# KINGSTON
# REV 1.01
## FAB G RETAIL

| PAGE | CONTENTS |
|---|---|
| [1] | COVER PAGE |
| [2] | SOC: PCIEX,CLOCKS,VIDEO |
| [3] | SOC: POWER: MEMIO,CPUCORE,NBCORE,MISC |
| [4] | SOC: POWER: V_GFXCORE,VSS |
| [5] | SOC: MEMORY PARTITION C & D |
| [6] | SOC: MEMORY PARTITION A & B |
| [7] | SOC: VSS, SPARE |
| [8] | SOC: DEBUG, SB SIGNALS |
| [9] | SOC: DECOUPLING |
| [10] | SOC: DECOUPLING |
| [11] | SOC: DECOUPLING |
| [12] | MEMORY: CHANNEL D |
| [13] | MEMORY: CHANNEL D |
| [14] | MEMORY: CHANNEL D, DECOUPLING & TERMINATION |
| [15] | MEMORY: CHANNEL C |
| [16] | MEMORY: CHANNEL C |
| [17] | MEMORY: CHANNEL C, DECOUPLING & TERMINATION |
| [18] | MEMORY: CHANNEL B |
| [19] | MEMORY: CHANNEL B |
| [20] | MEMORY: CHANNEL B, DECOUPLING & TERMINATION |
| [21] | MEMORY: CHANNEL A |
| [22] | MEMORY: CHANNEL A |
| [23] | MEMORY: CHANNEL A, DECOUPLING & TERMINATION |
| [24] | KIC: USB |
| [25] | KIC: PCIEX, SATA, VIDEO |
| [26] | KIC: SMC |
| [27] | KIC: FACET |
| [28] | KIC: POWER |
| [29] | KIC: CLOCKS, STRAPPING, POR |
| [30] | KIC: POWER |
| [31] | KIC: DECOUPLING |
| [32] | ETHERNET CONTROLLER |
| [33] | EMMC |
| [34] | CONN: RJ45,TOSLINK |
| [35] | CONN: USB (FRONT & REAR) |
| [36] | CONN: WIFI |
| [37] | CONN: HDMI IN |
| [38] | CONN: HDMI OUT |
| [39] | CONN: HDMI SUPPORT |
| [40] | CONN: ODD & HDD |
| [41] | CONN: FRONT PANEL, FAN, AUDIO |
| [42] | CONN: POWER |
| [43] | VREGS: INPUT & OUTPUT FILTERS |
| [44] | VREGS: CPUCORE |
| [45] | VREGS: GFXCORE |
| [46] | VREGS: GFXCORE OUTPUT PHASE 1 & 2 |
| [47] | VREGS: CPUCORE OUTPUT PHASE |
| [48] | VREGS: VTT TERMINATION |
| [49] | VREGS: NBCORE |
| [50] | VREGS: MEMIO |
| [51] | VREGS: V5P0 |
| [52] | VREGS: V3P3, VSOC1P8 |
| [53] | VREGS: VSOCPHY/VFUSE |
| [54] | VREGS: V_SB1P8, V_SB1P1 |
| [55] | VREGS: V3P3 STANDBY |
| [56] | VREGS: V1P1 STANDBY, V1P8 STANDBY |
| [57] | STANDBY GATES |
| [58] | IR BLASTER |
| [59] | I2C |
| [60] | MARGIN: SOCPHY,SOC1P8,MEMIO,NBCORE |
| [61] | V_BAT |
| [62] | MONITOR: NBCORE, MEMIO |
| [63] | MONITOR: VSOC1P8, VSOCPHY |
| [64] | MONITOR: V12P0 |
| [65] | CONN: FACET BOARD |
| [66] | CONN: SWITCHES |
| [67] | CONN: HDT |
| [68] | DEBUG: V_BURN |
| [69] | DEBUG: VR HEADERS & TEST POINTS |
| [70] | DEBUG: CONNECTORS |
| [71] | LABELS AND MOUNTING |
| [72] | BOM DEFINITIONS |

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
Mon Jan 18 12:03:57 2016

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 1/72 | 1/72 | G | 1.01 |

# SOC:PCIEX,CLOCKS,VIDEO

NOTES:
1.TO SUPPORT A PCIE WIFI INTERFACE (J3C1), POPULATE C6P6 AND C6P7
2.SEE PAGE 32 FOR 100MHZ CLOCK ROUTING INFORMATION

SOC_BASE

U7E1 IC

PCIE
1 of 17

X887732-001 BGA1443

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 36 | IN | PEX_WIFI_SOC_TP | AR19 | P_UMI_RX3_P | P_UMI_TX3_P | AP20 | PEX_SOC_WIFI_TP |
| 36 | IN | PEX_WIFI_SOC_TN | AR20 | P_UMI_RX3_N | P_UMI_TX3_N | AP21 | PEX_SOC_WIFI_TN |
| 32 | IN | PEX_ENET_SOC_TP_C | AN21 | P_UMI_RX2_P | P_UMI_TX2_P | AP23 | PEX_SOC_ENET_TP |
| 32 | IN | PEX_ENET_SOC_TN_C | AN22 | P_UMI_RX2_N | P_UMI_TX2_N | AP24 | PEX_SOC_ENET_TN |
| 25 | IN | PEX_L1_SB_SOC_TP_C | AV22 | P_UMI_RX1_P | P_UMI_TX1_P | AU23 | PEX_L1_SOC_SB_TP |
| 25 | IN | PEX_L1_SB_SOC_TN_C | AV23 | P_UMI_RX1_N | P_UMI_TX1_N | AU24 | PEX_L1_SOC_SB_TN |
| 25 | IN | PEX_L0_SB_SOC_TP_C | AT24 | P_UMI_RX0_P | P_UMI_TX0_P | AV25 | PEX_L0_SOC_SB_TP |
| 25 | IN | PEX_L0_SB_SOC_TN_C | AT25 | P_UMI_RX0_N | P_UMI_TX0_N | AV26 | PEX_L0_SOC_SB_TN |
| | | | | | P_RX_ZVDD_095 | AN19 | RX_ZVDD_095 |
| | | | | | P_TX_ZVDD_095 | AN18 | TX_ZVDD_095 |

C6P7 1 2 0.1 UF 10% 6.3 V EMPTY 402
C6P6 1 2 0.1 UF 10% 6.3 V EMPTY 402
C5T40 1 2 0.1 UF 10% 16 V XR5 402
C5T39 1 2 0.1 UF 10% 16 V XR5 402
C7E1 1 2 0.1 UF 10% 16 V XR5 402
C7E2 1 2 0.1 UF 10% 16 V XR5 402
C7E3 1 2 0.1 UF 10% 16 V XR5 402
C7E4 1 2 0.1 UF 10% 16 V XR5 402

PEX_SOC_WIFI_TP_C OUT 36
PEX_SOC_WIFI_TN_C OUT 36
PEX_SOC_ENET_TP_C OUT 32
PEX_SOC_ENET_TN_C OUT 32
PEX_L1_SOC_SB_TP_C OUT 25
PEX_L1_SOC_SB_TN_C OUT 25
PEX_L0_SOC_SB_TP_C OUT 25
PEX_L0_SOC_SB_TN_C OUT 25

R3T5 1 200 OHM 1% CH 402 2
R3T6 1 0 OHM 5% 2 EMPTY 402
V_SOCPHY

V_SOCPHY
R4T21 1 510 OHM 5% 2 CH 402
2 IN TEST25_N
USED BY AMD FOR SOC PLL CHARACTERIZATION
2 IN TEST25_P
R4T22 1 510 OHM 5% 2 CH 402

U7E1 IC

VIDEO
3 of 17

X887732-001 BGA1443

| | | | | |
|---|---|---|---|---|
| | BI | DP_CR_CLK | AP14 | DP_CR_CLK |
| 25 | IN | DP_L0_SB_SOC_TP_C | AU18 | DP1_RX0_P |
| 25 | IN | DP_L0_SB_SOC_TN_C | AU17 | DP1_RX0_N |
| 38 | OUT | TMDS_TX_DP0 | AU15 | DP0_TX2_P |
| 38 | OUT | TMDS_TX_DN0 | AU14 | DP0_TX2_N |
| 38 | OUT | TMDS_TX_DP2 | AV17 | DP0_TX0_P |
| 38 | OUT | TMDS_TX_DN2 | AV16 | DP0_TX0_N |
| 25 | IN | DP_L1_SB_SOC_TP_C | AT19 | DP1_RX1_P |
| 25 | IN | DP_L1_SB_SOC_TN_C | AT18 | DP1_RX1_N |
| 38 | OUT | TMDS_TX_DP1 | AT16 | DP0_TX1_P |
| 38 | OUT | TMDS_TX_DN1 | AT15 | DP0_TX1_N |
| | | DP_AUX_SOC_SB_TP | AT13 | DP1_AUX_P |
| | | DP_AUX_SOC_SB_TN | AT12 | DP1_AUX_N |
| 38 | OUT | SOC_DDC_CLK | AR14 | DP0_AUX_P |
| 38 | BI | SOC_DDC_DATA | AR13 | DP0_AUX_N |
| 38 | OUT | TMDS_TX_CLKP | AV14 | DP0_TX3_P |
| 38 | OUT | TMDS_TX_CLKN | AV13 | DP0_TX3_N |
| | | | AP15 | DP1_HPD |
| 34 | OUT | SPDIF_OUT | AP12 | SPDIF_OUT |
| | | | AU12 | DP0_HPD |
| | | DP_TX_CALR | AM12 | DP_TX_ZVSS |
| | | DP_AUX_CALR | AR12 | DP_AUX_ZVSS |
| | | DP_RX_CALR | AN13 | DP_RX_ZVSS |

25 IN DP_AUX_SB_SOC_TP_C — C3R25 1 2 0.1 UF 10% 16 V XR5 402
25 IN DP_AUX_SB_SOC_TN_C — C3R23 1 2 0.1 UF 10% 16 V XR5 402
25 OUT DP1_HPD
38 IN DP0_HPD

R5D15 1 100 KOHM 1% 2 CH 402
R3R6 1 0 OHM 5% 2 EMPTY 402
R3R11 1 150 OHMS 1% 2 CH 402
R3R13 1 200 OHM 1% 2 CH 402

U7E1 IC

CLOCKS
2 of 17

X887732-001 BGA1443

| | | | | |
|---|---|---|---|---|
| 29 | IN | SOC_NB_PEX_SS_100M_CLKP | AU26 | CLKIN_NB_P |
| 29 | IN | SOC_NB_PEX_SS_100M_CLKN | AU27 | CLKIN_NB_N |
| 29 | IN | SOC_SYNC_NS_100M_CLKP | AT21 | DISP_CLKIN_P |
| 29 | IN | SOC_SYNC_NS_100M_CLKN | AT22 | DISP_CLKIN_N |
| 29 | IN | SOC_AV_NS_100M_CLKP | AV19 | AV_CLKIN_P |
| 29 | IN | SOC_AV_NS_100M_CLKN | AV20 | AV_CLKIN_N |
| 29 | IN | SOC_PEX_SS_100M_CLKP | AU20 | CLKIN_P |
| 29 | IN | SOC_PEX_SS_100M_CLKN | AU21 | CLKIN_N |
| 2 | OUT | TEST25_P | AR23 | TEST25_P |
| 2 | OUT | TEST25_N | AR22 | TEST25_N |

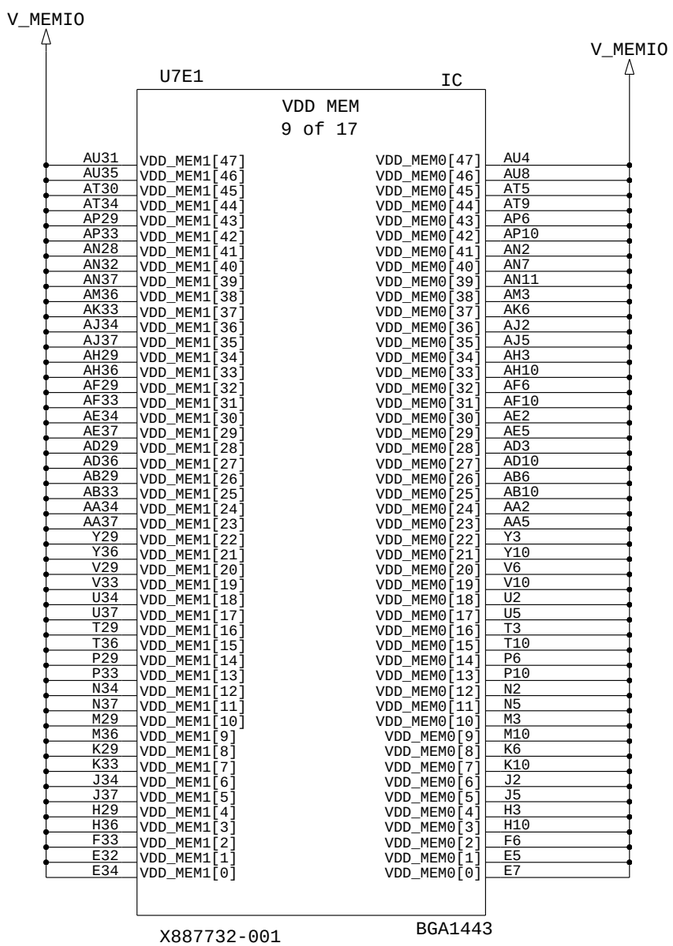
| DVI PCB ROUTING ORDERING | DP PCB ROUTING ORDERING | PIN NAME |
|---|---|---|
| TMDS CLOCK - | DP LANE 3 - | DP0_TX3_N |
| TMDS CLOCK + | DP LANE 3 + | DP0_TX3_P |
| TMDS DATA0 - | DP LANE 2 - | DP0_TX2_N |
| TMDS DATA0 + | DP LANE 2 + | DP0_TX2_P |
| TMDS DATA1 - | DP LANE 1 - | DP0_TX1_N |
| TMDS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

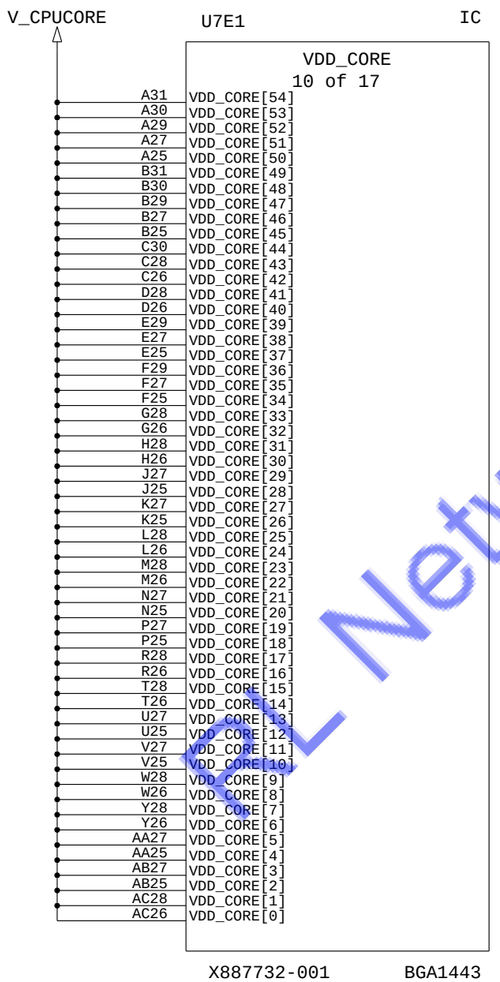
| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X941293-001 | IC | U7E1 | ARLENE,TSMC,SHINKO,SPIL,AMD PENANG,TYPICAL,79W TDP+,A0,AKA ROUTE 1 | ARLENE_SOC_R1 |
| X941294-001 | IC | U7E1 | ARLENE,TSMC,IBIDEN,SPIL,AMD PENANG,TYPICAL,79W TDP+,A0,AKA ROUTE 2 | ARLENE_SOC_R2 |
| X941295-001 | IC | U7E1 | ARLENE,TSMC,UMTC,SPIL,AMD PENANG,TYPICAL,79W TDP+,A0,AKA ROUTE 3 | ARLENE_SOC_R3 |
| X941296-001 | IC | U7E1 | ARLENE,TSMC,NOT DEFINED,SPIL,AMD PENANG,FF,79W TDP+,A0 | ARLENE_SOC_FF |
| X941297-001 | IC | U7E1 | ARLENE,TSMC,NOT DEFINED,SPIL,AMD PENANG,FS,79W TDP+,A0 | ARLENE_SOC_FS |
| X941298-001 | IC | U7E1 | ARLENE,TSMC,NOT DEFINED,SPIL,AMD PENANG,SF,79W TDP+,A0 | ARLENE_SOC_SF |
| X941299-001 | IC | U7E1 | ARLENE,TSMC,NOT DEFINED,SPIL,AMD PENANG,SS,79W TDP+,A0 | ARLENE_SOC_SS |

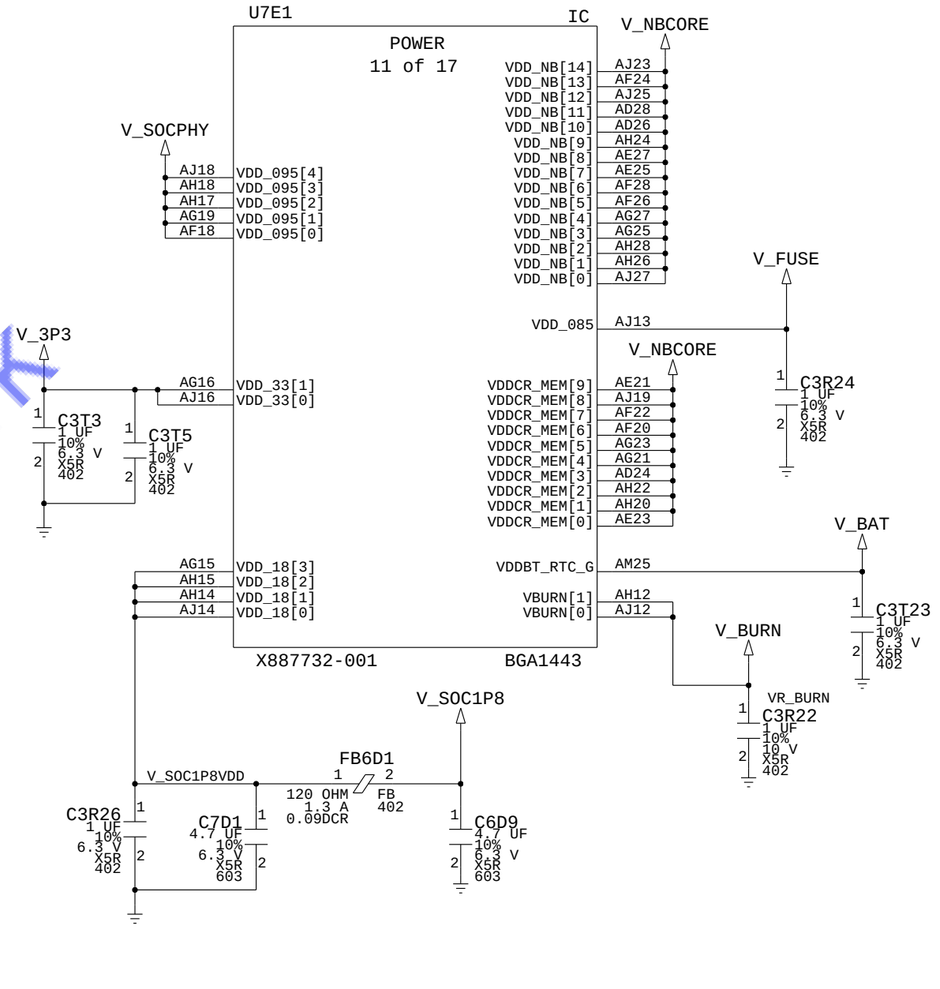


| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 2/72 | 2/72 | G | 1.01 |

# SOC: POWER: MEMIO,MEMCORE,CPUCORE,NBCORE,MISC



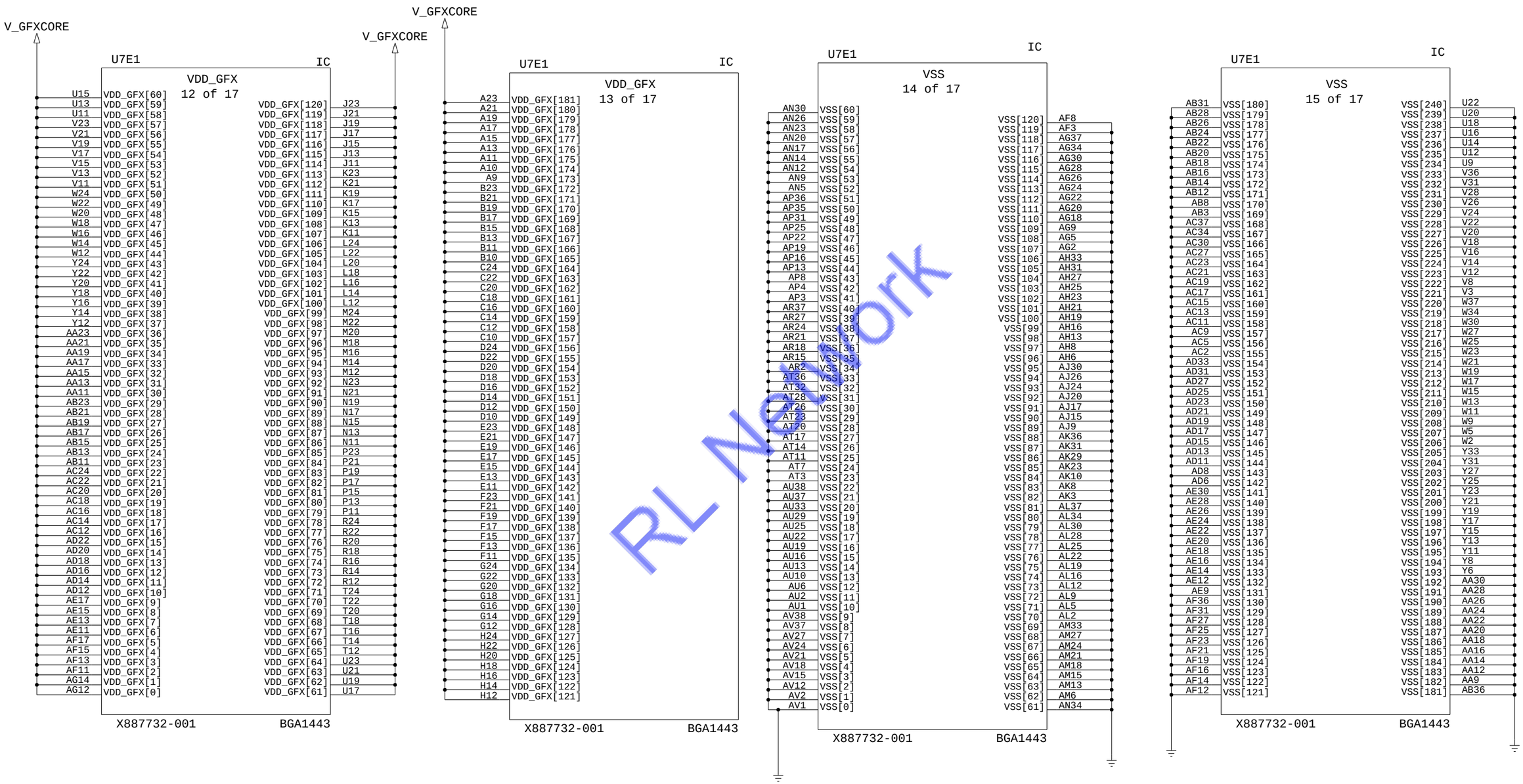






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 3/72 | 3/72 | G | 1.01 |

# SOC: POWER: V_GFXCORE,VSS






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 4/72 | 4/72 | G | 1.01 |

# SOC: MEMORY PARTITION C & D

U7E1 — IC — MEM CHANNEL D — 6 of 17

| | | |
|---|---|---|
| MD_DQ63 | P2 | MD_DQ63 |
| MD_DQ62 | W1 | MD_DQ62 |
| MD_DQ61 | N4 | MD_DQ61 |
| MD_DQ60 | V2 | MD_DQ60 |
| MD_DQ59 | N1 | MD_DQ59 |
| MD_DQ58 | W3 | MD_DQ58 |
| MD_DQ57 | P1 | MD_DQ57 |
| MD_DQ56 | W4 | MD_DQ56 |
| MD_DQ55 | Y2 | MD_DQ55 |
| MD_DQ54 | M2 | MD_DQ54 |
| MD_DQ53 | Y1 | MD_DQ53 |
| MD_DQ52 | M1 | MD_DQ52 |
| MD_DQ51 | T1 | MD_DQ51 |
| MD_DQ50 | N3 | MD_DQ50 |
| MD_DQ49 | U3 | MD_DQ49 |
| MD_DQ48 | R4 | MD_DQ48 |
| MD_DQ47 | M7 | MD_DQ47 |
| MD_DQ46 | R6 | MD_DQ46 |
| MD_DQ45 | M5 | MD_DQ45 |
| MD_DQ44 | P7 | MD_DQ44 |
| MD_DQ43 | M4 | MD_DQ43 |
| MD_DQ42 | R8 | MD_DQ42 |
| MD_DQ41 | N6 | MD_DQ41 |
| MD_DQ40 | T4 | MD_DQ40 |
| MD_DQ39 | L4 | MD_DQ39 |
| MD_DQ38 | H1 | MD_DQ38 |
| MD_DQ37 | L3 | MD_DQ37 |
| MD_DQ36 | G4 | MD_DQ36 |
| MD_DQ35 | L1 | MD_DQ35 |
| MD_DQ34 | H2 | MD_DQ34 |
| MD_DQ33 | K1 | MD_DQ33 |
| MD_DQ32 | J1 | MD_DQ32 |
| MD_DQ31 | H5 | MD_DQ31 |
| MD_DQ30 | K5 | MD_DQ30 |
| MD_DQ29 | H4 | MD_DQ29 |
| MD_DQ28 | K4 | MD_DQ28 |
| MD_DQ27 | G8 | MD_DQ27 |
| MD_DQ26 | L6 | MD_DQ26 |
| MD_DQ25 | H7 | MD_DQ25 |
| MD_DQ24 | L8 | MD_DQ24 |
| MD_DQ23 | G3 | MD_DQ23 |
| MD_DQ22 | C1 | MD_DQ22 |
| MD_DQ21 | G1 | MD_DQ21 |
| MD_DQ20 | C3 | MD_DQ20 |
| MD_DQ19 | F1 | MD_DQ19 |
| MD_DQ18 | D2 | MD_DQ18 |
| MD_DQ17 | E1 | MD_DQ17 |
| MD_DQ16 | D1 | MD_DQ16 |
| MD_DQ15 | C8 | MD_DQ15 |
| MD_DQ14 | D5 | MD_DQ14 |
| MD_DQ13 | E8 | MD_DQ13 |
| MD_DQ12 | G6 | MD_DQ12 |
| MD_DQ11 | D9 | MD_DQ11 |
| MD_DQ10 | F5 | MD_DQ10 |
| MD_DQ9 | B7 | MD_DQ9 |
| MD_DQ8 | F4 | MD_DQ8 |
| MD_DQ7 | A3 | MD_DQ7 |
| MD_DQ6 | D6 | MD_DQ6 |
| MD_DQ5 | B3 | MD_DQ5 |
| MD_DQ4 | A7 | MD_DQ4 |
| MD_DQ3 | D4 | MD_DQ3 |
| MD_DQ2 | C6 | MD_DQ2 |
| MD_DQ1 | C4 | MD_DQ1 |
| MD_DQ0 | A6 | MD_DQ0 |
| MD_DQSL_0_P | B5 | MD_DQSL_0_P |
| MD_DQSL_0_N | A5 | MD_DQSL_0_N |
| MD_DQSL_1_P | E3 | MD_DQSL_1_P |
| MD_DQSL_1_N | E4 | MD_DQSL_1_N |
| MD_DQSL_2_P | J3 | MD_DQSL_2_P |
| MD_DQSL_2_N | J4 | MD_DQSL_2_N |
| MD_DQSL_3_P | R1 | MD_DQSL_3_P |
| MD_DQSL_3_N | T2 | MD_DQSL_3_N |
| MD_DQSU_0_P | E6 | MD_DQSU_0_P |
| MD_DQSU_0_N | F7 | MD_DQSU_0_N |
| MD_DQSU_1_P | J8 | MD_DQSU_1_P |
| MD_DQSU_1_N | K7 | MD_DQSU_1_N |
| MD_DQSU_2_P | P4 | MD_DQSU_2_P |
| MD_DQSU_2_N | P5 | MD_DQSU_2_N |
| MD_DQSU_3_P | U1 | MD_DQSU_3_P |
| MD_DQSU_3_N | V1 | MD_DQSU_3_N |
| MD_DML_0 | A4 | MD_DML_0 |
| MD_DMU_0 | D7 | MD_DMU_0 |
| MD_DML_1 | F2 | MD_DML_1 |
| MD_DMU_1 | J6 | MD_DMU_1 |
| MD_DML_2 | K2 | MD_DML_2 |
| MD_DMU_2 | N8 | MD_DMU_2 |
| MD_DML_3 | U4 | MD_DML_3 |
| MD_DMU_3 | R3 | MD_DMU_3 |

X887732-001 BGA1443

V_MEMIO
R3R10 40.2 OHM 1% EMPTY 402
R3R5 40.2 OHM 1% EMPTY 402
R2R4 40.2 OHM 1% CH 402
R2R3 0 OHM 5% 402 EMPTY MD_VREFDQ_MM MD_ZVDDIO

| | | |
|---|---|---|
| MD_TEST | AG11 | MD_TEST |
| MD_CLK0_DP | K9 | MD_CLK0_DP |
| MD_CLK0_DN | J10 | MD_CLK0_DN |
| MD_A15 | V7 | MD_A<15> |
| MD_A14 | W10 | MD_A<14> |
| MD_A13 | U10 | MD_A<13> |
| MD_A12 | W6 | MD_A<12> |
| MD_A11 | Y5 | MD_A<11> |
| MD_A10 | N10 | MD_A<10> |
| MD_A9 | V9 | MD_A<9> |
| MD_A8 | W7 | MD_A<8> |
| MD_A7 | U7 | MD_A<7> |
| MD_A6 | Y7 | MD_A<6> |
| MD_A5 | V4 | MD_A<5> |
| MD_A4 | R10 | MD_A<4> |
| MD_A3 | U8 | MD_A<3> |
| MD_A2 | Y4 | MD_A<2> |
| MD_A1 | W8 | MD_A<1> |
| MD_A0 | T9 | MD_A<0> |
| MD_BA0 | T7 | MD_BA<0> |
| MD_BA1 | V5 | MD_BA<1> |
| MD_BA2 | U6 | MD_BA<2> |
| MD_CKE0 | N7 | MD_CKE0 |
| MD_CAS_N | L10 | MD_CAS_N |
| MD_RAS_N | M9 | MD_RAS_N |
| MD_CS0_N | R7 | MD_CS0_N |
| MD_ODT0 | T5 | MD_ODT0 |
| MD_WE_N | P9 | MD_WE_N |
| MD_RESET | Y9 | MD_RESET_N |
| MD_CKE1 | H9 | |
| MD_CS1_N | F9 | |
| MD_ODT1 | G10 | |
| MD_VREFDQ | G7 | |
| MD_ZVDDIO | J7 | |

U7E1 — IC — MEM CHANNEL C — 5 of 17

| | | |
|---|---|---|
| MC_DQ63 | AN8 | MC_DQ63 |
| MC_DQ62 | AM11 | MC_DQ62 |
| MC_DQ61 | AM8 | MC_DQ61 |
| MC_DQ60 | AN10 | MC_DQ60 |
| MC_DQ59 | AR7 | MC_DQ59 |
| MC_DQ58 | AP11 | MC_DQ58 |
| MC_DQ57 | AP9 | MC_DQ57 |
| MC_DQ56 | AR11 | MC_DQ56 |
| MC_DQ55 | AV11 | MC_DQ55 |
| MC_DQ54 | AR8 | MC_DQ54 |
| MC_DQ53 | AU11 | MC_DQ53 |
| MC_DQ52 | AV7 | MC_DQ52 |
| MC_DQ51 | AV10 | MC_DQ51 |
| MC_DQ50 | AT8 | MC_DQ50 |
| MC_DQ49 | AR10 | MC_DQ49 |
| MC_DQ48 | AV8 | MC_DQ48 |
| MC_DQ47 | AT2 | MC_DQ47 |
| MC_DQ46 | AN6 | MC_DQ46 |
| MC_DQ45 | AP2 | MC_DQ45 |
| MC_DQ44 | AN4 | MC_DQ44 |
| MC_DQ43 | AT1 | MC_DQ43 |
| MC_DQ42 | AM7 | MC_DQ42 |
| MC_DQ41 | AN3 | MC_DQ41 |
| MC_DQ40 | AP7 | MC_DQ40 |
| MC_DQ39 | AU7 | MC_DQ39 |
| MC_DQ38 | AV3 | MC_DQ38 |
| MC_DQ37 | AV6 | MC_DQ37 |
| MC_DQ36 | AU3 | MC_DQ36 |
| MC_DQ35 | AT6 | MC_DQ35 |
| MC_DQ34 | AR4 | MC_DQ34 |
| MC_DQ33 | AV5 | MC_DQ33 |
| MC_DQ32 | AT4 | MC_DQ32 |
| MC_DQ31 | AJ8 | MC_DQ31 |
| MC_DQ30 | AL6 | MC_DQ30 |
| MC_DQ29 | AH4 | MC_DQ29 |
| MC_DQ28 | AL8 | MC_DQ28 |
| MC_DQ27 | AH5 | MC_DQ27 |
| MC_DQ26 | AM5 | MC_DQ26 |
| MC_DQ25 | AJ6 | MC_DQ25 |
| MC_DQ24 | AM4 | MC_DQ24 |
| MC_DQ23 | AR1 | MC_DQ23 |
| MC_DQ22 | AK1 | MC_DQ22 |
| MC_DQ21 | AP1 | MC_DQ21 |
| MC_DQ20 | AJ4 | MC_DQ20 |
| MC_DQ19 | AN1 | MC_DQ19 |
| MC_DQ18 | AK2 | MC_DQ18 |
| MC_DQ17 | AM1 | MC_DQ17 |
| MC_DQ16 | AL1 | MC_DQ16 |
| MC_DQ15 | AC1 | MC_DQ15 |
| MC_DQ14 | AG4 | MC_DQ14 |
| MC_DQ13 | AB2 | MC_DQ13 |
| MC_DQ12 | AG3 | MC_DQ12 |
| MC_DQ11 | AB1 | MC_DQ11 |
| MC_DQ10 | AH1 | MC_DQ10 |
| MC_DQ9 | AC3 | MC_DQ9 |
| MC_DQ8 | AH2 | MC_DQ8 |
| MC_DQ7 | AJ3 | MC_DQ7 |
| MC_DQ6 | AA3 | MC_DQ6 |
| MC_DQ5 | AJ1 | MC_DQ5 |
| MC_DQ4 | AA1 | MC_DQ4 |
| MC_DQ3 | AE3 | MC_DQ3 |
| MC_DQ2 | AA4 | MC_DQ2 |
| MC_DQ1 | AE4 | MC_DQ1 |
| MC_DQ0 | AD1 | MC_DQ0 |
| MC_DQSL_0_P | AD2 | MC_DQSL_0_P |
| MC_DQSL_0_N | AE1 | MC_DQSL_0_N |
| MC_DQSL_1_P | AL3 | MC_DQSL_1_P |
| MC_DQSL_1_N | AL4 | MC_DQSL_1_N |
| MC_DQSL_2_P | AV4 | MC_DQSL_2_P |
| MC_DQSL_2_N | AU5 | MC_DQSL_2_N |
| MC_DQSL_3_P | AU9 | MC_DQSL_3_P |
| MC_DQSL_3_N | AV9 | MC_DQSL_3_N |
| MC_DQSU_0_P | AF2 | MC_DQSU_0_P |
| MC_DQSU_0_N | AG1 | MC_DQSU_0_N |
| MC_DQSU_1_P | AK4 | MC_DQSU_1_P |
| MC_DQSU_1_N | AK5 | MC_DQSU_1_N |
| MC_DQSU_2_P | AP5 | MC_DQSU_2_P |
| MC_DQSU_2_N | AR5 | MC_DQSU_2_N |
| MC_DQSU_3_P | AM9 | MC_DQSU_3_P |
| MC_DQSU_3_N | AM10 | MC_DQSU_3_N |
| MC_DML_0 | AF1 | MC_DML_0 |
| MC_DMU_0 | AC4 | MC_DMU_0 |
| MC_DML_1 | AM2 | MC_DML_1 |
| MC_DMU_1 | AK7 | MC_DMU_1 |
| MC_DML_2 | AR6 | MC_DML_2 |
| MC_DMU_2 | AR3 | MC_DMU_2 |
| MC_DML_3 | AT10 | MC_DML_3 |
| MC_DMU_3 | AR9 | MC_DMU_3 |

