SoM-STM32F4.PrjPcb

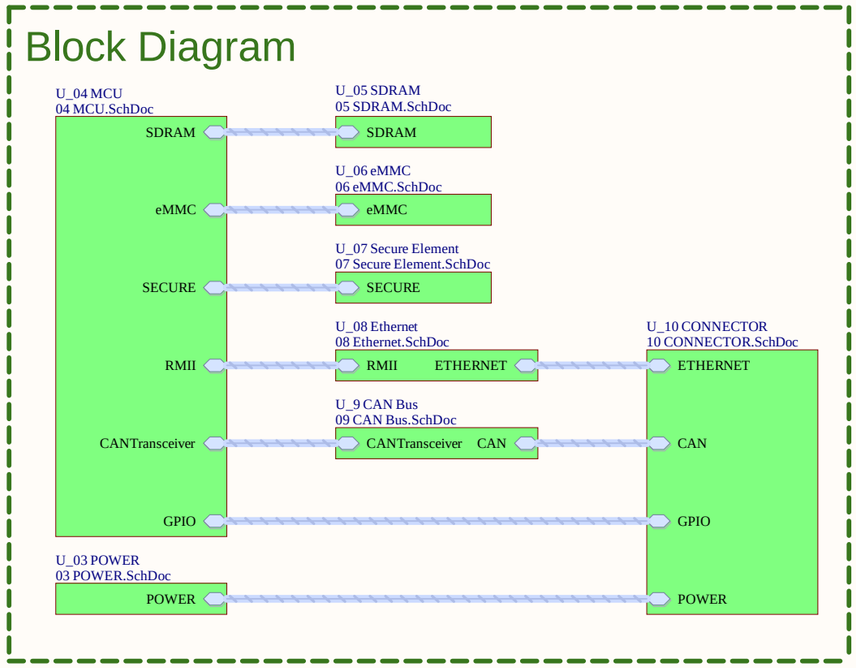
Version 1.0
Variant [No Variations]

#	PAGE NAME	PAGE FUNCTIONALITY
1	COVER PAGE	This page.
2	BLOCK DIAGRAM	Block diagram of the system.
3	POWER	Power regulator to provide 3.3V to the SoM.
4	MCU	Microcontroller and the connections to it.
5	SDRAM	SDRAM connected via FMC to the STM32.
6	eMMC	eMMC connected to the STM32 through MMC.
7	Secure Element	Secure Element connected via I2C to the STM32.
8	Ethernet	Ethernet connected to STM32 through RMII.
9	CAN Bus	CAN Bus connection to the connector and the STM32.
10	CONNECTOR	Connector to the outside world.

DATE	VERSION	DESCRIPTION
	V1.0	Initial

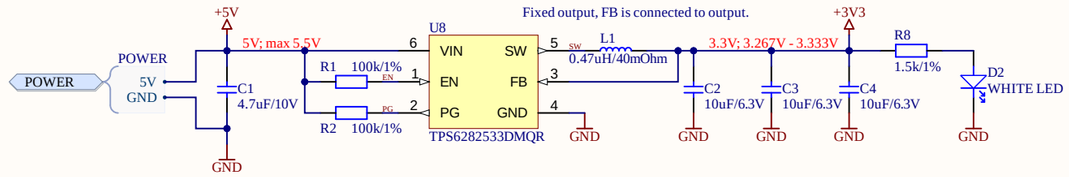
Title
COVER PAGE

Project	Size	Designed By
SoM-STM32F4.PrjPcb	A3	Silard Gal
Date	Revision	https://www.silardgal.com
8/18/2023	1.0	contact@silardgal.com



Title: BLOCK DIAGRAM		
Project: SoM-STM32F4.PrjPcb	Size: A3	Designed By: Silard Gal, https://www.silardgal.com, contact@silardgal.com
Date: 8/18/2023	Revision: 1.0	

