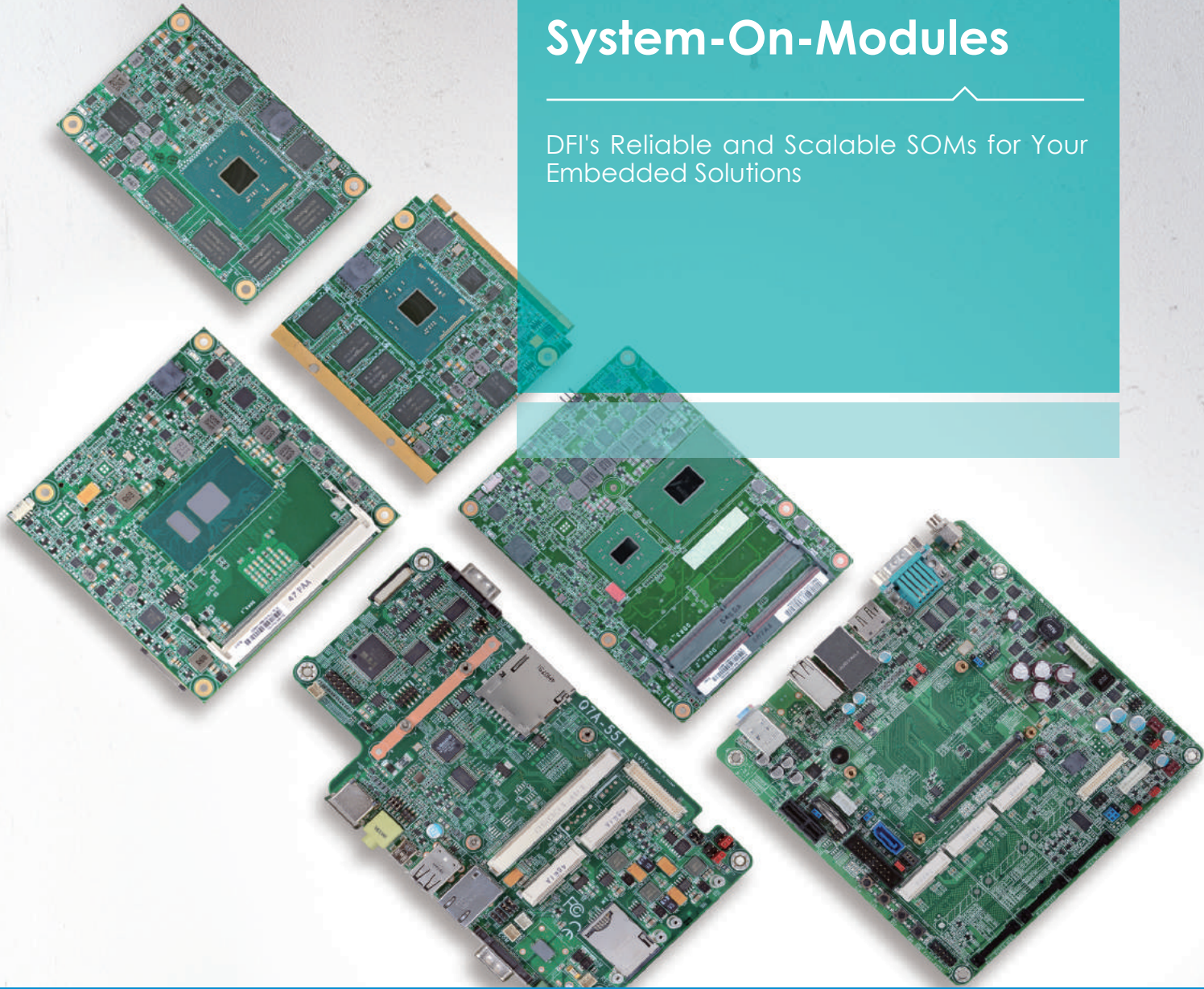


System-On-Modules

DFI's Reliable and Scalable SOMs for Your Embedded Solutions



DFI's Reliable and Scalable SOMs for Your Embedded Solutions

DFI provides off-the-shelf System-On-Modules including COM Express Mini, COM Express Compact, Qseven, SMARC and Customized Design-in Services for various embedded computing solutions

System-On-Modules Product Overview

Qseven



AL700

Processor	Platform	Chipset	Model	Index
Intel Atom® Processor E3900	Atom	-	AL701	P6
Intel Atom® Processor E3900	Atom	-	AL700	
Intel Atom® Processor E3800	Atom	-	BT700	
Freescale™ i.MX6	ARM	-	FS700	

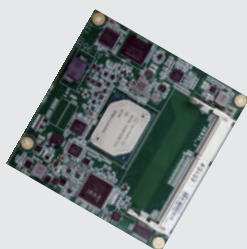
COM Express Mini



AL9A3

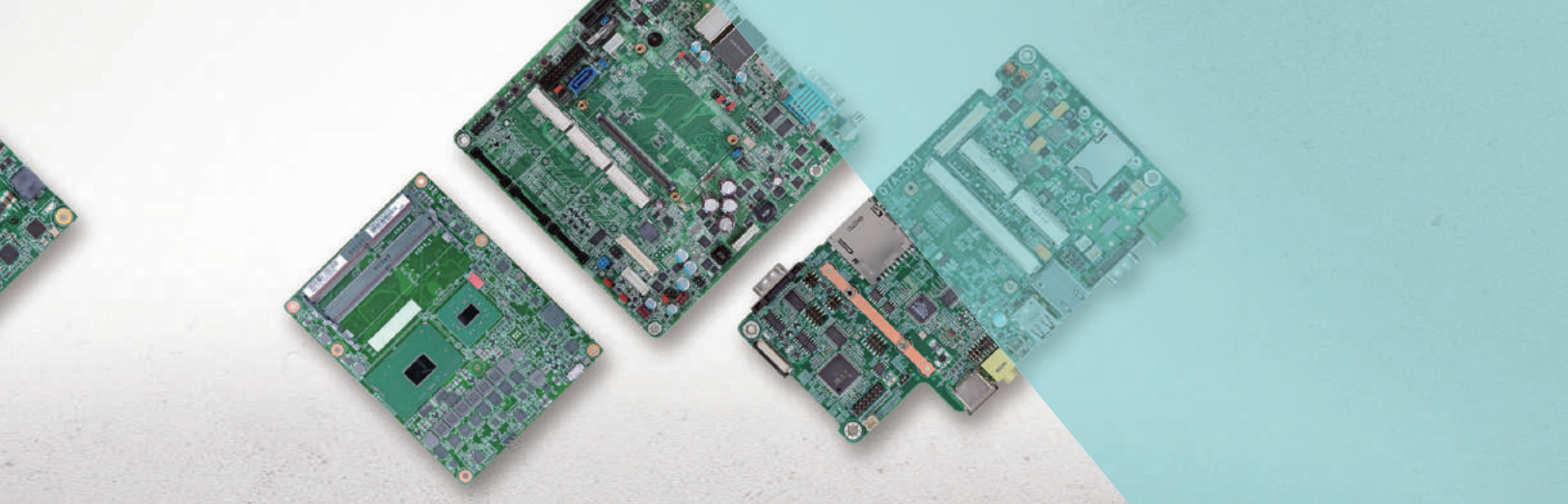
Type	Processor	Platform	Chipset	Model	Index
Type 10	Intel Atom® Processor E3900	Atom	-	AL9A2	P7
				AL9A3	
	Intel Atom® Processor E3800	Atom	-	BT9A3	

