

Title	Page
Cover Sheet	1
Block Diagram	2
CLK Distribution, Power Sequence, Delivery	3,4,5
CPU-CLK/Control/MISC/PEG ,CPU-Memory	6,7,8,9,10,11,12
CPU-Power,CPU-GND	13,14
DDR4 DIMM 1,2 DDR4 DIMM 3,4 VREF	15,16,17,18,19
PCH-PCI/E/DMI/USB/CLK	20
PCH-SATA/HOST/FAN/GPIO	21
PCH-SMB/LPC/AUDIO/RTC/RST	22
PCH-POWER,GND/NVRAM	23,24,25
PCIE x16/x1/x16/x4/x16 Slot	26,27,28,29,30
TBT 1*5 header	31
LAN Killer E2205	32
M2_NGFF_S1	33
TPM	34
F_USB3.0 header	35
R_USB3.0 connector	36
F_USB2.0 header	37
R_USB2.0 connector	38
SATA port	39
CREATIVE Sound Core3D	40
NCT6683D-T	41
Fan control	42
VRD12.5 - PWM-ISL6376	43
(Dr.MOS) PHASE1~10	44
Vcore Decoupling Caps	45
DDR Power	46
PCH Core Power	47
ATX/F_Panel/LED	48
CPU XDP / TPM	49
Manual parts	50

CPU:

INTEL HSW-E LGA2011-3

System Chipset:

INTEL - Wellsbug-X

OnBoard Chipset:

HD Audio Codec:ALC1150

RTL8161GSH

eSIO: NCT6683D-T

Flash ROM: 64 Mb SPI Quad Read

TPM: SLB9670

Main Memory:

DDR4 (2133MHz) * 4 (Qual Channel) @1.2V

Expansion Slots:

PCI Express (X16) Slot * 2

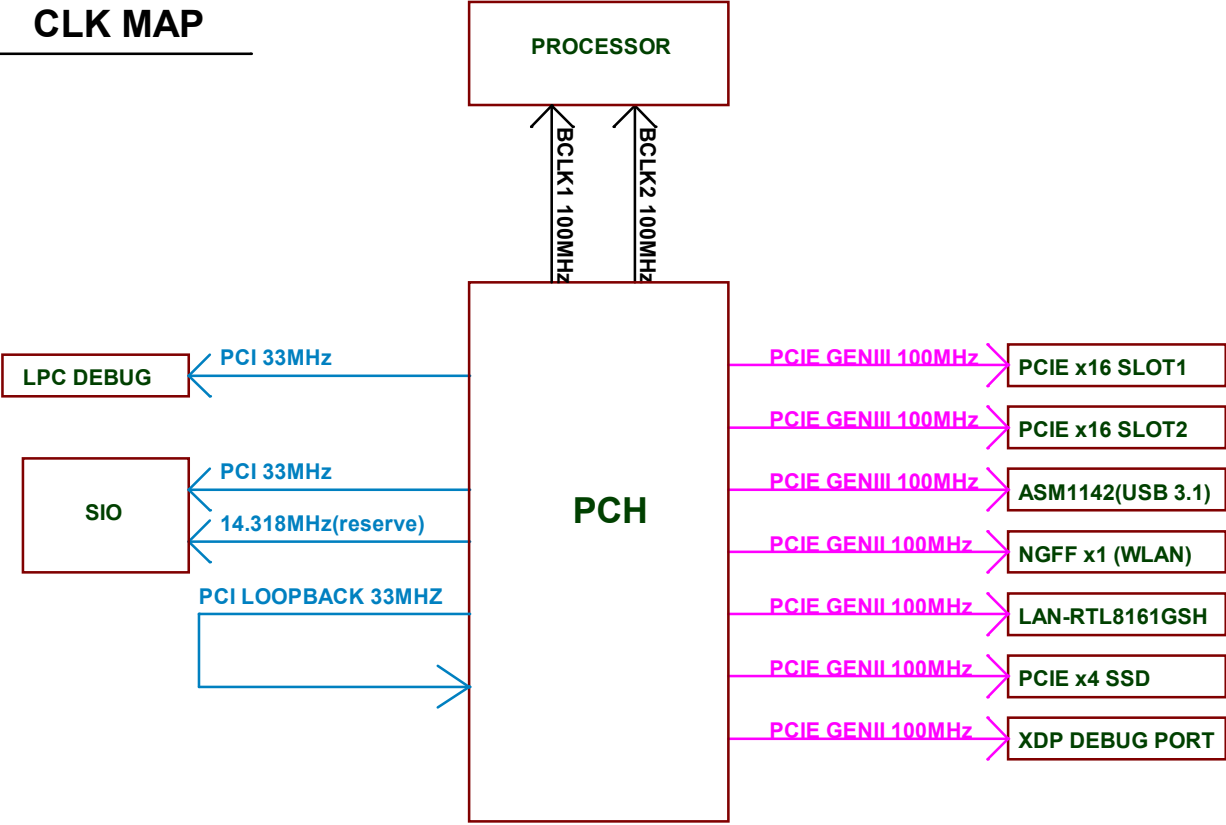
M.2 Key M(SSD) * 1

M.2 Key A(WLAN) * 1

PWM:

VRD12.5 - ISL6376 Extend to10-Phase Dr.MOS

CLK MAP



G3-->S5-->S0

3VSB

PCH_DPWROK

RSMRST#

PSIN#

PWRBTN#

SLP_S5#

SLP_S4#

SLP_S3#

PS_ON#

+12V/VCC5/VCC3

WBG_1P05

CPU_IO

PCH_1P5_PLL

VPP_2P5V

VCC_DDR

VCCP

VRM_PGD


MEM_PWRGD

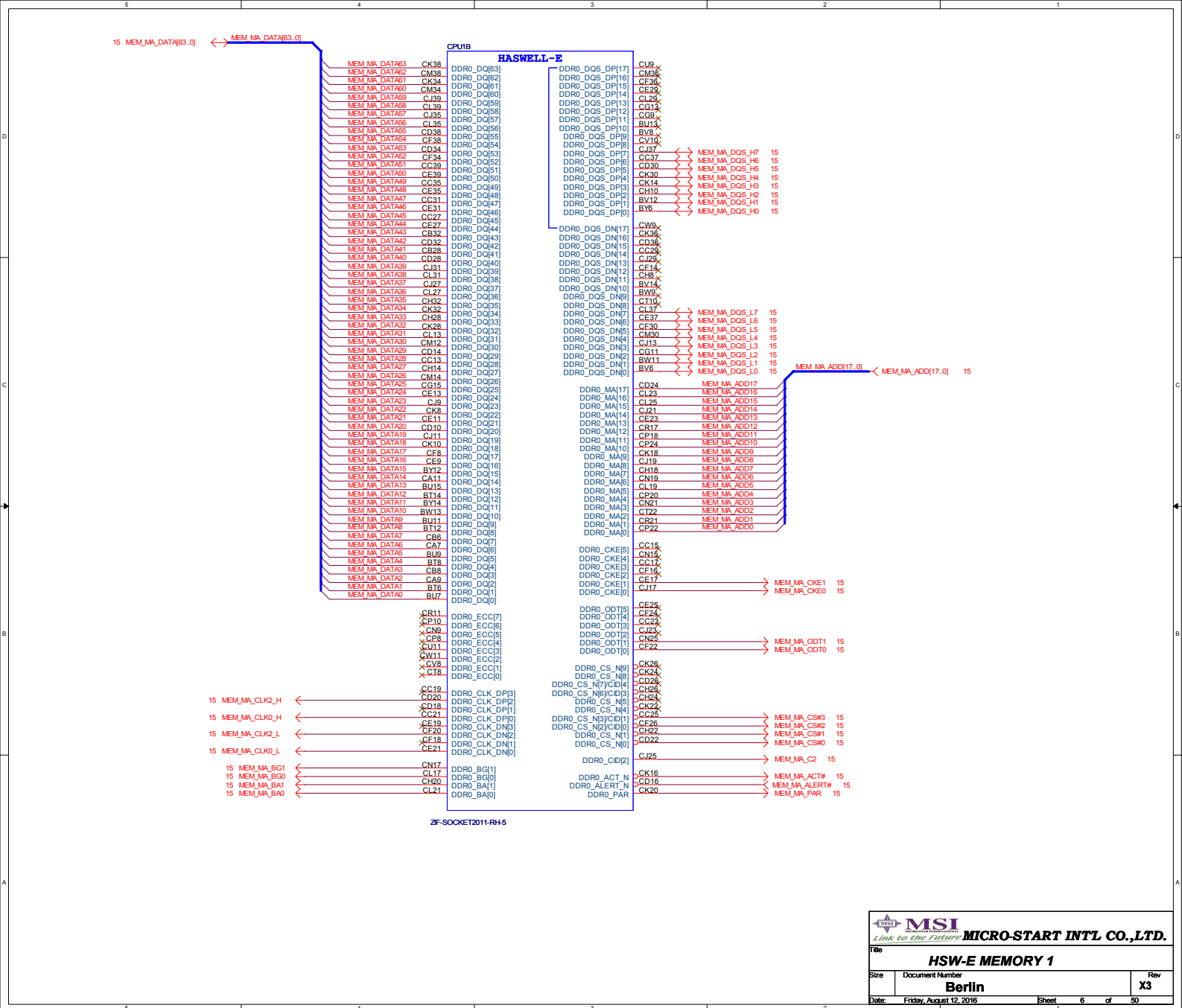
H_PWRGD

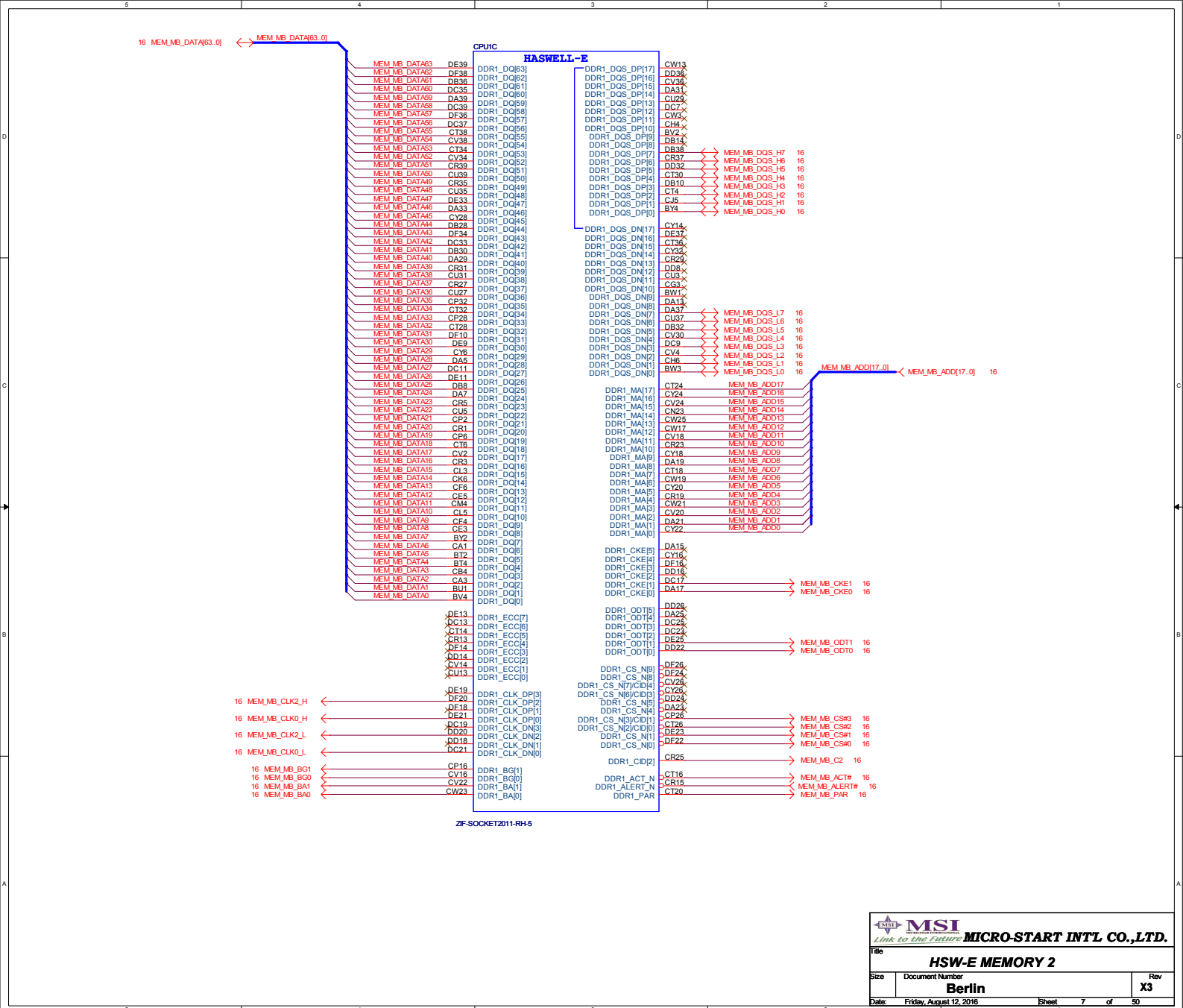
PWRGD_3V

PLTRST#

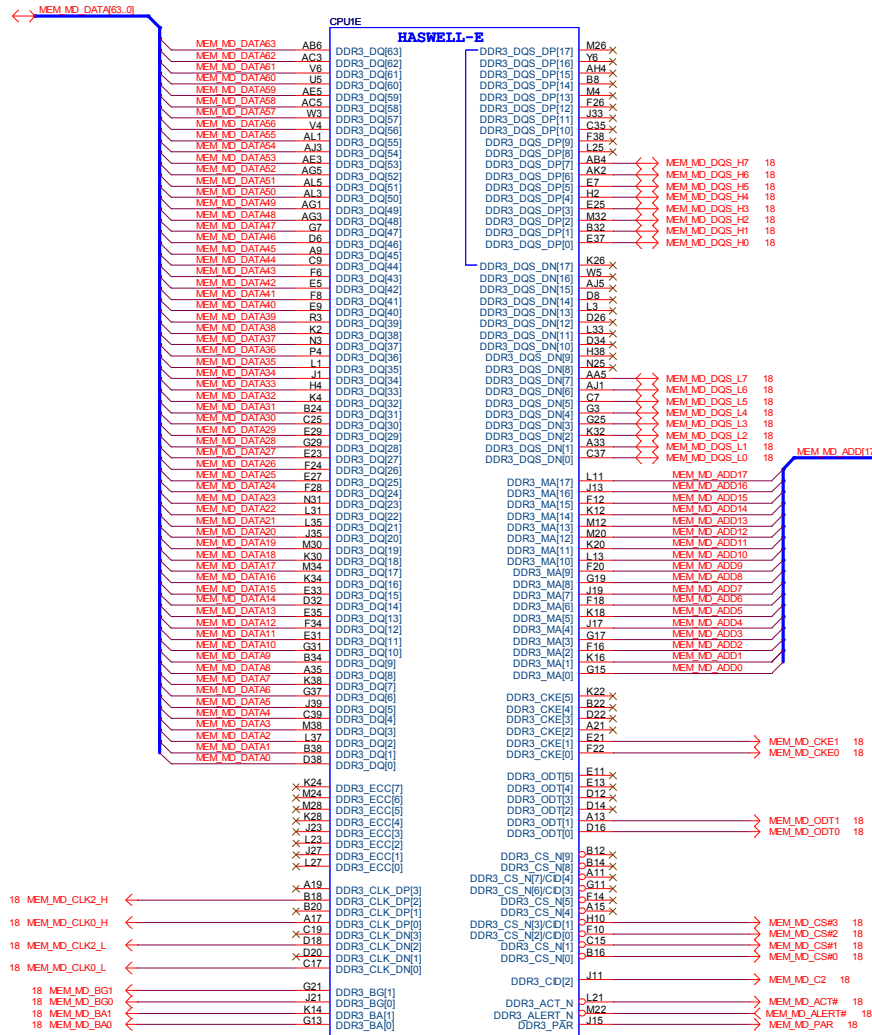
PLTRST_CPU#

 MICRO-START INTL CO.,LTD.		
Title Power Sequence		
Size	Document Number	Rev
	Berlin	X3
Date:	Friday, August 12, 2016	Sheet 4 of 50

