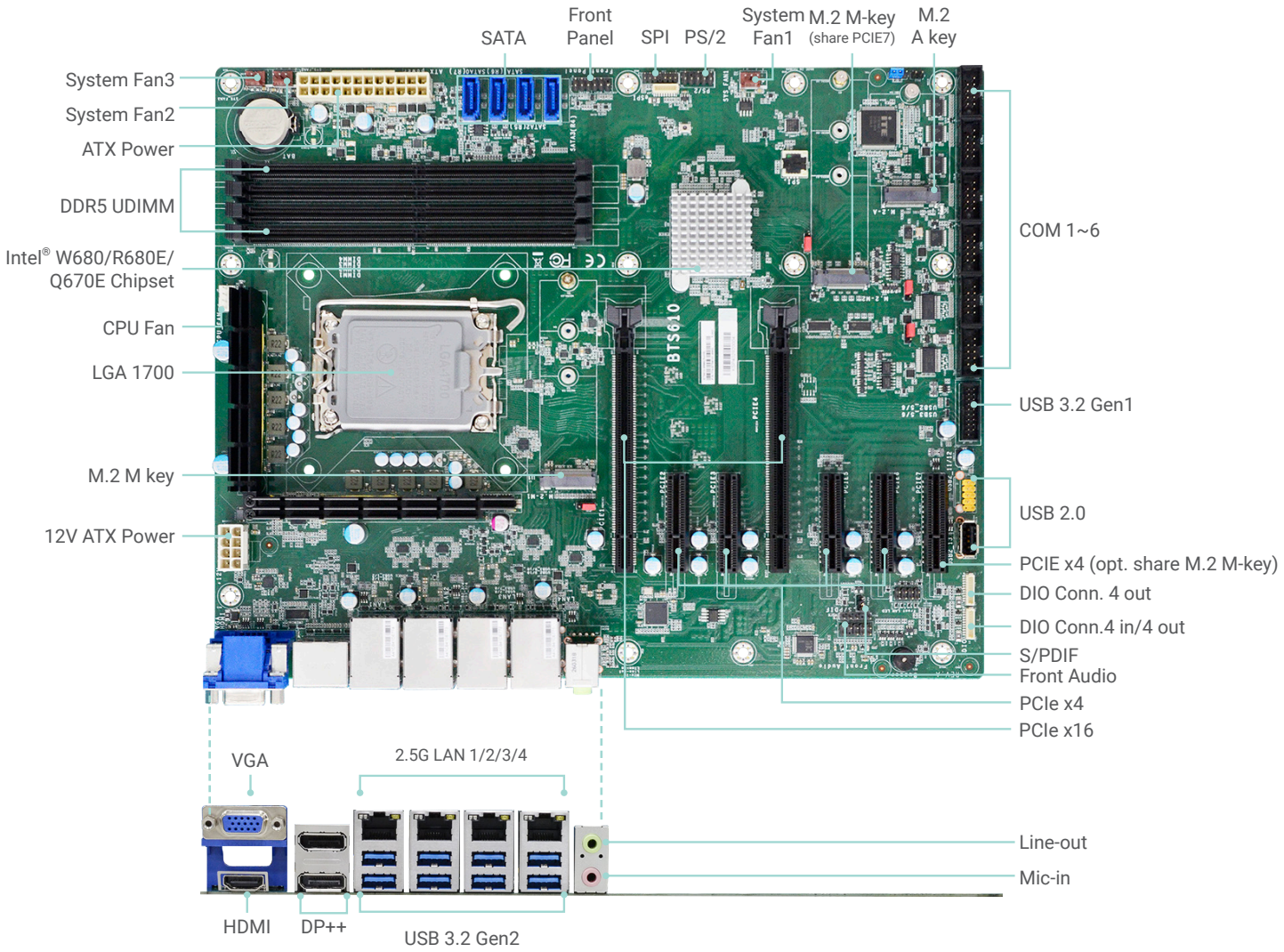
BTS610-W680/R680E
BTS610-Q670E

Desktop

BTL-S/14th/13th/12th Gen Intel® Core™

ATX



Top View (BTS610-W680/R680E)

