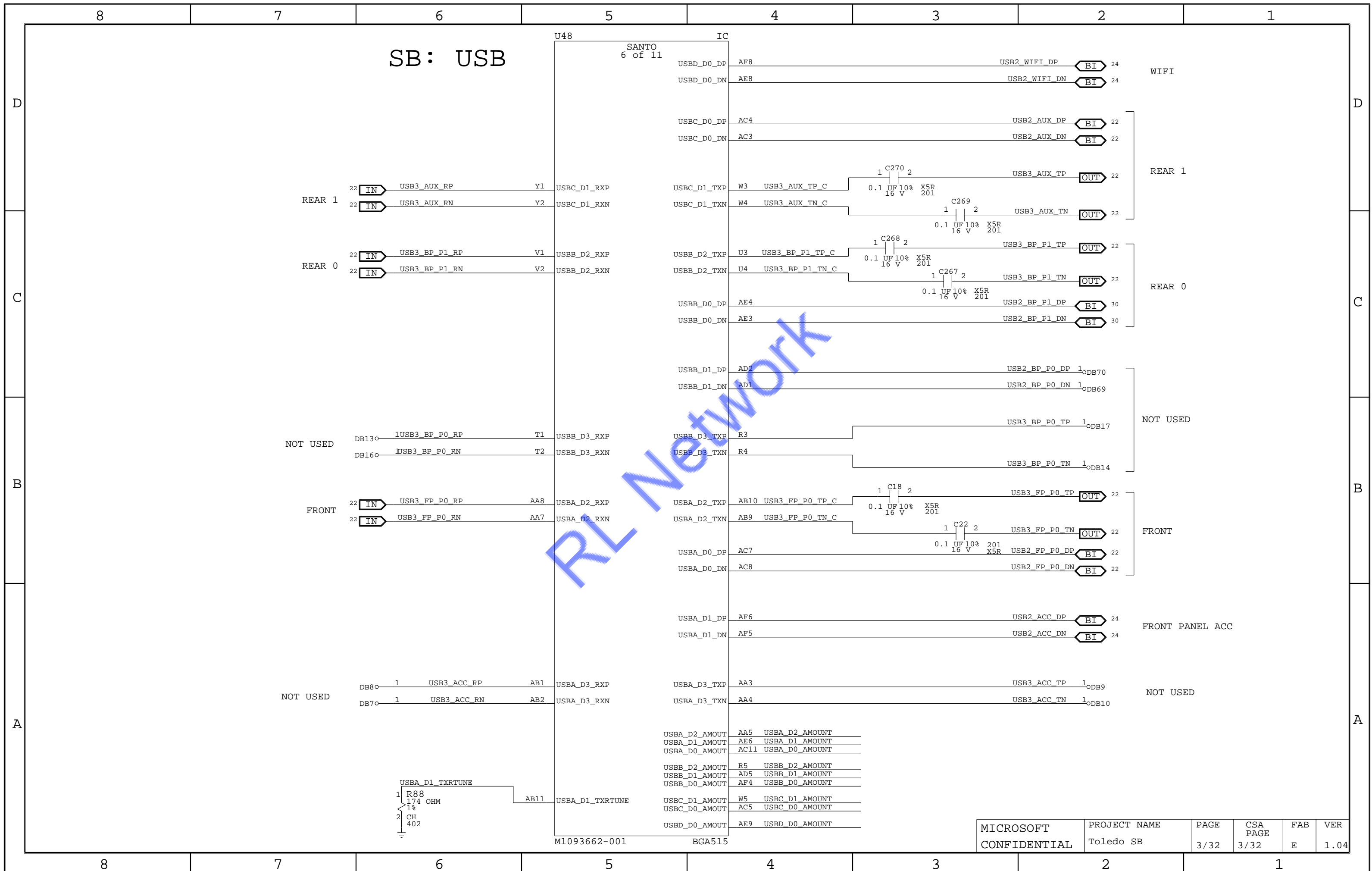
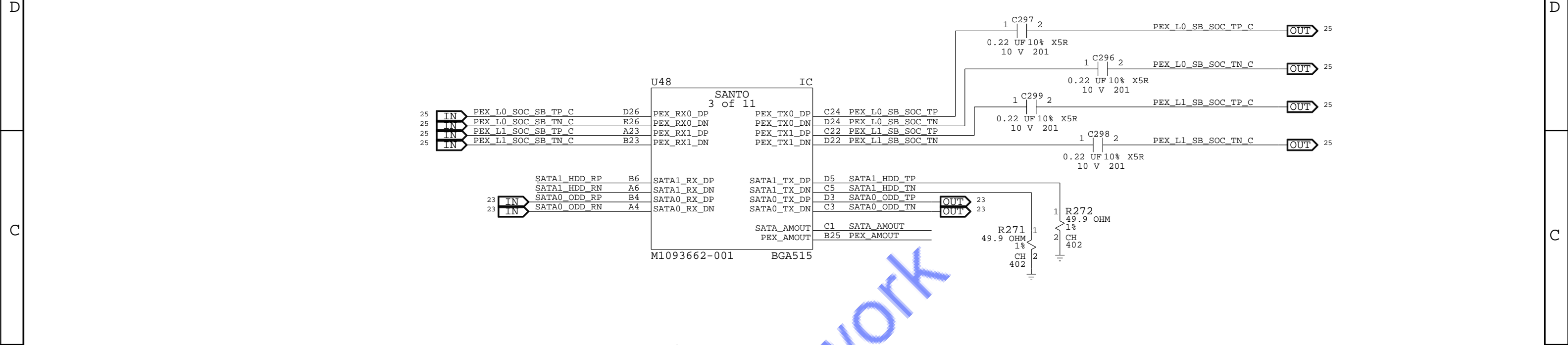
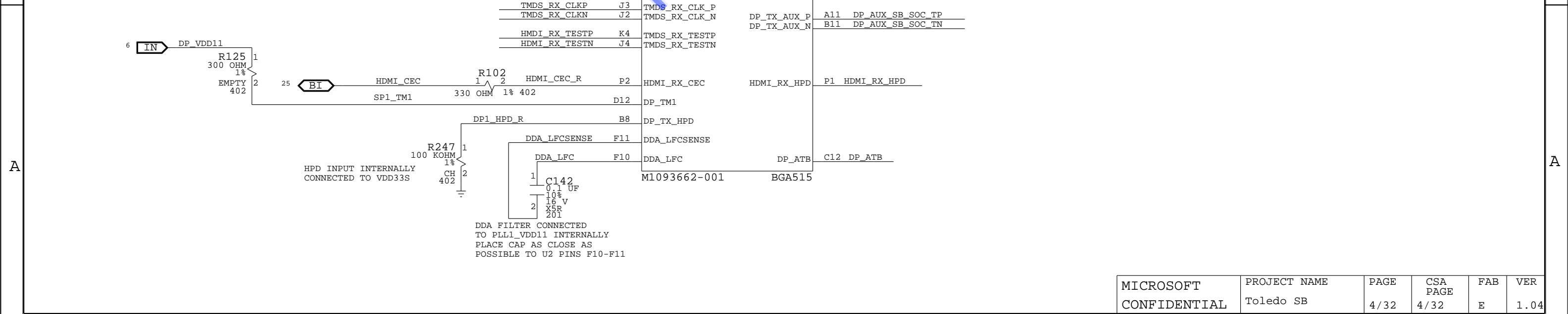


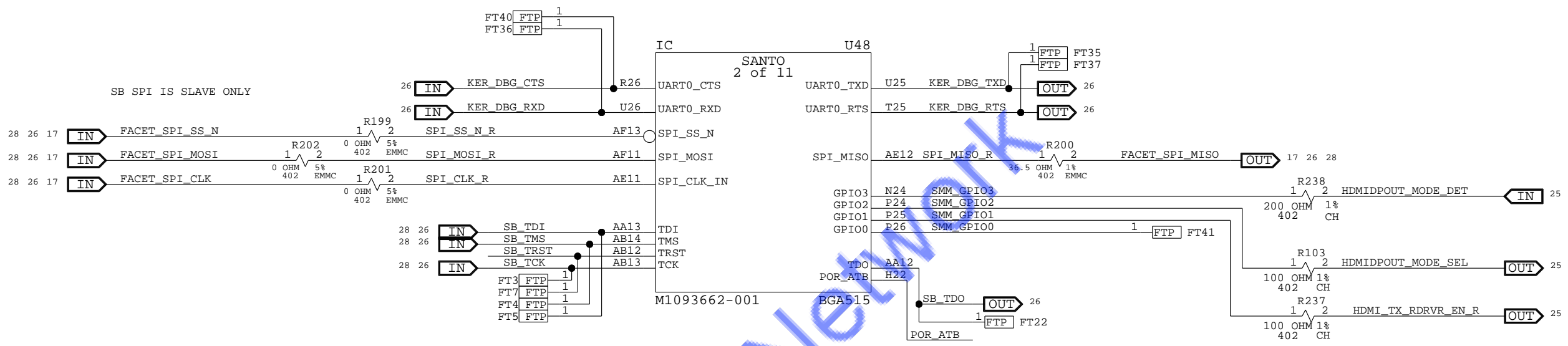
8		7		6		5		4		3		2		1													
D	PAGE	CONTENTS													Toledo SB				D								
															FAB E												
															REV 1.04												
	1	TABLE OF CONTENTS																									
	2	SB: SMC																									
	3	SB: USB																									
	4	SB: PCIEX, SATA, VIDEO																									
	5	SB: SMM UART, SPI, JTAG, GPIO																									
	6	SB: POWER																									
	7	SB: POWER VSS																									
C	8	SB: DECOUPLING																									
	9	SB: CLOCKS, STRAPPING, POR																									
	10	VREG: V_12P0_SB INPUT & FILTER																									
	11	VREG: STANDBY GATES																									
	12	VREG: V_3P3STBY_SB																									
	13	VREG: V_1P1STBY, V_1P8STBY																									
	14	VREG: V_SB1P1, V_SB1P8																									
	15	VREG: V_5P0																									
	16	MEMORY: EMMC (LEGACY)																									
	17	MEMORY: SPI FLASH																									
B	18	AUDIO: BASIC																									
	19	AUDIO: PREMIUM (SE/LE)																									
	20	ETHERNET NIC																									
	21	CONN: RJ45, NEXUS BOARD																									
	22	CONN: USB (FRONT, REAR)																									
	23	CONN: ODD SATA & PWR																									
	24	CONN: FAN, ACCY & NTKW RADIOS																									
	25	CONN: B2B SB/SOC																									
	26	DEBUG: FACET, I2C, V_BAT																									
	27	DEBUG: FTDI BRIDGE																									
A	28	DEBUG: FTDI BUFFERS, FTDI PWR																									
	29	DEBUG: BUTTONS, HDT																									
	30	DEBUG: TEST POINTS, LEDS, USB2 SWITCH																									
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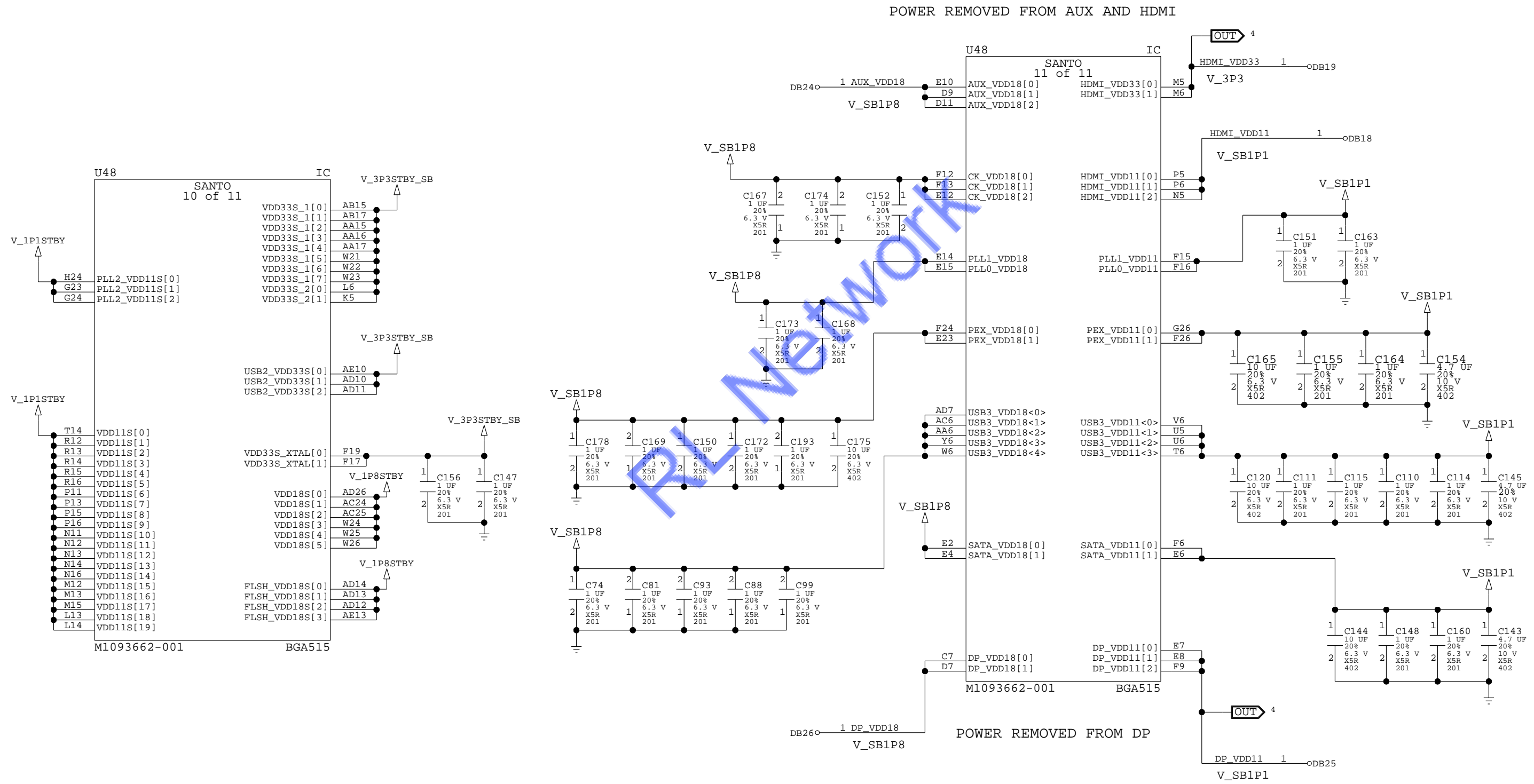
8	7	6	5	4	3	2	1
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[illegible]

