

eSOM3735z

Quick Start Guide



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Introduction

The eSOM3735z is an easy to use 204 pin core board based on the power-efficient quad-core Atom Z3735G processor from Intel's 22nm Bay Trail line clocked at 1.33 - 1.83 GHz. It has 2MB L2 cache and integrated Intel HD Graphics GPU clocked at 311MHz to 646MHz.

The eSOM3735z comes with 1GB DDR3L RAM. The Non-Volatile Memory for this PC board is eMMC modules that plug into coreboard through two 60pin specific connectors. The eMMC modules exist in 32GB with 8bit Bus width by default, and it is customizable with 8,16, 64GB versions. Upgrade, repair and troubleshooting in this way is easy, quick, and cost-effective and improve maintenance ability.

The eSOM3735z integrated a PMU that reduces complexity of external power supply. Due to board components eSOM3735z has low power consumption and can operate in industrial grade temperature from -20°C to +85°C.

The eSOM3735z support dual channel video output HDMI and MIPI-DSI interfaces with 24-bit depth color resolution. This SOM has extra IO interfaces like HDMI, LCD, Ethernet, USB, GPIO, UART, I2C that users can access them through DDR3-SODIMM 204 pin straight connector that enables hardware customization and gives more hardware flexibility to various projects.

The eSOM3735z can boots Windows 10 very quickly and allows x86 developers to use the single board software development without having to learn about embedded systems such as ARM processors. Utilizing the eMMC with 8bit BUS width increased Operating System speed. In addition, it is integrated many peripherals such as GPIOs and users challenge with microcontrollers is eliminated. It is a perfect platform for x86 developers to make devices like Thin client HMI, Vending Machines, IoT etc.

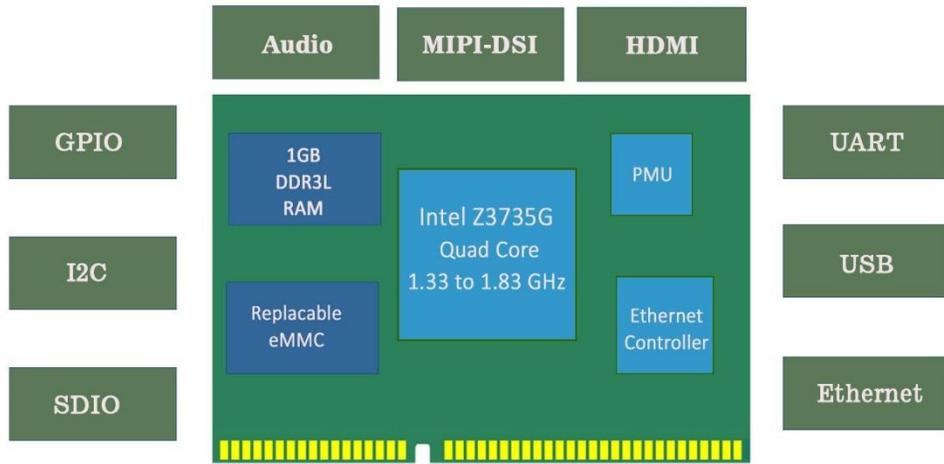
Features

- Intel Atom® Z3735G quad core processor (2M Cache, up to 1.83 GHz) with Intel HD graphics
- 1GB DDR3L RAM
- Up to 64GB Replaceable eMMC module
- Support multiple displays HDMI, MIPI-DSI interfaces.
- Support 16x GPIO directly programmable
- Two High Speed UARTs
- Flexible hardware customization using DDR3-SODIMM 204 pin connector
- Industrial Temperature range from -20°C to +85°C
- Very quick and easy OS installation through USB disk
- Windows 10 fast startup

