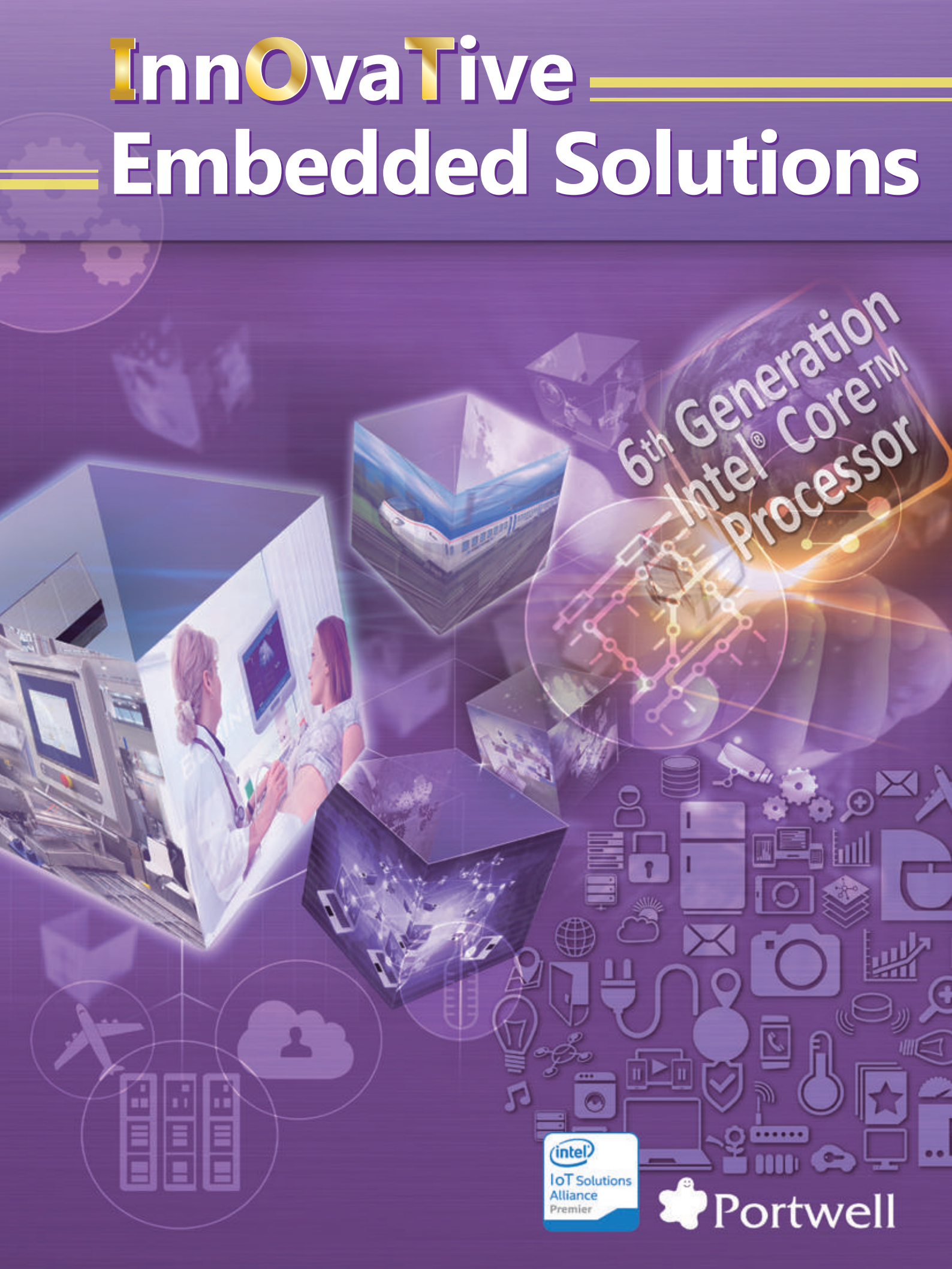


# InnOvaTive

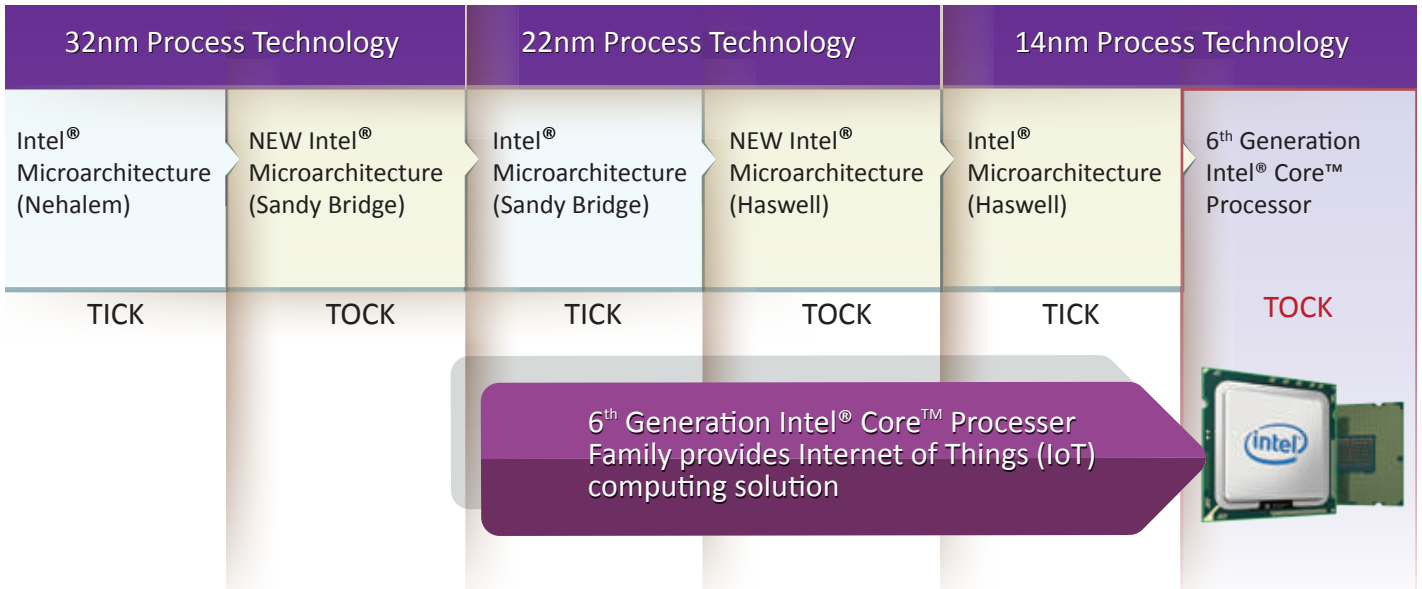
## Embedded Solutions

6th Generation  
Intel® Core™  
Processor



# 6<sup>th</sup> Generation Intel® Core™ Processor for IoT Computing Solutions – Overview

With the launch of the 6<sup>th</sup> Generation Intel® Core™ Processor product family (formerly codenamed “Skylake”), Intel® takes performance and computing power to a new level. These new processors combine a new micro architecture with Intel’s 14nm process technology, and DDR4 memory support. The product family offers manufacturers a wide selection of processors to build new hardware solutions for an extensive range of applications.



## Portwell’s Perspective on Internet of Things (IoT)

The IoT and Industrial 4.0 are exploding. According to Gartner, Inc. (a technology research and advisory corporation), there will be nearly 26 billion devices on the Internet by 2020. In other words, the number of devices or things connected to the Internet is increasing with unstoppable speed. Demand for IoT solutions in Networking, Industrial Automation, Medical, Transportation, and other IoT Industrial 4.0 applications are rising.

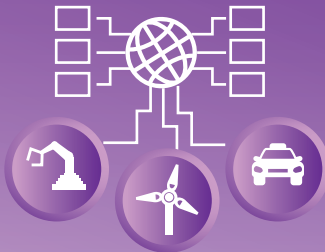
As a leader in providing trusted innovative embedded and automation products and solutions, Portwell offers more advanced system, hardware, software, services, and customer-oriented customization support. To meet IoT market demands, Portwell is ready to help customers speed new innovative solutions to market. The picture below shows our position and vision in this global trend.

### INTELLIGENT DEVICES



Deliver intelligence where needed to acquire and filter data securely

### INTELLIGENT SYSTEM OF SYSTEMS



Billions of intelligent devices sharing data securely, supporting legacy and new environments

### END-TO-END ANALYTICS



Solutions from device to cloud to deliver end-to-end customer value

## Target Applications

### Medical

### Industrial Automation

### Transportation

### Networking

## 6<sup>th</sup> Generation Intel® Core™ Processor Comes Up with Performance & New Features

The new 6<sup>th</sup> Generation Intel® Core™ Processor delivers greater CPU and graphics performance over the previous generation. While offering better performance, the new architecture brings new features like DDR4, DirectX 12, 4K, and PCIe Gen 3 support. The new PCH also brings more I/O ports and flexible high speed I/O combinations. Through the 14nm process technology and other enhancements, Intel® is able to provide up to 30% faster graphic performance with Intel® Gen 9 graphics.