X887732-001 BGA1443

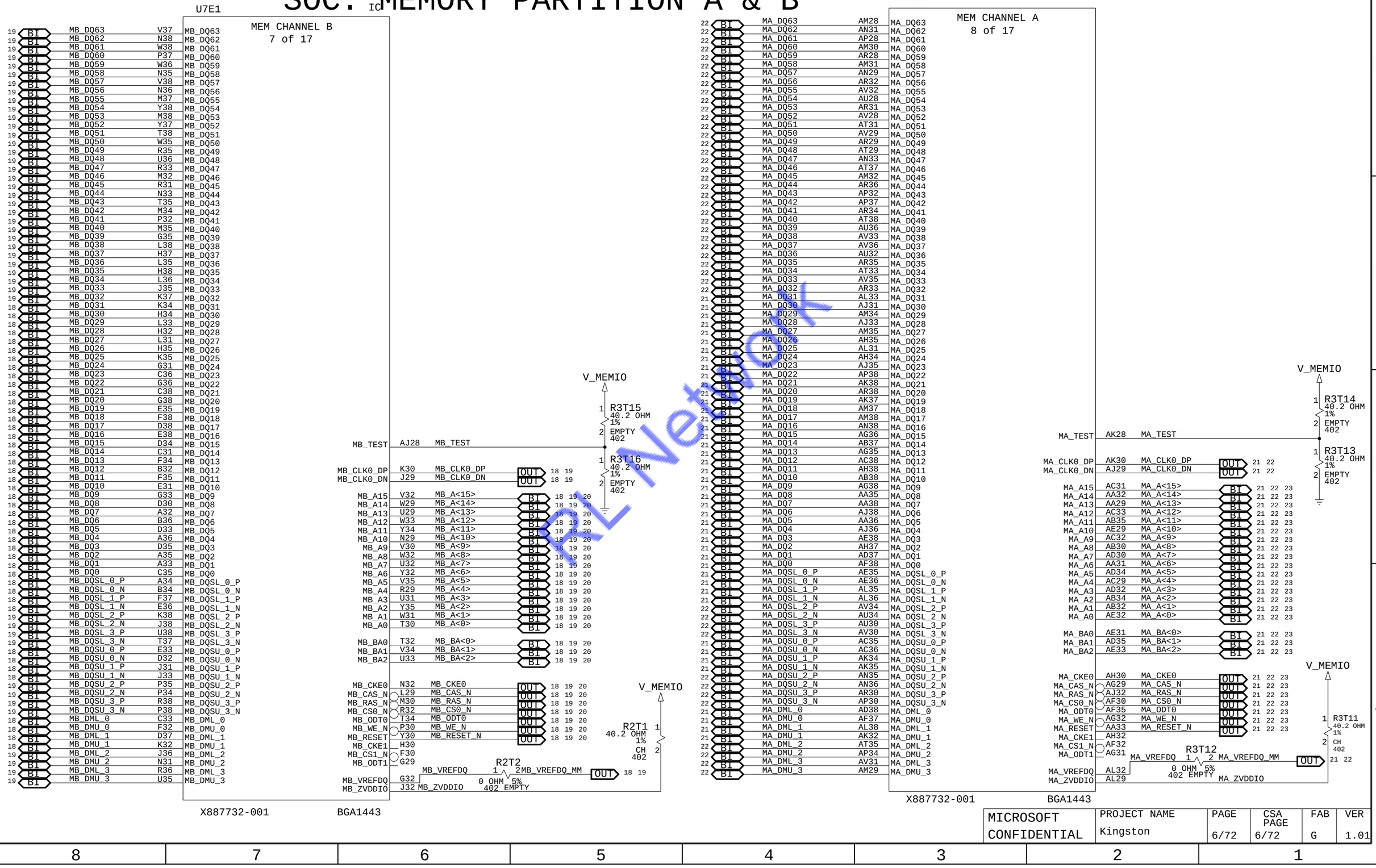
V_MEMIO
R3R9 40.2 OHM 1% EMPTY 402
R3R4 40.2 OHM 1% EMPTY 402
R3R7 40.2 OHM 1% CH 402
R3R1 0 OHM 5% 402 EMPTY MC_VREFDQ_MM MC_ZVDDIO

| | | |
|---|---|---|
| MC_TEST | AJ11 | MC_TEST |
| MC_CLK0_DP | AK9 | MC_CLK0_DP |
| MC_CLK0_DN | AJ10 | MC_CLK0_DN |
| MC_A15 | AC8 | MC_A<15> |
| MC_A14 | AA7 | MC_A<14> |
| MC_A13 | AA10 | MC_A<13> |
| MC_A12 | AC6 | MC_A<12> |
| MC_A11 | AB4 | MC_A<11> |
| MC_A10 | AE10 | MC_A<10> |
| MC_A9 | AC7 | MC_A<9> |
| MC_A8 | AB9 | MC_A<8> |
| MC_A7 | AD9 | MC_A<7> |
| MC_A6 | AA8 | MC_A<6> |
| MC_A5 | AD5 | MC_A<5> |
| MC_A4 | AC10 | MC_A<4> |
| MC_A3 | AD7 | MC_A<3> |
| MC_A2 | AB5 | MC_A<2> |
| MC_A1 | AB7 | MC_A<1> |
| MC_A0 | AE7 | MC_A<0> |
| MC_BA0 | AE8 | MC_BA<0> |
| MC_BA1 | AD4 | MC_BA<1> |
| MC_BA2 | AE6 | MC_BA<2> |
| MC_CKE0 | AH9 | MC_CKE0 |
| MC_CAS_N | AG10 | MC_CAS_N |
| MC_RAS_N | AJ7 | MC_RAS_N |
| MC_CS0_N | AF9 | MC_CS0_N |
| MC_ODT0 | AF4 | MC_ODT0 |
| MC_WE_N | AG7 | MC_WE_N |
| MC_RESET | AA6 | MC_RESET_N |
| MC_CKE1 | AH7 | |
| MC_CS1_N | AF7 | |
| MC_ODT1 | AG8 | |
| MC_VREFDQ | AL7 | |
| MC_ZVDDIO | AL10 | |



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 5/72 | 5/72 | G | 1.01 |

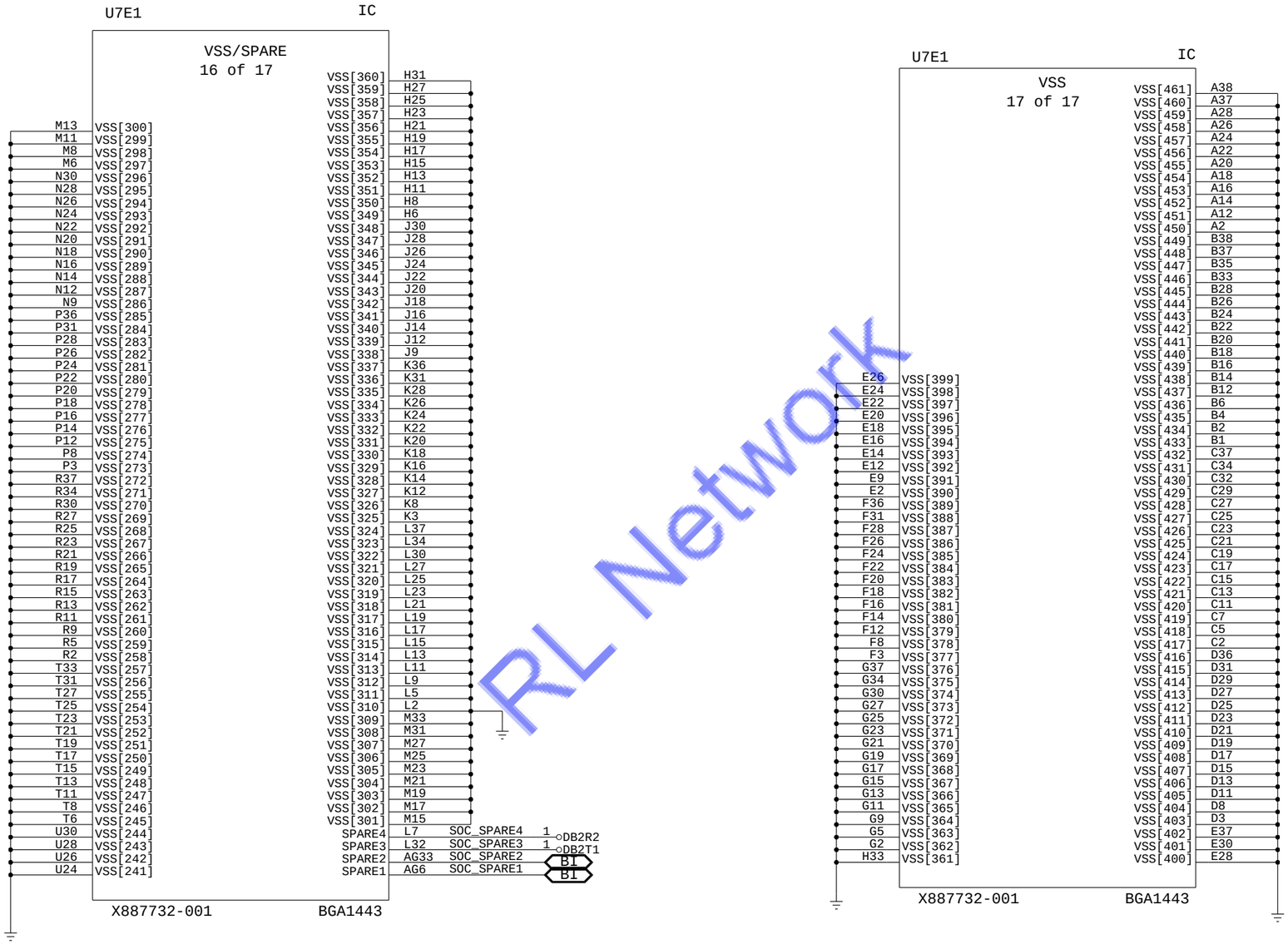
# SOC: MEMORY PARTITION A & B






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 6/72 | 6/72 | G | 1.01 |

# SOC: VSS,SPARE






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 7/72 | 7/72 | G | 1.01 |

# SOC:DEBUG,SB SIGNALS

V_SOC1P8
R4T1 10 KOHM 1% 2 EMPTY 402
R3T17 10 KOHM 1% 2 EMPTY 402
A0 BYPASS FOR ARLENE A0/A1 BRING UP
NO SECURITY RISK FOR B0

U7E1 IC
JTAG/DEBUG
4 of 17

B1 ATE_TSTCLK_EN AK11 ATE_TSTCLK_EN
AL24 DLY_PSP_RESET
A0_BYPASS AK16 A0_BYPASS
26 OUT SOC_THERMTRIP_N AN15 THERMTRIP*

TMON_CAL1 AM22 TMON_CAL1 1 FTP FT3T2
TMON_CAL0 AM20 TMON_CAL0 1 FTP FT3T1

RTC_RETAIL
29 IN X32K_X2_R R4T2 0 OHM 5% 402 CH
X32K_X2 AM23 X32K_X2
X32K_X1 AN24 X32K_X1

RTC_DEBUG R4T3 20 MOHM 5% 402 CH

GPIO_3P3_3 AK19 NEW_GPIO13
GPIO_3P3_2 AN25 NEW_GPIO12
GPIO_3P3_1 AK21 NEW_GPIO11
68 OUT VREG_BURN_EN AK20 NEW_GPIO10
GPIO_1P8_3 AL21 NEW_GPIO9
GPIO_1P8_2 AL20 NEW_GPIO8
GPIO_1P8_1 AM19 NEW_GPIO7
GPIO_1P8_0 AM17 NEW_GPIO6
GPIO_POSTOUT_5 AM26 NEW_GPIO5
GPIO_POSTOUT_4 AR25 NEW_GPIO4
GPIO_POSTOUT_3 AP27 NEW_GPIO3
GPIO_POSTOUT_2 AP26 NEW_GPIO2
GPIO_POSTOUT_1 AR26 NEW_GPIO1
GPIO_POSTOUT_0 AT27 NEW_GPIO0

PSEN AG13

RTC_DEBUG Y4T1 SM XTAL 32 KHZ
RTC_DEBUG C4T1 15 PF 5% 50 V NPO 402
RTC_DEBUG C4T3 15 PF 5% 50 V NPO 402

67 IN DBREQ_L AK26 DBREQ_N
67 OUT DBRDY AL26 DBRDY
67 IN TRST_L AN27 TRST_N
67 26 IN TMS AK24 TMS
TDO AK25 TDO
67 26 OUT TDI AK22 TDI
67 26 IN TCK AL23 TCK

V_SOC1P8
R3T8 10 KOHM 5% 2 EMPTY 402
R3T7 10 KOHM 1% 2 CH 402

67 26 IN SOC_RST_N AR17 RESET_N
67 44 26 IN SOC_PWR_OK AR16 PWROK

B1 SOC_TEST32_P AL18 TEST32_P
B1 SOC_TEST32_N AK18 TEST32_N
B1 SOC_TEST30_P AK17 TEST30_P
B1 SOC_TEST30_N AL17 TEST30_N
B1 SOC_TEST28_P AL15 TEST28_P
B1 SOC_TEST28_N AK15 TEST28_N
67 OUT TEST19 AJ21 TEST19
67 OUT TEST18 AL27 TEST18
TEST17 AL11 TEST17
B1 TEST16 AK13 TEST16
B1 TEST15 AL14 TEST15
B1 TEST14 AM16 TEST14
B1 TEST10 AK12 TEST10
B1 TEST9 AM14 TEST9
AJ22 TEST6

DEBUG R5T24 1 KOHM 5% CH 402
DEBUG R5T25 1 KOHM 5% CH 402
DEBUG R3R12 0 OHM 5% EMPTY 402
B1 SOC_TEST5 AK14 TEST5
B1 SOC_TEST4 AL13 TEST4

ALERT_N AN16 SP_SMC_INT_N 26 OUT

SVT E10 SVT 44 IN
SVD C9 SVD 44 B1
SVC F10 SVC 44 OUT
SID AP18 SID
SIC AP17 SIC
RTCCLK AK27 RTCCLK B1
M_VREF AH11 M_VREF 8 IN

VDDCR_MEM_SENSE AE19 SOC_MEMCORE_S B1
VDD_MEM0_SENSE AF5 SOC_MEMIO_S0 B1
VDD_MEM1_SENSE AF34 SOC_MEMIO_S1 DB2R4 B1
VSS_GFX_SENSE B8 SOC_GFXCPU_S_RTN 44 OUT
VDD_GFX_SENSE B9 SOC_GFXCORE_S 45 OUT
VDD_NB_SENSE AC25 SOC_NBCORE_S B1 DB2R3 DB2R1 V_SOCPHY
VDD_CORE_SENSE A8 SOC_CPUCORE_S 44 OUT
VDD_095_SENSE AG17

X887732-001 BGA1443

V_1P8STBY
R3T4 475 OHM 1% 2 EMPTY 402
R3T2 2 1 1% 243 OHM CH 402
SB_SOC_DATA B1 26
DEBUG C3T7 47 PF 5% 50 V 2 EMPTY 402
V_1P8STBY
R3T3 475 OHM 1% 2 EMPTY 402
R3T1 2 1 1% 243 OHM CH 402
SB_SOC_CLK IN 26
DEBUG C3T4 47 PF 5% 50 V 2 EMPTY 402

DB2R6 1
V_CPUCORE
DB2T2 1
V_GFXCORE
DB2R5 1
SENSE CONNECTION FOR VRTB

V_MEMIO
R3R2 1 KOHM 1% 2 CH 402
NET M_VREF_W LEFT FOR 8L MEMORY MARGINING
IN M_VREF_W R7D1 0 OHM 5% 402 EMPTY M_VREF OUT 8
R3R3 1 KOHM 1% 2 CH 402
C3R21 1 UF 10% 6.3 V X5R 402



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 8/72 | 8/72 | G | 1.01 |

# SOC: DECOUPLING

V_GFXCORE 29 0805 22UF

C2T35 1 2 22 UF 20% 6.3 V X5R 805
C2R38 1 2 22 UF 20% 6.3 V X5R 805
C2T15 1 2 22 UF 20% 6.3 V X5R 805
C2R11 1 2 22 UF 20% 6.3 V X5R 805
C2R12 1 2 22 UF 20% 6.3 V X5R 805

C2R37 1 2 22 UF 20% 6.3 V X5R 805
C2R33 1 2 22 UF 20% 6.3 V EMPTY 805
C2T14 1 2 22 UF 20% 6.3 V X5R 805
C2R21 1 2 22 UF 20% 6.3 V X5R 805
C2T12 1 2 22 UF 20% 6.3 V X5R 805
C2R19 1 2 22 UF 20% 6.3 V X5R 805
C2R18 1 2 22 UF 20% 6.3 V X5R 805

C2T31 1 2 22 UF 20% 6.3 V EMPTY 805
C2R10 1 2 22 UF 20% 6.3 V EMPTY 805
C2T11 1 2 22 UF 20% 6.3 V EMPTY 805
C2T33 1 2 22 UF 20% 6.3 V X5R 805
C2R36 1 2 22 UF 20% 6.3 V X5R 805
C2T13 1 2 22 UF 20% 6.3 V X5R 805
C2T30 1 2 22 UF 20% 6.3 V EMPTY 805
C2R13 1 2 22 UF 20% 6.3 V X5R 805

C2R17 1 2 22 UF 20% 6.3 V EMPTY 805
C2R16 1 2 22 UF 20% 6.3 V EMPTY 805
C2T34 1 2 22 UF 20% 6.3 V X5R 805
C2T10 1 2 22 UF 20% 6.3 V EMPTY 805
C2R34 1 2 22 UF 20% 6.3 V EMPTY 805
C2R35 1 2 22 UF 20% 6.3 V X5R 805
C2T32 1 2 22 UF 20% 6.3 V X5R 805
C2R9 1 2 22 UF 20% 6.3 V EMPTY 805
C2R20 1 2 22 UF 20% 6.3 V X5R 805

V_GFXCORE 44 0805 10UF

C3R17 1 2 10 UF 10% 6.3 V X5R 805
C2T6 1 2 10 UF 10% 6.3 V X5R 805
C2T7 1 2 10 UF 10% 6.3 V X5R 805
C2T8 1 2 10 UF 10% 6.3 V X5R 805
C2T9 1 2 10 UF 10% 6.3 V X5R 805
C3T2 1 2 10 UF 10% 6.3 V X5R 805
C3R18 1 2 10 UF 10% 6.3 V X5R 805
C3R19 1 2 10 UF 10% 6.3 V X5R 805
C2T40 1 2 10 UF 10% 6.3 V X5R 805

C3R20 1 2 10 UF 10% 6.3 V X5R 805
C2T1 1 2 10 UF 10% 6.3 V X5R 805
C2T2 1 2 10 UF 10% 6.3 V X5R 805
C2T41 1 2 10 UF 10% 6.3 V X5R 805
C2T16 1 2 10 UF 10% 6.3 V X5R 805
C3T1 1 2 10 UF 10% 6.3 V X5R 805
C2R24 1 2 10 UF 10% 6.3 V X5R 805
C2R25 1 2 10 UF 10% 6.3 V X5R 805
C2R26 1 2 10 UF 10% 6.3 V X5R 805
C2R27 1 2 10 UF 10% 6.3 V X5R 805

C2R28 1 2 10 UF 10% 6.3 V X5R 805
C2R29 1 2 10 UF 10% 6.3 V X5R 805
C2R30 1 2 10 UF 10% 6.3 V X5R 805
C2R31 1 2 10 UF 10% 6.3 V X5R 805
C2R32 1 2 10 UF 10% 6.3 V X5R 805
C2T5 1 2 10 UF 10% 6.3 V X5R 805
C2T4 1 2 10 UF 10% 6.3 V X5R 805
C2T3 1 2 10 UF 10% 6.3 V X5R 805
C2T17 1 2 10 UF 10% 6.3 V X5R 805
C2T18 1 2 10 UF 10% 6.3 V X5R 805

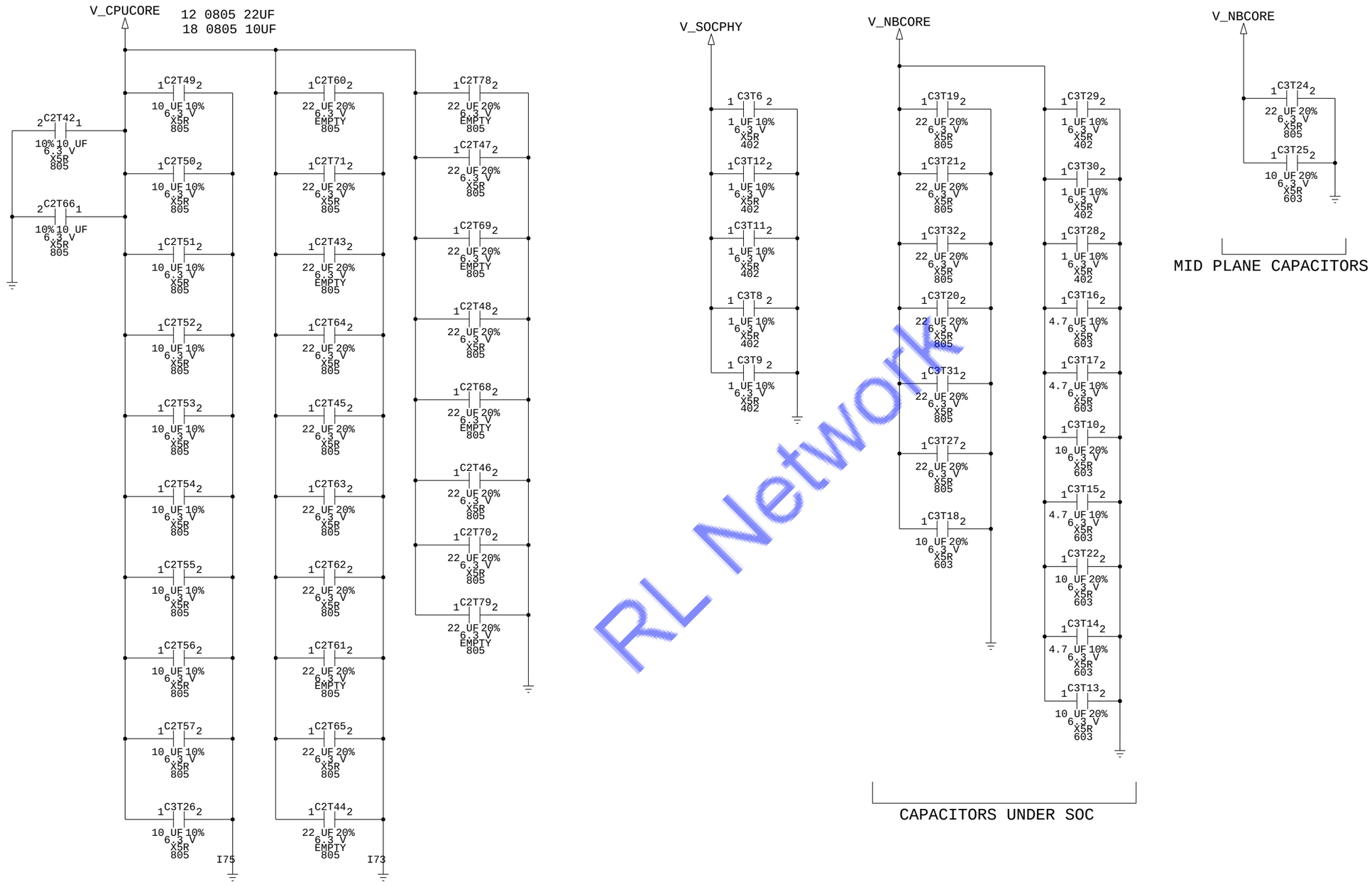
C2T19 1 2 10 UF 10% 6.3 V X5R 805
C2T20 1 2 10 UF 10% 6.3 V X5R 805
C2T21 1 2 10 UF 10% 6.3 V X5R 805
C2T22 1 2 10 UF 10% 6.3 V X5R 805
C2T36 1 2 10 UF 10% 6.3 V X5R 805
C2T38 1 2 10 UF 10% 6.3 V X5R 805
C2T23 1 2 10 UF 10% 6.3 V X5R 805
C2T24 1 2 10 UF 10% 6.3 V X5R 805
C2T25 1 2 10 UF 10% 6.3 V X5R 805
C2T26 1 2 10 UF 10% 6.3 V X5R 805

C2T28 1 2 10 UF 10% 6.3 V X5R 805
C2T29 1 2 10 UF 10% 6.3 V X5R 805
C2T37 1 2 10 UF 10% 6.3 V X5R 805
C2T39 1 2 10 UF 10% 6.3 V X5R 805
C2T27 1 2 10 UF 10% 6.3 V X5R 805