Specification

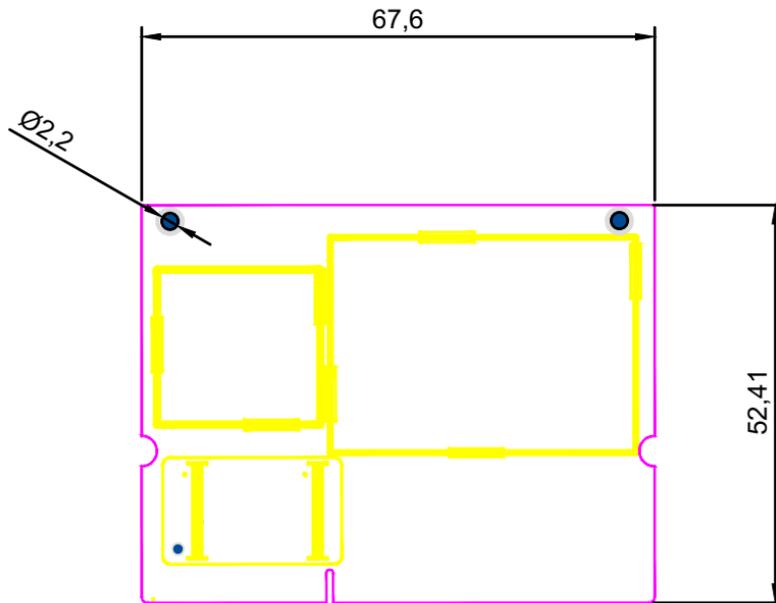
Characteristic	Standard	Customizable
Processor Details		
CPU Name	Intel Z3735G (Atom Z Series) 1.33 to 1.83 GHz Quad Core AI-Compatible	
Cache	32KB L1 + 24KB L1 Per Core 2MB L2 Total	
Memory		
RAM	1GB DDR3L with 32bit RAM BUS Width	
RAM BUS Frequency	666MHz (1333MT/s)	
Non-Volatile Memory Type	eMMC 4.5 + ECC with 8bit Bus Width	
Non-Volatile Memory Capacity	32GB	8, 16, 64GB
Multimedia		
Display Type	Dual Channel 24Bit Up to 1920 x 1080 Resolution 1- MIPI-DSI 2-HDMI 1.4 (1080p)	
Graphics Engine	Intel® HD Graphics for Intel Atom® Processor Z3700 Series /3D Hardware Acceleration	
Camera	-	Dual MIPI-CSI Camera channel 1- Rear Camera 2-8MP (Dual Lane) 2- Front Camera 0.3MP (Single Lane)
Analog Sound	Headset / MIC(Mono) /LineOut(Stereo)	
Connectivity		
USB	1 USB Host Root 4 USB Host Over HUB	-
UART	3	-
I2C	3	4
Ethernet	1 (10/100)	-
SDIO	1 (4bit SD-Card Reader)	-
GPIO	16	25
OS		
Windows	10 32bit	EFI Installer OS
Physical		
Working Temperature	-20 to +80	
Power	3.7 to 4.2V 1500mA (Max)	

