PEAK890VL2

PICMG 1.3 Full-Size SBC with Intel® R680E/Q670E/H610E

Support 12th/13th Generation Intel® Core™ i9/ i7/i5/i3 Processors

Main Features

- Intel® Coffee (12th/13th generation Core™ i9/i7/i5/i3) processor, 65W/35W TDPs, LGA1700 socket
- Support Intel® R680E/Q670E/H610E PCH chipset PICMG 1.3 specification
- Support Dual channel DDR5 with ECC/ Non-ECC DIMM 4800MHz
- Support multiple display for Mini-DP, HDMI, VGA
- Support SATA 3.0 W/RAID 0,1,5,10/ PCIe 4.0 M.2 NVMe
- Support Intel® vPro™ technology with Intel® AMT
- Support on board TPM2.0

Product Overview

The PEAK890 series is a PICMG1.3 full-size single-board computing, Powered by the Intel® 12th/13th generation Core™i9/ i7/ i5/ i3 processors featuring Performance-cores and Efficient-cores to enhance IoT workload consolidation and multitasking. It comes with Dual DDR5 DIMM socket up to 64GB 4800MHz with ECC (R680E) and Non-ECC for faster data transfer and lower power efficiency. PEAK890 SKU in Q680E/ R680E features SATA3.0 with RAID 0,1,5 and 10 to support data protection. Furthermore, the advanced storage capabilities with Intel® RST features PCIe Gen4 x4 on M.2 (2280) to maximizes storage performance and it also features an integrated Intel® AMT for easier maintenance and on-board TPM2.0 to elevate the security. PEAK890 W/H610 SKU provides cost effective solution.

PEAK890 series with high performance platform and high flexibility I/O expansion with wide selections of backplane fits AI application.

Specifications

CPU Support

- 13th Generation Intel® LGA 1700 Socket Processors
  - Intel® Core™ I9-13900E (24 Cores, 36M Cache, up to 5.2 GHz); 65W
  - Intel® Core™ I9-13900TE (24 Cores, 36M Cache, up to 5.0 GHz); 35W
  - Intel® Core™ I7-13700E (16 Cores, 30M Cache, up to 5.1 GHz); 65W
  - Intel® Core™ I7-13700TE (16 Cores, 30M Cache, up to 4.8 GHz); 35W
  - Intel® Core™ I7-13700T (16 Cores, 30M Cache, up to 4.9 GHz); 35W
  - Intel® Core™ I5-13500E (14 Cores, 24M Cache, up to 4.6 GHz); 65W
  - Intel® Core™ I5-13500TE (14 Cores, 24M Cache, up to 4.5 GHz); 35W
  - Intel® Core™ I5-13500T (14 Cores, 24M Cache, up to 4.6 GHz); 35W
  - Intel® Core™ I5-13400E (10 Cores, 20M Cache, up to 4.6 GHz); 65W
  - Intel® Core™ I3-13100E (4 Cores, 12M Cache, up to 4.4 GHz); 65W
  - Intel® Core™ I3-13100TE (4 Cores, 12M Cache, up to 4.1 GHz); 35W
  - Intel® Core™ I3-13100T (4 Cores, 12M Cache, up to 4.2 GHz); 35W
- 12th Generation Intel® LGA 1700 Socket Processors
  - Intel® Core™ i9-12900E (16 Cores, 30M Cache, up to 5.0 GHz); 65W
  - Intel® Core™ i9-12900TE (16 Cores, 30M Cache, up to 4.8 GHz); 35W
  - Intel® Core™ i7-12700E (12 Cores, 25M Cache, up to 4.8 GHz); 65W
  - Intel® Core™ i7-12700TE (12 Cores, 25M Cache, up to 4.6 GHz); 35W
  - Intel® Core™ i5-12500E (6 Cores, 18M Cache, up to 4.5 GHz); 65W
  - Intel® Core™ i5-12500TE (6 Cores, 18M Cache, up to 4.3 GHz); 35W
  - Intel® Core™ i3-12100E (4 Cores, 12M Cache, up to 4.2 GHz); 60W
  - Intel® Core™ i3-12100TE (4 Cores, 12M Cache, up to 4.0 GHz); 35W
  - Intel® Pentium® G7400E (2 Cores, 6M Cache, 3.6 GHz); 46W
  - Intel® Pentium® G7400TE (2 Cores, 6M Cache, 3.0 GHz); 35W
  - Intel® Celeron® G6900E (2 Cores, 4M Cache, 3.0 GHz); 46W
  - Intel® Celeron® G6900TE (2 Cores, 4M Cache, 2.4 GHz); 35W

Platform Control Hub

- Intel® R680E/ Q670E/ H610E express chipset PCH

Main Memory

- 2x SO-DIMM, support Dual channel DDR5 ECC/ Non ECC 4800MHz (Max. 64GB)