COM Express Compact

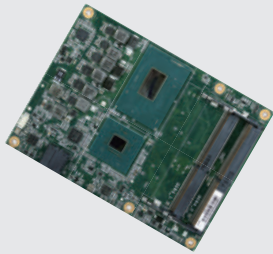


AL968

Type	Processor	Platform	Chipset	Model	Index
Type 6	7th Gen Intel® Core™ Processor	ULT	-	KU968	P8
	6th Gen Intel® Core™ Processor	ULT	-	SU968	
	4th Gen Intel® Core™ Processor	ULT	-	HU968	
	3rd Gen Intel® Core™ Processor	Mobile	QM77	CR908-B	P9
			QM67	HR908-B	
	Intel Atom® Processor E3900	Atom	-	AL968	
	Intel® Pentium®/Celeron® Processor N3000	Atom	-	BW968	
	Intel Atom® Processor E3800	Atom	-	BT968	
	AMD® Embedded G-Series SoC	AMD	-	KB968	



COM Express Basic



CH960

Type	Processor	Platform	Chipset	Model	Index
Type 7	Intel Atom® Processor C3000	Atom	-	DV970	P10
Type 6	8th Gen Intel® Core™ Processor	Mobile	CM246/ QM370	CH960-CM246/QM370	
			HM370	CH960-HM370	
	7th Gen Intel® Core™ Processor	Mobile	CM238/ QM175	KH960-CM238/QM175	P11
			HM175	KH960-HM175	
	6th Gen Intel® Core™ Processor	Mobile	QM170	SH960-QM170	
			HM170	SH960-HM170	
	4th Gen Intel® Core™ Processor	Mobile	QM87	HM960-QM87, HM961-QM87	P12
			HM86	HM960-HM86, HM961-HM86	
3rd Gen Intel® Core™ Processor	Mobile	QM77	CR901-B, CR960-QM77		
		HM76	CR960-HM76		
2nd Gen AMD® Embedded R-Series	AMD	A77E	BE960		
Type 2	4th Gen Intel® Core™ Processor	Mobile	QM87/HM86	HM920-QM87, HM920-HM86	P13
	3rd Gen Intel® Core™ Processor	Mobile	QM77	CR900-B, CR902-B	
			HM76	CR902-BL	
	2nd Gen Intel® Core™ Processor	Mobile	QM67	HR900-B	

Carrier Board



COM333-I

Form Factor	Compliance	Model	Index
microATX	COM Express R3.0, Type 7	COM333-I	P14
Mini-ITX	COM Express R2.1, Type 10	COM100-B	
microATX	COM Express R2.1, Type 6	COM332-B(R.A)	
microATX	COM Express R2.1, Type 6	COM332-B(R.B1)	
ATX	COM Express R1.0, Type 2	COM630-B	P15
Mini-ITX	Qseven (AL700, BT700)	Q7X-151-RC	
Proprietary	Qseven (FS700)	Q7A-551	

Design Assistance

- Comprehensive evaluation of carrier board design during planning phase
Hardware/Software Recommendations, Technical Specifications, Developing Schedule, and Database Schematic Review, Placement/Layout Review, Debugging Assistance Services, and General/Special Reference Design
- Comprehensive design documentation for designing carrier board
Carrier Board Design Guide, User's Manual, Schematic & Layout Checklist, and 2D/3D Mechanical Drawing

Strict Validation

- Strict validation and testing process ensures reliable deployments
Dedicated Design Review Team, Thermal Simulation, and COMe Debug Module Card

Thermal Solution

- Customized thermal solution design & Optional heatspreader
For special requirements like high-temperature environments or ultra-slim chassis

Software Integration

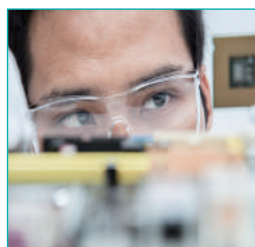
- Embedded OS and BIOS customization
Windows 10, Windows 7, WES 7, Windows XP, Linux (CentOS/Debian), etc.
- Windows licensing offerings
- DFI Application Programming Interface (API) library
Watchdog, Hardware Control/Monitor, GPIO, Backlight Control, SMBus, etc.
- Remote management utility



Planning



Design



Validation



Integration



Production



Rugged Design

- Industrial-rated components with high MTBF over 100,000 hrs
- Extended operating temperatures
- High ESD protection for I/O ports
- Signal integrity measurement
- Wide range power design
- 100% Japanese-made solid capacitor
- Power hot plug protection for DC-in type SBC and Industrial Motherboards



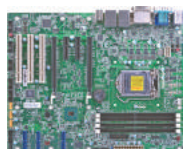
Software Integration

- Embedded BIOS and OS customization services
- Windows licensing offerings
- Android, Linux distribution (Yocto/Ubuntu/CentOS/Debian)
- Embedded API
(Hardware Monitor, SMBus, I²C, Brightness Control, GPIO, Watchdog)
- Remote management utility



Embedded Total Solution

- Express customization service: 30 days (NRE cost: project based)
- Strict revision control
- Long product life cycle support
- High volume OEM/ODM production capabilities



Embedded Boards



Peripherals



Systems



Embedded Software & BIOS



Vertical Solutions

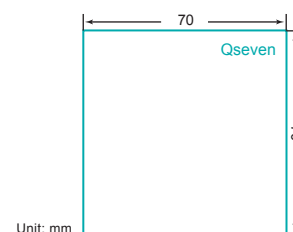
Qseven

Extremely Small & Mobile Solutions



Features

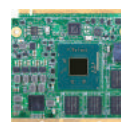
Qseven is equipped with fast serial interfaces in an ultra-small form factor with a measurement of just 70 x 70 mm. It is much smaller than other system-on-module standards such as COM Express, which makes it an ideal solution for space-limited and low power applications such as industrial automation, retail, and power & energy.