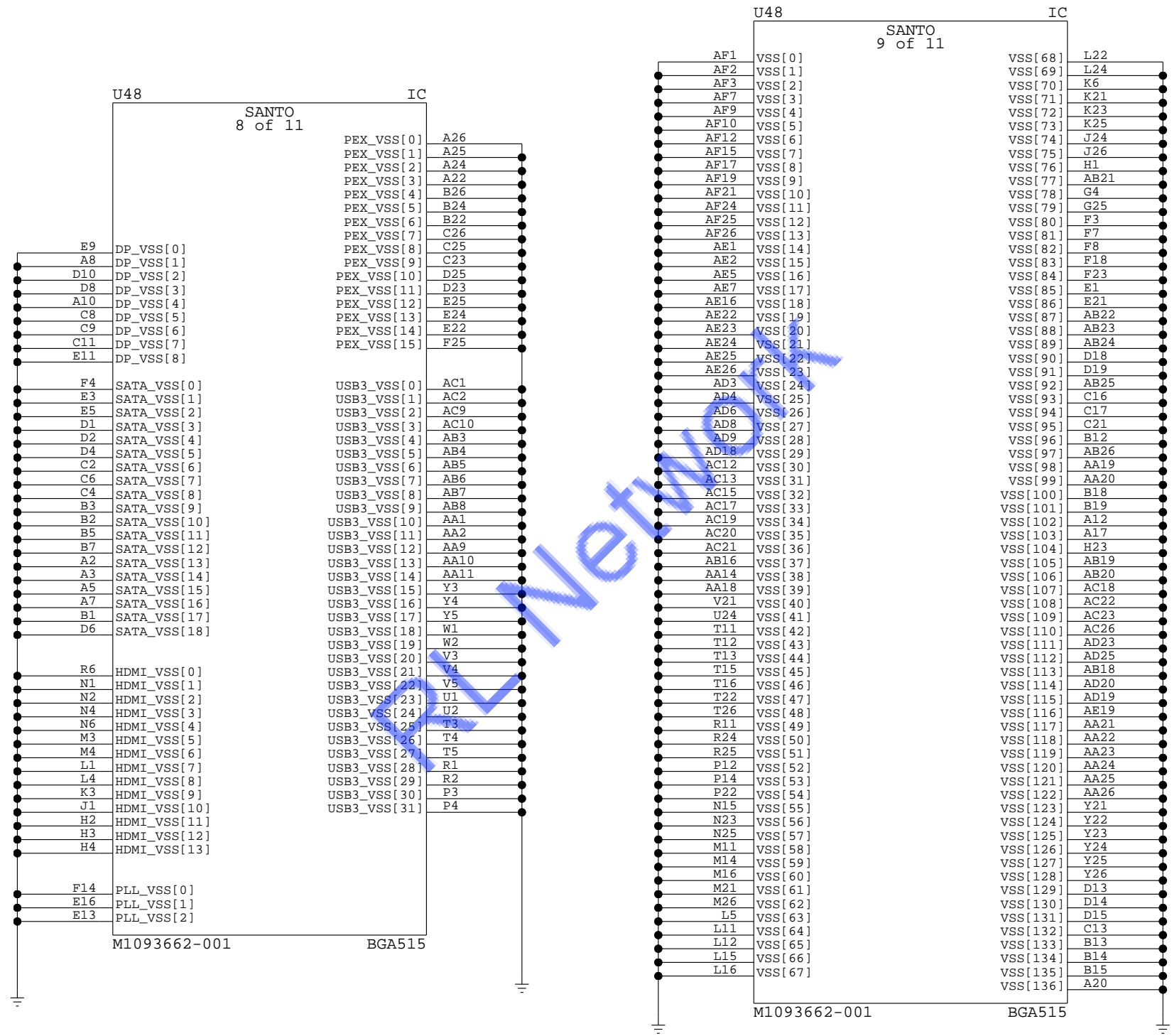
SB: SMM UART, SPI, JTAG, GPIO



SB: POWER



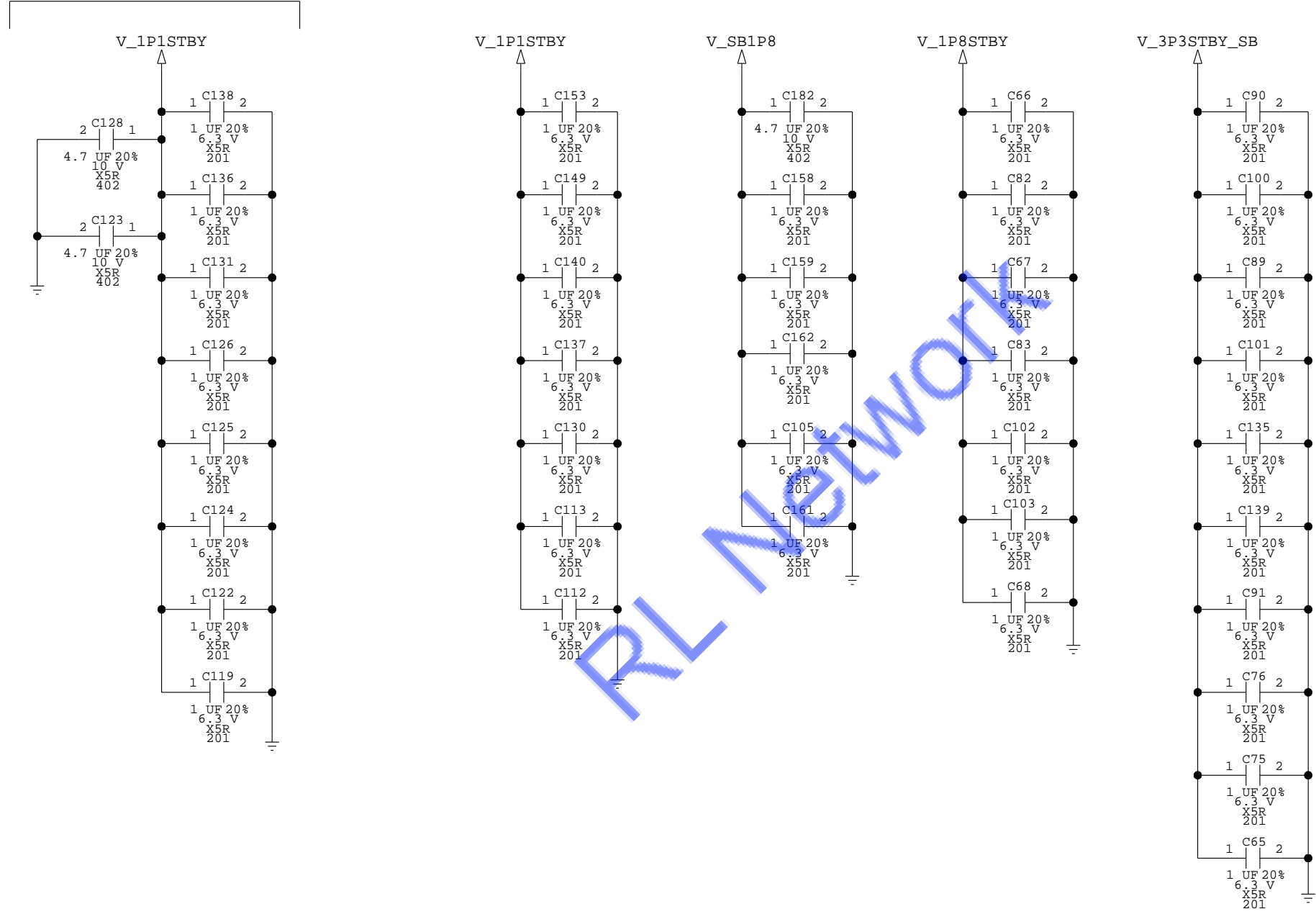
SB: POWER VSS



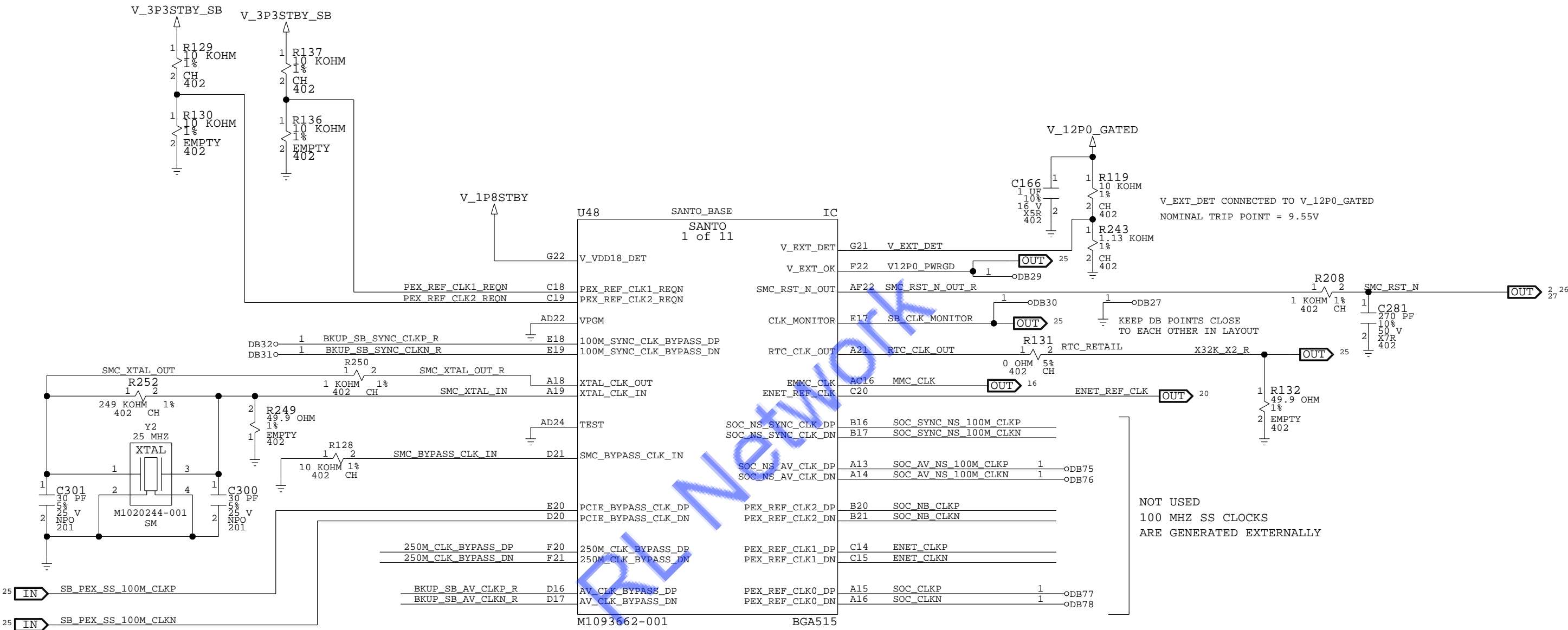
NOTE: ALL V_SB1P1 DECOUPLING
IS SHOWN ON POWER PAGE 6

SB: DECOUPLING

THIS GROUP OF CAPS MUST BE
REMOVED TO SUPPORT SOCKET USE



SB: CLOCKS, STRAPPING, POR



NOT USED
100 MHZ SS CLOCKS
ARE GENERATED EXTERNALLY

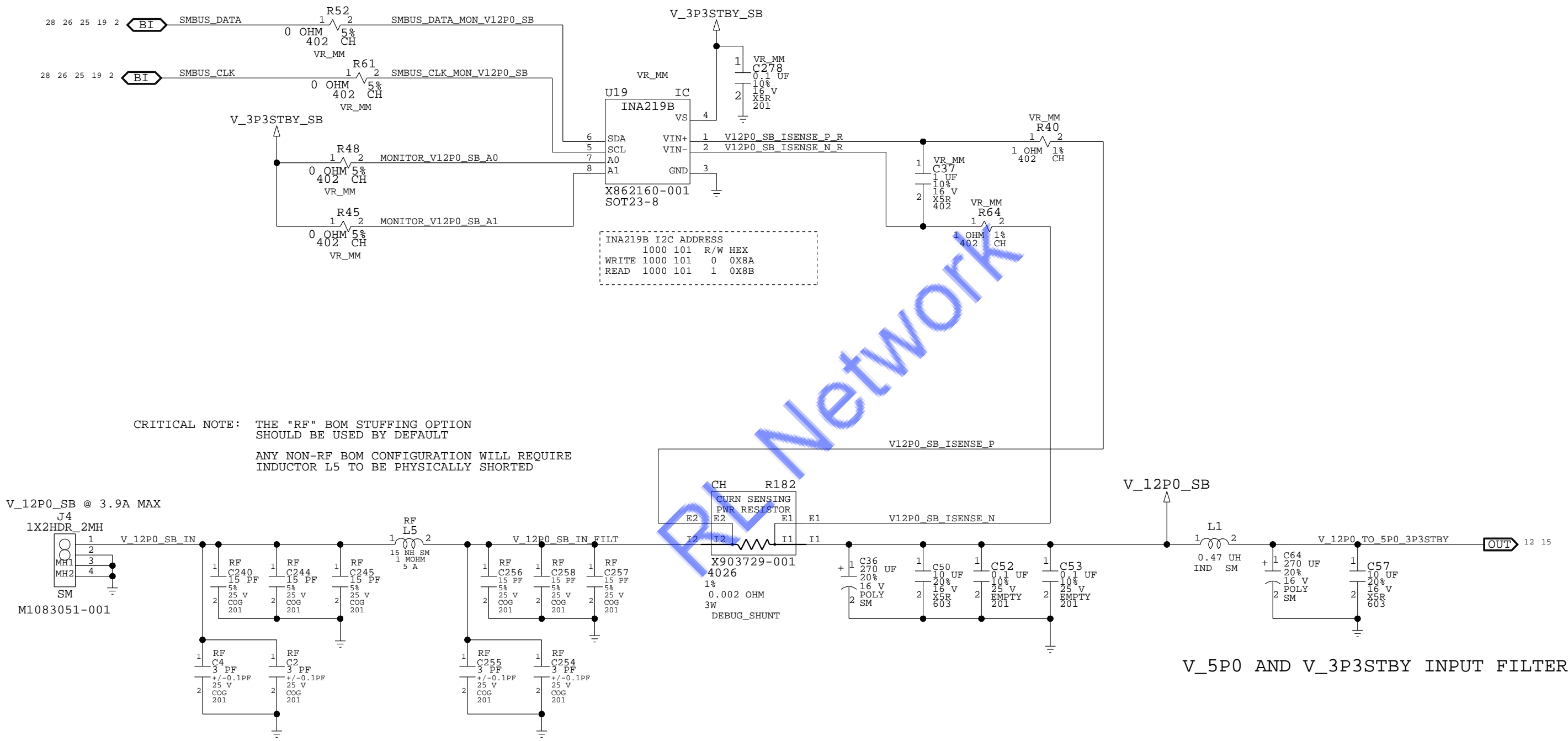
UNUSED 100 MHZ OUTPUTS
MUST BE TURNED OFF BY SMC

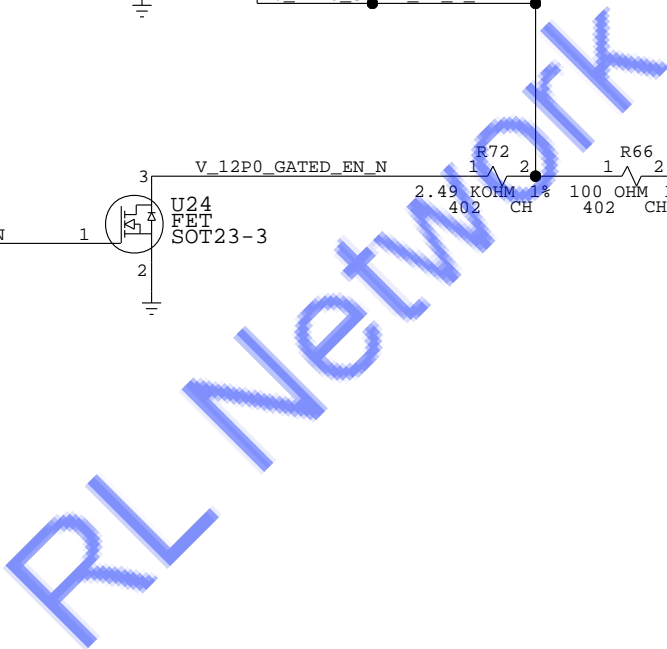
NOTE: USE ALTERNATE FOOTPRINT SKT_BGA515_27X27X2P4_1MM_CO
IN LAYOUT TO SUPPORT USE OF SOUTHBRIDGE SOCKET.