CADMUS

Specifications

BIOS

- AMI UEFI system BIOS
- 256M Bit SPI depended on AMT function
- Dual BIOS for Four PCIe x1 and One PCIe x4

Display

- Integrated Intel® UHD Graphics 770 driven by Xe Architecture
- Support independent triple display
- VGA: resolution up to 1920*1200 pixels @60Hz (via optional cable)
- HDMI: resolution up to 4096*2304 pixels@60Hz
- Mini DP: resolution up to 4096*2304 pixels@60Hz

R680E/ Q670E PCH

Storage

- 4x SATA 7P connector on board
- 2x SATA through PICMG1.3 connector C to Backplane
- 1x M.2 2280 M Key PCIe 4.0x4 from CPU
- Support Intel® Rapid Storage Technology
- Support SATA RAID 0,1,5,10

USB3.2

- 2-Ports USB 3.2 Gen2 through I/O bracket
- 4-Ports USB 3.2 Gen1 through 2.0mm box header
- Backward compatible for USB 2.0

USB 2.0

- 4-Ports USB2.0 through 2.0mm pin header
- 4-Ports USB2.0 through PICMG1.3 connector C to backplane

H610E PCH

Storage

- 2x SATA 7P connector on board
- 2x SATA through PICMG1.3 connector C to backplane

USB 3.2

- 2-Ports USB 3.2 Gen2 through I/O bracket
- 2-Ports USB 3.2 Gen1 through 2.0mm box header
- Backward compatible for USB 2.0

USB2.0

- 2-Ports USB2.0 through 2.0 pin header
- 4-Ports USB2.0 through PICMG1.3 connector C to backplane

On-board LAN

- 2x Intel ® WGI226LM 2.5GbE Controller support Intel® AMT with Intel vPro®(LAN1 Only)
- RJ45 with LED connector x2
- Support boot from LAN(PXE)
- Support wake on LAN

Internal I/O

- 2 x RS232/485/422 with auto flow control, 2 x RS232
- 1 x CPU Smart Fan, 1 x System Smart Fan
- WDT 1 ~ 255 steps by software program
- 1 x Front panel connector
- 1 x ATX 4-pin power connector

Audio

- High definition audio interface (compatible with NEXCOM audio daughter board PN: 10E000HDA00X0 EBK-HAD)