Wide Temp
Atom



Wide Temp
Atom



Wide Temp
Atom



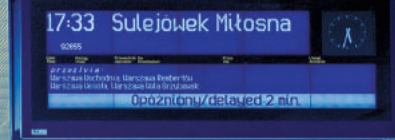
ARM

Model Name		AL701	AL700	BT700	FS700
Compliance		Qseven R2.1	Qseven R2.1	Qseven R2.0	Qseven R1.2
System	Processor	Intel Atom® E3900	Intel Atom® E3900	Intel Atom® E3800	Freescale™ i.MX6 Series
	Socket	BGA 153	BGA 1296	BGA 1170	FCPBGA
	Max. Speed	1.8~2.5GHz	1.1~2.5GHz	1.46~2.41GHz	1.0GHz
	TDP	6~12W	6W/6.5W/9.5W/12W	5W/7.5W/8W/10W	-
	Cache	2M	2M	0.5M/1M/2M	32KB
	Chipset	-	-	-	-
Memory	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 64Mbit	-
	Technology	Dual Channel LPDDR4 3200MHz	Dual Channel DDR3L 1600MHz	Single Channel DDR3L 1066/1333MHz	Single Channel DDR3 1000/1200MHz
	Max. Capacity	4GB/8GB	4GB/8GB	2GB/4GB	1GB/2GB
	Socket	Memory down	Memory down	Memory down	Memory down
Graphics	Interface	1 LVDS, 1 eDP	1 LVDS, 1 DDI	1 LVDS, 1 DDI	1 HDMI, 2 LVDS
Expansion	PCIe	-	4 PCIe x1	3 PCIe x1	1 PCIe x1
	PCI	-	-	-	-
	LPC	1	1	1	-
	I ² C	1	1	1	2
	SMBus	1	1	1	-
	CAN Bus	-	-	-	1
Audio	Interface	HD Audio	HD Audio	HD Audio	I ² S
Ethernet	Controller	1 Intel® I211 / 1 Intel® I210	1 Intel® I211 / 1 Intel® I210	1 Intel® I210	1 Atheros AR8033
I/O	USB	1 USB 3.0, 8 USB 2.0	1 USB 3.0, 8 USB 2.0	1 USB 3.0, 6 USB 2.0	4 USB 2.0, 1 USB OTG
	SATA	2 SATA 3.0	2 SATA 3.0	2 SATA 2.0	1 SATA 2.0
	IDE	-	-	-	-
	SSD	-	-	-	-
	eMMC	optional	optional	optional	onboard
	DIO	4-bit DIO	4-bit DIO	-	-
TPM		optional	optional	optional	1 SDIO, 1 microSD onboard
iAMT		-	-	-	-
Power		VCC_RTC, 5V standby, 5V	VCC_RTC, 5V standby, 5V	VCC_RTC, 5V standby, 5V	VCC_RTC, 5V standby, 5V
Operating Temperature		-40oC~85oC, 0oC~60oC	-40°C~85°C, 0°C~60°C	-40°C~85°C, -20°C~70°C, 0°C~60°C	-20°C~70°C, 0°C~60°C

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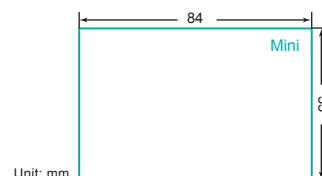
COM Express Mini

Power-Saving & Small-Size Solutions



Features

COM Express® Mini module delivers high performance on a small footprint which features 55 x 84 mm in size. It is ideal for space-limited, power-saving and mobile applications. DFI's ultra-small modules are available with COM Express® pin-out Type 10.



COMe Type 10



Wide Temp
Atom



Wide Temp
Atom



Wide Temp
Atom

Model Name		AL9A2	AL9A3	BT9A3
Compliance		COM Express® R2.1 Mini, Type 10	COM Express® R2.1 Mini, Type 10	COM Express® R2.1 Mini, Type 10
System	Processor	Intel Atom® E3900	Intel Atom® E3900	Intel Atom® E3800
	Socket	BGA 1296	BGA 1296	BGA 1170
	Max. Speed	1.1~2.5GHz	1.1~2.5GHz	1.46~2.41GHz
	TDP	6W/6.5W/9.5W/12W	6W/6.5W/9.5W/12W	5W/7.5W/8W/10W
	Cache	2M	2M	0.5M/1M/2M
	Chipset	-	-	-
Memory	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 64Mbit
	Technology	Single Channel DDR3L 1600MHz	Dual Channel DDR3L 1600MHz	Single Channel DDR3L 1066/1333MHz
	Max. Capacity	4GB non-ECC/8GB ECC	4GB/8GB	4GB/2GB
Graphics	Socket	Memory down	Memory down	ECC memory down
	Interface	1 LVDS*/eDP, 1 DDI	1 LVDS*/eDP, 1 DDI	1 LVDS, 1 DDI
Expansion	PCIe	4 PCIe x1	4 PCIe x1	3 PCIe x1
	PCI	-	-	-
	LPC	1	1	1
	I ² C	2	1	1
	SMBus	1	1	1
	CAN Bus	-	-	-
Audio	Interface	HD Audio	HD Audio	HD Audio
Ethernet	Controller	1 Intel® I210	1 Intel® I210	1 Intel® I210
I/O	USB	2 USB 3.0, 8 USB 2.0	2 USB 3.0, 8 USB 2.0	1 USB 3.0, 8 USB 2.0
	SATA	2 SATA 3.0	2 SATA 3.0	2 SATA 2.0
	IDE	-	-	-
	SSD	-	optional	-
	eMMC	optional	-	optional
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	SD	optional	optional	-
TPM		-	-	-
iAMT		-	-	-
Power		4.75V~20V, 5VSB, VCC_RTC (ATX mode)	4.75V~20V, 5VSB, VCC_RTC (ATX mode)	4.75V~20V, 5VSB, VCC_RTC (ATX mode)
		4.75V~20V, VCC_RTC (AT mode)	4.75V~20V, VCC_RTC (AT mode)	4.75V~20V, VCC_RTC (AT mode)
Operating Temperature		-40°C~85°C, 0°C~60°C	-40°C~85°C, 0°C~60°C	-40°C~85°C, 0°C~60°C

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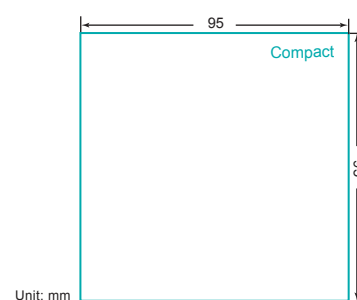
COM Express Compact

Reliable & Compact Solutions



Features

COM Express® Compact module is designed with computing capability and cost efficiency in a compact form factor with a footprint of 95 x 95 mm, making it the best option for transportation and defense applications. DFI's Compact modules are available with COM Express® pin-out Type 2 and Type 6.