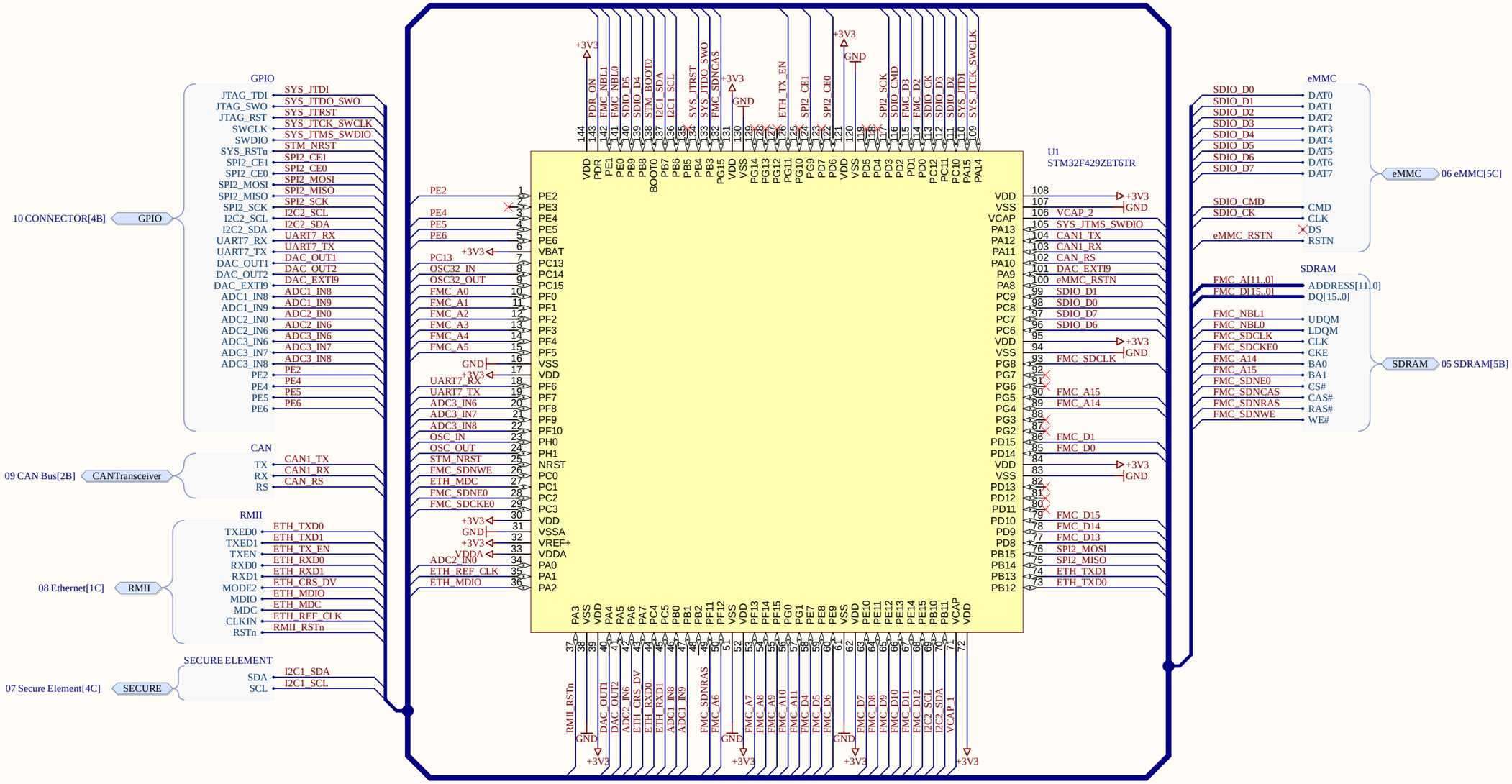
Power



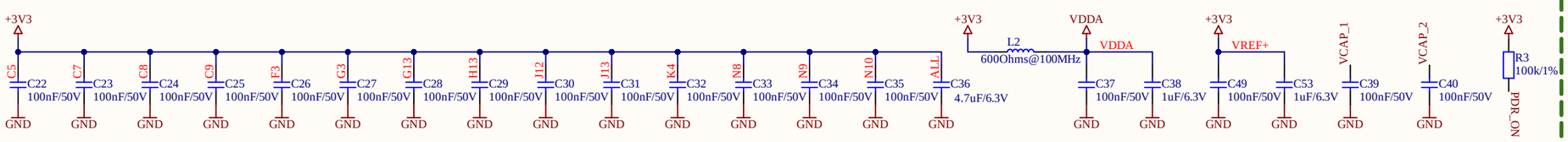
STM32F4 - Sum Ivdd 270mA
SDRAM - 70mA
NOR Memory - 200mA max
eMMC - 120mA
Secure element - 14mA
Ethernet - 50mA
CAN Bus - 60mA

All: 784mA

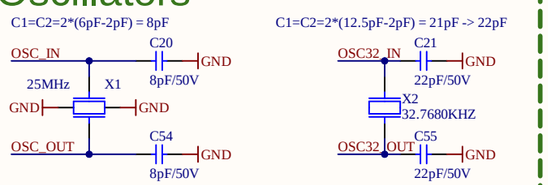
Title: POWER		
Project: SoM-STM32F4.PrjPcb	Size: A3	Designed By: Silard Gal, https://www.silardgal.com, contact@silardgal.com
Date: 8/18/2023	Revision: 1.0	



