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		

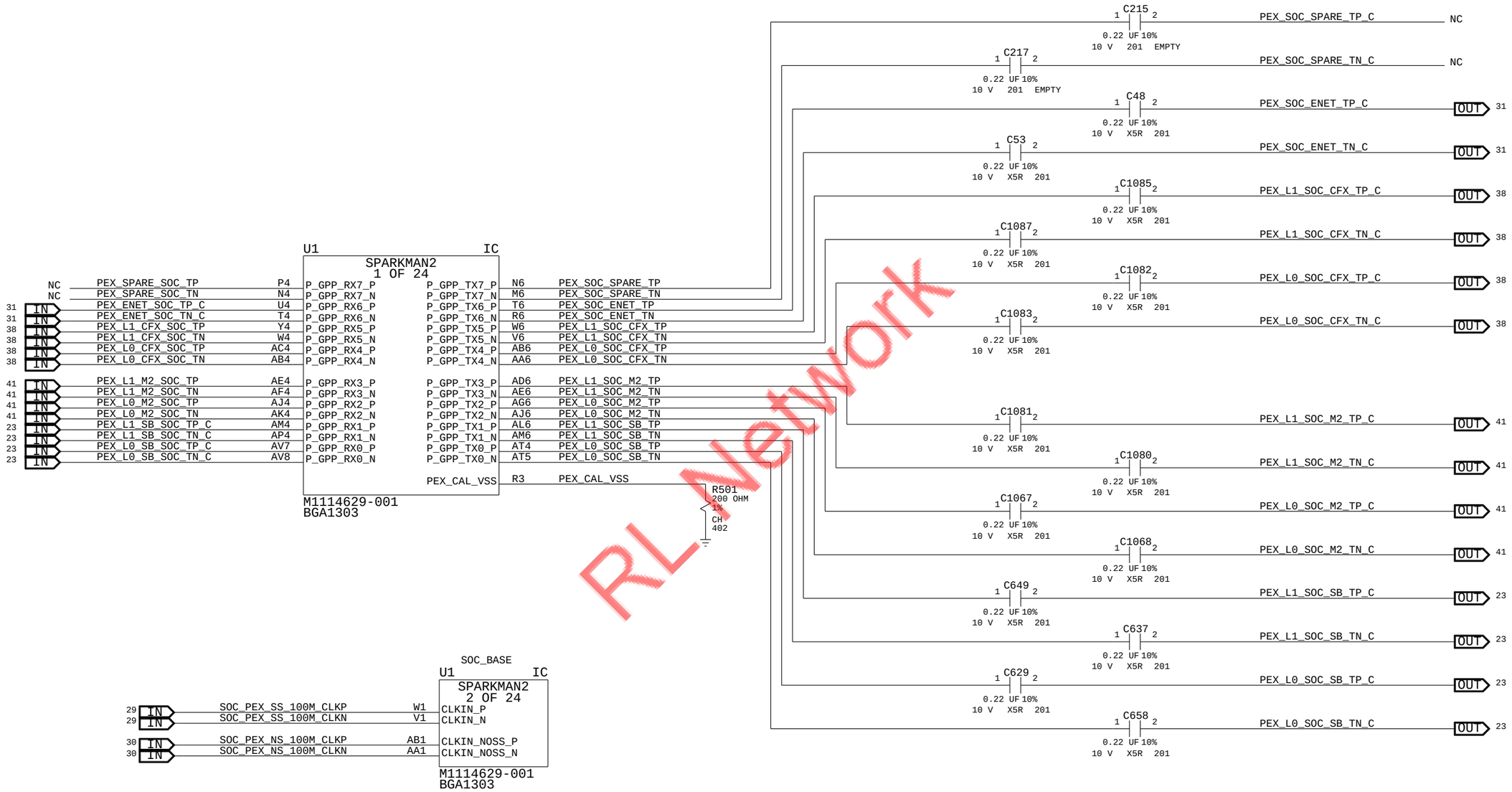
STOCKTON FAB C
REV 0.12

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: Stockton	PAGE: 1/76	CSA PAGE: 1/76	FAB: C	VER: 0.12

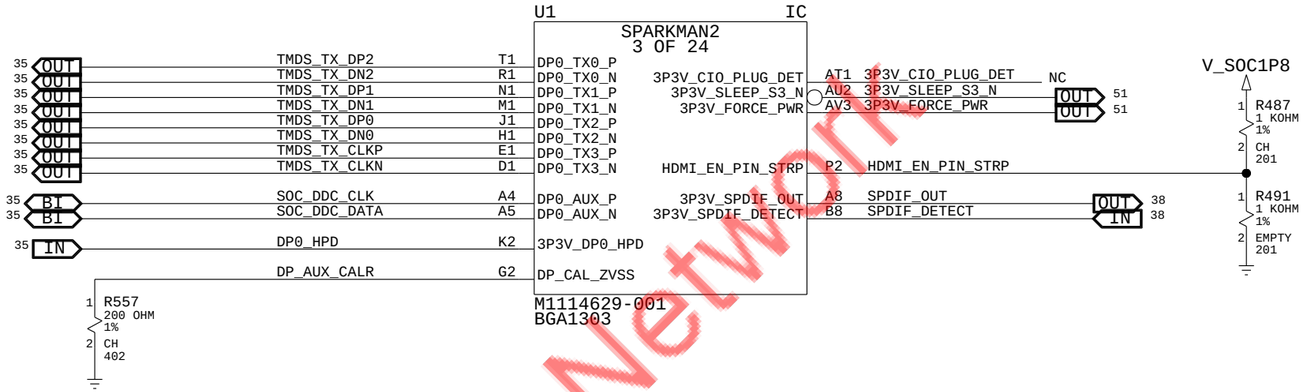
SOC: PCIEX,CLOCKS



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

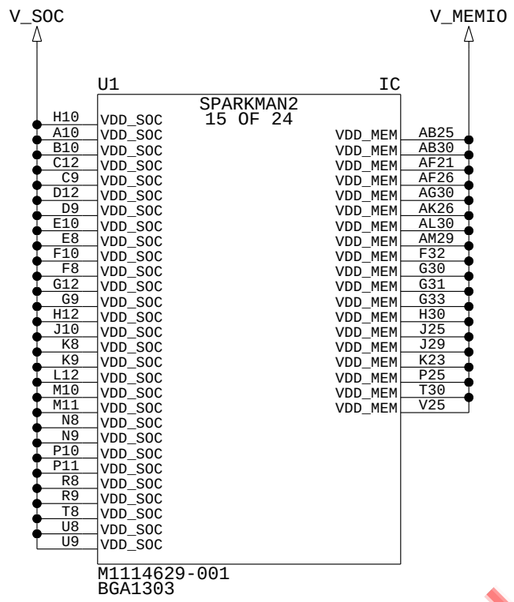
SOC: VIDEO

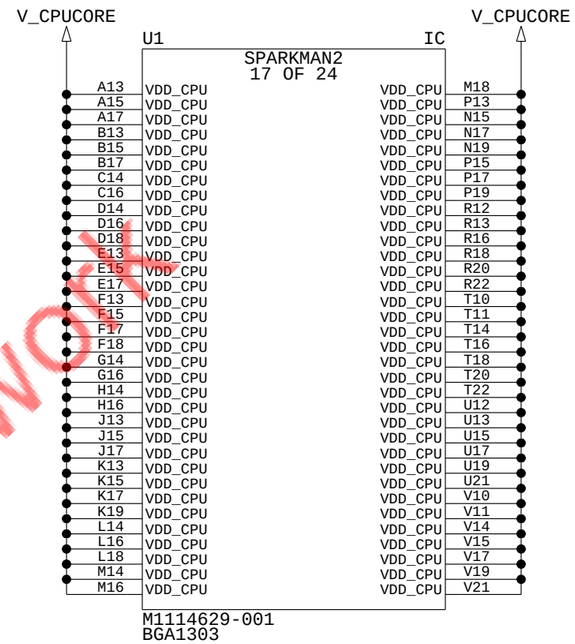


DVI PCB ROUTING ORDERING	DP PCB ROUTING ORDERING	PIN NAME
TMDS CLOCK -	DP LANE 3 -	DP0_TX3_N
TMDS CLOCK +	DP LANE 3 +	DP0_TX3_P
TMDS DATA0 -	DP LANE 2 -	DP0_TX2_N
TMDS DATA0 +	DP LANE 2 +	DP0_TX2_P
TMDS DATA1 -	DP LANE 1 -	DP0_TX1_N
TMDS DATA1 +	DP LANE 1 +	DP0_TX1_P
TMDS DATA2 -	DP LANE 0 -	DP0_TX0_N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

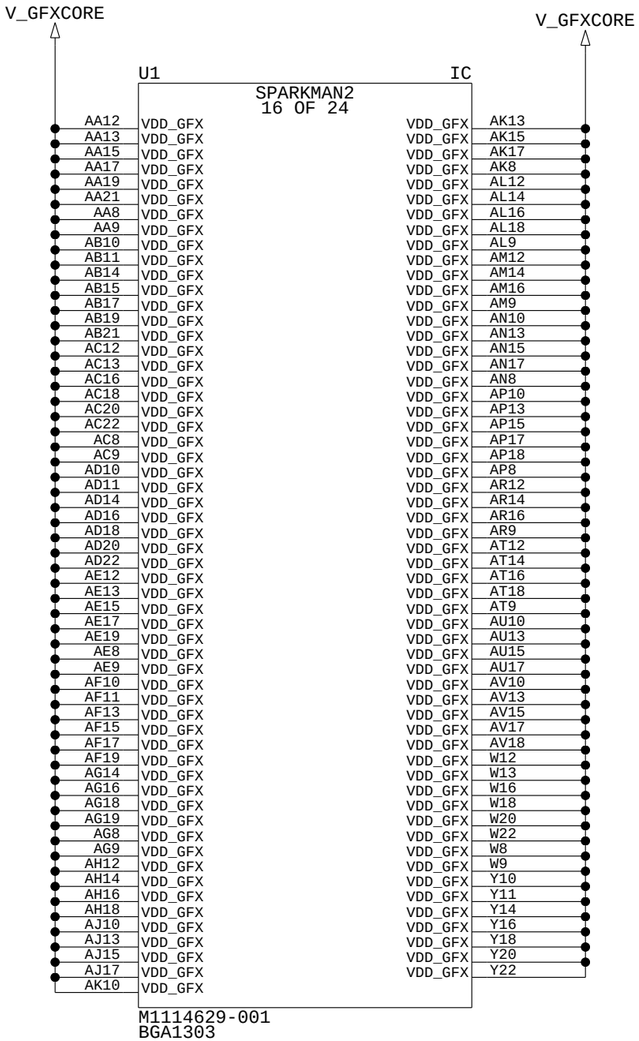
SOC POWER: MEMIO, CPUCORE, SOC

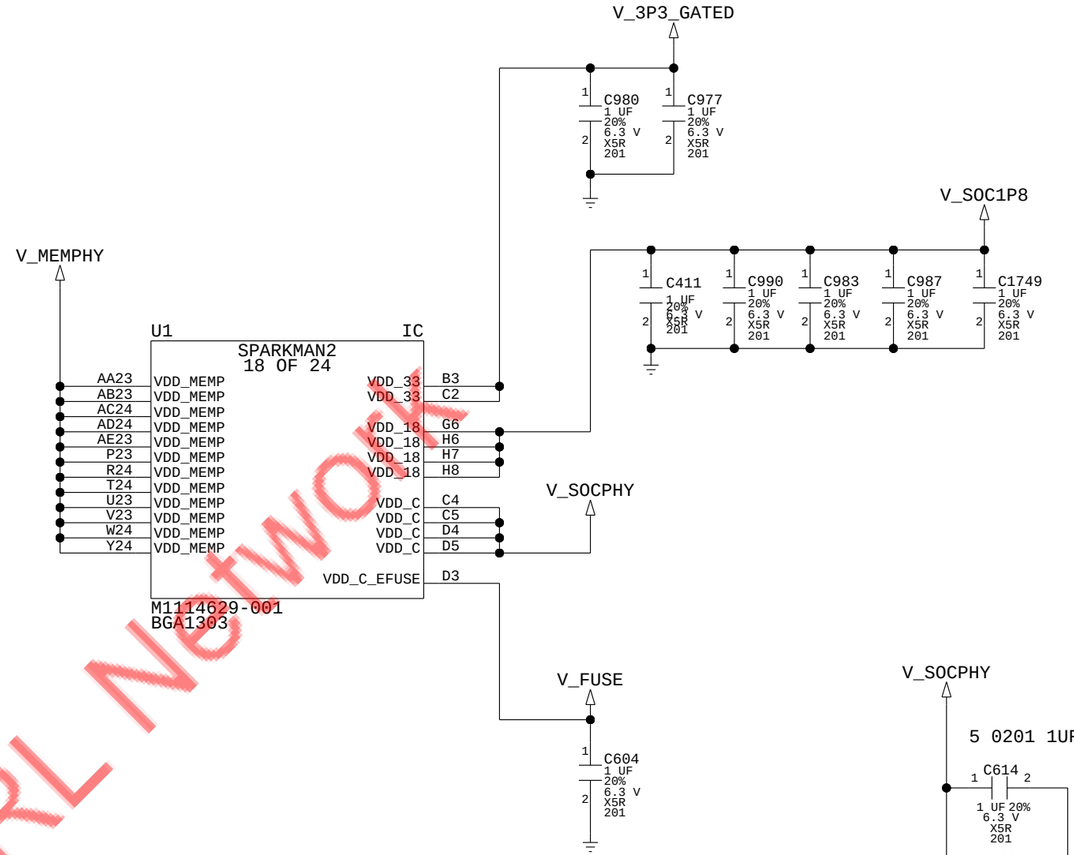


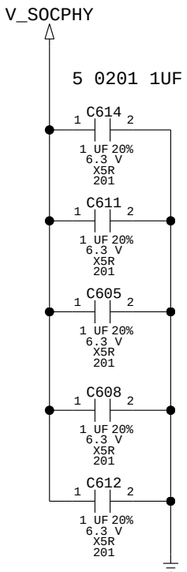


MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	4/76	4/76	C	0.12

SOC: POWER: GFXCORE, MEMPHY, MISC

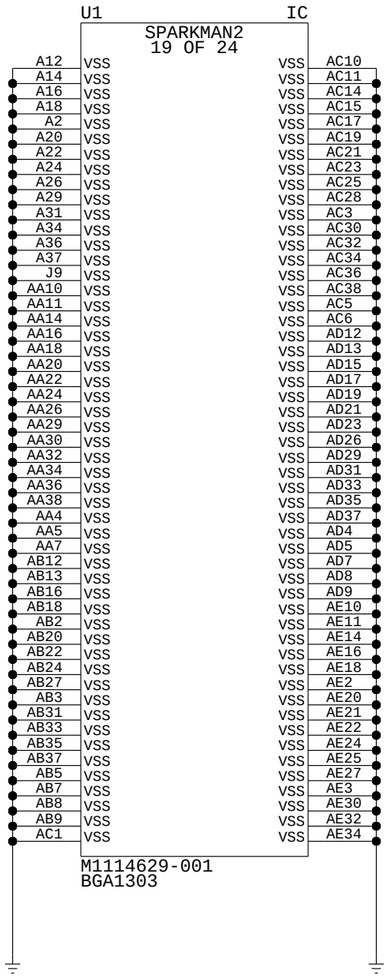


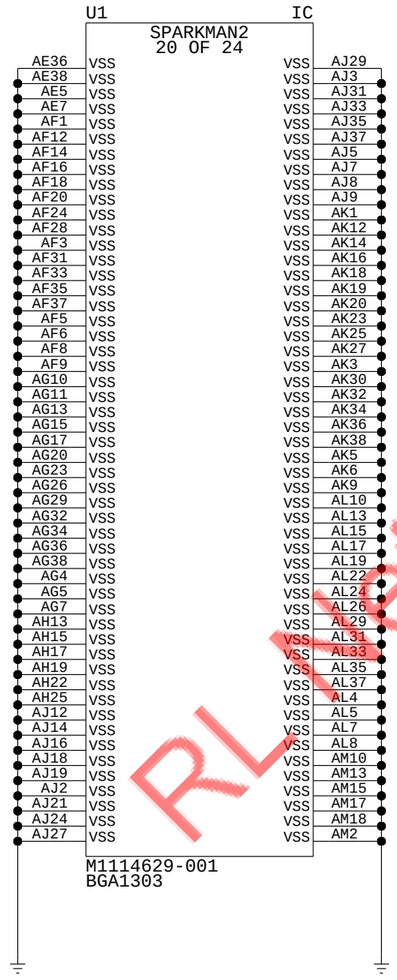


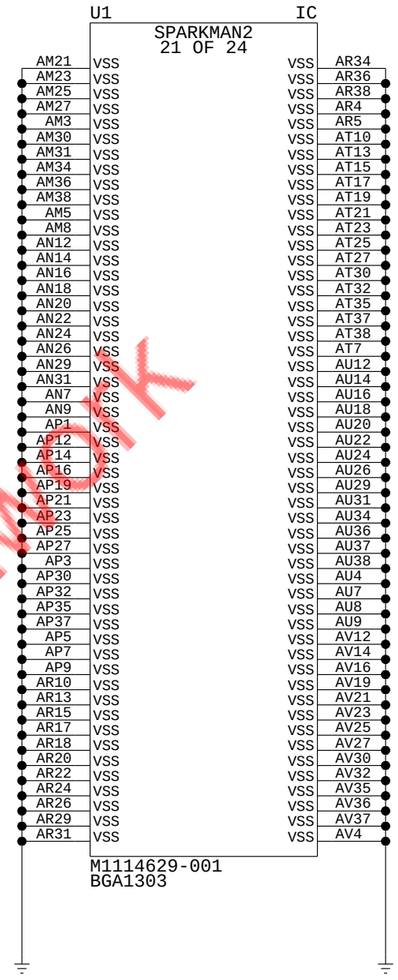


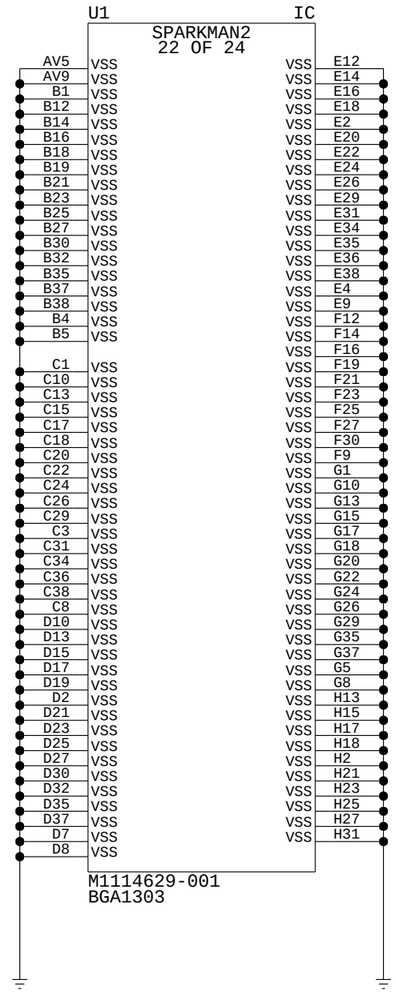
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	5/76	5/76	C	0.12

SOC: POWER: VSS



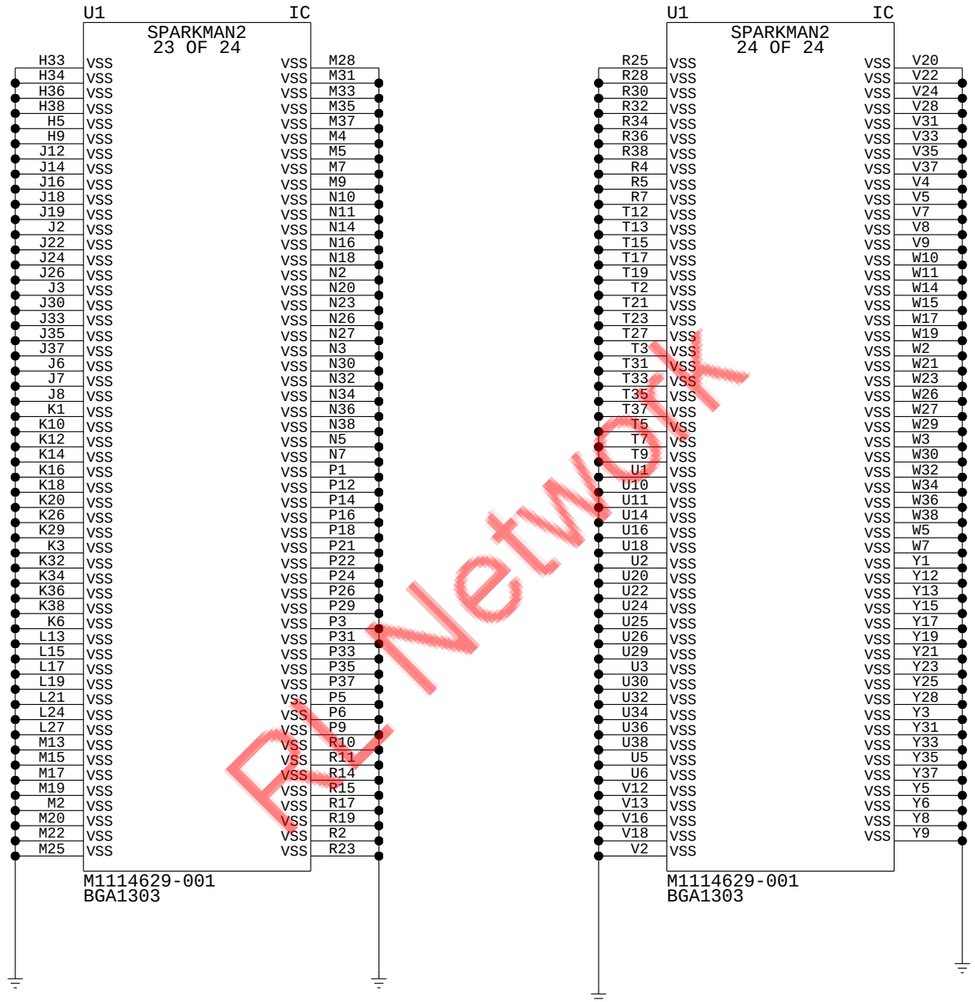






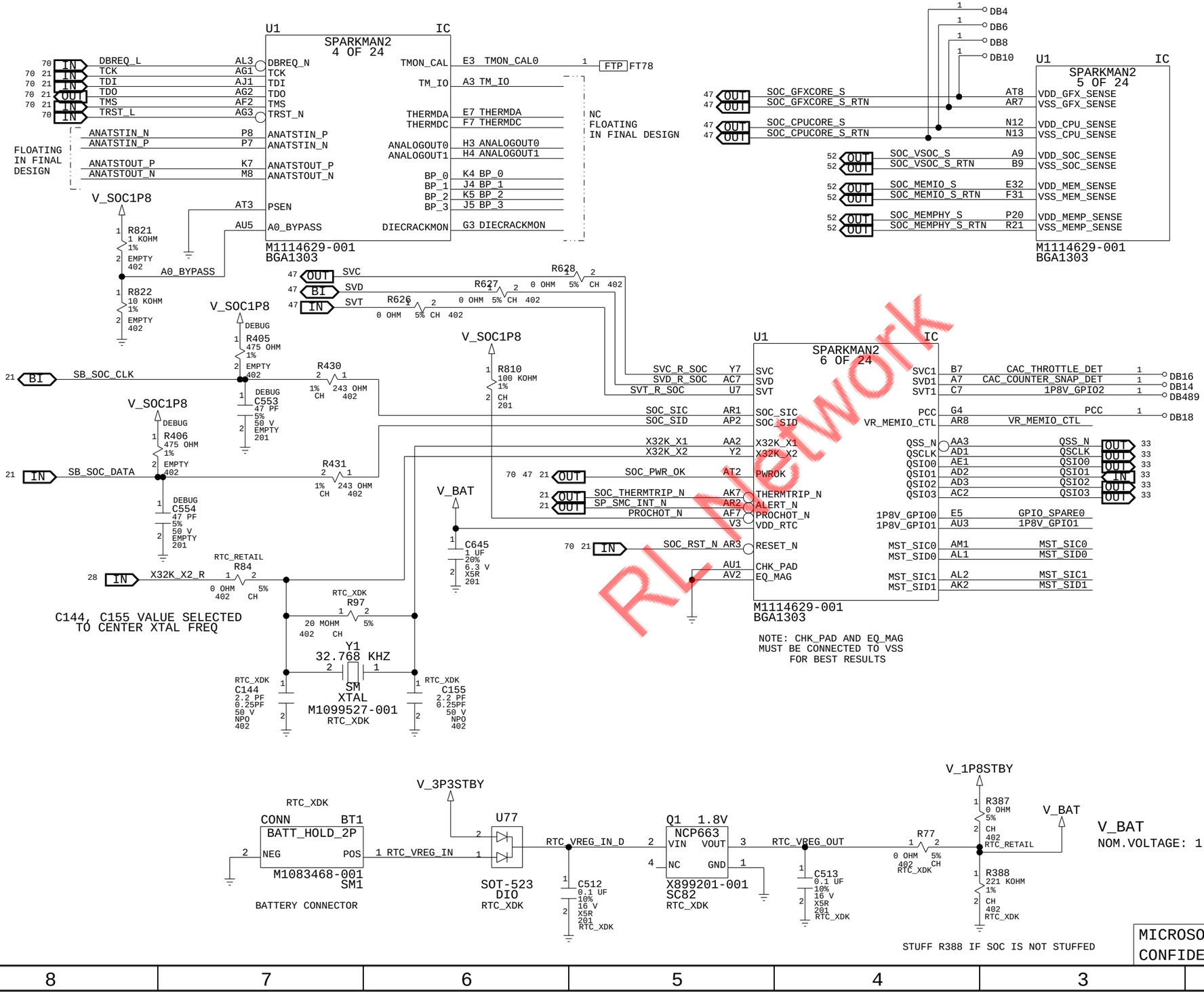
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	6/76	6/76	C	0.12

SOC: POWER: VSS



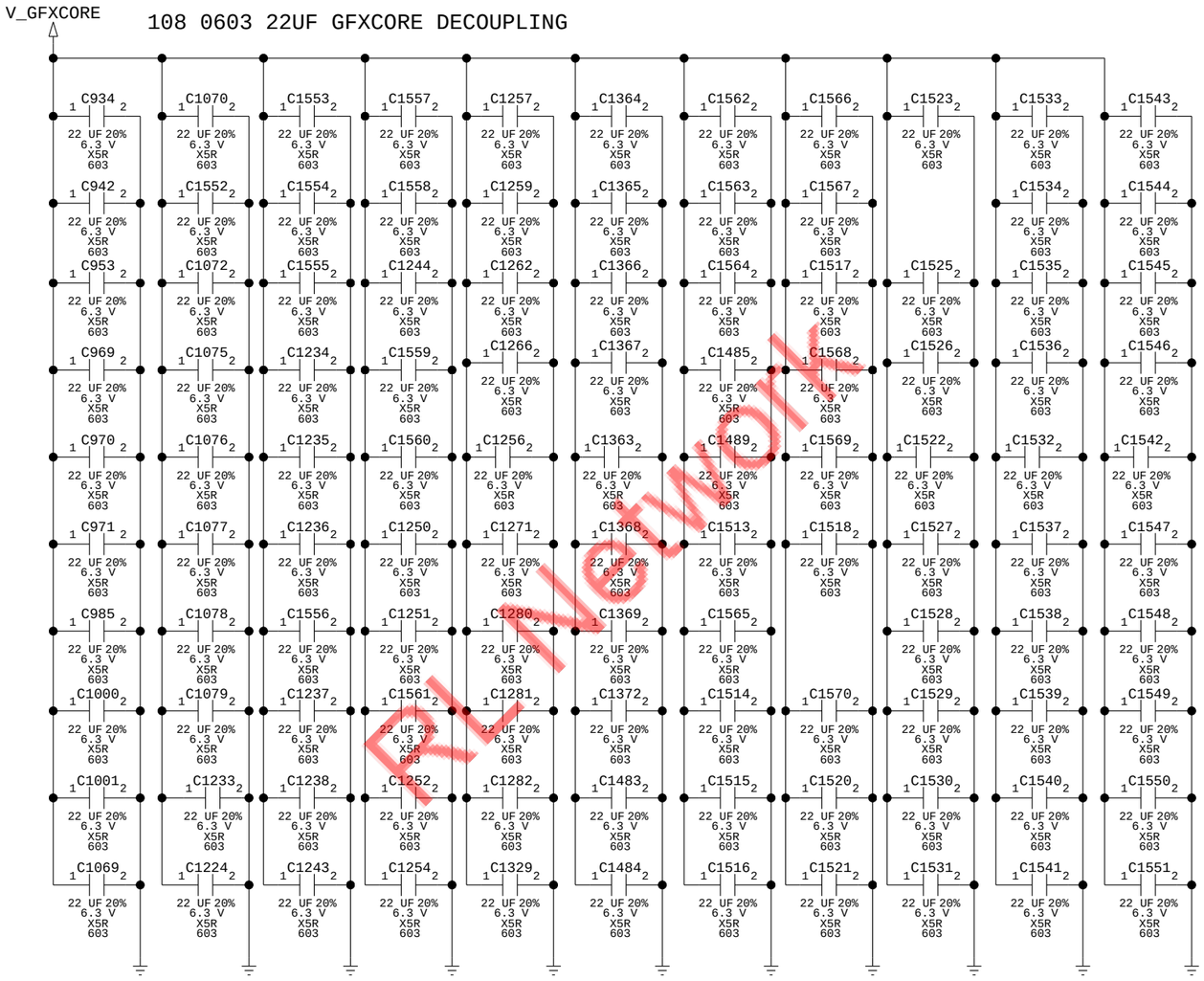
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	7/76	7/76	C	0.12

SOC: DEBUG, SB SIGNALS, V_BAT, VOLTAGE SENSE



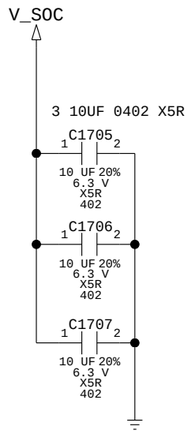
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	8/76	8/76	C	0.12

