SHEET	SHEET NAME	SHEET	SHEET NAME
1	NONE	41	CONN: M.2
2	SOC: PCIEX,CLOCKS	42	CONN: ODD
3	SOC: VIDEO	43	CONN: FRONT PANEL, FAN, NEXUS
4	SOC POWER: MEMIO, CPUCORE, SOC	44	CONN: POWER
5	SOC: POWER: GFXCORE, MEMPHY, MISC	45	VREGS: V_12P0_GATED
6	SOC: POWER: VSS	46	VREGS: INPUT DECOUPLING
7	SOC: POWER: VSS	47	VREGS: V_CPUCORE, V_GFXCORE CONTROLLER
8	SOC: DEBUG, SB SIGNALS, V_BAT, VOLTAGE SENSE	48	VREGS: V_GFXCORE OUTPUT PHASE 1 & 2
9	SOC: V_GFXCORE DECOUPLING	49	VREGS: V_GFXCORE OUTPUT PHASE 3 & 4
10	SOC: V_SOC DECOUPLING	50	VREGS: V_CPUCORE OUTPUT
11	SOC: V_MEMIO/V_MEMPHY DECOUPLING	51	VREGS: V_MEMIO, V_MEMPHY, V_SOC CONTROLLER
12	SOC: V_CPUCORE DECOUPLING	52	VREGS: V_MEMIO, V_MEMPHY, V_SOC SENSE
13	SOC & Memory: CHA/PHY0	53	VREGS: V_MEMIO AND V_MEMPHY OUTPUT
14	MEMORY: PWR/VSS & DECAP, A	54	VREGS: V_SOC OUTPUT
15	SOC & Memory: CHB/PHY1	55	VREGS: V_5P0
16	MEMORY: PWR/VSS & DECAP, B	56	VREGS: V_SOC1P8, V_DRAM1P8
17	SOC & Memory: CHC/PHY2	57	VREGS: V_SOCPHY, V_FUSE
18	MEMORY: PWR/VSS & DECAP, C	58	VREGS: V_SB1P8, V_SB1P1
19	SOC & Memory: CHD/PHY3	59	VREGS: V_3P3STBY
20	MEMORY: PWR/VSS & DECAP, D	60	VREGS: V_3P3_GATED, V_3P3_CFX
21	SB: SMC	61	VREGS: V_1P1STBY, V_1P8STBY
22	SB: USB	62	I2C
23	SB: PCIEX, SATA, VIDEO	63	DEBUG: MARGIN V_SOCPHY,V_SOC1P8, V_DRAM1P8
24	SB: SMM UART, SPI, JTAG, GPIO	64	DEBUG: MONITOR V_SOC1P8, V_SOCPHY, V_12P0, V_DRAM1P8
25	SB: POWER (VSS)	65	DEBUG: MONITOR M.2. CFEXPRESS
26	SB: POWER	66	DEBUG: FACET HEADER
27	SB: DECOUPLING	67	DEBUG: FTDI BRIDGE
28	SB: CLOCKS, STRAPPING, POR	68	DEBUG: FTDI BUFF, USB, PWR
29	CLOCK: PCIE 100MHZ SS	69	DEBUG: SWITCHES, LEDS
30	CLOCK: PCIE 100MHZ NS	70	DEBUG: HDT
31	ETHERNET CONTROLLER	71	DEBUG: VR HEADERS, TEST POINTS, CONNECTORS
32	SB: EMMC (LEGACY)	72	LABELS AND MOUNTING
33	MEMORY: SPI FLASH SOC	73	BOM DEFINITIONS
34	MEMORY: SPI FLASH	74	STOCKTON_NEXUS
35	HDMI: VIDEO OUT	75	B2B CONN AND LABELS
36	HDMI: LOAD SWITCHES	76	NEXUS LED AND POWER SWITCH
37	AUDIO: PREMIUM AND RETAIL		
38	CONN: RJ45, SPDIF, CFEXPRESS		
39	CONN: USB (FRONT & REAR)		
40	CONN: WIFI		

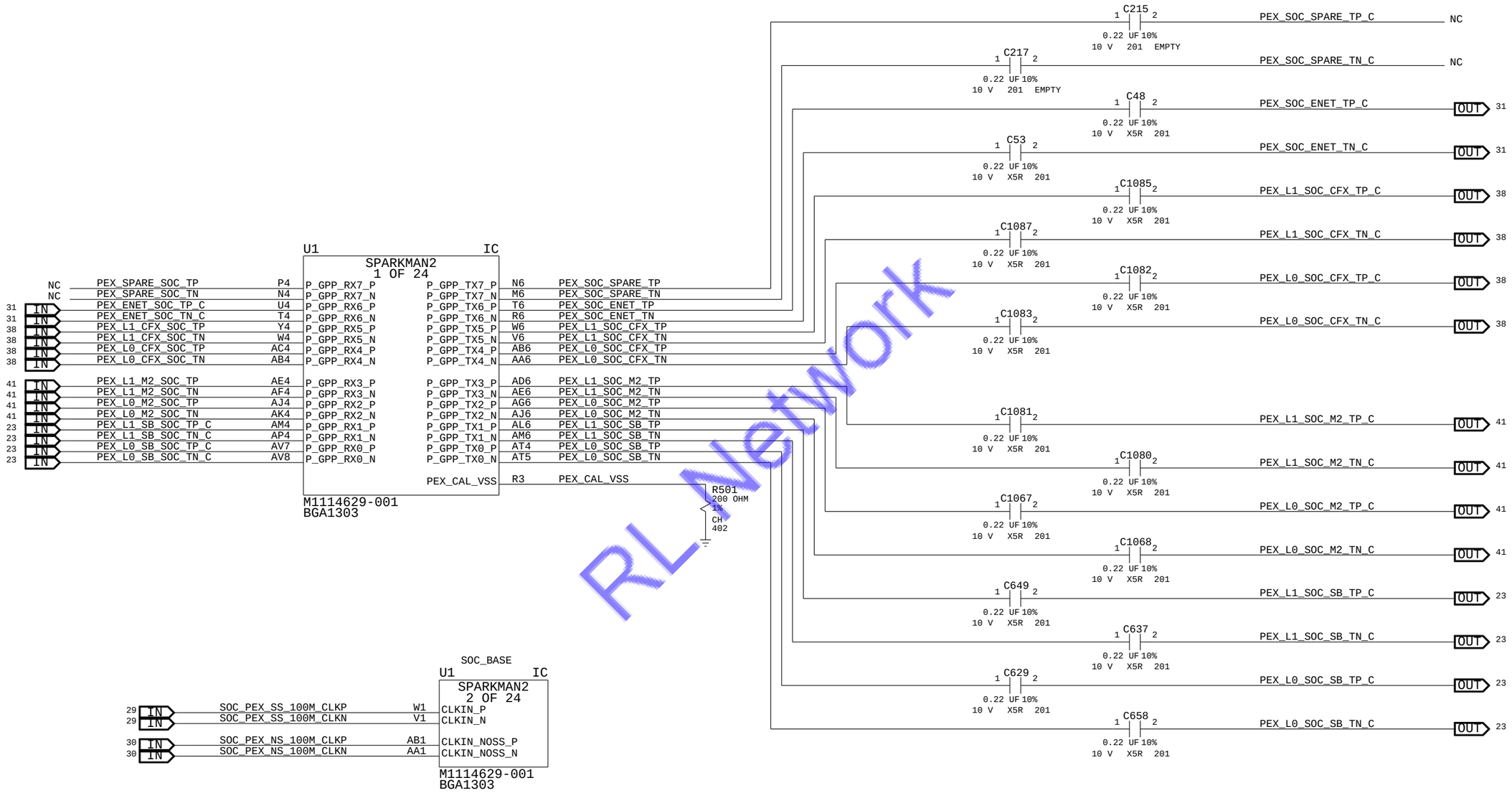
STOCKTON FAB C
REV 0.12

RULES: (APPLIED WHEN POSSIBLE)
1. MSB TO LSB IS TOP TO BOTTOM
2. WHEN POSSIBLE: INPUTS ON LEFT, OUTPUTS ON RIGHT
3. ORDER OF PAGES=CHIP INTERFACES, TERMINATION, POWER, DECOUPLING
4. AVOID USING OFF PAGE CONNECTORS FOR ON PAGE CONNECTIONS
5. LANED SIGNALS ARE GROUPED ON SYMBOLS
6. TRANSIMITTER NAME USED AS PREFIX WITH RX AND TX CONNECTIONS
7. SUFFIX V_ IS USED FOR VOLTAGE RAIL SIGNAL NAMES
8. SUFFIX _DP AND _DN ARE USED FOR DIFFERIENTAL PAIRS
9. UNNAMED NETS ARE NAMED WITH /2 TEXT SIZE
10. SUFFIX _N FOR ACTIVE LOW OR N JUNCTION
12. SUFFIX _P FOR P JUNCTION
13. SUFFIX _EN FOR ENABLE
14. 'CLK' FOR CLOCKS, 'RST' FOR RESETS
15. PWRGD FOR POWER GOOD
16. REV AND FAB ARE SET USING CUSTOM VARIABLES
    TOOLS>OPTIONS>VARIABLES

DRAWING
Tue Jun 25 13:39:30 2019

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	1/76	1/76	C	0.12

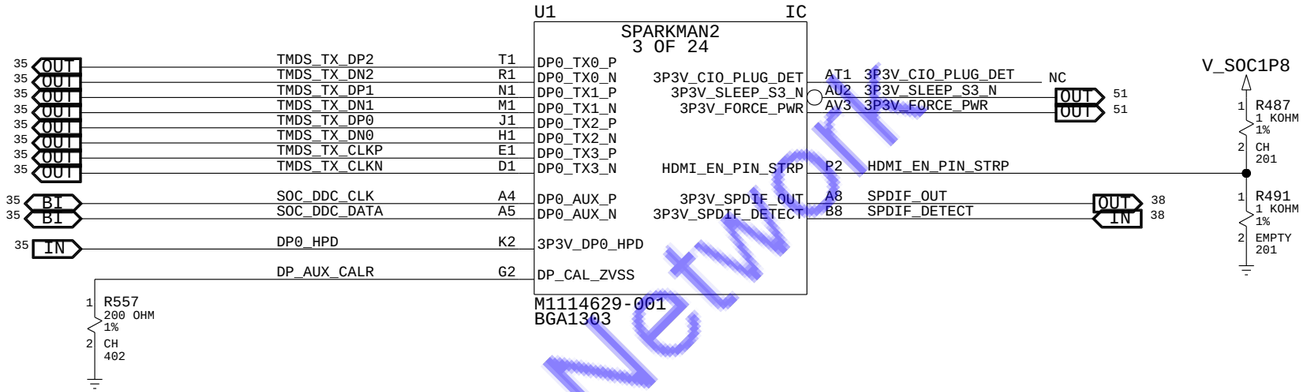
SOC: PCIEX,CLOCKS



MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
M1114629-001	IC	U1	PROCSR,SOC,SM,1304-BGA,SPARKMAN35	SOC_INCLUDE
M1114629-001	EMPTY	U1	PROCSR,SOC,SM,1304-BGA,SPARKMAN35	SOC_EMPTY

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	2/76	2/76	C	0.12

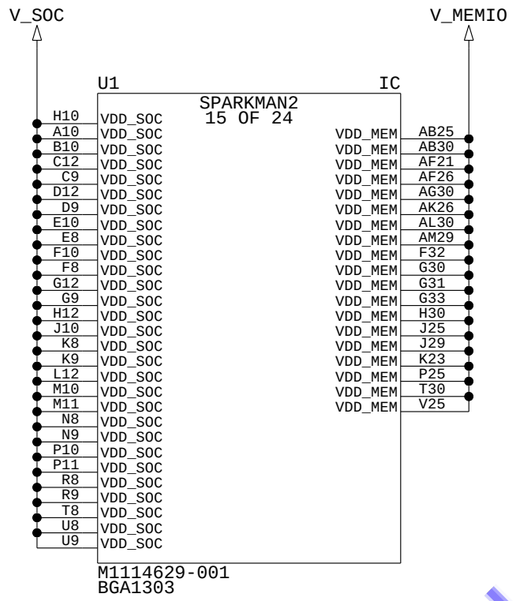
SOC: VIDEO

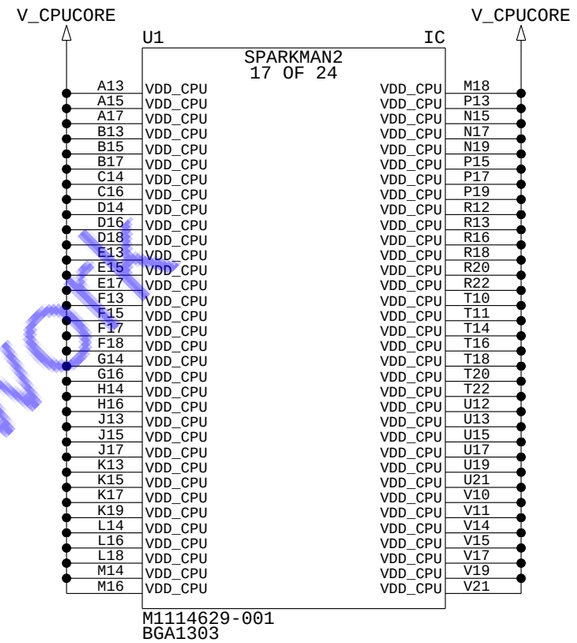


DVI PCB ROUTING ORDERING	DP PCB ROUTING ORDERING	PIN NAME
TMDS CLOCK -	DP LANE 3 -	DP0_TX3_N
TMDS CLOCK +	DP LANE 3 +	DP0_TX3_P
TMDS DATA0 -	DP LANE 2 -	DP0_TX2_N
TMDS DATA0 +	DP LANE 2 +	DP0_TX2_P
TMDS DATA1 -	DP LANE 1 -	DP0_TX1_N
TMDS DATA1 +	DP LANE 1 +	DP0_TX1_P
TMDS DATA2 -	DP LANE 0 -	DP0_TX0_N
TMDS DATA2 +	DP LANE 0 +	DP0_TX0_P

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	3/76	3/76	C	0.12

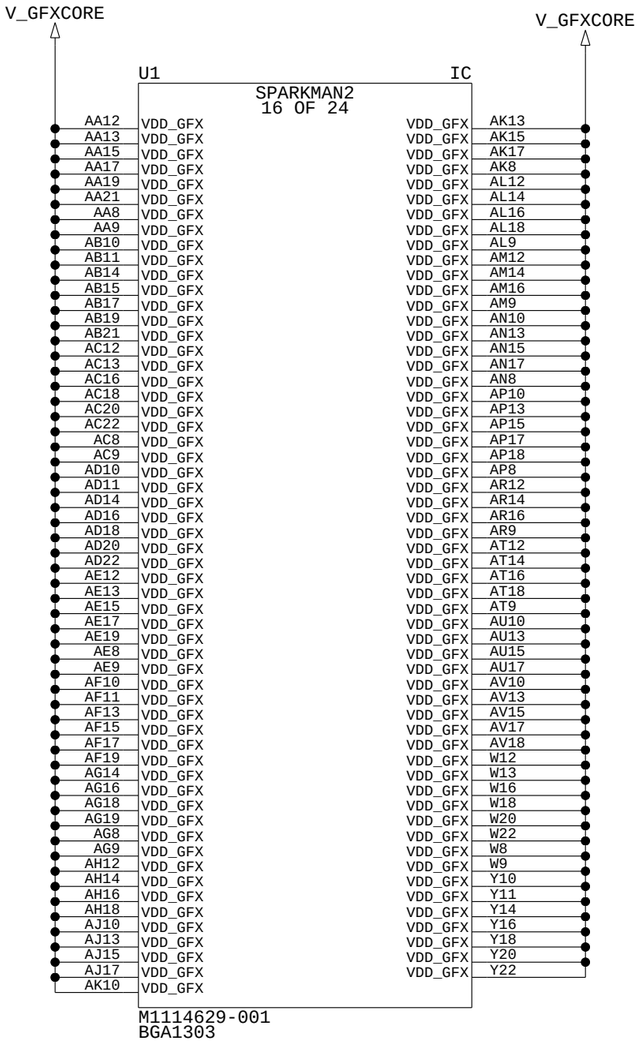
SOC POWER: MEMIO, CPUCORE, SOC

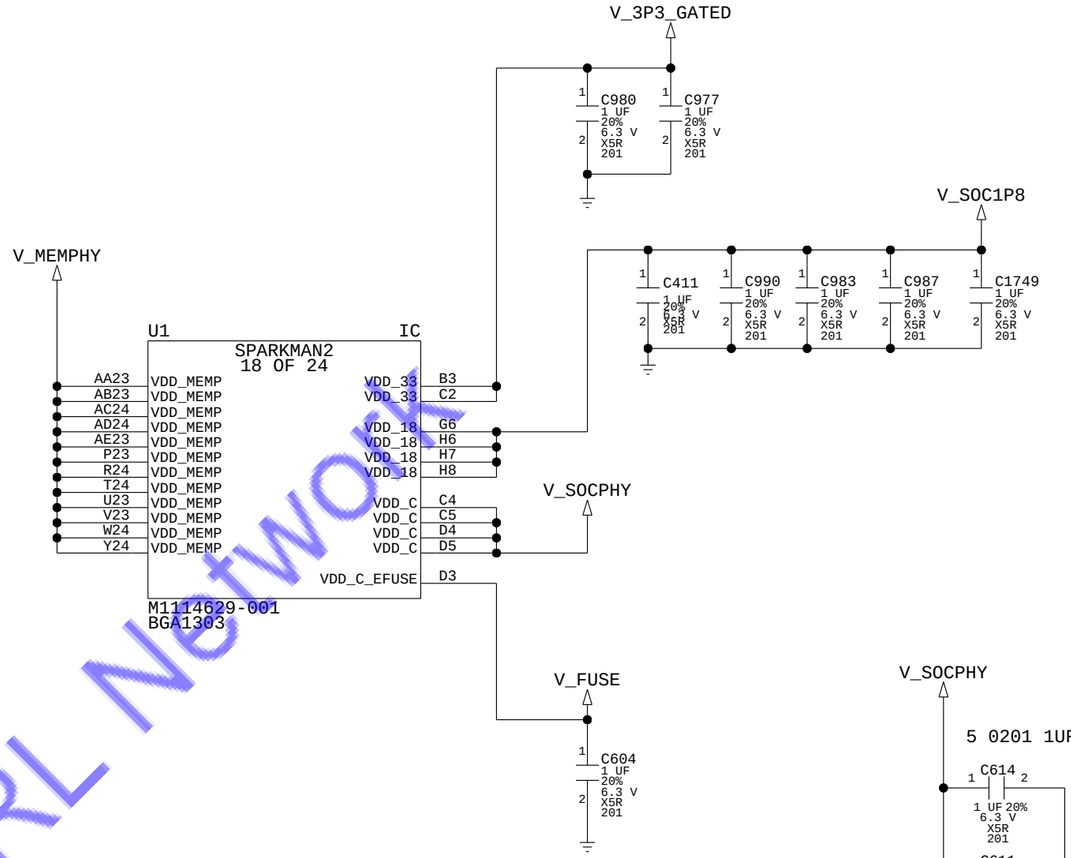


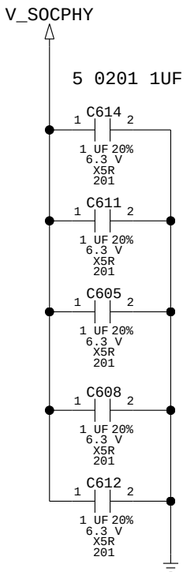


MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	4/76	4/76	C	0.12

SOC: POWER: GFXCORE, MEMPHY, MISC

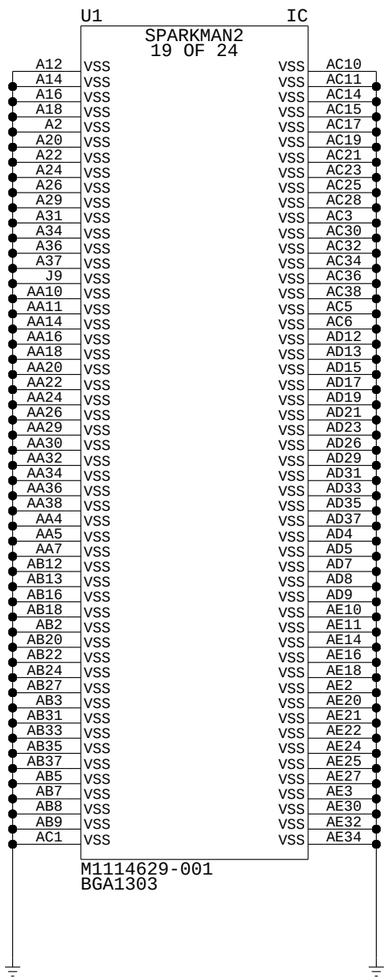


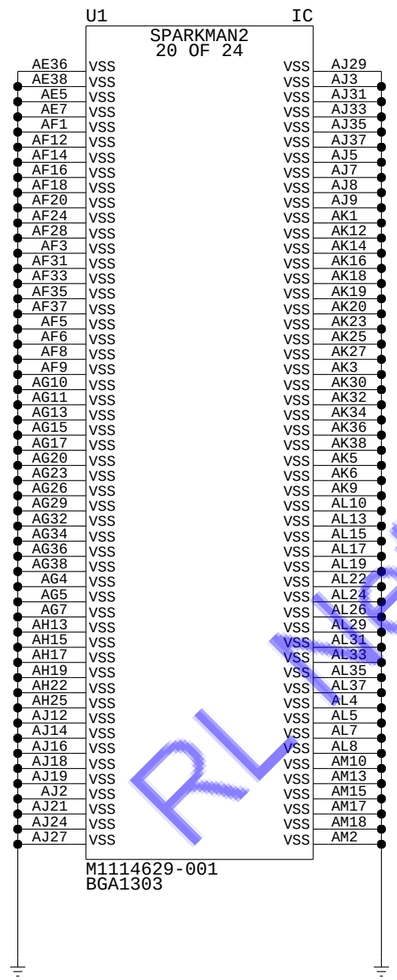


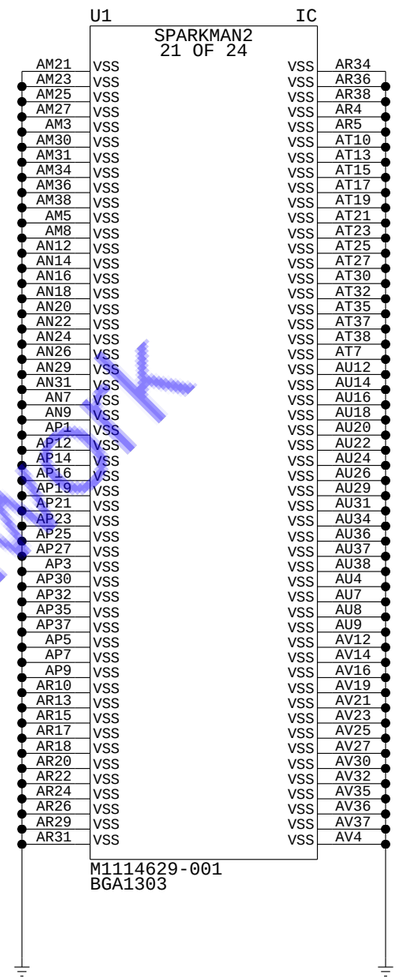


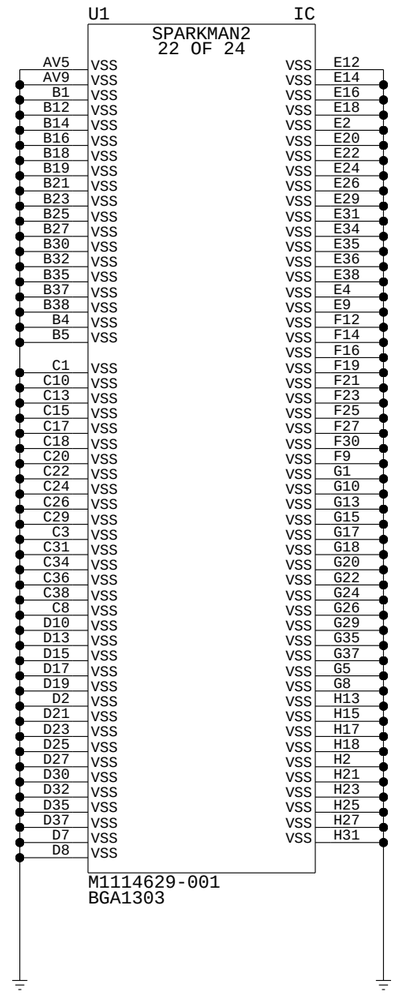
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	5/76	5/76	C	0.12

SOC: POWER: VSS



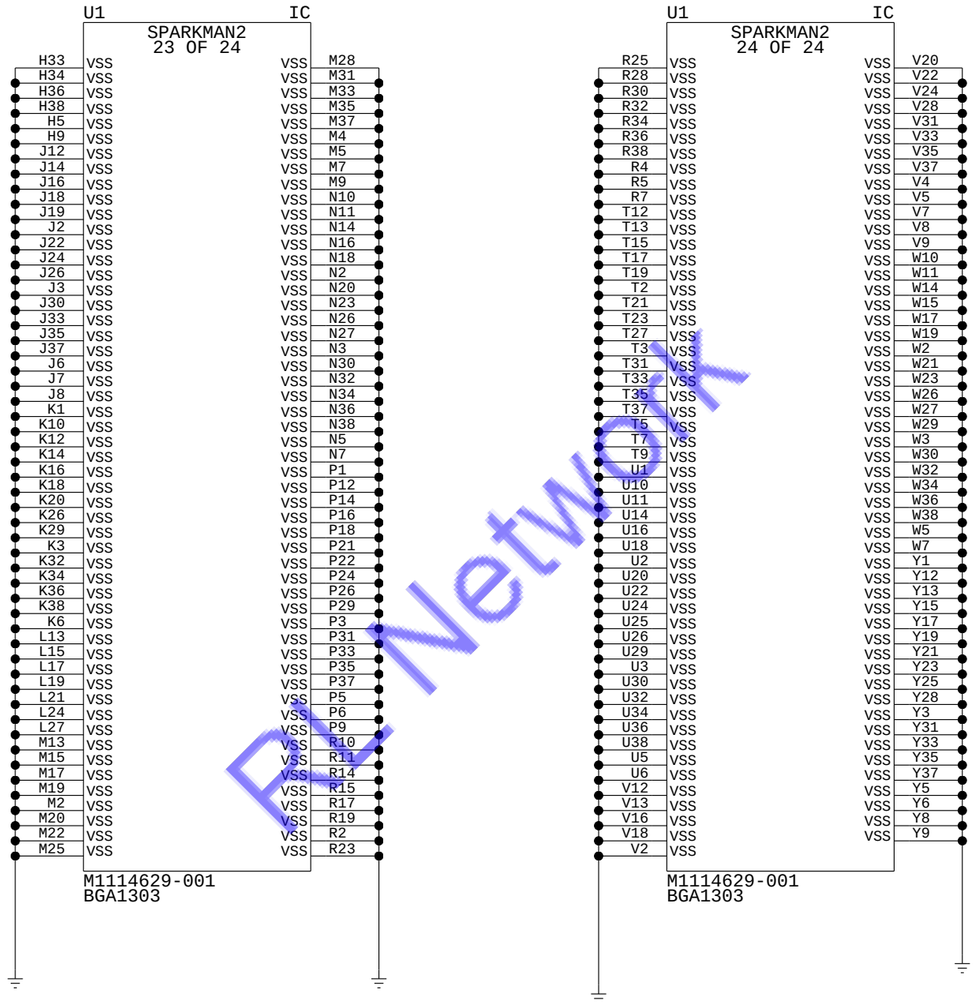






MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	6/76	6/76	C	0.12

SOC: POWER: VSS



MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	7/76	7/76	C	0.12

SOC: DEBUG, SB SIGNALS, V_BAT, VOLTAGE SENSE

U1 IC
SPARKMAN2
4 OF 24
M1114629-001
BGA1303

DBREQ_L AL3 DBREQ_N
TCK AG1 TCK
TDI AJ1 TDI
TDO AG2 TDO
TMS AF2 TMS
TRST_L AG3 TRST_N
ANATSTIN_N P8 ANATSTIN_P
ANATSTIN_P P7 ANATSTIN_N
ANATSTOUT_P K7 ANATSTOUT_P
ANATSTOUT_N M8 ANATSTOUT_N
PSEN AT3
A0_BYPASS AU5

TMON_CAL E3 TMON_CAL0 → FTP FT78
TM_IO A3 TM_IO
THERMDA E7 THERMDA
THERMDC F7 THERMDC
ANALOGOUT0 H3 ANALOGOUT0
ANALOGOUT1 H4 ANALOGOUT1
BP_0 K4 BP_0
BP_1 J4 BP_1
BP_2 K5 BP_2
BP_3 J5 BP_3
DIECRACKMON G3 DIECRACKMON

NC
FLOATING
IN FINAL DESIGN

FLOATING IN FINAL DESIGN

V_SOC1P8
R821 1 KOHM 1% EMPTY 402
R822 10 KOHM 1% EMPTY 402
A0_BYPASS

SVC
SVD
SVT
R628 0 OHM 5% CH 402
R627 0 OHM 5% CH 402
R626 0 OHM 5% CH 402

V_SOC1P8
R405 475 OHM 1% EMPTY 402 DEBUG
R406 475 OHM 1% EMPTY 402 DEBUG
C553 47 PF 5% 50 V EMPTY 201 DEBUG
C554 47 PF 5% 50 V EMPTY 201 DEBUG

SB_SOC_CLK
SB_SOC_DATA
R430 243 OHM 1% CH 402
R431 243 OHM 1% CH 402

V_SOC1P8
R810 100 KOHM 1% CH 201

SVC_R_SOC Y7 SVC
SVD_R_SOC AC7 SVD
SVT_R_SOC U7 SVT
SOC_SIC AR1 SOC_SIC
SOC_SID AP2 SOC_SID
X32K_X1 AA2 X32K_X1
X32K_X2 Y2 X32K_X2
SOC_PWR_OK AT2 PWROK
SOC_THERMTRIP_N AK7 THERMTRIP_N
SP_SMC_INT_N AR2 ALERT_N
PROCHOT_N AF7 PROCHOT_N
V3 VDD_RTC
SOC_RST_N AR3 RESET_N
AU1 CHK_PAD
AV2 EQ_MAG

V_BAT
C645 1 UF 20% 6.3 V X5R 201

RTC_RETAIL
R84 0 OHM 5% 402 CH
X32K_X2_R

RTC_XDK
R97 20 MOHM 5% 402 CH
Y1 32.768 KHZ SM XTAL M1099527-001 RTC_XDK
C144 2.2 PF 0.25PF 50 V NPO 402 RTC_XDK
C155 2.2 PF 0.25PF 50 V NPO 402 RTC_XDK

C144, C155 VALUE SELECTED TO CENTER XTAL FREQ

NOTE: CHK_PAD AND EQ_MAG MUST BE CONNECTED TO VSS FOR BEST RESULTS

U1 IC
SPARKMAN2
5 OF 24
M1114629-001
BGA1303

SOC_GFXCORE_S AT8 VDD_GFX_SENSE
SOC_GFXCORE_S_RTN AR7 VSS_GFX_SENSE
SOC_CPUCORE_S N12 VDD_CPU_SENSE
SOC_CPUCORE_S_RTN N13 VSS_CPU_SENSE
SOC_VSOC_S A9 VDD_SOC_SENSE
SOC_VSOC_S_RTN B9 VSS_SOC_SENSE
SOC_MEMIO_S E32 VDD_MEM_SENSE
SOC_MEMIO_S_RTN F31 VSS_MEM_SENSE
SOC_MEMPHY_S P20 VDD_MEMP_SENSE
SOC_MEMPHY_S_RTN R21 VSS_MEMP_SENSE

DB4 DB6 DB8 DB10

U1 IC
SPARKMAN2
6 OF 24
M1114629-001
BGA1303

SVC1 B7 CAC_THROTTLE_DET → DB16
SVD1 A7 CAC_COUNTER_SNAP_DET → DB14
SVT1 C7 1P8V_GPIO2 → DB489
PCC G4 PCC → DB18
VR_MEMIO_CTL AR8 VR_MEMIO_CTL
QSS_N AA3 QSS_N
QSCLK AD1 QSCLK
QSIO0 AE1 QSIO0
QSIO1 AD2 QSIO1
QSIO2 AD3 QSIO2
QSIO3 AC2 QSIO3
1P8V_GPIO0 E5 GPIO_SPARE0
1P8V_GPIO1 AU3 1P8V_GPIO1
MST_SIC0 AM1 MST_SIC0
MST_SID0 AL1 MST_SID0
MST_SIC1 AL2 MST_SIC1
MST_SID1 AK2 MST_SID1

V_3P3STBY
RTC_XDK
CONN BT1 BATT_HOLD_2P M1083468-001 SM1
BATTERY CONNECTOR
1 RTC_VREG_IN
U77 SOT-523 DIO RTC_XDK
RTC_VREG_IN_D
C512 0.1 UF 10% 16 V X5R 201 RTC_XDK
Q1 1.8V NCP663 VIN VOUT NC GND X899201-001 SC82 RTC_XDK
RTC_VREG_OUT
C513 0.1 UF 10% 16 V X5R 201 RTC_XDK
R77 0 OHM 5% 402 CH RTC_XDK

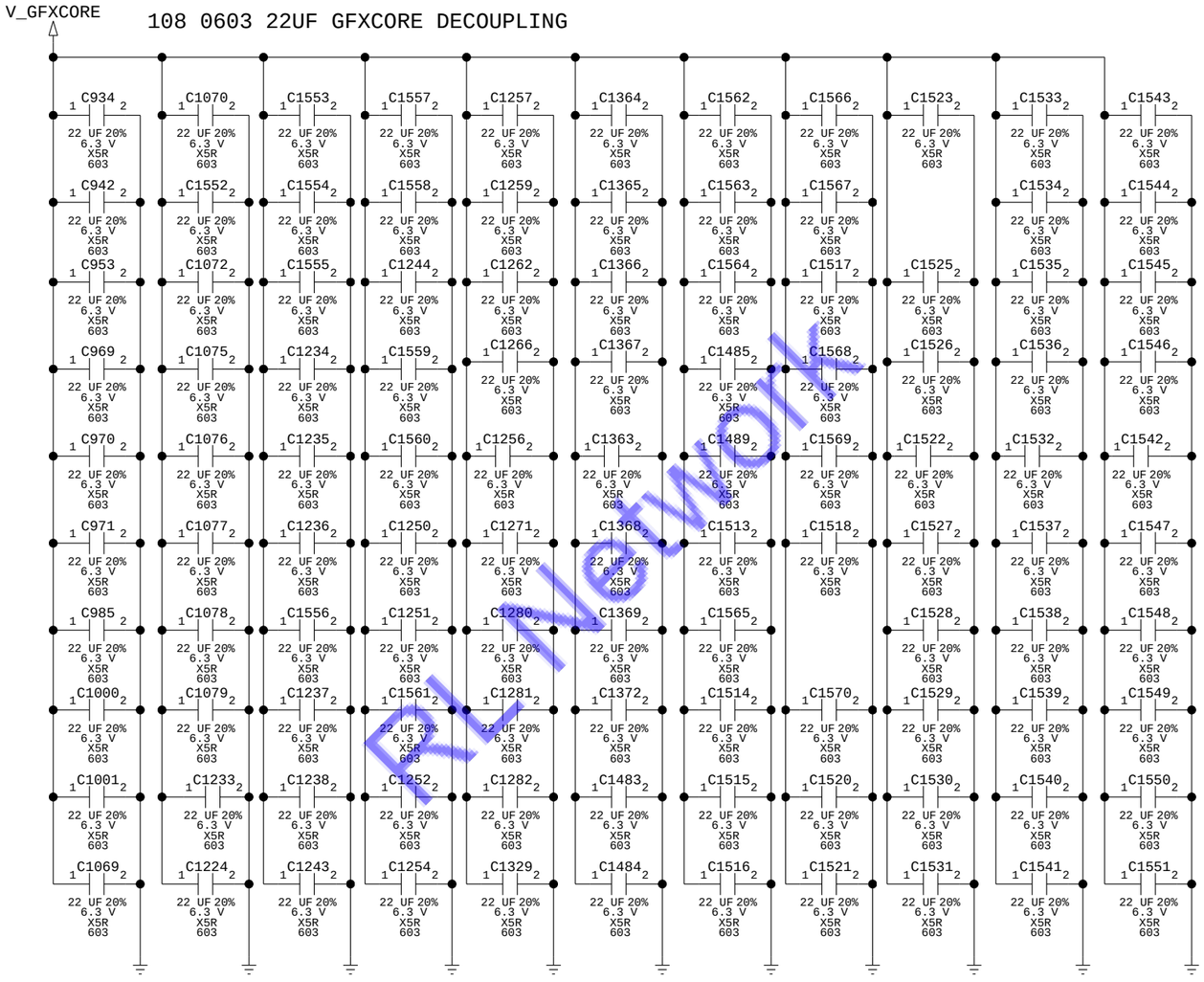
V_1P8STBY
R387 0 OHM 5% 402 CH RTC_RETAIL
R388 221 KOHM 1% 402 CH RTC_XDK
V_BAT

V_BAT
NOM.VOLTAGE: 1.8V

STUFF R388 IF SOC IS NOT STUFFED

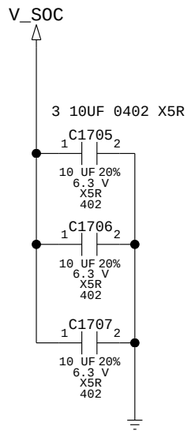
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	8/76	8/76	C	0.12

