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MS-7883

ATX

Ver: 10

Haswell-E Platform

CPU:

Haswell-E

System Chipset:

Wellsburg

Onboard Chip:

HD Audio Codec: ALC1150

LAN-Killer LAN

LAN-Killer LAN

SIO:NTC6792D

Dual Flash ROM: SPI 64 MB X2

Main Memory:

DDRIV (1666MHz) * 8 (Dual Channel)

ACPI:

ISL6388

PWM:

VRD12.5 -ISL6388

Expansion Slots:

PCI Express (X16) Slot1

PCI Express (X8) Slot2

PCI Express (X16) Slot3

PCI Express (X16) Slot4

PCI Express (X8) Slot5

Other:

SATA3.0 *8

USB2.0 *8

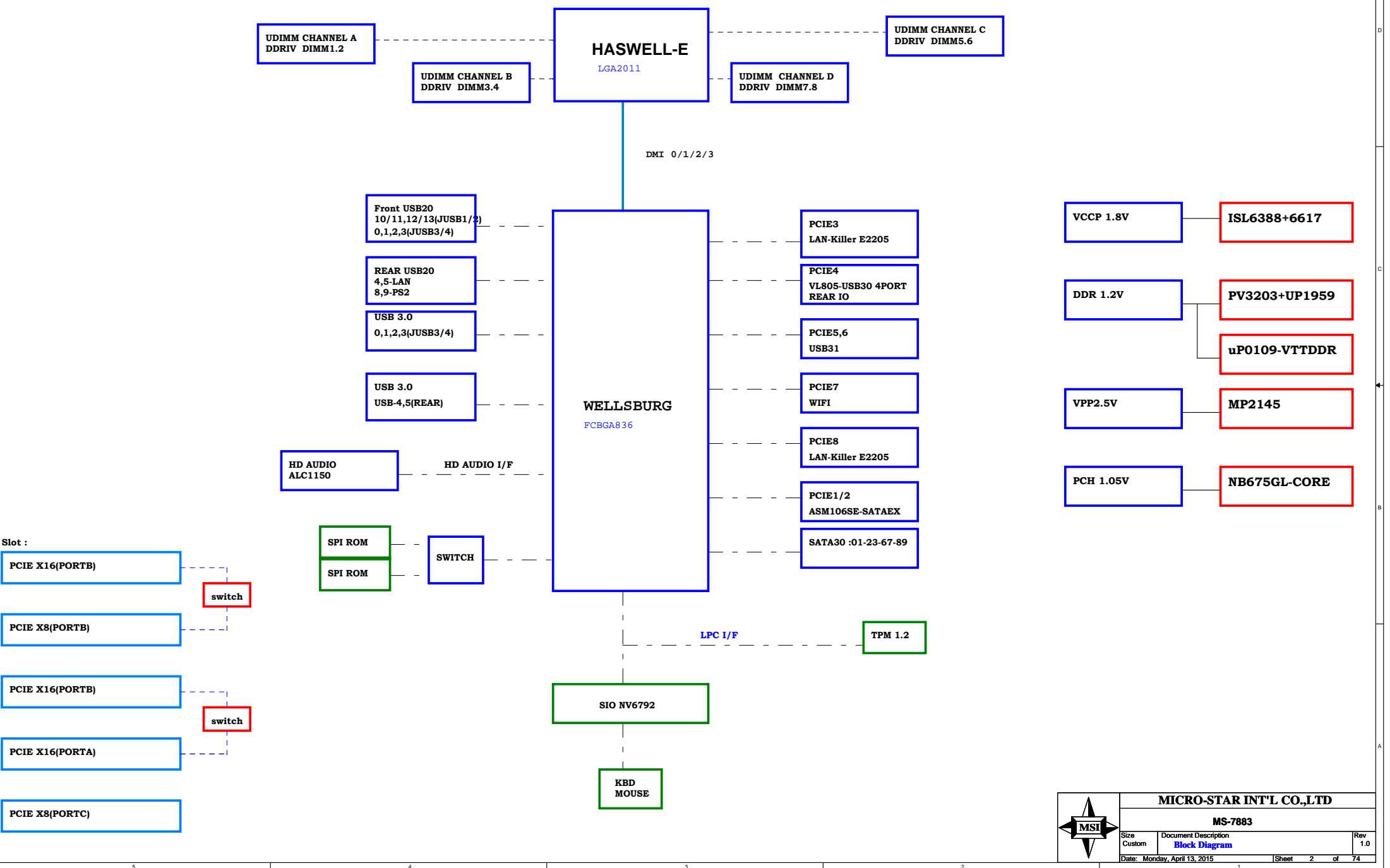
USB3.1 *1

REAL USB3.0 *6

FRONT USB2.0 *4

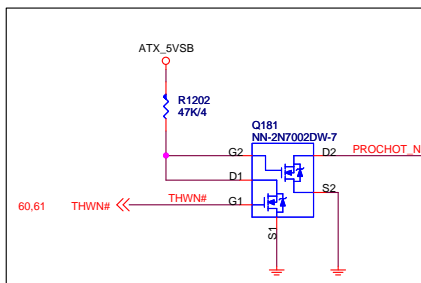
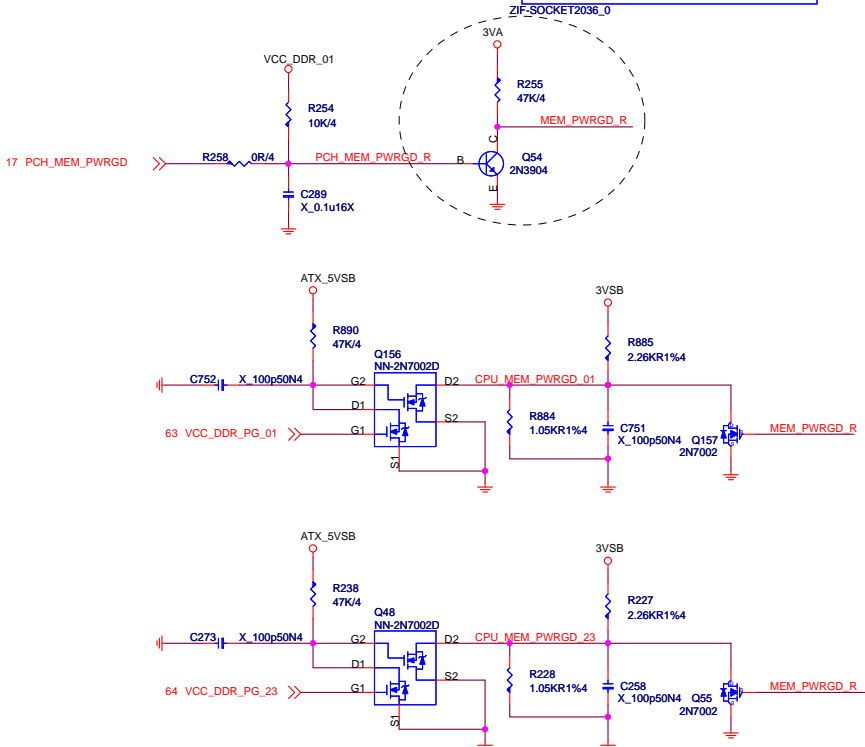
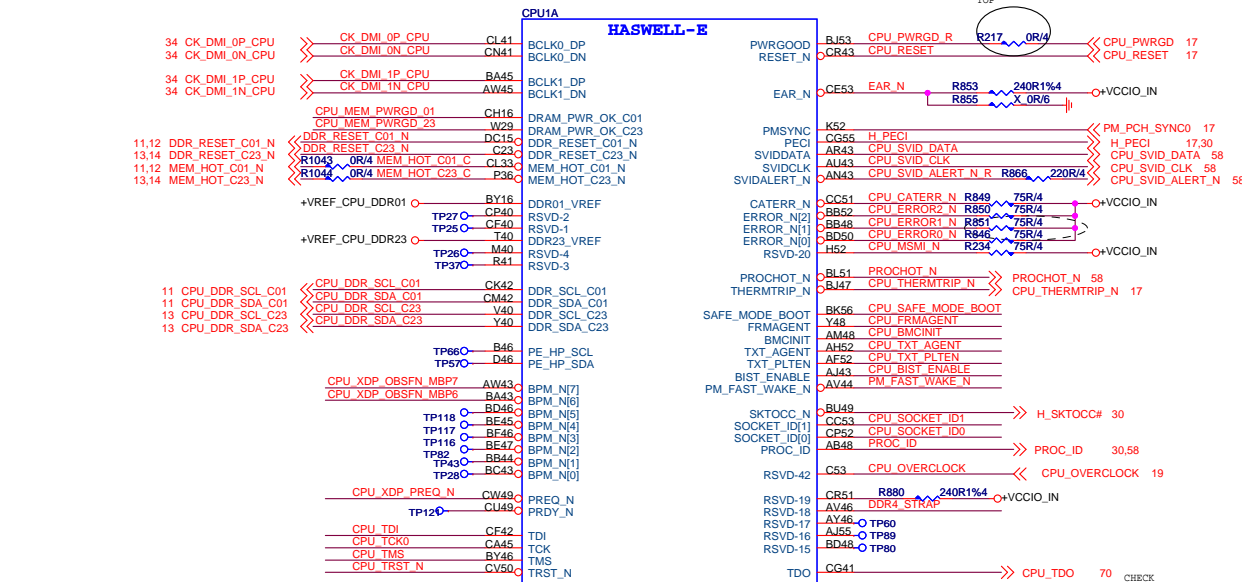
FRONT USB3.0 *4

