PCOM-B632VG-E3825	AB1-3A35	Available
PCOM-B632VG-E3815	AB1-3A40	Available
Accessory	Ordering P/N	Status
Heat Sink	B8308040	Available
Heat Spreader	B8307650	Available
PCOM-C605 (Mini-ITX Carrier Board)	AB1-3998	Available
PCOM-C60B (ATX Carrier Board)	AB1-3G22Z	Contact us

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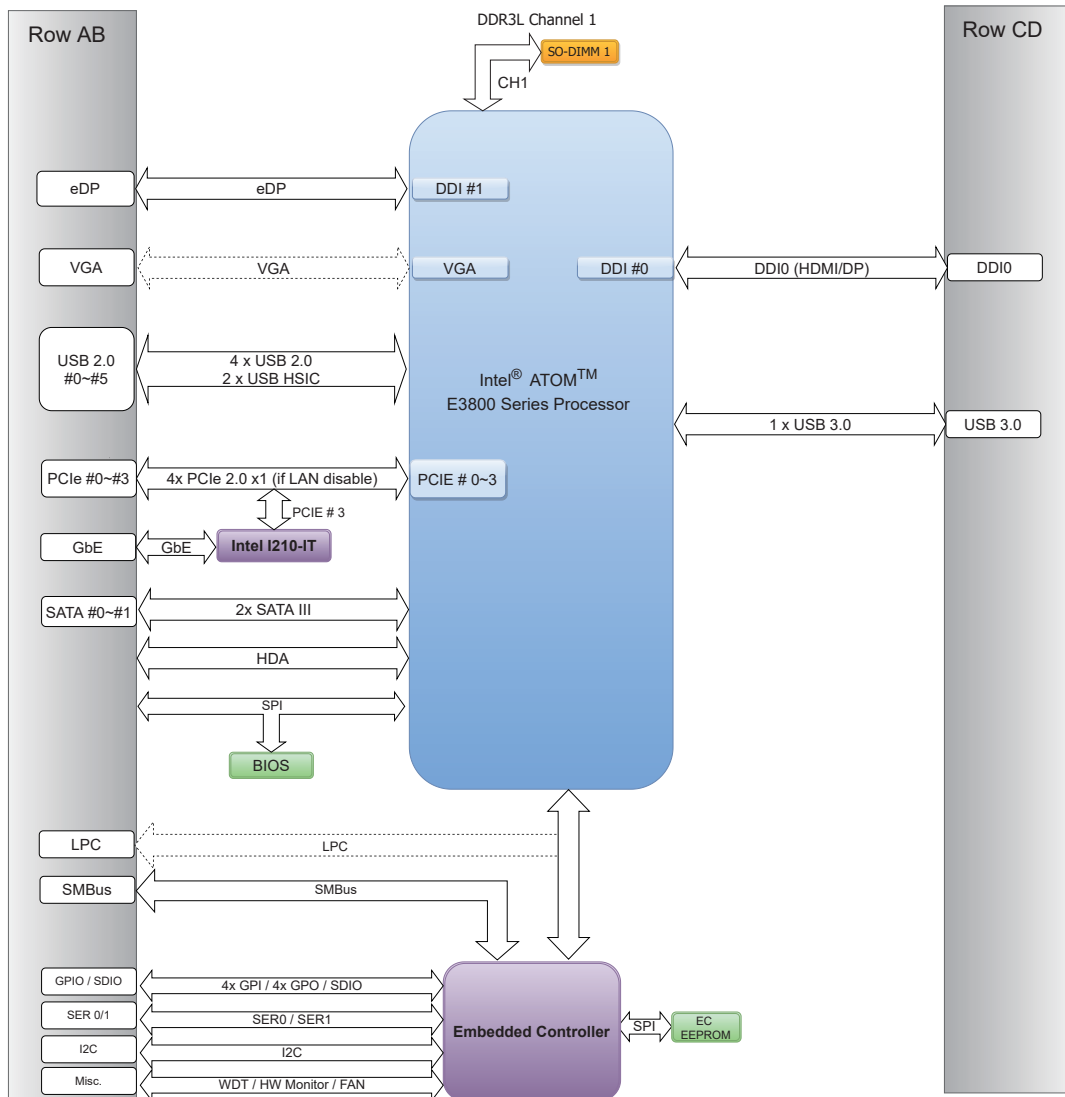
PCOM-B632VG

COM Express® Type 6
Compact Module 95x95mm

AT / ATX Mode

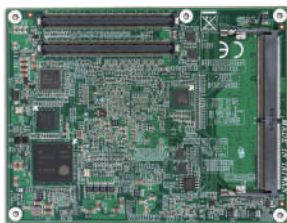
+12VDC

-40° C ~ +80° C
(E series only)



PCOM-B634VG

Intel® Pentium® / Xeon® D-1500 series Processor based on Type 6 COM Express® 2.0 module with DDR4 ECC/Non-ECC 3x SO-DIMM sockets, VGA, DDI, PCIe 16, USB 3.0, and SATA 6 Gb/s



FEATURES

- Intel® Pentium® / Xeon® D-1500 series Processor 14nm process (Broadwell-DE)
- Support DDR4-2133/2400 SDRAM on three SO-DIMM sockets, up to 48GB
- One VGA, One HDMI, and Two 10GbE Interfaces
- 7x USB 2.0, 4x USB 3.0, 4x SATA III, 8x PCIe x1 Gen 2.0, and 1x PCIe x16 Gen 3.0



Portwell PCOM-B634VG is designed with Intel® new Xeon processor with 16 CPU cores and DDR4 ECC/Non-ECC SO-DIMM support which provide high CPU computing, excellent Ethernet performance. Extend PCIe Gen3 ports in PCOM-B634 can support high speed IO card for more application. With VGA and legacy interface support, customer can upgrade system easy and fast.

General

Product	PCOM-B634					
Form Factor	Type 6, Basic Form Factor Com Express (125 x 95mm)					
Processor	Intel® Xeon®			Intel® Pentium®		
	D1577	D1548	D1527	D1519	D1517	D1508
Core	16	8	4	4	4	2
Freq.	1.30 GHz	2.00 GHz	2.20 GHz	1.50 GHz	1.60 GHz	2.20 GHz
Turbo	2.10 GHz	2.60 GHz	2.70 GHz	2.10 GHz	2.20 GHz	2.60 GHz
Cache	24 MB	12 MB	6 MB	6 MB	6 MB	3 MB
Processor Graphics	SM750					
Graphics Base Frequency	N/A					
Graphics Max Dynamic Frequency						
HW Encoding						
HW Decoding						
HW Acceleration						
Processor TDP	45 W	45 W	35 W	25 W	25 W	25 W
BIOS	AMI UEFI BIOS					
ECC Memory Supported	Yes					
Memory	Supports up to 48GB DDR4 2133/2400 MT/s SDRAM					

I/O Interface

SATA	4x SATA III	
USB	4 x USB2.0 4 x USB3.0	
Ethernet	Intel® Ethernet Controller I210LM for 1GbE. 2x KR for 10GbE	
Serial I/O	GPIO	8 GPIO (4 GPI and 4 GPO)
	I ² C	Baud Rate : 400KHz
	SMBus	Baud Rate : 100KHz
	UART	2 Serial Port (TX and RX)
PEG	N/A	
PCI Express	1x PCIe 3.0 x16 8x PCIe 2.0 x1	
Display	VGA: 1920x1440@24bpp	
Security	TPM 2.0 (Infineon SLB9665) , Intel® AES	

MECHANICAL & ENVIRONMENT

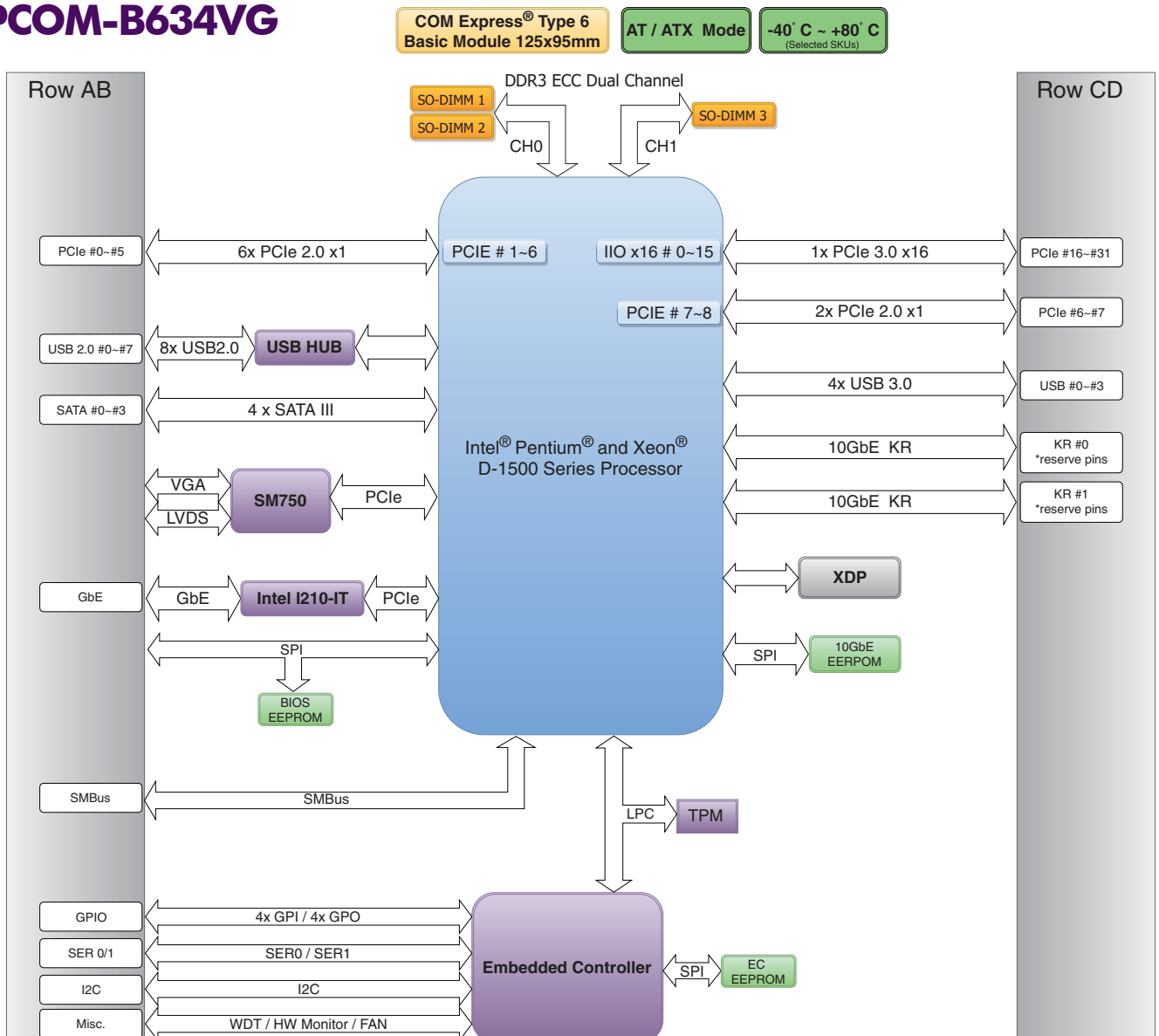
Dimension	125x95mm
Power DC IN	+12VDC
Storage Temperature	-40°C~+80°C
Operation Temperature	-40°C~+80°C
Certification	Contact us
MTBF	Over 100,000 hours at 40°C at both 35° C and 55° C
Vibration	Random 5Hz to 2KHz, 7.7 grms, 10min in each of 3 axes
OS	Windows 64 bit OS support RHEL/SUSE/Fedora/Ubuntu/CentOS/Xen & KVM/Yocto/ FreeBSD

ORDERING GUIDE

Product	Ordering P/N	Status
PCOM-B634VG-D-1577	AB1-3D94	Available
PCOM-B634VG-D-1548	AB1-3D95	Available
PCOM-B634VG-D-1527	AB1-3D96	Available
PCOM-B634VG-D-1519	AB1-3D97	Available
PCOM-B634VG-D-1517	AB1-3D98	Available
PCOM-B634VG-D-1508	AB1-3D99	Available
Accessory	Ordering P/N	Status
PCOM-B634VG Cooler	B9971410	Available
PCOM-C609 (uATX Carrier Board)	AB1-3D19	Available

BLOCK DIAGRAM

PCOM-B634VG



PCOM-B641VG

Intel® Atom® E3900 series SoC based on Type 6 COM-Express® module with DDR3L 2 x SD-DIMM Socket, VGA, HDMI, DP, eDP/LVDS, SATAIII, TPM



FEATURES

- Intel® Atom® Processor E3900 Series (Apollo Lake)
- Supports 2 x DDR3L SO-DIMM up to 16GB 1866 MT/s, TPM 2.0
- Low Power Consumption (6 to 12W)
- Supports Wide Operating Temperature and Wide Voltage
- Support VGA, LVDS, eDP, DP, HDMI and Turbo mode up to 2.5GHz



PCOM-B641VG, a Type 6 compact COM Express® (95 x 95 mm) module which based on Intel® Apollo Lake Atom® E3900 series SoC. In this architecture, it could provide VGA, LVDS, and high quantity HDMI, eDP, DP with 4K resolution, and three independent displays. And it also provides turbo mode up to 2.5GHz, with extending 4 x PCIe 2.0 x 1, 3 x USB 3.0, 8 x USB 2.0, and 2 x SATA III devices. With ultra low power consumption(6 to 12W), wide-temp support, it could provide very energy saving and high effective performance. Portwell want to promotes PCOM-B641VG as vertical solution to aim in the different versatile applications.

General

Product	PCOM-B641VG				
Form Factor	Type 6, Compact Form Factor COM-Express® (95 x 95 mm)				
Processor	Intel® ATOM®			Intel® Pentium®	Intel® Celeron®
	E3950	E3940	E3930	N4200	N3350
Core	4	4	2	4	2
Freq.	1.60 GHz	1.60 GHz	1.30 GHz	1.10 GHz	1.10 GHz
Turbo	2.00 GHz	1.80 GHz	1.80 GHz	2.50 GHz	2.40 GHz
Cache	2MB	2MB	2MB	2MB	2MB
Processor Graphics	Intel® HD Graphics 505	Intel® HD Graphics 505	Intel® HD Graphics 500	Intel® HD Graphics 505	Intel® HD Graphics 500
Graphics Base Frequency	500 MHz	400 MHz	400 MHz	200 MHz	200 MHz
Graphics Max Dynamic Frequency	650 MHz	600 MHz	550 MHz	750 MHz	650 MHz
HW Encoding	HEVC/H.265, H.264, MVC, VPS, VP9, JPEG/MJPEG				
HW Decoding	HEVC/H.265, H.264, MVC, VPS, MPEG2, VC-1, WMV9, JPEG/MJPEG				
HW Acceleration	Gen9LP, DirectX 12, OpenGL 4.3, OpenCL 1.2, PAVP 2.0, OGL ES 3.0				
Processor TDP	12W	9.5W	6.5W	6W	6W
BIOS	AMI BIOS				
ECC Memory Supported	No				
Memory	Supports 2 x DDR3L SO-DIMM up to 16GB 1866 MT/s				

I/O Interface

SATA	2 x SATA III		
USB	3 x USB 3.0, 8 x USB 2.0, (Option 1 x OTG)		
Ethernet	Intel® Ethernet Controller I210T		
Serial I/O	GPIO		8 GPIO
	I²C		Baud Rate: 400KHz
	SMBus		Baud Rate: 100KHz
	UART		2 Serial Port (Tx/Rx)
PEG	N/A		
PCI Express	4 x PCIe 2.0 x 1, or 1 x PCIe 2.0 x 4		
Display	Default	Options	Resolution
	VGA	VGA	up to 1920x 1200 @ 60Hz
		DP	up to 3840x 2160 @ 30Hz
	eDP	LVDS(24bit, dual channel)	up to 1920x 1200 @ 60Hz
		eDP	up to 4096x 2160 @ 60Hz
	DP	DP	up to 4096x 2160 @ 60Hz
		HDMI	up to 3840x 2160 @ 30Hz
Security	TPM 2.0 (Infineon SLB9670) , Intel® AES		

MECHANICAL & ENVIRONMENT

Dimension	95 x 95mm
Power DC IN	Normal : +12V Wide range : +9VDC - +18VDC AT/ATX Mode
Storage Temperature	-40°C to 80°C
Operation Temperature	-40°C to 80°C
Certification	Contact us
MTBF	Over 120,000 hours at 40°C
Vibration	Contact us
OS	Windows 7/10, WES7/8 Linux Fedora/Tizen/Yocto RTOS Windriver

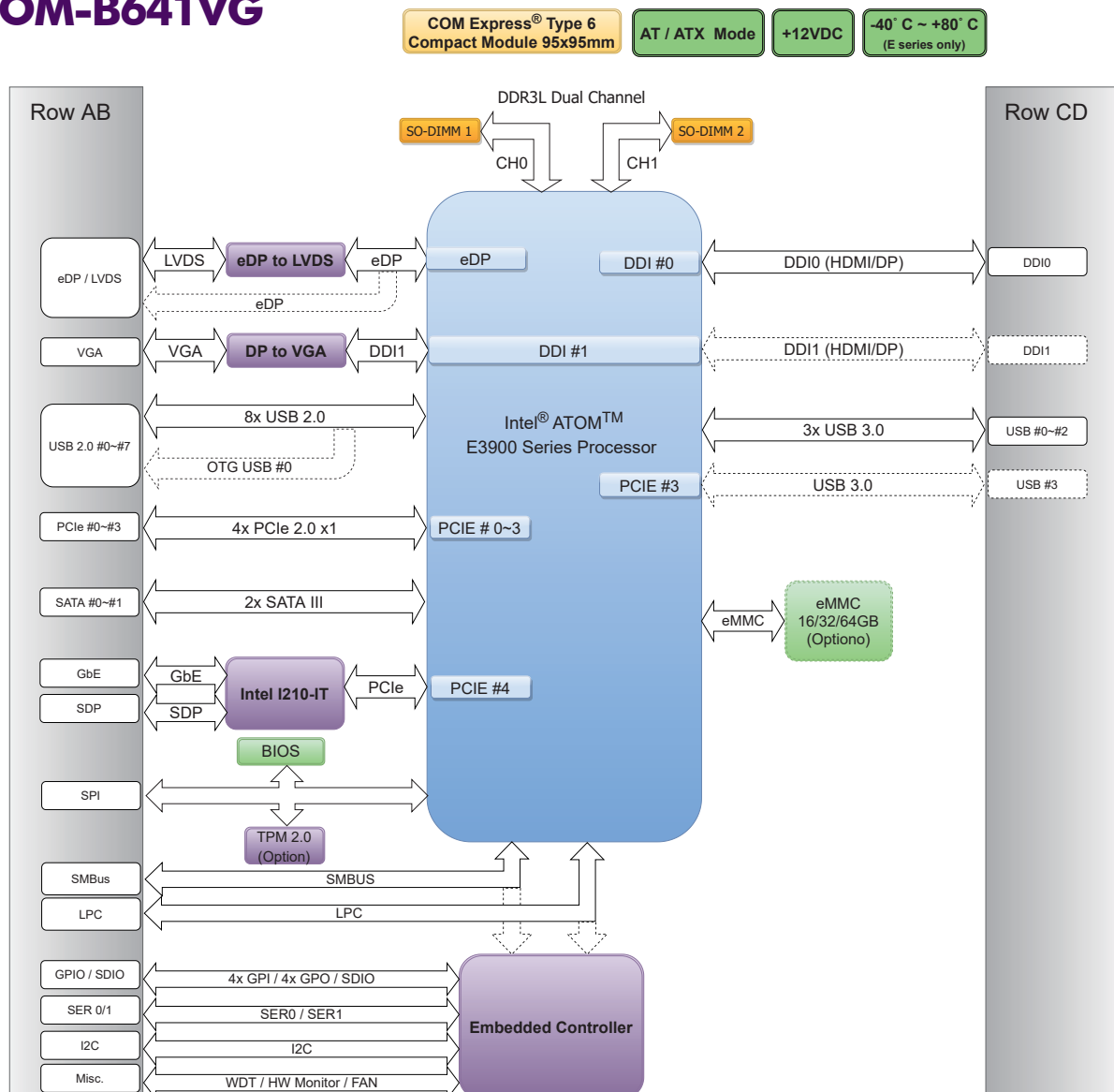
ORDERING GUIDE

Product	Ordering P/N	Status
PCOM-B641-E3950	AB1-3F71	Available
PCOM-B641-E3940	AB1-3F39	Available
PCOM-B641-E3930	AB1-3F38	Available
PCOM-B641-N4200	AB1-3F28	Available
PCOM-B641-N3350	AB1-3F72	Available

Accessory	Ordering P/N	Status
Heat Sink (E-sku)	B8308491	Available
Heat Sink (N-sku)	B9971521	Available
PCOM-C605 (Mini-ITX Carrier Board)	AB1-3998	Available
PCOM-C60B (ATX Carrier Board)	AB1-3G22Z	Contact us

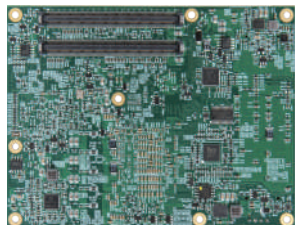
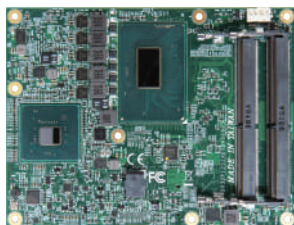
BLOCK DIAGRAM

PCOM-B641VG



PCOM-B651VGL

Intel® Coffee Lake-H Core™ Processor
based on Type VI COM Express module with dual
DDR4 SO-DIMM, DDI, LVDS, Gigabit Ethernet,
SATA III, and USB 3.1 Gen2



FEATURES

- Intel® Xeon®E/Core™ i7/i5/i3 Processors 14nm process(Coffee Lake-H)
- Support 2x DDR4-2666 Non-ECC/ECC SO-DIMMs, up to 2x 16GB
- Support USB2.0/3.1 Gen2, 4x SATAIII, 1x PCIe 3.0 x16, and 8x PCIe 3.0 x1
- Support LVDS, and 3x Display port/HDMI



PCOM-B651VGL is Intel® Coffee Lake-H platform COM Express module. It is compatible with COMe 3.0 Type 6 carrier board. The 8th Generation Intel® Core™ processor family is able to fulfill the applications demand on high performance. This module supports both ECC and Non-ECC DDR4 memory by different PCH SKUs(QM370/CM246). Customers have various models to meet different requirements in cost, performance, and memory type. PCOM-B651VGL provides one PCIe x16, eight PCIe x1 (Option to one PCIe x4), four USB 3.1 Gen2, and four SATA III.