Block Diagram



Mechanical Drawing

Dimension	
PCB	6 Layer, ENIG, 0.8mm
Weight	15g
Size	67.6mm × 52.41mm × 3.9mm

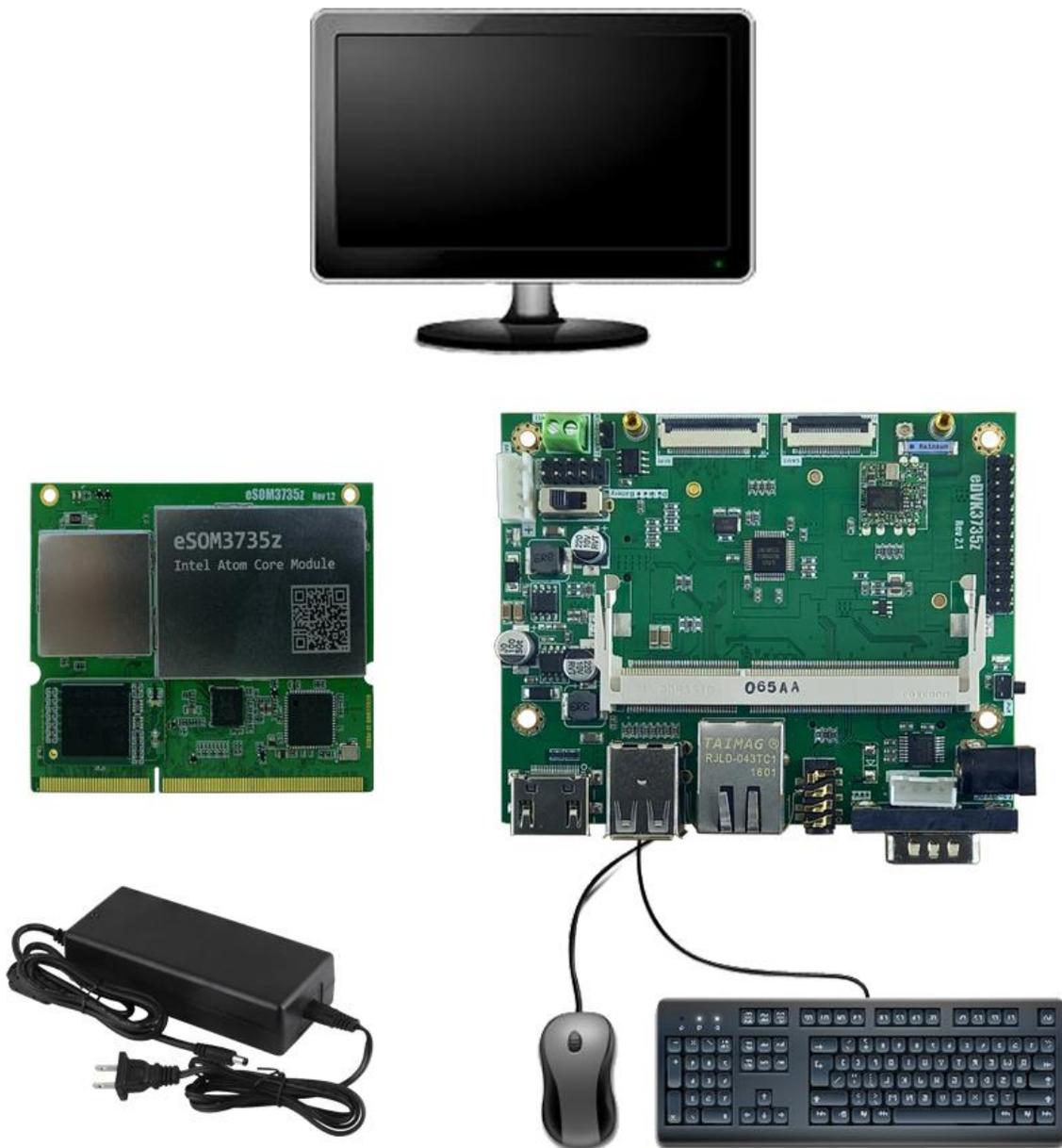


Power ON

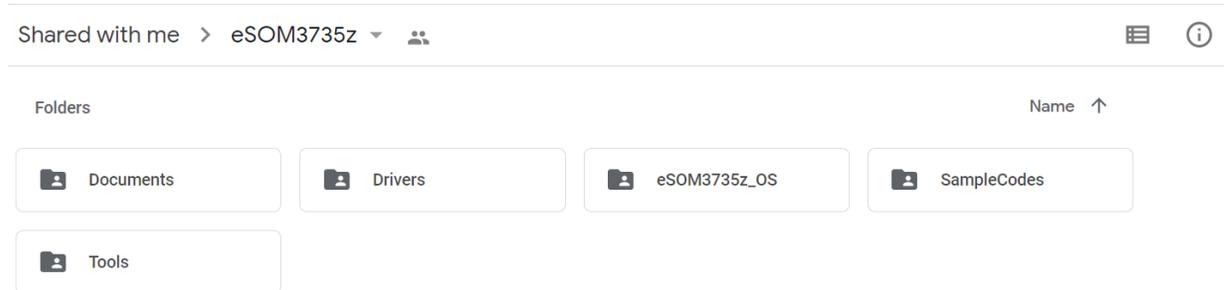
Essentials You Need

Users need to following items to power on eSOM3735z Board:

- eSOM3735z core board and development board((eDVK3735z is recommended))
- HDMI or LCD display
- Proper power adaptor (if using eDVK3735z proper power supply is 7.5V to 24V DC)
- Ethernet cable
- USB mouse and keyboard



Resources files of eSOM3735z is uploaded to network drive, and users can access them from [here](#). Following figure shows contents of eSOM3735z network drive. Documents, drivers, Windows 10 OS image, sample codes and tools are resources files that users can download them for using with coreboard.



There are many sample codes for eSOM3735z as shown in the following figure:

The screenshot shows a file explorer interface for a network drive, specifically the "SampleCodes" folder. The breadcrumb path is "Shared with me > eSOM3735z > SampleCodes". Below the path, there is a table listing files and folders. The table has four columns: "Name", "Owner", "Last modified", and "File size".