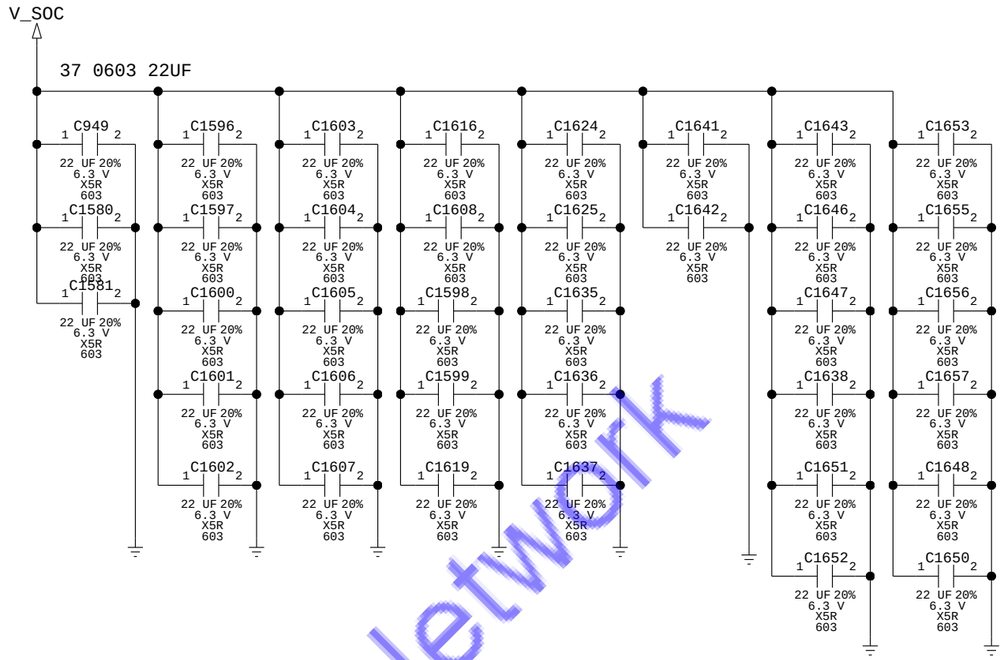
SOC: V_GFXCORE DECOUPLING



MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	9/76	9/76	C	0.12

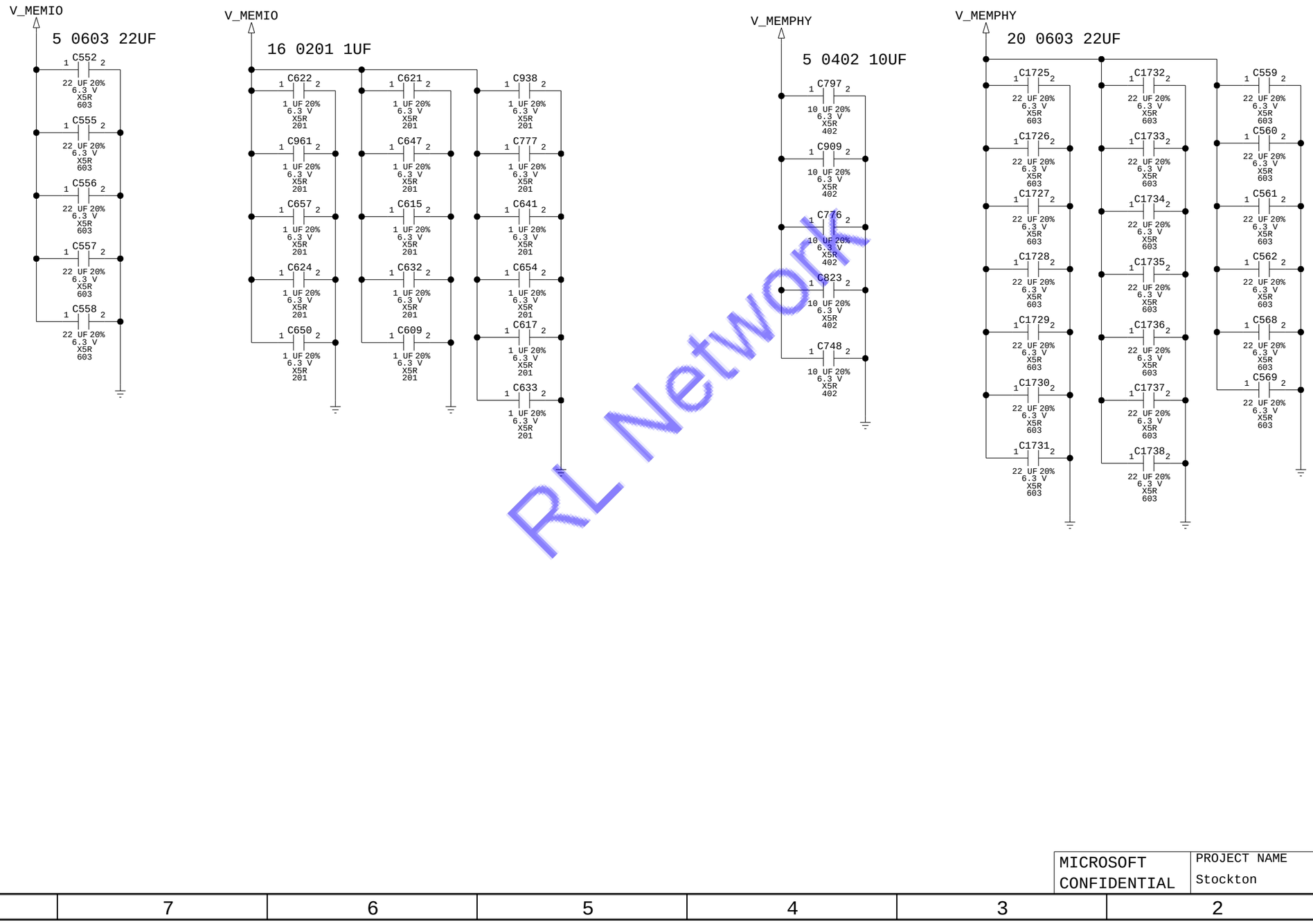
SOC: V_SOC DECOUPLING





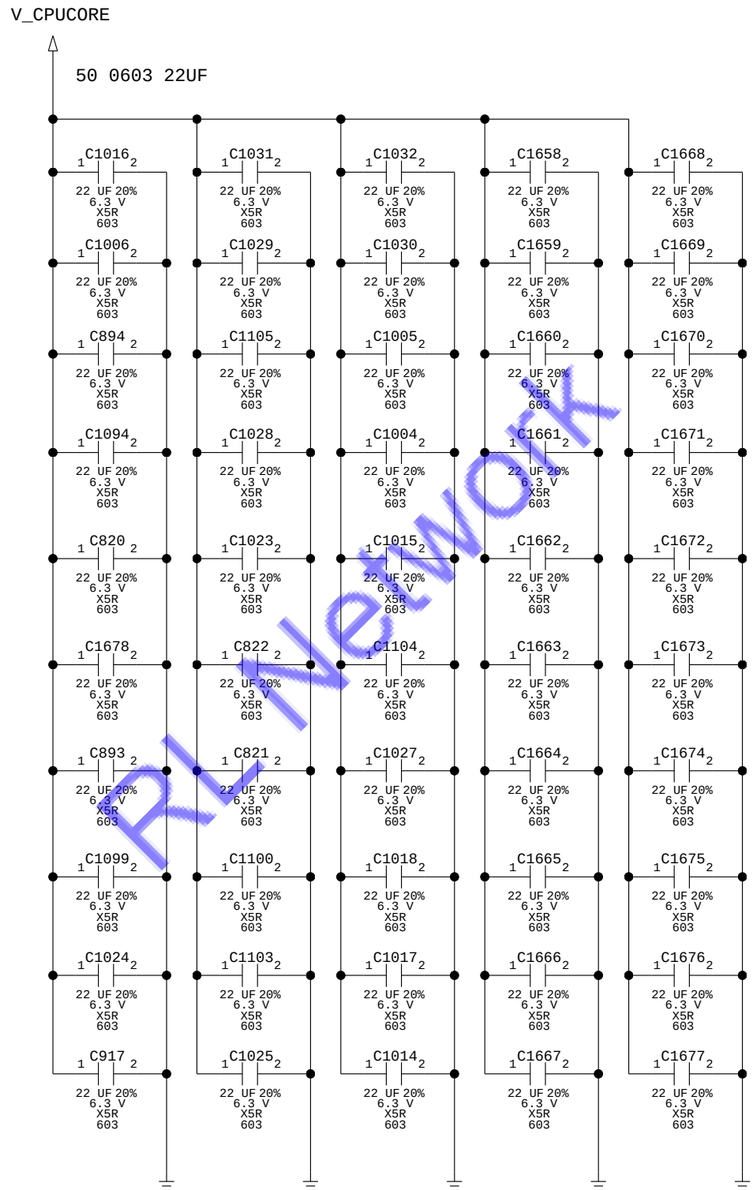
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	10/76	10/76	C	0.12

SOC: V_MEMIO/V_MEMPHY DECOUPLING



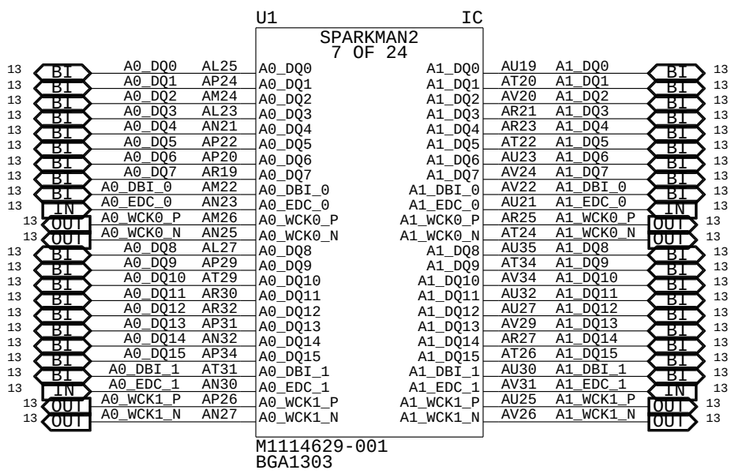
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	11/76	11/76	C	0.12

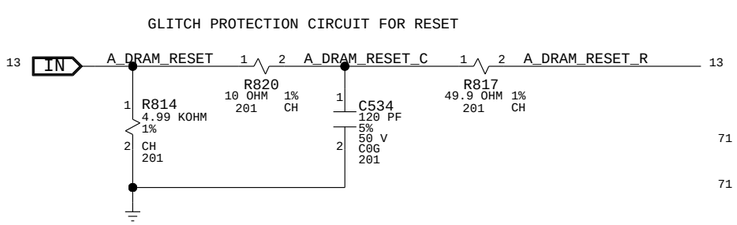
SOC: V_CPUCORE DECOUPLING

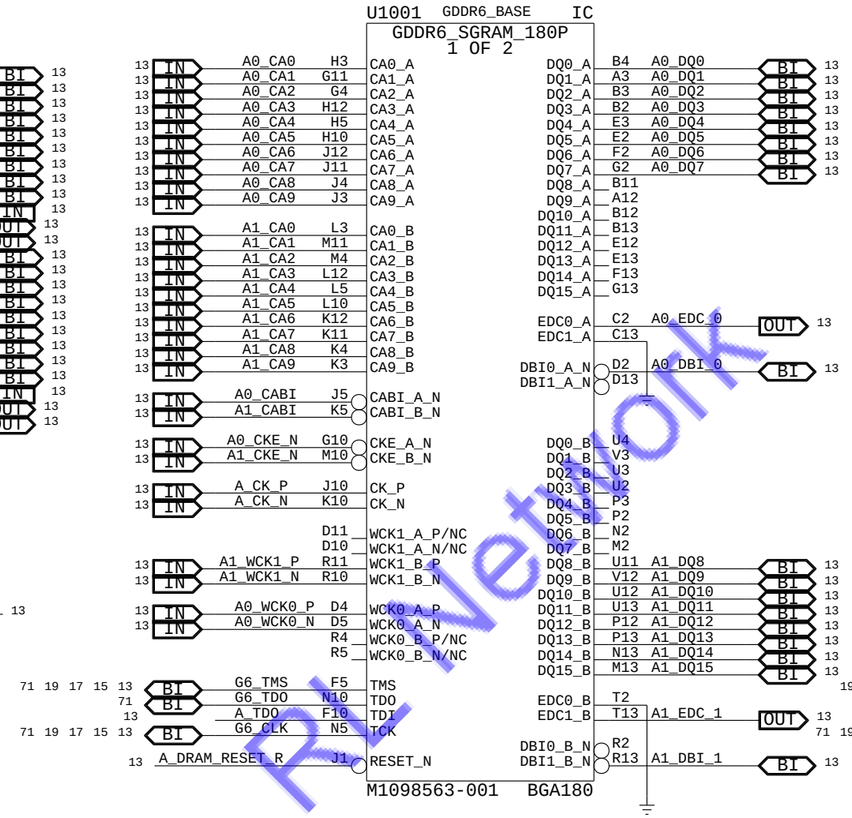


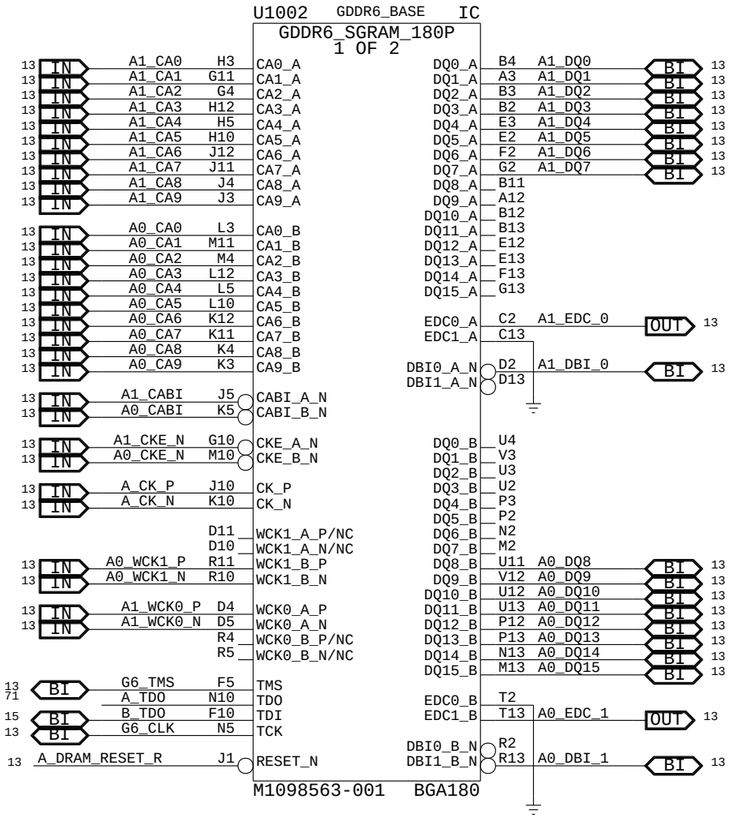
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	12/76	12/76	C	0.12

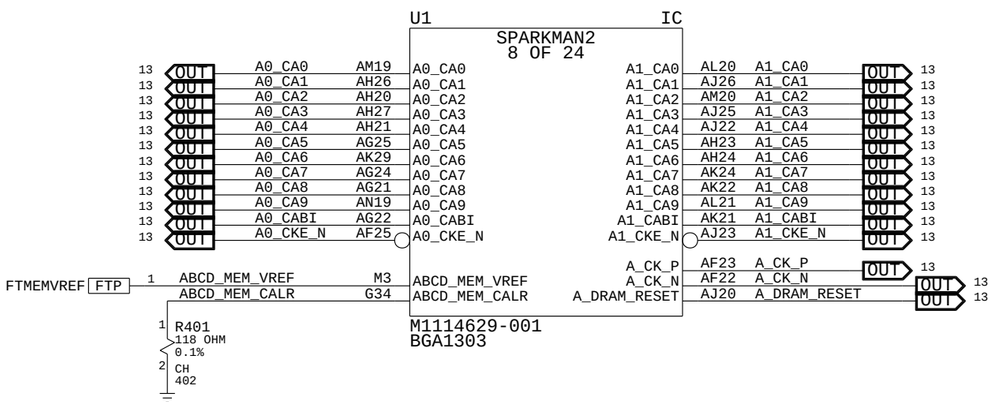
SOC & Memory: CHA/PHY0







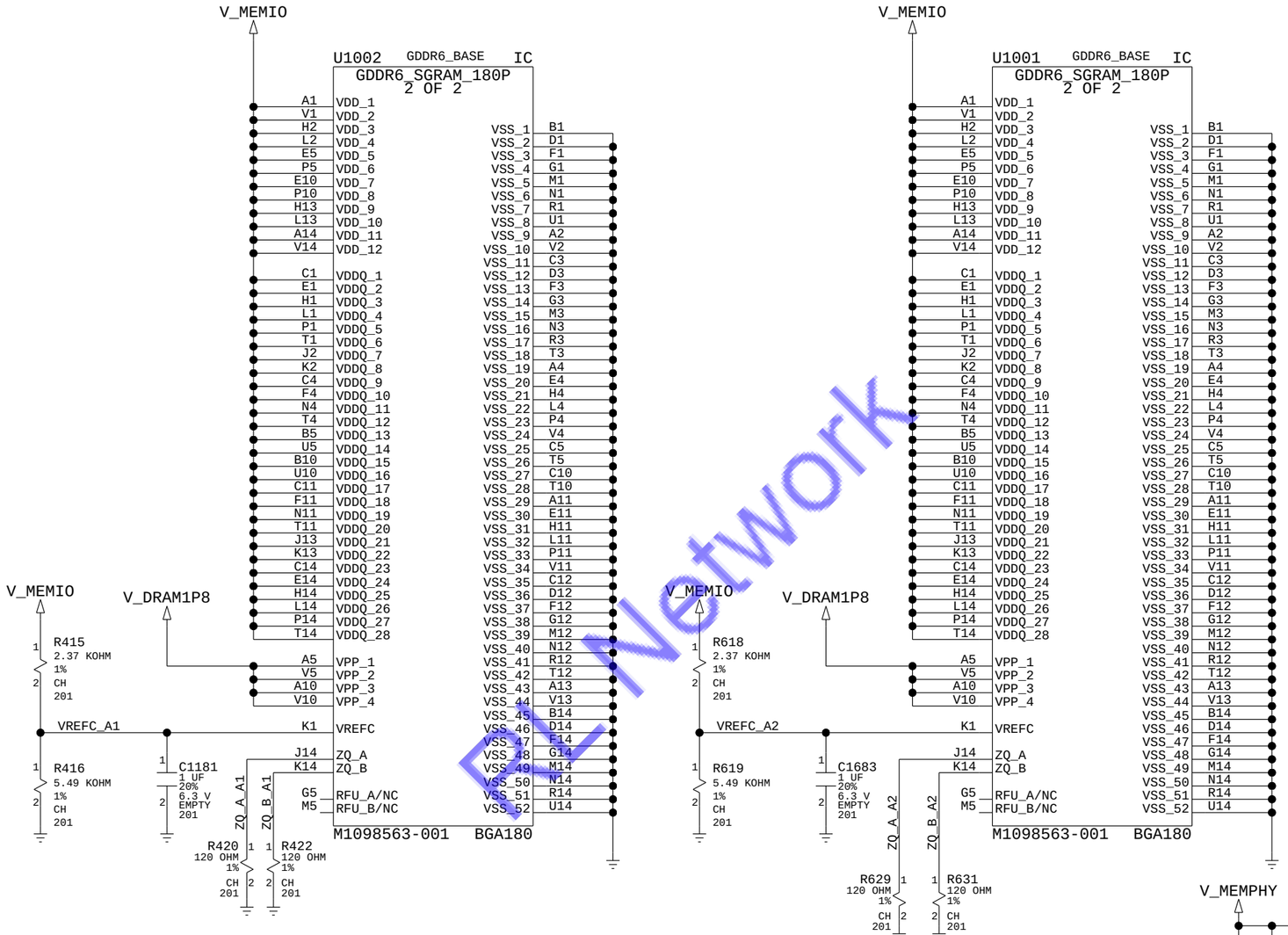


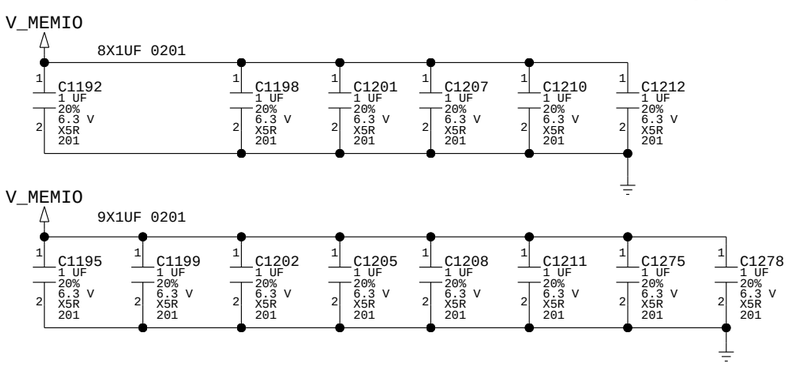


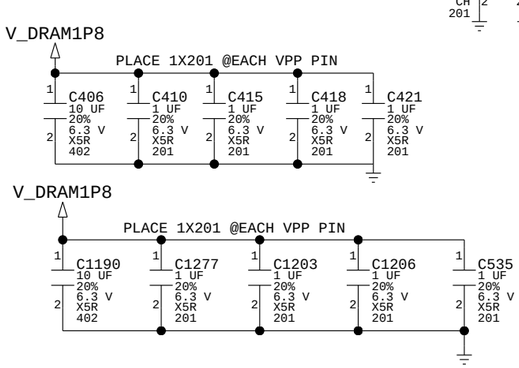
MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
M1098563-001	IC	U1002, U1001, U1005, U1006, U1011	GDDR6	GDDR6_SAMSUNG
M1107532-001	IC	U1002, U1001, U1005, U1006, U1011	GDDR6	GDDR6_HYNIX
M1107537-001	IC	U1002, U1001, U1005, U1006, U1011	GDDR6	GDDR6_MICRON

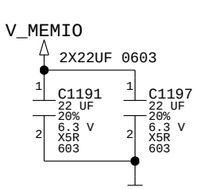
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	13/76	13/76	C	0.12

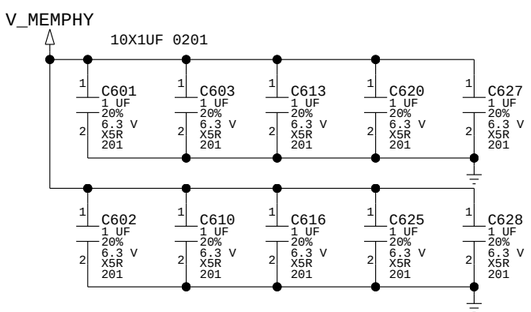
MEMORY: PWR/VSS & DECAP, A





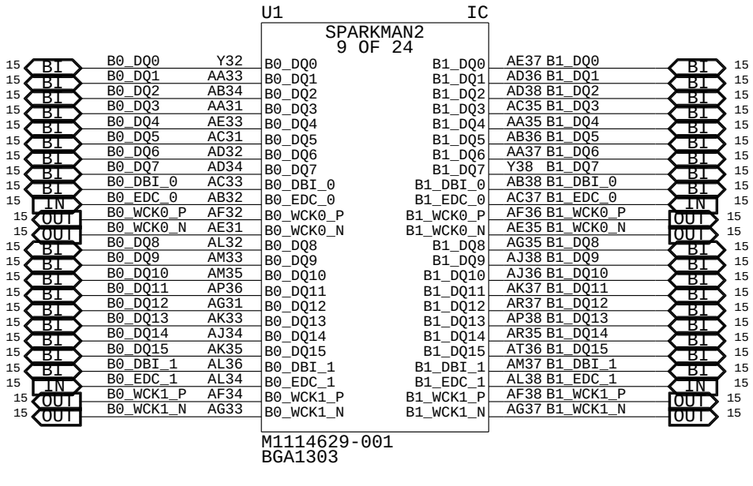


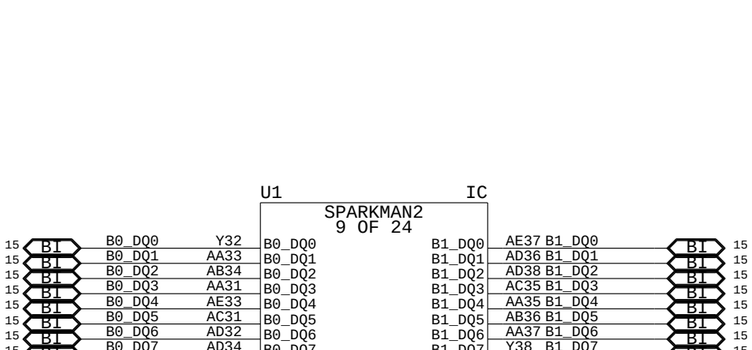


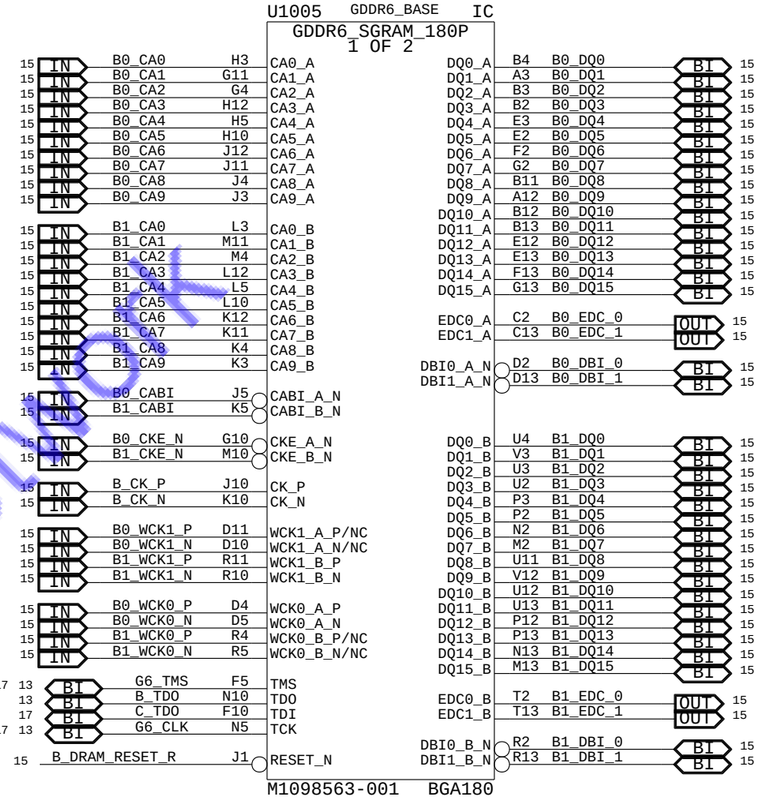


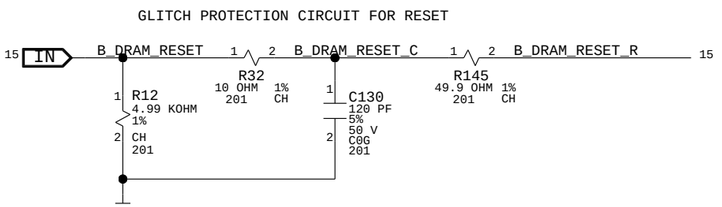
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	14/76	14/76	C	0.12

SOC & Memory: CHB/PHY1



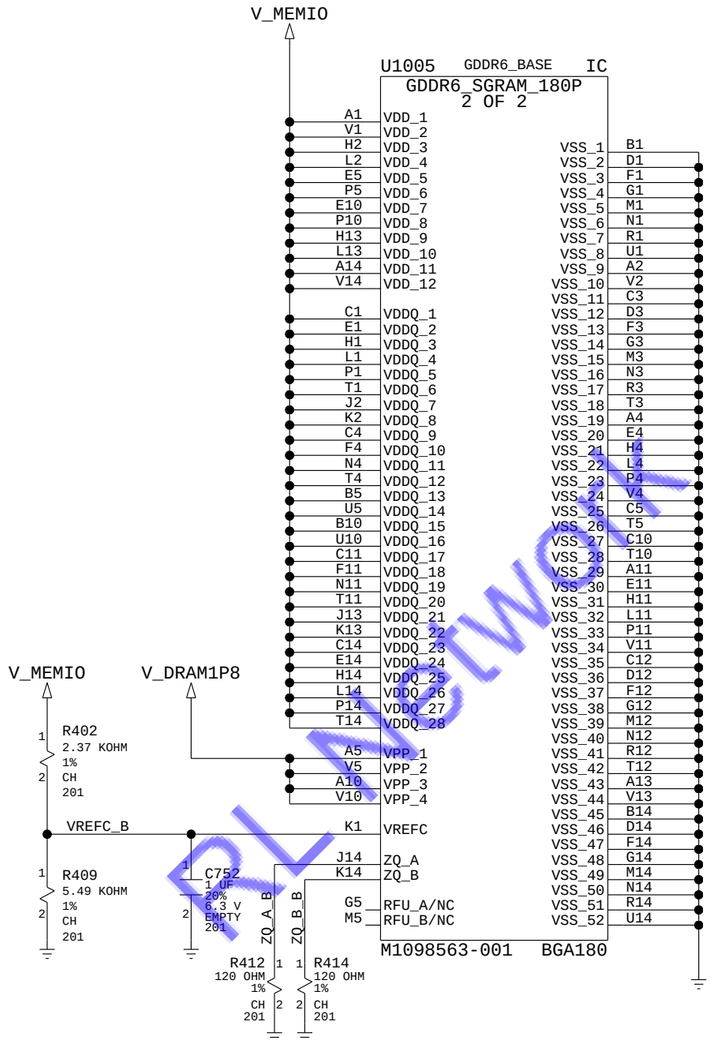


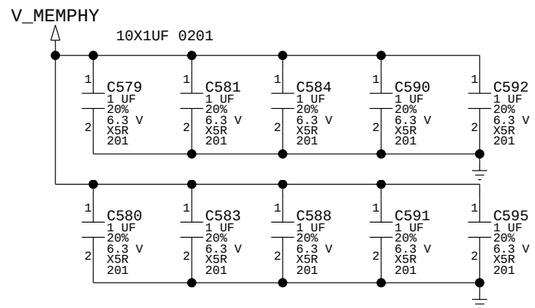


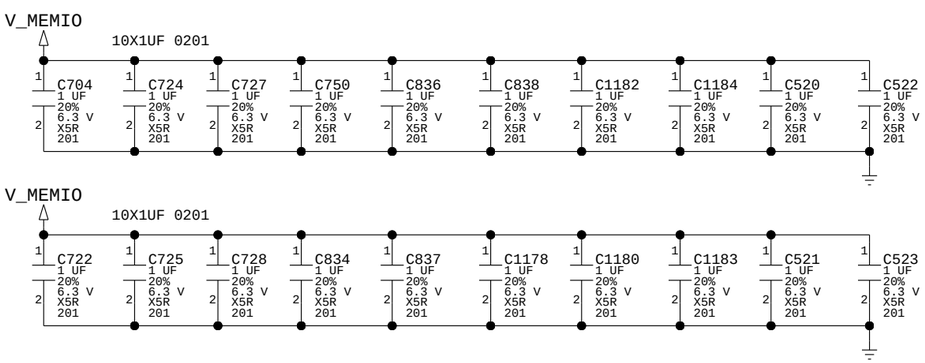


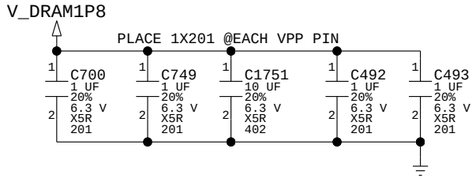
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	15/76	15/76	C	0.12

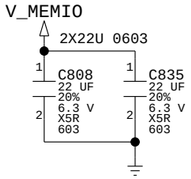
MEMORY: PWR/VSS & DECAP, B





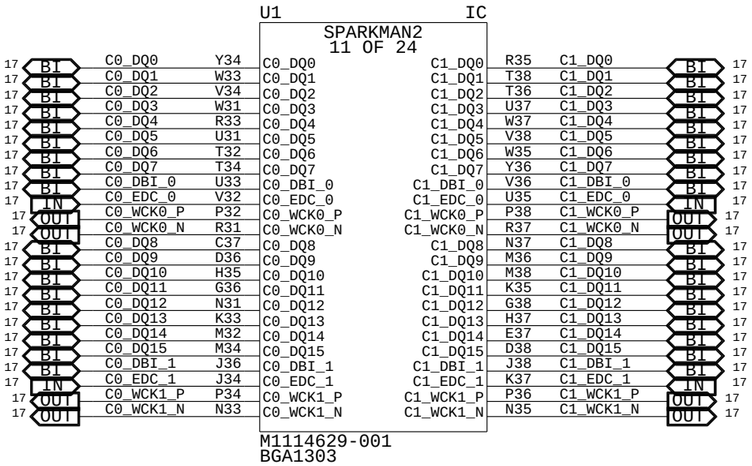


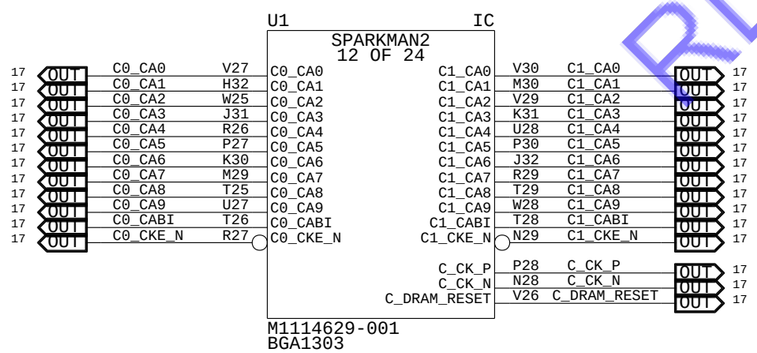


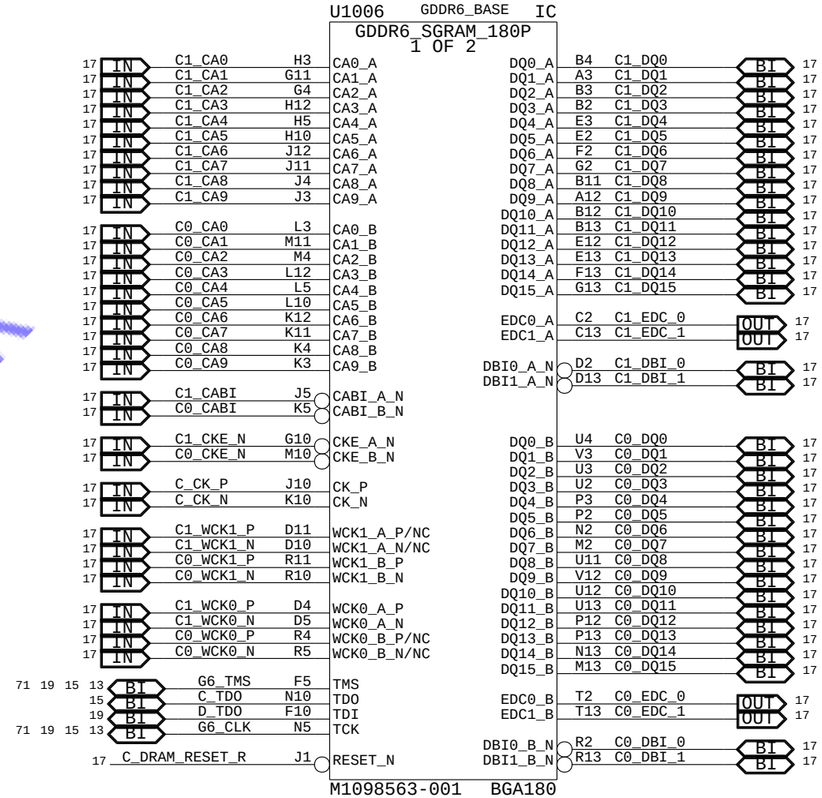


MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	16/76	16/76	C	0.12

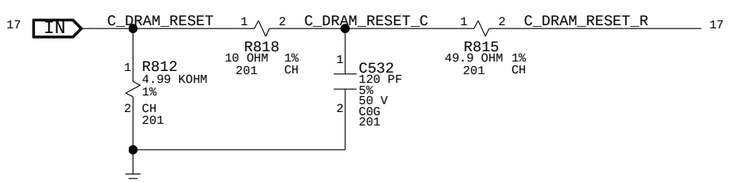
SOC & Memory: CHC/PHY2





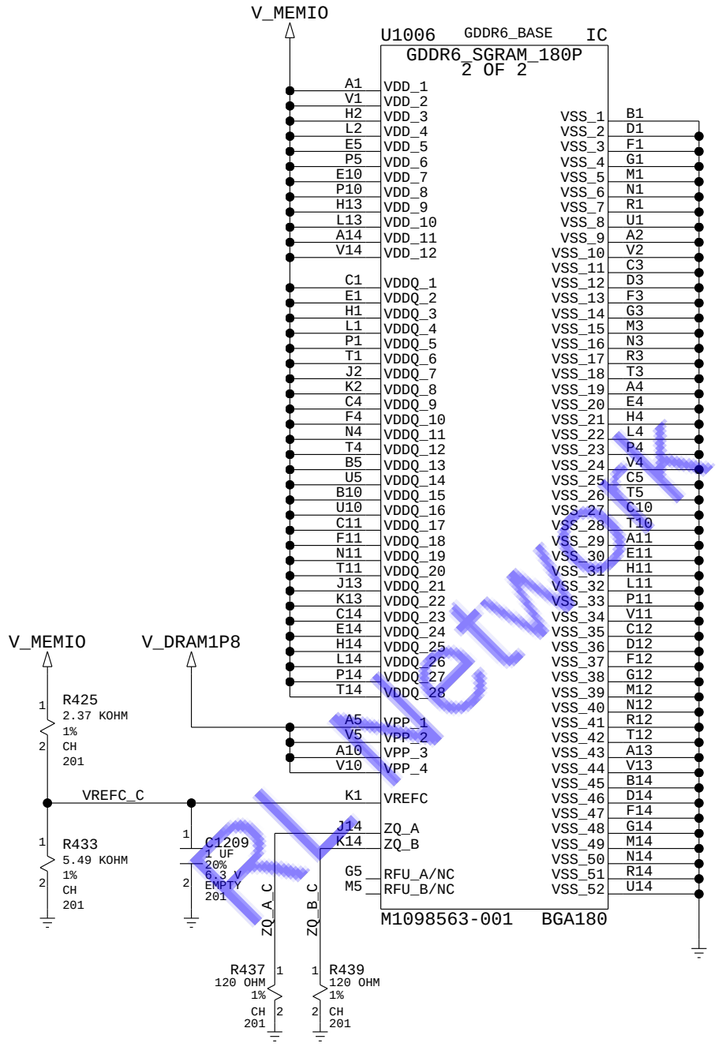


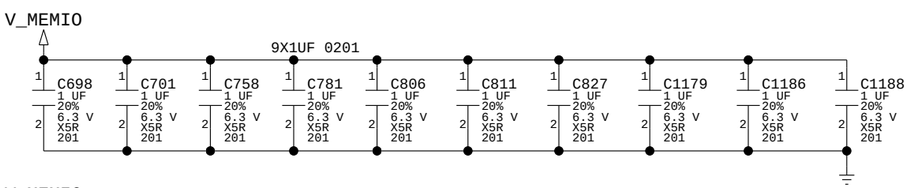
GLITCH PROTECTION CIRCUIT FOR RESET

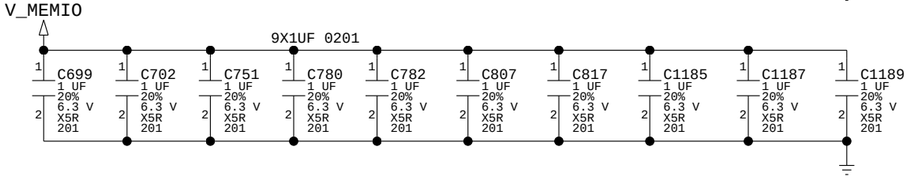


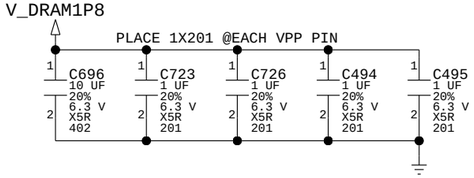
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	17/76	17/76	C	0.12