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 9/72 | 9/72 | G | 1.01 |

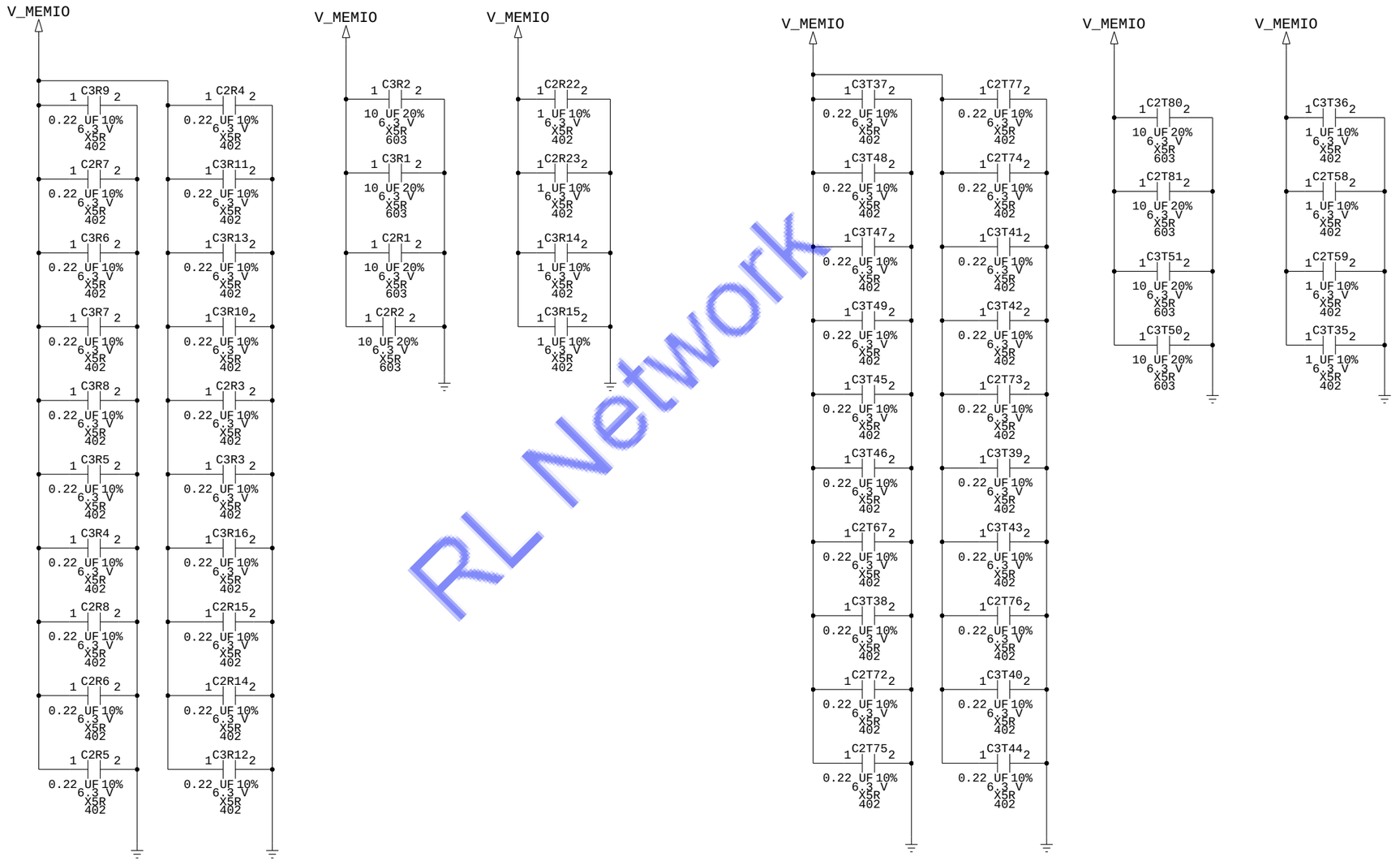
# SOC: DECOUPLING






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 10/72 | 10/72 | G | 1.01 |

# SOC: DECOUPLING

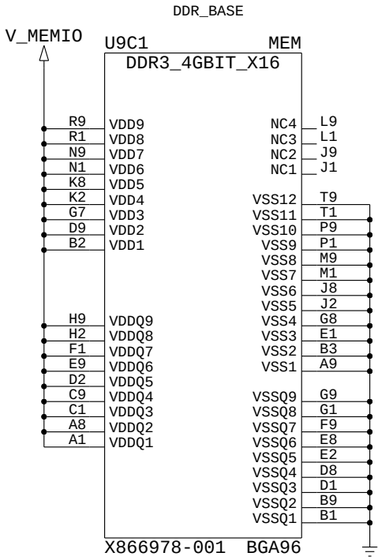


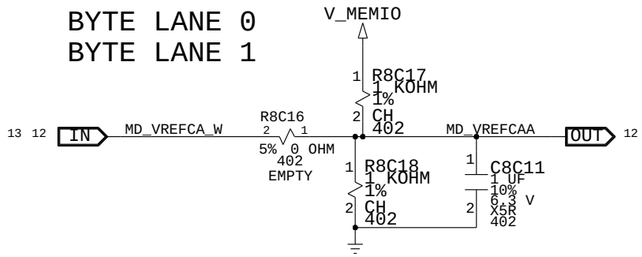


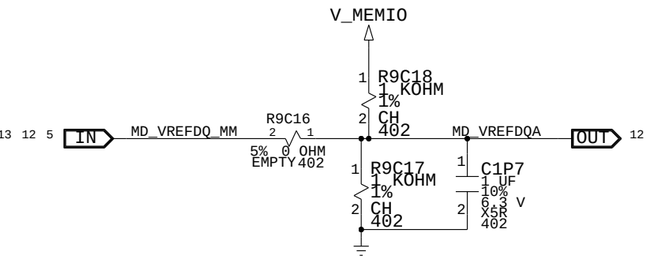

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 11/72 | 11/72 | G | 1.01 |

# MEMORY: CHANNEL D

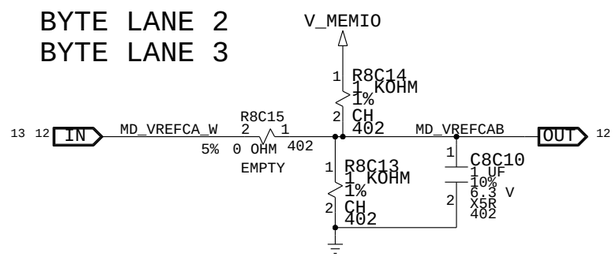
BYTE LANE 0
BYTE LANE 1

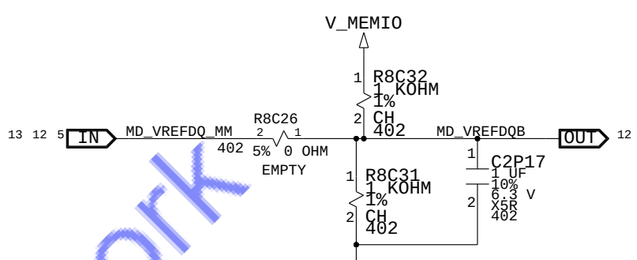


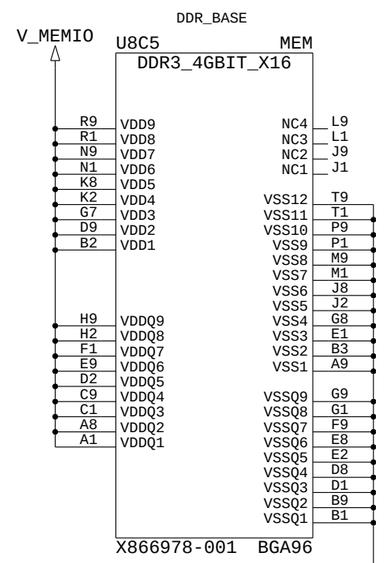



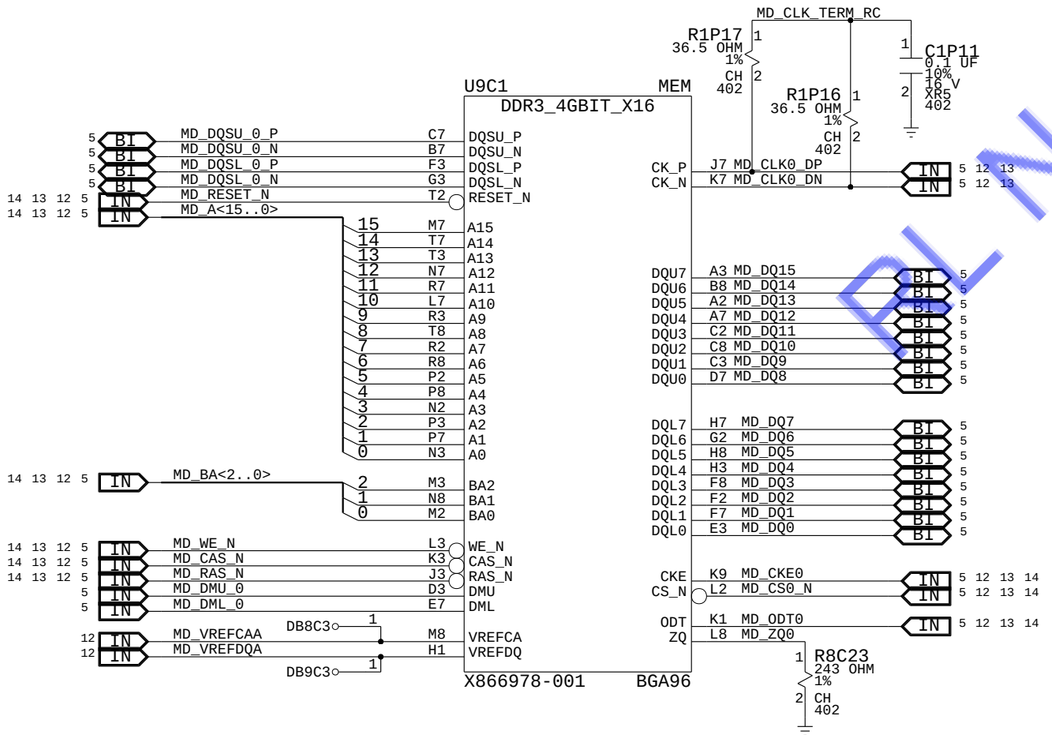



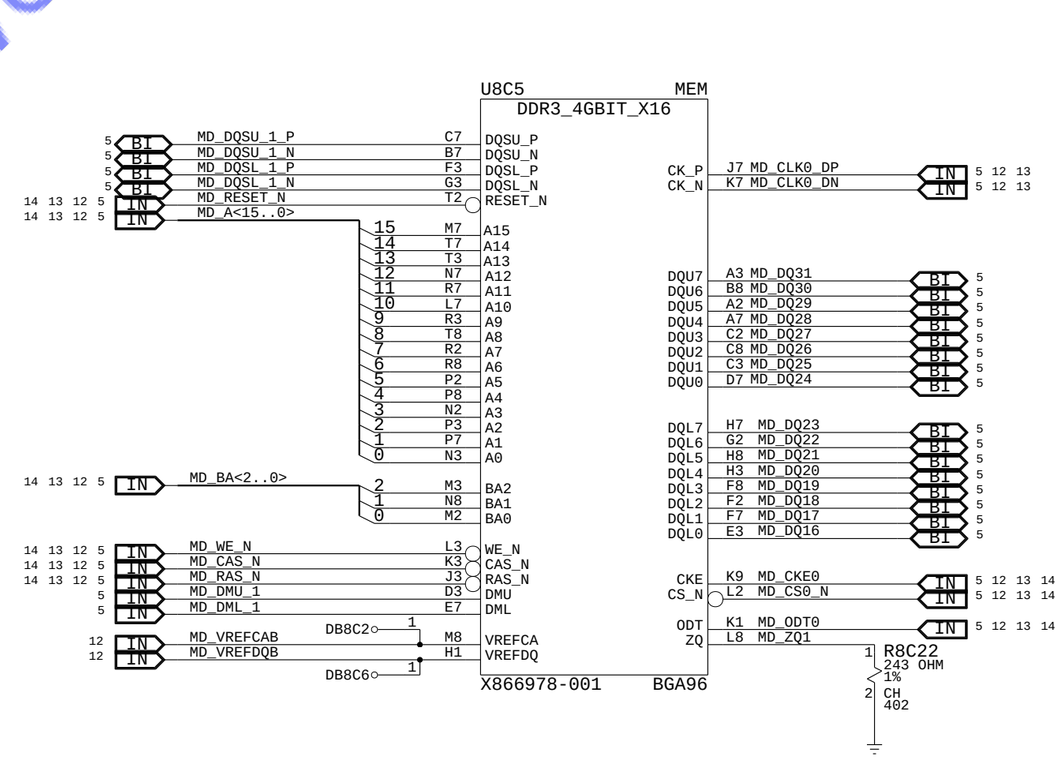

BYTE LANE 2
BYTE LANE 3



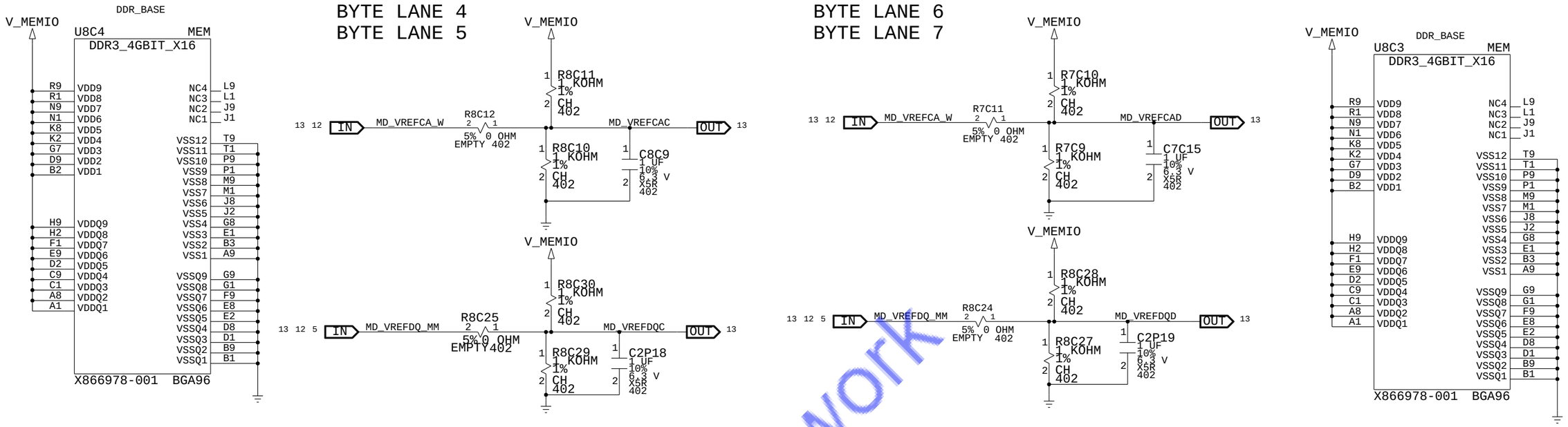


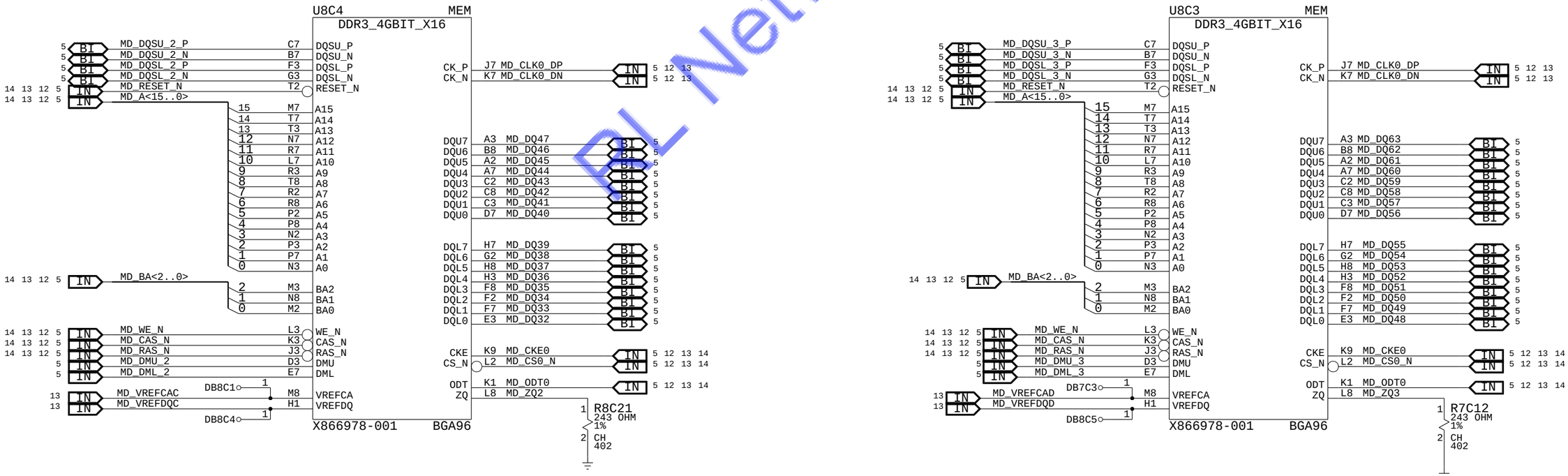

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 12/72 | 12/72 | G | 1.01 |

# MEMORY: CHANNEL D

BYTE LANE 4
BYTE LANE 5

BYTE LANE 6
BYTE LANE 7

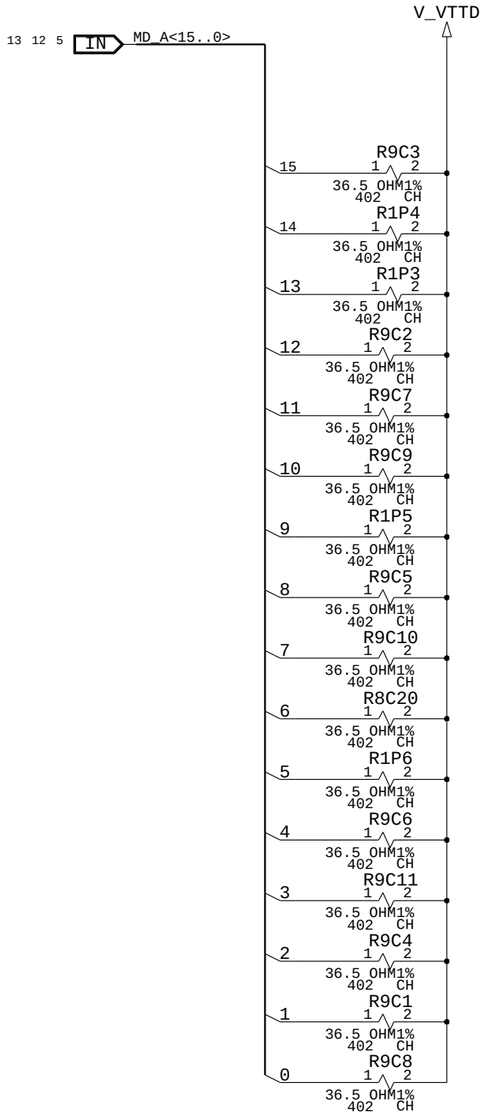


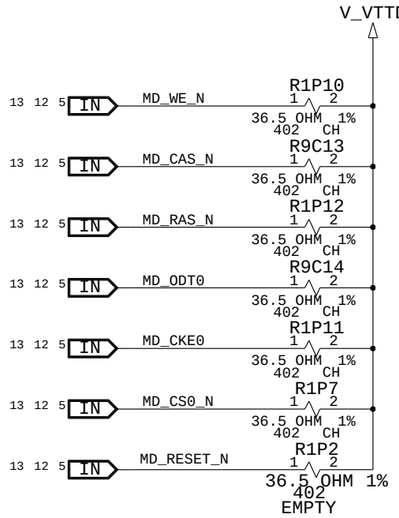






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 13/72 | 13/72 | G | 1.01 |

# MEMORY: CHANNEL D,DECOUPLING & TERMINATION

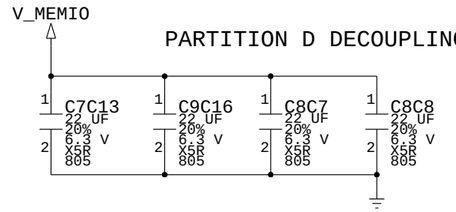


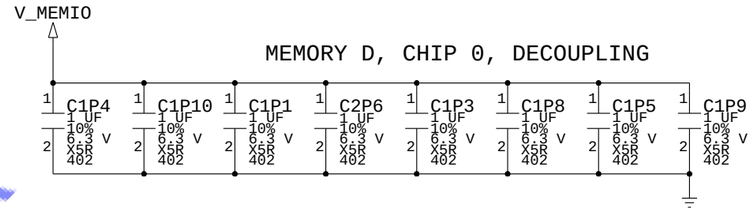



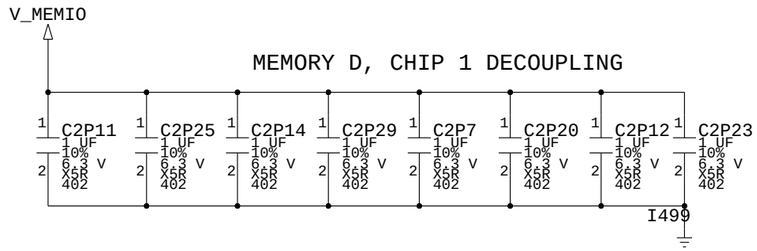


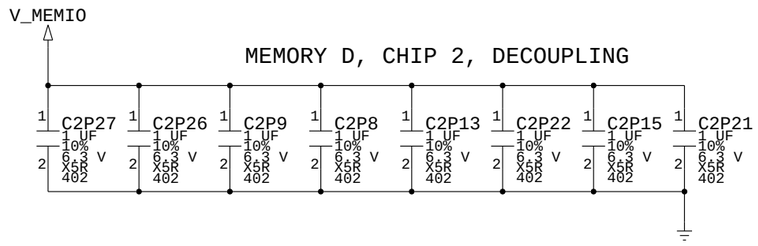


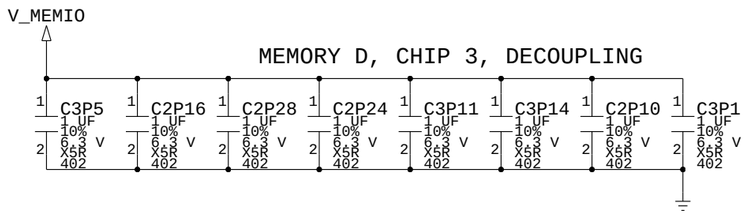
| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X903915-001 | IC | U9C1,U8C5,U8C4,U8C3,U7C2,U7C1,U6D2,U6D3 | MEM,SM,4GB,DDR3,E-DIE,20NM,2133MHZ,96FBGA,K4W4G1646E-BC1A,TYP,SAMSUNG | DDR_SAMSUNG |
| X903915-001 | IC | U9F5,U8F3,U8F2,U8F1,U7F2,U7F1,U6E5,U6E3 | MEM,SM,4GB,DDR3,E-DIE,20NM,2133MHZ,96FBGA,K4W4G1646E-BC1A,TYP,SAMSUNG | DDR_SAMSUNG |
| X903814-001 | IC | U9C1,U8C5,U8C4,U8C3,U7C2,U7C1,U6D2,U6D3 | MEM,SM,4GB,DDR3,POLARIS,25NM,2133MHZ,FBGA96,H5TQ4G63CFR-TEC,TYP,HYNIX | DDR_HYNIX_25NM |
| X903814-001 | IC | U9F5,U8F3,U8F2,U8F1,U7F2,U7F1,U6E5,U6E3 | MEM,SM,4GB,DDR3,POLARIS,25NM,2133MHZ,FBGA96,H5TQ4G63CFR-TEC,TYP,HYNIX | DDR_HYNIX_25NM |
| X945095-001 | IC | U9C1,U8C5,U8C4,U8C3,U7C2,U7C1,U6D2,U6D3 | MEM,SM,4GB,256X16,DDR3,96 FBGA,NT5CB256M16DP-FL,TYP | DDR_NANYA_30NM |
| X945095-001 | IC | U9F5,U8F3,U8F2,U8F1,U7F2,U7F1,U6E5,U6E3 | MEM,SM,4GB,256X16,DDR3,96 FBGA,NT5CB256M16DP-FL,TYP | DDR_NANYA_30NM |



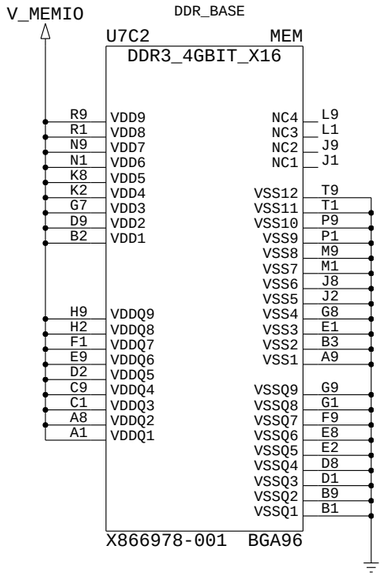



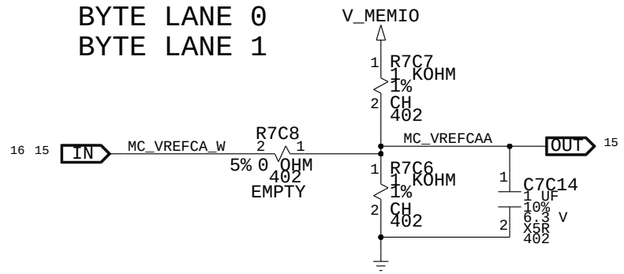


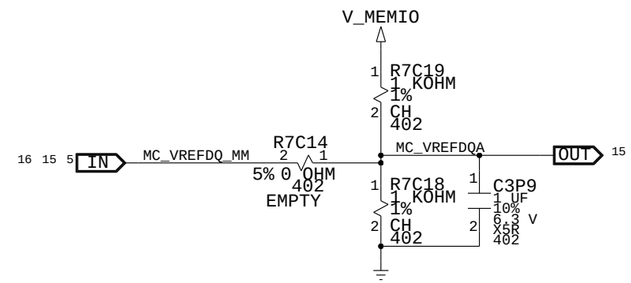

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 14/72 | 14/72 | G | 1.01 |

# MEMORY: CHANNEL C

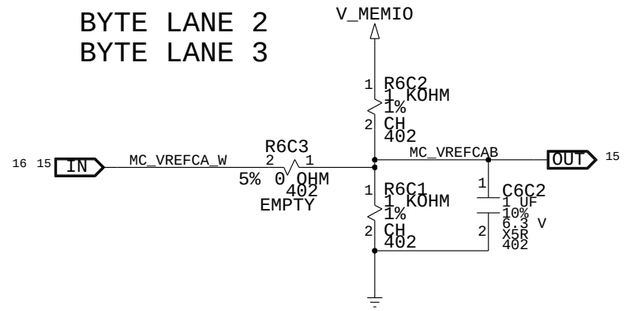
BYTE LANE 0
BYTE LANE 1

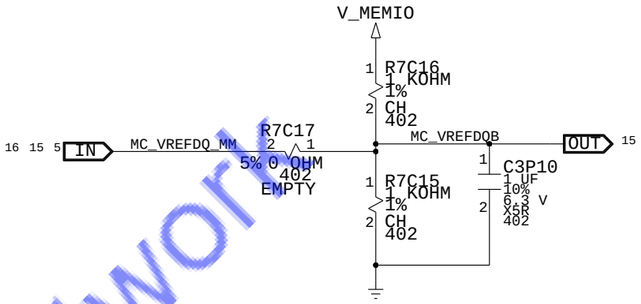


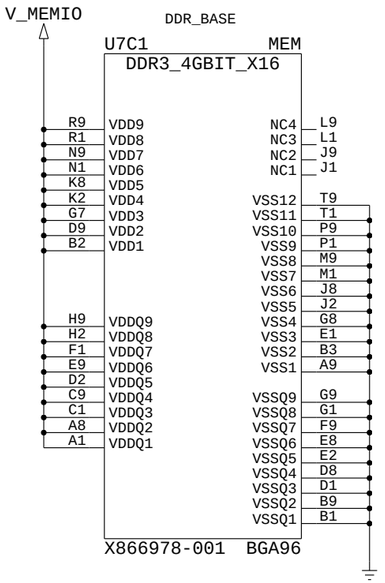



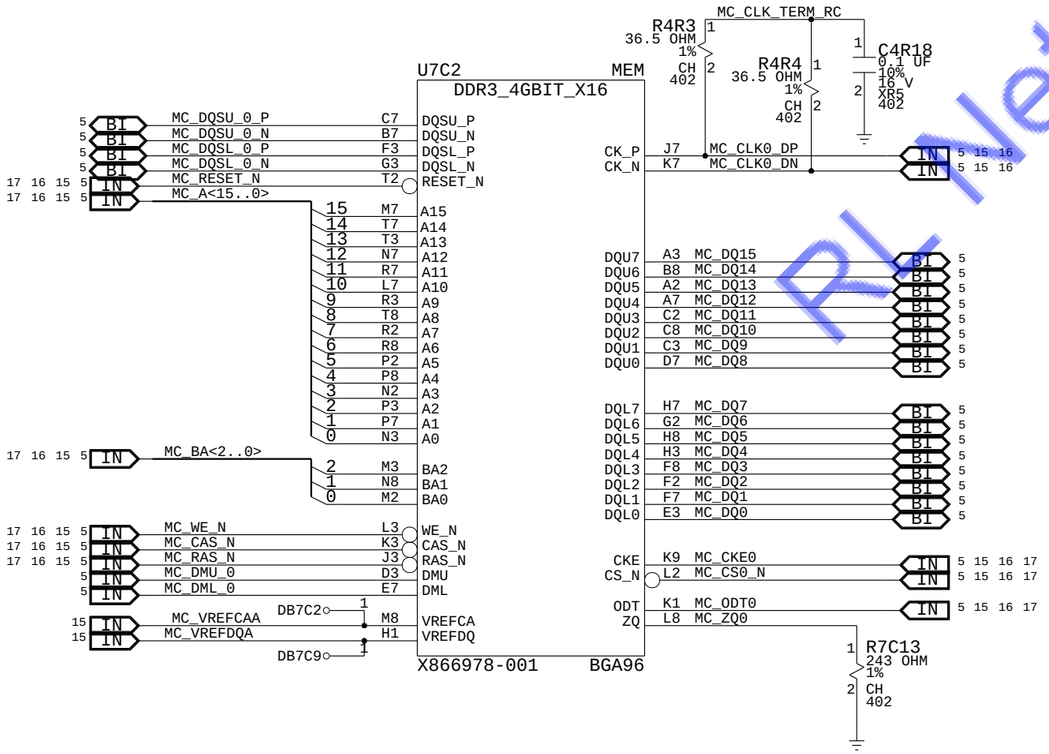



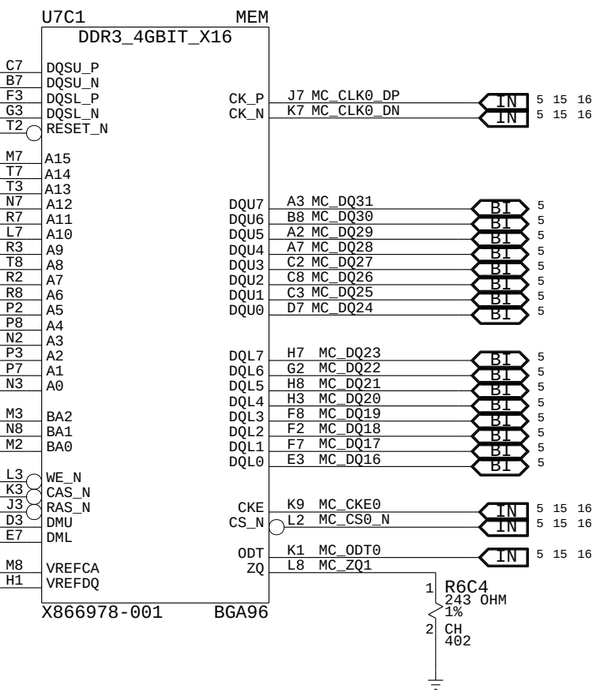

BYTE LANE 2
BYTE LANE 3



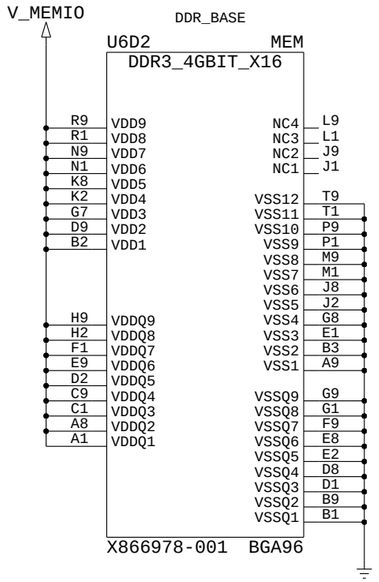



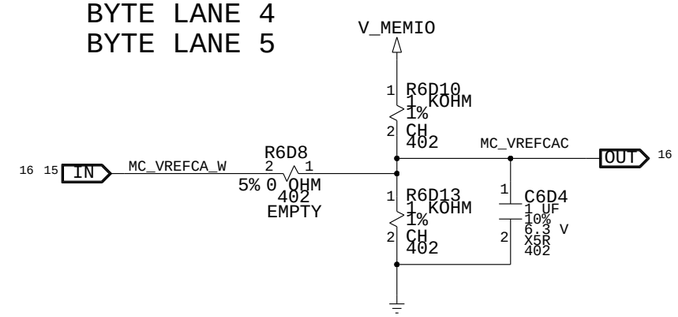


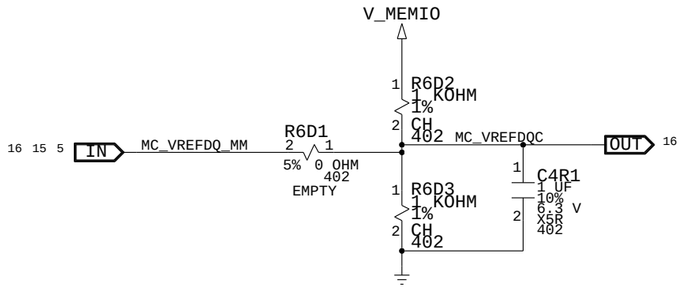

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 15/72 | 15/72 | G | 1.01 |

# MEMORY: CHANNEL C

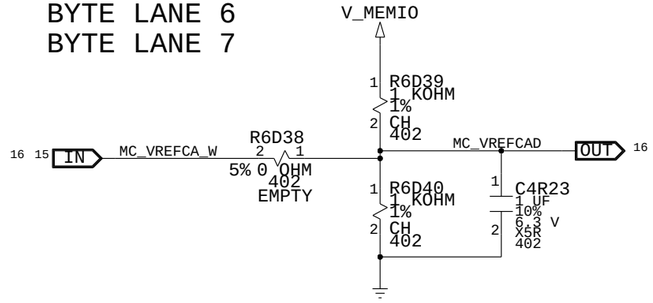


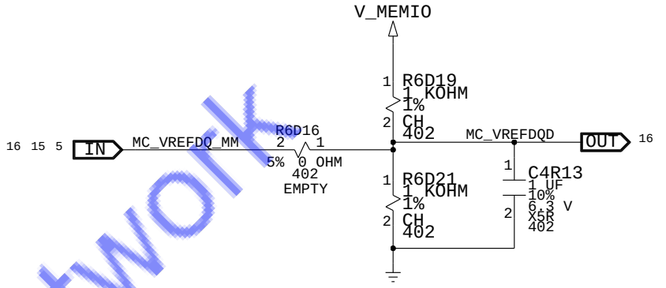

BYTE LANE 4
BYTE LANE 5

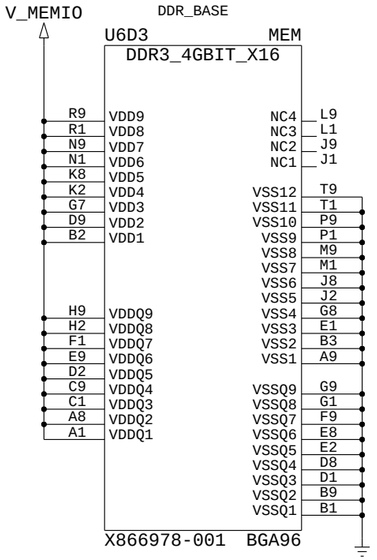


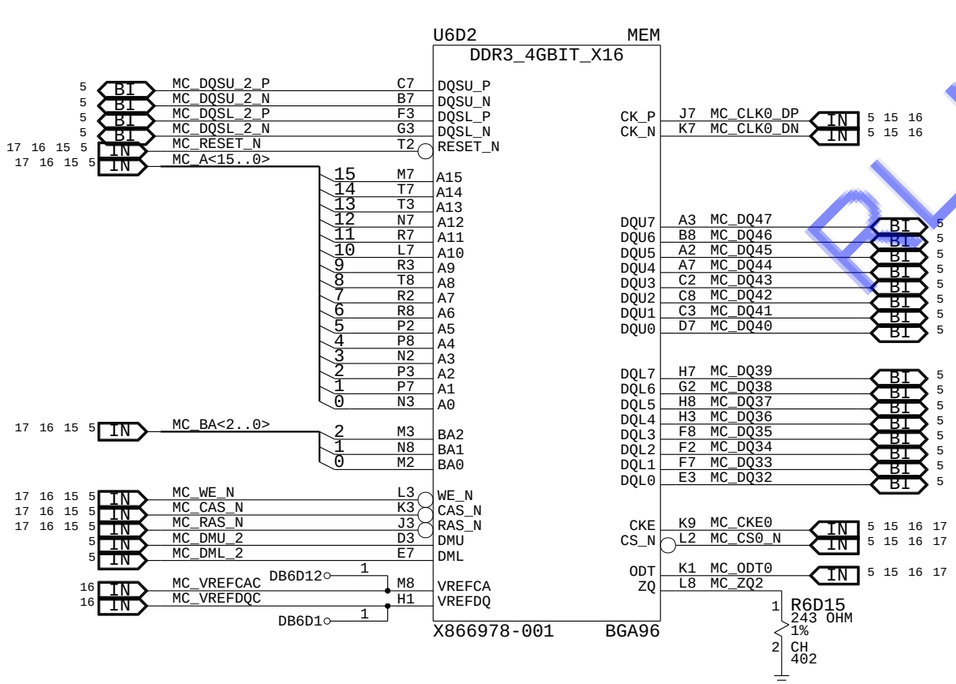



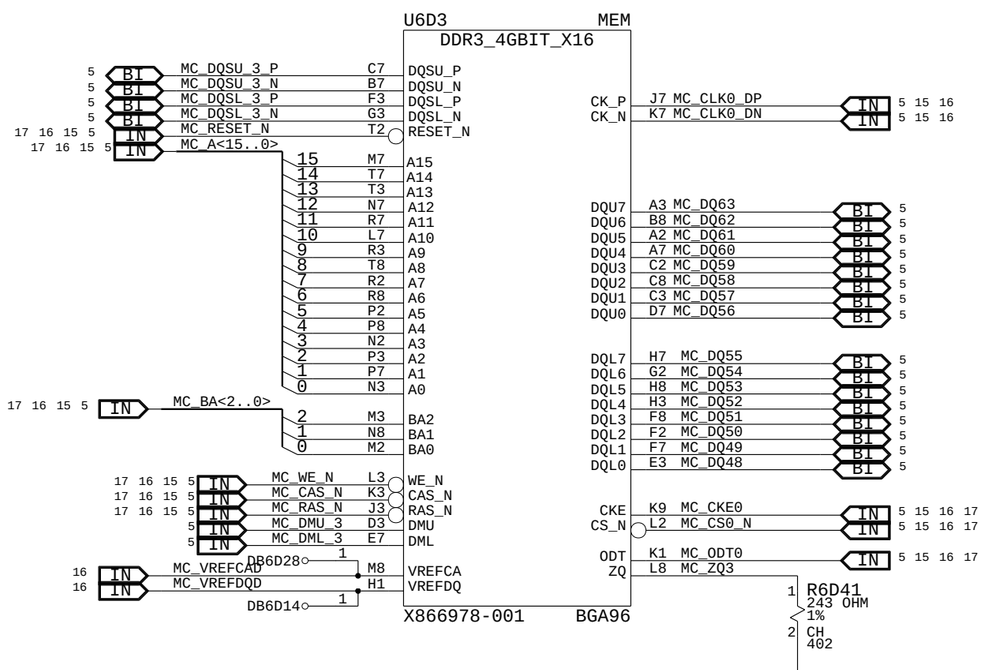

BYTE LANE 6
BYTE LANE 7



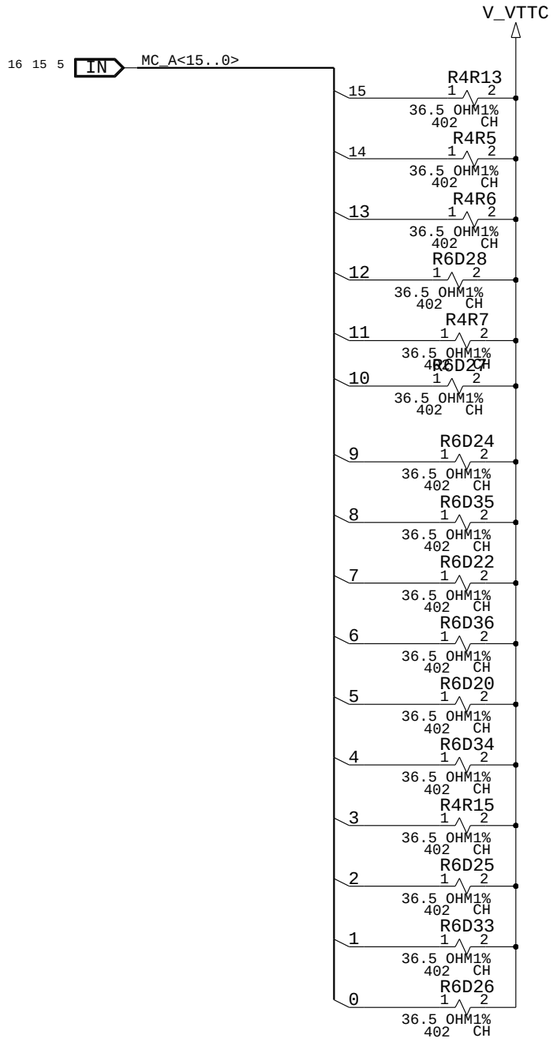



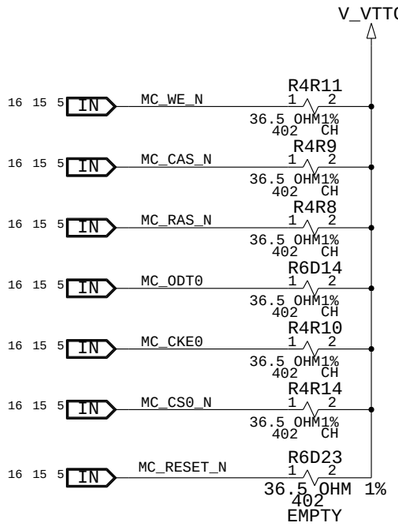



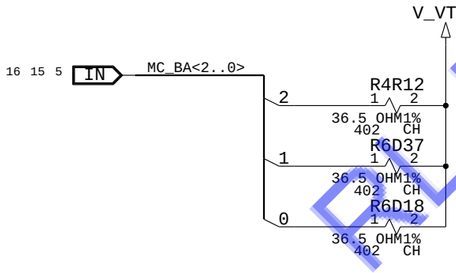


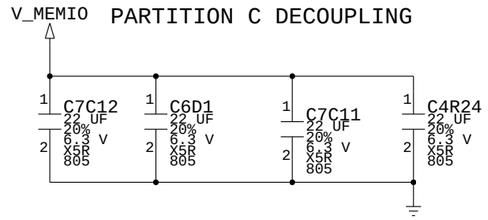

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 16/72 | 16/72 | G | 1.01 |

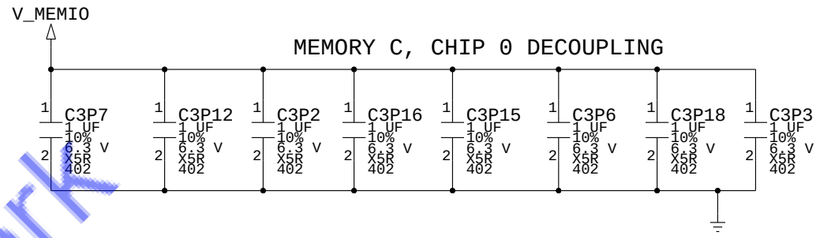
# MEMORY: CHANNEL C,DECOUPLING & TERMINATION