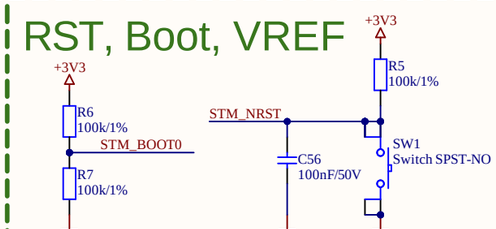
Decoupling



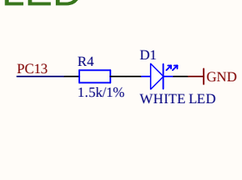
Oscillators



RST, Boot, VREF



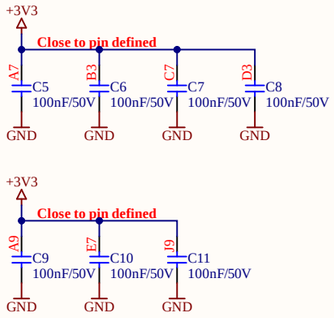
LED

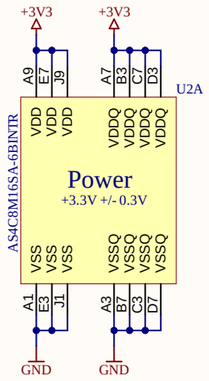


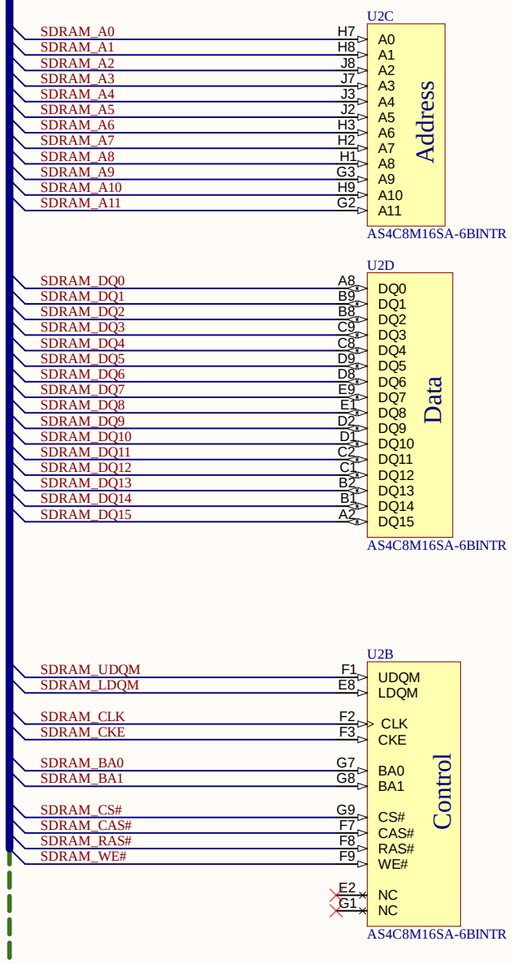
Title	MCU
Project	SoM-STM32F4.PrjPcb
Size	A3
Date	8/18/2023
Revision	1.0
Designed By	Silard Gal
	https://www.silardgal.com
	contact@silardgal.com