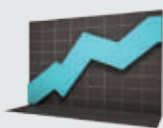
### Performance

- 14nm technology using 2<sup>nd</sup> generation 3D tri-gate transistors
- Up to 10% additional CPU performance
- Intel Rapid Storage Technology for PCIe Storage
- Up to 40% more high speed I/O than prior gen Intel products



### New Features

- DDR4 Memory allows customers the flexibility to unify memory routing for ECC enablement in a single board design
- CSME (FW11) is a Unified firmware for all SKL platforms enabling faster development cycles and debugging capabilities



### Graphics

- Up to 30% faster graphics performance
- Up to 3 independent audio streams with video audio
- Gen 9 Graphics: GT4e for Halo, GT3e for ULT
- Increased display resolutions supporting Ultra HD 4K x 2K
- Accelerated HW Media Codecs for Encoding HEVC, VP8, VP9, VDENC



### Security & Manageability

- HW based security features with Intel® PTT, Boot Guard, Intel MPX
- SW based security introduces Intel® SGX
- Intel vPro™ technology support for self encrypting SSDs to protect data automatically
- Embedded operating systems and support

With flexible high speed I/O combinations, customers have several options of PCH selection to fulfill and meet requirements from different applications. The Gen 3 PCIe support allows faster connection on add-on cards and peripherals. The DDR4 support brings more memory bandwidth which is good for general system performance, but it's especially good for integrated graphics performance. The integrated GPUs are enhanced by Gen 9 technology and DirectX 12.

### 6<sup>th</sup> Generation Intel® Core™ Processor

Next Generation DT Processor with new IA and Graphics Microarchitecture on 14nm process

### New CPU Features

- Increased IA Performance and Faster Graphics @Lower Power
- Latest: API Support
  - DX 11/12, OGL 4.3/4.4, ES 2.0, OCL 2.x
- Accelerated HW Media Codecs Support
  - HEVC, VP8, and VP9 Encode
- High Display Resolution up to 4096x2304
- 3 Independent Digital Displays
  - Including embedded DP (eDP)
  - 3 Independent Audio Streams
- DDR4 & DDR3L Memory Support (ECC optional)
- Intel® Turbo Boost Technology 2.0
- Intel® Hyper-Threading Technology
- DMI Gen 3 Support
- PEG Bi-Furcation (x4, x8, x16)

### Socket

- LGA 1151

### Power

- Optimized number of TDP offerings
  - Quad Core : 65W, 35W
  - Dual Core : 65W, 35W
  - Xeon® workstation: 80W