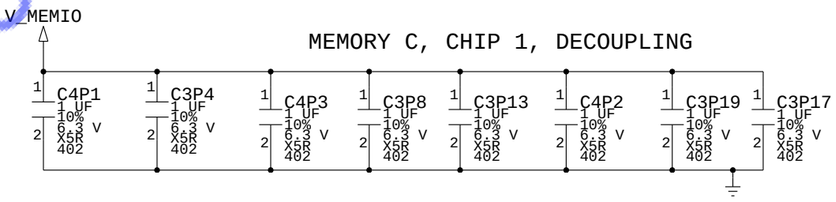


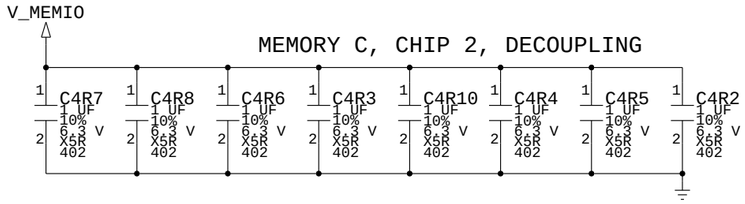



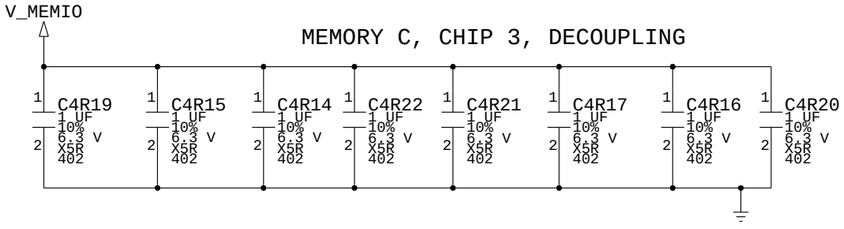



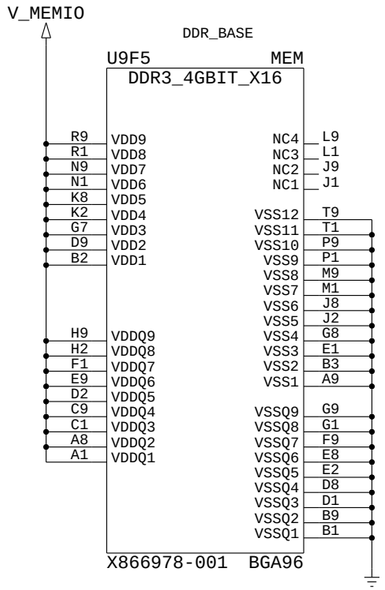



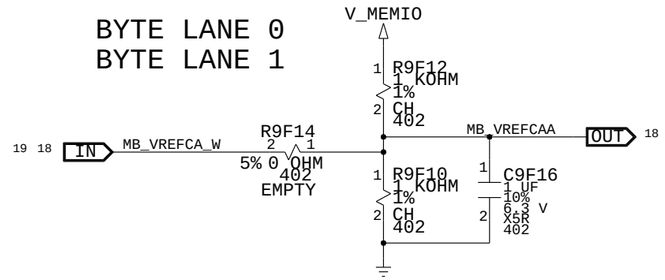


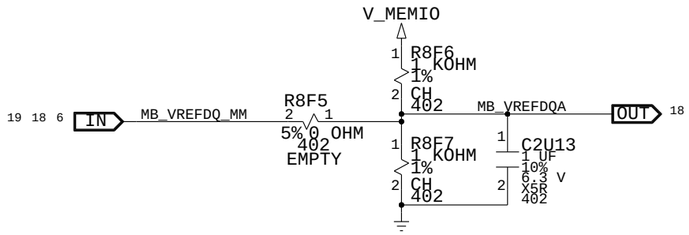

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 17/72 | 17/72 | G | 1.01 |

# MEMORY: CHANNEL B

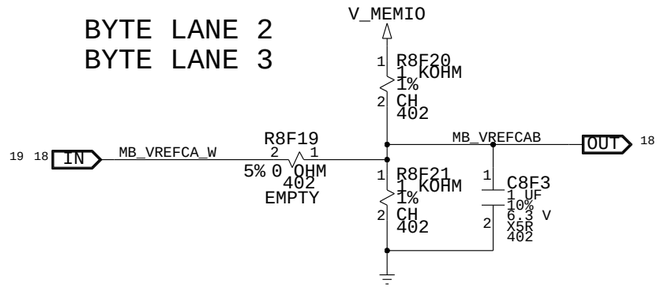
BYTE LANE 0
BYTE LANE 1

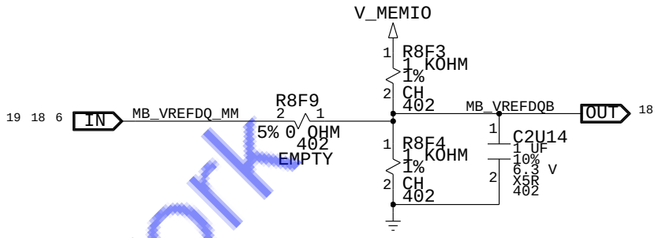


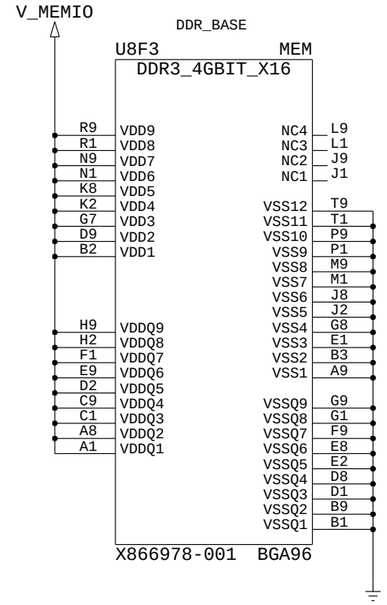



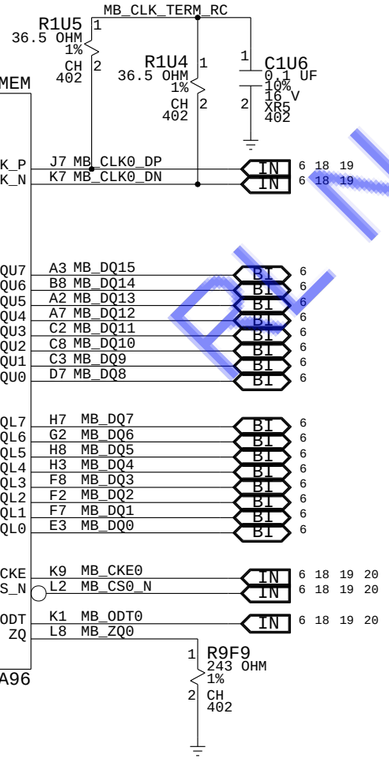



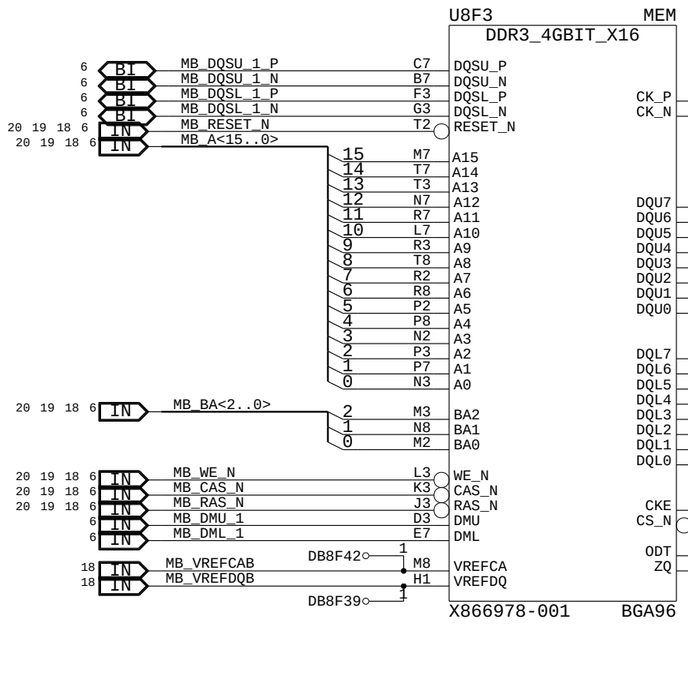

BYTE LANE 2
BYTE LANE 3



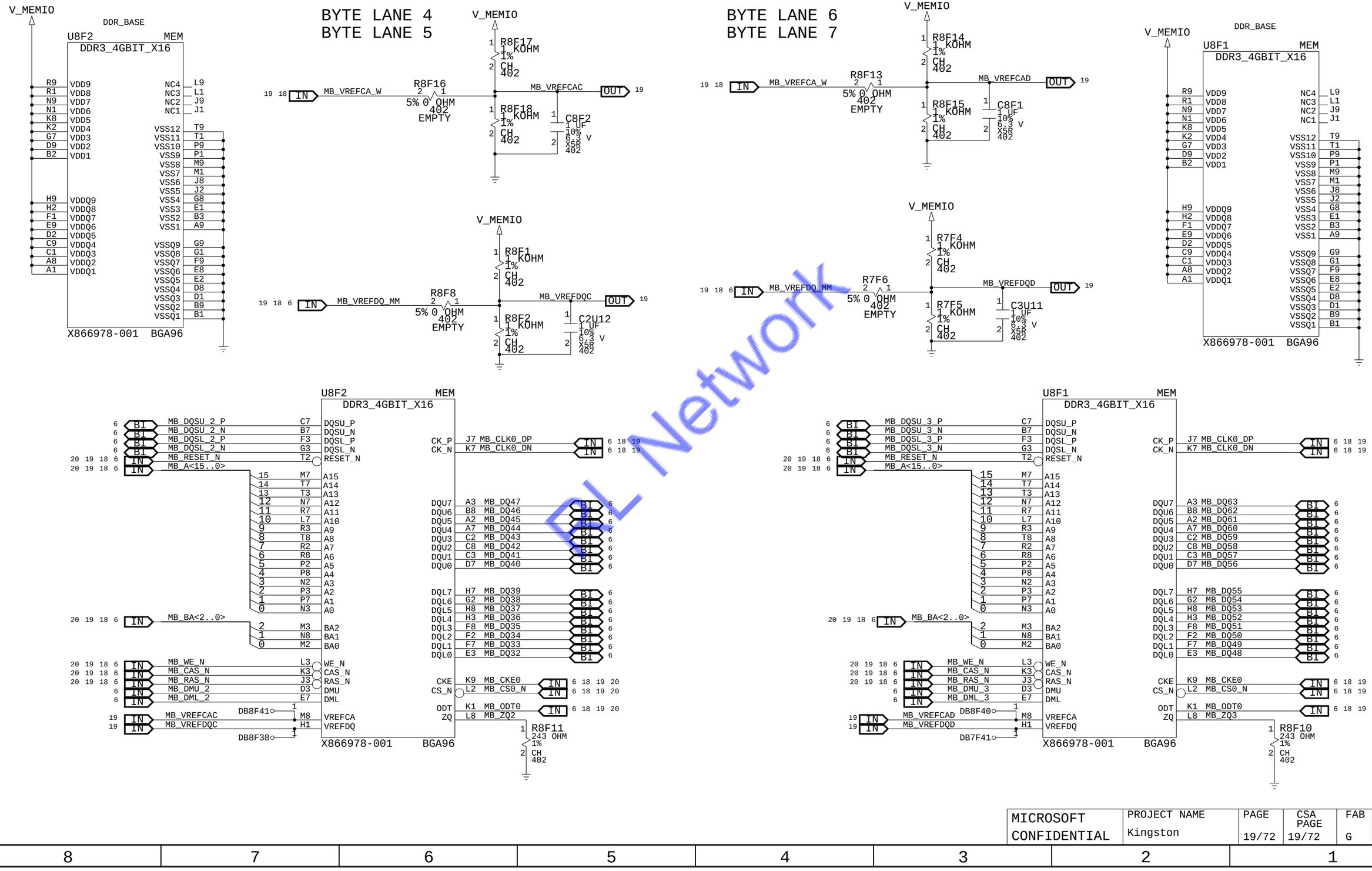



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 18/72 | 18/72 | G | 1.01 |

# MEMORY: CHANNEL B

BYTE LANE 4
BYTE LANE 5

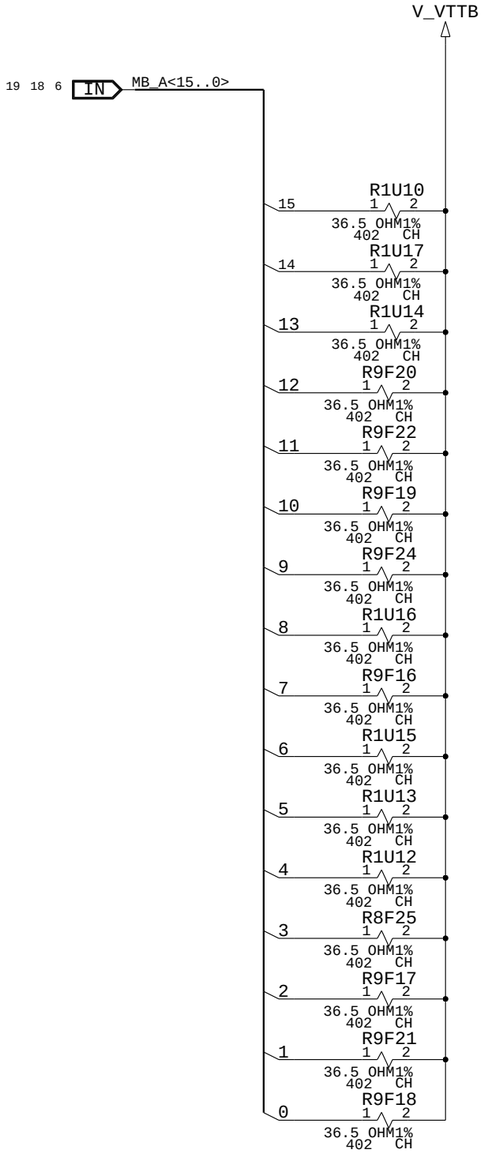
BYTE LANE 6
BYTE LANE 7

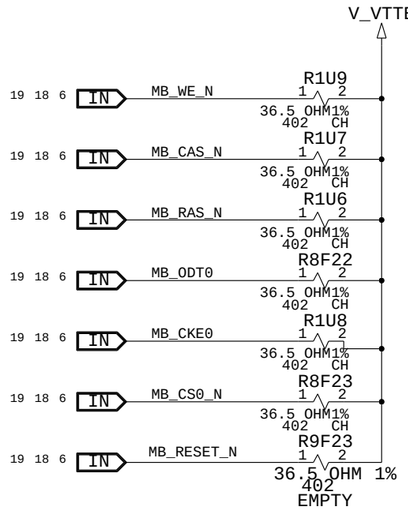





| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 19/72 | 19/72 | G | 1.01 |

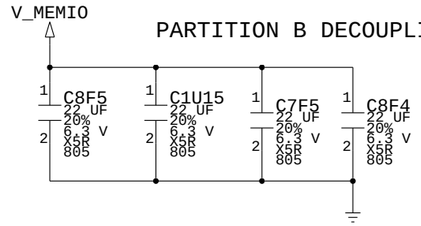
# MEMORY: CHANNEL B,DECOUPLING & TERMINATION

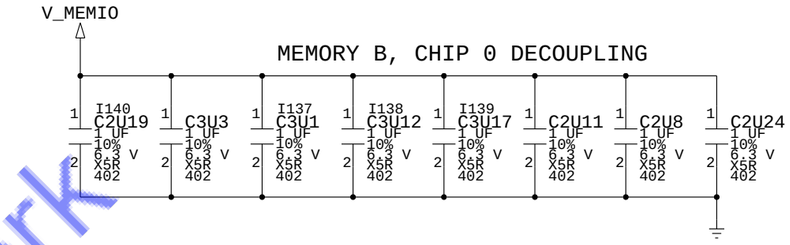


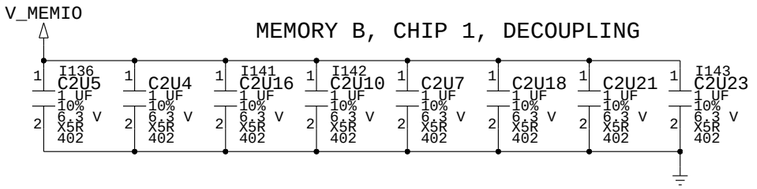



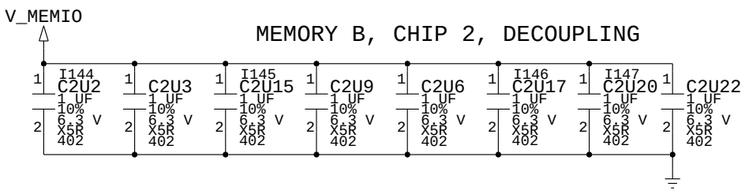


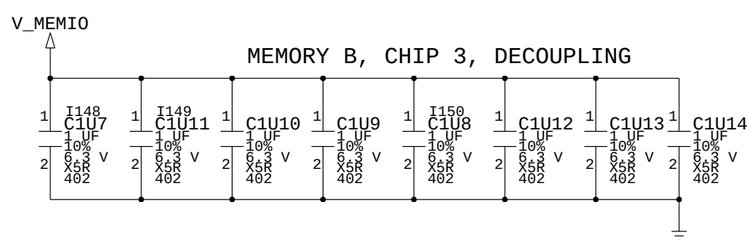




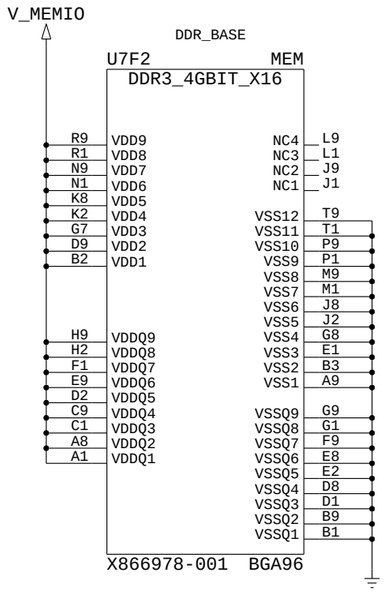



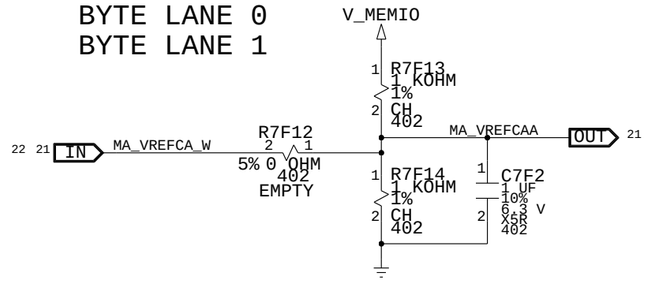


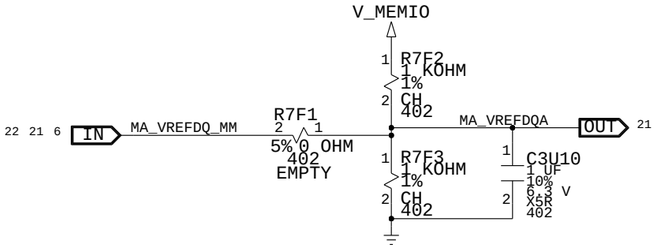

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 20/72 | 20/72 | G | 1.01 |

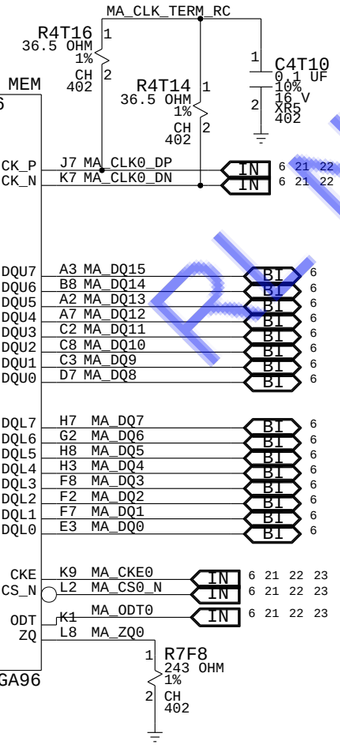
# MEMORY: CHANNEL A

BYTE LANE 0
BYTE LANE 1

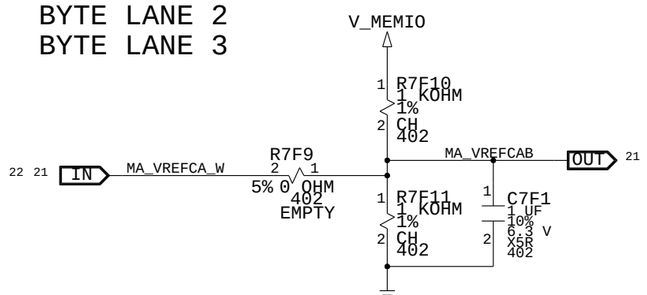


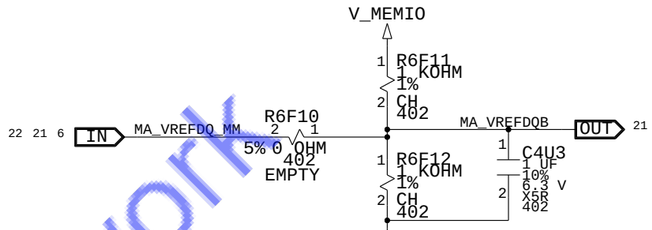



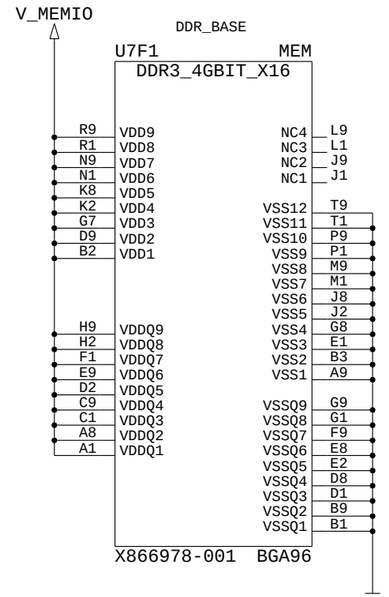



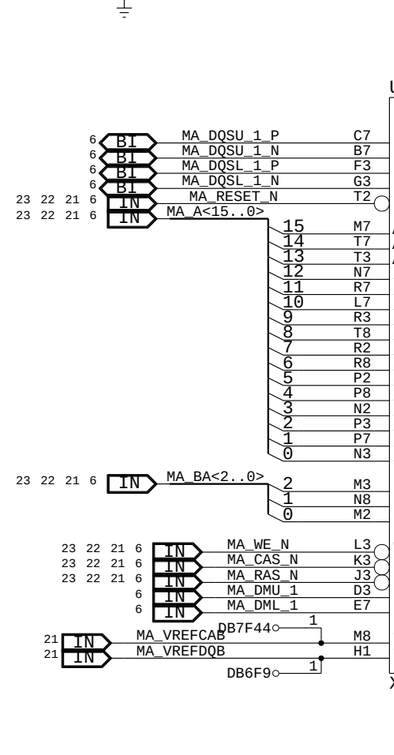




BYTE LANE 2
BYTE LANE 3



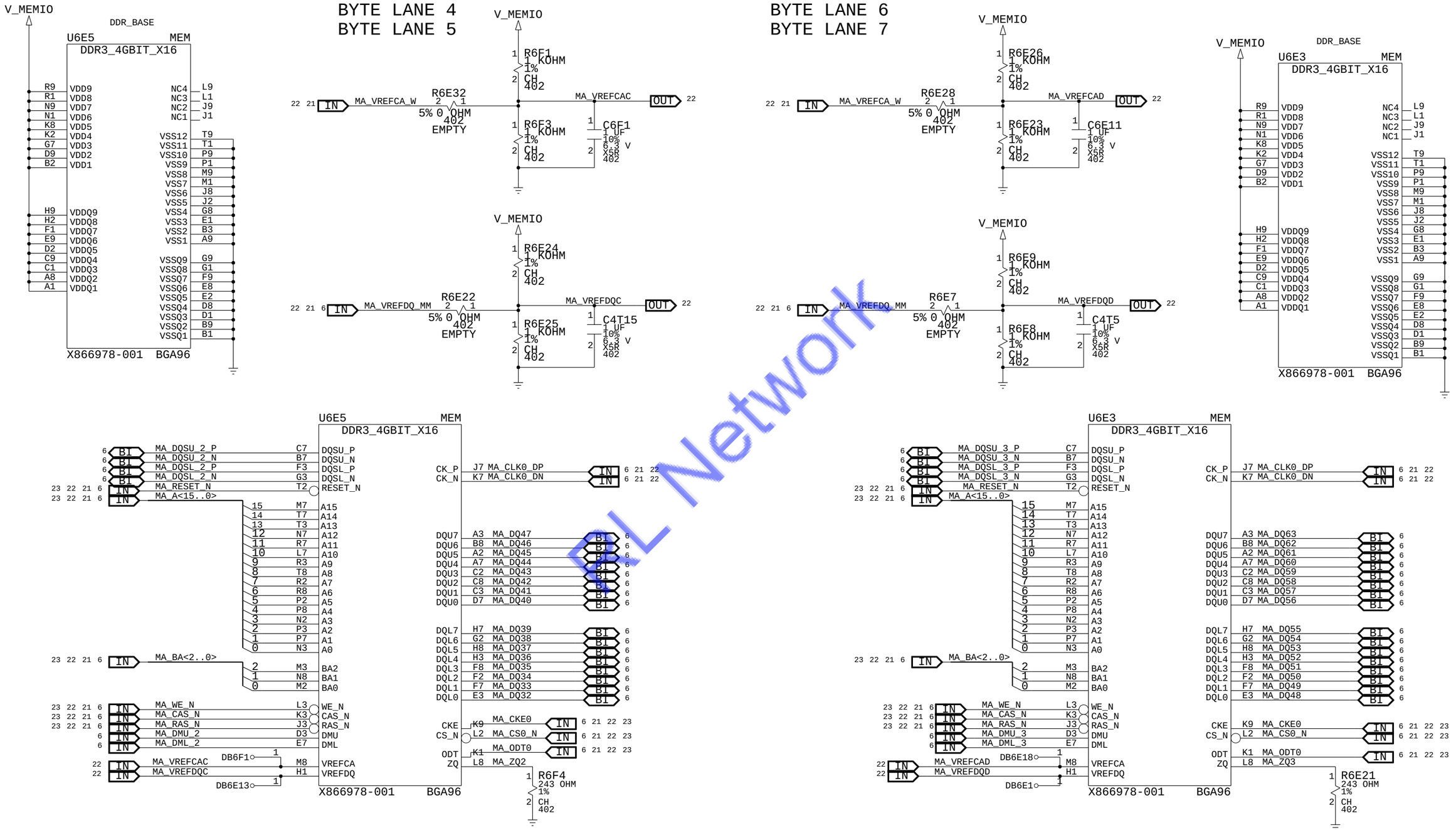



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 21/72 | 21/72 | G | 1.01 |

# MEMORY: CHANNEL A

BYTE LANE 4
BYTE LANE 5

BYTE LANE 6
BYTE LANE 7



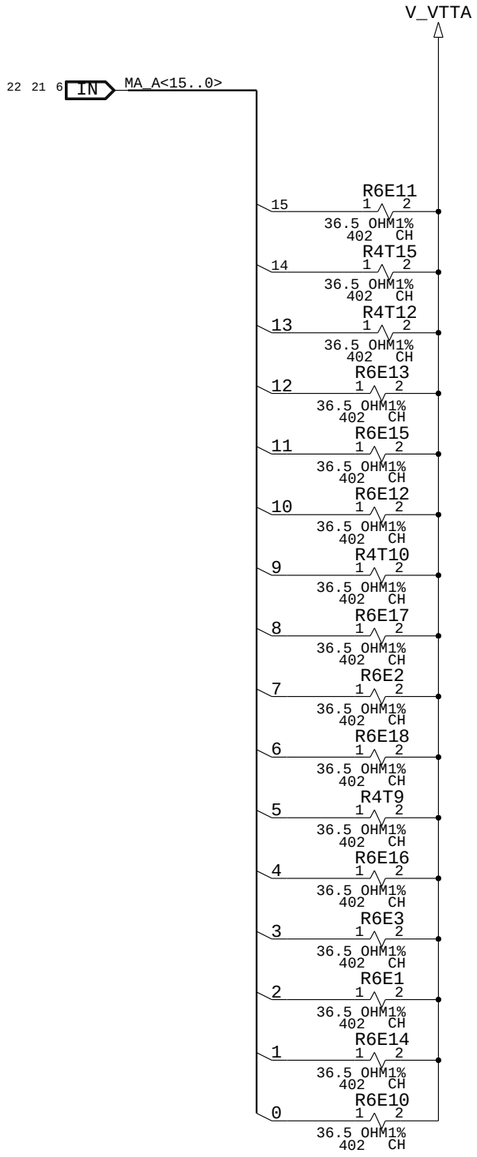


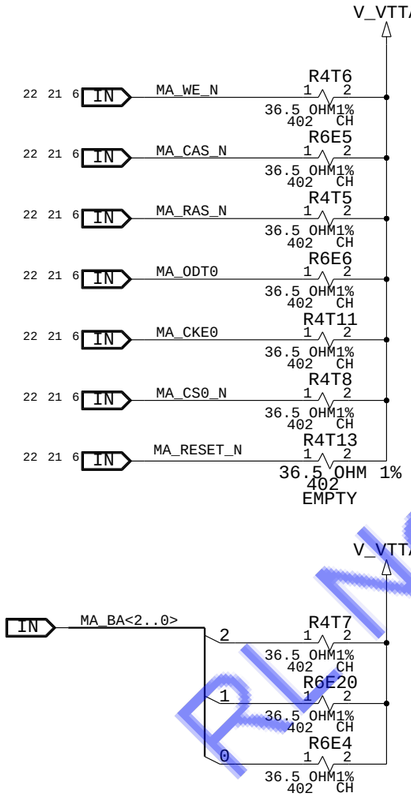




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 22/72 | 22/72 | G | 1.01 |

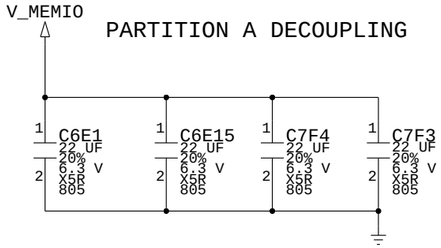
# MEMORY: CHANNEL A,DECOUPLING & TERMINATION

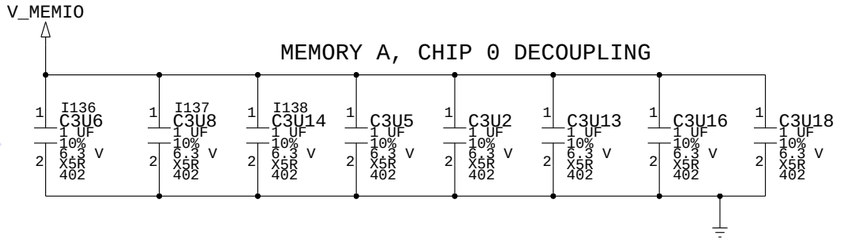


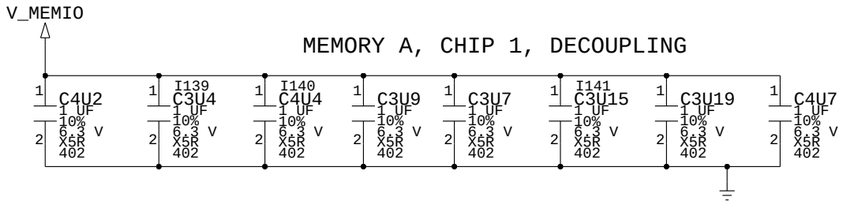



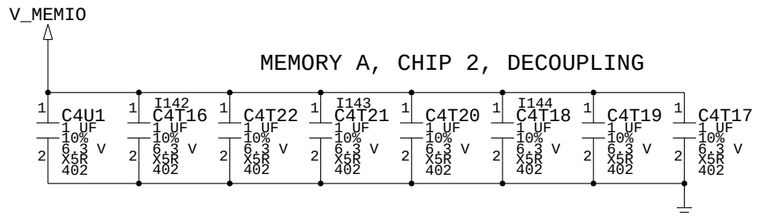


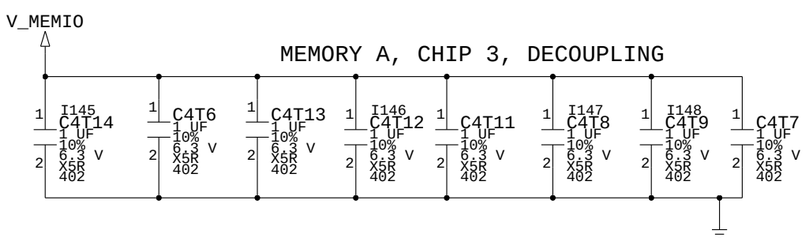




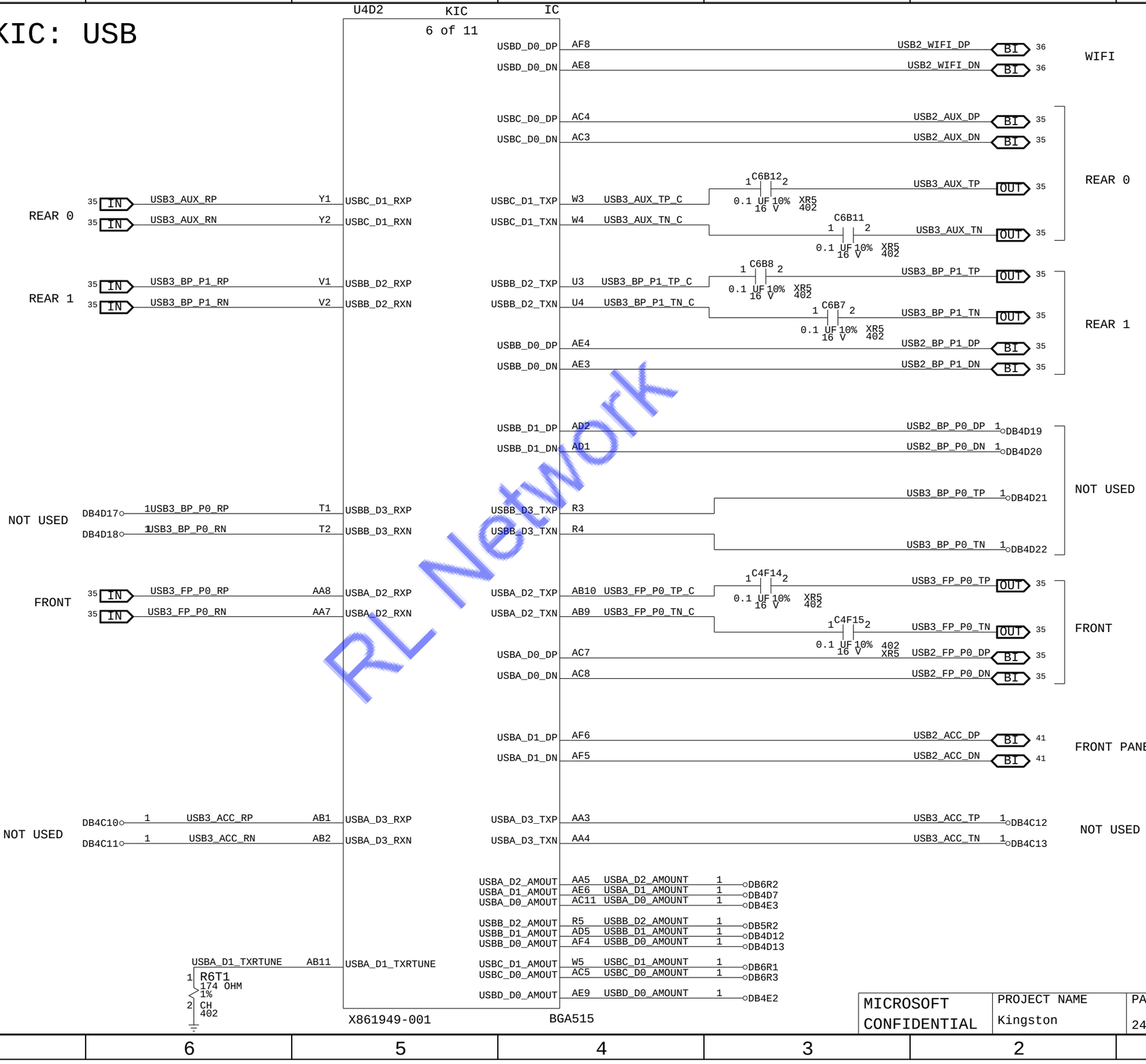



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 23/72 | 23/72 | G | 1.01 |

# KIC: USB

U4D2 KIC IC

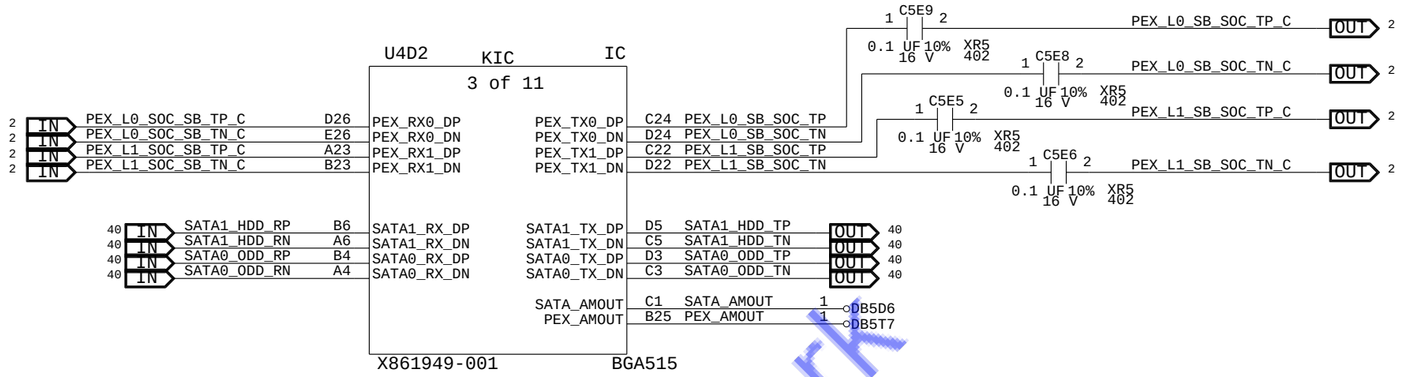
6 of 11






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 24/72 | 24/72 | G | 1.01 |

# KIC: PCIEX,SATA,VIDEO









| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 25/72 | 25/72 | G | 1.01 |

# KIC: SMC

U4D2 KIC IC
4 of 11
X861949-001 BGA515

3.3V LEVEL SHIFTER

U5E2 XSTR

R6R3 10 KOHM 1% CH 402
R6T4 100 KOHM 1% CH 402
R6T6 10 KOHM 1% CH 402
R6T12 10 KOHM 1% CH 402
R6I3 4.7 KOHM 5% EMPTY 402
R4E31 100 KOHM 1% CH 402
R4E24 1.27 KOHM 1% CH 402
R4E26 1.27 KOHM 1% CH 402
R5T5 2 KOHM 1% CH 402
R5T6 2 KOHM 1% CH 402
R4E28 243 OHM 1% CH 402
R4E29 243 OHM 1% CH 402
R4E27 0 OHM 5% CH 402
R4E25 0 OHM 5% CH 402
R5D17 49.9 OHM 1% CH 402
R5D16 49.9 OHM 1% CH 402
R5D14 49.9 OHM 1% CH 402
R5D12 10 OHM 1% CH 402
R5T3 10 KOHM 1% CH 402
R5T7 4.7 KOHM 5% CH 402
R5E8 10 KOHM 1% CH 402
R5E9 10 KOHM 1% CH 402
R5E12 0 OHM 5% CH 402
R5E11 0 OHM 5% CH 402
R5G1 100 KOHM 1% CH 402
R9C22 10 KOHM 1% CH 402
R5T27 0 OHM 5% CH 402
R5T42 0 OHM 5% CH 402
R5T38 0 OHM 5% 402 EMPTY
R5T39 0 OHM 5% 402 CH
R5T29 0 OHM 5% 402 CH
R5T31 0 OHM 5% 402 CH
R5T40 0 OHM 5% 402 EMPTY
R5T41 0 OHM 5% 402 CH
R5T13 4.7 KOHM 5% CH 402
R5T28 4.7 KOHM 5% CH 402
R9D15 10 KOHM 1% CH 402
R5T6 10 KOHM 1% CH 402

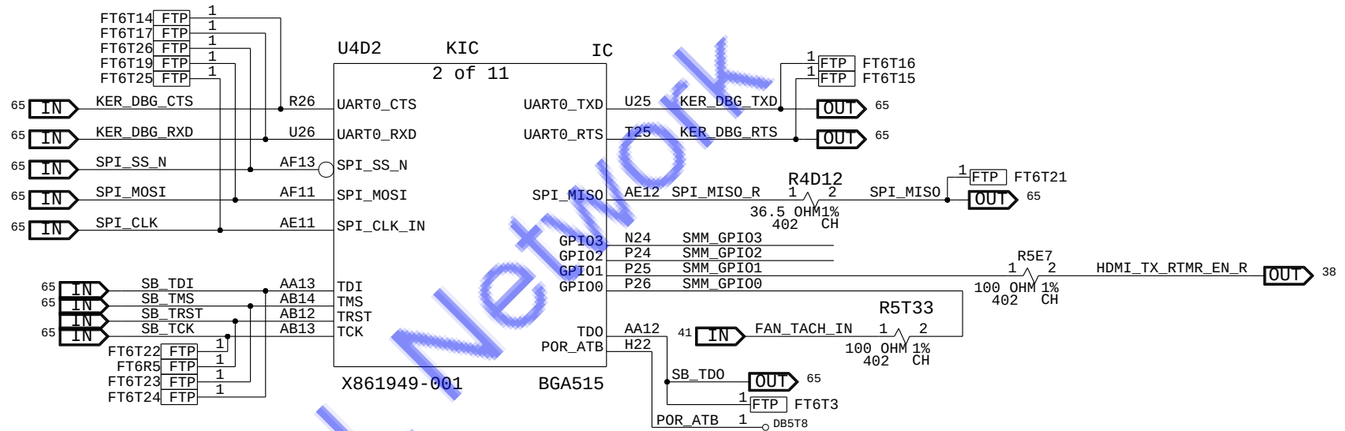
USED BY SMC IR BLASTER SOLUTION
SMC_IR_BLASTER_GPIO'S

SMC_P1_GPIO1 > IR_SMC_BLAST_OUT (TIMER 0)
SMC_P0_GPIO6 > IR_MOD_TIMER_OUT (TIMER 1)
SMC_P4_GPIO2 > IR_MOD_TIMER_IN (TIMER 2)