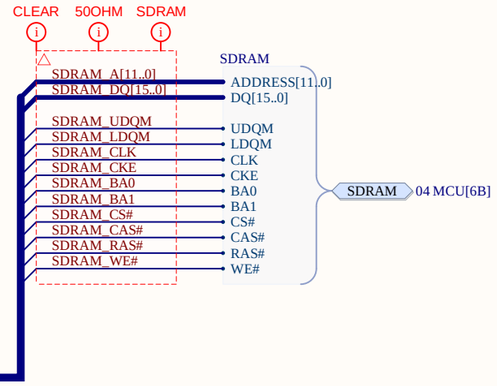
Address, Data and Control connections

Power



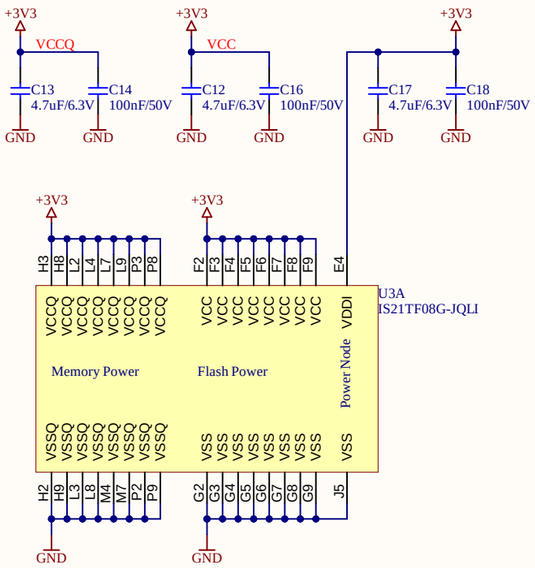




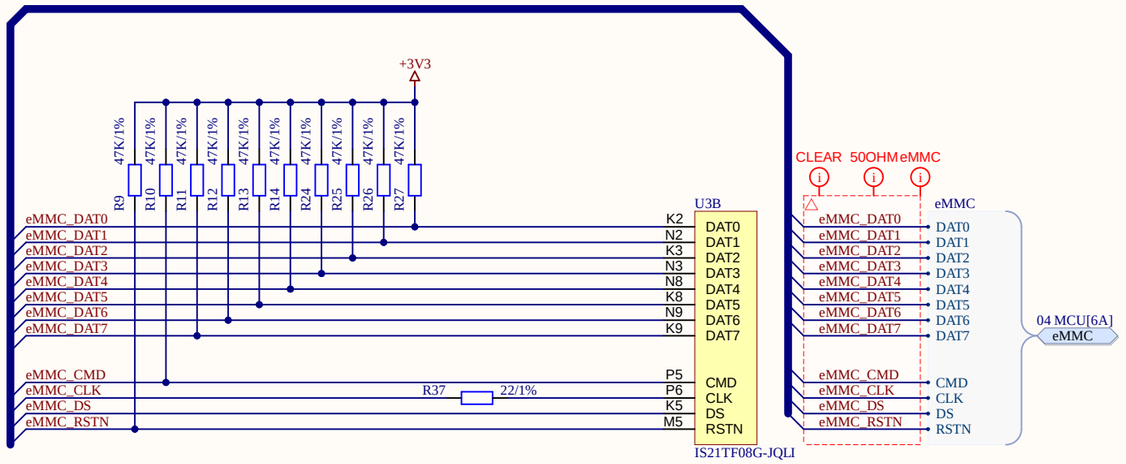


Title	SDRAM		
Project	SoM-STM32F4.PrjPcb	Size	A3
Date	8/18/2023	Revision	1.0
Designed By	Silard Gal https://www.silardgal.com contact@silardgal.com		