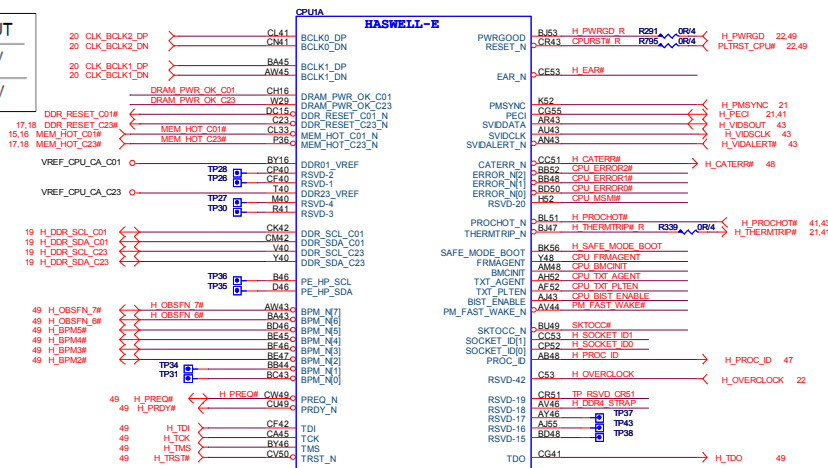




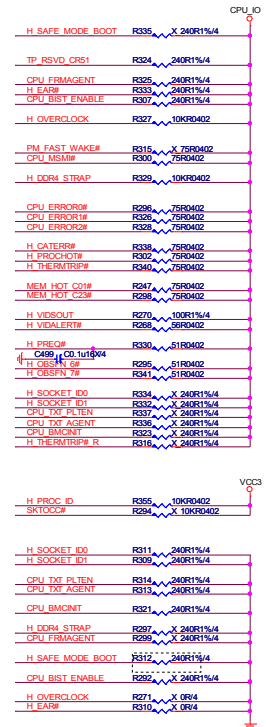
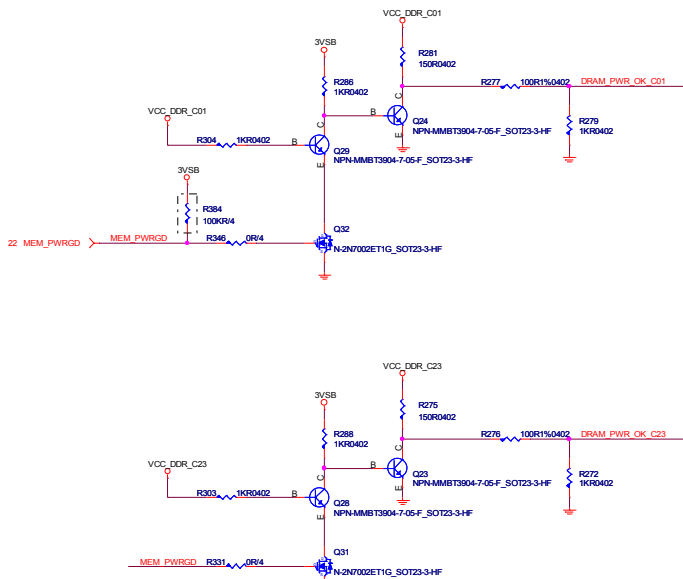
18 MEM_MD_DATA[63:0] ← MEM_MD_DATA[63:0]

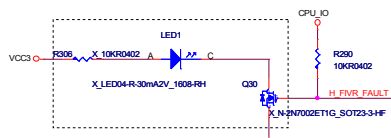
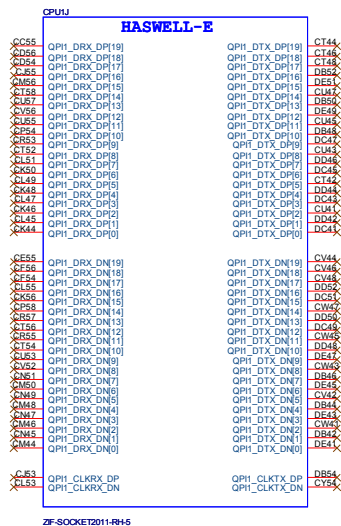


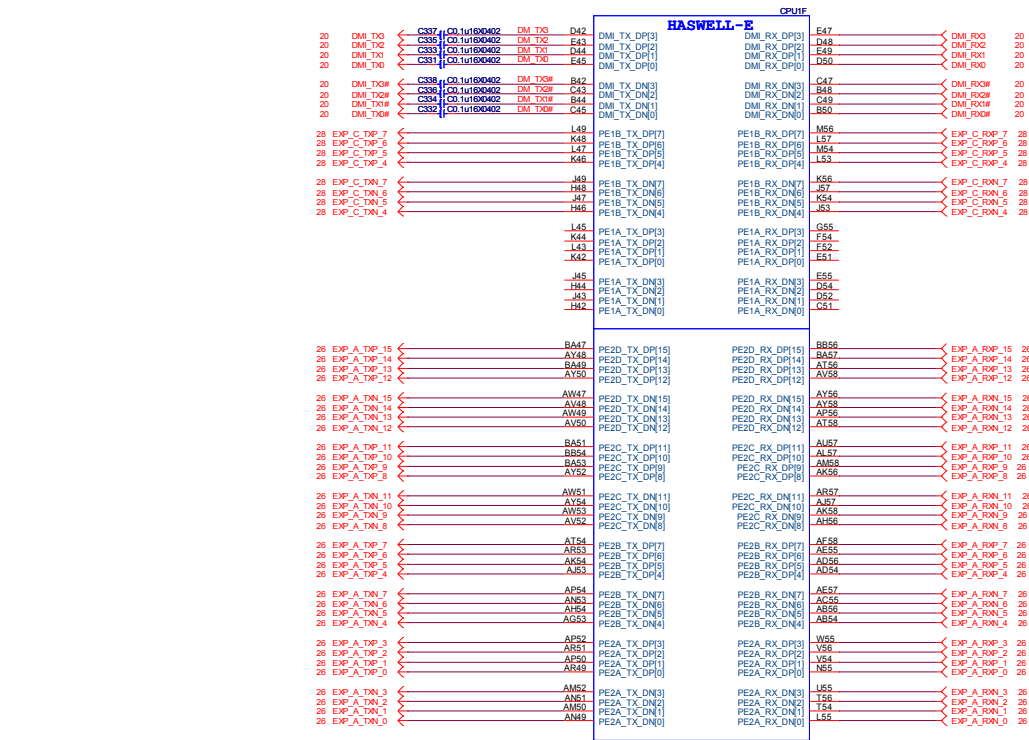
PROC_ID	VOUT
0	0.95V
1	1.05V



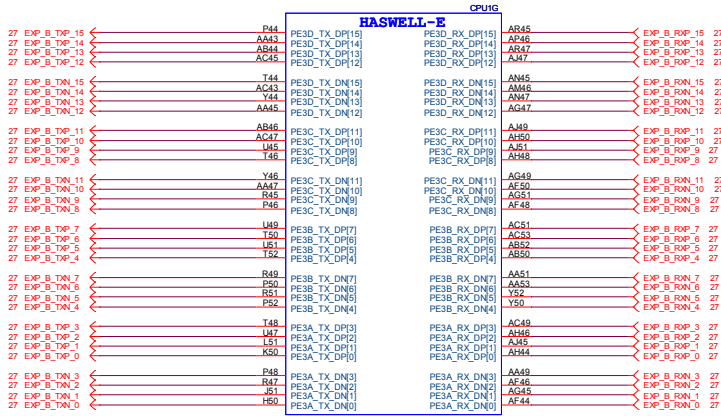
ZF-SOCKET2011-RH-5








ZIF-SOCKET2011-RH6



ZIF-SOCKET2011-RH6

PCIe Port 1	Dev 1, Func 0	PE1A_RX_DP[3:0], PE1A_RX_DN[3:0] PE1A_TX_DP[3:0], PE1A_TX_DN[3:0]	PEG C	Not functional in HSW-E 28-lane SKU
I/OU2	Dev 1, Func 1	PE1B_RX_DP[7:4], PE1B_RX_DN[7:4] PE1B_TX_DP[7:4], PE1B_TX_DN[7:4]	---	



Link to the Future

MICRO-START INT'L CO.,LTD.