KEY FEATURES

DDR5

4 DDR5 UDIMM up to 192GB

4K High Resolution

Supports 4K resolution

Quad Displays

VGA, 2 DP++, HDMI

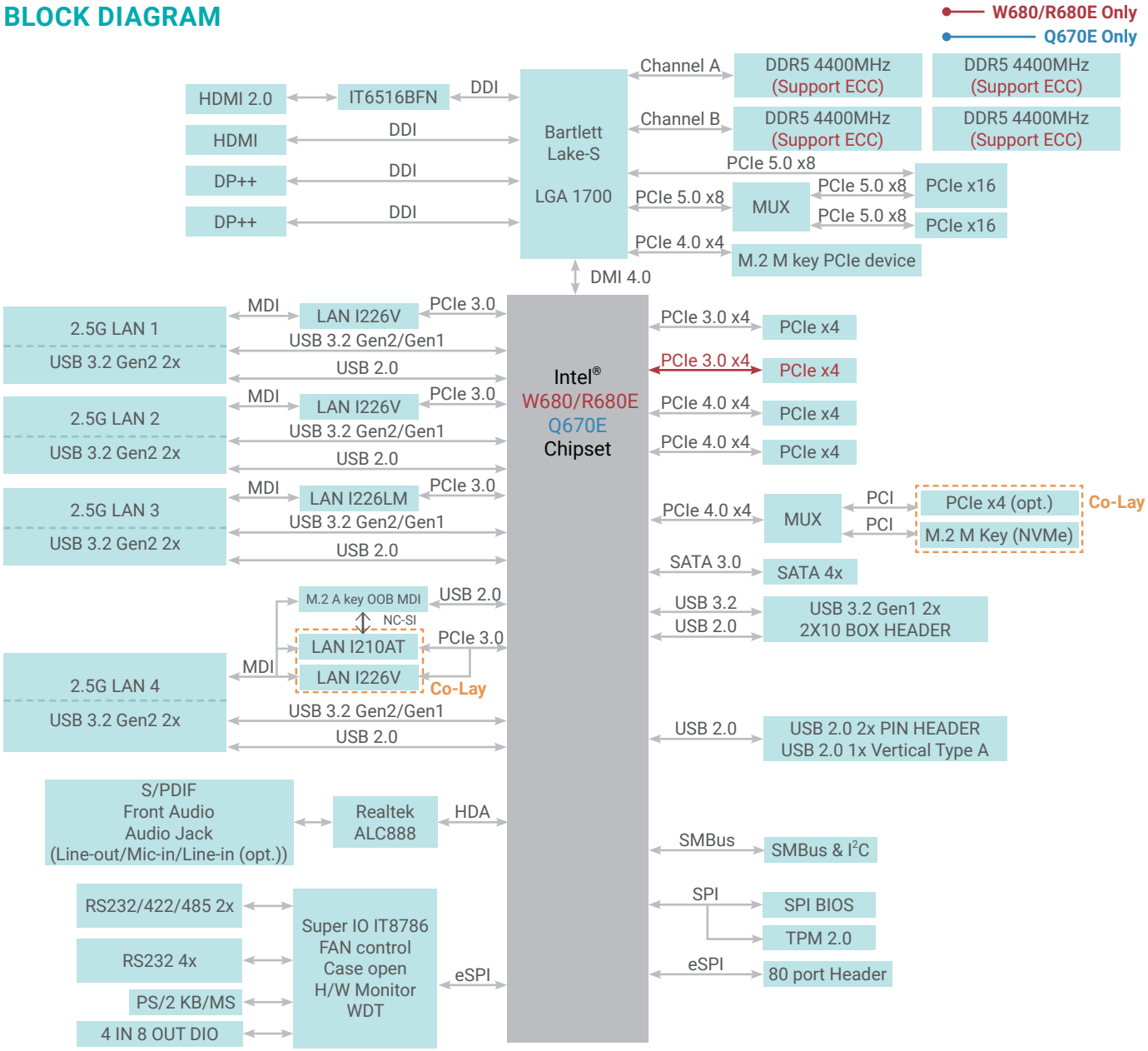
Multiple Expansion

2 PCIe x16, 5 PCIe x4,
2 M.2 M key,
1 M.2 A Key(OOB)

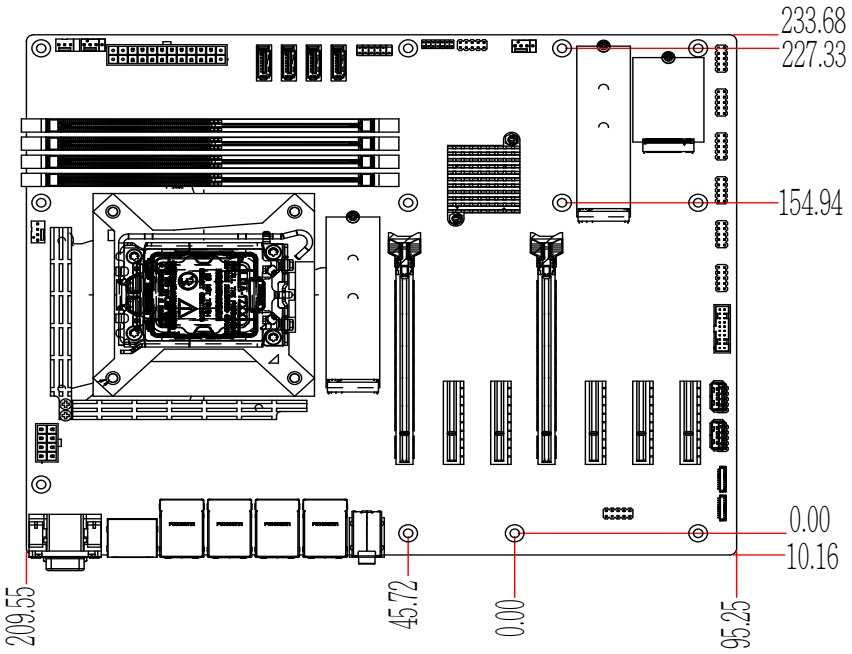
Rich I/O

4 Intel 2.5GbE, 6 COM,
8 USB 3.2 Gen2,
2 USB 3.2 Gen1,
3 USB 2.0

BLOCK DIAGRAM



MECHANICAL DRAWING



SPECIFICATION

Model Name		BTS610-W680/R680E	BTS610-Q670E
SYSTEM	Processor	Intel® Bartlett Lake-S P-Core Only LGA 1700 Socket Processors, TDP support up to 125W Intel® Core™ 9 273PQE (12 Cores, 36M Cache, up to 5.9 GHz); 125W Intel® Core™ 9 273PE (12 Cores, 36M Cache, up to 5.7 GHz); 65W Intel® Core™ 9 273PTE (12 Cores, 36M Cache, up to 5.5 GHz); 45W Intel® Core™ 7 253PQE (10 Cores, 33M Cache, up to 5.7 GHz); 125W Intel® Core™ 7 253PE (10 Cores, 33M Cache, up to 5.5 GHz); 65W Intel® Core™ 7 253PTE (10 Cores, 33M Cache, up to 5.4 GHz); 45W Intel® Core™ 5 223PQE (8 Cores, 24M Cache, up to 5.5 GHz); 125W Intel® Core™ 5 223PE (8 Cores, 24M Cache, up to 5.4 GHz); 65W Intel® Core™ 5 223PTE (8 Cores, 24M Cache, up to 5.4 GHz); 45W Intel® Core™ 5 213PE (8 Cores, 24M Cache, up to 5.2 GHz); 65W Intel® Core™ 5 213PTE (8 Cores, 24M Cache, up to 5.2 GHz); 45W	