### Chipset Compatibility

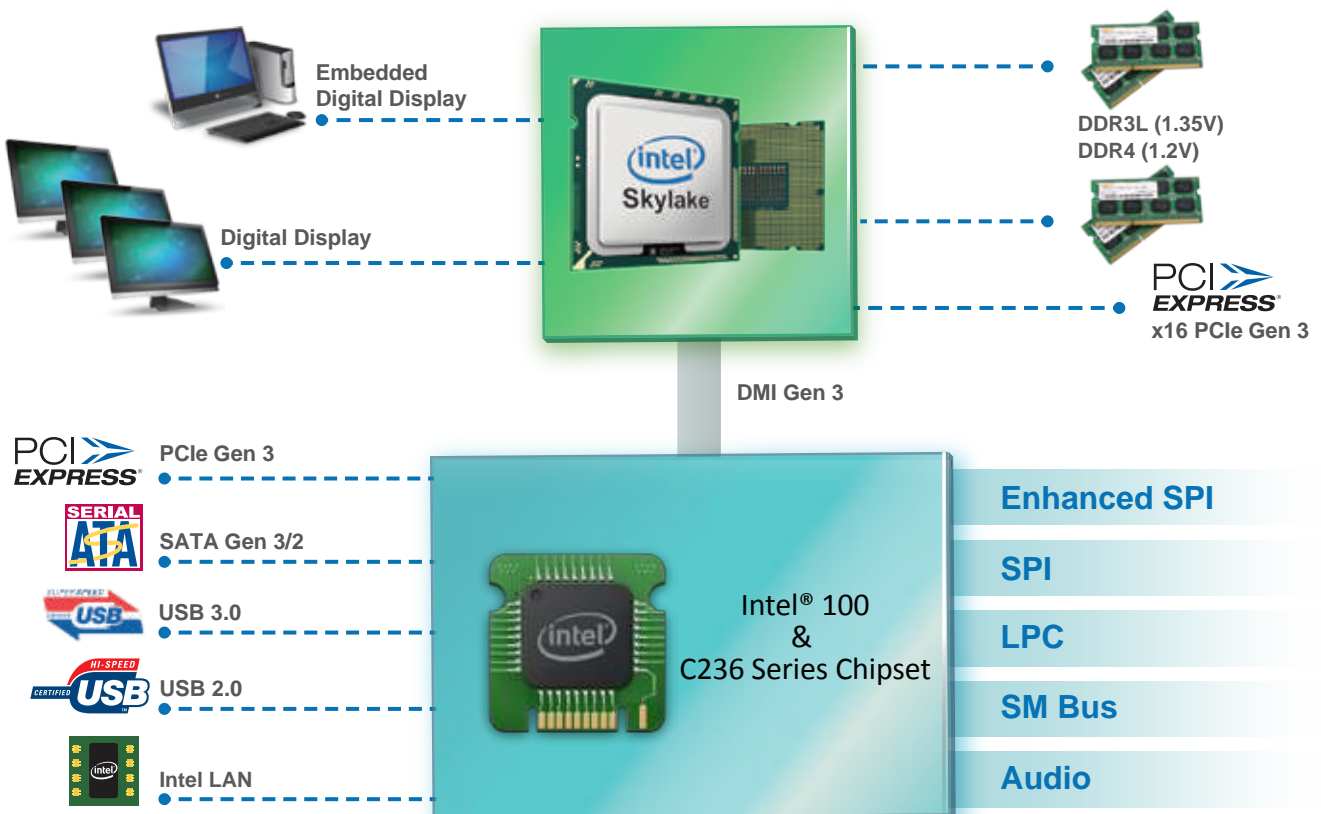
- Intel® 100 Series Chipset
- Intel® C236 Workstation Chipset

### New Chipset I/O Features

- PCIe Gen 3.0 (up to 20 lanes)
  - PCIe NAND remap (up to 3 devices)
- USB 3.0 (up to 8)
- SATA Gen 3.0 (up to 4)

### Increased Security

- Intel® Device Protection Technology with Boot Guard
- Intel® Memory Protection Extensions
- Intel® Software Guard Extensions

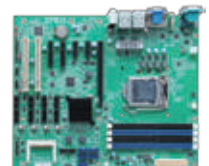
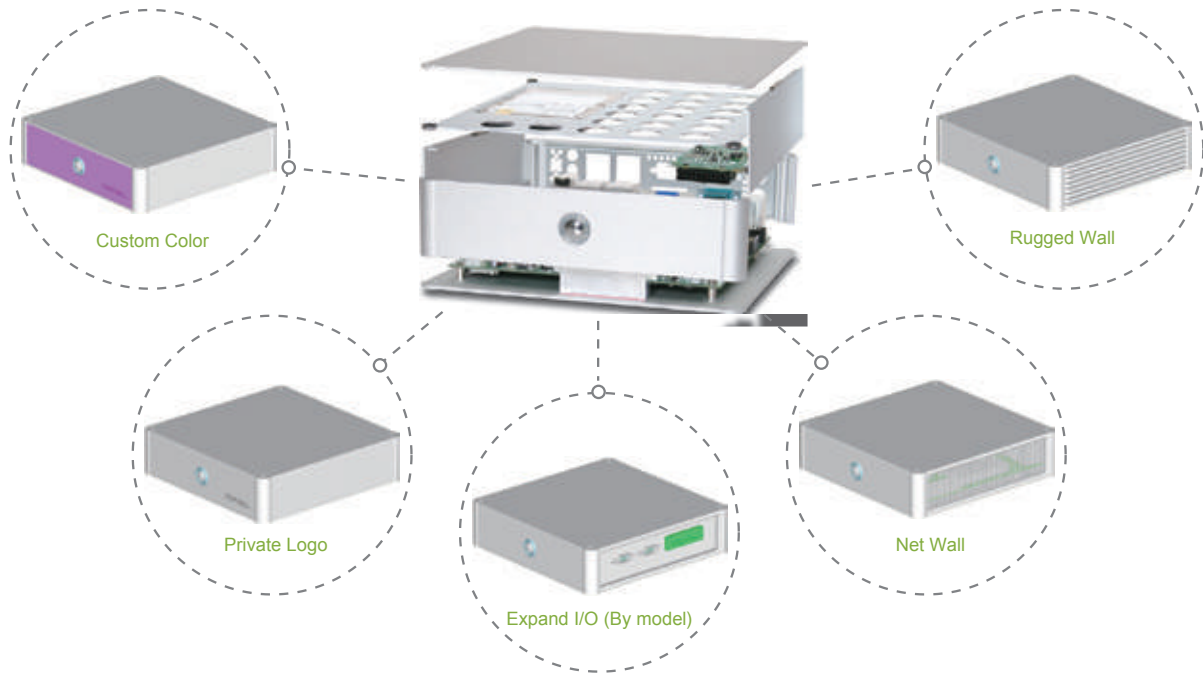


