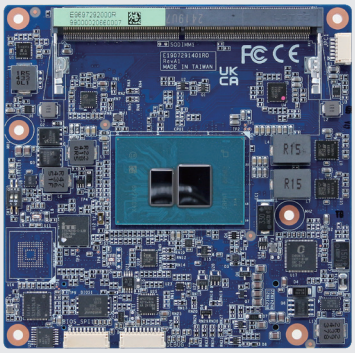
ESM-TWLC

Intel® Processor N150, N250, & Intel® Core™ 3 Processor N355 Type6 COMe Compact Module



Features

- PICMG COM R3.1 Type 6 module with Processor N150, N250, & Intel® Core™ 3 Processor N355 by BOM optional
- 1 x 262-pin DDR5 4800MHz SO-DIMM socket, supports up to 16GB Max
- 1 x Intel® i226V
- Intel® HD Audio Integrated in SOC
- Onboard TPM 2.0
- COMe Type 6 Compact Size: 3.74" x 3.74" (95 x 95 mm)
- DC in +9V ~ +19V

DDR5 SO-DIMM | USB 3.2 | DP | HDMI | LVDS/ eDP

Specifications

System Information	
Processor	Intel® Processor N-series, BGA 1264 Intel® Processor N150, 4C4T, 6MB, GHz (3.6GHz), TDP up to 6W Intel® Processor N250, 4C4T, 6MB, GHz (3.8GHz), TDP up to 6W Intel® Core™ 3 Processor N-series, BGA 1264 Intel® Core™ 3 Processor N355, 8C8T, 6MB, GHz (3.9GHz), TDP up to 15W
System Memory	1 x 262-pin DDR5 4800MHz SO-DIMM socket, supports up to 16GB Max
I/O Chipset	EC iTE IT5782VG-I-128/BX or Super IO Equivalent
Watchdog Timer	H/W Reset, 1Sec. ~ 65535Sec. and 1Sec./Step
BIOS	AMI uEFI BIOS, 256 Mbit SPI Flash ROM
H/W Status Monitor	CPU temperature monitoring Voltages monitoring CPU fan speed control
TPM	Onboard TPM 2.0
Expansion	
Expansion	BOM1(default): 4 x PCIe x1 Gen3 BOM2: 1 x PCIe x4 Gen3 BOM3: 2 x PCIe x1 Gen3
Storage	
Storage	eMMC 5.1 Up to 128GB (Optional)
Display	
Graphic Chipset	Intel® Graphics
Spec. & Resolution	HDMI 2.0b: 1920x1080 as Default or 4096x2160@60Hz set by Bios. *VBT1 use Vbios for Full HD/ no display audio. VBT3 use Vbios for output 4K/ support display audio DP 1.4: 4096x2160@60Hz LVDS (via eDP-to-LVDS): 1920x1080 @60Hz, LVDS via CH7511B-BF or eDP 1.4b (By BOM Optional): 2Lanes FHD 1920x1080 @60Hz
Multiple Display	Triple Display Support
LVDS	CH7511B-BF (eDP to LVDS)
DDI	DDIA: 2 CH LVDS (via eDP-to-LVDS) or eDP (By BOM Optional) DDIB: DDI Signal TCP0: DDI2 Signal or Type C Signal

Audio	
Audio Interface	Intel® HD Audio Integrated on CPU
Ethernet	
LAN Chipset	1 x Intel® i226V
Ethernet Interface	10/100/1000/2500 Base-Tx GbE Compatible
Software Support	
OS	Windows 11 64-bit, Linux
Certification	
Certification Information	CE, FCC Class, RoHS Compliant
I/O	
USB	BOM1 (default): 8 x USB2.0, 2 x USB3.2 Gen 2x1 BOM2: 8 x USB2.0, 4 x USB3.2 Gen 2x1 BOM3: 8 x USB2.0, 4 x USB3.2 Gen 2x1
COM Port	2 x UART (RX/TX Only)
SATA	BOM1 (default): 2 x SATA III BOM2: N/A BOM3: 2 x SATA III
DIO	1 x 8-bit GPIO
MIO	1 x SMBus 1 x LPC 1 x eSPI (W-B 10Px1 1.0mm 90D for debug conn) 1 x I²C 1 x SPI
Mechanical & Environmental	
Operating Temp.	Standard 0°C ~ 60°C (32°F ~ 140°F)
Storage Temp.	-40°C ~ 75°C (-40°F ~ 167°F)
Operating Humidity	40°C @ 95% Relative Humidity, Non-condensing
Weight	0.16lbs (0.07kg)
Power Requirement	+9V ~ +19V
Power Mode	AT/ATX
Dimension (L x W)	3.74" x 3.74" (95 x 95 mm)