Name	Owner	Last modified	File size
eSOM3735z_IOT_CS_GPIO	eSOM eDVK	Mar 30, 2021 eSOM ...	—
eSOM3735z_IOT_CS_GPIO_v1	eSOM eDVK	Mar 30, 2021 eSOM ...	—
eSOM3735z_IOT_CS_I2C_Test	eSOM eDVK	Mar 30, 2021 eSOM ...	—
eSOM3735z_IOT_CS_UartSerialTest	eSOM eDVK	Mar 30, 2021 eSOM ...	—
eSOM3735z_iotBus_Cpp_gpio_i2c_uart	eSOM eDVK	Mar 30, 2021 eSOM ...	—
Windows-iotcore-samples-develop.zip	eSOM eDVK	Nov 3, 2020 eSOM e...	153 MB

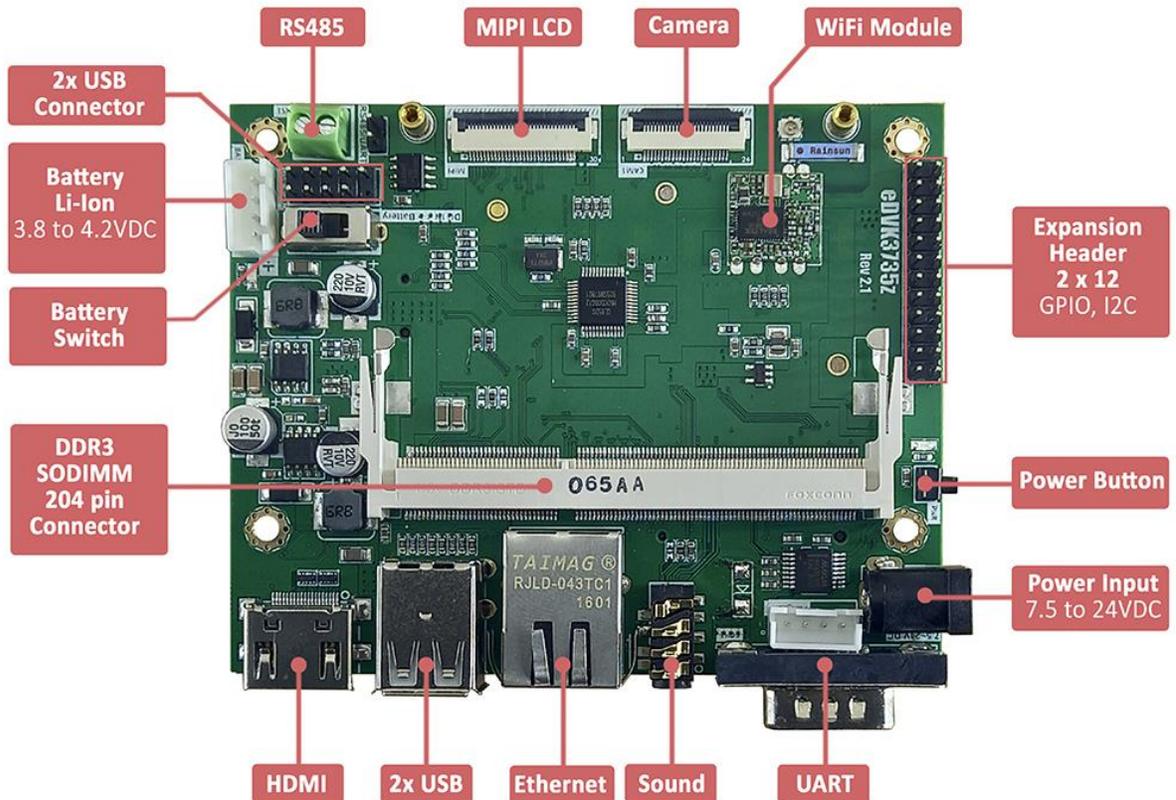
Development Board Setup

Follow these instructions to power on your board:

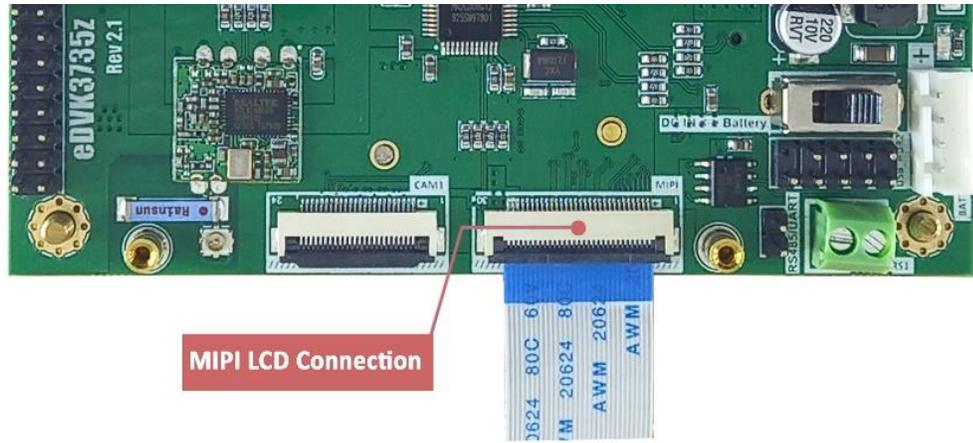
- Plug eMMC module into your eSOM3735z eMMC connector, a hole in eMMC module and corresponding hole on coreboard is considered to users can install eMMC module in the relevant position



- For using eSOM3735z coreboard you need to expansion board, eDVK3735z is recommended. This board connections is shown in the following picture:

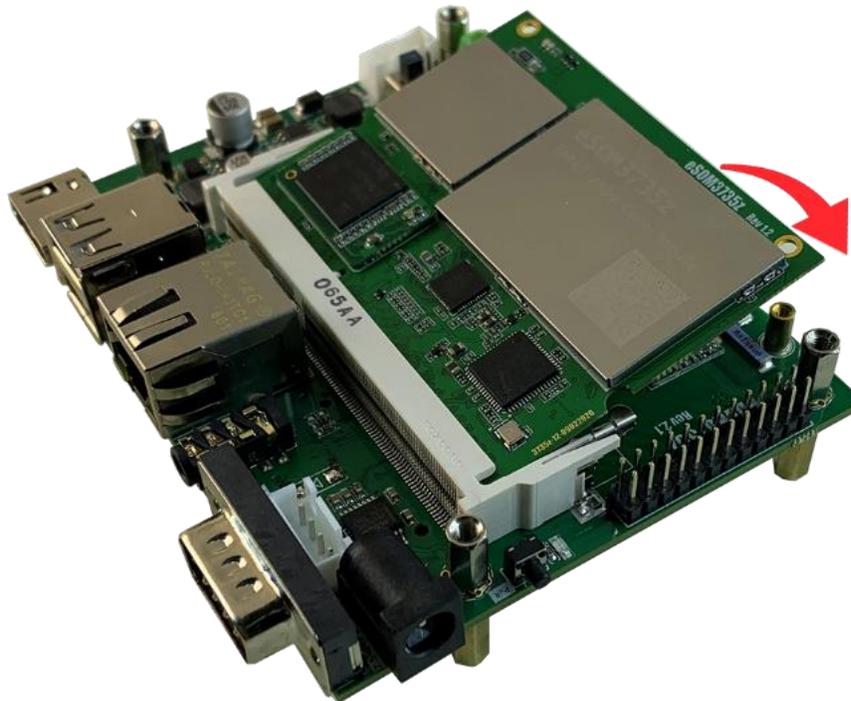


- Connect HDMI cable to HDMI Port of board. If you want using MIPI LCD, plug LCD FPC cable to corresponding slot as shown in the following image (MIPI LCD connection in eDVK3735z).