## Desktop - LGA (Haswell + Q87 PCH vs. Skylake + Q100 PCH)

	Line item	Haswell DT: 65w, 35w	Skylake DT: 65w, 35w	Benefits or Key Information
CPU	CPU Package	LGA1150	LGA1151	New board required
	Memory Type/Total System	DD3L:1600 (32GB Max)	DDR3L 1600 (32GB Max) DDR4 2133 (64 GB Max)	<ul style="list-style-type: none"> <li>Faster Memory performance</li> <li>Long-life for DDR4 designs</li> <li>ECC optional</li> </ul>
	Graphics Generation and Cores	2 (Gen 8) DX11.1; OCL:1.2, OGL:4.x	2 (Gen 9) DX11/12, OCL 2x, OGL 4.3/4.4, ES2.0	<ul style="list-style-type: none"> <li>Faster graphics for 3D applications, HD video conferencing, and low power media transcode.</li> </ul>
	HW Acceleration/Media Codecs	Decode for HEVC, VP8, VP9	Decode/Encode for HEVC, VP8, VP9, VDENC	
PCH-High Speed I/O	PCI Express Lanes	Up to 8 PCIe (Gen 2)	Up to 20 PCIe (Gen 3)	<ul style="list-style-type: none"> <li>Flexible I/O with additional high-speed ports over prior generation to enable more flexible designs.</li> </ul>
	SATA Ports	Up to 6 SATA 6.0 Gbps	Up to 6 SATA 6.0 Gbps	
	USB 3.0 Ports USB 2.0 Ports	Up to 6 ports (2 mixed) 8 ports	Up to 10 ports (4 mixed) 14 ports	
	PCIe NAND Storage Remap Ports(SATA Express/M.2)	Up to 1 x2 port	Up to 3 x4 ports (Gen 3)	
Security	Security Features	Secure Boot, PFAT	Intel MPX, Intel SGX, Device Protection with Boot Guard	<ul style="list-style-type: none"> <li>Hardware and Software features to better protect systems against boot threats, memory overflow issues, and protect data while it's in use in Windows environment.</li> </ul>

## Ready-To-Go System Solutions

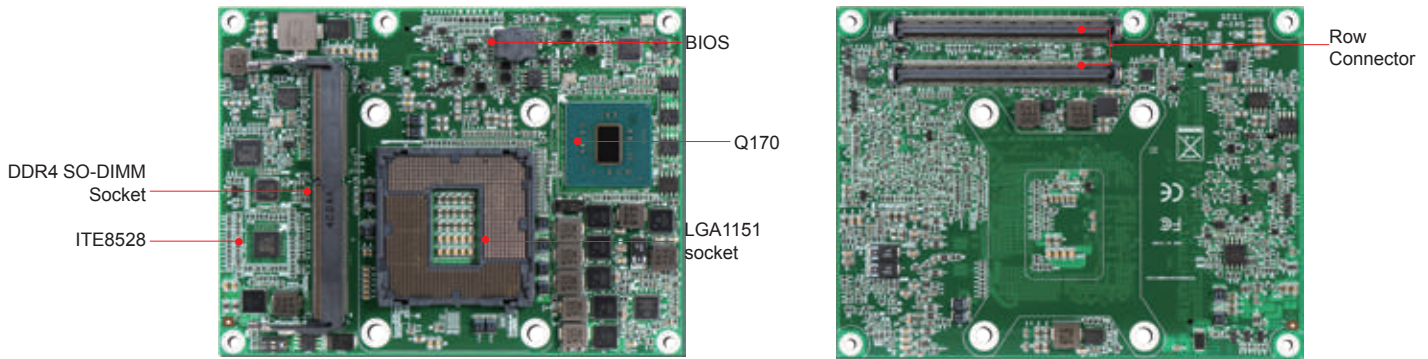
Portwell's wide-range product line gives customer rich choices. Customers can select different form factors from modules (COM Express, Q7, ETX) and embedded boards (ATX, Mini-ITX, Nano-ITX), SBC (PICMG 1.0, PICMG 1.3, Backplane), to systems (Panel PC, Box PC). With Portwell's unique modular design, no matter what kind of solution you're looking for, you can simply start by selecting your preferred platform. Then our complete one-stop service will help you on integration with software (BIOS, EC, embedded OS, BSP, API), hardware (expansion, form factor, peripheral devices, PSU), and system (thermal, chassis). It's simply like playing Lego; just picking up options of bricks then building them up into a system. This easy but quick way will only consume a short period of time on verification and validation. The next step is to meet customer's requirements with our flexibility and customization capability.