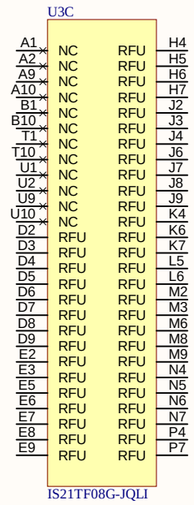
Power



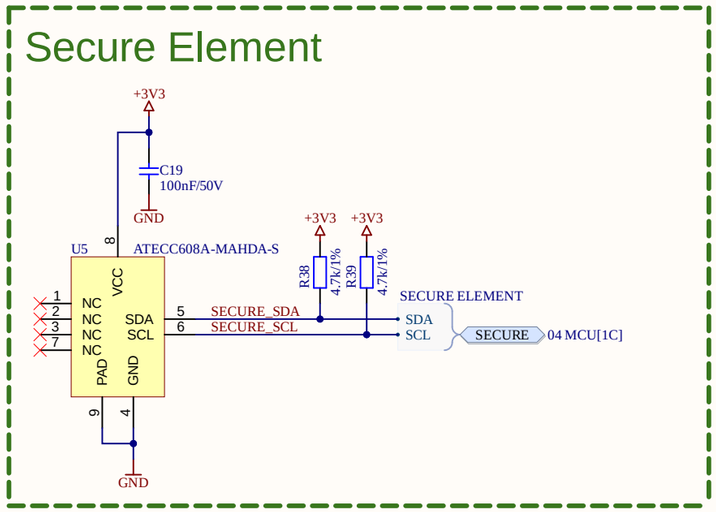
SDIO Communication



No Connect

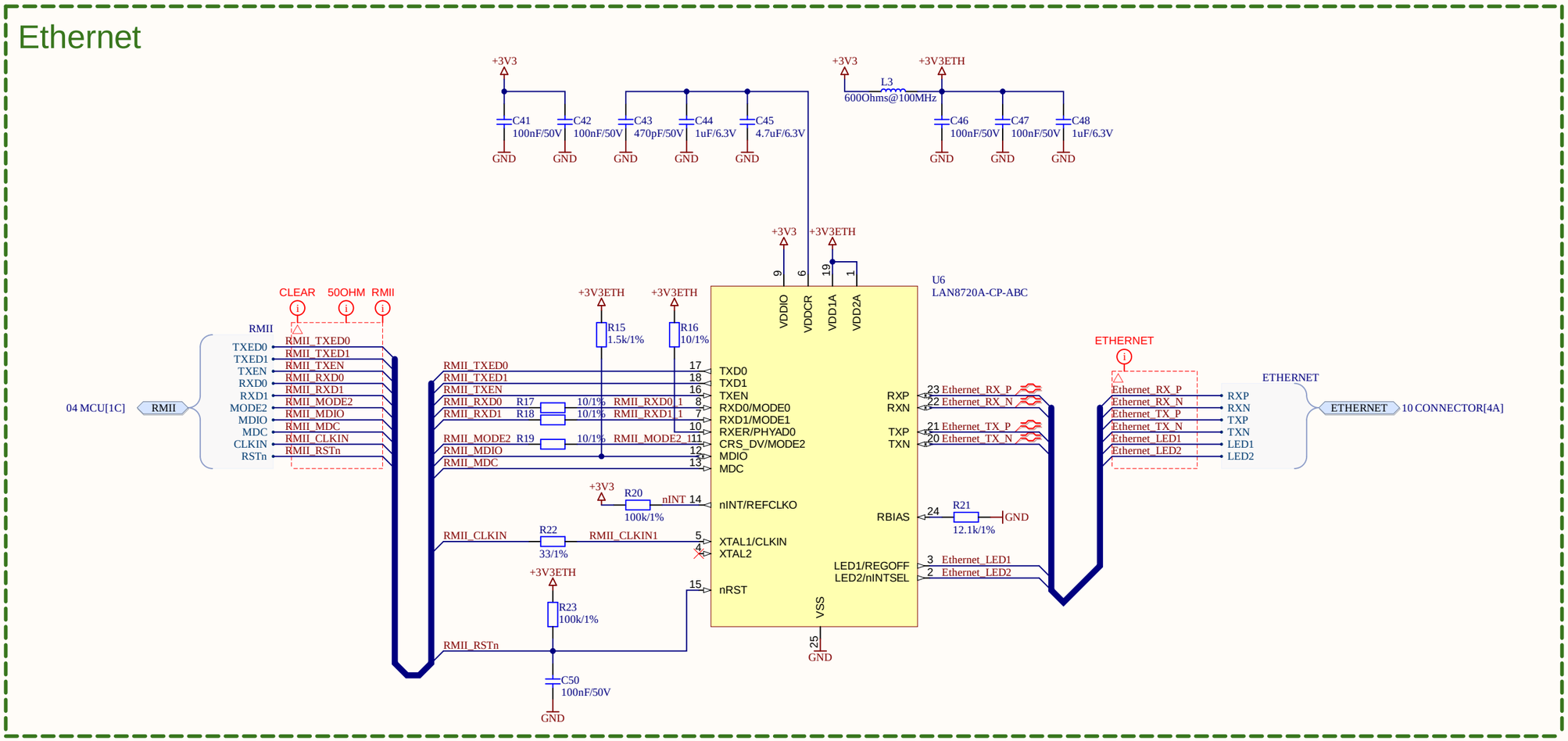


Title: eMMC			
Project: SoM-STM32F4.PrjPcb	Size: A3	Designed By: Silard Gal	
Date: 8/18/2023	Revision: 1.0	https://www.silardgal.com	
		contact@silardgal.com	



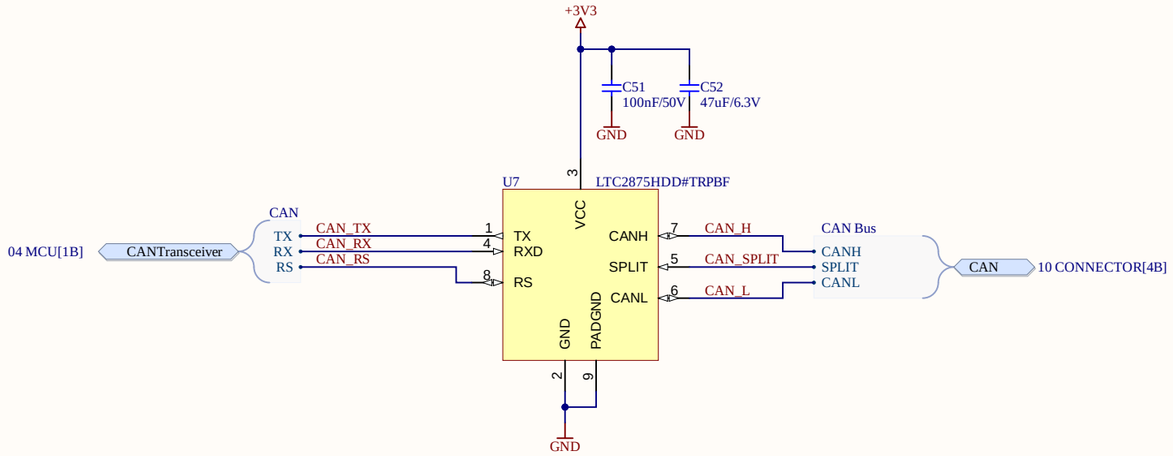
Title	Secure Element		
Project	SoM-STM32F4.PrjPcb	Size	A3
Date	8/18/2023	Revision	1.0
Designed By	Silard Gal https://www.silardgal.com contact@silardgal.com		

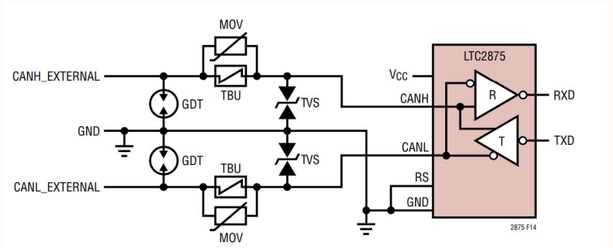
Ethernet



Title	Ethernet
Project	SoM-STM32F4.PrjPcb
Size	A3
Date	8/18/2023
Revision	1.0
Designed By	Silard Gal https://www.silardgal.com contact@silardgal.com