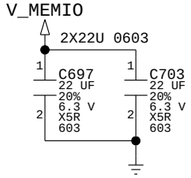
MEMORY: PWR/VSS & DECAP, C

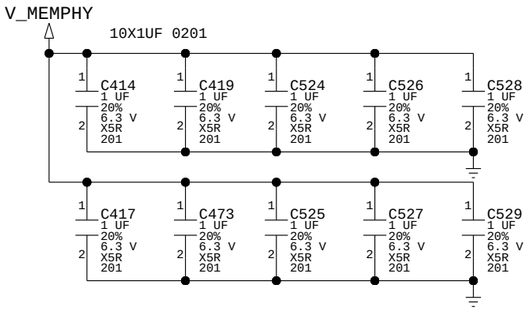






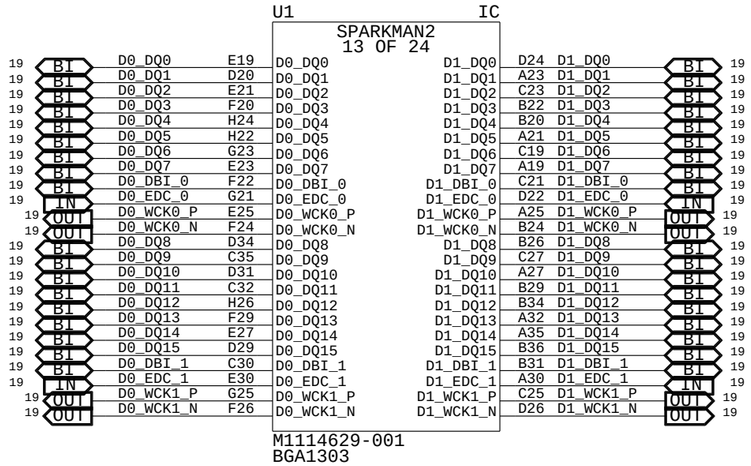


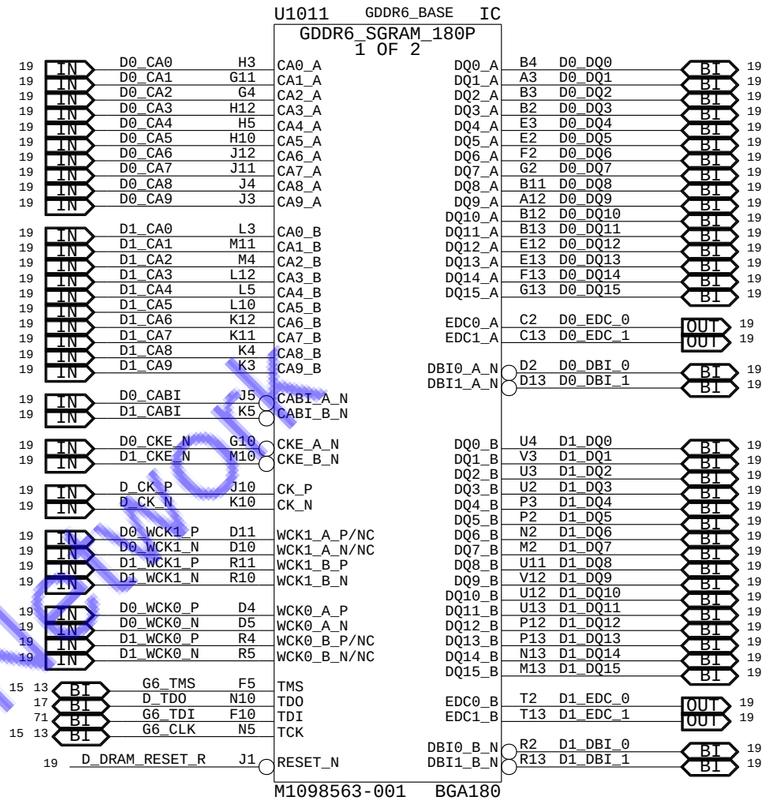


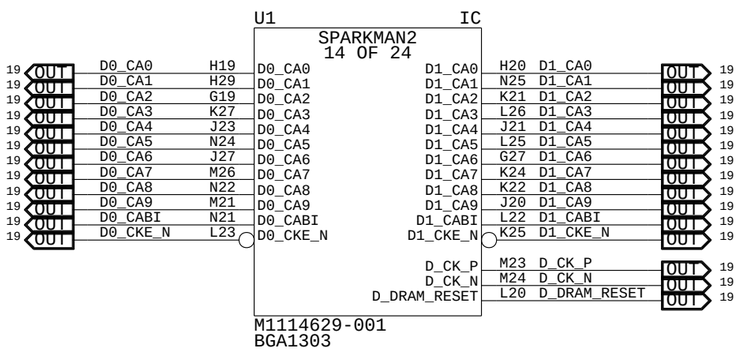


MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	18/76	18/76	C	0.12

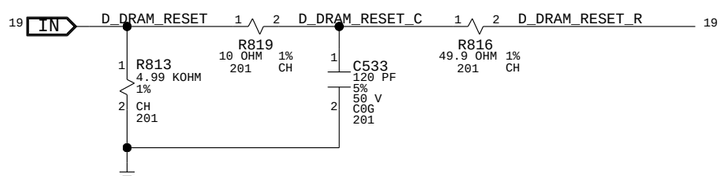
SOC & Memory: CHD/PHY3





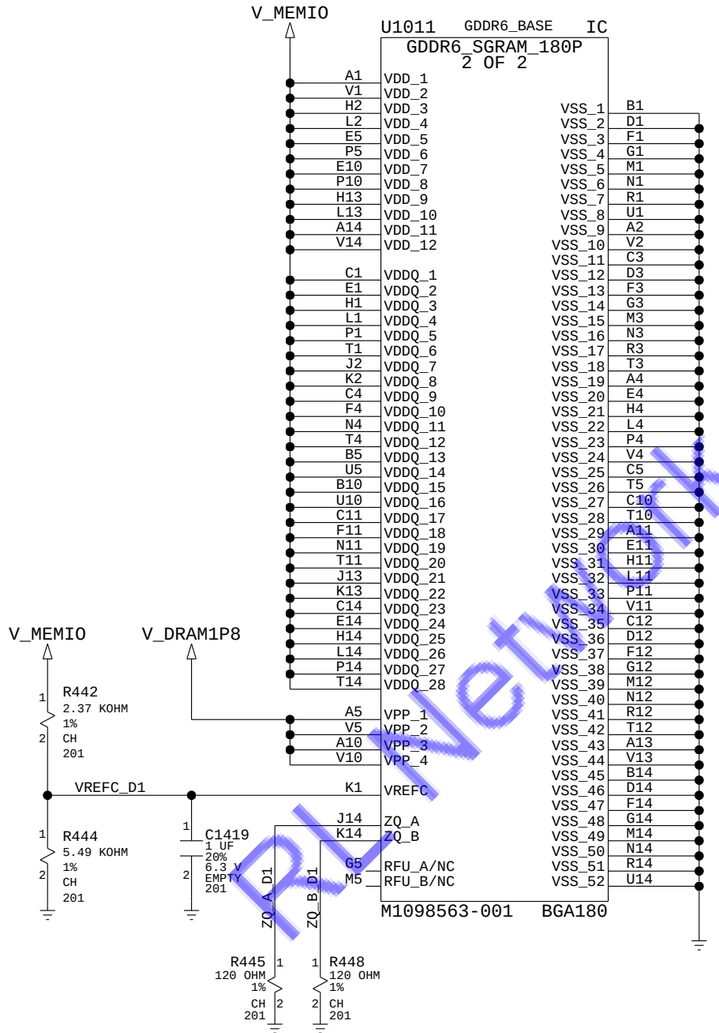


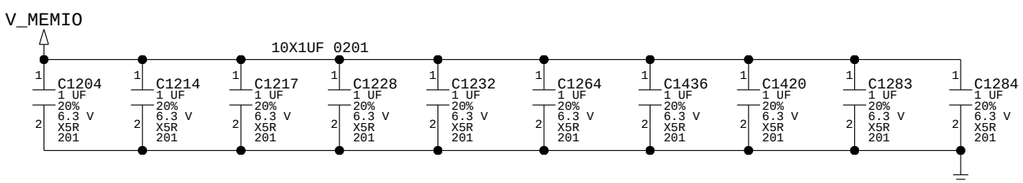
GLITCH PROTECTION CIRCUIT FOR RESET

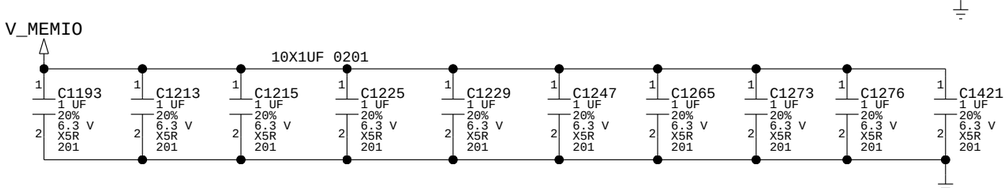


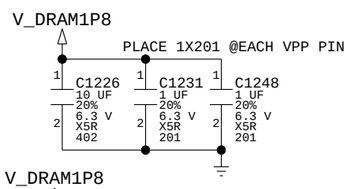
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	19/76	19/76	C	0.12

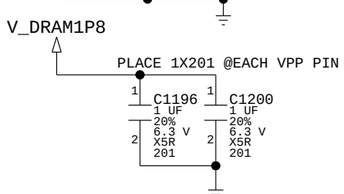
MEMORY: PWR/VSS & DECAP, D

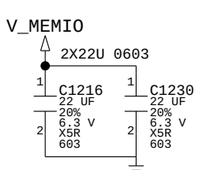


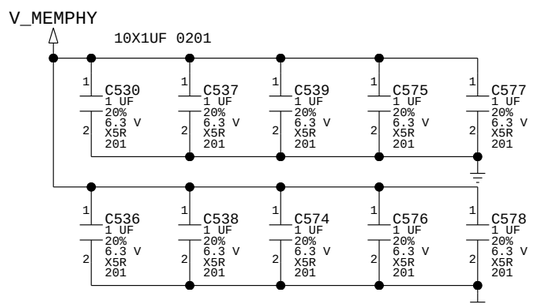












MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	20/76	20/76	C	0.12

SB: SMC

3.3V LEVEL SHIFTER

U48 SANTO IC 4 of 11 — M1093662-001 BGA515

SMC_RST_N_IN	AF23		
SMC_P4_GPIO7	V23	PWRSW_N	
SMC_P4_GPIO6	V22	EJECTSW_N	
SMC_P4_GPIO5	T23	BINDSW_N	
SMC_P4_GPIO4	U23	AUDIO_PWM_OUT	
SMC_P4_GPIO3	U22	VREG_PWRGPC_EN	
SMC_P4_GPIO2	U21	ACC_RESET_N	
SMC_P4_GPIO1	T21	PCIE_RST_N	
SMC_P4_GPIO0	R23	CFX_INS_N	
SMC_P3_GPIO7	L21	TCK	
SMC_P3_GPIO6	M22	TMS	
SMC_P3_GPIO5	N22	USB_PWR_FAULT_N	
SMC_P3_GPIO4	N21	USB_PWR_EN	
SMC_P3_GPIO3	P21	PSU_FAN_EN	
SMC_P3_GPIO2	R21	VREG_PWRGPB_EN	
SMC_P3_GPIO1	R22	FAN_SPEED	
SMC_P3_GPIO0	P23	VREG_PWRGPA_EN	
SMC_UART1_RXD	V25	SMC_RXD	
SMC_UART1_CTS	V26	SMC_UART1_CTS	
SMBUS3_SDA	AE21	SB_SOC_DATA_R	
SMBUS3_SCK	AD21	SB_SOC_CLK_R	
SMBUS2_SDA	AE20	SMBUS_DATA_R	
SMBUS2_SCK	AF20	SMBUS_CLK_R	
SMBUS1_SDA	H6	HDMI_TX_DDC_DATA_SB	
SMBUS1_SCK	G6	HDMI_TX_DDC_CLK_SB	
SMBUS0_SDA	G5		
SMBUS0_SCK	F5		
SECURITY_BYPASS	AC14		
SMC_IR_IN	N26		

SMC_UART1_TXD	T24	SMC_TXD	FT48
SMC_UART1_RTS	V24	SMC_UART1_RTS	DB457
SMC_P2_GPIO7	G2	VREG_PWRGPAB_CPUGFX_PWRGD	
SMC_P2_GPIO6	F2	COLD_RESET_N	
SMC_P2_GPIO5	G1	CFX_PWR_FAULT_N	
SMC_P2_GPIO4	F1	SOC_THERMTRIP	
SMC_P2_GPIO3	G3	SMC_P2_GPIO3	DB454
SMC_P2_GPIO2	H5	SMC_P2_GPIO2	DB455
SMC_P2_GPIO1	J5	SP_SMC_INT	
SMC_P2_GPIO0	J6	SMC_P2_GPIO0	DB456
SMC_P1_GPIO7	J21	TDI_R	
SMC_P1_GPIO6	H21		
SMC_P1_GPIO5	J22		
SMC_P1_GPIO4	K22	TDO_R	
SMC_P1_GPIO3	J23	FAN_PWM	
SMC_P1_GPIO2	H25	WIFI_RESET_N	
SMC_P1_GPIO1	J25	VREG_1P1_ACTIVE_EN	
SMC_P1_GPIO0	H26	LED_NEXUS	
SMC_P0_GPIO7	M23	HDMI_V_5P0_EN	
SMC_P0_GPIO6	M24	SMC_P0_GPIO6	DB419
SMC_P0_GPIO5	L23	DP0_HPD_SB	
SMC_P0_GPIO4	K24	SMC_DBG_LED0_SWO	
SMC_P0_GPIO3	L25	SMC_SPI_SS_N	
SMC_P0_GPIO2	M25	SMC_SPI_CLK	
SMC_P0_GPIO1	L26	SMC_SPI_MISO	
SMC_P0_GPIO0	K26	SMC_SPI_MOSI	

SPARE GPIO

ADD NEAR EJECTSW_N DEBUG POINT

HDMI OUT DDC

HDMI RX DDC SLAVE USE ONLY

PLACE NEXT TO R471 AND R473 RESISTORS

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	21/76	21/76	C	0.12

SB: USB

U48
SANTO
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IC

USBD_D0_DP	AF8					USB2_WIFI_DP	BI	40	WIFI
USBD_D0_DN	AE8					USB2_WIFI_DN	BI	40	
USBC_D0_DP	AC4					USB2_AUX_DP	BI	39	REAR 1
USBC_D0_DN	AC3					USB2_AUX_DN	BI	39	
REAR 1	39 IN	USB3_AUX_RP	Y1	USBC_D1_RXP	USBC_D1_TXP	W3 USB3_AUX_TP_C	C501 0.1 UF10% 16 V 201 X5R	USB3_AUX_TP	OUT 39
	39 IN	USB3_AUX_RN	Y2	USBC_D1_RXN	USBC_D1_TXN	W4 USB3_AUX_TN_C	C500 0.1 UF 10% 16 V 201 X5R	USB3_AUX_TN	OUT 39
REAR 0	39 IN	USB3_BP_P1_RP	V1	USBB_D2_RXP	USBB_D2_TXP	U3 USB3_BP_P1_TP_C	C499 0.1 UF10% 16 V 201 X5R	USB3_BP_P1_TP	OUT 39
	39 IN	USB3_BP_P1_RN	V2	USBB_D2_RXN	USBB_D2_TXN	U4 USB3_BP_P1_TN_C	C498 0.1 UF10% 16 V 201 X5R	USB3_BP_P1_TN	OUT 39
USBB_D0_DP	AE4					USB2_BP_P1_DP	BI	68	REAR 0
USBB_D0_DN	AE3					USB2_BP_P1_DN	BI	68	
USBB_D1_DP	AD2					USB2_BP_P0_DP	1 DB85		NOT USED
USBB_D1_DN	AD1					USB2_BP_P0_DN	1 DB84		
NOT USED	DB90 1	USB3_BP_P0_RP	T1	USBB_D3_RXP	USBB_D3_TXP	R3		USB3_BP_P0_TP	1 DB408
	DB91 1	USB3_BP_P0_RN	T2	USBB_D3_RXN	USBB_D3_TXN	R4		USB3_BP_P0_TN	1 DB15
FRONT	39 IN	USB3_FP_P0_RP	AA8	USBA_D2_RXP	USBA_D2_TXP	AB10 USB3_FP_P0_TP_C	C1097 0.1 UF10% 16 V 201 X5R	USB3_FP_P0_TP	OUT 39
	39 IN	USB3_FP_P0_RN	AA7	USBA_D2_RXN	USBA_D2_TXN	AB9 USB3_FP_P0_TN_C	C1096 0.1 UF 10% 16 V 201 X5R	USB3_FP_P0_TN	OUT 39
USBA_D0_DP	AC7					USB2_FP_P0_DP	BI	39	FRONT
USBA_D0_DN	AC8					USB2_FP_P0_DN	BI	39	
USBA_D1_DP	AF6					USB2_ACC_DP	BI	43	FRONT PANEL ACC
USBA_D1_DN	AF5					USB2_ACC_DN	BI	43	
NOT USED	DB409 1	USB3_ACC_RP	AB1	USBA_D3_RXP	USBA_D3_TXP	AA3		USB3_ACC_TP	1 DB20
	DB17 1	USB3_ACC_RN	AB2	USBA_D3_RXN	USBA_D3_TXN	AA4		USB3_ACC_TN	1 DB22

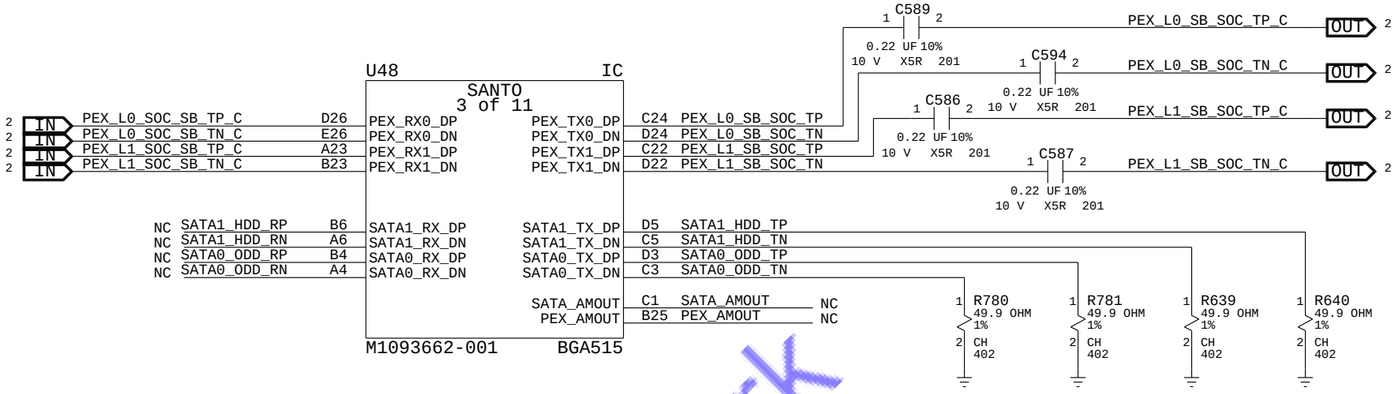
USBA_D2_AMOUT	AA5	NC
USBA_D1_AMOUT	AE6	
USBA_D0_AMOUT	AC11	
USBB_D2_AMOUT	R5	
USBB_D1_AMOUT	AD5	
USBB_D0_AMOUT	AF4	
USBC_D1_AMOUT	W5	
USBC_D0_AMOUT	AC5	
USBD_D0_AMOUT	AE9	

USBA_D1_TXRTUNE
1 R724 174 OHM 1%
2 CH 402
AB11 USBA_D1_TXRTUNE

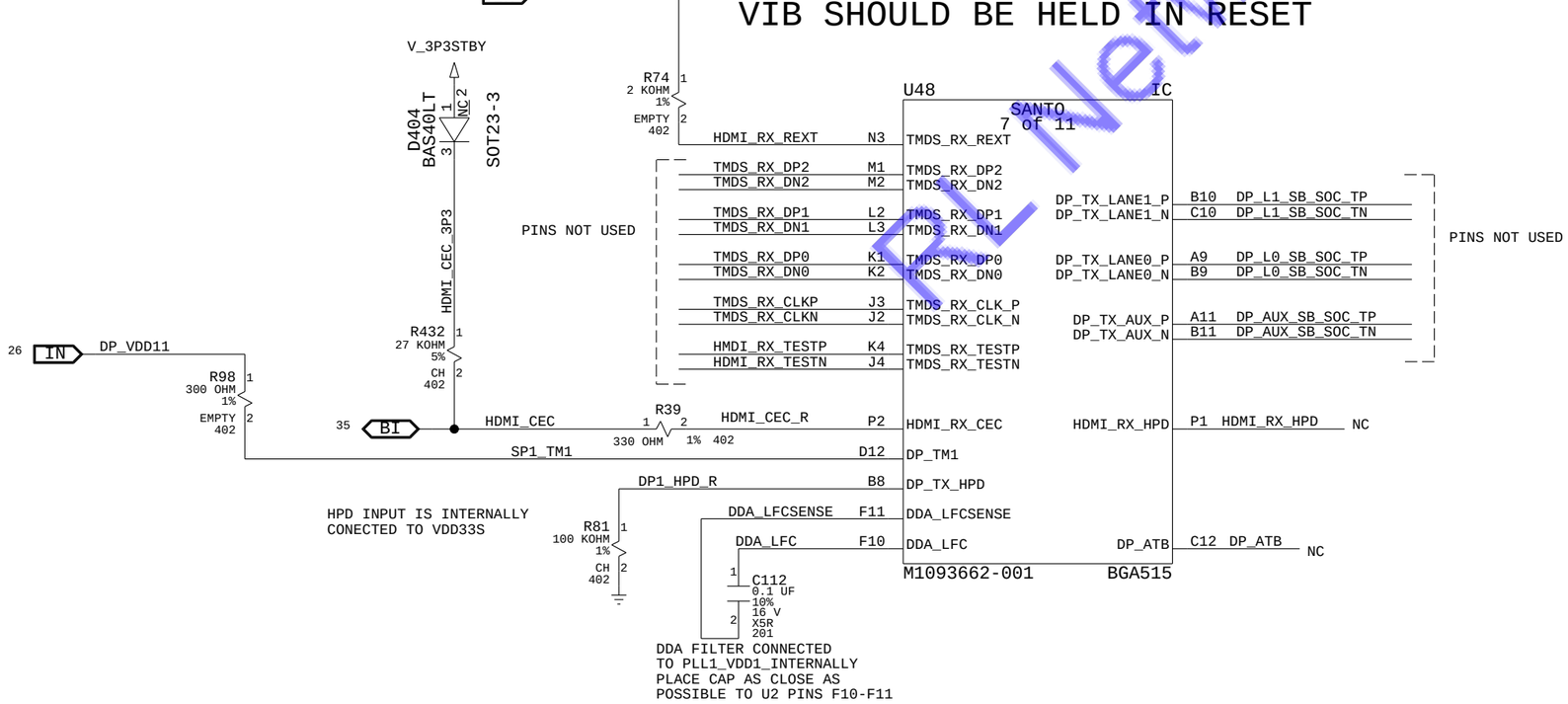
M1093662-001 BGA515

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	22/76	22/76	C	0.12

SB: PCIEX, SATA, VIDEO

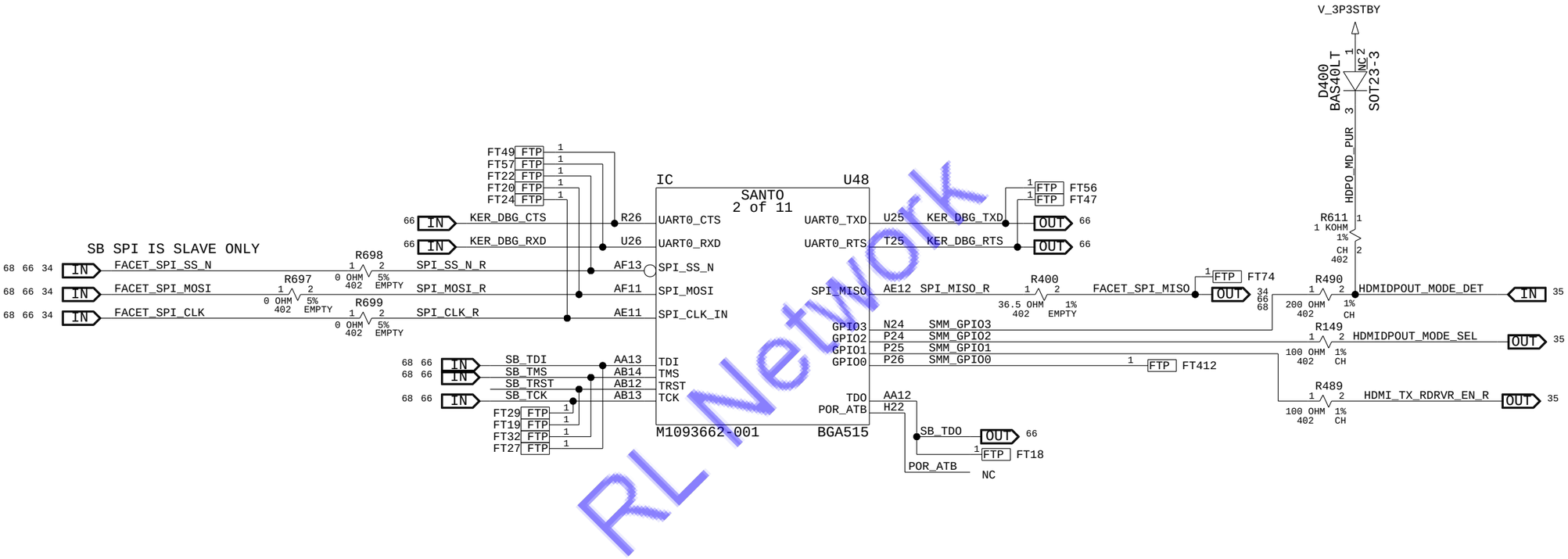


HDMI/DP NOT USED
VIB SHOULD BE HELD IN RESET



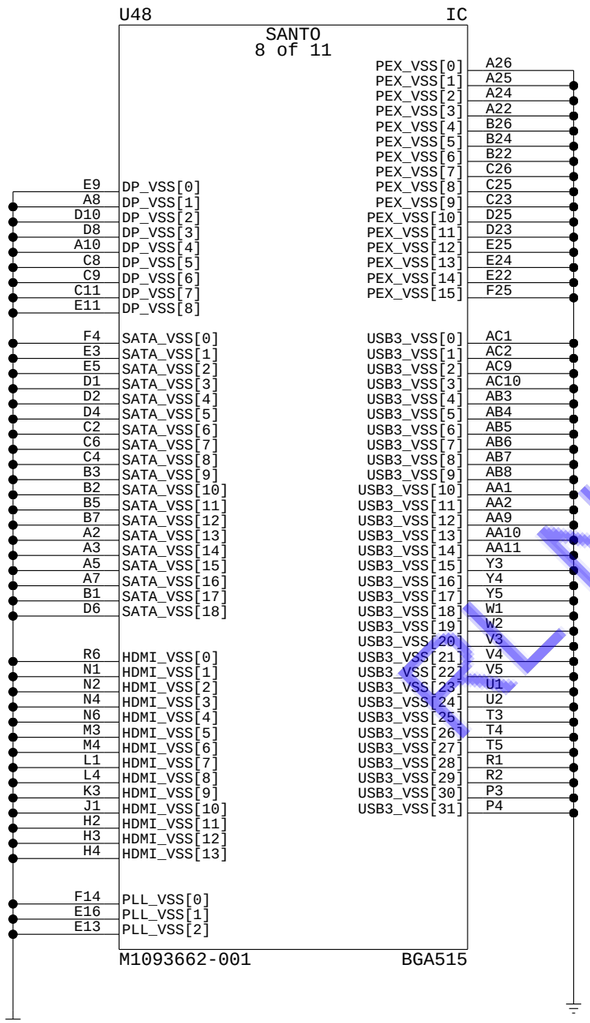
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	23/76	23/76	C	0.12

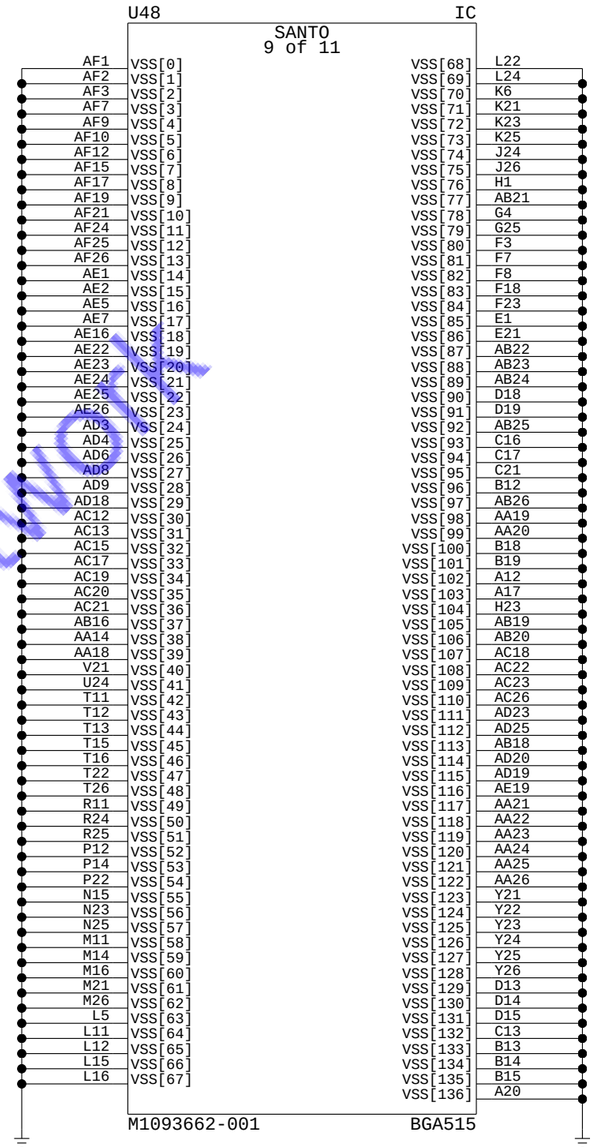
SB: SMM UART, SPI, JTAG, GPIO



MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	24/76	24/76	C	0.12

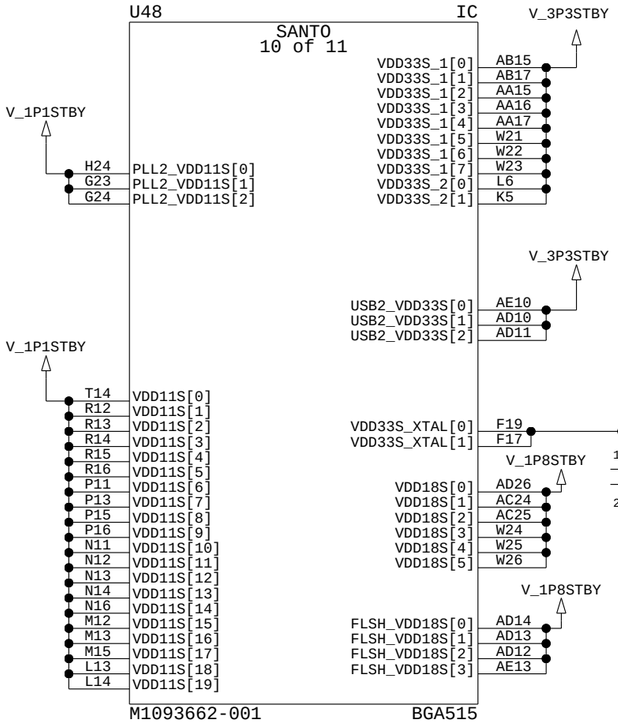
SB: POWER (VSS)



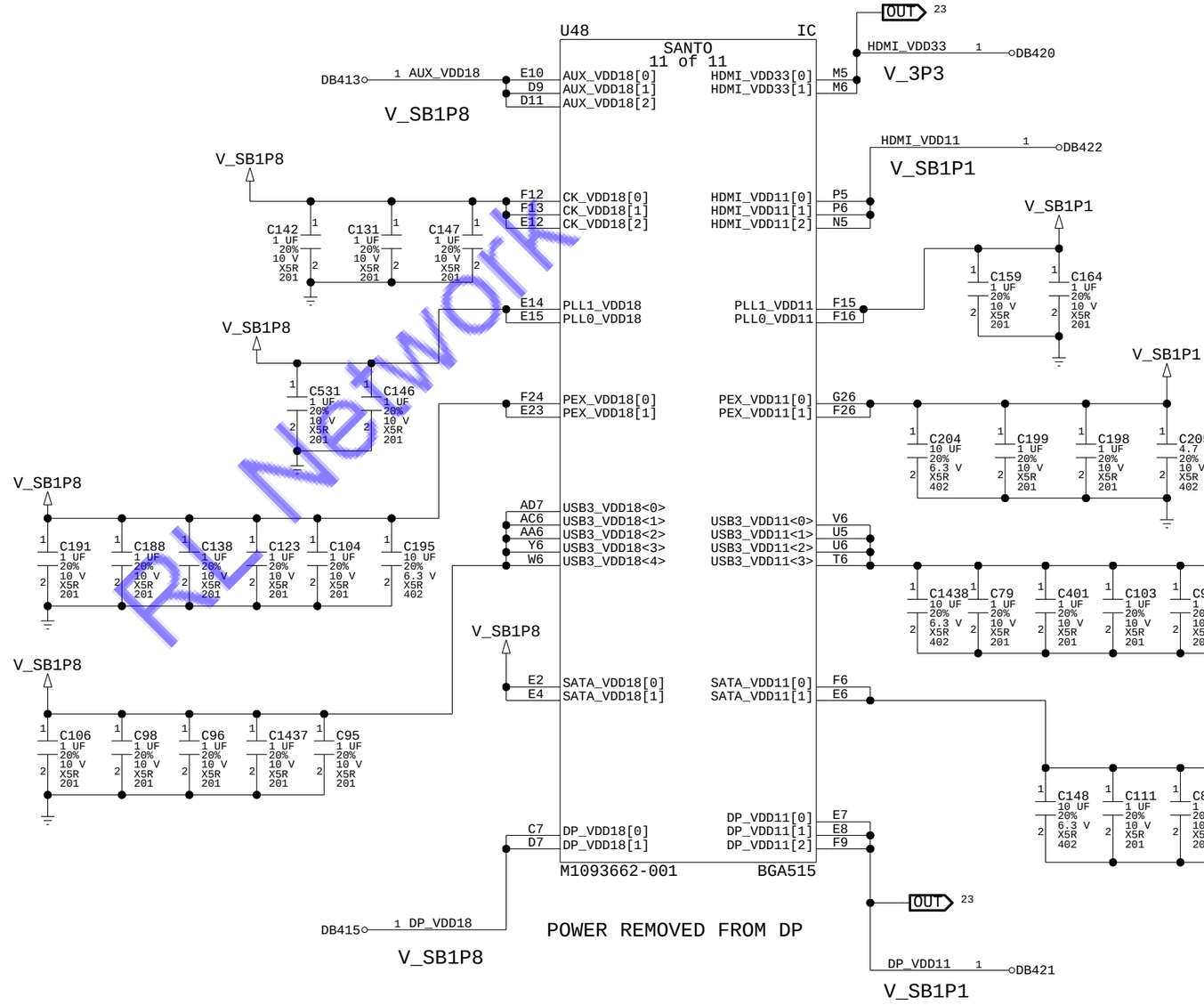


MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	25/76	25/76	C	0.12

SB: POWER



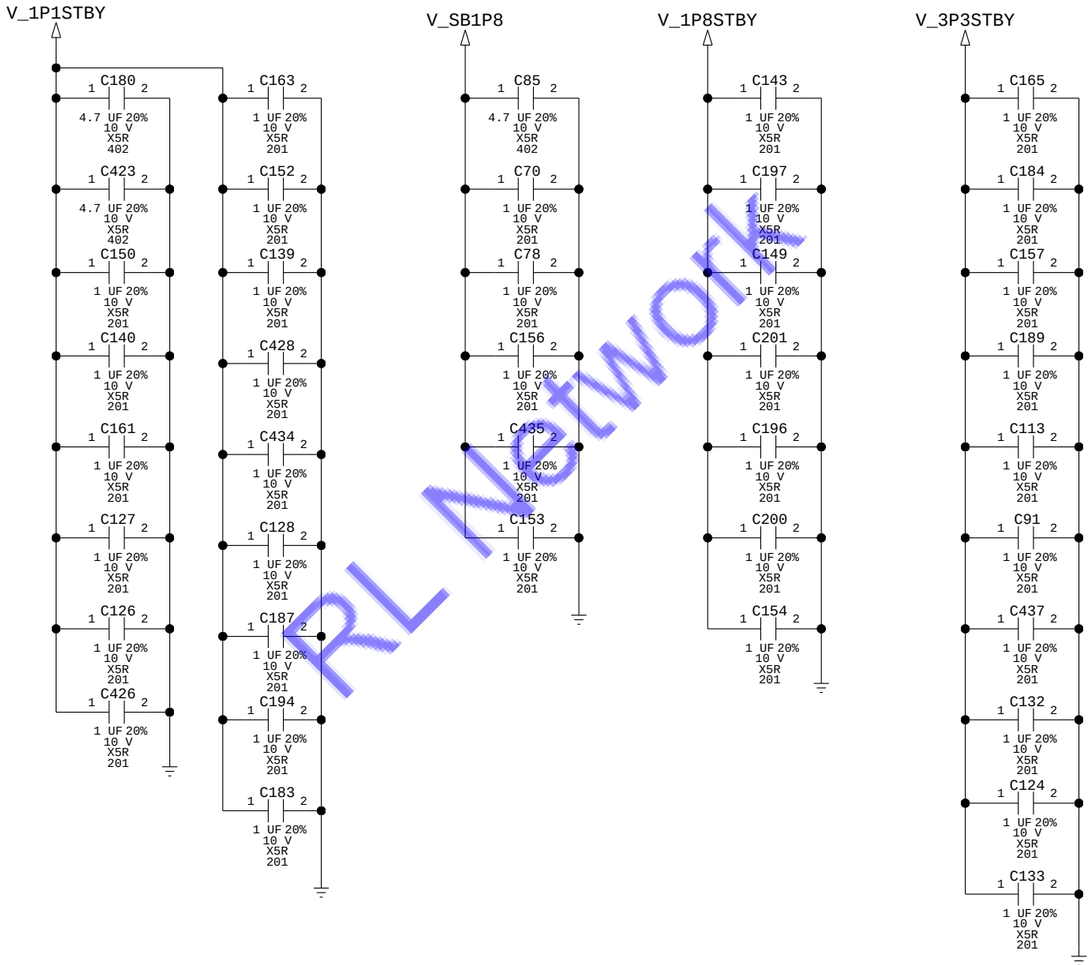
POWER REMOVED FROM AUX AND HDMI



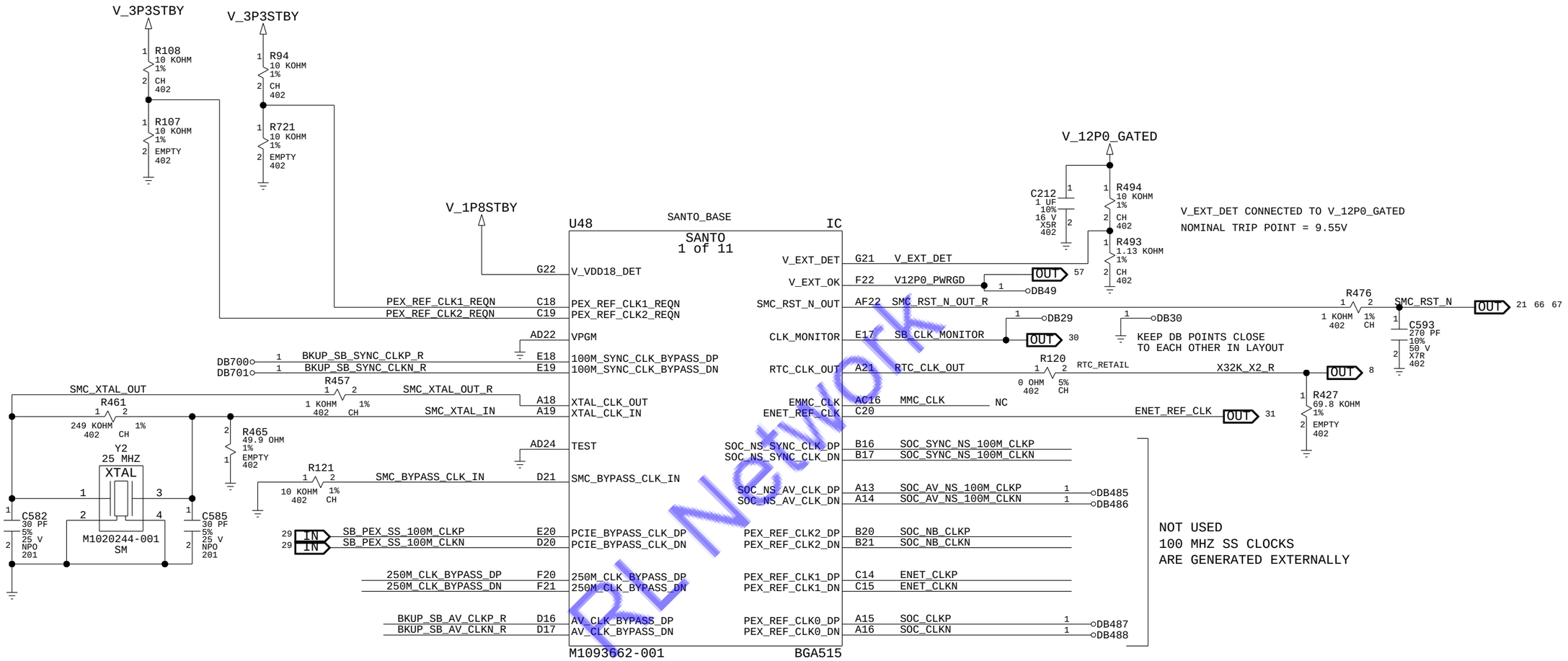
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	26/76	26/76	C	0.12