General

Product	PCOM-B651VGL			
Form Factor	COM Express Type 6 Basic module (125 X 95mm)			
Processor	Intel® Xeon®	Intel® Core™		
	E-2176M	i7-8850H	i5-8400H	i3-8100H
Core	6	6	4	4
Freq.	2.70 GHz	2.60 GHz	2.50 GHz	3.00 GHz
Turbo	4.40 GHz	4.30 GHz	4.20 GHz	--
Cache	12MB	9MB	8MB	6MB
Processor Graphics	Intel® UHD Graphics P630	Intel® UHD Graphics 630	Intel® UHD Graphics 630	Intel® UHD Graphics 630
Graphics Base Frequency	350 MHz	350 MHz	350 MHz	350 MHz
Graphics Max Dynamic Frequency	1.20 GHz	1.15 GHz	1.10 GHz	1.00 GHz
HW Encoding	H.264/AVC, H.265/HEVC, MPEG2, JPEG, VP8, VP9			
HW Decoding	H.264/AVC, VP8, VP9, H.265/HEVC, MPEG2, JPEG/MJPEG, VC-1/WMV9			
HW Acceleration	DirectX 11/12/OpenGL 4.5/OpenCL 2.1			
Processor TDP	45 W			
BIOS	AMI BIOS			
ECC Memory Supported	YES(only with CM246 PCH)	NO		YES(only with CM246 PCH)
Memory	2x SO-DIMM DDR4 up to 32GB 2666MT/s			

I/O Interface

SATA	4 x SATA III (Port 0~3)		
USB	4x USB 3.1 Gen2 (Port 0~3) 8x USB 2.0 (Port 0~7)		
Ethernet	Intel® I219LM		
Serial I/O	GPIO	8 bit GPIO (default 4 input/4 output)	
	I²C	Baud Rate : 400KHz	
	SMBus	Baud Rate : 100KHz	
	UART	TX/RX signal only	
PEG	1x PCIe Gen3 x16 (can be configured to 2x8, 1x8, 2x4)		
PCI Express	8x PCIe Gen3 x1 (can be configured to x2, x4)		

Display	Default	Options	Resolution
	LVDS	LVDS (24bit, dual channel)	up to 1920x1200@60Hz
		eDP	up to 4096x2304@60Hz
	DDI	DP 1.2	up to 4096x2304@60Hz up to 4096x2304@30Hz (2176M)
	VGA	HDMI 1.4	up to 4096x2304@30Hz
Security	TPM 2.0(Infinion SLB9665), Intel® AES		

MECHANICAL & ENVIRONMENT

Dimension	125 x 95mm
Power DC IN	Normal: +12V DC Wide range: +9VDC~ +18VDC AT/ATX mode
Storage Temperature	-20°C to 80°C
Operating Temperature	0°C to 60°C
Certification	Contact us
MTBF	Over 100,000 hours at 40°C
Vibration	Contact us
OS	Windows 10 Red Hat, Ubuntu, CentOS

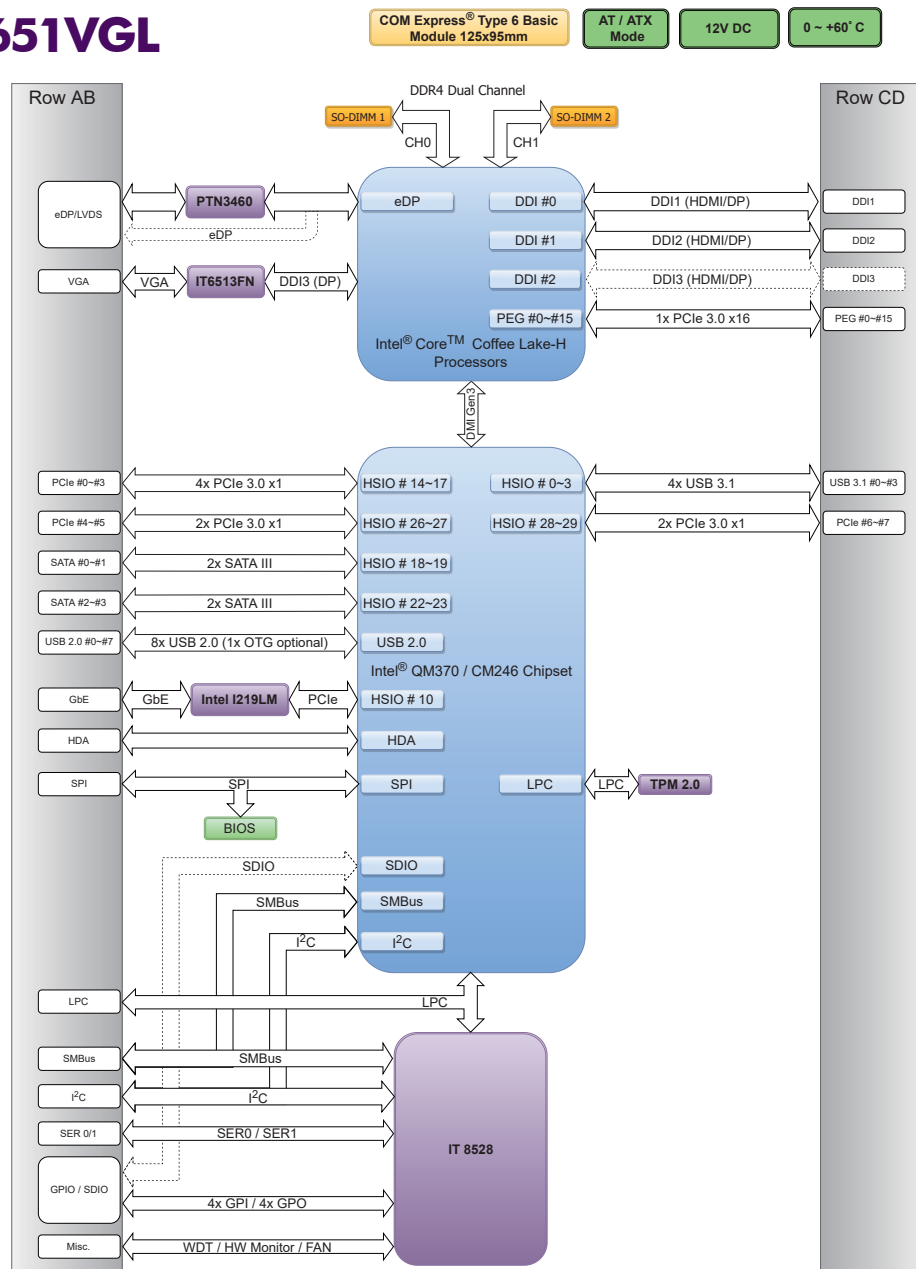
ORDERING GUIDE

Product	Ordering P/N	Status
PCOM-B651VGL-2176M	AB1-3J55Z	Contact us
PCOM-B651VGL-8850H	AB1-3J08Z	Contact us
PCOM-B651VGL-8400H	AB1-3J09Z	Contact us
PCOM-B651VGL-8100H	AB1-3J54Z	Contact us

Accessory	Ordering P/N	Status
PCOM-C605 (Mini-ITX Carrier Board)	AB1-3998	Available
PCOM-C60B (ATX Carrier Board)	AB1-3G22Z	Contact us
Cooler	B9971840	Available

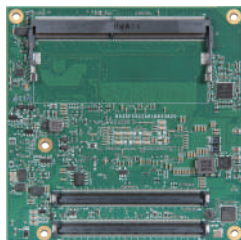
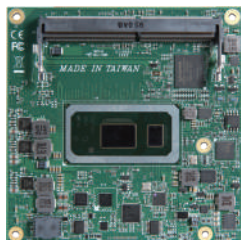
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PCOM-B651VGL



PCOM-B653VGL

Intel® Whiskey Lake-U Core™ Processor
based on Type VI COM Express module with dual
DDR4 SO-DIMM, DDI, eDP, Gigabit Ethernet,
SATA 3.0, and USB 3.1



FEATURES

- Intel® Core™ i3/i5/i7/Celeron Processors 14nm process(Whiskey Lake U)
- Support 2xDDR4-2400 Non-ECC SO-DIMMs, up to 32G
- Support USB2.0/3.1, 2x SATAIII, 10x PCIe 3.0 LANEs
- Support VGA, LVDS/eDP, and Display port



Portwell PCOM-B653VGL is designed with Intel® Whiskey Lake-U processor with Type 6 pin definition. It brings three important factors including DDR4 memory support, PCIe Gen3 support, and USB 3.1 Gen2 support. Extend PCIe Gen3 ports in PCOM-B653VGL can support high speed IO card for more applications. In the meantime, it's compatible with COMe 3.0 Type 6 carrier board.

General

Product	PCOM-B653VGL			
Form Factor	COM Express® Type 6 Compact Form Factor (95 x 95mm)			
Processor	Intel® Core™			Intel® Celeron®
	i7-8665UE	i5-8365UE	i3-8145UE	4305UE
Core	4	4	2	2
Freq.	1.70 GHz	1.60 GHz	2.20 GHz	2.00 GHz
Turbo	4.40 GHz	4.10 GHz	3.90 GHz	2.00 GHz
Cache	8MB	6MB	4MB	2MB
Processor Graphics	Intel® UHD Graphics 620	Intel® UHD Graphics 620	Intel® UHD Graphics 620	Intel® UHD Graphics 610
Graphics Base Frequency	300 MHz	300 MHz	300 MHz	300 MHz
Graphics Max Dynamic Frequency	1.15 GHz	1.05 GHz	1.00 GHz	1.00 GHz
HW Encoding	H.264 AVC, MPEG2, HEVC, VP8/9, JPEG			
HW Decoding	H.264 AVC, VC1, MPEG2, VP8/9, JPEG			
HW Acceleration	DX 11.3/12, OpenGL 4.5, OpenCL 2.1			
Processor TDP	15W	15W	15W	15W
BIOS	AMI BIOS			
ECC Memory Supported	NO			
Memory	2x SO-DIMM DDR4 up to 32GB 2400MHz			

I/O Interface

SATA	2 x SATA III (Port 0/1)		
USB	4x USB 3.1 Gen2 (Port 0~3) 8x USB 2.0 (Port 0~7)		
Ethernet	Intel® I219LM		
Serial I/O	GPIO	8 bit GPIO	
	I²C	Baud Rate : 400KHz	
	SMBus	Baud Rate : 100KHz	
	UART	Only RX/TX signal	
PEG	1x PCIe Gen3 x4		
PCI Express	1x PCIe Gen3 x4 1x PCIe Gen3 x1 1x PCIe Gen3 x1 (Option)		
Display	Default	Options	Resolution
	VGA	VGA	Up to 1920x1200 @ 60Hz
		DDI2	DP up to 4096x2160 @ 60Hz
	LVDS	eDP	Up to 3840x2160 @ 60Hz
		24bit dual channel LVDS	Up to 1920x1200 @ 60Hz
DDI-DP	DP1.2	DP up to 4096x2160 @ 60Hz	
Security	TPM 2.0(Infineon SLB9670), Intel® AES		

MECHANICAL & ENVIRONMENT

Dimension	95 x 95mm
Power DC IN	Normal: +12V DC Wide range: +6VDC~ +18VDC AT/ATX mode
Storage Temperature	-20°C to 80°C
Operation Temperature	0°C to 60°C
Certification	Contact us
MTBF	Over 100,000 hours at 40°C
Vibration	Contact us
OS	Windows 10 Red Hat, Ubuntu, CentOS

ORDERING GUIDE

Product	Ordering P/N	Status
PCOM-B653VGL-8665UE	AB1-3J37	Available
PCOM-B653VGL-8365UE	AB1-3J34	Available
PCOM-B653VGL-8145UE	AB1-3J77	Available
PCOM-B653VGL-4305UE	AB1-3J78	Available

Accessory	Ordering P/N	Status
PCOM-C605 (Mini-ITX Carrier Board)	AB1-3998	Available
Cooler	B9971820	Available

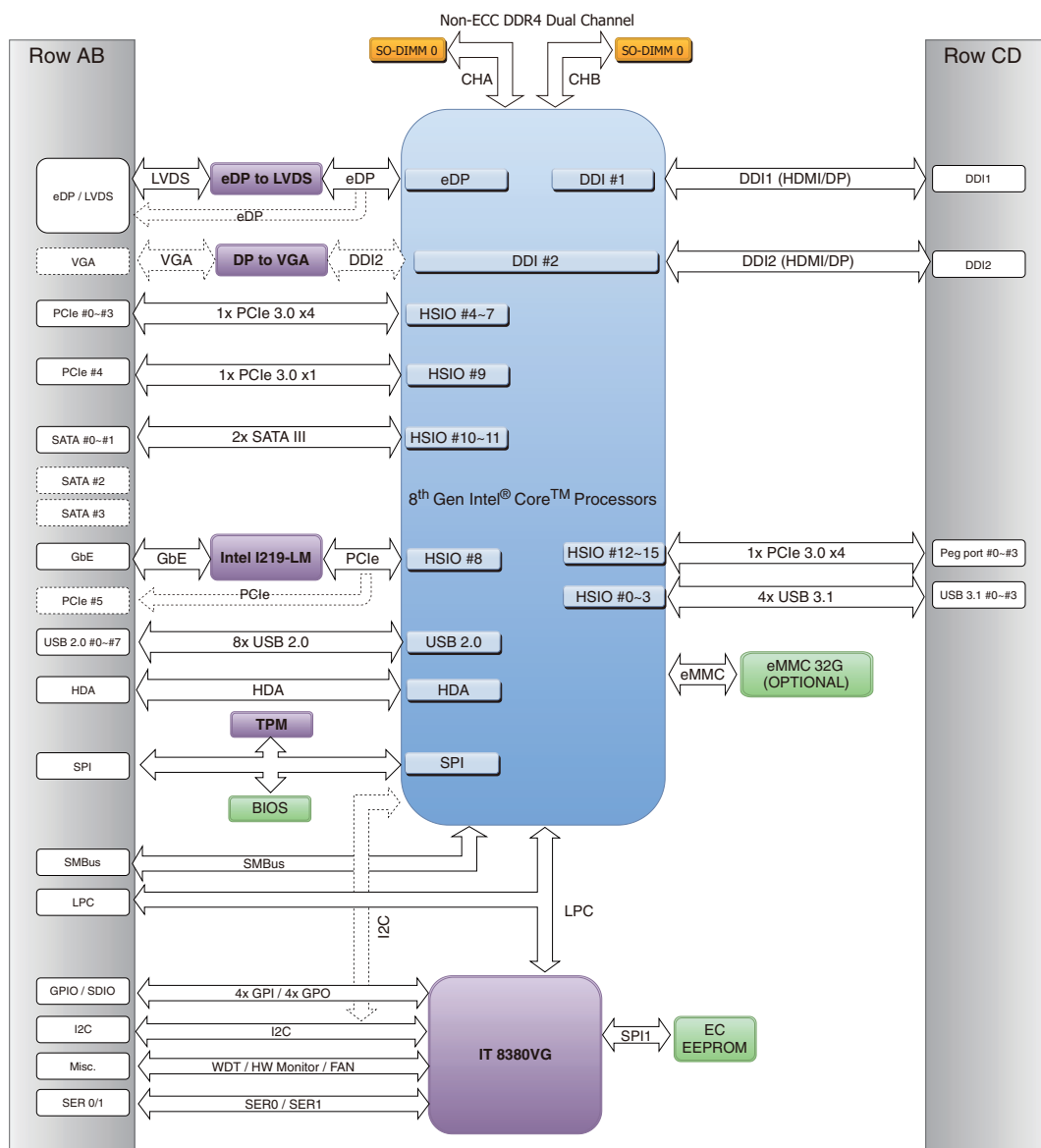
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PCOM-B653VGL

COM Express® Type 6
Compact Module 95x95mm

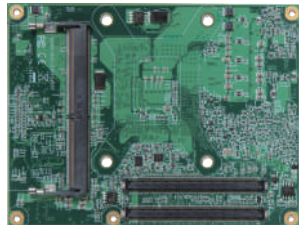
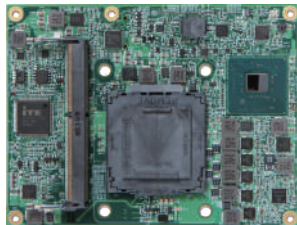
AT / ATX
Mode

0° C ~ +60° C



PCOM-B654GL

Intel® Coffee Lake-S Core™ Processor
based on Type VI COM Express module with dual
DDR4 SO-DIMM, DDI, LVDS, Gigabit Ethernet,
SATA III, and USB 3.1 Gen2



FEATURES

- Intel® Core™ i7/i5/i3/Celeron 14nm process(Coffee Lake-S)
- Support 2x DDR4-2400 Non-ECC/ECC SO-DIMMs, up to 2x 16GB
- Support USB2.0/3.1 Gen2, 4x SATAIII, 1x PCIe 3.0 x16, and 8x PCIe 3.0 x1
- Support LVDS, and 3x Display port/HDMI



PCOM-B654GL is Intel® Coffee Lake-S platform COM Express module. It is compatible with COMe 3.0 Type 6 carrier board. The desktop CPU on module offers customer higher computing power but lower cost comparing to mobile solutions. PCOM-B654GL supports both ECC and Non-ECC DDR4 by different PCH SKUs(Q370/C246), which can be adapted to different applications. This module provides one PCIe x16, eight PCIe x1 (Option to one PCIe x4), four USB 3.1 Gen2, and four SATA III.

