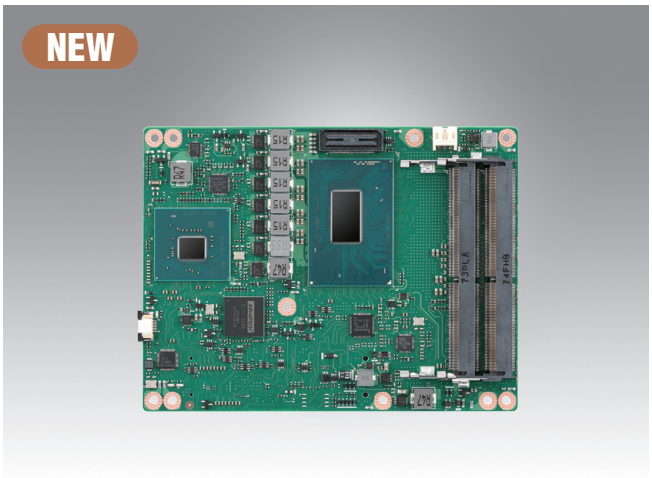
SOM-5899

9th/8thGen Intel® Xeon®/Core™ Processors COM Express Basic Module Type 6



Features

- Intel 9th/8th Gen Xeon®/Core™ Hexa/Quad Cores + PCH QM370/CM246
- Dual channel DDR4, Max 96GB (ECC optional)
- High Speed I/O: 4 USB3.1 (Gen2), 8 PCIex1(Gen3), 4 SATA (Gen3)
- Three Independent Symmertrical Displays (Up to 4K)
- Supports iManager, WISE-Device-On, Embedded Software APIs and Edge AI Suite