SB: DECOUPLING

NOTE: ALL V_SB1P1 DECOUPLING
IS SHOWN ON POWER PAGE 49



SB: CLOCKS, STRAPPING, POR



MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
M1093668-001	IC	U48	IC,SANTO SB,BGA515	SANTO_RETAIL
M1093662-001	IC	U48	IC,SANTO SB,BGA515	SANTO_DEV
M1093668-001	EMPTY	U48	IC,SANTO SB,BGA515	SANTO_EMPTY

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	28/76	28/76	C	0.12

CLOCK: PCIE 100MHZ SS

9FGL0651 SMBUS ADDRESS
1101 010 R/W HEX
WRITE 1101 010 0 0XD4
READ 1101 010 1 0XD5

POWER SUBJECT TO REVIEW

V_SOC1P8
V_1P8_SS_CLK_SEL
R607 0 OHM 402 5% EMPTY
V_3P3_GATED
V_3P3_SS_CLK
V_1P8_SS_CLK
FB0 1000 OHM 200 MA 1 OHM BEAD 402
R656 0 OHM 402 5% CH
FB3 1000 OHM 200 MA 1 OHM BEAD 402
C105 1 UF 20% 10 V X5R 201
C1343 0.1 UF 10% 16 V X5R 201

U17 IC 6V41466

R418 10 KOHM 1% CH 402
R496 10 KOHM 1% CH 402
R438 10 KOHM 1% EMPTY 402
R528 10 KOHM 1% EMPTY 402

C1095 10 UF 20% 6.3 V X5R 402
C1336 0.1 UF 10% 16 V X5R 201
C1337 0.1 UF 10% 16 V X5R 201
C1338 0.1 UF 10% 16 V X5R 201
C1339 0.1 UF 10% 16 V X5R 201
C1340 0.1 UF 10% 16 V X5R 201
PLACE 0.1UF CAPS CLOSE TO EACH POWER PINS

C84 0.1 UF 10% 16 V X5R 201
C1341 0.1 UF 10% 16 V X5R 201
C1342 0.1 UF 10% 16 V X5R 201
C487 0.1 UF 10% 16 V X5R 201
C88 0.1 UF 10% 16 V X5R 201
C89 0.1 UF 10% 16 V X5R 201
C1344 10 UF 20% 6.3 V X5R 402
PLACE 0.1UF CAPS CLOSE TO EACH POWER PIN

		12	VDDIO	VDD3.3	16
		17	VDDIO	VDD3.3	31
		27	VDDIO	VDDA3.3	26
		32	VDDIO	VDDDIG3.3	11
		39	VDDIO	VDDREF3.3	5
	SS_LEVEL_SS_CLK	1	VSS_EN_TRI	VDDXTAL3.3	4
	ADR_SEL_SS_CLK	6	VSADR/REF3.3		
41 29 IN	M2_CLKREQ_N	13	VOE0_N	DIF0	14
				DIF0_N	15
	R22 0 OHM 402 EMPTY SB_CLKREQ_N	21	VOE1_N	DIF1	18
				DIF1_N	19
51 30 29 IN	SOC_REFCLK_EN_N				
	R21 0 OHM 402 SOC_CLKREQ_N	24	VOE2_N	DIF2	22
				DIF2_N	23
31 29 IN	SB_REFCLK_N				
	R25 0 OHM 402 ENET_CLKREQ_N	30	VOE3_N	DIF3	28
				DIF3_N	29
	R83 0 OHM 402 EMPTY SPARE_CLKREQ_N	35	VOE4_N	DIF4	33
				DIF4_N	34
38 29 IN	CFX_CLKREQ_N	38	VOE5_N	DIF5	36
				DIF5_N	37
29	SS_CKPWRGD_PD_N	40	CKPWRGD_PD_N		
29	SS_SCLK	9	SCLK_3.3	NC	7
				NC	20
29	SS_SDATA	10	SDATA_3.3	NC	25
30 IN	25MHZ_REF	2	X1_25	GNDDIG	8
		3	X2	EPAD	41

OUT 41 M2_PEX_SS_100M_CLKP
OUT 41 M2_PEX_SS_100M_CLKN
OUT 28 SB_PEX_SS_100M_CLKP
OUT 28 SB_PEX_SS_100M_CLKN
OUT 2 SOC_PEX_SS_100M_CLKP
OUT 2 SOC_PEX_SS_100M_CLKN
OUT 31 ENET_PEX_SS_100M_CLKP
OUT 31 ENET_PEX_SS_100M_CLKN
OUT 71 SPARE_PEX_SS_100M_CLKP
OUT 71 SPARE_PEX_SS_100M_CLKN
OUT 38 CFX_PEX_SS_100M_CLKP
OUT 38 CFX_PEX_SS_100M_CLKN

85 OHM DIFF OUTPUTS

M1092049-001
QFN41

PLACE NEXT TO I2C ISOLATION RESISTORS
DB448
DB490

30 29 IN SMBUS_CLK_BUFFERED
R152 0 OHM 402 CH DEBUG
30 29 BI SMBUS_DATA_BUFFERED
R411 0 OHM 402 CH DEBUG

DB425 TP 1 SS_XTAL_X2

PLACE NEXT TO I2C ISOLATION RESISTORS
DB446
DB447

V_3P3STBY
V_3P3_SS_CLK
C58 1 UF 20% 10 V X5R 201 DEBUG
C416 1 UF 20% 10 V X5R 201 DEBUG

U12 IC TCA9803

		1	VCCA	VCCB	8
68 66 65 62 51 47 37 35 21 BI	SMBUS_DATA	3	SDAA	SDAB	6 SMBUS_DATA_BUFFERED
68 66 65 62 51 47 37 35 21 IN	SMBUS_CLK	2	SCLA	SCLB	7 SMBUS_CLK_BUFFERED
	SS_SMBUS_EN	5	EN	GND	4

BI 29 30 SMBUS_DATA_BUFFERED
OUT 29 30 SMBUS_CLK_BUFFERED

R2 0 OHM 402 5% CH DEBUG
R11 10 KOHM 1% EMPTY 402
M1090212-001 VSSOP DEBUG

EN: 450K INTERNAL PU TO VCCA
V_3P3_SS_CLK HAS 10K PD TO GND

I2C BUFFER PREVENTS LEAKAGE PATH FROM SMBUS PULLUPS TO V_3P3_GATED THROUGH CLOCK GENERATORS

R659 10 KOHM 1% CH 402
R660 10 KOHM 1% CH 402
R661 10 KOHM 1% EMPTY 402
R662 10 KOHM 1% EMPTY 402
R529 10 KOHM 1% CH 402
R663 10 KOHM 1% EMPTY 402
R664 10 KOHM 1% CH 402
R603 10 KOHM 1% CH 402
R43 10 KOHM 1% CH 402
R166 1 KOHM 1% CH 402
RETAIL R642 10 KOHM 1% CH 402
RETAIL R648 10 KOHM 1% CH 402

41 29 IN M2_CLKREQ_N
38 29 IN CFX_CLKREQ_N
29 SOC_CLKREQ_N
29 SB_CLKREQ_N
29 ENET_CLKREQ_N
29 SPARE_CLKREQ_N
29 31 IN SB_REFCLK_N
29 SS_CKPWRGD_PD_N
51 30 29 IN SOC_REFCLK_EN_N
29 SS_SCLK
29 SS_SDATA

R166 = 1K TO ACCOUNT FOR ~60KOHM COMBINED INPUT IMPEDANCE OF CLOCK GENS

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	29/76	29/76	C	0.12

CLOCK: PCIE 100MHZ NS

9FGL04 SMBUS ADDRESS
1101 000 R/W HEX
WRITE 1101 000 0 0XD0
READ 1101 000 1 0XD1

POWER SUBJECT TO REVIEW

30 V_3P3_NS_CLK
R665 10 KOHM 1% EMPTY 402
R667 10 KOHM 1% EMPTY 402
SS_LEVEL_NS_CLK
R666 10 KOHM 1% CH 402
ADR_SEL_NS_CLK
R668 10 KOHM 1% CH 402
SPREAD SPECTRUM TURNED OFF

29 OUT 25MHZ_REF
R593 49.9 OHM 1% 402 CH
25MHZ REF FOR SPREAD CLOCK GEN

V_3P3_GATED
C1345 1 UF 20% 10 V X5R 201
C1346 0.1 UF 10% 16 V X5R 201
FB4 1000 OHM 200 MA 1 OHM BEAD 402

U2 IC
6V41462
M1092048-001
QFN25

VDD3.3	11		
VDD3.3	20		
VDDA3.3	16		
VDDDIG3.3	7		
VDDXTAL3.3	3		
VSS_EN_TRI	23		
VSADR/REF3.3	4		
VOE0_N	12	DIF0	13 SOC_PEX_NS_100M_CLKP
		DIF0_N	14 SOC_PEX_NS_100M_CLKN
VOE1_N	19	DIF1	17 SPARE_PEX_NS_100M_CLKP
		DIF1_N	18 SPARE_PEX_NS_100M_CLKN
CKPWRGD_PD_N	22		
SCLK_3.3	8		
SDATA_3.3	9		
XIN/CLKIN_25	1		
X2	2		
GNDA	15		
GND1	10		
GND2	21		
GNDREF	5		
GNDXTAL	24		
GNDDIG	6		
MPAD	25		

30 V_3P3_NS_CLK
C1422 0.1 UF 10% 16 V X5R 201
C92 0.1 UF 10% 16 V X5R 201
C93 0.1 UF 10% 16 V X5R 201
C94 0.1 UF 10% 16 V X5R 201
C1423 10 UF 20% 6.3 V X5R 402
PLACE 0.1UF CAPS CLOSE TO EACH POWER PIN

85 OHM DIFF OUTPUTS

DIF0 OUT 2
DIF0_N OUT 2
DIF1 1 DB423
DIF1_N 1 DB424

R670 0 OHM EMPTY 402 30 SOC_NS_CLKREQ_N
51 29 IN SOC_REFCLK_EN_N
R669 0 OHM EMPTY 402 30 SPARE_NS_CLKREQ_N
30 NS_CKPWRGD_PD_N
R419 0 OHM DEBUG 402 CH 30 NS_SCLK
29 IN SMBUS_CLK_BUFFERED
29 BI SMBUS_DATA_BUFFERED
R435 0 OHM DEBUG 402 CH 30 NS_SDATA

28 IN SB_CLK_MONITOR
R135 0 OHM 402 5% EMPTY
R134 49.9 OHM 1% EMPTY 402
25MHZ CLOCK FROM SB

NS_XTAL_X1
R620 0 OHM 402
NS_XTAL_X1_R
R621 0 OHM EMPTY 402
NS_XTAL_X2
R105 0 OHM 402
NS_XTAL_X2_R

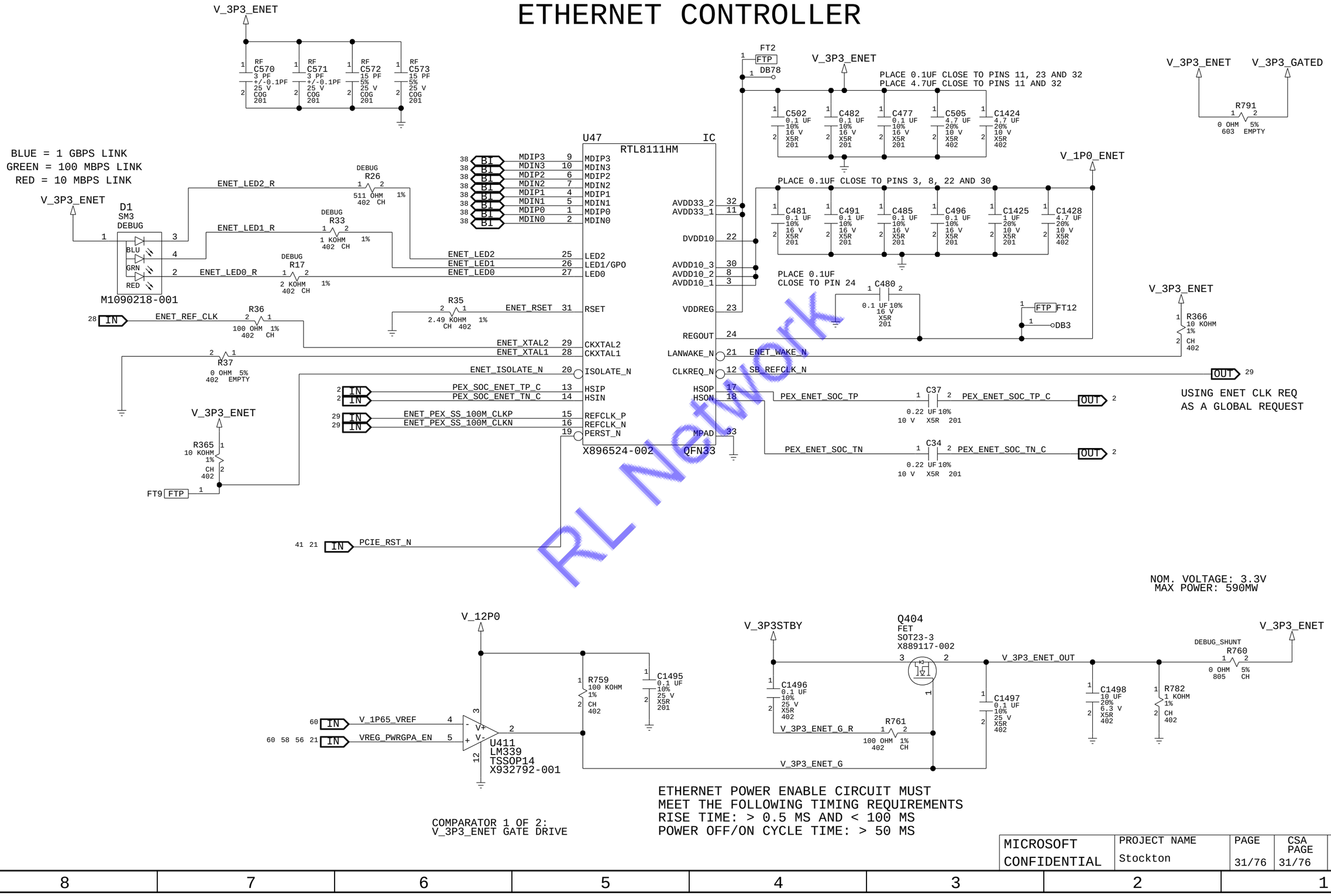
Y0
25 MHZ
XTAL
M1085687-001
SM
XTAL_25MHZ_BASE
C1091 6.8 PF +/-0.5PF 50 V NPO 402
C1335 6.8 PF +/-0.5PF 50 V NPO 402

30 V_3P3_NS_CLK
R671 10 KOHM 1% CH 402 30 SOC_NS_CLKREQ_N
R672 10 KOHM 1% CH 402 30 SPARE_NS_CLKREQ_N
R689 10 KOHM 1% CH 402 30 NS_CKPWRGD_PD_N
RETAIL R114 10 KOHM 1% CH 402 30 NS_SCLK
RETAIL R115 10 KOHM 1% CH 402 30 NS_SDATA

MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
M1115898-001	IC	Y0	XTAL,25MHZ,15PPM,8PF,3.2X2.5MM	XTAL_25MHZ_KDS
M1085687-001	IC	Y0	XTAL,25MHZ,15PPM,8PF,3.2X2.5MM	XTAL_25MHZ_TXC
M1115904-001	IC	Y0	XTAL,25MHZ,15PPM,8PF,3.2X2.5MM	XTAL_25MHZ_NDK

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	30/76	30/76	C	0.12

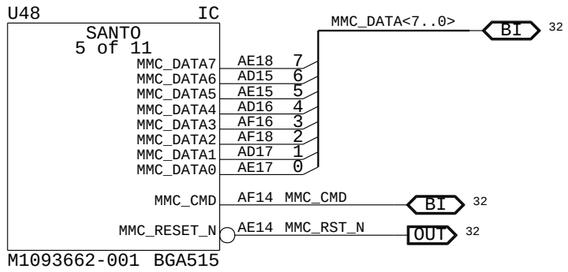
ETHERNET CONTROLLER

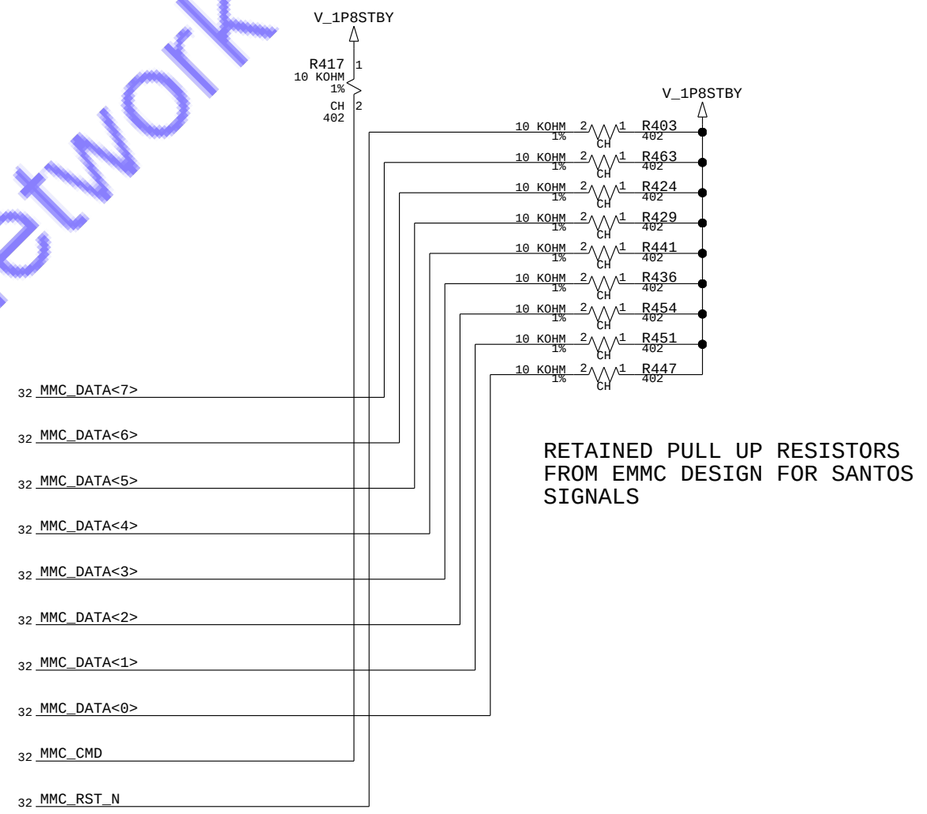


MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	31/76	31/76	C	0.12

SB: EMMC (LEGACY)

EMMC PLACEHOLDER





RETAINED PULL UP RESISTORS
FROM EMMC DESIGN FOR SANTOS
SIGNALS

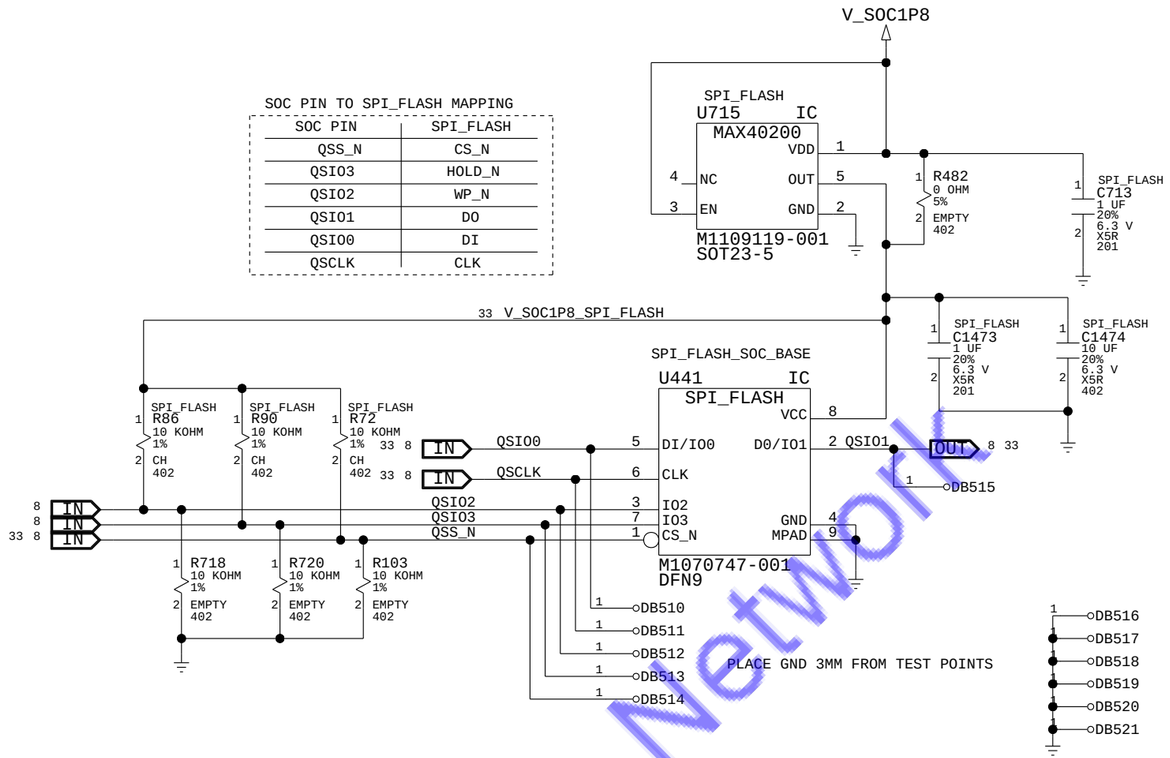
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	32/76	32/76	C	0.12

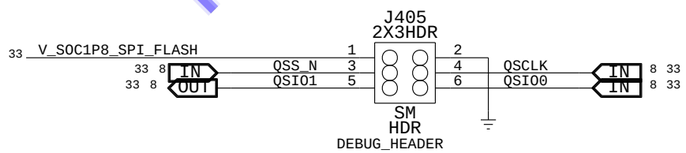
MEMORY: SPI FLASH SOC

MAX40200 IDEAL DIODE PROVIDES BACKDRIVE PROTECTION FROM DEDIPROG

SOC PIN TO SPI_FLASH MAPPING

SOC PIN	SPI_FLASH
QSS_N	CS_N
QSIO3	HOLD_N
QSIO2	WP_N
QSIO1	DO
QSIO0	DI
QSCLK	CLK



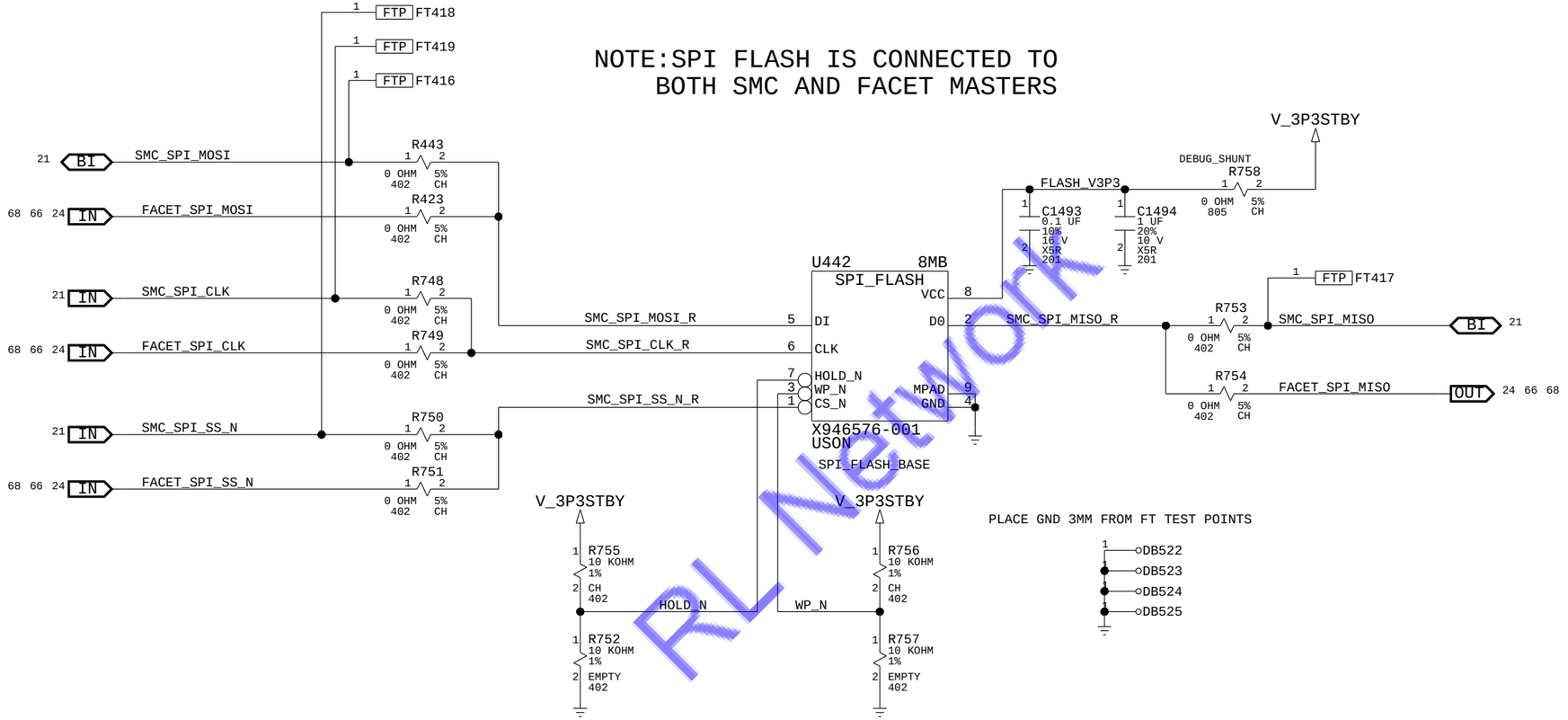


MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
M1070747-001	IC	U441	FLASH MEMORY,FLASH,256MBIT,SM,WSON8,SERIAL,W/DUAL/QUAD SPI	SPI_FLASH_SOC_WINBOND
M1104466-001	IC	U441	FLASH MEMORY,FLASH,256MBIT,SM,8-WSON,SERIAL,MULTI I/O,DTR,1.8V	SPI_FLASH_SOC_MACRONIX

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	33/76	33/76	C	0.12

MEMORY: SPI FLASH

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



MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
X946576-001	IC	U442	WINBOND,SPI_FLASH,8GBIT,USON	SPI_FLASH_WINBOND
M1090771-001	IC	U442	MACRONIX,SPI_FLASH,8GBIT,USON	SPI_FLASH_MACRONIX

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	34/76	34/76	C	0.12

HDMI: VIDEO OUT

MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
M1093444-001	IC	U40	HDMI RE-DRIVER PASS1 NB7NQ621M XB7N	HDMI_RDVR_PASS1
M1093444-002	IC	U40	HDMI RE-DRIVER PASS2 NB7NQ621M PB7N	HDMI_RDVR_PASS2
MXXXXXXX-XXX	IC	U40	HDMI RE-DRIVER PASS3 NB7NQ621M NB7N	HDMI_RDVR_PASS3

Q621M CONTROL SLAVE ADDRESS

ADDR0/ADDR1	7-BIT ADDRESS	8-BIT ADDRESS
FLOAT/FLOAT	0X5E	BC/BD

16 AVAILABLE OPTIONS (7-BIT): 0X50 - 0X5E
SEE DATASHEET FOR MORE DETAILS

PLACE NEXT TO I2C ISOLATION RESISTORS

DB414
DB416

HDMI_RDVR_BASE U40 IC
NB7NQ621M 1 OF 3 CONTROL
M1093444-001 QFN39

SMBUS_CLK — R28 0 OHM 5% 402 CH — HDMI_TX_RDRVR_SCL_CTL (13) / HDMI_TX_RDRVR_SDA_CTL (12)
SMBUS_DATA — R29 0 OHM 5% 402 CH
HDMI_TX_RDRVR_EN — R31 10 KOHM 1% 402 CH; C39 0.1 UF 10% 16 V X5R 201 EMPTY — (36)
HDMI_TX_RDRVR_EN_R — R30 0 OHM 5% 402 CH — FT15 FTP

OS/SCL, FG/SDA, EN
I2C_EN (18) HDMI_TX_RDRVR_I2C_EN
EQ0/ADDR0 (31) HDMI_TX_RDRVR_ADDR0
EQ1/ADDR1 (17) HDMI_TX_RDRVR_ADDR1
MODE (37) HDMI_TX_RDRVR_MODE
LANE_SWAP (14) HDMI_TX_RDRVR_LANE_SWAP

V_3P3STBY_HDMI

STRAP CONFIG: HIGH / FLOAT / FLOAT / FLOAT / LOW

R183 0 OHM 5% 402 CH	R552 0 OHM 5% 402 EMPTY	R693 0 OHM 5% 402 EMPTY	R559 0 OHM 5% 402 EMPTY	R568 0 OHM 5% 402 EMPTY
R541 0 OHM 5% 402 EMPTY	R692 0 OHM 5% 402 EMPTY	R694 0 OHM 5% 402 EMPTY	R560 0 OHM 5% 402 EMPTY	R700 0 OHM 5% 402 CH

TMDS_TX_DP2 — C52 0.1 UF 10% 16 V X5R 201 — TMDS_TX_DP2_C
TMDS_TX_DN2 — C49 — TMDS_TX_DN2_C
TMDS_TX_DP1 — C57 — TMDS_TX_DP1_C
TMDS_TX_DN1 — C55 — TMDS_TX_DN1_C
TMDS_TX_DP0 — C38 — TMDS_TX_DP0_C
TMDS_TX_DN0 — C36 — TMDS_TX_DN0_C
TMDS_TX_CLKP — C45 — TMDS_TX_CLKP_C
TMDS_TX_CLKN — C42 — TMDS_TX_CLKN_C

HDMI_RDVR_BASE U40 IC
NB7NQ621M 2 OF 3 HDMI
M1093444-001 QFN39

A_RXP 1, A_RXN 2, B_RXP 4, B_RXN 5, C_RXP 7, C_RXN 8, D_RXP 10, D_RXN 11
A_TXP 30, A_TXN 29, B_TXP 27, B_TXN 26, C_TXP 24, C_TXN 23, D_TXP 21, D_TXN 20
AUXP 33 NC, AUXN 32 NC
NC 38 HPD_SRC, HPD_SNK 19

HDMI_TX_RDRVR_HPD

R533 0 OHM 5% 2 CH 402

V_3P3STBY_HDMI

C192 C504 C705 C707 C708 C709 — 0.1 UF 10% 16 V X5R 201
C506 22 PF 2% 50 V NP0 201
C706 1000 PF 10% 50 V X7R EMPTY 201
C507 0.01 UF 10% 100 V X7R EMPTY 16 V
C510 10 UF 20% 6.3 V X5R
C511 22 UF 20% 6.3 V X5R EMPTY

HDMI_RDVR_BASE U40 IC
NB7NQ621M 3 OF 3 POWER
VCC 3, 9, 16, 22, 28, 34
GND 6, 15, 25, 35, 39
MPAD
M1093444-001 QFN39

V_3P3STBY
C25 4.7 UF 20% 10 V X5R 402
C478 0.1 UF 10% 16 V X5R 201

V_3P3STBY
R50 2 KOHM 1% 2 CH 402
R54 2 KOHM 1% 2 CH 402

SB_DDC_CLK — R52 0 OHM 5% CH 402
SB_DDC_DATA — R51 0 OHM 5% CH 402
SOC_DDC_CLK — C24 0.1 UF 10% X5R 16 V 201 — SOC_AUXP
SOC_DDC_DATA — C15 0.1 UF 10% X5R 16 V 201 — SOC_AUXN

U21 IC
HDMIDP1_5F6
M1004155-002 WLCSP18

VDD_5V	C4	CEC	E1
VDD_IC	C3		
R_SCL_IC	E5	SCL	D2
R_SDA_IC	D5	SDA	C1
AUX_P	D4	5V_OUT	A3
SCL_IC	E4		
AUX_N	D3	HPD	A1
SDA_IC	E2		
HPD_IC	B5	GND	B1
SELECT_IC	A2	GND	C2
ENABLE_IC	A5		

HDMI_TX_SCL_R, HDMI_TX_SDA_R
HDMI_TX_SCL_BUF, HDMI_TX_SDA_BUF

HDMI 5V LOAD SWITCH: 5V, 250MA MAX TDC
DP PWR LOAD SWITCH: 3.3V, 500MA MAX TDC

C14 2.2 UF 20% 6.3 V X5R 201

DP0_HPD
DP0_HPD_SB — R382 0 OHM 5% 402 CH
HDMIDPOUT_MODE_SEL
HDMI_V_5P0_EN — FT6 FTP
R48 10 KOHM 1% 2 CH 402
R148 10 KOHM 1% 2 CH 402

EG690 DIO SM M1015860-001
EG689 DIO SM M1015860-001
EG688 DIO SM M1015860-001
EG41 DIO SM M1015860-001
EG702 DIO SM M1015860-001
EG701 DIO SM M1015860-001
EG696 DIO SM M1015860-001
EG695 DIO SM M1015860-001

J401 CONN
HDMI_19P_10MH
M1097399-001 SM

TMDS_TX_DP2_CONN	1	TMDS_DATA2_DP	
	2	TMDS_DATA2_SHD	
TMDS_TX_DN2_CONN	3	TMDS_DATA2_DN	
TMDS_TX_DP1_CONN	4	TMDS_DATA1_DP	
	5	TMDS_DATA1_SHD	
TMDS_TX_DN1_CONN	6	TMDS_DATA1_DN	
TMDS_TX_DP0_CONN	7	TMDS_DATA0_DP	
	8	TMDS_DATA0_SHD	
TMDS_TX_DN0_CONN	9	TMDS_DATA0_DN	
TMDS_TX_CLKP_CONN	10	TMDS_CLK_DP	
	11	TMDS_CLK_SHD	
TMDS_TX_CLKN_CONN	12	TMDS_CLK_DN	
HDMI_CEC	13	CEC	
HDMIDPOUT_MODE_DET	14	UTILITY	
HDMI_TX_SCL_CONN	15	SCL	
HDMI_TX_SDA_CONN	16	SDA	
	17	DDC/CEC_GND	
V_5P0_HDMI_OUT	18	+5V_POWER	
HDMI_TX_HPD_CONN	19	HOT_PLUG_DET	
	MT1 20		
	MT2 21		
	MT3 22		
	MT4 23		
	MT5 24		
	MT6 25		
	MT7 26		
	MT8 27		
	MT9 28		
	MT10 29		

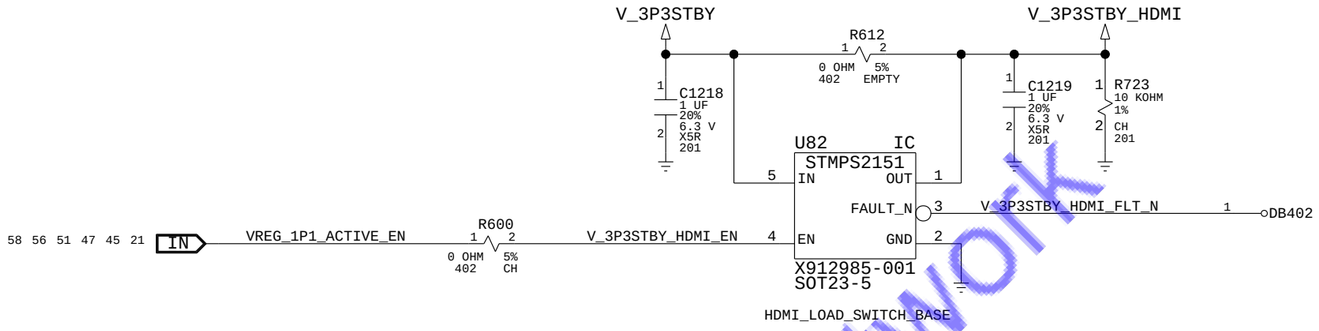
EG24 X882235-001 DIO 402

R19 0 OHM 5% CH 402
R18 0 OHM 5% CH 402

V_3P3STBY_HDMI
RF C563 3 PF +/-0.1PF 25 V COG 201
RF C564 3 PF +/-0.1PF 25 V COG 201
RF C565 15 PF 5% 25 V COG 201
RF C566 15 PF 5% 25 V COG 201

