



Introduction

The Aventen Formosa Sync is a high-performance development board equipped with a 600 MHz RT106S MCU (overclockable), built-in WiFi 5 capability + bluetooth with audio, USB OTG, and an array of advanced features like RGB LEDs, USB-C connectivity, and comprehensive battery management. Designed for versatile applications, from IoT makers looking for the best for all projects to industrial solutions and professionals, it offers a seamless blend of power and innovation in an compact, breadboardable formfactor.



Component	PIN ID	Тур (v)	Max (v)	Max Current (mA)	Details
MIMXRT106SDVL6 B					The main microcontroller on the board.
Murata 1ZM					802.11a/b/g/n/ac WiFi + Bluetooth 5.1
TX1812LB RGB					RGB LED
LiPo Battery Support					The board uses the BQ2404x series LiPo and Li-lon single cell, single input charger, with up to 500mA charging current on USB.
MAX17048 Battery Monitor					MAX17048 Battery monitor, powered only when battery is connected.
RF Switch CG2163X3					The CG2163X3 RF switch allows you to switch between the IPX external antenna connector and the onboard chip antenna seamlessly, to switch - an HIGH IO output of 3.3V is needed to the control GPIO.
10/100 LAN8720A Ethernet					The LAN8720A allows for extra ethernet connectivity using the header pins.
Built-in SD Card slot					The slot is located on the bottom side of the board, it allows you to store code and boot from it.
Flash memory 128Mbit					128Mbit available flash memory
PSRAM 64Mbit					64Mbit available QSPI RAM
LDO +Aux LDO					1A Max output LDO (when used with battery), with maximum efficiency and power-saving.
ESD Protection					ESD Protection on all USB data lines.
Change over circuit					Allows switching to battery power when USB is disconnected.





Aventen Formosa Sync R1 Schematic Diagram 01/10/2023

POR B **Supervisor PMU** JST (BATT) TPS3831G33DQNT +3V3 SNVS LDO VBAT VCC TLV757 GND GND There must be no exceptions in the +3V3 SYS LDO power supply sequence for the IMX LiPo/Li-Ion Battery Charger **Mosfet Changeover** (steps 2-9), otherwise the IMX might BQ24045DSQR PMPB12R5EPX +1V8 LDO To avoid overloading the +3V3 SYS LDO, it is preferred you use the +3V3 SNVS LDO. All LDOs can VBUS +5V output 1A SD MAX17048 RF Switch RGB/LED Slot +5V SDHC i2C **GPIO** PSRAM DPU **IMX RT** APS6404L-3SQR-ZR **USB** USB PHY Flex SPI C DMU OTG MIMXRT106SDVL6B FLASH W25Q128JVPIQ RMII SDHC/SAI/UART RF **Ethernet (RMII)** WiFi + BT **Murata 1ZM** CG2163X3 **LAN8720A** LBEE5QD1ZM RJ45 Header

Power On Sequence

- Power from USB arrives into the USB PHY and regulators, if battery is used USB won't work on this board. (USB PHY can be powered at anytime)
- 2) The separate SNVS_IN LDO turns on powering the VDD_SNVS_IN domain regulator.
- 3) SNVS CAP creates +1.1V
- 4) VDD_HIGH_CAP and NVCC_PLL create +1.1V once the IMX RT internal PMU powers on.
- 5) PMIC_ON_REQ is driven with +1.1V to the +1V8 LDO and +3V3 SYS LDO to request main power.
- 6) POR_B/PSWITCH is driven low until the +3V3 SYS LDO provides +3V3.
- 7) +3V3 SYS and +1V8 LDO turn on, this supplies the main power to the whole board.
- DC_DC_PSWITCH is driven high by the RC delay circuit.
- 9) POR B is driven high after +3V3 is stable.
- 10) The CPU is powered

Headers