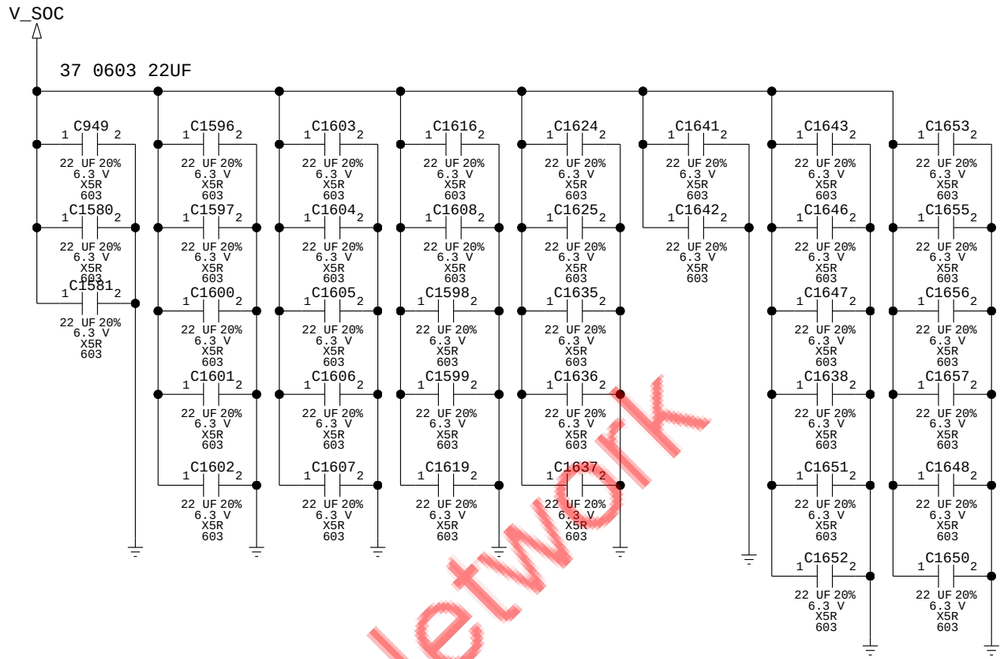
SOC: V_GFXCORE DECOUPLING



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

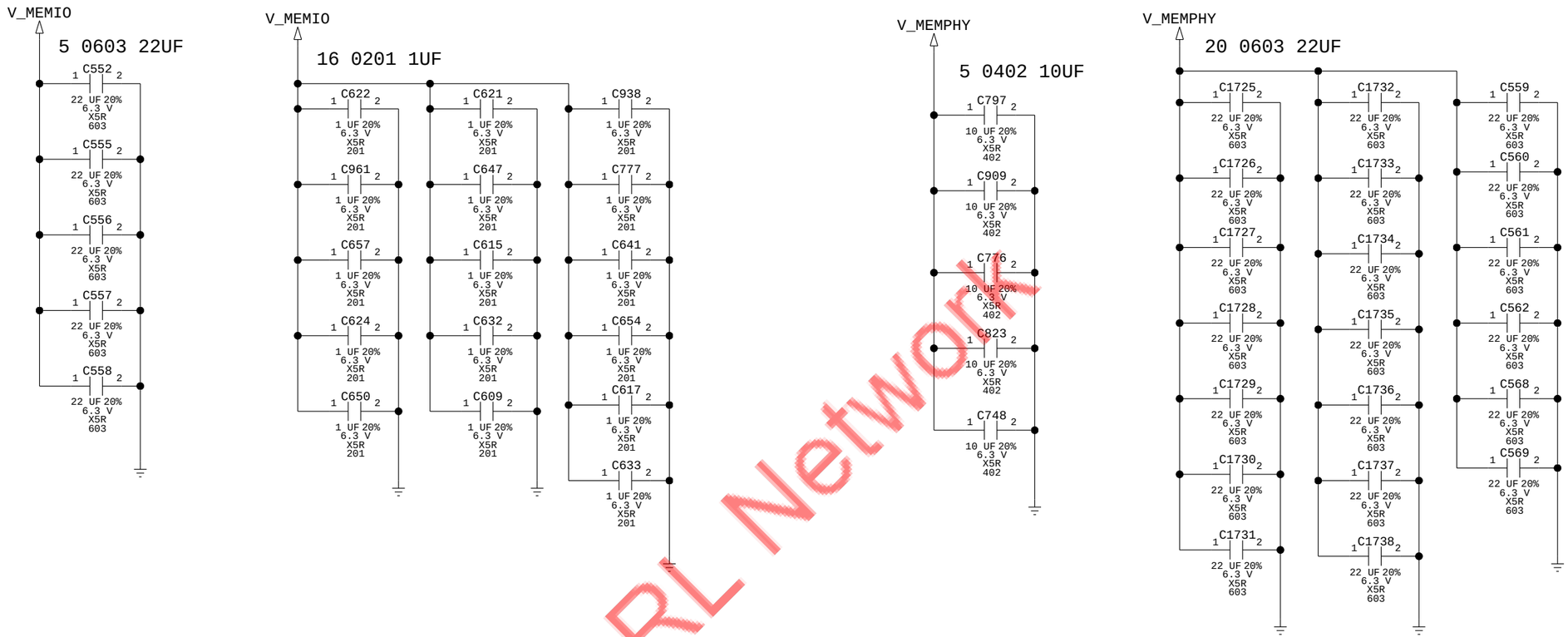
SOC: V_SOC DECOUPLING





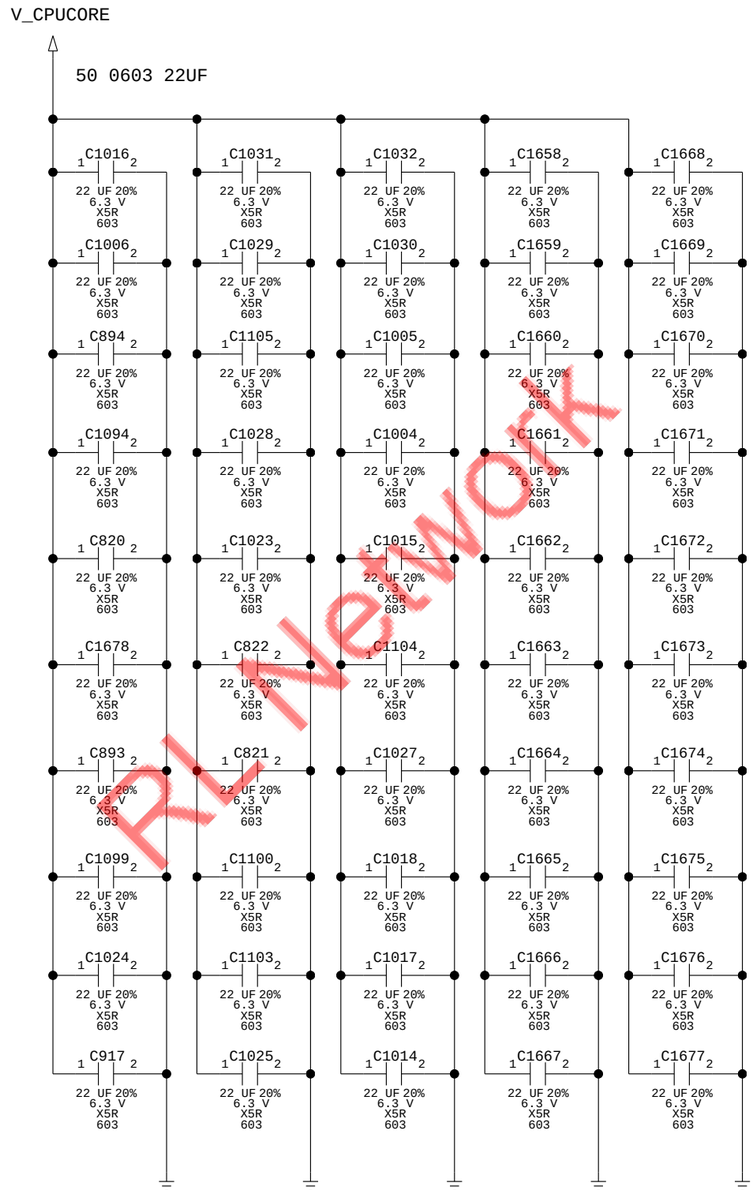
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	10/76	10/76	C	0.12

SOC: V_MEMIO/V_MEMPHY DECOUPLING



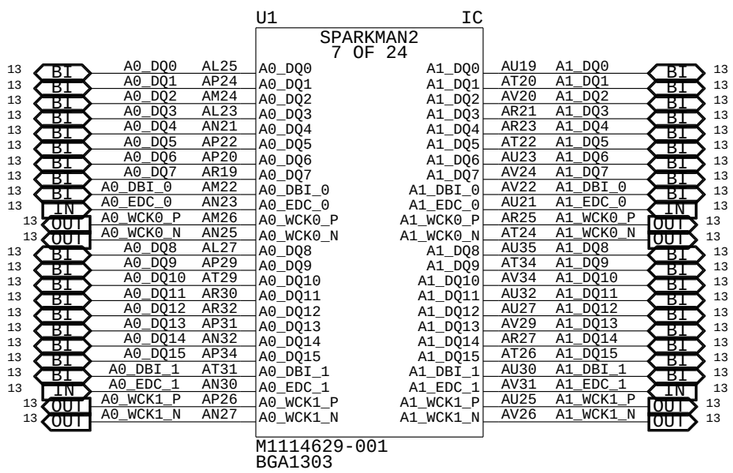
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	11/76	11/76	C	0.12

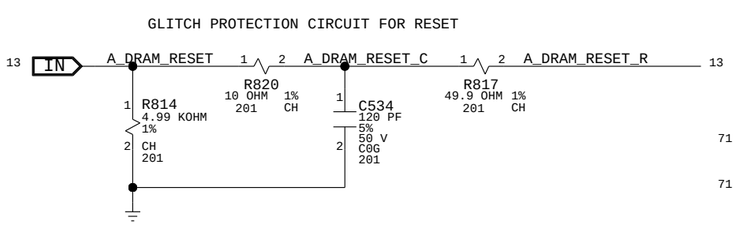
SOC: V_CPUCORE DECOUPLING

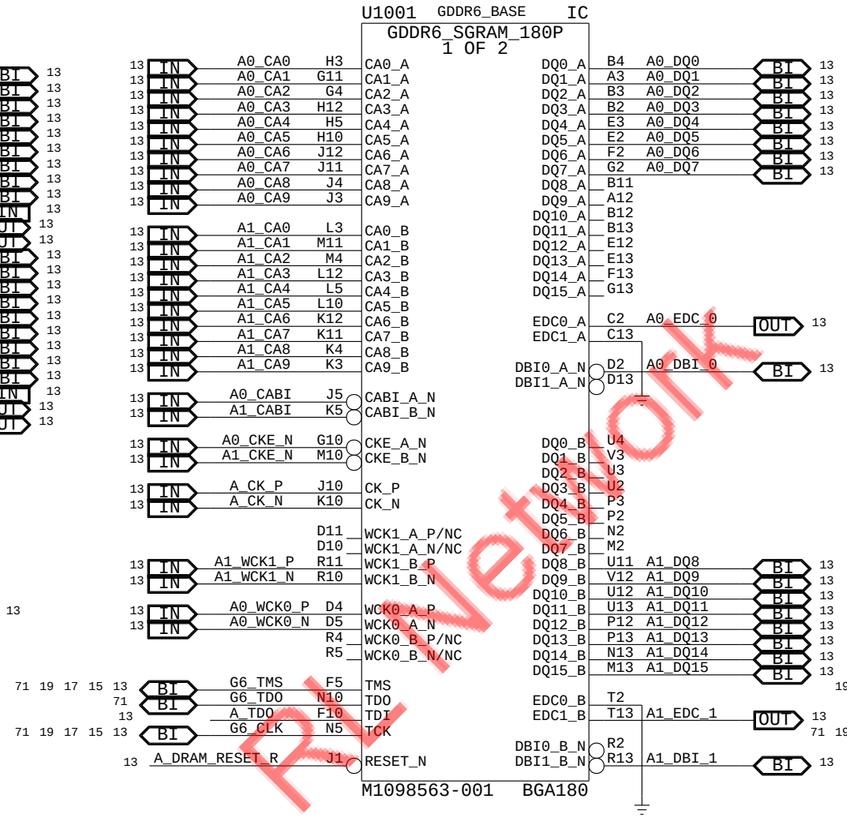


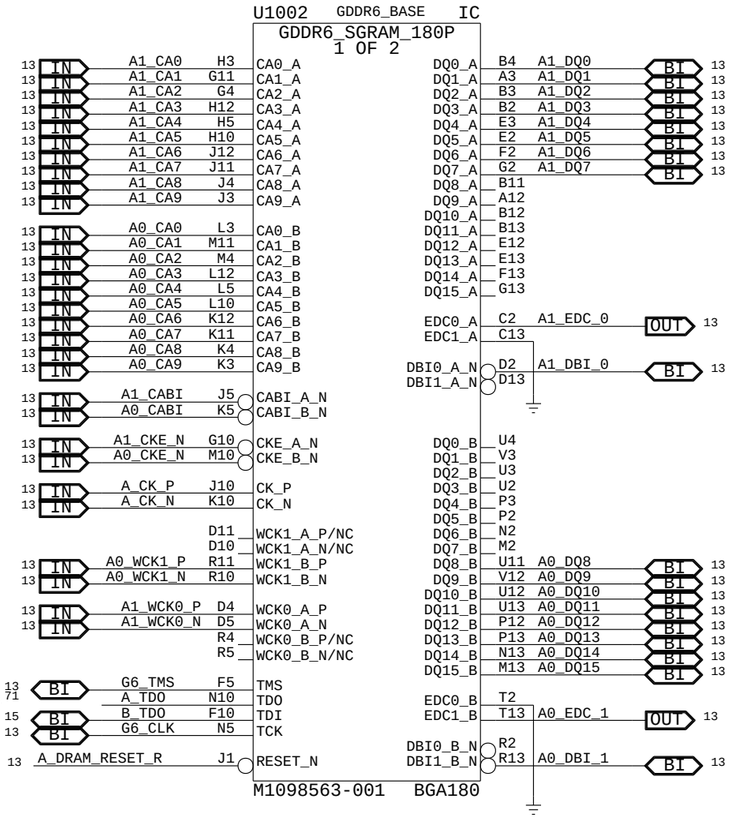
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	12/76	12/76	C	0.12

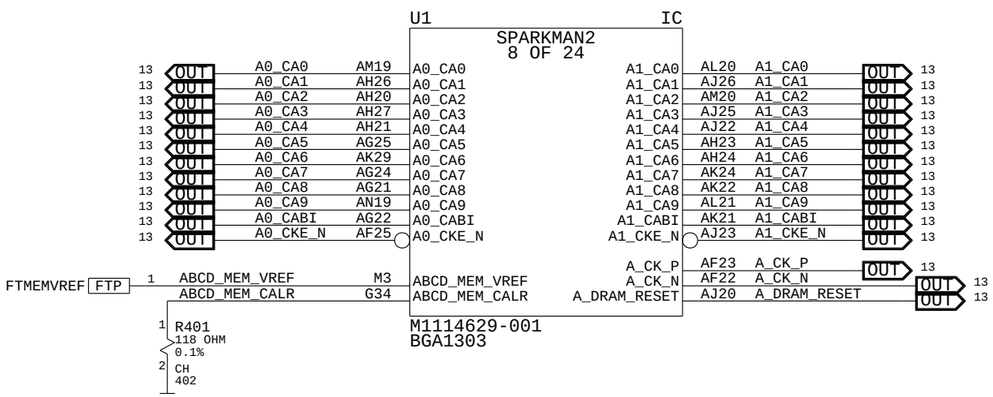
SOC & Memory: CHA/PHY0







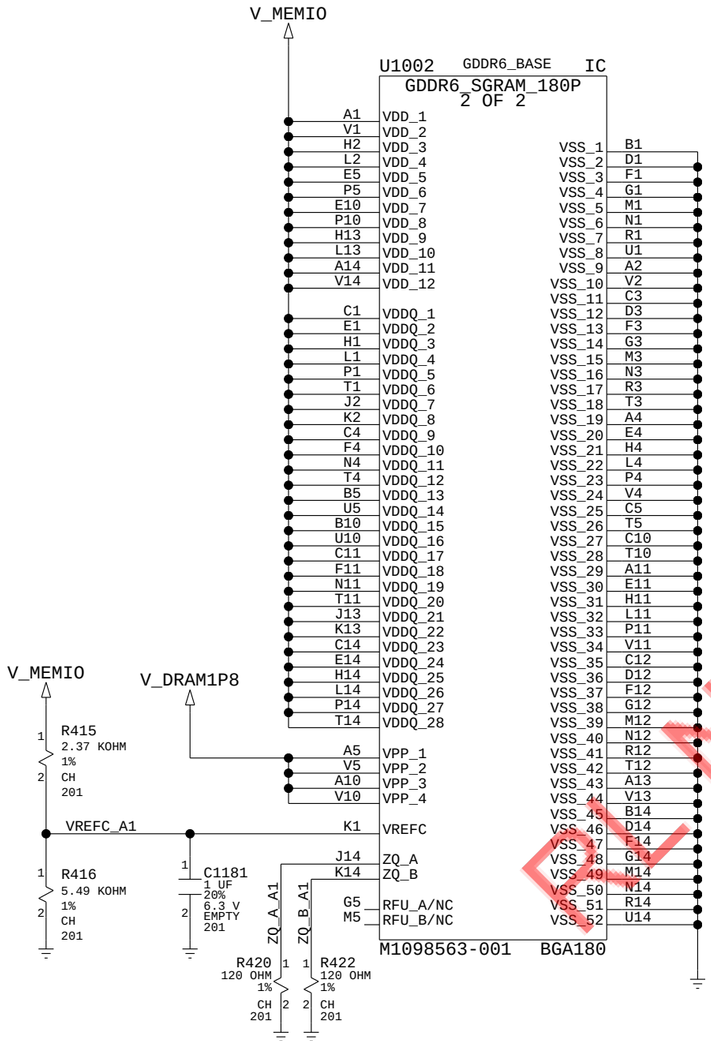


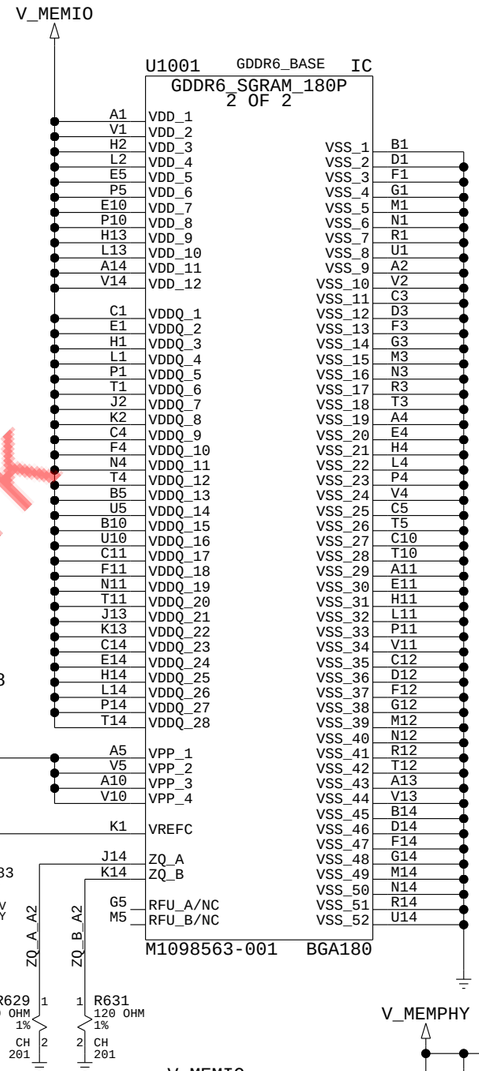


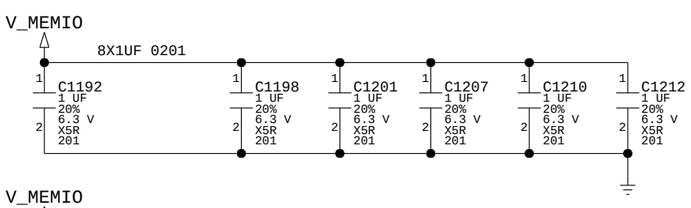
MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
M1098563-001	IC	U1002, U1001, U1005, U1006, U1011	GDDR6	GDDR6_SAMSUNG
M1107532-001	IC	U1002, U1001, U1005, U1006, U1011	GDDR6	GDDR6_HYNIX
M1107537-001	IC	U1002, U1001, U1005, U1006, U1011	GDDR6	GDDR6_MICRON

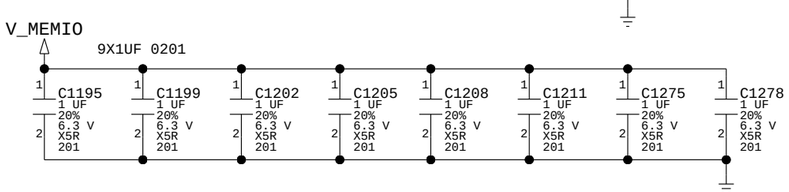
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	13/76	13/76	C	0.12

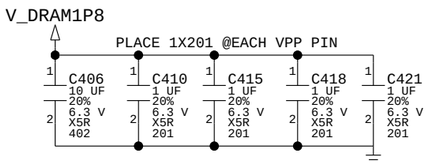
MEMORY: PWR/VSS & DECAP, A

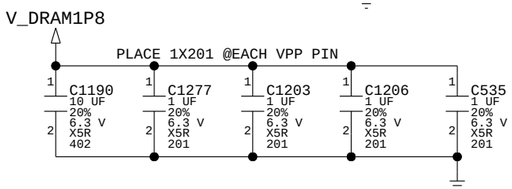


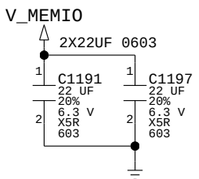


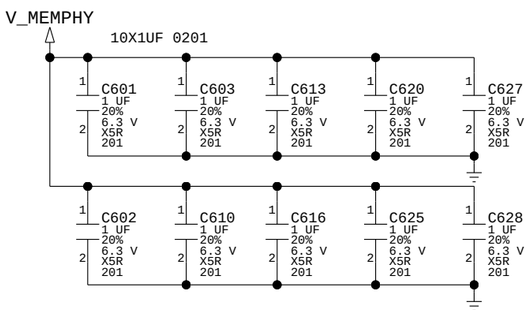






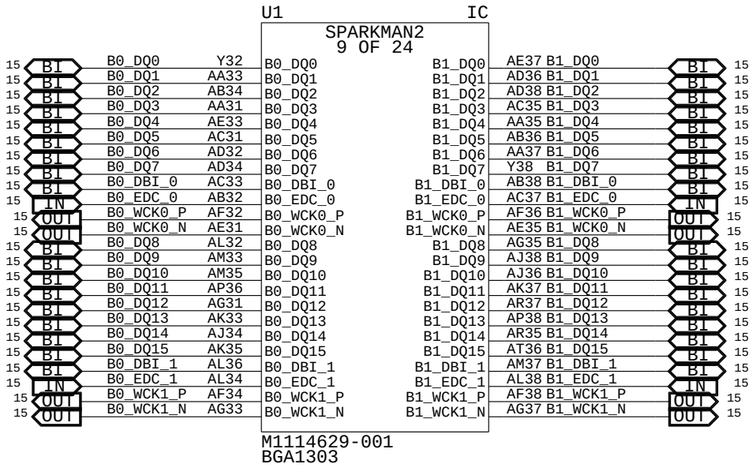


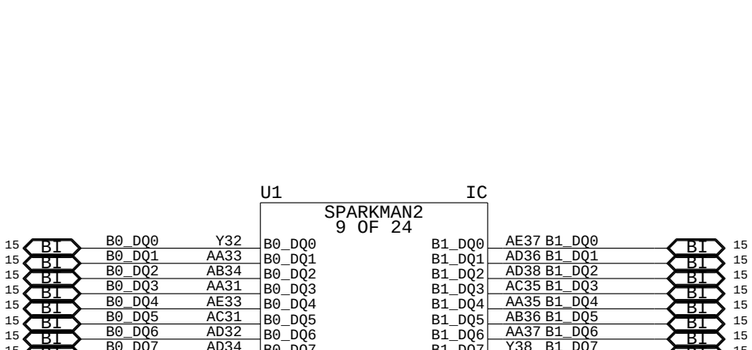


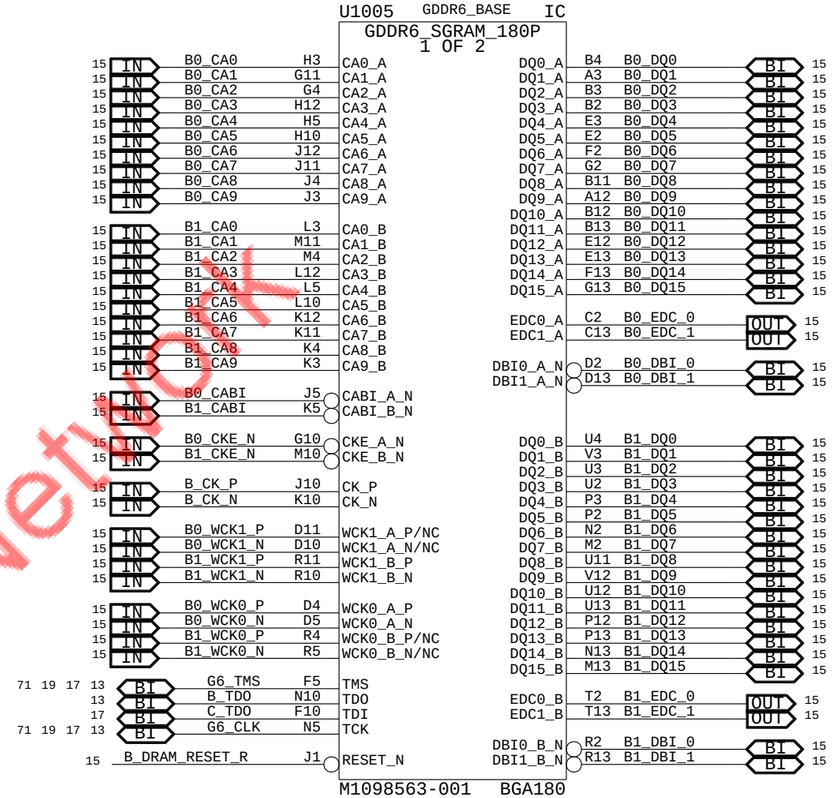


MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	14/76	14/76	C	0.12

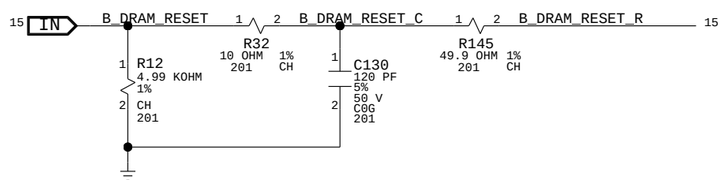
SOC & Memory: CHB/PHY1





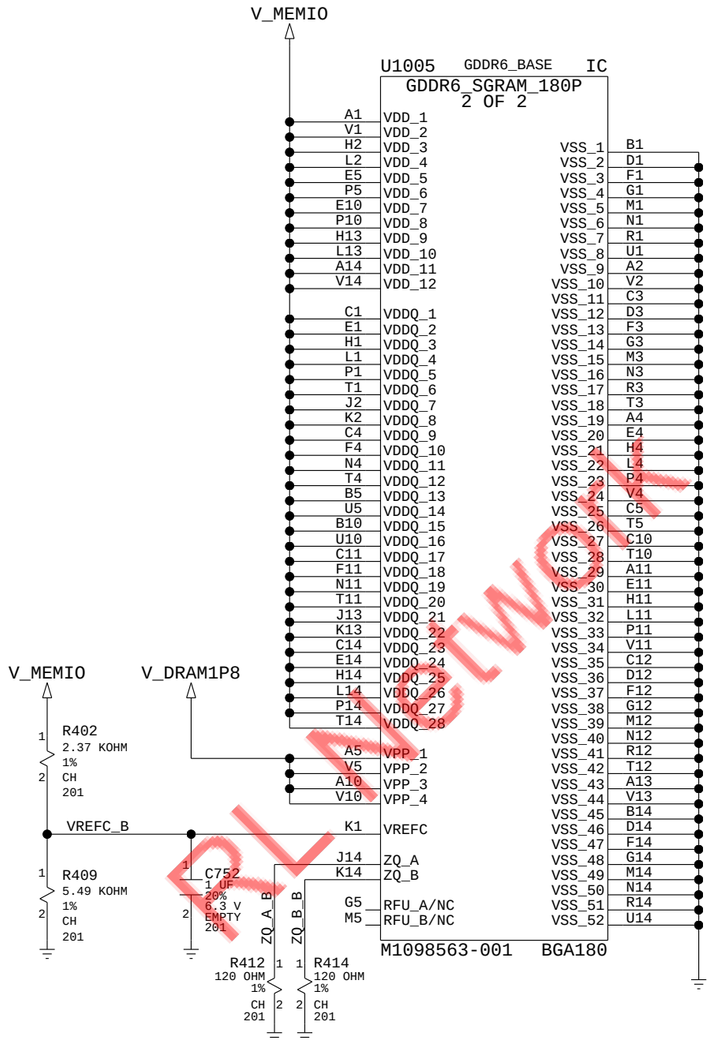


GLITCH PROTECTION CIRCUIT FOR RESET



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

MEMORY: PWR/VSS & DECAP, B



V_MEMPHY

10X1UF 0201

C579 1 UF 20% 6.3 V X5R 201
C581 1 UF 20% 6.3 V X5R 201
C584 1 UF 20% 6.3 V X5R 201
C590 1 UF 20% 6.3 V X5R 201
C592 1 UF 20% 6.3 V X5R 201
C580 1 UF 20% 6.3 V X5R 201
C583 1 UF 20% 6.3 V X5R 201
C588 1 UF 20% 6.3 V X5R 201
C591 1 UF 20% 6.3 V X5R 201
C595 1 UF 20% 6.3 V X5R 201

V_MEMIO

10X1UF 0201

C704 1 UF 20% 6.3 V X5R 201
C724 1 UF 20% 6.3 V X5R 201
C727 1 UF 20% 6.3 V X5R 201
C750 1 UF 20% 6.3 V X5R 201
C836 1 UF 20% 6.3 V X5R 201
C838 1 UF 20% 6.3 V X5R 201
C1182 1 UF 20% 6.3 V X5R 201
C1184 1 UF 20% 6.3 V X5R 201
C520 1 UF 20% 6.3 V X5R 201
C522 1 UF 20% 6.3 V X5R 201

V_MEMIO

10X1UF 0201

C722 1 UF 20% 6.3 V X5R 201
C725 1 UF 20% 6.3 V X5R 201
C728 1 UF 20% 6.3 V X5R 201
C834 1 UF 20% 6.3 V X5R 201
C837 1 UF 20% 6.3 V X5R 201
C1178 1 UF 20% 6.3 V X5R 201
C1180 1 UF 20% 6.3 V X5R 201
C1183 1 UF 20% 6.3 V X5R 201
C521 1 UF 20% 6.3 V X5R 201
C523 1 UF 20% 6.3 V X5R 201

V_DRAM1P8

PLACE 1X201 @EACH VPP PIN

C700 1 UF 20% 6.3 V X5R 201
C749 1 UF 20% 6.3 V X5R 201
C1751 10 UF 20% 6.3 V X5R 402
C492 1 UF 20% 6.3 V X5R 201
C493 1 UF 20% 6.3 V X5R 201

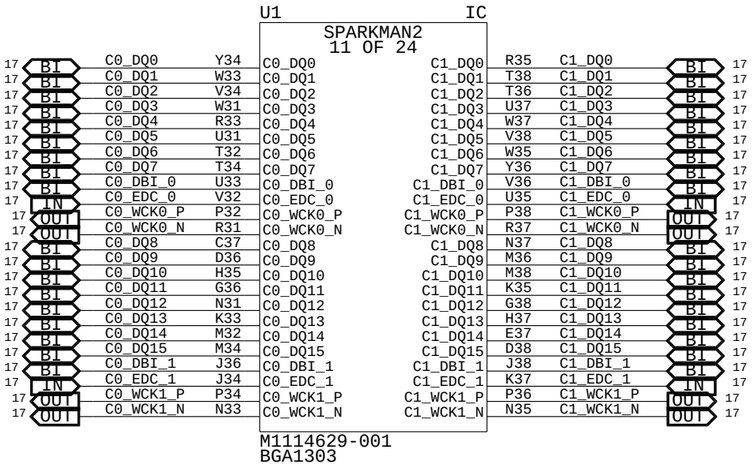
V_MEMIO

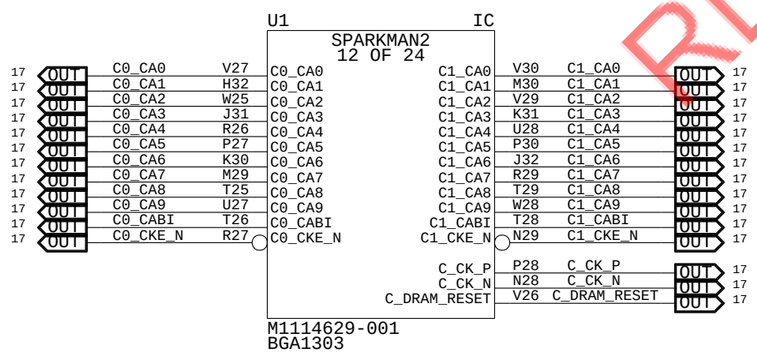
2X22U 0603

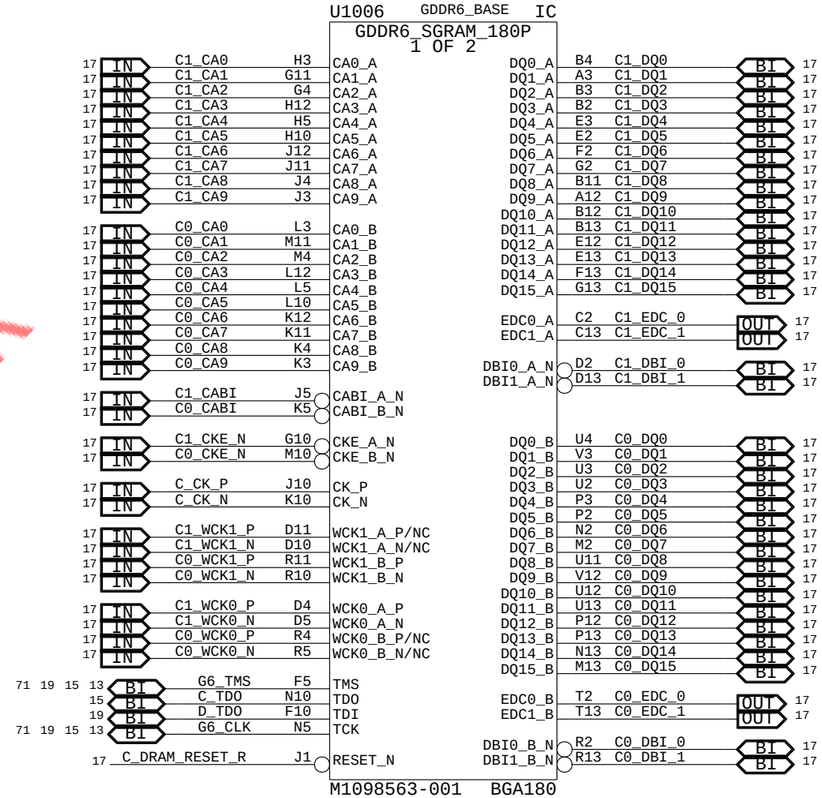
C808 22 UF 20% 6.3 V X5R 603
C835 22 UF 20% 6.3 V X5R 603