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	35/76	35/76	C	0.12

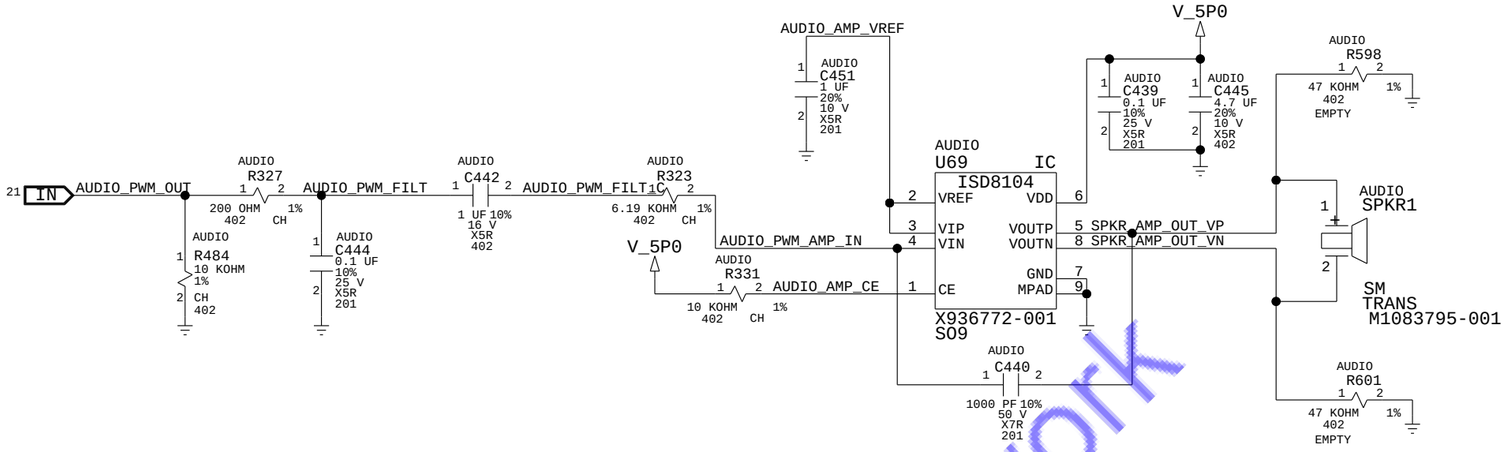
HDMI: LOAD SWITCHES



U82 IS MITIGATION FOR HDMI TMDS BACK-DRIVE CURRENT THROUGH Q621M RE-DRIVER

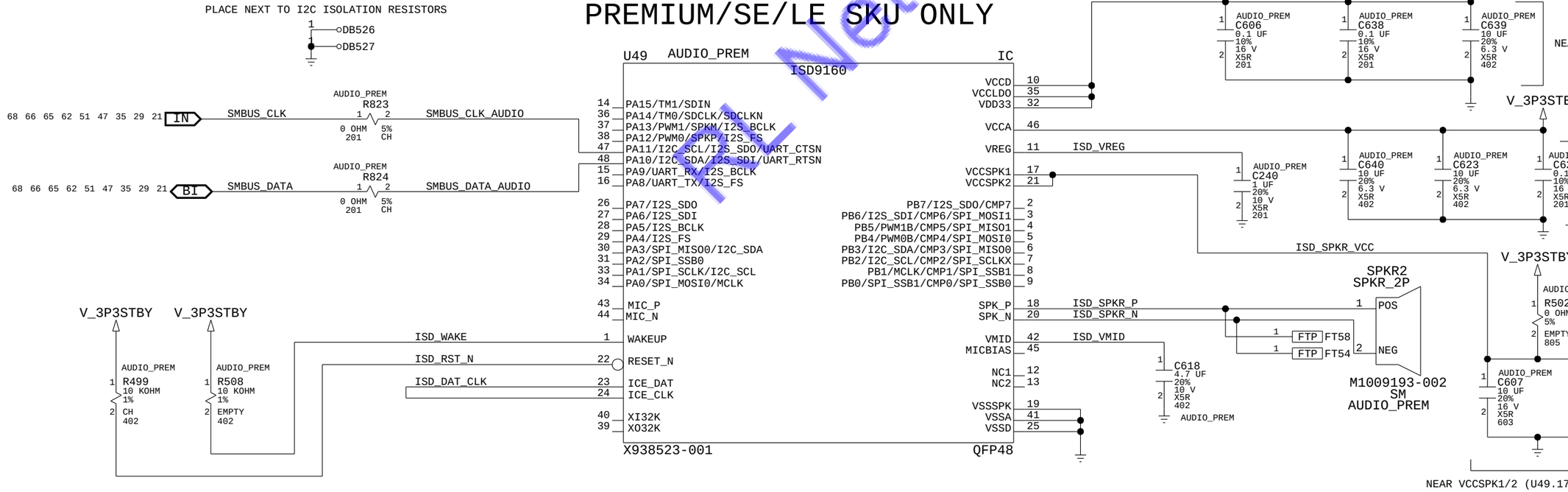
MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
X912985-001	IC	U82	IC,SM,SOT23-5,STMPS2151STR,PWR SW,1CH,0.5A	HDMI_LOAD_SWITCH_ST
X862402-001	IC	U82	IC,SM,SOT23-5,TPS2065DBVR,HI SIDE SW,1.5A	HDMI_LOAD_SWITCH_TI
X934019-001	IC	U82	IC,SM,SOT23-5,AP2151D,PWR SW,1CH,0.5A,DIODES QUAL	HDMI_LOAD_SWITCH_DIODES

AUDIO: PREMIUM AND RETAIL



PLACE NEXT TO I2C ISOLATION RESISTORS

PREMIUM/SE/LE SKU ONLY



ISD9160FIMS05 - REMOVED CAP TOUCH FUNCTIONALITY

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	VER
	Stockton	37/76	37/76	0.12

CONN: RJ45, SPDIF, CFEXPRESS

MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
M1087814-001	CONN	J13	FOXCONN RJ45 CONNECTOR	CON_RJ45_FOXC
MXXXXXX-001	CONN	J13	AMPHENOL QUAL RJ45 CONNECTOR	CON_RJ45_AMP

J13 CONN
RJ45_10P_4MH
M1097403-001
TH

MDIP0 TD1_P 1
MDIN0 TD1_N 2
MDIP1 TD2_P 3
MDIN1 TD2_N 4
MDIP2 TD3_P 7
MDIN2 TD3_N 8
MDIP3 TD4_P 9
MDIN3 TD4_N 10
RJ45_CT CT1 5 / CT2 6
MT1 11, MT2 12, MT3 13, MT4 14

C28 0.01 UF 10% 16 V X5R 201

V_3P3_GATED
R164 1 KOHM 1% CH 402
SPDIF_DETECT
Q166 FET SOT23-3
1 SPDIF_DETECT_N_R
R165 0 OHM 5% 402 EMPTY
R495 100 KOHM 1% CH 402
R497 1 KOHM 1% CH 402
C438 0.1 UF 10% 10 V X5R 201
EG1 X882235-001 DIO 402
C443 22 PF 2% 50 V NP0 201
R805 0 OHM 5% 603 CH DEBUG
C1268 1 UF 20% 10 V X5R 201
C1269 10 UF 20% 6.3 V X5R 402
3V_SPDIF_OUT
SPDIF_DETECT_N
SPDIF_OUT
EG20 X882235-001 EMPTY 402
C8 22 PF 2% 50 V NP0 201

J7 CONN
SPDIF_4P_10MH
M1097402-001
TH
VCC 2
DETECT 4
VIN 3
GND 1
MH 5 6 7 8 9 10 11 12 13 14

EG9
EMPTY
SP3010
MDIP2 D1A 1 / D1B 10
MDIN2 D2A 2 / D2B 9
MDIP3 D3A 4 / D3B 7
MDIN3 D4A 5 / D4B 6
GNDA 3, GNDB 8
CONNECT As TO Bs
X863136-001
DFN10

EG10
EMPTY
SP3010
MDIP0 D1A 1 / D1B 10
MDIN0 D2A 2 / D2B 9
MDIP1 D3A 4 / D3B 7
MDIN1 D4A 5 / D4B 6
GNDA 3, GNDB 8
CONNECT As TO Bs
X863136-001
DFN10

PEX_L1_SOC_CFX_TN_C
PEX_L1_SOC_CFX_TP_C
EG7 EMPTY SM M1015860-001
EG12 EMPTY SM M1015860-001

PEX_L1_CFX_SOC_TN
PEX_L1_CFX_SOC_TP
EG8 EMPTY SM M1015860-001
EG408 EMPTY SM M1015860-001

CFX_PEX_SS_100M_CLKN
CFX_PEX_SS_100M_CLKP
EG406 EMPTY SM M1015860-001
EG409 EMPTY SM M1015860-001

PEX_L0_SOC_CFX_TN_C
PEX_L0_SOC_CFX_TP_C
EG407 EMPTY SM M1015860-001
EG410 EMPTY SM M1015860-001

PEX_L0_CFX_SOC_TN
PEX_L0_CFX_SOC_TP
EG11 EMPTY SM M1015860-001
EG411 EMPTY SM M1015860-001

CFX_PERST_N
CFX_CLKREQ_N
EG2 EMPTY SM M1015860-001
EG6 EMPTY SM M1015860-001

Q166 PROVIDES LOGIC INVERSION
SPDIF DETECT IS ACTIVE LOW
SOC REQUIRES ACTIVE HIGH

V_3P3_CFX
EMPTY U132
NCP803
VCC
RESET_N
GND
CFX_PERST_MONITOR_N
C1452 0.1 UF 10% 10 V EMPTY 201
M1095945-001
SOT23-3
R695 0 OHM 5% 402 EMPTY
R104 10 KOHM 1% CH 402
R789 100 KOHM 1% EMPTY 402
R783 0 OHM 5% 402 CH
CFX_PERST_GPIO_N

V_3P3_CFX_IN
RF FILTER CAPS
RF C1457 15 PF 5% 25 V C0G 201
RF C1458 15 PF 5% 25 V C0G 201
RF C1459 15 PF 5% 25 V C0G 201
RF C1460 3 PF +/-0.1PF 25 V C0G 201
RF C1462 3 PF +/-0.1PF 25 V C0G 201
C1444 22 UF 20% 6.3 V X5R 603
C1758 22 UF 20% 6.3 V X5R 603
C1456 10 UF 20% 6.3 V X5R 402
C1454 1 UF 20% 10 V X5R 201
DB433
EG86 EMPTY SM M1015860-001

CFX_ISENSE_P
DEBUG_SHUNT
R211 PWR
CURN SENSING PWR RESISTOR
E1 E1 E2 E2 CFX_ISENSE_N
I1 I1 I2 I2
0.01 OHM 1/2W 0.5% X867966-001 1206

CFEXPRESS
2.5A EDC
1.55A TDC

J3 CONN
CF_EXPRESS
M1097401-002
SM

1 GND	MH12 33	17 PER0_P	MH28 49
2 PER1_N	MH13 34	18 GND	MH29 50
3 PER1_P	MH14 35	19 PET0_N	MH30 51
4 GND	MH15 36	20 PET0_P	MH31 52
5 PET1_N	MH16 37	21 GND	MH32 53
6 PET1_P	MH17 38	22 MH1	MH33 54
7 RESERVED	MH18 39	23 MH2	MH34 55
8 RESERVED	MH19 40	24 MH3	MH35 56
9 PERST_N	MH20 41	25 MH4	MH36 57
10 +3.3V	MH21 42	26 MH5	MH37 58
11 CLKREQ_N	MH22 43	27 MH6	MH38 59
12 INS_N	MH23 44	28 MH7	MH39 60
13 REFCLK-	MH24 45	29 MH8	MH40 61
14 REFCLK+	MH25 46	30 MH9	MH41 62
15 GND	MH26 47	31 MH10	MH42 63
16 PER0_N	MH27 48	32 MH11	MH43 64

R696 0 OHM 5% 402 CH CFX_RSV1

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	38/76	38/76	C	0.12

CONN: USB (FRONT & REAR)

MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
M1087813-001	CONN	J14,J15	FOXCONN USB CONNECTOR	CON_USB_FOXC
MXXXXXXX-001	CONN	J14,J15	AMPHENOL QUAL USB CONNECTOR	CON_USB_AMP

EG4
ESD ARRAY
SP3010
X863136-001
DFN10

39 22 BI USB3_AUX_RN — 1 D1A, 10 D1B
39 22 BI USB3_AUX_RP — 2 D2A, 9 D2B
39 22 BI USB2_AUX_DP — 4 D3A, 7 D3B
39 22 BI USB2_AUX_DN — 5 D4A, 6 D4B
GNDA 3, GNDB 8
CONNECT As TO Bs

PINS SWAPPED TO SUPPORT PLACEMENT ON BOTTOM

EG5
ESD ARRAY
SP3010
X863136-001
DFN10

68 39 BI USB2_BP_P1_IN_DN — 1 D1A, 10 D1B
68 39 BI USB2_BP_P1_IN_DP — 2 D2A, 9 D2B
39 22 BI USB3_BP_P1_RP — 4 D3A, 7 D3B
39 22 BI USB3_BP_P1_RN — 5 D4A, 6 D4B
GNDA 3, GNDB 8
CONNECT As TO Bs

EG27
ESD ARRAY
SP3010
X863136-001
DFN10

39 22 BI USB2_FP_P0_DN — 1 D1A, 10 D1B
39 22 BI USB2_FP_P0_DP — 2 D2A, 9 D2B
39 22 BI USB3_FP_P0_RP — 4 D3A, 7 D3B
39 22 BI USB3_FP_P0_RN — 5 D4A, 6 D4B
GNDA 3, GNDB 8
CONNECT As TO Bs

V_5P0
USB_LOAD_SWITCH_BASE
U717 IC
TPS2001D
M1089559-001
SOT23-5
IN 5, OUT 1, FLT_N 3, EN 4, GND 2
C1371 0.1 UF 10% 25 V X5R 201
39 21 IN USB_PWR_EN
39 V_5P0_USB3_P1
USB_PWR_FAULT_N OUT 21 39
USB PORT PROTECTION

C67 150 UF 20% 6.3 V POLY SM
C65 470 PF 10% 25 V X7R 201
C63 4.7 UF 20% 10 V X5R 402

PINS SWAPPED TO SUPPORT PLACEMENT ON BOTTOM
POLARITY INSENSITIVE

39 22 BI USB2_AUX_DN
39 22 BI USB2_AUX_DP
39 22 OUT USB3_AUX_RN
39 22 OUT USB3_AUX_RP
100 MA 9 OHM

FILT U76
ECMF02_2HSMX6
X900532-002
DFN6
22 IN USB3_AUX_TN — D+_IC, D+_CONN
22 IN USB3_AUX_TP — D-_IC, D-_CONN
GND, NC 4 NC
USB3_AUX_TN_CMC
USB3_AUX_TP_CMC

J14 CONN
USB3_9P_18MH
M1097400-001
TH
TX/RX FROM HOST PERSPECTIVE
VBUS 1, D- 2, D+ 3, GND 4, STDA_SSRX_N 5, STDA_SSRX_P 6, GND_DRAIN 7, STDA_SSTX_N 8, STDA_SSTX_P 9
MH 10–27

REAR 1
(FORMERLY KINECT)
39 V_5P0_USB3_P1
C540 3 PF +/-0.1PF 25 V COG 201
C543 3 PF +/-0.1PF 25 V COG 201
C546 15 PF 5% 25 V COG 201
C549 15 PF 5% 25 V COG 201

68 39 BI V_5P0_USB3_P0
V_5P0
USB_LOAD_SWITCH_BASE
U431 IC
TPS2001D
M1089559-001
SOT23-5
USB_DEBUG_FTDI
C1690 1 UF 20% 10 V X5R 201
C1397 0.1 UF 10% 25 V X5R 201
USB_PWR_FAULT_N OUT 21 39

C68 150 UF 20% 6.3 V POLY SM
C64 470 PF 10% 25 V X7R 201
C62 4.7 UF 20% 10 V X5R 402

FILT U75
ECMF02_2HSMX6
X900532-002
DFN6
22 IN USB3_BP_P1_TN — D+_IC, D+_CONN
22 IN USB3_BP_P1_TP — D-_IC, D-_CONN
GND, NC 4 NC
USB3_BP_P1_TN_CMC
USB3_BP_P1_TP_CMC

68 39 BI USB2_BP_P1_IN_DN
68 39 BI USB2_BP_P1_IN_DP
39 22 OUT USB3_BP_P1_RN
39 22 OUT USB3_BP_P1_RP

J15 CONN
USB3_9P_18MH
M1097400-001
TH
TX/RX FROM HOST PERSPECTIVE
VBUS 1, D- 2, D+ 3, GND 4, STDA_SSRX_N 5, STDA_SSRX_P 6, GND_DRAIN 7, STDA_SSTX_N 8, STDA_SSTX_P 9
MH 10–27

REAR 0
(CLOSEST TO ENET PORT)
68 39 BI V_5P0_USB3_P0
C541 3 PF +/-0.1PF 25 V COG 201
C544 3 PF +/-0.1PF 25 V COG 201
C547 15 PF 5% 25 V COG 201
C550 15 PF 5% 25 V COG 201

V_12P0
PWR DETECT
3.0V NOM
VBUS_EN_PWR_SNS
R256 10 KOHM 1% CH 201 DEBUG_FTDI
R280 3.32 KOHM 1% CH 201 DEBUG_FTDI
R440 0 OHM 5% 201 EMPTY

V_3P3_FTDI
39 21 IN USB_PWR_EN
R609 0 OHM 5% 402 CH NO_DEBUG_FTDI
USB3_P0_EN
C1681 1 UF 20% 10 V X5R 201 DEBUG_FTDI

U51 IC
SN74LVC1G08
M1035197-001
SC70-5 DEBUG_FTDI
69 68 IN LOGIC_USB_HOST_PWR_EN
GATED_USB_HOST_PWR_EN
R610 0 OHM 5% 402 CH DEBUG_FTDI

V_5P0
USB_LOAD_SWITCH_BASE
U407 IC
TPS2001D
M1089559-001
SOT23-5
C1701 0.1 UF 10% 25 V X5R 201
39 21 IN USB_PWR_EN
39 V_5P0_USB3_FP
USB_PWR_FAULT_N OUT 21 39
USB PORT PROTECTION

C1702 150 UF 20% 6.3 V POLY SM
C1703 470 PF 10% 25 V X7R 201
C1704 4.7 UF 20% 10 V X5R 402

FILT U438
ECMF02_2HSMX6
X900532-002
DFN6
22 IN USB3_FP_P0_TP — D+_IC, D+_CONN
22 IN USB3_FP_P0_TN — D-_IC, D-_CONN
GND, NC 4 NC
USB3_FP_P0_TN_CMC
USB3_FP_P0_TP_CMC

39 22 BI USB2_FP_P0_DN
39 22 BI USB2_FP_P0_DP
39 22 OUT USB3_FP_P0_RN
39 22 OUT USB3_FP_P0_RP

J27 CONN
USB3_9P_15MH
M1097400-002
TH
TX/RX FROM HOST PERSPECTIVE
VBUS 1, D- 2, D+ 3, GND 4, STDA_SSRX_N 5, STDA_SSRX_P 6, GND_DRAIN 7, STDA_SSTX_N 8, STDA_SSTX_P 9
MH 10–24

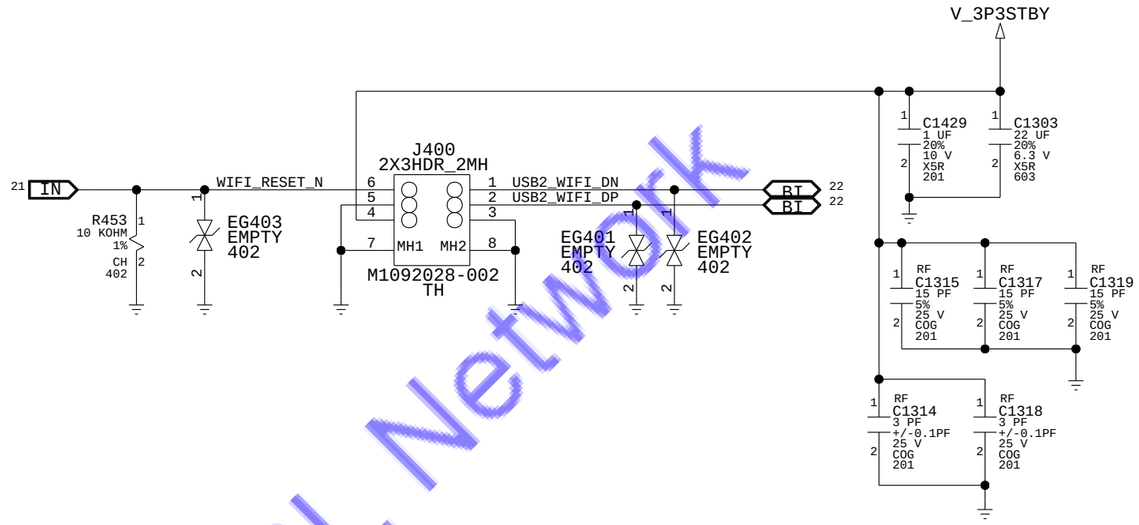
FRONT USB
39 V_5P0_USB3_FP
C542 3 PF +/-0.1PF 25 V COG 201
C545 3 PF +/-0.1PF 25 V COG 201
C548 15 PF 5% 25 V COG 201
C551 15 PF 5% 25 V COG 201

MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
M1089694-001	IC	U431	IC,SM,SOT25,LOAD SWITCH,50 MOHM,2.5 A, SI	USB_LOAD_SWITCH_FTDI
M1089559-001	IC	U407, U717	IC,SM,SOT23-5,CURRENT LIMITED, POWER DISTRIBUTION SWITCH	USB_LOAD_SWITCH_FTDI
M1089559-001	IC	U431, U407, U717	IC,SM,SOT23-5,CURRENT LIMITED, POWER DISTRIBUTION SWITCH	USB_LOAD_SWITCH_TI
M1104212-001	IC	U431, U407, U717	IC-PWR,DC/DC CONV,SM,TSOT-23-5,HIGH SIDE POWER SWITCH	USB_LOAD_SWITCH_RICHTEK

USB_LOAD_SWITCH_FTDI STUFFS USB P0 LOAD SWITCH WITH REVERSE CURRENT PROTECTION

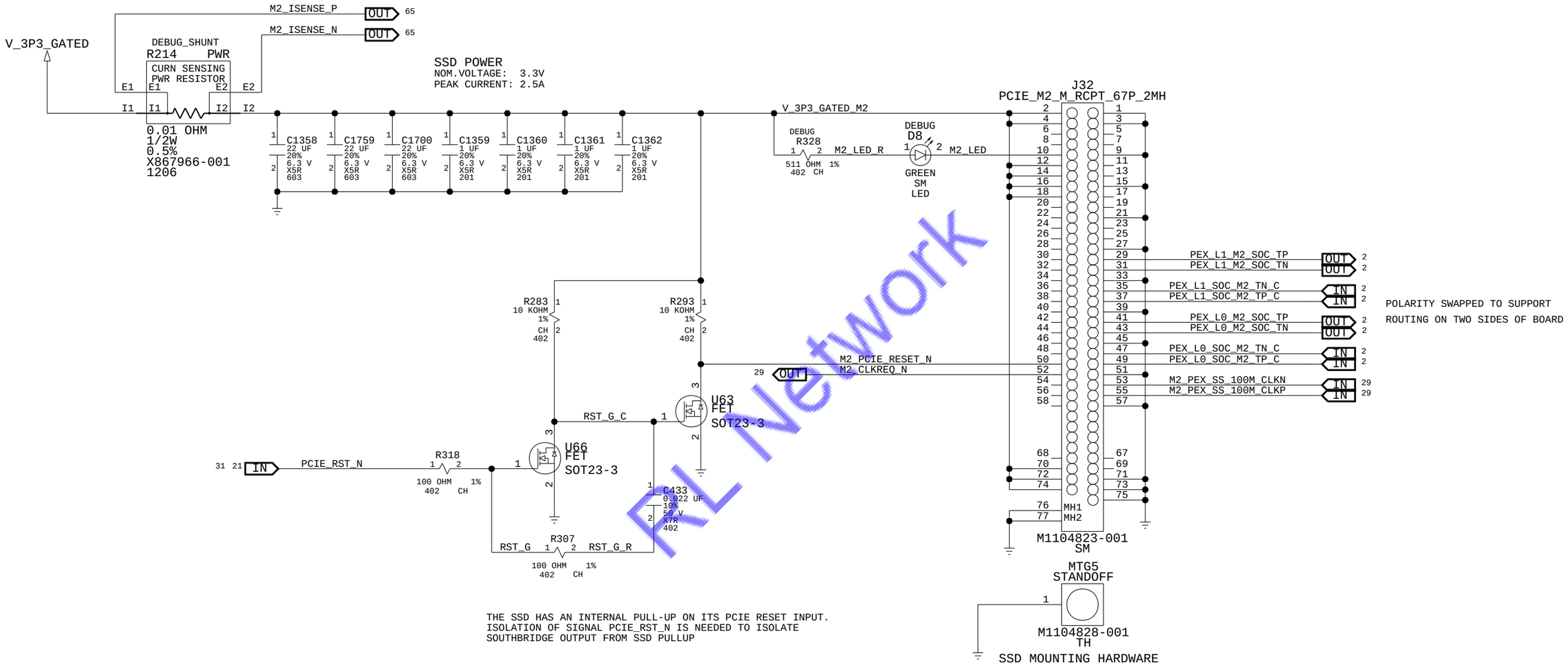
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	39/76	39/76	C	0.12

CONN: WIFI



MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	40/76	40/76	C	0.12

CONN: M.2



POLARITY SWAPPED TO SUPPORT
ROUTING ON TWO SIDES OF BOARD

THE SSD HAS AN INTERNAL PULL-UP ON ITS PCIE RESET INPUT.
ISOLATION OF SIGNAL PCIE_RST_N IS NEEDED TO ISOLATE
SOUTHBRIDGE OUTPUT FROM SSD PULLUP

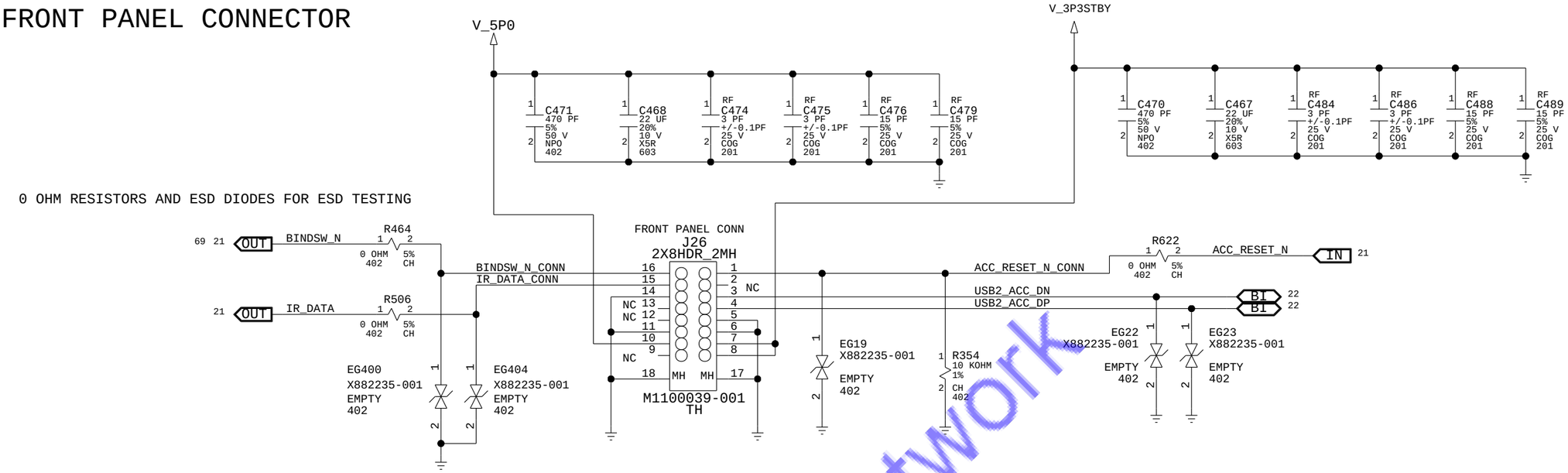
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	41/76	41/76	C	0.12

CONN: ODD

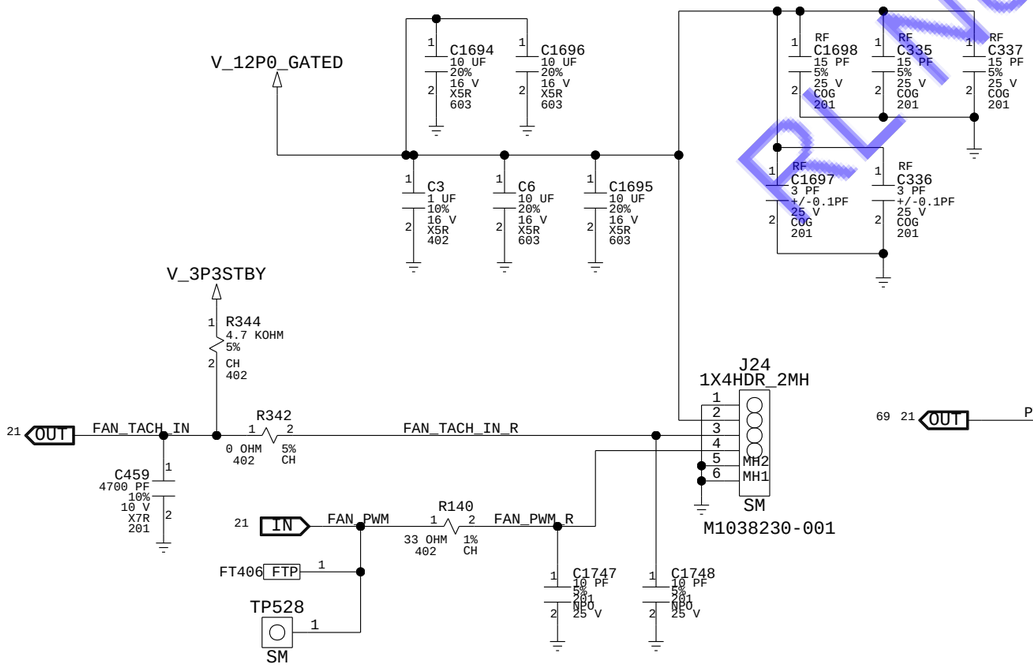
PLACEHOLDER FOR OBSOLETE ODD CIRCUITRY

CONN: FRONT PANEL, FAN, NEXUS

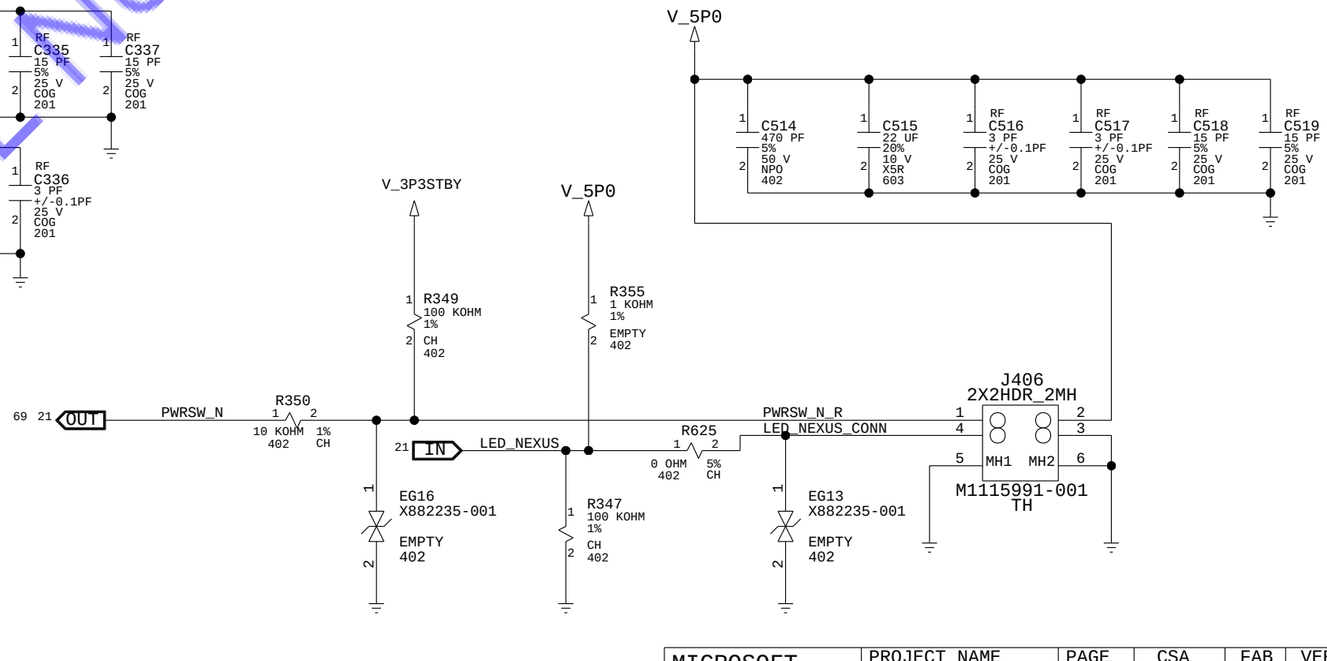
FRONT PANEL CONNECTOR



FAN CONNECTOR

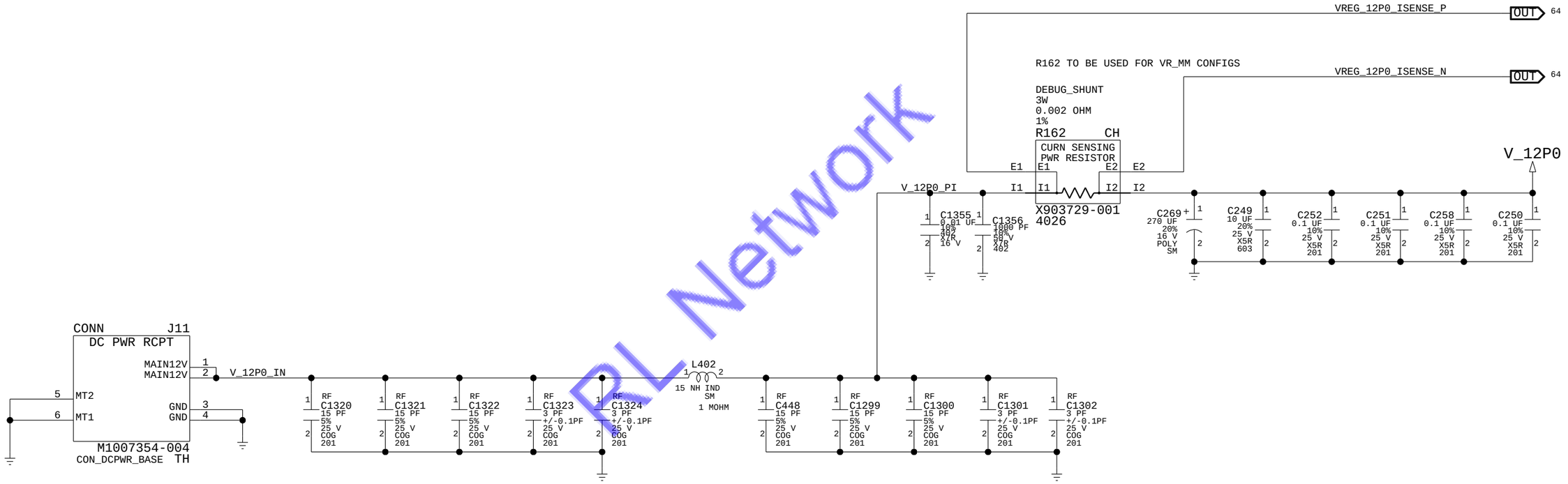


NEXUS CONNECTOR



MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	43/76	43/76	C	0.12

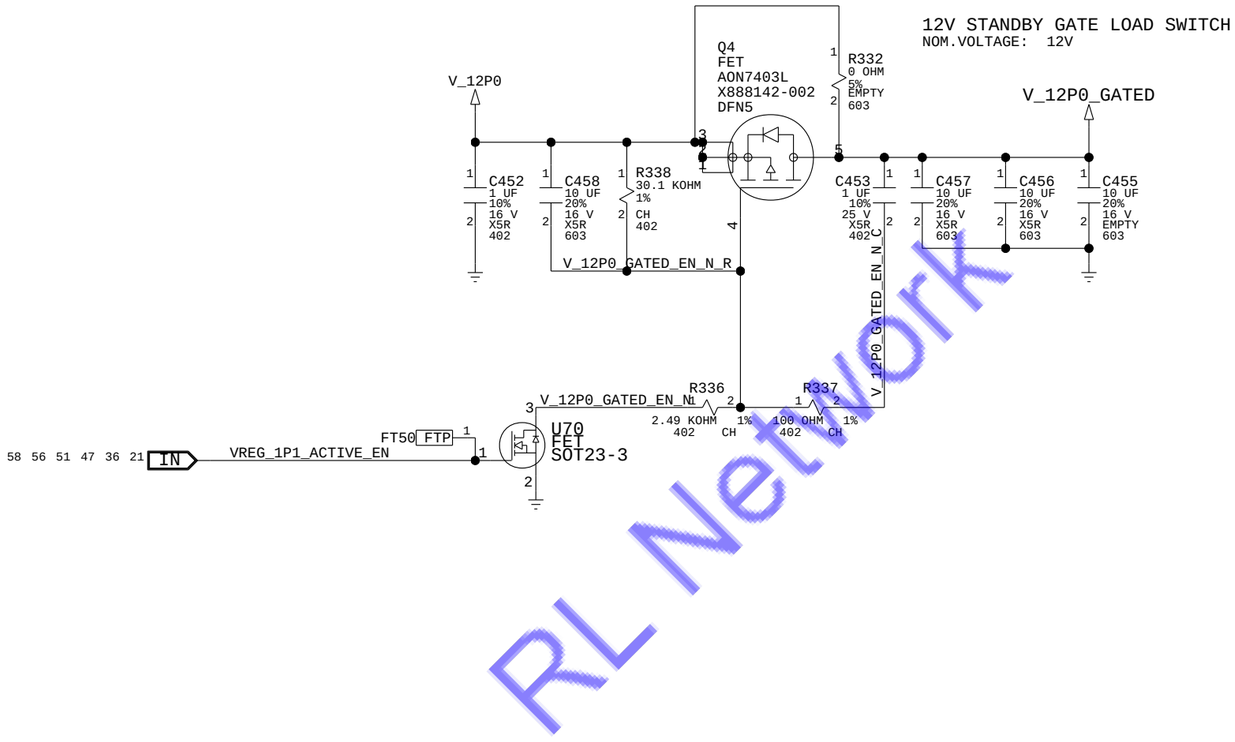
CONN: POWER



MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
M1007354-004	CONN	J11	FOXCONN DC POWER CONNECTOR 1ST MAT SRC	CON_DCPWR_FOXC_1
M1021821-003	CONN	J11	FOXLINK QUAL DC POWER CONN 1ST MAT SRC	CON_DCPWR_FOXL_1
M1040539-001	CONN	J11	FOXCONN QUAL DC POWER CONN 2ND MAT SRC	CON_DCPWR_FOXC_2
M1040540-001	CONN	J11	FOXLINK QUAL DC POWER CONN 2ND MAT SRC	CON_DCPWR_FOXL_2

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	44/76	44/76	C	0.12

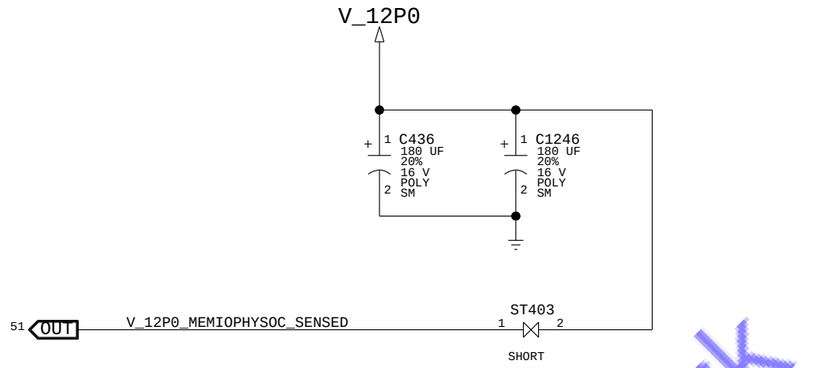
VREGS: V_12P0_GATED



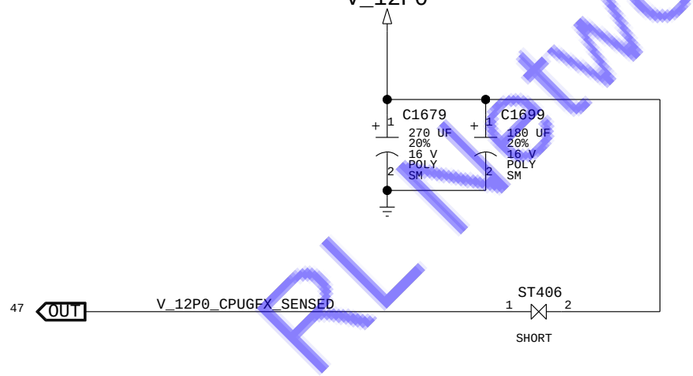
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	45/76	45/76	C	0.12