MS-7882 Block Diagram

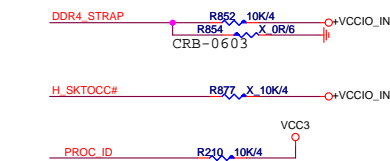
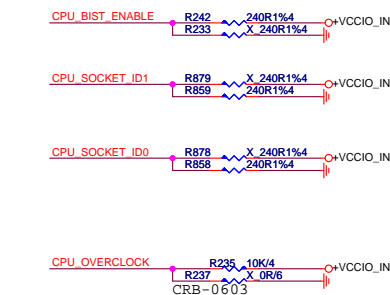
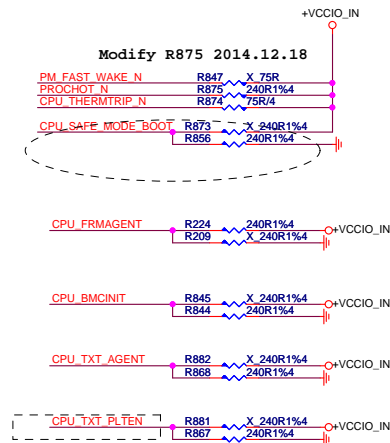
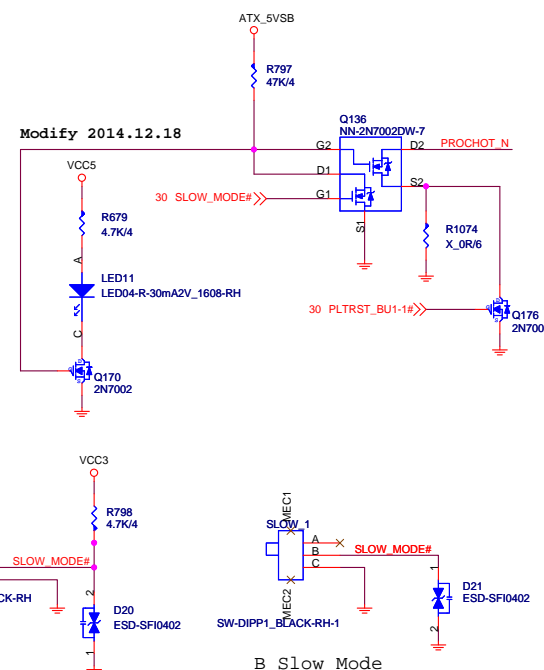


CPU-CLK/Control/MISC

OR:R278 REMOVED



Slow mode circuit



PROC_ID	+VCCIO_IN
0	0.95V
1	1.05V

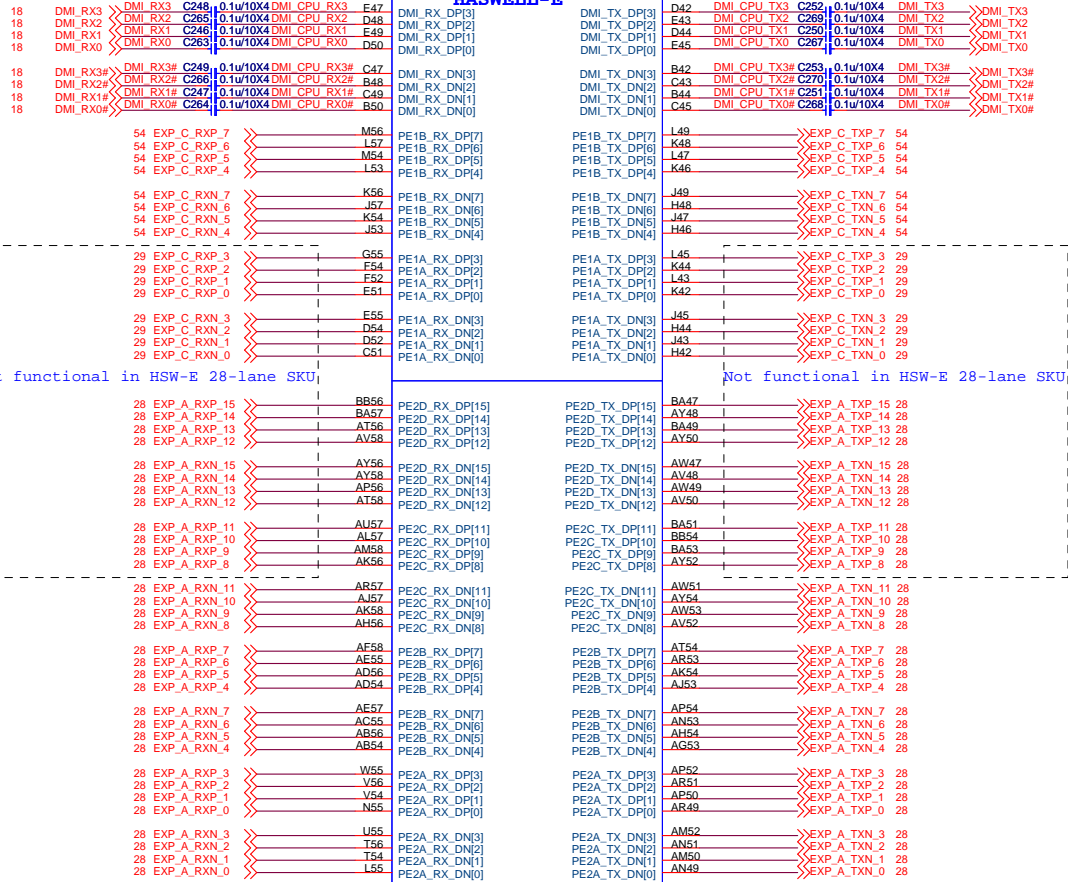


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CPU-DMI / PEG

CPU1F

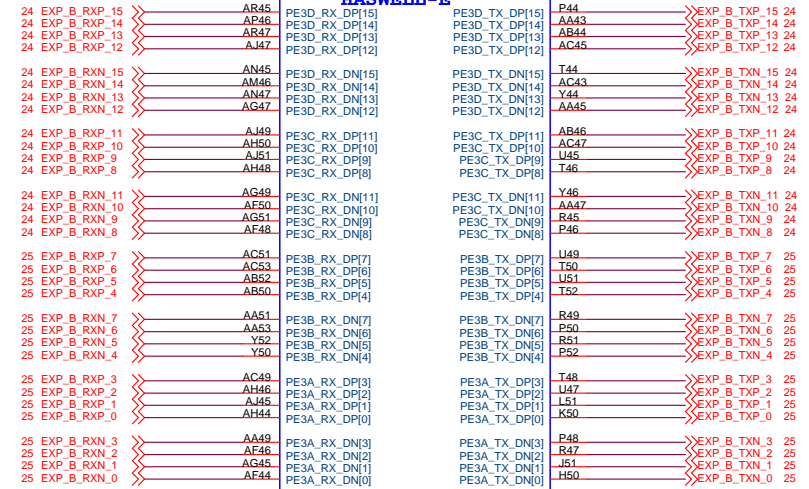
HASWELL-E



ZIF-SOCKET2036_0

CPU1G

HASWELL-E



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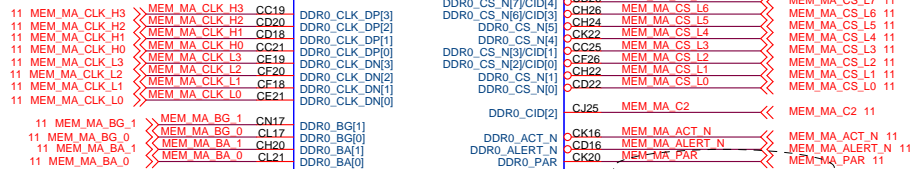
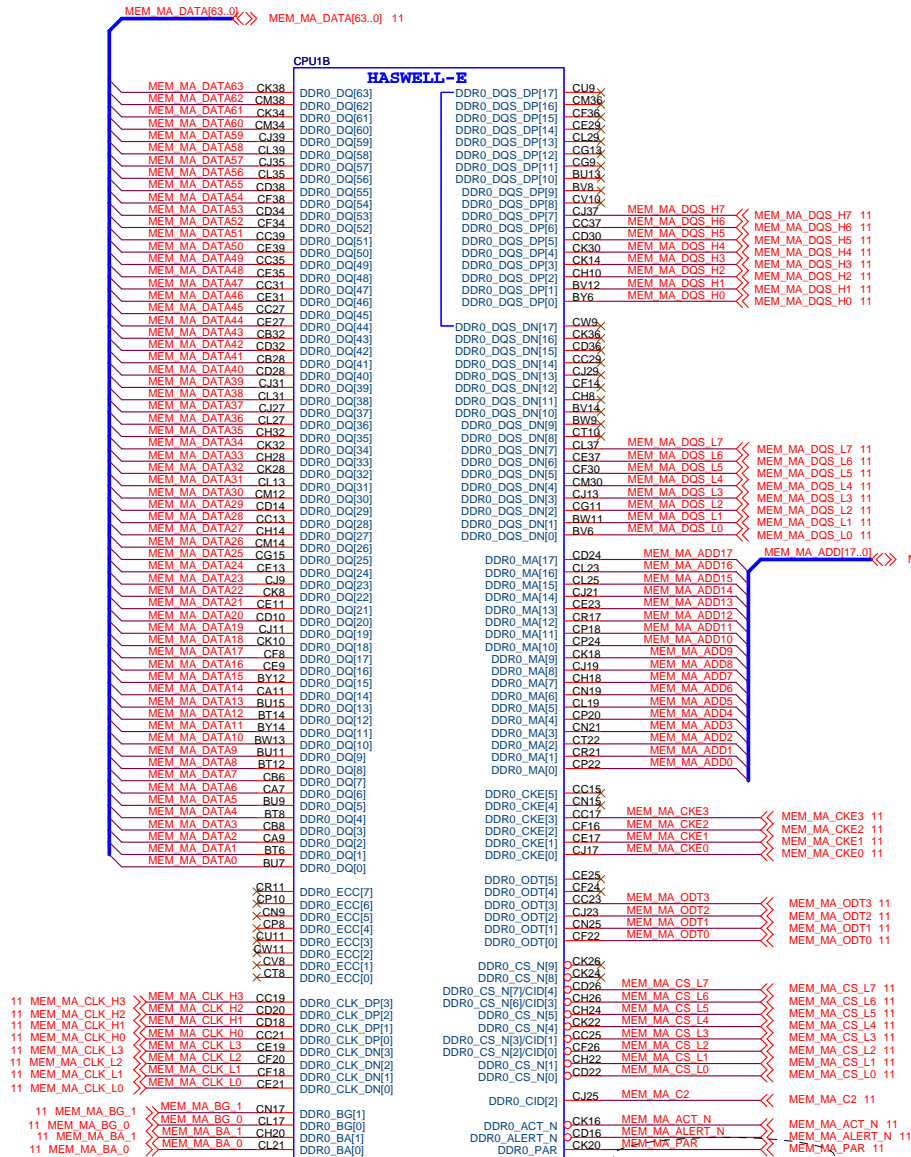