MXXXXXXX-001	MATL	REF DES	DESCR.	BOM PROPERTY
M1093668-001	IC	U48	SANTO, IC, SM, BGA-515, SB, PRODUCTION	SANTO_RETAIL
M1093662-001	IC	U48	SANTO, IC, SM, BGA-515, SB, DEV MODE, STD	SANTO_DEV
M1093668-001	EMPTY	U48	SANTO, NO STUFF	SANTO_EMPTY

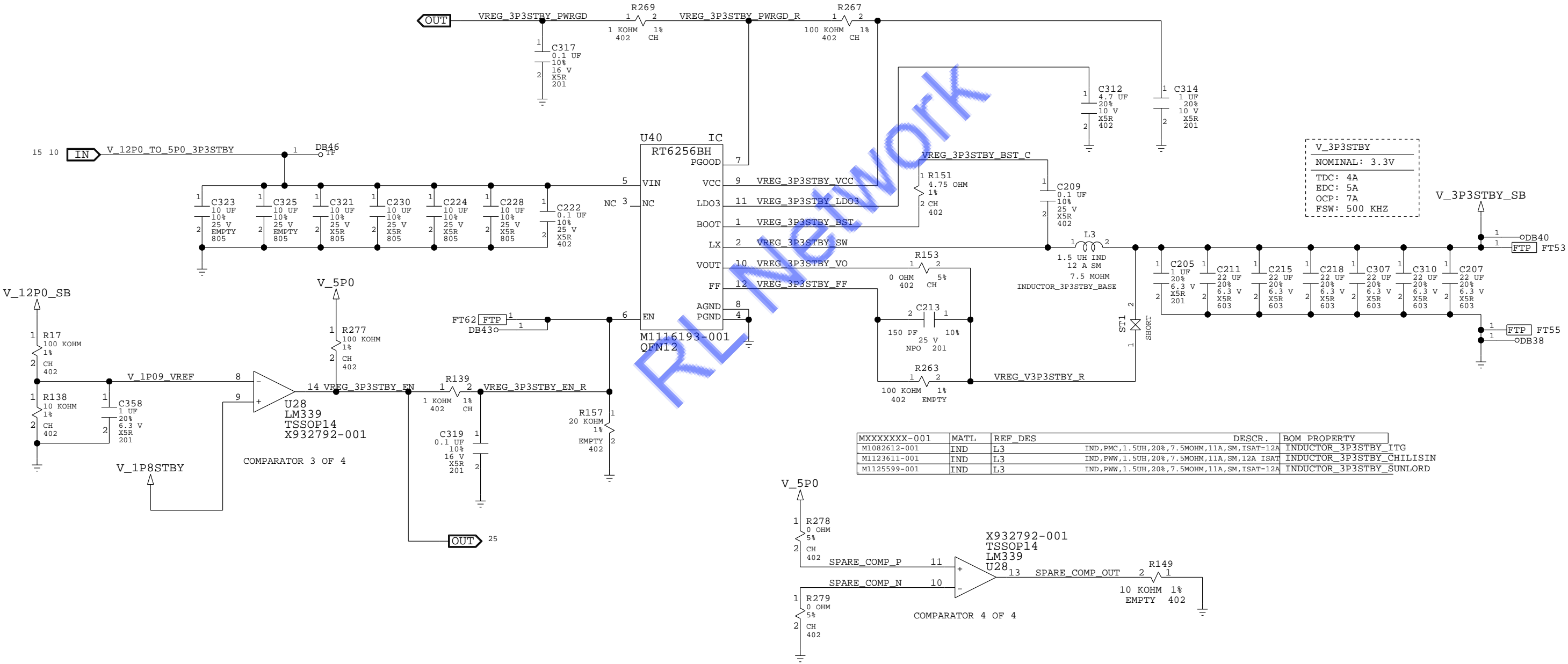
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VREG: V_12P0_SB INPUT & FILTER



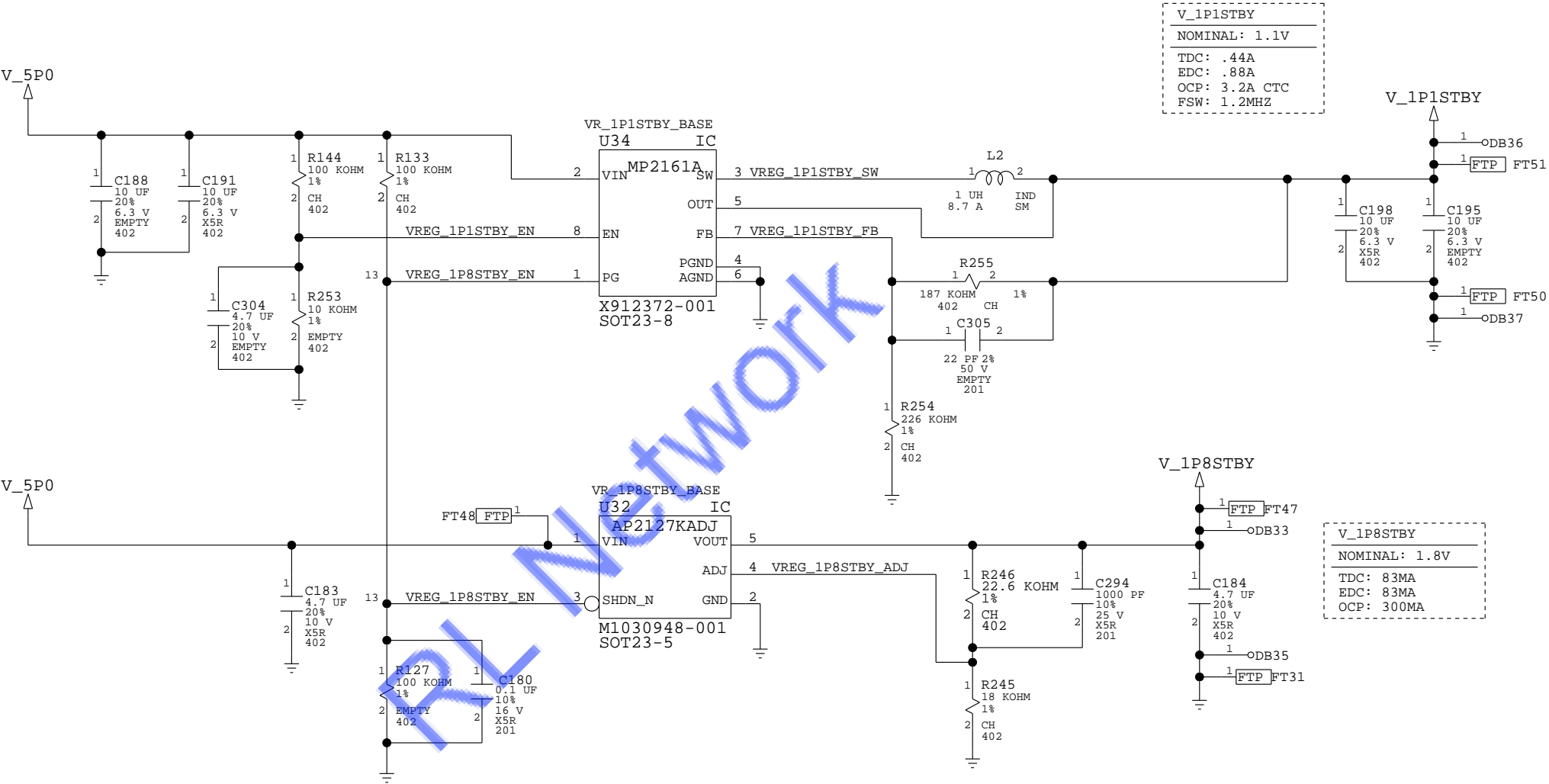


VREG: V_3P3STBY_SB



XXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
M1082612-001	IND	L3	IND,PMC,1.5UH,20%,7.5MOHM,11A,SM,ISAT=12A	INDUCTOR_3P3STBY_ITG
M1123611-001	IND	L3	IND,PWM,1.5UH,20%,7.5MOHM,11A,SM,12A ISAT	INDUCTOR_3P3STBY_CHILISIN
M1125599-001	IND	L3	IND,PWM,1.5UH,20%,7.5MOHM,11A,SM,ISAT=12A	INDUCTOR_3P3STBY_SUNLORD

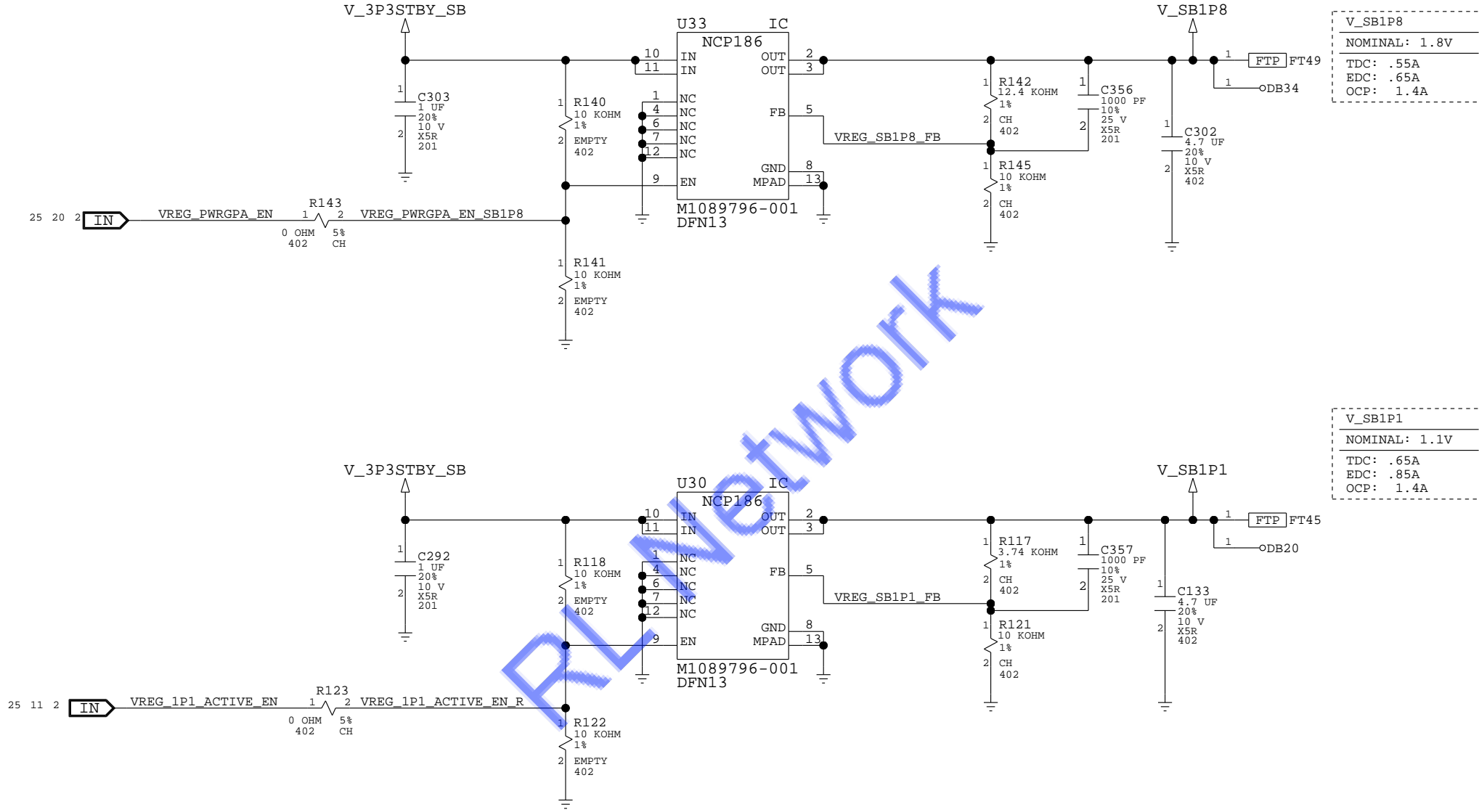
VREG: V_1P1STBY, V_1P8STBY



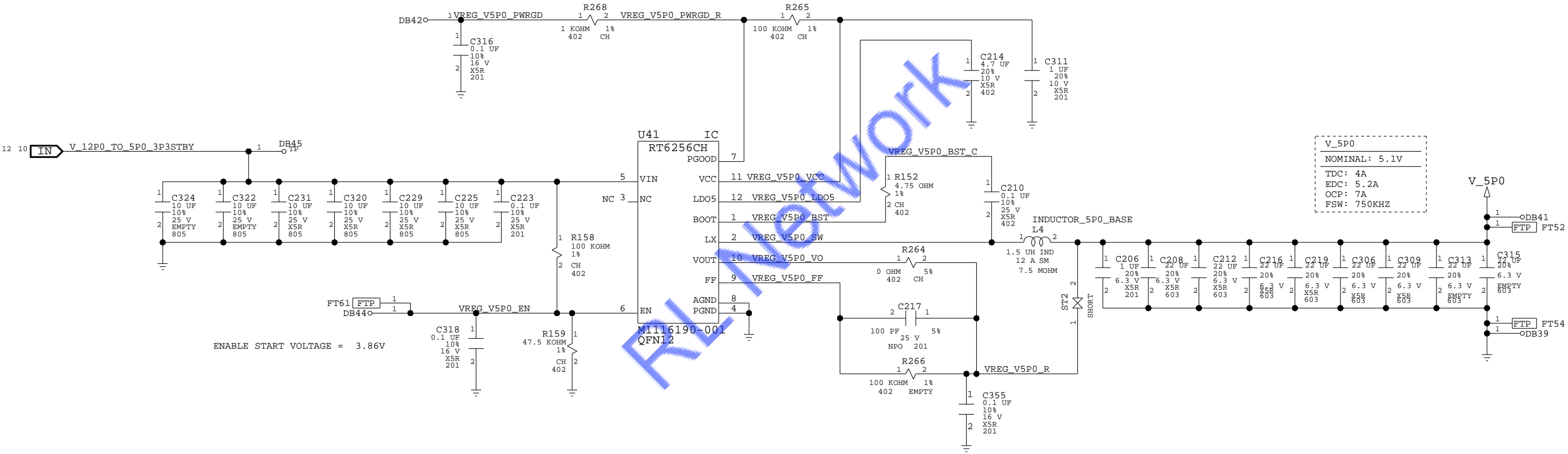
MXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
X912372-001	IC	U34	IC-PWR,VREG,SM,TSOT23-8,STEP DOWN,6V,2A,MP2161A	VR_1P1STBY_MPS
M1018565-001	IC	U34	IC-PWR,VREG,SM,TSOT23-8,STEP DOWN,6V,2A,RICHTEK,RT5785C QUAL	VR_1P1STBY_RICHTEK

MXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
M1030948-001	IC	U32	IC-PWR,LDO,300MA,ADJ V,SM,SOT-23-5,0.8 T	VR_1P8STBY_DIODES
M1125074-001	IC	U32	IC-PWR,LDO,SM,TSOT23-5,LDO,ADJ,300MA,RT9078	VR_1P8STBY_RICHTEK

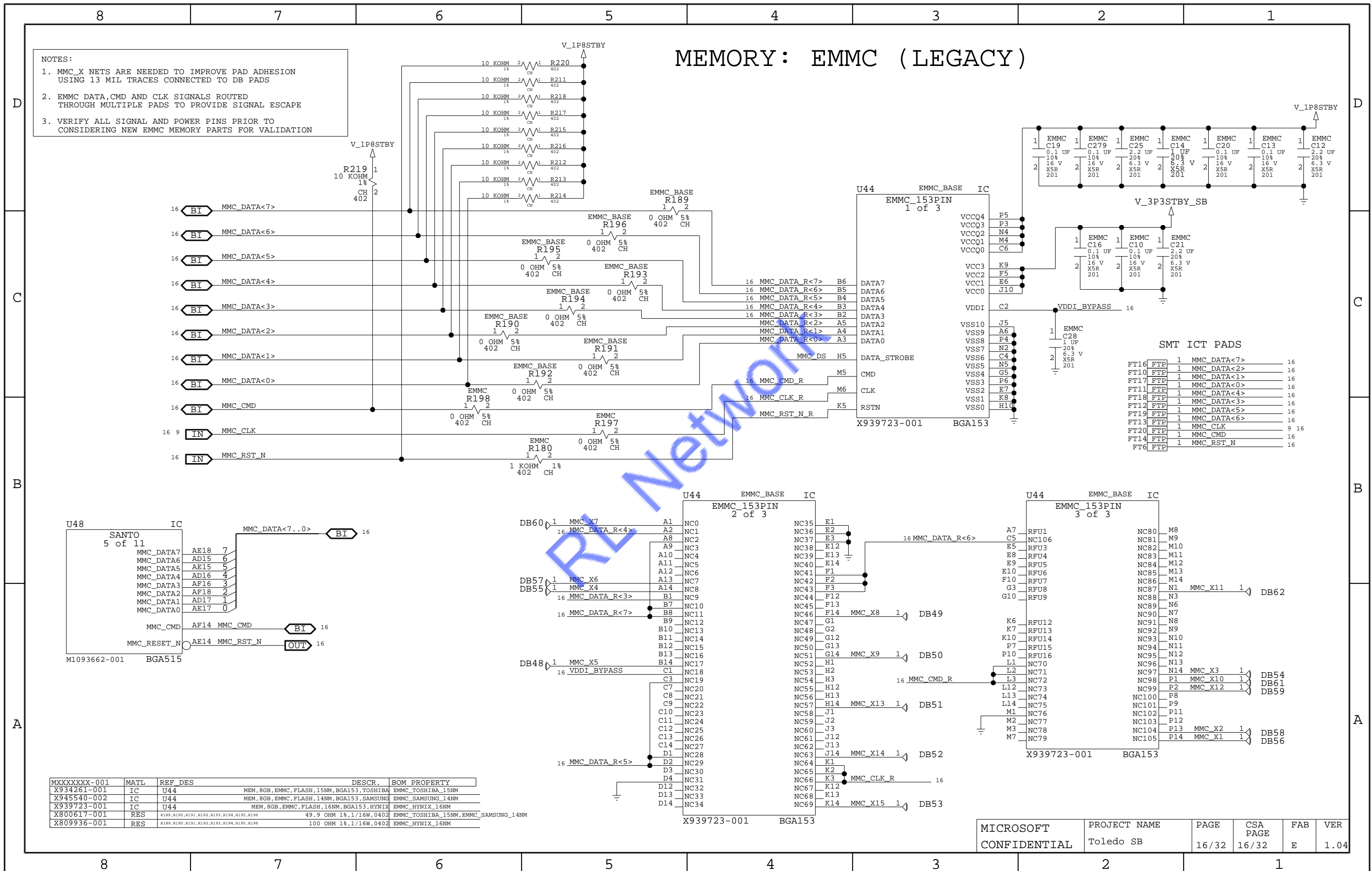
VREG: V_SB1P1, V_SB1P8



VREG: V_5P0

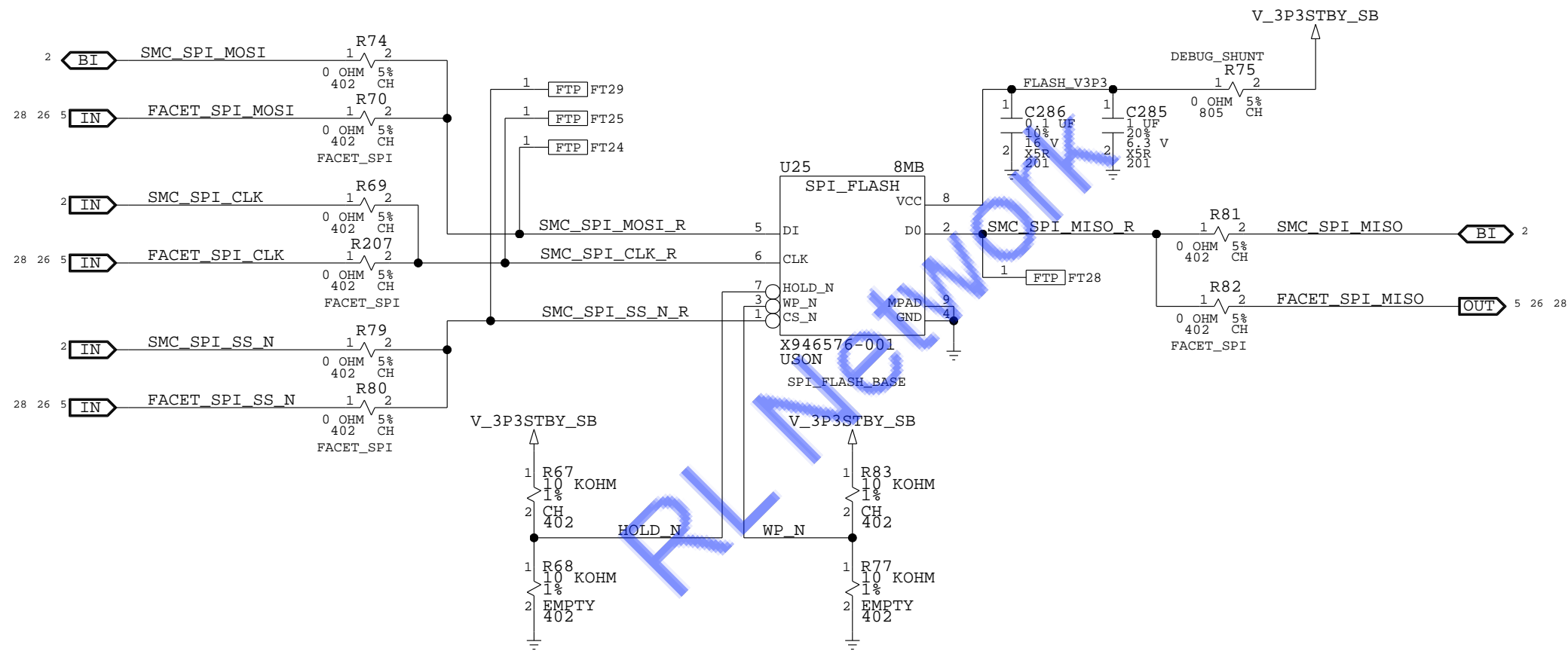


MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
M1082612-001	IND	L4	IND,PMC,1.5UH,20%,7.5MOHM,11A,SM,ISAT=12A	INDUCTOR_5P0_ITG
M1123611-001	IND	L4	IND,PWW,1.5UH,20%,7.5MOHM,11A,SM,ISAT=12A	INDUCTOR_5P0_CHILISIN
M1125599-001	IND	L4	IND,PWW,1.5UH,20%,7.5MOHM,11A,SM,ISAT=12A	INDUCTOR_5P0_SUNLORD



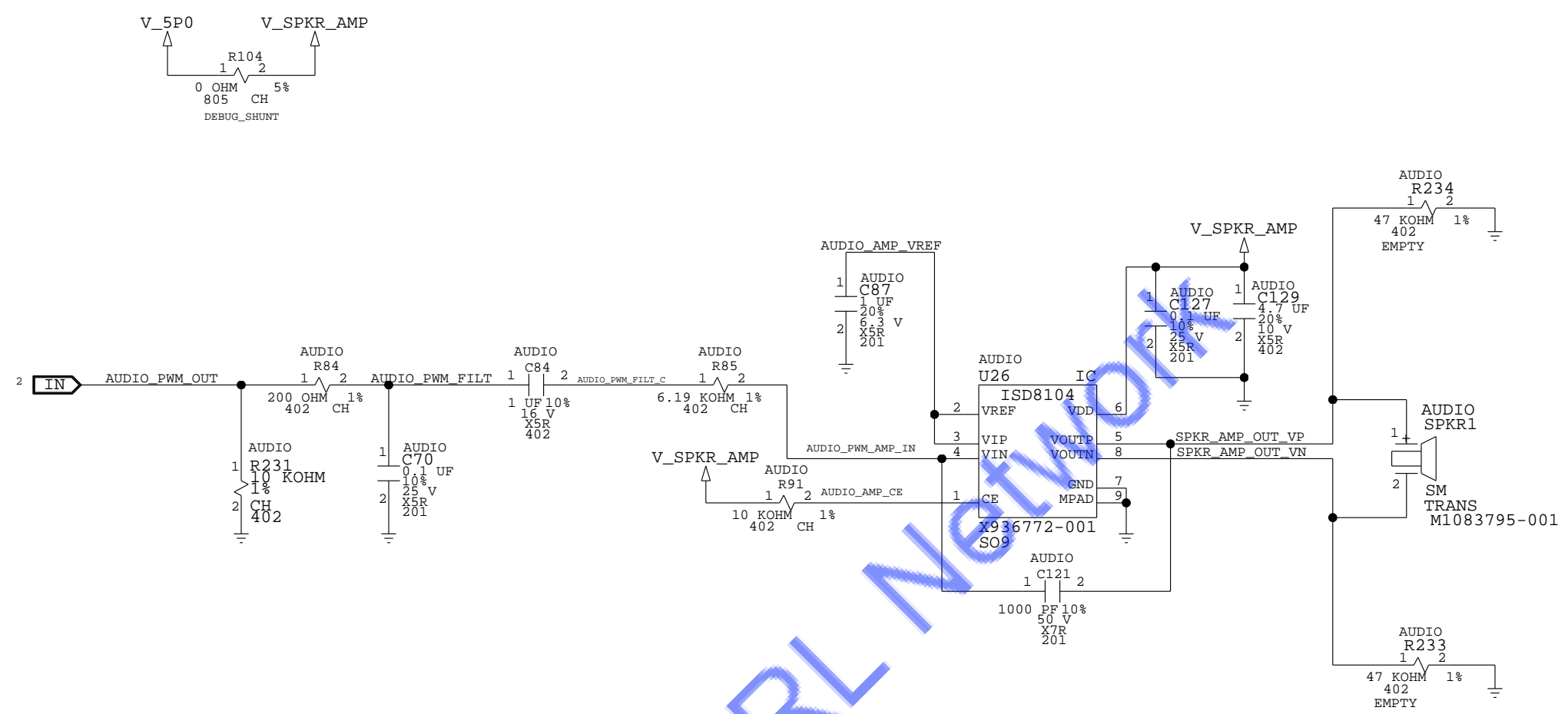
MEMORY: SPI FLASH

NOTE: SPI FLASH IS CONNECTED TO BOTH SMC AND FACET MASTERS

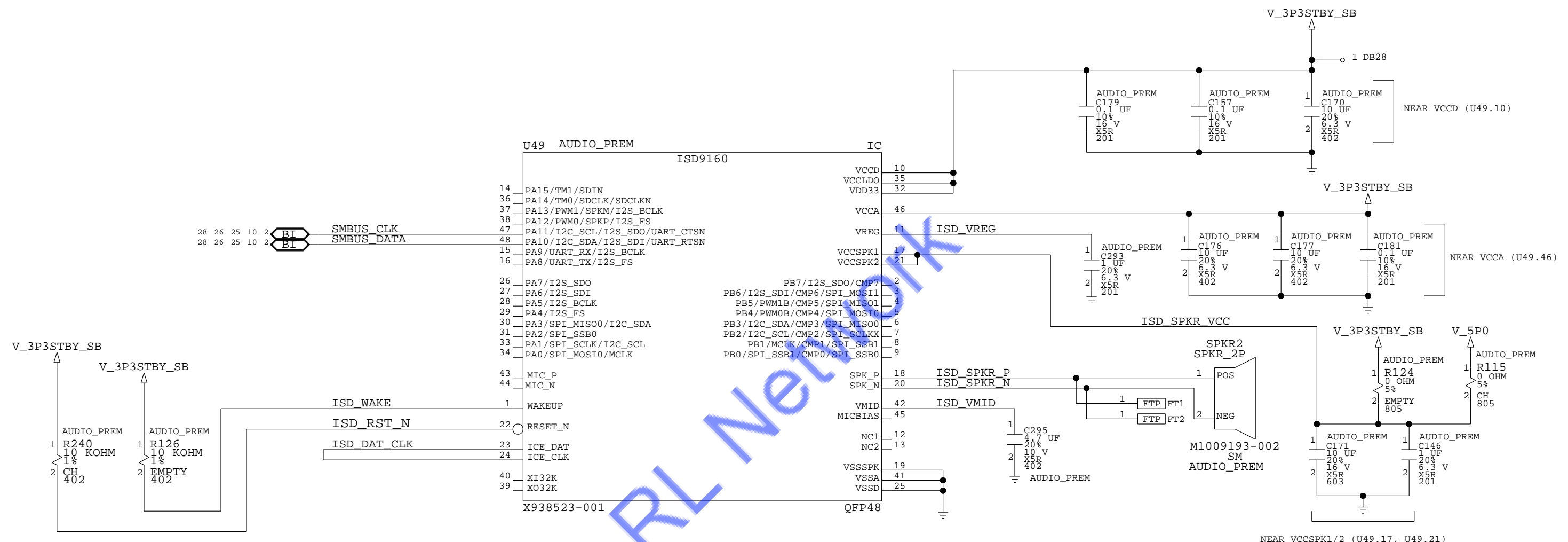


XXXXXXXX-001	MATL	REF DES	DESCR.	BOM PROPERTY
X946576-001	IC	U25	WINBOND, SPI_FLASH, 8GBIT, USON	SPI_FLASH_WINBOND
M1090771-001	IC	U25	MACRONIX, SPI_FLASH, 8GBIT, USON	SPI_FLASH_MACRONIX