CAN Bus

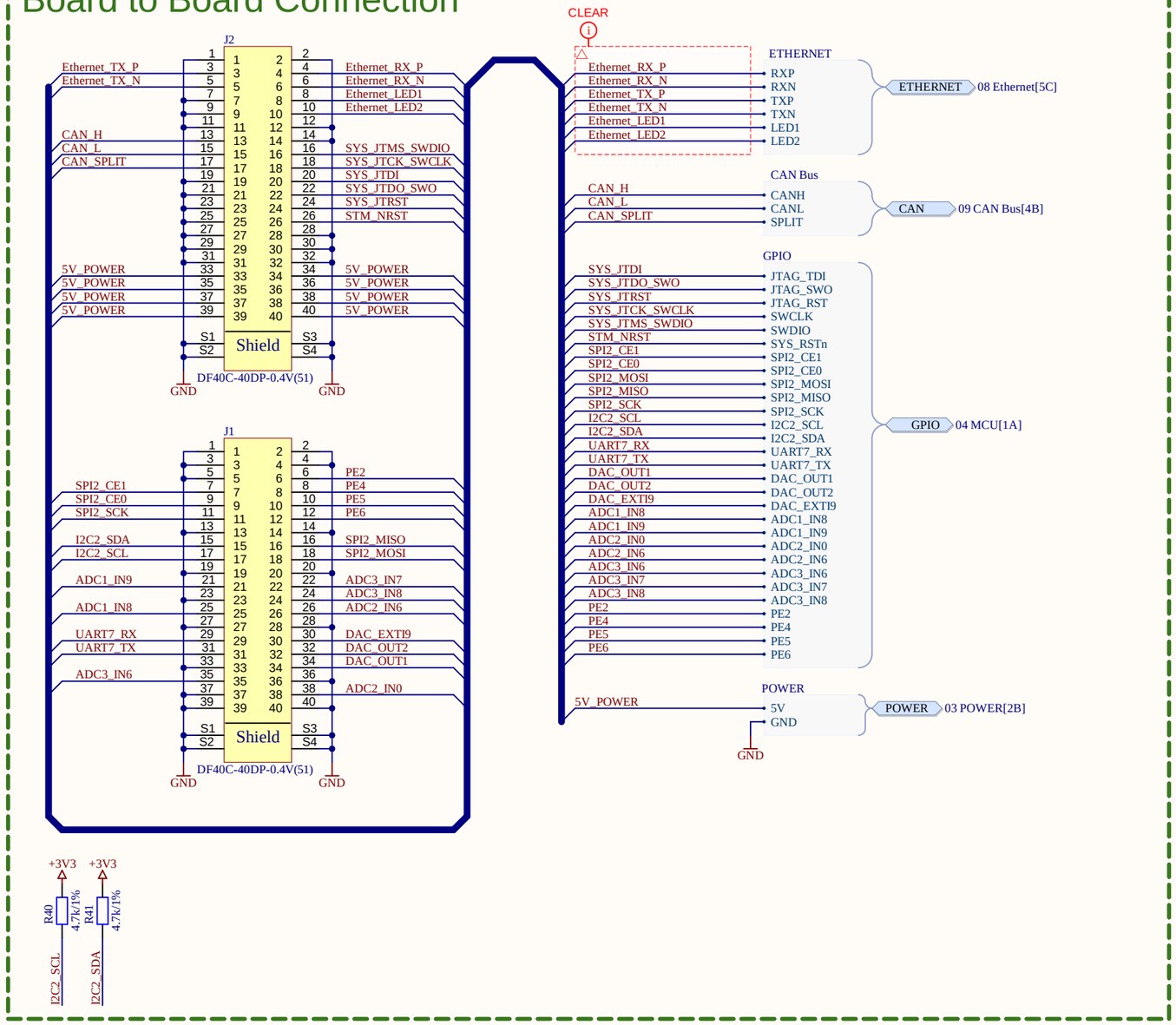




GDT: BOURNS 2031-15T-SM; 150V GAS DISCHARGE TUBE
TBU: BOURNS TBU-CA050-300-WH; 500V TRANSIENT BLOCKING UNIT
MOV: BOURNS MOV-7D201K; 200V 13J METAL OXIDE VARISTOR
TVS: BOURNS CDSOD323-T36SC; 36V BIDIRECTIONAL TVS DIODE