General

General				
Product	PCOM-B654GL			
Form Factor	COM Express Type 6 Basic module (125 X 95mm)			
Processor	Intel® Core™			Intel® Celeron®
	i7-8700T	i5-8500T	i3-8100T	G4900T
Core	6	6	4	2
Freq.	2.40 GHz	2.10 GHz	3.10 GHz	2.90 GHz
Turbo	4.00 GHz	3.50 GHz	--	--
Cache	12MB	9MB	6MB	2MB
Processor Graphics	Intel® UHD Graphics 630	Intel® UHD Graphics 630	Intel® UHD Graphics 630	Intel® UHD Graphics 610
Graphics Base Frequency	350 MHz	350 MHz	350 MHz	350 MHz
Graphics Max Dynamic Frequency	1.20 GHz	1.10 GHz	1.10 GHz	1.00 GHz
HW Encoding	H.264/AVC, H.265/HEVC, MPEG2, JPEG, VP8, VP9			
HW Decoding	H.264/AVC, VP8, VP9, H.265/HEVC, MPEG2, JPEG/MJPEG, VC-1/WMV9			
HW Acceleration	DirectX 11/12/OpenGL 4.5/OpenCL 2.1			
Processor TDP	35 W	35 W	35 W	35 W
BIOS	AMI BIOS			
ECC Memory Supported	NO		YES(only with C246 PCH)	
Memory	2x SO-DIMM DDR4 up to 32GB 2400MT/s			

*PCOM-B654GL only supports Intel® 8th Generation 35W processors

I/O Interface

I/O Interface			
SATA	4 x SATA III (Port 0~3)		
USB	4x USB 3.1 Gen2 (Port 0~3) 8x USB 2.0 (Port 0~7)		
Ethernet	Intel® I219LM		
Serial I/O	GPIO	8 bit GPIO (default 4 input/4 output)	
	I²C	Baud Rate : 400KHz	
	SMBus	Baud Rate : 100KHz	
	UART	TX/RX signal only	
PEG	1x PCIe Gen3 x16 (can be configured to 2x8, 1x8, 2x4)		
PCI Express	8x PCIe Gen3 x1 (ocan be configured to x2, x4)		
Display	Default	Options	Resolution
	LVDS	LVDS (24bit, dual channel)	up to 1920x1200@60Hz
	DDI	DP 1.2	up to 4096x2304@60Hz
		HDMI 1.4	up to 4096x2304@24Hz
Security	TPM 2.0(Infineon SLB9670), Intel® AES		

MECHANICAL & ENVIRONMENT

Dimension	125 x 95mm
Power DC IN	Normal: +12V DC Wide range: +9VDC~ +18VDC AT/ATX mode
Storage Temperature	-20°C to 80°C
Operation Temperature	0°C to 60°C
Certification	Contact us
MTBF	Over 100,000 hours at 40°C
Vibration	Contact us
OS	Windows 10 Red Hat, Ubuntu, CentOS

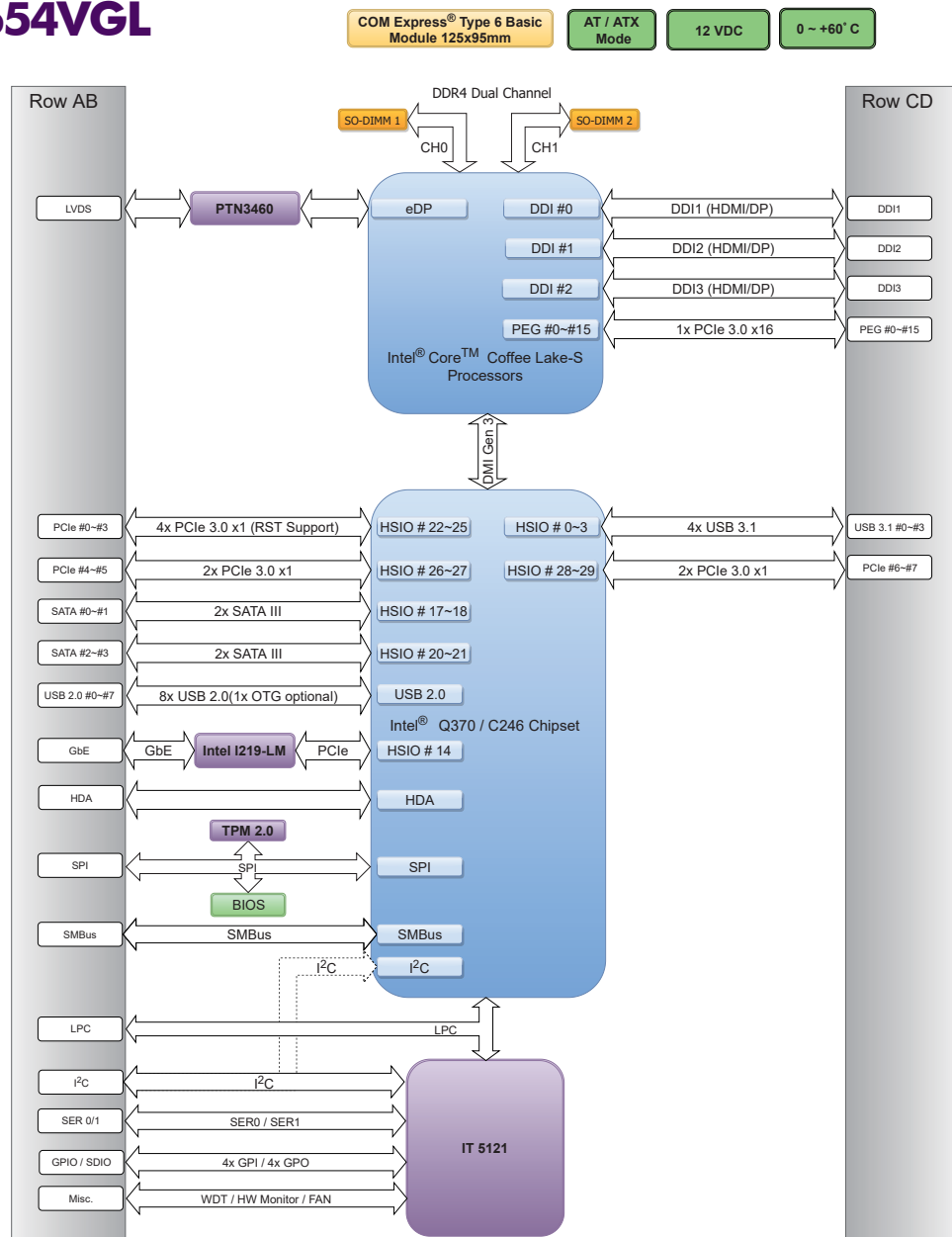
ORDERING GUIDE

Product	Ordering P/N	Status
PCOM-B654GL-C246	AB1-3J46	Available
PCOM-B654GL-Q370	AB1-3J47	Available

Accessory	Ordering P/N	Status
PCOM-C605 (Mini-ITX Carrier Board)	AB1-3998	Available
PCOM-C60B (ATX Carrier Board)	AB1-3G22Z	Contact us
Cooler	B9971811	Available

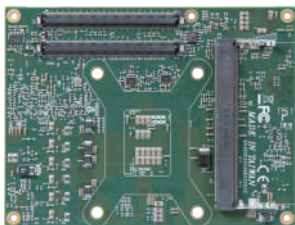
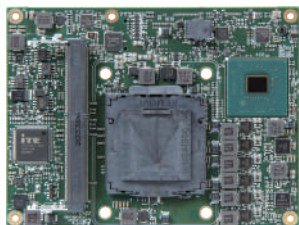
BLOCK DIAGRAM

PCOM-B654VGL



PCOM-B655VGL

Intel® Comet Lake-S Core™ Processor
based on Type VI COM Express module with dual
DDR4 SO-DIMM, DDI, LVDS, VGA, Gigabit Ethernet,
SATA III, and USB 3.1 Gen2



FEATURES

- Intel® Core™ i9/i7/i5/i3 14nm process(Comet Lake-S)
- Support 2x DDR4-2933 Non-ECC/ECC SO-DIMMs, up to 2x 32GB
- Support USB2.0/3.1 Gen2, 4x SATAIII, 1x PCIe 3.0 x16, and 8x PCIe 3.0 x1
- Support LVDS, VGA, and 3x Display port/HDMI



PCOM-B655VGL is Intel® Comet Lake-S platform COM Express module. It is compatible with COMe 3.0 Type 6 carrier board. The desktop CPU on module offers customer higher computing power but lower cost comparing to mobile solutions. PCOM-B655VGL supports both ECC and Non-ECC DDR4 by different PCH SKUs(Q470E/W480E), which can be adapted to different applications. This module provides one PCIe x16, eight PCIe x1 (Option to one PCIe x4), four USB 3.1 Gen2, and four SATA III.

General

Product	PCOM-B655VGL			
Form Factor	COM Express Type 6 Basic module (125 X 95mm)			
Processor	Intel® Core™			
	i9-10900TE	i7-10700TE	i5-10500TE	i3-10100TE
Core	10	8	6	4
Freq.	1.80 GHz	2.00 GHz	2.30 GHz	2.30 GHz
Turbo	4.50 GHz	4.40 GHz	3.70 GHz	3.60 GHz
Cache	20 MB Intel® Smart Cache	16 MB Intel® Smart Cache	12 MB Intel® Smart Cache	6 MB Intel® Smart Cache
Processor Graphics	Intel® UHD Graphics 630	Intel® UHD Graphics 630	Intel® UHD Graphics 630	Intel® UHD Graphics 630
Graphics Base Frequency	350 MHz	350 MHz	350 MHz	350 MHz
Graphics Max Dynamic Frequency	1.20 GHz	1.15 GHz	1.15 GHz	1.10 GHz
HW Encoding	H.264/AVC, H.265/HEVC, MPEG2, JPEG, VP8, VP9			
HW Decoding	H.264/AVC, VP8, VP9, H.265/HEVC, MPEG2, JPEG/MJPEG, VC-1/WMV9			
HW Acceleration	DirectX 11/12/OpenGL 4.5/OpenCL 2.1			
Processor TDP/cTDP	35 W	35 W	35 W	35 W
BIOS	AMI BIOS			
ECC Memory Supported	NO			YES(only with W480E PCH)
Memory	DDR 4 SO-DIMM up to 64GB 2933MT/s		DDR 4 SO-DIMM up to 64GB 2666MT/s	

*PCOM-B655VGL only supports Intel® 10th Generation 35W processors

I/O Interface

SATA	4 x SATA III (Port 0~3)		
USB	4x USB 3.1 Gen2 (Port 0~3) 8x USB 2.0 (Port 0~7)		
Ethernet	Intel® I219LM		
Serial I/O	GPIO	8 bit GPIO (default 4 input/4 output)	
	I²C	Baud Rate : 400KHz	
	SMBus	Baud Rate : 100KHz	
	UART	TX/RX signal only	
PEG	1x PCIe Gen3 x16 (can be configured to 2x8,1x8. 2x4)		
PCI Express	8x PCIe Gen3 x1 (can be configured to x2, x4)		
Display	Default	Options	Resolution
	LVDS	LVDS (24bit, dual channel)	1920 x 1200@60Hz
		eDP	2880 x 1800@60Hz
	DDI	DP 1.2	4096 x 2304@60Hz
		HDMI 1.4	4096 x 2160@30Hz
VGA	VGA	1920 x 1200@60Hz	
Security	TPM 2.0(Infineon SLB9670), Intel® AES		

MECHANICAL & ENVIRONMENT

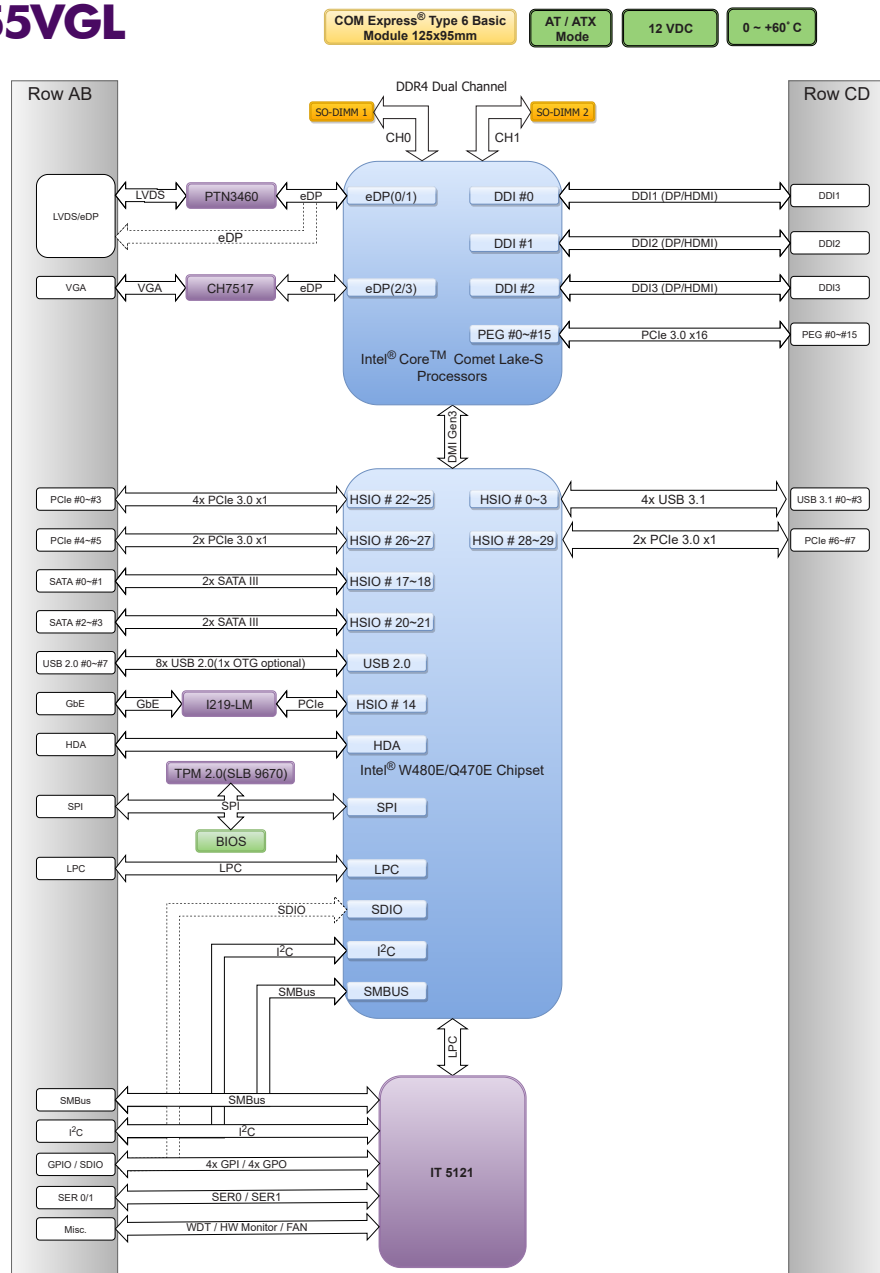
Dimension	125 x 95mm
Power DC IN	Normal: +12V DC AT/ATX mode
Storage Temperature	-20°C to 80°C
Operating Temperature	0°C to 60°C
Certification	Contact us
MTBF	TBD
Vibration	TBD
OS	Windows 10 Ubuntu, CentOS

ORDERING GUIDE

Product	Ordering P/N	Status
PCOM-B655VGL-W480E	AB1-3K44Z	Contact us
PCOM-B655VGL-Q470E	AB1-3K80Z	Contact us
Accessory	Ordering P/N	Status
PCOM-C60B (ATX Carrier Board)	AB1-3G22Z	Contact us
Cooler	B9971950	Contact us

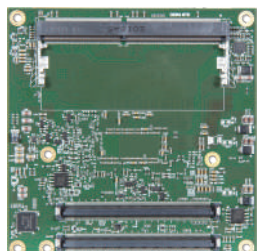
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PCOM-B655VGL



PCOM-B656VGL

Intel® Tiger Lake-UP3 Core™ Processor based on Type VI COM Express module with dual DDR4 SO-DIMM, DDI, eDP, Gigabit Ethernet, SATA 3.0, and USB 3.2



FEATURES

- Intel® Core™ i3/i5/i7/Celeron Processors 10nm process (Tiger Lake UP3)
- Support 2xDDR4-3200 Non-ECC SO-DIMMs, up to 32G per DIMM
- Support USB2.0/3.2, 2x SATAIII, 1x PCIe4.0 x4 and 5x PCIe 3.0 LANES
- Support Display Port, HDMI, VGA, and LVDS/eDP



Portwell PCOM-B656VGL is designed with Intel® Tiger Lake-UP3 processor with Type 6 pin definition. It brings three important factors including DDR4 memory, PCIe Gen4, and USB 3.2 Gen2 x1 support. Extend PCIe Gen3 ports in PCOM-B656VGL can support high speed I/O card for more applications. In the meantime, it's compatible with COMe 3.0 Type 6 carrier board.

General

Product	PCOM-B656VGL			
Form Factor	Type 6, Compact Size Form Factor Express® (95 X 95mm)			
Processor	Intel® Core™			Intel® Celeron®
	i7-1185G7E i7-1185GRE	i5-1145G7E i5-1145GRE	i3-1115G4E i3-1115GRE	6305E
Core	4	4	2	2
Base Freq. @ TDP/cTDP	2.8/1.8/1.2 GHz	2.6/1.5/1.1 GHz	3.0/2.2/1.7 GHz	1.80 GHz
Turbo	4.4 GHz	4.1 GHz	3.9 GHz	N/A
Cache	12MB	8MB	6MB	4MB
Processor Graphics	Intel® Iris® Xe Graphics	Intel® Iris® Xe Graphics	Intel® Iris® Xe Graphics	Intel® UHD Graphics
Graphics Max Dynamic Frequency	1.35 GHz	1.30 GHz	1.25 GHz	1.25 GHz
HW Encoding	VP9 8/10 bit, H.265/HEVC 8/10 bit, H.264/AVC, MPEG2			
HW Decoding	AV1, VP9 8/10/12 bit, H.265/HEVC 8/10/12 bit, H.264/AVC, MPEG2			
Processor TDP/cTDP	28/15/12W	28/15/12W	28/15/12W	15W
BIOS	AMI BIOS			
ECC Memory Supported	NO			
Memory	2x SO-DIMM DDR4 up to 32GB 3200MHz per DIMM			

I/O Interface

SATA	2 x SATA III (Port 0~1)		
USB	4x USB 3.2 Gen2 (Port 1~4) 8x USB 2.0 (Port 0~7)		
Ethernet	Intel® i225IT		
Serial I/O	GPIO	4x GPI & 4x GPO	
	I²C	Baud Rate : 400KHz	
	SMBus	Baud Rate : 100KHz	
	UART	Only RX/TX signal	
PEG	1x PCIe Gen4 x4		
PCI Express	1x PCIe Gen3 x4 / 2x PCIe Gen3 x2 / 4x PCIe Gen3 x1 / 1x PCIe Gen3 x2 + 2x PCIe Gen3 x1 (Port 0~3) 1x PCIe Gen3 x1 (Port 4) with I225 LAN 1x PCIe Gen3 x2 / 2x PCIe Gen3 x1 (Port 6,7) w/o USB 3.2		
Display	Default	Options	Resolution
	DDI1	DP1.4	Up to 5120x3200 @ 60Hz 24 bpp
		HDMI	Up to 4096x2304 @ 60Hz 24 bpp
	DDI2	DP1.4	Up to 5120x3200 @ 60Hz 24 bpp
		HDMI	Up to 4096x2304 @ 60Hz 24 bpp
	LVDS	eDP	Up to 4096x2304 @ 60Hz 24 bpp
		24bit dual channel LVDS	
VGA	VGA		Up to 1920x1200 @ 60Hz
Security	TPM 2.0(Infinion SLB9670), Intel® AES		

PCOM-B656VGL

PCOM

MECHANICAL & ENVIRONMENT

Dimension	95 x 95mm
Power DC IN	Normal: +12V DC, +5VSB DC AT/ATX mode
Storage Temperature	-40°C to 85°C
Operating Temperature	0°C to 60°C -40°C to 85°C (Selection Model)
Certification	Contact us
MTBF	Over 100,000 hours at 40°C
Vibration	Contact us
OS	Windows 10 Red Hat, Ubuntu, CentOS

ORDERING GUIDE

Product	Ordering P/N	Status
PCOM-B656VGL-1185G7E	AB1-3L45	Contact us
PCOM-B656VGL-1185GRE	AB1-3L28	Contact us
PCOM-B656VGL-1145G7E	AB1-3L47	Contact us
PCOM-B656VGL-1145GRE	AB1-3L48	Contact us
PCOM-B656VGL-1115G4E	AB1-3L49	Contact us
PCOM-B656VGL-1115GRE	AB1-3L46	Contact us
PCOM-B656VGL-6305E	AB1-3L50	Contact us
Accessory	Ordering P/N	Status
PCOM-C60B (ATX Carrier Board)	AB1-3G22Z	Contact us
Cooler	B9971920	Contact us

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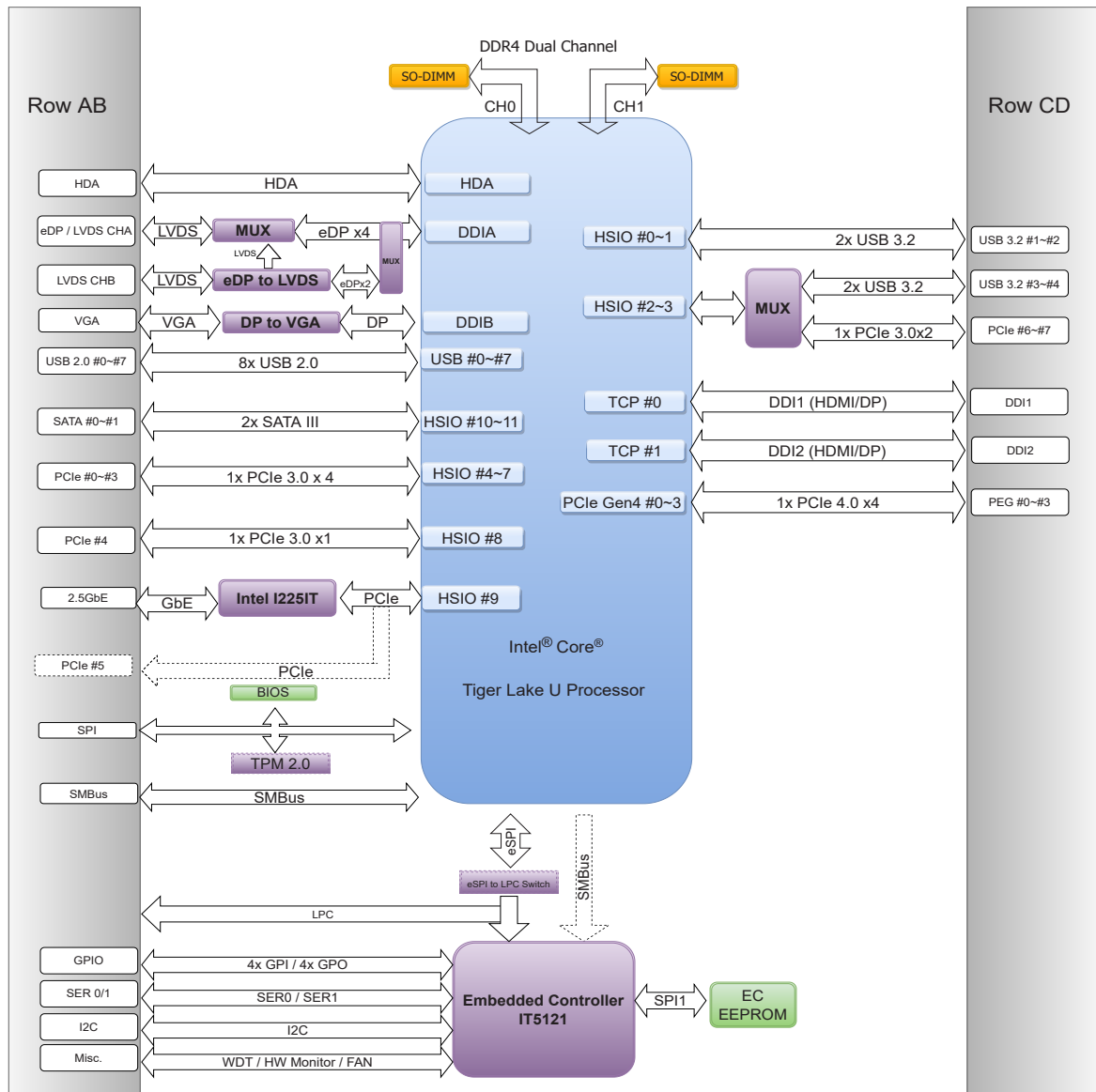
PCOM-B656VGL

COM Express® Type 6
Compact Module 95x95mm

AT / ATX Mode

+12VDC
+5VSB

-40° C ~ +85° C
For Selection model



PCOM-B700G

Intel® Pentium® and Xeon® processor D-1500 Series with DDR4 ECC up to 96GB 2400 MT/s on Three SO-DIMM Sockets with 31 PCIe Lanes, 2x KR to support 10G, NC-SI Interface, SATA III, USB 2.0 and 3.0



FEATURES

- Intel® Pentium® and Xeon® Processors D-1500 Series (Broadwell-DE)
- DDR4 1866/2133/2400 MT/s ECC up to 96GB
- 31 PCIe Lanes
- High-speed Ethernet, 2x 10GbE and 1x GbE interfaces
- Wide-Temp (-40°C to 85°C by selected sku) Support



PCOM-B700G, a Type 7 COM Express module, is designed with Intel® Pentium® and Xeon® processor. Based on the COM Express 3.0 Type 7 pinout definition, when compared to the Type 6 pinout, trades all the graphic interfaces for 10 GbE ports and more PCIe lanes, makes PCOM-B700G ideal for applications in networking, micro server and the like, requiring low power consumption while supporting high computing performance and communication throughput.