File

HSW-E PCIE/DMI

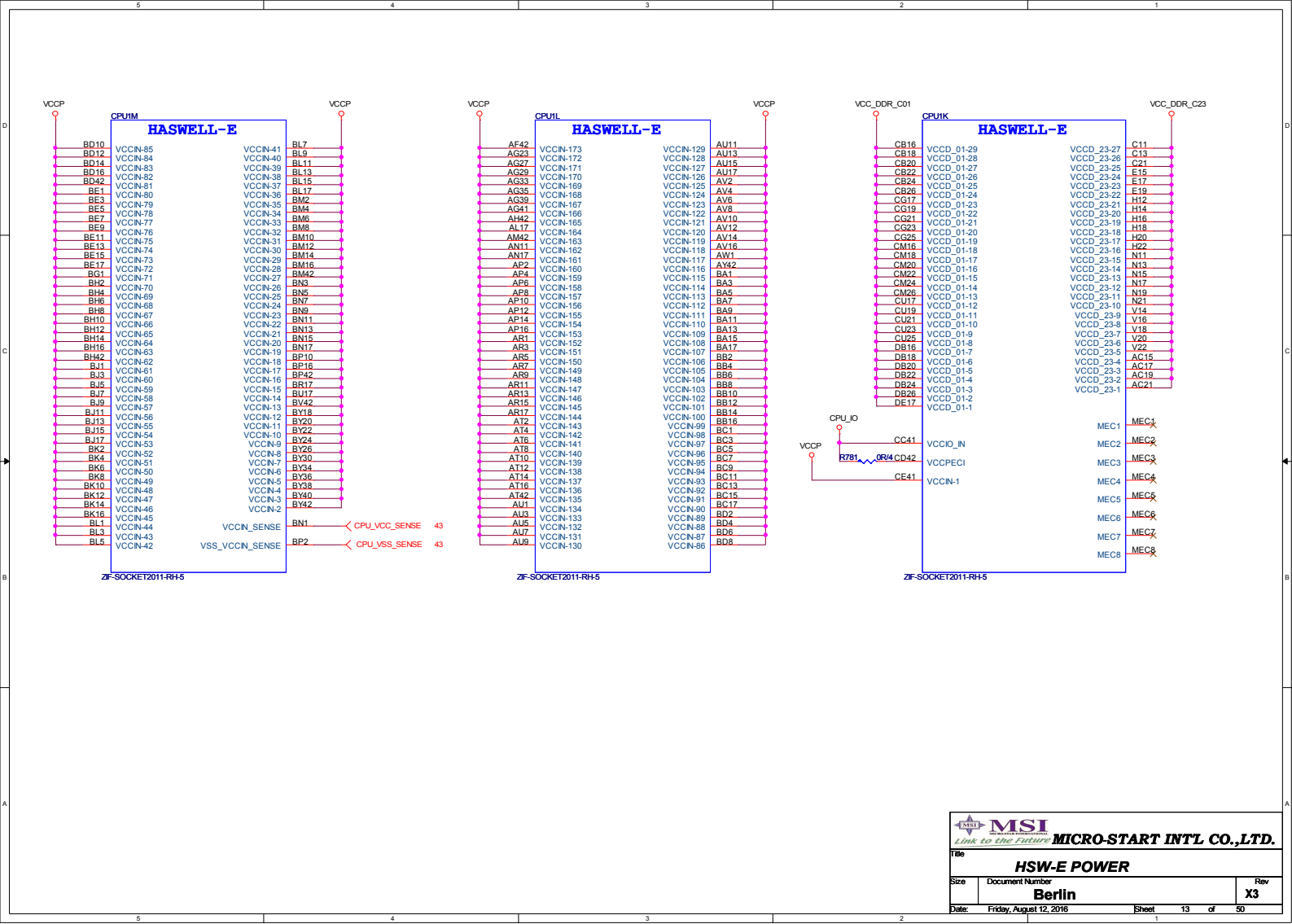
Size Document Number

Berlin

Date Friday, August 12, 2016

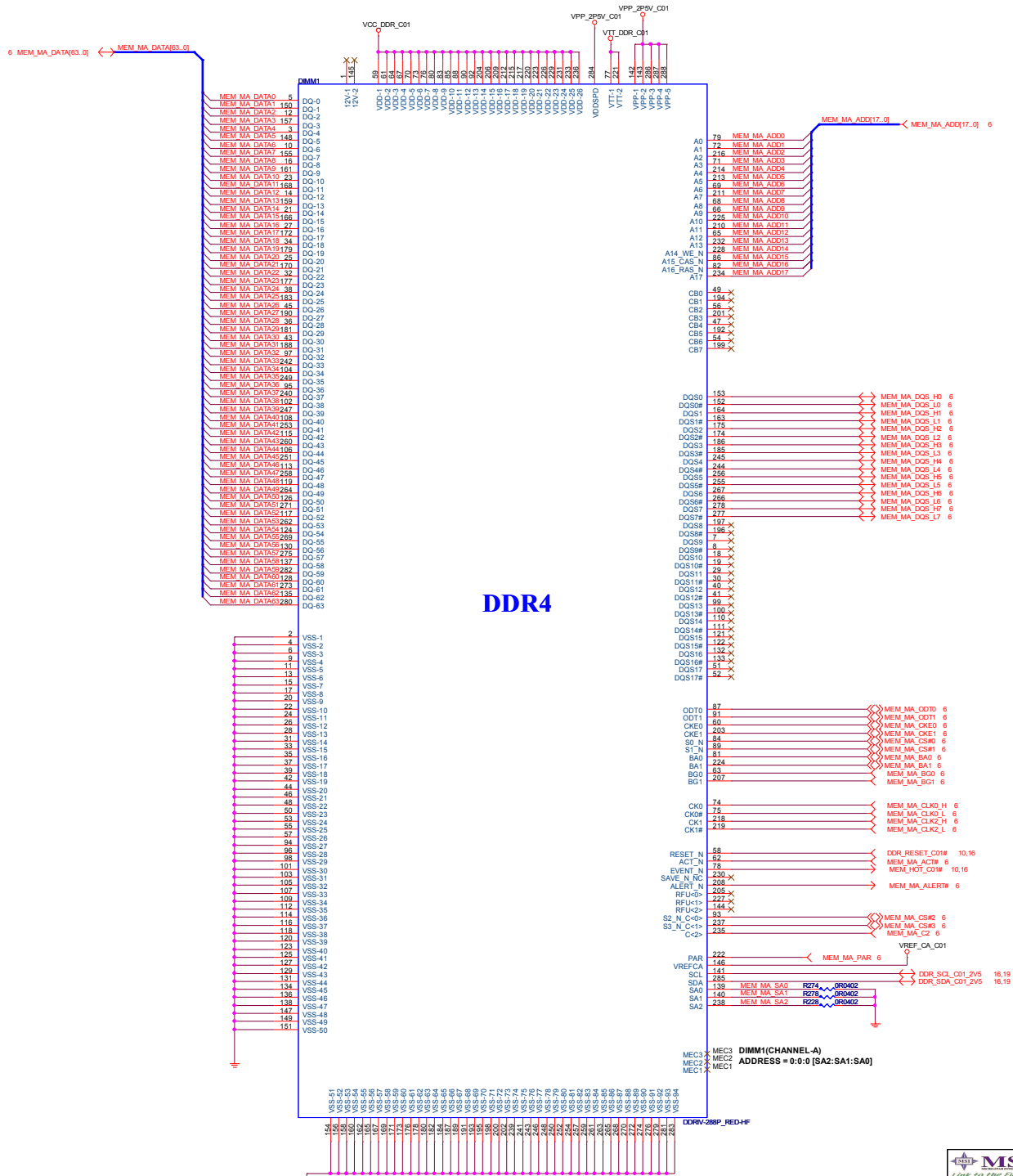
Sheet 12 of 50

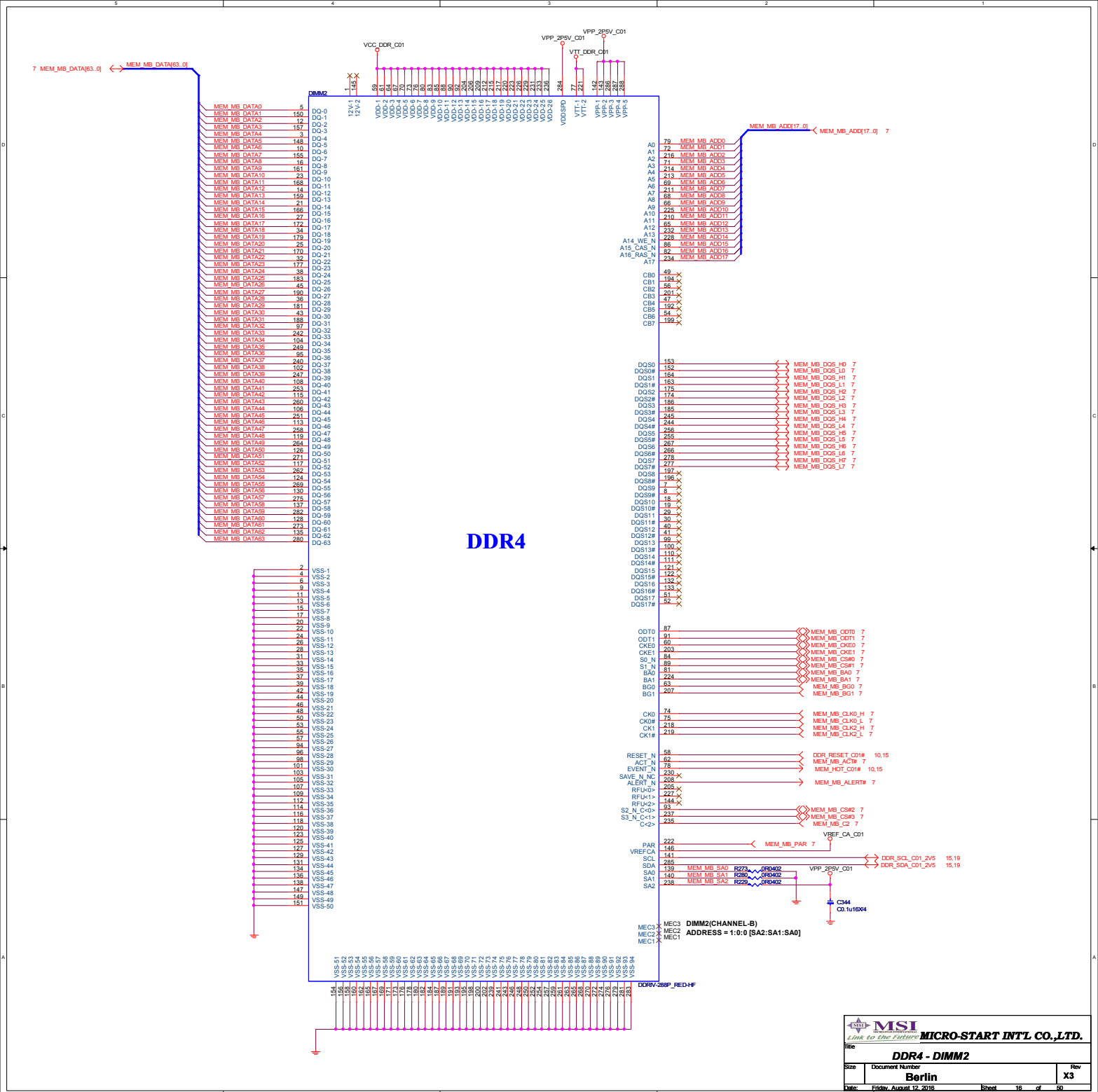
Rev **X3**

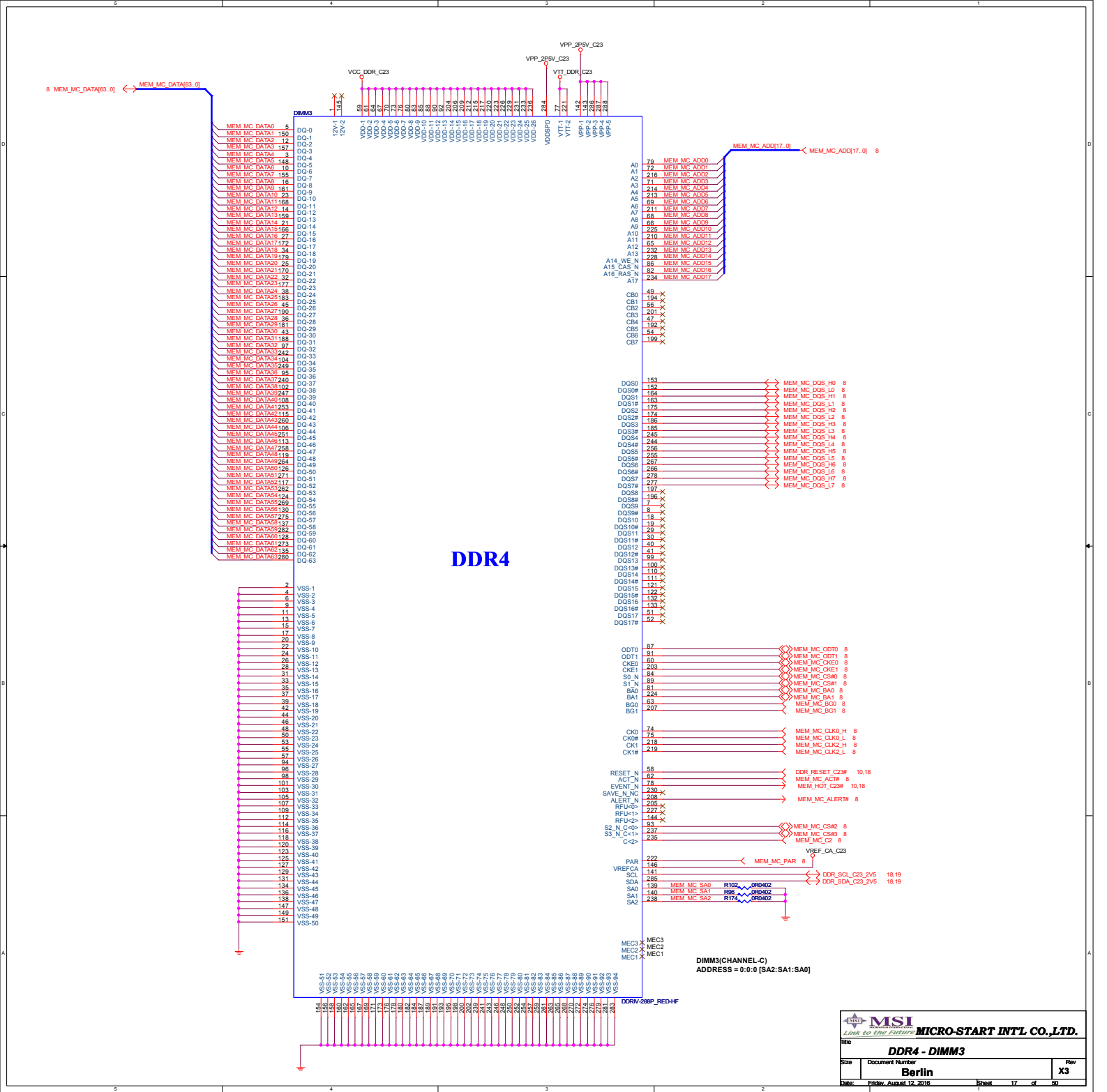


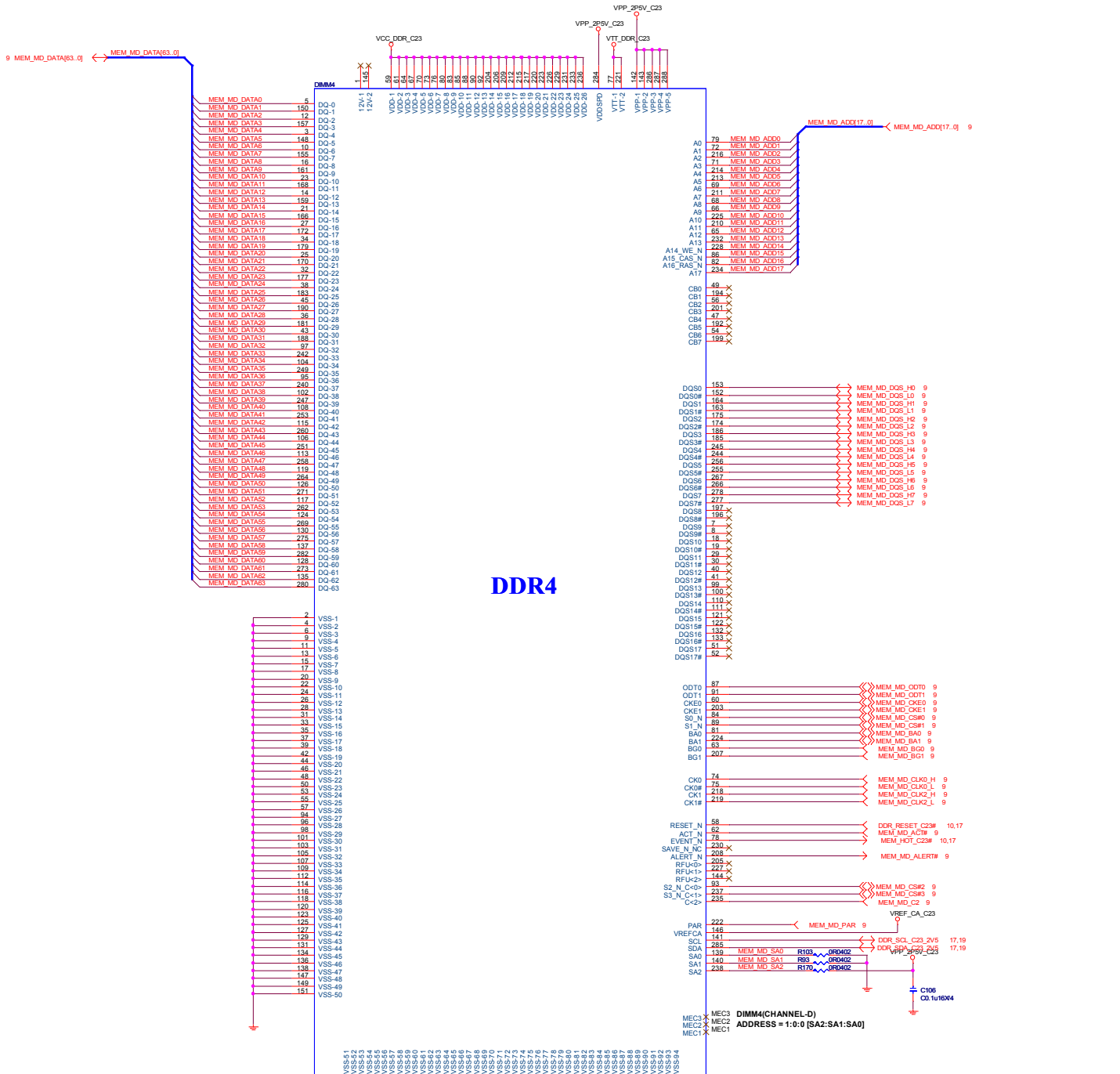
CPU01										CPU1P										CPU10										CPU1N									
HASWELL-E										HASWELL-E										HASWELL-E										HASWELL-E									
CH12	VSS-157									BC47	VSS-315									Y36	VSS-472									A23	VSS-629								
CH30	VSS-158	VSS-78	CUI7							BC48	VSS-314	VSS-236	BW15							Y37	VSS-480	VSS-394								A27	VSS-628	VSS-653							
CH34	VSS-159	VSS-77	CUI5							BC51	VSS-313	VSS-235	BW16							Y38	VSS-471	VSS-393								A30	VSS-627	VSS-651							
CH36	VSS-155	VSS-76	CUI3							BC53	VSS-312	VSS-234	BW17							Y39	VSS-470	VSS-392								A31	VSS-626	VSS-649							
CH38	VSS-153	VSS-75	CUI1							BC55	VSS-311	VSS-233	BW18							Y40	VSS-469	VSS-391								A32	VSS-625	VSS-648							
CH40	VSS-152	VSS-74	CUI0							BC57	VSS-310	VSS-232	BW19							Y41	VSS-468	VSS-390								A33	VSS-624	VSS-647							
CH42	VSS-151	VSS-73	CUI2							BC59	VSS-309	VSS-231	BW20							Y42	VSS-467	VSS-389								A34	VSS-623	VSS-646							
CH44	VSS-150	VSS-72	CUI3							BC61	VSS-308	VSS-230	BW21							Y43	VSS-466	VSS-388								A35	VSS-622	VSS-645							
CH46	VSS-149	VSS-71	CUI4							BC63	VSS-307	VSS-229	BW22							Y44	VSS-465	VSS-387								A36	VSS-621	VSS-644							
CH48	VSS-148	VSS-70	CUI5							BC65	VSS-306	VSS-228	BW23							Y45	VSS-464	VSS-386								A37	VSS-620	VSS-643							
CH50	VSS-147	VSS-69	CUI6							BC67	VSS-305	VSS-227	BW24							Y46	VSS-463	VSS-385								A38	VSS-619	VSS-642							
CH52	VSS-146	VSS-68	CUI7							BC69	VSS-304	VSS-226	BW25							Y47	VSS-462	VSS-384								A39	VSS-618	VSS-641							
CH54	VSS-145	VSS-67	CUI8							BC71	VSS-303	VSS-225	BW26							Y48	VSS-461	VSS-383								A40	VSS-617	VSS-640							
CH56	VSS-144	VSS-66	CUI9							BC73	VSS-302	VSS-224	BW27							Y49	VSS-460	VSS-382								A41	VSS-616	VSS-639							
CH58	VSS-143	VSS-65	CUI0							BC75	VSS-301	VSS-223	BW28							Y50	VSS-459	VSS-381								A42	VSS-615	VSS-638							
CH60	VSS-142	VSS-64	CUI1							BC77	VSS-300	VSS-222	BW29							Y51	VSS-458	VSS-380								A43	VSS-614	VSS-637							
CH62	VSS-141	VSS-63	CUI2							BC79	VSS-299	VSS-221	BW30							Y52	VSS-457	VSS-379								A44	VSS-613	VSS-636							
CH64	VSS-140	VSS-62	CUI3							BC81	VSS-298	VSS-220	BW31							Y53	VSS-456	VSS-378								A45	VSS-612	VSS-635							
CH66	VSS-139	VSS-61	CUI4							BC83	VSS-297	VSS-219	BW32							Y54	VSS-455	VSS-377								A46	VSS-611	VSS-634							
CH68	VSS-138	VSS-60	CUI5							BC85	VSS-296	VSS-218	BW33							Y55	VSS-454	VSS-376								A47	VSS-610	VSS-633							
CH70	VSS-137	VSS-59	CUI6							BC87	VSS-295	VSS-217	BW34							Y56	VSS-453	VSS-375								A48	VSS-609	VSS-632							
CH72	VSS-136	VSS-58	CUI7							BC89	VSS-294	VSS-216	BW35							Y57	VSS-452	VSS-374								A49	VSS-608	VSS-631							
CH74	VSS-135	VSS-57	CUI8							BC91	VSS-293	VSS-215	BW36							Y58	VSS-451	VSS-373								A50	VSS-607	VSS-630							