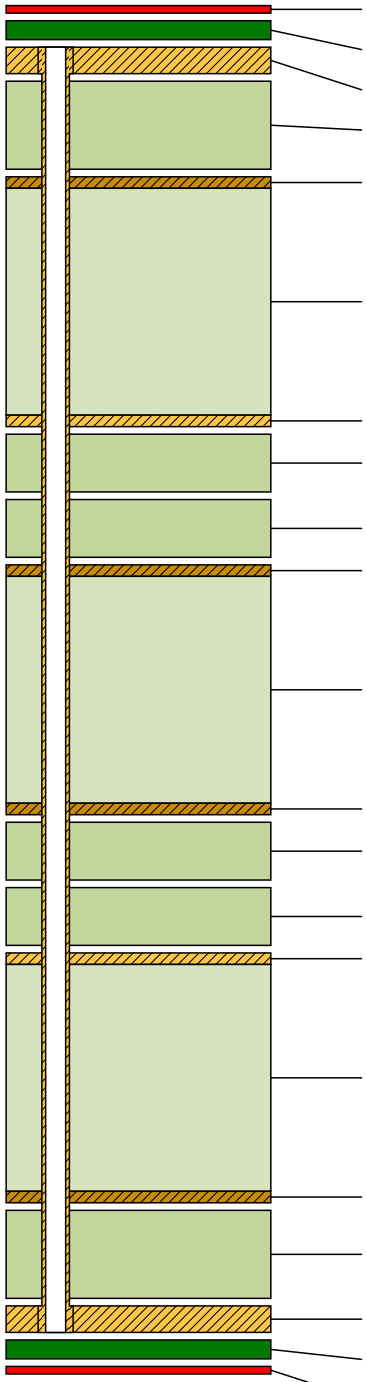
Title: CAN Bus			
Project: SoM-STM32F4.PrjPcb	Size: A3	Designed By: Silard Gal	
Date: 8/18/2023	Revision: 1.0	https://www.silardgal.com	contact@silardgal.com

Board to Board Connection



Title	Connector
Project	SoM-STM32F4.PrjPcb
Size	A3
Date	8/18/2023
Revision	1.0
Designed By	Silard Gal https://www.silardgal.com contact@silardgal.com

Layer Stack Legend

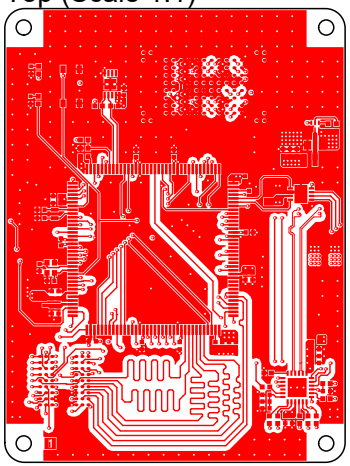


Material	Layer	Thickness	Dielectric Material	Type	Gerber
	Top Overlay			Legend	GTO
Surface Material	Top Solder	0.03mm	Solder Resist	Solder Mask	GTS
CF-004	**Top**	**0.04mm**		**Signal**	**GTL**
Prepreg		*0.12mm*	*PP-006*	*Dielectric*	
CF-004	**GND1**	**0.02mm**		**Internal Plane**	**GP1**
Core		*0.30mm*	*PP-006*	*Dielectric*	
CF-004	**Signal 1**	**0.02mm**		**Signal**	**G1**
Prepreg		*0.08mm*	*PP-006*	*Dielectric*	
Prepreg		*0.08mm*	*PP-006*	*Dielectric*	
CF-004	**Power**	**0.02mm**		**Internal Plane**	**GP2**
Core		*0.30mm*	*FR-4*	*Dielectric*	
CF-004	**GND3**	**0.02mm**		**Internal Plane**	**GP3**
Prepreg		*0.08mm*	*PP-006*	*Dielectric*	
Prepreg		*0.08mm*	*PP-006*	*Dielectric*	
CF-004	**Signal 2**	**0.02mm**		**Signal**	**G2**
Core		*0.30mm*	*PP-006*	*Dielectric*	
CF-004	**GND4**	**0.02mm**		**Internal Plane**	**GP4**
Prepreg		*0.12mm*	*PP-006*	*Dielectric*	
CF-004	**Bottom**	**0.04mm**		**Signal**	**GBL**
Surface Material	Bottom Solder	0.03mm	Solder Resist	Solder Mask	GBS
	Bottom Overlay			Legend	GBO

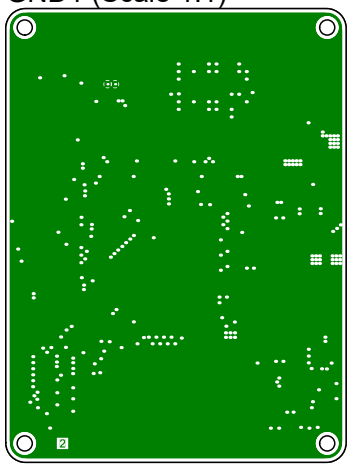
Total thickness: 1.65mm

We are using JLC08161H-2116 stackup

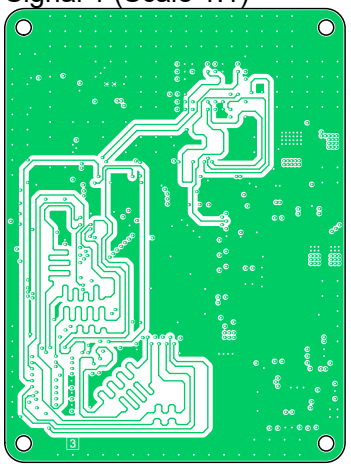
Top (Scale 1:1)