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CPU-Memory0/1



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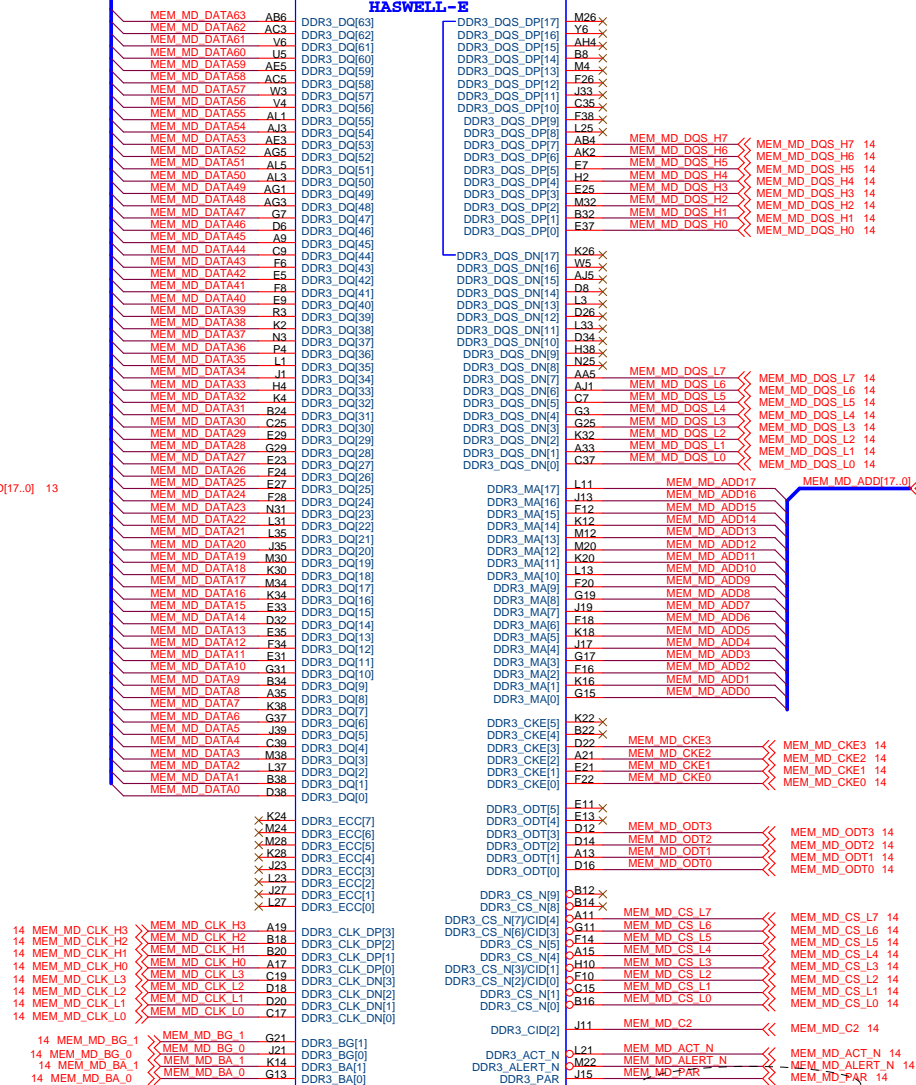


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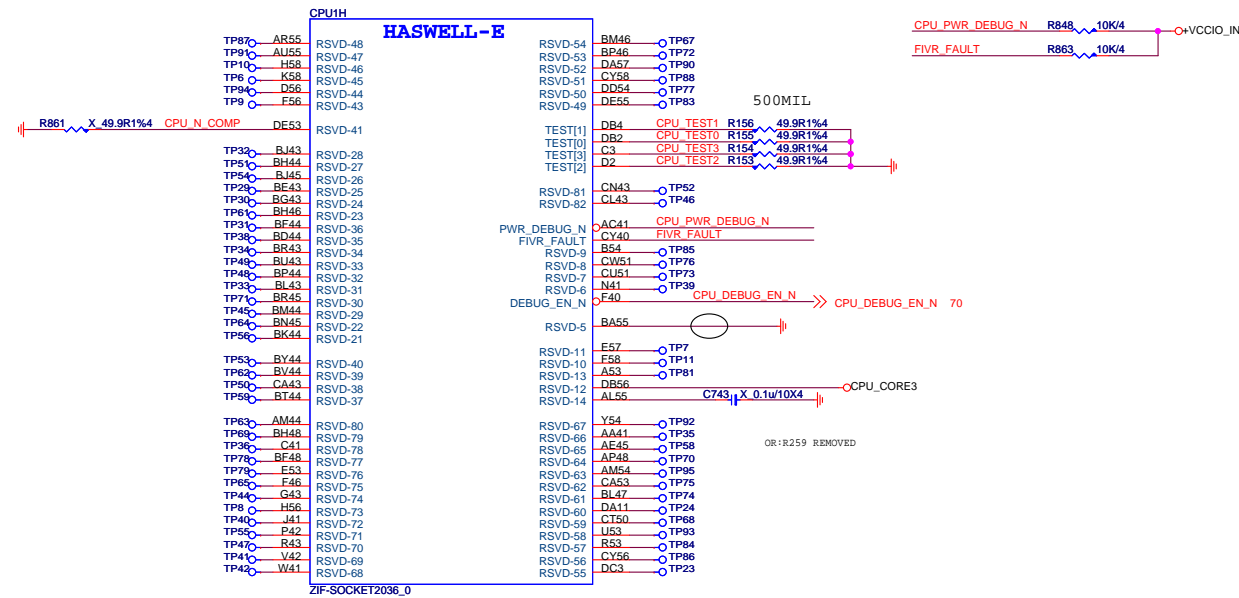
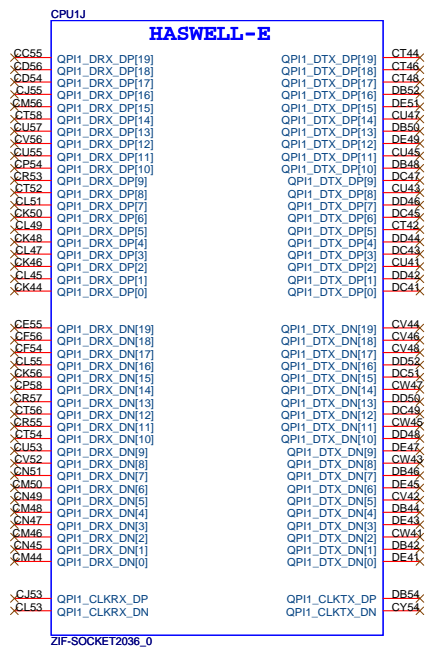
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CPU-QPI/RESERVE



CPU1N

HASWELL-E

A23	VSS-629	VSS-553	M2
A37	VSS-628	VSS-551	M36
A39	VSS-627	VSS-550	M42
A41	VSS-626	VSS-549	M44
A43	VSS-625	VSS-548	M46
A45	VSS-624	VSS-547	M48
A47	VSS-623	VSS-546	M50
A49	VSS-622	VSS-545	M52
A5	VSS-631	VSS-543	N23
A51	VSS-621	VSS-542	N27
A7	VSS-619	VSS-541	N29
B10	VSS-630	VSS-540	N33
B36	VSS-618	VSS-539	N35
B40	VSS-617	VSS-538	N37
B52	VSS-616	VSS-537	N39
B6	VSS-620	VSS-536	N43
C33	VSS-614	VSS-535	N45
C5	VSS-615	VSS-534	N47
D10	VSS-611	VSS-533	N49
D24	VSS-610	VSS-544	N5
D36	VSS-609	VSS-532	N51
D4	VSS-612	VSS-531	N53
D40	VSS-608	VSS-530	P10
E1	VSS-607	VSS-529	P26
E3	VSS-606	VSS-528	P28
E39	VSS-605	VSS-527	P30
E41	VSS-604	VSS-526	P32
F2	VSS-603	VSS-525	P34
F30	VSS-601	VSS-524	P38
F32	VSS-600	VSS-523	P40
F36	VSS-599	VSS-522	P42
F4	VSS-602	VSS-521	P44
F42	VSS-598	VSS-517	R11
F44	VSS-597	VSS-516	R25
F48	VSS-596	VSS-515	R29
G1	VSS-595	VSS-514	R39
G23	VSS-594	VSS-513	R5
G27	VSS-593	VSS-512	R55
G33	VSS-589	VSS-511	R9
G36	VSS-588	VSS-518	T36
G39	VSS-587	VSS-508	T4
G41	VSS-586	VSS-511	T42
G45	VSS-585	VSS-507	T46
G47	VSS-584	VSS-510	T8
G49	VSS-583	VSS-509	U29
G5	VSS-582	VSS-506	U3
G51	VSS-581	VSS-503	U39
G53	VSS-580	VSS-502	U43
G57	VSS-579	VSS-501	U47
G9	VSS-578	VSS-500	V10
H24	VSS-577	VSS-499	V12
H26	VSS-576	VSS-498	V14
H30	VSS-575	VSS-497	V16
H32	VSS-574	VSS-496	V18
H34	VSS-572	VSS-495	V20
H36	VSS-571	VSS-494	V22
H40	VSS-570	VSS-493	V24
H54	VSS-569	VSS-491	W23
H6	VSS-579	VSS-490	W27
H8	VSS-578	VSS-489	W33
J25	VSS-565	VSS-488	W35
J29	VSS-564	VSS-487	W39
J3	VSS-568	VSS-486	W43
J37	VSS-563	VSS-485	W45
J5	VSS-562	VSS-484	W47
J55	VSS-567	VSS-483	W49
J7	VSS-566	VSS-482	W51
K10	VSS-560	VSS-481	W53
K36	VSS-559	VSS-480	W57
K40	VSS-558	VSS-479	Y2
L29	VSS-556	VSS-478	Y24
L39	VSS-555	VSS-476	Y28
L41	VSS-554	VSS-475	Y30
L5	VSS-557	VSS-474	Y32
M10	VSS-552	VSS-473	Y34