CH76	VSS-134	VSS-56	CUI9							BC93	VSS-292	VSS-214	BW37							Y59	VSS-450	VSS-372								A51	VSS-606	VSS-629							
CH78	VSS-133	VSS-55	CUI0							BC95	VSS-291	VSS-213	BW38							Y60	VSS-449	VSS-371								A52	VSS-605	VSS-628							
CH80	VSS-132	VSS-54	CUI1							BC97	VSS-290	VSS-212	BW39							Y61	VSS-448	VSS-370								A53	VSS-604	VSS-627							
CH82	VSS-131	VSS-53	CUI2							BC99	VSS-289	VSS-211	BW40							Y62	VSS-447	VSS-369								A54	VSS-603	VSS-626							
CH84	VSS-130	VSS-52	CUI3							BC101	VSS-288	VSS-210	BW41							Y63	VSS-446	VSS-368								A55	VSS-602	VSS-625							
CH86	VSS-129	VSS-51	CUI4							BC103	VSS-287	VSS-209	BW42							Y64	VSS-445	VSS-367								A56	VSS-601	VSS-624							
CH88	VSS-128	VSS-50	CUI5							BC105	VSS-286	VSS-208	BW43							Y65	VSS-444	VSS-366								A57	VSS-600	VSS-623							
CH90	VSS-127	VSS-49	CUI6							BC107	VSS-285	VSS-207	BW44							Y66	VSS-443	VSS-365								A58	VSS-599	VSS-622							
CH92	VSS-126	VSS-48	CUI7							BC109	VSS-284	VSS-206	BW45							Y67	VSS-442	VSS-364								A59	VSS-598	VSS-621							
CH94	VSS-125	VSS-47	CUI8							BC111	VSS-283	VSS-205	BW46							Y68	VSS-441	VSS-363								A60	VSS-597	VSS-620							
CH96	VSS-124	VSS-46	CUI9							BC113	VSS-282	VSS-204	BW47							Y69	VSS-440	VSS-362								A61	VSS-596	VSS-619							
CH98	VSS-123	VSS-45	CUI0							BC115	VSS-281	VSS-203	BW48							Y70	VSS-439	VSS-361								A62	VSS-595	VSS-618							
CH100	VSS-122	VSS-44	CUI1							BC117	VSS-280	VSS-202	BW49							Y71	VSS-438	VSS-360								A63	VSS-594	VSS-617							
CH102	VSS-121	VSS-43	CUI2							BC119	VSS-279	VSS-201	BW50							Y72	VSS-437	VSS-359								A64	VSS-593	VSS-616							
CH104	VSS-120	VSS-42	CUI3							BC121	VSS-278	VSS-200	BW51							Y73	VSS-436	VSS-358								A65	VSS-592	VSS-615							
CH106	VSS-119	VSS-41	CUI4							BC123	VSS-277	VSS-199	BW52							Y74	VSS-435	VSS-357								A66	VSS-591	VSS-614							
CH108	VSS-118	VSS-40	CUI5							BC125	VSS-276	VSS-198	BW53							Y75	VSS-434	VSS-356								A67	VSS-590	VSS-613							
CH110	VSS-117	VSS-39	CUI6							BC127	VSS-275	VSS-197	BW54							Y76	VSS-433	VSS-355								A68	VSS-589	VSS-612							
CH112	VSS-116	VSS-38	CUI7							BC129	VSS-274	VSS-196	BW55							Y77	VSS-432	VSS-354								A69	VSS-588	VSS-611							
CH114	VSS-115	VSS-37	CUI8							BC131	VSS-273	VSS-195	BW56							Y78	VSS-431	VSS-353								A70	VSS-587	VSS-610							
CH116	VSS-114	VSS-36	CUI9							BC133	VSS-272	VSS-194	BW57							Y79	VSS-430	VSS-352								A71	VSS-586	VSS-609							
CH118	VSS-113	VSS-35	CUI0							BC135	VSS-271	VSS-193	BW58							Y80	VSS-429	VSS-351								A72	VSS-585	VSS-608							
CH120	VSS-112	VSS-34	CUI1							BC137	VSS-270	VSS-192	BW59							Y81	VSS-428	VSS-350								A73	VSS-584	VSS-607							
CH122	VSS-111	VSS-33	CUI2							BC139	VSS-269	VSS-191	BW60							Y82	VSS-427	VSS-349								A74	VSS-583	VSS-606							
CH124	VSS-110	VSS-32	CUI3							BC141	VSS-268	VSS-190	BW61							Y83	VSS-426	VSS-348								A75	VSS-582	VSS-605							
CH126	VSS-109	VSS-31	CUI4							BC143	VSS-267	VSS-189	BW62							Y84	VSS-425	VSS-347								A76	VSS-581	VSS-604							
CH128	VSS-108	VSS-30	CUI5							BC145	VSS-266	VSS-188	BW63							Y85	VSS-424	VSS-346																	