VREGS: INPUT DECOUPLING

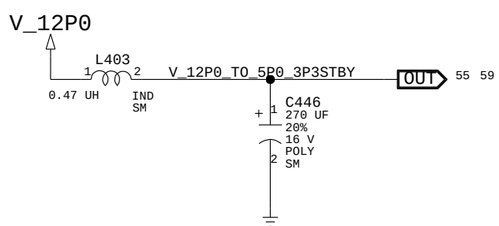
CPU/MEMIO/MEMPHY/SOC INPUT FILTER



GFX INPUT FILTER



5P0 AND 3P3STBY INPUT FILTER



MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	46/76	46/76	C	0.12

VREGS: V_CPUCORE, V_GFXCORE CONTROLLER

PLACE NEXT TO I2C ISOLATION RESISTORS

DB491
DB492

62 51 37 35 29 21 68 66 65 IN SMBUS_CLK — R231 0 OHM 5% CH 402 — SMBUS_CLK_GFXCPU

62 51 37 35 29 21 68 66 65 BI SMBUS_DATA — R233 0 OHM 5% CH 402 — SMBUS_DATA_GFXCPU

46 IN V_12P0_CPUGFX_SENSED — R252 150 KOHM 1% 402 CH

R253 10 KOHM 1% CH 402

C395 0.01 UF 10% 16 V X5R 201

V_3P3STBY

R563 2.2 OHM 1% CH 603

C1009 1 UF 20% 10 V X5R 201

VREG_GFXCPU_VDD33

VREG_GFXCPU_VDD18

C391 1 UF 20% 10 V X5R 201

V_SOC1P8

R808 1 MOHM 1% CH 201

R809 1 MOHM 1% CH 201

U57 IC MP2855

		SCL_P	18
		SDA_P	17
50 49 48 OUT	VREG_GFXCPU_SYNC	STB	19
	VINSEN_12P0_GFXCORE	VINSEN	12
VDD33	35		
VDD18	13		
VORTN1	6	VREG_GFXCORE_S_RTN	
VOSEN1	5	VREG_GFXCORE_S	
CS1	36	VREG_GFXCORE_CS1	IN 48
CS2	37	VREG_GFXCORE_CS2	IN 48
CS3	38	VREG_GFXCORE_CS3	IN 49
CS4	39	VREG_GFXCORE_CS4	IN 49
CS5	40	NC	
CS6	1	NC	
CS7	2	NC	
CS8	3	VREG_CPUCORE_CS2	IN 50
CS9	4	VREG_CPUCORE_CS1	IN 50
		SVT_R	SVT 21
		SVD_R	SVD/PVID1 25
		SVC_R	SVC/PVID2 24
		VREG_GFXCPU_MUX_ALT	MUX_ALT 16
		VREG_GFXCPU_PG1	PG1 15
		VREG_GFXCPU_PG2	PG2 14
		VREG_GFXCPU_EN	EN 20
			VDDIO 22
VORTN2	8	VREG_CPUCORE_S_RTN	
VOSEN2	7	VREG_CPUCORE_S	
PWM1	34	VREG_GFXCORE_PWM1_R	
PWM2	33	VREG_GFXCORE_PWM2_R	
PWM3	32	VREG_GFXCORE_PWM3_R	
PWM4	31	VREG_GFXCORE_PWM4_R	
PWM5	30	NC	
PWM6	29	NC	
PWM7	28	NC	
PWM8	27	VREG_CPUCORE_PWM2_R	
PWM9	26	VREG_CPUCORE_PWM1_R	
			TSENS1 9
		VREG_GFX_IMON	IMON1 10
		VREG_CPU_IMON	IMON2 11
MPAD	41		

M1080755-102
QFN41

DB71 TP — FT1005 FTP — R1003 0 OHM 5% 402 CH — SOC_GFXCORE_S_RTN IN 8

R564 100 OHM 1% CH 402

C460 0.1 UF 10% 25 V EMPTY 402

V_GFXCORE

R225 100 OHM 1% CH 402

R1006 0 OHM 5% 402 CH — SOC_GFXCORE_S IN 8

DB1005 TP — FT1004 FTP

V_CPUCORE

R565 100 OHM 1% CH 402

DB1007 TP — FT1007 FTP — R230 0 OHM 5% 402 CH — SOC_CPUCORE_S IN 8

C462 0.1 UF 10% 25 V EMPTY 402

DB1006 TP — FT1006 FTP — R617 0 OHM 5% 402 CH — SOC_CPUCORE_S_RTN IN 8

R232 100 OHM 1% CH 402

V_3P3STBY

R258 10 KOHM 1% CH 402

R449 10 KOHM 1% CH 402

DB70 TP — 8 OUT SVT — R228 0 OHM 5% 402 CH

DB69 TP — 8 BI SVD — R219 0 OHM 5% 402 CH

DB68 TP — 8 IN SVC — R220 0 OHM 5% 402 CH

70 21 8 IN SOC_PWR_OK

69 51 21 57 56 OUT VREG_PWRGPAB_CPUGFX_PWRGD

R249 0 OHM 5% 402 CH — VREG_GFXCPU_PG1

R248 0 OHM 5% 402 EMPTY — VREG_GFXCPU_PG2

56 45 21 36 51 58 IN VREG_1P1_ACTIVE_EN — R581 0 OHM 5% 402 CH

49 48 OUT — VREG_GFXCPU_EN

R580 100 KOHM 1% CH 402

V_SOC1P8

C1010 1 UF 20% 10 V X5R 201

48 49 IN VREG_GFXCORE_TEMP

R456 24.9 KOHM 1% CH 402

C449 0.1 UF 10% 16 V X5R 201

R122 0 OHM 5% CH 402

FT1003 FTP — DB1004 — VREG_GFX_IMON_R — R245 0 OHM 5% 402 CH — VREG_GFX_IMON

VREG_CPU_IMON

50 IN VREG_CPUCORE_TEMP — R244 0 OHM 5% 402 EMPTY

C450 0.1 UF 10% 25 V EMPTY 402

FT1002 FTP — DB1003 — VREG_CPU_IMON_R — R459 0 OHM 5% 402 CH

C390 1000 PF 10% 50 V EMPTY 402

DB444
DB445

PLACE GND CLOSE TO IMON

R217 0 OHM 402 5% CH — VREG_GFXCORE_PWM1 OUT 48

R176 0 OHM 402 5% CH — VREG_GFXCORE_PWM2 OUT 48

R153 0 OHM 402 5% CH — VREG_GFXCORE_PWM3 OUT 49

R160 0 OHM 402 5% CH — VREG_GFXCORE_PWM4 OUT 49

R218 0 OHM 402 5% CH — VREG_CPUCORE_PWM2 OUT 50

R462 0 OHM 402 5% CH — VREG_CPUCORE_PWM1 OUT 50

MP2855 I2C ADDRESS

	7-BIT BASE	R/W	I2C ADDR	8-BIT HEX
WRITE	010 0000	0	0X20	0X40
READ	010 0000	1	0X20	0X41

MP2855 RAIL ASSIGNMENTS

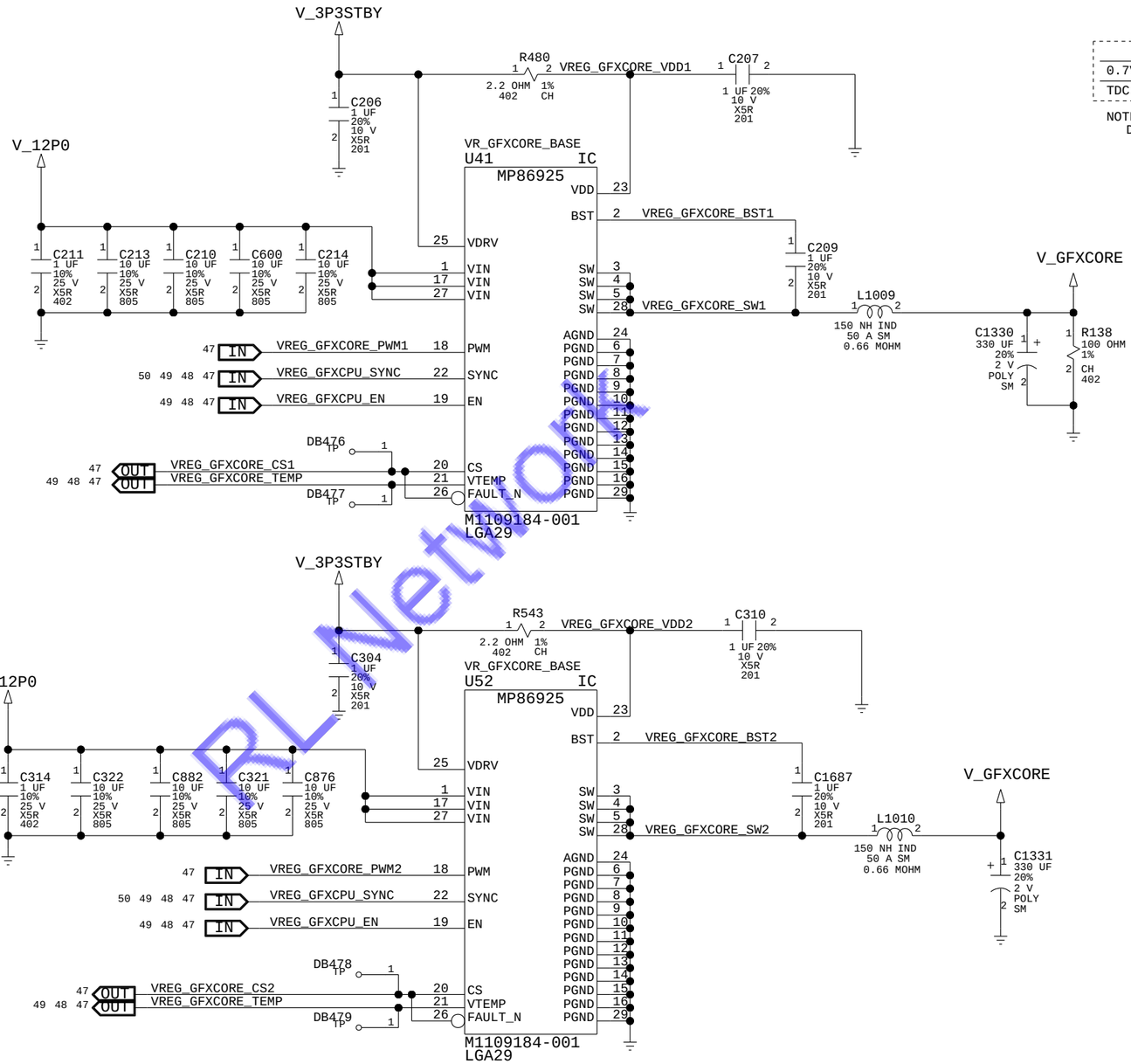
RAIL 1:	V_GFXCORE	(POWER GROUP B)
RAIL 2:	V_CPUCORE	(POWER GROUP B)

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	47/76	47/76	C	0.12

VREGS: V_GFXCORE OUTPUT PHASE 1 & 2

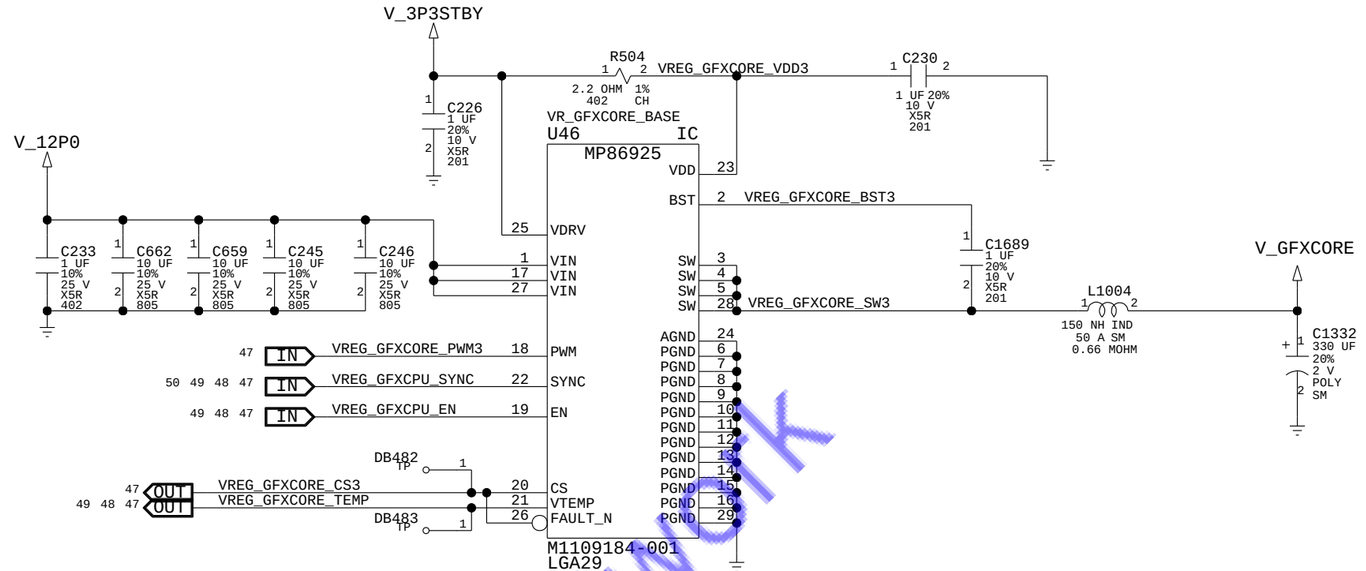
V_GFXCORE
0.7V-0.8V
TDC: 75A EDC: 103A FSW: 700KHZ

NOTE: X6S/X7R CAPACITORS USED NEAR SOC DUE TO HIGHER TEMPERATURES IN AREA



MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
M1109184-001	IC	U41, U52, U46, U408	IC-PWR, DC/DC CONV, MP86925	VR_GFXCORE_MP86925
M1079609-001	IC	U41, U52, U46, U408	IC-PWR, DC/DC CONV, MP86915	VR_GFXCORE_MP86915
M1109184-001	IC	U41, U52, U46	IC-PWR, DC/DC CONV, MP86925	VR_GFXCORE_RETAIL

VREGS: V_GFXCORE OUTPUT PHASE 3 & 4

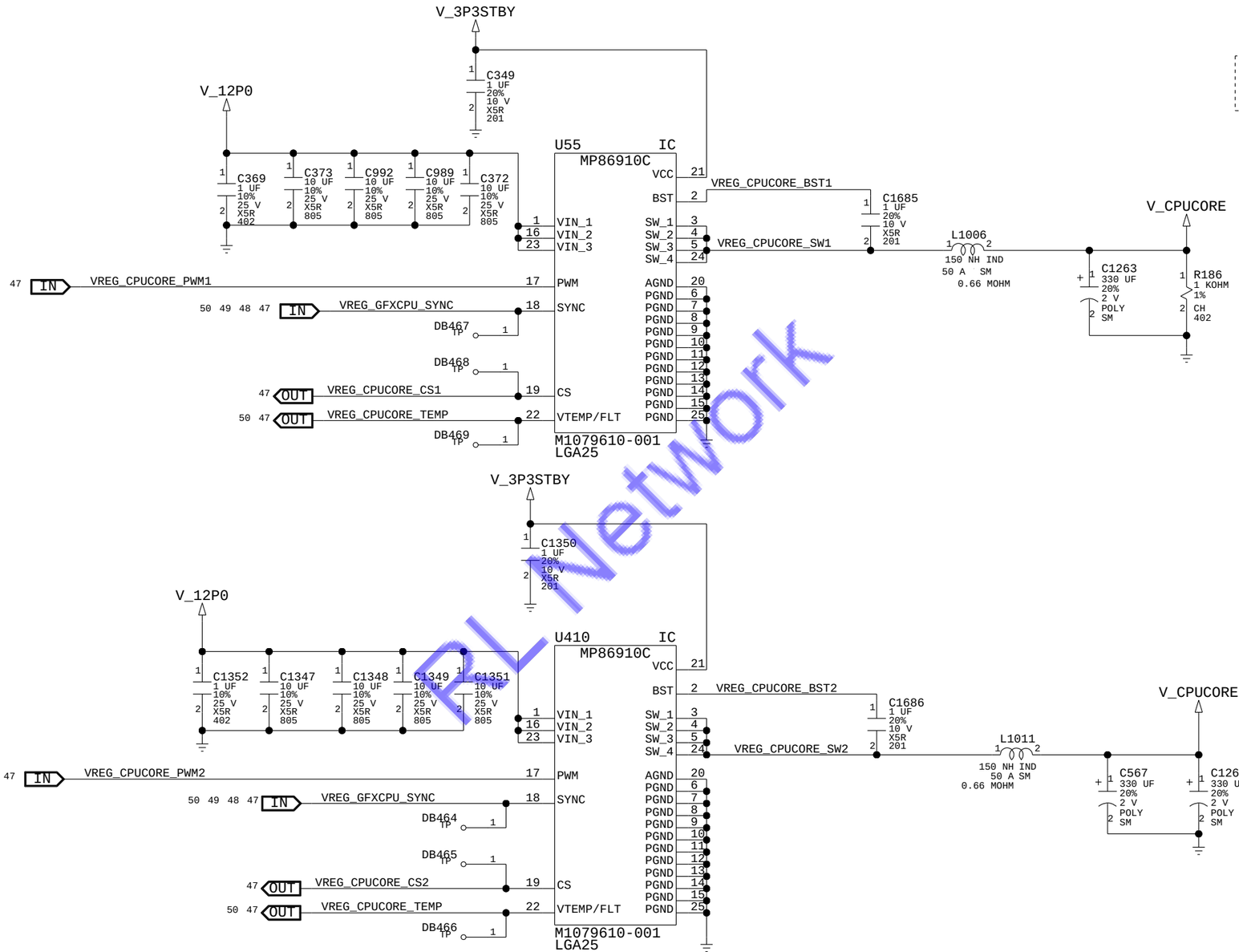


MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	49/76	49/76	C	0.12

VREGS: V_CPUCORE OUTPUT

V_CPUCORE
0.9V-1.1V
TDC: 26A EDC: 69A FSW: 700KHZ

NOTE: X6S/X7R CAPACITORS USED NEAR SOC DUE TO HIGHER TEMPERATURES IN AREA



MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	50/76	50/76	C	0.12

VREGS: V_MEMIO, V_MEMPHY, V_SOC CONTROLLER

PLACE NEXT TO I2C ISOLATION RESISTORS

DB411
DB412

68 66 65 62 47 37 35 29 21 IN SMBUS_CLK — R655 0 OHM 5% CH 402 — SMBUS_CLK_MEMIOPHYSOC

68 66 65 62 47 37 35 29 21 BI SMBUS_DATA — R675 0 OHM 5% CH 402 — SMBUS_DATA_MEMIOPHYSOC

46 IN V_12P0_MEMIOPHYSOC_SENSED — R132 150 KOHM 1% 402 CH — VINSEN_12P0_MEMIOPHYSOC

R676 10 KOHM 1% CH 402
C1441 0.01 UF 10% 16 V X5R 201

56 47 45 36 21 58 IN VREG_1P1_ACTIVE_EN — R657 0 OHM 5% 402 CH

R130 100 KOHM 1% EMPTY 402

69 57 56 47 21 OUT VREG_PWRGPAB_CPUGFX_PWRGD — R131 0 OHM 5% 402 CH

PG PULLED UP EXTERNALLY

V_3P3_GATED

R654 10 KOHM 1% EMPTY 402
R679 10 KOHM 1% EMPTY 402
R683 10 KOHM 1% EMPTY 402

DB141

3 IN 3P3V_SLEEP_S_N — R790 0 OHM 5% 402 CH

3 IN 3P3V_FORCE_PWR — R678 0 OHM 5% 402 CH

R170 10 KOHM 1% CH 402
R685 10 KOHM 1% CH 402
R686 10 KOHM 1% CH 402

DB661
38 OUT CFX_PERST_GPIO_N
60 OUT V_3P3_CFX_EN_GPIO
30 29 OUT SOC_REFCLK_EN_N

GPIO PULLUPS ON CFX PAGES

53 IN VREG_MEMPHY_TEMP
53 IN VREG_MEMIO_TEMP
54 IN VREG_SOC_TEMP

R70 24.9 KOHM 1% CH 402 — C1439 0.1 UF 10% 16 V X5R 201
R674 24.9 KOHM 1% CH 402 — C1440 0.1 UF 10% 16 V X5R 201
R658 24.9 KOHM 1% CH 402 — C1442 0.1 UF 10% 16 V X5R 201

51 VREG_MEMIOPHYSOC_VDD18 — R677 3.32 KOHM 1% 402 EMPTY — VREG_MEMIOPHYSOC_ADDR

R680 10 KOHM 1% CH 402

V_3P3STBY

R171 2.2 OHM 1% CH 603

VREG_MEMIOPHYSOC_VDD33

C1443 1 UF 20% 10 V X5R 201

VREG_MEMIOPHYSOC_VDD18

C18 1 UF 20% 10 V X5R 201

U480 IC
MP2926
1 of 2

19	SCL_P	VDD33	35
18	SDA_P	VDD18	17
13	VINSEN		
22	EN	STB	20 VREG_MEMIOPHYSOC_SYNC OUT 53 54
25	PGOOD		
		CS1	37 VREG_MEMPHY_CS IN 53
		CS2	38
		CS3	39
		CS4	40 VREG_MEMIO_CS IN 53
		CS5	1 VREG_SOC_CS2 IN 54
		CS6	2 VREG_SOC_CS1 IN 54
PVID0	VREG_MEMIOPHYSOC_PVID032		
PVID1	VREG_MEMIOPHYSOC_PVID131		
PVID2	VREG_MEMIOPHYSOC_PVID230		
		PWM1	34 VREG_MEMPHY_PWM_R
		PWM2	33
		PWM3	29
		PWM4	28 VREG_MEMIO_PWM_R
		PWM5	27 VREG_SOC_PWM2_R
		PWM6	26 VREG_SOC_PWM1_R
GPIO1	36 VREG_MEMIOPHYSOC_GPIO1		
GPIO2	21 CFX_PERST_GPIO_N		
GPIO3	23 V_3P3_CFX_EN_GPIO		
GPIO4	24 SOC_REFCLK_EN_N		
TSENS1	9		
TSENS2	10		
TSENS3	11		
ADDR	12	MPAD	41

M1094197-102
QFN41

R688 0 OHM 402 5% CH — VREG_MEMPHY_PWM OUT 53
R182 0 OHM 402 5% CH — VREG_MEMIO_PWM OUT 53
R682 0 OHM 402 5% CH — VREG_SOC_PWM2 OUT 54
R684 0 OHM 402 5% CH — VREG_SOC_PWM1 OUT 54

IMON1 14 VREG_MEMPHY_IMON
IMON2 15 VREG_MEMIO_IMON — R687 0 OHM 5% CH 402 — VREG_MEMIO_IMON_R — DB677 — FTP FT679
IMON3 16

C1445 1000 PF 10% 50 V EMPTY 402

R681 0 OHM 5% CH 402 — VREG_MEMPHY_IMON_R — DB685 — FTP FT686

C1447 1000 PF 10% 50 V EMPTY 402

PLACE GND CLOSE TO IMON

DB449
DB450
DB451

VREG_SOC_IMON — R673 0 OHM 5% CH 402 — VREG_SOC_IMON_R — DB678 — FTP FT680

C1446 1000 PF 10% 50 V EMPTY 402

V_MEMPHY/V_MEMIO PSTATES

V_MEMPHY	V_MEMIO	PVID1 3P3V_SLEEP_S3_N	PVID2 3P3V_FORCE_PWR
0.85	1.35	0	0
0.85	1.25	0	1
0.75	1.25	1	0
0.70	1.25	1	1

MP2926 RAIL ASSIGNMENTS

RAIL 1:	V_MEMPHY	(POWER GROUP B)
RAIL 2:	V_MEMIO	(POWER GROUP A)
RAIL 3:	V_SOC	(POWER GROUP B)

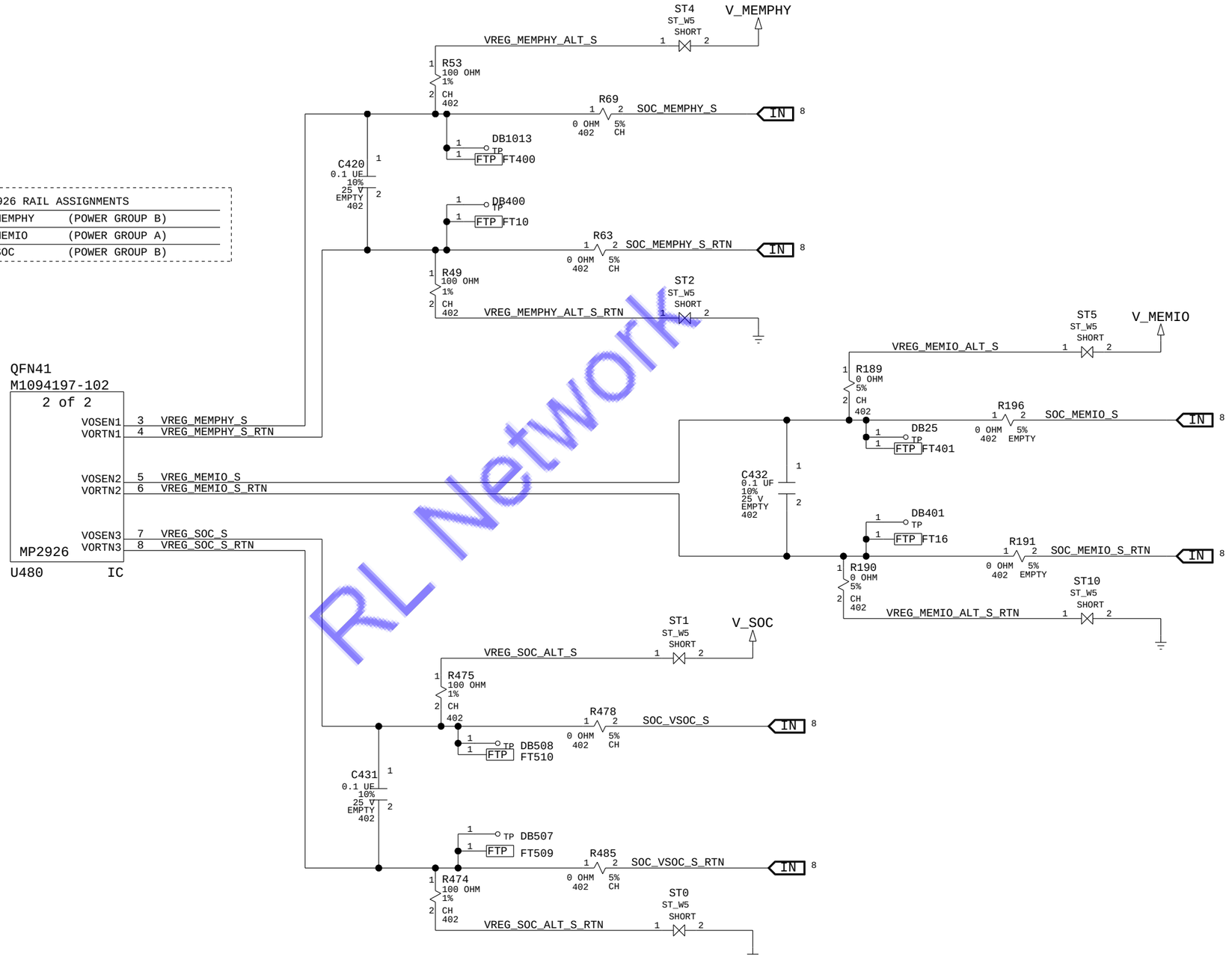
MP2926 I2C ADDRESS

	7-BIT BASE	R/W	I2C ADDR	8-BIT HEX
WRITE	010 0001	0	0X23	0X46
READ	010 0001	1	0X23	0X47

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	51/76	51/76	C	0.12

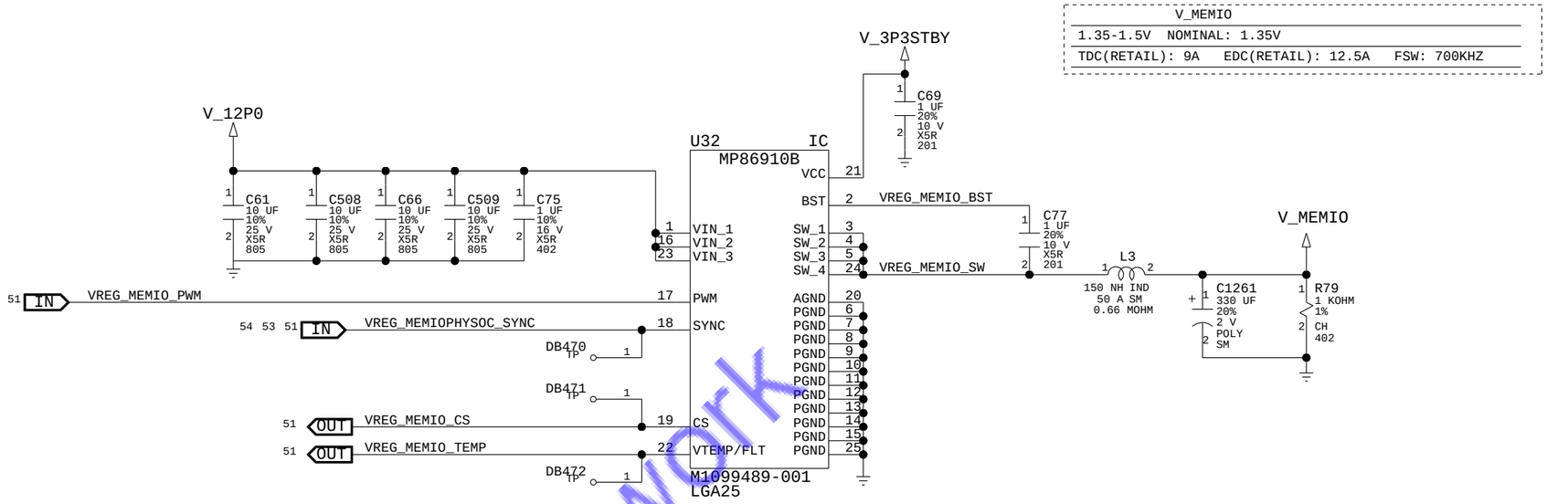
VREGS: V_MEMIO, V_MEMPHY, V_SOC SENSE

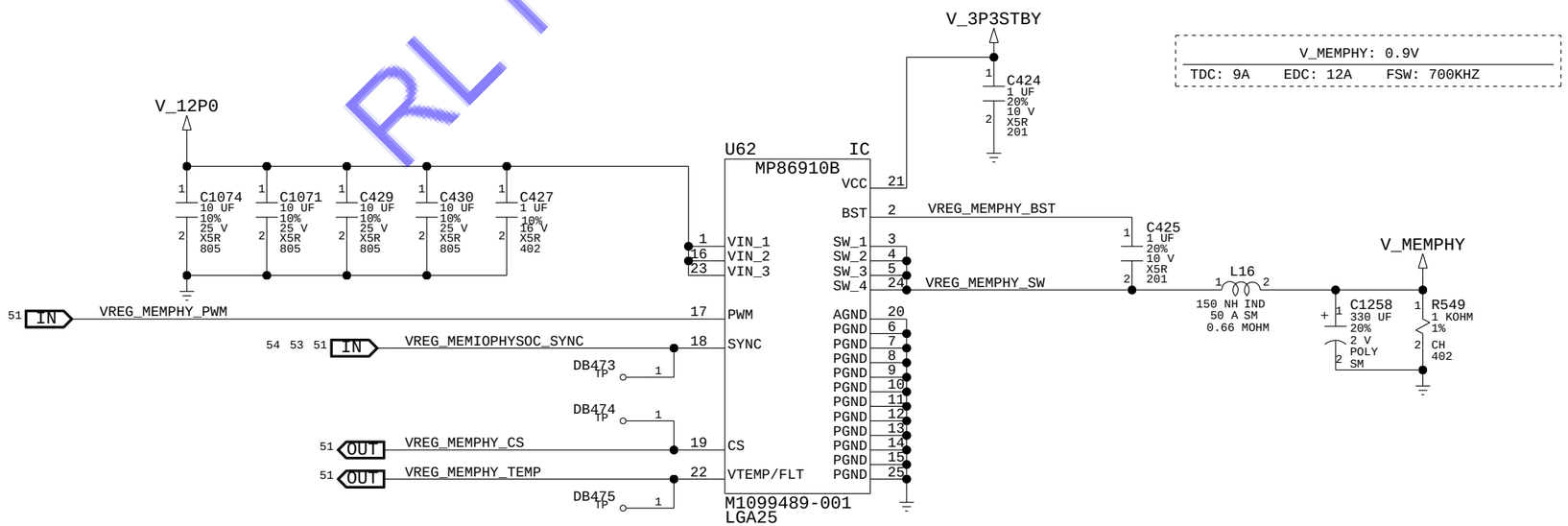
MP2926 RAIL ASSIGNMENTS		
RAIL 1:	V_MEMPHY	(POWER GROUP B)
RAIL 2:	V_MEMIO	(POWER GROUP A)
RAIL 3:	V_SOC	(POWER GROUP B)



MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	52/76	52/76	C	0.12

VREGS: V_MEMIO AND V_MEMPHY OUTPUT

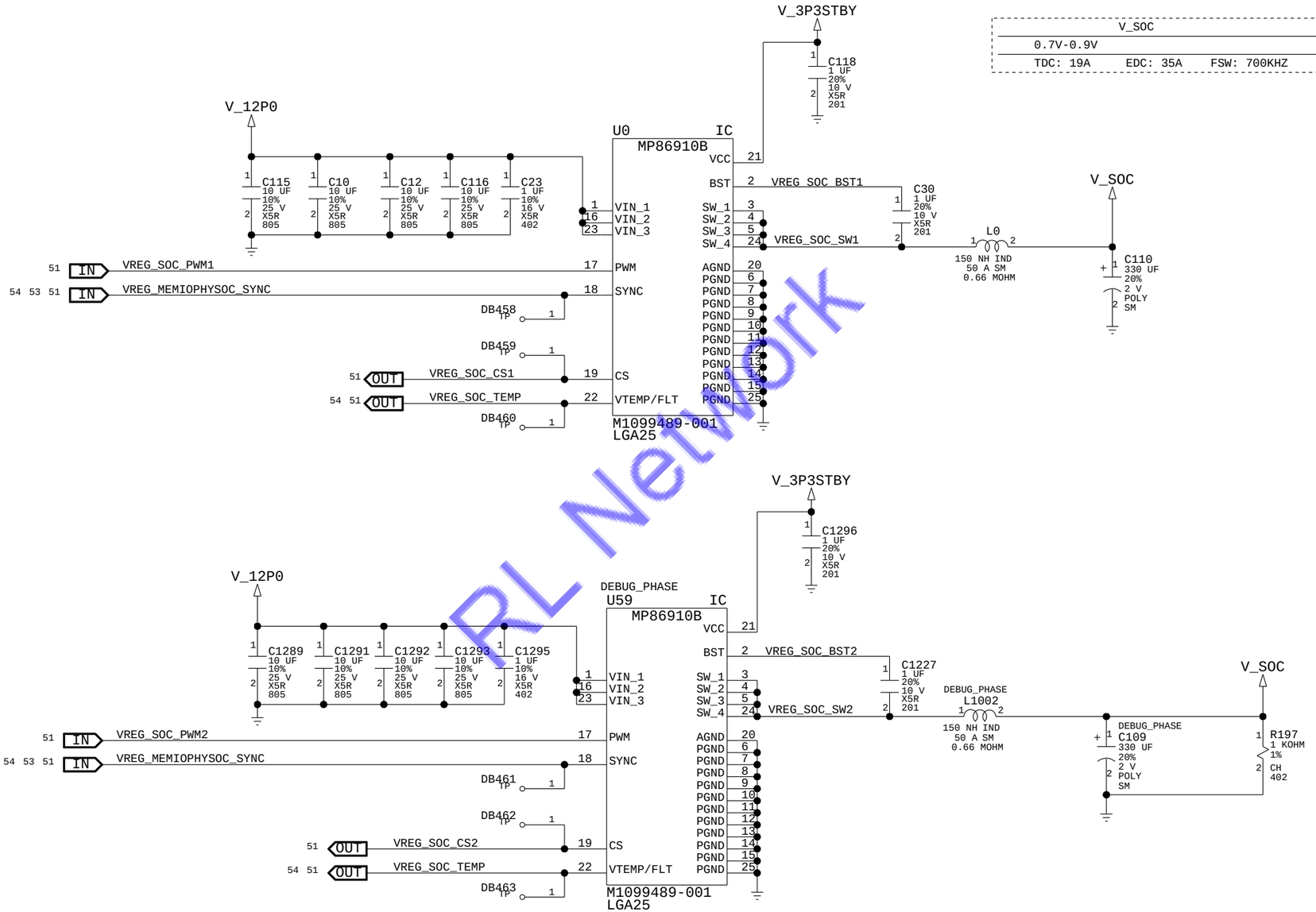




MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	53/76	53/76	C	0.12

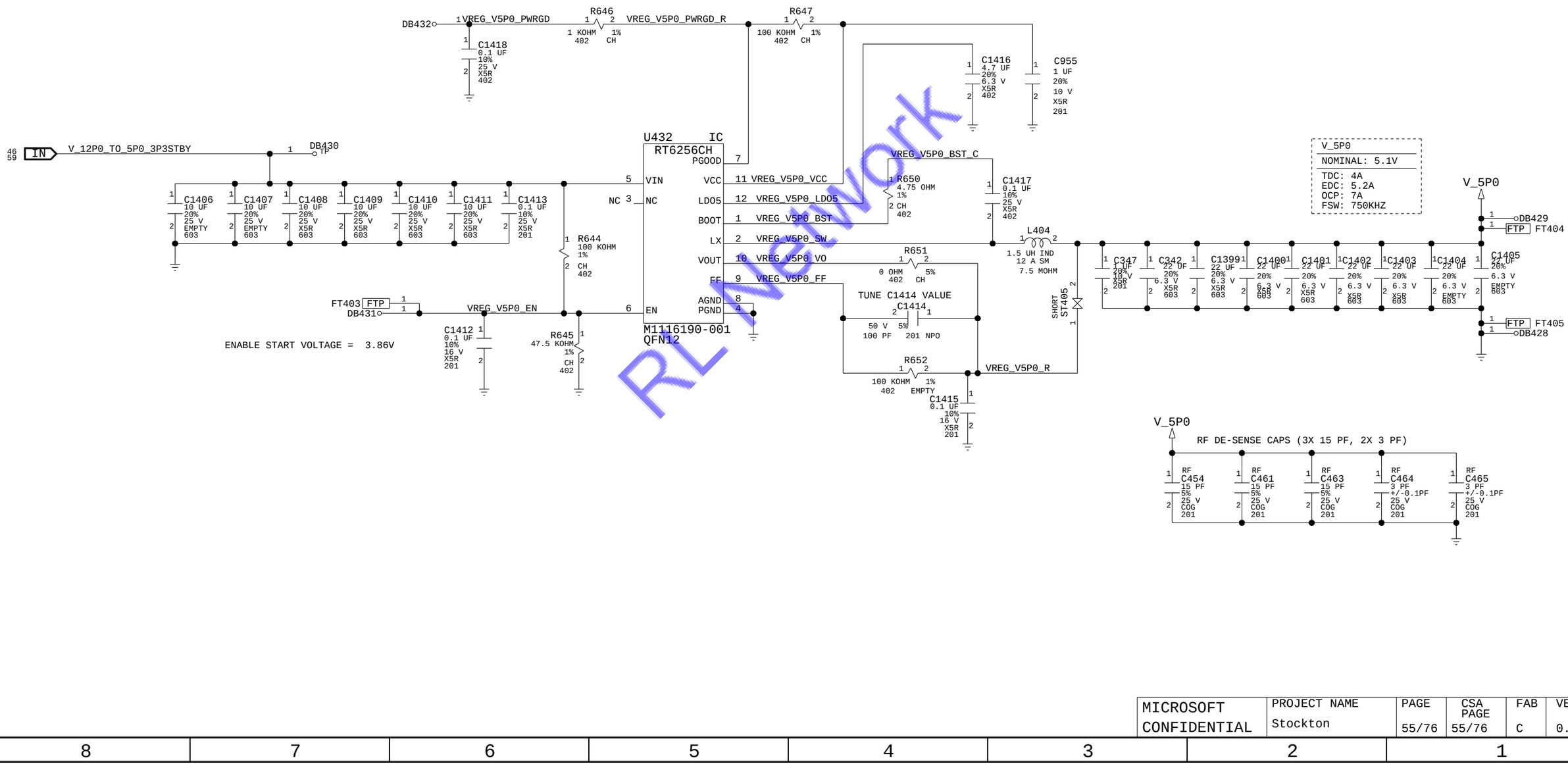
VREGS: V_SOC OUTPUT

V_SOC		
0.7V-0.9V		
TDC: 19A	EDC: 35A	FSW: 700KHZ



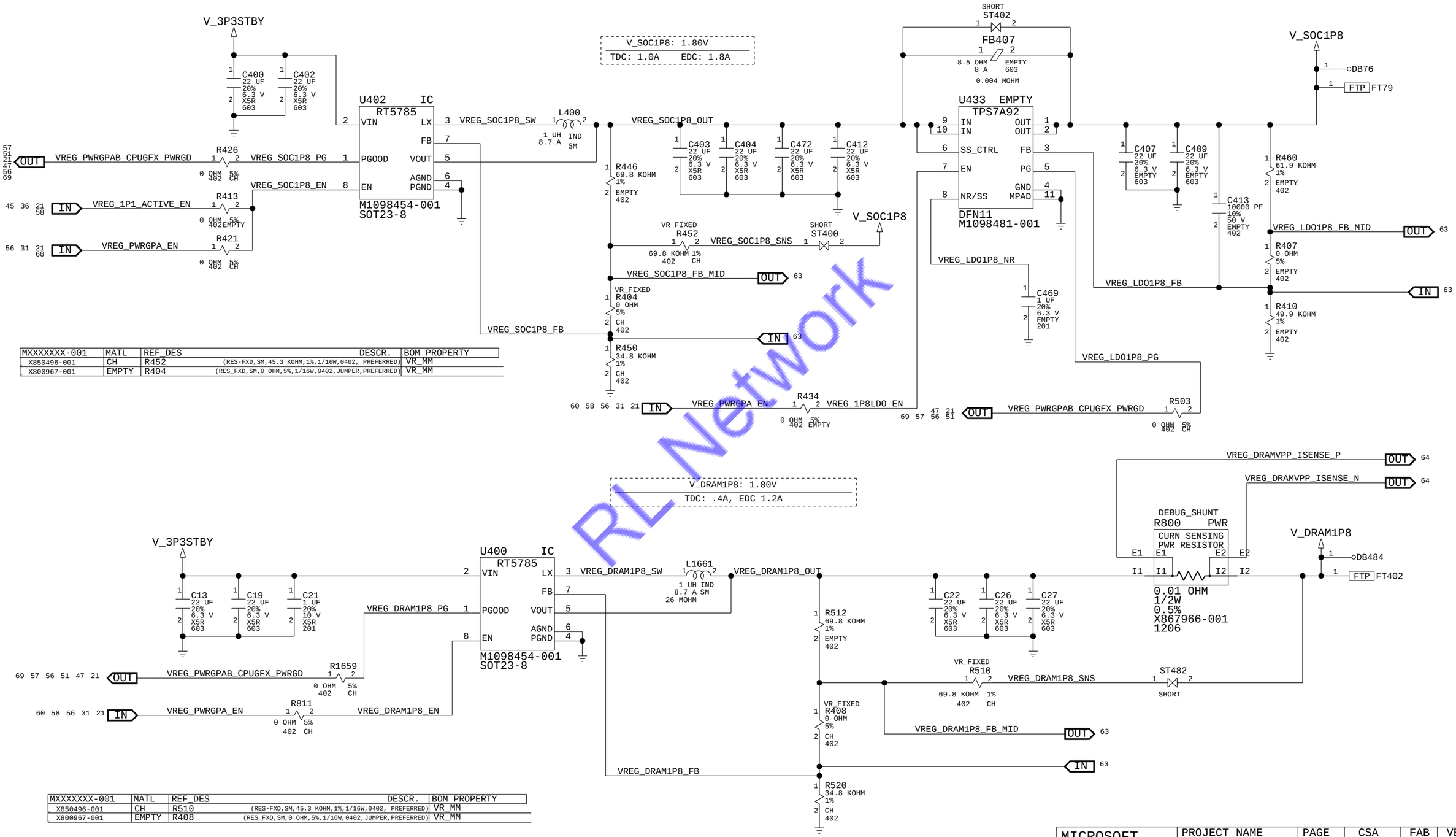
	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	54/76	54/76	C	0.12