COMe Type 6



Wide Temp
ULT



Wide Temp
ULT



ULT



QM77

Model Name		KU968	SU968	HU968	CR908-B
Compliance		COM Express® R2.1 Compact, Type 6	COM Express® R2.1 Compact, Type 6	COM Express® R2.1 Compact, Type 6	COM Express® R2.1 Compact, Type 6
System	Processor	7th Gen Intel® Core™	6th Gen Intel® Core™	4th Gen Intel® Core™	3rd/2nd Gen Intel® Core™
	Socket	BGA 1356	BGA 1356	BGA 1168	BGA 1023
	Max. Speed	2.2~3.9GHz	2~3.4GHz	1.6~3.3GHz	1.0~3.3GHz
	TDP	15W	15W	15W	10W/17W/25W/35W/45W
	Cache	2M/3M/4M	2M/3M/4M	2M/3M/4M	1M/2M/3M/4M/6M
	Chipset	-	-	-	Intel® QM77
Memory	BIOS	Insyde SPI 128Mbit	Insyde SPI 128Mbit	AMI SPI 64Mbit	AMI SPI 64Mbit
	Technology	Dual Channel DDR4 2133MHz	Dual Channel DDR3L 1600MHz	Dual Channel DDR3L 1600MHz	Single Channel DDR3/DDR3L 1600MHz
	Max. Capacity	4GB/8GB	16GB	2GB/4GB/8GB	8GB
Graphics	Socket	Memory down	2 SODIMM	Memory down	1 SODIMM
	Interface	1 VGA*/DDI, 1 LVDS*/eDP, 1 DDI	1 VGA*/DDI, 1 LVDS*/eDP, 1 DDI	1 VGA, 1 LVDS, 1 DDI	1 VGA, 1 LVDS, 3 DDI
Expansion	PCIe	4 PCIe x1 + 1 PCIe x4	4 PCIe x1 + 1 PCIe x4	1 PCIe x4, 1 PCIe x2, 1 PCIe x1	1 PCIe x16, 1 PCIe x4, 3 PCIe x1
	PCI	-	-	-	-
	LPC	1	1	1	1
	I²C	1	1	1	1
	SMBus	1	1	1	1
	CAN Bus	-	-	-	-
Audio	Interface	HD Audio	HD Audio	HD Audio	HD Audio
Ethernet	Controller	1 Intel® I219	1 Intel® I219	1 Intel® I218	1 Intel® 82579
I/O	USB	4 USB 3.0, 8 USB 2.0	4 USB 3.0, 8 USB 2.0	2 USB 3.0, 8 USB 2.0	4 USB 3.0/2.0, 4 USB 2.0
	SATA	3 SATA 3.0 (RAID)	3 SATA 3.0 (RAID)	3 SATA 3.0 (RAID)	2 SATA 3.0, 2 SATA 2.0 (RAID)
	IDE	-	-	-	-
	SSD	-	-	optional	-
	eMMC	-	-	-	-
	DIO	8-bit DIO	8-bit DIO	4-bit DIO	8-bit DIO
	SD	-	-	-	-
TPM		optional	optional	optional	-
iAMT		iAMT 11.0 (Core i7/i5)	iAMT 11.0 (Core i7/i5)	iAMT 9.5	-
Power		12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)	12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)	12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)	12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)
Operating Temperature		-40°C~85°C, 0°C~60°C	-40°C~85°C, 0°C~60°C	0°C~60°C	0°C~60°C

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COME Type 6



QM67



Wide Temp
Atom

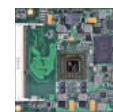


Atom

Model Name		HR908-B	AL968	BW968
Compliance		COM Express® R2.1 Compact, Type 6	COM Express® R2.1 Compact, Type 6	COM Express® R2.1 Compact, Type 6
System	Processor	3rd/2nd Gen Intel® Core™	Intel Atom® E3900	Intel® Pentium®/Celeron® N3000
	Socket	BGA 1023	BGA 1296	BGA 1170
	Max. Speed	1.0~3.3GHz	1.1~2.5GHz	2.24~2.56GHz
	TDP	10W/17W/25W/35W/45W	6W/6.5W/9.5W/12W	4W/6W
	Cache	1M/2M/3M/4M/6M	2M	2M
	Chipset	Intel® QM67	-	-
Memory	BIOS	AMI SPI 64Mbit	Insyde SPI 128Mbit	Insyde SPI 64Mbit
	Technology	Single Channel DDR3/DDR3L 1066/1333/1600MHz	Dual Channel DDR3L 1600MHz	Dual Channel DDR3L 1600MHz
	Max. Capacity	8GB	8GB	8GB
Graphics	Socket	SODIMM	2 SODIMM	2 SODIMM
	Interface	1 VGA, 1 LVDS, 3 DDI	1 VGA*/DDI, 1 LVDS*/eDP, 1 DDI	1 VGA*/DDI, 1 LVDS*/eDP, 1 DDI
Expansion	PCIe	1 PCIe x16, 1 PCIe x4, 3 PCIe x1	4 PCIe x1	3 PCIe x1
	PCI	-	-	-
	LPC	1	1	1
	i²C	1	1	1
	SMBus	1	1	1
	CAN Bus	-	-	-
Audio	Interface	HD Audio	HD Audio	HD Audio
Ethernet	Controller	1 Intel® 82579	1 Intel® I211 / 1 Intel® I210	1 Intel® I211
	USB	8 USB 2.0	4 USB 3.0, 8 USB 2.0	4 USB 3.0, 8 USB 2.0
I/O	SATA	2 SATA 3.0, 2 SATA 2.0 (RAID)	2 SATA 3.0	2 SATA 3.0
	IDE	-	-	-
	SSD	-	-	-
	eMMC	-	optional	-
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	SD	-	optional	optional
TPM		-	-	-
iAMT		-	-	-
Power		12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)	12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)	12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)
Operating Temperature		0°C~60°C	-40°C~85°C, 0°C~60°C	0°C~60°C