DDR4











Link to the Future

MICRO-START INT'L CO.,LTD.

Title

DDR4 - DIMM4

Size

Document Number

Berlin

Rev

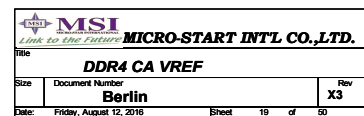
X3

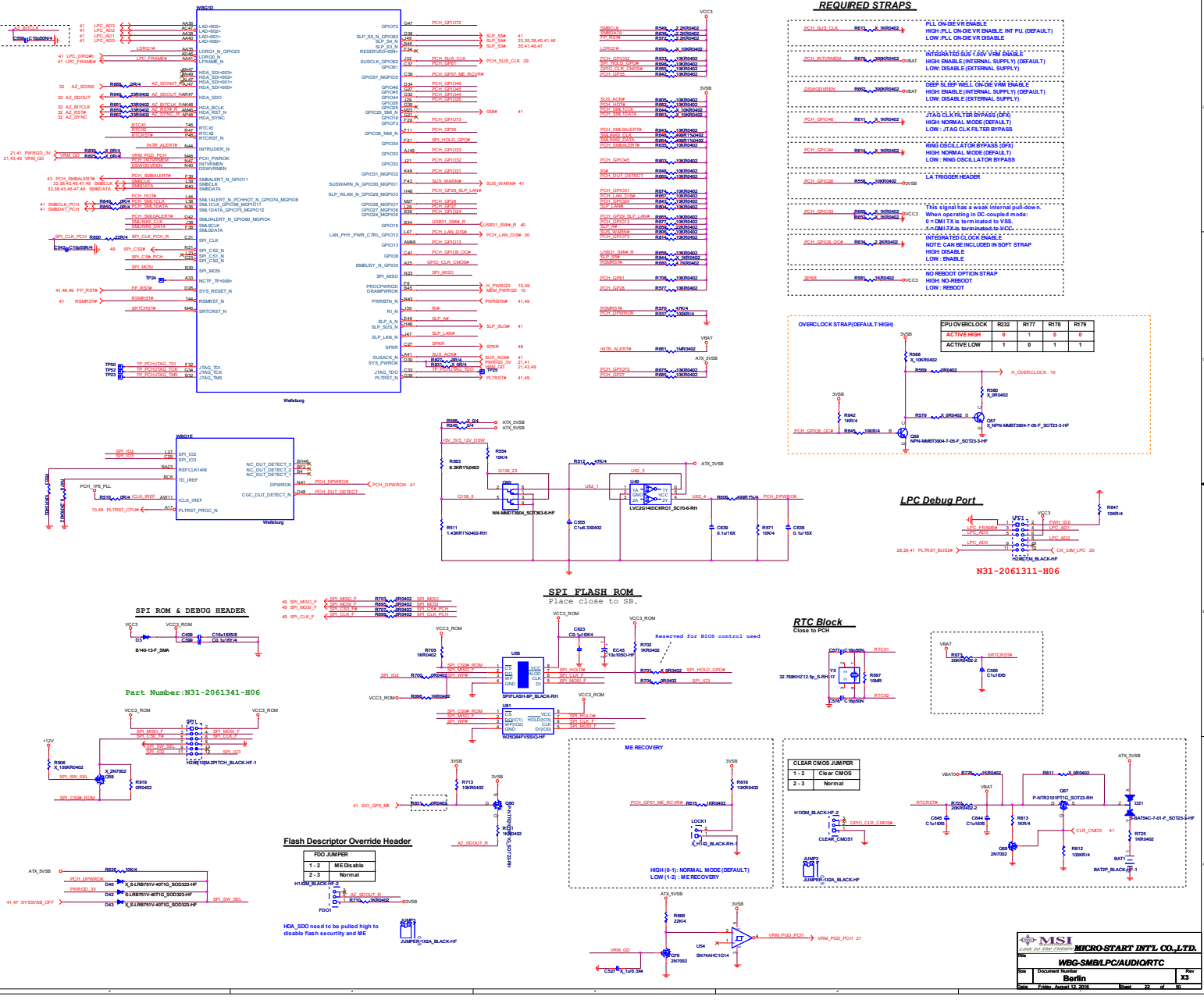
Date

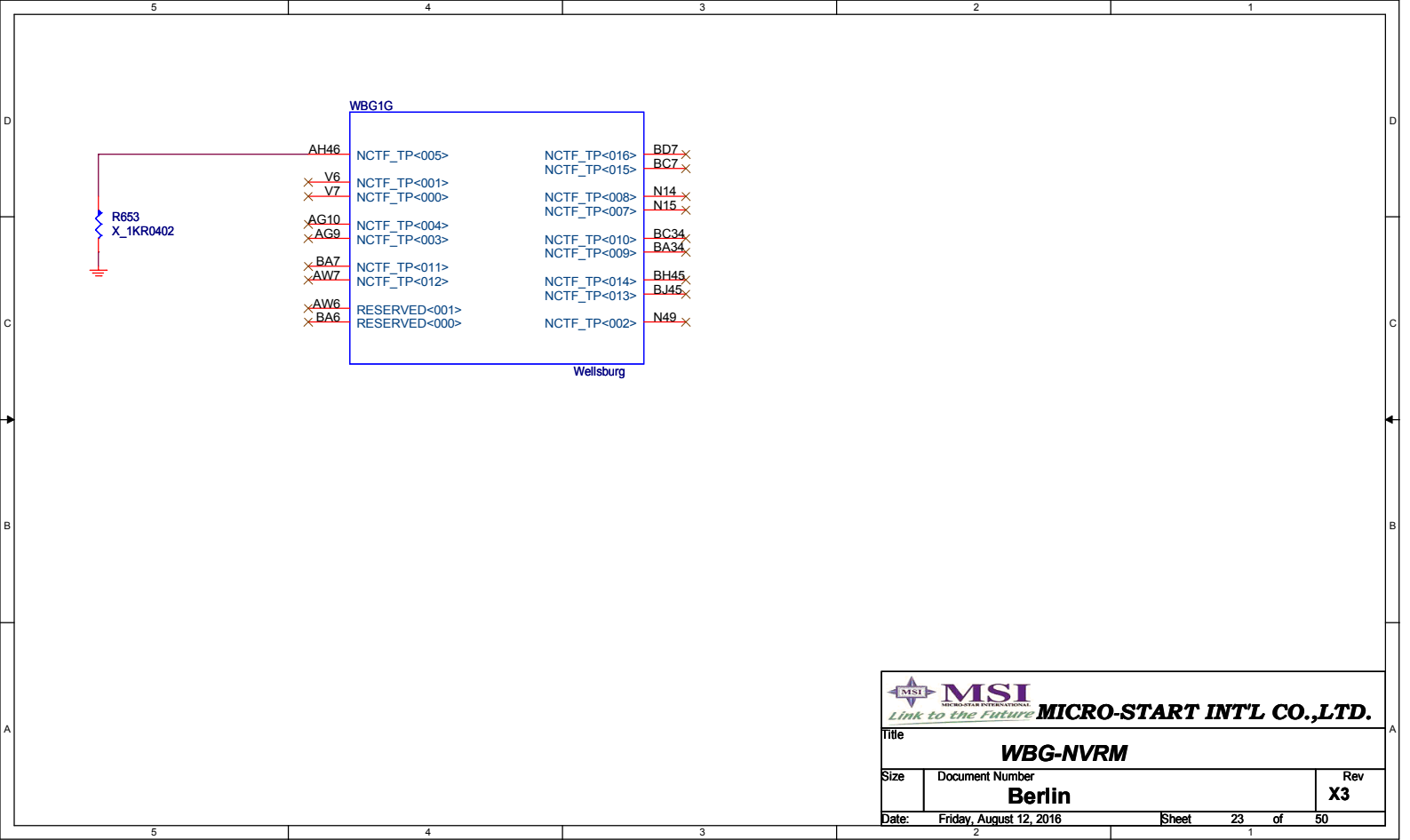
Friday, August 12, 2016


Sheet

18 of 50





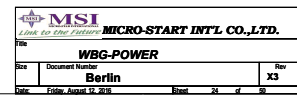


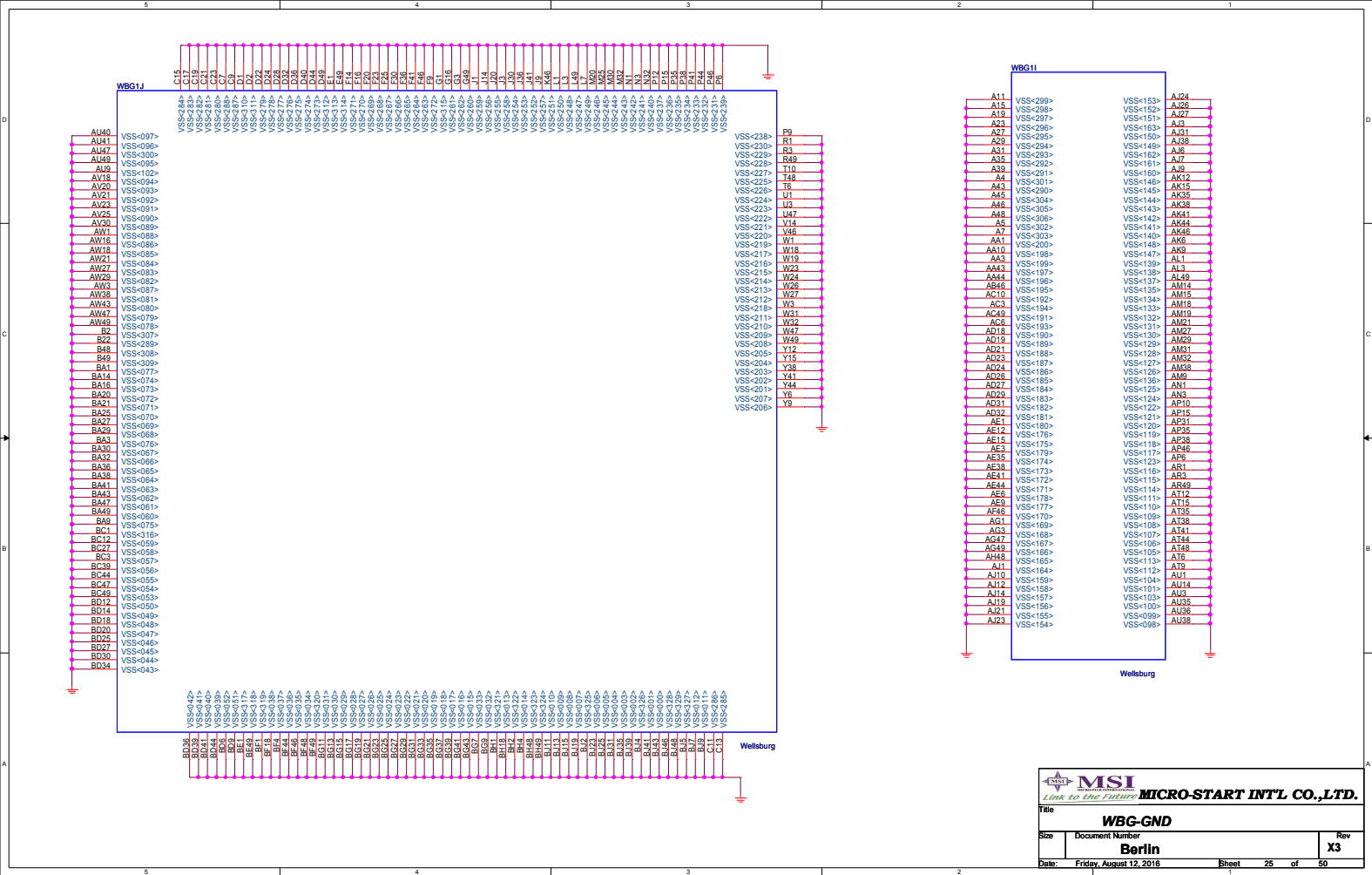


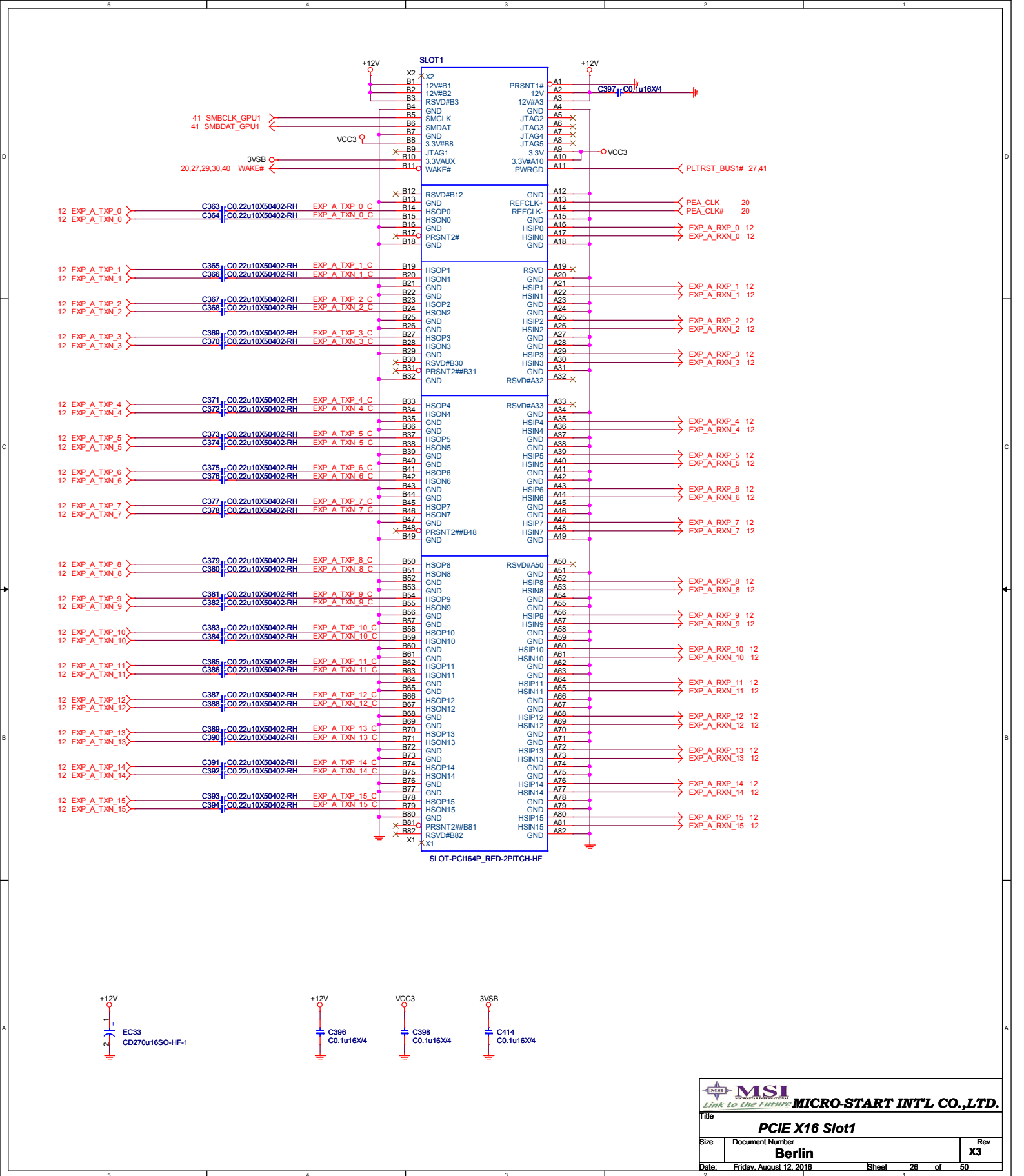
MSI
MICRO-STAR INTERNATIONAL
Link to the Future

MICRO-START INT'L CO.,LTD.

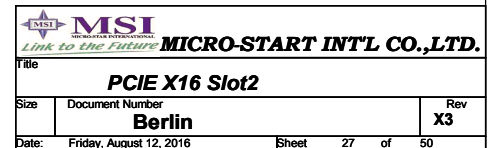
Title		
WBG-NVRM		
Size	Document Number	Rev
	Berlin	X3
Date:	Friday, August 12, 2016	Sheet 23 of 50

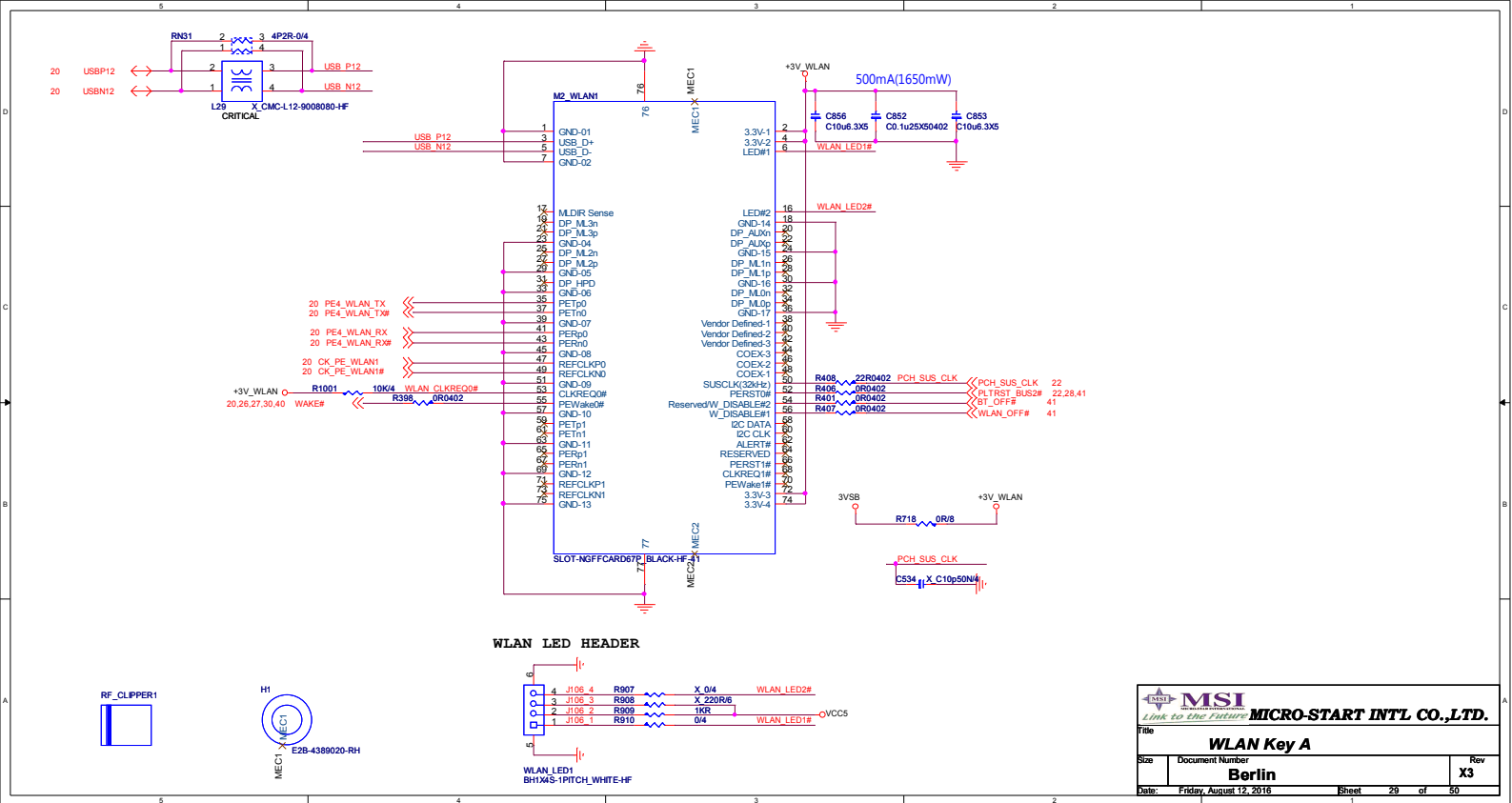




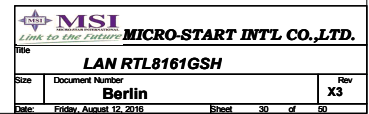
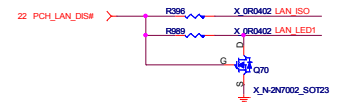
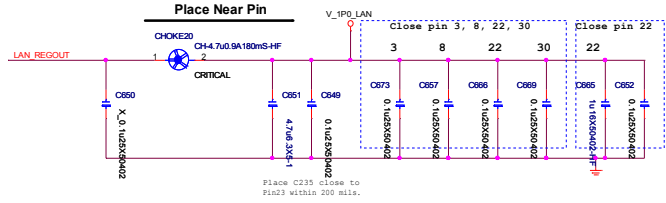


SLOT2		SLOT1	
X2	X2	A1	A1
B1	12VWB1	A2	A2
B2	12VWB2	A3	A3
B3	RSVD#WB3	A4	A4
B4	GND	A5	A5
B5	SMCLK	A6	A6
B6	SMDAT	A7	A7
B7	GND	A8	A8
B8	3.3VWB8	A9	A9
B9	JTAG1	A10	A10
B10	3.3VWA	A11	A11
B11	WAKE#	A12	A12
B12	RSVD#B12	A13	A13
B13	GND	A14	A14
B14	HSOP0	A15	A15
B15	HSON0	A16	A16
B16	GND	A17	A17
B17	PRNST2#	A18	A18
B18	GND	A19	A19
B19	HSOP1	A20	A20
B20	HSON1	A21	A21
B21	GND	A22	A22
B22	HSOP2	A23	A23
B23	HSON2	A24	A24
B24	GND	A25	A25
B25	HSOP3	A26	A26
B26	HSON3	A27	A27
B27	GND	A28	A28
B28	HSOP4	A29	A29
B29	HSON4	A30	A30
B30	RSVD#B30	A31	A31
B31	PRNST2##B31	A32	A32
B32	GND	A33	A33
B33	HSOP4	A34	A34
B34	HSON4	A35	A35
B35	GND	A36	A36
B36	HSOP4	A37	A37
B37	HSOP5	A38	A38
B38	GND	A39	A39
B39	HSOP5	A40	A40
B40	GND	A41	A41
B41	HSOP6	A42	A42
B42	HSON6	A43	A43
B43	GND	A44	A44
B44	HSOP7	A45	A45
B45	HSON7	A46	A46
B46	GND	A47	A47
B47	PRNST2##B48	A48	A48
B48	GND	A49	A49
B49	GND	A50	A50
B50	HSOP8	A51	A51
B51	HSON8	A52	A52
B52	GND	A53	A53
B53	HSOP8	A54	A54
B54	HSON8	A55	A55
B55	GND	A56	A56
B56	HSOP10	A57	A57
B57	HSON10	A58	A58
B58	GND	A59	A59
B59	HSOP10	A60	A60
B60	HSON10	A61	A61
B61	GND	A62	A62
B62	HSOP11	A63	A63
B63	HSON11	A64	A64
B64	GND	A65	A65
B65	HSOP12	A66	A66
B66	HSON12	A67	A67
B67	GND	A68	A68
B68	HSOP13	A69	A69
B69	HSON13	A70	A70
B70	GND	A71	A71
B71	HSOP13	A72	A72
B72	GND	A73	A73
B73	HSOP14	A74	A74
B74	HSON14	A75	A75
B75	GND	A76	A76
B76	HSOP14	A77	A77
B77	HSON14	A78	A78
B78	GND	A79	A79
B79	HSOP15	A80	A80
B80	HSON15	A81	A81
B81	GND	A82	A82
B82	PRNST2##B81		
B83	RSVD#B82		
X1	X1		

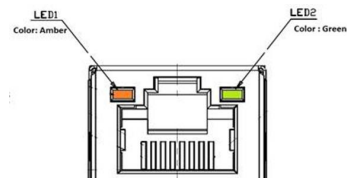




(58mA+289mA)

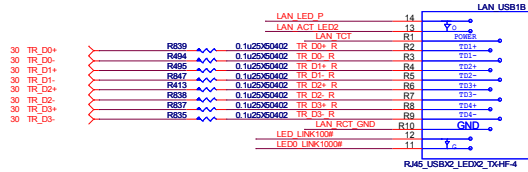
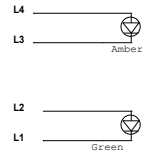
[illegible]

LAN Connector

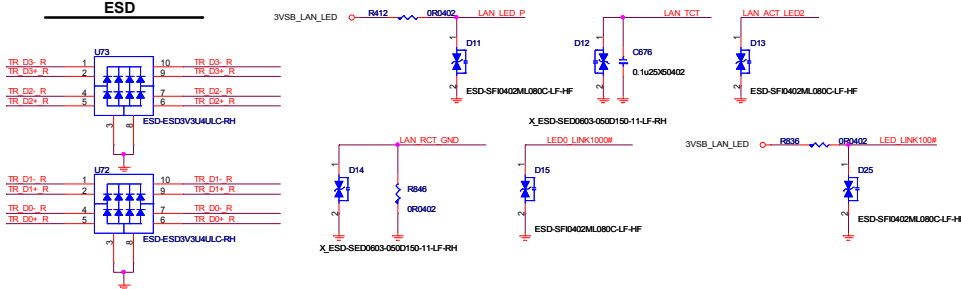


Giga-Lan

Link Amber
Active Blinking
1000 Green
100 Green
10 Green

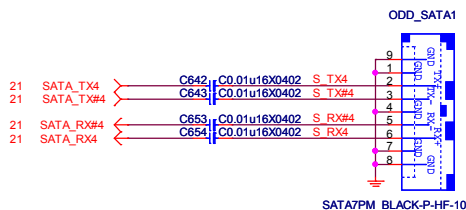
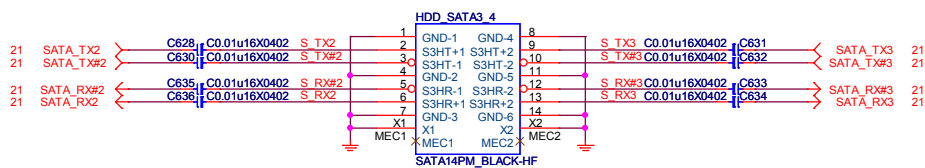
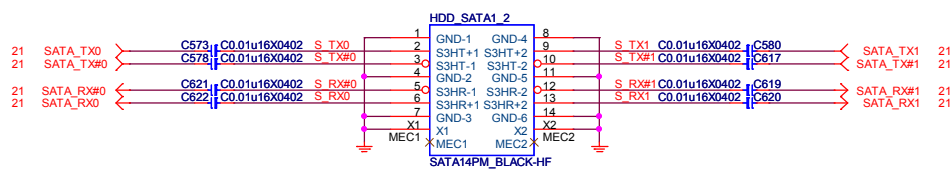