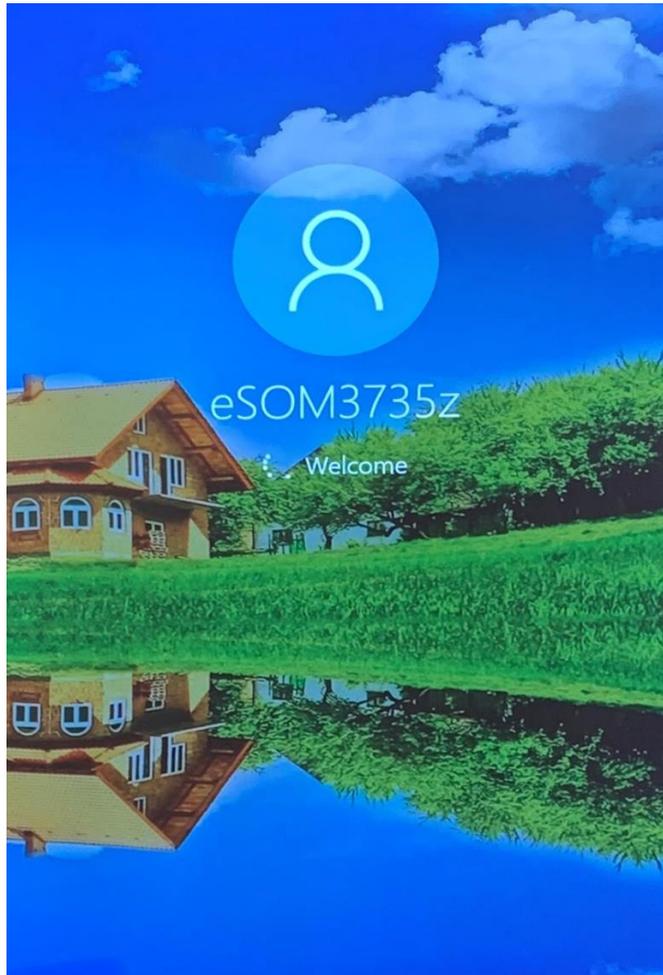
The eSOM3735z support both HDMI and MIPI LCD simultaneous with special Windows 10 that released for this board.

- Plug core board into corresponding slot of your development board:



- Plug USB mouse and keyboard.
- Users need to power the developer kit with a good quality power supply that can deliver sufficient current at the developer kit's power jack. If you are using eDVK3735z a power supply voltage output must be in 7.5V to 24VDC range. Plug Power adaptor into your board.

- If you are using eDVK3735z press power button to power on the board, after a few time eSOm3735z launch Windows 10 smoothly.