Software APIs: Watchdog, I²C, SMBus, H/W Monitor, GPIO, Brightness

Windows Embedded

iManager

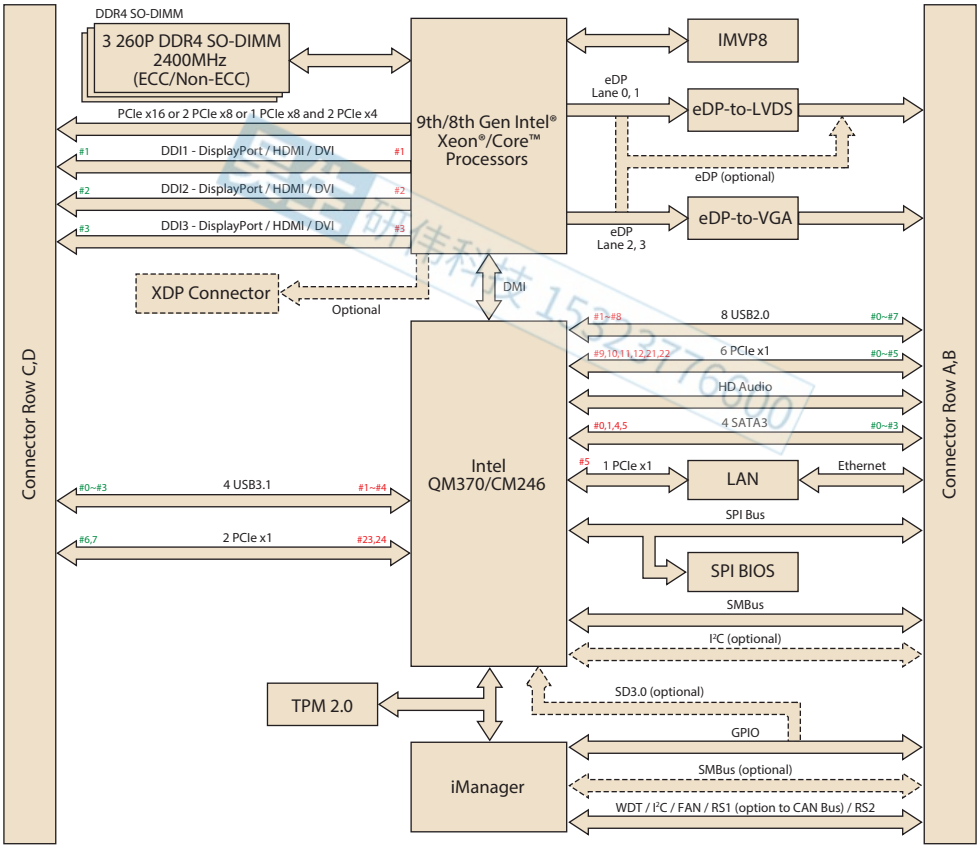
Specifications

Form Factor	Form Factor	COM Express Basic Module									
	Pin-out Type	COM Express R3.0 Type 6 pin out									
Processor System	CPU	E-2276ME	E-2276ML	I7-9850HE	I7-9850HL	I3-9100HL	Celeron G4930E	E-2176M	i7-8850H	i5-8400H	i3-8100H
	Base Frequency	2.8 GHz	2.0 GHz	2.7 GHz	1.9 GHz	1.6 GHz	2.4 GHz	2.7GHz	2.6GHz	2.5GHz	3.0GHz
	Max Single Core Turbo Frequency	4.5 GHz	4.2 GHz	4.4 GHz	4.1 GHz	2.9 GHz	NA	4.4GHz	4.3GHz	4.2GHz	N/A
	Cores	6	6	6	6	4	2	6/12	6/12	4/8	4/4
	LLC	12MB	12MB	9MB	9MB	6MB	2MB	12MB	9MB	8MB	6MB
	CPU TDP	45W	25W	45W	25W	25W	35W	45W/35W	45W/35W	45W/35W	45W/35W
	BIOS	AMI UEFI 256Mbit						AMI 32MB, SPI			
Memory	Technology	DDR4 (2DPC: Up to DDR4 2400 x 3 SO-DIMM/1DPC: Up to DDR4 2666 x 2 SO-DIMM)									
	ECC Support	ECC is supported with specific SKU									
	Max. Capacity	96GB									
	Socket	3 260P SO-DIMM: 2 on front side (channel 0&1) / 1 on rear side (channel 0)									
Graphics	Controller	Intel® UHD Graphics 610/630/P630									
	Max. Frequency	1.15GHz	1.15GHz	1.15GHz	1.15GHz	1.10GHz	1.05GHz	1.20GHz	1.15GHz	1.10GHz	1.00GHz
	Graphic Memory	Shared Memory									
	3D/HW Acceleration	HW Encode: MPEG2, AVC/H264, VP8, JPEG, HEVC/H265, VP9 HW Decode: MPEG2, VC1/WMV9, AVC/H264, VP8, JPEG/MJPEG, JPEG/MJPEG, HEVC/H265 (10 bits & 8 bits), VP9									
Display	VGA	1920 x 1200@60Hz									
	LCD	LVDS dual channel: 1920 x 1200@60Hz (option support eDP 4096 x 2304@60Hz, 24bpp)									
	DDI	3 DDI ports support configurable HDMI/DVI/DisplayPort HDMI: 4096 x 2160@24Hz, DVI: 1920 x 1200@60Hz, DP: 4096 x 2304@60Hz									
	Multiple Display	Triple displays with each display combinations									
Expansion	PCI Express x16 (Gen3)	1 PCIe x16 configurable to 1 x16, 2 x8, 1 x8 + 2 x4									
	PCI Express x1 (Gen3)	8 PCIe x1, configurable to x4 or x2									
	Audio Interface	Intel HD Audio Interface									
	LPC	Yes									
Serial Bus	SMBus	Yes									
	I²C Bus	Yes									
	CAN Bus	Yes (Optional, co-layout with COM2)									
Ethernet	Controller	Intel I219									
	Speed	10/100/1000 Mbps									
I/O	SATA3.0	4 Ports (6Gbps)									
	USB3.1 (Gen2)	4 Ports (10Gbps)									
	USB2.0	8 Ports (480Mbps)									
	SPI Bus	Yes									
	GPIO	8 bits (Option support SD Card)									
	Watchdog	65536 level, 0~65535 sec									
	COM Port	2 Ports (2-wire)									
	TPM	TPM2.0 (Infineon SLB9665)									
	Smart Fan	2 Ports: 1 port on COM module (Notice: the input voltage of fan is aligned to Vin); 1 port on carrier board									
Power	Type	ATX: Vin, VSB; AT: Vin									
	Supply Voltage	Vin: 8.5V ~ 20V; VSB: 4.75V ~ 5.25 V, RTC Battery: 2.0V ~ 3.3V									
	Power Consumption	Max: 44.63W @ 12V (i7-8850H with 48GB DDR4 2400) Idle: 6.89W @ 12V (i7-8850H with 48GB DDR4 2400) *Only for reference and will depends on custom software loading, detail refer to user manual									
Environment	Operating Temperature	Standard: 0 ~ 60 °C (32 ~ 140 °F), Extend: -40 ~ 85 °C (-40 ~ 185 °F)									
	Storage Temperature	-40 ~ 85 °C (-40 ~ 185 °F)									
	Humidity	Operating: 40 °C @ 95% relative humidity, non-condensing Storage: 60 °C @ 95%relative humidity, non-condensing									
	Vibration Resistance	3.5 Grms									
Mechanical	Dimensions	125 mm x 95 mm (4.92" x 3.74")									

All product specifications are subject to change without notice.