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CPU1O

HASWELL-E

Y36	VSS-472	VSS-394	AH6
Y42	VSS-471	VSS-393	AH14
Y56	VSS-470	VSS-392	AH58
AA3	VSS-469	VSS-391	AJ11
AA29	VSS-467	VSS-390	AJ17
AA7	VSS-468	VSS-389	AK4
AA31	VSS-465	VSS-388	AK6
AA39	VSS-464	VSS-387	AK16
AA55	VSS-463	VSS-386	AK42
AB12	VSS-461	VSS-385	AK44
AB40	VSS-460	VSS-384	AK46
AB42	VSS-459	VSS-383	AK50
AC7	VSS-458	VSS-382	AK52
AC9	VSS-457	VSS-381	AL11
AC11	VSS-456	VSS-380	AL13
AC21	VSS-455	VSS-379	AL43
AD4	VSS-454	VSS-378	AL45
AD8	VSS-452	VSS-377	AL47
AD6	VSS-453	VSS-376	AL49
AD10	VSS-451	VSS-375	AL51
AD12	VSS-450	VSS-374	AL53
AD36	VSS-448	VSS-373	AM2
AD40	VSS-447	VSS-372	AM4
AD42	VSS-446	VSS-371	AM6
AD44	VSS-445	VSS-370	AM8
AD46	VSS-444	VSS-369	AM10
AD48	VSS-443	VSS-368	AM12
AD50	VSS-442	VSS-367	AM14
AD52	VSS-441	VSS-366	AM16
AE13	VSS-440	VSS-365	AM56
AE15	VSS-439	VSS-364	AN1
AE19	VSS-438	VSS-363	AN3
AE23	VSS-437	VSS-362	AN5
AE27	VSS-436	VSS-361	AN7
AE29	VSS-435	VSS-360	AN9
AE33	VSS-434	VSS-359	AN13
AE35	VSS-433	VSS-358	AN15
AE39	VSS-432	VSS-357	AN55
AE41	VSS-431	VSS-356	AN57
AE43	VSS-430	VSS-355	AP42
AE47	VSS-429	VSS-354	AP44
AE49	VSS-428	VSS-353	AP58
AF10	VSS-427	VSS-352	AT44
AF16	VSS-426	VSS-351	AT46
AF18	VSS-425	VSS-350	AT48
AF20	VSS-424	VSS-349	AT50
AF22	VSS-423	VSS-348	AT52
AF24	VSS-422	VSS-347	AU45
AF26	VSS-421	VSS-346	AU47
AF28	VSS-420	VSS-345	AU49
AF30	VSS-419	VSS-344	AU51
AF32	VSS-418	VSS-343	AU53
AF34	VSS-417	VSS-342	AV42
AF36	VSS-416	VSS-341	AV54
AF38	VSS-415	VSS-340	AV56
AF40	VSS-414	VSS-339	AW11
AF42	VSS-413	VSS-338	AW13
AF44	VSS-412	VSS-337	AW15
AF46	VSS-411	VSS-336	AW17
AF48	VSS-410	VSS-335	AW19
AF50	VSS-409	VSS-334	AW55
AF52	VSS-408	VSS-333	AW57
AF54	VSS-407	VSS-332	AY2
AF56	VSS-406	VSS-331	AY4
AG11	VSS-405	VSS-330	AY6
AG13	VSS-404	VSS-329	AY8
AG17	VSS-403	VSS-328	AY10
AG19	VSS-402	VSS-327	AY12
AG21	VSS-401	VSS-326	AY14
AG25	VSS-400	VSS-325	AY16
AG31	VSS-398	VSS-324	AY44
AG37	VSS-397	VSS-323	AY46
AG43	VSS-396	VSS-322	BB42
AG57	VSS-395	VSS-321	BB44
AH2	VSS-394	VSS-320	BB46
	VSS-393	VSS-319	BB50
	VSS-392	VSS-318	BB58
	VSS-391	VSS-317	BC45
	VSS-390	VSS-316	

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CPU1P

HASWELL-E

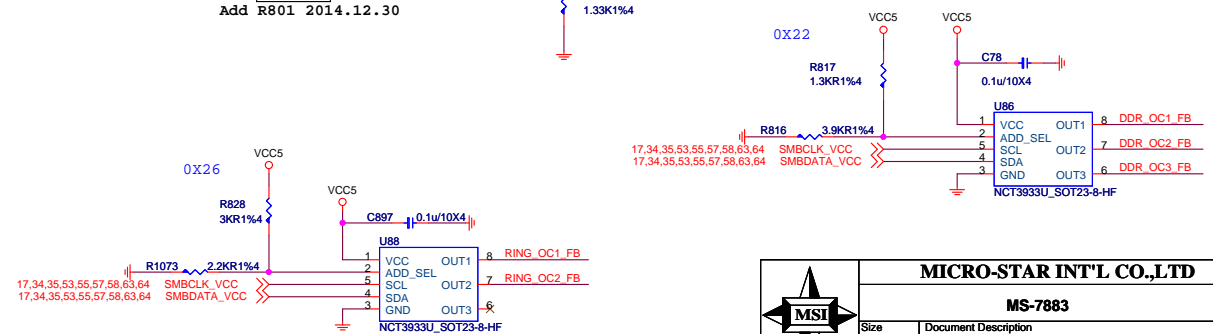
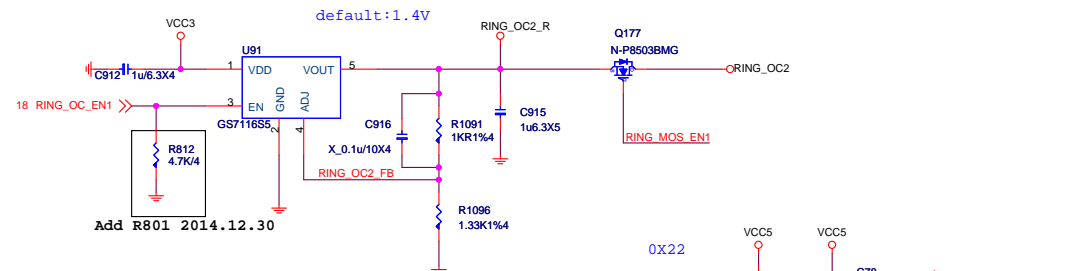
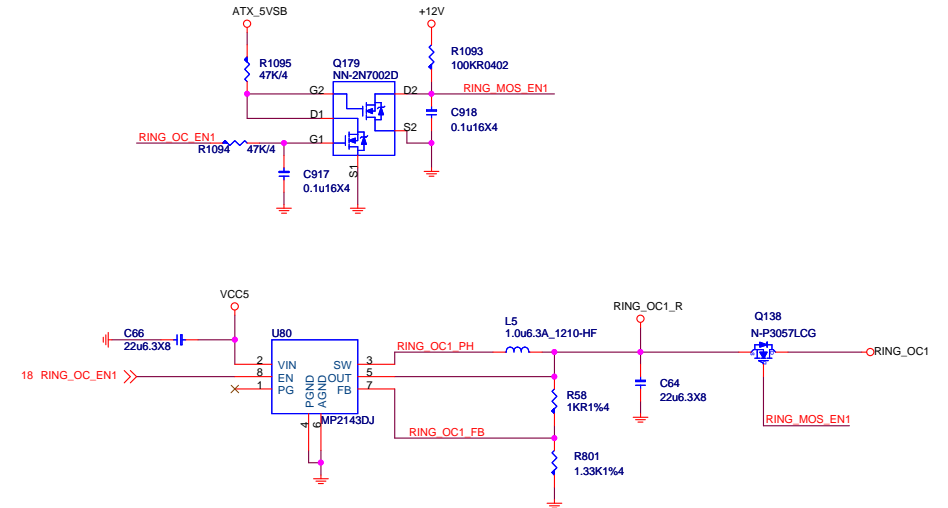
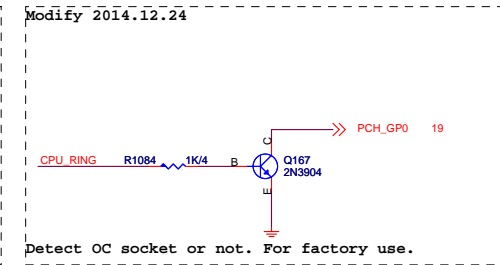
BC47	VSS-315	VSS-236	BW15
BC49	VSS-314	VSS-235	BW17
BC51	VSS-313	VSS-234	BW43
BC53	VSS-312	VSS-233	BY8
BC55	VSS-311	VSS-232	BY10
BC57	VSS-310	VSS-231	BY28
BD52	VSS-309	VSS-230	BY32
BD54	VSS-308	VSS-229	BY58
BD56	VSS-307	VSS-228	CA5
BE49	VSS-306	VSS-227	CA13
BE51	VSS-305	VSS-226	CA15
BF2	VSS-304	VSS-225	CA17
BF4	VSS-303	VSS-224	CA19
BF10	VSS-300	VSS-223	CA21
BF12	VSS-299	VSS-222	CA23
BF14	VSS-298	VSS-221	CA25
BF16	VSS-297	VSS-220	CA27
BF6	VSS-302	VSS-219	CA29
BF8	VSS-301	VSS-218	CA31
BF42	VSS-296	VSS-217	CA33
BG3	VSS-295	VSS-216	CA35
BG5	VSS-294	VSS-215	CA37
BG7	VSS-293	VSS-214	CA39
BG9	VSS-292	VSS-213	CA41
BG11	VSS-291	VSS-212	CA43
BG13	VSS-290	VSS-211	CA45
BG15	VSS-289	VSS-210	CA47
BG17	VSS-288	VSS-209	CB2
BG45	VSS-287	VSS-208	CB10
BG47	VSS-286	VSS-207	CB12
BH58	VSS-285	VSS-206	CB14
BJ65	VSS-284	VSS-205	CB30
BJ57	VSS-283	VSS-204	CB2
BK42	VSS-282	VSS-203	CB36
BK46	VSS-281	VSS-202	CB40
BK48	VSS-280	VSS-201	CB42
BK50	VSS-279	VSS-200	CB44
BK52	VSS-278	VSS-199	CB46
BK54	VSS-277	VSS-198	CB48
BL45	VSS-276	VSS-197	CB50
BL49	VSS-275	VSS-196	CB52
BL57	VSS-274	VSS-195	CB54
BN43	VSS-273	VSS-194	CB56
BN57	VSS-272	VSS-193	CC3
BP4	VSS-271	VSS-192	CC5
BP6	VSS-270	VSS-191	CC7
BP8	VSS-269	VSS-190	CC9
BP12	VSS-268	VSS-189	CC11
BP14	VSS-267	VSS-188	CC13
BP58	VSS-266	VSS-187	CC33
BR1	VSS-265	VSS-186	CC43
BR3	VSS-264	VSS-185	CC45
BR5	VSS-263	VSS-184	CC47
BR7	VSS-262	VSS-183	CC49
BR9	VSS-261	VSS-182	CC51
BR11	VSS-260	VSS-181	CC53
BR13	VSS-259	VSS-180	CC55
BR15	VSS-258	VSS-179	CC57
BR53	VSS-257	VSS-178	CD8
BR55	VSS-256	VSS-177	CD12
BR57	VSS-255	VSS-176	CD14
BT10	VSS-254	VSS-175	CD16
BT16	VSS-253	VSS-174	CD18
BT42	VSS-252	VSS-173	CD20
BT46	VSS-251	VSS-172	CD22
BT48	VSS-250	VSS-171	CD24
BT50	VSS-249	VSS-170	CD26
BT52	VSS-248	VSS-169	CD28
BT54	VSS-247	VSS-168	CD30
BT56	VSS-246	VSS-167	CD32
BU3	VSS-245	VSS-166	CD34
BU5	VSS-244	VSS-165	CD36
BU15	VSS-243	VSS-164	CD38
BU45	VSS-242	VSS-163	CD40
BU47	VSS-241	VSS-162	CD42
BU51	VSS-240	VSS-161	CD44
BV10	VSS-239	VSS-160	CD46
BV16	VSS-238	VSS-159	CD48
BW5	VSS-237	VSS-158	CD50
BW7	VSS-236	VSS-157	CD52