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 26/72 | 26/72 | G | 1.01 |

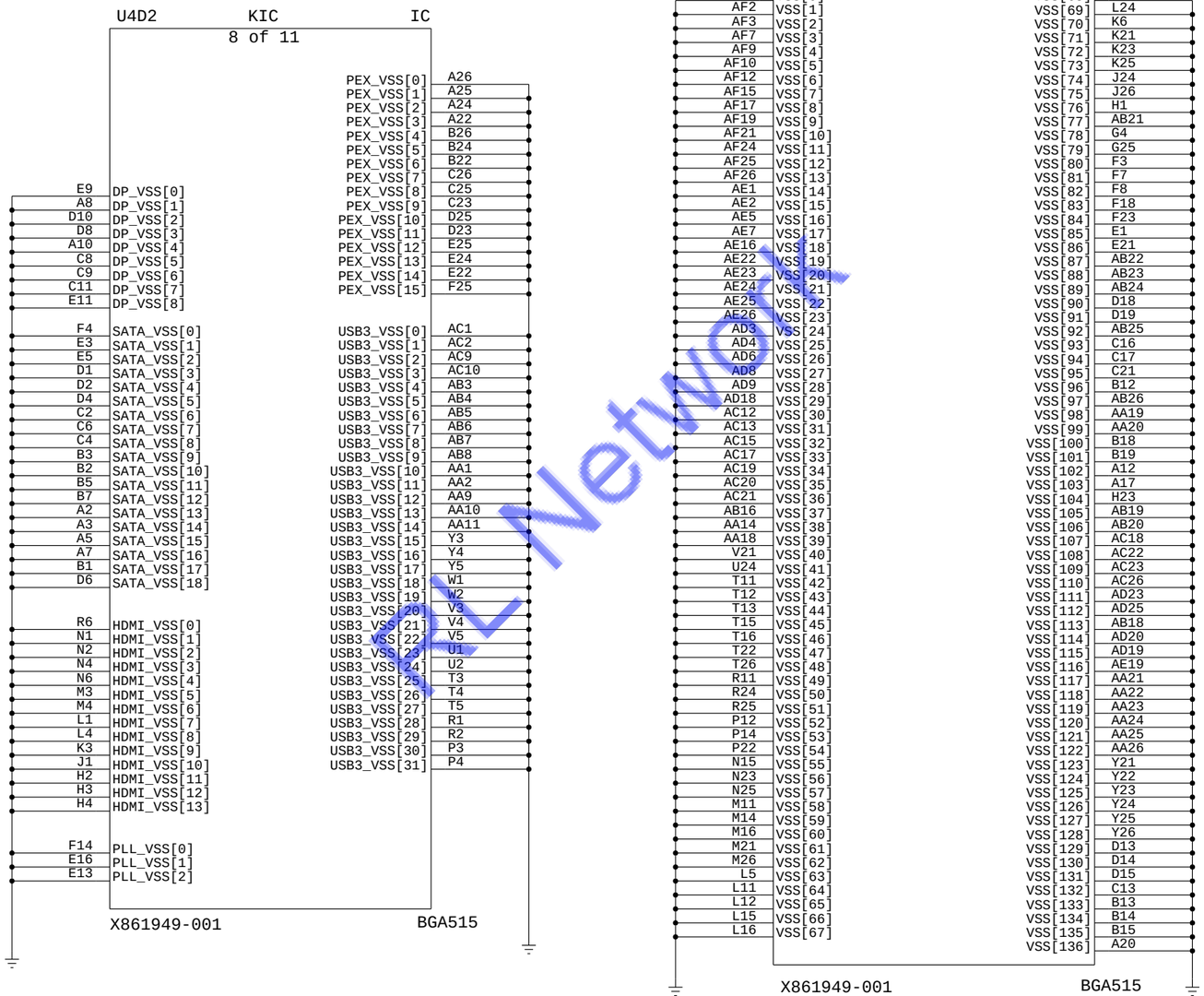
# KIC: FACET






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 27/72 | 27/72 | G | 1.01 |

# KIC: POWER






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 28/72 | 28/72 | G | 1.01 |

# KIC: CLOCKS,STRAPPING,POR

SEE PAGE 32 FOR ADDITIONAL INFORMATION
100 MHZ CLOCK ENABLE AND ROUTING

32 IN PEX_REF_CLK1_REQN_R

R4B3 0 OHM 5% 402 CH

V_3P3

R4C26 100 KOHM 5% EMPTY 402

R4B10 100 KOHM 5% EMPTY 402

R5T14 100 KOHM 1% CH 402

R5T15 100 KOHM 5% EMPTY 402

V_1P8STBY

KIC_BASE

U4D2 KIC 1 of 11 IC

| | | | |
|---|---|---|---|
| | G22 | V_VDD18_DET | |
| PEX_REF_CLK1_REQN | C18 | PEX_REF_CLK1_REQN | |
| PEX_REF_CLK2_REQN | C19 | PEX_REF_CLK2_REQN | |
| | AD22 | VPGM | |
| DB5T2 BKUP_SB_SYNC_CLKP | E18 | 100M_SYNC_CLK_BYPASS_DP | |
| DB5T3 BKUP_SB_SYNC_CLKN | E19 | 100M_SYNC_CLK_BYPASS_DN | |
| SMC_XTAL_OUT | A18 | XTAL_CLK_OUT | |
| SMC_XTAL_IN | A19 | XTAL_CLK_IN | |
| | AD24 | TEST | |
| SMC_BYPASS_CLK_IN | D21 | SMC_BYPASS_CLK_IN | |
| BKUP_SB_PEX_REF_CLKP | E20 | PCIE_BYPASS_CLK_DP | |
| BKUP_SB_PEX_REF_CLKN | D20 | PCIE_BYPASS_CLK_DN | |
| DB5T4 1 250M_CLK_BYPASS_DP | F20 | 250M_CLK_BYPASS_DP | |
| DB5T6 1 250M_CLK_BYPASS_DN | F21 | 250M_CLK_BYPASS_DN | |
| DB5T10 1 BKUP_SB_AV_CLKP | D16 | AV_CLK_BYPASS_DP | |
| DB5T9 1 BKUP_SB_AV_CLKN | D17 | AV_CLK_BYPASS_DN | |

X861949-001 BGA515

| | | | |
|---|---|---|---|
| V_EXT_DET | G21 | V_EXT_DET | |
| V_EXT_OK | F22 | V12P0_PWRGD | OUT 53 |
| SMC_RST_N_OUT | AF22 | SMC_RST_N_OUT_R | |
| I27 | | | |
| CLK_MONITOR | E17 | SB_CLK_MONITOR | |
| RTC_CLK_OUT | A21 | RTC_CLK_OUT | |
| EMMC_CLK | AC16 | MMC_CLK | OUT 33 |
| ENET_REF_CLK | C20 | ENET_REF_CLK | |
| SOC_NS_SYNC_CLK_DP | B16 | SOC_SYNC_NS_100M_CLKP | OUT 2 |
| SOC_NS_SYNC_CLK_DN | B17 | SOC_SYNC_NS_100M_CLKN | OUT 2 |
| SOC_NS_AV_CLK_DP | A13 | SOC_AV_NS_100M_CLKP | OUT 2 |
| SOC_NS_AV_CLK_DN | A14 | SOC_AV_NS_100M_CLKN | OUT 2 |
| PEX_REF_CLK2_DP | B20 | SOC_NB_PEX_SS_100M_CLKP | OUT 2 |
| PEX_REF_CLK2_DN | B21 | SOC_NB_PEX_SS_100M_CLKN | OUT 2 |
| PEX_REF_CLK1_DP | C14 | ENET_PEX_SS_100M_CLKP | OUT 32 |
| PEX_REF_CLK1_DN | C15 | ENET_PEX_SS_100M_CLKN | OUT 32 |
| PEX_REF_CLK0_DP | A15 | SOC_PEX_SS_100M_CLKP | OUT 2 |
| PEX_REF_CLK0_DN | A16 | SOC_PEX_SS_100M_CLKN | OUT 2 |

V_12P0_GATED

C5T27 1 UF 10% 16 V X5R 603

R5T26 11.3 KOHM 1% CH 402

R5T18 1.13 KOHM 1% CH 402

R5T26/V_EXT_DET IS NOW CONNECTED TO V_12P0_GATED

DB5E5

DB5E6

KEEP DB55E5 AND DB5E6 CLOSE TO EACH OTHER IN LAYOUT

R4E30 1 KOHM 1% 402 CH

SMC_RST_N OUT 26 65

C4E3 270 PF 10% 50 V X7R 402

RTC_RETAIL

R5E4 0 OHM 5% 402 CH

X32K_X2_R OUT 8

R5E6 69.8 KOHM 1% EMPTY 402

R5T16 100 OHM 1% 402 CH PEX_XTAL2 OUT 32

R5E1 1 KOHM 1% 402 CH

R5E2 249 KOHM 1% 402 CH

R5E5 49.9 OHM 1% EMPTY 402

R5T17 10 KOHM 1% 402 CH

Y5D1 25 MHZ SM XTAL

C5E3 30 PF 5% 50 V NPO 402

C5E4 30 PF 5% 50 V NPO 402

DEBUG
CONN J5F3
MINI RF
GND1 GND2 IO1
X864758-001 SM

ULTRA MINIATURE COAX
TO SMA CABLE ASSEMBLY
DIGIKEY PN: 931-1098-ND

DEBUG
CONN J5E2
MINI RF
GND1 GND2 IO1
X864758-001 SM

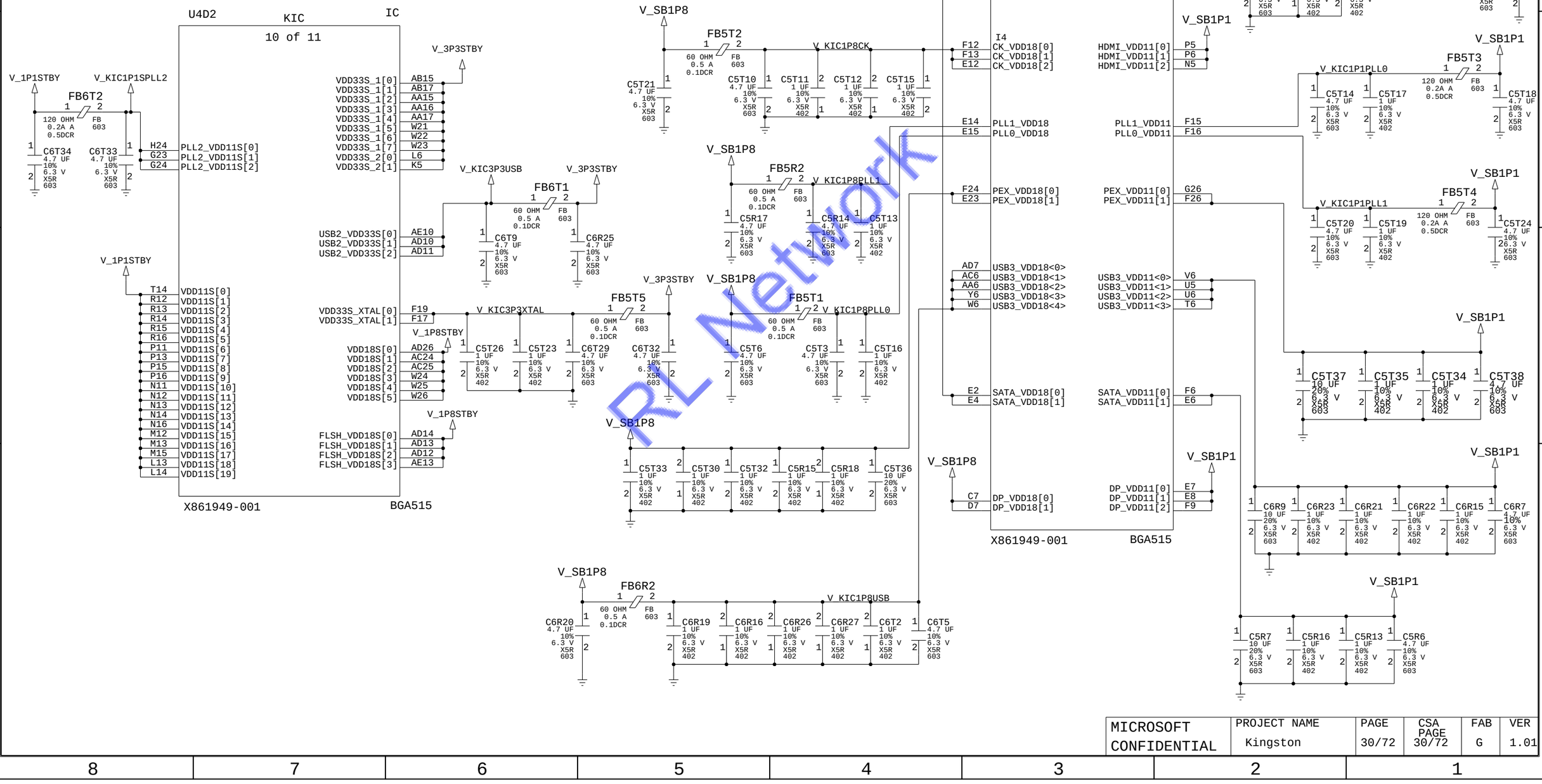


| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X861949-005 | IC | U4D2 | IC,KRAKEN SB,BGA515 | KIC_RETAIL |
| X861949-003 | IC | U4D2 | IC,KRAKEN SB,BGA515 | KIC_DEV |

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 29/72 | 29/72 | G | 1.01 |

# KIC: POWER

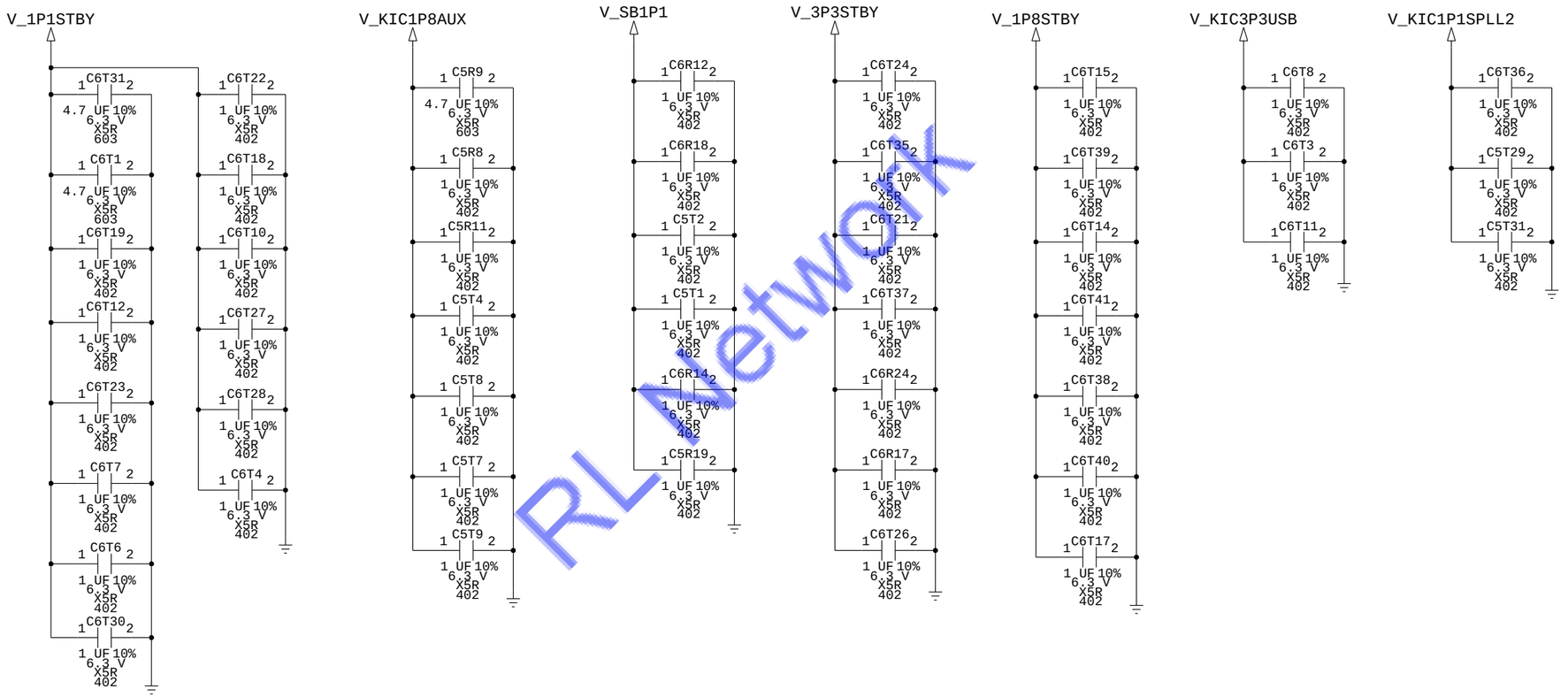
FET PREVENTS LEAKAGE THROUGH KRAKEN
FROM STANDBY RAILS TO 3P3 RAIL






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 30/72 | 30/72 | G | 1.01 |

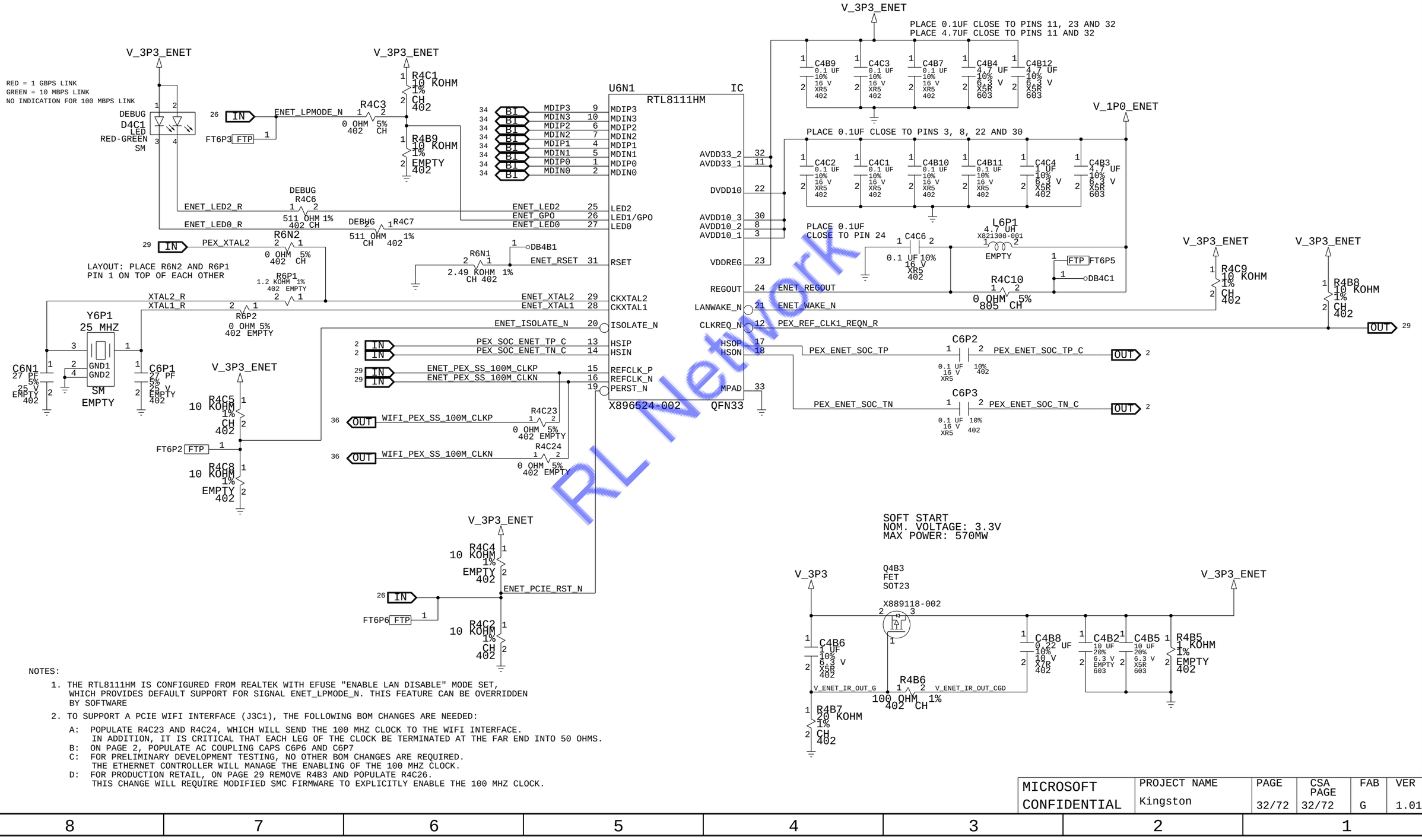
# KIC: DECOUPLING






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 31/72 | 31/72 | G | 1.01 |

# ETHERNET CONTROLLER




NOTES:

1. THE RTL8111HM IS CONFIGURED FROM REALTEK WITH EFUSE "ENABLE LAN DISABLE" MODE SET, WHICH PROVIDES DEFAULT SUPPORT FOR SIGNAL ENET_LPMODE_N. THIS FEATURE CAN BE OVERRIDDEN BY SOFTWARE
2. TO SUPPORT A PCIE WIFI INTERFACE (J3C1), THE FOLLOWING BOM CHANGES ARE NEEDED:
   - A: POPULATE R4C23 AND R4C24, WHICH WILL SEND THE 100 MHZ CLOCK TO THE WIFI INTERFACE. IN ADDITION, IT IS CRITICAL THAT EACH LEG OF THE CLOCK BE TERMINATED AT THE FAR END INTO 50 OHMS.
   - B: ON PAGE 2, POPULATE AC COUPLING CAPS C6P6 AND C6P7
   - C: FOR PRELIMINARY DEVELOPMENT TESTING, NO OTHER BOM CHANGES ARE REQUIRED. THE ETHERNET CONTROLLER WILL MANAGE THE ENABLING OF THE 100 MHZ CLOCK.
   - D: FOR PRODUCTION RETAIL, ON PAGE 29 REMOVE R4B3 AND POPULATE R4C26. THIS CHANGE WILL REQUIRE MODIFIED SMC FIRMWARE TO EXPLICITLY ENABLE THE 100 MHZ CLOCK.



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 32/72 | 32/72 | G | 1.01 |

# EMMC

| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X934261-001 | IC | U3D1 | MEM,SM,8GB,EMMC,15NM,THGBMFG6C1LBAILL | EMMC_TOSHIBA |
| X904693-001 | IC | U3D1 | MEM,SM,8GB,EMMC,FLASH,16NM,BGA153,KLM8G1GEND-B031,SAMSUNG | EMMC_SAMSUNG |
| X939723-001 | IC | U3D1 | MEM,SM,8GB,64GBX1,H26M41204HPR | EMMC_HYNIX_5P0 |
| X800617-001 | CH | R4E9,R4E13,R4E11,R4E17,R4E15,R4E21,R4E19,R4E23 | RES-FXD,SM,49.9 OHM 1%,1/16W,0402 | EMMC_TOSHIBA,EMMC_SAMSUNG |
| X809936-001 | CH | R4E9,R4E13,R4E11,R4E17,R4E15,R4E21,R4E19,R4E23 | RES-FXD,SM,100 OHM 1%,1/16W,0402 | EMMC_HYNIX_5P0 |

V_1P8STBY

R4E4 R4E8 R4E12 R4E10 R4E16 R4E14 R4E20 R4E18 R4E22 — 402 CH — 10 KOHM 1%

EMMC_BASE R4E9 / R4E13 / R4E11 / R4E17 / R4E15 / R4E21 / R4E19 / R4E23 — 0 OHM 5% 402 CH

33 BI MMC_DATA<7>
33 BI MMC_DATA<6>
33 BI MMC_DATA<5>
33 BI MMC_DATA<4>
33 BI MMC_DATA<3>
33 BI MMC_DATA<2>
33 BI MMC_DATA<1>
33 BI MMC_DATA<0>

R4E6 10 KOHM 1% CH 402 — V_1P8STBY

R7T2 10 KOHM 5% 402 EMPTY — MMC_DS_5P0

33 BI MMC_CMD — R4E7 0 OHM 5% 402 CH
29 BI MMC_CLK — R4E5 0 OHM 5% 402 CH
33 BI MMC_RST_N — R4E1 1 KOHM 1% 402 CH

FT6T4 FTP 1
FT6T2 FTP 1

R4E2 10 KOHM 1% EMPTY 402

U4D2 KIC IC
5 of 12
I446

| | | | |
|---|---|---|---|
| MMC_DATA7 | AE18 | 7 | |
| MMC_DATA6 | AD15 | 6 | |
| MMC_DATA5 | AE15 | 5 | |
| MMC_DATA4 | AD16 | 4 | |
| MMC_DATA3 | AF16 | 3 | |
| MMC_DATA2 | AF18 | 2 | |
| MMC_DATA1 | AD17 | 1 | |
| MMC_DATA0 | AE17 | 0 | |
| MMC_CMD | AF14 | MMC_CMD | OUT 33 |
| MMC_RESET_N | AE14 | MMC_RST_N | OUT 33 |

MMC_DATA<7..0> BI 33

X861949-001 BGA515

U3D1 EMMC_BASE IC
EMMC_153PIN
1 of 3

| | | | |
|---|---|---|---|
| MMC_DATA_R<7> | B6 | DATA7 | |
| MMC_DATA_R<6> | B5 | DATA6 | |
| MMC_DATA_R<5> | B4 | DATA5 | |
| MMC_DATA_R<4> | B3 | DATA4 | |
| MMC_DATA_R<3> | B2 | DATA3 | |
| MMC_DATA_R<2> | A5 | DATA2 | |
| MMC_DATA_R<1> | A4 | DATA1 | |
| MMC_DATA_R<0> | A3 | DATA0 | |
| MMC_DS_5P0 | H5 | DATA_STROBE | |
| MMC_CMD_R | M5 | CMD | |
| MMC_CLK_R | M6 | CLK | |
| MMC_RST_N_R | K5 | RSTN | |

| | | | |
|---|---|---|---|
| VDD4 | P5 | VDDF4 | K9 |
| VDD3 | P3 | VDDF3 | F5 |
| VDD2 | N4 | VDDF2 | E6 |
| VDD1 | M4 | VDDF1 | J10 |
| VDD0 | C6 | VDDF0 | |
| VDDI | C2 | VDDI_ROUTE | |
| VSS10 | J5 | MMC_VSS10_5P0 | |
| VSS9 | A6 | | |
| VSS8 | P4 | | |
| VSS7 | N2 | | |
| VSS6 | C4 | MMC_VSS9_5P0 | |
| VSS5 | N5 | | |
| VSS4 | G5 | | |
| VSS3 | P6 | | |
| VSS2 | E7 | | |
| VSS1 | K8 | | |
| VSS0 | H10 | | |

X894231-002 BGA153

V_1P8STBY
C7T1 0.1 UF 10% 16 V XR5 402
C4E1 0.1 UF 10% 16 V XR5 402
C6T13 2.2 UF 20% 6.3 V X5R 402
C7T5 1 UF 10% 6.3 V X5R 402
C6T16 0.1 UF 10% 16 V XR5 402
C6T25 0.1 UF 10% 16 V XR5 402
C6T20 2.2 UF 20% 6.3 V X5R 402

V_3P3STBY
C7T2 0.1 UF 10% 16 V XR5 402
C7T3 0.1 UF 10% 16 V XR5 402
C7T4 2.2 UF 20% 6.3 V X5R 402

R7T1 0 OHM 5% 402 EMPTY — MMC_VSS10_5P0
R6T2 0 OHM 5% 402 EMPTY — MMC_VSS9_5P0
C4E2 1 UF 10% 6.3 V X5R 402

MMC_X NETS ARE DUMMY NETS TO IMPROVE PAD ADHESION

U3D1 EMMC_BASE IC
EMMC_153PIN
2 of 3

| | | | |
|---|---|---|---|
| MMC_X7 | A1 | NC0 | |
| D4 | A2 | NC1 | |
| | A8 | NC2 | |
| | A9 | NC3 | |
| | A10 | NC4 | |
| | A11 | NC5 | |
| | A12 | NC6 | |
| MMC_X6 | A13 | NC7 | |
| MMC_X4 | A14 | NC8 | |
| MMC_X8 | B1 | NC9 | |
| | B7 | NC10 | |
| | B8 | NC11 | |
| | B9 | NC12 | |
| | B10 | NC13 | |
| | B11 | NC14 | |
| | B12 | NC15 | |
| | B13 | NC16 | |
| MMC_X5 | B14 | NC17 | |
| D3 | C1 | NC18 | |
| D5 | C3 | NC19 | |
| D7 | C7 | NC20 | |
| | C8 | NC21 | |
| | C9 | NC22 | |
| | C10 | NC23 | |
| | C11 | NC24 | |
| | C12 | NC25 | |
| | C13 | NC26 | |
| | C14 | NC27 | |
| | D1 | NC28 | |
| | D2 | NC29 | |
| | D3 | NC30 | |
| | D4 | NC31 | |
| | D12 | NC32 | |
| | D13 | NC33 | |
| | D14 | NC34 | |

| | | | |
|---|---|---|---|
| NC35 | E1 | | DB3E7 |
| NC36 | E2 | | |
| NC37 | E3 | | |
| NC38 | E12 | | |
| NC39 | E13 | | DB3E6 |
| NC40 | E14 | | |
| NC41 | F1 | | |
| NC42 | F2 | | |
| NC43 | F3 | | |
| NC44 | F12 | | |
| NC45 | F13 | | DB3E5 |
| NC46 | F14 | | |
| NC47 | G1 | | |
| NC48 | G2 | | |
| NC49 | G12 | | |
| NC50 | G13 | | DB3E4 |
| NC51 | G14 | | |
| NC52 | H1 | | |
| NC53 | H2 | | |
| NC54 | H3 | | |
| NC55 | H12 | | |
| NC56 | H13 | | DB3E3 |
| NC57 | H14 | | |
| NC58 | J1 | | |
| NC59 | J2 | | |
| NC60 | J3 | | |
| NC61 | J12 | | |
| NC62 | J13 | | DB3E2 |
| NC63 | J14 | | |
| NC64 | K1 | | |
| NC65 | K2 | | |
| NC66 | K3 | | |
| NC67 | K12 | | |
| NC68 | K13 | | |
| NC69 | K14 | | |

X894231-002 BGA153

VDDI_ROUTE

U3D1 EMMC_BASE IC
EMMC_153PIN
3 of 3

D6

| | | | |
|---|---|---|---|
| | A7 | RFU1 | |
| | C5 | RFU2 | |
| | E5 | RFU3 | |
| | E8 | RFU4 | |
| | E9 | RFU5 | |
| | E10 | RFU6 | |
| | F10 | RFU7 | |
| | G3 | RFU8 | |
| | G10 | RFU9 | |
| | K6 | RFU12 | |
| | K7 | RFU13 | |
| | K10 | RFU14 | |
| | P7 | RFU15 | |
| | P10 | RFU16 | |
| DUMMY_EMMC_P10 | L1 | NC70 | |
| | L2 | NC71 | |
| | L3 | NC72 | |
| | L12 | NC73 | |
| | L13 | NC74 | |
| | L14 | NC75 | |
| | M1 | NC76 | |
| | M2 | NC77 | |
| | M3 | NC78 | |
| | M7 | NC79 | |

| | | | |
|---|---|---|---|
| NC80 | M8 | | |
| NC81 | M9 | | |
| NC82 | M10 | | |
| NC83 | M11 | | |
| NC84 | M12 | | |
| NC85 | M13 | | |
| NC86 | M14 | | |
| NC87 | N1 | MMC_X11 | |
| NC88 | N3 | | |
| NC89 | N6 | | |
| NC90 | N7 | | |
| NC91 | N8 | | |
| NC92 | N9 | | |
| NC93 | N10 | | |
| NC94 | N11 | | |
| NC95 | N12 | | |
| NC96 | N13 | | |
| NC97 | N14 | MMC_X3 | |
| NC98 | P1 | MMC_X10 | |
| NC99 | P2 | MMC_X12 | |
| NC100 | P8 | | |
| NC101 | P9 | | |
| NC102 | P11 | | |
| NC103 | P12 | | |
| NC104 | P13 | MMC_X2 | |
| NC105 | P14 | MMC_X1 | |

X894231-002 BGA153

1 DB3E1

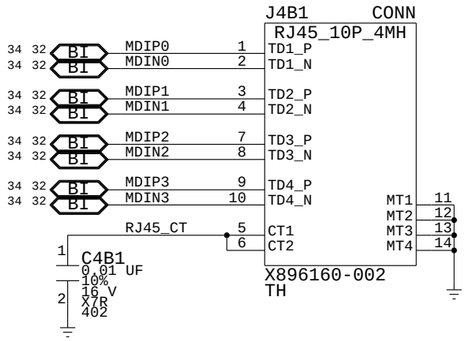
SIGNALS ROUTED TO NC PINS FOR ESCAPE

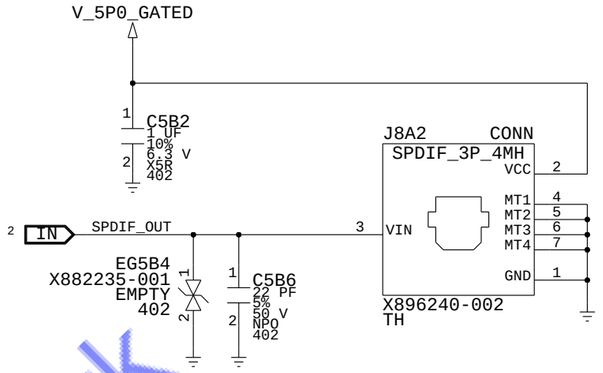
| | |
|---|---|
| D7 | PIN B6 ROUTED TO PIN C7, C8 |
| D6 | PIN B5 ROUTED TO PIN C5 |
| D5 | PIN B4 ROUTED TO PIN C3, D3 |
| D4 | PIN B3 ROUTED TO PIN A2 |
| D3 | PIN B2 ROUTED TO PIN C1 |
| VDDI | PIN C2 ROUTED TO PIN D1 |
| GND | PIN N2 ROUTED TO PIN M1 |

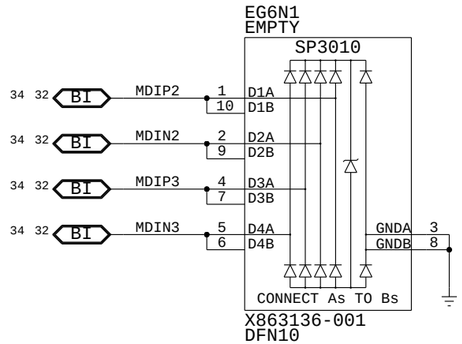


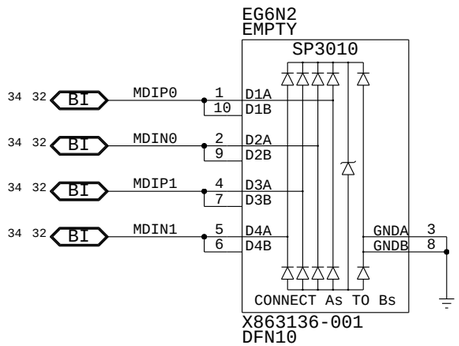
| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 33/72 | 33/72 | G | 1.01 |