AUDIO: BASIC



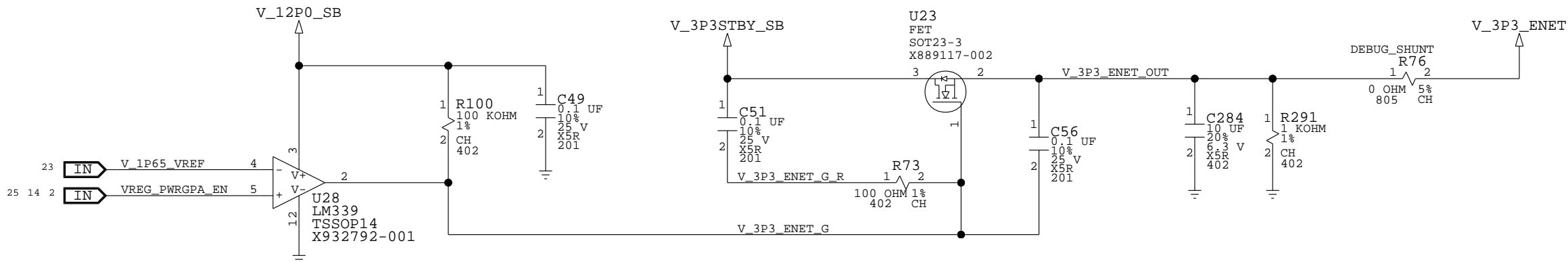
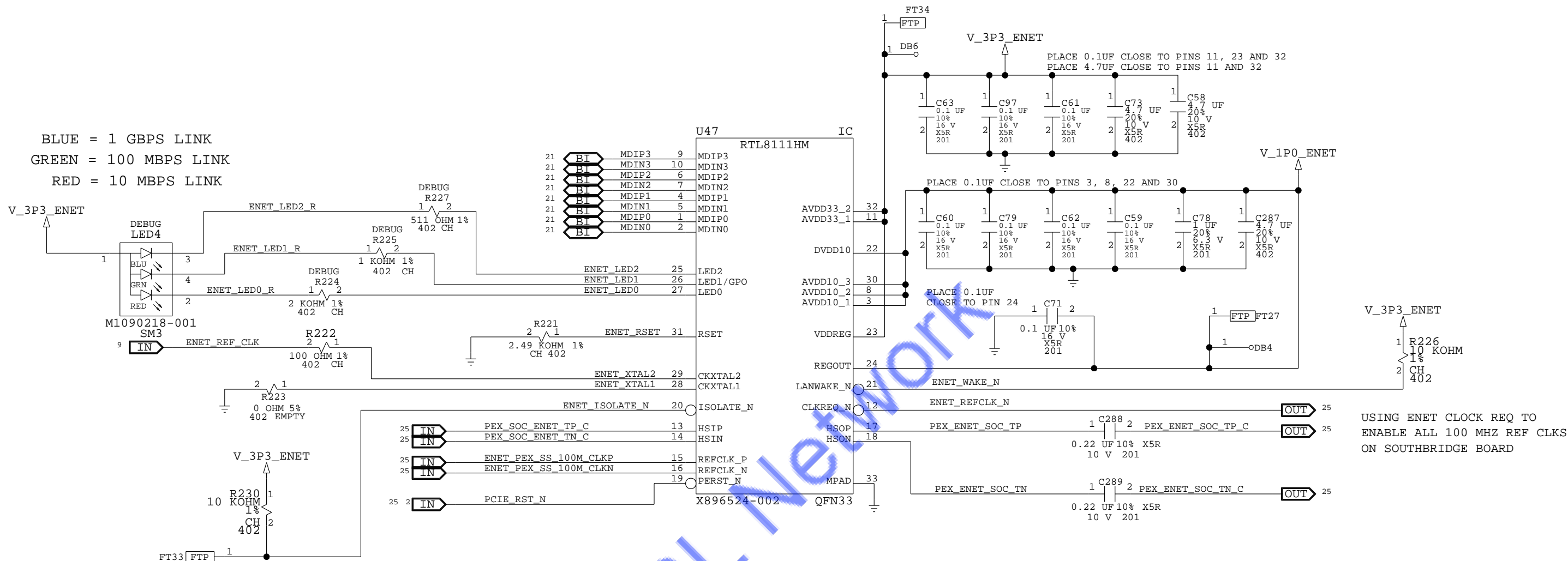
AUDIO: PREMIUM (SE/LE)



ISD9160FIMS05 - REMOVED CAP TOUCH FUNCTIONALITY

ETHERNET NIC

BLUE = 1 GBPS LINK
GREEN = 100 MBPS LINK
RED = 10 MBPS LINK



COMPARATOR 1 OF 4:
V_3P3_ENET GATE DRIVE

ETHERNET POWER ENABLE CIRCUIT MUST
MEET THE FOLLOWING TIMING REQUIREMENTS
RISE TIME: > 0.5 MS AND < 100 MS
POWER OFF/ON CYCLE TIME: > 50 MS

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8	7	6	5	4	3	2	1
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D

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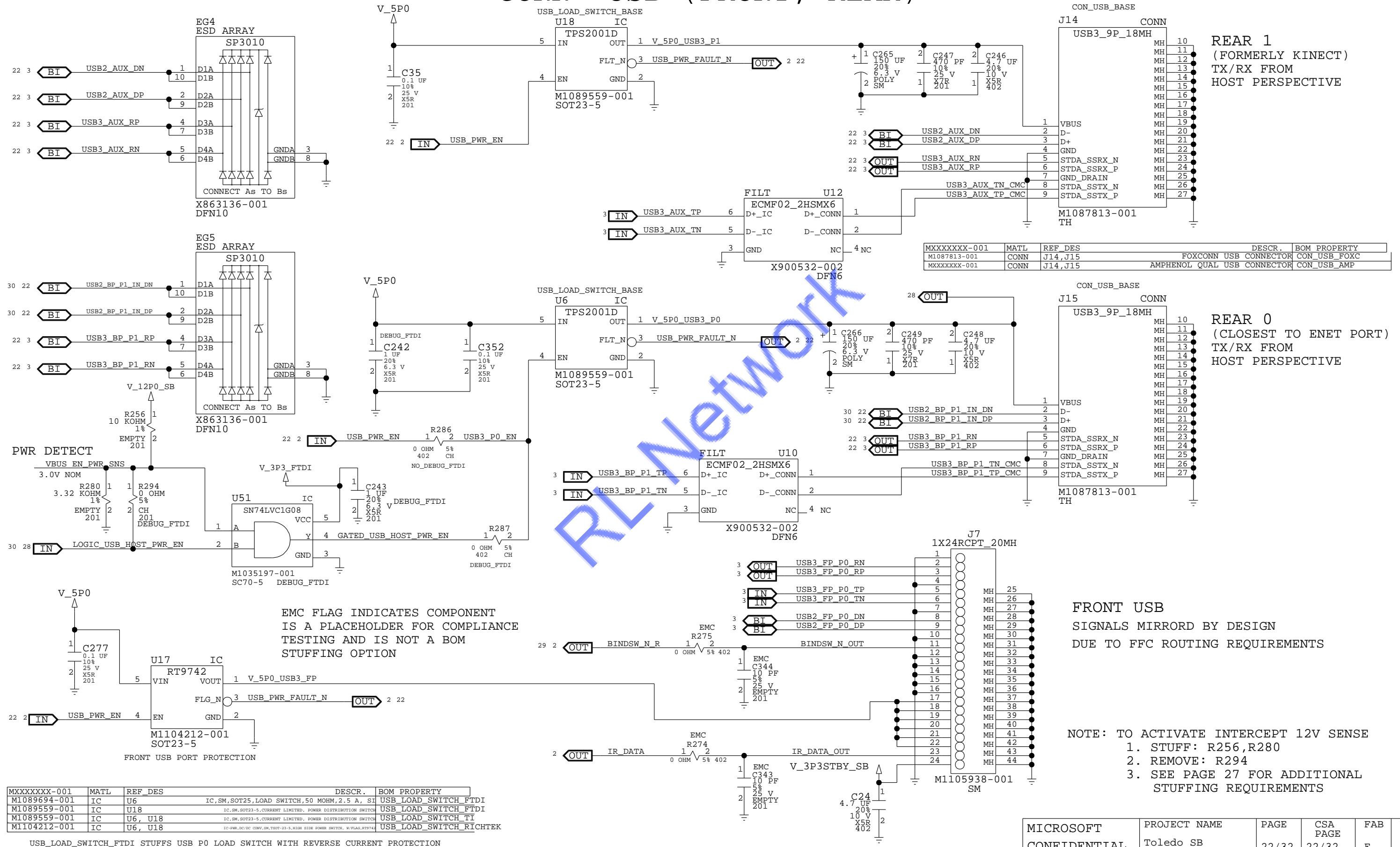
C



A

8	7	6	5	4	3	2	1
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CONN: USB (FRONT, REAR)



FRONT USB
SIGNALS MIRROR'D BY DESIGN
DUE TO FFC ROUTING REQUIREMENTS

NOTE: TO ACTIVATE INTERCEPT 12V SENSE

1. STUFF: R256,R280
2. REMOVE: R294
3. SEE PAGE 27 FOR ADDITIONAL STUFFING REQUIREMENTS

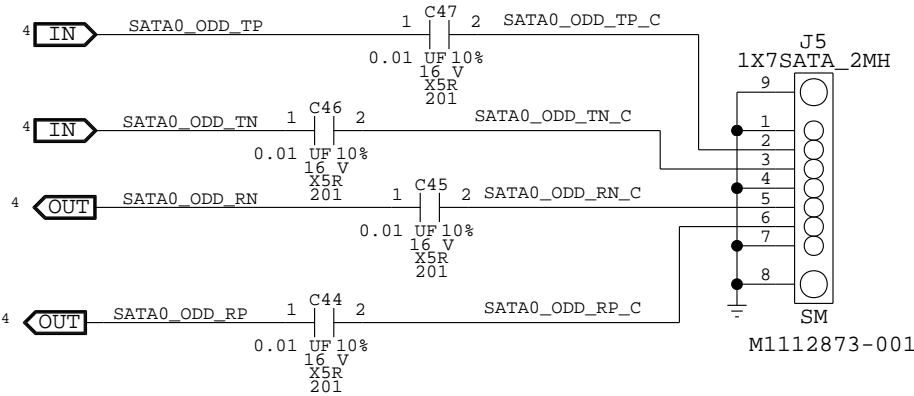
MXXXXXXX-001	MATL	REF DES	DESCR.	BOM PROPERTY
M1089694-001	IC	U6	IC,SM,SOT25,LOAD SWITCH,50 MOHM,2.5 A, SI	USB_LOAD_SWITCH_FTDI
M1089559-001	IC	U18	IC,SM,SOT23-5,CURRENT LIMIT, POWER DISTRIBUTION	USB_LOAD_SWITCH_FTDI
M1089559-001	IC	U6, U18	IC,SM,SOT23-5,CURRENT LIMIT, POWER DISTRIBUTION	USB_LOAD_SWITCH_TI
M1104212-001	IC	U6, U18	IC-PWR,DC/DC CONV,SM,TQFP-23-5,HIGH SIDE POWER SWITCH, 4/FLAG,879742	USB_LOAD_SWITCH_RIGHTK

USB_LOAD_SWITCH_FTDI STUFFS USB P0 LOAD SWITCH WITH REVERSE CURRENT PROTECTION

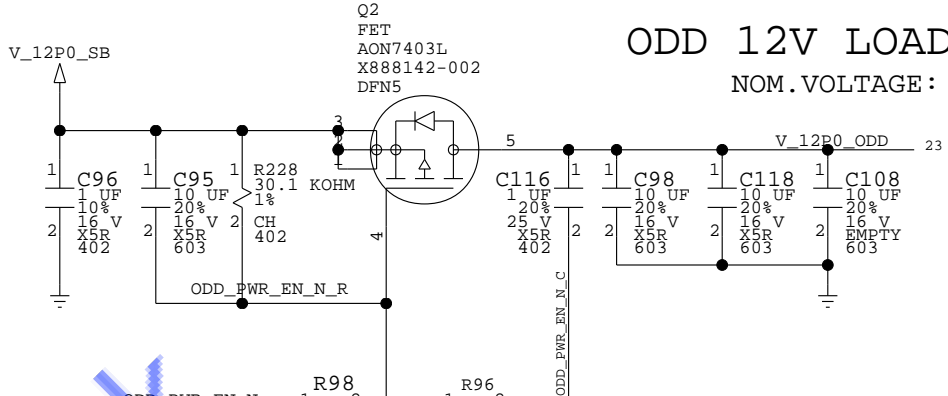
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CONN: ODD SATA & PWR