VREGS: V_5P0



MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	55/76	55/76	C	0.12

VREGS: V_SOC1P8, V_DRAM1P8



MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
X850496-001	CH	R452	(RES-FXD,SM,45.3 KOHM,1%,1/16W,0402, PREFERRED)	VR_MM
X800967-001	EMPTY	R404	(RES_FXD,SM,0 OHM,5%,1/16W,0402,JUMPER,PREFERRED)	VR_MM

MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
X850496-001	CH	R510	(RES-FXD,SM,45.3 KOHM,1%,1/16W,0402, PREFERRED)	VR_MM
X800967-001	EMPTY	R408	(RES_FXD,SM,0 OHM,5%,1/16W,0402,JUMPER,PREFERRED)	VR_MM

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	56/76	56/76	C	0.12

VREGS: V_SOCPHY, V_FUSE

V_SOCPHY: 0.75V
TDC: 1.3A EDC: 3.4A FSW: 2.2MHZ

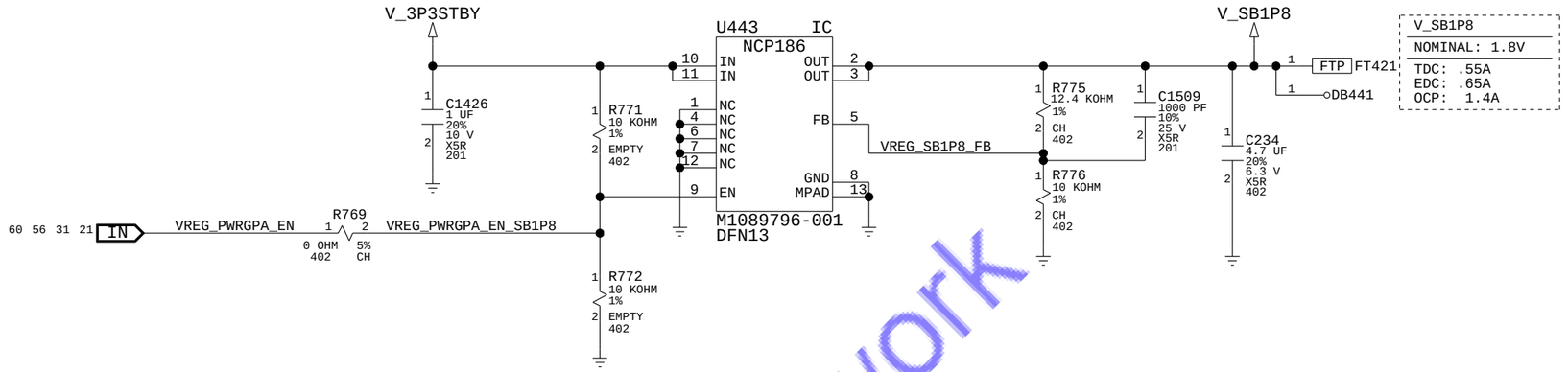
V_3P3STBY
C483 1 UF 20% 10 V X5R 201
C497 10 UF 20% 6.3 V X5R 402
C490 10 UF 20% 6.3 V X5R 402
U129 IC TPS62826 M1087390-001 DFN6
VIN SW PG FB EN GND
L1 0.47 UH IND 7.8 A SAT 0.01 OHM
X902974-001 SENSE RESISTOR WAS REMOVED BUT SHOULD BE REPLACED IN SCB
V_SOCPHY
FTP FT14 DB7
56 51 47 21 69 OUT VREG_PWRGPAB_CPUGFX_PWRGD
R136 0 OHM 5% 402 CH
VREG_SOCPHY_PG
21 IN VREG_PWRGPB_EN
R743 0 OHM 5% 402 CH
VREG_SOCPHY_EN
VREG_SOCPHY_SW
C40 120 PF 5% 50 V NPO 402
C503 22 UF 20% 6.3 V X5R 603
C1486 22 UF 20% 6.3 V X5R 603
C1487 22 UF 20% 6.3 V EMPTY 603
C1488 22 UF 20% 6.3 V EMPTY 603
FTP FT13 DB5
SHORT ST13
PWRGPAB_CPUGFX_PWRGD TIED TO 3P3_MAIN WITH 10K
VREG_PWRGPB_EN PULLED DOWN TO GND WITH 10K
VREG_SOCPHY_FB
VR_FIXED R68 24.9 KOHM 1% 402 CH
VREG_SOCPHY_S
R64 100 KOHM 1% 2 CH 402
IN 63
OUT 63

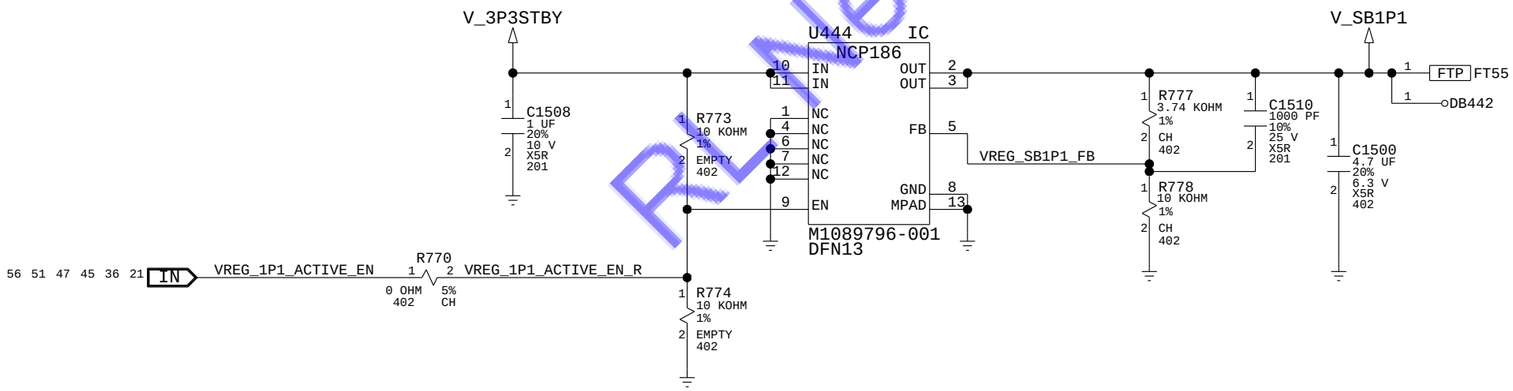
V_FUSE: 0.83V
TDC: 100MA

V_3P3_GATED
V_3P3STBY
R324 100 KOHM 1% 2 CH 402
C447 1 UF 10% 10 V X5R 402
U68 IC AP7331_ADJ M1012324-001 SOT23-5
IN OUT ADJ EN GND
VREG_PWRGPC_EN_R
D9 SOD323 DIO
D7 SOD323 DIO
R599 20 KOHM 1% 2 EMPTY 402
21 IN VREG_PWRGPC_EN
28 IN V12P0_PWRGD
VREG_VFUSE_ADJ
R596 45.3 KOHM 1% 2 CH 402
C1084 0.022 UF 10% 25 V EMPTY 402
R595 42.2 KOHM 1% 2 CH 402
C441 4.7 UF 20% 10 V X5R 402
R597 1 KOHM 1% 2 EMPTY 402
V_FUSE
DB74

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	57/76	57/76	C	0.12

VREGS: V_SB1P8, V_SB1P1

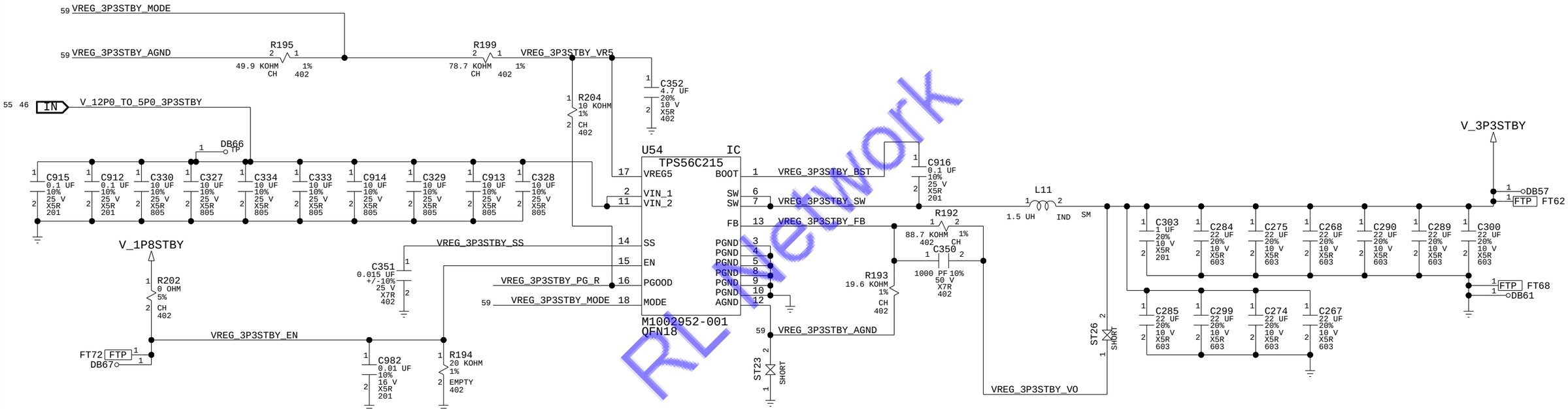




MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	58/76	58/76	C	0.12

VREGS: V_3P3STBY

V_3P3STBY
NOM. VOLTAGE: 3.32
EST TDC = 9A
EST EDC = 12A

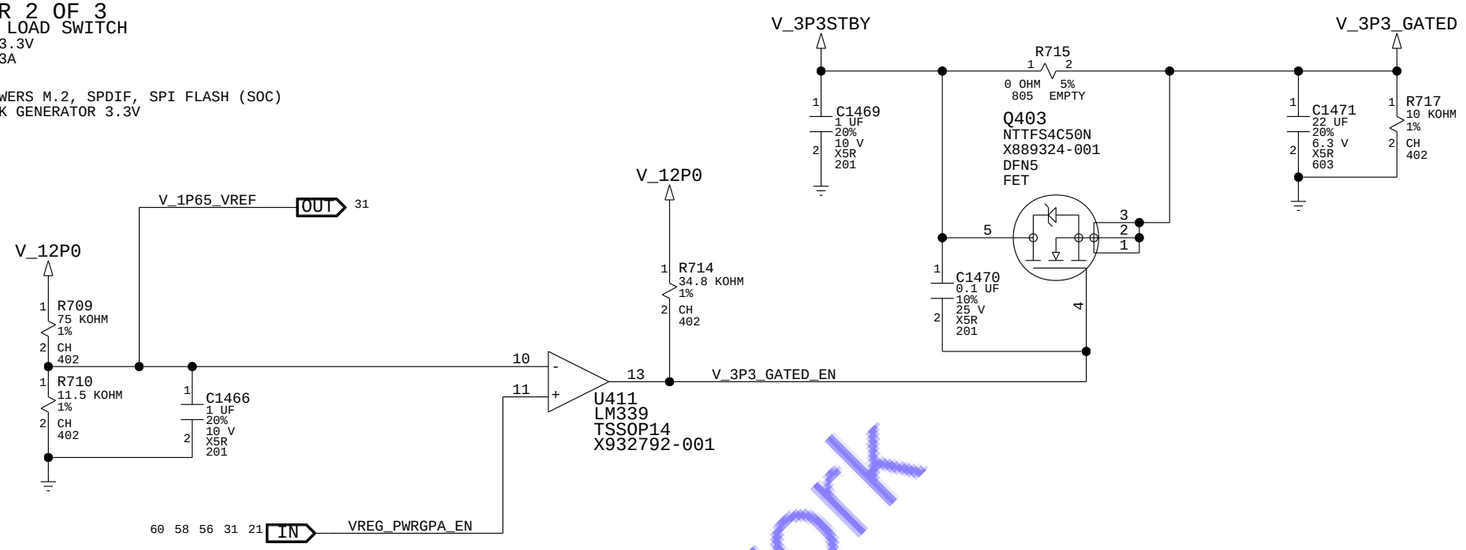


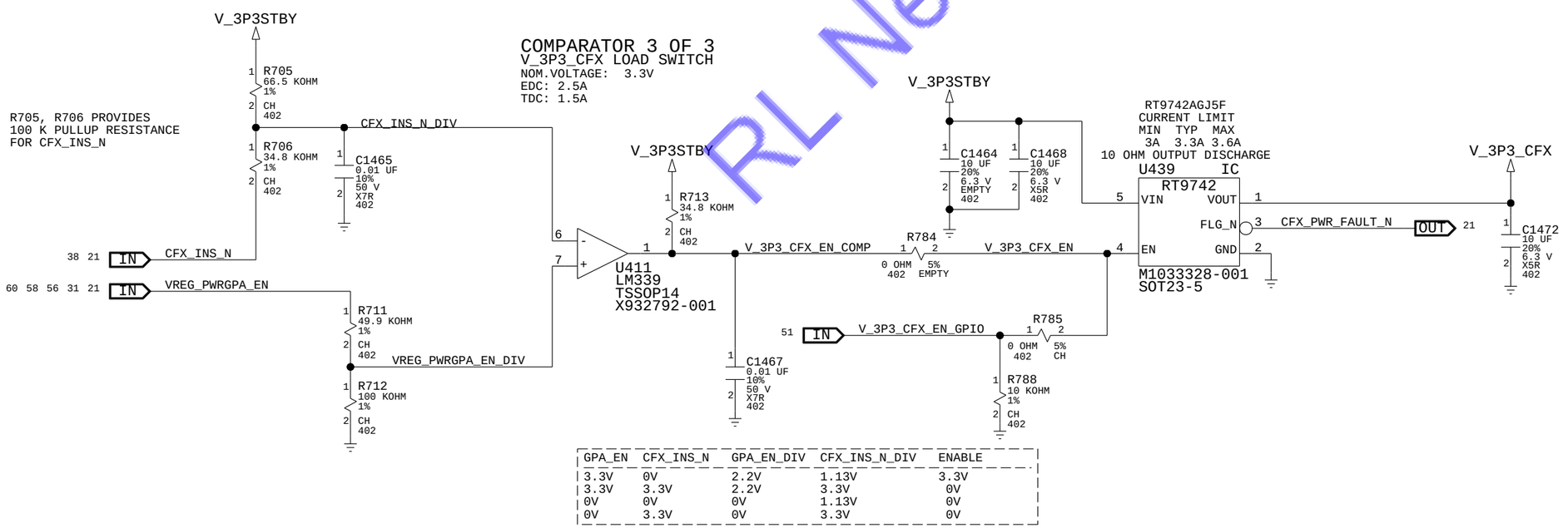
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	59/76	59/76	C	0.12

VREGS: V_3P3_GATED, V_3P3_CFX

COMPARATOR 2 OF 3
V_3P3_GATED LOAD SWITCH
NOM.VOLTAGE: 3.3V
PEAK CURRENT: 3A

V_3P3_GATED POWERS M.2, SPDIF, SPI FLASH (SOC)
SOC VDD3, CLOCK GENERATOR 3.3V

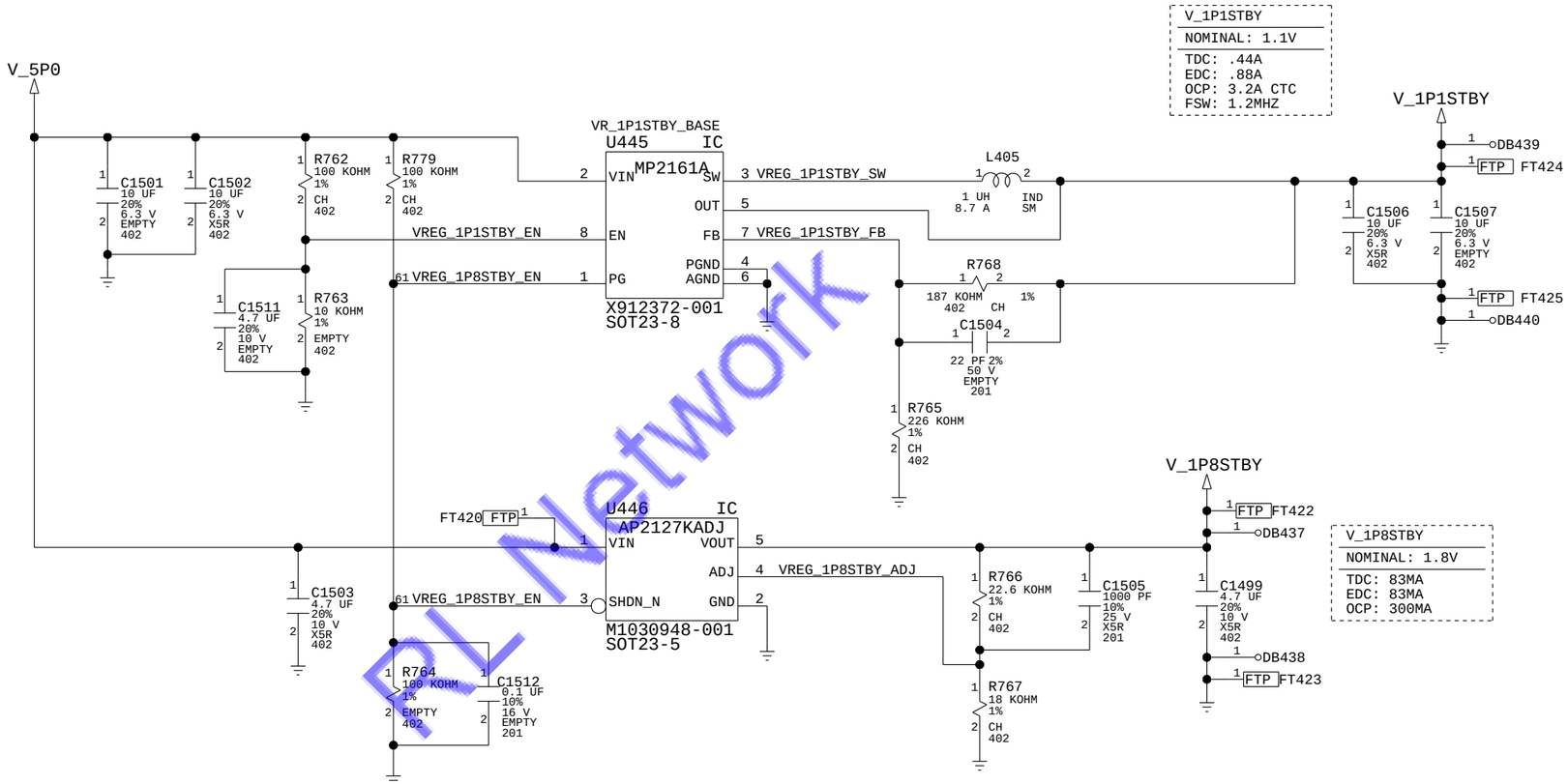




GPA_EN	CFX_INS_N	GPA_EN_DIV	CFX_INS_N_DIV	ENABLE
3.3V	0V	2.2V	1.13V	3.3V
3.3V	3.3V	2.2V	3.3V	0V
0V	0V	0V	1.13V	0V
0V	3.3V	0V	3.3V	0V

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	60/76	60/76	C	0.12

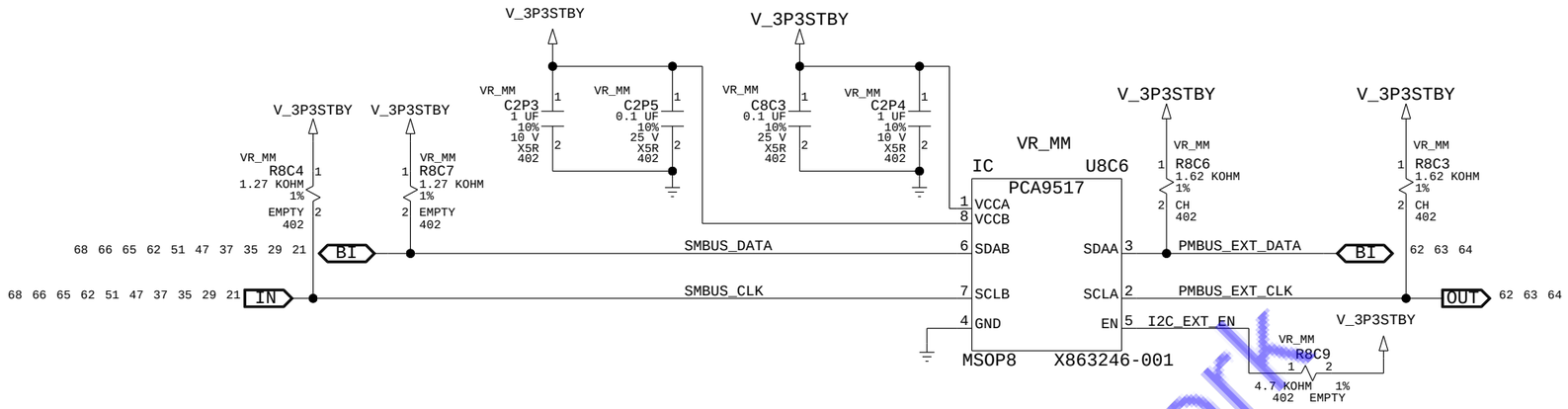
VREGS: V_1P1STBY, V_1P8STBY

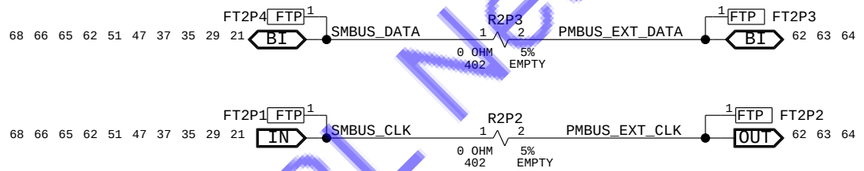


MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
X912372-001	IC	U445	IC-PWR,VREG,SM,TSOT23-8,STEP DOWN,6V,2A,MP2161A	VR_1P1STBY_MPS
M1018565-001	IC	U445	IC-PWR,VREG,SM,TSOT23-8,STEP DOWN,6V,2A,RICHTEK,RT5785C QUAL	VR_1P1STBY_RT

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	61/76	61/76	C	0.12

I2C





PMBUS JUMPERS REMOVE CAPACITANCE FOR MONITORING AND MARGINING. .
ALLOWS TESTING OF SMBUS WITHOUT EXTERNAL INTERFERANCE
REMOVE PMBUS IN RETAIL VERSIONS

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	62/76	62/76	C	0.12

DEBUG: MARGIN V_SOCPHY,V_SOC1P8, V_DRAM1P8

PLACE NEXT TO I2C ISOLATION RESISTORS

DB497
DB498

MCP4661 I2C ADDRESS
0101 110 R/W HEX
WRITE 0101 110 0 0X5C
READ 0101 110 1 0X5D

V_3P3STBY

R289 1 KOHM 1% CH 402
R466 1 KOHM 1% CH 402

U404 IC
MCP4661
X871745-001
TSSOP14

VDD	14		
P0A	8		
P0W	9	VREG_SOC1P8_FB	OUT 56
P0B	10	VREG_SOC1P8_FB_MID	OUT 56
P1A	7		
P1W	6	VREG_LDO1P8_FB	OUT 56
P1B	5	VREG_LDO1P8_FB_MID	OUT 56
VSS1	4		
A2	12	MARGIN_SOC1P8_A2	
A1	13	MARGIN_SOC1P8_A1	
HVC/A0	1	MARGIN_SOC1P8_A0	
SCL	2	PMBUS_EXT_CLK_MM_SOC1P8	
SDA	3	PMBUS_EXT_DATA_MM_SOC1P8	
WP_N	11		

C897 0.1 UF 10% 10 V X5R 201

64 63 62 IN — PMBUS_EXT_CLK — R574 0 OHM 201 5% CH
64 63 62 BI — PMBUS_EXT_DATA — R577 0 OHM 201 5% CH
R288 1 KOHM 1% CH 402

DUAL 50KOHM, POWERS UP AT MIDSCALE

PLACE NEXT TO I2C ISOLATION RESISTORS

DB495
DB496

MCP4562 I2C ADDRESS
0101 111 R/W HEX
WRITE 0101 111 0 0X5E
READ 0101 111 1 0X5F

V_3P3STBY

R6 1 KOHM 1% CH 402
R8 1 KOHM 1% CH 402

U18 IC
MCP4562
X864019-001
DFN9

HVC/A0	1	MARGIN_SOCPHY_A0	
A1	7	MARGIN_SOCPHY_A1	
SCL	2	PMBUS_EXT_CLK_MM_SOCPHY	
SDA	3	PMBUS_EXT_DATA_MM_SOCPHY	
VDD	8		
P0B	6	VREG_SOCPHY_FB	OUT 57
P0W	5	VREG_SOCPHY_S	OUT 57
VSS	4		
MPAD	9		

C4 0.1 UF 10% 10 V X5R 201

64 63 62 IN — PMBUS_EXT_CLK — R578 0 OHM 201 5% CH
64 63 62 BI — PMBUS_EXT_DATA — R579 0 OHM 201 5% CH

50KOHM, POWERS UP AT MIDSCALE

PLACE NEXT TO I2C ISOLATION RESISTORS

DB493
DB494

MCP4562 I2C ADDRESS
0101 101 R/W HEX
WRITE 0101 101 0 0X5A
READ 0101 101 1 0X5B

V_3P3STBY

R793 1 KOHM 1% CH 402
R794 1 KOHM 1% CH 402

U409 IC
MCP4562
X864019-001
DFN9

HVC/A0	1	MARGIN_DRAM1P8_A0	
A1	7	MARGIN_DRAM1P8_A1	
SCL	2	PMBUS_EXT_CLK_MM_DRAM1P8	
SDA	3	PMBUS_EXT_DATA_MM_DRAM1P8	
VDD	8		
P0B	6	VREG_DRAM1P8_FB	OUT 56
P0W	5	VREG_DRAM1P8_FB_MID	OUT 56
VSS	4		
MPAD	9		

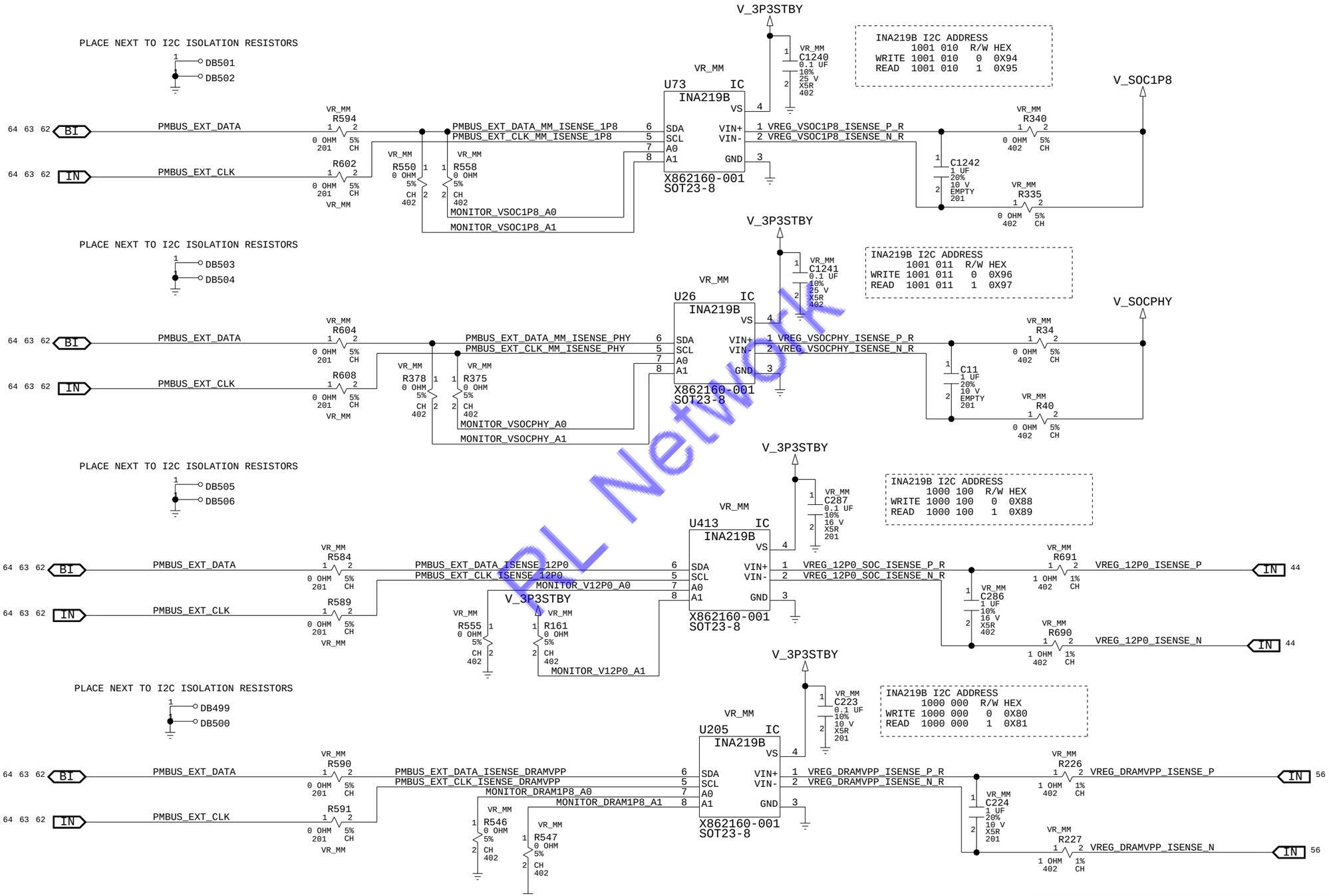
C1739 0.1 UF 10% 10 V X5R 201

64 63 62 IN — PMBUS_EXT_CLK — R582 0 OHM 201 5% CH
64 63 62 BI — PMBUS_EXT_DATA — R583 0 OHM 201 5% CH

50KOHM, POWERS UP AT MIDSCALE

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	63/76	63/76	C	0.12

DEBUG: MONITOR V_SOC1P8, V_SOCPHY, V_12P0, V_DRAM1P8



MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	64/76	64/76	C	0.12

DEBUG: MONITOR M.2. CFEXPRESS

PLACE NEXT TO I2C ISOLATION RESISTORS

DB434
DB435

V_3P3STBY

VR_MM C596 0.1 UF 10% 10 V X5R 201

VR_MM U225 IC INA219B

X862160-001 SOT23-8

68 66 65 62 51 47 37 35 29 21 BI — SMBUS_DATA — R630 0 OHM 5% 201 CH VR_MM — SMBUS_DATA_ISENSE_M2 — SDA (6)

68 66 65 62 51 47 37 35 29 21 IN — SMBUS_CLK — R649 0 OHM 5% 201 CH VR_MM — SMBUS_CLK_ISENSE_M2 — SCL (5)

A0 (7)
A1 (8)

V_3P3STBY

VR_MM R221 0 OHM 5% CH 402 — MONITOR_M2_A0

MONITOR_M2_A1

VR_MM R222 0 OHM 5% CH 402

VS (4)
GND (3)

VIN+ (1) — M2_ISENSE_P_R — R801 1 OHM 1% 402 CH VR_MM — M2_ISENSE_P — IN 41

VIN- (2) — M2_ISENSE_N_R — R802 1 OHM 1% 402 CH VR_MM — M2_ISENSE_N — IN 41

VR_MM C598 1 UF 10% 10 V X5R 402

INA219B I2C ADDRESS

	1000 001	R/W	HEX
WRITE	1000 001	0	0X82
READ	1000 001	1	0X83

PLACE NEXT TO I2C ISOLATION RESISTORS

DB417
DB418

V_3P3STBY

VR_MM C597 0.1 UF 10% 10 V X5R 201

VR_MM U226 IC INA219B

X862160-001 SOT23-8

68 66 65 62 51 47 37 35 29 21 BI — SMBUS_DATA — R702 0 OHM 5% 201 CH VR_MM — SMBUS_DATA_ISENSE_CFX — SDA (6)

68 66 65 62 51 47 37 35 29 21 IN — SMBUS_CLK — R703 0 OHM 5% 201 CH VR_MM — SMBUS_CLK_ISENSE_CFX — SCL (5)

A0 (7)
A1 (8)

VR_MM R223 0 OHM 5% CH 402 — MONITOR_CFX_A0

MONITOR_CFX_A1

VR_MM R224 0 OHM 5% CH 402

VS (4)
GND (3)

VIN+ (1) — CFX_ISENSE_P_R — R803 1 OHM 1% 402 CH VR_MM — CFX_ISENSE_P — IN 38

VIN- (2) — CFX_ISENSE_N_R — R804 1 OHM 1% 402 CH VR_MM — CFX_ISENSE_N — IN 38

VR_MM C599 1 UF 10% 10 V X5R 402

INA219B I2C ADDRESS

	1000 010	R/W	HEX
WRITE	1000 010	0	0X84
READ	1000 010	1	0X85

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	VER
	Stockton	65/76	65/76	0.12