## Portwell's Solutions based on 6<sup>th</sup> Generation Intel® Core™ Processor

Portwell uses the new 6<sup>th</sup> Generation Intel® Core™ Processor to offer five new products in different form factors designed to fulfill requirements from vertical markets. We're proud to announce that the 6<sup>th</sup> Generation Intel® Core™ Processor is successfully implemented on our COM Express module. With our thermal solution, we're able to use desktop SKUs on PCOM-B637 which help customers on cost reduction. In addition, we also offer PICMG 1.3, ATX and Mini-ITX boards with these new processors.

With our 22-year experience, rich successful projects/use cases, and as a Premier member of the Intel® Internet of Things Solutions Alliance, Portwell is able to bring you state-of-the-art technology and product solutions that help you accelerate time-to-market. Our modular design concept may help you adopt the latest platforms in a shorter period of time. With our flexibility and customization abilities, you can achieve verification and validation without much effort.



PCOM-B637VG is Portwell's first module with desktop CPU. It provides customers four important factors, high performance with affordable cost, DDR 4 memory support, Gen 3 PCIe support, and 30% faster graphic performance. The desktop CPU on module is a new idea which offers customer higher computing power but lower cost comparing to mobile solutions. The DDR4 support is also another important point for higher performance. PCOM-B637VG can support both ECC and Non-ECC DDR4 by different PCH SKUs. This is good for different applications. The Gen 3 PCIe support provides faster PCIe speed so that the performance of PCIe devices will be better. It is crucial for Networking and Medical related applications. PCOM-B637VG provides one PCIe16, eight PCIe1 (Option to one PCIe4), four USB 3.0, and four SATA3.

## FEATURES

- Intel® 6<sup>th</sup> Core™ Processors Support (Skylake-S 35W)
- Support DDR4-2133 ECC/Non-ECC SO-DIMM, up to 16GB
- Support 1x Gen3 PCIe x16, 8x Gen3 PCIe x1 (Option to 1x Gen3 PCIe x4)
- Support 4x SATA3 and 4x USB3.0
- Support VGA and LVDS for legacy applications
- Support TPM, I2C, SMBUS, and UART

## ORDERING GUIDE

<b>Contact us</b>	<b>PCOM-B637VG.</b> TYPE VI.Skylake-S.Basic Form Factor.Com Express Module.ECC/Non-ECC.DDR4
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## GENERAL

Form Factor	- Type VI, Basic Form Factor COM Express
Processor	- Intel® 6 <sup>th</sup> Core™ processors (Skylake-S 35W) - LGA1151 - Celeron®/i3/i5/i7/Xeon® - Up to 2.4GHz, 8M Cache, 4 Cores, 8 Threads
BIOS	- AMI Aptio BIOS - Support UEFI, ACPI, SMBIOS, Compatibility Support Module
Storage Devices	- 4x SATA3 ports up to 6.0 Gb/s - Intel® Rapid Storage Technology for PCIe Storage
Watchdog Timer	- Programmable via S/W from 1 sec to 255min
Ethernet	- Intel® I219M Gigabit LAN x 1
Audio	- Intel® High Definition Audio
Expansion Interface	- 1x Gen3 PCI Express x16 (Option to 2x PCIe x8, or 1x PCIe x8 + 2x PCIe x4) - 8x Gen3 PCI Express x1 (Option to 1x PCIe x4) - 4x USB 3.0 ports - 8x USB 2.0 ports
Hardware Monitors	- ITE8528: CPU, Voltage and Temperature
Power Requirement	- Typical: 12V, 5VSB, VBAT - Support AT and ATX mode
Dimension	- 125mm(L) x 95mm(W)
Environment	- Operation Temperature: 0~60°C - Storage Temperature: -20~80°C - Relative Humidity: 5~90%

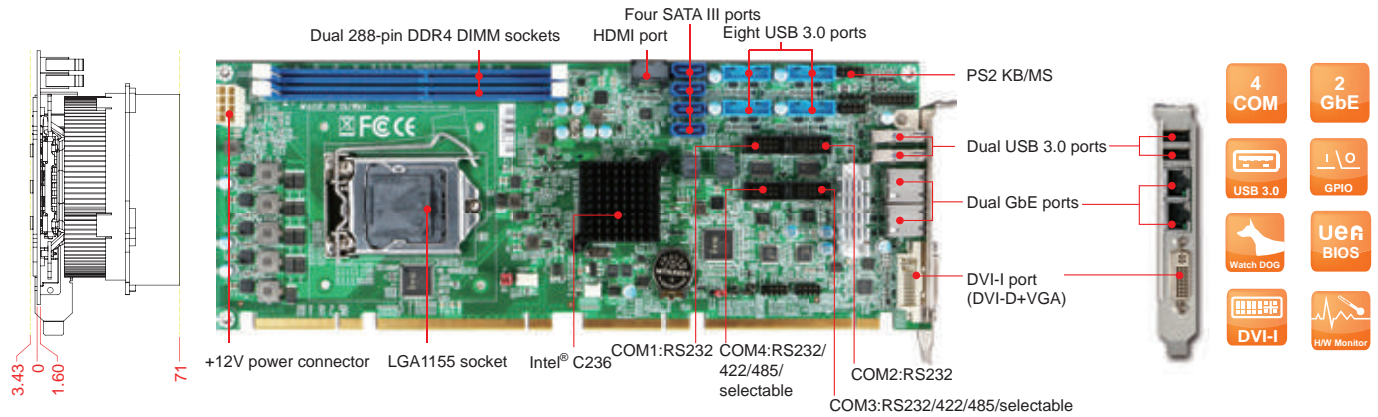
## Display

Graphic Controller	Intel® HD Gen9 Graphics, Support DX 11/12, OpenGL 4.3/4.4, ES 2.0, OpenCL 2.x
Graphic Memory	Dynamic share system memory up to 1GB of 2GB system memory
Display Interface	VGA, LVDS/eDP, 2x DDI (DP/HDMI/DVI)



# ROBO-8113VG2AR

Intel® Xeon® and Core™ i3 processor based PICMG 1.3 SHB with DDR4 SDRAM, HDMI, DVI-I, Dual Gigabit Ethernet, Audio and USB



ROBO-8113VG2AR is based on Intel® C236 chipset and workstation processors. Built with flexible PCI express expansions, ROBO-8113VG2AR is suitable for Medical, Industrial automation, and Digital Signage application.