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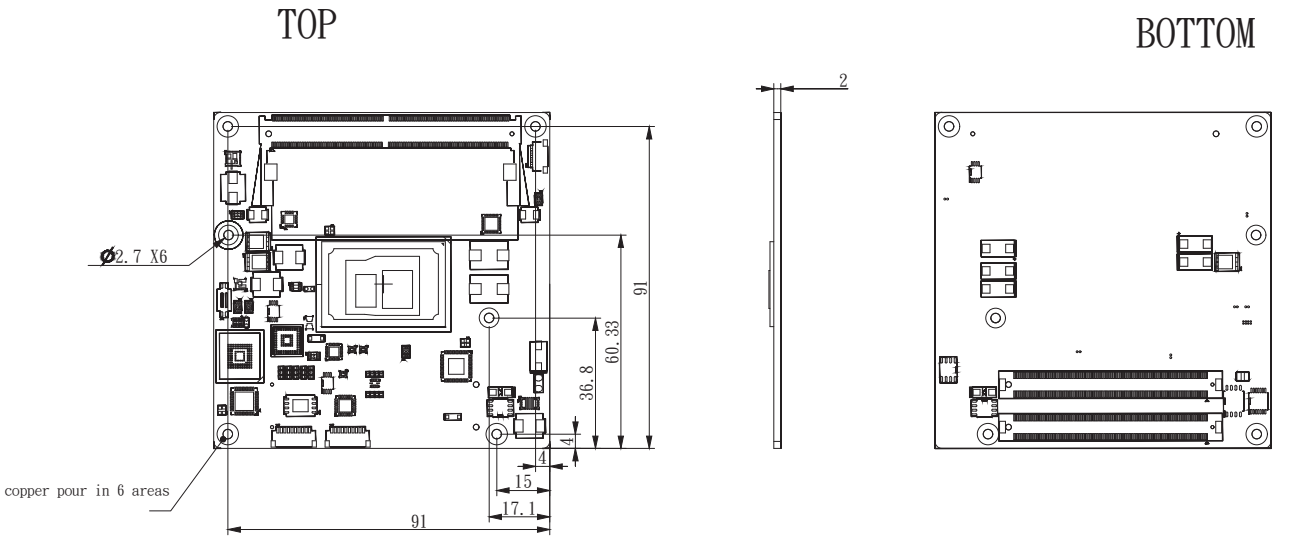
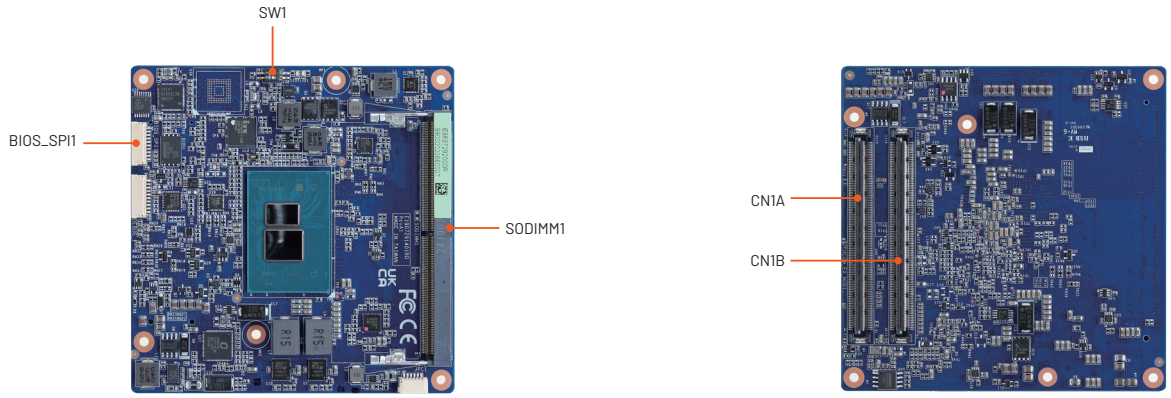
Mechanical Drawing