DEBUG: FACET HEADER

SIGNAL FACET_ATTACHED_N IS GROUNDED
WHEN EXTERNAL FACET CARD IS ATTACHED

V_3P3STBY

C1398 2.2 UF 20% 6.3 V X5R 201

V_3P3_FTDI

DEBUG_FTDI

R633 10 KOHM 1% 2 CH 402

J403 2X13HDR

SM EMPTY X877818-001

FACET HEADER

21 IN SMC_DBG_LED0_SWO — R592 33 OHM 1% 402

69 67 OUT SMC_DBG_LED0_SWO_FACET

24 IN KER_DBG_TXD — R737 33 OHM 1% 402

66 OUT KER_DBG_TXD_FACET_R — R455 0 OHM 5% 402 DEBUG_FTDI — KER_DBG_TXD_FACET

66 IN KER_DBG_RXD_R — R719 0 OHM 5% 402 DEBUG_FTDI

24 OUT KER_DBG_RXD

66 BI SMBUS_CLK_FACET_R — R477 0 OHM 5% 402 DEBUG_FTDI

68 66 65 62 51 47 37 35 29 21 BI SMBUS_CLK — R613 0 OHM 5% 402 DEBUG_FTDI — SMBUS_CLK_FACET

67 28 21 OUT SMC_RST_N

68 34 24 IN FACET_SPI_MISO

68 34 24 OUT FACET_SPI_SS_N

68 34 24 OUT FACET_SPI_CLK

68 24 OUT SB_TDI

68 24 OUT SB_TMS

68 24 OUT SB_TCK

FACET_SPI_MOSI — OUT 24 34 68

FACET_ATTACHED_N — OUT 67 68

KER_DBG_RTS_FACET

NC

NC

R632 33 OHM 1% 402 — SB_TDO — IN 24

SB_TDO_FACET — OUT 68

R722 0 OHM 5% 402 DEBUG_FTDI — KER_DBG_CTS_R — IN 66

KER_DBG_CTS — OUT 24

R792 33 OHM 1% 402 — KER_DBG_RTS — IN 24

R498 0 OHM 5% 402 DEBUG_FTDI — KER_DBG_RTS_FACET_R — OUT 66

R500 0 OHM 5% 402 DEBUG_FTDI — SMBUS_DATA_FACET_R — BI 66

SMBUS_DATA_FACET — R616 0 OHM 5% 402 DEBUG_FTDI — SMBUS_DATA — BI 21 29 35 37 47 51 62 65 66 68

PLACE NEXT TO I2C ISOLATION RESISTORS

DB407

DB410

STUFF RESPECTIVE RESISTOR
ONLY IF 3.3V OR 5V ARE NEEDED
NOT TYPICALLY REQUIRED BECAUSE
AARDVARK IS POWERED BY USB PORT

ENSURE SILK SCREEN OUTLINE
ACCOMODATES THE AARDVARK 2X5 RECPT

V_3P3STBY — R479 0 OHM 5% EMPTY 402

V_5P0 — R481 0 OHM 5% EMPTY 402

DEBUG J404 2X2HDR

68 66 65 62 51 47 37 35 29 21 BI SMBUS_CLK

68 66 65 62 51 47 37 35 29 21 BI SMBUS_DATA

I2C_2X2_HDR_VDD

SM X868013-001

AARDVARK I2C HEADER

67 OUT FTDI_RX_KER_DBG_TXD — R708 0 OHM 5% 201 CH DEBUG_FTDI

67 IN FTDI_TX_KER_DBG_RXD — R623 33 OHM 1% 201 CH DEBUG_FTDI

67 IN FTDI_RTS_KER_DBG_CTS — R624 33 OHM 1% 201 CH DEBUG_FTDI

67 OUT FTDI_CTS_KER_DBG_RTS — R716 0 OHM 5% 201 CH DEBUG_FTDI

67 BI FTDI_I2C_SCL — R634 0 OHM 5% 201 CH DEBUG_FTDI

67 BI FTDI_I2C_SCA — R635 0 OHM 5% 201 CH DEBUG_FTDI

67 IN 3P3STBY_FACET_EN_N — R636 0 OHM 5% 201 CH DEBUG_FTDI — 3P3STBY_FACET_EN_N_R

V_3P3_FTDI — R637 10 KOHM 1% 2 CH 201 DEBUG_FTDI

V_3P3_FTDI — C405 1 UF 20% 6.3 V X5R 201 DEBUG_FTDI

DEBUG_FTDI U401 IC SN74CB3T3245

FTDI_RX_KER_DBG_TXD_R — A1 — B1 — KER_DBG_TXD_FACET_R 66

FTDI_TX_KER_DBG_RXD_R — A2 — B2 — KER_DBG_RXD_R 66

FTDI_RTS_KER_DBG_CTS_R — A3 — B3 — KER_DBG_CTS_R 66

FTDI_CTS_KER_DBG_RTS_R — A4 — B4 — KER_DBG_RTS_FACET_R 66

FTDI_I2C_SCL_R — A5 — B5 — SMBUS_CLK_FACET_R 66

FTDI_I2C_SCA_R — A6 — B6 — SMBUS_DATA_FACET_R 66

A7 — B7

A8 — B8

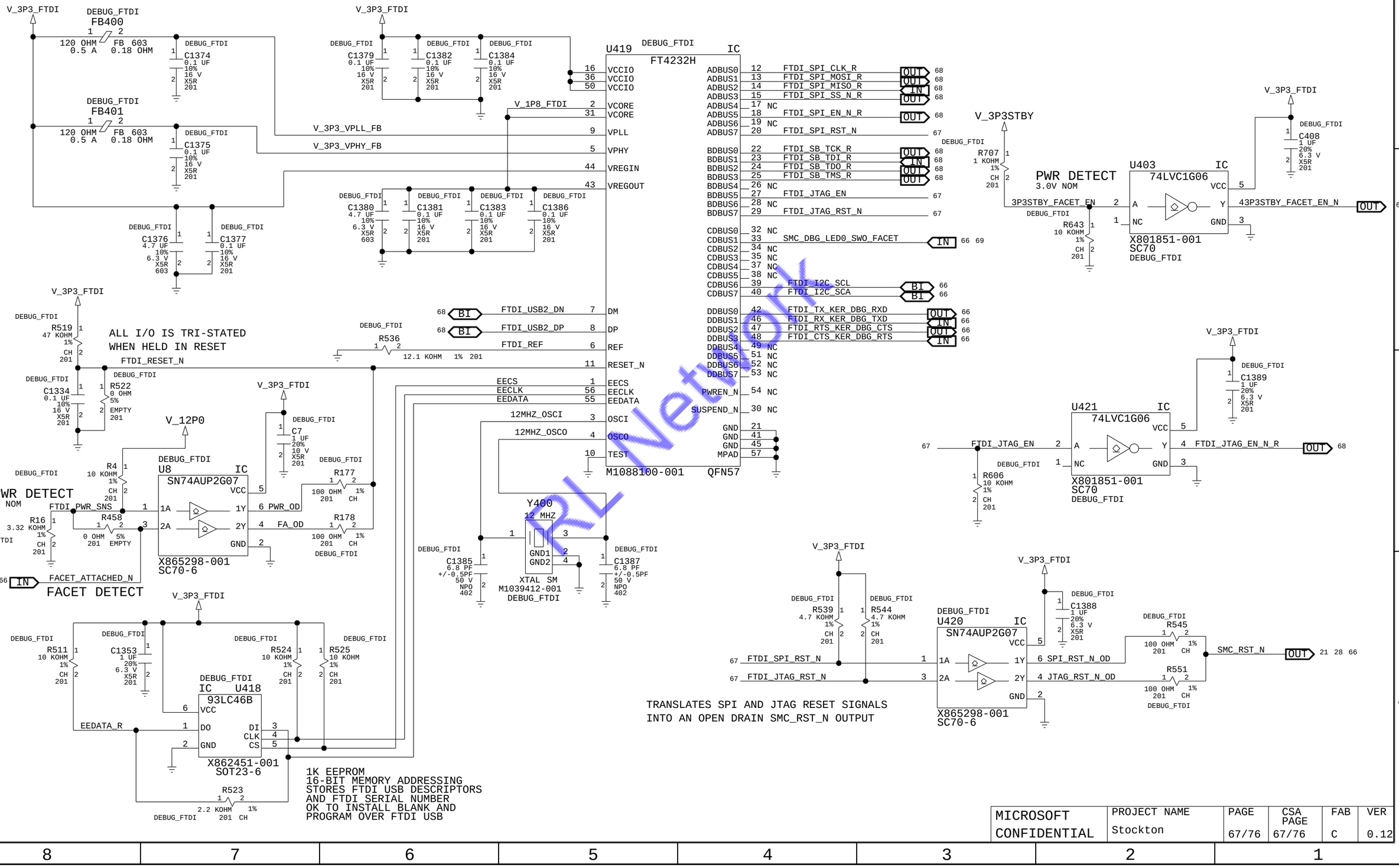
OE_N — GND

M1086512-001 TVSOP20

SPI BUS SWITCH

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	66/76	66/76	C	0.12

DEBUG: FTDI BRIDGE



MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	67/76	67/76	C	0.12

DEBUG: FTDI BUFF, USB, PWR

SPI BUS SWITCH

67 IN FTDI_SPI_CLK_R — R566 33 OHM 1% 201 CH — FTDI_SPI_CLK
67 IN FTDI_SPI_MOSI_R — R567 33 OHM 1% 201 CH — FTDI_SPI_MOSI
67 OUT FTDI_SPI_MISO_R — R569 33 OHM 1% 201 CH — FTDI_SPI_MISO
67 IN FTDI_SPI_SS_N_R — R570 33 OHM 1% 201 CH — FTDI_SPI_SS_N
67 IN FTDI_SPI_EN_N_R — R571 0 OHM 5% 201 CH — FTDI_SPI_OE_N

V_3P3_FTDI
DEBUG_FTDI C1391 1 UF 20% 6.3 V X5R 201

DEBUG_FTDI U423 IC SN74CB3T3245

FTDI_SPI_CLK	2	A1	B1	18	FACET_SPI_CLK → OUT 24 34 66
FTDI_SPI_MOSI	3	A2	B2	17	FACET_SPI_MOSI → OUT 24 34 66
FTDI_SPI_MISO	4	A3	B3	16	FACET_SPI_MISO → IN 24 34 66
FTDI_SPI_SS_N	5	A4	B4	15	FACET_SPI_SS_N → OUT 24 34 66
	6	A5	B5	14	
	7	A6	B6	13	
	8	A7	B7	12	
	9	A8	B8	11	
			NC	1	
FTDI_SPI_OE_N	19	OE_N	GND	10	

M1086512-001 TVSOP20

V_3P3_FTDI — DEBUG_FTDI R576 10 KOHM 1% 2 CH 201

JTAG BUS SWITCH

67 IN FTDI_SB_TCK_R — R553 33 OHM 1% 201 CH — FTDI_SB_TCK
67 IN FTDI_SB_TDI_R — R554 33 OHM 1% 201 CH — FTDI_SB_TDI
67 OUT FTDI_SB_TDO_R — R556 0 OHM 5% 201 CH — FTDI_SB_TDO
67 IN FTDI_SB_TMS_R — R561 33 OHM 1% 201 CH — FTDI_SB_TMS
67 IN FTDI_JTAG_EN_N_R — R562 0 OHM 5% 201 CH — FTDI_JTAG_OE_N

V_3P3_FTDI
DEBUG_FTDI C1392 1 UF 20% 6.3 V X5R 201

DEBUG_FTDI U424 IC SN74CB3T3245

FTDI_SB_TCK	2	A1	B1	18	SB_TCK → OUT 24 66
FTDI_SB_TDI	3	A2	B2	17	SB_TDI → OUT 24 66
FTDI_SB_TDO	4	A3	B3	16	SB_TDO_FACET → IN 66
FTDI_SB_TMS	5	A4	B4	15	SB_TMS → OUT 24 66
	6	A5	B5	14	
	7	A6	B6	13	
	8	A7	B7	12	
	9	A8	B8	11	
			NC	1	
FTDI_JTAG_OE_N	19	OE_N	GND	10	

M1086512-001 TVSOP20

V_3P3_FTDI — DEBUG_FTDI R575 10 KOHM 1% 2 CH 201

GPIO EXPANDER

PCA9570 I2C ADDRESS

	0100 100	R/W	HEX
WRITE	0100 100	0	0X48
READ	0100 100	1	0X49

51 47 37 35 29 21 66 65 62 BI SMBUS_DATA — R572 0 OHM 5% 201 CH — EXP_SDA
51 47 37 35 29 21 66 65 62 BI SMBUS_CLK — R573 0 OHM 5% 201 CH — EXP_SCL

V_3P3_FTDI
DEBUG_FTDI C1390 1 UF 20% 6.3 V X5R 201

DEBUG_FTDI U422 IC PCA9570

	8	VDD	
EXP_P0	1	P0	→ U5 IC 74LVC2G14 3 2A 2Y 4 → X819343-001 SC70 DEBUG_FTDI
EXP_P1	2	P1	→ U5 IC 74LVC2G14 1 1A 1Y 6 → X819343-001 SC70 DEBUG_FTDI
EXP_P2	3	P2	→ DB426
EXP_P3	5	P3	→ DB427
EXP_SDA	7	SDA	
EXP_SCL	6	SCL	
	4	VSS	

X950297-001 QFN8

U422 LOGIC
0X0 = HOST MODE
0X3 = DEVICE MODE (DEFAULT)

USB2 SWITCH

USB2 SWITCH CONNECTED TO USB PORT CLOSEST TO ETHERNET JACK

V_3P3_FTDI
DEBUG_FTDI C1395 1 UF 20% 6.3 V X5R 201

DEBUG_FTDI U425 IC TS3USB30E

	9	VCC	
FTDI_USB2_DP	1	D1+	D+ 3 USB2_BP_P1_IN_DP → R586 0 OHM 5% 2 CH 201 NO_DEBUG_FTDI → BI 39
USB2_BP_P1_DP	2	D2+	
USB2_BP_P1_DN	6	D2-	D- 5 USB2_BP_P1_IN_DN → R587 0 OHM 5% 2 CH 201 NO_DEBUG_FTDI → BI 39
FTDI_USB2_DN	7	D1-	
	8	OE_N	
LOGIC_FTDI_USB_EN_N	10	S	GND 4

X870617-001 QFN10

69 OUT LOGIC_FTDI_USB_EN_N
DEFAULT: PORT D1

FACET DETECT

V_3P3_FTDI
DEBUG_FTDI C1393 1 UF 20% 6.3 V X5R 201

DEBUG_FTDI IC U426 SN74LVC1G32

	5	VCC	
	4	Y	NOR1_Y 4
	3	GND	
		A	1
		B	2

X858887-001 SC70-5 DEBUG_FTDI

DEBUG_FTDI IC U429 74LVC1G02

	5	VCC	
	4	Y	
	3	GND	
		A	1
		B	2

X852697-001 SC70

FACET_ATTACHED_N 1 → IN 66 67 68
FTDI_USB_EN_N 2 → 68

V_3P3_FTDI
DEBUG_FTDI C1394 1 UF 20% 6.3 V X5R 201

DEBUG_FTDI IC U427 SN74LVC1G32

	5	VCC	
	4	Y	NOR2_Y 4
	3	GND	
		A	1
		B	2

X858887-001 SC70-5 DEBUG_FTDI

69 39 OUT LOGIC_USB_HOST_PWR_EN

DEBUG_FTDI IC U430 74LVC1G02

	5	VCC	
	4	Y	
	3	GND	
		A	1
		B	2

X852697-001 SC70

FACET_ATTACHED_N 1 → IN 66 67 68
USB_HOST_PWR_EN 2 → 68

FACET DETECT

EXP_P1_N — R3 0 OHM 5% 201 CH — USB_HOST_PWR_EN 68
DEBUG_FTDI R5 10 KOHM 1% 2 CH 201

V_3P3_FTDI
DEBUG_FTDI C1682 1 UF 20% 10 V X5R 201

EXP_P0_N — R614 0 OHM 5% 201 CH — FTDI_USB_EN_N 68
DEBUG_FTDI R615 10 KOHM 1% 2 CH 201

FTDI VREG

3.3V @ 600MA MAX

V_3P3_FTDI
DEBUG_FTDI R585 0 OHM 5% CH 805 — V_3P3_FTDI_VOUT

DEBUG_FTDI IC U428 AP7365_33

	4	VOUT	
	6	NC	
	2	GND	
	3	VIN	
	5	NC	
	1	EN	FTDI_VREG_EN

M1086914-001 DFN6

DEBUG_FTDI C1325 4.7 UF 20% 10 V X5R 402
DEBUG_FTDI C1396 1 UF 20% 6.3 V X5R 201
DEBUG_FTDI R588 10 KOHM 1% 2 CH 201

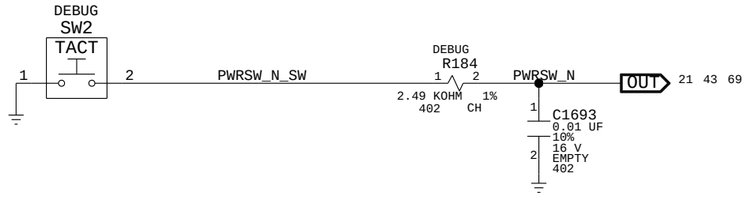
V_3P3_FTDI_VIN

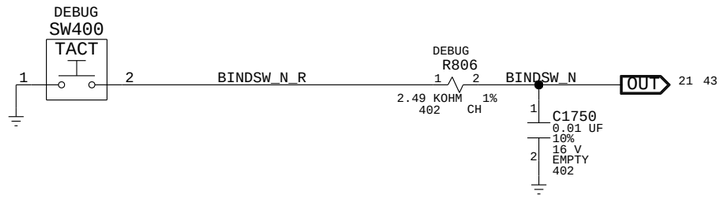
ALWAYS ENABLED

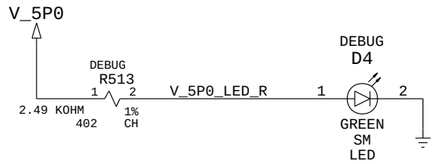
V_5P0
D402 SOD123 X806746-001 DEBUG_FTDI
D401 SOD123 X806746-001 DEBUG_FTDI
39 BI V_5P0_USB3_P0

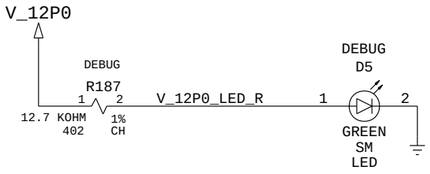
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	68/76	68/76	C	0.12

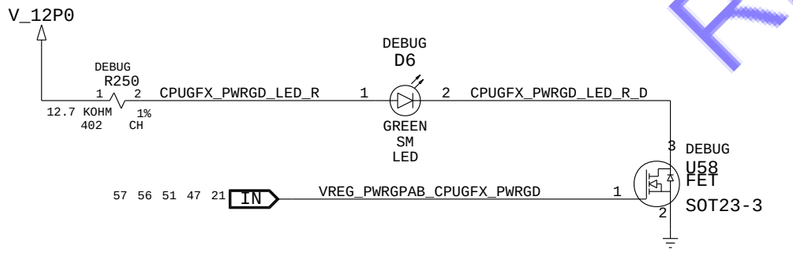
DEBUG: SWITCHES, LEDS

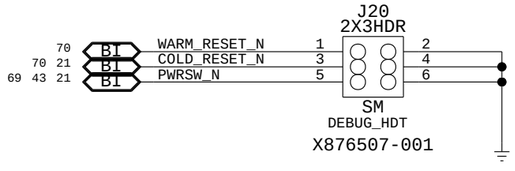


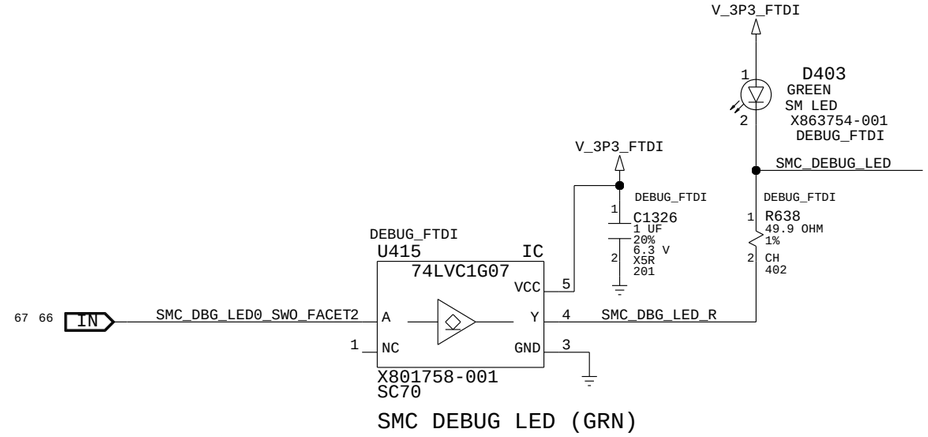




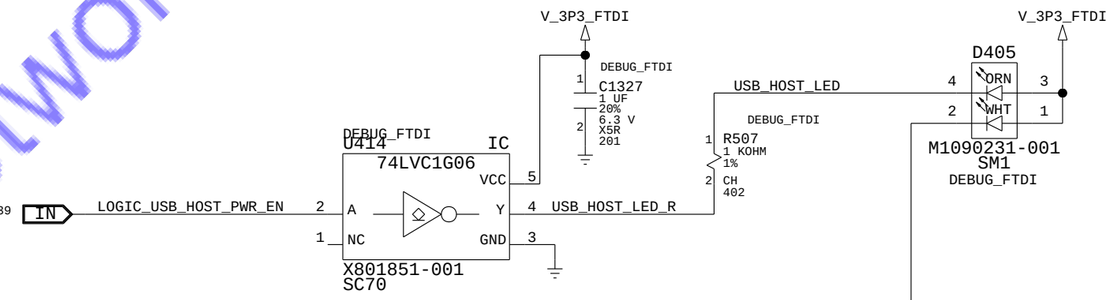




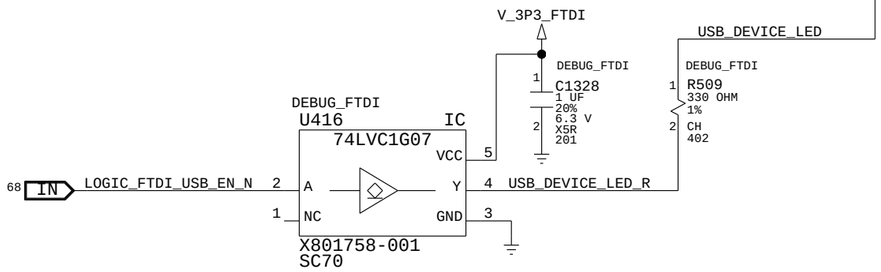




SMC DEBUG LED (GRN)



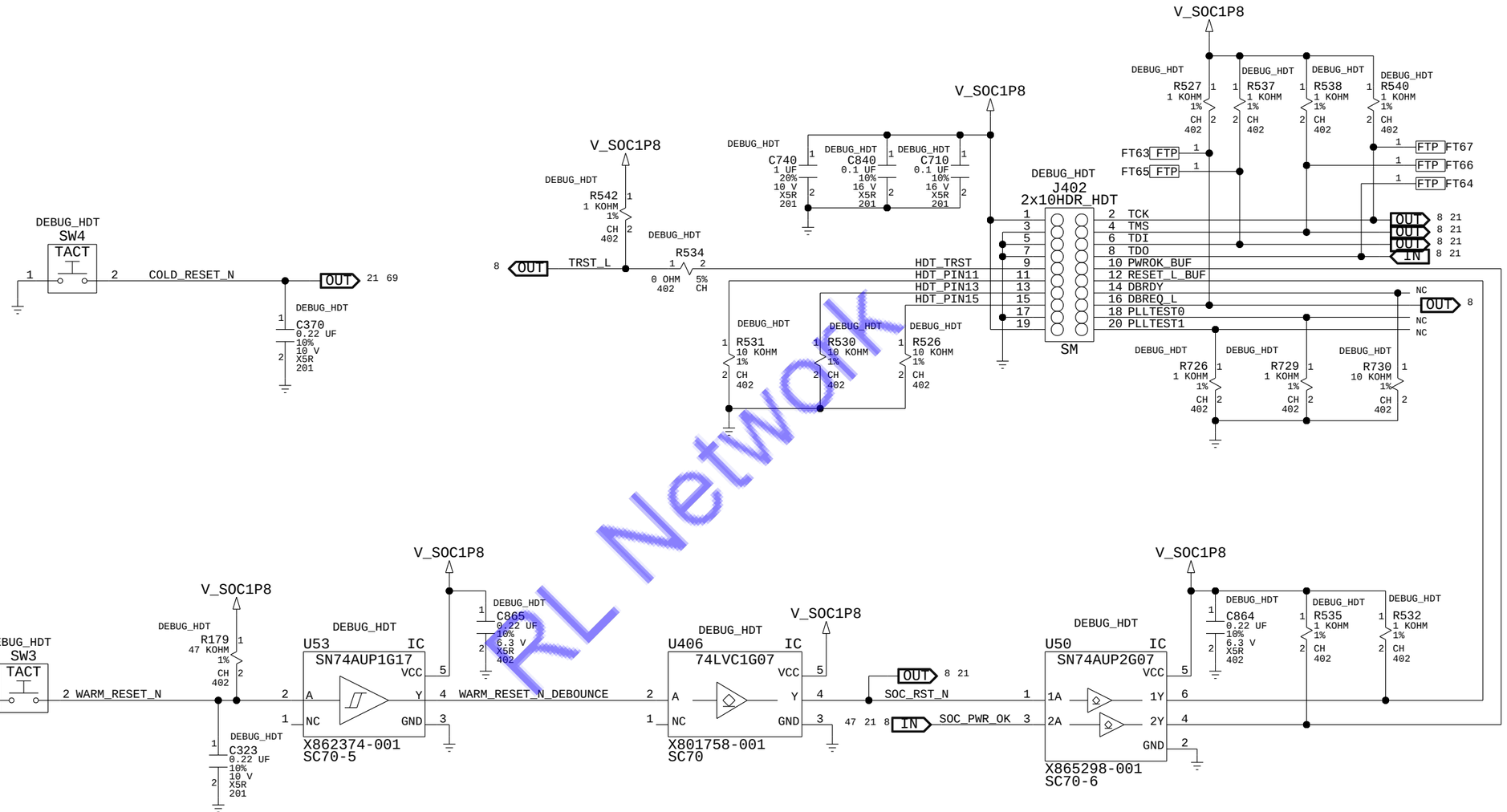
USB HOST MODE LED (ORG)



USB DEVICE MODE LED (WHT)

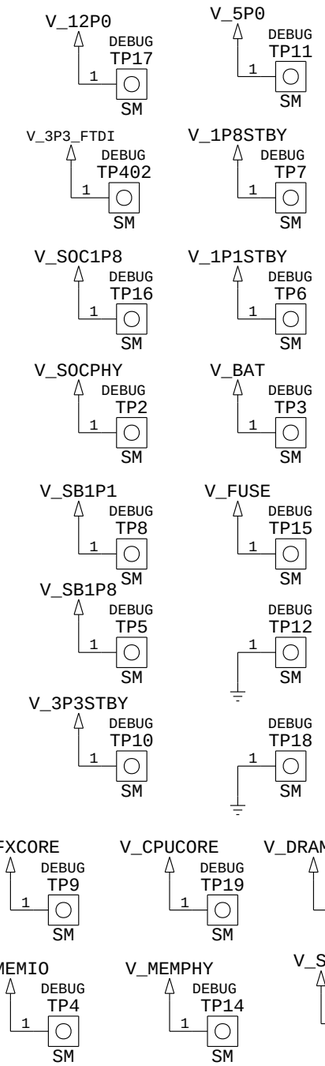
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	69/76	69/76	C	0.12

DEBUG: HDT



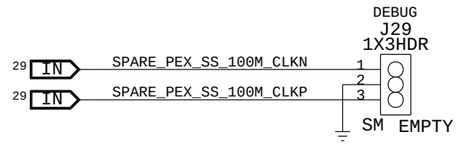
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	70/76	70/76	C	0.12

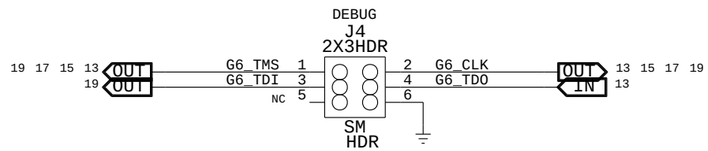
DEBUG: VR HEADERS, TEST POINTS, CONNECTORS



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

PCIE CONNECTORS

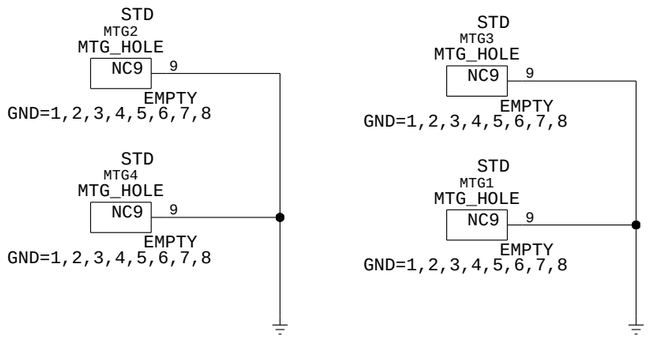




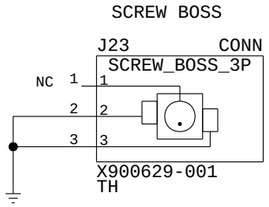
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	71/76	71/76	C	0.12

LABELS AND MOUNTING

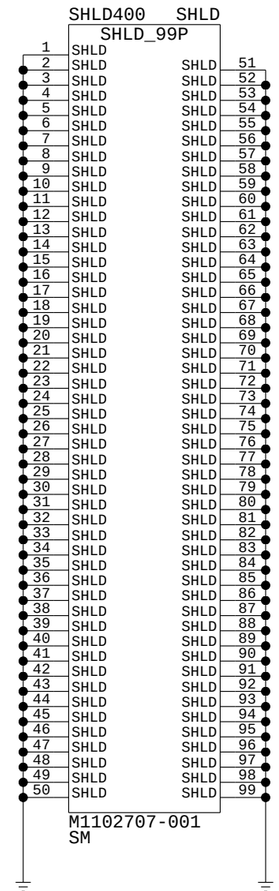
HEAT SINK MOUNTING HOLES



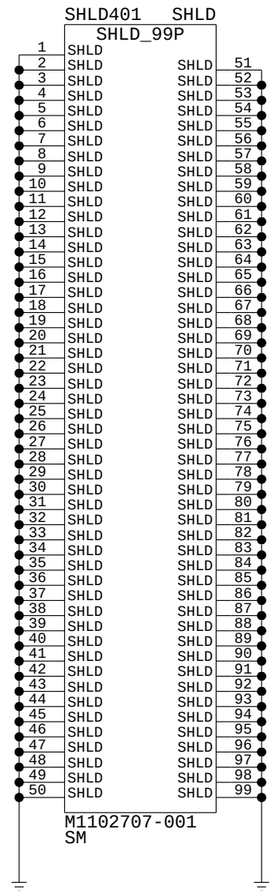
SCREW BOSS



TOP BOARD LEVEL SHIELD



BOTTOM BOARD LEVEL SHIELD



GND PADS FOR HEATSINK ALIGNMENT PINS

INTELLIGENT SERIAL NUMBER TARGET

MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
M1111890-001	FR4	PCB1	PCB,STOCKTON,FAB B,8 LAYERS,GI	PCB_GI
MXXXXXXX-001	FR4	PCB1	PCB,STOCKTON,FAB B,8 LAYERS,OSP	PCB_OSP

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	VER
	Stockton	72/76	72/76	0.12

BOM DEFINITIONS

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
DEBUG	COMPONENTS REQUIRED FOR BRING UP & DEBUG
DEBUG_HDT	HDT-RELATED DEBUG COMPONENTS
DEBUG_SHUNT	COMPONENTS WHICH ARE ON DEBUG BOARDS, BUT ARE REMOVED/SHORTED ON RETAIL
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
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
SANTO_RETAIL	RETAIL VERSION OF SANTO SB
M2_ONLY	POPULATE TO SUPPORT AN M.2 INTERFACE
NO_M2	POPULATE WHEN THERE IS NO M2. INTERFACE
PCB_GI	FAB TYPE: GOLD
PCB_OSP	FAB TYPE: ORGANIC SOLDERABILITY PRESERVATIVE GREEN SOLDERMASK
PCB_OSP_BLACK	FAB TYPE: ORGANIC SOLDERABILITY PRESERVATIVE BLACK SOLDERMASK
RTC_RETAIL	RTC CIRCUIT IMPLEMENTATION FOR RETAIL BOARDS
RTC_XDK	RTC CIRCUIT IMPLEMENTATION FOR XDK BOARDS
SOC_BASE	DUMMY PLACE HOLDER FOR SOC. NEVER USE THIS IN THE RECIPE FILE. SELECT ONE OF THESE INSTEAD: EMMC_HYNIX_16NM, EMMC TOSHIBA_15NM, EMMC SAMSUNG_14NM
SOC_EMPTY	DOES NOT STUFF SPARKMAN
SOC_INCLUDE	STUFFS SPARKMAN
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
RETAIL	COMPONENTS STUFFED FOR A RETAIL CONSOLE. DO NOT USE WITH DEBUG
DEBUG_PHASE	PHASES USED FOR INITIAL POWER UP
DRAM_VPP_DEBUG	SEPARATES SOC 1.8V AND DRAM 1.8V. USE IF MARGINING SOC 1.8V OUTSIDE OF DRAM 1.8V LIMITS. NEVER USE WITH DRAM_VPP_RETAIL
DRAM_VPP_RETAIL	COMBINES SOC 1,8V AND DRAM1.8V USEING A FILTER NETWORK. NEVER USE WITH DRAM_VPP_DEBUG
DEBUG_FTDI	STUFFS INTERCEPT CIRCUITRY FOR DEBUG
NO_DEBUG_FTDI	BYPASSES INTERCEPT CIRCUITRY FOR NO DEBUG
SPI_FLASH_BASE	DUMMY PLACE HOLDER FOR SPI FLASH. NEVER USE THIS IN THE RECIPE FILE.
SPI_FLASH_MACRONIX	STUFFS MACRONIX SPI FLASH
SPI_FLASH_WINBOND	STUFFS WINBOND SPI FLASH

STOCKTON_NEXUS

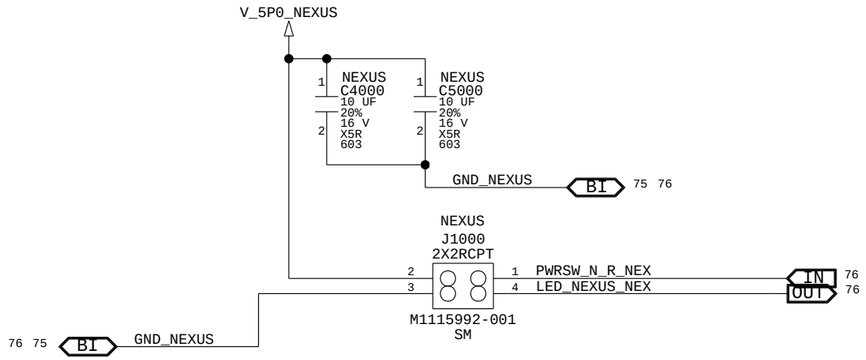
NEXUS BOARD IS CO-PANELED WITH MAIN BOARD

PAGE	CONTENTS
[1]	COVER PAGE
[2]	B2B CONN, LABELS
[3]	NEXUS LED, POWER SWITCH

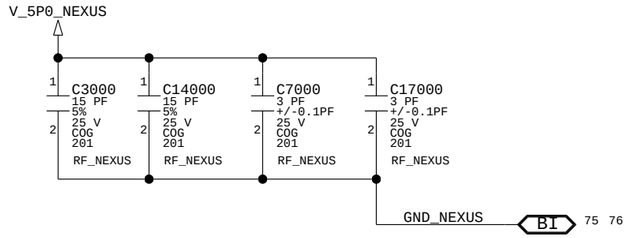
RULES: (APPLIED WHEN POSSIBLE)

1.) MSB TO LSB IS TOP TO BOTTOM
2.) WHEN POSSIBLE: INPUTS ON LEFT, OUTPUTS ON RIGHT
3.) ORDER OF PAGES=CHIP INTERFACES, TERMINATION, POWER, DECOUPLING
4.) AVOID USING OFF PAGE CONNECTORS FOR ON PAGE CONNECTIONS
5.) LANED SIGNALS ARE GROUPED ON SYMBOLS
6.) TRANSIMITTER NAME USED AS PREFIX WITH RX AND TX CONNECTIONS
7.) SUFFIX V_ IS USED FOR VOLTAGE RAIL SIGNAL NAMES
8.) SUFFIX _DP AND _DN ARE USED FOR DIFFERIENTAL PAIRS
9.) UNNAMED NETS ARE NAMED WITH /2 TEXT SIZE
10.) SUFFIX _N FOR ACTIVE LOW OR N JUNCTION
12.) SUFFIX _P FOR P JUNCTION
13.) SUFFIX _EN FOR ENABLE
14.) 'CLK' FOR CLOCKS, 'RST' FOR RESETS
15.) PWRGD FOR POWER GOOD

B2B CONN AND LABELS



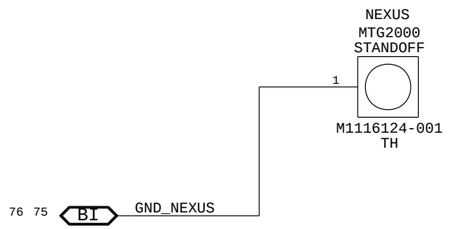
B2B CONNECTOR



LB3
LABEL

M1023564-801
6.35MM X 6.35MM
NEXUS

MOUNTING STANDOFF

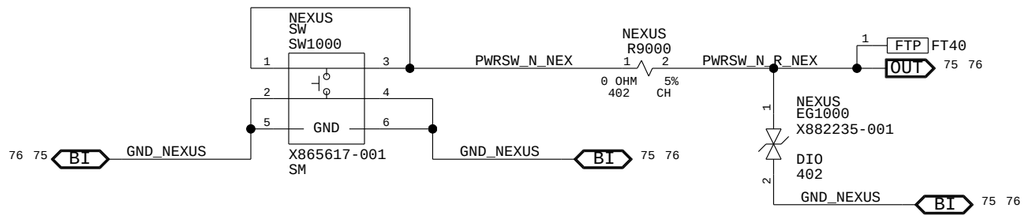


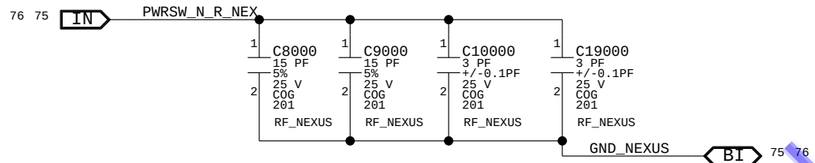
MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
M1110461-001	FR4	PCB1	PCB,STOCKTON,2LAYERS,NEXUS,FAB A	PCB

MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	75/76	75/76	C	0.12

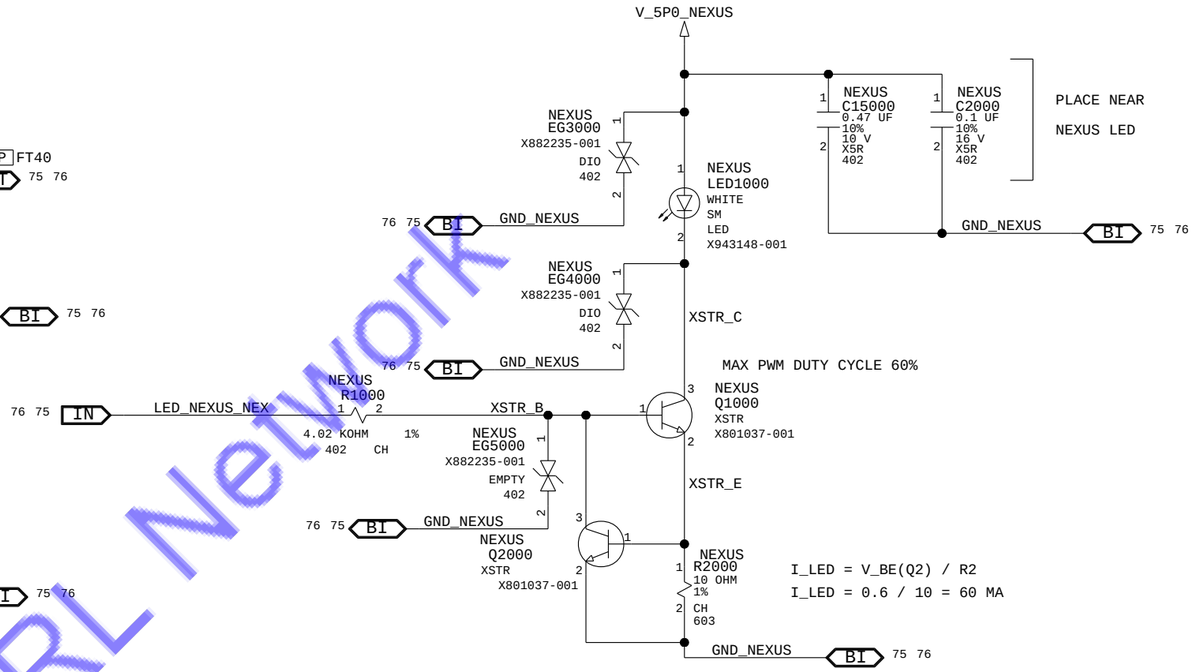
NEXUS LED AND POWER SWITCH

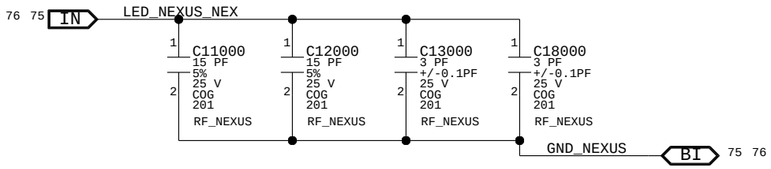
POWER SWITCH





NEXUS LED LIGHTING





MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	76/76	76/76	C	0.12