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

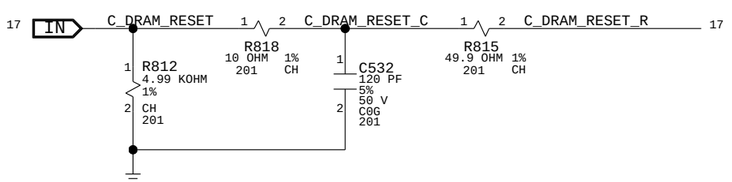
SOC & Memory: CHC/PHY2





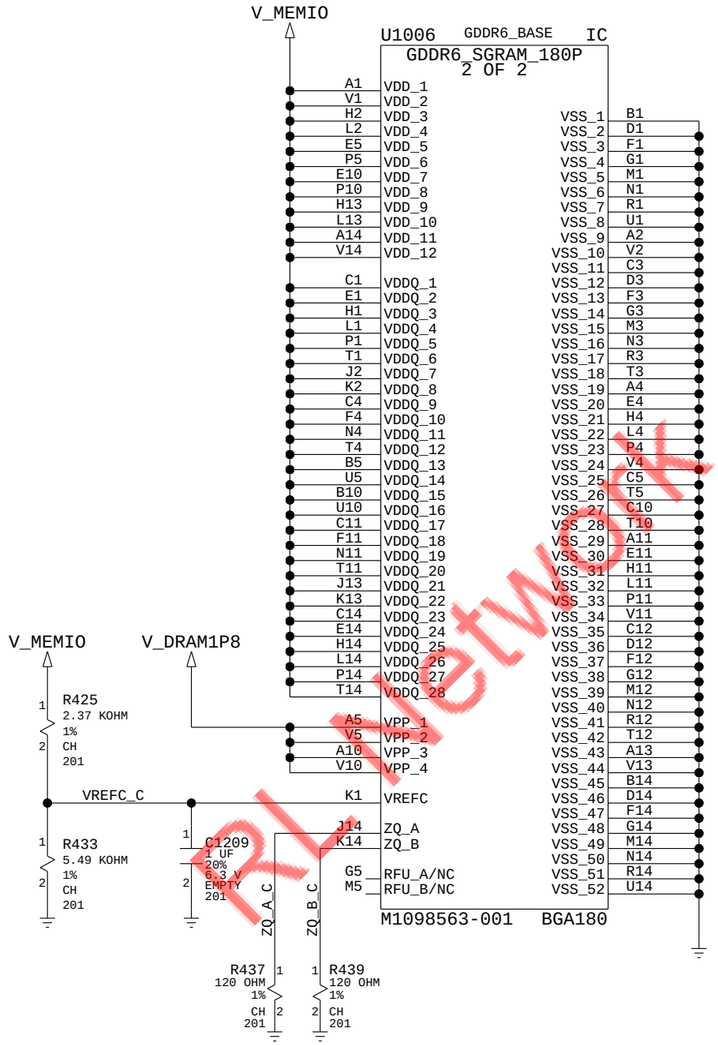


GLITCH PROTECTION CIRCUIT FOR RESET



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

MEMORY: PWR/VSS & DECAP, C



V_MEMIO — 9X1UF 0201

C698 C701 C758 C781 C806 C811 C827 C1179 C1186 C1188
1 UF 20% 6.3 V X5R 201

V_MEMIO — 9X1UF 0201

C699 C702 C751 C780 C782 C807 C817 C1185 C1187 C1189
1 UF 20% 6.3 V X5R 201

V_DRAM1P8 — PLACE 1X201 @EACH VPP PIN

C696 10 UF 20% 6.3 V X5R 402
C723 C726 C494 C495
1 UF 20% 6.3 V X5R 201

V_MEMIO — 2X22U 0603

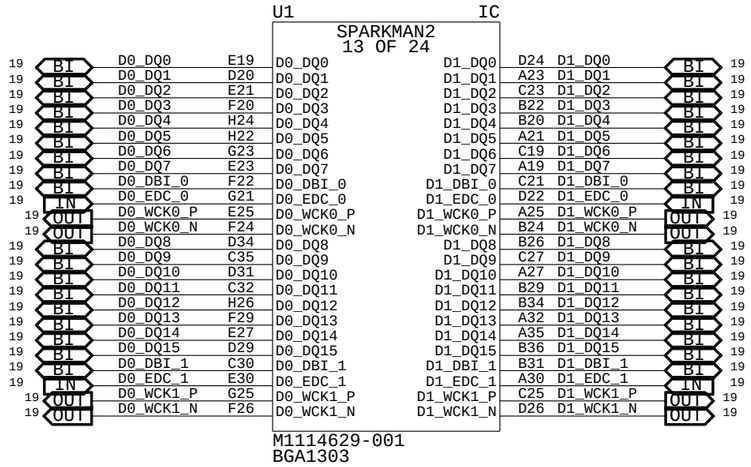
C697 C703
22 UF 20% 6.3 V X5R 603

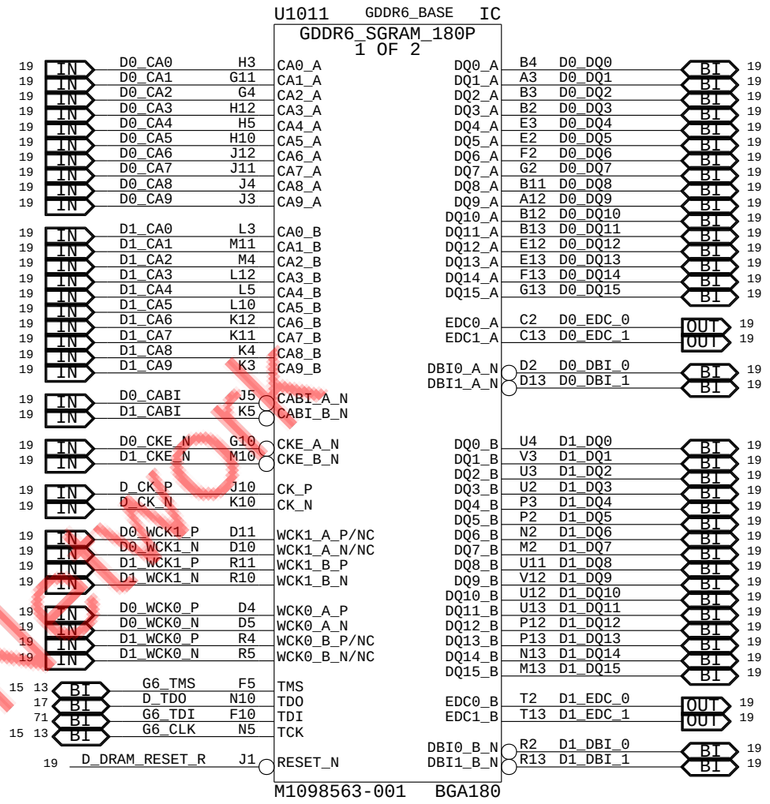
V_MEMPHY — 10X1UF 0201

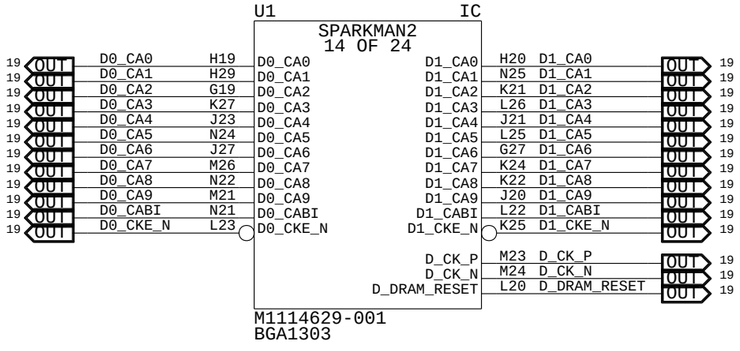
C414 C419 C524 C526 C528
C417 C473 C525 C527 C529
1 UF 20% 6.3 V X5R 201

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

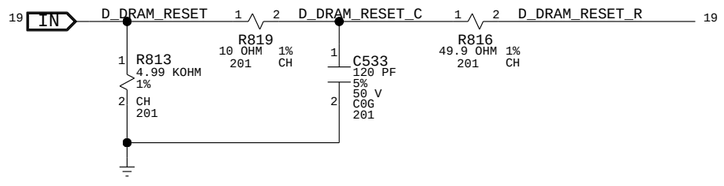
SOC & Memory: CHD/PHY3





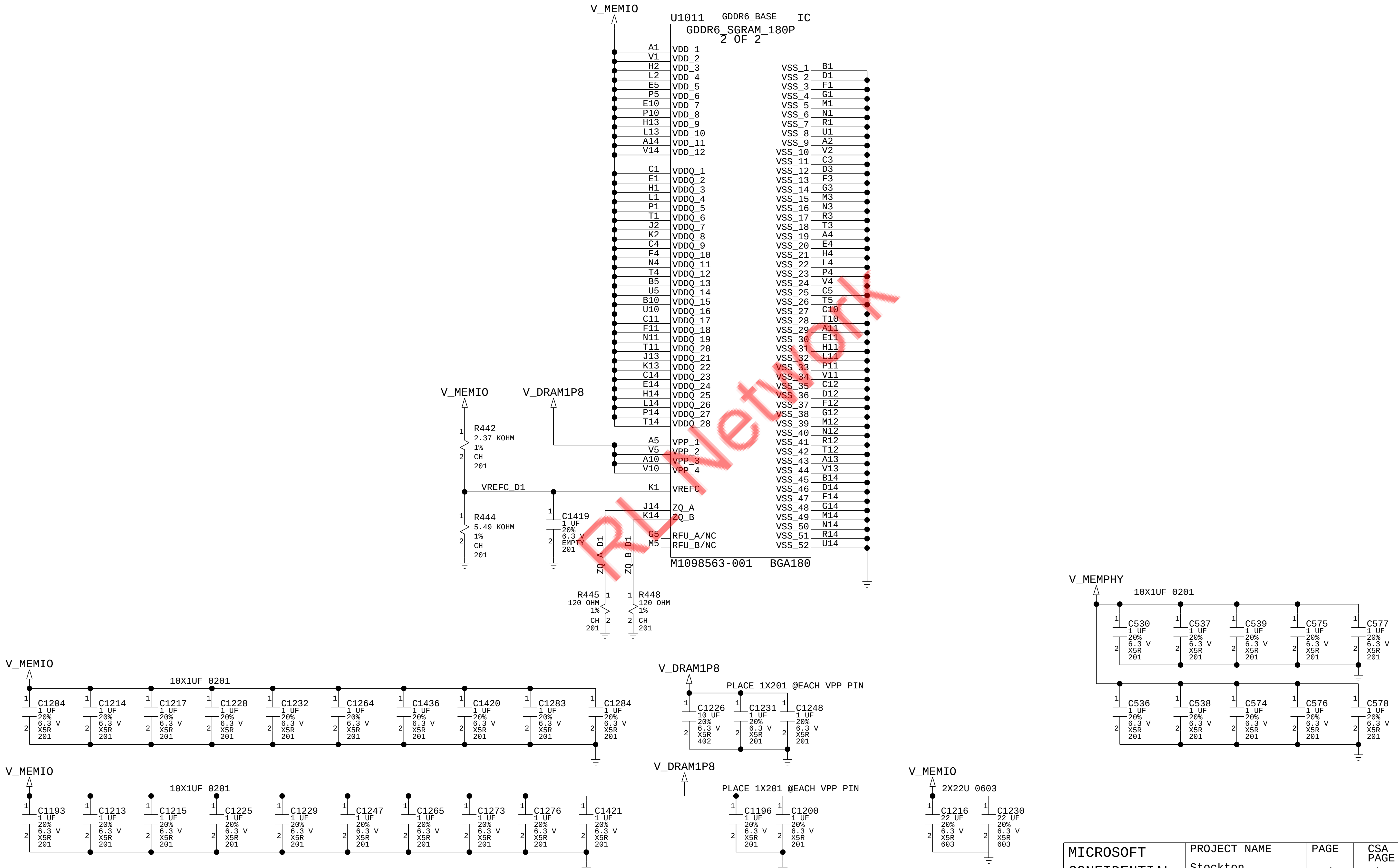


GLITCH PROTECTION CIRCUIT FOR RESET



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

V_3P3STBY
V_SOC1P8
V_5P0

R472 4.7 KOHM 5% EMPTY 402
R825 47 KOHM 1% CH 402
R486 100 KOHM 1% CH 402
C466 0.01 UF 10% 16 V EMPTY 201
ADD NEAR EJECTSW_N DEBUG POINT
DB509
R483 10 KOHM 1% CH 402
R704 10 KOHM 1% CH 402
R548 10 KOHM 1% CH 402
R380 10 KOHM 1% CH 402
R826 10 KOHM 1% CH 402
R827 10 KOHM 1% CH 402
R488 100 OHM 1% 402 CH
R467 1.27 KOHM 1% CH 402
R469 1.27 KOHM 1% CH 402
R515 2 KOHM 1% CH 402
R516 2 KOHM 1% CH 402
R471 243 OHM 1% 402 CH
R473 243 OHM 1% 402 CH
R470 0 OHM 5% 402 CH
R468 0 OHM 5% 402 CH
R20 49.9 OHM 1% 402 CH
R27 49.9 OHM 1% 402 CH
R641 10 KOHM 1% CH 402
R428 100 KOHM 1% CH 402
R605 10 KOHM 1% CH 402
R514 10 KOHM 1% CH 402
R517 4.7 KOHM 5% CH 402
R110 10 KOHM 1% CH 402
R126 10 KOHM 1% CH 402
R518 4.7 KOHM 5% CH 402
R133 0 OHM 5% 402 CH
R653 0 OHM 5% 402 CH
R128 4.7 KOHM 5% CH 402
R492 10 KOHM 1% CH 402
R701 10 KOHM 1% CH 402
U37 XSTR

FT43 FTP SMC_RST_N — AF23 SMC_RST_N_IN
PWRSW_N — V23 SMC_P4_GPIO7
EJECTSW_N — V22 SMC_P4_GPIO6
BINDSW_N — T23 SMC_P4_GPIO5
AUDIO_PWM_OUT — U23 SMC_P4_GPIO4
VREG_PWRGPC_EN — U22 SMC_P4_GPIO3
ACC_RESET_N — U21 SMC_P4_GPIO2
PCIE_RST_N — T21 SMC_P4_GPIO1
FT53 FTP
CFX_INS_N — R23 SMC_P4_GPIO0
3P3V 5V OK

TCK — L21 SMC_P3_GPIO7
TMS — M22 SMC_P3_GPIO6
1P8V NO 5V
USB_PWR_FAULT_N — N22 SMC_P3_GPIO5
USB_PWR_EN — N21 SMC_P3_GPIO4
PSU_FAN_EN — P21 SMC_P3_GPIO3
VREG_PWRGPB_EN — R21 SMC_P3_GPIO2
FAN_SPEED — R22 SMC_P3_GPIO1
VREG_PWRGPA_EN — P23 SMC_P3_GPIO0
3P3V 5V OK

SMC_RXD — V25 SMC_UART1_RXD
SMC_UART1_CTS — V26 SMC_UART1_CTS
SB_SOC_DATA — AE21 SMBUS3_SDA
SB_SOC_CLK — AD21 SMBUS3_SCK
SMBUS_DATA — AE20 SMBUS2_SDA
SMBUS_CLK — AF20 SMBUS2_SCK
HDMI_TX_DDC_DATA_SB — H6 SMBUS1_SDA
HDMI_TX_DDC_CLK_SB — G6 SMBUS1_SCK
HDMI RX DDC SLAVE USE ONLY
SMBUS0_SDA — G5 SMBUS0_SDA
SMBUS0_SCK — F5 SMBUS0_SCK
SECURITY_BYPASS — AC14 SECURITY_BYPASS
N26 SMC_IR_IN

SMC_UART1_TXD — T24 SMC_TXD — FT48
SMC_UART1_RTS — V24 SMC_UART1_RTS — DB457
3P3V 5V OK
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 — SPARE GPIO
SMC_P2_GPIO2 — H5 — SMC_P2_GPIO2 — DB455 — SPARE GPIO
SMC_P2_GPIO1 — J5 — SP_SMC_INT
SMC_P2_GPIO0 — J6 — SMC_P2_GPIO0 — DB456 — SPARE GPIO
1P8V NO 5V
SMC_P1_GPIO7 — J21 — TDI_R — TDI
SMC_P1_GPIO6 — H21 — SOC_PWR_OK
SMC_P1_GPIO5 — J22 — SOC_RST_N
SMC_P1_GPIO4 — K22 — TDO_R — TDO
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
3P3V NO 5V
3P3V 5V OK
SMC_P0_GPIO7 — M23 — HDMI_V_5P0_EN
SMC_P0_GPIO6 — M24 — SMC_P0_GPIO6 — DB419 — SPARE GPIO
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

SP_SMC_INT_N
SOC_THERMTRIP_N
SP_SMC_INT
SOC_THERMTRIP
SOC_PWR_OK
SOC_RST_N

PLACE NEXT TO R471 AND R473 RESISTORS
DB436
DB443

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

SB: USB

U48
SANTO
6 of 11
IC

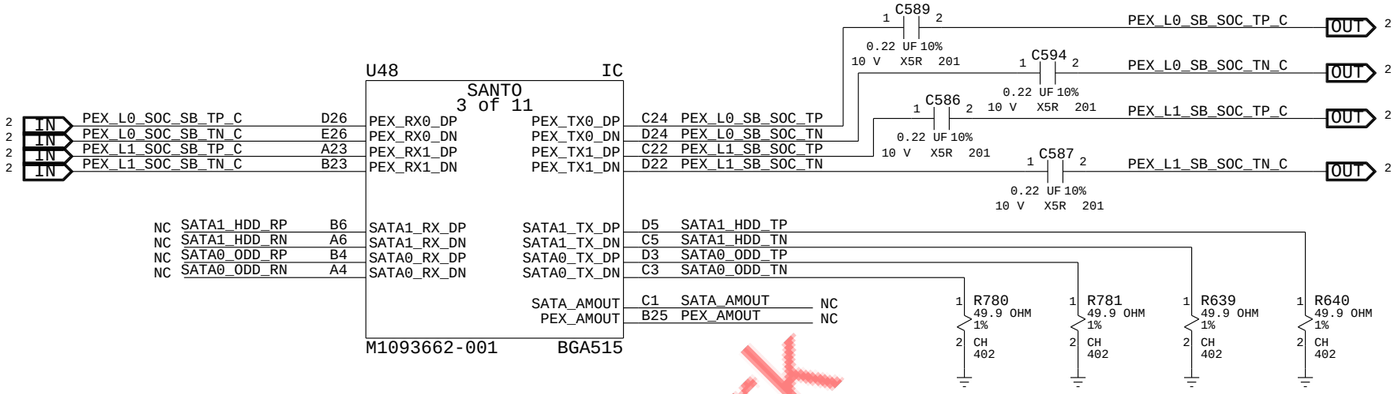
				USBD_D0_DP	AF8	USB2_WIFI_DP	BI	40	WIFI
				USBD_D0_DN	AE8	USB2_WIFI_DN	BI	40	
				USBC_D0_DP	AC4	USB2_AUX_DP	BI	39	REAR 1
				USBC_D0_DN	AC3	USB2_AUX_DN	BI	39	
REAR 1	39 IN	USB3_AUX_RP	Y1 USBC_D1_RXP	USBC_D1_TXP	W3 USB3_AUX_TP_C	C501 0.1 UF10% 16 V 201 X5R	USB3_AUX_TP	OUT 39	
	39 IN	USB3_AUX_RN	Y2 USBC_D1_RXN	USBC_D1_TXN	W4 USB3_AUX_TN_C	C500 0.1 UF 10% 16 V 201 X5R	USB3_AUX_TN	OUT 39	
				USBB_D2_TXP	U3 USB3_BP_P1_TP_C	C499 0.1 UF10% 16 V 201 X5R	USB3_BP_P1_TP	OUT 39	REAR 0
REAR 0	39 IN	USB3_BP_P1_RP	V1 USBB_D2_RXP	USBB_D2_TXN	U4 USB3_BP_P1_TN_C	C498 0.1 UF10% 16 V 201 X5R	USB3_BP_P1_TN	OUT 39	
	39 IN	USB3_BP_P1_RN	V2 USBB_D2_RXN						
				USBB_D0_DP	AE4		USB2_BP_P1_DP	BI 68	
				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	
				USBA_D2_TXP	AB10 USB3_FP_P0_TP_C	C1097 0.1 UF10% 16 V 201 X5R	USB3_FP_P0_TP	OUT 39	FRONT
FRONT	39 IN	USB3_FP_P0_RP	AA8 USBA_D2_RXP	USBA_D2_TXN	AB9 USB3_FP_P0_TN_C	C1096 0.1 UF 10% 16 V 201 X5R	USB3_FP_P0_TN	OUT 39	
	39 IN	USB3_FP_P0_RN	AA7 USBA_D2_RXN						
				USBA_D0_DP	AC7		USB2_FP_P0_DP	BI 39	
				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	NOT USED
	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

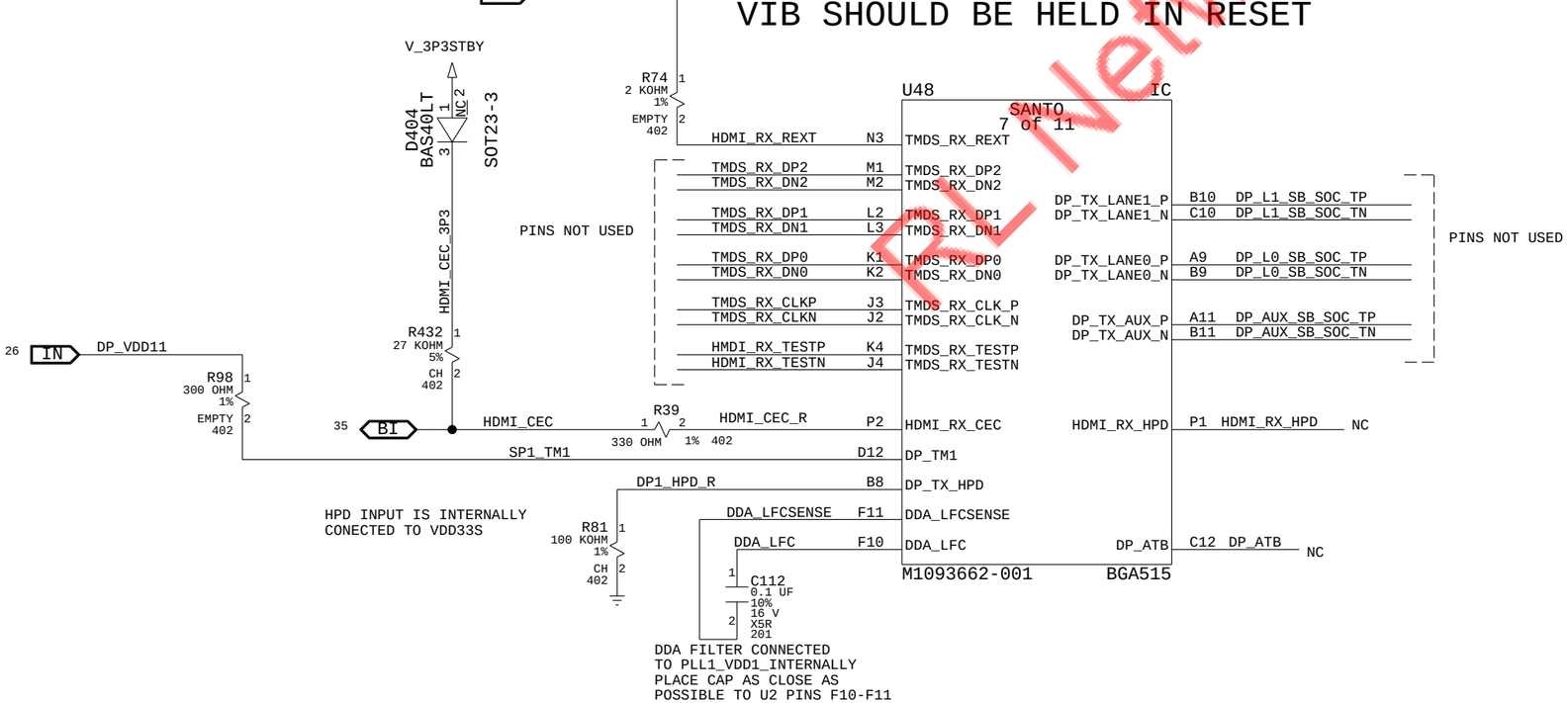
M1093662-001 BGA515

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

SB: PCIEX, SATA, VIDEO

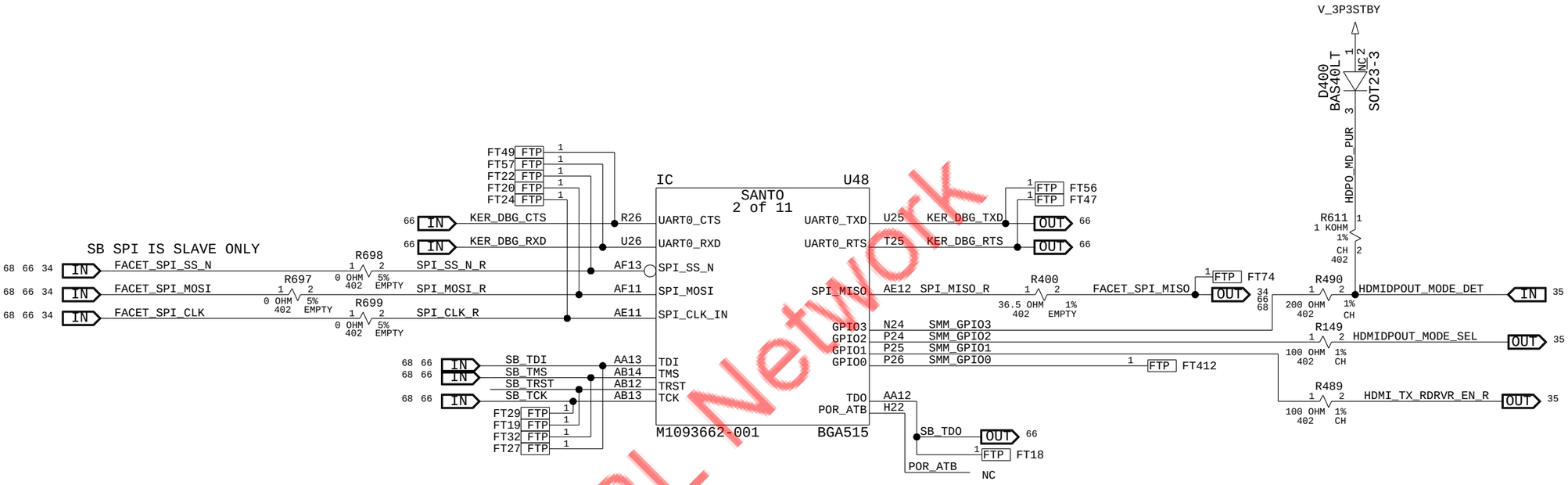


HDMI/DP NOT USED
VIB SHOULD BE HELD IN RESET



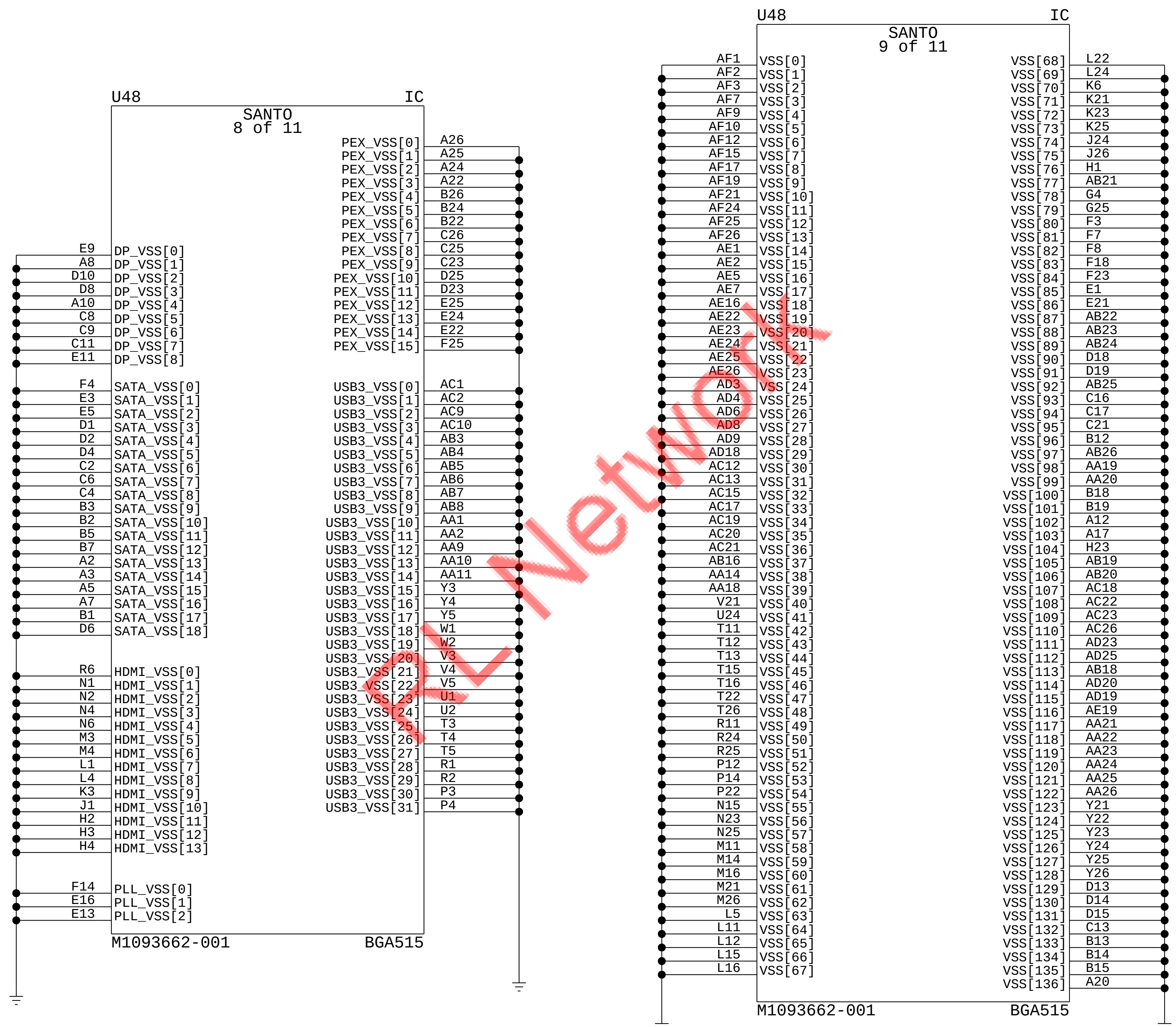
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	23/76	23/76	C	0.12

SB: SMM UART, SPI, JTAG, GPIO



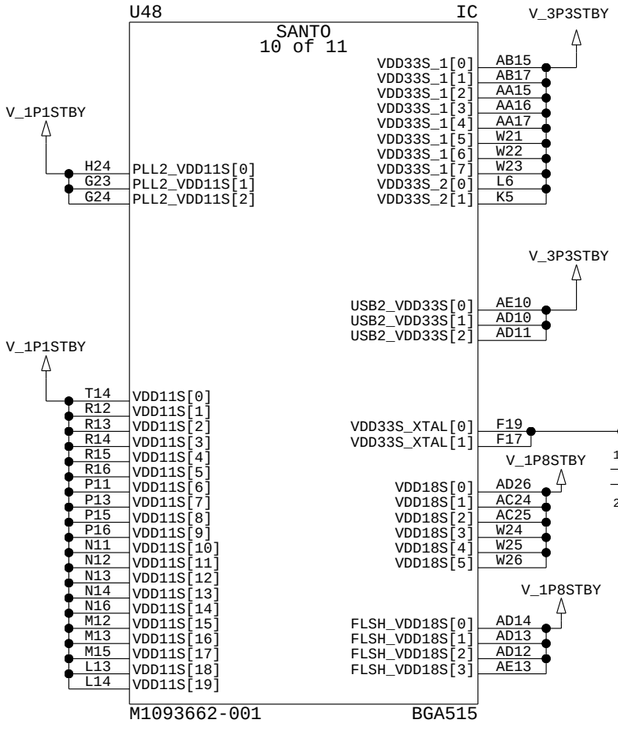
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	24/76	24/76	C	0.12

SB: POWER (VSS)