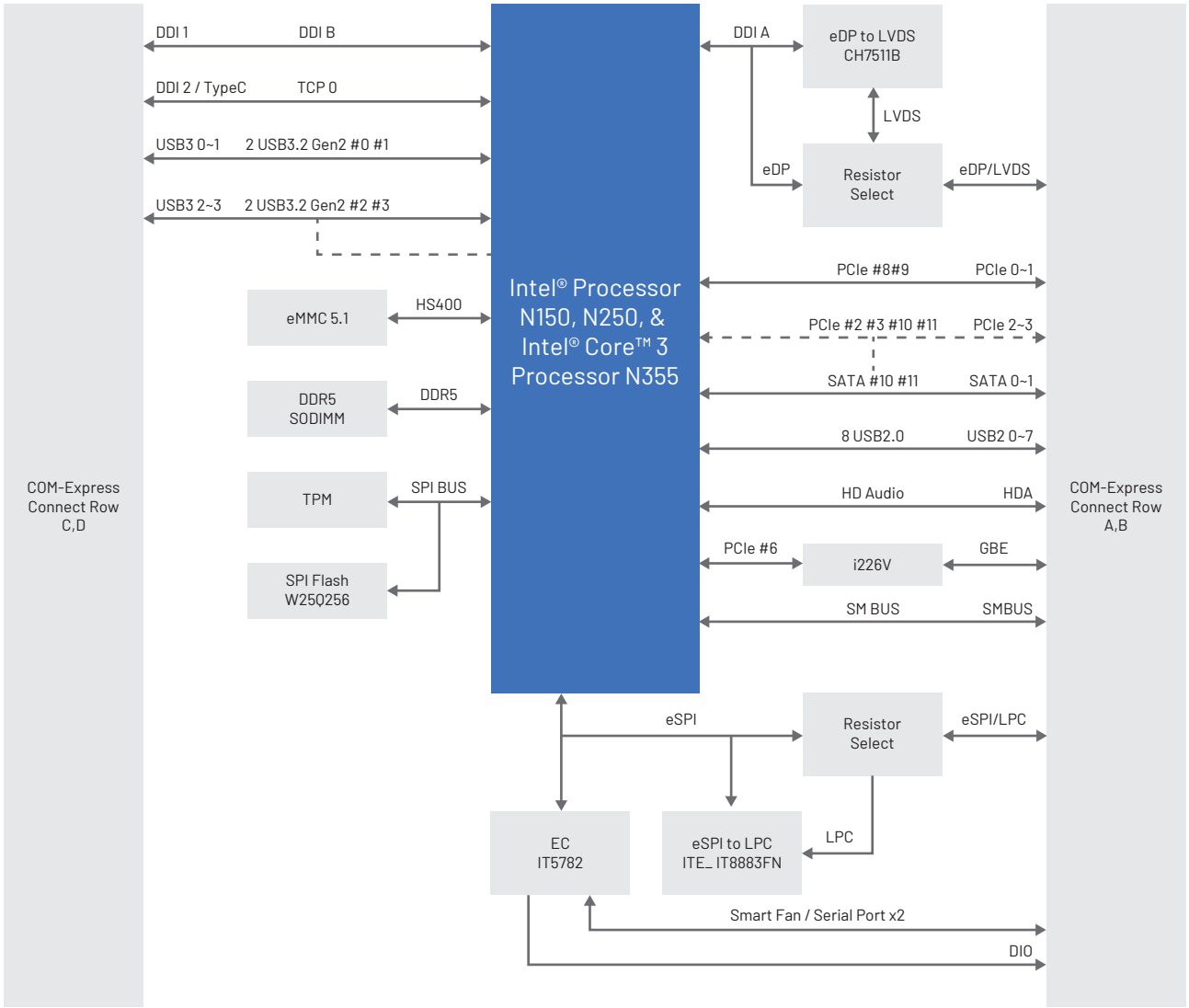
Ordering Information

P/N	CPU	PCH	LVDS/eDP	TPM	Memory	Storage	Operating Temp.	Thermal Solution	Note
ESM-TWLC-N150-A1R	Intel® Processor N150	NA	LVDS/eDP	Onboard TPM 2.0	1	eMMC 5.1 Up to 128GB (Optional)	0°C ~ 60°C (32°F ~ 140°F)	ACC-ESMASLC-CL-1R	NA
ESM-TWLC-N250-A1R	Intel® Processor N250	NA	LVDS/eDP	Onboard TPM 2.0	1	eMMC 5.1 Up to 128GB (Optional)	0°C ~ 60°C (32°F ~ 140°F)	ACC-ESMASLC-CL-1R	NA
ESM-TWLC-N355-A1R	Intel® Core™ 3 Processor N355	NA	LVDS/eDP	Onboard TPM 2.0	1	eMMC 5.1 Up to 128GB (Optional)	0°C ~ 60°C (32°F ~ 140°F)	ACC-ESMASLC-CL-1R	NA

I/O Overview



Block Diagram



	ME1	ME2	ME3
	BOM 1	BOM 2	BOM 3
CPU Lane#	Function	Function	Function
0	USB0	USB0	USB0
1	USB1	USB1	USB1
2	PCIe2	USB2	USB2
3	PCIe3	USB3	USB3
6	I226		
8	PCIe0	PCIeX4 (0~3)	PCIe0
9	PCIe1		PCIe1
10	SATA0		SATA0
11	SATA1		SATA1