		Intel® Bartlett Lake-S Hybrid LGA 1700 Socket Processors, TDP support up to 125W Intel® Core™ 7 251E (24 Cores, 36M Cache, up to 5.6 GHz); 65W Intel® Core™ 7 251TE (24 Cores, 36M Cache, up to 5.4 GHz); 45W Intel® Core™ 5 221E (14 Cores, 24M Cache, up to 5.2 GHz); 65W Intel® Core™ 5 221TE (14 Cores, 24M Cache, up to 5.0 GHz); 45W Intel® Core™ 5 211E (10 Cores, 20M Cache, up to 4.9 GHz); 65W Intel® Core™ 5 211TE (10 Cores, 20M Cache, up to 4.8 GHz); 45W Intel® Core™ 3 201E (4 Cores, 12M Cache, up to 4.8 GHz); 60W Intel® Core™ 3 201TE (4 Cores, 12M Cache, up to 4.6 GHz); 45W	
		14th Generation Intel® LGA 1700 Socket Processors, TDP support up to 125W Intel® Core™ I9-14901E (8 Cores, 36M Cache, up to 5.6 GHz); 65W Intel® Core™ I5-14401E (6 Cores, 24M Cache, up to 4.7 GHz); 65W Intel® Core™ I9-14900 (24 Cores, 36M Cache, up to 5.8 GHz); 65W Intel® Core™ I9-14900T (24 Cores, 36M Cache, up to 5.5 GHz); 35W Intel® Core™ I7-14700 (20 Cores, 33M Cache, up to 5.4 GHz); 65W Intel® Core™ I7-14700T (20 Cores, 33M