PCOM-B700G features two 10GbE LAN interfaces, 31 PCIe Lanes and three DDR4 ECC SO-DIMM up to 96GB in total. It is compatible with Type 7 carrier board.

General

Product	PCOM-B700G					
Form Factor	Type 7, Basic Size Form Factor COM Express® (125 X 95mm)					
Processor	Intel® Pentium®/Xeon®					
	D1508	D1517	D1539	D1548	D1559	D1577
Core	2	4	8	8	12	16
Freq.	2.20 GHz	1.60 GHZ	1.60 GHZ	2.00 GHz	1.50 GHZ	1.30 GHZ
Turbo	2.60 GHz	2.20 GHz	2.20 GHz	2.60 GHz	2.10 GHz	2.10 GHz
Cache	3MB	6MB	12MB	12MB	18MB	24MB
Processor Graphics	N/A					
Graphics Base Frequency						
Graphics Max Dynamic Frequency						
HW Encoding						
HW Decoding						
Processor TDP	25W	25W	35W	45W	45W	45W
BIOS	AMI BIOS					
ECC Memory Supported	Yes					
BIOS	3x SO-DIMM DDR4 up to 96GB 1866 MT/s	3x SO-DIMM DDR4 up to 96GB 2133 MT/s		3x SO-DIMM DDR4 up to 96GB 2400 MT/s	3x SO-DIMM DDR4 up to 96GB 2133 MT/s	

I/O Interface

SATA	2x SATA III	
USB	4x USB 2.0 4x USB 3.0	
Ethernet	Intel® I210AT	
Serial I/O	GPIO	8 bit GPIO (4 in, 4out)
	I ² C	Frequency : 100kHz (Default) / 400kHz (available)
	SMBus	Frequency : 100kHz (Default) / 400kHz (available)
	UART	2x UART
PEG	1x PCIe Gen3 x16 & 2x PCIe Gen3 x4	
PCI Express	7x PCIe Gen2 x1	
Security	N/A	

MECHANICAL & ENVIRONMENT

Dimension	125 x 95mm
Power DC IN	12V DC IN AT/ATX mode
Storage Temperature	-40°C to 85°C
Operating Temperature	-40°C to 85°C
Certification	Contact us
MTBF	Contact us
Vibration	Contact us
OS	Windows 10 Pro, CentOS 7.6

ORDERING GUIDE

Product	Ordering P/N	Status
PCOM-B700G-D1577	AB1-3G83	Available
PCOM-B700G-D1559	AB1-3G82	Available
PCOM-B700G-D1548	AB1-3F53	Available
PCOM-B700G-D1539	AB1-3F52	Available
PCOM-B700G-D1517	AB1-3G77	Available
PCOM-B700G-D1508	AB1-3G78	Available
Accessory	Ordering P/N	Status
Heat Spreader	B830A070	Available
Heat Sink	B830A060	Available
Cooler	B9971570	Available
PCOM-C701 (ATX Carrier Board)	AB1-3J61Z	Available
PCOM-C702 (ATX Carrier Board)	AB1-3J60Z	Available

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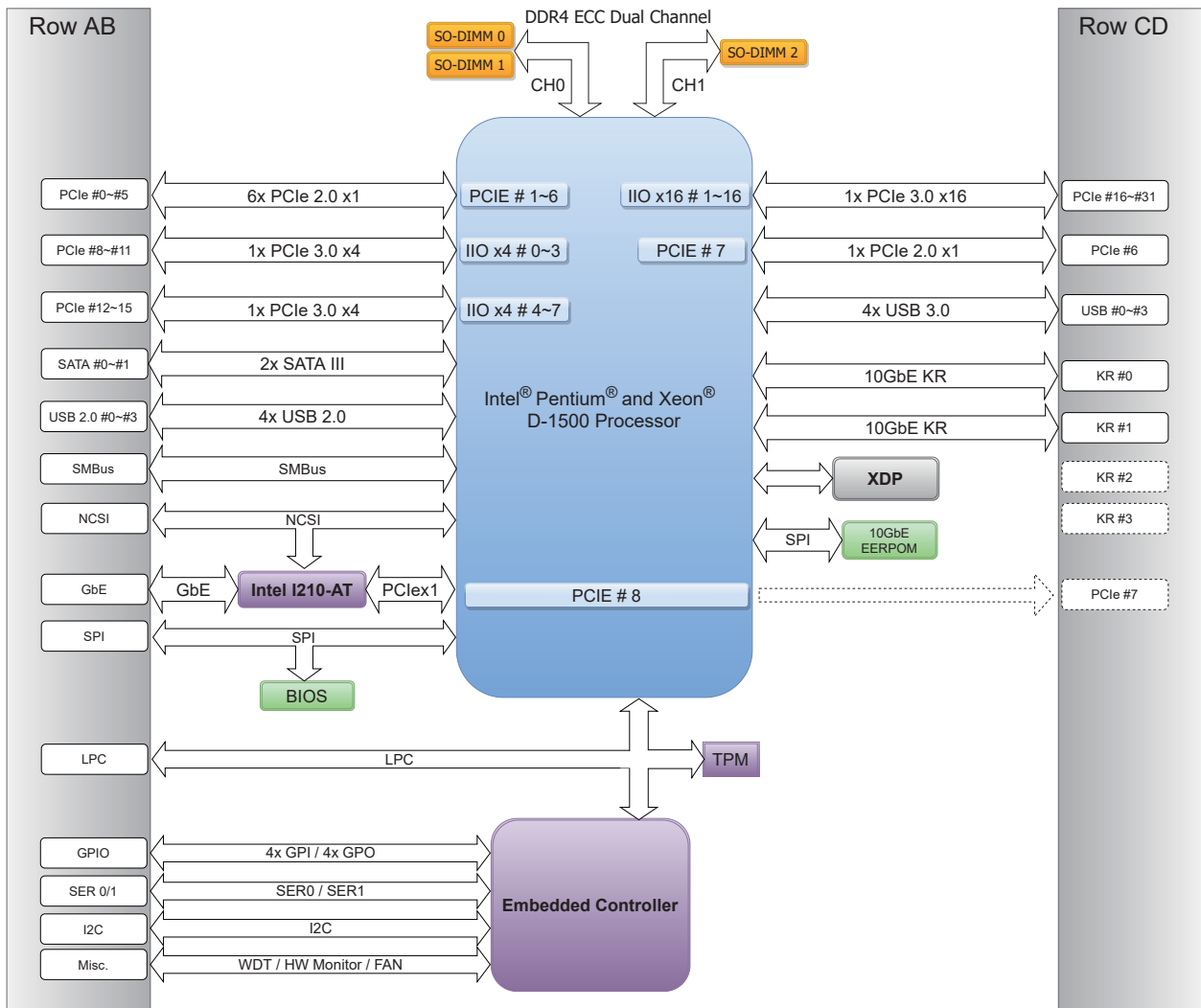
PCOM-B700G

COM Express® Type 7
Basic Module 125x95mm

AT / ATX Mode

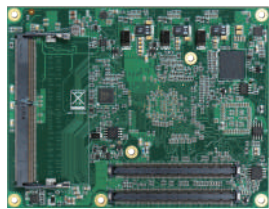
12VDC+/-20%

-40° C ~ +85° C
(Selected SKUs)



PCOM-B701GT

Intel® Atom® processor C3000 Series with DDR4 ECC up to 96GB 2400 MT/s on Three SO-DIMM Sockets with up to 20 HSIO Lanes, 4x KR to support 10G, NC-SI Interface, SATA III, TPM 2.0, USB 2.0 and 3.0



FEATURES

- Intel® Atom® Processors C3000 Series (Denverton)
- DDR4 1866/2133/2400 MT/s ECC up to 96GB
- Up to 20 HSIO Lanes (based on CPU sku)
- High-speed Ethernet, 4x 10GbE and 1x GbE interfaces (based on CPU sku)
- Wide-Temp (-40°C to 85°C by selected sku) Support



PCOM-B701GT, a Type 7 COM Express module, is designed with Intel® Atom® processor. Based on the COM Express 3.0 Type 7 pinout definition, when compared to the Type 6 pinout, trades all the graphic interfaces for 10 GbE ports and more PCIe lanes, makes PCOM-B701GT ideal for applications in networking, micro server and the like, requiring low power consumption while supporting high computing performance and communication throughput.

PCOM-B701GT features four 10GbE LAN interfaces, 20 PCIe Lanes, TPM 2.0 and three DDR4 ECC SO-DIMM up to 96GB in total. It is compatible with Type 7 carrier board.

General

Product	PCOM-B701GT						
Form Factor	Type 7, Basic Size Form Factor COM Express® (125 X 95mm)						
Processor	Intel® Atom®						
	C3308	C3338	C3508	C3538	C3708	C3758	C3808
Core	2	2	4	4	8	8	12
Freq.	1.60 GHz	1.50 GHz	1.60 GHz	2.20 GHz	1.70 GHz	2.20 GHz	2.00 GHz
Turbo	2.10 GHz	2.20 GHz	1.60 GHz	2.20 GHz	1.70 GHz	2.20 GHz	2.00 GHz
Cache	4MB	4MB	8MB	8MB	16MB	16MB	12MB
Processor Graphics	N/A						
Graphics Base Frequency							
Graphics Max Dynamic Frequency							
HW Encoding							
HW Decoding							
HW Acceleration							
Processor TDP	9.5W	8.5W	11.5W	16W	17W	25W	25W
BIOS	AMI BIOS						
ECC Memory Supported	Yes						
Memory	1x SO-DIMM DDR4 up to 32GB 1866 MT/s	3x SO-DIMM DDR4 up to 96GB 1866 MT/s	3x SO-DIMM DDR4 up to 96GB 2133 MT/s	3x SO-DIMM DDR4 up to 96GB 2133 MT/s	3x SO-DIMM DDR4 up to 96GB 2400 MT/s	3x SO-DIMM DDR4 up to 96GB 2133 MT/s	3x SO-DIMM DDR4 up to 96GB 2133 MT/s

I/O Interface

SATA	2x SATA III (1x SATA III for C3308, C3338 and C3508)	
USB	4x USB 2.0 4x USB 3.0 (No USB 3.0 for C3308, 1x USB 3.0 for C3508, 2x USB 3.0 for C3338)	
Ethernet	Intel® I210IT	
Serial I/O	GPIO	8 bit GPIO (4 in, 4out)
	I ² C	Frequency : 100kHz (Default) / 400kHz (available)
	SMBus	Frequency : 100kHz (Default) / 400kHz (available)
	UART	2x UART
PCI Express	C3308: 3x PCIe Gen3 x1 & 3x PCIe Gen2 x1 C3338: 2x PCIe Gen3 x2 & 1x PCIe Gen3 x1 & 3x PCIe Gen2 x1 C3508: 1x PCIe Gen3 x2 & 2x PCIe Gen3 x1 & 3x PCIe Gen2 x1 C3538: 3x PCIe Gen3 x2 & 3x PCIe Gen2 x1 C3708, C3758 & C3808: 1x PCIe Gen3 x8 & 2x PCIe Gen3 x2 & 3x PCIe Gen2 x1	
Security	TPM 2.0 (Option)	

MECHANICAL & ENVIRONMENT

Dimension	125x95mm
Power DC IN	12V DC IN AT/ATX mode
Storage Temperature	-40°C to 85°C
Operating Temperature	-40°C to 85°C
Certification	Contact us
MTBF	Contact us
Vibration	Contact us
OS	Windows 10 Pro, CentOS 7.6

ORDERING GUIDE

Product	Ordering P/N	Status
PCOM-B701GT-C3808	AB1-3H90Z	Available
PCOM-B701GT-C3758	AB1-3J94Z	Available
PCOM-B701GT-C3708	AB1-3H89Z	Available
PCOM-B701GT-C3538	AB1-3H96Z	Available
PCOM-B701GT-C3508	AB1-3H86Z	Available
PCOM-B701GT-C3338	AB1-3J02Z	Available
PCOM-B701GT-C3308	AB1-3J01Z	Available
Accessory	Ordering P/N	Status
Heat Sink	TBD	Contact us
Cooler	TBD	Contact us
PCOM-C701 (ATX Carrier Board)	AB1-3J61Z	Available
PCOM-C702 (ATX Carrier Board)	AB1-3J60Z	Available

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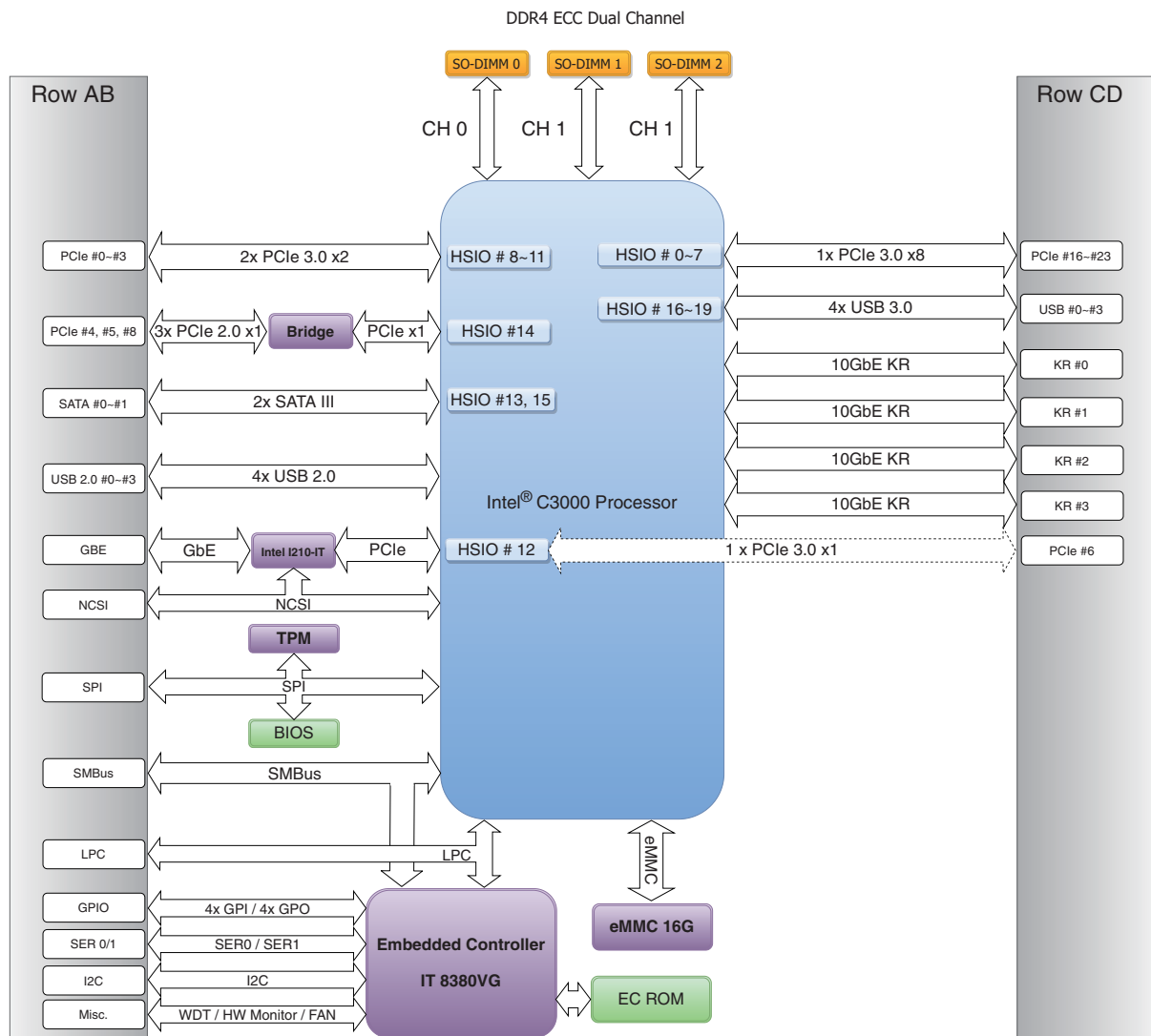
PCOM-B701GT

COM Express® Type 7
Compact Module 125x95mm

AT / ATX Mode

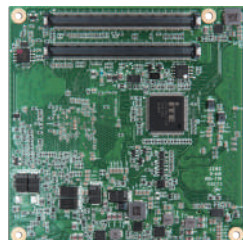
12VDC+/-20%

-40° C ~ +85° C
(Selected SKUs)



PCOM-B702G

Intel® Atom® processor C3000 Series with DDR4 ECC up to 64GB 2133 MT/s on Two SO-DIMM Sockets with up to 12 HSIO Lanes, 4x KR to support 10G, NC-SI Interface, SATA III, USB 2.0 and 3.0



FEATURES

- Intel® Atom® Processors C3000 Series (Denverton)
- DDR4 1866/2133 MT/s ECC up to 64GB
- Up to 12 HSIO Lanes (based on CPU sku)
- High-speed Ethernet, 4x 10GbE (based on CPU sku) and 1x GbE interfaces
- Wide-Temp (-40°C to 85°C by selected sku) Support



PCOM-B702G, a Type 7 COM Express module, is designed with Intel® Atom® processor. Based on the COM Express 3.0 Type 7 pinout definition, when compared to the Type 6 pinout, trades all the graphic interfaces for 10 GbE ports and more PCIe lanes, makes PCOM-B702G ideal for applications in networking, micro server and the like, requiring low power consumption while supporting high computing performance and communication throughput.

PCOM-B702G features four 10GbE LAN interfaces (based on CPU sku) and DDR4 ECC SO-DIMM up to 64GB. It is compatible with Type 7 carrier board.