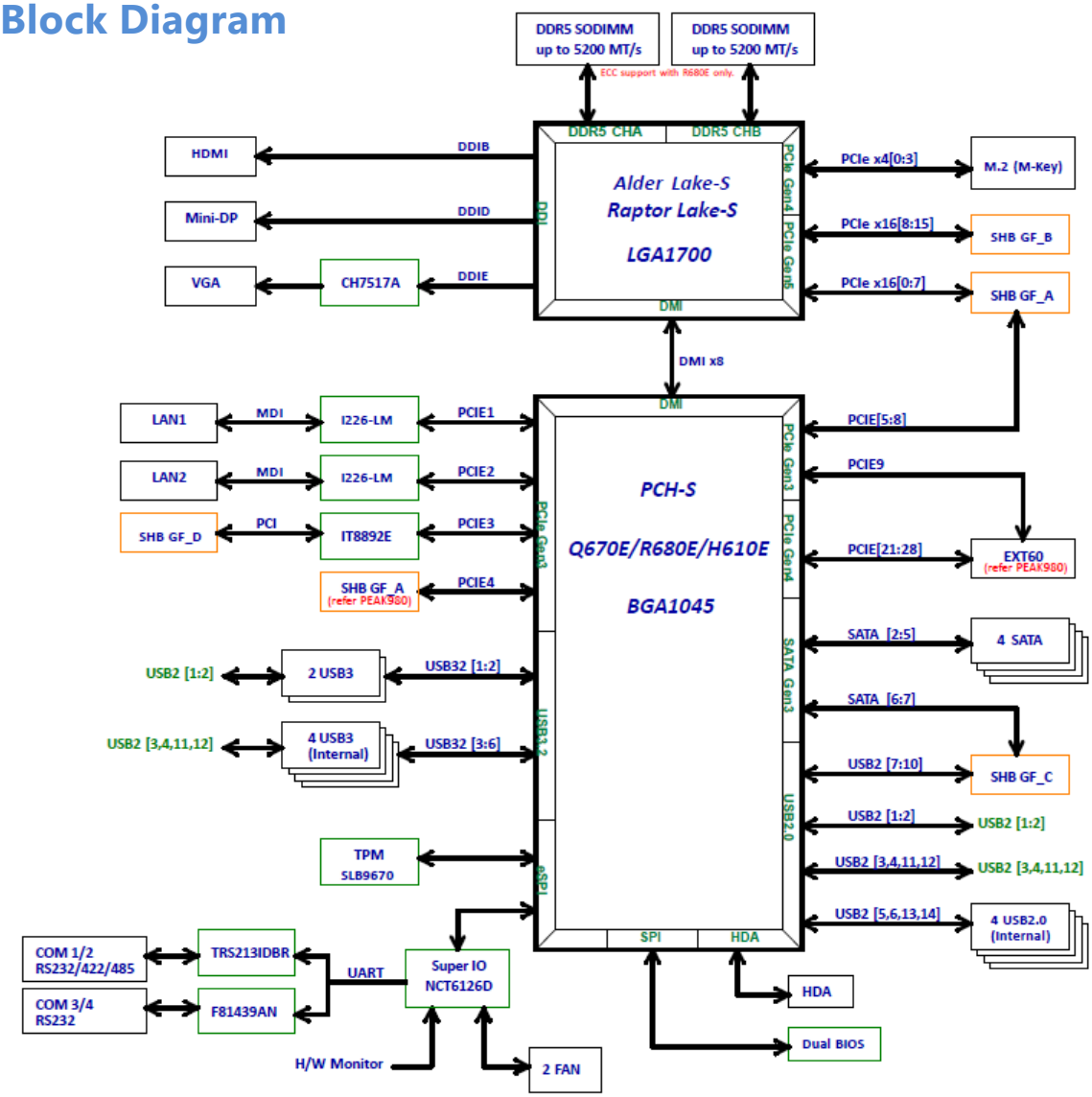
Expansion Interface

- One PCIe Gen3.0 x16/ two PCIe Gen3.0 x8 and one PCIe Gen3.0 x4 to backplane (R680E/ Q670E)
- One PCIe Gen3.0 x16 and one PCIe Gen3.0 x4 to backplane (H610E)
- Four PCI through PICMG 1.3 connector D to backplane

Edge I/O Interface

- 2 x USB 3.2 ports
- 2 x 2.5Gb LAN ports
- 1 x HDMI 1.4 connector
- 1 x Mini DP connector

Block Diagram



Power Requirements

- Power source from backplane through golden finger and AUX +12V
- Support ATX/AT function by jumper setting
- BIOS default is (ATX MODE)

Mechanical & Environment

- Operating temperature: 0˚C ~ 60˚C
- Storage temperature: -20 ~ 85˚C
- Relative humidity:
  Operating: 0%~90%, non-condensing
  Non-operating: 0%~95%, non-condensing

Dimension

- 338.58 mm x 126.39 mm, 8 layers

Operating System

- Windows® 11 IoT Enterprise 22H2
- Windows® 10 IoT Ent LTSC 2022
- Linux for Ubuntu

Certificate

- CE/FCC Class A compliant

Ordering Information

- **PEAK 890VL2 –R (P/N: TBC)**
  PICMG 1.3 full-size SBC, R680E, Intel® LGA1700, DDR5 DIMM, support triple display,
  LAN x2, USB 3.2 x6, SATA 3.0 x4, M.2 (support PCIe storage)
- **PEAK 890VL2 –Q (P/N: TBC)**
  PICMG 1.3 full-size SBC, Q670E, Intel® LGA1700, DDR5 DIMM, support triple display,
  LAN x2, USB 3.2 x6, SATA 3.0 x4, M.2 (support PCIe storage)
- **PEAK 890VL2 –H (P/N: TBC)**
  PICMG 1.3 full-size SBC, H610E, Intel® LGA1700, DDR5 DIMM, support triple display,
  LAN x2, USB 3.2 x4, SATA 3.0 x2

Backplane Selection Guide

PICMG1.3 Backplane

Model Name	Total Slot	Expansion Slot					ETX 60GF	
		PCIe x16	PCIe x8	PCIe x4	PCIe x1	PCI	PCIe x4	PCIe x1
NBP14890	14	1(x16) or 2(x8)		5		2	2	
2U-E2P2	5	1		1		2		
NBP1468	14	1(x8)		3		4	2	1
NBP1465	14	1(x16) or 2(x8)		1		5	2	1(R680E)
NBP1257	14	1			4	7		
NBP1052	10	1(x16) or 2(x8)		1		2	2	
NBP1024	10	1		1		4		
NBP06P2	5	1		1		2	1	
NBP06E5	5	1		1	1		1	
NBP05P2	5	1(x16) or 2(x8)		1		2		
NBP14880	14	1(x16) or 2(x8)		5		4		
NBP14670	14	1		4		7		
NBP142A0-CX	14	1		1		10		
NBP14570-CX	14	1			4	7		
NBP1412X1	14				12			
NBP1358	14	1			3	8		
NBP0926	10	1		1		6		