ESD



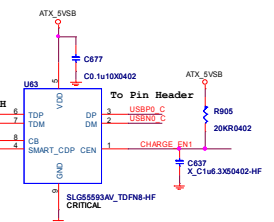
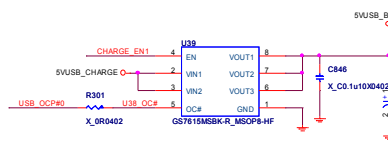
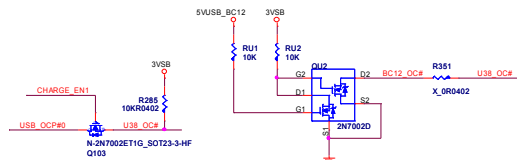
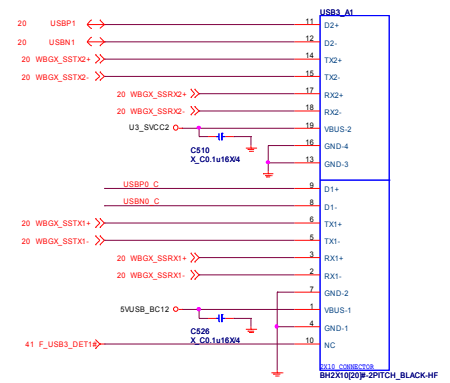


SATA 3.0 Connector

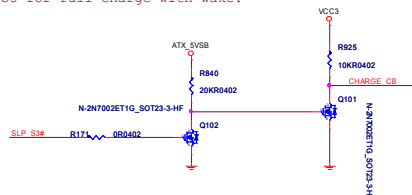


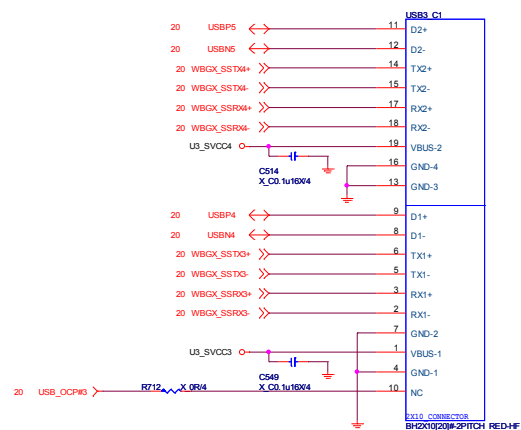
 MICRO-START INT'L CO.,LTD.		
Title SATA PORT		
Size	Document Number	Rev
	Berlin	X3
Date	Friday, August 12, 2016	Sheet 33 of 50

```
ODE: Hi support S0 for full charge function without KB/MOUSE wake.
ODE: Low support S3/S4/S5 for full charge with wake.
```

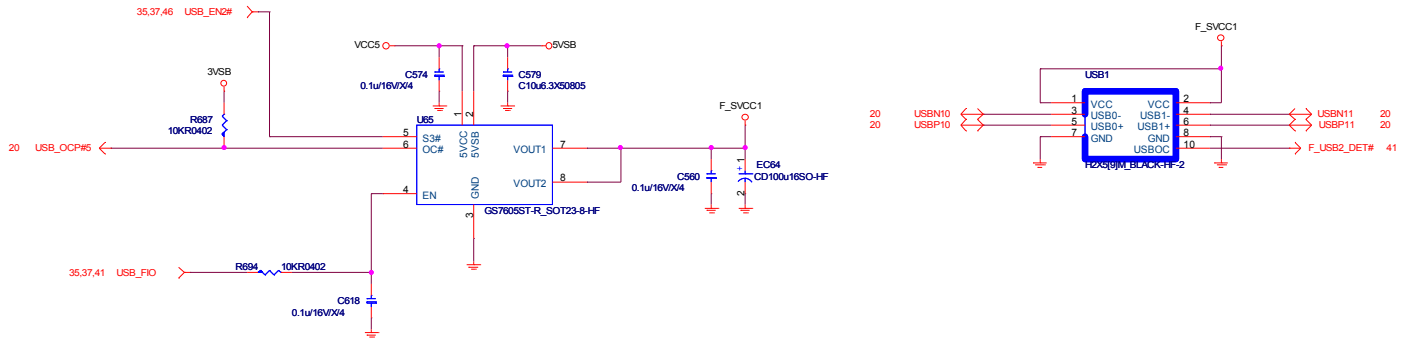



CB	SMART-CDP	Function
0	X	DCP autodetect with mouse/keyboard wakeup
1	0	SD charging with SDP only
1	1	SD charging with CDP or SDP only (depending on external device) And, when Non-CDP phone is plugged in, the CDP mode will be changed automatically to SD mode during handshaking protocol for supporting data communication.

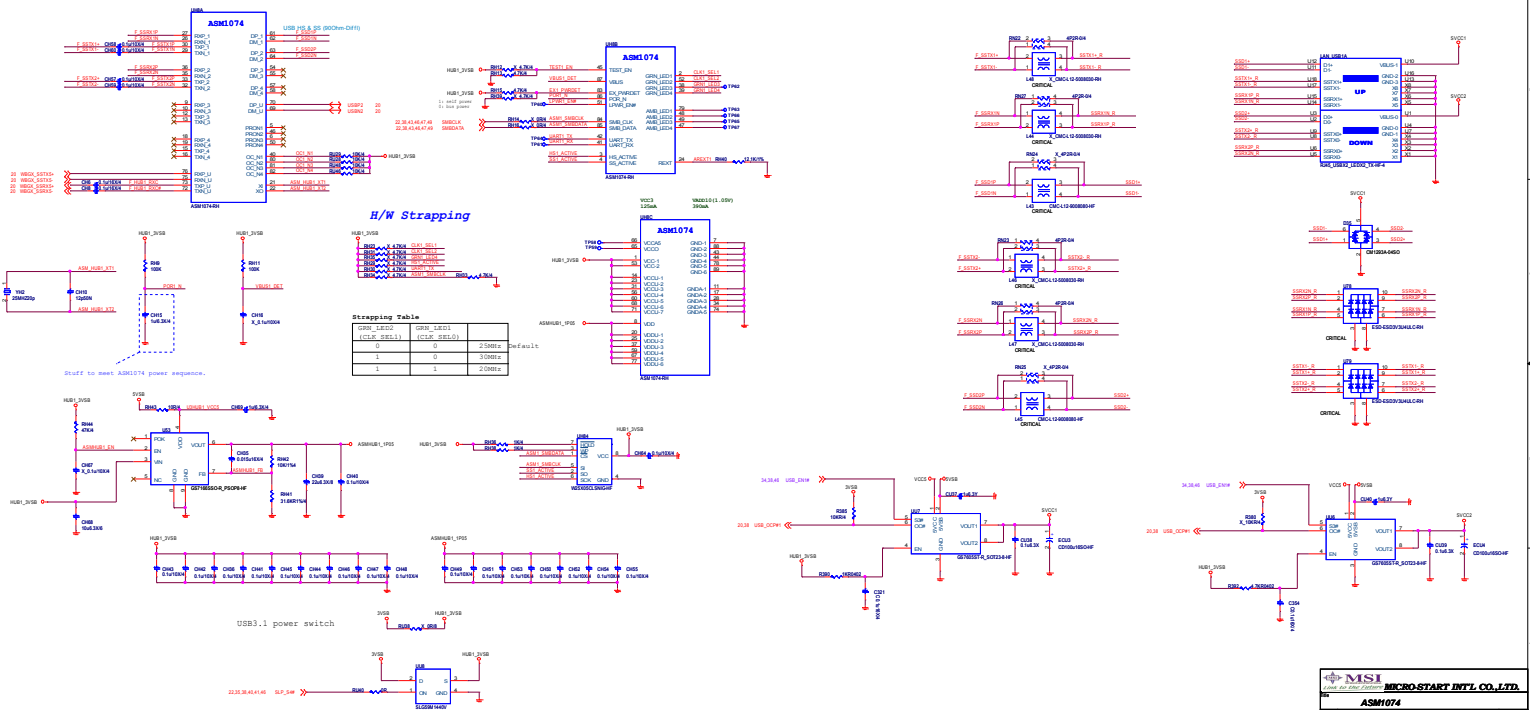


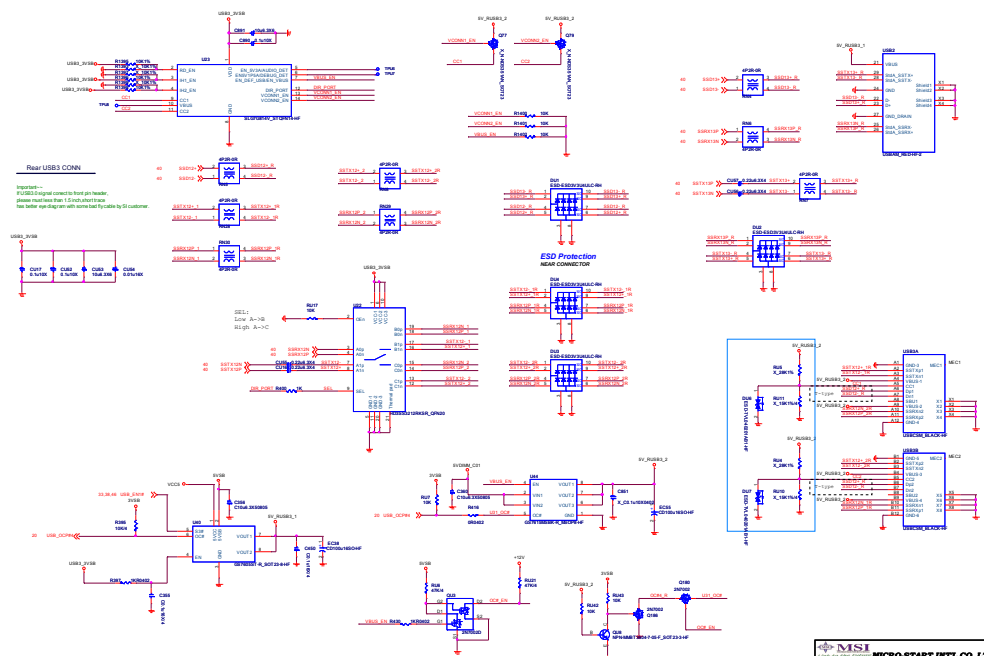


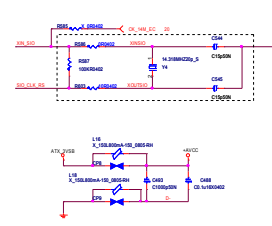
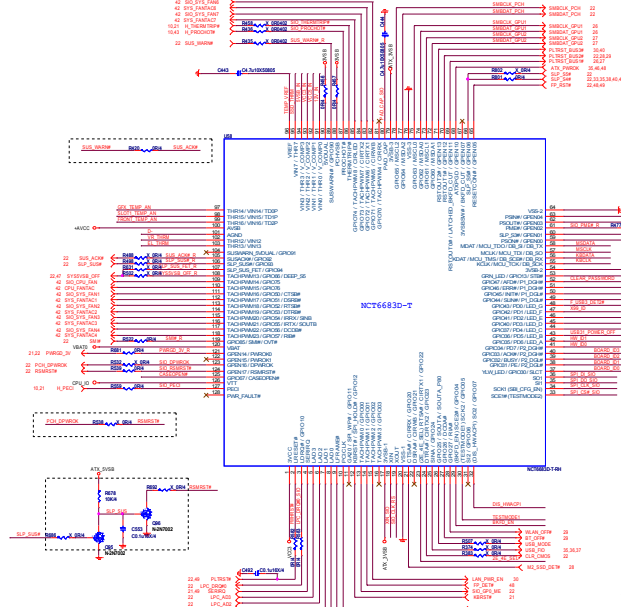
Front USB2.0 Port 11/12



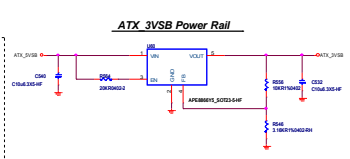
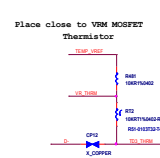
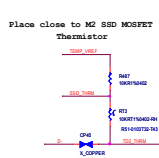
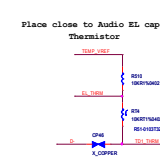
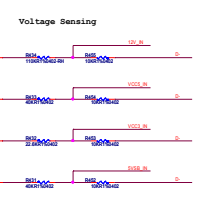
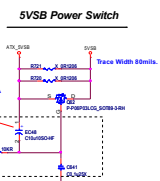
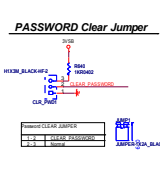
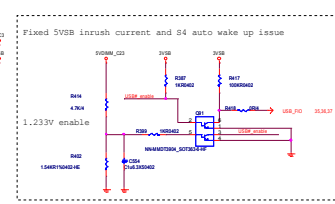
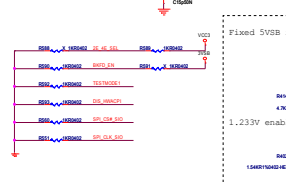
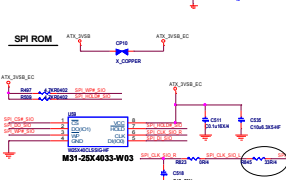
 MICRO-START INTL CO.,LTD.		
Title		
Front USB2.0		
Size	Document Number	Rev
	Berlin	X3
Date:	Friday, August 12, 2016	Sheet 36 of 50