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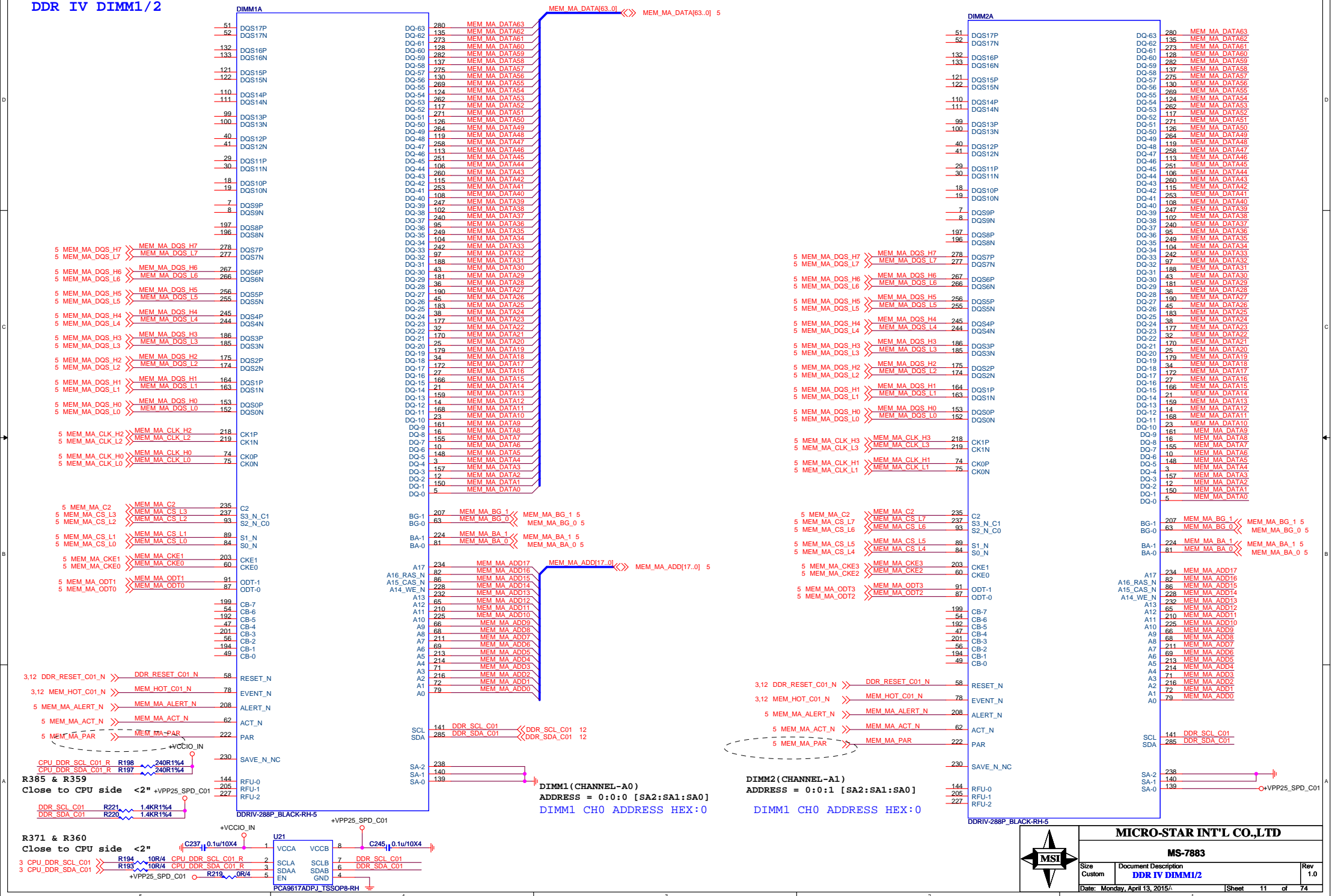
CPU1Q

HASWELL-E

CH12	VSS-157
CH30	VSS-156
CH34	VSS-155
CH36	VSS-154
CH38	VSS-153
CH40	VSS-152
CH42	VSS-151
CH44	VSS-150
CH46	VSS-149
CH48	VSS-148
CH50	VSS-147
CH52	VSS-146
CH54	VSS-145
CH56	VSS-144
CJ3	VSS-143
CJ7	VSS-142
CJ15	VSS-141
CJ33	VSS-140
CJ41	VSS-139
CJ43	VSS-138
CJ45	VSS-137
CJ47	VSS-136
CJ49	VSS-135
CJ51	VSS-134
CK4	VSS-133
CK12	VSS-132
CK40	VSS-131
CK52	VSS-130
CK54	VSS-129
CL7	VSS-128
CL9	VSS-127
CL11	VSS-126
CL15	VSS-125
CM6	VSS-124
CM8	VSS-123
CM10	VSS-122
CM28	VSS-121
CM32	VSS-120
CM40	VSS-119
CM52	VSS-118
CM54	VSS-117
CN3	VSS-116
CN5	VSS-115
CN7	VSS-114
CN11	VSS-113
CN13	VSS-112
CN27	VSS-111
CN29	VSS-110
CN31	VSS-109
CN33	VSS-108
CN35	VSS-107
CN37	VSS-106
CN39	VSS-105
CN53	VSS-104
CN55	VSS-103
CN57	VSS-102
CP4	VSS-101
CP12	VSS-100
CP14	VSS-99
CP30	VSS-98
CP34	VSS-97
CP36	VSS-96
CP38	VSS-95
CP42	VSS-94
CP44	VSS-93
CP46	VSS-92
CP48	VSS-91
CP50	VSS-90
CP56	VSS-89
CR7	VSS-88
CR9	VSS-87
CR33	VSS-86
CR41	VSS-85
CR45	VSS-84
CR47	VSS-83
CR49	VSS-82
CT2	VSS-81
CT12	VSS-80
CT40	VSS-79