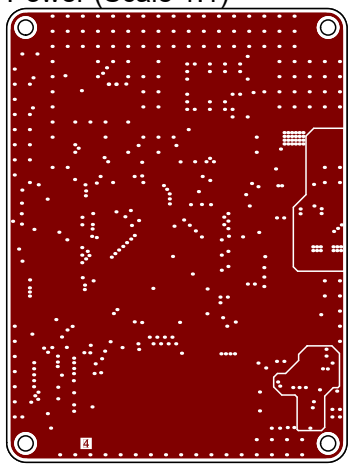
GND1 (Scale 1:1)



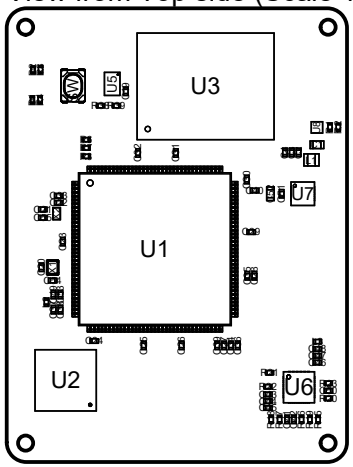
Signal 1 (Scale 1:1)



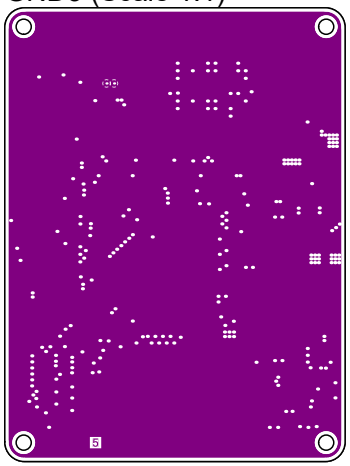
Power (Scale 1:1)



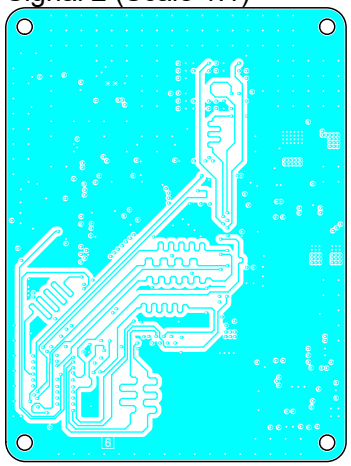
View from Top side (Scale 1:1)



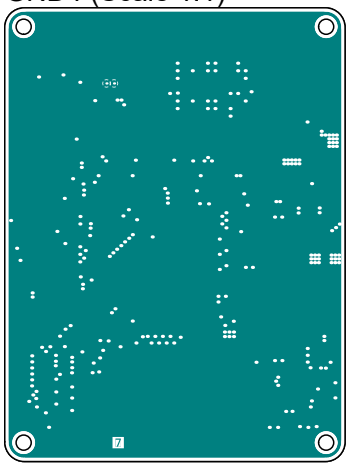
GND3 (Scale 1:1)



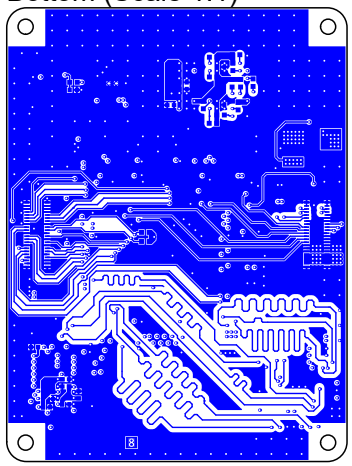
Signal 2 (Scale 1:1)



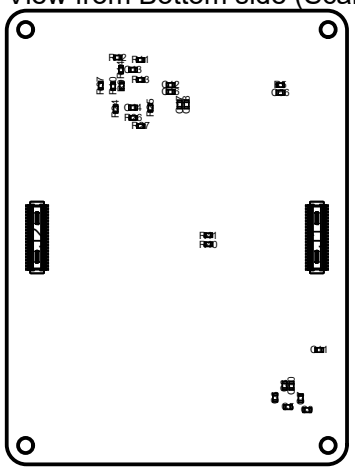
GND4 (Scale 1:1)



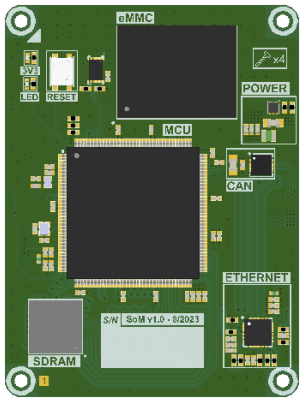
Bottom (Scale 1:1)



View from Bottom side (Scale 1:1)



Realistic View



Realistic View