Last updated: 18-May-2022

Block Diagram



*Display Configuration Table

	DDI 1	DDI 2	DDI 3	LVDS/eDP	VGA
Defaullt	DP++	DP++	HDMI/DVI	LVDS	VGA
Option 1	DP++	DP++	HDMI/DVI	eDP (2-lane)	VGA
Option 2	DP++	DP++	DP++	eDP (4-lane)	None

Support maximum 3 independent displays simultaneously.

Ordering Information

Part No.	CPU	Freq.	Cores	CPU TDP	PCH	DDR4 SODIMM	Thermal Solution	Operating Temp.
SOM-5899RE6C-U8A3	E-2276ME	2.8	6	45W	CM246	ECC/ non-ECC	Active	0 ~ 60 °C
SOM-5899RC7Q-U7A3	I7-9850HE	2.7	6	45W	QM370	non-ECC	Active	0 ~ 60 °C
SOM-5899RC7Q-S9A3	I7-9850HL	1.9	6	25W	QM370	non-ECC	Active	0 ~ 60 °C
SOM-5899RC3Q-S6A3	I3-9100HL	1.6	4	25W	QM370	non-ECC	Active	0 ~ 60 °C
SOM-5899RCRC-U4A3	Celeron G4930E	2.4	2	35W	CM246	ECC/ non-ECC	Active	0 ~ 60 °C
SOM-5899RE6CX-U8A3	E-2276ME	2.8	6	45W	CM246	ECC/ non-ECC	Active	-40 ~ 85 °C
SOM-5899RC7QX-U7A3	I7-9850HE	2.7	6	45W	QM370	non-ECC	Active	-40 ~ 85 °C

Part No.	CPU	Freq.	Cores	CPU TDP	PCH	DDR4 SODIMM	Thermal Solution	Operating Temperature
SOM-5899E6C-U7A3	E-2176M	2.7	6	45W	CM246	ECC/ non-ECC	Active	0 ~ 60 °C
SOM-5899C7Q-U6A3	i7-8850H	2.6	6	45W	QM370	non-ECC	Active	0 ~ 60 °C
SOM-5899C5Q-U5A3	i5-8400H	2.5	4	45W	QM370	non-ECC	Active	0 ~ 60 °C
SOM-5899C3Q-H0A3	i3-8100H	3.0	4	45W	QM370	non-ECC	Active	0 ~ 60 °C
SOM-5899C7QX-U6A3	i7-8850H	2.6	6	45W	QM370	non-ECC	Active	-40 ~ 85 °C
SOM-5899C5QX-U5A3	i5-8400H	2.5	4	45W	QM370	non-ECC	Active	-40 ~ 85 °C

Any other SKUs or combination is project based support. Please contact sales for details.

Packing List

Part No.	Description	Quantity
-	SOM-5899 CPU Module	1
1960081253T001	Heatspreader of SOM-5899	1

Development Board

Part No.	Description
SOM-DB5830-00A1	COMe Devel. Board COMe R3.0 Type6 pin-out (SOM-DB5830)

Optional Accessories

Part No.	Description
1960048820N001	Semi-Cooler 125 x 95 x 33 mm with 12V fan
1960094209T001	QFCS 125 x 95 x 26.29 mm

* Test conditions follow Advantech regulations and procedures.
* QFCS: Quadro Flow Cooling System

Embedded OS

OS	Part No.	Description
Win10 (HL)	20706WX9HS0037	Img Win10 IoT Ent_LTSB 64 bit (Xeon & Core i7)
Win10 (VL)	20706WX9VS0040	Img Win10 IoT Ent_LTSB 64 bit (Core i5 & i3)
Ubuntu 20.04	20706U20DS0035	img Ubun20.4 SOM-5899 64b 2004 ENU