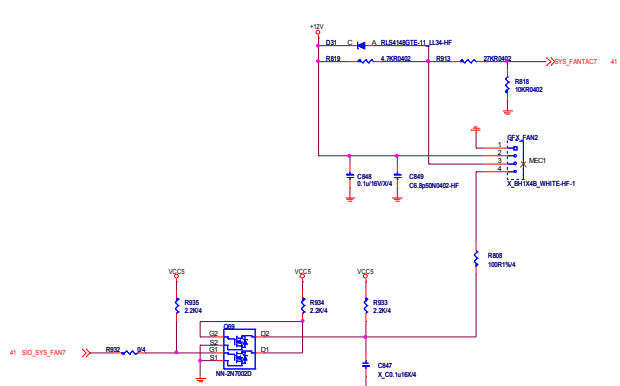
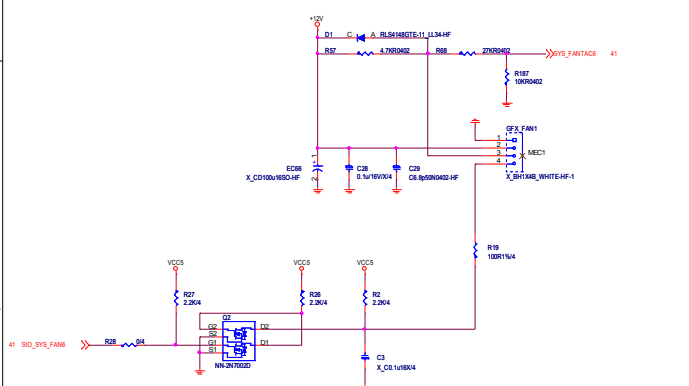
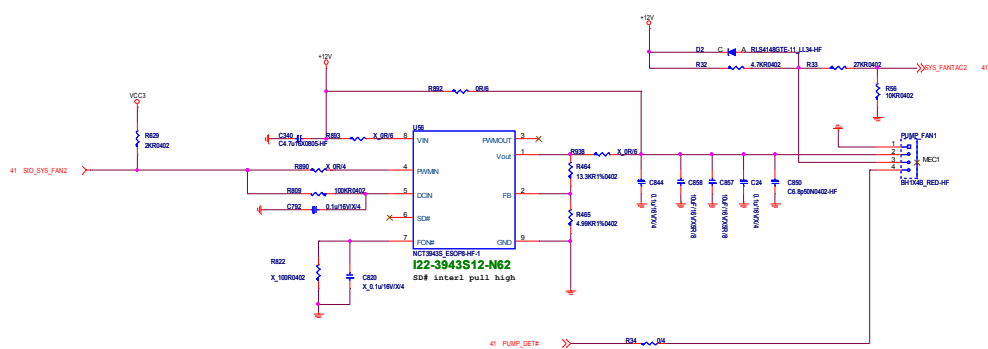
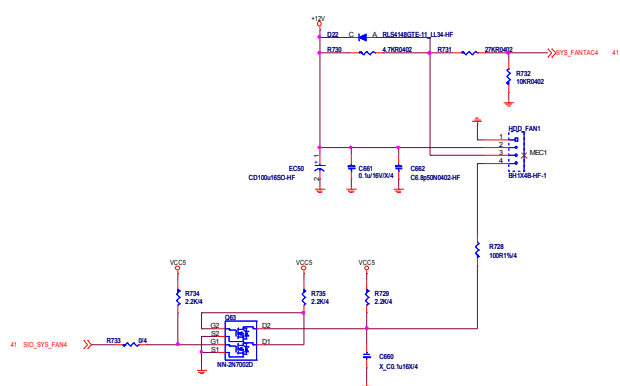
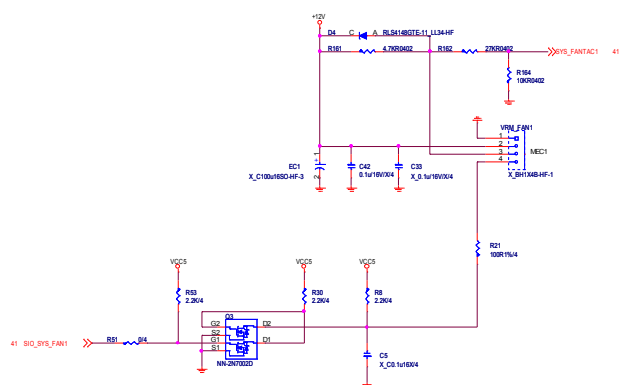
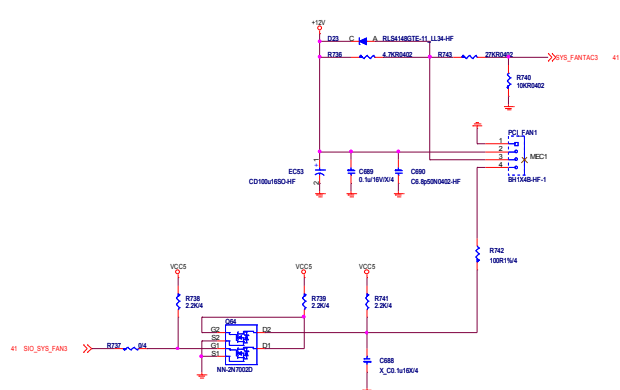
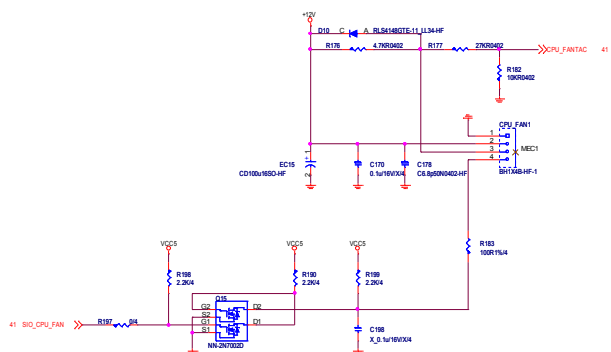


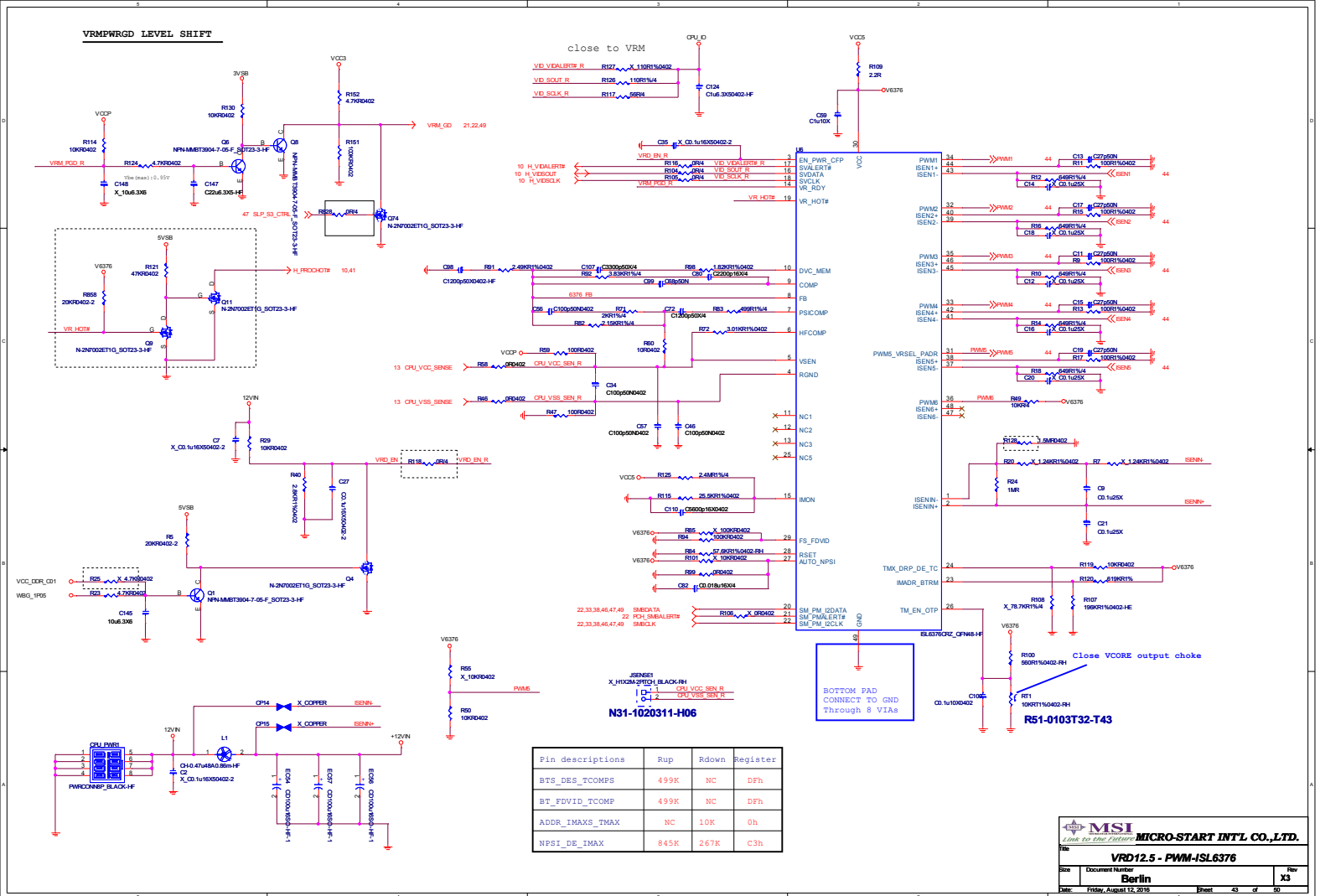


Power On Strapping Table		
Symbol	Value	Description
2E_AE_SEL	0	BIO IO address is 2Eh/2Fh
2E_AE_SEL	1	BIO IO address is 4Eh/4Fh
TESTMODE	0	Push SW1, SW2, SW3, SW4, SW5, SW6, SW7, SW8, SW9, SW10, SW11, SW12, SW13, SW14, SW15, SW16, SW17, SW18, SW19, SW20, SW21, SW22, SW23, SW24, SW25, SW26, SW27, SW28, SW29, SW30, SW31, SW32, SW33, SW34, SW35, SW36, SW37, SW38, SW39, SW40, SW41, SW42, SW43, SW44, SW45, SW46, SW47, SW48, SW49, SW50, SW51, SW52, SW53, SW54, SW55, SW56, SW57, SW58, SW59, SW60, SW61, SW62, SW63, SW64, SW65, SW66, SW67, SW68, SW69, SW70, SW71, SW72, SW73, SW74, SW75, SW76, SW77, SW78, SW79, SW80, SW81, SW82, SW83, SW84, SW85, SW86, SW87, SW88, SW89, SW90, SW91, SW92, SW93, SW94, SW95, SW96, SW97, SW98, SW99, SW100
DIS_HWACHT	0	Hardware ACPI cannot take over related signals
DIS_HWACHT	1	Hardware ACPI can take over related signals
RESMODE2	0	Configuration Register IO port is 4Eh/4Fh
RESMODE2	1	Configuration Register IO port is 4Eh/4Fh
BIOS_CLK_SEL	0	Switches open or close are determined by ATSPD
BIOS_CLK_SEL	1	Switches open or close are determined by configuration register

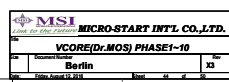


CPU Fan





Pin descriptions	Rup	Rdown	Register
BTS_DES_TCOMPS	499K	NC	DFh
BT_FDVID_TCOMP	499K	NC	DFh
ADDR_IMAXS_TMAX	NC	10K	0h
NPSI_DE_IMAX	845K	267K	C3h



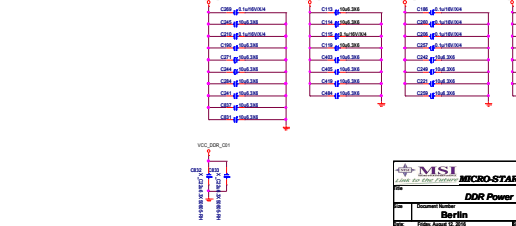
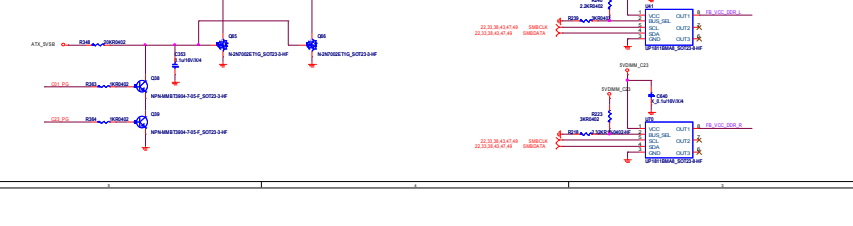
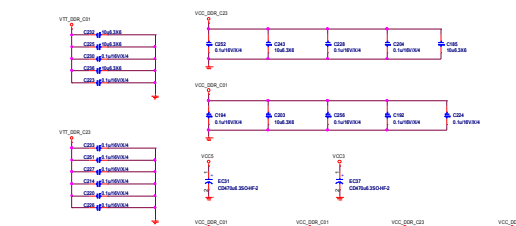
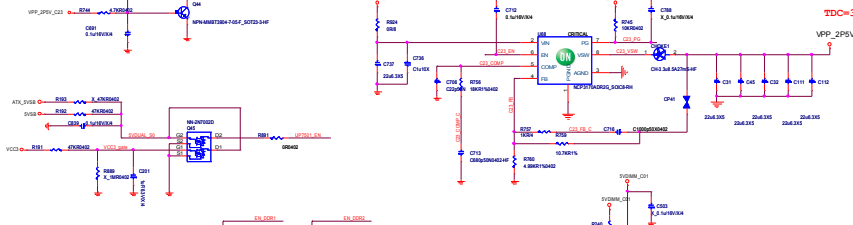
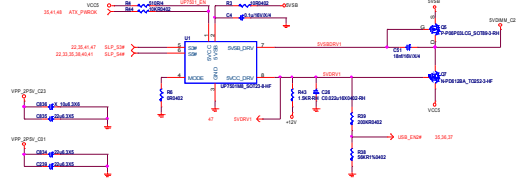
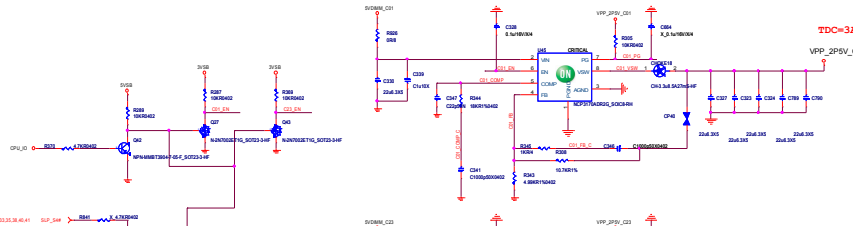
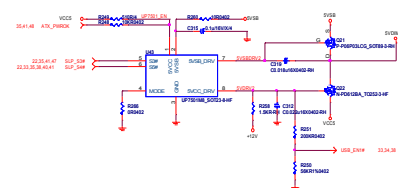
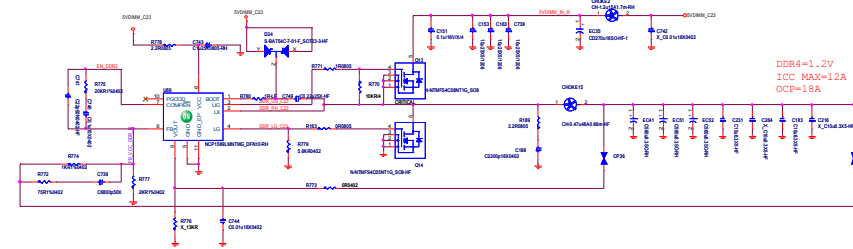
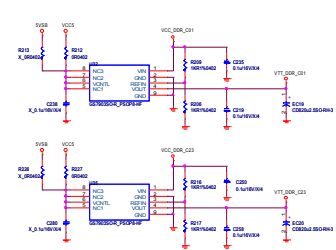
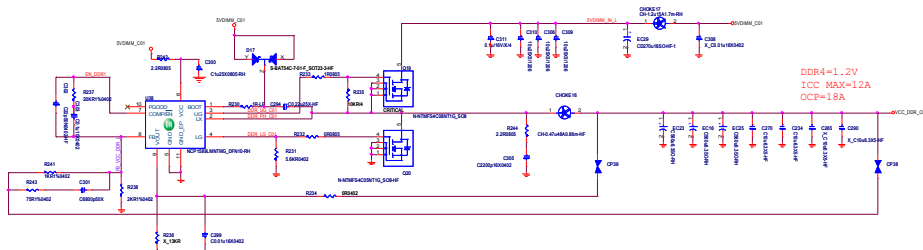
[illegible]

The schematic diagram illustrates a 10-bit DAC circuit. It features a resistor ladder network connected to a VCCP supply. The ladder consists of resistors labeled E07, E06, E05, E04, E03, E02, E01, and E00, each with a value of 300kΩ. The output of the ladder is connected to a 10-bit DAC block, which is labeled EC32 and has a value of 320kΩ. The DAC block is also connected to a VCCP supply. The output of the DAC is labeled DACOUT.