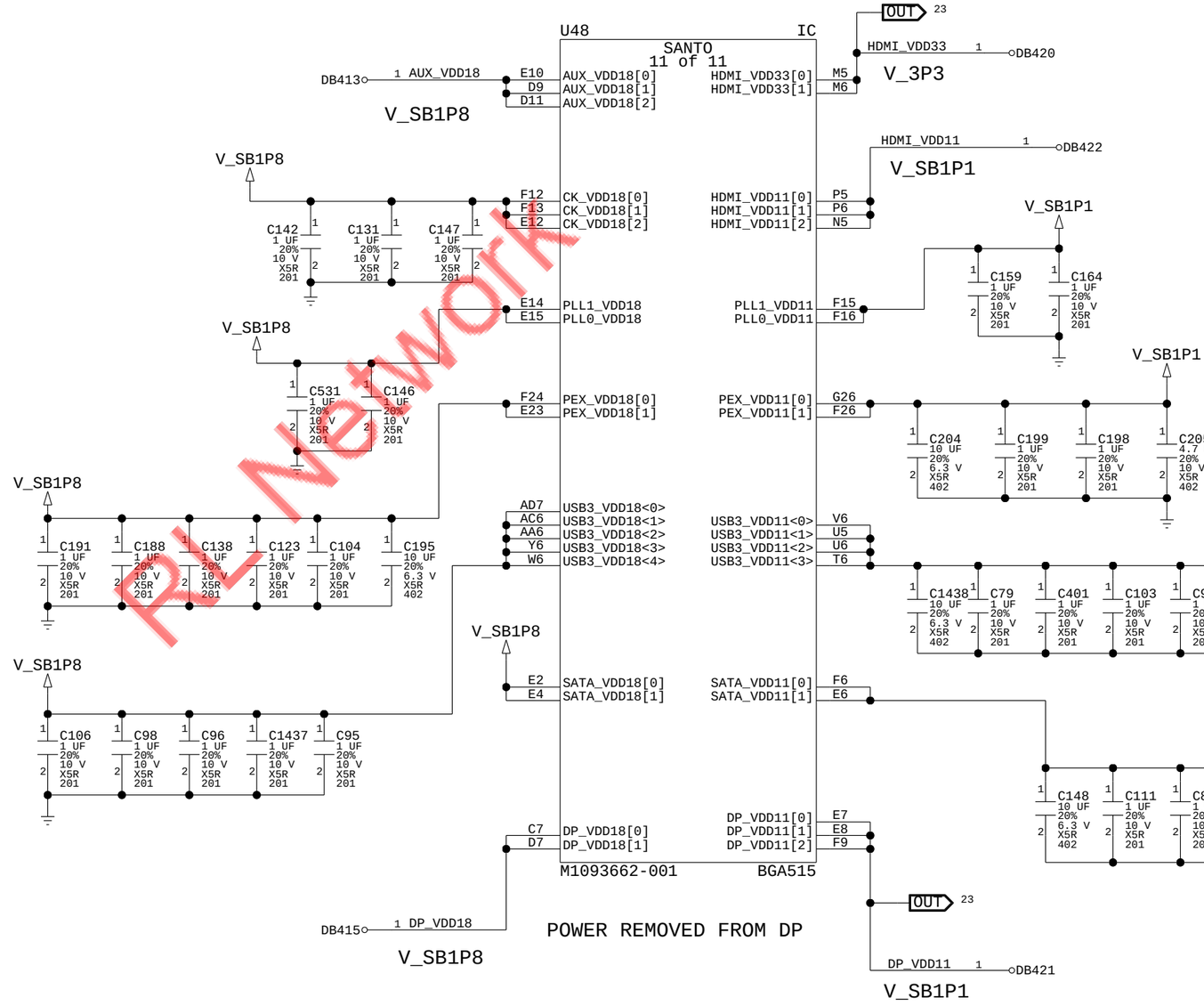


MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	25/76	25/76	C	0.12

SB: POWER



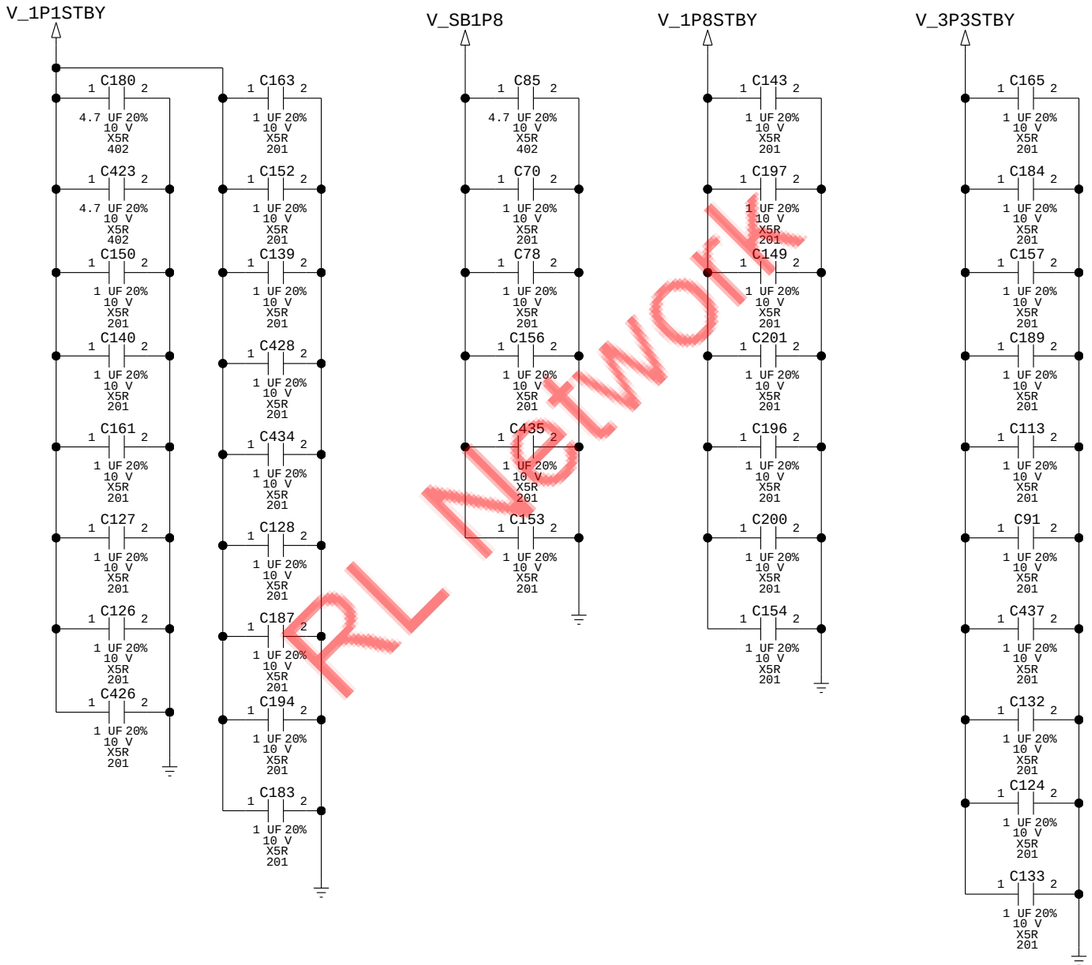
POWER REMOVED FROM AUX AND HDMI



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

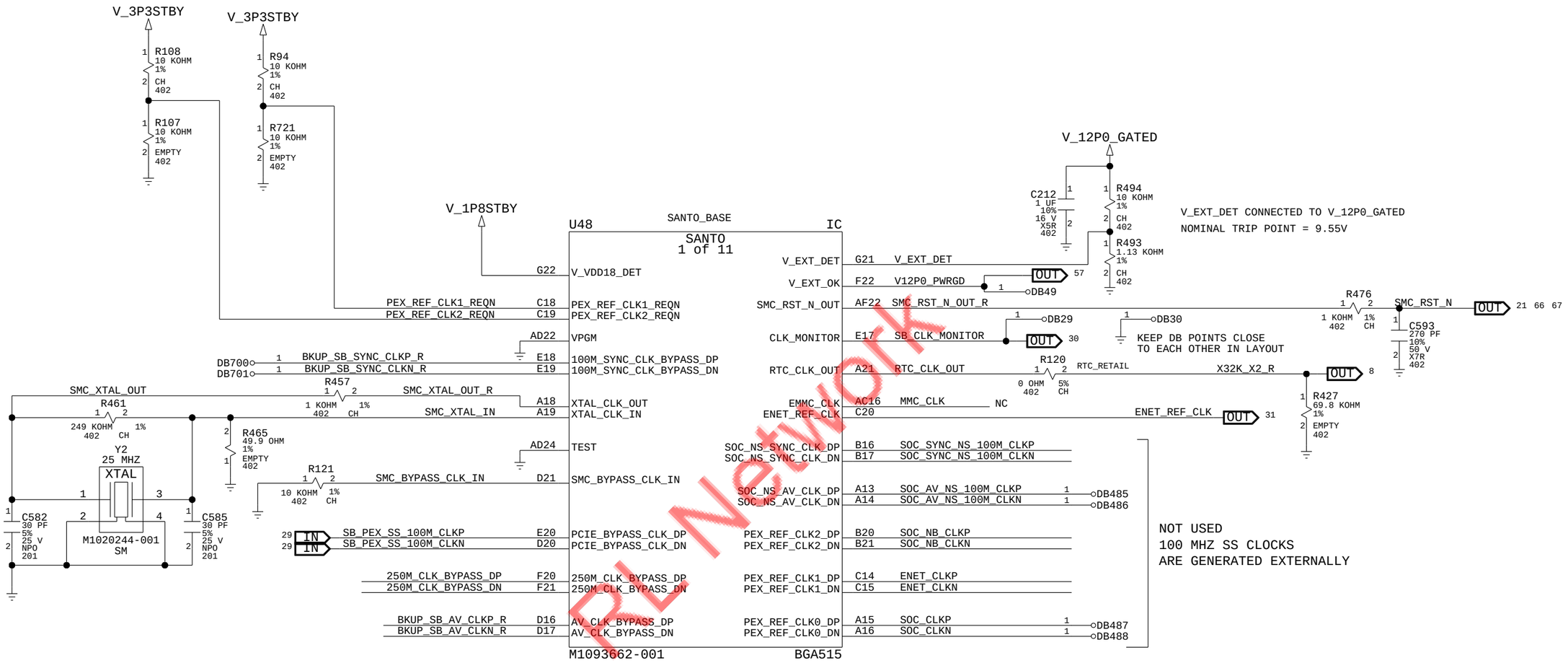
SB: DECOUPLING

NOTE: ALL V_SB1P1 DECOUPLING
IS SHOWN ON POWER PAGE 49



MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	27/76	27/76	C	0.12

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
R607 0 OHM 5% 402 EMPTY
V_1P8_SS_CLK_SEL

V_3P3_GATED
C105 1 UF 20% 10 V X5R 201
C1343 0.1 UF 10% 16 V X5R 201

V_3P3_SS_CLK
FB0 1000 OHM 200 MA 1 OHM BEAD 402
R656 0 OHM 5% 402 CH
FB3 1000 OHM 200 MA 1 OHM BEAD 402

V_1P8_SS_CLK
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

U17 IC 6V41466

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
		VDDXTAL3.3	4

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

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

1	VSS_EN_TRI	SS_LEVEL_SS_CLK	
6	VSADR/REF3.3	ADR_SEL_SS_CLK	
13	VOE0_N	M2_CLKREQ_N	41 29 IN
21	VOE1_N	SB_CLKREQ_N	R22 0 OHM EMPTY 29
24	VOE2_N	SOC_CLKREQ_N	51 30 29 IN; R21 0 OHM
30	VOE3_N	ENET_CLKREQ_N	31 29 IN; R25 0 OHM
35	VOE4_N	SPARE_CLKREQ_N	R83 0 OHM EMPTY 29
38	VOE5_N	CFX_CLKREQ_N	38 29 IN
40	CKPWRGD_PD_N	SS_CKPWRGD_PD_N	29
9	SCLK_3.3	SS_SCLK	29
10	SDATA_3.3	SS_SDATA	29
2	X1_25	25MHZ_REF	30 IN
3	X2		

DIF0	14	M2_PEX_SS_100M_CLKP	OUT 41
DIF0_N	15	M2_PEX_SS_100M_CLKN	OUT 41
DIF1	18	SB_PEX_SS_100M_CLKP	OUT 28
DIF1_N	19	SB_PEX_SS_100M_CLKN	OUT 28
DIF2	22	SOC_PEX_SS_100M_CLKP	OUT 2
DIF2_N	23	SOC_PEX_SS_100M_CLKN	OUT 2
DIF3	28	ENET_PEX_SS_100M_CLKP	OUT 31
DIF3_N	29	ENET_PEX_SS_100M_CLKN	OUT 31
DIF4	33	SPARE_PEX_SS_100M_CLKP	OUT 71
DIF4_N	34	SPARE_PEX_SS_100M_CLKN	OUT 71
DIF5	36	CFX_PEX_SS_100M_CLKP	OUT 38
DIF5_N	37	CFX_PEX_SS_100M_CLKN	OUT 38
NC	7		
NC	20		
NC	25		
GNDDIG	8		
EPAD	41		

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
C58 1 UF 20% 10 V X5R 201 DEBUG

V_3P3_SS_CLK
C416 1 UF 20% 10 V X5R 201 DEBUG

V_3P3_SS_CLK
R2 0 OHM 5% 402 CH DEBUG
R11 10 KOHM 1% EMPTY 402

U12 IC TCA9803

1	VCCA	VCCB	8		
68 66 65 62 51 47 37 35 21 BI	SMBUS_DATA	SDAA	SDAB	SMBUS_DATA_BUFFERED	BI 29 30
68 66 65 62 51 47 37 35 21 IN	SMBUS_CLK	SCLA	SCLB	SMBUS_CLK_BUFFERED	29 30 OUT
5	SS_SMBUS_EN	EN	GND	4	

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

V_3P3_SS_CLK

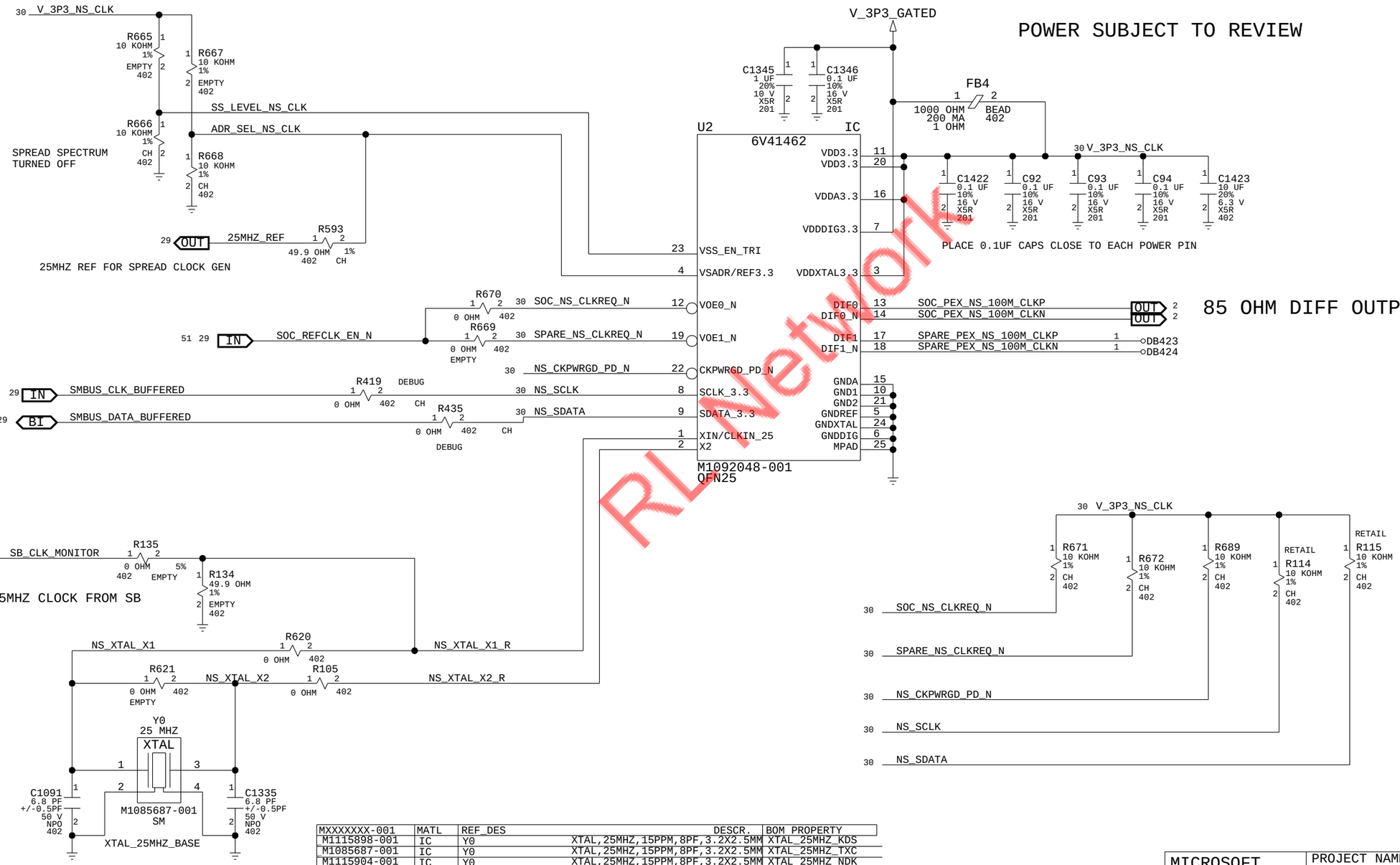
R659 10 KOHM 1% CH 402	41 29 IN	M2_CLKREQ_N
R660 10 KOHM 1% CH 402	38 29 IN	CFX_CLKREQ_N
R661 10 KOHM 1% EMPTY 402	29	SOC_CLKREQ_N
R662 10 KOHM 1% EMPTY 402	29	SB_CLKREQ_N
R529 10 KOHM 1% CH 402	29	ENET_CLKREQ_N
R663 10 KOHM 1% EMPTY 402	29	SPARE_CLKREQ_N
R664 10 KOHM 1% CH 402	29 31 IN	SB_REFCLK_N
R603 10 KOHM 1% CH 402	29	SS_CKPWRGD_PD_N
R43 10 KOHM 1% CH 402	51 30 29 IN	SOC_REFCLK_EN_N
R166 1 KOHM 1% CH 402	29	SS_SCLK
RETAIL R642 10 KOHM 1% CH 402	29	SS_SDATA
RETAIL R648 10 KOHM 1% CH 402		