Wide Temp
Atom



AMD

COME Type 6 & 2

Model Name		BT968	KB968
Compliance		COM Express® R2.1 Compact, Type 6	COM Express® R2.1 Compact, Type 6
System	Processor	Intel Atom® E3800	AMD® Embedded G-Series SoC
	Socket	BGA 1170	FT3 BGA
	Max. Speed	1.46~2.41GHz	1.0~2.0GHz
	TDP	5W/7.5W/8W/10W	6W/9W/15W/25W
	Cache	0.5M/1M/2M	1M/2M
	Chipset	-	-
Memory	BIOS	AMI SPI 64Mbit	AMI SPI 32Mbit
	Technology	Dual/Single Channel DDR3L 1066/1333MHz	Single Channel DDR3 1066/1333/1600MHz
	Max. Capacity	4GB/8GB	8GB
Graphics	Socket	1 or 2 SODIMM	1 SODIMM
	Interface	1 VGA, 1 LVDS*/DDI, 1 DDI	1 VGA, 1 DP/LVDS, 1 DP
Expansion	PCIe	3 PCIe x1	1 PCIe x4, 4 PCIe x1
	PCI	-	-
	LPC	1	1
	i²C	1	1
	SMBus	1	1
	CAN Bus	-	-
Audio	Interface	HD Audio	HD Audio
Ethernet	Controller	1 Intel® I210	1 Intel® I210
	USB	1 USB 3.0, 8 USB 2.0	2 USB 3.0/2.0, 6 USB 2.0
I/O	SATA	2 SATA 2.0	2 SATA 3.0
	IDE	-	-
	SSD	-	optional
	eMMC	optional	-
	DIO	8-bit DIO	8-bit DIO
	SD	-	-
TPM		optional	optional
iAMT		-	-
Power		12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)	12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)
Operating Temperature		-40°C~85°C, -20°C~70°C, 0°C~60°C	0°C~60°C

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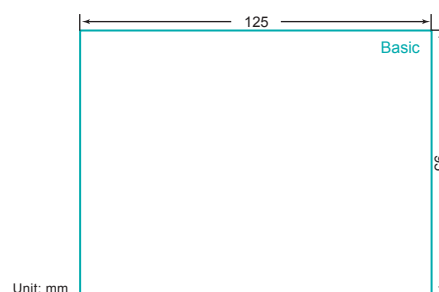
COM Express Basic

High-Performance & Cost-Effective Solutions



Features

COM Express® Basic module provides high-level processing performance and high-speed interfaces for a wide range of computing-demand applications such as medical, transportation, and industrial automation. DFI's Basic modules are compatible with COM Express® pin-out Type 2, Type 6 and Type 7.



COMe Type 7 & 6



Wide Temp
Atom



Wide Temp
CM246

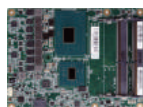


Wide Temp
HM370

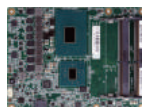
Model Name		DV970	CH960-CM246/QM370	CH960-HM370
Compliance		COM Express® R3.0 Basic, Type 7	COM Express® R2.1 Basic, Type 6	COM Express® R2.1 Basic, Type 6
System	Processor	Intel Atom® C3000	8th Gen Intel® Core™	8th Gen Intel® Core™
	Socket	BGA 1310	BGA 1440	BGA 1440
	Max. Speed	1.7~2.0GHz	2.5~4.4GHz	2.5~4.2GHz
	TDP	17W/25W/31W	45W	45W
	Cache	12M/16M	8M/12M	8M
	Chipset	-	Intel® CM246/QM370	Intel® HM370
Memory	BIOS	Insyde SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit
	Technology	Dual Channel DDR4 2400MHz	Dual Channel DDR4 2666MHz	Dual Channel DDR4 2666MHz
	Max. Capacity	32GB	32GB	32GB
Graphics	Socket	2 SODIMM	2 SODIMM	2 SODIMM
	Interface	-	1 VGA*/DDI, 1 LVDS*/eDP, 2 DDI	1 VGA*/DDI, 1 LVDS*/eDP, 2 DDI
Expansion	PCIe	2 PCIe x8	1 PCIe x16 / 2 PCIe x8, 8 PCIe x1	1 PCIe x16 / 2 PCIe x8, 8 PCIe x1
	PCI	-	-	-
	LPC	1	1	1
	I ² C	1	1	1
	SMBus	1	1	1
	CAN Bus	-	-	-
Audio	Interface	-	HD Audio	HD Audio
I/O	Ethernet Controller	1 Intel® I210, 4 10Gbase-KR	1 Intel® I219	1 Intel® I219
	USB	2 USB 3.0, 4 USB 2.0	4 USB 3.1, 8 USB 2.0	4 USB 3.1, 8 USB 2.0
	SATA	2 SATA 3.0 (RAID)	4 SATA 3.0 (RAID)	4 SATA 3.0
	IDE	-	-	-
	SSD	-	-	-
	eMMC	-	-	-
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	SD	-	-	-
TPM		optional	optional	optional
iAMT		-	iAMT 12.0 (Core i7/i5)	-
Power		12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)	12V, 5VSB, VCC_RTC (ATX mode), 12V, VCC_RTC (AT mode)	12V, 5VSB, VCC_RTC (ATX mode), 12V, VCC_RTC (AT mode)
	Operating Temperature	-20°C~70°C, 0°C~60°C	-40°C~85°C, 0°C~60°C	-40°C~85°C, 0°C~60°C