General

Product	PCOM-B702G			
Form Factor	Type 7, Compact Size Form Factor COM Express® (95 X 95mm)			
Processor	Intel® Atom®			
	C3308	C3338	C3508	C3558
Core	2	2	4	4
Freq.	1.60 GHz	1.50 GHz	1.60 GHz	2.20 GHz
Turbo	2.10 GHz	2.20 GHz	1.60 GHz	2.20 GHz
Cache	4MB	4MB	8MB	8MB
Processor Graphics	N/A			
Graphics Base Frequency				
Graphics Max Dynamic Frequency				
HW Encoding				
HW Decoding				
HW Acceleration				
Processor TDP	9.5W	8.5W	11.5W	16W
BIOS	AMI BIOS			
ECC Memory Supported	YES			
Memory	1x SO-DIMM DDR4 up to 32GB 1866 MT/s		2x SO-DIMM DDR4 up to 64GB 1866 MT/s	2x SO-DIMM DDR4 up to 64GB 2133 MT/s

I/O Interface

I/O Interface		
SATA	1x SATA III (2x SATA III for C3558)	
USB	1x USB 3.0 (2x USB 3.0 for C3338 and C3558) 4x USB 2.0	
Ethernet	Intel® I210IT	
Serial I/O	GPIO	8 bit GPIO (4 in, 4 out)
	I²C	Frequency:100kHz (Default) / 400kHz (available)
	SMBus	Frequency:100kHz (Default) / 400kHz (available)
	UART	2x UART
PCI Express	C3308: 4x PCIe Gen3 x1 C3338: 1x PCIe Gen3 x4 & 3x PCIe Gen3 x1 C3508: 1x PCIe Gen3 x4 & 2x PCIe Gen3 x1 C3558: 1x PCIe Gen3 x4 & 3x PCIe Gen3 x1	
Security	N/A	

MECHANICAL & ENVIRONMENT

Dimension	95 x 95mm
Power DC IN	12V DC IN AT mode
Storage Temperature	-40°C ~ 85°C
Operating Temperature	-40°C ~ 85°C
Certification	Contact us
MTBF	Contact us
Vibration	Contact us
OS	Windows 10 Pro, CentOS 7.6

ORDERING GUIDE

Product	Ordering P/N	Status
PCOM-B702G-C3558	AB1-3H49	Available
PCOM-B702G-C3508	AB1-3J40	Available
PCOM-B702G-C3338	AB1-3H46	Available
PCOM-B702G-C3308	AB1-3H45	Available

Accessory	Ordering P/N	Status
Heat Sink	TBD	Contact us
Cooler	TBD	Contact us
PCOM-C701 (ATX Carrier Board)	AB1-3J61Z	Available
PCOM-C702 (ATX Carrier Board)	AB1-3J60Z	Available

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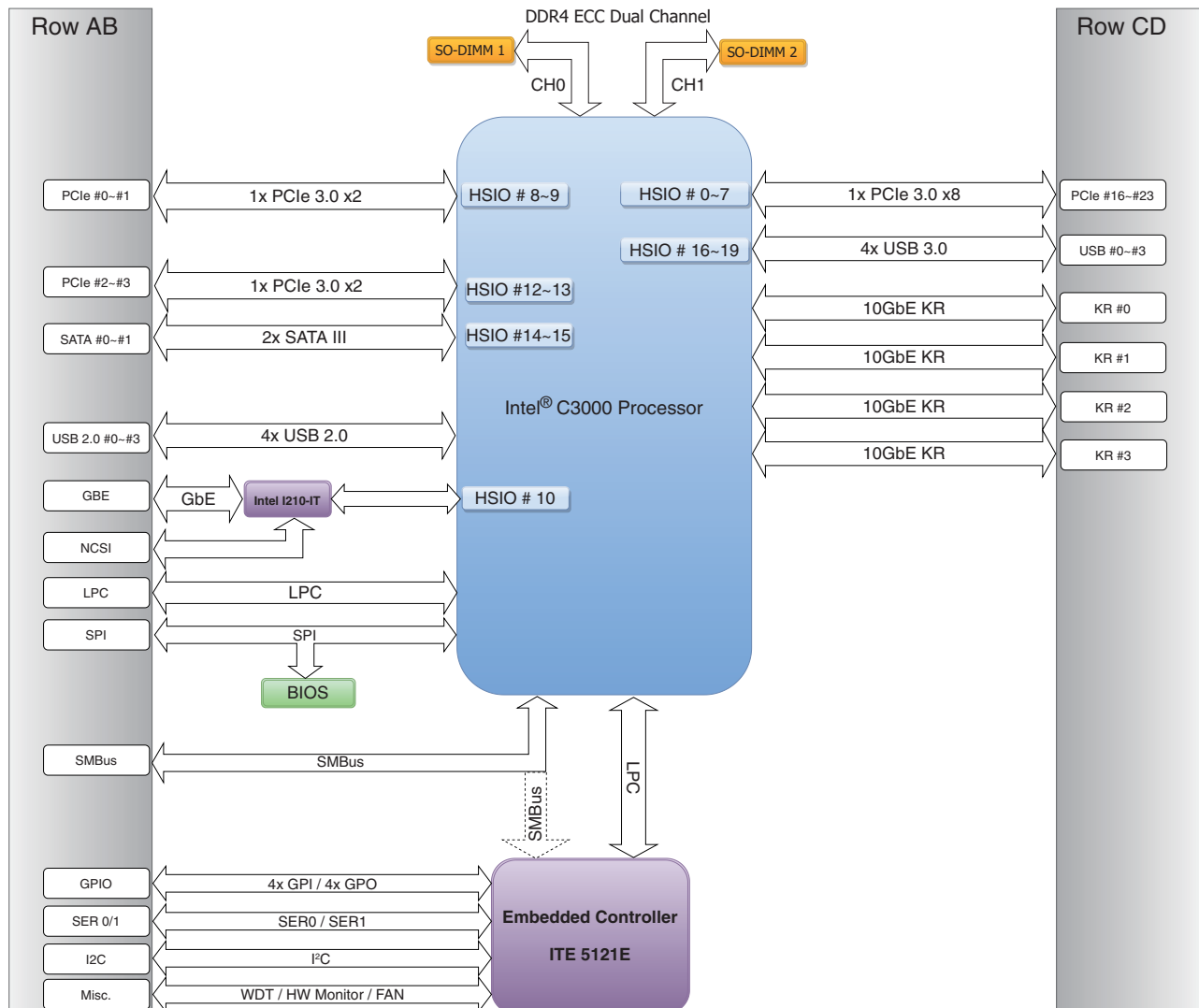
PCOM-B702G

COM Express® Type 7
Compact Module 95x95mm

AT Mode

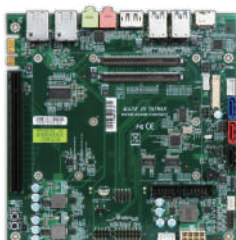
12VDC+/-20%

-40° C ~ +85° C
(Selected SKUs)



PCOM-C605

PCOM-C605 is Mini-ITX Form Factor Evaluation Carrier Board COM Express Revision 2.0 Type VI Module



FEATURES

- COM Express® carrier board is compatible with the Portwell Type VI COM Express® modules.
- Mini-ITX form factor meets most standard mounting spaces and provides more expansions slots

Portwell PCOM-C605 is designed with Mini-ITX form factor with COM Express Type VI row connectors, suitable for evaluation testing of Portwell's Type VI COM Express modules on PCI-E, PEG, VGA/LVDS, USB, SATA, and CFEX with SATA and SPI interface. We also provide carrier board design guides for your own carrier board development reference.

This new version of the PCOM-C605 Reference Carrier Board is 100% compatible with the recently released PICMG COM Express Carrier Design Guide and provides a full complement of I/O interfaces, debugging tools, and peripheral devices such as Super I/O and audio code that may be required on the custom carrier board. The full schematics and mechanical drawings of the PCOM-C605 are available for testing to allow customers to immediately begin their own carrier board design effort. A complete Starter Kit is also available, which includes the COM Express module of choice, the PCOM-C605 reference carrier board, thermal solution, documentation.

General

Product	PCOM-C605	
Form Factor	Type 6, Mini-ITX (170 x 170 mm)	
Processor	Depends on Module	
Core		
Freq.		
Turbo		
Cache		
Processor Graphics		
Graphics Base Frequency		
Graphics Max Dynamic Frequency		
HW Encoding		
HW Decoding		
HW Acceleration		
Processor TDP		
BIOS		
ECC Memory Supported		
Memory		

I/O Interface

I/O Interface		
SATA	3 x SATA III, 1 x CFEX	
USB	4 x USB 3.0, 4 x USB2.0	
Ethernet	2 x GbE	
Serial I/O	GPIO	8 bit GPIO
	I²C	Based on module desing
	SMBus	Based on module desing
	UART	1 x Serial Port
PEG	1 x PCIe x16	
PCI Express	2 x PCIe x 1 Golden Finger	
Display	Default	Resolution
	VGA	Depends on module
	LVDS	
	DP	
	HDMI	
Security	N/A	

MECHANICAL & ENVIRONMENT

Dimension	170 x 170 mm
Power DC IN	12V DC IN
Storage Temperature	-40°C to 80°C
Operation Temperature	-40°C to 80°C
Certification	Contact us
MTBF	Over 100,000 hours at 40° C
Vibration	N/A
OS	Depend on Module

ORDERING GUIDE

Product	Ordering P/N	Status
PCOM-C605	AB1-3998	Available

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PCOM-C605

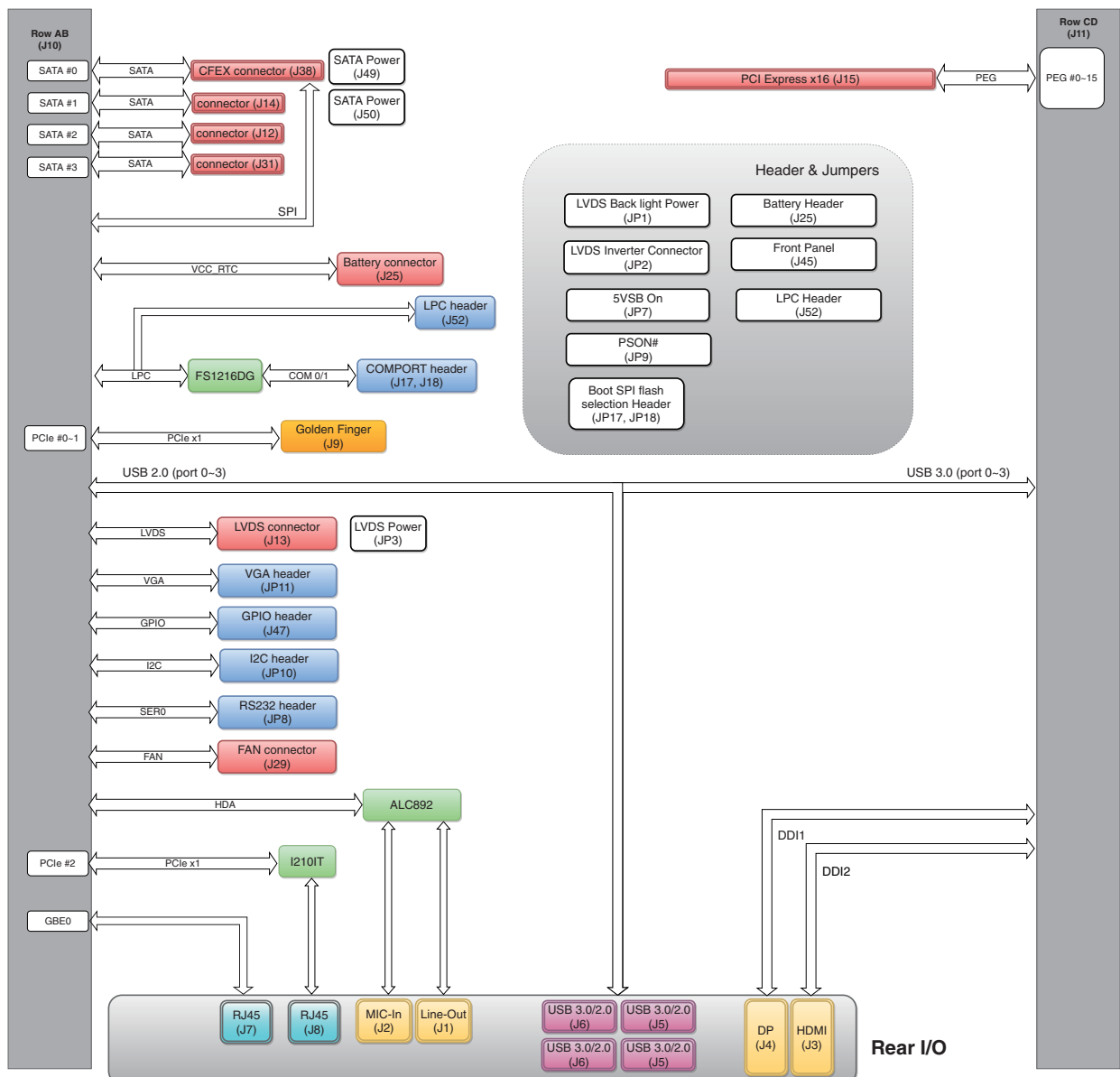
COM Express Type 6
Carrier Board

Mini-ITX
Form Factor

-40 ~ +80°C

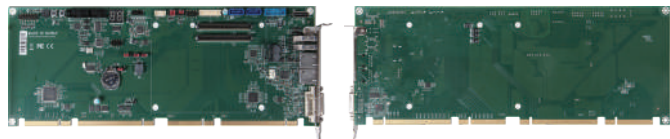
ATX PSU
Connector

12V DC in



PCOM-C615

PCOM-C615 is PICMG 1.3 Full Size Form Factor Evaluation Carrier Board for COM Express® Revision 2.0 Type VI Module. PCOM-C615 follows standard PICMG 1.3 golden finger pin definition and let customer save system total cost for easily upgrading modules



FEATURES

- Supports four SATA III ports
- Supports multiple display by LVDS, HDMI, DP on board and DVI-I (DVI-D+VGA) on bracket (Choose either HDMI or VGA by BIOS)
- Rich I/O interfaces such as serial ports, USB, PCI



Portwell PCOM-C615 is designed with PICMG 1.3 form factor with COM Express Type VI row connectors, suitable for evaluation testing of Portwell's Type VI COM Express modules on PCIe, PEG, VGA/HDMI, DVI, USB and SATA interface.

General

Product	PCOM-C615
Form Factor	PICMG 1.3 (338.5 x 126.39mm)
Processor	Depends on Module
Core	
Freq.	
Turbo	
Cache	
Processor Graphics	
Graphics Base Frequency	
Graphics Max Dynamic Frequency	
HW Encoding	
HW Decoding	
HW Acceleration	
Processor TDP	
BIOS	
ECC Memory Supported	
Memory	

I/O Interface

SATA	4 x SATA III (2 ports through backplane)	
USB	2 x USB3.1 Gen2 ports on bracket 2 x USB3.1 Gen1 ports on board 4 x USB2.0 ports through backplane	
Ethernet	2 x GbE	
Serial I/O	GPIO	8 bit GPIO
	I²C	base on module design
	SMBus	base on module design
	UART	1x RS232 1x RS232/422/485
PEG	1x PCIe x16 (PCIe Gen3)	
PCI Express	4x PCIe x1 or 1x PCIe x4 by different bios support (PCIe Gen3)	
Display	HDMI	base on module design
	DP	
	DVI-I (DVI-D/VGA)	
	24bit dual channel LVDS	
Security	N/A	

MECHANICAL & ENVIRONMENT

Dimension	338.5 x 126.39mm
Power DC IN	Support ATX power supply
Storage Temperature	-20°C to 80°C
Operation Temperature	0°C to 60°C
Certification	CE, FCC
MTBF	Over 100,000 hours at 40°C
Vibration	N/A
OS	Depends on Module

ORDERING GUIDE

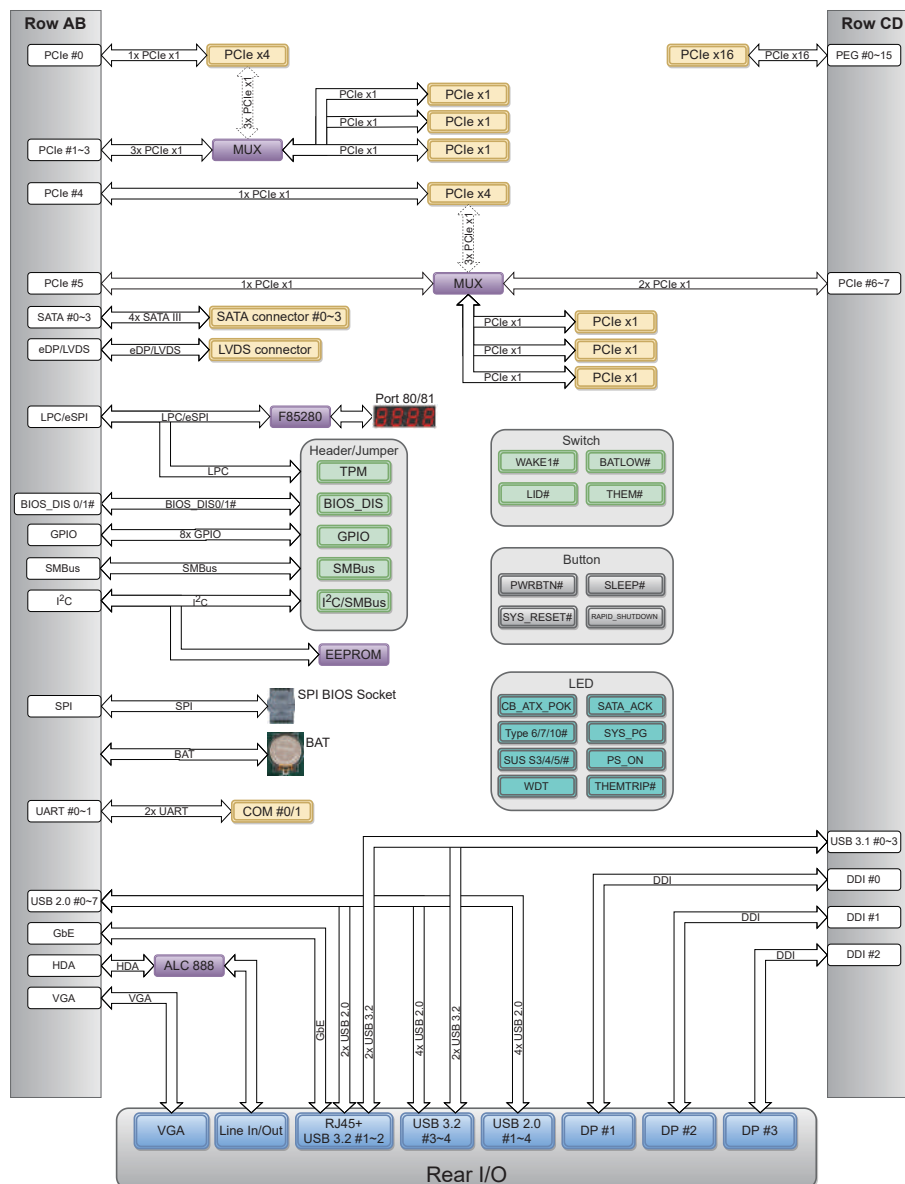
Product	Ordering P/N	Status
PCOM-C615	ABI-3J53	Available

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PCOM-C615

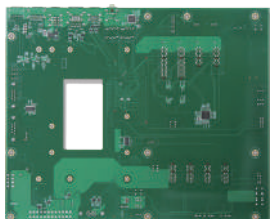
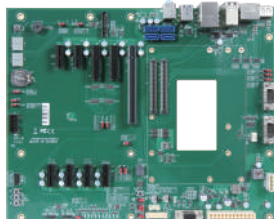
COM Express Type 6
Carrier Board

-40 ~ +85°C



PCOM-C60B

PCOM-C60B is ATX Form Factor Evaluation Carrier Board for COM Express® Revision 3.0 Type VI Module. PCOM-C60B follows standard COM Express 2.0 carrier board specification



FEATURES

- ATX function evaluation carrier board
- Support 4x USB 3.1, 8x USB 2.0, 4x SATA III ports
- Support multiple display(DP, VGA, LVDS)



Portwell PCOM-C60B is designed with ATX form factor with COM Express Type VI row connectors, suitable for evaluation testing of Portwell's Type VI COM Express modules on PCIe, PEG, VGA/DP/LVDSI, USB and SATA interface.

General

Product	PCOM-C60B
Form Factor	ATX Form Factor (305 X 244mm)
Processor	Depends on Module
Core	
Freq.	
Turbo	
Cache	
Processor Graphics	
Graphics Base Frequency	
Graphics Max Dynamic Frequency	
HW Encoding	
HW Decoding	
HW Acceleration	
Processor TDP	
BIOS	
ECC Memory Supported	
Memory	

I/O Interface

SATA	4x SATA III		
USB	4x USB 3.1 Gen2 (Port 0~3) 8x USB 2.0 (Port 0~7)		
Ethernet	2 x GbE		
Serial I/O	GPIO	8 bit GPIO	
	I ² C	base on module design	
	SMBus	base on module design	
	UART	2x DB9 connector	
PEG	1x PCIe x16 (PCIe Gen3)		
PCI Express	8x PCIe Gen3 x1 (including 2x PCIe x4 slot)		
Display	Default	Options	Resolution
	VGA	VGA	Depends on module
		DDI2	
		eDP	
		24bit dual channel LVDS	
LVDS	DP1.2		
DDI-DP			
Security	N/A		

MECHANICAL & ENVIRONMENT

Dimension	305 X 244mm
Power DC IN	Support ATX power supply
Storage Temperature	-40°C to 80°C
Operation Temperature	-40°C to 80°C
Certification	Contact us
MTBF	Contact us
Vibration	Contact us
OS	Depends on Module

ORDERING GUIDE

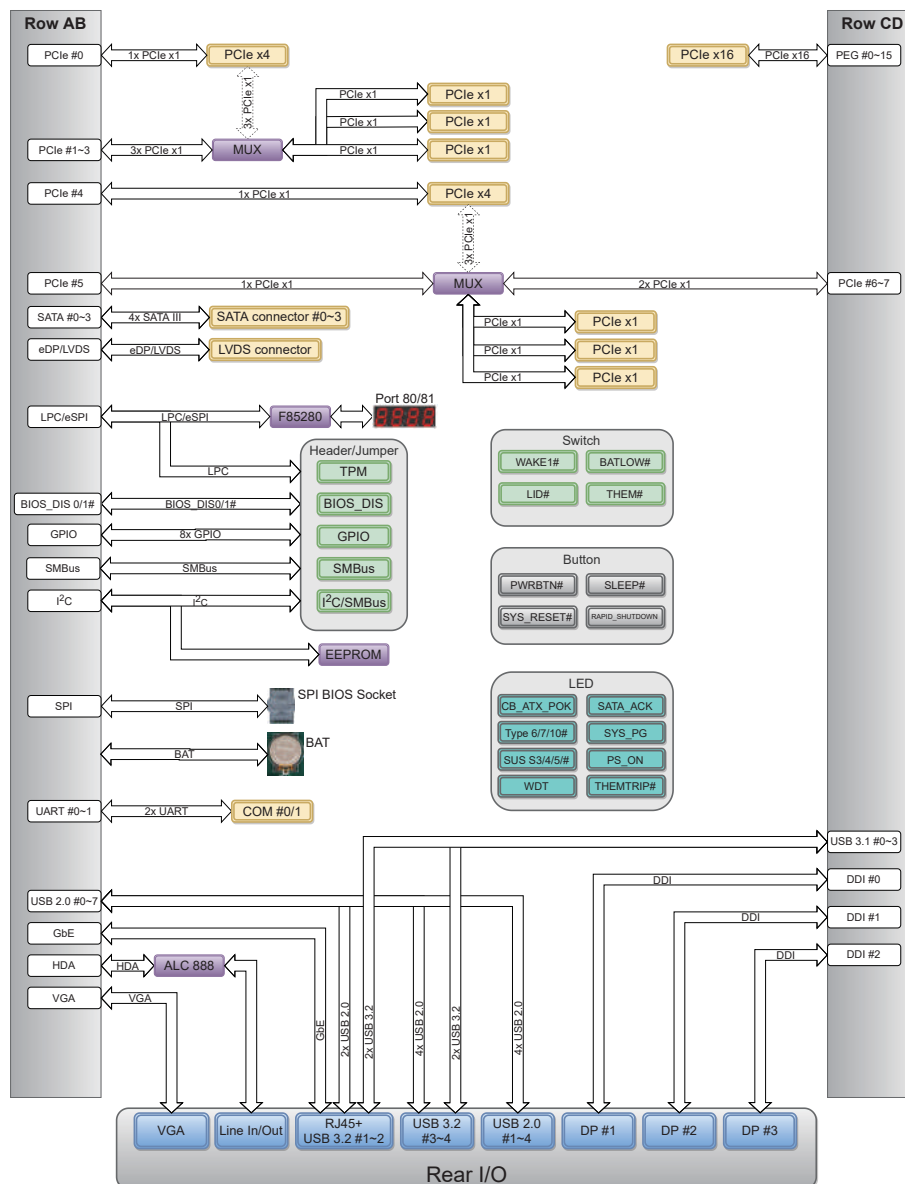
Product	Ordering P/N	Status
PCOM-C60B	AB1-3G22Z	Contact us

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PCOM-C60B

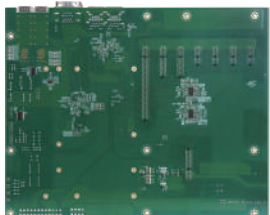
COM Express Type 6
Carrier Board

-40 ~ +85° C



PCOM-C701

ATX Form Factor Evaluation Carrier Board for COM Express
Revision 3.0 Type VII Module with 4x 10GbE Support with
Inphi CS4227 PHY



FEATURES

- Support both AT and ATX mode
- 10G PHY: Inphi CS4227
- 1x GbE, 4x 10GbE SFP+
- 32 PCIe Lanes, 2 SATA III, 4 USB 3.0, 4 USB 2.0



Portwell PCOM-C701 is designed with ATX form factor with COM Express Type VII row connectors; it's suitable for evaluation testing of Portwell's Type VII COM Express modules with 4x USB 3.0, 32x PCIe lanes, 4x 10 Gigabit Ethernet, and BMC AST2500 support. Portwell is able to provide carrier board design guide for customer to design their carrier board as a reference. This can shorten customer's carrier board developing time and make the development quick and easy. The PCOM-C701 provides COM Express Type VII support in addition to fulfill wide range of device connectivity for prototype and flexibility .