DDR IV DIMM1/2

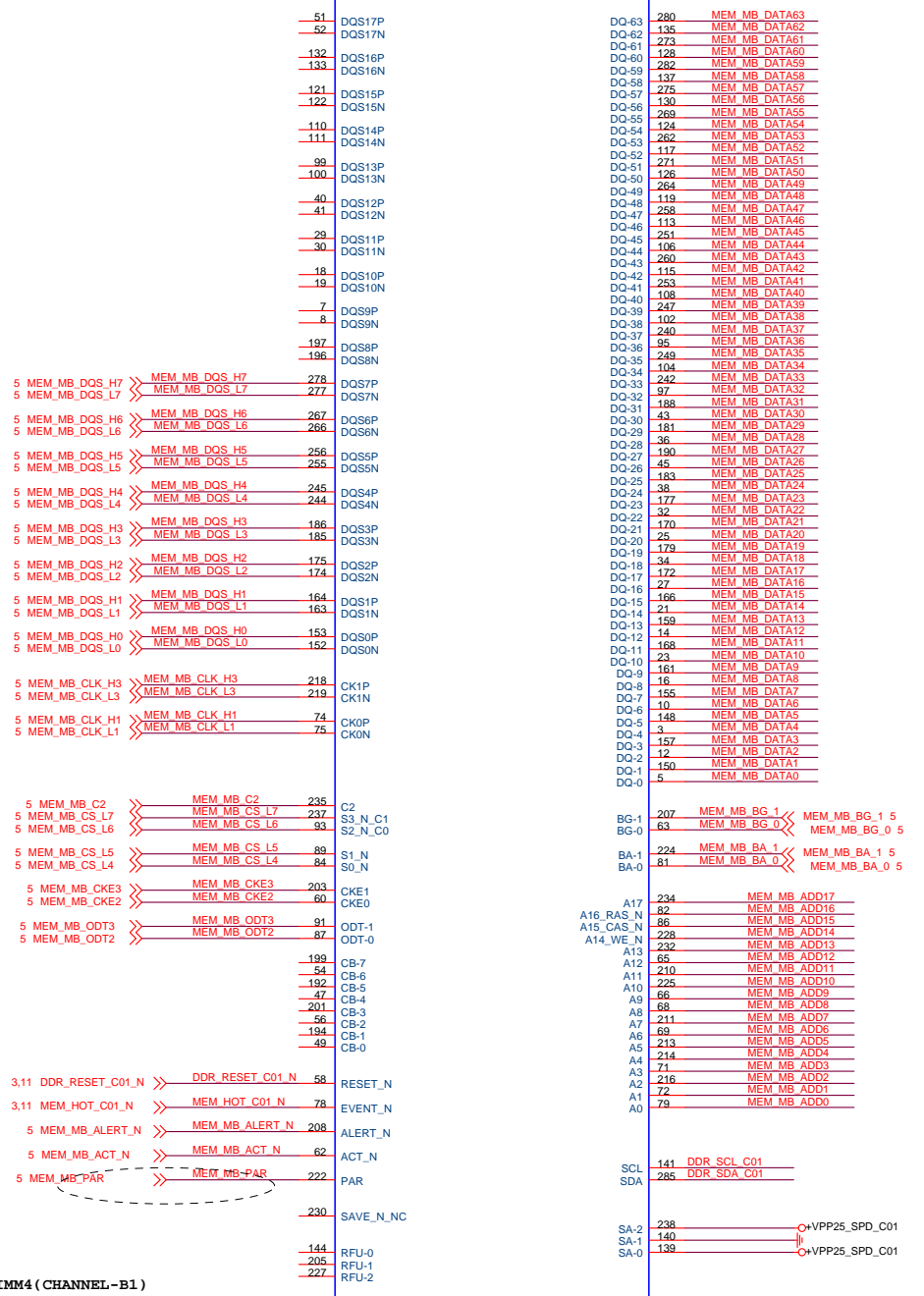
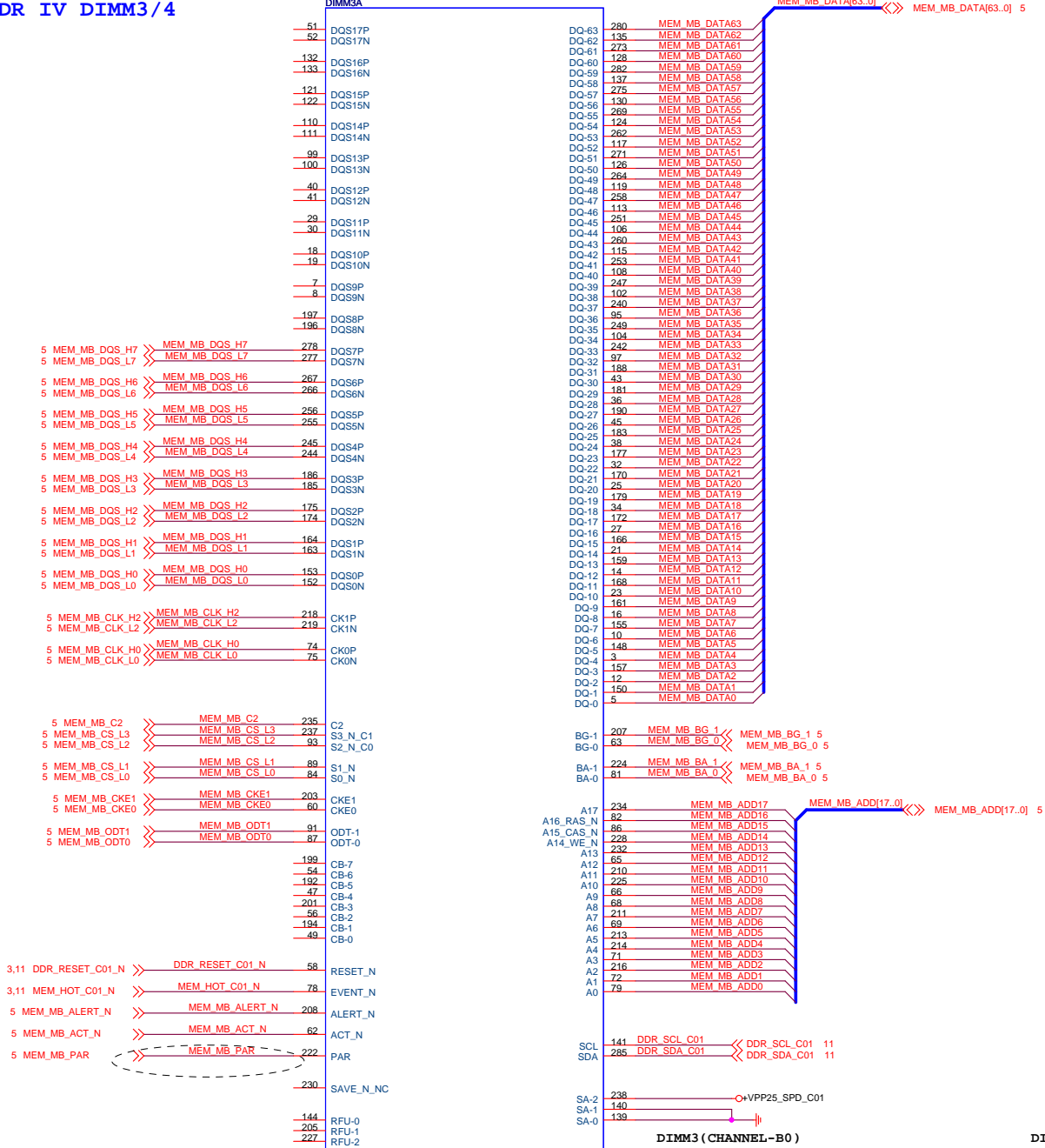