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
```



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

V_3P3_ENET

RF C570 3 PF +/-0.1PF 25 V COG 201
RF C571 3 PF +/-0.1PF 25 V COG 201
RF C572 15 PF 5% 25 V COG 201
RF C573 15 PF 5% 25 V COG 201

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

V_3P3_ENET
D1 SM3 DEBUG
BLU
GRN
RED
M1090218-001

ENET_LED2_R — DEBUG R26 511 OHM 1% 402 CH
ENET_LED1_R — DEBUG R33 1 KOHM 1% 402 CH
ENET_LED0_R — DEBUG R17 2 KOHM 1% 402 CH

U47 IC
RTL8111HM
X896524-002 QFN33

MDIP3	9	MDIP3	
MDIN3	10	MDIN3	
MDIP2	6	MDIP2	
MDIN2	7	MDIN2	
MDIP1	4	MDIP1	
MDIN1	5	MDIN1	
MDIP0	1	MDIP0	
MDIN0	2	MDIN0	
ENET_LED2	25	LED2	
ENET_LED1	26	LED1/GPO	
ENET_LED0	27	LED0	
ENET_RSET	31	RSET	
ENET_XTAL2	29	CKXTAL2	
ENET_XTAL1	28	CKXTAL1	
ENET_ISOLATE_N	20	ISOLATE_N	
PEX_SOC_ENET_TP_C	13	HSIP	
PEX_SOC_ENET_TN_C	14	HSIN	
ENET_PEX_SS_100M_CLKP	15	REFCLK_P	
ENET_PEX_SS_100M_CLKN	16	REFCLK_N	
	19	PERST_N	
	33	MPAD	
AVDD33_2	32		
AVDD33_1	11		
DVDD10	22		
AVDD10_3	30		
AVDD10_2	8		
AVDD10_1	3		
VDDREG	23		
REGOUT	24		
LANWAKE_N	21	ENET_WAKE_N	
CLKREQ_N	12	SB_REFCLK_N	
HSOP	17	PEX_ENET_SOC_TP	
HSON	18	PEX_ENET_SOC_TN	

R35 2.49 KOHM CH 402 1%
R36 100 OHM 1% 402 CH
R37 0 OHM 5% 402 EMPTY
R365 10 KOHM 1% CH 402
FT9 FTP

FT2 FTP
DB78

V_3P3_ENET
PLACE 0.1UF CLOSE TO PINS 11, 23 AND 32
PLACE 4.7UF CLOSE TO PINS 11 AND 32
C502 0.1 UF 10% 16 V X5R 201
C482 0.1 UF 10% 16 V X5R 201
C477 0.1 UF 10% 16 V X5R 201
C505 4.7 UF 20% 10 V X5R 402
C1424 4.7 UF 20% 10 V X5R 402

V_1P0_ENET
PLACE 0.1UF CLOSE TO PINS 3, 8, 22 AND 30
C481 0.1 UF 10% 16 V X5R 201
C491 0.1 UF 10% 16 V X5R 201
C485 0.1 UF 10% 16 V X5R 201
C496 1 UF 10% 16 V X5R 201
C1425 1 UF 20% 10 V X5R 201
C1428 4.7 UF 20% 10 V X5R 402

PLACE 0.1UF CLOSE TO PIN 24
C480 0.1 UF 10% 16 V X5R 201

FT FT12
DB3

V_3P3_ENET
R366 10 KOHM 1% CH 402

USING ENET CLK REQ AS A GLOBAL REQUEST

C37 0.22 UF 10% 10 V X5R 201
C34 0.22 UF 10% 10 V X5R 201

V_3P3_ENET V_3P3_GATED
R791 0 OHM 5% 603 EMPTY

NOM. VOLTAGE: 3.3V
MAX POWER: 590MW

V_12P0
R759 100 KOHM 1% CH 402
C1495 0.1 UF 10% 25 V X5R 201
V_1P65_VREF
VREG_PWRGPA_EN
U411 LM339 TSSOP14 X932792-001

V_3P3STBY
Q404 FET SOT23-3 X889117-002
V_3P3_ENET_OUT
C1496 0.1 UF 10% 25 V X5R 402
V_3P3_ENET_G_R
R761 100 OHM 1% 402 CH
C1497 0.1 UF 10% 25 V X5R 402
C1498 10 UF 20% 6.3 V X5R 402
R782 1 KOHM 1% CH 402
DEBUG_SHUNT R760 0 OHM 5% 805 CH
V_3P3_ENET_G

COMPARATOR 1 OF 2:
V_3P3_ENET GATE DRIVE

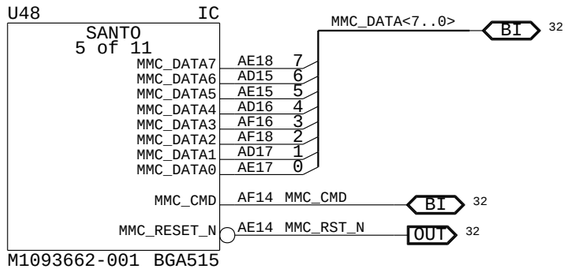
ETHERNET POWER ENABLE CIRCUIT MUST
MEET THE FOLLOWING TIMING REQUIREMENTS
RISE TIME: > 0.5 MS AND < 100 MS
POWER OFF/ON CYCLE TIME: > 50 MS

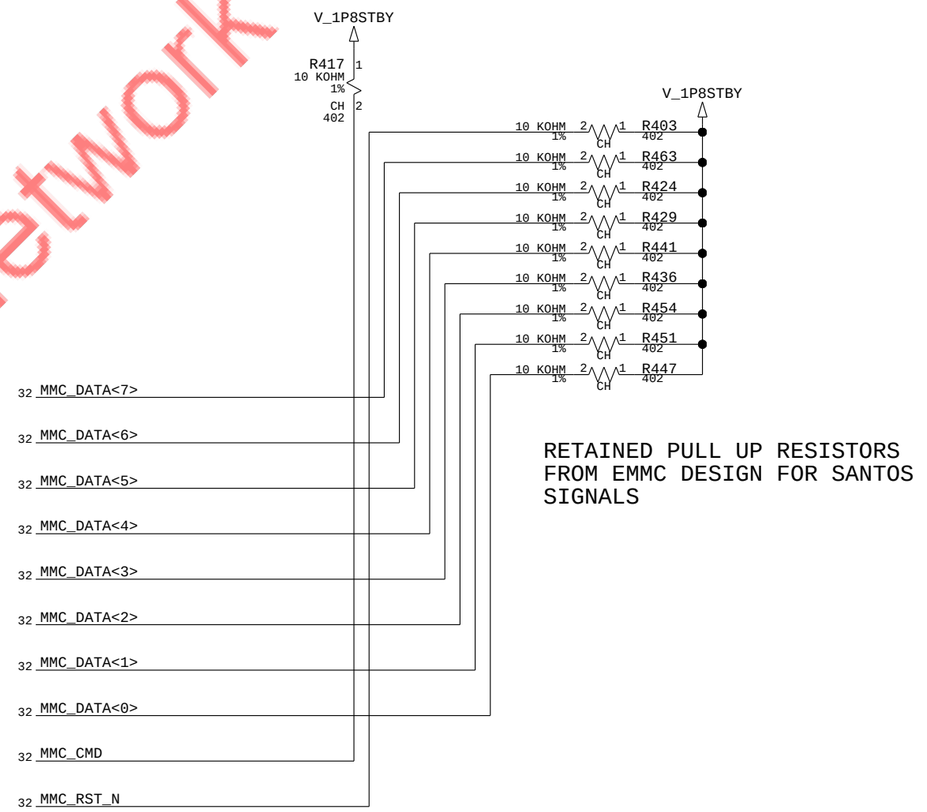
PCIE_RST_N

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

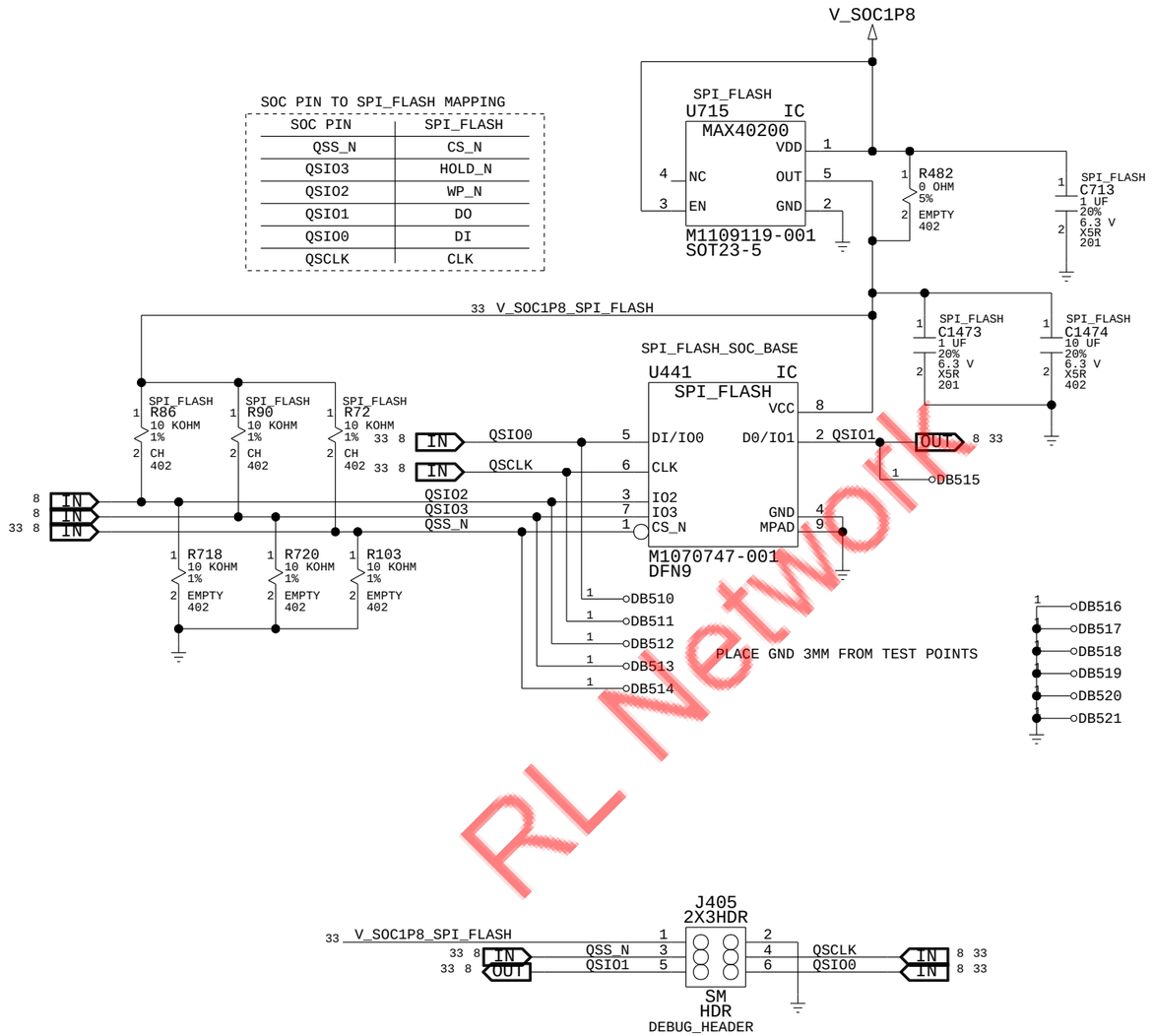
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	32/76	32/76	C	0.12

MEMORY: SPI FLASH SOC

MAX40200 IDEAL DIODE PROVIDES BACKDRIVE PROTECTION FROM DEDIPROG

SOC PIN TO SPI_FLASH MAPPING

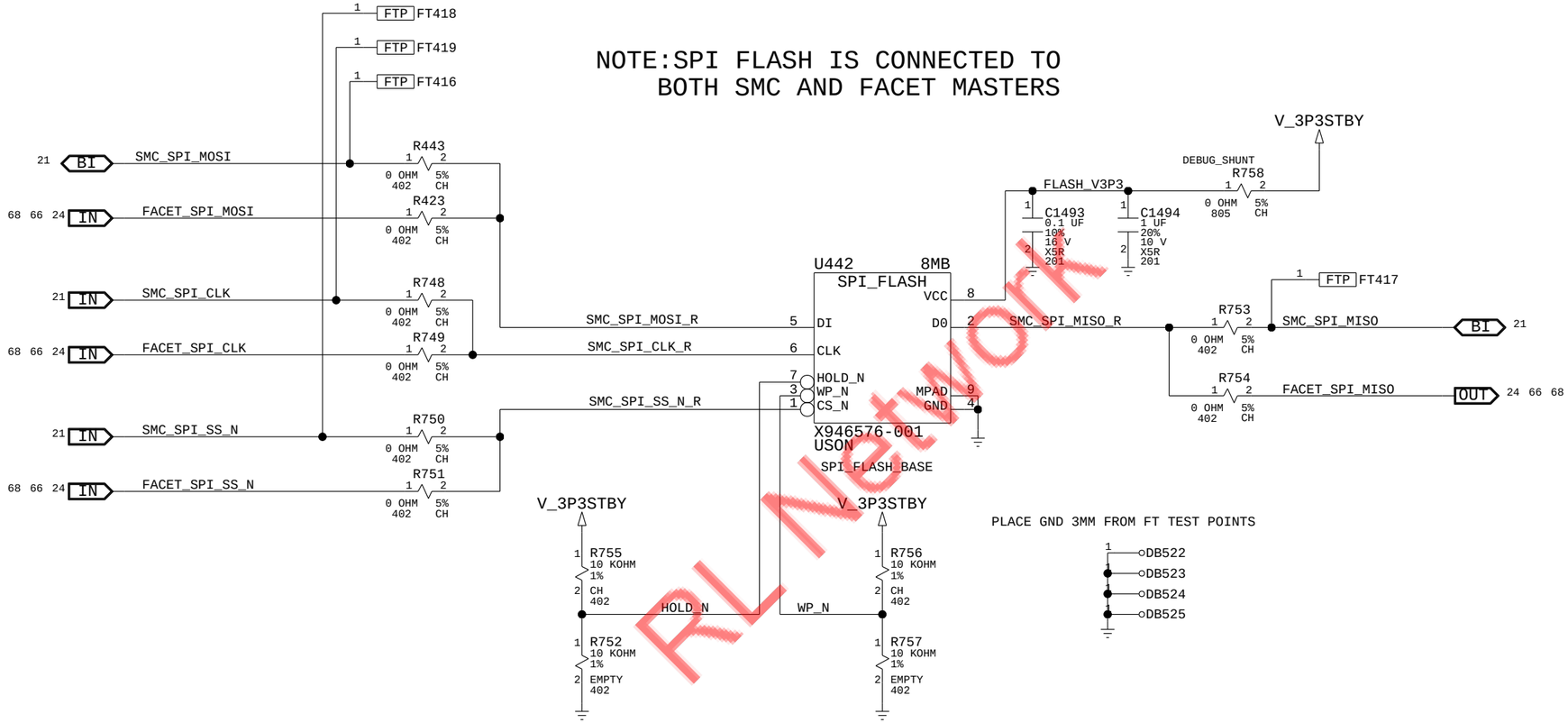
SOC PIN	SPI_FLASH
QSS_N	CS_N
QSIO3	HOLD_N
QSIO2	WP_N
QSIO1	DO
QSIO0	DI
QSCLK	CLK



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



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

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_R — R30 0 OHM 5% 402 CH — FT15 FTP
HDMI_TX_RDRVR_EN (36) — R31 10 KOHM 1% 402 CH — C39 0.1 UF 10% 16 V X5R 201 EMPTY

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

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

HDMI_TX_RDRVR_HPD

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	MT8 27
V_5P0_HDMI_OUT	18	+5V_POWER	MT9 28
HDMI_TX_HPD_CONN	19	HOT_PLUG_DET	MT10 29
			MT1 20
			MT2 21
			MT3 22
			MT4 23
			MT5 24
			MT6 25
			MT7 26

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 6.3 V

HDMIDPOUT_MODE_SEL — R48 10 KOHM 1% 402 CH — FT6 FTP
HDMI_V_5P0_EN — R148 10 KOHM 1% 402 CH

DP0_HPD
DP0_HPD_SB — R382 0 OHM 5% 402 CH

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

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

R533 0 OHM 5% 402 CH

V_3P3STBY C25 4.7 UF 20% 10 V X5R 402
V_5P0 C478 0.1 UF 10% 16 V X5R 201

U21 IC HDMIDP1_5F6 M1004155-002 WLCSP18

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

HDMI_TX_SCL_BUF — R19 0 OHM 5% 402 CH
HDMI_TX_SDA_BUF — R18 0 OHM 5% 402 CH

C14 2.2 UF 20% 6.3 V X5R 201

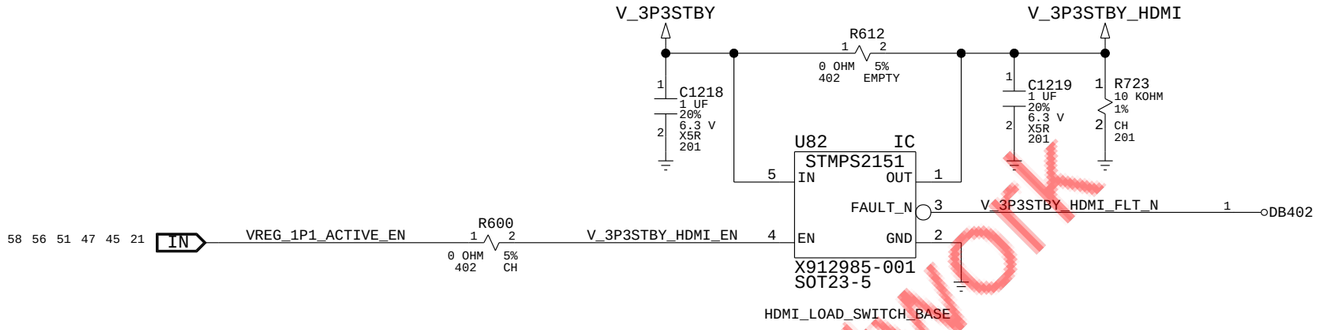
HDMI 5V LOAD SWITCH: 5V, 250MA MAX TDC
DP PWR LOAD SWITCH: 3.3V, 500MA MAX TDC

EG24 X882235-001 DIO 402

V_3P3STBY_HDMI
C563 C564 3 PF +/-0.1PF 25 V COG 201
C565 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

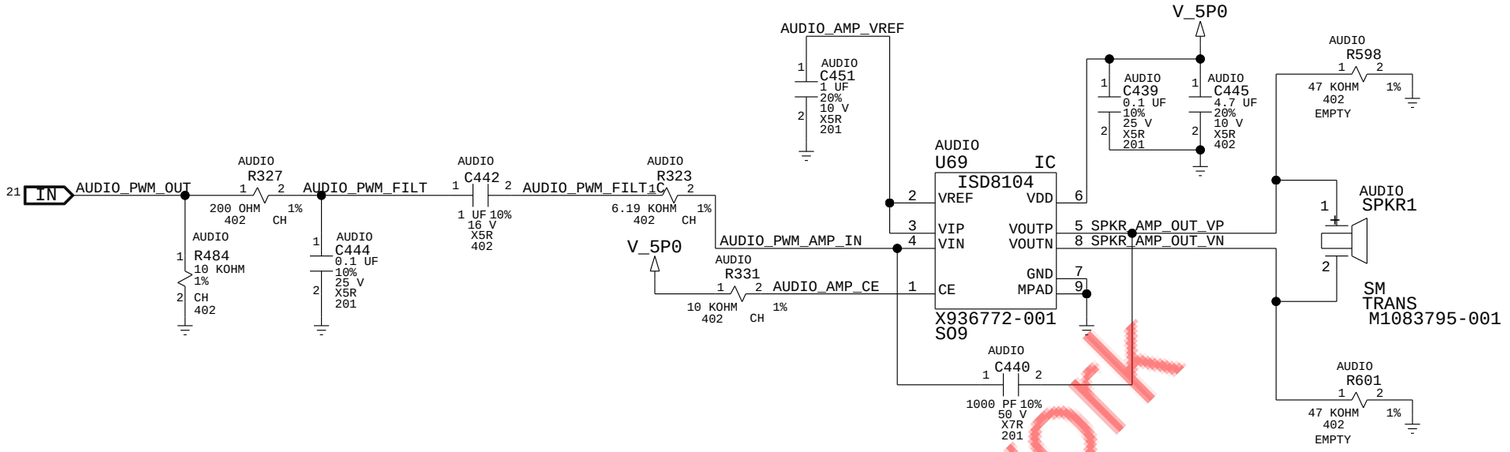
HDMI: LOAD SWITCHES



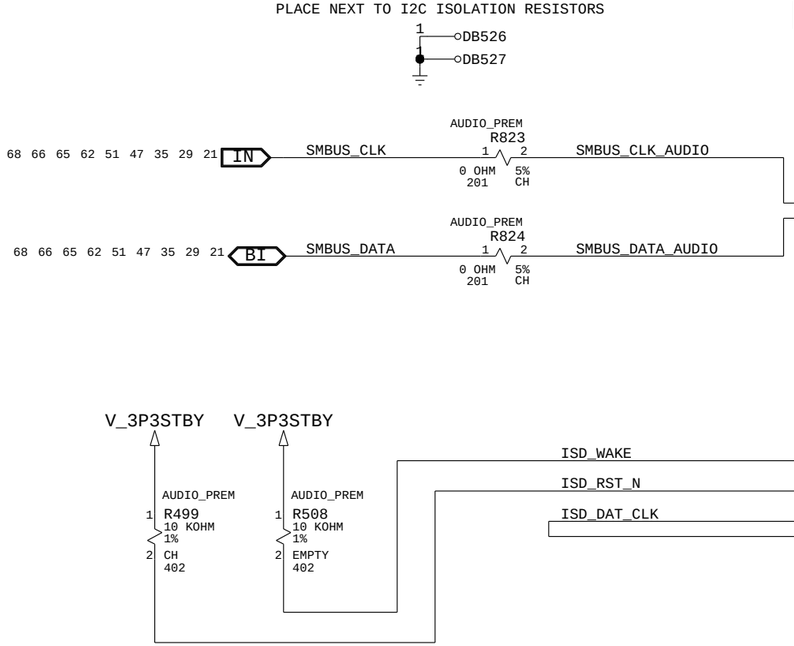
U82 IS MITIGATION FOR HDMI TMDS BACK-DRIVE CURRENT THROUGH Q621M RE-DRIVER

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

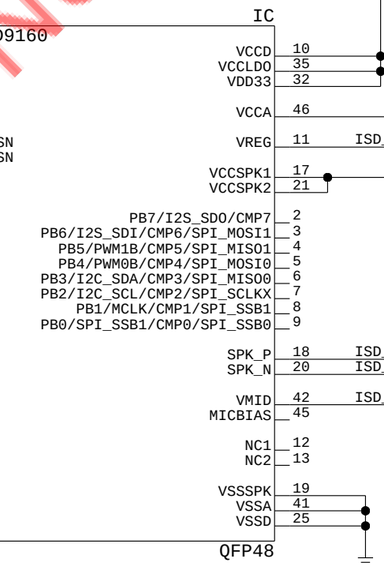
AUDIO: PREMIUM AND RETAIL

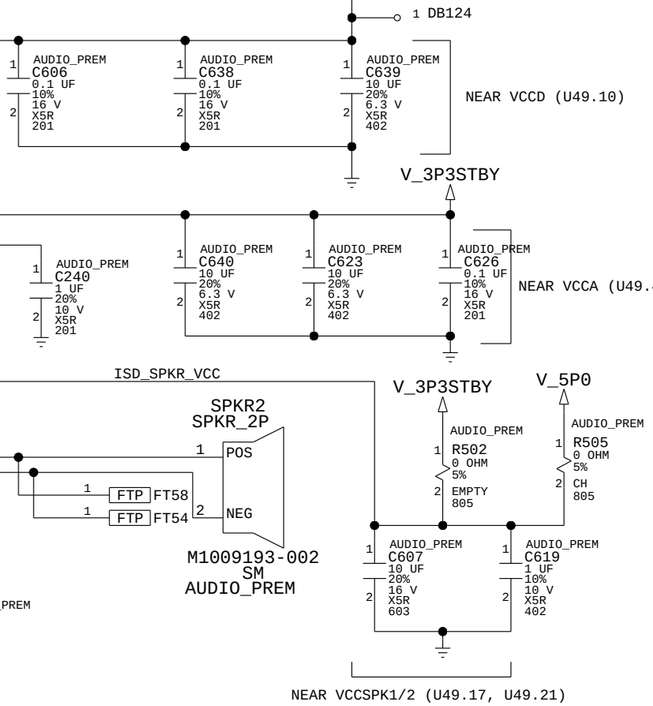


PLACE NEXT TO I2C ISOLATION RESISTORS



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
C1452 0.1 UF 10% 10 V EMPTY 201
M1095945-001
SOT23-3
CFX_PERST_MONITOR_N
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
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

RF FILTER CAPS
V_3P3_CFX_IN
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

PEX_L1_CFX_SOC_TN
PEX_L1_CFX_SOC_TP
PEX_L1_SOC_CFX_TN_C
PEX_L1_SOC_CFX_TP_C