General

Product	PCOM-C701	
Form Factor	ATX Form Factor (305 X 244mm)	
Processor	Depends on module	
Core		
Freq.		
Turbo		
Cache		
Processor Graphics		
Graphics Base Frequency		
Graphics Max Dynamic Frequency		
HW Encoding		
HW Decoding		
HW Acceleration		
Processor TDP		
BIOS		
ECC Memory Supported		
Memory		

I/O Interface

SATA	2x SATA III (Port 0/1)	
USB	4x USB 3.0 (Port 0~3) 4x USB 2.0 (Port 0~3)	
Ethernet	1x GbE, 4x 10GbE SFP+	
Serial I/O	GPIO	8 bit GPIO (4 in, 4 out)
	I ² C	1
	SMBus	1
	UART	2
PCI Express	1x PCIe Gen3 x16 3x PCIe Gen3 x4 4x PCIe Gen3 x1	
Display	Unavailable in Type7	
Security	N/A	

MECHANICAL & ENVIRONMENT

Dimension	305 X 244mm
Power DC IN	Single Power: +12V DC PSU connector available AT/ATX mode
Storage Temperature	-40°C to 85°C
Operation Temperature	-40°C to 85°C 0°C to 70°C for BMC and 10G
Certification	Contact us
MTBF	Contact us
Vibration	Contact us
OS	Depends on Module

ORDERING GUIDE

Product	Ordering P/N	Status
PCOM-C701	AB1-3J61Z	Available

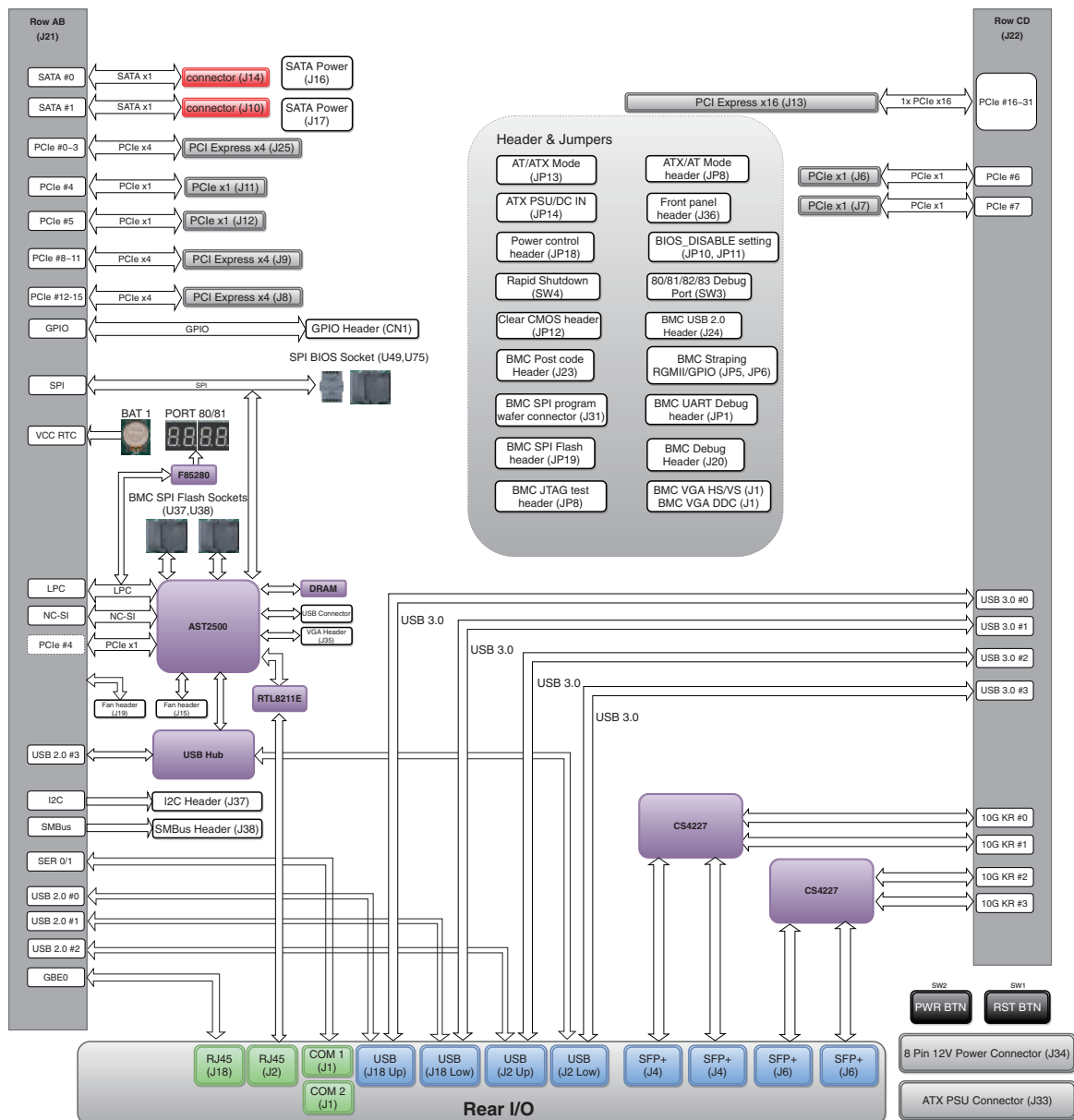
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PCOM-C701

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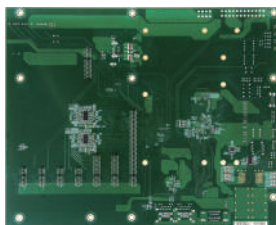
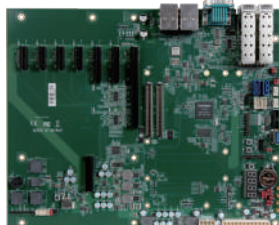
COM Express Type 7
Carrier Board

AT/ATX Form
Factor

-40 ~ +80° C
0 ~ +70° C (BMC, 10G)


PCOM-C702

ATX Form Factor Evaluation Carrier Board for COM Express
Revision 3.0 Type VII Module with 4x 10GbE Support with
Inphi CS4223 PHY



FEATURES

- Support both AT and ATX mode
- 10G PHY: Inphi CS4223
- 1x GbE, 4x 10GbE SFP+
- 32 PCIe Lanes, 2 SATA III, 4 USB 3.0, 4 USB 2.0



Portwell PCOM-C702 is designed with ATX form factor with COM Express Type VII row connectors; it's suitable for evaluation testing of Portwell's Type VII COM Express modules with 4x USB 3.0, 32x PCIe lanes, 4x 10 Gigabit Ethernet, and BMC AST2500 support. Portwell is able to provide carrier board design guide for customer to design their carrier board as a reference. This can shorten customer's carrier board developing time and make the development quick and easy. The PCOM-C702 provides COM Express Type VII support in addition to fulfill wide range of device connectivity for prototype and flexibility.

General

Product	PCOM-C702
Form Factor	ATX Form Factor (305 X 244mm)
Processor	Depends on module
Core	
Freq.	
Turbo	
Cache	
Processor Graphics	
Graphics Base Frequency	
Graphics Max Dynamic Frequency	
HW Encoding	
HW Decoding	
HW Acceleration	
Processor TDP	
BIOS	
ECC Memory Supported	
Memory	

I/O Interface

SATA	2x SATA III (Port 0/1)	
USB	4x USB 3.0 (Port 0~3) 4x USB 2.0 (Port 0~3)	
Ethernet	1x GbE, 4x 10GbE SFP+	
Serial I/O	GPIO	8 bit GPIO (4 in, 4 out)
	I ² C	1
	SMBus	1
	UART	2
PCI Express	1x PCIe Gen3 x16 3x PCIe Gen3 x4 4x PCIe Gen3 x1	
Display	Unavailable in Type7	
Security	N/A	

MECHANICAL & ENVIRONMENT

Dimension	305 X 244mm
Power DC IN	Single Power: +12V DC PSU connector available AT/ATX mode
Storage Temperature	-40°C to 85°C
Operation Temperature	-40°C to 85°C 0°C to 70°C for BMC and 10G
Certification	Contact us
MTBF	Contact us
Vibration	Contact us
OS	Depends on Module

ORDERING GUIDE

Product	Ordering P/N	Status
PCOM-C702	AB1-3J60Z	Available

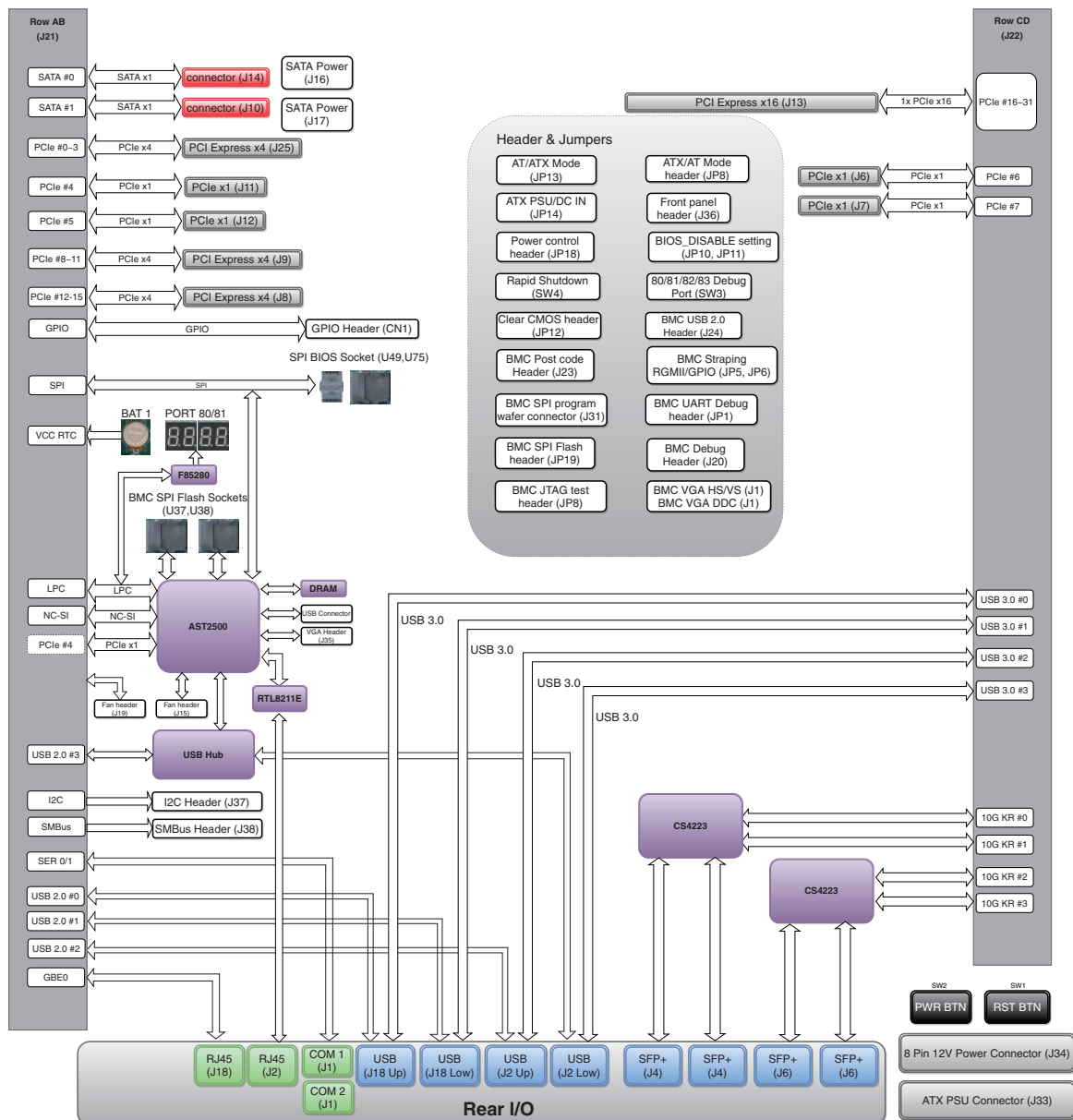
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PCOM-C702

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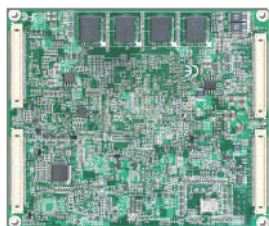
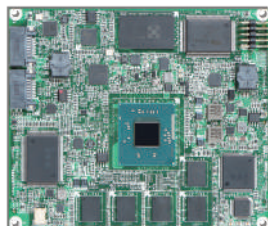
COM Express Type 7
Carrier Board

AT/ATX Form
Factor

-40 ~ +80° C
0 ~ +70° C (BMC, 10G)


PEM-E203VLA

Intel® ATOM® E3800 series processor based on form factor module ETX® 3.0 specification with DDR3L optional ECC/ Non-ECC Memory down, VGA, LVDS, Gigabit Ethernet, IDE, PCI, ISA, Parallel Port, SATA and USB



FEATURES

- ETX tailor-made modular architecture speeds up time-to-market
- 10W TDP for easy fan-less design
- SATA and IDE interface provide best cost effective functions for market
- Support VGA, LVDS and Display-port interface
- On Board DDR3L optional ECC/Non-ECC Memory up to 4GB



Portwell PEM-E203VLA is designed with Intel® ATOM® E3800 series processor. PEM-E203 supports dual 24bit LVDS, and 10W TDP processor is suitable for supermarket, healthy and industrial weighing scale applications which has equipped with dual monitors nowadays. PEM-E203 is capable of driving thermal printer, barcode scanner etc. via Serial and USB interfaces for achieving self-service along with weighing scale.

General

Product	PEM-E203VLA			
Form Factor	ETX 3.01, 114x95 mm			
Processor	Intel® Atom®			
	E3845	E3827	E3825	E3815
Core	4	2	2	1
Freq.	1.91 GHz	1.75 GHz	1.33 GHz	1.46 GHz
Turbo	N/A			
Cache	2MB	1MB	1MB	512KB
Processor Graphics	Intel® HD Graphics for Intel Atom® Processor Z3700 Series			
Graphics Base Frequency	542 MHz	542 MHz	533 MHz	400 MHz
Graphics Max Dynamic Frequency	792 MHz	792 MHz	533 MHz	400 MHz
HW Encoding	H.264			
HW Decoding	H.264, JPEG, MVC, MPEG-2, WMV9, VC1			
HW Acceleration	DX x11, OpenGL x3.0 (OGL 3.0), OpenCL x1.2 (OCL 1.2), OpenGLES x2.0(OGLES x2.0)			
Processor TDP	10W	8W	6W	5W
BIOS	AMI Aptio5 BIOS			
ECC Memory Supported	Yes			
Memory	On Board DDR3L optional ECC/Non-ECC Memory up to 4GB (Intel® Valleyview I-series is up to 8GB for E3845 & E3827 only)			

I/O Interface

SATA	2x SATA II (Option to 1x NAND-Flash)		
USB	4x USB2.0		
Ethernet	1x Realtek® RTL811F-CG FastEthernet Wake-on-LAN and remote wake-up support		
Serial I/O	GPIO		N/A
	I²C		Baud rate: 400KHz
	SMBus		Baud rate: 100KHz
	UART		2x UART
PEG	N/A		
PCI Express	N/A		
Display	VGA	VGA	2048 x 1536
	LVDS	eDP	1600 x 1200
	HDMI	DP	N/A
		HDMI	N/A
Security	Contact us		

MECHANICAL & ENVIRONMENT

Dimension	114 x 95 mm
Power DC IN	5V,3V, 5VSB, VBAT, AT/ATX mode
Storage Temperature	-40°C~ +80°C
Operating Temperature	-40°C~ +80°C
Certification	Contact us
MTBF	Over 120,000 hours at both 35° C and 55° C
Vibration	Random 5Hz to 2KHz, 7.7 grms, 10min in each of 3 axes
OS	Windows 7 / Windows Embedded Standard 7/ Windows 8 / Fedora 18 uUbuntu 13

ORDERING GUIDE

Product	Ordering P/N	Status
PEM-E203VLA-E3815-2G	AB1-3C29	Available
PEM-E203VLA-E3825-2G	AB1-3C52	Available
PEM-E203VLA-E3827-2G	AB1-3B58	Available
PEM-E203VLA-E3845-2G	AB1-3C28	Available
PEM-E203VLA-E3845-4G	AB1-3D67	Available

Accessory	Ordering P/N	Status
PEM-C200	AB1-3246	Available
Heat spreader	B8307620	Available
Heat Sink	B8308990	Available

BLOCK DIAGRAM

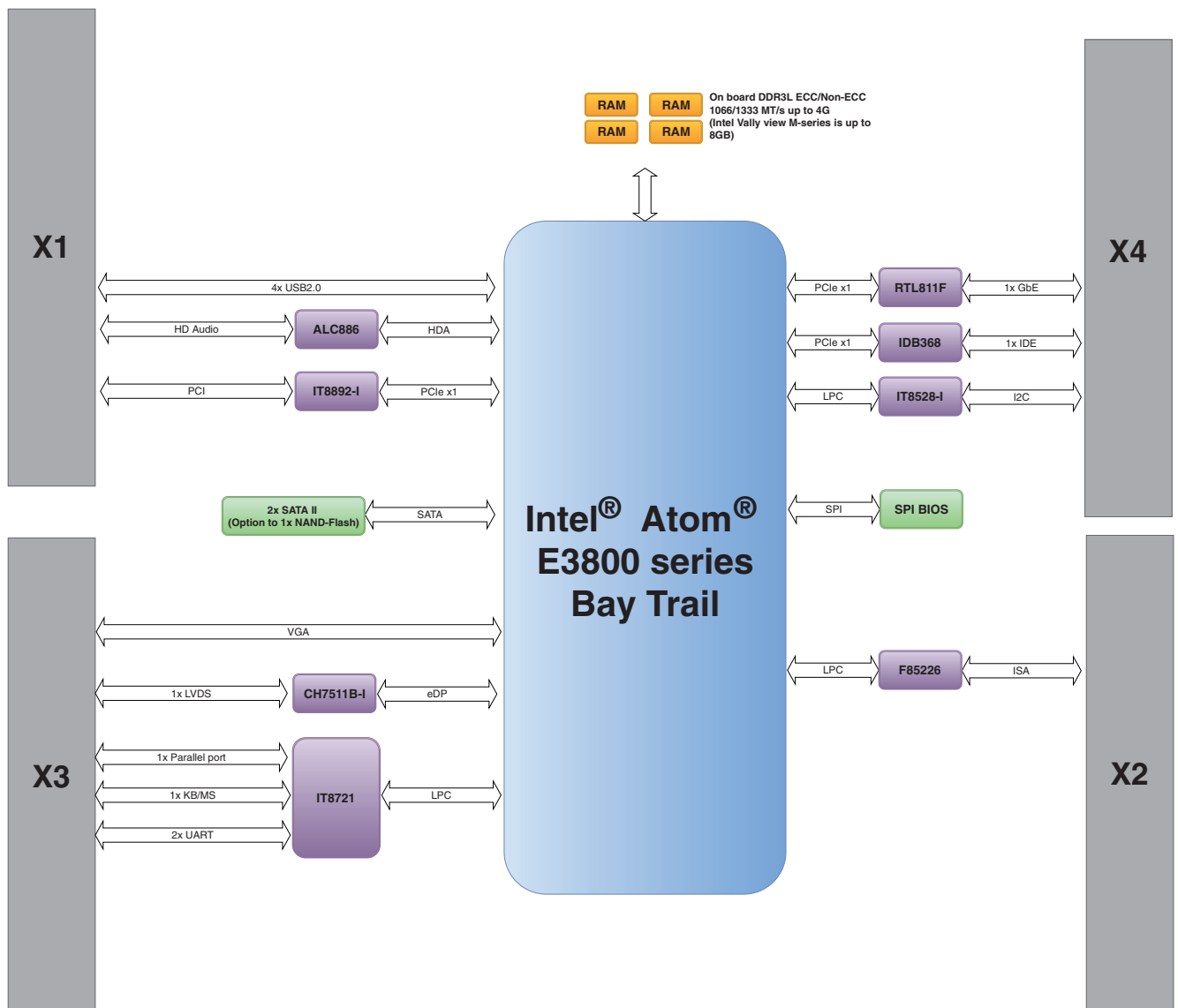
PEM-E203VLA

ETX® 3.01
114x95 mm

AT/ATX Mode

-40°C~ +80°C

5V DC-in



Signal integrity is tested and assured

The Signal Integrity Lab (SI) concentrates its efforts on ensuring reliable quality of our PCB design. With advanced software, Portwell can repair discrepancies via Signal Integrity (SI), Power Integrity (PI) and EMI (Electromagnetic Interference) before gerber out. The benefits of SI not only reduces re-spin versions but also minimizes cost to achieve a faster time-to-market.