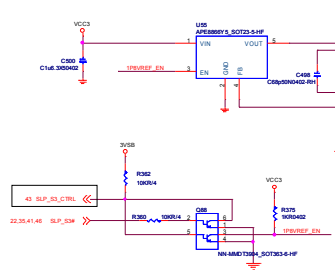
The figure displays four circuit diagrams arranged in a 2x2 grid, representing different test board configurations. Each diagram shows a power supply connection (VCC_DDR_C01 or VCC_DDR_C23) to a capacitor (C748, C746, C827, or C828) which is then connected to a specific component (C22u6.3X50805-RH or C22u6.3X50805-RH).

- Top Left:** VCC_DDR_C01 is connected to C748, which is connected to C22u6.3X50805-RH. C746 is connected to C22u6.3X50805-RH.
- Top Right:** VCC_DDR_C23 is connected to C747, which is connected to C22u6.3X50805-RH. C746 is connected to C22u6.3X50805-RH.
- Bottom Left:** VCC_DDR_C01 is connected to C827, which is connected to C22u6.3X50805-RH.
- Bottom Right:** VCC_DDR_C23 is connected to C828, which is connected to C22u6.3X50805-RH.

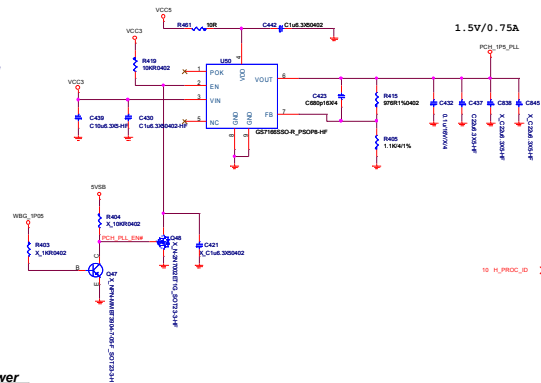
The schematic diagram illustrates the power supply system for a 1600W power supply. It shows the input, output, and internal components. The input is connected to a 12V source, and the output is connected to a 12V source. The diagram shows the power supply system for the 1600W power supply, including the input, output, and internal components.



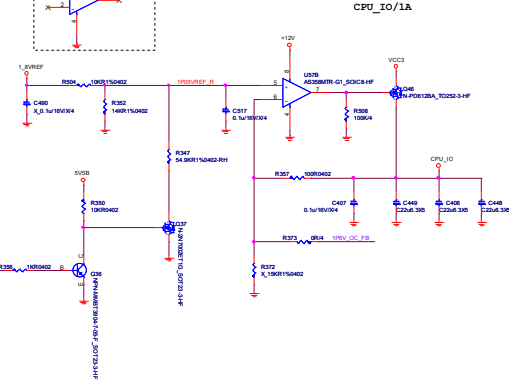
1.8V Reference Power



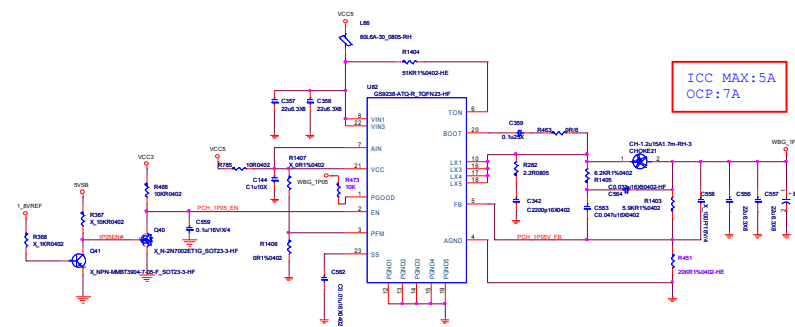
WBG 1.5V PLL Power Rail



CPU IO 1.05V Power Rail



PCH Core Power

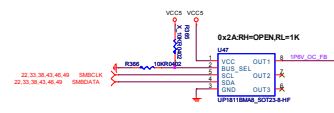


ICC MAX: 5A
OCP: 7A

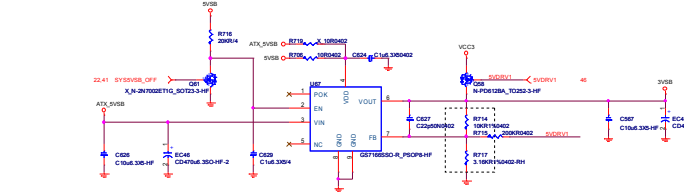
PROC_ID	VOUT
0	0.95V
1	1.05V

UPI VOLTAGE CONSOLE

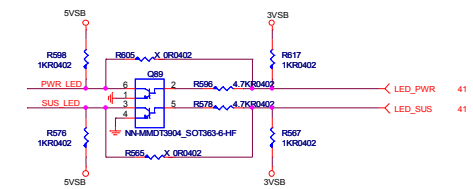
ADDRESS	0x2A	0x2B	0x2C	0x2D	0x2E
RH (KOhm)	OPEN	3.9	3	2.2	1.3
RL (KOhm)	10	1.3	2.3	3	3.9
BUS_SEL	0%	25%	40%	60%	75%



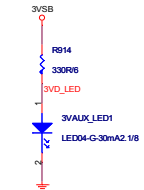
3VSB Power Rail



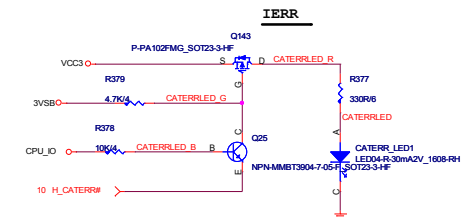
Power LED



3VDUAL



HDD LED

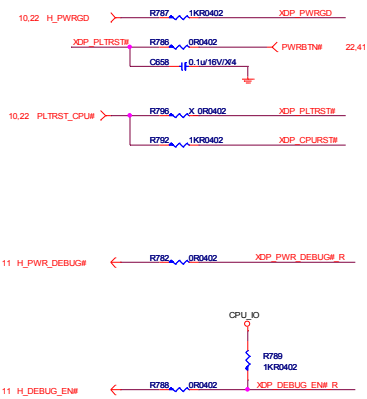


Pin 1 to 61 connection diagram for the XBT800PF-R4 module:

- Pin 1:** CPU_ID
- Pin 44:** VCC_OBS_AB, VCC_OBS_CD
- Pin 3:** OBSFN_A0
- Pin 9:** OBSFN_A1
- Pin 11:** OBSSDATA_A_0
- Pin 15:** OBSSDATA_A_1
- Pin 17:** OBSSDATA_A_2
- Pin 21:** OBSSDATA_A_3
- Pin 23:** OBSFN_B0
- Pin 27:** OBSFN_B1
- Pin 29:** OBSSDATA_B_0
- Pin 31:** OBSSDATA_B_1
- Pin 33:** OBSSDATA_B_2
- Pin 35:** OBSSDATA_B_3
- Pin 51:** SDA
- Pin 53:** SCL
- Pin 6:** OBSFN_C0
- Pin 10:** OBSFN_C1
- Pin 12:** OBSSDATA_C_0
- Pin 16:** OBSSDATA_C_1
- Pin 18:** OBSSDATA_C_2
- Pin 22:** OBSFN_D_0
- Pin 26:** OBSFN_D_1
- Pin 28:** OBSSDATA_D_0
- Pin 30:** OBSSDATA_D_1
- Pin 32:** OBSSDATA_D_2
- Pin 34:** OBSSDATA_D_3
- Pin 61:** GND18_XDP_PRESENTB
- Pin 62:** Not connected
- Pin 63:** Not connected

Other connections shown in the diagram:

- Pin 55:** TCK1
- Pin 57:** TCK0
- Pin 52:** TDO
- Pin 54:** TRST#
- Pin 56:** TDI
- Pin 58:** TMS
- Pin 39:** XDP_PWRGD
- Pin 41:** XDP_PL_RSTB
- Pin 43:** XDP_PWR_DBGGR
- Pin 45:** XDP_VR_READY
- Pin 47:** ITPCLKH00K5
- Pin 49:** ITPCLKH00K4
- Pin 40:** RESET_BH00K6
- Pin 42:** DBRSH00K7
- Pin 44:** XDP_CPUSW
- Pin 46:** XDP_DEBUG_ENB_R
- Pin 7:** GND1
- Pin 13:** GND2
- Pin 19:** GND3
- Pin 25:** GND4
- Pin 31:** GND5
- Pin 37:** GND6
- Pin 43:** GND7
- Pin 49:** GND8
- Pin 55:** GND9
- Pin 61:** GND10
- Pin 67:** GND11
- Pin 73:** GND12
- Pin 79:** GND13
- Pin 85:** GND14
- Pin 91:** GND15
- Pin 97:** GND16
- Pin 103:** GND17
- Pin 109:** GND18
- Pin 115:** GND19
- Pin 121:** GND20
- Pin 127:** GND21
- Pin 133:** GND22
- Pin 139:** GND23
- Pin 145:** GND24
- Pin 151:** GND25
- Pin 157:** GND26
- Pin 163:** GND27
- Pin 169:** GND28
- Pin 175:** GND29
- Pin 181:** GND30
- Pin 187:** GND31
- Pin 193:** GND32
- Pin 199:** GND33
- Pin 205:** GND34
- Pin 211:** GND35
- Pin 217:** GND36
- Pin 223:** GND37
- Pin 229:** GND38
- Pin 235:** GND39
- Pin 241:** GND40
- Pin 247:** GND41
- Pin 253:** GND42
- Pin 259:** GND43
- Pin 265:** GND44
- Pin 271:** GND45
- Pin 277:** GND46
- Pin 283:** GND47
- Pin 289:** GND48
- Pin 295:** GND49
- Pin 301:** GND50
- Pin 307:** GND51
- Pin 313:** GND52
- Pin 319:** GND53
- Pin 325:** GND54
- Pin 331:** GND55
- Pin 337:** GND56
- Pin 343:** GND57
- Pin 349:** GND58
- Pin 355:** GND59
- Pin 361:** GND60
- Pin 367:** GND61
- Pin 373:** GND62
- Pin 379:** GND63
- Pin 385:** GND64
- Pin 391:** GND65
- Pin 397:** GND66
- Pin 403:** GND67
- Pin 409:** GND68
- Pin 415:** GND69
- Pin 421:** GND70
- Pin 427:** GND71
- Pin 433:** GND72
- Pin 439:** GND73
- Pin 445:** GND74
- Pin 451:** GND75
- Pin 457:** GND76
- Pin 463:** GND77
- Pin 469:** GND78
- Pin 475:** GND79
- Pin 481:** GND80
- Pin 487:** GND81
- Pin 493:** GND82
- Pin 499:** GND83
- Pin 505:** GND84
- Pin 511:** GND85
- Pin 517:** GND86
- Pin 523:** GND87
- Pin 529:** GND88
- Pin 535:** GND89
- Pin 541:** GND90
- Pin 547:** GND91
- Pin 553:** GND92
- Pin 559:** GND93
- Pin 565:** GND94
- Pin 571:** GND95
- Pin 577:** GND96
- Pin 583:** GND97
- Pin 589:** GND98
- Pin 595:** GND99
- Pin 601:** GND100
- Pin 607:** GND101
- Pin 613:** GND102
- Pin 619:** GND103
- Pin 625:** GND104
- Pin 631:** GND105
- Pin 637:** GND106
- Pin 643:** GND107
- Pin 649:** GND108
- Pin 655:** GND109
- Pin 661:** GND110
- Pin 667:** GND111
- Pin 673:** GND112
- Pin 679:** GND113
- Pin 685:** GND114
- Pin 691:** GND115
- Pin 697:** GND116
- Pin 703:** GND117
- Pin 709:** GND118
- Pin 715:** GND119
- Pin 721:** GND120
- Pin 727:** GND121
- Pin 733:** GND122
- Pin 739:** GND123
- Pin 745:** GND124
- Pin 751:** GND125
- Pin 757:** GND126
- Pin 763:** GND127
- Pin 769:** GND128
- Pin 775:** GND129
- Pin 781:** GND130
- Pin 787:** GND131
- Pin 793:** GND132
- Pin 799:** GND133
- Pin 805:** GND134
- Pin 811:** GND135
- Pin 817:** GND136
- Pin 823:** GND137
- Pin 829:** GND138
- Pin 835:** GND139
- Pin 841:** GND140
- Pin 847:** GND141
- Pin 853:** GND142
- Pin 859:** GND143
- Pin 865:** GND144
- Pin 871:** GND145
- Pin 877:** GND146



The schematic shows the connection of the TPM module (U48) to the system components. The TPM module has several pins connected to the system:

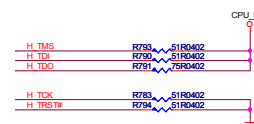
- VDD-1**: Connected to VCC3_ROM.
- GND-1**: Connected to GND-5.
- NC-1**: Not connected.
- NC-2**: Not connected.
- NC-3**: Not connected.
- GPIO PP**: Connected to GPIO PP.
- VDD-2**: Connected to VCC3_ROM.
- MISO**: Connected to MISO.
- GND-3**: Connected to GND-5.
- VDD-3**: Connected to VCC3_ROM.
- MOSI**: Connected to MOSI.
- CS#**: Connected to CS#.
- SCLK**: Connected to SCLK.
- P18**: Connected to P18.
- PIRQ0**: Connected to PIRQ0.
- RST#**: Connected to RST#.

The TPM module is also connected to the system components via the following connections:

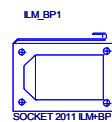
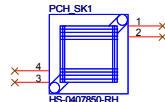
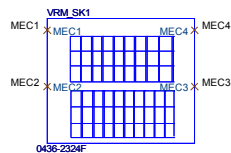
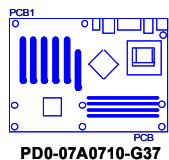
- VCC3_ROM**: Connected to VCC3_ROM.
- GND-5**: Connected to GND-5.
- GPIO PP**: Connected to GPIO PP.
- VDD-2**: Connected to VCC3_ROM.
- MISO**: Connected to MISO.
- GND-3**: Connected to GND-5.
- VDD-3**: Connected to VCC3_ROM.
- MOSI**: Connected to MOSI.
- CS#**: Connected to CS#.
- SCLK**: Connected to SCLK.
- P18**: Connected to P18.
- PIRQ0**: Connected to PIRQ0.
- RST#**: Connected to RST#.

The TPM module is also connected to the system components via the following connections:

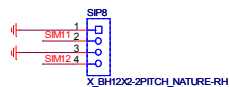
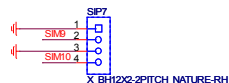
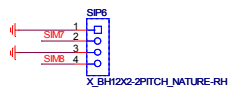
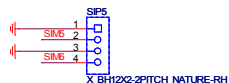
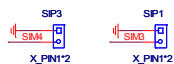
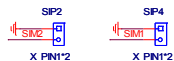
- VCC3_ROM**: Connected to VCC3_ROM.
- GND-5**: Connected to GND-5.
- GPIO PP**: Connected to GPIO PP.
- VDD-2**: Connected to VCC3_ROM.
- MISO**: Connected to MISO.
- GND-3**: Connected to GND-5.
- VDD-3**: Connected to VCC3_ROM.
- MOSI**: Connected to MOSI.
- CS#**: Connected to CS#.
- SCLK**: Connected to SCLK.
- P18**: Connected to P18.
- PIRQ0**: Connected to PIRQ0.
- RST#**: Connected to RST#.



Manual Parts

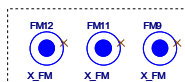


Simulation



Optics Orientation Holes

Optical Fiducial Marks-120



PCB Mounting Holes