## FEATURES

- Supports Intel® 6th Skylake-S Xeon® / Core™ i3 processors in LGA 1151 package
- Delivers up to 32GB maximum DDR4 2133 ECC DIMM on two sockets
- Supports multiple display by DVI-I(DVI-D+VGA) and HDMI
- High speed dual Gigabit Ethernet based on PCI express x 1, high bandwidth I/O interface
- Rich I/O connections such as four serials ports, USB 3.0/2.0, SATA III ports

## ORDERING GUIDE

<b>AB1-3D40Z</b>	(R).ROBO-8113VG2AR.PICMG 1.3(PCI-E+PCI).LGA1151. Intel Xeon®/Core™ i3 processors.SHB.w/VGA/Dual GbE/Audio/four COM ports
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## PACKING LIST

Standard	Optional
B6902932 SATA III cable	B6902980 PS/2 Keyboard / Mouse Cable with bracket
B8981980 PICMG SBC Handling and Installation Notice	B6902230 USB port cable with bracket
B6903350 DVI-D + VGA cable	AB9-2066 PA-M1AU Multiple Media kit
B6903240 dual head COM port cable with bracket	B6903090 USB 3.0 cable with bracket
B8983660 Installation CD	

## GENERAL

Processor	- Intel® Xeon® E3-1200v5 series / Core™ i3 processors up to 3.6 GHz (35~80W) with (8MB) Cache in LGA-1151 package - DMI x4 Link: 5.0GT/s - Support Intel® Turbo Boost , Hyper-Threading, Virtualization, Thermal Monitoring,Trusted Execution and SpeedStep Technology (depends on CPU sku)
Chipset	Intel® C236 PCH
BIOS	AMI uFEI BIOS (SPI ROM)
Memory	- Supports up to 32GB DDR4 2133/1866 SDRAM on two 288-pin DIMM sockets - Supports ECC
Storage Devices	- 6x SATAIII drives (Dual ports via Backplane) - RAID 0, 1, 5, 10
Watchdog Timer	Programmable via S/W from 0.5 sec. to 254.5 sec
Hardware Monitoring	System monitor(Voltage,Fan Speed and Temperature)
Expansion Interface	- From CPU (Xeon/Core i3): 1x PCI Express x16 or 2x PCI Express x8 or 1x PCI Express x8 + 2x PCI Express x4 by jumper setting (Gen3 up to 8.0 GT/s) - From PCH: 1x PCI Express x4 or 4x PCI Express x1 by different bios support (Gen 3 up to 8.0 GT/s)

## I/O INTERFACE

Embedded Controller	ITE IT8528E
Audio	- Intel® PCH built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC886-GR HDA codec, 5.1 channels - one on- board audio pin header
Ethernet	- Intel® WG1219LM + WG1210AT gigabit ethernet controller - Dual 10BASE-T / 100BASE-TX / 1000BASE-T Ethernet - PCI Express x1 interface based on gigabit ethernet - Dual RJ-45 connector with two LED indicators
Serial Port	- 2x RS232 ports - 2x RS232/422/485 selectable - LPC to COM port IC: Fintek F81216DG
USB	- 2x USB 2.0 ports ( through backplane) - 480Mb/s bus capable of high-speed/full-speed/low-speed data ranges - 10x USB 3.0 ports on board (eight ports on board, dual ports on bracket) - 5Gbps bus capable of high-speed/ full-speed/low-speed data ranges
Keyboard & Mouse	- 2x USB 3.0 ports on bracket dedicated to keyboard & mouse (on bracket) - 1x 10 pin box header for external PS/2 keyboard/mouse
GPIO	On board programmable 8-bit Digital I/Os

## DISPLAY

Graphic Controller	- Intel® Xeon® and Core™ i3 processors integrated graphics engine - Provides improved 3D multimedia capabilities including Microsoft DirectX 12, OCL 2.x and OpenGL 4.3/4.4
Display Interface	- Support independent triple display - CRT on bracket: Resolution up to 1920x1200 @ 60Hz - DVI-D on bracket: up to 1920x1200 @ 60Hz (CRT + DVI-D on bracket by DVI-I port) - HDMI: up to 4096x2160 @ 24Hz

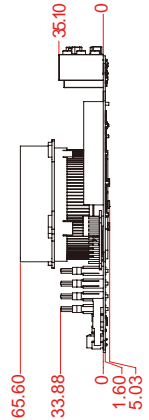
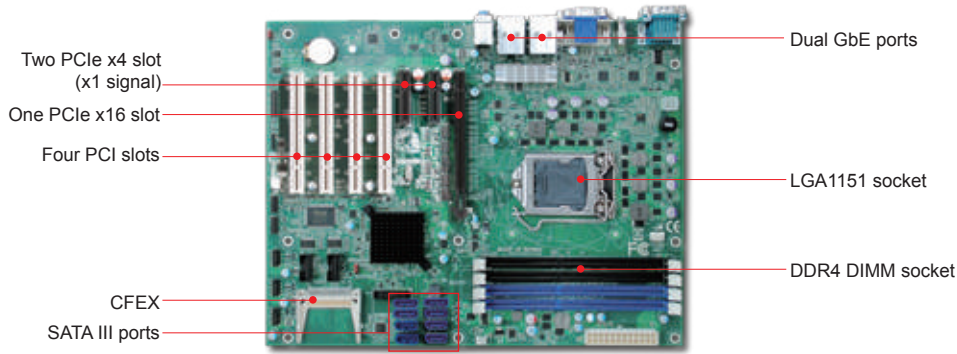
## Mechanical & Environment

