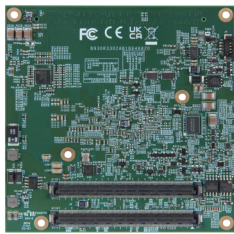
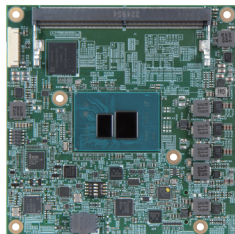


PCOM-B646

COM Express Type 6 Compact size module with Intel Atom® processors x7000E/x7000RE series with DDR5 SO-DIMM, DDI, PCIe Gen 3, USB 3.2 Gen2, 2.5 Gigabit TSN Ethernet, discrete TPM 2.0, eDP, SATA



FEATURES

- Intel Atom® processors x7000RE series (formerly Amston Lake), Intel Atom® processors x7000E series & Intel® Core™ i3 N-series processors
- DDR5 SO-DIMM up to 48GB 4800 MT/s (non-ECC)
- Support 3x independent displays via DDI / eDP(LVDS) / VGA
- Support industrial temperature range -40°C up to +85°C (select SKUs)
- Support Intel® TCC/TSN with 2.5GbE (select SKUs)
- Option for CAN bus



The Portwell PCOM-B646 is a COM Express Type VI Compact size module featuring Intel Atom® processors x7000E/x7000RE series and Intel Core i3 N-series processors, and based on the PICMG COM Express Module Base Specification Rev 3.1. The Intel processors series platform adopts Intel 7 lithography process, and supports AI acceleration with Intel Deep Learning Boost (including Intel AVX VNNI) to offer optimized performance with 15W thermal design power (TDP) for dynamic embedded use cases. The Intel Atom x7000RE series processors offer up to eight computing cores performance with high energy efficiency. PCOM-B646 also features PCIe Gen 3 and non-ECC DDR5 SO-DIMM interfaces, and is suitable for mission critical use conditions and AI edge computing. It also provides (up to) 6x PCIe Gen 3 x1 lanes, (up to) 4x USB 3.2 Gen 2, and 2x SATA III. The comprehensive feature set, combined with its flexible I/O capacity, makes it ideal for diverse embedded and industrial applications.

General

General								
Model Name	PCOM-B646							
Form Factor	COM Express Type6 Compact Size (95 X 95mm)							
CPU Series	PC Client N series	Embedded E Series			Industrial RE Series			
Core	i3-N305	x7211E	x7213E	x7425E	x7211RE	x7213RE	x7433RE	x7835RE
	8	2	2	4	2	2	4	8
Frequency	1.0/1.8 GHz	1.0 GHz	1.7 GHz	1.5 GHz	1.0 GHz	2.0 GHz	1.5 GHz	1.3 GHz
Turbo Frequency	3.8 GHz	3.2 GHz	3.2 GHz	3.4 GHz	3.2 GHz	3.4 GHz	3.4 GHz	3.6 GHz
Intel® Smart Cache	6 MB							
Intel® Gfx EU	32EU	16EU	16EU	24EU	16EU	16EU	32EU	32EU
Graphics Max Freq.	1.25 GHz	1.0 GHz	1.0 GHz	1.0 GHz	800 MHz	800 MHz	800 MHz	1.0 GHz
Processor TDP	9W/15W	6W	10W	12W	6W	9W	9W	12W
Support Temperature	0°C to 60°C				-40°C~85°C			
PCH	SoC							
Memory Type/Speed	DDR5 SO-DIMM up to 48GB 4800MT/s							
ECC Memory Support	Non-ECC SO-DIMM							

I/O Interface

I/O Interface			
SATA	2x SATA III share with PCIe lane		
USB	Up to 4x USB 3.2 Gen2 (2 lanes share with PCIe) 8x USB 2.0		
Ethernet	Intel® I226 series		
Serial I/O	GPIO	8 bit GPIO (default 4 input/4 output)	
	I²C	Baud Rate : 400KHz	
	SMBus	Baud Rate : 100KHz	
	UART	TX/RX signal only	
PCI Express	Up to 6x Gen 3.0 x1 (2 lanes share with SATA / 2 lanes share with USB)		
Display	Module display interface	Carrier output options	Resolution
	eDP / LVDS (default eDP)	eDP up to HBR3	3840 x 2160@120Hz
		LVDS (24bit, dual channel)	1920 x 1200@60Hz
	DDI	DP up to HBR3	3840 x 2160@120Hz
	VGA	HDMI 2.1	3840 x 2160@120Hz
VGA		VGA	1920 x 1200@60Hz
Security	TPM 2.0		

MECHANICAL & ENVIRONMENT

Dimension	95 x 95mm
Power DC IN	Normal: +12V DC AT/ATX mode
Storage Temperature	-40°C to 85°C
Operating Temperature	0°C to 60°C -40°C to 85°C (Industrial SKUs)
Certification	Contact us
MTBF	TBD
Vibration	TBD
OS	Windows 10/11 Ubuntu

ORDERING GUIDE

Product	Ordering P/N	Status
PCOM-B646-N305	AB1-3S21	Available
PCOM-B646-x7211E	AB1-3T03	Available
PCOM-B646-x7213E	AB1-3T04	Available
PCOM-B646-x7425E	AB1-3S22	Available
PCOM-B646-x7211RE	AB1-3T05	Available
PCOM-B646-x7213RE	AB1-3T06	Available
PCOM-B646-x7433RE	AB1-3S86	Available
PCOM-B646-x7835RE	AB1-3S85	Available

Accessory	Ordering P/N	Status
Cooler (Copper)	B9972270	Available
Cooler (Aluminum)	B9972280	Available
Heatsink (Copper)	B830C400	Available
Heatsink (Aluminum)	B830C420	Available
Heatspreader (Copper)	B830C410	Available
Heatspreader (Aluminum)	B830C430	Available
PCOM-C605R Mini-ITX Carrier	AB1-3P78	Available
PCOM-C60B ATX Evaluation Carrier	AB1-3G22	Available

BLOCK DIAGRAM

PCOM-B646