PEX_L0_CFX_SOC_TN
PEX_L0_CFX_SOC_TP
PEX_L0_SOC_CFX_TN_C
PEX_L0_SOC_CFX_TP_C
CFX_CLKREQ_N
CFX_INS_N
CFX_PEX_SS_100M_CLKN
CFX_PEX_SS_100M_CLKP
R696 0 OHM 5% 402 CH
CFX_RSV1

CFEXPRESS
2.5A EDC
1.55A TDC

J3 CONN
CF_EXPRESS
M1097401-002
SM
GND PER1_N PER1_P GND PET1_N PET1_P RESERVED RESERVED PERST_N +3.3V CLKREQ_N INS_N REFCLK- REFCLK+ GND PER0_N PER0_P GND PET0_N PET0_P GND MH1 MH2 MH3 MH4 MH5 MH6 MH7 MH8 MH9 MH10 MH11
MH12 MH13 MH14 MH15 MH16 MH17 MH18 MH19 MH20 MH21 MH22 MH23 MH24 MH25 MH26 MH27 MH28 MH29 MH30 MH31 MH32 MH33 MH34 MH35 MH36 MH37 MH38 MH39 MH40 MH41 MH42 MH43

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
C1371 0.1 UF 10% 25 V X5R 201
39 V_5P0_USB3_P1
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
USB_PWR_FAULT_N OUT 21 39
39 21 IN USB_PWR_EN
USB PORT PROTECTION

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
22 IN USB3_AUX_TP
USB3_AUX_TN_CMC
USB3_AUX_TP_CMC

J14 CONN
USB3_9P_18MH
M1097400-001
TH
TX/RX FROM
HOST PERSPECTIVE
VBUS, D-, D+, GND, STDA_SSRX_N, STDA_SSRX_P, GND_DRAIN, STDA_SSTX_N, STDA_SSTX_P

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
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
USB_PWR_FAULT_N OUT 21 39

FILT U75
ECMF02_2HSMX6
X900532-002
DFN6
22 IN USB3_BP_P1_TN
22 IN USB3_BP_P1_TP
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, D-, D+, GND, STDA_SSRX_N, STDA_SSRX_P, GND_DRAIN, STDA_SSTX_N, STDA_SSTX_P

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
R256 10 KOHM 1% CH 201 DEBUG_FTDI
PWR DETECT
3.0V NOM
VBUS_EN_PWR_SNS
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 V_5P0_USB3_FP
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
USB_PWR_FAULT_N OUT 21 39
39 21 IN USB_PWR_EN
USB PORT PROTECTION

FILT U438
ECMF02_2HSMX6
X900532-002
DFN6
22 IN USB3_FP_P0_TP
22 IN USB3_FP_P0_TN
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, D-, D+, GND, STDA_SSRX_N, STDA_SSRX_P, GND_DRAIN, STDA_SSTX_N, STDA_SSTX_P

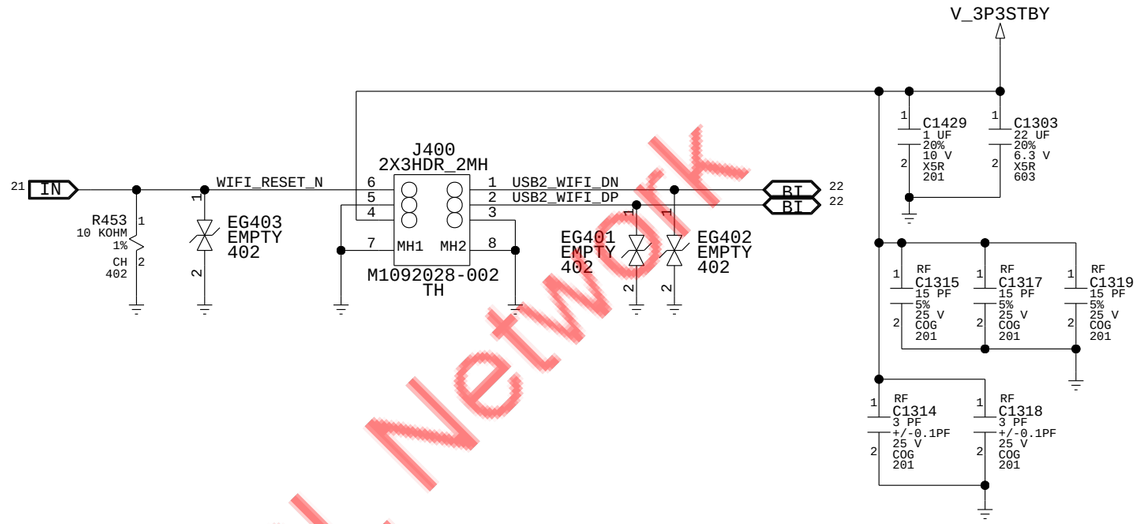
FRONT USB
39 V_5P0_USB3_FP
C542 3 PF +/-0.1PF 25 V COG 201
C545 3 PF +/-0.1PF 25 V COG 201
C548 15 PF 5% 25 V COG 201
C551 15 PF 5% 25 V COG 201

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

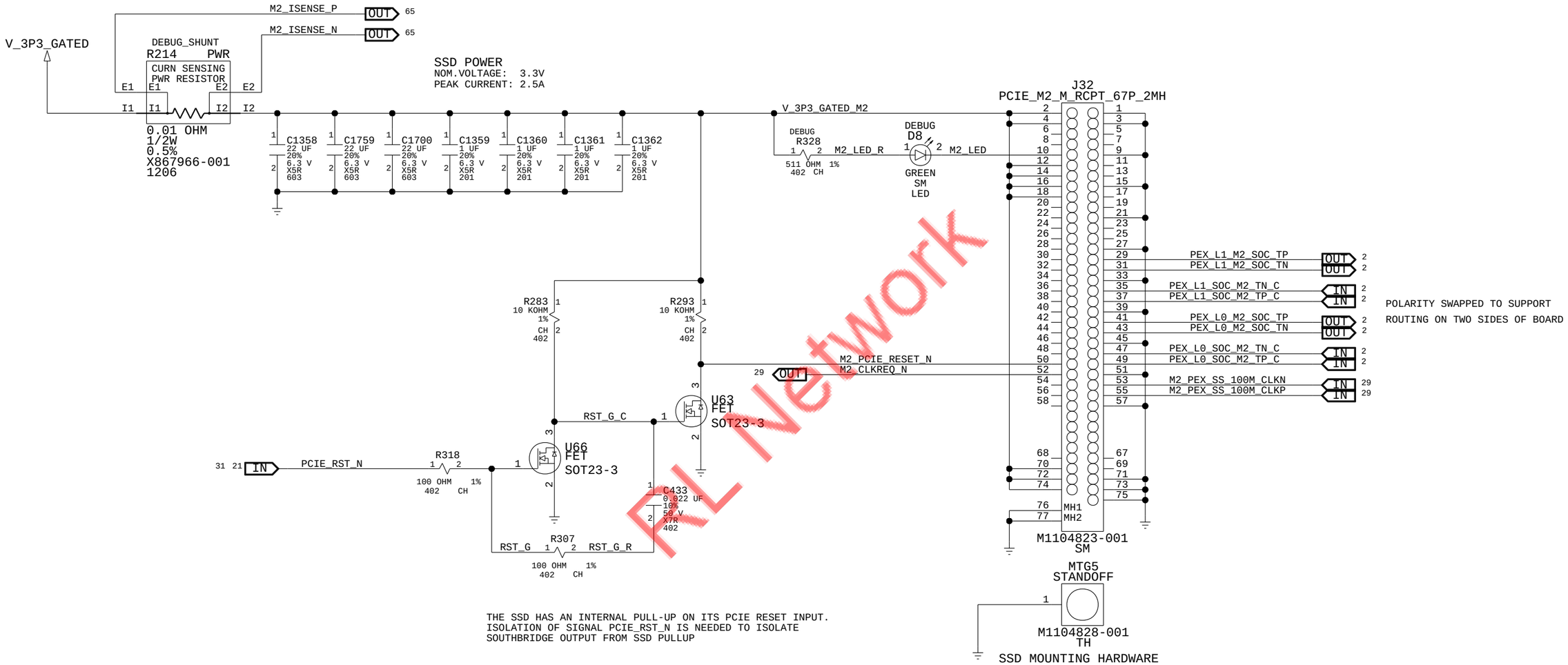
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	39/76	39/76	C	0.12

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

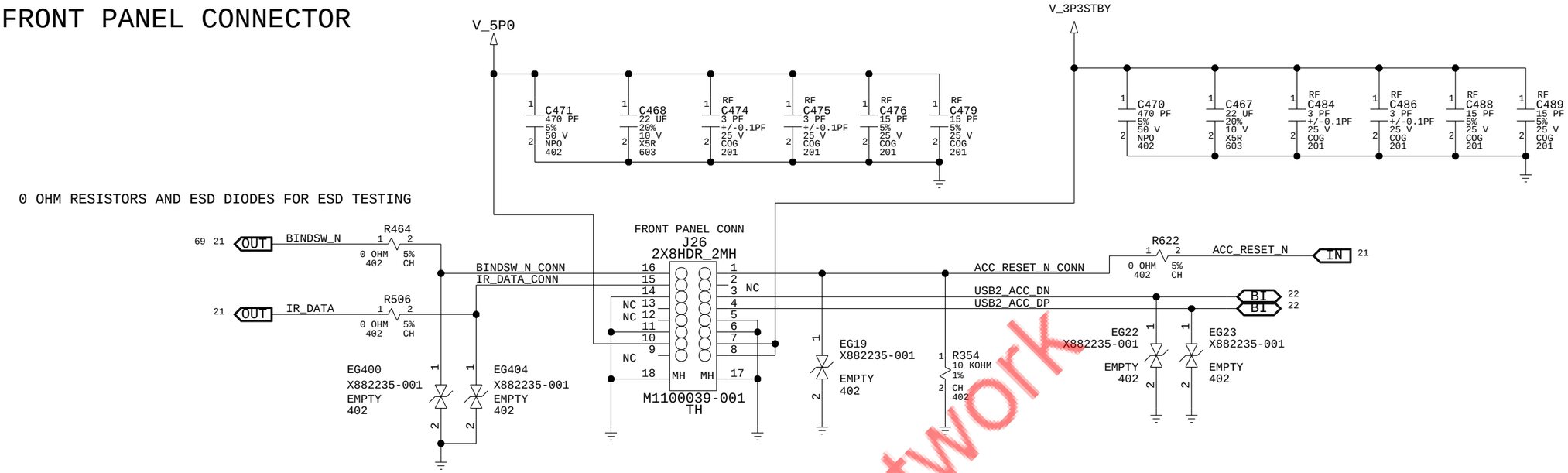
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	41/76	41/76	C	0.12

CONN: ODD

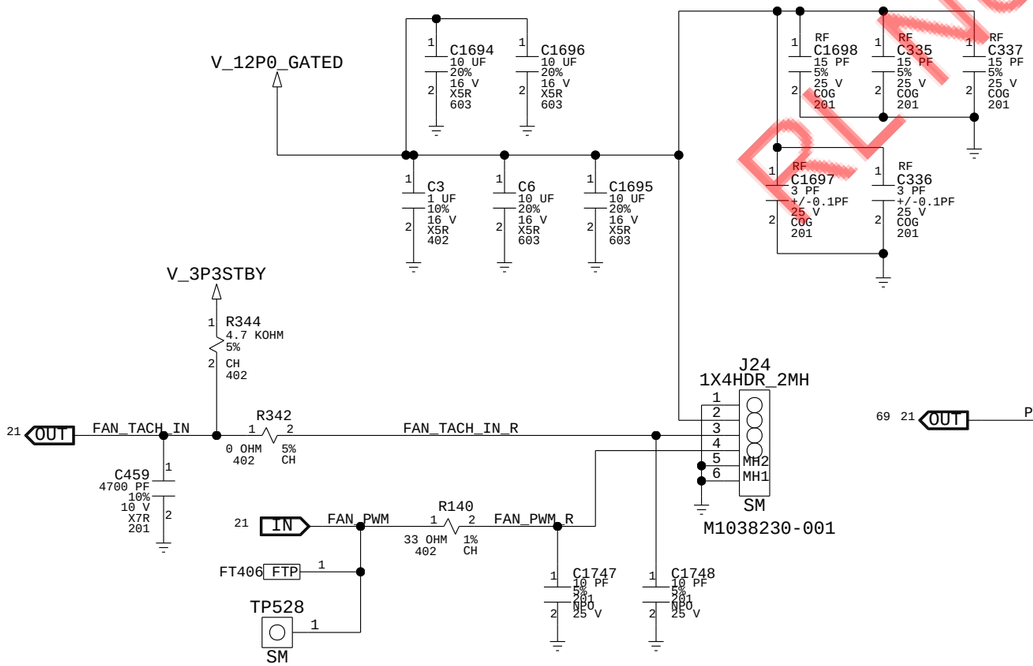
PLACEHOLDER FOR OBSOLETE ODD CIRCUITRY

CONN: FRONT PANEL, FAN, NEXUS

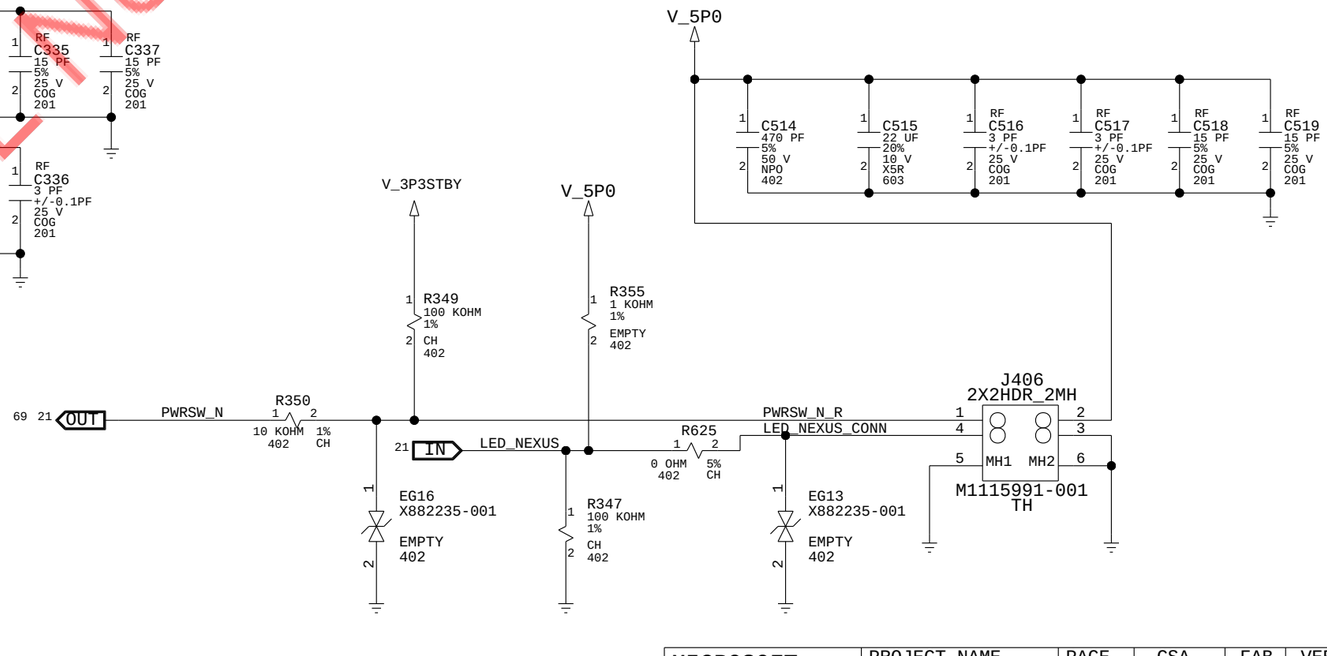
FRONT PANEL CONNECTOR



FAN CONNECTOR

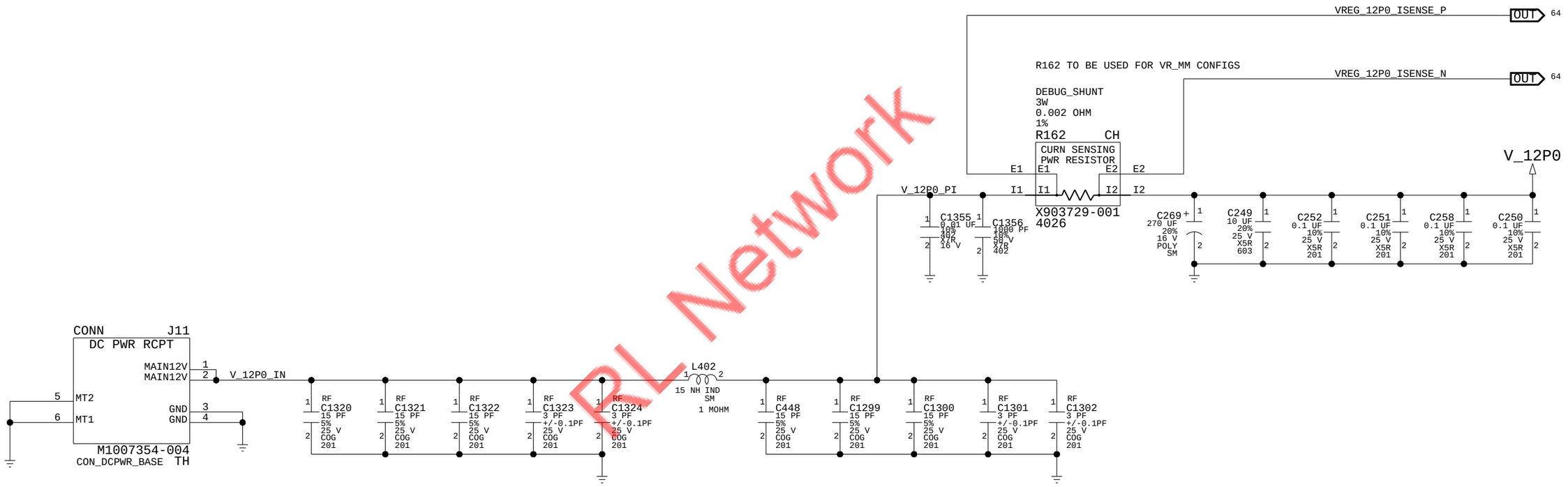


NEXUS CONNECTOR



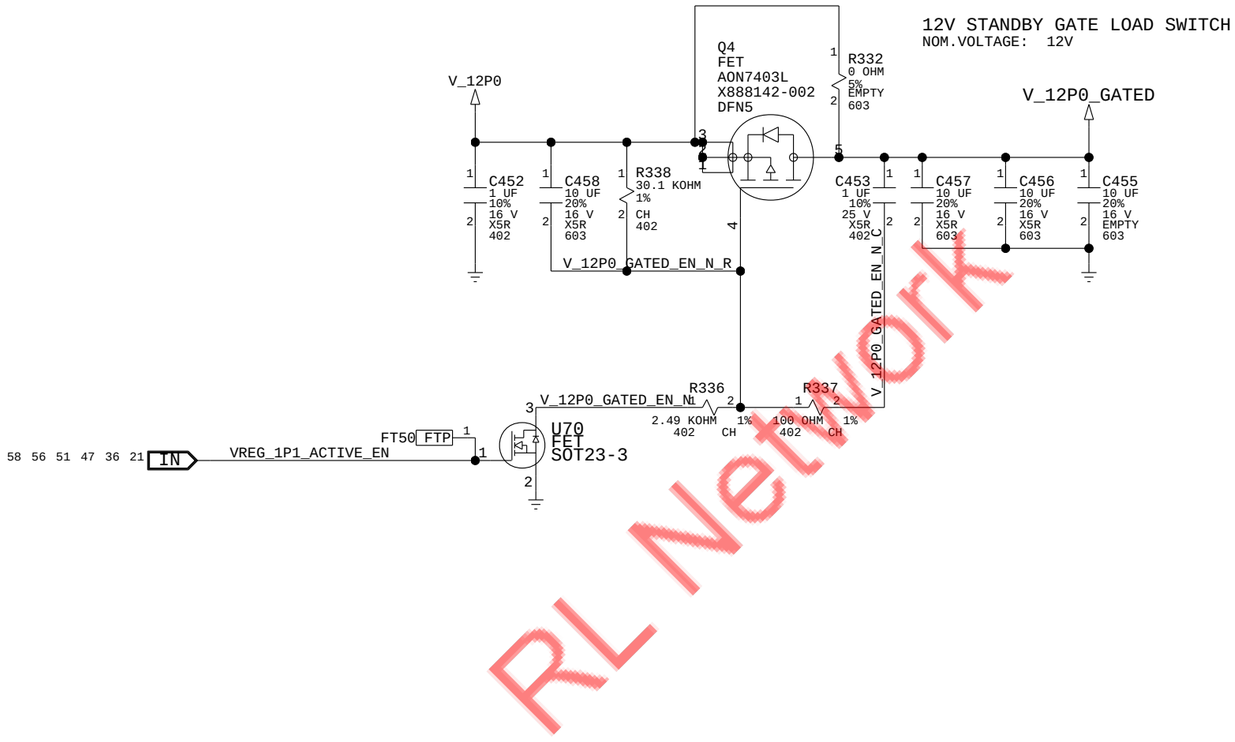
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	43/76	43/76	C	0.12

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

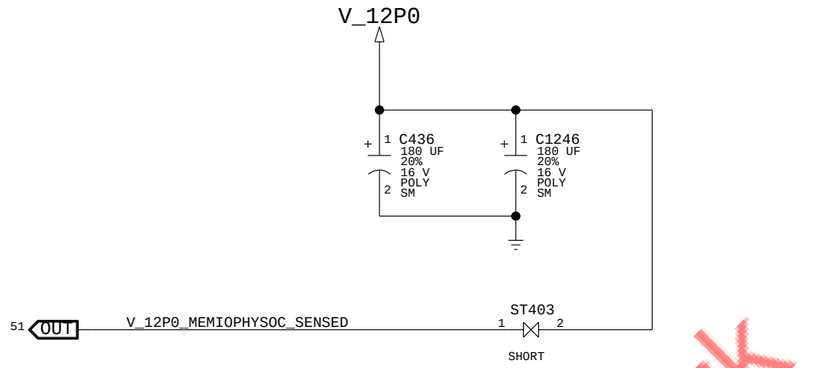
VREGS: V_12P0_GATED



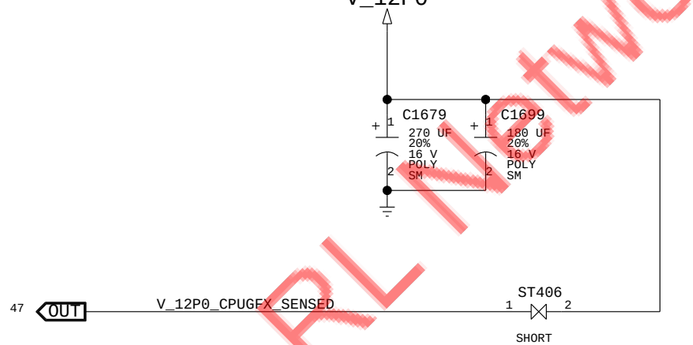
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	45/76	45/76	C	0.12

VREGS: INPUT DECOUPLING

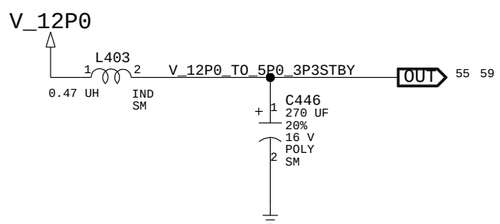
CPU/MEMIO/MEMPHY/SOC INPUT FILTER



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

VREG_GFXCPU_VDD33

C1009 1 UF 20% 10 V X5R 201

V_SOC1P8

R808 1 MOHM 1% CH 201

R809 1 MOHM 1% CH 201

V_3P3STBY

R449 10 KOHM 1% CH 402

R258 10 KOHM 1% CH 402

DB70 TP SVT — R228 0 OHM 5% CH 402

DB69 TP SVD — R219 0 OHM 5% CH 402

DB68 TP SVC — R220 0 OHM 5% CH 402

69 51 21 57 56 OUT VREG_PWRGPAB_CPUGFX_PWRGD

R249 0 OHM 5% CH 402 — VREG_GFXCPU_PG1

R248 0 OHM 5% 402 EMPTY — VREG_GFXCPU_PG2

49 48 OUT — R581 0 OHM 5% 402 CH — VREG_1P1_ACTIVE_EN

R580 100 KOHM 1% CH 402

56 45 21 36 51 58 IN

50 49 48 OUT VREG_GFXCPU_SYNC

VINSEN_12P0_GFXCORE

U57 IC MP2855

18	SCL_P		
17	SDA_P		
19	STB		
12	VINSEN		
		VDD33 35	
		VDD18 13	
23	PWROK/PVID3		
21	SVT		
25	SVD/PVID1		
24	SVC/PVID2		
16	MUX_ALT		
15	PG1		
14	PG2		
20	EN		
22	VDDIO		
9	TSENS1		
10	IMON1		
11	IMON2		
		MPAD 41	

M1080755-102
QFN41

VREG_GFXCPU_VDD18

C391 1 UF 20% 10 V X5R 201

70 21 8 IN SOC_PWR_OK

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

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

DB71 TP — FTP FT1005 — 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 — FTP FT1004

V_CPUCORE

R565 100 OHM 1% CH 402

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

C462 0.1 UF 10% 25 V EMPTY 402

R617 0 OHM 5% 402 CH — SOC_CPUCORE_S_RTN — IN 8

DB1006 TP — FTP FT1006

R232 100 OHM 1% CH 402

VORTN2 8 VREG_CPUCORE_S_RTN
VOSEN2 7 VREG_CPUCORE_S

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

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 TP — VREG_GFX_IMON_R — R245 0 OHM 5% 402 CH — VREG_GFX_IMON

VREG_CPU_IMON

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

C390 1000 PF 10% 50 V EMPTY 402

50 IN VREG_CPUCORE_TEMP — R244 0 OHM 5% 402 EMPTY

C450 0.1 UF 10% 25 V EMPTY 402

DB444
DB445

PLACE GND CLOSE TO IMON

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

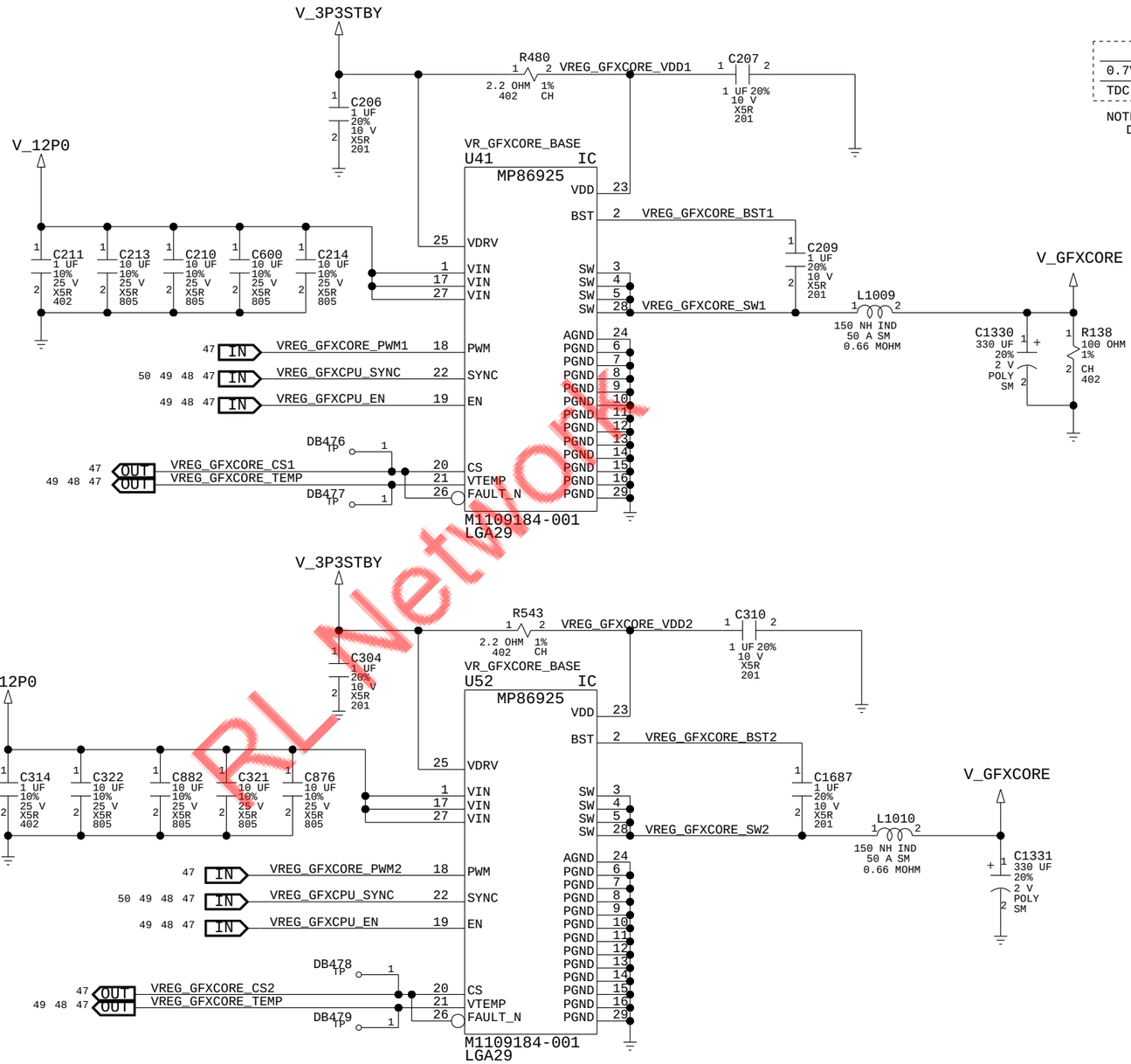
RAIL 1:	V_GFXCORE	(POWER GROUP B)
RAIL 2:	V_CPUCORE	(POWER GROUP B)

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

VREGS: V_GFXCORE OUTPUT PHASE 1 & 2

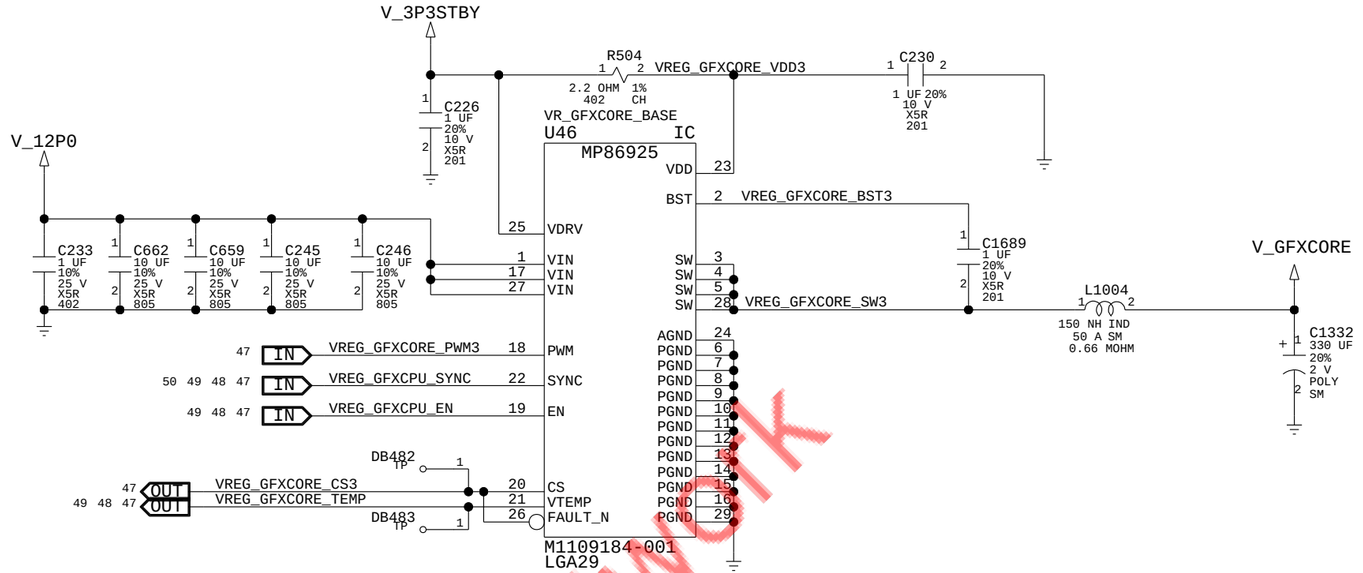
V_GFXCORE
0.7V-0.8V
TDC: 75A EDC: 103A FSW: 700KHZ