DDR IV DIMM3/4

DIMM3A

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DIMM4A

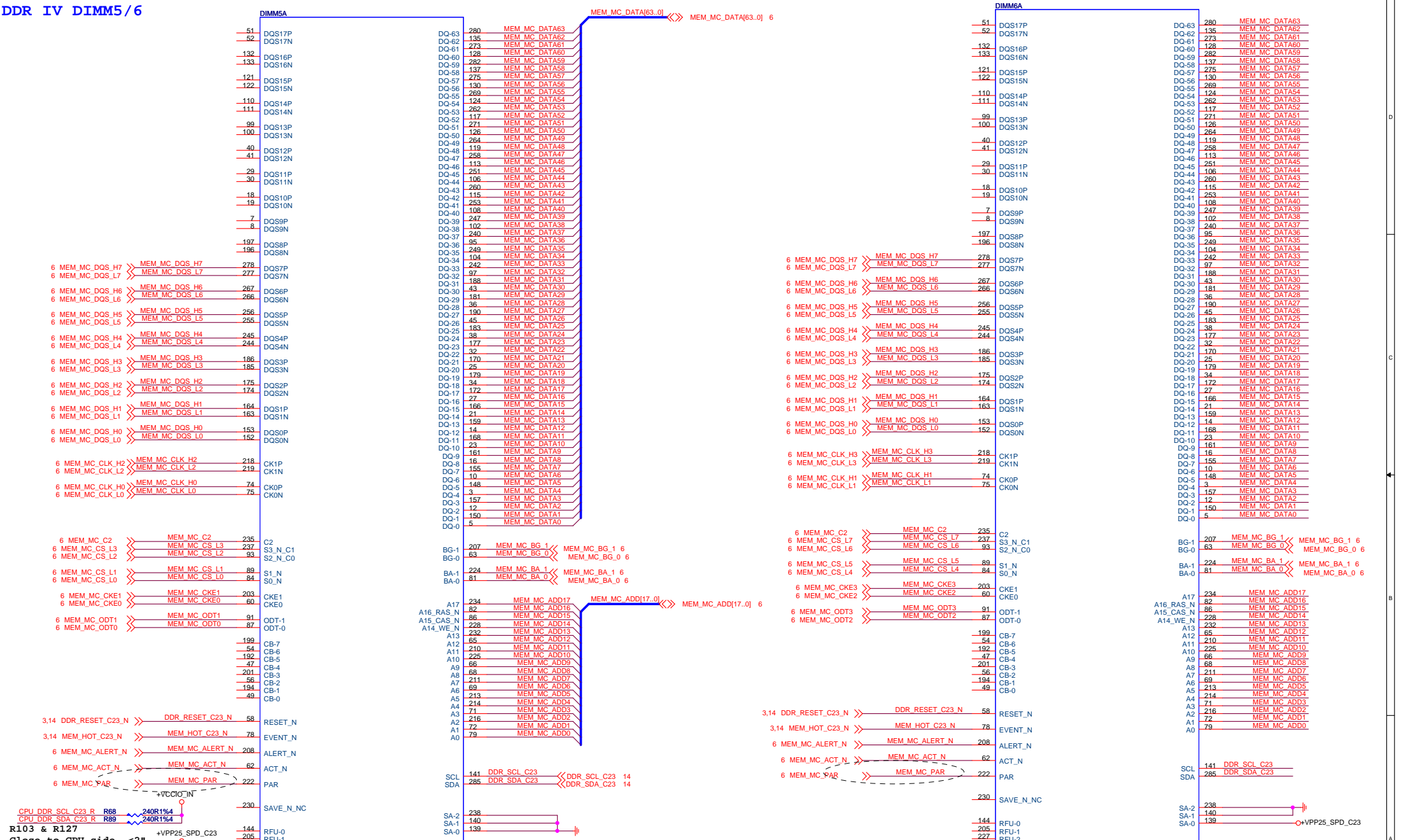


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DDR IV DIMM5/6



R103 & R127
Close to CPU side <2"

R110 & R128
Close to CPU side <2"

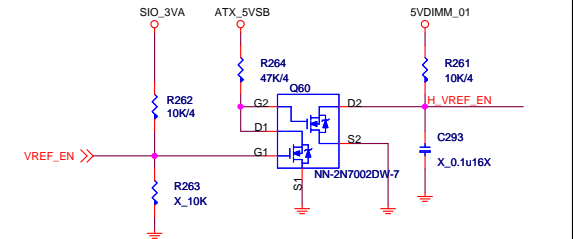
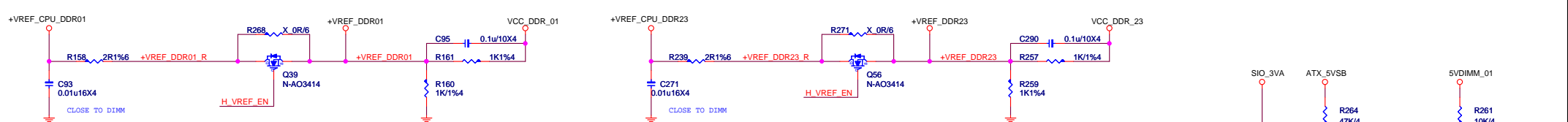
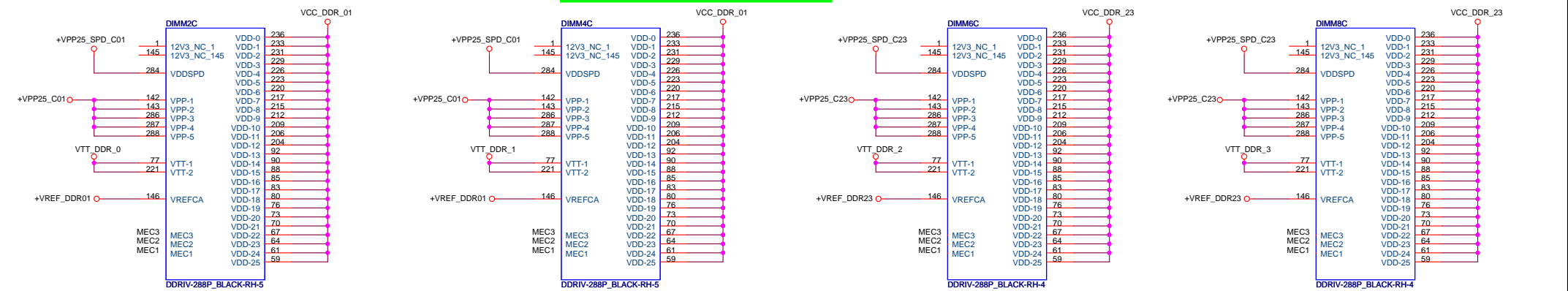
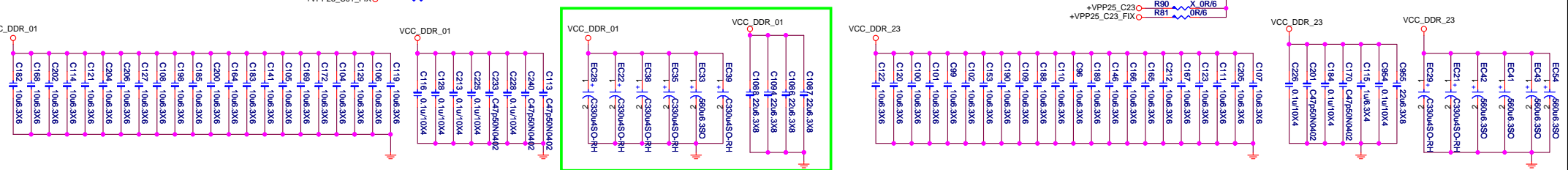
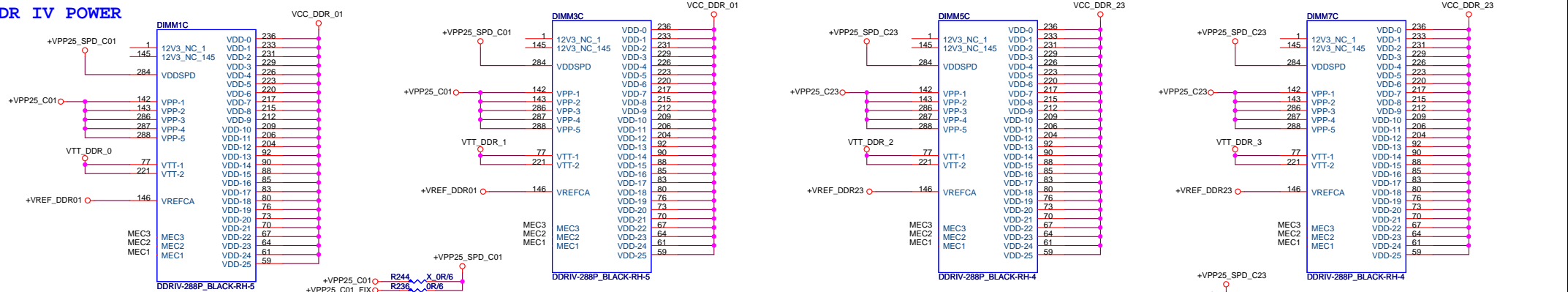
DIMM5 (CHANNEL-C0)
ADDRESS = 0:0:0 [SA2:SA1:SA0]
DIMM5 CH2 ADDRESS HEX:0

DIMM6 (CHANNEL-C1)
ADDRESS = 0:0:1 [SA2:SA1:SA0]
DIMM6 CH2 ADDRESS HEX:0

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Custom	DDR IV DIMM5/6	1.0
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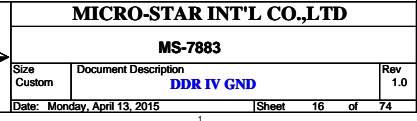
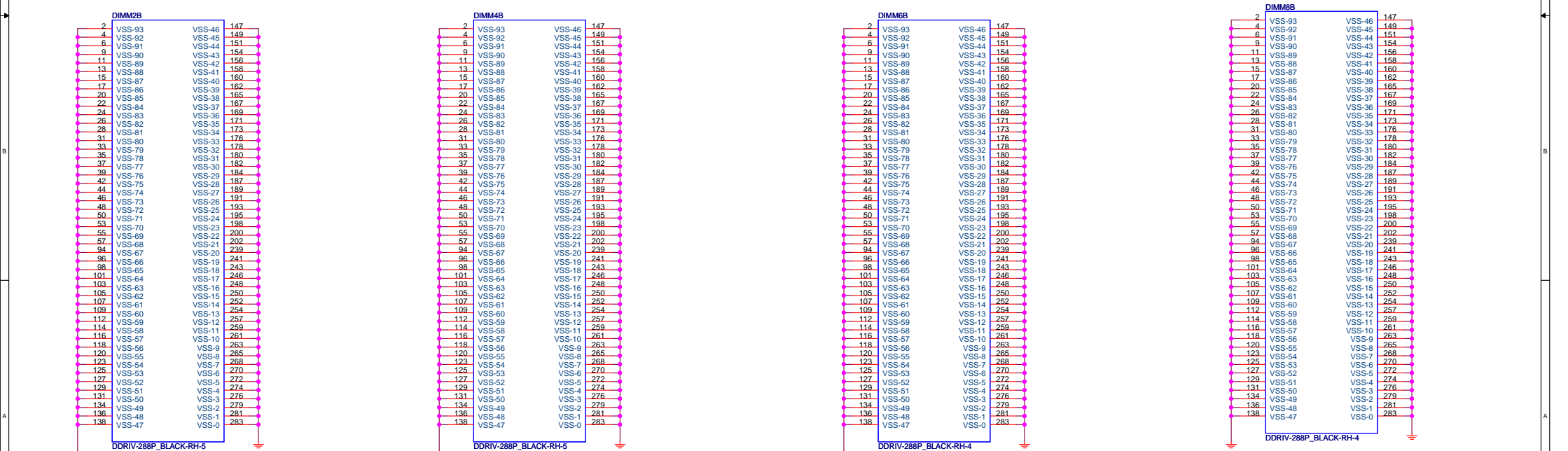
DDR IV POWER



