



**High Performance  
Embedded  
vPro AMT  
IPMI**

## Key Features

10th Generation Intel® Core™ i9/Core™ i7/Core™ i5/Core™ i3/Pentium®/Celeron® Processor  
Single Socket LGA-1200 (Socket H5) supported, CPU TDP support Up to 125W TDP

Single LAN with Intel® PHY I219LM LAN controller  
Single LAN with Intel® Ethernet Controller I210-AT

Intel® Q470

Up to 128GB Unbuffered non-ECC UDIMM, DDR4-2933MHz, in 4 DIMM slots

1 PCI-E 3.0 x16,  
1 PCI-E 3.0 x4 (in x8 slot),  
1 PCI-E 3.0 x4  
1 M.2 M-Key SATA/PCI-E 3.0 x4, 2280/22110  
1 M.2 E-Key CNV/PCI-E 3.0 x1, 2230

Intel® Q470 controller for 4 SATA3 (6 Gbps) ports; RAID 0,1,5,10

1 VGAD-Sub Connector port, 2 DP++(Dual-Mode DisplayPort) ports, 1 DVI - D port

## Product SKUs

- **MBD-X12SCZ-QF** ■ X12SCZ-QF

## Physical Stats

- **Form Factor** ■ Micro-ATX
- **Dimension** ■ 9.6" x 9.6" (24.38cm x 24.38cm)

## Processor

- **CPU** ■ 10th Generation Intel® Core™ i9/Core™ i7/Core™ i5/Core™ i3/Pentium®/Celeron® Processor
- Single Socket LGA-1200 (Socket H5) supported, CPU TDP supports Up to 125W TDP
- A graphic integrated CPU is required to have onboard video from the DVI and DP ports
- **Core** ■ Up to 10 cores
- **Note** ■ \*\* Motherboard supports this maximum TDP. Please verify your system can thermally support.  
\*\*The X12SCZ does not support the Intel 10th/11th generation processor 2M cache SKUs. These processors will not boot with the latest BIOS version.

## System Memory

- **Memory Capacity** ■ 4 DIMM slots  
■ Up to 128GB UDIMM, DDR4-2933MHz
- **Memory Type** ■ 2933/2666/2400/2133MHz
- **DIMM Sizes** ■ 4GB, 8GB, 16GB, 32GB
- **Memory Voltage** ■ 1.2V

## On-Board Devices

- **Chipset** ■ Intel® Q470E
- **SATA** ■ Intel® Q470E controller for 4 SATA3 (6 Gbps) ports; RAID 0,1,5,10
- **IPMI** ■ ASPEED AST2500 BMC
- **Audio** ■ ALC 888S HD Audio
- **Graphics** ■ Intel® HD Graphics  
■ ASPEED AST2500 BMC
- **Network Controllers** ■ Single LAN with Intel® PHY I219LM LAN controller  
■ Single LAN with Intel® Ethernet Controller I210-AT

## Input / Output

- **SATA** ■ 4 SATA3 (6Gbps) port(s)
- **LAN** ■ 2 RJ45 Gigabit Ethernet LAN ports
- **USB** ■ 6 USB 3.1 Gen2 port(s) (2 via header; 4 rear type A)  
■ 6 USB 3.2 Gen2 port(s) (4 rear type A; 2 via header)  
■ 6 USB 2.0 port(s) (6 via header)
- **Video Output** ■ 1 DVI - D port(s), 1 VGA D-Sub Connector port(s), 2 DP++(Dual-Mode DisplayPort) port(s)
- **Serial Port** ■ 1 COM Port(s) (1 header)
- **DOM** ■ 1 SATA DOM (Disk on Module) power connector support
- **TPM** ■ 1 TPM Header & Chip both

## Expansion Slots

- **PCI-E** ■ 1 PCI-E 3.0 x16,  
■ 1 PCI-E 3.0 x4,  
■ 1 PCI-E 3.0 x4 (in x8 slot)
- **M.2** ■ M.2 Interface: 1 SATA/PCI-E 3.0 x4; 1 CNVi/PCI-E 3.0 x1  
■ Form Factor: 2280/22110, 2230  
■ Key: M-Key, E-Key

## System BIOS

- **BIOS Type** ■ AMI UEFI
- **BIOS Features** ■ ACPI 6.1  
■ SMBIOS 3.1  
■ PCI FW 3.0  
■ UEFI 2.6  
■ RTC (Real Time Clock) Wakeup

## Management

- **Software** ■ SuperDoctor® 5, SUM, AMT, vPro, Watchdog, IPMI (Intelligent Platform Management Interface) v2.0 with KVM support
- **System Management Software** ■ IPMI (Intelligent Platform Management Interface) v1.5 / 2.0 with KVM support
- **Power Configurations** ■ ACPI Power Management, ATX Power connector, +12V DC Power Input

## PC Health Monitoring

- **Voltage** ■ VBAT, Memory, CPU, Chassis intrusion header, 5 -fan status, 1.2V (VDIMM), 1.05 (PCH), +5V standby, +5V, +3.3V, +12V
- **LED** ■ UID/Remote UID  
■ Power LED  
■ BMC/IPMI Heartbeat LED
- **Temperature** ■ Thermal Control for 5 Fan Connectors
- **FAN** ■ 5x 4-pin fan headers (up to 5 fans)  
■ Fan speed control  
■ Dual Cooling Zone  
■ 5 fans with tachometer status monitoring
- **Other Features** ■ UID, RoHS, M.2 NGFF connector, Dual Cooling Zones, Chassis intrusion header, ATX Power connector, ACPI power management, 8-pin 12v DC power connector, 12V DC or ATX Power Source

## Operating Environment

- **Operating Temperature Range** ■ 0°C - 60°C (32°F - 140°F)
- **Non-Operating Temperature Range** ■ -40°C - 85°C (-40°F - 185°F)
- **Operating Relative Humidity Range** ■ 10% - 85% (non-condensing)
- **Non Operating Relative Humidity Range** ■ 5% - 95% (non-condensing)