The Mission of SIL is as follows.

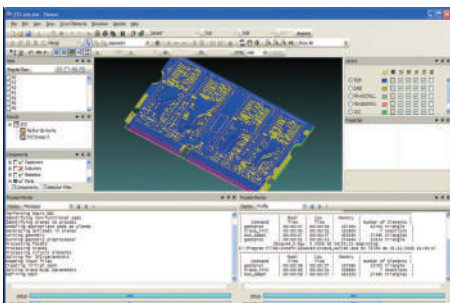
- Ensure high-speed signal quality.
- Reduce PCB turn-around time to fix SI, PI and EMC issue in advance.
- Minimize cost on board design (size, layer no., stackup, etc).
- Provide board stack-up design and PCB material selection.
- Export layout guidelines of high-speed signals.
- Signal validation and correlation.
- Sharing SI/PI/EMI knowledge know-how with part- ners by design collaboration.



For better collaboration design with customers, we adopt world leading simulation tools in the industry field. Such as

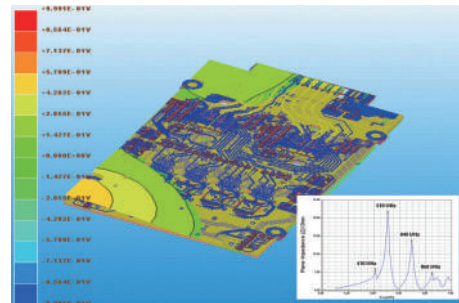
Ansyes (Ansoft) Siwave 5.0

1. Hybrid 2D Full Wave EM Field Solver.
2. Analyze entire PCB and IC packages.
3. ID signal and power integrity problems.



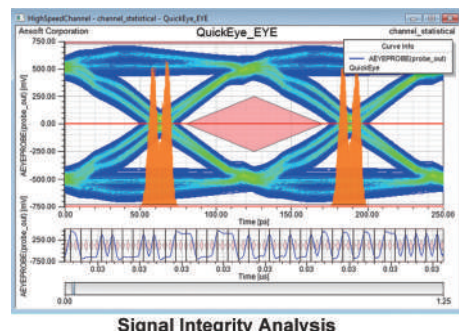
Ansyes (Ansoft) PI Advisor

1. Optimizes power distribution
2. Quickly determines the optimal capacitors
3. Minimizes production costs, non-recurring engineering costs, and time to market.



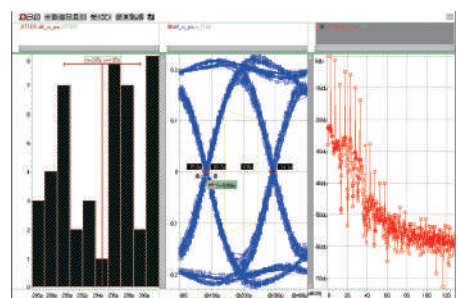
Ansyes (Ansoft) Designer SI 6.0

1. Leverages multiple signal integrity simulation methods.
2. Utilizes optimization algorithms, Design of Experiments, tuning and post-processing for key comp.
3. Utilizes electromagnetic simulation and circuit tools.



Synopsys HSPICE

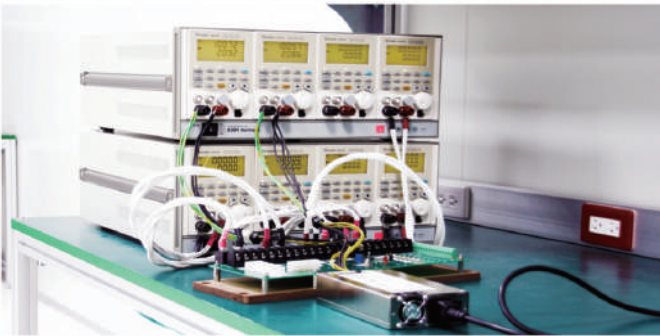
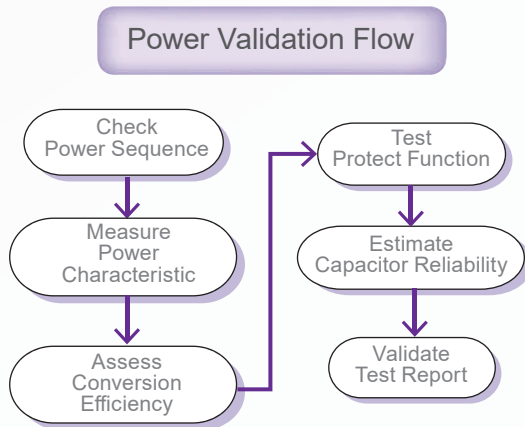
1. Uses the Gold Standard for accurate circuit simulation.
2. Provides Yield-Process variability and device reliability simulation.
3. Applies high speed simulation with harmonic balance and shooting algorithms.



Power & energy, stable & efficient

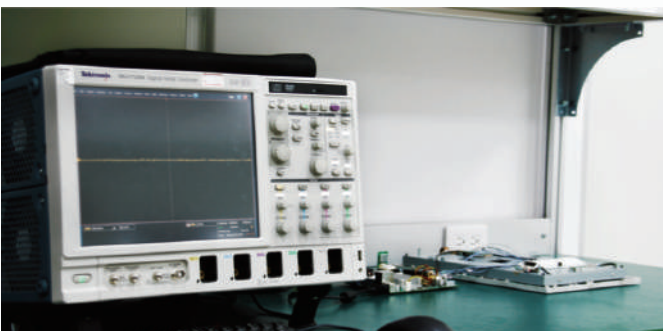
Power Lab

Since the development of the Industrial PC it has been widely used in communications, medical, aerospace, automation & control applications and more. The power design quality and reliability is very important during product development which may affect the system operation stability and power efficiency consumption. The role of the Power Lab is to help engineers verify the power sequence, measure heat loss, etc. in order to improve the power design.

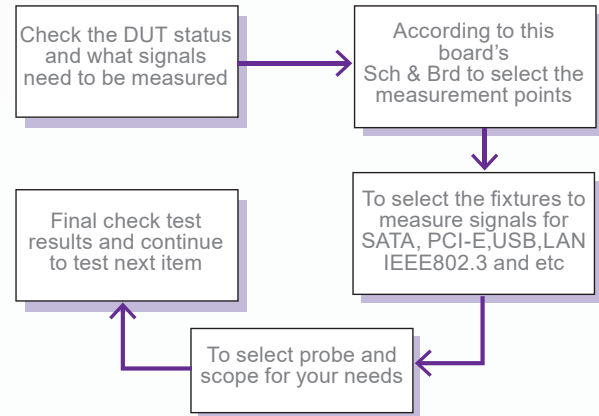


Electronic R&D Lab

The Electronic R&D Lab fulfills hardware engineers' needs by utilizing different measurement equipment which help investigate high speed signals required in Data Quality Assurance (DQA) during the test stage to ensure all hardware functionalities are compliant with the design guide.



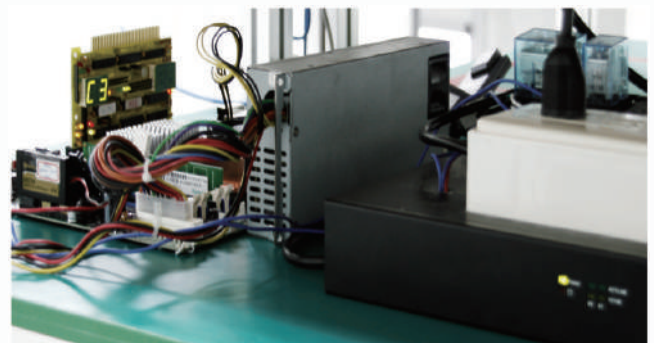
Engineering Validation Flow



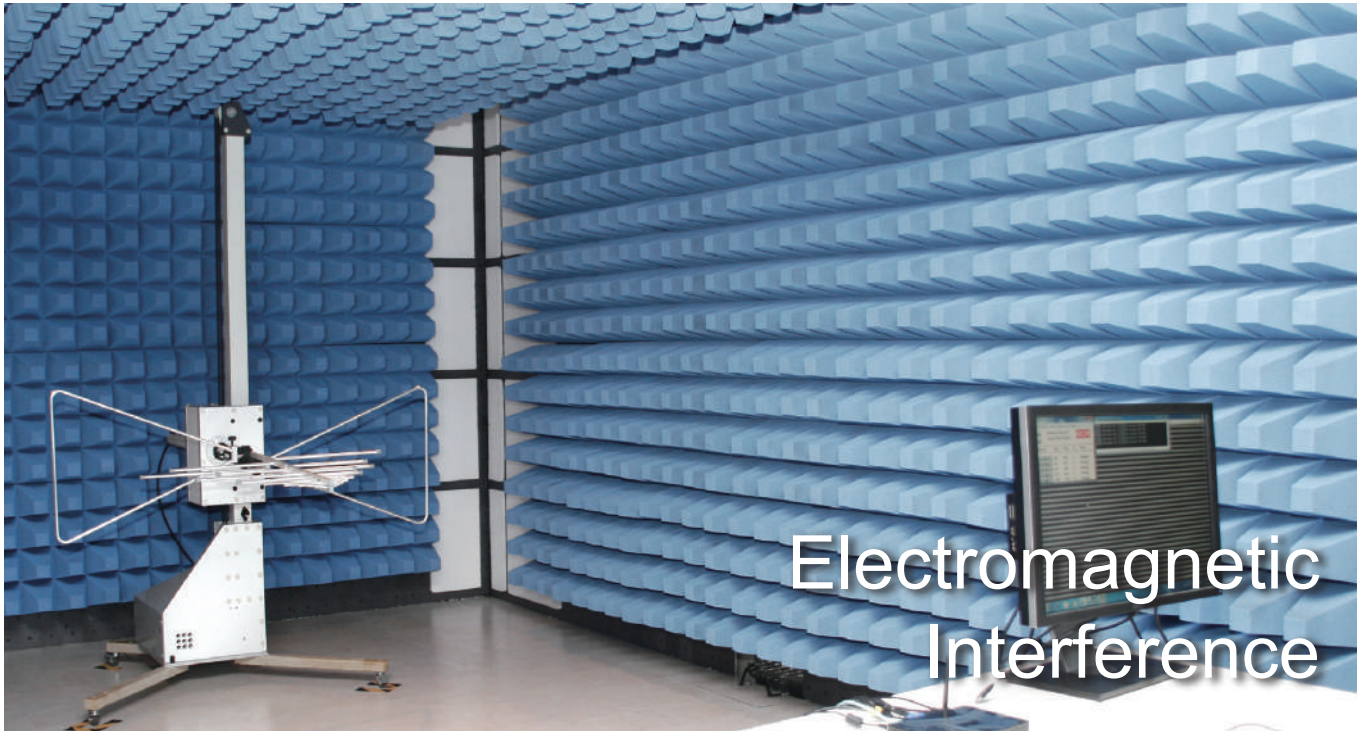
On / Off Lab

ON/OFF Lab is built to ensure our products are designed with the highest quality. By testing On and Off we can validate the system power sequence which is one of the most important test methods to ensure the reliability and compatibility.

Portwell's On/Off Lab features replay equipment that monitors power input for boards or systems and provides advanced remote control so engineers can monitor the test status of 16 systems via WAN, LAN or the Internet which proves to be an efficient method during project development.



Our modules are resistant to rapidly changing electrical currents



Electromagnetic interference (also called radio frequency interference or RFI) is a disturbance that affects an electrical circuit due to either electromagnetic induction or electromagnetic radiation emitted from an external source. The disturbance may interrupt, obstruct, or otherwise degrade or limit the effective performance of the circuit. The source may be any object, artificial or natural, that carries rapidly changing electrical currents. Problems with EMI can be minimized by ensuring that all electronic equipment is operated with a good electrical ground system. In addition, cords and cables connecting the peripherals in an electronic or computer system should be shielded

to keep unwanted RF energy from entering or leaving. Specialized components such as line filters, capacitors, and inductors can be installed in power cords and interconnecting cables to reduce the EMI susceptibility of some systems.

Placing a large amount of electrical and electronic systems into a very confined space poses the issue of keeping the EMI of these systems from interfering with each other through radiated and conducted emissions. With most systems now fully electronic, the need to contain EMI is more vital than ever starting from the design stage.

Features of Portwell EMI LAB



The EMI test receiver we utilize combines two instruments into one; measuring EMC disturbances in accordance with the latest standards and also serving as a full-featured spectrum analyzer for diverse lab applications.

Key Features

- Frequency range from 9 kHz to 3 GHz covering almost all commercial EMC standards.
First-ever combination of an EMI test receiver and spectrum analyzer in the economy class.
- All major functions of an advanced EMI test receiver, including fully automated test sequences.
Weighting detectors: max./min. peak, average, RMS, quasi-peak as well as average with meter
- time constant and rms average in accordance with the latest version of CISPR 16-1-1

Our modules compliants with EMS standards

EMS

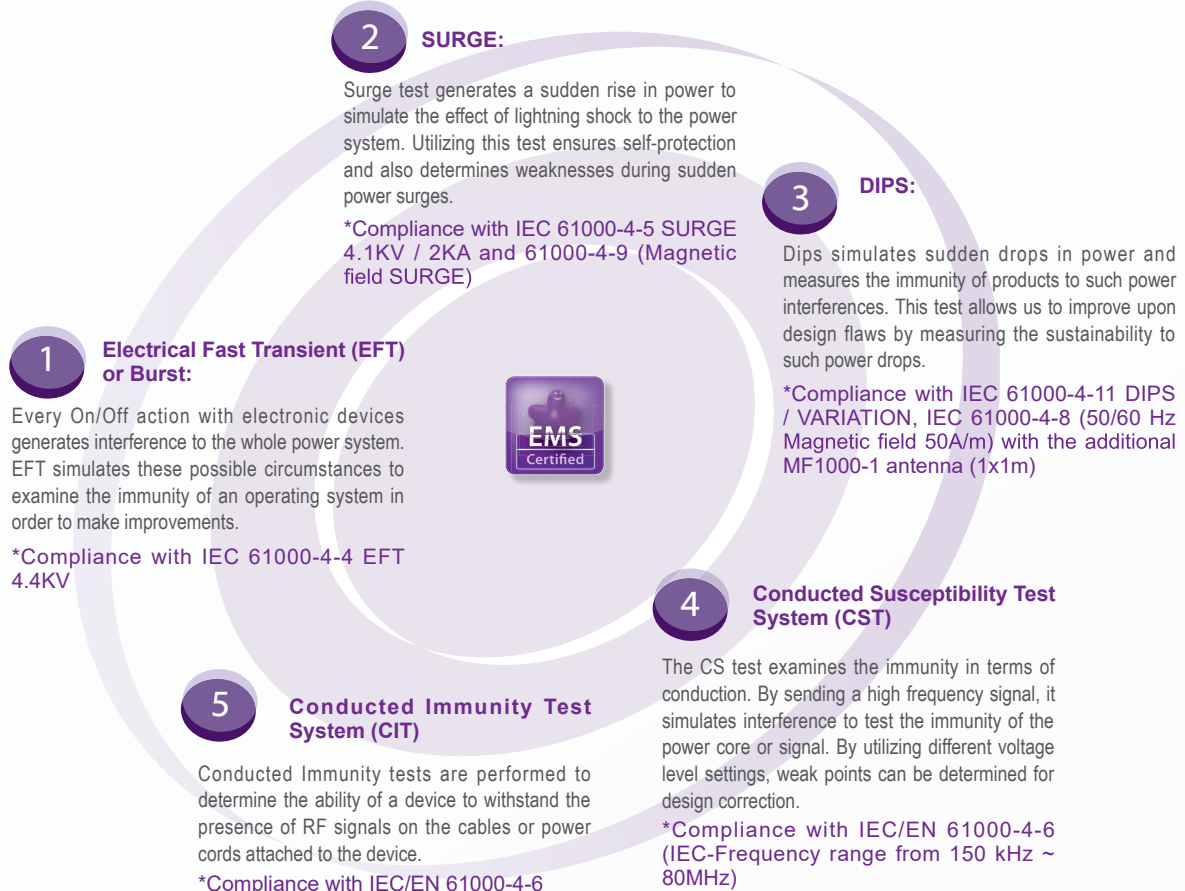
EMS tests including CS & RS are the reliability tests against electric fields, magnetic fields, power cords, control cables, signal cables, ground interference and static electricity discharges, electricity discharge and electromagnetic wave.

ESD

Electrostatic discharge (ESD) is the sudden and momentary electric current that flows between two objects at different electrical potentials. One of the causes of ESD events is static electricity. A system will suffer permanent damage when static electricity is generated through turbo-charging or electrostatic induction that occurs when an electrically charged object is placed near a conductive object isolated from grounding.

Features of Portwell ESD Facility

- Meets the requirements in EN/IEC 61000-4-2.
- Up to 30KV output in both contact and air discharges. A lightweight discharge gun.
- Easily changeable capacitor and resistor units.
- Self-explanatory control panel.
- Optional remote control Windows software offers
- more comprehensive control than local operation.



A farm of chambers for module testing



Advanced Chamber Farm

The environmental test is a very important certification to all industrial products needed for mission critical environments. At Portwell, we test all our products, developed or integrated, against these conditions. Our readily available equipment always allows us to meet customer deadlines and provide detailed test results compliant with industrial standards. While there are many applications and choices in the ever-changing IPC industry, Portwell is the most competent and qualified to adapt to these changes and remain as an industrial leader. Though the quantity scale is a concern of our customers, advanced functionalities

satisfies them due to the savings of cost and time. For example, a remote monitoring system enables our customers to conduct environmental tests by way of our equipment. Meanwhile, our experienced engineers can effortlessly help our customers achieve desired results without additional costs.

Features of Portwell Chamber Zone

As a leading worldwide industrial platform provider, we know the importance of environmental testing. We build our Chamber Zones with the following features.

- Scalable – More than 30 chamber devices can be installed in the zone.
- Independent – Well controlled and separated space for each individual chamber in order to sustain steady operations and security of a project.
Advanced – 30 check points for every tested object to collect detailed data.
- Green – we recycle and use well-filled water for the environmental test.
- Remote Control & Monitoring
- Manipulation of chambers and testing objects
- Allows instant acquisition of the testing data

IEC 68-2-X Certification

IEC 68-2-1	Low-temp. Test, 60°C, 96 hrs	IEC 68-2-3	Humidity Test, 40°C, 93+2/-3% R.H., 96 hrs
IEC 68-2-2	High-temp. Test, -10°C, 96 hrs	IEC 68-2-14	Temp. cycle Test, -10°C ~ 60°C, 48 hrs



Bringing thermal validation expertise to module development

Programmable Temperature & Humidity Chamber

Portwell's Programmable Temperature and Humidity Chamber Farm houses 12 programmable constant temperature and humidity testing machines, with the abilities to run from -60°C up to 150°C. Moreover, the air flow control is compliant with IEC 68-2 standard. Portwell vigorously applies these extreme conditions to their products in order to ensure their durability and accuracy while under such conditions. Therefore, Portwell can assure their customers superior and stable performance in any environment.