# CONN: RJ45,TOSLINK



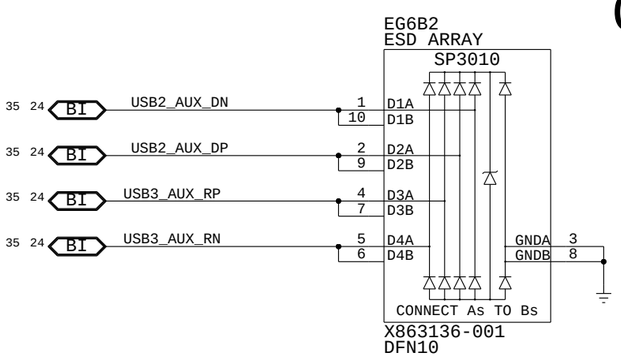



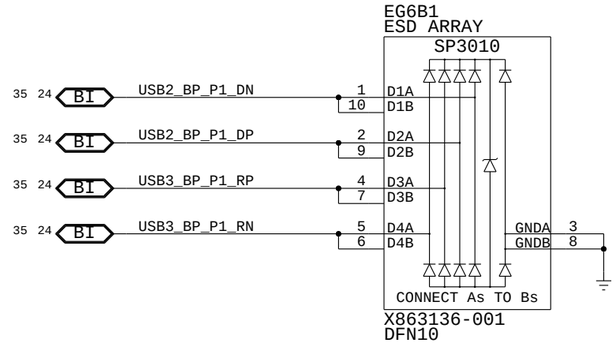



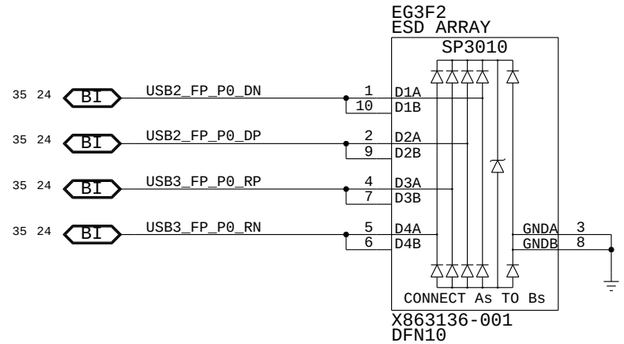


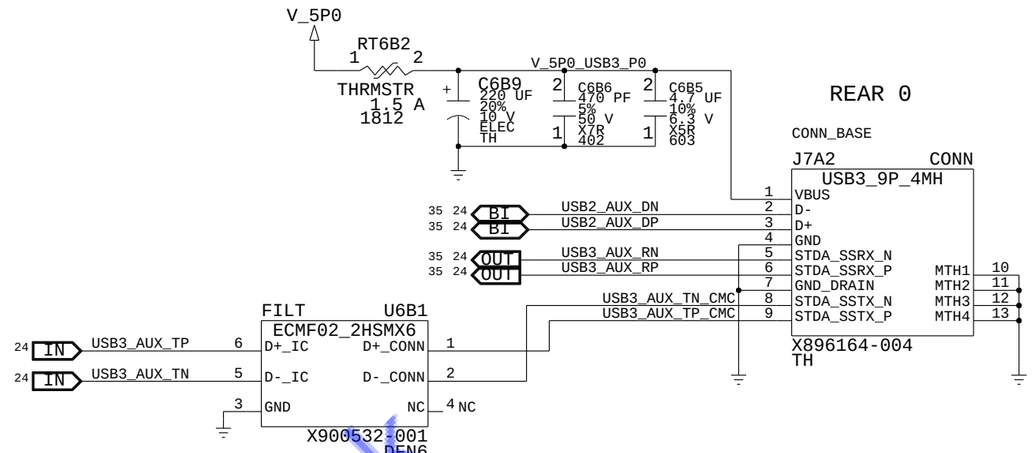

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 34/72 | 34/72 | G | 1.01 |

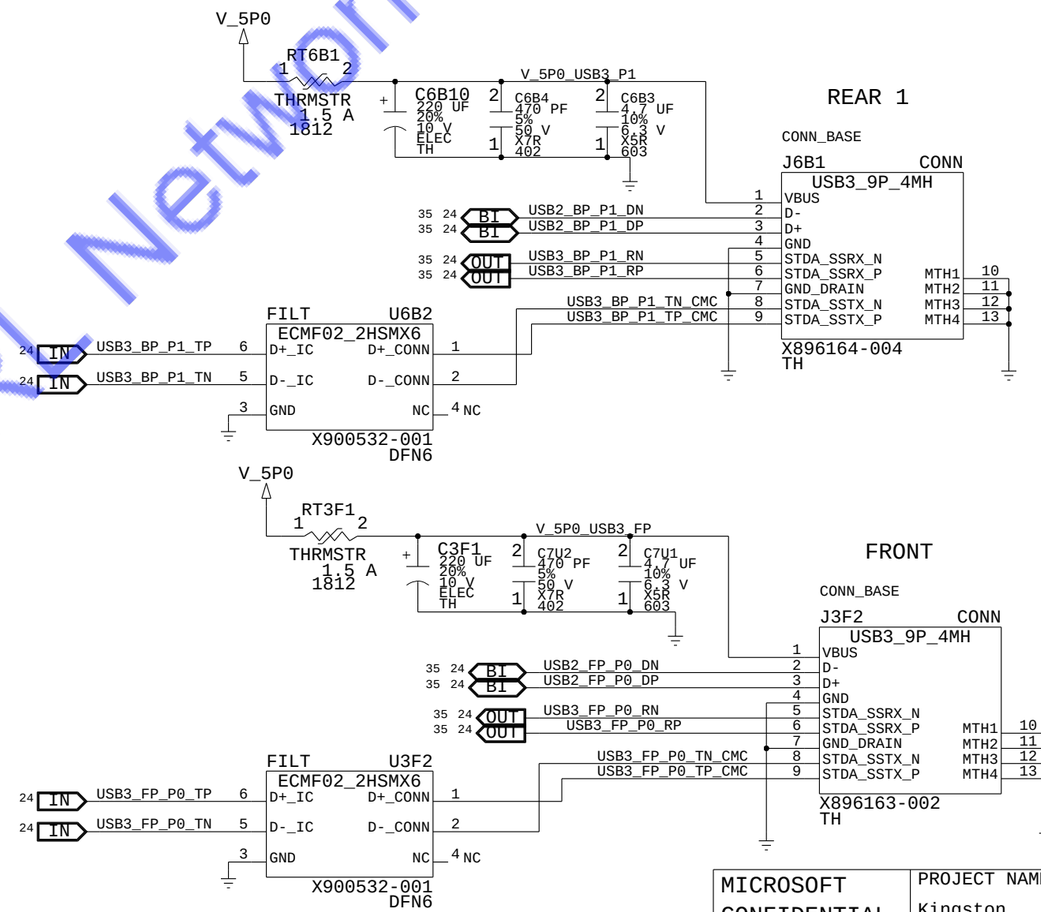
# CONN: USB (FRONT & REAR)



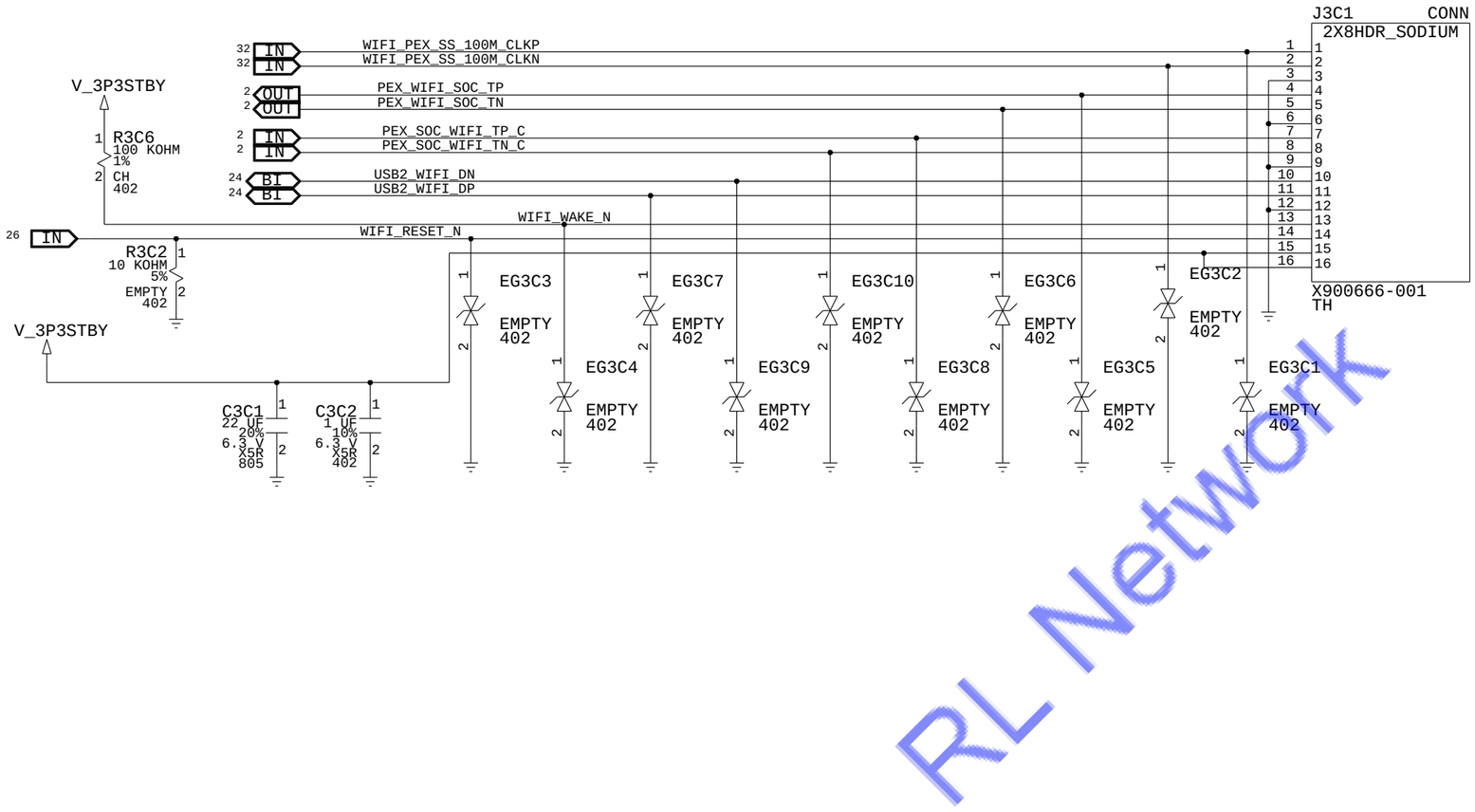

| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X896164-004 | CONN | J7A2,J6B1 | CONN-USB,TH,009,FEMALE,USB3-A,BLACK NI, KGS | USB_REAR_FOXC_BLACK |
| X896164-003 | CONN | J7A2,J6B1 | CONN-USB,SM,009,FEMALE,USB3-A,PLAIN NI, KGS | USB_REAR_FOXC_PLAIN |

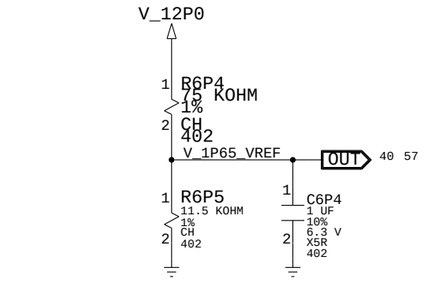
| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X896163-004 | CONN | J3F2 | CONN-USB,TH,009,FEMALE,FRONT,USB3-A,BLACK NICKEL,KGS | USB_FRONT_FOXC |
| X907318-002 | CONN | J3F2 | CONN-USB,TH,009,FEMALE,FRONT,USB3-A,KGS,(QUAL-AMPHENOL) | USB_FRONT_AMPH |

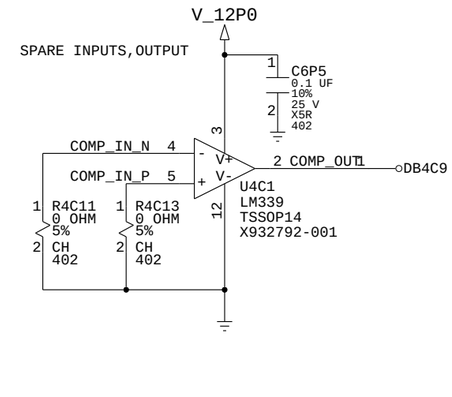


| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 35/72 | 35/72 | G | 1.01 |

# CONN: WIFI



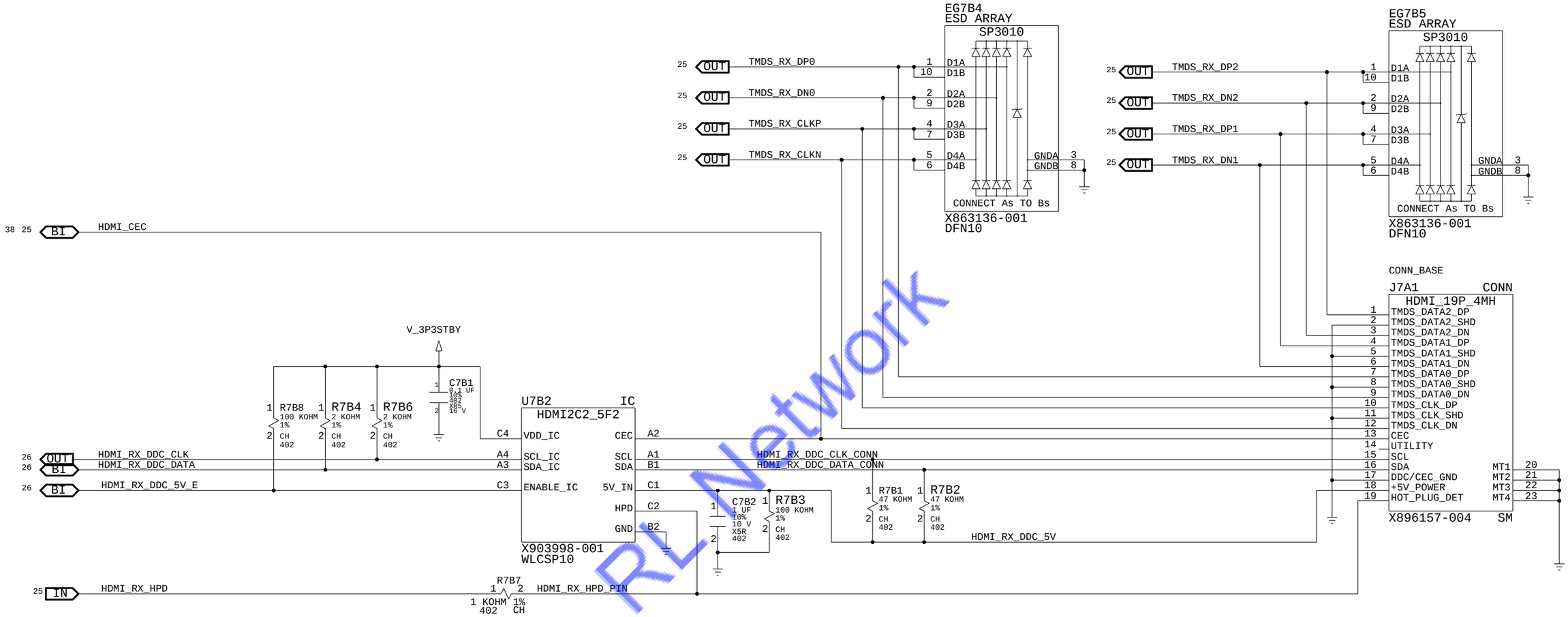






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 36/72 | 36/72 | G | 1.01 |

# CONN: HDMI IN




| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X896157-006 | CONN | J7A1,J8A1 | CONN-HDMI,SM.019,FEMALE,W/EMI FLANGES,BLACK NI,KGS | HDMI_FOXC_BLACK |
| X896157-005 | CONN | J7A1,J8A1 | CONN-HDMI,SM,019,FEMALE,W/ EMI FLANGES,PLAIN NI, KGS | HDMI_FOXC_PLAIN |



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 37/72 | 37/72 | G | 1.01 |

# CONN: HDMI OUT

| DP159 CONTROL SLAVE ADDRESS | | | |
|---|---|---|---|
| SELECTED | A1/A0 | 7-BIT ADDRESS | 8-BIT ADDRESS |
| --> | 00 | 0X5E | BC/BD |
| | 01 | 0X5D | BA/BB |
| | 10 | 0X5C | B8/B9 |
| | 11 | 0X5B | B6/B7 |

U8B2 IC — SN75DP159 1 OF 3 CONTROL — X944186-001 QFN41

U8B2 IC — SN75DP159 2 OF 3 HDMI — X944186-001 QFN41

U8B2 IC — SN75DP159 3 OF 3 POWER — X944186-001 QFN41

EG8B6 ESD ARRAY SP3010 — X863136-001 DFN10

EG8B7 ESD ARRAY SP3010 — X863136-001 DFN10

U8B1 IC — HDMI2C4_5F2 — X934148-001 WLCSP12

HDMI LOAD SWITCH
NOM.VOLTAGE: 5V
PEAK CURRENT: 0.2A

CONN_BASE
J8A1 CONN — HDMI_19P_4MH — X896157-004 SM

DATA P LINE DELAY ADDED TO BOARD TO COMPENSATE FOR DP159 INTRAPAIR SKEW



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 38/72 | 38/72 | G | 1.01 |

# CONN: HDMI SUPPORT

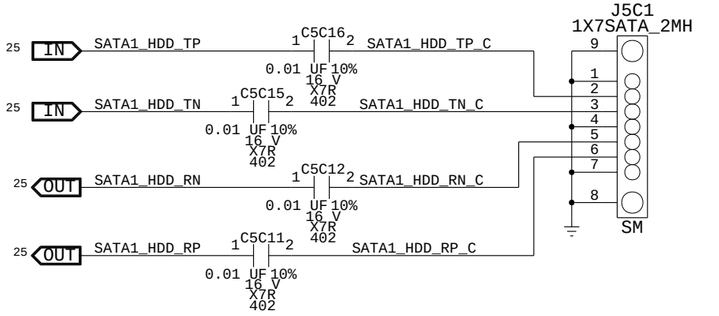
BLANK



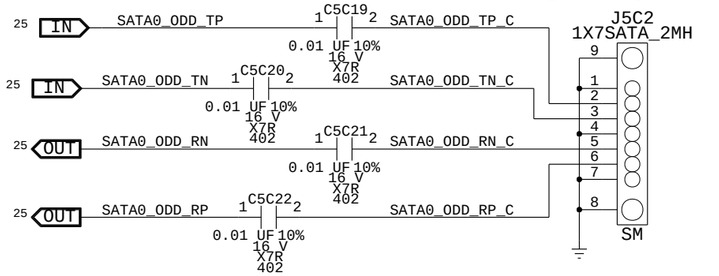
| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 39/72 | 39/72 | G | 1.01 |