Dimension	- 338.5mm(L) x 126.39mm(W), 13.33"(L) x 4.98"(W) - PCB: 8 layers
Power Supply	- Typical: +12V, +5V - Support ATX mode
Environment	- Operatin Temperature:0~60°C - Storage Temperature:-20~80°C - Relative Humidity:5~90%,non-condensing
MTBF	Over 100,000 hours at 40°C



# RUBY-D718VG2AR

Leading Desktop 6<sup>th</sup> generation Intel® Core™ processor (Skylake-S) based ATX with DDR4 SDRAM, Triple Displays, Two GbE LAN Ports, Six COM Ports

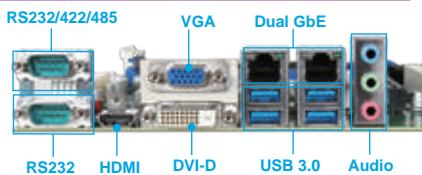


RUBY-D718VG2AR is based on Intel® Q170 chipset and Skylake desktop processor sku like Core™ i7 and i5. Built with PCI and PCIe expansions, it's suitable for Medical, Industrial automaton, and Digital Signage application.

## FEATURES

- Intel® 6<sup>th</sup> Skylake-S processor support
- Four Long-DIMMs support DDR4 ECC/ Non-ECC SDRAM up to 64GB
- One PCIe x 16, two PCIe x4, four PCI

## REAR I/O



## ORDERING GUIDE

<b>AB1-3D29</b>	(R).RUBY-D718VG2AR.ATX.IMB.LGA1151. CPU.Q170.DDR4/VGA/HDMI/DVI/Dual GbE/COM/Audio/USB
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## PACKING LIST

One RUBY-D718VG2AR ATX Industrial Main Board
One Installation DVD
One SATA III cable
One I/O shield



## GENERAL

Processor	Intel® 6 <sup>th</sup> Skylake-S processor in LGA1151 package
Chipset	Intel® Q170
BIOS	AMI uFEI BIOS (SPI ROM)
Memory	Support up to 64GB DDR4 2133/1866 ECC/ Non-ECC on four 260pin DIMM socket
Storage Devices	6x SATAIII port
Watchdog Timer	Programmable by embedded controller
Hardware Monitoring	System monitor(Voltage,Fan Speed and Temperature)
Expansion Interface	- 1x PClex16 GNE3 - 2x PClex4 GEN3 - 4x PCI

## I/O INTERFACE

Super I/O	N/A
Audio	- Realtek ALC886 HAD codec - Audio Jack on rear I/O with Line-in/ Line-out/ Mic-in
Ethernet	- Intel® WG1219LM and Intel® WG1210AT Ethernet controller - 12x RJ45 connectors on rear I/O
Serial Port	- 2x RS232/422/485 port - 4x RS232 port
USB	- 4x USB 3.0 ports on rear I/O (5 Gbps) - 6x USB 2.0 ports on board (480 Mb/s)
Keyboard & Mouse	N/A
GPIO	8-bit configurable controlled by embedded controller

## DISPLAY

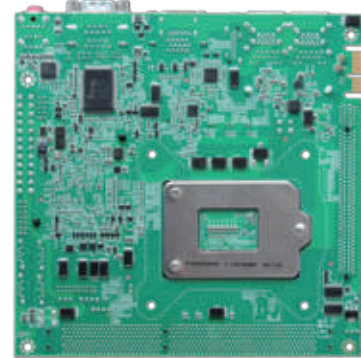
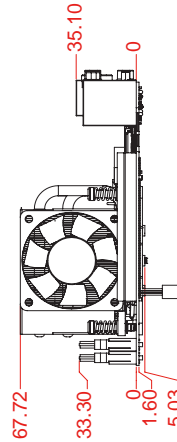
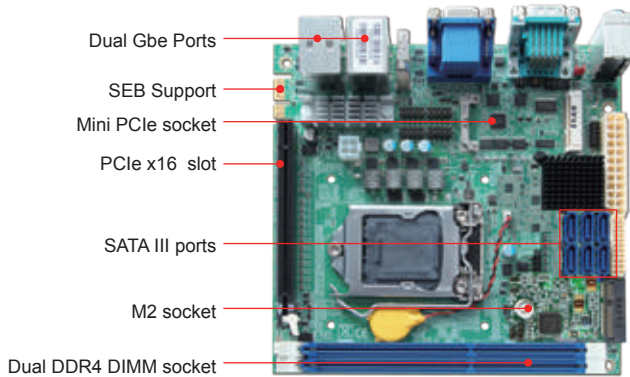
Graphic Controller	Intel® Gen 9 graphic engine supports DirectX 12, OprnGL 4.4
Display Interface	- DVI-D:One DP port on rear I/O - HDMI:One HDMI port on rear I/O - VGA:One VGA port on rear I/O

## Mechanical & Environment

Dimension	- 304.8(L) x 243.8(W);12"(L) x 9.6"(W)
Power Supply	24Pin ATX power input
Environment	- Operation temperature:0~60°C - Storage temperature:40~80°C - Relative humidity:5~95%,non-condensing
MTBF	Over 120,000 hours at 40°C

# WADE-8017

Leading Desktop 6<sup>th</sup> generation Intel® Core™ processor (Skylake-s) based Mini-ITX with DDR4 SDRAM, Triple Displays, Two GbE LAN Ports, Six COM Ports

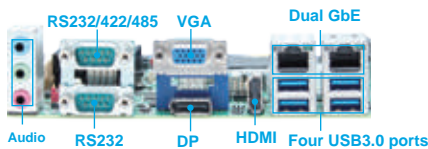


WADE-8017 is based on Intel® C236 chip-set and desktop processors including Core™ i7,i5,and i3 sku. This board supports DDR4 with ECC, PCIe 3.0, and SATA3.0.Those features help you to build high performance and stability system.