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COME Type 6



Wide Temp
CM238



Wide Temp
HM175

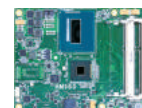


Wide Temp
QM170

Model Name		KH960-CM238/QM175	KH960-HM175	SH960-QM170
Compliance		COM Express® R2.1 Basic, Type 6	COM Express® R2.1 Basic, Type 6	COM Express® R2.1 Basic, Type 6
System	Processor	7th Gen Intel® Core™	7th Gen Intel® Core™	6th Gen Intel® Core™
	Socket	BGA 1440	BGA 1440	BGA 1440
	Max. Speed	2.1~4.0GHz	2.1~3.7GHz	1.9~3.5GHz
	TDP	25W/35W/45W	25W/35W/45W	25W/35W/45W
	Cache	3M/6M/8M	3M/6M/8M	2M/3M/6M/8M
	Chipset	Intel® CM238/QM175	Intel® HM175	Intel® QM170
BIOS		Insyde SPI 128Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2400MHz	Dual Channel DDR4 2400MHz	Dual Channel DDR4 2133MHz
	Max. Capacity	32GB	32GB	32GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Interface	1 VGA*/DDI, 1 LVDS*/eDP, 2 DDI	1 VGA*/DDI, 1 LVDS*/eDP, 2 DDI	1 VGA*/DDI, 1 LVDS*/eDP, 2 DDI
Expansion	PCIe	1 PCIe x16 / 2 PCIe x8, 8 PCIe x1	1 PCIe x16 / 2 PCIe x8, 8 PCIe x1	1 PCIe x16 / 2 PCIe x8, 8 PCIe x1
	PCI	-	-	-
	LPC	1	1	1
	I ² C	1	1	1
	SMBus	1	1	1
	CAN Bus	-	-	-
Audio	Interface	HD Audio	HD Audio	HD Audio
Ethernet	Controller	1 Intel® I219	1 Intel® I219	1 Intel® I219
I/O	USB	4 USB 3.0, 8 USB 2.0	4 USB 3.0, 8 USB 2.0	4 USB 3.0, 8 USB 2.0
	SATA	4 SATA 3.0 (RAID)	4 SATA 3.0	4 SATA 3.0 (RAID)
	IDE	-	-	-
	SSD	-	-	-
	eMMC	-	-	-
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	SD	-	-	-
TPM		optional	optional	optional
iAMT		iAMT 11.0 (Core i7/i5)	-	iAMT 11.0
Power		12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)	12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)	12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)
Operating Temperature		-40°C~85°C, 0°C~60°C	-40°C~85°C, 0°C~60°C	-40°C~85°C, 0°C~60°C



Wide Temp
HM170



QM87



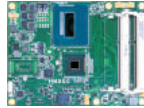
QM87

COME Type 6

Model Name		SH960-HM170	HM960-QM87	HM961-QM87
Compliance		COM Express® R2.1 Basic, Type 6	COM Express® R2.1 Basic, Type 6	COM Express® R2.1 Basic, Type 6
System	Processor	6th Gen Intel® Core™	4th Gen Intel® Core™	4th Gen Intel® Core™
	Socket	BGA 1440	BGA 1364	BGA 1364
	Max. Speed	1.6~3.5GHz	1.6~3.4GHz	1.6~3.4GHz
	TDP	25W/35W/45W	25W/37W/47W	25W/37W/47W
	Cache	2M/3M/6M/8M	3M/6M	3M/6M
	Chipset	Intel® HM170	Intel® QM87	Intel® QM87
BIOS		Insyde SPI 128Mbit	AMI SPI 64Mbit	AMI SPI 64Mbit
Memory	Technology	Dual Channel DDR4 2133MHz	Dual Channel DDR3L 1333/1600MHz	Dual Channel DDR3L 1333/1600MHz
	Max. Capacity	32GB	16GB	16GB
	Socket	2 SODIMM	2 SODIMM	2 ECC SODIMM
Graphics	Interface	1 VGA*/DDI, 1 LVDS*/eDP, 2 DDI	1 VGA, 1 LVDS, 3 DDI	1 VGA, 1 LVDS, 3 DDI
Expansion	PCIe	1 PCIe x16 / 2 PCIe x8, 8 PCIe x1	1 PCIe x16, 7 PCIe x1	1 PCIe x16, 7 PCIe x1
	PCI	-	-	-
	LPC	1	1	1
	I ² C	1	1	1
	SMBus	1	1	1
	CAN Bus	-	-	-
Audio	Interface	HD Audio	HD Audio	HD Audio
Ethernet	Controller	1 Intel® I219	1 Intel® I217	1 Intel® I217
I/O	USB	4 USB 3.0, 8 USB 2.0	4 USB 3.0, 8 USB 2.0	4 USB 3.0, 8 USB 2.0
	SATA	4 SATA 3.0	4 SATA 3.0 (RAID)	4 SATA 3.0 (RAID)
	IDE	-	-	-
	SSD	-	optional	optional
	eMMC	-	-	-
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	SD	-	-	-
TPM		optional	optional	optional
iAMT		iAMT 11.0	iAMT 9.0	iAMT 9.0
Power		12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)	12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)	12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)
Operating Temperature		-40°C~85°C, 0°C~60°C	0°C~60°C	0°C~60°C

*Populated by default

COME Type 6



HM86

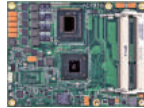


HM86



QM77

Model Name		HM960-HM86	HM961-HM86	CR901-B
Compliance		COM Express® R2.1 Basic, Type 6	COM Express® R2.1 Basic, Type 6	COM Express® R2.1 Basic, Type 6
System	Processor	4th Gen Intel® Core™	4th Gen Intel® Core™	3rd/2nd Gen Intel® Core™
	Socket	BGA 1364	BGA 1364	G2 988B
	Max. Speed	1.6~3.4GHz	1.6~3.4GHz	1.6~3.3GHz
	TDP	25W/37W/47W	25W/37W/47W	35W/45W
	Cache	3M/6M	3M/6M	2M/3M/6M
	Chipset	Intel® HM86	Intel® HM86	Intel® QM77
BIOS		AMI SPI 64Mbit	AMI SPI 64Mbit	AMI SPI 64Mbit
Memory	Technology	Dual Channel DDR3L 1333/1600MHz	Dual Channel DDR3L 1333/1600MHz	Dual Channel DDR3/DDR3L 1066/1333/1600MHz
	Max. Capacity	16GB	16GB	16GB
	Socket	2 SODIMM	2 ECC SODIMM	2 SODIMM
Graphics	Interface	1 VGA, 1 LVDS, 3 DDI	1 VGA, 1 LVDS, 3 DDI	1 VGA, 1 LVDS, 3 DDI
Expansion	PCIe	1 PCIe x16, 7 PCIe x1	1 PCIe x16, 7 PCIe x1	1 PCIe x16, 1 PCIe x4, 3 PCIe x1
	PCI	-	-	-
	LPC	1	1	1
	I ² C	1	1	1
	SMBus	1	1	1
	CAN Bus	-	-	-
Audio	Interface	HD Audio	HD Audio	HD Audio
Ethernet	Controller	1 Intel® I217	1 Intel® I217	1 Intel® 82579
I/O	USB	2 USB 3.0, 8 USB 2.0	2 USB 3.0, 8 USB 2.0	4 USB 3.0, 8 USB 2.0
	SATA	2 SATA 3.0, 2 SATA 2.0	2 SATA 3.0, 2 SATA 2.0	2 SATA 3.0, 2 SATA 2.0 (RAID)
	IDE	-	-	-
	SSD	optional	optional	optional
	eMMC	-	-	-
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	SD	-	-	-
	TPM	optional	optional	optional
iAMT		-	-	-
Power		12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)	12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)	12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)
Operating Temperature		0°C~60°C	0°C~60°C	0°C~60°C