# CONN: ODD & HDD

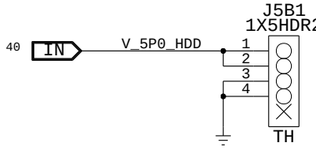
## HDD SATA

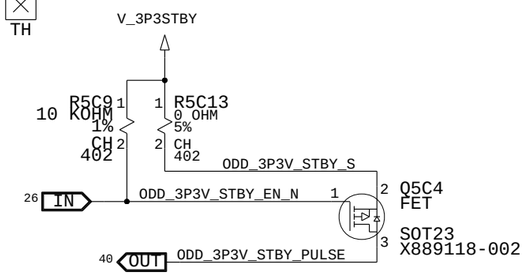



## ODD SATA

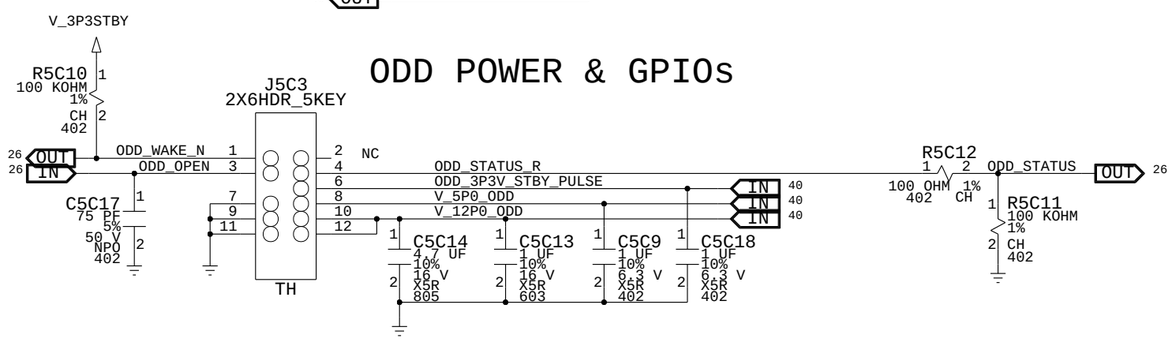


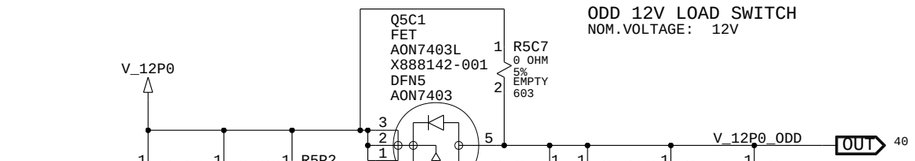

## HDD POWER

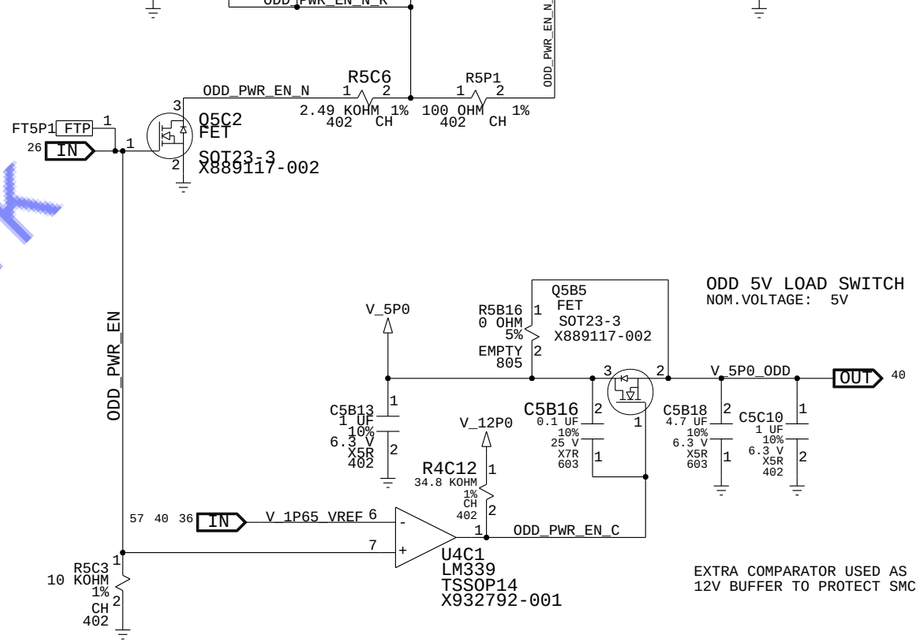


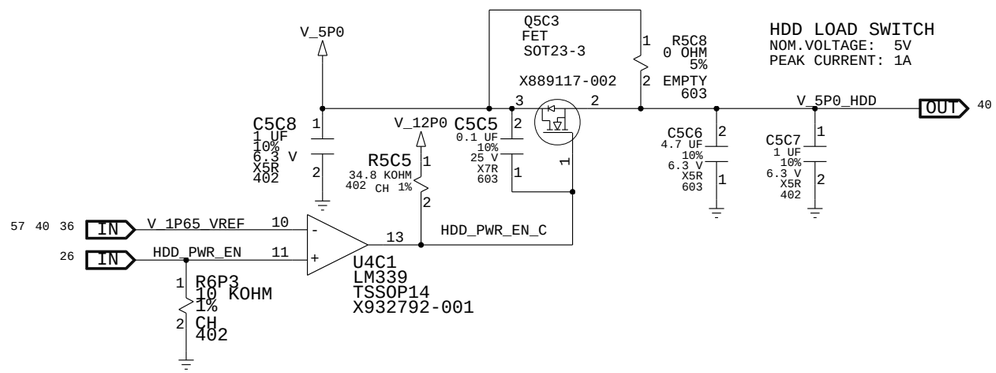




## ODD POWER & GPIOs



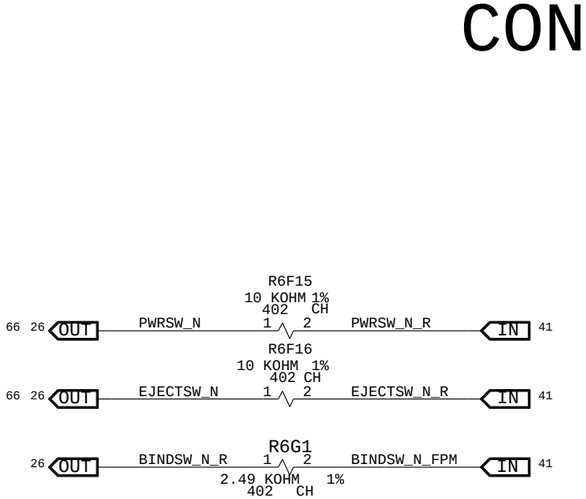



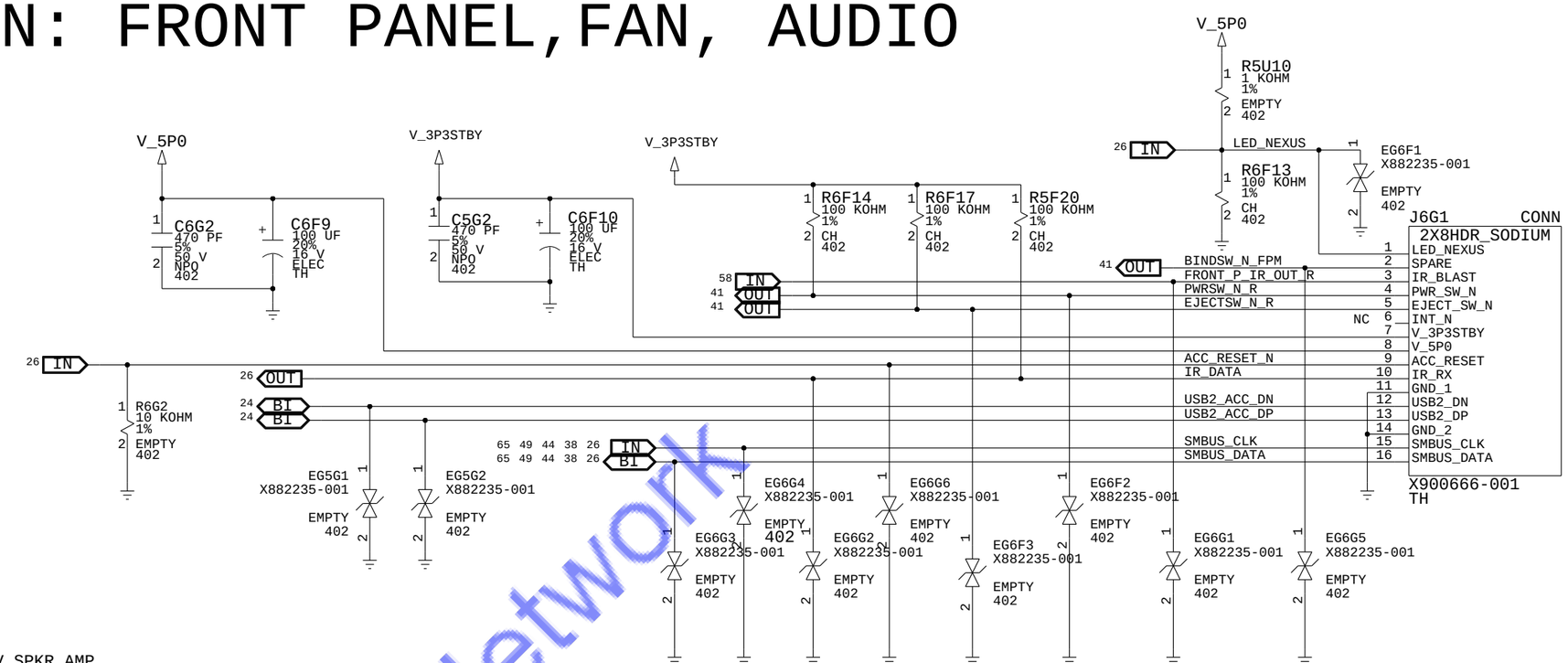



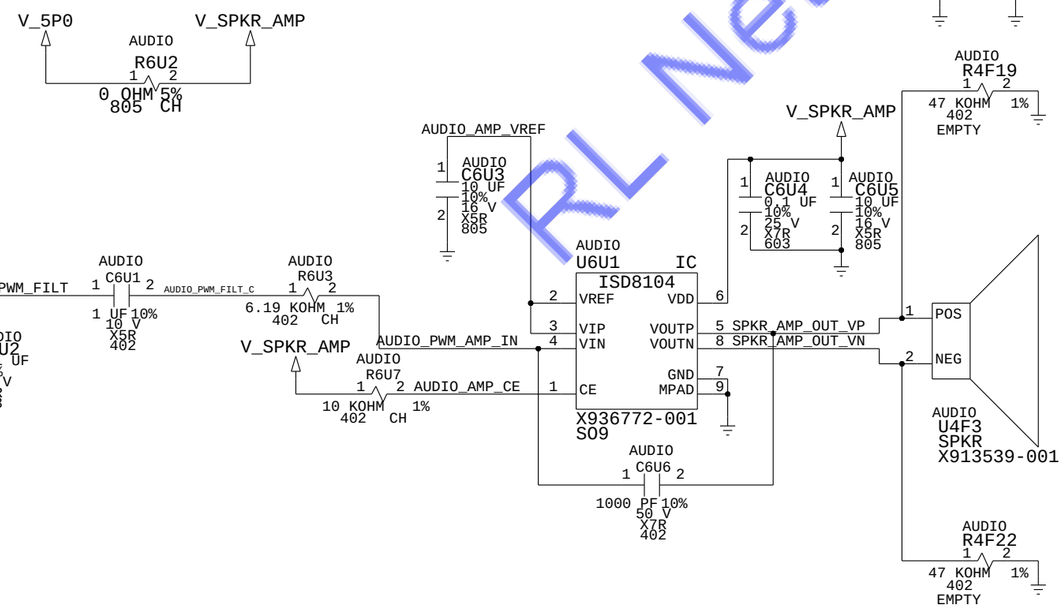


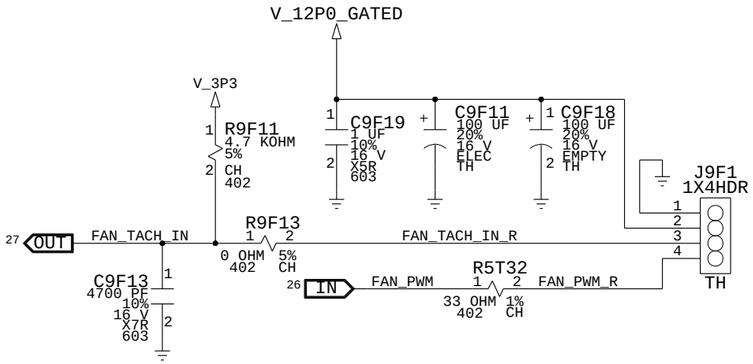

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 40/72 | 40/72 | G | 1.01 |

# CONN: FRONT PANEL,FAN, AUDIO



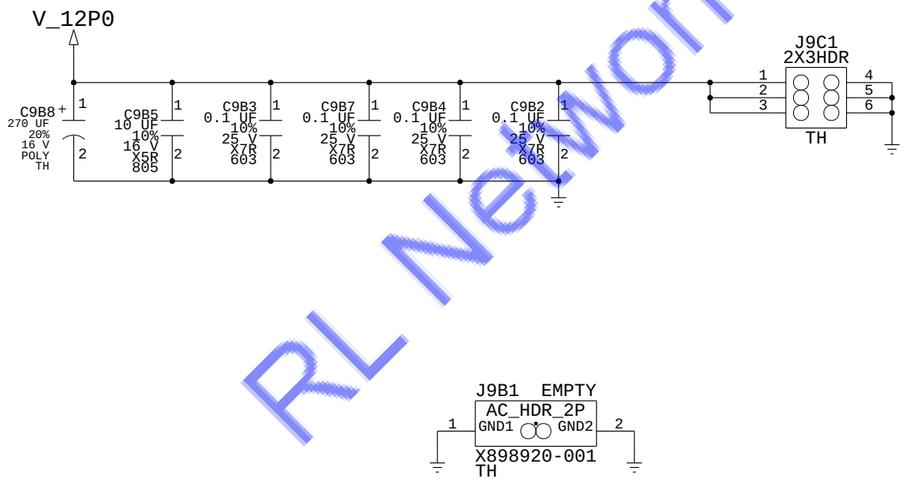






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 41/72 | 41/72 | G | 1.01 |

# CONN: POWER

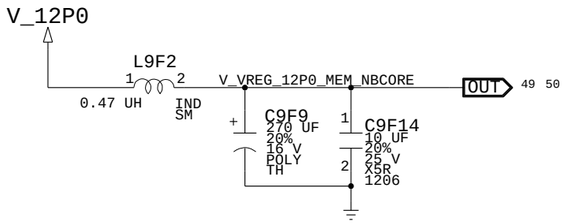




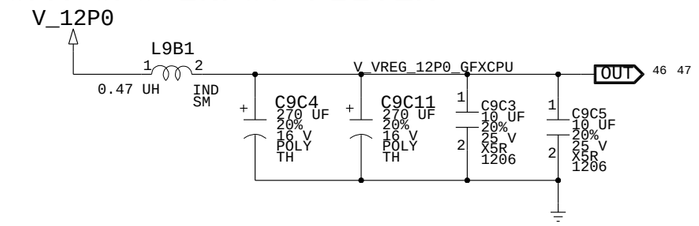

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 42/72 | 42/72 | G | 1.01 |

# VREGS: INPUT & OUTPUT FILTERS

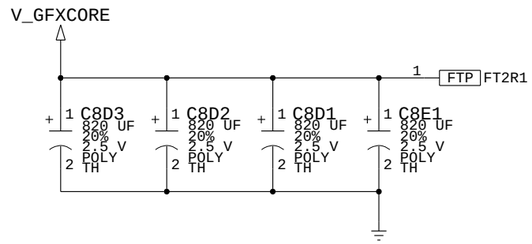
## IO/NBCORE INPUT FILTER



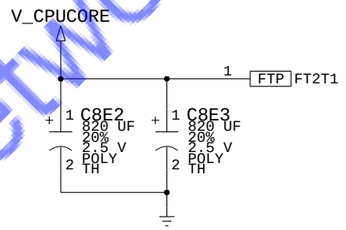

## GFX/CPU INPUT FILTER



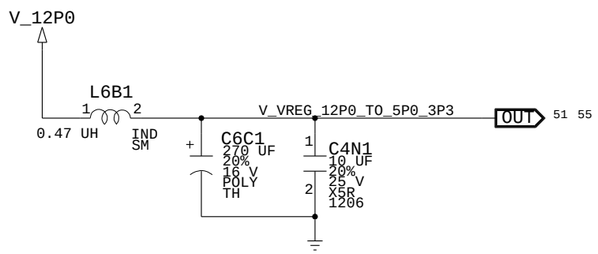

## V_GFXCORE OUTPUT FILTER




## V_CPUCORE OUTPUT FILTER



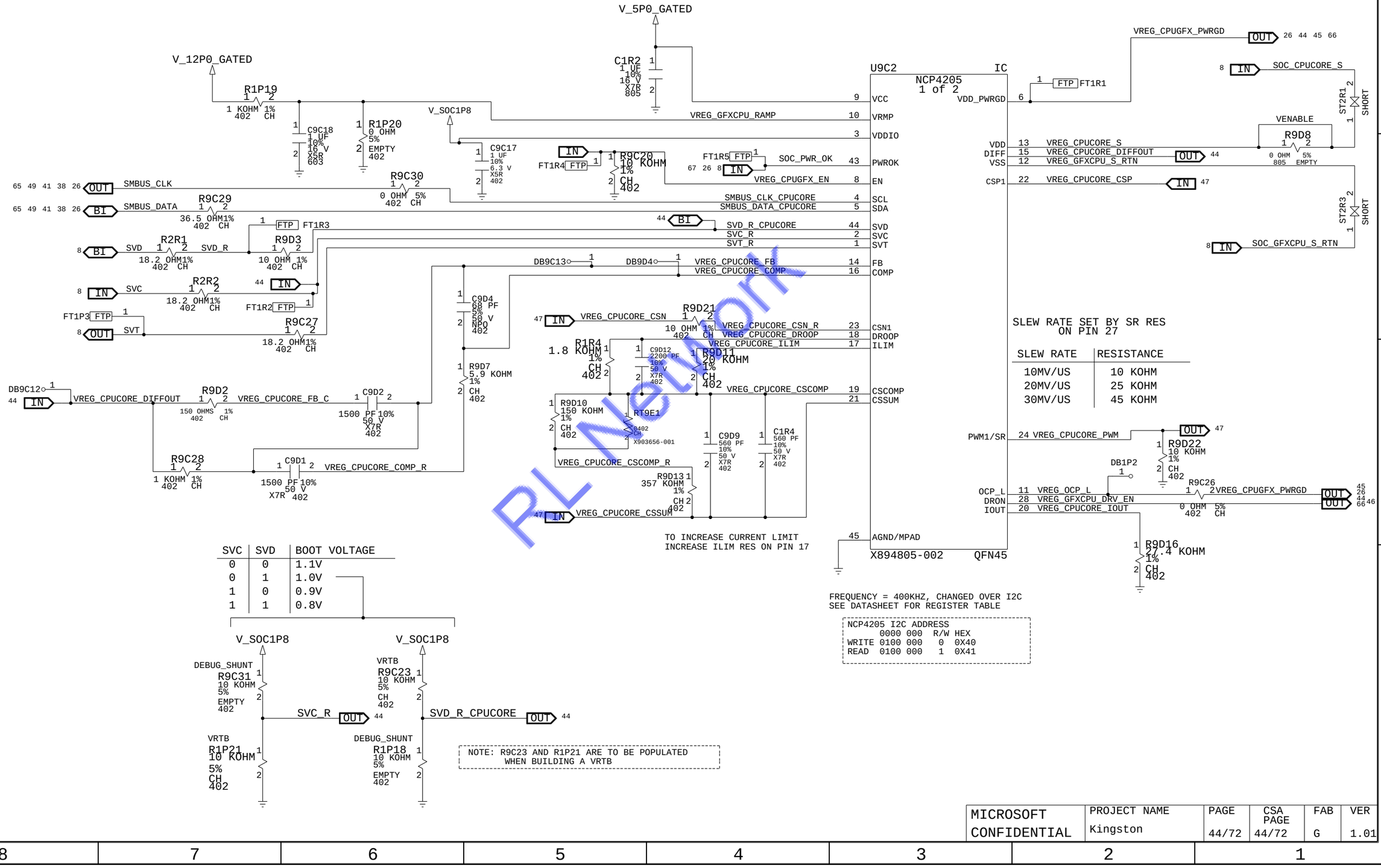

## V_5P0 AND V_3P3 INPUT FILTER






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 43/72 | 43/72 | G | 1.01 |

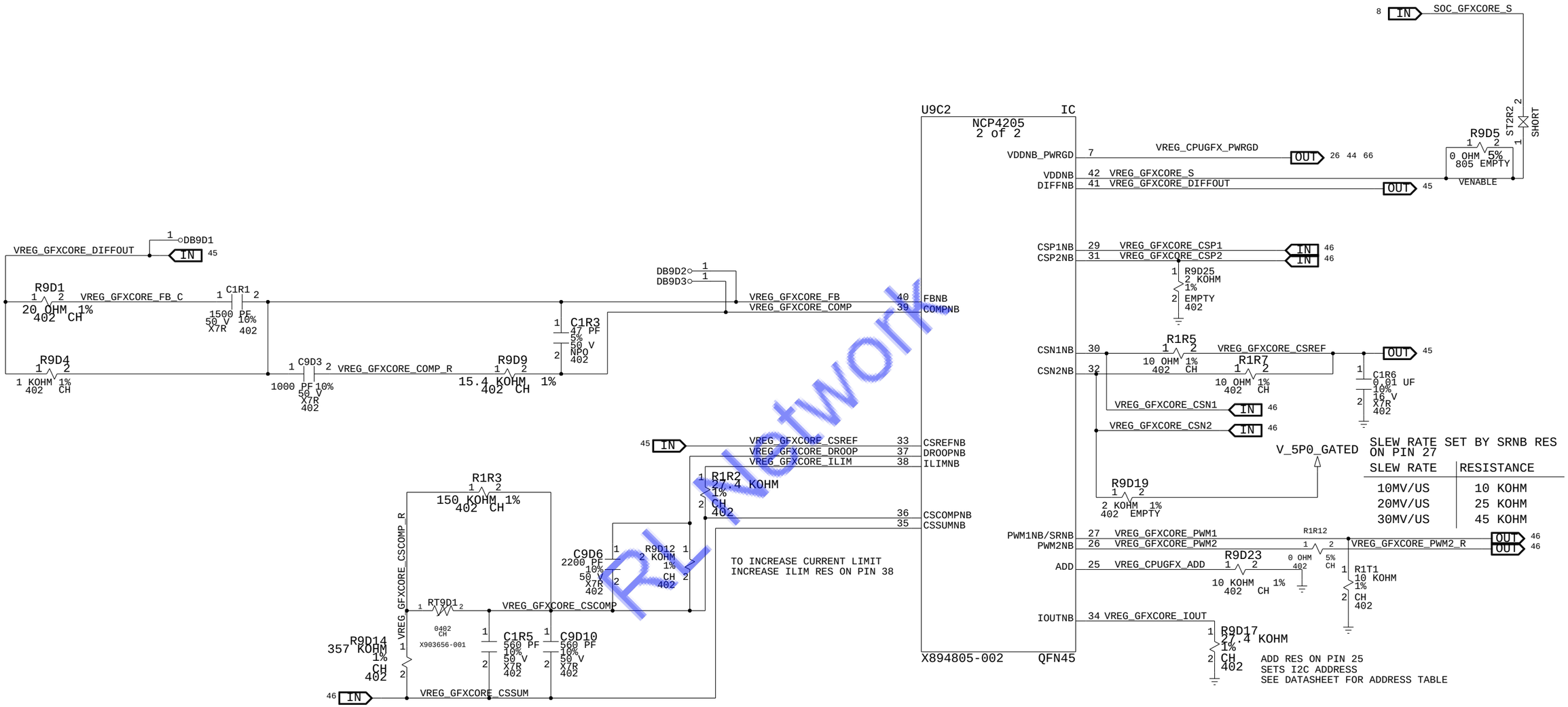
# VREGS: CPUCORE






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 44/72 | 44/72 | G | 1.01 |

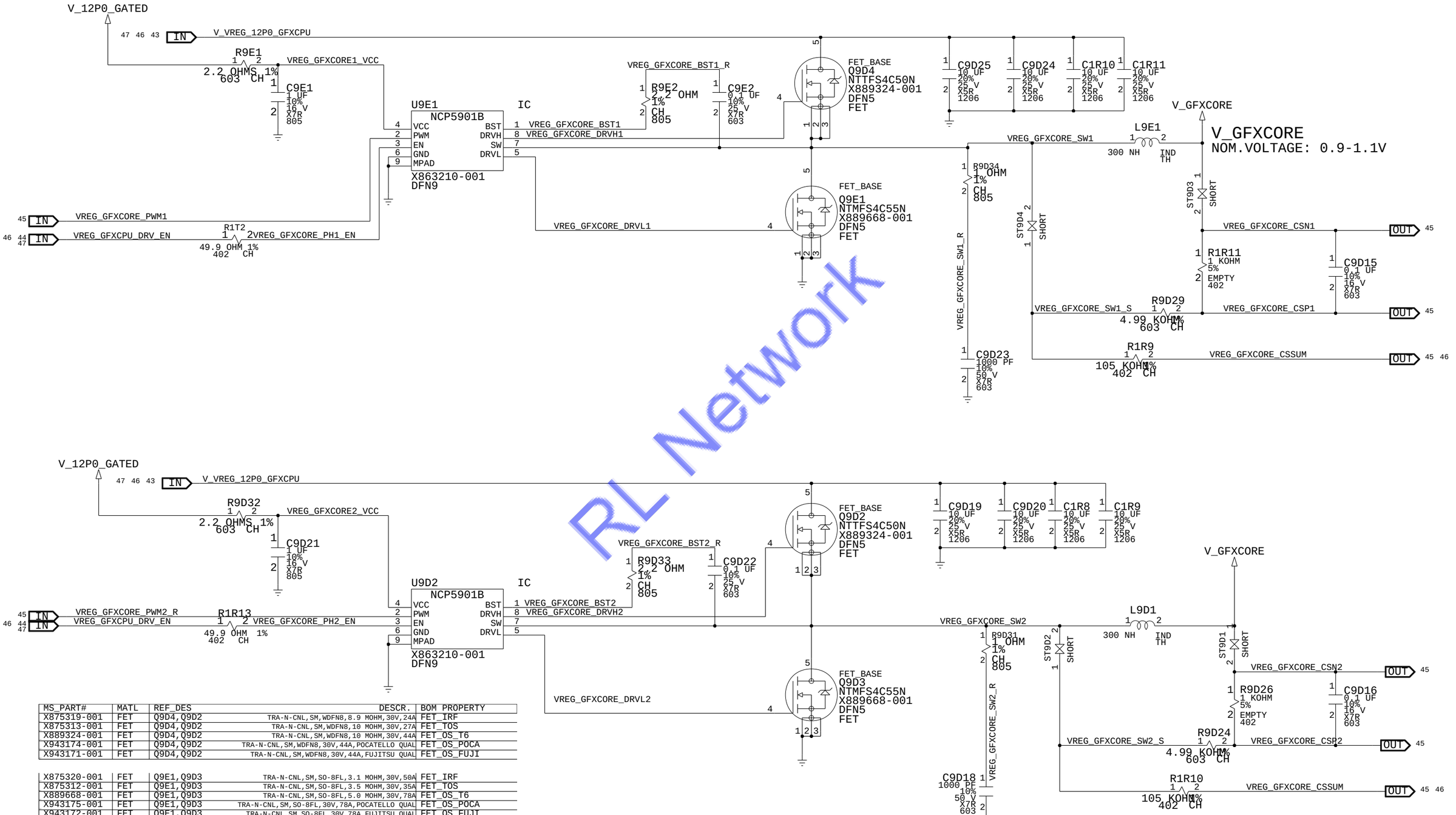
# VREGS: GFXCORE






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 45/72 | 45/72 | G | 1.01 |

# VREGS: GFXCORE OUTPUT PHASE 1 & 2

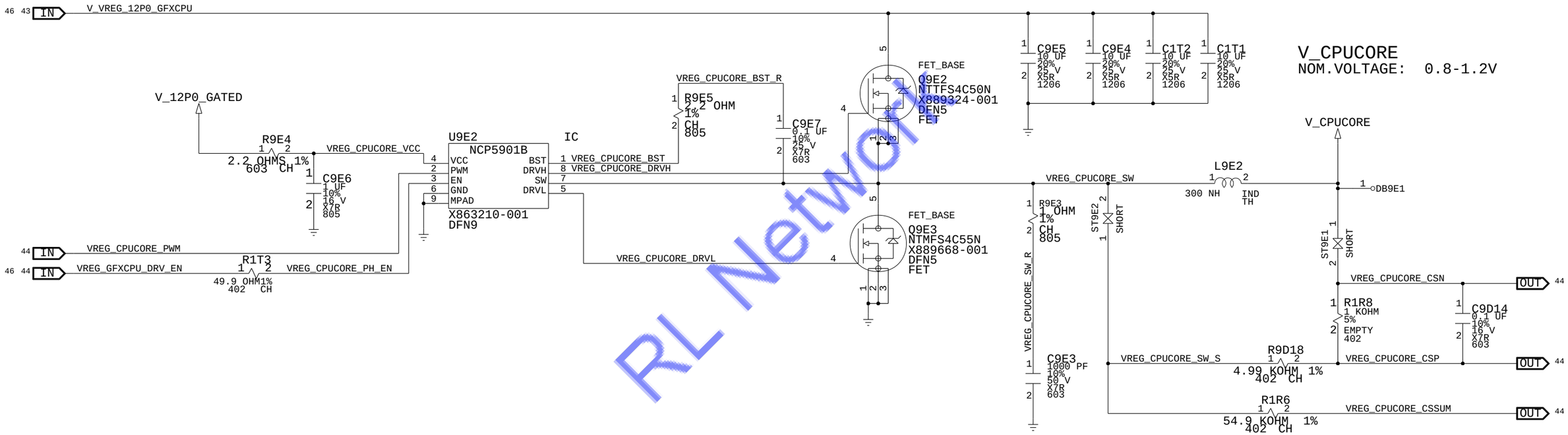





| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X875319-001 | FET | Q9D4,Q9D2 | TRA-N-CNL,SM,WDFN8,8.9 MOHM,30V,24A | FET_IRF |
| X875313-001 | FET | Q9D4,Q9D2 | TRA-N-CNL,SM,WDFN8,10 MOHM,30V,27A | FET_TOS |
| X889324-001 | FET | Q9D4,Q9D2 | TRA-N-CNL,SM,WDFN8,10 MOHM,30V,44A | FET_OS_T6 |
| X943174-001 | FET | Q9D4,Q9D2 | TRA-N-CNL,SM,WDFN8,30V,44A,POCATELLO QUAL | FET_OS_POCA |
| X943171-001 | FET | Q9D4,Q9D2 | TRA-N-CNL,SM,WDFN8,30V,44A,FUJITSU QUAL | FET_OS_FUJI |
| X875320-001 | FET | Q9E1,Q9D3 | TRA-N-CNL,SM,SO-8FL,3.1 MOHM,30V,50A | FET_IRF |
| X875312-001 | FET | Q9E1,Q9D3 | TRA-N-CNL,SM,SO-8FL,3.5 MOHM,30V,35A | FET_TOS |
| X889668-001 | FET | Q9E1,Q9D3 | TRA-N-CNL,SM,SO-8FL,5.0 MOHM,30V,78A | FET_OS_T6 |
| X943175-001 | FET | Q9E1,Q9D3 | TRA-N-CNL,SM,SO-8FL,30V,78A,POCATELLO QUAL | FET_OS_POCA |
| X943172-001 | FET | Q9E1,Q9D3 | TRA-N-CNL,SM,SO-8FL,30V,78A,FUJITSU QUAL | FET_OS_FUJI |

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 46/72 | 46/72 | G | 1.01 |

# VREGS: CPUCORE OUTPUT PHASE



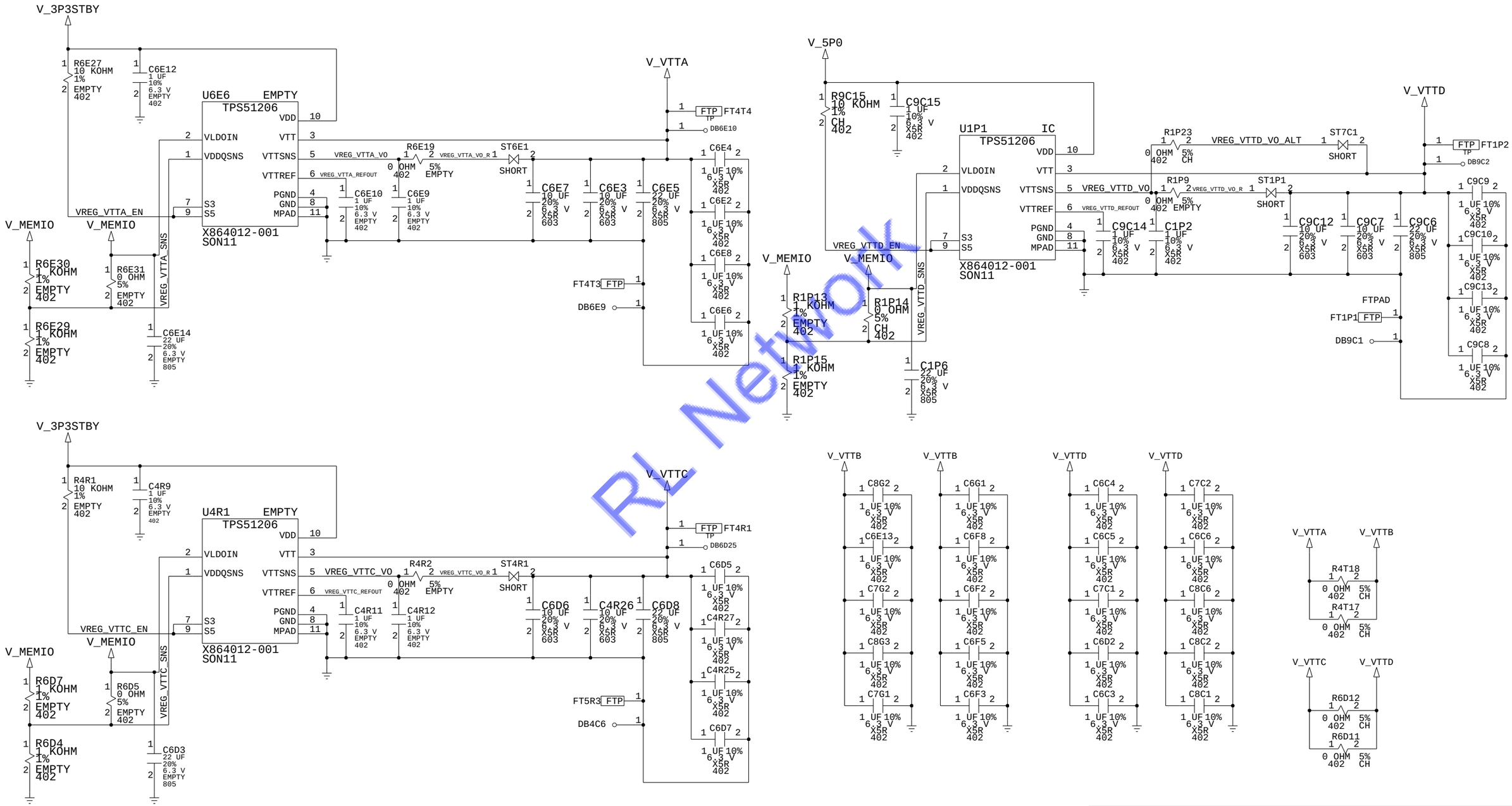



| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X875319-001 | FET | Q9E2 | TRA-N-CNL,SM,WDFN8,8.9 MOHM,30V,24A | FET_IRF |
| X875313-001 | FET | Q9E2 | TRA-N-CNL,SM,WDFN8,10 MOHM,30V,27A | FET_TOS |
| X889324-001 | FET | Q9E2 | TRA-N-CNL,SM,WDFN8,10 MOHM,30V,44A | FET_OS_T6 |
| X943174-001 | FET | Q9E2 | TRA-N-CNL,SM,WDFN8,30V,44A,POCATELLO QUAL | FET_OS_POCA |
| X943171-001 | FET | Q9E2 | TRA-N-CNL,SM,WDFN8,30V,44A,FUJITSU QUAL | FET_OS_FUJI |

| | | | | |
|---|---|---|---|---|
| X875320-001 | FET | Q9E3 | TRA-N-CNL,SM,SO-8FL,3.1 MOHM,30V,50A | FET_IRF |
| X875312-001 | FET | Q9E3 | TRA-N-CNL,SM,SO-8FL,3.5 MOHM,30V,35A | FET_TOS |
| X889668-001 | FET | Q9E3 | TRA-N-CNL,SM,SO-8FL,5.0 MOHM,30V,78A | FET_OS_T6 |
| X943175-001 | FET | Q9E3 | TRA-N-CNL,SM,SO-8FL,30V,78A,POCATELLO QUAL | FET_OS_POCA |
| X943172-001 | FET | Q9E3 | TRA-N-CNL,SM,SO-8FL,30V,78A,FUJITSU QUAL | FET_OS_FUJI |

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 47/72 | 47/72 | G | 1.01 |

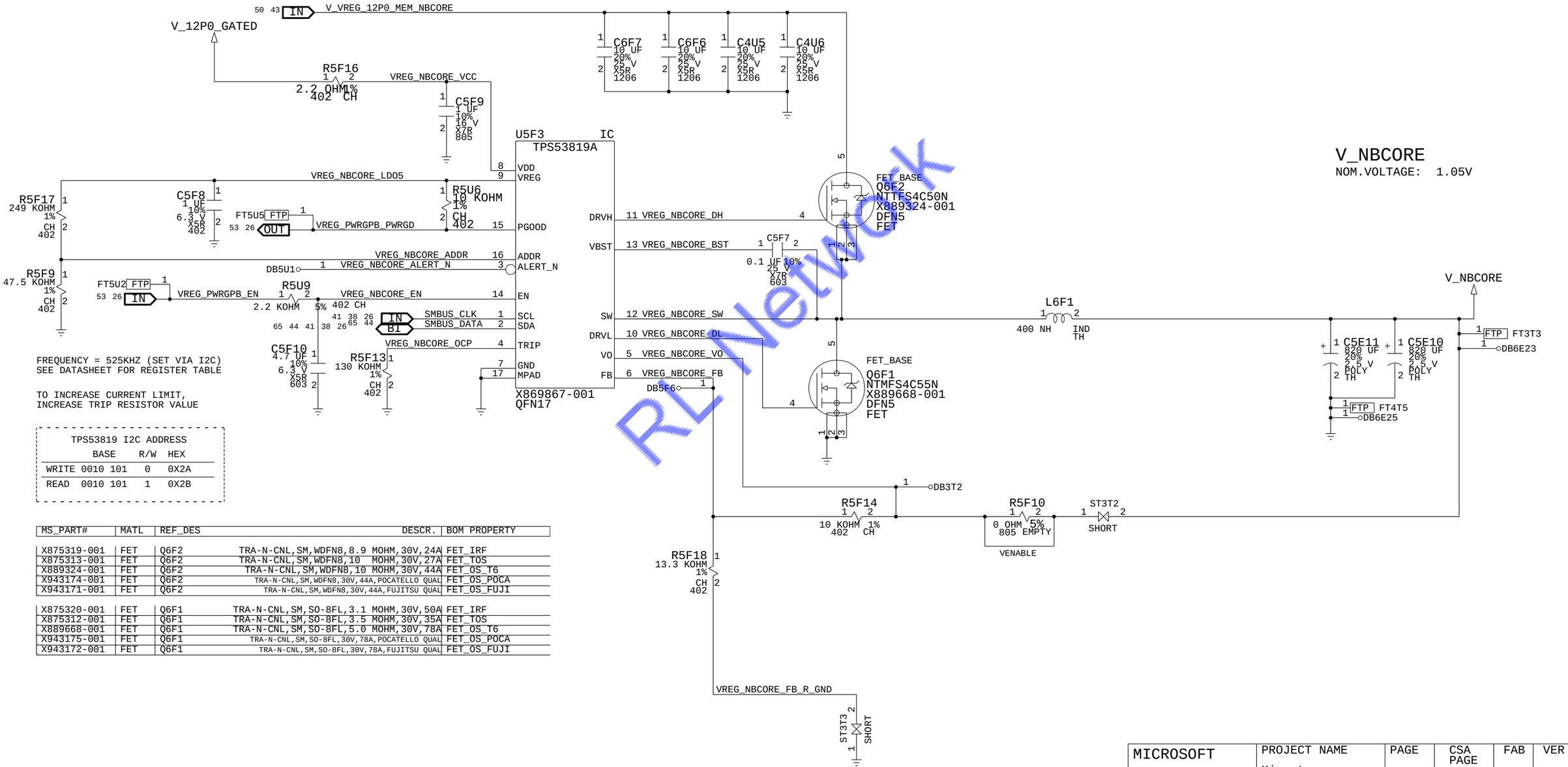
# VREGS: VTT TERMINATION






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 48/72 | 48/72 | G | 1.01 |

# VREGS: NBCORE




FREQUENCY = 525KHZ (SET VIA I2C)
SEE DATASHEET FOR REGISTER TABLE

TO INCREASE CURRENT LIMIT,
INCREASE TRIP RESISTOR VALUE

TPS53819 I2C ADDRESS

| | BASE | R/W | HEX |
|---|---|---|---|
| WRITE | 0010 101 | 0 | 0X2A |
| READ | 0010 101 | 1 | 0X2B |

| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X875319-001 | FET | Q6F2 | TRA-N-CNL,SM,WDFN8,8.9 MOHM,30V,24A | FET_IRF |
| X875313-001 | FET | Q6F2 | TRA-N-CNL,SM,WDFN8,10 MOHM,30V,27A | FET_TOS |
| X889324-001 | FET | Q6F2 | TRA-N-CNL,SM,WDFN8,10 MOHM,30V,44A | FET_OS_T6 |
| X943174-001 | FET | Q6F2 | TRA-N-CNL,SM,WDFN8,30V,44A,POCATELLO QUAL | FET_OS_POCA |
| X943171-001 | FET | Q6F2 | TRA-N-CNL,SM,WDFN8,30V,44A,FUJITSU QUAL | FET_OS_FUJI |
| X875320-001 | FET | Q6F1 | TRA-N-CNL,SM,SO-8FL,3.1 MOHM,30V,50A | FET_IRF |
| X875312-001 | FET | Q6F1 | TRA-N-CNL,SM,SO-8FL,3.5 MOHM,30V,35A | FET_TOS |
| X889668-001 | FET | Q6F1 | TRA-N-CNL,SM,SO-8FL,5.0 MOHM,30V,78A | FET_OS_T6 |
| X943175-001 | FET | Q6F1 | TRA-N-CNL,SM,SO-8FL,30V,78A,POCATELLO QUAL | FET_OS_POCA |
| X943172-001 | FET | Q6F1 | TRA-N-CNL,SM,SO-8FL,30V,78A,FUJITSU QUAL | FET_OS_FUJI |

V_NBCORE
NOM.VOLTAGE: 1.05V



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 49/72 | 49/72 | G | 1.01 |

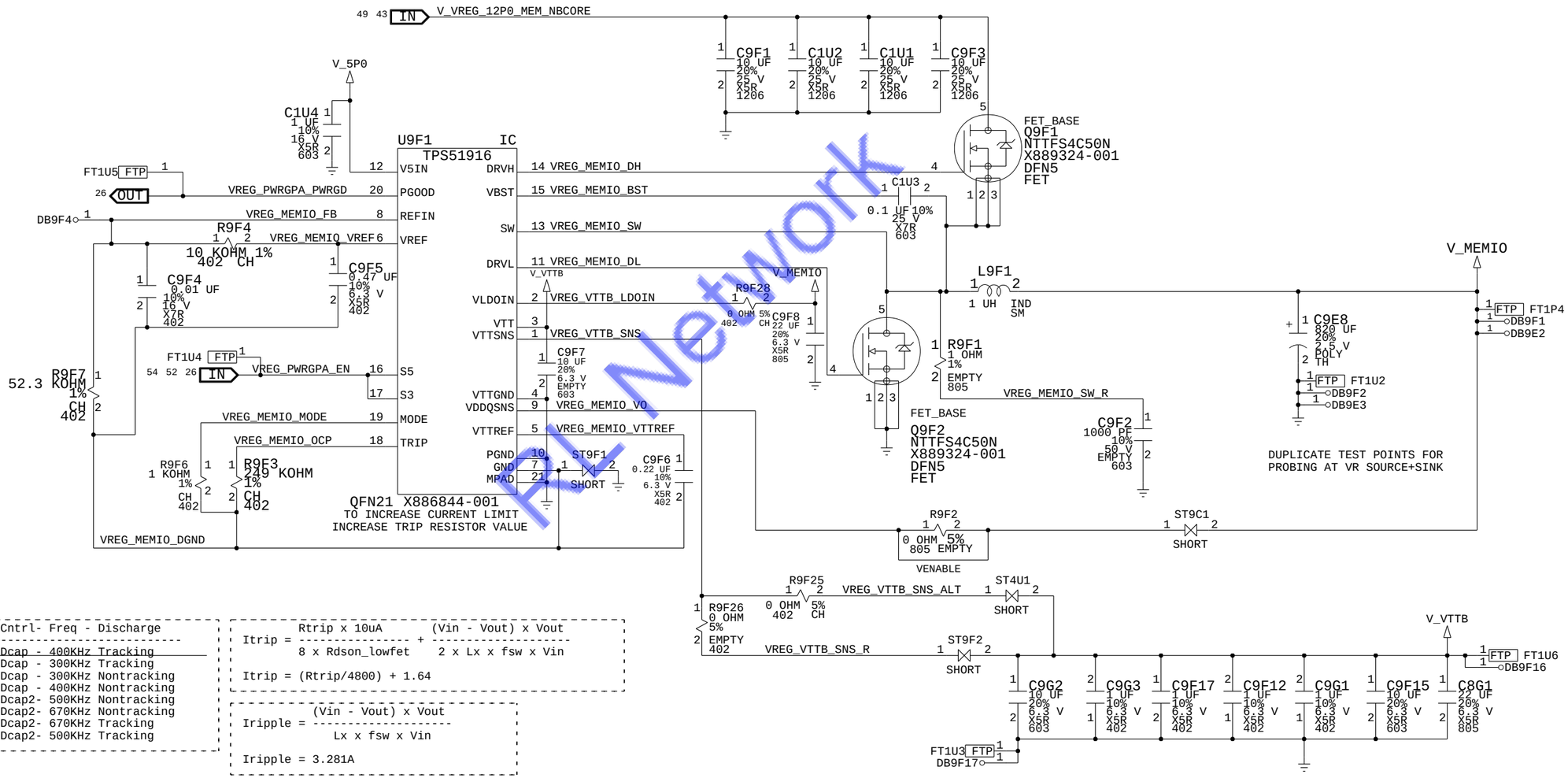
| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X875319-001 | FET | Q9F1 | TRA-N-CNL,SM,WDFN8,8.9 MOHM,30 V,24 A | FET_IRF |
| X875313-001 | FET | Q9F1 | TRA-N-CNL,SM,WDFN8,10 MOHM,30 V,27 A | FET_TOS |
| X889324-001 | FET | Q9F1 | TRA-N-CNL,SM,WDFN8,10 MOHM,30 V,44 A | FET_OS_T6 |
| X943174-001 | FET | Q9F1 | TRA-N-CNL,SM,WDFN8,30V,44A,POCATELLO QUAL | FET_OS_POCA |
| X943171-001 | FET | Q9F1 | TRA-N-CNL,SM,WDFN8,30V,44A,FUJITSU QUAL | FET_OS_FUJI |

| | | | | |
|---|---|---|---|---|
| X875319-001 | FET | Q9F2 | TRA-N-CNL,SM,WDFN8,8.9 MOHM,30 V,24 A | FET_IRF |
| X875313-001 | FET | Q9F2 | TRA-N-CNL,SM,WDFN8,10 MOHM,30 V,27 A | FET_TOS |
| X889324-001 | FET | Q9F2 | TRA-N-CNL,SM,WDFN8,10 MOHM,30 V,44 A | FET_OS_T6 |
| X943174-001 | FET | Q9F2 | TRA-N-CNL,SM,WDFN8,30V,44A,POCATELLO QUAL | FET_OS_POCA |
| X943171-001 | FET | Q9F2 | TRA-N-CNL,SM,WDFN8,30V,44A,FUJITSU QUAL | FET_OS_FUJI |

Q9F2 MATCHES Q9F1

# VREG: MEMIO

V_MEMIO
NOM. VOLTAGE: 1.50




| Rmode | Cntrl- Freq - Discharge |
|---|---|
| 200K | Dcap - 400KHz Tracking |
| 100K | Dcap - 300KHz Tracking |
| 68K | Dcap - 300KHz Nontracking |
| 47K | Dcap - 400KHz Nontracking |
| 33K | Dcap2- 500KHz Nontracking |
| 22K | Dcap2- 670KHz Nontracking |
| 12K | Dcap2- 670KHz Tracking |
| 1K | Dcap2- 500KHz Tracking |

$$Itrip = \frac{Rtrip \times 10uA}{8 \times Rdson\_lowfet} + \frac{(Vin - Vout) \times Vout}{2 \times Lx \times fsw \times Vin}$$

$$Itrip = (Rtrip/4800) + 1.64$$

$$Iripple = \frac{(Vin - Vout) \times Vout}{Lx \times fsw \times Vin}$$

$$Iripple = 3.281A$$

$$Vout = \frac{1.8 \times R2}{R1 + R2} + \frac{Iripple \times ESR}{2}$$

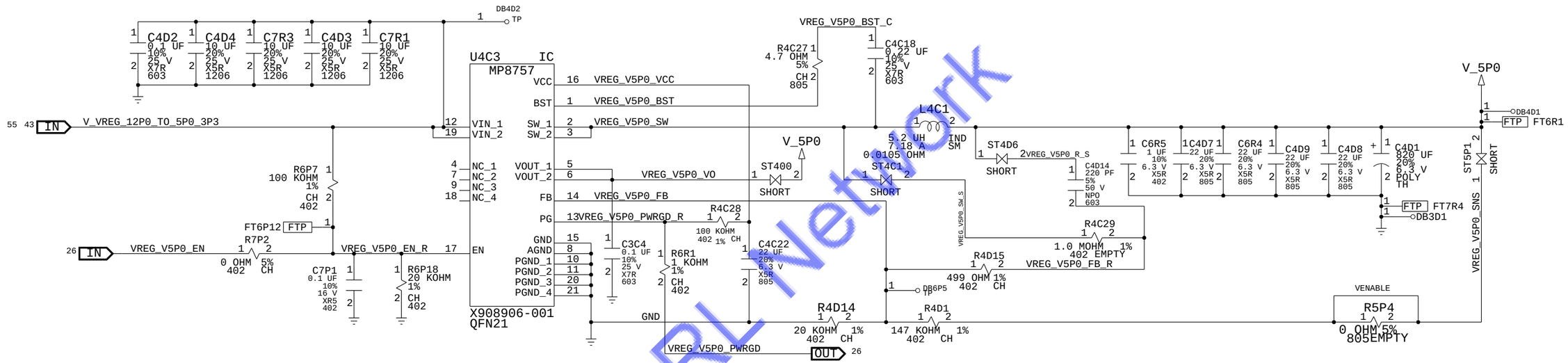
$$Vout = 1.8\ R2/(R1+R2) + 0.010$$



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 50/72 | 50/72 | G | 1.01 |

# VREGS: V5P0

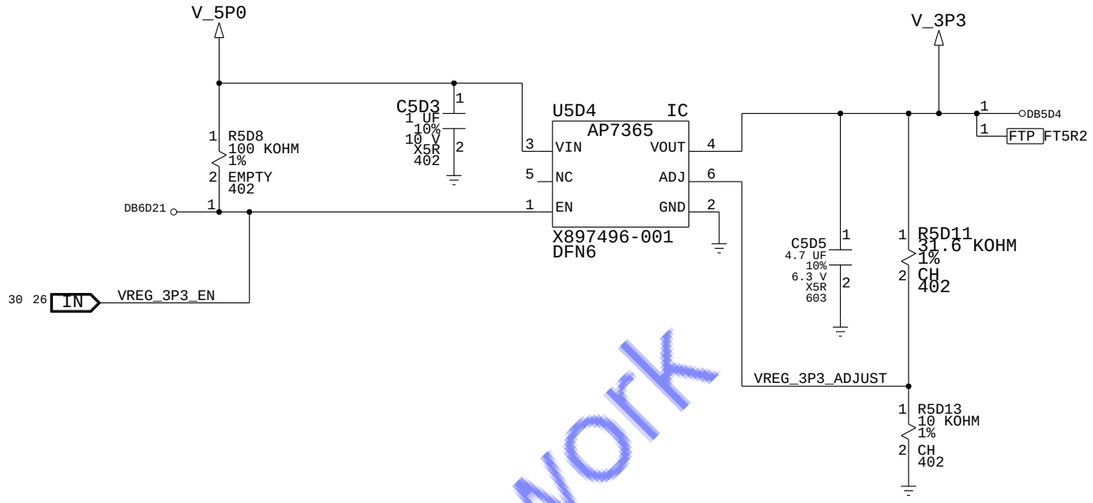
V_5P0
NOM. VOLTAGE: 5.09

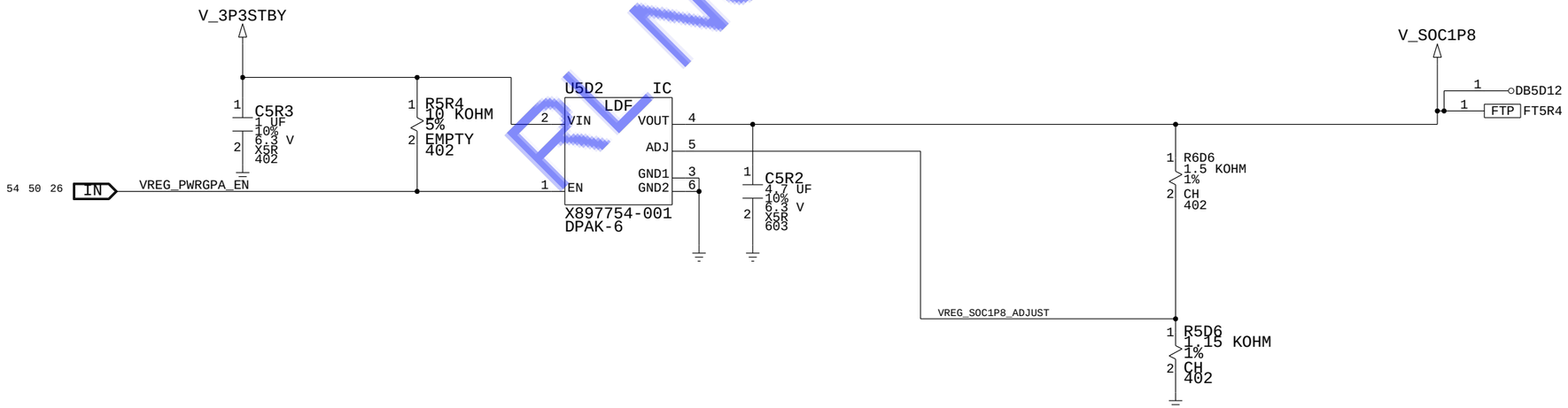





| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 51/72 | 51/72 | G | 1.01 |