## FEATURES

- Intel® 6<sup>th</sup> Skylake-S processor support
- Two SODIMMs support DDR4 ECC/Non-ECC SDRAM up to 32GB
- Two 204-pin SODIMMs support single channel DDR3 SDRAM up to 4GB
- Rear I/O,USB2.0/3.0 dual Gigabit Ethernet,COM Port and SATAIII ports
- One PCIe x 16(Gen3), one M.2 type E socket, one Mine PCIe

## REAR I/O



## ORDERING GUIDE

<b>AB1-3D16</b>	(R).WADE-8017.Mini-ITX ESB.Q170 w/o ECC LGA1151.w/DDR4 SDRAM /VGA/DP/HDMI/Dual GbE/COM/Audio/USB
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## PACKING LIST

One WADE-8017 motherboard
One Driver CD
One SATA Cable



## GENERAL

Processor	Intel® 6 <sup>th</sup> Skylake-S processor CPU in LGA1151 package
Chipset	SKL PCH-H C236 Series
BIOS	AMI uFEI BIOS (SPI ROM)
Memory	Support up to 32GB DDR4 2133/1866 ECC/ Non-ECC SDRAM on two 260pin DIMM socket
Storage Devices	Up to 8x SATAIII port
Watchdog Timer	Programmable by embedded controller
Hardware Monitoring	System monitor(Voltage,Fan Speed and Temperature)
Expansion Interface	- 1x PCIe x16 GNE3 - 1x M.2 type E socket - 1x Mini PCIe

## I/O INTERFACE

Super I/O	N/A
Audio	Audio Jack on rear I/O with Line-in/ Line-out/ Mic-in
Ethernet	- Intel® WGI219LM and Intel® WGI211AT Ethernet controller - 2x RJ45 connectors on rear I/O
Serial Port	- 2x RS232/422/485 port - 4x RS232 port
USB	- 6x USB3.0 - 4x USB2.0
GPIO	8-bit configurable controlled by embedded controller





## DISPLAY

Graphic Controller	Intel® Gen 9 graphic engine supports DirectX 12, OprnGL 4.4
Display Interface	- DP:One DP port on rear I/O, resolution up to 4K - HDMI:One HDMI port on rear I/O, resolution up to 4K - VGA:One VGA port on rear I/O resolution up to

## Mechanical & Environment

Dimension	170mm(L) x 170mm(W) x 1.6mm(H)
Power Supply	ATX
Environment	- Operation temperature:0~60 °C - Storage temperature:40~80 °C - Relative humidity:5~95%,non-condensing
MTBF	Over 120,000 hours at 40°C

# Reference Table

Model	Dimension	Form Factor	Key Feature	Target Application
 PCOM-B637	125mm x 95mm	COM-Express	<ul style="list-style-type: none"> <li>Desktop CPU on Module (35W)</li> <li>Intel® 6<sup>th</sup> Core™ Processors Support(LGA1151)</li> <li>Support DDR4-2133 SDRAM on SO-DIMM slot, up to 16GB</li> <li>Support Gen 3 PCIe</li> <li>Support VGA, LVDS and Display-port interface</li> <li>Support Rich High Speed I/Os</li> <li>Support TPM&amp;I2C</li> </ul>	Networking Automation Medical
 ROBO-8113VG2AR	338.5 x 126.39mm	PICMG 1.3	<ul style="list-style-type: none"> <li>Support Intel® Xeon®/Core™ i3/i5/i7 processor in LGA1151 package</li> <li>Delivers up to 32GB maximum DDR4 2133 ECC or non-ECC SDRAM on two DIMM sockets</li> <li>Supports multiple display by DVI-I(DVI-D+VGA)and HDMI</li> <li>Flexible PCI-Express expansions by one PCIe16 or two PCIe8 or one PCIe8+two PCIe4</li> <li>Rich I/O connections such as two Gigabit Ethernet, four serial ports, USB 2.0/3.0 ports</li> <li>On-board six SATA III ports support RAID 0,1,5,10 (dual ports on backplane)</li> </ul>	Industrial Automation Digital Signage Medical
 RUBY-D718	304.8mm x 243.8mm	ATX	<ul style="list-style-type: none"> <li>Intel® Core™ i5 and i7 processor Support in LGA-1151 package</li> <li>Four Long-DIMMs support dual channel DDR4 non-ECC / ECC SDRAM up to 64GB</li> <li>Triple display by VGA/DVI-D/HDMI</li> <li>Support Rich I/O, USB2.0/3.0 dual Gigabit Ethernet. COM Port and SATA III ports support Intel RAID 0, 1, 5, 10.</li> <li>Support One PCIe x16 (Gen3), Two PCIe x4 (Gen3, x4signal), And Four PCI slot</li> <li>Support SPDIF Pin Header</li> </ul>	Automation POS Medical
 WADE-8017	170mm x 170mm	MINI-ITX	<ul style="list-style-type: none"> <li>Intel® Core™ i5 and i7 processor Support in LGA-1151 package</li> <li>Two Long-DIMMs support dual channel DDR4 non-ECC / ECC SDRAM up to 32GB</li> <li>Triple display by VGA/DP/HDMI</li> <li>Support Rich I/O, USB2.0/3.0 dual Gigabit Ethernet. COM Port and SATA III ports support Intel RAID 0, 1, 5, 10.</li> <li>Support One PCIe x16 (Gen3), One MiniPCIe with mSATA and One M.2 TypeE slot</li> </ul>	Automation POS Micro Server Networks



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