Intel® Core™ Ultra Mobile Processor (Series 2) Reference Design based on Intel® Edge Scalable Design (Arrow Island)

Product Brief

March 2025

Contents

Figures

Tables

Revision History

Date	Revision	Description
March 2025	1.0	Initial release.

§

1.0 Introduction

The Arrow Island Reference Design is an advanced platform developed by Intel, featuring the Intel® Core™ Ultra Mobile Processor (Series 2) aimed at unlocking AI and next-generation possibilities in computing.

Key features of the Arrow Island Reference Design include:

- **Mini-ITX SBC Form Factor**: 170mm x170mm, which is compact and suitable for various applications.
- **DDR5 SODIMM Dual Channel**: It supports DDR5 SODIMM memory in a dual-channel configuration, enhancing memory bandwidth and performance.
- **Supports 8K** video output with HDMI 2.1, ensuring high-quality video transmission and reducing signal degradation over longer distances.
- **DisplayPort 2.0 Re-driver**: Enhances DisplayPort 2.0 capabilities, supporting high-resolution displays and improving signal integrity.
- **Dual Intel® Ethernet Controller I226**: Offers advanced networking capabilities with dual Intel® Ethernet Controller I226, supporting high-speed data transmission and reliable connectivity.
- **Supports HDMI Capture via MIPI CSI**: The design allows for HDMI capture through the MIPI CSI interface, which is useful for video processing and streaming applications.

These features make the Arrow Island Reference Design a versatile and powerful platform for developers working on cutting-edge AI and edge computing solutions.

1.1 Terminology

Table 1.   Terminology

Term	Description
HDMI	High-Definition Multimedia Interface
TSN	Time-Sensitive Networking
MIPI CSI	Mobile Industry Processor Interface Camera Serial Interface
LSPCON	Level Shifter and Protocol Converter
SIO	Super Input Output
eSPI	Enhanced Serial Peripheral Interface
DP	Display Port

Term	Description
eDP LVDS	Embedded Display Port with Low-Voltage Differential Signaling

1.2   Reference Documents

Log in to the Resource and Documentation Center (rdc.intel.com) to search for and download the document numbers listed in the following table. Contact your Intel field representative for access.

Note: NDA Customers can access Arrow Island Design Collaterals after obtaining a Design Licensing Agreement from Intel.
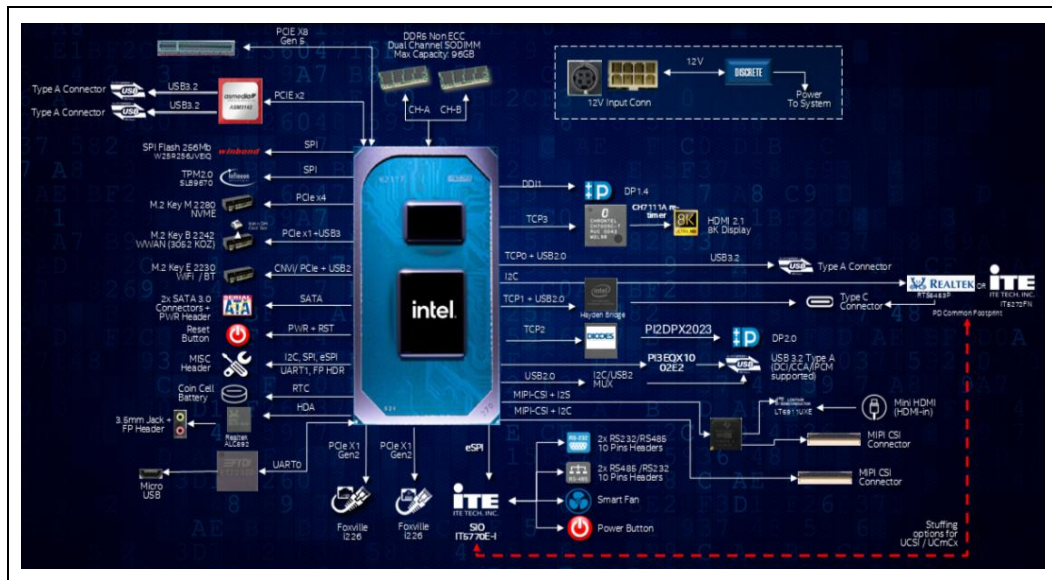
Table 2.   Arrow Island Reference Documents