Cache, up to 5.2 GHz); 35W Intel® Core™ I5-14500 (14 Cores, 24M Cache, up to 5 GHz); 65W Intel® Core™ I5-14500T (14 Cores, 24M Cache, up to 4.8 GHz); 35W Intel® Core™ I5-14400 (10 Cores, 20M Cache, up to 4.7 GHz); 65W Intel® Core™ I5-14400T (10 Cores, 20M Cache, up to 4.5 GHz); 35W Intel® Core™ I3-14100 (4 Cores, 12M Cache, up to 4.7 GHz); 60W Intel® Core™ I3-14100T (4 Cores, 12M Cache, up to 4.4 GHz); 35W Intel® 300 (2 Cores, 6M Cache, up to 3.9 GHz); 46W Intel® 300T (2 Cores, 6M Cache, up to 3.4 GHz); 35W	
		13th Generation Intel® LGA 1700 Socket Processors, TDP support up to 125W 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); 60W 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, TDP support up to 125W 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	
	Chipset	Intel® W680/R680E Chipset	Intel® Q670E Chipset
	Memory	Four 288-pin UDIMM up to 192GB (ECC/Non-ECC) Dual Channel DDR5 up to 4400 MHz *Speed support list follow User's Manual	Four 288-pin UDIMM up to 192GB (Non-ECC) Dual Channel DDR5 up to 4400 MHz *Speed support list follow User's Manual
	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit

SPECIFICATION

Model Name		BTS610-W680/R680E	BTS610-Q670E
GRAPHICS	**Controller**	Intel® UHD Graphics 700 series	Intel® UHD Graphics 700 series
	Feature	OpenGL 4.5, DirectX 12, OpenCL 2.1 **HW Decode:** AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9 **HW Encode:** MPEG2, AVC/H264, JPEG, HEVC/H265, VP8, VP9	OpenGL 4.5, DirectX 12, OpenCL 2.1 **HW Decode:** AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9 **HW Encode:** MPEG2, AVC/H264, JPEG, HEVC/H265, VP8, VP9
	Display	1 x VGA 2 x DP++ 1 x HDMI 2.0a **VGA:** resolution up to 1920x1200 @ 60Hz **DP++:** resolution up to 4096x2304 @ 60Hz **HDMI:** resolution up to 4096x2160 @ 24Hz	1 x VGA 2 x DP++ 1 x HDMI 2.0a **VGA:** resolution up to 1920x1200 @ 60Hz **DP++:** resolution up to 4096x2304 @ 60Hz **HDMI:** resolution up to 4096x2160 @ 24Hz
	Quad Displays	VGA + 2 DP++ + HDMI	VGA + 2 DP++ + HDMI
EXPANSION	**Interface**	2 x PCIe x16 (Gen 5, 16 or 8+8) -Support PCIE1/PCIE4 : single at x16(PCIE1) -Support PCIE1/PCIE4 : dual at x8(PCIE1)/x8(PCIE4) -Support PCIE1 : Riser card x16 or x8/x8 selected by Jumper 1 x PCIe x4 (Gen 3, open edge, PCIE2) 1 x PCIe x4 (Gen 3, open edge, PCIE3) 2 x PCIe x4 (Gen 4, open edge, PCIE5 6) 1 x PCIe x4 (opt. Gen 4, open edge, PCIE7 share M.2-M2, function selected by BIOS.)	2 x PCIe x16 (Gen 5, 16 or 8+8) -Support PCIE1/PCIE4 : single at x16(PCIE1) -Support PCIE1/PCIE4 : dual at x8(PCIE1)/x8(PCIE4) -Support PCIE1 : Riser card x16 or x8/x8 selected by Jumper 1 x PCIe x4 (Gen 3, open edge, PCIE3) 2 x PCIe x4 (Gen 4, open edge, PCIE5 6) 1 x PCIe x4 (opt. Gen 4, open edge, PCIE7 co-lay M.2-M2, function selected by BIOS.)
	M.2	1 x M.2 M key (PCIe x4 Gen4 NVMe) 1 x M.2 M key (PCIe x4 Gen4 NVMe, SATA) (share PCIE7, function selected by BIOS) 1 x M.2 A key for M2-OOB	1 x M.2 M key (PCIe x4 Gen4 NVMe) 1 x M.2 M key (PCIe x4 Gen4 NVMe, SATA) (share PCIE7, function selected by BIOS) 1 x M.2 A key for M2-OOB
AUDIO	**Audio Codec**	Realtek ALC888S	Realtek ALC888S
ETHERNET	**Controller**	1 x Intel® I226-LM (Core i9/i7/i5 support iAMT) 1 x Intel® I210-AT (co-lay I226-V) 2 x Intel® I226-V	1 x Intel® I226-LM (Core i9/i7/i5 support iAMT) 1 x Intel® I210-AT (co-lay I226-V) 2 x Intel® I226-V
REAR I/O	**Ethernet**	3 x 2.5GbE (RJ-45) 1 x 1GbE (RJ-45, opt. 2.5GbE)	3 x 2.5GbE (RJ-45) 1 x 1GbE (RJ-45, opt. 2.5GbE)
	USB	8 x USB 3.2 Gen 2	8 x USB 3.2 Gen 2
	Display	1 x VGA 2 x DP++ 1 x HDMI	1 x VGA 2 x DP++ 1 x HDMI
	Audio	1 x Line-out 1 x Mic-in 1 x Line-in (opt.)	1 x Line-out 1 x Mic-in 1 x Line-in (opt.)
INTERNAL I/O	**Serial**	2 x RS-232/422/485 (RS-232 w/ power) (2.54mm pitch) 4 x RS-232 (2.54mm pitch)	2 x RS-232/422/485 (RS-232 w/ power) (2.54mm pitch) 4 x RS-232 (2.54mm pitch)
	USB	2 x USB 3.2 Gen1 3 x USB 2.0 (2.54mm pitch) (1 x USB 2.0 colay vertical Type A)	2 x USB 3.2 Gen1 3 x USB 2.0 (2.54mm pitch) (1 x USB 2.0 colay vertical Type A)
	Audio	1 x Front Audio 1 x S/PDIF	1 x Front Audio 1 x S/PDIF
	SATA	4 x SATA 3.0 (up to 6Gb/s) RAID 0/1/5/10	4 x SATA 3.0 (up to 6Gb/s) RAID 0/1/5/10
	PS/2	1 x PS/2 (2.54mm pitch)	1 x PS/2 (2.54mm pitch)
	DIO	4-IN / 8-OUT DIO	4-IN / 8-OUT DIO
	eSPI	1 x eSPI	1 x eSPI
	SMBus	1 x SMBus	1 x SMBus
WATCHDOG TIMER	**Output & Interval**	System Reset, Programmable via Software from 1 to 255 Seconds	System Reset, Programmable via Software from 1 to 255 Seconds
SECURITY	**TPM**	TPM 2.0	TPM 2.0
POWER	**Type**	ATX	ATX
	Connector	8-pin ATX 12V power 24-pin ATX power	8-pin ATX 12V power 24-pin ATX power
	Consumption	TBD	TBD
	RTC Battery	CR2032 Coin Cell	CR2032 Coin Cell
OS SUPPORT	**Microsoft**	Windows 10 IoT Enterprise 64-bit Windows 11 LTSC	Windows 10 IoT Enterprise 64-bit Windows 11 LTSC
	Linux	Linux	Linux
ENVIRONMENT	**Temperature**	**Operating:** -5 to 65°C **Storage:** -20 to 70°C with RTC Battery; -40 to 85°C without RTC Battery	**Operating:** -5 to 65°C **Storage:** -20 to 70°C with RTC Battery; -40 to 85°C without RTC Battery
	Humidity	**Operating:** 5 to 95% RH **Storage:** 5 to 95% RH	**Operating:** 5 to 95% RH **Storage:** 5 to 95% RH
	MTBF	TBD	TBD