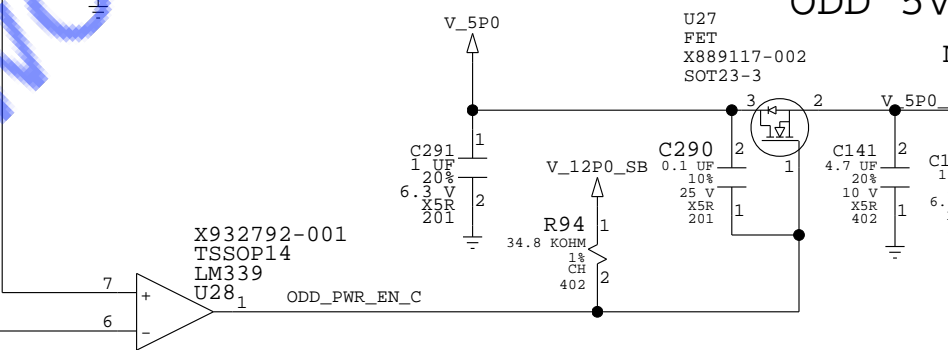
ODD SATA



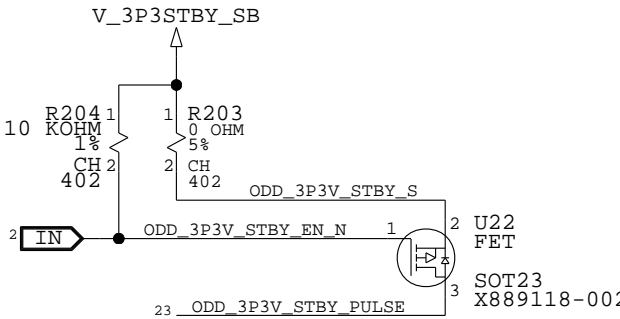
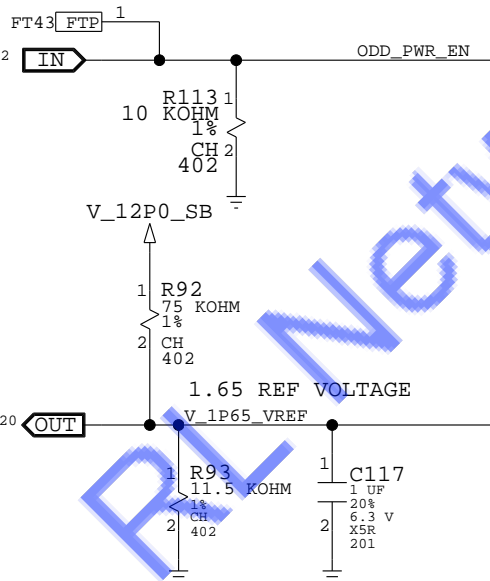
ODD 12V LOAD SWITCH
NOM.VOLTAGE: 12V



ODD 5V LOAD SWITCH
NOM.VOLTAGE: 5.0V



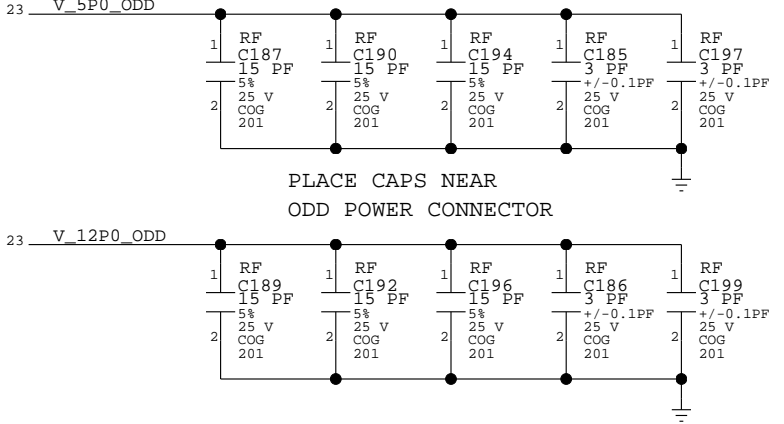
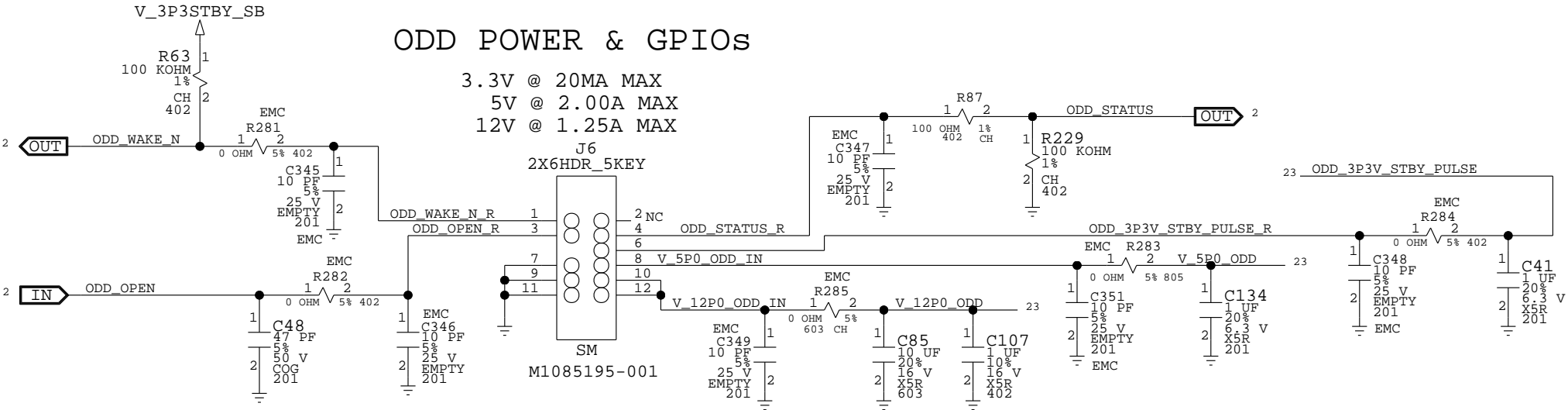
COMPARATOR 2 OF 4:
V_5P0_ODD GATE DRIVE



EMC FLAG INDICATES COMPONENT
IS A PLACEHOLDER FOR COMPLIANCE
TESTING AND IS NOT A BOM
STUFFING OPTION

ODD POWER & GPIOs

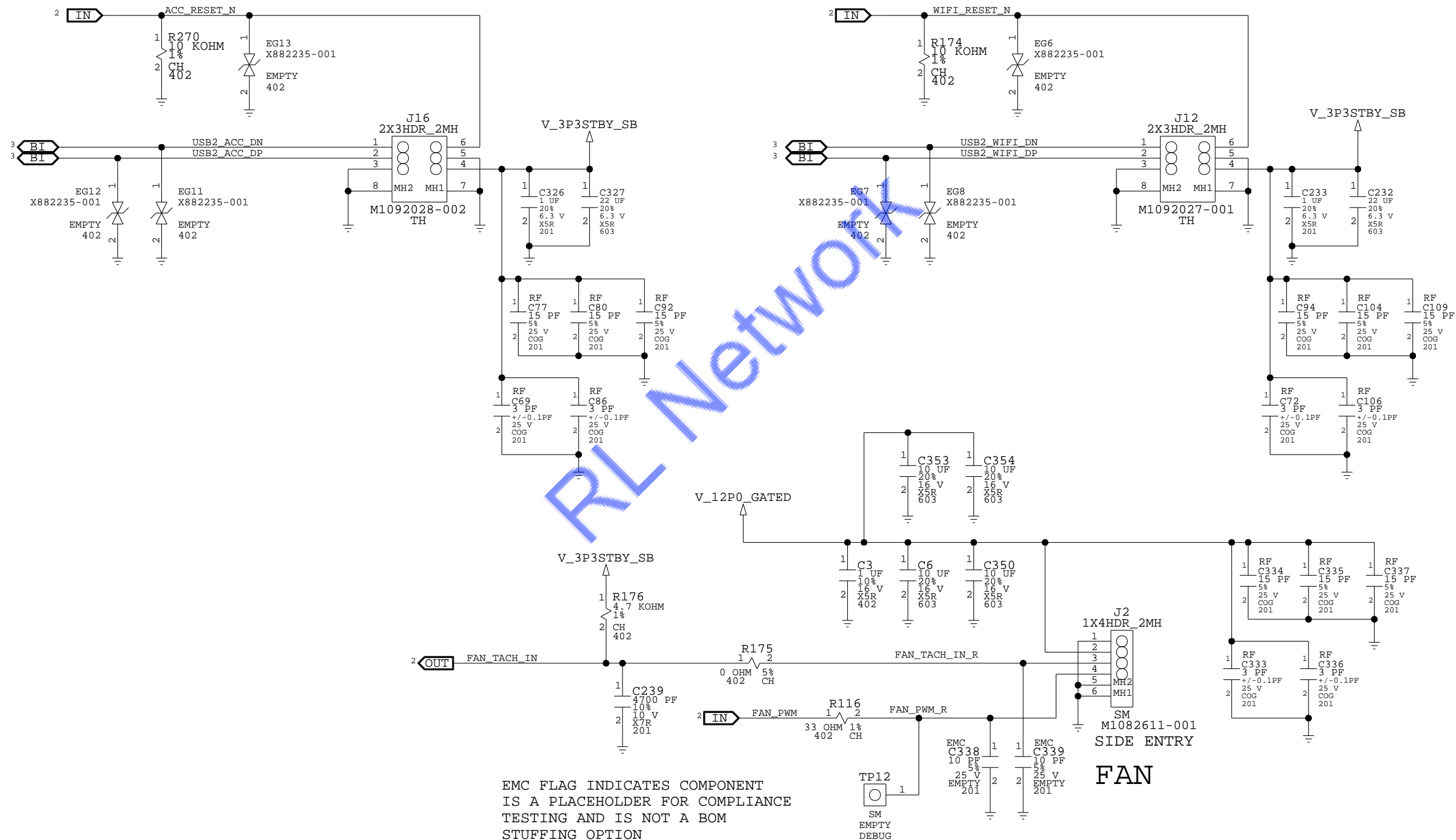
3.3V @ 20MA MAX
5V @ 2.00A MAX
12V @ 1.25A MAX



CONN: FAN, ACCY & NTKW RADIOS

ACCY RADIO

NETWORK RADIO



EMC FLAG INDICATES COMPONENT
IS A PLACEHOLDER FOR COMPLIANCE
TESTING AND IS NOT A BOM
STUFFING OPTION

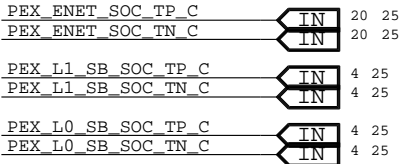
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NOTE: EMPTY RESISTORS ARE
POPULATED ON SOC BOARD

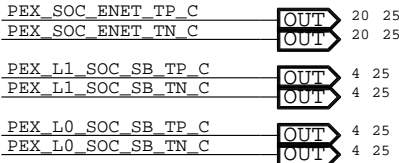
CONN: B2B SB/SOC

25MHZ CLOCK TO SOC

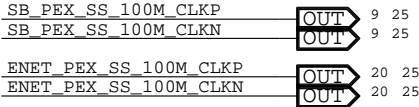
PCIE SOC RX



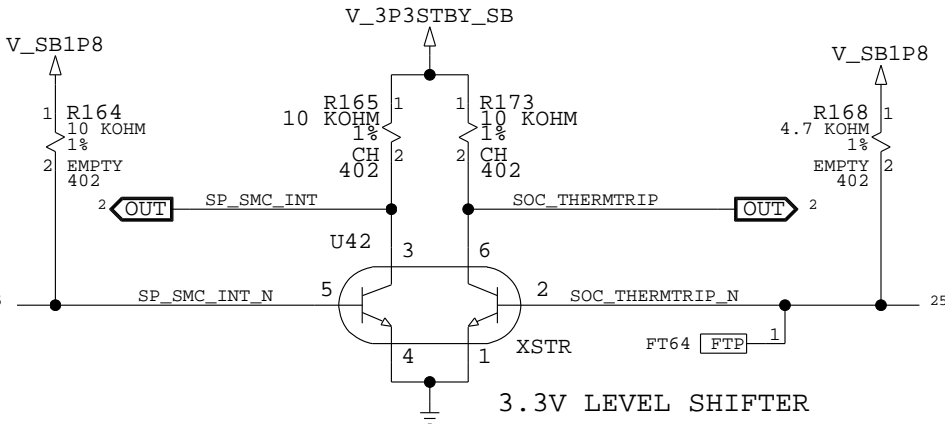
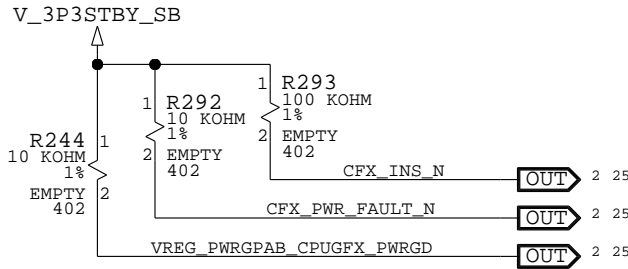
PCIE SOC TX



