Breakout Session

12th Gen Intel® Core™ Processor PICMG 1.3 Single Host Board

Russell Cheng, Portwell
Portwell is dedicated to providing innovative and high-quality AIoT turnkey solutions to support our customer's business goals. In addition to our extensive and scalable list of products, we offer a wide range of technology services that are designed to help our customers develop and deploy their applications with ease so that they can achieve and expand their industry leadership. In 2017, Portwell Inc. was acquired by Posiflex Technology, Inc., a global leader in POS solution design and manufacturing. This has established Portwell as a major worldwide supplier of specialty computing application platforms.

**Headquarter**: Taipei, Taiwan  
**Founded**: 1993  
**OTC Listed**: 2001 ~ 2017  
**Capital**: NT$ 9.8B  
**Consolidate Rev.**: ~ US$176M\text{(_2020)_}/~US$189M\text{(_2021)_}  
**Employee**: ~720 WW
Global Organizations

Headquarters / Manufacturing Sites
Subsidiaries with Services (Tech. / Assembly & Sales)
Subsidiaries (Sales only)
Industrial Applications
Single Board Computer, Standalone Board & Computer-On-Module

- **Medical**
  - 11%
  - MRI Machine
  - CT/PET Scanner
  - Patient Monitoring
  - Ultrasound
  - Fitness

- **Transportation**
  - 13%
  - Ticket Machine
  - Train Control
  - System Fleet Management
  - Tolls & Traffic Management

- **Other**
  - 30%
  - Surveillance System
  - Gaming
  - Machine Telecoms
  - Aerospace & Defense

- **Factory Automation**
  - 36%
  - Industrial PC
  - PLC Remote I/O
  - HMI
  - Machine Control
  - Robotics

- **Retail**
  - 10%
  - Digital Signage
  - Vending Machine
  - Kiosk & ATM POS
12th Gen Intel® Core™ Desktop Processor
PICMG 1.3 Single Host Board
ROBO-8116G2AR Key Features
ROBO-8116G2AR Quick Guide

- 12th Gen Intel® Core™ Desktop Processor
- Support M.2 Type M(2280) socket
- DVI-D, HDMI, DP display output
- Target Applications for Automation, Network and Medical
- From CPU: 1x PCIe x16 or 2x PCIe x8 by jumper / BIOS
- From PCH: 1x PCIe x4 or 4x PCIe x1 by different BIOS support
- 4x PCI devices at 32bit 33MHz
BP Support

PBPE-10P2

10-slot [PCIe x16 (1), PCIe x4 (3, x4 signal), PCIe x4(3, x1 signal), PCI(2)]

- Fit for 4U Chassis
- Four USB ports
- Two SATA ports
- Support PCIe Gen5 with ROBO-8116 series

❖ Support 1x PCIe x16(Gen5) / 3x PCIe x1(Gen4)
❖ Support 2x PCIe x4(Gen4) / 1x PCIe x4(Gen3) with PEP-501X16
PEP-501X16 Mechanical Design

2x PCIe x4(Gen4) / 1x PCIe x4(Gen3) with PEP-501X16

<table>
<thead>
<tr>
<th>J6</th>
<th>PCIe x4 Slot (Gen4, From CPU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>J7</td>
<td>PCIe x4 Slot (Gen3, From PCH)</td>
</tr>
<tr>
<td>J8</td>
<td>PCIe x4 Slot (Gen4, From PCH)</td>
</tr>
</tbody>
</table>
BP Support

PBPE-11P4

11-slot [PCIe x16 (2, 1x16 or 2x8 signal), PCIe x4(4, x1 signal), PCI(4)]

- Fit for 4U Chassis
- Four USB ports
- Two SATA ports
- Support PCIe Gen5 with ROBO-8116 series

✧ Support 1x PCIe x16(Gen5) or 2x PCIe x8(Gen5) select by BIOS
✧ 1x PCIe x4 or 4x PCIe x1 select by BIOS
Performance
12th Gen - S Overview

- 10nm Intel Core S Processor
- PCIe Gen5 support
- Up to 16 Cores
- Up to DDR5 – 4800 support
- USB 3.2 Gen2x2 20G support
Comparison
### Comparison

<table>
<thead>
<tr>
<th>Model</th>
<th>ROBO-8116G2AR</th>
<th>ROBO-8115VG2AR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Factor</td>
<td>PICMG1.3</td>
<td>PICMG1.3</td>
</tr>
<tr>
<td>CPU</td>
<td>Intel® Core™ i3/15/17/19/Pentium®/Celeron®</td>
<td>Intel® Xeon® W/ Core™ i3/15/17/19/Pentium®/Celeron®</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel® 9460</td>
<td>Intel® P4500</td>
</tr>
<tr>
<td>Memory</td>
<td>2 x DDR3 ECC SODIMM up to 12GB</td>
<td>4 x DDR4 ECC DIMM up to 128GB</td>
</tr>
<tr>
<td>Expansion</td>
<td>1x PCIe x1 slot or 2x 1x PCIe x4 slot or 4x PCIe x1 slot</td>
<td>1x PCIe x1 slot or 2x PCIe x8 slot or 1x PCIe x8 slot</td>
</tr>
<tr>
<td>Display</td>
<td>Realtek ALC8885 HDA codec</td>
<td>DVI / HDMI</td>
</tr>
<tr>
<td>USB</td>
<td>1x USB3.2 Gen2 2x USB3.2 Gen2 2x USB3.2 Gen1 4x USB2.0</td>
<td>6x USB3.2 Gen2 8x USB2.0</td>
</tr>
<tr>
<td>Storage Devices</td>
<td>4x SATA III 1x M.2 Type M 2280</td>
<td>5x SATA III 1x M.2 Type M 2280</td>
</tr>
<tr>
<td>GPIO</td>
<td>8 bit</td>
<td>8 bit</td>
</tr>
<tr>
<td>Others</td>
<td>N/A</td>
<td>PS2/KB &amp; MS</td>
</tr>
<tr>
<td>Dimension</td>
<td>338.5 x 126.39mm</td>
<td>338.5 x 126.39mm</td>
</tr>
</tbody>
</table>

1. Support DDR5 4800 MHZ SODIMM up to 64GB
2. Support PCIe Gen5 performance
3. Support DVI-D / HDMI /DP display output on Bracket
4. Support Dual 2.5G Lan
5. Support USB3.2 Gen 2x2 Type C
Portwell Software Value (PET)
Portwell Software Value - PET

PET : Portwell Engineering Toolkit
The name of the Portwell API (Application Programming Interface). A bridge to simplify and enhance H/W & S/W application implementation efficiency.

What PET do ?

- Hardware monitor
- Fan control
- GPIO control
- WDT
- SMBus
- I²C
Portwell Software Value - PAC

PAC : Portwell AMT Client
A management program which support the newest version of the Intel AMT (Active Management Technology).

What PAC do ?

- Remote power on/off
- OS independent KVM
- Network isolation
- Remote Diagnosis and repair
  - reboot to bios
  - reboot to CDROM
  - boot to user selected OS image
Success Story / Application
Application-Automation

Industrial automation control

Key feature for IAC:
- 4x UART
- M.2 Type M
- x16 PCIe slot
- Dual Giga LAN
- TCN/TCC
- Extensibility

RS-232/RS-485 High-Speed Line Drivers

RS-232/RS-485 High-Speed Line Drivers

RS-485 Cable

PC

Lathe

Time Clock

Conveyor

COM / x16 slot / 2.5G Lan(TSN for R680E only)
Support Page

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🌟 Download Center
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