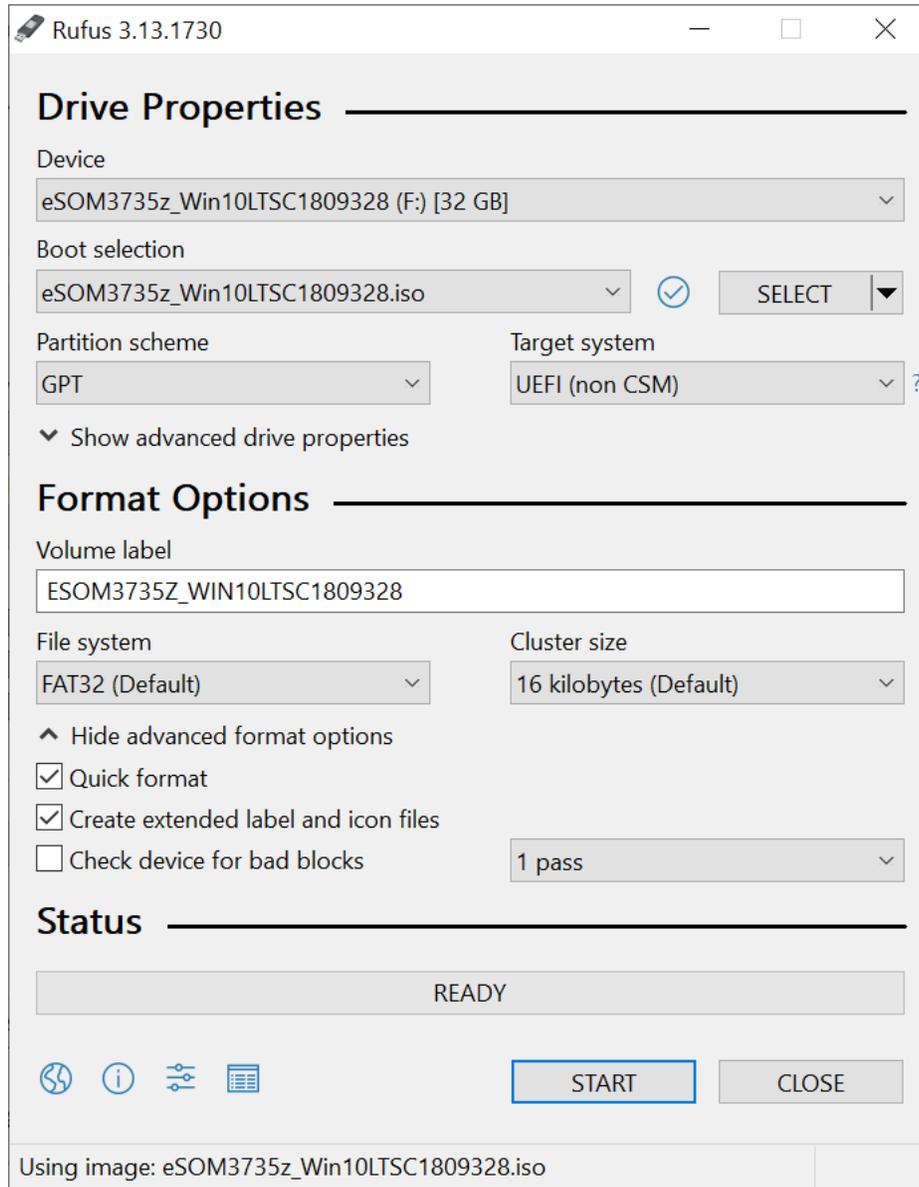


- If your board did not launch with Windows 10, refer to next section and install an OS for your board.

OS Installation

A customized Windows 10 image file is ready for eSOM3735z. Installation routine is very easy just using a flash memory with at least 4GB memory capacity.

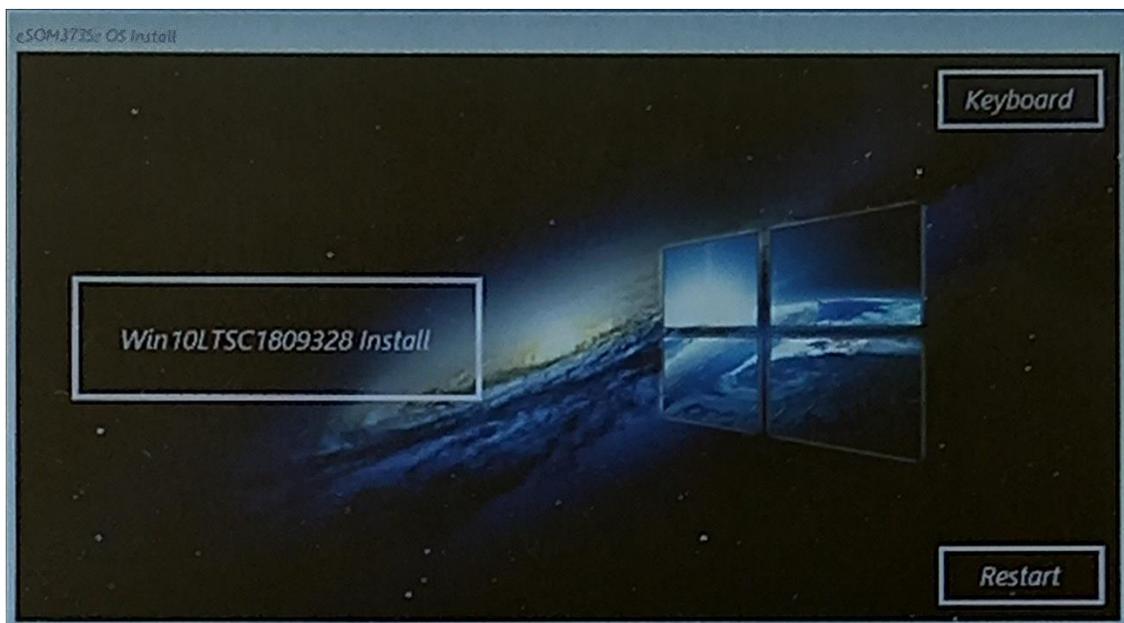
- Run Rufus application and from **Boot selection** section, choose your image file with **eSOM3735z_Win10LTSC1809328.iso**, then click START button to bootable flash memory to be created.



- Insert bootable USB memory into your development board and Power it on.
- Press **F11** on keyboard to access the boot menu of your device. (if your board does not find any OS on eMMC, then directly boots from bootable USB)
- In this menu, choose your USB flash memory (in our case UEFI:Sandisk)



- Board start loading OS file, after a while a dialog box is opened, for OS installation click on **Win10LTSC1809328 Install**. (by default, if you press on Enter Button on keyboard this button is clicked).



OS installation is started and a *cmd* is opened that shows how percent of OS installation is done. In the end of installation process, a dialog opened that shows succussed burning, you should remove flash and click on **Reboot System**.

Note: If in the OS installation, a message is appeared and ask a key for continue, you can use a virtual keyboard by click on keyboard, in this manner a keyboard is appeared, and you can type in *cmd* window with this keyboard.