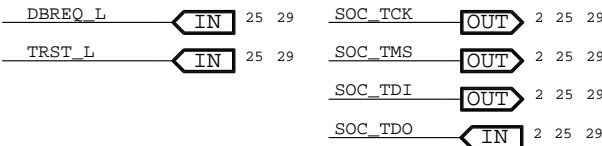
100 MHZ REF CLOCKS FROM SOC



SB SIGNALS FROM SOC

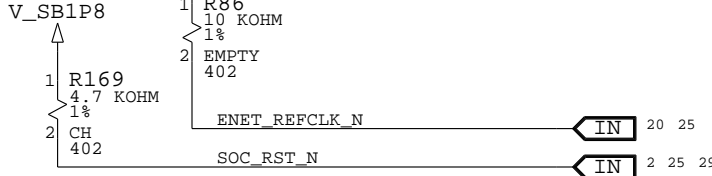


HDT SUPPORT

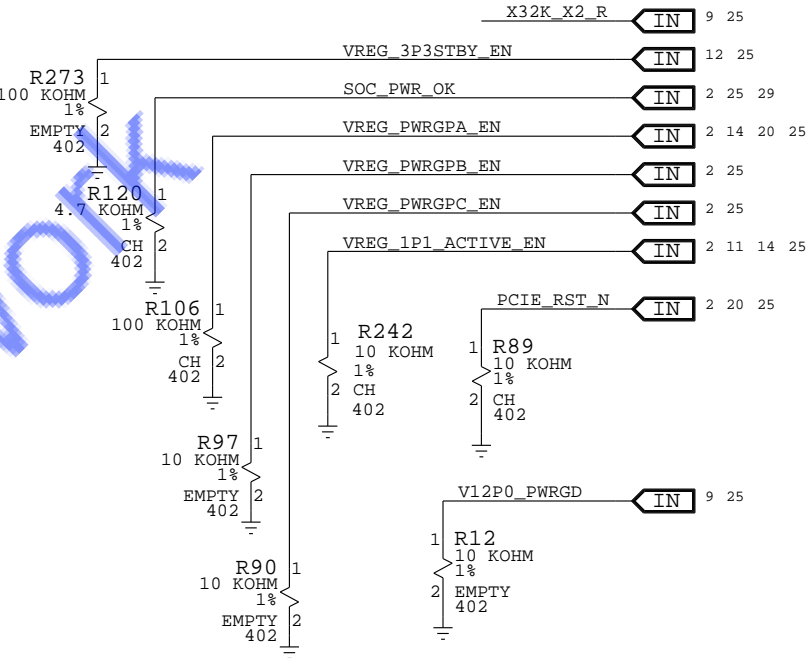


SEE P30 FOR SIGNAL DETAILS

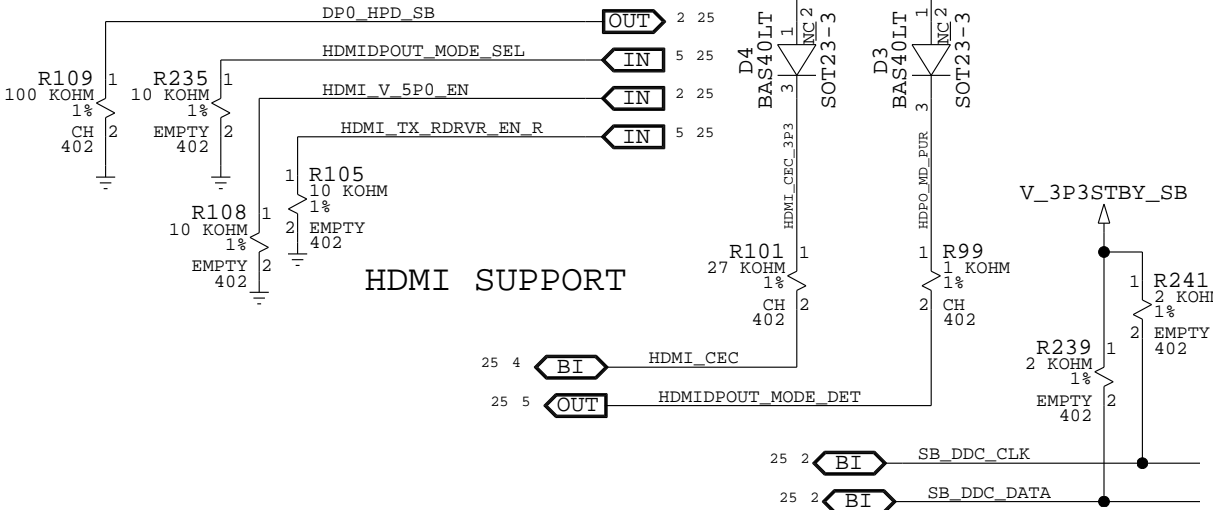
V_3P3_ENET



SB SIGNALS TO SOC

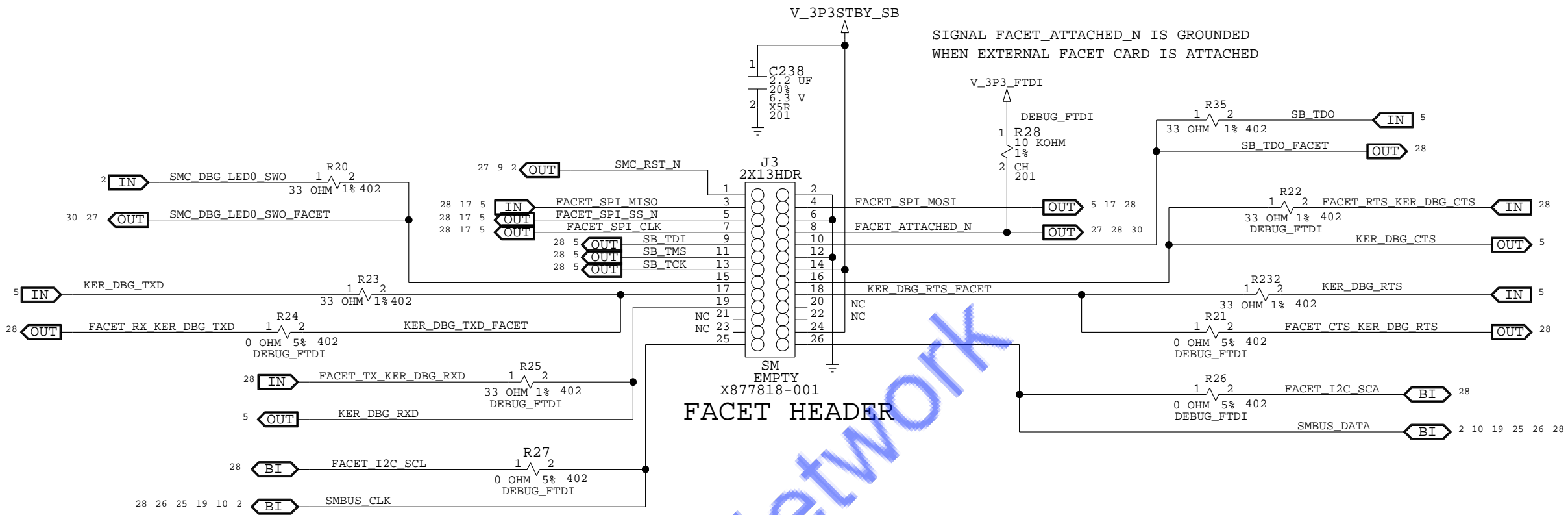


HDMI SUPPORT



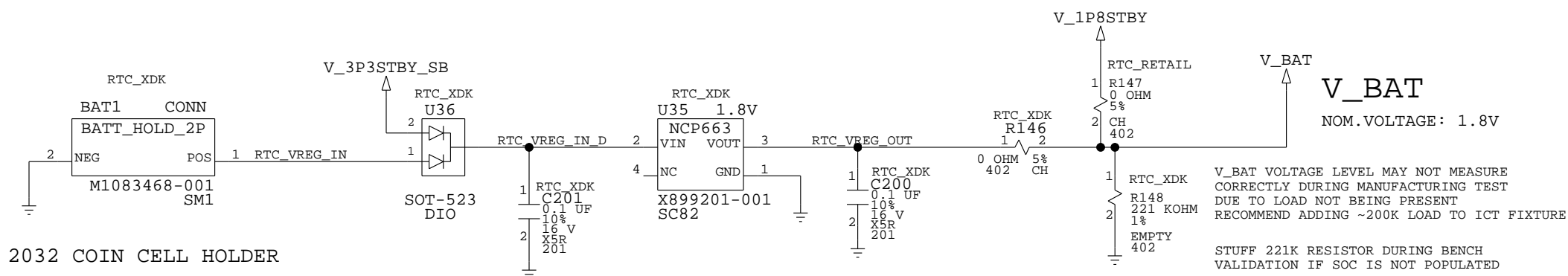
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DEBUG: FACET, I2C, V_BAT