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

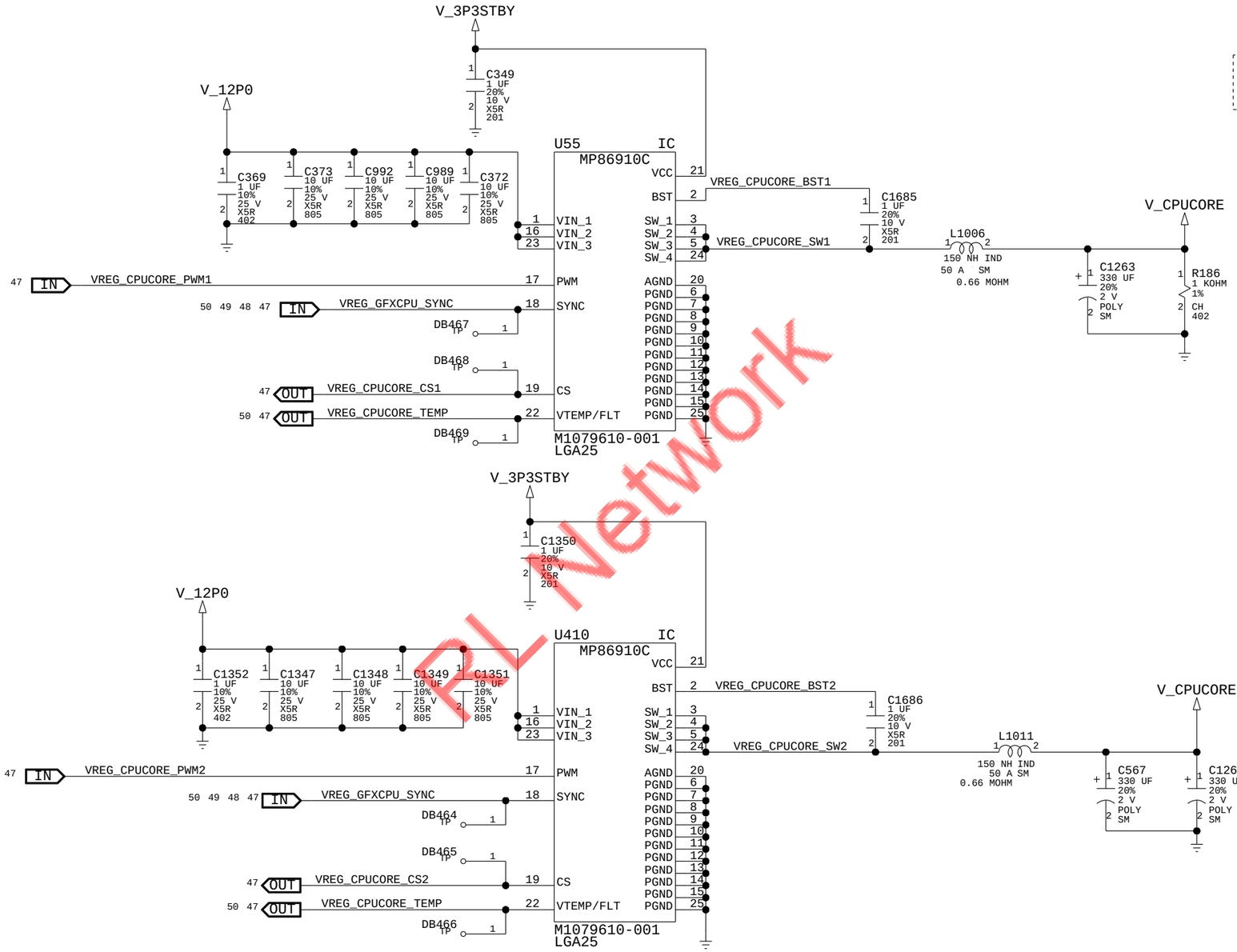


MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	49/76	49/76	C	0.12

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

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			
PVID1			
PVID2			
		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			
GPIO2			
GPIO3			
GPIO4			
TSENS1			
TSENS2			
TSENS3			
ADDR		MPAD	41
		IMON1	14 VREG_MEMPHY_IMON
		IMON2	15 VREG_MEMIO_IMON
		IMON3	16

M1094197-102
QFN41

R657 0 OHM 5% 402 CH
R130 100 KOHM 1% 2 EMPTY 402
56 47 45 36 21 58 IN VREG_1P1_ACTIVE_EN
VREG_MEMIOPHYSOC_EN
VREG_MEMIOPHYSOC_PG

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% 2 EMPTY 402
R679 10 KOHM 1% 2 EMPTY 402
R683 10 KOHM 1% 2 EMPTY 402
DB141
VREG_MEMIOPHYSOC_PVID032
VREG_MEMIOPHYSOC_PVID131
VREG_MEMIOPHYSOC_PVID230

3 IN 3P3V_SLEEP_S3_N — R790 0 OHM 5% 402 CH
3 IN 3P3V_FORCE_PWR — R678 0 OHM 5% 402 CH
R170 10 KOHM 1% 2 CH 402
R685 10 KOHM 1% 2 CH 402
R686 10 KOHM 1% 2 CH 402

DB661 1 VREG_MEMIOPHYSOC_GPIO1
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

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

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

PLACE GND CLOSE TO IMON
DB449
DB450
DB451

R687 0 OHM 5% 402 CH — VREG_MEMIO_IMON_R — DB677 FTP FT679
C1445 1000 PF 10% 50 V EMPTY 402

R681 0 OHM 5% 402 CH — VREG_MEMPHY_IMON_R — DB685 FTP FT686
C1447 1000 PF 10% 50 V EMPTY 402

VREG_SOC_IMON — R673 0 OHM 5% 402 CH — 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)

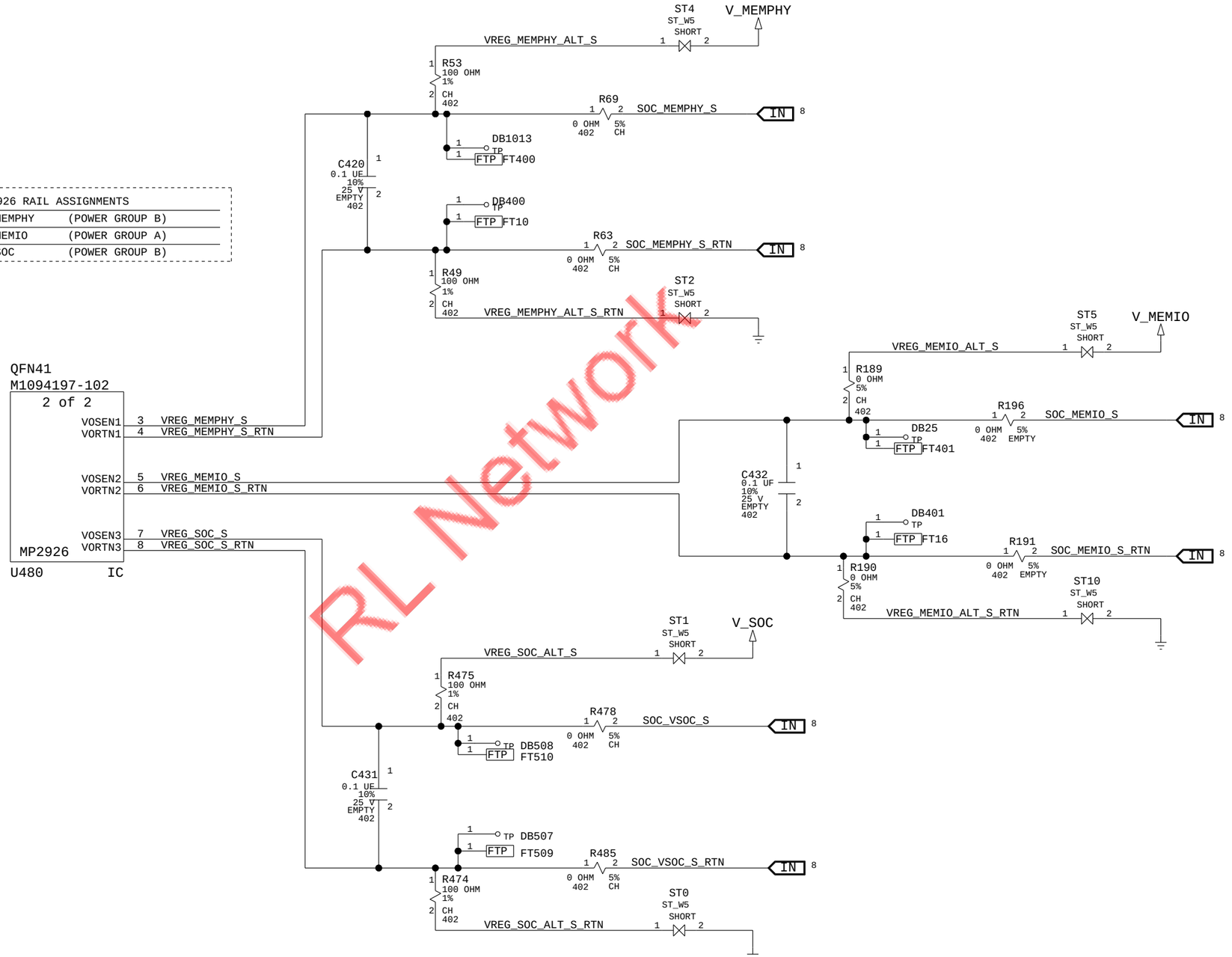
MP2926 I2C ADDRESS

	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

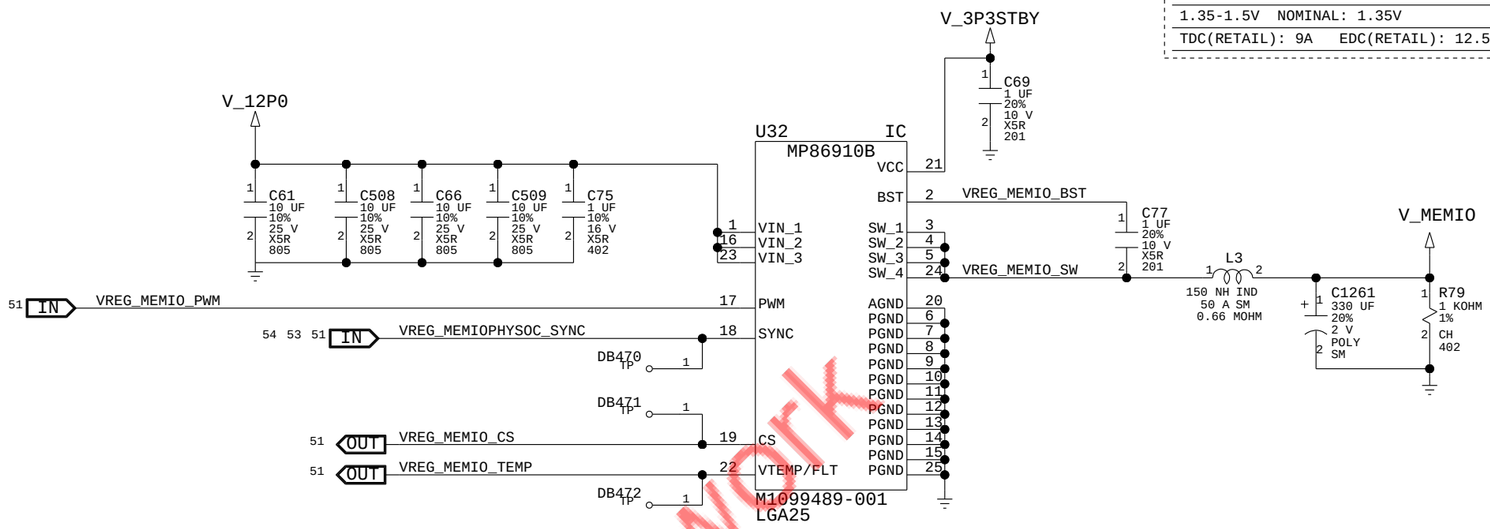
MP2926 RAIL ASSIGNMENTS		
RAIL 1:	V_MEMPHY	(POWER GROUP B)
RAIL 2:	V_MEMIO	(POWER GROUP A)
RAIL 3:	V_SOC	(POWER GROUP B)

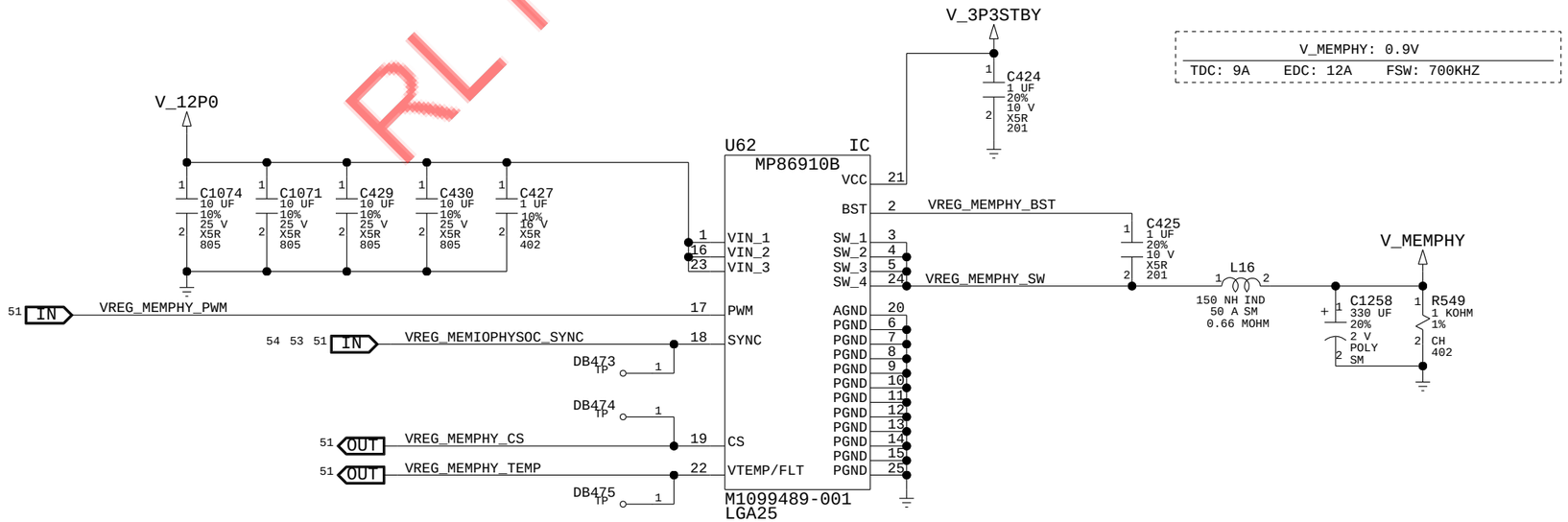


MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	52/76	52/76	C	0.12

VREGS: V_MEMIO AND V_MEMPHY OUTPUT

V_MEMIO
1.35-1.5V NOMINAL: 1.35V
TDC(RETAIL): 9A EDC(RETAIL): 12.5A FSW: 700KHZ

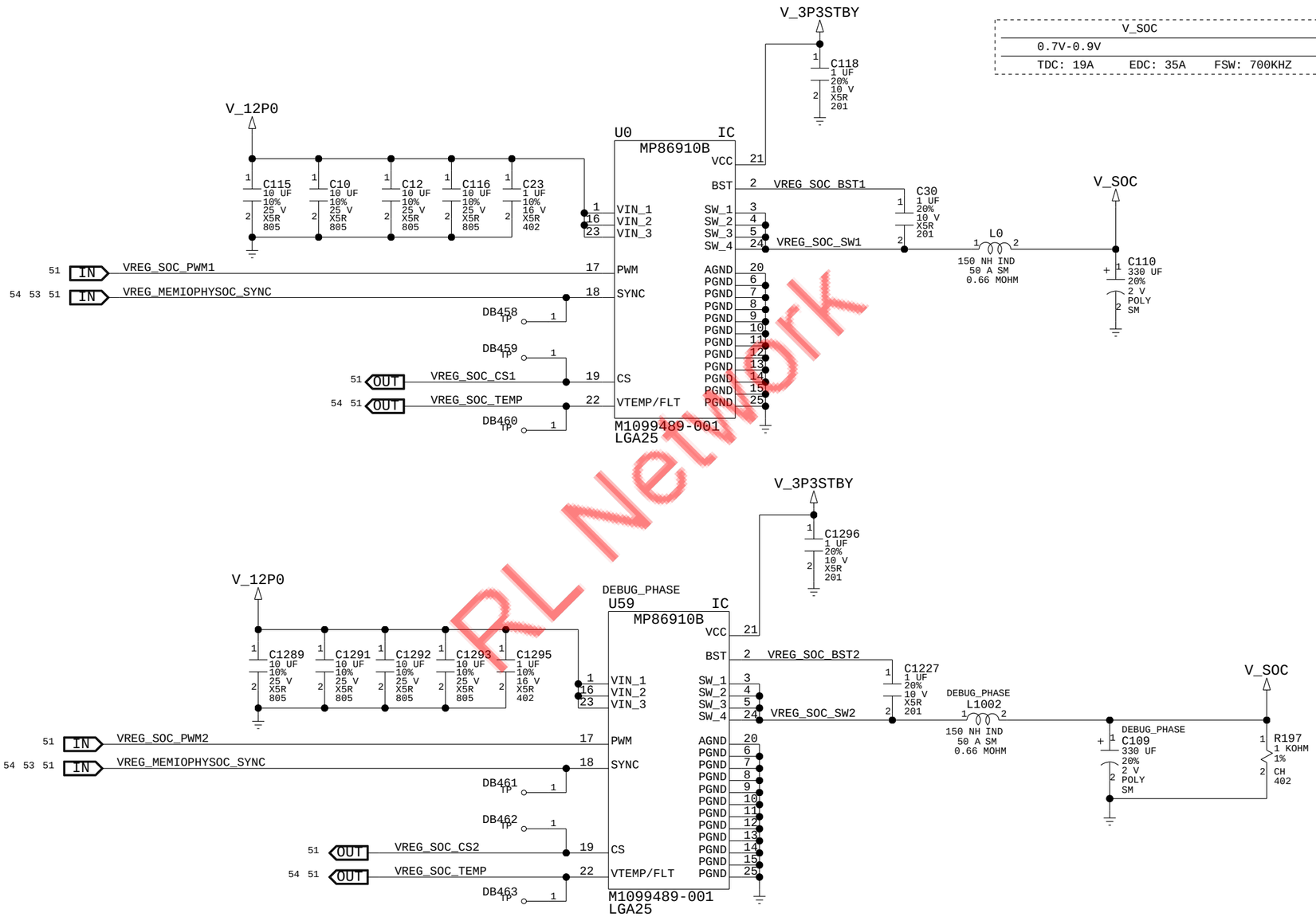




MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	53/76	53/76	C	0.12

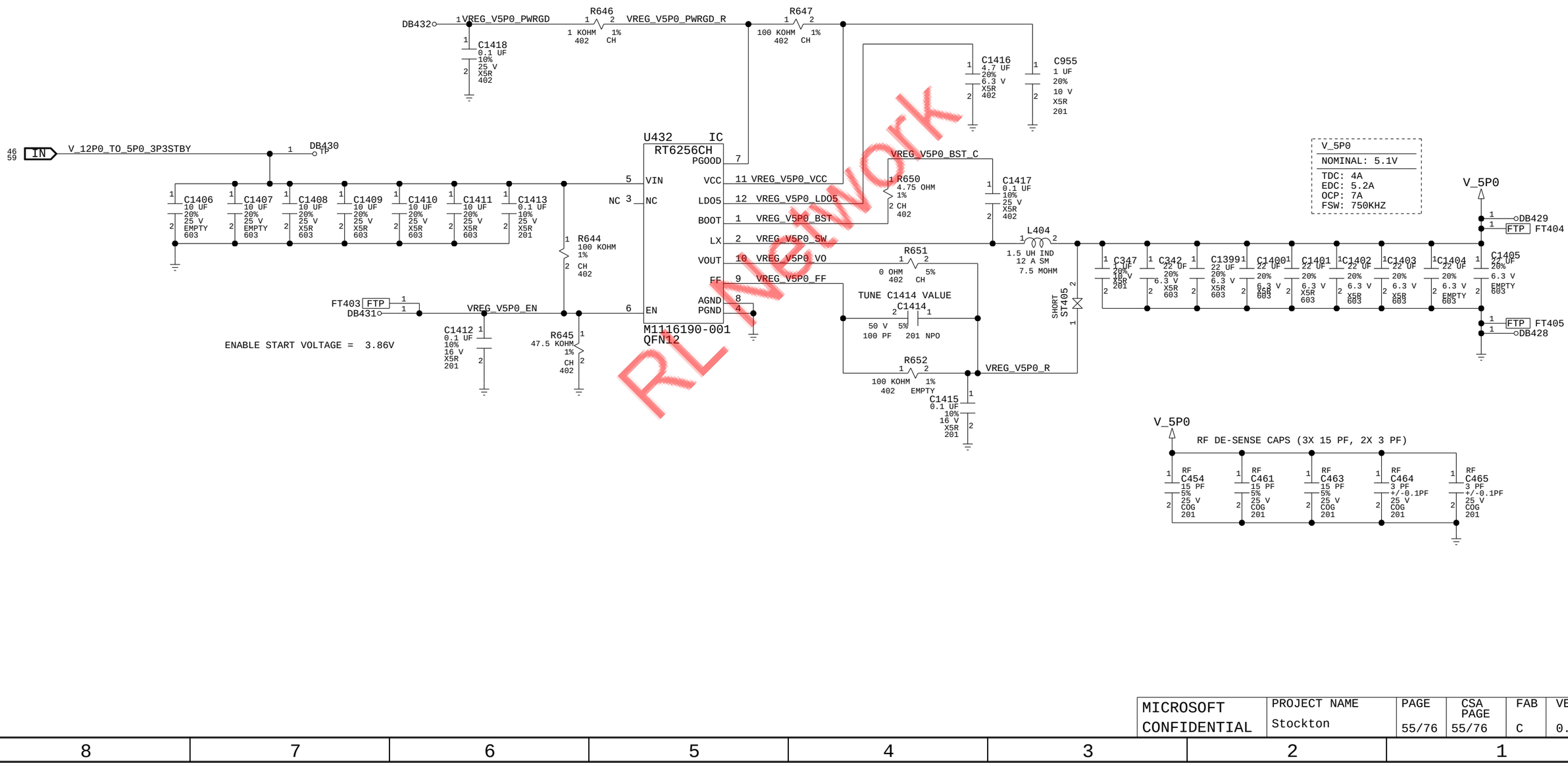
VREGS: V_SOC OUTPUT

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



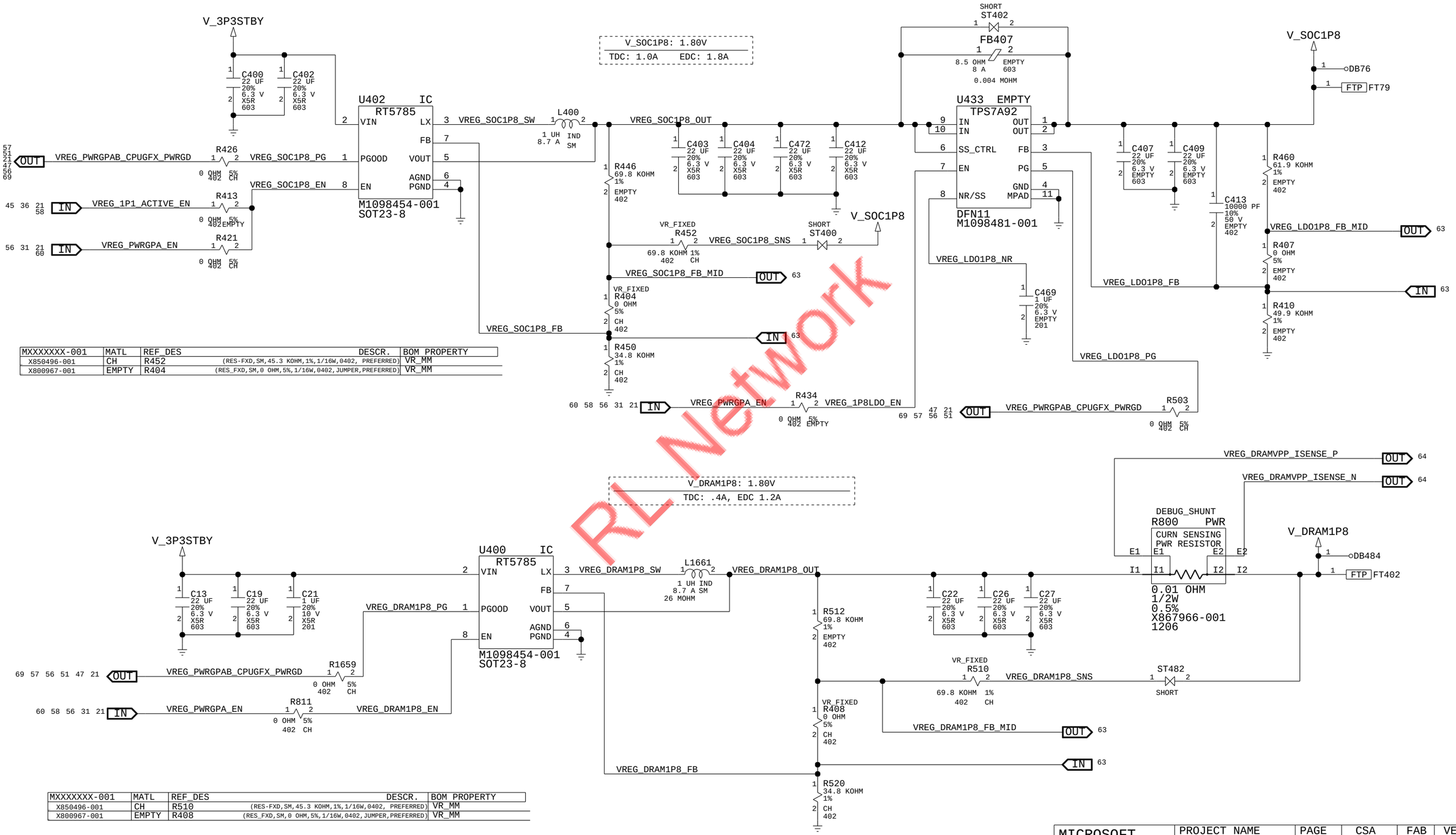
	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	54/76	54/76	C	0.12

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

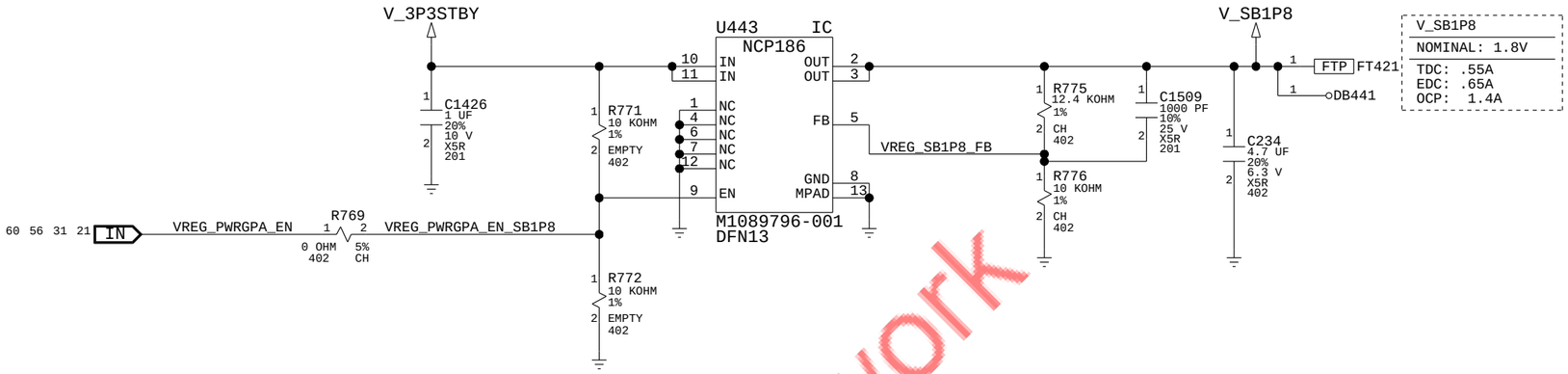
V_3P3STBY
C483 1 UF 20% 10 V X5R 201
C497 10 UF 20% 6.3 V X5R 402
C490 10 UF 20% 6.3 V X5R 402
U129 IC TPS62826 M1087390-001 DFN6
VIN SW PG FB EN GND
L1 0.47 UH IND 7.8 A SAT 0.01 OHM
X902974-001 SENSE RESISTOR WAS REMOVED BUT SHOULD BE REPLACED IN SCB
V_SOCPHY
FTP FT14 DB7
56 51 47 21 69 OUT VREG_PWRGPAB_CPUGFX_PWRGD
21 IN VREG_PWRGPB_EN
R136 0 OHM 5% 402 CH
R743 0 OHM 5% 402 CH
VREG_SOCPHY_PG
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% CH 402
IN 63
OUT 63

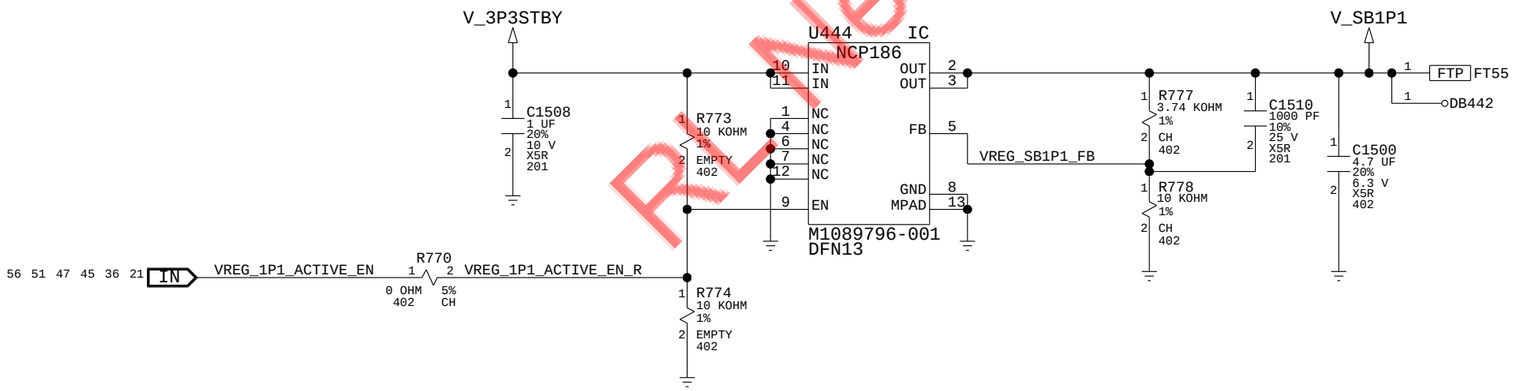
V_FUSE: 0.83V
TDC: 100MA

V_3P3_GATED
V_3P3STBY
R324 100 KOHM 1% 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% EMPTY 402
21 IN VREG_PWRGPC_EN
28 IN V12P0_PWRGD
VREG_VFUSE_ADJ
R596 45.3 KOHM 1% CH 402
R595 42.2 KOHM 1% CH 402
C1084 0.022 UF 10% 25 V EMPTY 402
C441 4.7 UF 20% 10 V X5R 402
R597 1 KOHM 1% 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

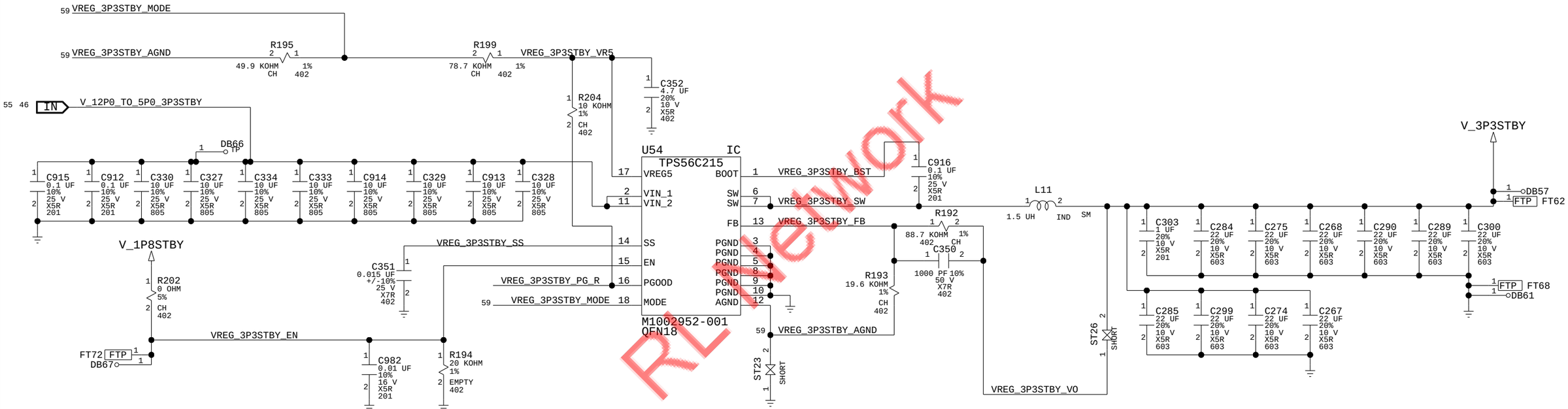




MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	58/76	58/76	C	0.12

VREGS: V_3P3STBY

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

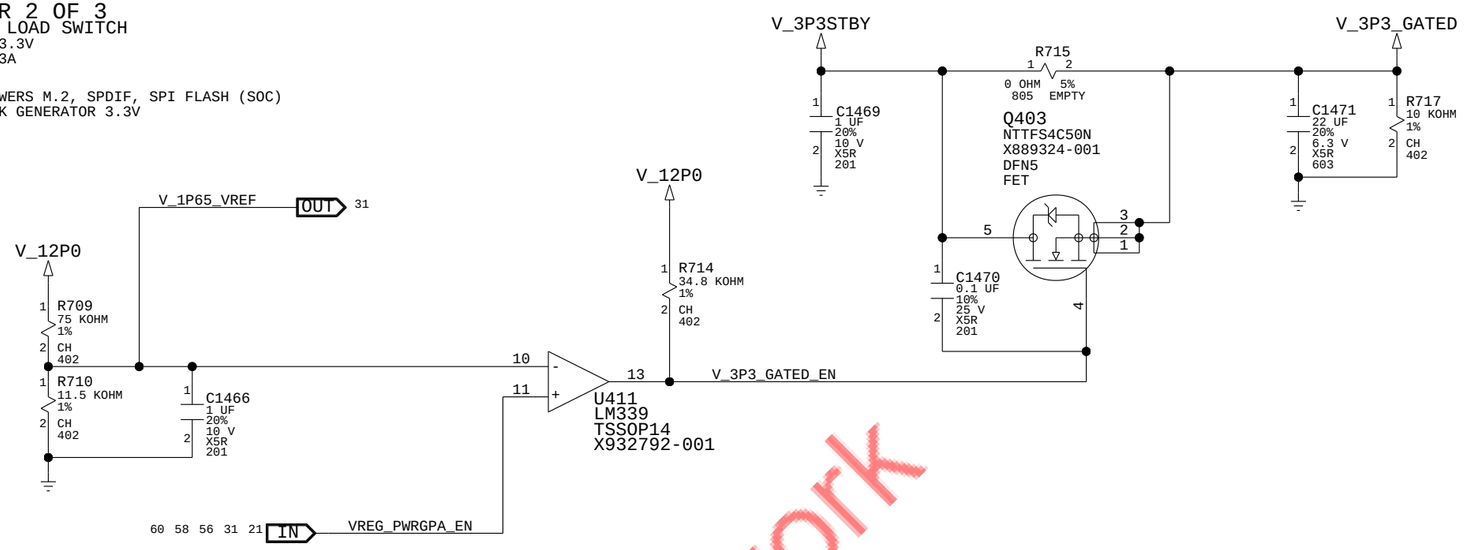


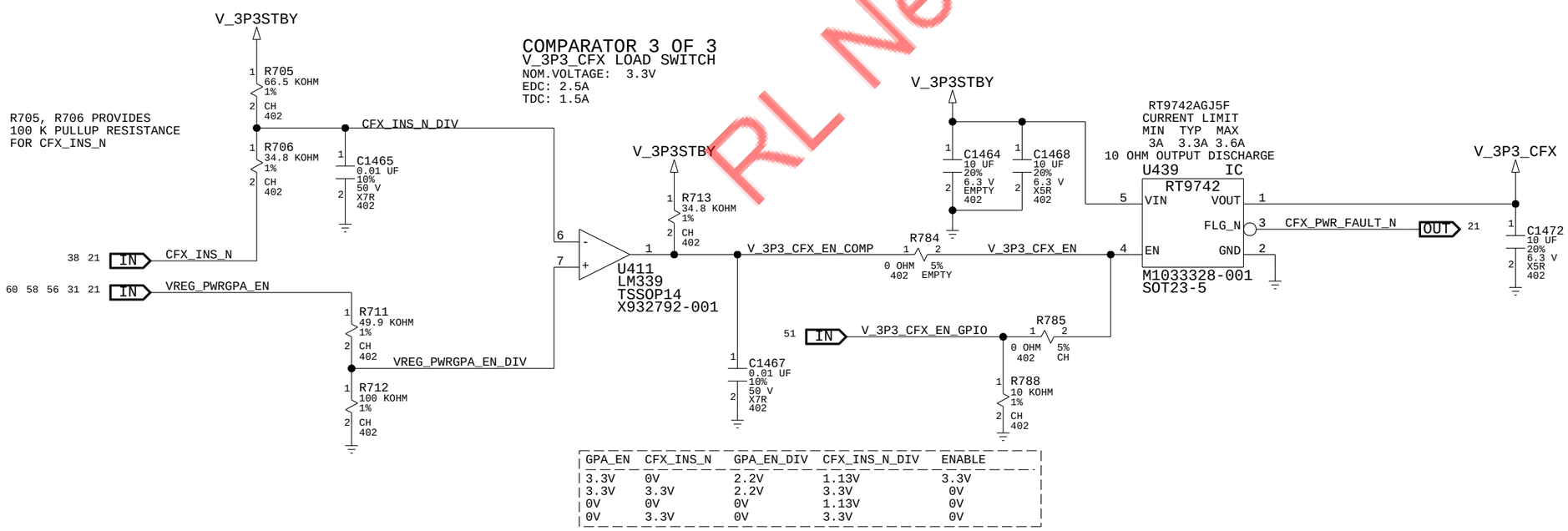
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	59/76	59/76	C	0.12

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

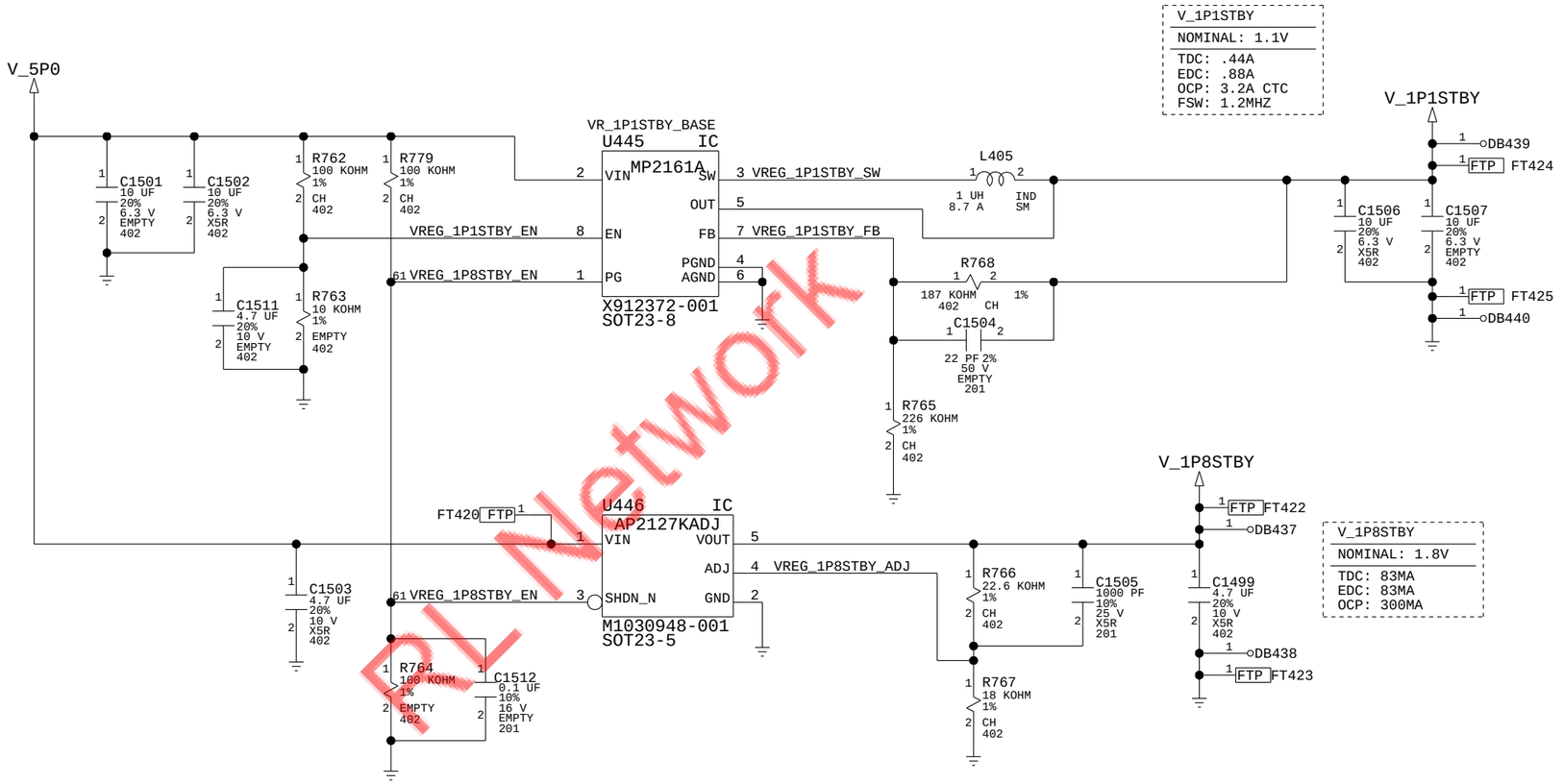




GPA_EN	CFX_INS_N	GPA_EN_DIV	CFX_INS_N_DIV	ENABLE
3.3V	0V	2.2V	1.13V	3.3V
3.3V	3.3V	2.2V	3.3V	0V
0V	0V	0V	1.13V	0V
0V	3.3V	0V	3.3V	0V

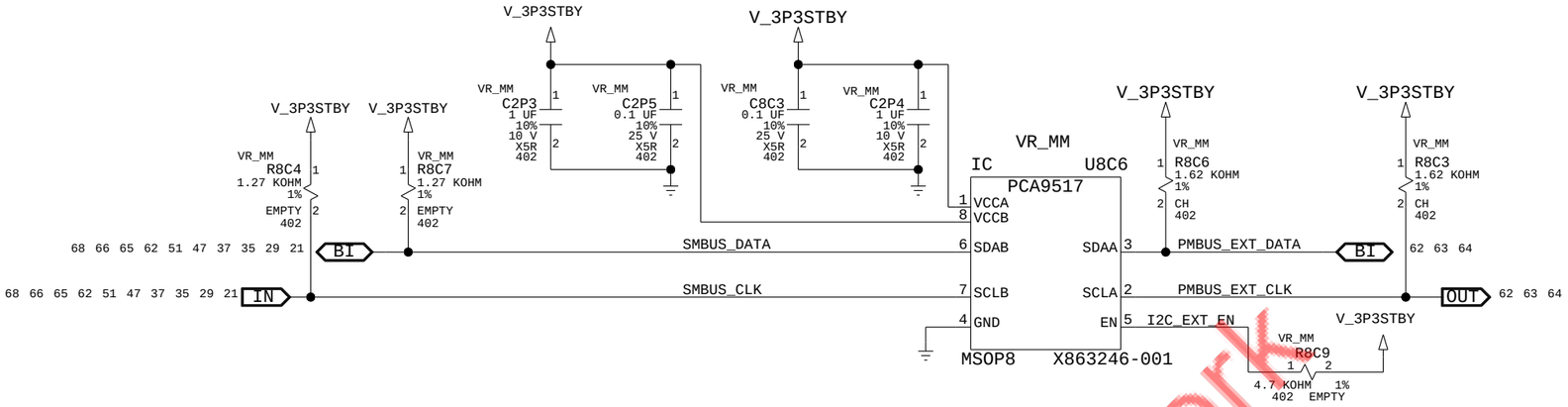
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	60/76	60/76	C	0.12

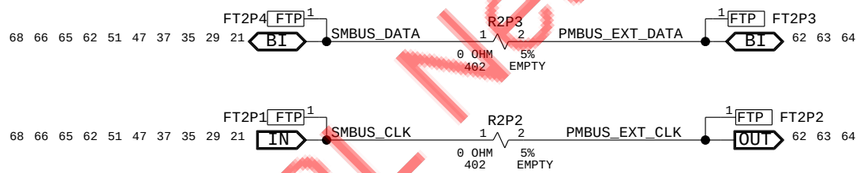
VREGS: V_1P1STBY, V_1P8STBY



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

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		
MARGIN_SOC1P8_A2	12	A2	
MARGIN_SOC1P8_A1	13	A1	
MARGIN_SOC1P8_A0	1	HVC/A0	
PMBUS_EXT_CLK_MM_SOC1P8	2	SCL	
PMBUS_EXT_DATA_MM_SOC1P8	3	SDA	
	11	WP_N	

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

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

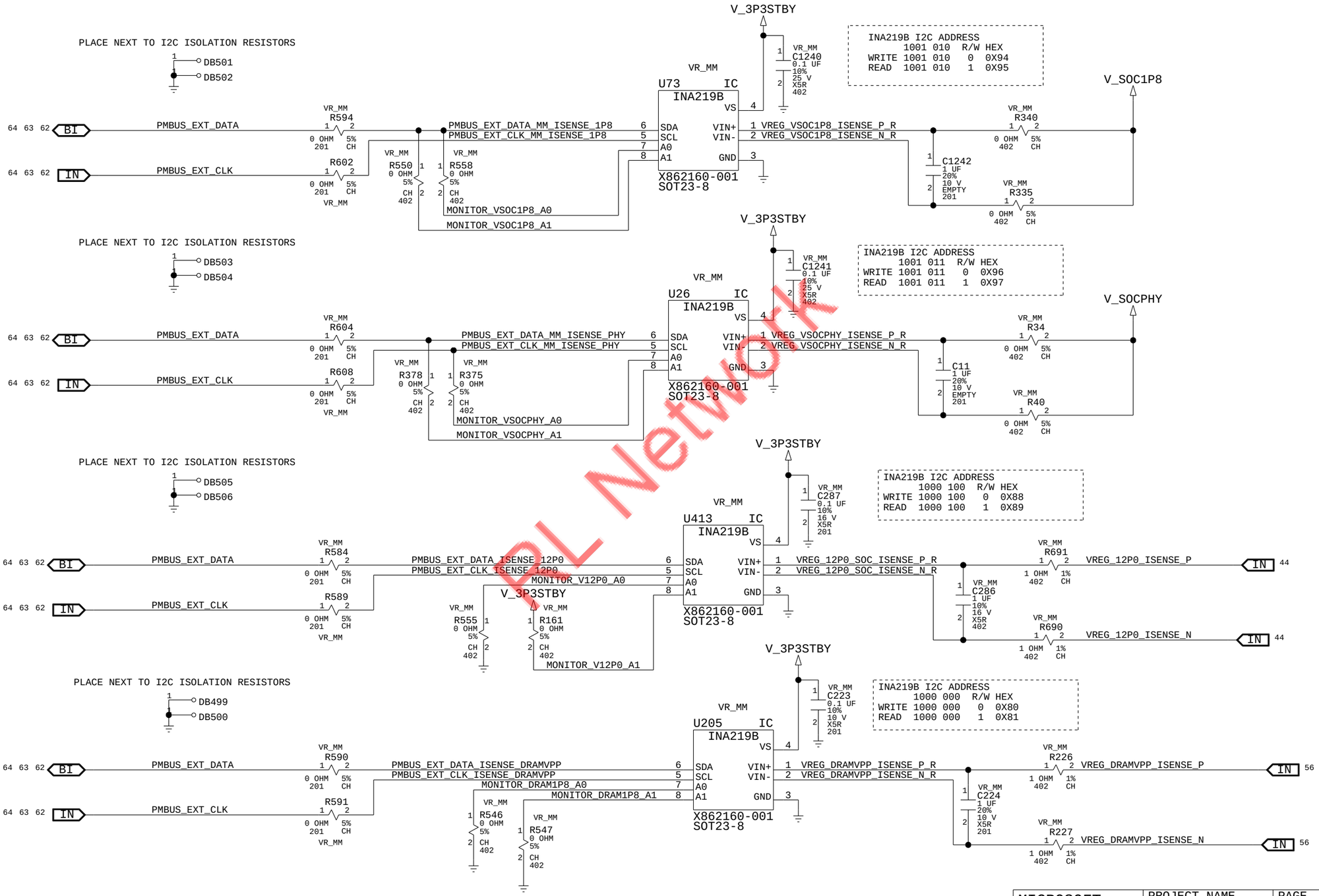
C1739 0.1 UF 10% 10 V X5R 201

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

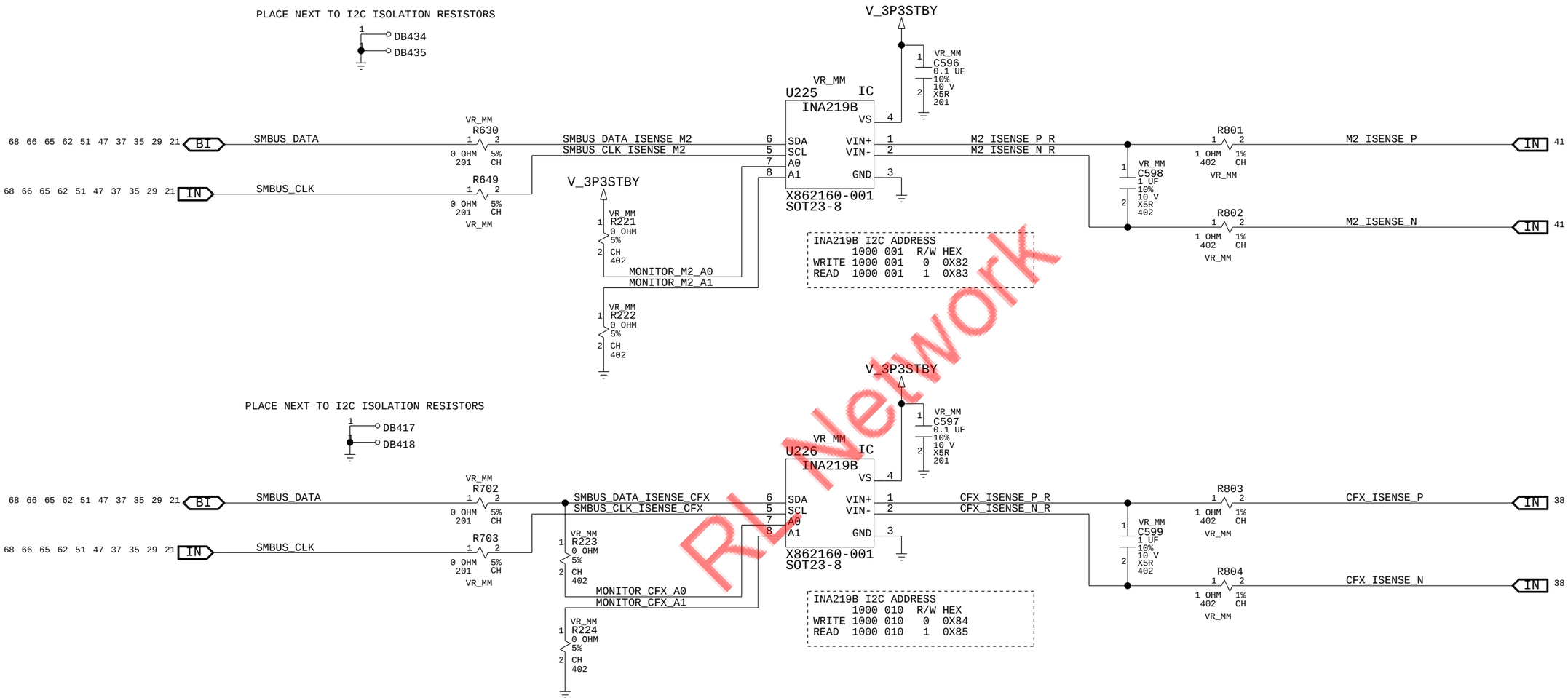
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	63/76	63/76	C	0.12

DEBUG: MONITOR V_SOC1P8, V_SOCPHY, V_12P0, V_DRAM1P8



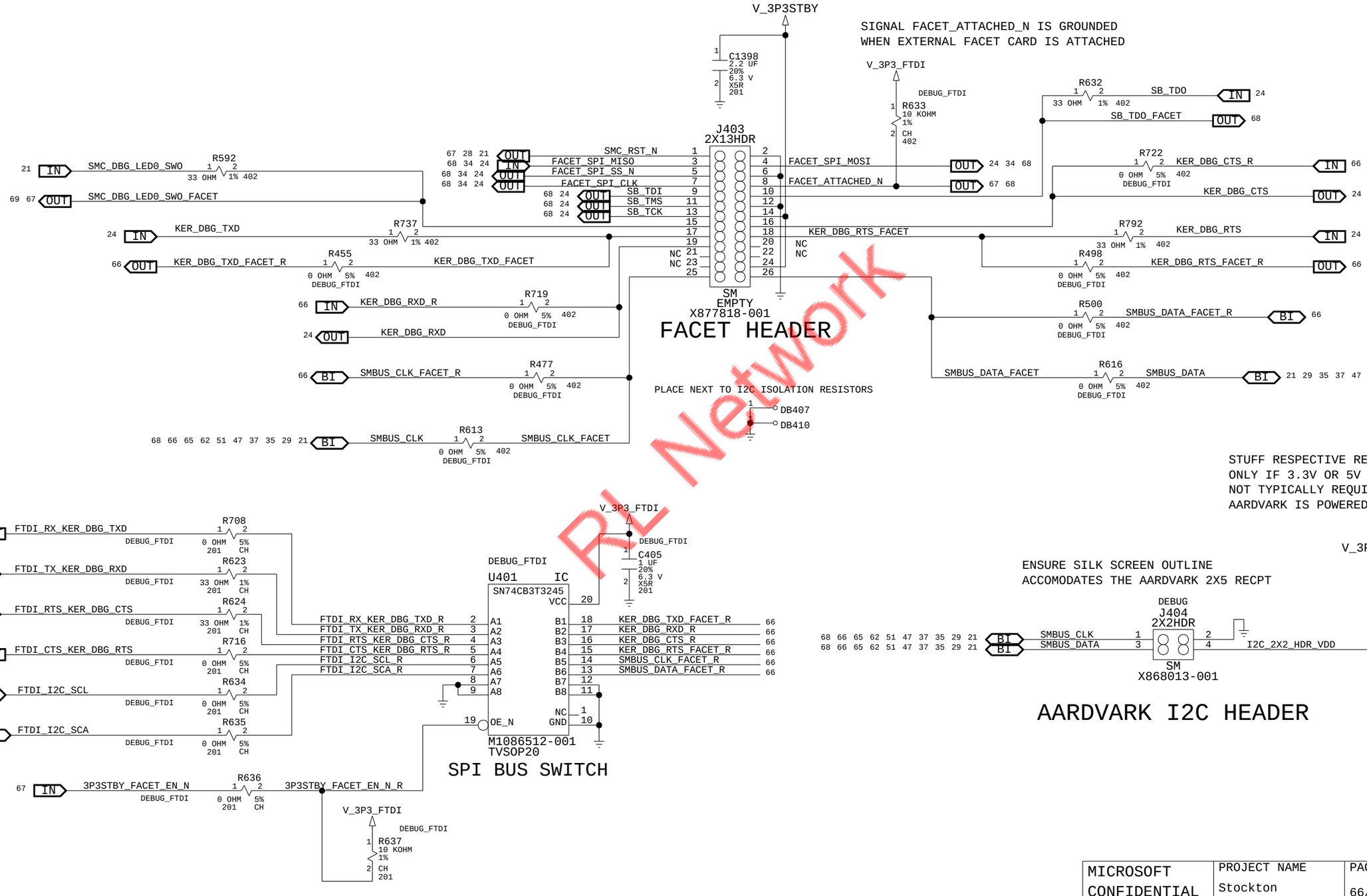
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	64/76	64/76	C	0.12

DEBUG: MONITOR M.2. CFEXPRESS



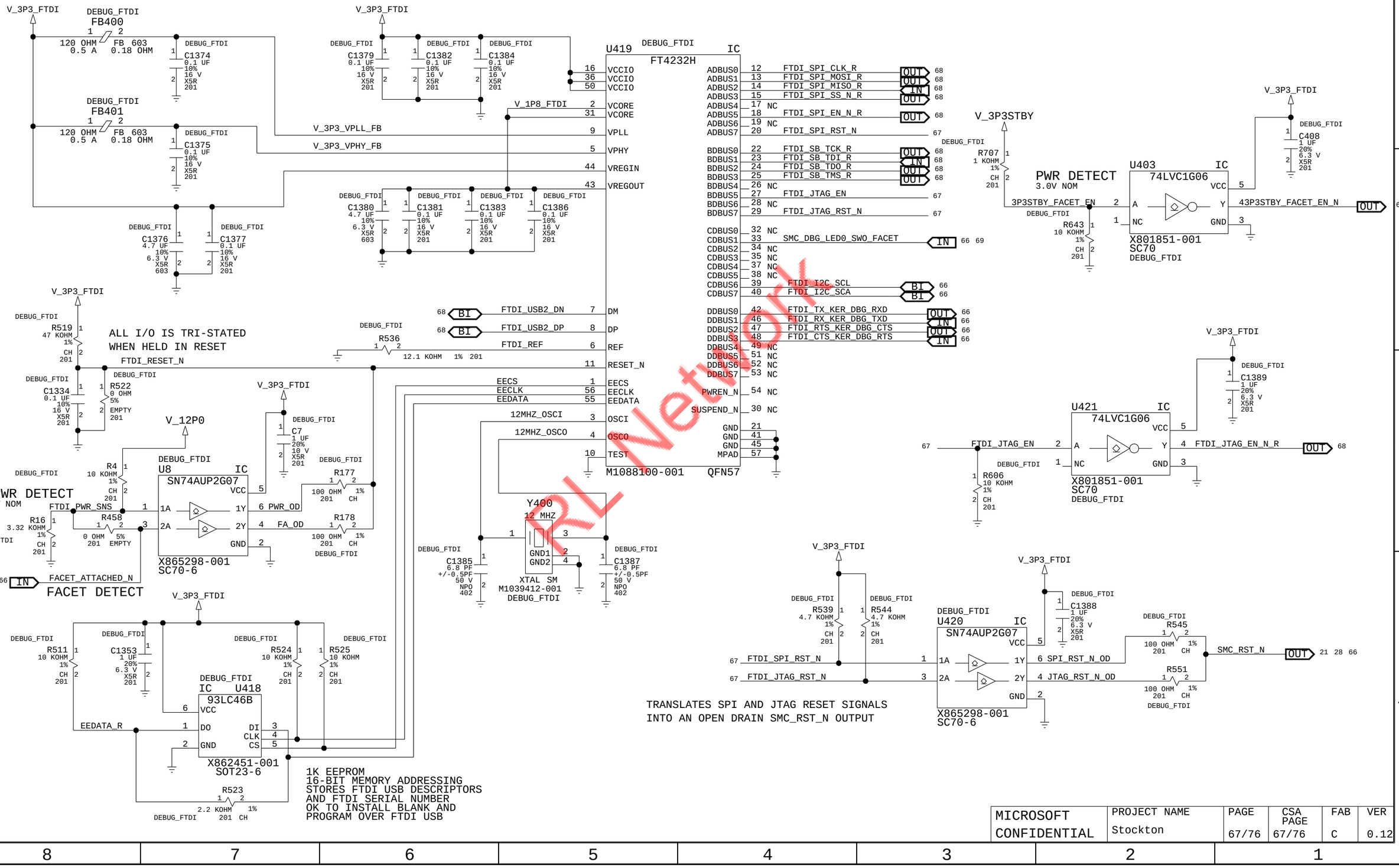
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	VER
	Stockton	65/76	65/76	0.12

DEBUG: FACET HEADER



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

DEBUG: FTDI BRIDGE



DEBUG: FTDI BUFF, USB, PWR

SPI BUS SWITCH

V_3P3_FTDI

DEBUG_FTDI U423 IC SN74CB3T3245 TVSOP20 M1086512-001