Document	Document No./Location
Gold Deck	822989
Schematics PDF	822991
Schematics – Cadence	822992
Schematics – OrCAD	822993
Schematics – Zuken	822994
Schematics – Mentor	822995
Bill of Materials (BOM)	822997
Board Layout Files	822996
Tape Out Manufacturing Files	822998

§

2.0 Arrow Island Reference Design Specifications

The Arrow Island Reference Design is an advanced platform developed by Intel. It features the Intel® Core™ Ultra Mobile Processor (Series 2) on a Mini-ITX 170mm x 170mm system board footprint.

The following section describes the high-level details and specifications of this cutting-edge platform.

Figure 1.   Arrow Island Reference Design Landing Zone

2.1 Arrow Island Reference Design Specifications

Table 3.   Technical Specification Summary

Specification	Details
SoC	Intel® Core™ Ultra Mobile Processor (Series 2)
Dimensions	Mini-ITX SBC: 170mm x170mm
Layers	Type 3 Hybrid PCB stack up, 10 Layer
Memory	DDR5 SODIMM , 6400MT/s, Non-ECC, max 64GB
Display Out	1x Standard HDMI connector (HDMI2.1 – 8K via Retimer) 2x Type-C Connector (DP1.4a) 1x Standard DP++ connector (DP1.4a) 1x DP2.0 connector (via Retimer)

Display In	1x mini-HDMI (LT6911 HDMI in – x4 MIPI CSI)
Storage	1x M.2 Key B 3052 SSD [PCIE, USB3] 1x M.2 Key M 2280 [PCIe x4] 2x SATA3.2 Connector with PWR headers 256Mb SPI Chip [W25R256JWEIO]
USB	4x USB 3.2 Gen 2 Type-A Connector (1-PCH, 2- PCIE bridge, 1- stuffing option between Type-C & Type-A) 1x USB 4, Type-C 1x USB 3.2 Gen 2 x2 Type-C Connector (1 stuffing option with Type-A connector) DCI enabled for silicon debug & IPCM for power measurement 1x USB to UART debug port (FTDI)
Connectivity	2x Intel® Ethernet Controller I226 (2.5Gb) 'Foxville' 1x M.2 Key E 2230 for Wi-Fi/ Bluetooth® 1x M.2 Key B 3042 for WWAN (LTE/5G with 3052 KOZ) 1x Nano SIM Slot
Super IO	eSPI Super IO [IT5770E-I]
Expansion Slots	1x FUSA connector 1x PCIE Gen 5 X8 connector
Headers	eSPI HDR Front Panel HDR Fan Header UART HDR (SOC) RS232 HDR (SIO) RS485 HDR (SIO) 2x Samtec* 60-pins connector (MIPI-CSI)
Audio	Realtek* ALC897 (HDA) 3.5mm Line Out + Microphone
Security	TPM SLB9670VQ2.0
Power	12V, 10A input Discrete Solution
Chassis	Open Chassis
Cooling	Active
Operating Temperature	Operating: 0 ~ 60 °C

3.0   Call to Action

To obtain Arrow Island design documents from Intel, an NDA (Non-Disclosure Agreement) and Design Licensing Agreement must be signed. This ensures compliance with legal and corporate policies while facilitating seamless collaboration between your company and Intel.

For our existing customers, please contact your Intel sales representative for more information about these agreements and how to proceed.

If you are new to Intel, please contact us at https://builders.intel.com/contact-us.

§