SPECIFICATION

Model Name		BTS610-W680/R680E	BTS610-Q670E
MECHANISM	**Dimensions**	ATX Form Factor 305mm (12") x 244mm (9.6")	ATX Form Factor 305mm (12") x 244mm (9.6")
	Height	**PCB:** 1.6mm **Top Side:** TBD **Bottom Side:** TBD	**PCB:** 1.6mm **Top Side:** TBD **Bottom Side:** TBD
CERTIFICATIONS	**Certifications**	CE, FCC Class B, RoHS	CE, FCC Class B, RoHS

ORDERING INFORMATION

Model Name	P/N	Memory	2.5GbE	1GbE	RS-232/422/485	RS-232	USB 3.2 Gen2	USB 3.2 Gen1	USB 2.0	SATA 3.0	TPM	Temp.
BTS610-R680E	770-BTS6101-000G	4 UDIMM	3	1	2	4	8	2	3	4	TPM 2.0	-5 to 65°C
BTS610-Q670E	770-BTS6101-100G		3	1								
BTS610-R680E	770-BTS6101-200G		1	1								
BTS610-Q670E	770-BTS6101-300G		1	1								
BTS610-W680	770-BTS6101-400G		3	1								
BTS610-W680	770-BTS6101-500G		2	0								

PACKING LIST

- 1 BTS610-W680/R680E/Q670E motherboard
- 1 COM port cables (Length: 300mm, 2 x COM ports)
- 1 Serial ATA data cable (Length: 500mm)
- 1 I/O shield
- 1 M.2 screw/standoff

OPTIONAL ITEMS

· USB 2.0 port cable (Length: 350/398mm)	A81-001066-016G
· USB 3.2 Gen1 port cable (Length: 320mm)	A81-001052-023G
· COM port cable (Length: 300mm, 2 x COM ports)	A81-015026-023G
· Serial ATA data cable (Length: 500mm, W/LOCK)	332-553001-005G
· Serial ATA data cable (Length: 500mm, W/LOCK, 90D)	A81-002128-017G
· Thermal solution (For 35W, Height: 29.39mm)	A71-101136-000G
· Thermal solution (For 65W, Height: 46mm)	A71-101137-000G
· Thermal solution (For 95W/125W, Height: 110mm)	A71-101145-000G
· DP to HDMI Dongle	612-D2H13M-000G
· M.2-COM4 (M.2 serial port module)	770-M2COM1-000G
· M.2-2LAN (M.2 LAN port module)	770-M22LN2-000G
· M.2-2PSE (M.2 PSE module)	770-M22PS2-000G

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