QM77



AMD



QM87

COME Type 6 & 2

Model Name		CR960-QM77/HM76	BE960	HM920-QM87/HM86
Compliance		COM Express® R2.1 Basic, Type 6	COM Express® R2.1 Basic, Type 6	COM Express® R2.1 Basic, Type 2
System	Processor	3rd/2nd Gen Intel® Core™	2nd Gen AMD® Embedded R-Series	4th Gen Intel® Core™
	Socket	BGA 1023	FP3 BGA	BGA 1364
	Max. Speed	1.1~3.3GHz	2.5~3.6GHz	1.5~3.4GHz
	TDP	17W/25W/35W/45W	35W	25W/37W/47W
	Cache	1.5M/2M/3M/4M/6M	4M	2M/3M/6M
	Chipset	Intel® QM77/Intel® HM76	AMD® A77E	Intel® QM87/Intel® HM86
BIOS		AMI SPI 64Mbit	AMI SPI 64Mbit	AMI SPI 64Mbit
Memory	Technology	Dual Channel DDR3L 1600MHz	Dual Channel DDR3L 1866MHz	Dual Channel DDR3L 1333/1600MHz
	Max. Capacity	16GB	16GB	16GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Interface	1 VGA, 1 LVDS, 3 DDI	1 VGA*/DDI, 1 LVDS*/eDP, 2 DDI	1 VGA, 1 LVDS
Expansion	PCIe	1 PCIe x16, 7 PCIe x1	1 PCIe x16, 7 PCIe x1	1 PCIe x16, 5 PCIe x1
	PCI	-	-	4
	LPC	1	1	1
	I ² C	1	1	1
	SMBus	1	1	1
	CAN Bus	-	-	-
Audio	Interface	HD Audio	HD Audio	HD Audio
Ethernet	Controller	1 Intel® 82579	1 Intel® I210	1 Intel® I217
I/O	USB	4 USB 3.0, 8 USB 2.0	4 USB 3.0, 8 USB 2.0	8 USB 2.0
	SATA	2 SATA 3.0, 2 SATA 2.0 (RAID)	4 SATA 3.0	4 SATA 3.0 (RAID)
	IDE	-	-	1
	SSD	optional	-	optional
	eMMC	-	-	-
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	SD	-	-	-
	TPM	optional	optional	optional
iAMT		-	-	iAMT 9.0 (QM87)
Power		12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)	12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)	12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)
Operating Temperature		0°C~60°C	0°C~60°C	0°C~60°C

*Populated by default

COMe Type 2



QM77



QM77

Model Name		CR900-B	CR902-B
Compliance		COM Express® R2.1 Basic, Type 2	COM Express® R2.1 Basic, Type 2
System	Processor	3rd/2nd Gen Intel® Core™	3rd/2nd Gen Intel® Core™
	Socket	G2 988B	BGA 1023
	Max. Speed	1.6~3.3GHz	1.1~2.8GHz
	TDP	35W/45W	17W/35W
	Cache	2M/3M/6M	1.5M/2M/3M/4M
	Chipset	Intel® QM77	Intel® QM77
Memory	BIOS	AMI SPI 64Mbit	AMI SPI 64Mbit
	Technology	Dual Channel DDR3/DDR3L 1066/1333/1600MHz	Dual Channel DDR3/DDR3L 1066/1333/1600MHz
	Max. Capacity	16GB	16GB
Graphics	Socket	2 SODIMM	2 SODIMM
	Interface	1 VGA, 1 LVDS	1 VGA, 1 LVDS, 2 DDI
Expansion	PCIe	1 PCIe x16, 1 PCIe x1, 1 PCIe x4	1 PCIe x16, 1 PCIe x4, 1 PCIe x1
	PCI	4	4
	LPC	1	1
	I²C	1	-
	SMBus	1	1
	CAN Bus	-	-
Audio	Interface	HD Audio	HD Audio
Ethernet	Controller	1 Intel® 82579	1 Intel® 82579
I/O	USB	8 USB 2.0	8 USB 2.0
	SATA	2 SATA 3.0, 2 SATA 2.0 (RAID)	2 SATA 3.0, 2 SATA 2.0 (RAID)
	IDE	1	1
	SSD	optional	-
	eMMC	-	-
	DIO	8-bit DIO	8-bit DIO
TPM		optional	-
iAMT		-	-
Power		12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)	12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)
Operating Temperature		0°C~60°C	0°C~60°C



HM76



QM67

COMe Type 2

Model Name		CR902-BL	HR900-B
Compliance		COM Express® R2.1 Basic, Type 2	COM Express® R1.0 Basic, Type 2
System	Processor	3rd/2nd Gen Intel® Core™	3rd/2nd Gen Intel® Core™
	Socket	BGA 1023	G2 988B
	Max. Speed	1.0~3.3GHz	1.6~3.3GHz
	TDP	10W/17W/25W/35W/45W	35W/45W
	Cache	1M/1.5M/2M/3M/4M/6M	2M/3M/6M
	Chipset	Intel® HM76	Intel® QM67
Memory	BIOS	AMI SPI 64Mbit	AMI SPI 64Mbit
	Technology	Dual Channel DDR3/DDR3L 1066/1333/1600MHz	Dual Channel DDR3/DDR3L 1066/1333/1600MHz
	Max. Capacity	16GB	16GB
Graphics	Socket	2 SODIMM	2 SODIMM
	Interface	1 VGA, 1 LVDS, 2 DDI	1 VGA, 1 LVDS, 2 DDI
Expansion	PCIe	1 PCIe x16, 1 PCIe x4, 1 PCIe x1	1 PCIe x16, 5 PCIe x1
	PCI	4	4
	LPC	1	1
	I²C	-	-
	SMBus	1	1
	CAN Bus	-	-
Audio	Interface	HD Audio	HD Audio
Ethernet	Controller	1 Intel® 82579	1 Intel® 82579
I/O	USB	8 USB 2.0	8 USB 2.0
	SATA	2 SATA 3.0, 2 SATA 2.0	2 SATA 3.0, 2 SATA 2.0
	IDE	1	1
	SSD	-	-
	eMMC	-	-
	DIO	8-bit DIO	8-bit DIO
TPM		-	-
iAMT		-	-
Power		12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)	12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)
Operating Temperature		0°C~60°C	0°C~60°C