ENSURE SILK SCREEN OUTLINE ACCOMODATES THE AARDVARK 2X5 RECPT

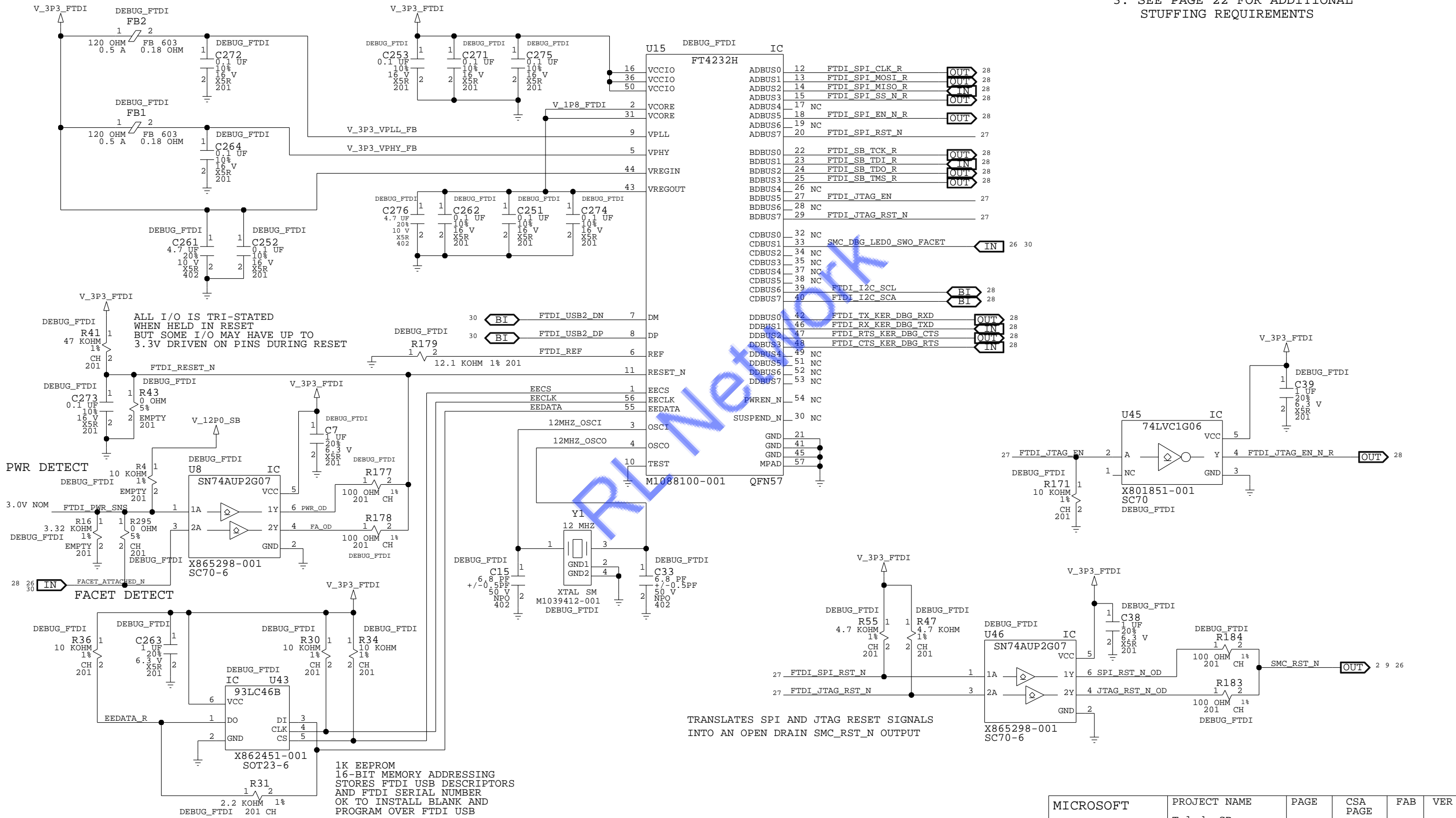
AARDVARK I2C HEADER



DEBUG: FTDI BRIDGE

NOTE: TO ACTIVATE INTERCEPT 12V SENSE

1. STUFF: R4,R16
2. REMOVE: R295
3. SEE PAGE 22 FOR ADDITIONAL STUFFING REQUIREMENTS



DEBUG: FTDI BUFFERS, FTDI PWR

D

D

C

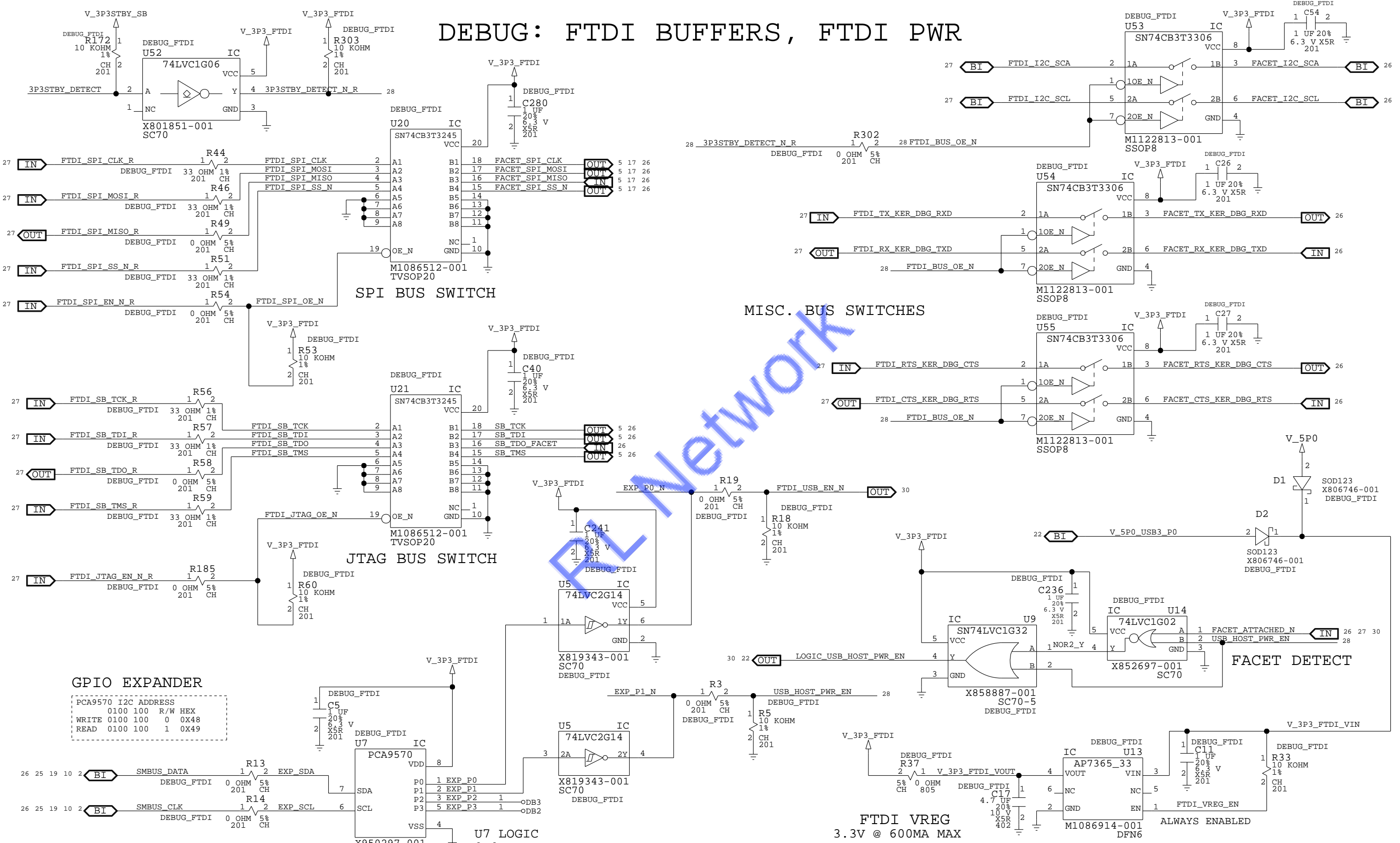
C

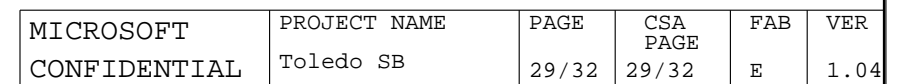
B

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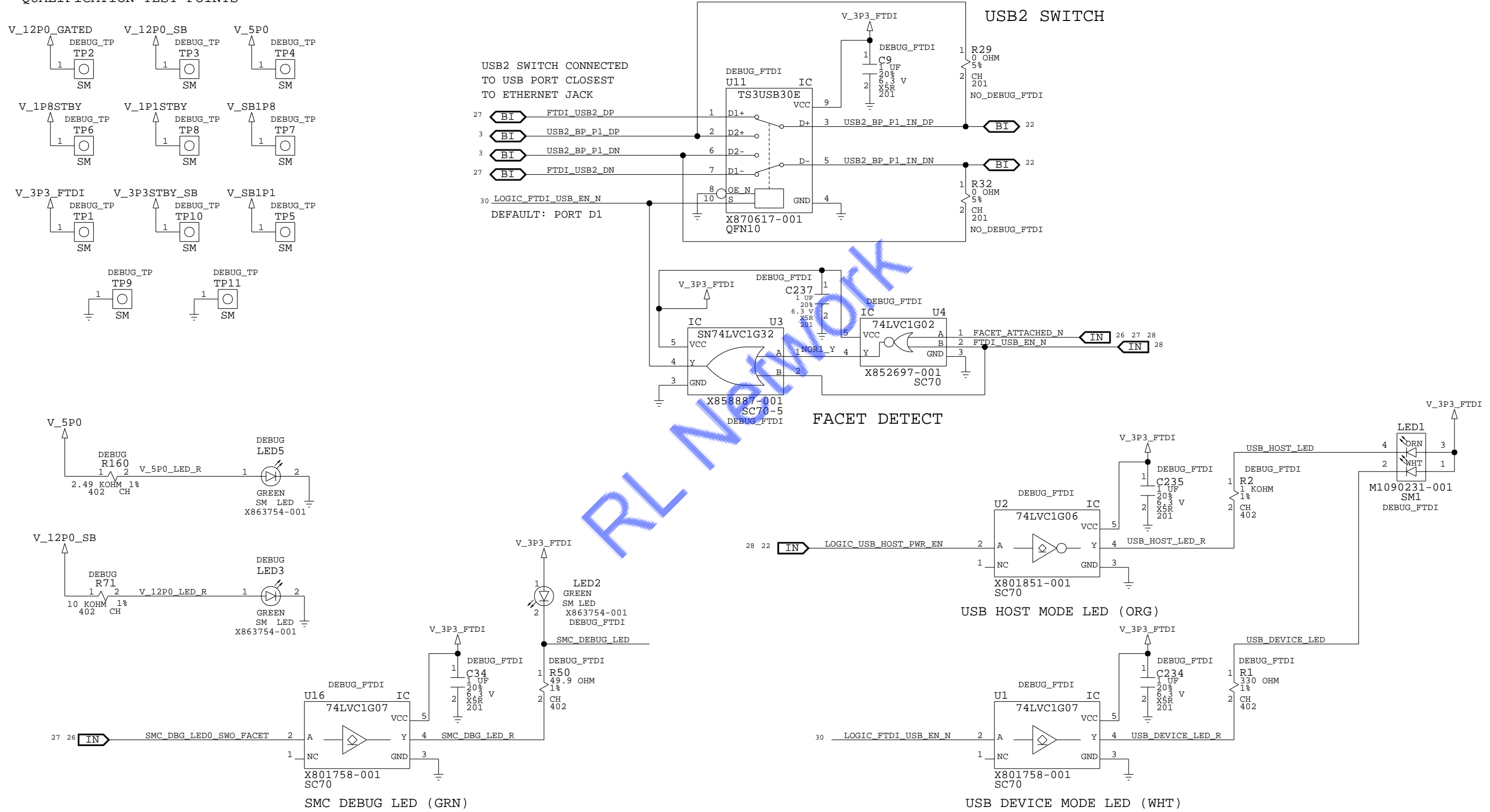
A

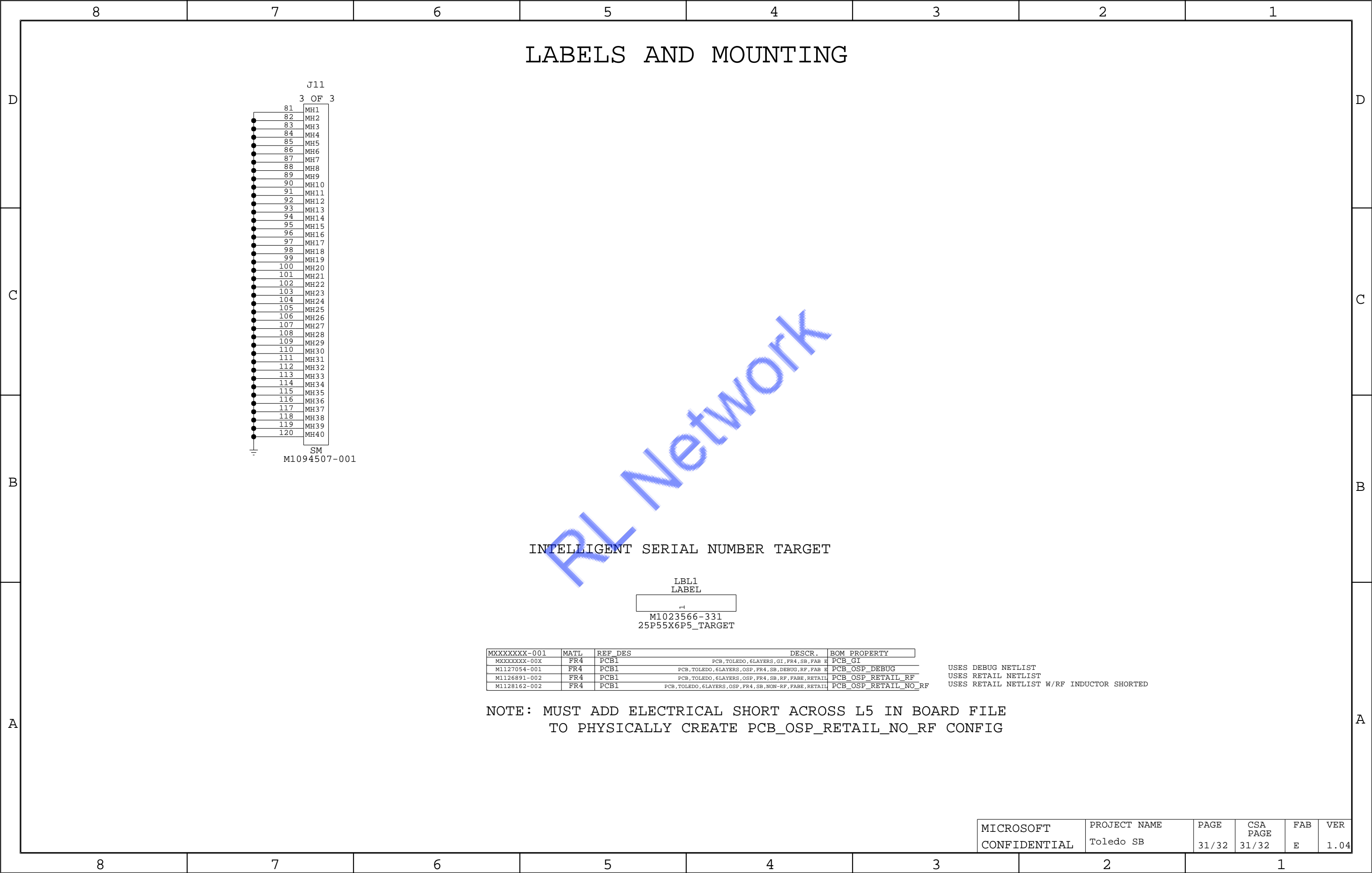




DEBUG: TEST POINTS, LEDS, USB2 SWITCH

NOTE: THESE TEST POINTS ARE NOT TO BE USED FOR VOLTAGE REGULATOR QUALIFICATION TEST POINTS





LBL1

LABEL

M1023566-331

25P55X6P5_TARGET

MXXXXXXX-001	MATL	REF	DES	DESCR.	BOM PROPERTY
MXXXXXXX-00X	FR4	PCB1	PCB, TOLEDO, 6LAYERS, GI, FR4, SB, FAB	PCB_GI	
M1127054-001	FR4	PCB1	PCB, TOLEDO, 6LAYERS, OSP, FR4, SB, DEBUG, RF, FAB	PCB_OSP_DEBUG	USES DEBUG NETLIST
M1126891-002	FR4	PCB1	PCB, TOLEDO, 6LAYERS, OSP, FR4, SB, RF, FABE, RETAIL	PCB_OSP_RETAIL_RF	USES RETAIL NETLIST
M1128162-002	FR4	PCB1	PCB, TOLEDO, 6LAYERS, OSP, FR4, SB, NON-RF, FABE, RETAIL	PCB_OSP_RETAIL_NO_RF	USES RETAIL NETLIST W/RF INDUCTOR SHORTED

NOTE: MUST ADD ELECTRICAL SHORT ACROSS L5 IN BOARD FILE

TO PHYSICALLY CREATE PCB_OSP_RETAIL_NO_RF CONFIG

MICROSOFT

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FAB

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8		7		6		5		4		3		2		1			
BOM DEFINITIONS																	
D	BOM		DEFINITION														
	AUDIO		INCLUDES COMPONENTS FOR THE STANDARD AUDIO SOLUTION														
	AUDIO_PREM		INCLUDES COMPONENTS FOR THE PREMIUM SE/LE SPEAKER SOLUTION														
	COMMON		ALL COMPONENTS WITH NO BOM PROPERTY														
C	DEBUG		COMPONENTS REQUIRED FOR BRING UP & DEBUG														
	NO_DEBUG_FTDI		DO NOT USE WITH DEBUG_FTDI OPTION. BYPASSES DEBUG_FTDI FOOTPRINTS AND CONNECTS USB R0 ENABLE TO SMC														
	DEBUG_FTDI		DO NOT USE WITH NO_DEBUG_FTDI OPTION. ADDS COMPONENTS TO SUPPORT DEBUGGING OVER USB. USE WITH USB_LOAD_SWITCH_DEBUG														
	DEBUG_HDT		HDT-RELATED DEBUG COMPONENTS														
	DEBUG_SHUNT		COMPONENTS WHICH ARE ON DEBUG BOARDS, BUT ARE REMOVED/SHORTED ON RETAIL														
	EMMC		POPULATE TO SUPPORT EMMC INTERFACE														
	EMMC_BASE		DUMMY PLACE HOLDER FOR EMMC DEVICE & RESISTORS. NEVER USE THIS IN THE RECIPE FILE. SELECT ONE OF THESE INSTEAD: EMMC_HYNIX_16NM, EMMC TOSHIBA_15NM, EMMC SAMSUNG_14NM														
	EMMC_HYNIX_16NM		HYNIX EMMC DEVICE														
	EMMC_SAMSUNG_14NM		SAMSUNG EMMC DEVICE														
	EMMC_TOSHIBA_15NM		TOSHIBA EMMC DEVICE														
	CON_USB_BASE		DUMMY PLACE HOLDER FOR USB CONNECTORS. NEVER USE IN RECIPE FILE														
	CON_USB_FOXC		FOXCONN USB CONNECTORS														
B	CON_USB_AMP		AMPHENOL USB CONNECTORS														
	CON_RJ45_BASE		DUMMY PLACE HOLDER FOR RJ45 CONNECTOR. NEVER USE IN RECIPE FILE														
	CON_RJ45_FOXC		FOXCONN RJ45 CONNECTOR														
	CON_RJ45_AMP		FOXCONN RJ45 CONNECTOR														
	PCB_GI		FAB TYPE: GOLD														
	PCB_OSP		FAB TYPE: ORGANIC SOLDERABILITY PRESERVATIVE GREEN SOLDERMASK														
	PCB_RF		FAB TYPE: GOLD. PCB ROUTED TO POPULATE RF FILTER INDUCTOR														
	RTC_RETAIL		RTC CIRCUIT IMPLEMENTATION FOR RETAIL BOARDS														
	RTC_XDK		RTC CIRCUIT IMPLEMENTATION FOR XDK BOARDS														
	RF		STUFFS HIGH FREQUENCY RF FILTERS														
	SANTO_BASE		DUMMY PLACE HOLDER FOR SANTO SB. NEVER USE THIS IN THE RECIPE FILE. USE ONE OF THESE INSTEAD: SANTO_DEV OR SANTO_RETAIL														
	SANTO_DEV		DEBUG VERSION OF SANTO SB														
A	SANTO_RETAIL		RETAIL VERSION OF SANTO SB														
	SPI_FLASH_WINBOND		WINBOND SPI FLASH														
	SPI_FLASH_MACRONIX		MACRONIX SPI FLASH														
	USB_LOAD_SWITCH_BASE		BASE PROPERTY FOR REAR USB LOAD SWITCHES. NEVER USE IN RECIPE FILE														
	USB_LOAD_SWITCH_FTDI		STUFFS RETAIL LOAD SWITCH FOR USB REAR0 AND TI LOAD SWITCH FOR REAR1. USE WITH DEBUG_FTDI														
	USB_LOAD_SWITCH_RICHTEK		STUFFS RICHTEK LOAD SWITCH FOR USB REAR0 AND REAR1. USE WITH NO_DEBUG_FTDI														
	USB_LOAD_SWITCH_TI		STUFFS TI LOAD SWITCH FOR USB REAR0 AND REAR1. USE WITH NO_DEBUG_FTDI														
	VR_1P1STBY_BASE		BASE PROPERTY FOR 1P1STBY REGULATOR SOURCE. NEVER USE IN RECIPE FILE														
	VR_1P1STBY_MPS		STUFFS MPS 1P1STBY REGULATOR														
	VR_1P1STBY_RICHTEK		STUFFS RICHTEK 1P1STBY REGULATOR														
	VR_FIXED		SET ALL VRS TO FIXED VOLTAGES (NON-MARGINED). EXCLUDES V_MEMIO. MUST BE USED IN CONJUNCTION WITH NOT VR_MM														
	VR_MM		ALLOWS MOST VRS TO BE MARGINED FOR M&M BOARDS. EXCLUDES V_MEMIO. MUST BE USED IN CONJUNCTION WITH NOT VR_FIXED														
8		7		6		5		4		3		2		1			
										MICROSOFT CONFIDENTIAL		PROJECT NAME Toledo SB		PAGE 32/32	CSA PAGE 32/32	FAB E	VER 1.04