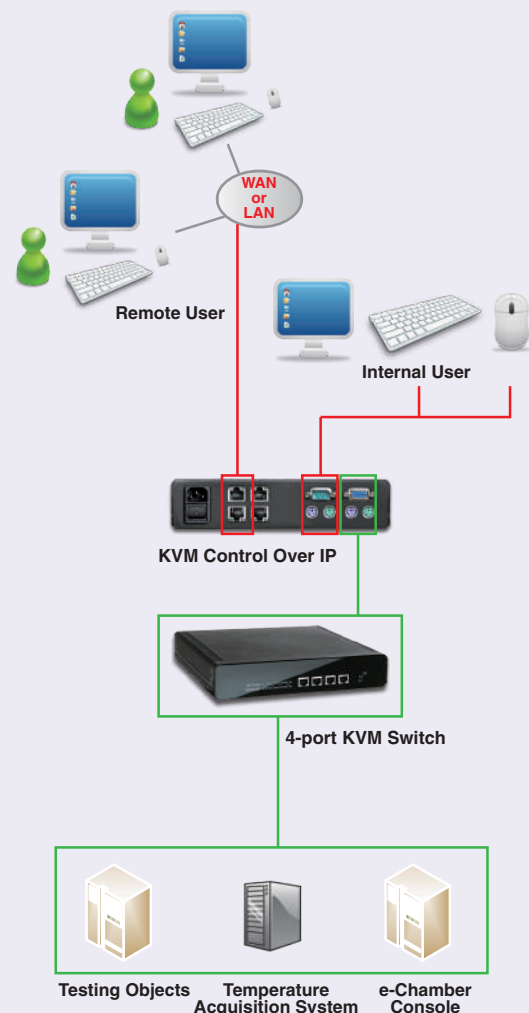
Features:

- **Air Flow Control**
Comply with IEC 68-2 standard, lower wind is under 0.5m/s.
- **With/without Due**
Available upon request.
- **Humidity Control**
Can be controlled under 40°C / 10% RH.
- **Web Monitoring**
Can be arranged by the dedicated program.

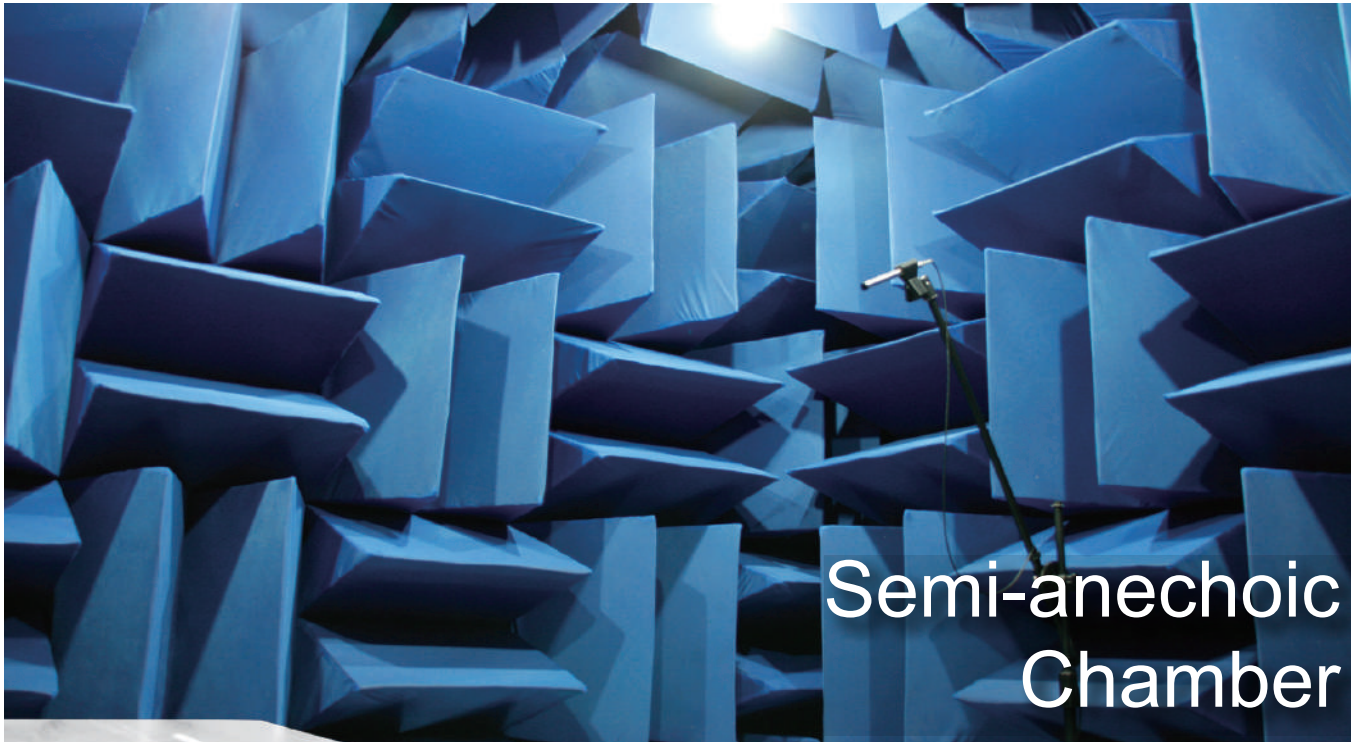
Web Monitoring Console

In order to serve those customers unable to stay at our facility for the environmental test, Portwell developed web-based tests to meet the customer demands via the internet by remote control access.

Provide us with your testing object and our engineers will arrange your object in an assigned chamber and set the remote control console with you. This service allows you to manage your tests right from your computer.



Silence is a signature of our modules



Anechoic chambers are commonly used in acoustics to conduct experiments in nominally "free field" conditions. All sound energy will be traveling away from the source with almost none reflected back. Common anechoic chamber experiments include measuring the transfer function of a loudspeaker or the directivity of noise radiation from industrial machinery. In general, the interior of an anechoic chamber is very quiet, with typical noise levels in the 10–20 dBA range. Full anechoic chambers aim to absorb energy in all directions. Semi-anechoic chambers have a solid

floor that acts as a work surface for supporting heavy items, such as cars, washing machines, or industrial machinery, rather than the mesh floor grille over absorbent tiles found in full anechoic chambers. This floor is damped and floating on absorbent buffers to isolate it from outside vibration or electromagnetic signals. A recording studio may utilize a semi-anechoic chamber to produce high-quality music, free of outside noise and unwanted echoes.



Structure	Semi-anechoic Room
Space	3.95 x 3.95 x 2.5 (m2)
Separated	Floating Ground with Zin plated steel
Material	Polymer Absorption wedge
Door	Fully sealed Pressure Door, Outdoor Open, lock inside
Regulation	ISO 3745
Power filter	1kW 110V
Cable	Belden
Instruments	CRAS Microphone, IEA, analyser and system.

Chamber Type	1/3 Octave Band Frequency(Hz)	Tolerance (dB)
Anechoic Chamber	≤ 630	± 1.5
	800-5,000	± 1.0
	≥6,300	± 1.5
Semi-Anechoic Chamber	≤ 630	± 2.5
	800-5,000	± 2.0
	≥6,300	± 2.5

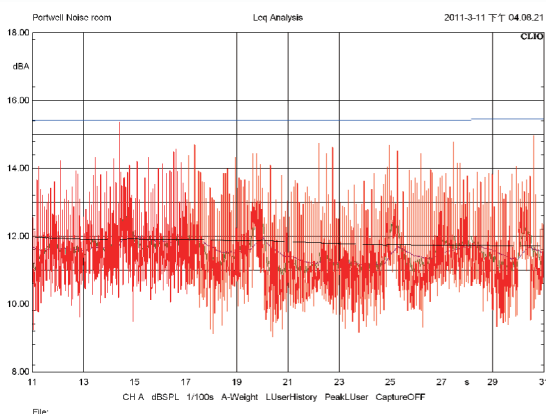
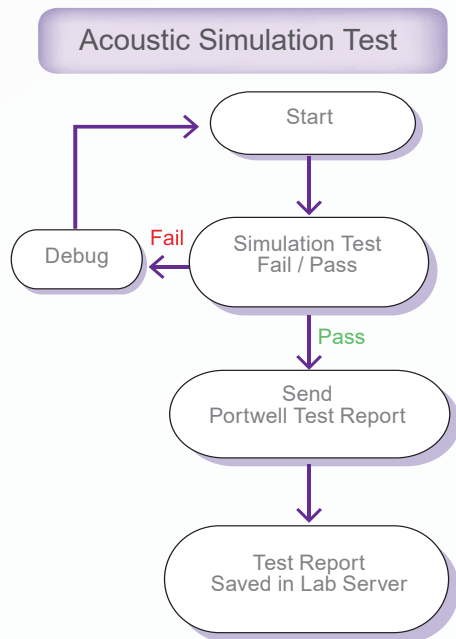
The noise emission meet ISO Standards

Goals of Semi-Acoustic Chamber

In Portwell Semi-Acoustic Chamber we follow the simulation procedure demonstrated below to validate our system noise levels. Our method is to provide dimension, space, wedged material, placement of EUT and microphones in the chamber in accordance with ISO 7779 standards which help us verify that the noise levels of our products fall within universal criteria.

Our goals are:

- Ensure medical related products can comply with noise requirements.
- Service customer to verify their products can meet local noise standards.



Portwell semi-acoustic chamber is based on ISO 3745 which states that indoor background noise remain under 15dB(A) while outside noise is under or equal to 70dB(A); thus we can detect accurate results for product evaluation.

ISO 3745:1977

Specifies two laboratory methods. First, it establishes requirements for the test room as well as the source location, operating conditions and instrumentation. Secondly, it specifies techniques for obtaining an estimate of the surface sound pressure level from which the weighted sound power level of the source and the sound power level in octave or one-third octave bands may be calculated.

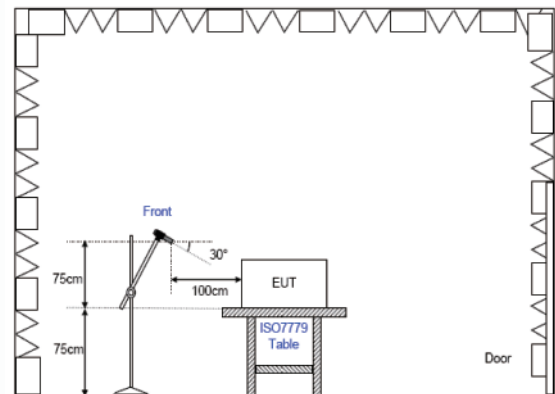


Fig. 2 Location of EUT and microphone position (Side view)

All the dimensions, space, material of wedges, placement of EUT and microphone within our semi-acoustic chamber follow ISO 7779 standards which ensure our products meet universal criteria.

ISO 3745:1977

ISO 7779:2010 specifies procedures for measuring and reporting the noise emission of information technology and telecommunications equipment. The basic emission quantity is the A-weighted sound power level which may be used for comparing equipment of the same type but from different manufacturers, or for comparing different equipment. Portwell Semi-Acoustic Chamber follows ISO 7779 when determining sound power levels of a machine.

Breaking the module to make it even stronger



A Highly Accelerated Life Test (HALT), is a stress testing methodology for accelerating product reliability during the engineering development process. It is commonly performed to identify and help resolve design weaknesses with progressively more severe environmental stresses. Another feature of HALT testing is that it characterizes the equipment under stress, and identifies the equipment's safe operating limits and design margins. Some common forms of failure acceleration for industrial products are power cycling, temperature cycling and random vibration. HALT serves to improve the reliability of a product and is an empirical method used to identify the limiting failure and the stresses at which these failures occur.

The major advantages of HALT are: a) it can be conducted during the development phase of a product in order to weed out design problems and marginal components thereby eliminating costs for warranty returns; b) it also is conducted as internal qualification testing which significantly reduce costs prior to sending the equipment for formal qualification.

During a HALT test the tested equipment has to be functional and operational while monitored so that if the equipment fails while being stressed, the failure will be detected. The failure may only

Typhoon 4.0	
WORK SPACE	UPPER TABLE POSITION : 53.8" w x 54" d x 34.6" h (1366 x 1372 x 879mm) LOWER TABLE POSITION : 53.8" w x 54" d x 53.6" h (1366 x 1372 x 1362mm)
OUTER DIMENSIONS	69.2" w x 78.8" d x 103.9" h (1759 x 2003 x 2640mm)
TEMPERATURE RANGE	+200 °C TO -100 °C
THERMAL RAMP	70 °C - 100 °C/min average
TABLE SIZE	48" x 48" (1220 x 1220mm)
ACCELERATION	5 - 75 gRMS (Bare Table) TABLE CAPACITY 600 lbs (272kg) Recommended
TABLE CAPACITY	600 lbs (272kg) Recommended
POWER REQUIREMENTS	380V, 400V, 440V, 480V, 3Φ, 50/60Hz, 100A
ACTUATORS	12 Lubricant free



be present while the stress is applied and may not cause permanent degradation that would be apparent after the stress is removed. All failures during HALT testing are subject to failure analysis and root cause analysis.

Super-aging our modules to unveil weaknesses



Stresses are delivered in an ordered sequence:

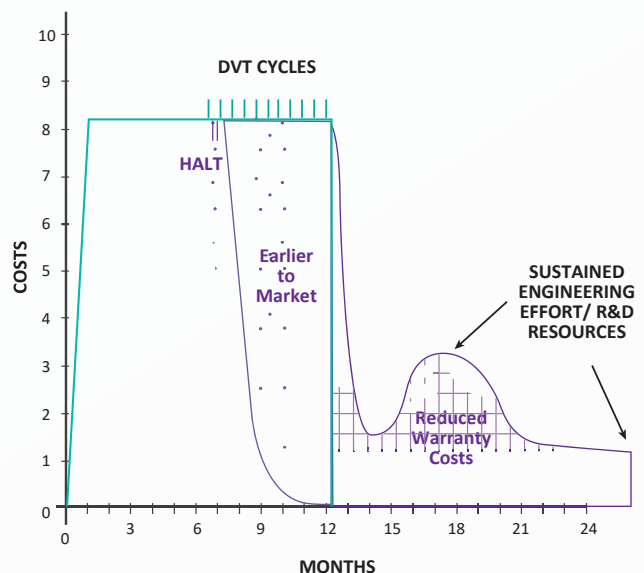
- Temperature Step Stress
 1. Cold Step Stress
 2. Hot Step Stress
- Rapid Temperature Transition Cycling
- Vibration Step Stress
- Combined Environment
 1. Rapid Temperature Transition Cycling and
 2. Vibration Step Stress

Portwell chooses a Typhoon 4.0 system which is designed specifically for the task of performing Highly Accelerated Stress Screening (HASS) and HALT on large products. With the Lowest Total Cost of Ownership within the AST industry, the 48" x 48" vibration table is capable of supporting hundreds of pounds of products and fixtures, while delivering low frequency ranges necessary to induce failure. For high temperature applications in simulating harsh conditions, this system is available as the Inferno™ which can deliver temperatures up to 200°C.

When validating the HALT test we follow the step by step procedure which helps us to analyze time of failures so that our engineers can make the necessary revisions.

Features of Portwell HALT Lab

- Increase Product Reliability
- Reduce Design Verification Time and Expense
 - Remove Costly Manufacturing Defects
- Reduce Warranty Costs
- Increase Sales Revenues with Reputation for Quality



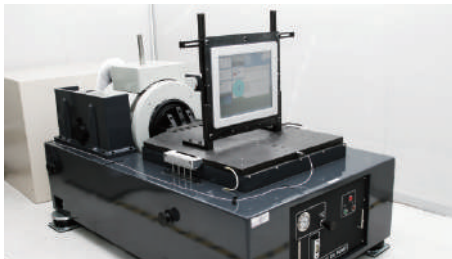
Undergo shipping simulation to ensure intact transportation

Vibration

Vibration is capable of damaging electronic components and component soldering. In our Vibration Chamber, we simulate variable vibration conditions that could potentially damage our products during their transportation, installation or operation. Therefore we rigorously test every product and gather accurate statistical analysis as proof of the outstanding level of tolerance and endurance in every Portwell product.

Vibration tester conducts either Sine or Random vibration.

Sine Vibration complies with IEC-68-2-6 and simulates the product on a ship to verify Resonance Search and Resonance Dwell. Random Vibration complies with IEC-68-2-36 and simulates the product in transportation situations in order to test the packaged product's vibration endurance.

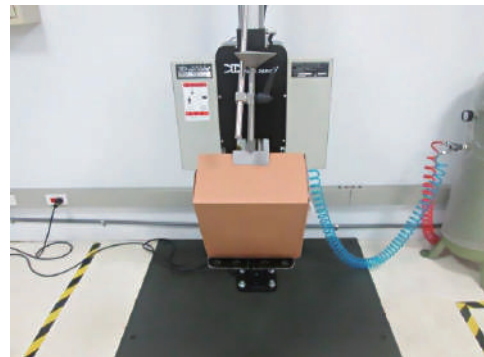


* Compliance with IEC-68 Comply the IEC-68 environmental regulation. The max magnetic force is 1000kgF.



Drop

This test focuses on package design. The drop test is conducted in order to test whether the packaged product remains intact and 100% functional after being dropped. This test simulates the accidents that occur during shipping and handling. Therefore, we also focus on the design of our packages to ensure you receive the product as if it just came off the shelf.



* Complies with IEC-68.

Portwell superior service

Completed Technical Service

In order to ensure customers receive fast and appropriate service from Portwell, we offer the following services to meet your needs.

Logistics Service



It is not only for the scalable or world-grade customers, we offer the service to our partners who need the world-wide delivery to save time and expense.

Consulting Service



Our engineering experts provide a free service to discuss with you the projects or technologies that you need in a short period of time. Please visit Portwell web and click the button, then the on-line service will appear for you.

Product Service



We have the experienced product managers who can help you to get the right products in our list and also the related information to complete your solution.

Manufacturing Service



Portwell has the most advanced manufacturing facilities to produce the quality product for your application or business. Please pay a visit to our Portwell engine, you will know how best that we can do for you.

Design Service



If our existing products cannot meet your requirements, a customized design service can be initiated to build the exact products that you demand.



Both Portwell RDC & SIC are prepared for complete service to our customers & partners. Should you have any requirements or technical issues, please contact us. Our services can be arranged in the following ways.

Web Service

Please visit us on the web and leave a message. We also provide an on-line consulting service via Skype. And if immediate assistance is needed, contact us by phone.

Extended Visits to PE

Sometimes it is difficult to find the solution in a short period of time. Therefore, Portwell provides a dormitory for our customers and partners to stay until we reach the necessary solutions. Please contact us and our staff will arrange a place for you to stay.

Direct Contact

Portwell welcomes our customers to visit our laboratory to witness our regulation tests and design service. This is the best way to answer all your questions and help you find the right solution.



E-Mail

Portwell's technical support department can be reached by e-mail as follows

TSD@portwell.com.tw



Global Service (Telephone)

In addition, you can get immediate support via telephone. Check the web site for phone numbers.

www.portwell.com.tw/contact/portwell-worldwide/



Intelligent City

www.portwell.com.tw



Portwell, Inc. Headquarters

No. 242, Bo' Ai St., Shu-Lin Dist,
New Taipei City 238, Taiwan
Tel: +886-2-7731-8888
Fax: +886-2-7731-9888
E-mail: info@portwell.com.tw
www.portwell.com.tw

Americas

American Portwell (Fremont, CA)

44200 Christy St., Fremont, CA 94538, USA
Tel: +1-510-403-3399
Fax: +1-510-403-3184
E-mail: info@portwell.com
www.portwell.com

Japan

Portwell Japan, Inc. (Tokyo)

〒112-0011 4-27-10, Sengoku, Bunkyo-ku,
Tokyo, Japan
Tel: +81-3-6902-9225
Fax: +81-3-6902-9226
E-mail: info@portwell.co.jp
www.portwell.co.jp

Portwell Japan, Inc. (Osaka)

〒532-0004 Ste.501 Nippo Shin-osaka Dai-2
Bldg, 1-8-33 Nishi-Miyahara, Yodogawa-ku
Osaka Japan
Tel: +81-6-4807-7721
Fax: +81-6-4807-7720
E-mail: info@portwell.co.jp
www.portwell.co.jp

Europe

European Portwell

Schillingweg 3, 2153 PL
Nieuw Vennep, The Netherlands
Tel: +31-252-620790
E-mail: info@portwell.eu
www.portwell.eu

Portwell Deutschland GmbH

Otto-Hahn-Str. 48, D-63303 Dreieich
Tel: +49-6103-3008-0
Fax: +49-6103-3008-199
E-mail: info@portwell.eu
www.portwell.de

Portwell UK Ltd.

Office TH2
Trident House, Trident Park Basil
Hill Road, Didcot, OX11 7HJ, UK
Tel: +44-1235-750-760
Fax: +44-1235-750-761
E-mail: info@portwell.eu
www.portwell.eu

China

Shanghai Portwell

(201612), Room 1303-1, Building 33, No.258,
Xinhuan Highway, Songjiang District,
Shanghai
Tel: +86-21-5771-2505
Fax: +86-21-5772-2965
E-mail: info@portwell.com.cn
www.portwell.com.cn

Korea

Portwell Korea, Inc.

O-BIZ Tower 1901, No.126,
Beolmal-ro, Dongan-gu, Anyang-si,
Gyeonggi-do, Korea, 431-060
Tel: +82-31-450-3043
Fax: +82-31-450-3044
E-mail: info@portwell.co.kr
www.portwell.co.kr

India

Portwell India Technology

2nd Floor, 5M-665, 5th Main Road, OMBR
Layout, Banaswadi, Bangalore -560043, India
Tel: +91-80-4168-4255
E-mail: enquiry@portwell.in
www.portwell.in

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