# VREGS: V3P3, VS0C1P8



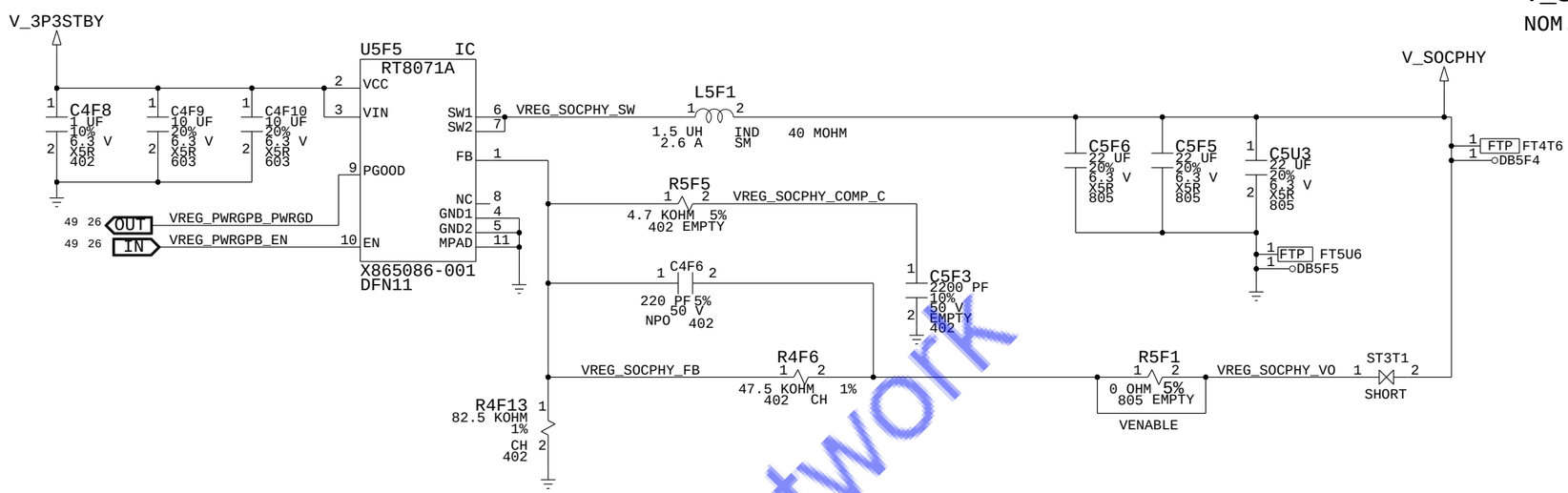



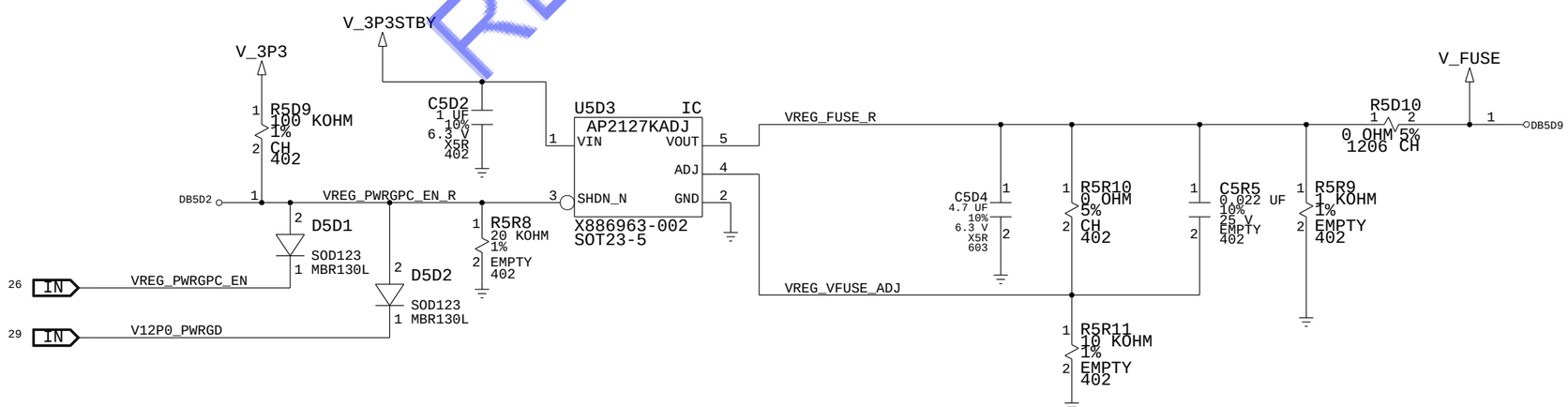



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 52/72 | 52/72 | G | 1.01 |

# VREGS: VSOCPHY/VFUSE

V_SOCPHY
NOM. VOLTAGE: 0.95

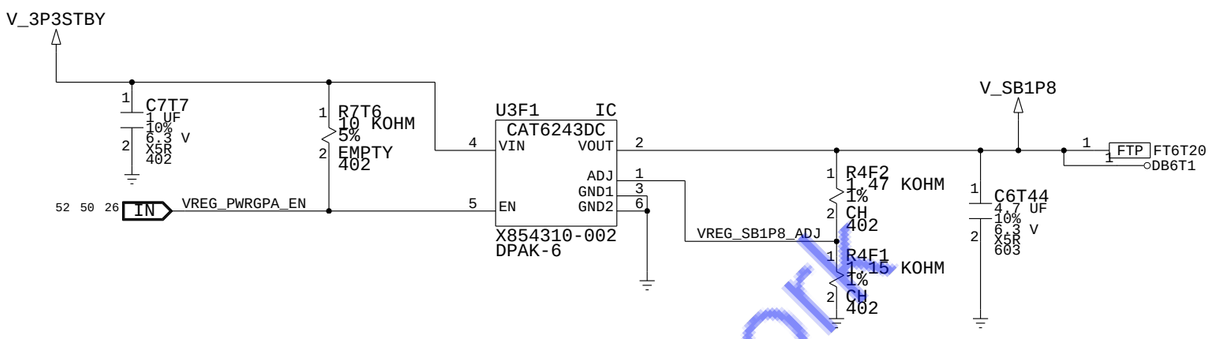


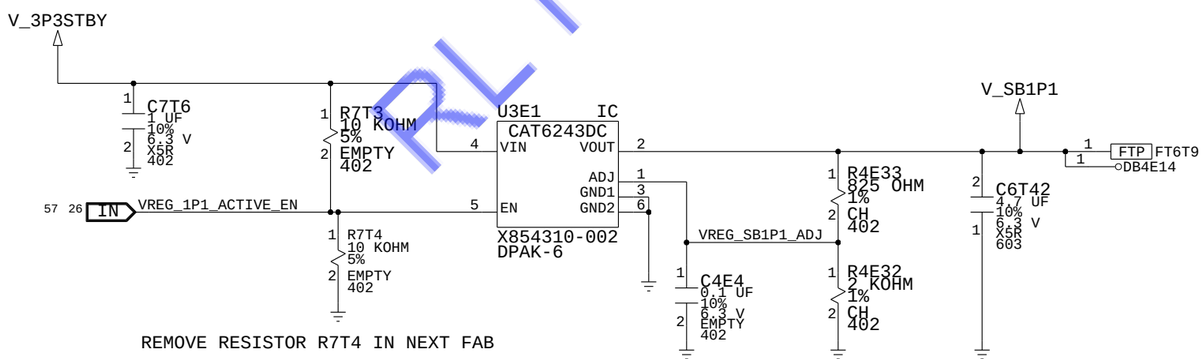






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 53/72 | 53/72 | G | 1.01 |

# VREGS: V_SB1P8, V_SB1P1



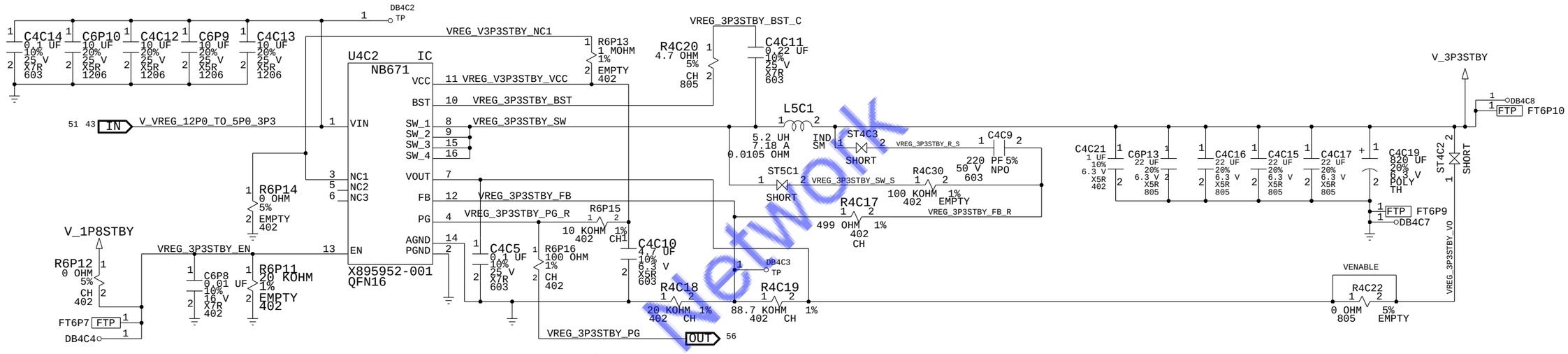

REMOVE RESISTOR R7T4 IN NEXT FAB



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 54/72 | 54/72 | G | 1.01 |

# VREGS: V3P3 STANDBY

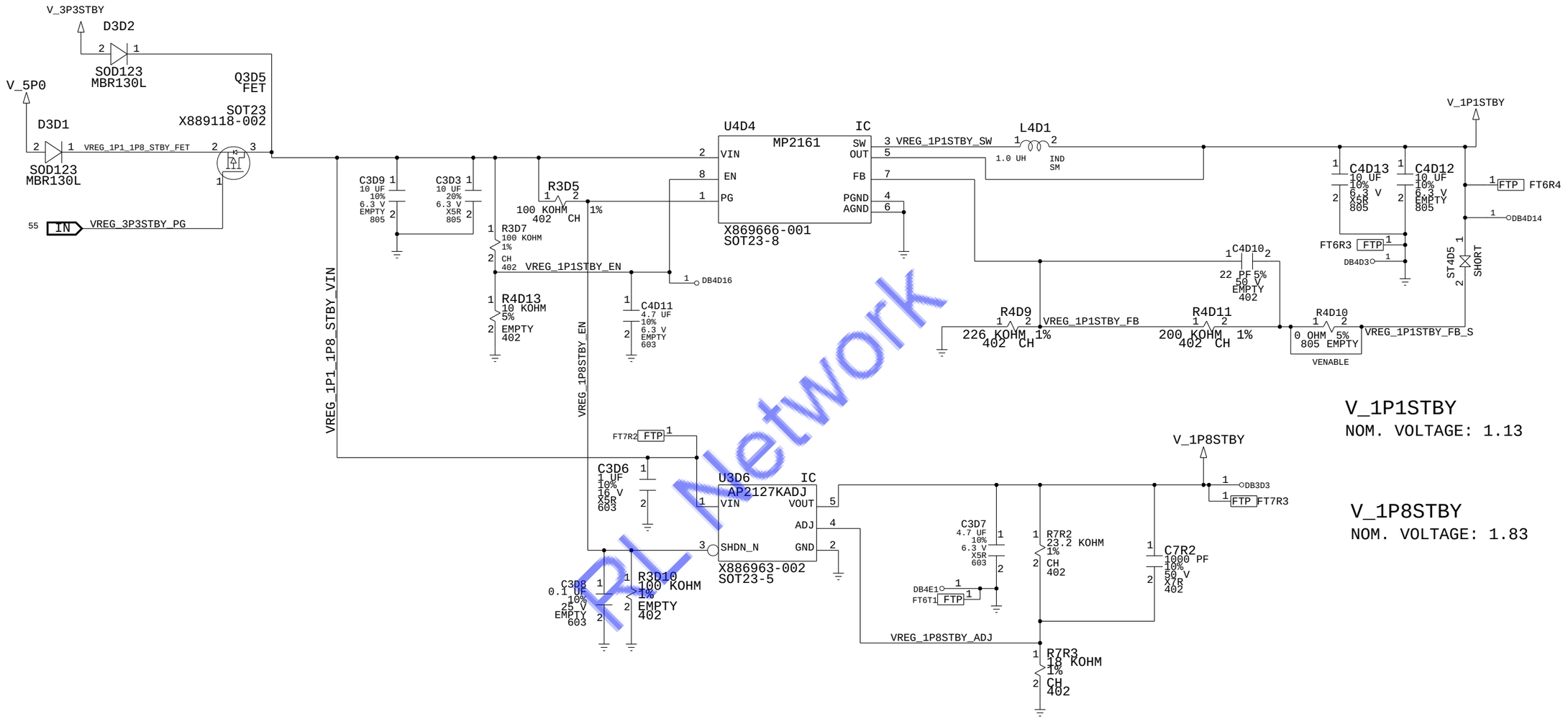
V_3P3STBY
NOM. VOLTAGE: 3.31






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 55/72 | 55/72 | G | 1.01 |

# VREGS: V1P1 STANDBY, V1P8 STANDBY



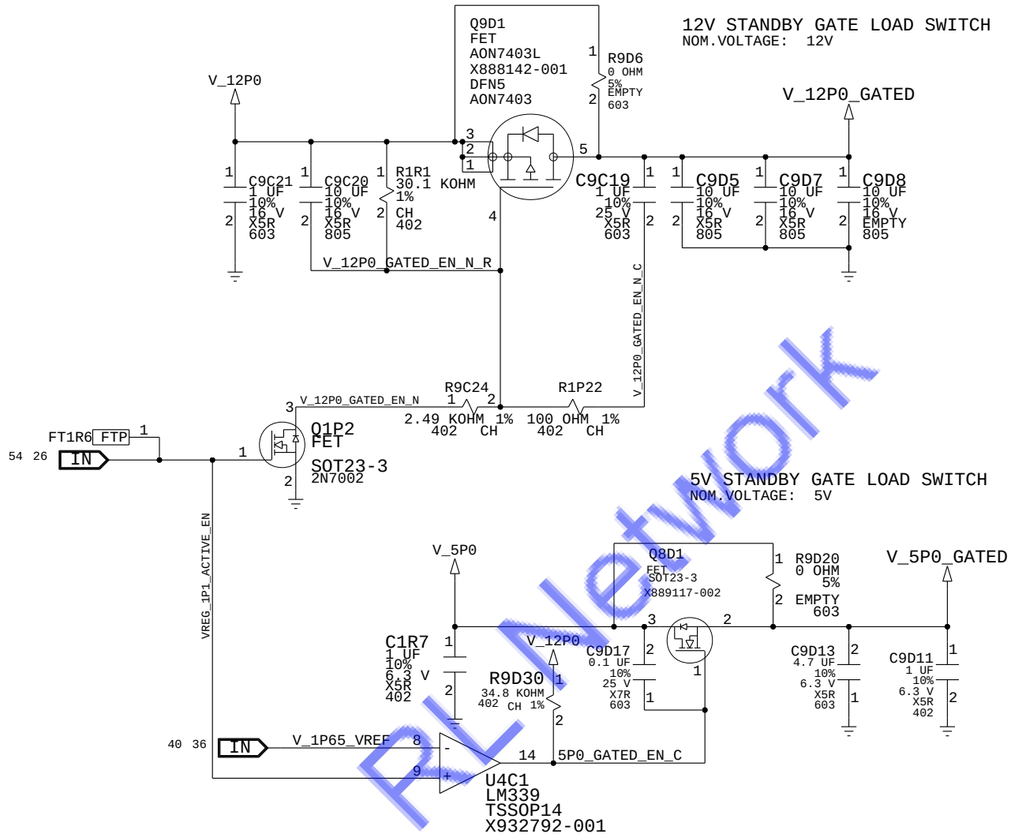

V_1P1STBY
NOM. VOLTAGE: 1.13

V_1P8STBY
NOM. VOLTAGE: 1.83



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 56/72 | 56/72 | G | 1.01 |

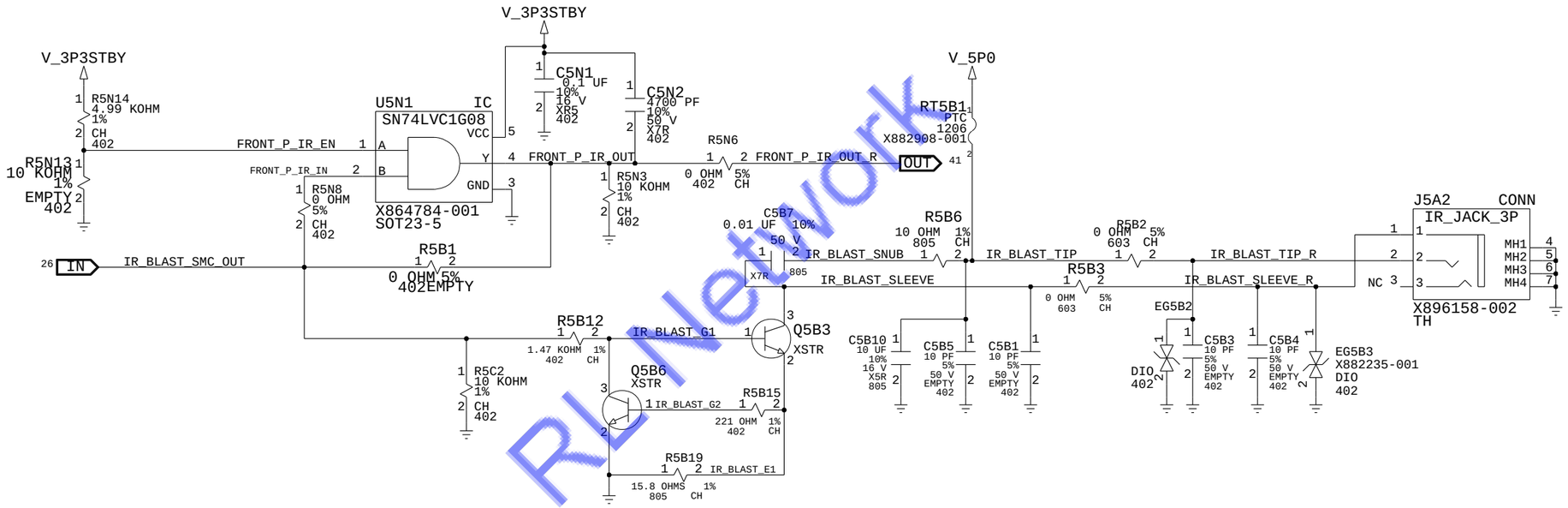
# STANDBY GATES






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 57/72 | 57/72 | G | 1.01 |

# IR BLASTER






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 58/72 | 58/72 | G | 1.01 |

# I2C

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| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 59/72 | 59/72 | G | 1.01 |

MARGIN: SOCPHY,SOC1P8,MEMIO,NBCORE

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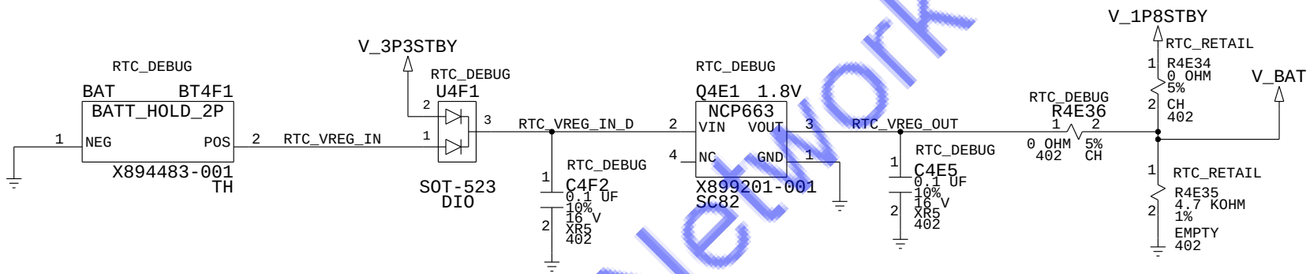
# V_BAT




V_BAT
NOM.VOLTAGE: 1.8V



| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X895557-001 | BAT | COIN_CELL1 | BAT-COIN,OTH,3 V,OTHER,OTH,2032(VARTA QUAL) | BAT_VARTA |

VARTA MAXIMUM OPERATING TEMP 70C

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 61/72 | 61/72 | G | 1.01 |

# MONITOR: NBCORE,MEMIO

BLANK

# MONITOR: VSOC1P8,VSOCPHY

BLANK



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 63/72 | 63/72 | G | 1.01 |

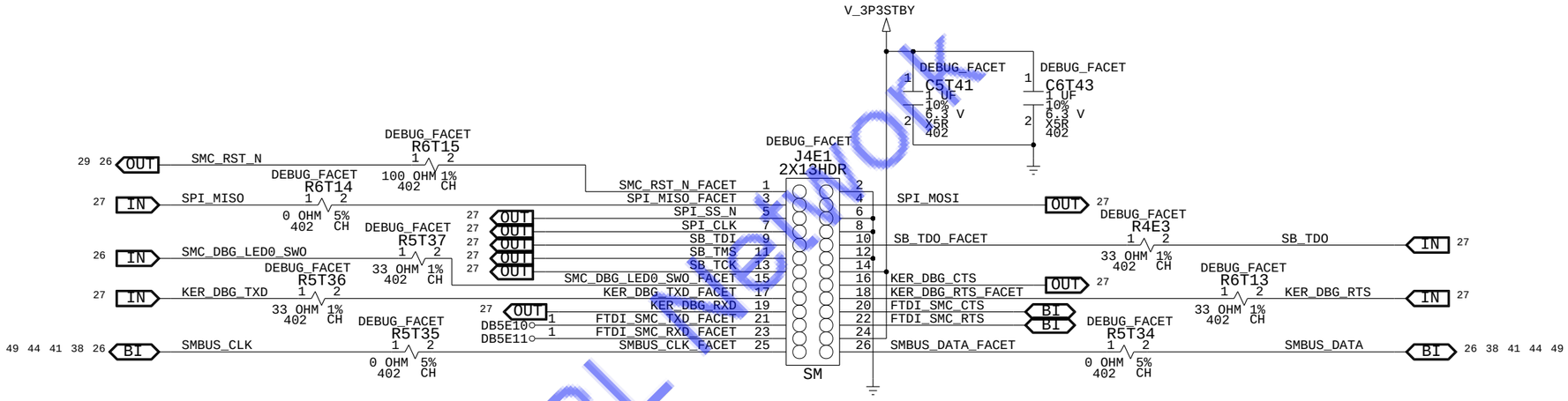
# MONITOR: V12P0

BLANK



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 64/72 | 64/72 | G | 1.01 |

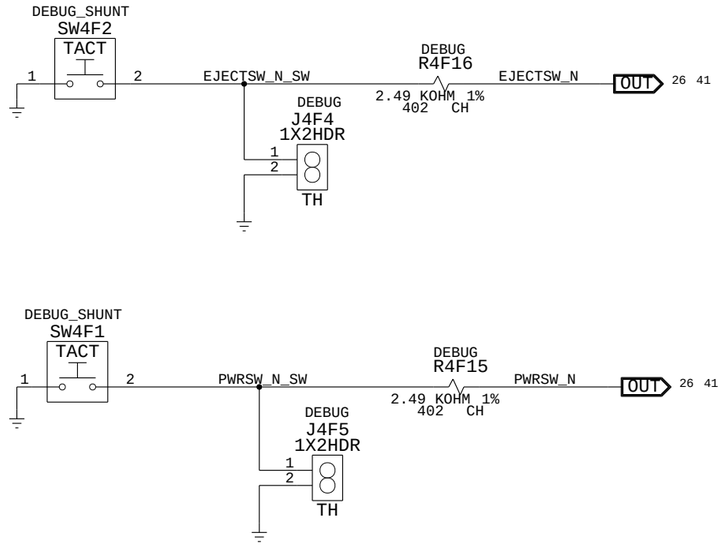
# CONN: FACET BOARD





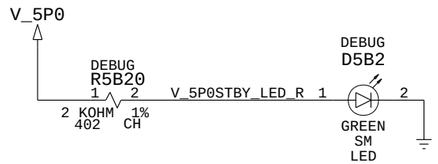

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 65/72 | 65/72 | G | 1.01 |

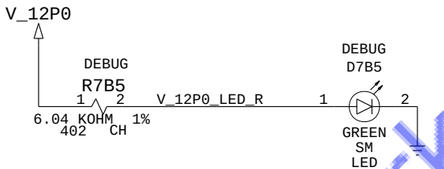
# CONN: SWITCHES

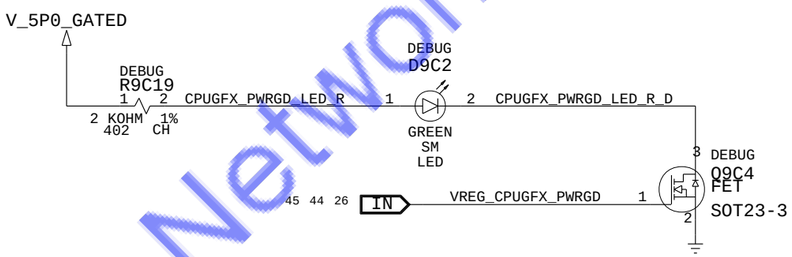








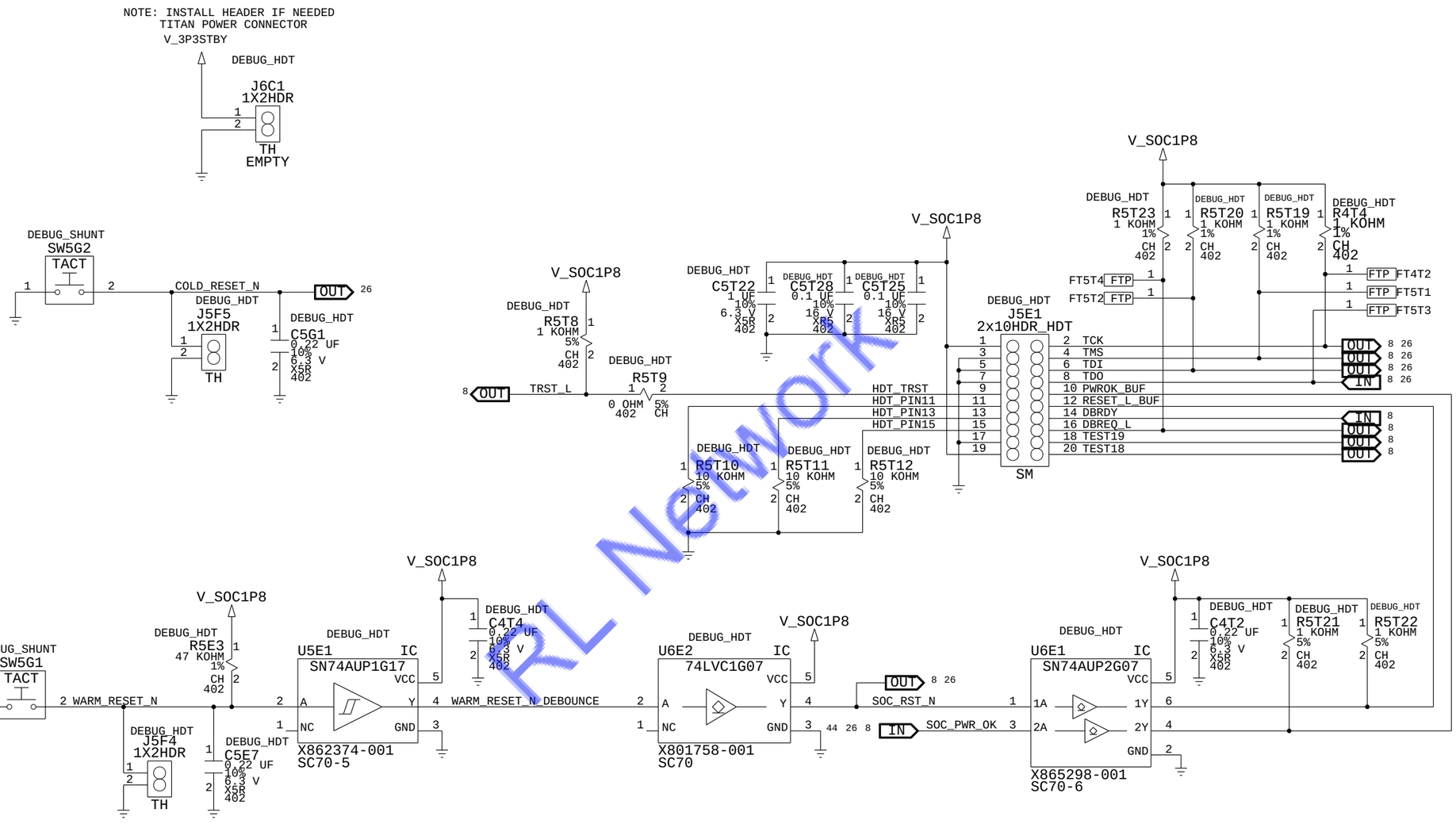






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 66/72 | 66/72 | G | 1.01 |

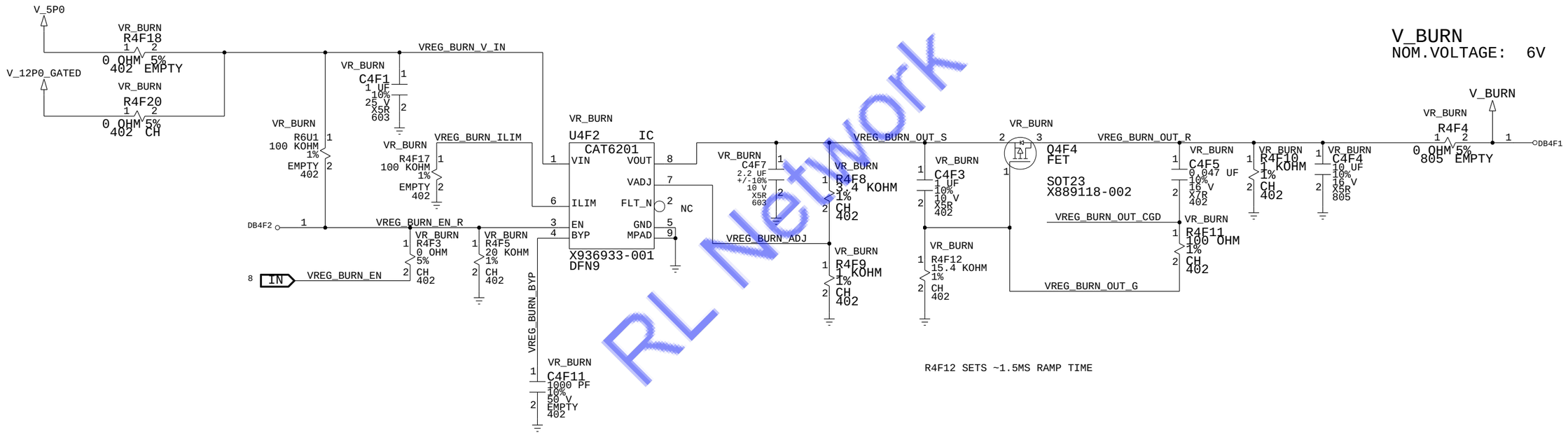
# CONN: HDT






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 67/72 | 67/72 | G | 1.01 |

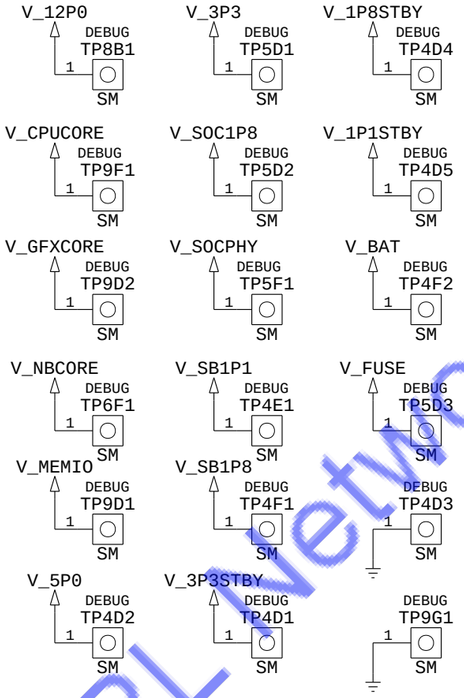
# DEBUG: V_BURN






| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 68/72 | 68/72 | G | 1.01 |

# DEBUG: VR HEADERS & TEST POINTS





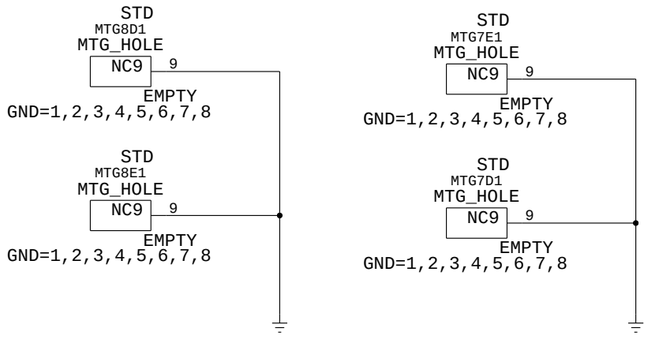

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 69/72 | 69/72 | G | 1.01 |

# DEBUG: CONNECTORS

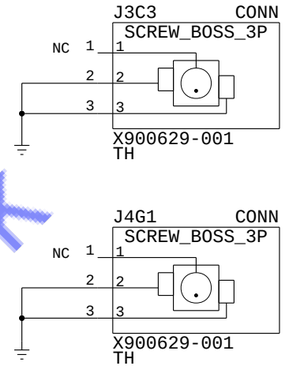
BLANK

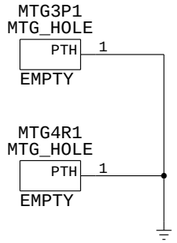
# LABELS AND MOUNTING

HEAT SINK MOUNTING HOLES




SCREW BOSS




INTELLIGENT SERIAL NUMBER TARGET

LB5G1
X801181-001
LABEL
1
1375X250_TARGET

| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X947889-001 | FR4 | PCB1 | PCB-RIGID,RETAIL,FAB G,6L,FR4,OSP | PCB_OSP |



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | VER |
|---|---|---|---|---|---|
| | Kingston | 71/72 | 71/72 | G | 1.01 |

# BOM DEFINITIONS

| BOM | DEFINTION |
|---|---|
| AUX | HDMI STUFFING OPTION. NEVER USED IN PRODUCTION. REWORK PURPOSES ONLY |
| COMMON | ALL COMPONENTS WITH NO BOM PROPERTY |
| DDC | HDMI STUFFING OPTION. ALWAYS USED IN PRODUCTION |
| DDR_BASE | DUMMY PLACE HOLDER FOR DDR3 DEVICES. NEVER USE THIS IN THE RECIPE FILE. SELECT ONE OF THESE 3 INSTEAD: DDR_HYNIX, DDR_MICRON, DDR_SAMSUNG |
| DDR_HYNIX | HYNIX DDR3 |
| DDR_MICRON | MICRON DDR3 |
| DDR_SAMSUNG | SAMSUNG DDR3 |
| DEBUG | COMPONENTS REQUIRED FOR BRING UP & DEBUG |
| DEBUG_HDT | HDT-RELATED DEBUG COMPONENTS |
| DEBUG_HDMI | DEBUG HDMI CONNECTOR USED 8L DEBUG BOARDS |
| 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_20NM, EMMC_HYNIX_5P0, EMMC_HYNIX_1XNM, EMMC_SAMSUNG AND EMMC_TOSHIBA |
| EMMC_HYNIX_5P0 | HYNIX EMMC V5.0 EMMC DEVICE |
| FET_BASE | DUMMY PLACE HOLDER FOR HIGH AND LOW FETS. NEVER USE THIS IN THE RECIPE FILE. SELECT ONE OF THESE INSTEAD: FET_AOS, FET_OS_T6, FET_STM, OR FET_TOS |
| FET_IRF | INTERNATIONAL RECTIFIER FETS USED FOR VOLTAGE REGUALTORS |
| FET_OS_T6 | ON-SEMI T6 FETS USED FOR VOLTAGE REGULATORS |
| FET_STM | STMICROELECTRONICS FETS USED FOR VOLTAGE REGULATORS |
| FET_TOS | TOSHIBA FETS USED FOR VOLTAGE REGULATORS |
| GARFIELD | CONTAINS GARFIELD (SOC) RELATED PASSIVE/ACTIVE COMPONENTS |
| KIC_BASE | DUMMY PLACE HOLDER FOR KIC. NEVER USE THIS IN THE RECIPE FILE. USE ONE OF THESE INSTEAD: KIC_DEV OR KIC_RETAIL |
| KIC_DEV | DEBUG VERSION OF KRAKEN |
| KIC_RETAIL | RETAIL VERSION OF KRAKEN |
| MEM_FIXED | SETS V_MEMIO TO A FIXED VOLTAGE (NON-MARGINED). MUST BE USED IN CONJUNCTION WITH NOT MEM_MM |
| MEM_MM | ALLOWS V_MEMIO TO BE MARGINED FOR M&M BOARDS. MUST BE USED IN CONJUNCTION WITH NOT MEM_FIXED |
| PANTHER | CONTAINS PANTHER (SOC) RELATED PASSIVE/ACTIVE COMPONENTS |
| PANTHER_SOC | PANTHER SYSTEM-ON-CHIP (SOC) |
| PANTHER_SOC_LP | PANTHER SYSTEM-ON-CHIP (SOC) LOW POWER VERSION |
| PCB_GI | FAB TYPE: GOLD |
| PCB_OSP | FAB TYPE: ORGANIC SOLDERABILITY PRESERVATIVE |
| RTC_RETAIL | RTC CIRCUIT IMPLEMENTATION FOR RETAIL BOARDS |
| RTC_DEBUG | RTC CIRCUIT IMPLEMENTATION FOR DEBUG BOARDS |
| SOC_BASE | DUMMY PLACE HOLDER FOR SOC |
| 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 |
| VRTB | BOOT STRAPPING RESISTOR ONLY TO BE POPULATED WHEN BUILDING VOLTAGE REGULATOR TEST BOARD WHICH CONTAINS NO SOC |
| WW | CAPACITORS WHICH NEED TO BE NO-STUFFED WHEN AI CPU/GPU SOCKET IS INSTALLED |



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