67 IN	FTDI_SPI_CLK_R	R566 33 OHM 1% 201 CH	FTDI_SPI_CLK	2 A1	B1 18	FACET_SPI_CLK	OUT	24 34 66
67 IN	FTDI_SPI_MOSI_R	R567 33 OHM 1% 201 CH	FTDI_SPI_MOSI	3 A2	B2 17	FACET_SPI_MOSI	OUT	24 34 66
67 OUT	FTDI_SPI_MISO_R	R569 33 OHM 1% 201 CH	FTDI_SPI_MISO	4 A3	B3 16	FACET_SPI_MISO	IN	24 34 66
67 IN	FTDI_SPI_SS_N_R	R570 33 OHM 1% 201 CH	FTDI_SPI_SS_N	5 A4	B4 15	FACET_SPI_SS_N	OUT	24 34 66
67 IN	FTDI_SPI_EN_N_R	R571 0 OHM 5% 201 CH	FTDI_SPI_OE_N	19 OE_N	NC 1 / GND 10			

V_3P3_FTDI — R576 10 KOHM 1% CH 201

JTAG BUS SWITCH

V_3P3_FTDI

DEBUG_FTDI U424 IC SN74CB3T3245 TVSOP20 M1086512-001

67 IN	FTDI_SB_TCK_R	R553 33 OHM 1% 201 CH	FTDI_SB_TCK	2 A1	B1 18	SB_TCK	OUT	24 66
67 IN	FTDI_SB_TDI_R	R554 33 OHM 1% 201 CH	FTDI_SB_TDI	3 A2	B2 17	SB_TDI	OUT	24 66
67 OUT	FTDI_SB_TDO_R	R556 0 OHM 5% 201 CH	FTDI_SB_TDO	4 A3	B3 16	SB_TDO_FACET	IN	66
67 IN	FTDI_SB_TMS_R	R561 33 OHM 1% 201 CH	FTDI_SB_TMS	5 A4	B4 15	SB_TMS	OUT	24 66
			FTDI_JTAG_OE_N	19 OE_N	NC 1 / GND 10			

V_3P3_FTDI — R575 10 KOHM 1% CH 201

67 IN FTDI_JTAG_EN_N_R — R562 0 OHM 5% 201 CH

GPIO EXPANDER

PCA9570 I2C ADDRESS

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

V_3P3_FTDI

DEBUG_FTDI U422 IC PCA9570 X950297-001 QFN8

51 47 37 35 29 21 66 65 62 BI	SMBUS_DATA	R572 0 OHM 5% 201 CH	EXP_SDA	7 SDA
51 47 37 35 29 21 66 65 62 BI	SMBUS_CLK	R573 0 OHM 5% 201 CH	EXP_SCL	6 SCL

VDD 8 — P0 1 EXP_P0 — P1 2 EXP_P1 — P2 3 EXP_P2 — P3 5 EXP_P3 — VSS 4

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

U5 IC 74LVC2G14 X819343-001 SC70 DEBUG_FTDI — 1A 1 — 1Y 6 — VCC 5 — GND 2

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

U5 IC 74LVC2G14 X819343-001 SC70 DEBUG_FTDI — 2A 3 — 2Y 4

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 U425 IC TS3USB30E X870617-001 QFN10

67 BI	FTDI_USB2_DP	D1+ 1	D+ 3	USB2_BP_P1_IN_DP BI 39
22 BI	USB2_BP_P1_DP	D2+ 2		
22 BI	USB2_BP_P1_DN	D2- 6	D- 5	USB2_BP_P1_IN_DN BI 39
67 BI	FTDI_USB2_DN	D1- 7		
69 OUT	LOGIC_FTDI_USB_EN_N	OE_N 8 / S 10	GND 4	VCC 9

DEFAULT: PORT D1

DEBUG_FTDI C1395 1 UF 20% 6.3 V X5R 201

R586 0 OHM 5% CH 201 NO_DEBUG_FTDI

R587 0 OHM 5% CH 201 NO_DEBUG_FTDI

FACET DETECT

V_3P3_FTDI

DEBUG_FTDI C1393 1 UF 20% 6.3 V X5R 201

IC U426 SN74LVC1G32 X858887-001 SC70-5 DEBUG_FTDI — VCC 5 — Y 4 — GND 3 — A — B 2 — NOR1_Y 1

DEBUG_FTDI IC U429 74LVC1G02 X852697-001 SC70 — VCC 5 — Y 4 — GND 3 — A 1 — B 2

FACET_ATTACHED_N — IN 66 67 68

FTDI_USB_EN_N — 68

FACET DETECT

V_3P3_FTDI

DEBUG_FTDI C1394 1 UF 20% 6.3 V X5R 201

IC U427 SN74LVC1G32 X858887-001 SC70-5 DEBUG_FTDI — VCC 5 — Y 4 — GND 3 — A — B 2 — NOR2_Y 1

DEBUG_FTDI IC U430 74LVC1G02 X852697-001 SC70 — VCC 5 — Y 4 — GND 3 — A 1 — B 2

LOGIC_USB_HOST_PWR_EN — 69 39 OUT — 4

FACET_ATTACHED_N — IN 66 67 68

USB_HOST_PWR_EN — 68

FTDI VREG

3.3V @ 600MA MAX

V_3P3_FTDI

R585 0 OHM 5% CH 805 — V_3P3_FTDI_VOUT

DEBUG_FTDI IC U428 AP7365_33 M1086914-001 DFN6 — VOUT 4 — NC 6 — GND 2 — VIN 3 — NC 5 — EN 1

DEBUG_FTDI C1325 4.7 UF 20% 10 V X5R 402

DEBUG_FTDI C1396 1 UF 20% 6.3 V X5R 201

FTDI_VREG_EN — ALWAYS ENABLED

V_3P3_FTDI_VIN — DEBUG_FTDI R588 10 KOHM 1% CH 201

V_5P0

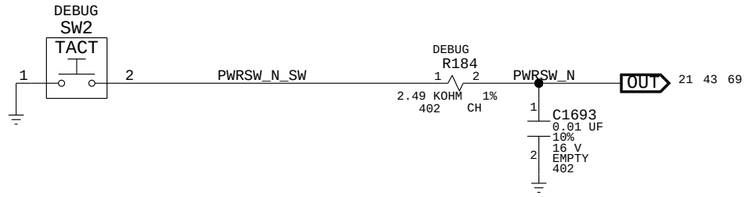
D402 SOD123 X806746-001 DEBUG_FTDI

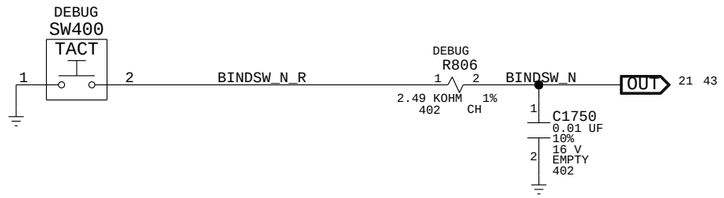
D401 SOD123 X806746-001 DEBUG_FTDI

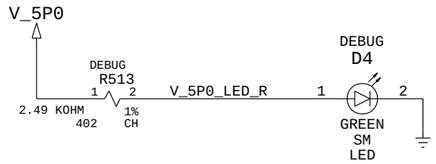
39 BI V_5P0_USB3_P0

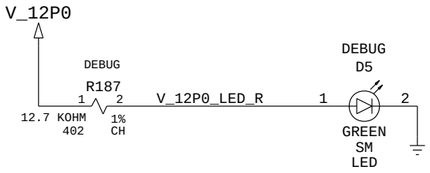
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	68/76	68/76	C	0.12

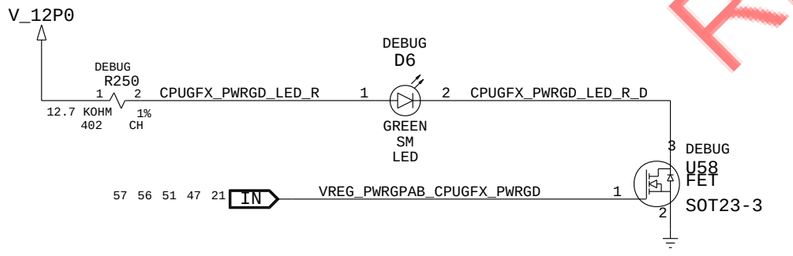
DEBUG: SWITCHES, LEDS

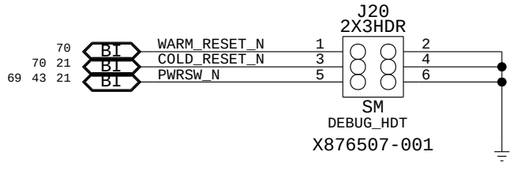


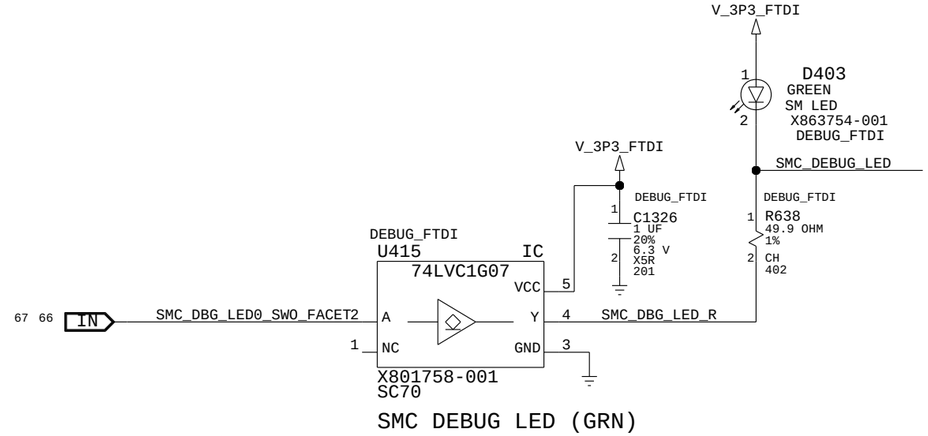




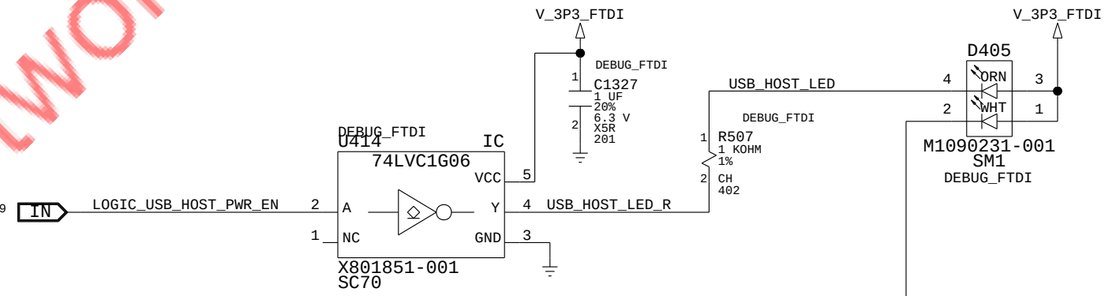




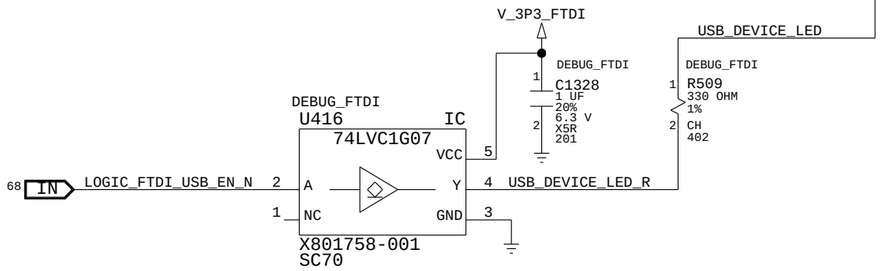




SMC DEBUG LED (GRN)



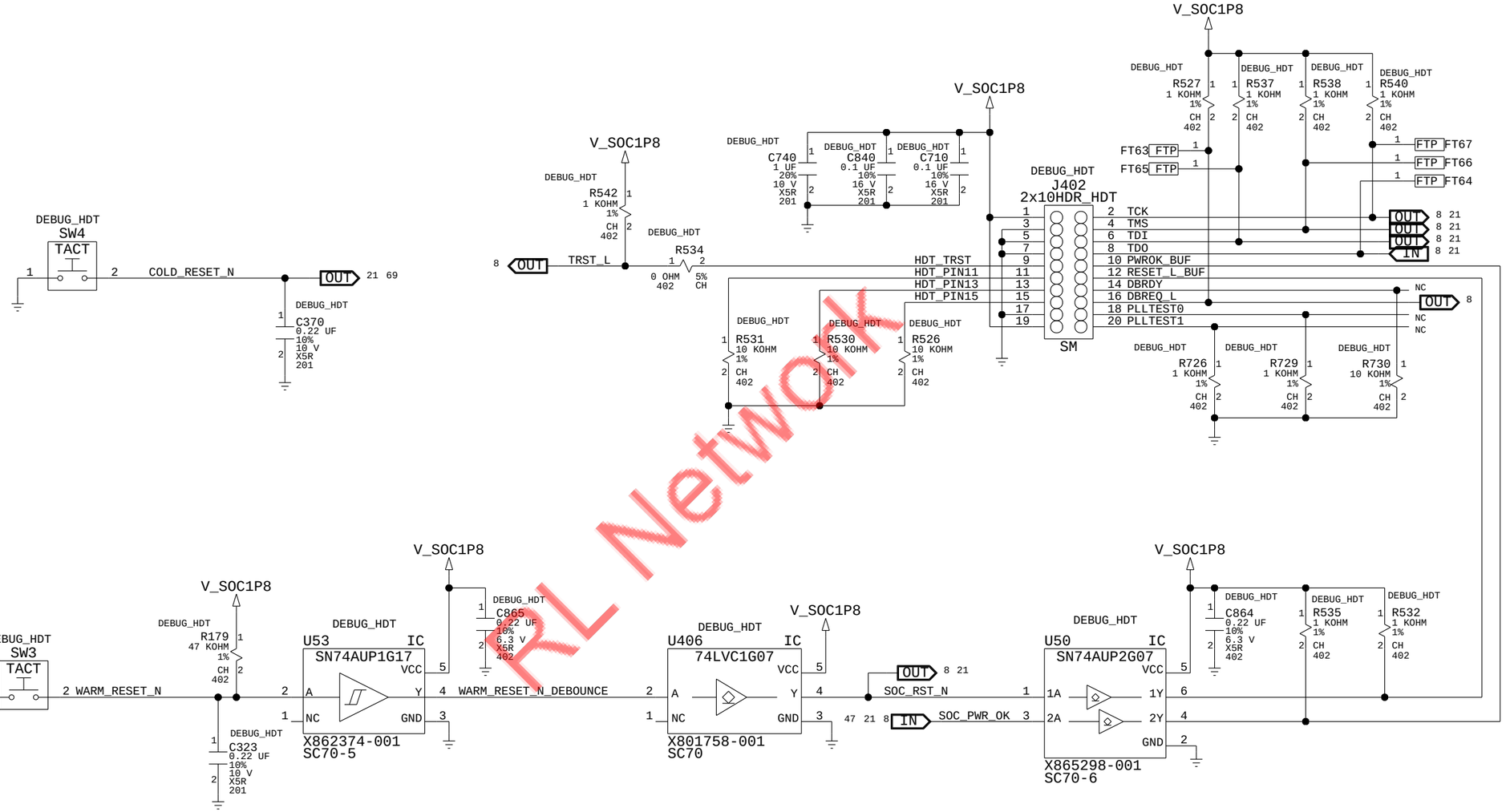
USB HOST MODE LED (ORG)



USB DEVICE MODE LED (WHT)

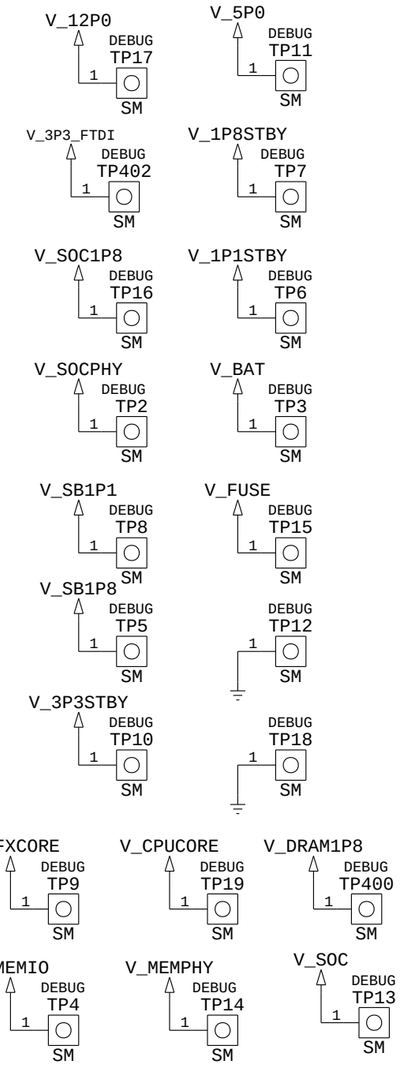
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	69/76	69/76	C	0.12

DEBUG: HDT



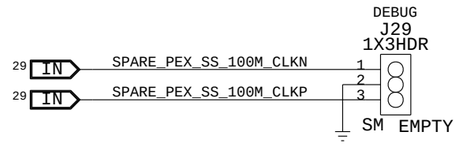
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	70/76	70/76	C	0.12

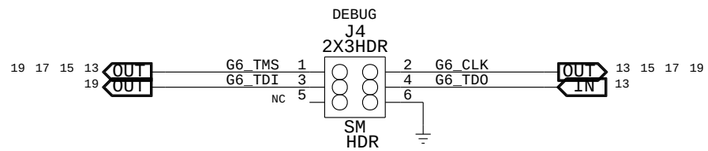
DEBUG: VR HEADERS, TEST POINTS, CONNECTORS



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

PCIE CONNECTORS

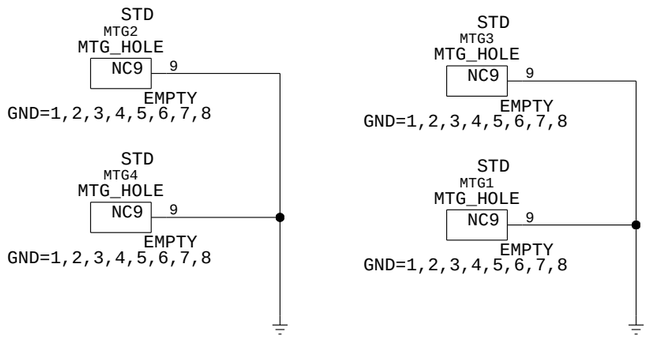




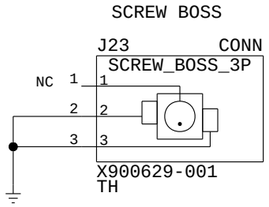
MICROSOFT CONFIDENTIAL	PROJECT NAME	PAGE	CSA PAGE	FAB	VER
	Stockton	71/76	71/76	C	0.12

LABELS AND MOUNTING

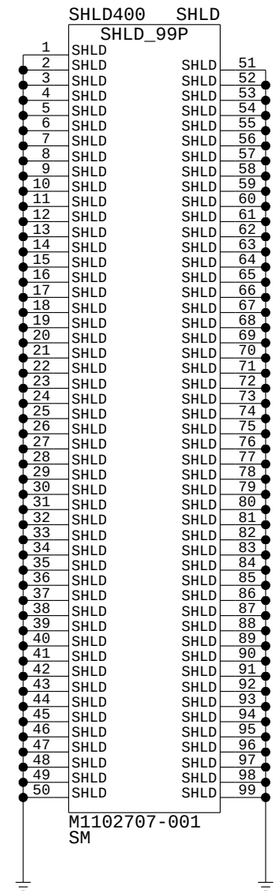
HEAT SINK MOUNTING HOLES



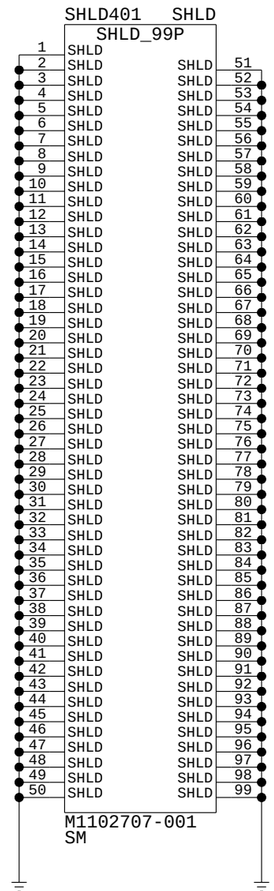
SCREW BOSS



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

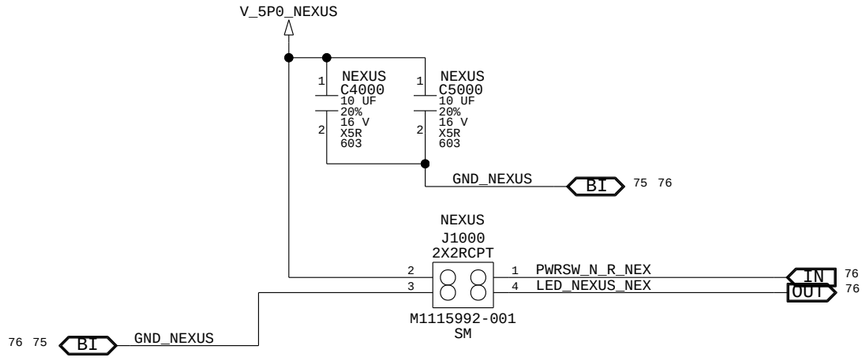
NEXUS BOARD IS CO-PANELED WITH MAIN BOARD

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

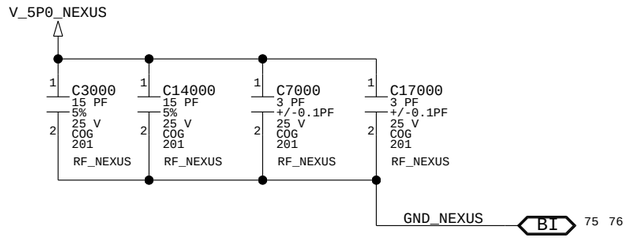
RULES: (APPLIED WHEN POSSIBLE)

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



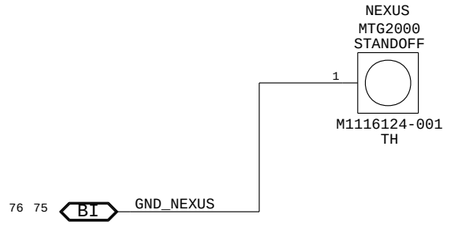
B2B CONNECTOR



LB3
LABEL

M1023564-801
6.35MM X 6.35MM
NEXUS

MOUNTING STANDOFF

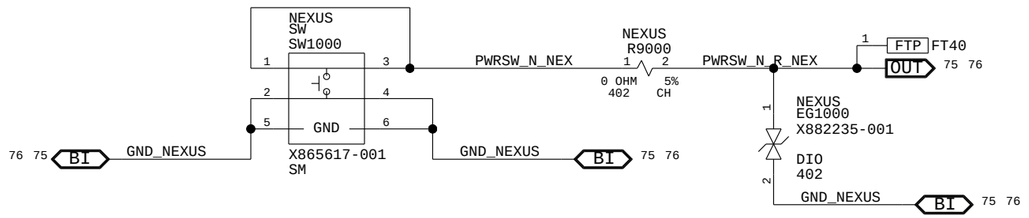


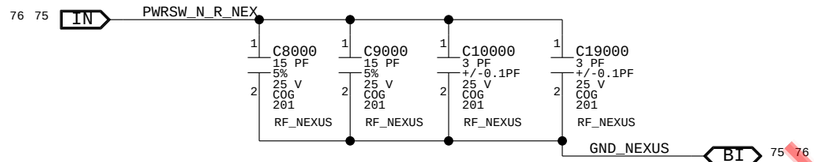
MXXXXXXX-001	MATL	REF_DES	DESCR.	BOM PROPERTY
M1110461-001	FR4	PCB1	PCB,STOCKTON,2LAYERS,NEXUS,FAB A	PCB

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

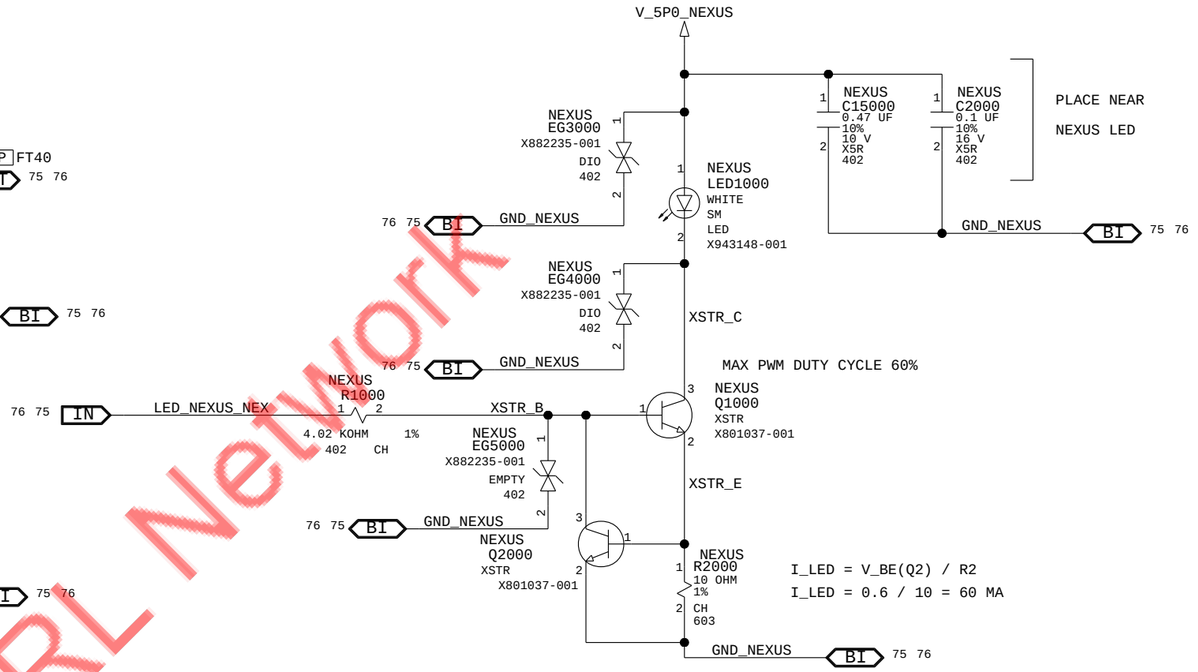
NEXUS LED AND POWER SWITCH

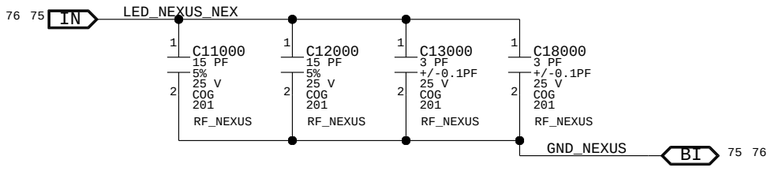
POWER SWITCH





NEXUS LED LIGHTING





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