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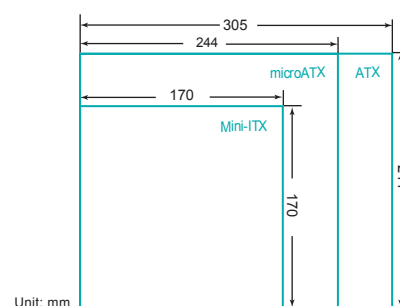
Carrier Board

Compatible with a Wide Range of Modules



Features

The DFI carrier board (also known as base board or evaluation board) offers a flexible engineering development environment for COM Express Type 10, Type 7, Type 6, Type 2, Qseven and SMARC to help our customers minimize installation requirements while reducing design time and cost.



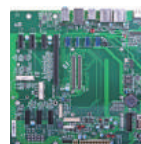
Type 7



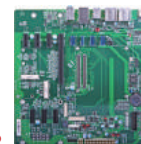
Type 10



Type 6



Type 6



Model Name		COM333-I	COM100-B	COM332-B(R.A)	COM332-B(R.B1)
Compliance		COM Express® R3.0, Type 7	COM Express® R2.1, Type 10	COM Express® R2.1, Type 6	COM Express® R2.1, Type 6
Form Factor		microATX (244 x 244 mm)	Mini-ITX (170 x 170 mm)	microATX (244 x 244 mm)	microATX (244 x 244 mm)
Expansion	Graphics	1 VGA via BMC	1 LVDS, 1 DP	1 VGA 1 LVDS*/eDP,, 3 DP, 1 eDP*/LVDS	1 VGA 1 LVDS*/eDP,, 3 DP, 1 eDP*/LVDS
	Connector	2 x PCIe x4/ 1 x PCIe x8	1 PCIe x1	1 PCIe x16, 6 PCIe x1	1 PCIe x16, 4 PCIe x1
	Mini PCIe, M.2	-	3 Mini PCIe	2 Mini PCIe	1 M.2
	SIM	-	1	-	-
Audio		Audio Codec	Realtek ALC886	Realtek ALC888	Realtek ALC888
Rear I/O	Ethernet (GbE)	2 GbE, 4 10Gbase-KR(2 RJ45, 2 SFP+)	1	1	1
	Serial	-	2 RS-232	-	-
	USB	4 USB 3.0/2.0	2 USB 3.0, 4 USB 2.0	4 USB 3.0, 4 USB 2.0	4 USB 3.1, 4 USB 2.0
	Display	-	1 DP	3 DP	3 DP
	Audio	-	Mic-in, Line-in, Line-out	Mic-in, Line-in, Line-out	Mic-in, Line-in, Line-out
	PS/2	-	-	-	-
Internal I/O	Serial	1 (TX/RX)	2 (TX/RX)	2 (TX/RX)	2 (TX/RX)
	USB	-	-	-	-
	Display	-	1 LVDS	1 VGA, 1 LVDS, 1 eDP	1 VGA, 1 LVDS, 1 eDP
	Audio	-	Front Audio, S/PDIF	Front Audio, S/PDIF	Front Audio, S/PDIF
	SATA	2 SATA 3.0	1 SATA 3.0	4 SATA 3.0	4 SATA 3.0
	DIO	8-bit DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC	1	1	1	1
	SMBus	1	1	1	1
	I ² C	1	1	-	-
Power		4-pin ATX 12V, 24-pin ATX	5~19V DC-in	4-pin ATX 12V, 24-pin ATX	4-pin ATX 12V, 24-pin ATX
Operating Temperature		0°C~60°C	0°C~60°C	0°C~60°C	0°C~60°C

*Populated by default

Type 2



Model Name		COM630-B
Compliance		COM Express® R1.0, Type 2
Form Factor		ATX (305 x 244 mm)
Graphics	Connector	1 VGA, 1 LVDS
Expansion	PCIe, PCI	1 PCIe x16, 2 PCIe x1, 4 PCI
	Mini PCIe	-
	SIM	-
Audio	Audio Codec	Realtek ALC262
Rear I/O	Ethernet (GbE)	1
	Serial	3
	USB	4 USB 2.0
	Display	1 VGA
	Audio	Mic-in, Line-in, Line-out
	PS/2	2
Internal I/O	Serial	1
	USB	4 USB 2.0
	Display	1 LVDS
	Audio	Front Audio, S/PDIF
	SATA	4 SATA 2.0
	DIO	8-bit DIO
	LPC	-
	SMBus	-
	I ² C	-
	CAN Bus	-
Power		24-pin ATX
Operating Temperature		0°C~60°C

Q7



Q7



Model Name		Q7X-151-RC	Q7A-551
Compliance		AL700 (Q7X-151-RC)/BT700 (Q7X-151)	FS700
Form Factor		Mini-ITX (170 x 170 mm)	Proprietary (190 x 102 mm)
Graphics	Connector	1 LVDS, 1 DP	1 HDMI, 1 LVDS
Expansion	PCIe, PCI	2 PCIe x2	-
	Mini PCIe	2 mSATA	1 Mini PCIe
	SIM	-	1
Audio	Audio Codec	Realtek ALC888	I ² S
Rear I/O	Ethernet (GbE)	1	1
	Serial	1 RS-232	1 RS-232/422/485, 1 RS232/UART
	USB	3 USB 3.0, 1 USB 2.0	2 USB 2.0, 1 USB Client
	Display	1 DP	1 HDMI
	Audio	Mic-in, Line-in, Line-out	Line-out / Mic-in
	PS/2	-	-
Internal I/O	Serial	2 (TX/RX)	1 RS-232/422/485
	USB	2 USB 2.0 (optional)	-
	Display	1 LVDS	1 LVDS
	Audio	-	-
	SATA	2 SATA 3.0	-
	DIO	-	12-bit DIO
	LPC	1	-
	SMBus	1	-
	I ² C	1	-
	CAN Bus	1	1
Power		12V DC-in	12~36V DC-in
Operating Temperature		0°C~60°C	0°C~60°C

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