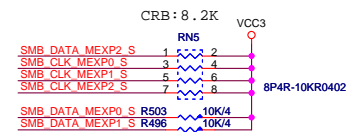
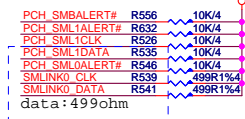
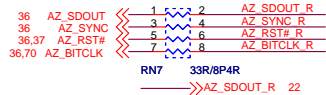
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Size Custom	Document Description DDR IV POWER	Rev 1.0
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PCH-LPC/HDA/RTC/MISC/SPI



SMB DATA MEXPI S R497 X 10K/4
LT DEBUG MODE ENABLE

HIGH: NORMAL MODE (DEFAULT)
LOW : LT DEBUG MODE

SMB_DATA MEXPO S R504  **X 10K/4** 

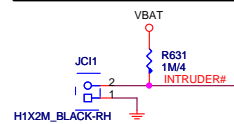
ADR TIMER HOLD OFF (DEFENSIVE)

NOTE: EXT PU ON SMB

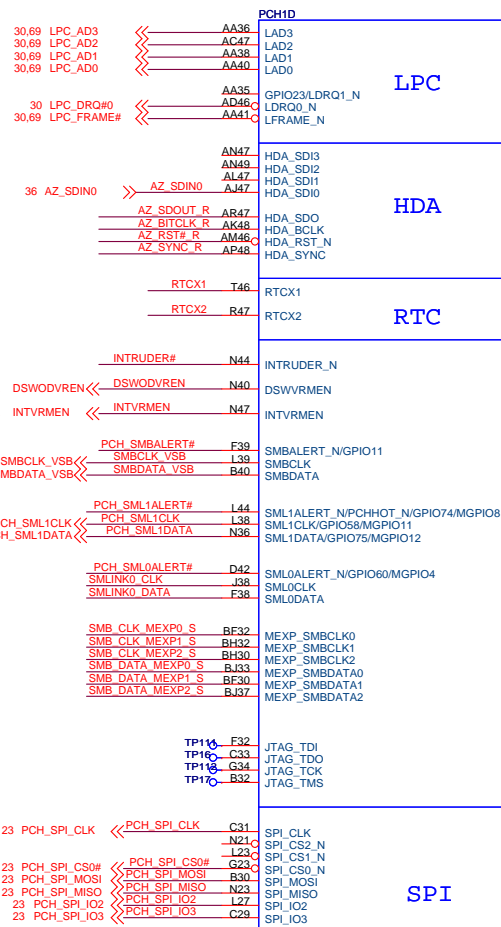
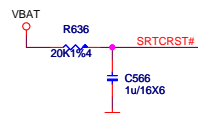
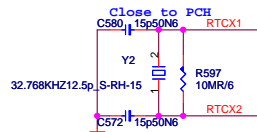
HIGH: NORMAL MODE (DEFAULT)

LOW : ADR TIMER HOLD OFF

Chassis Intrusion

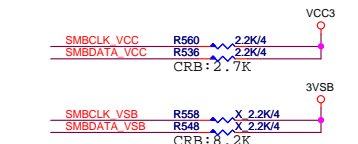
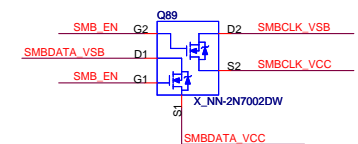
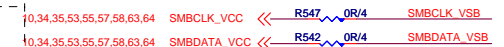
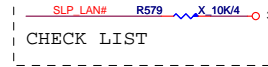
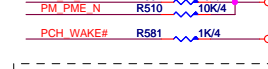
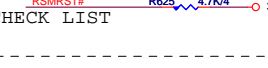
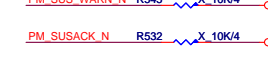
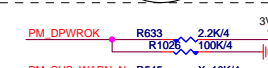
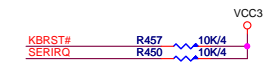
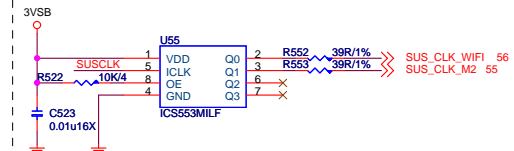
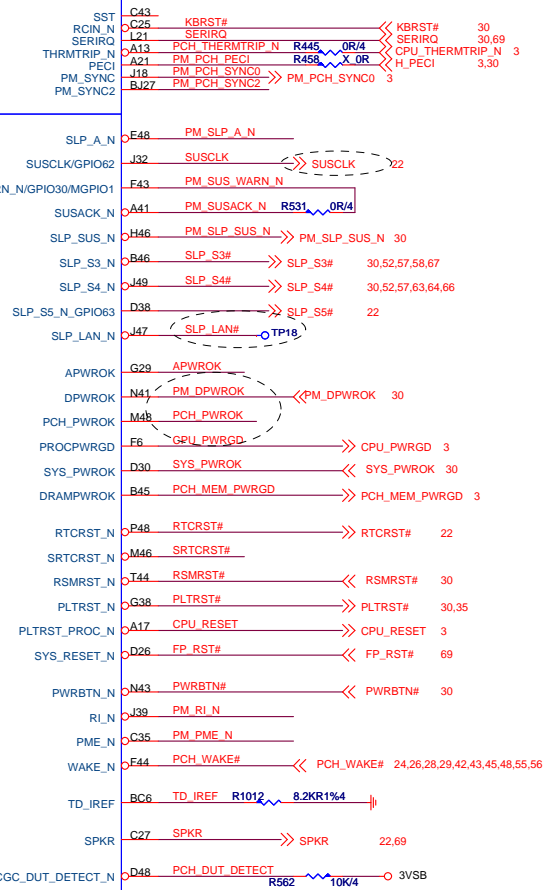


RTC Block



power management

The negative min timing implies that DRAMPWROK must either fall before SLP_S4# or within 100 ns after it.

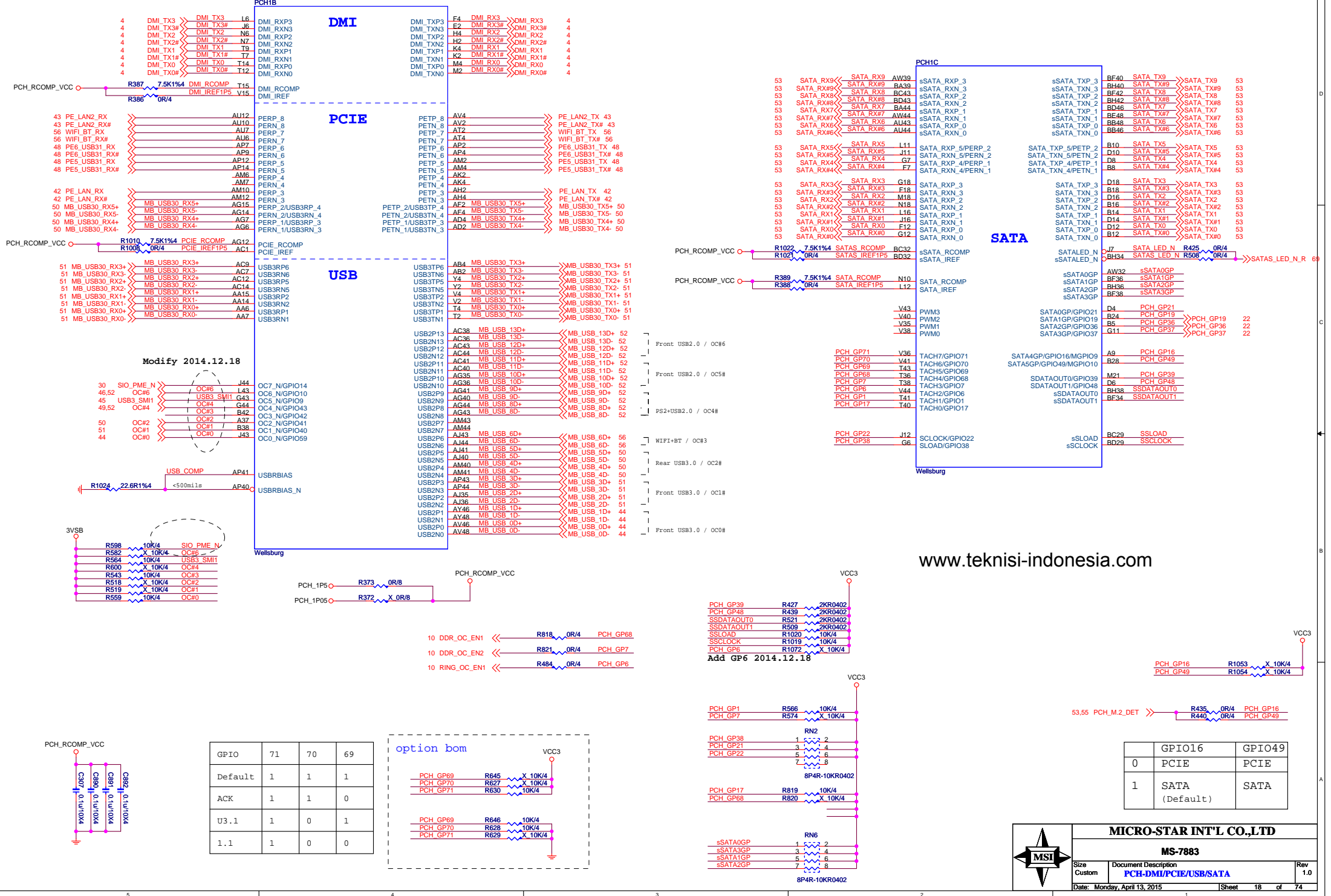


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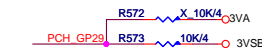
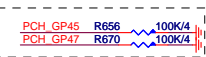
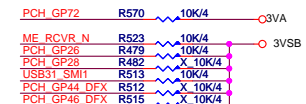
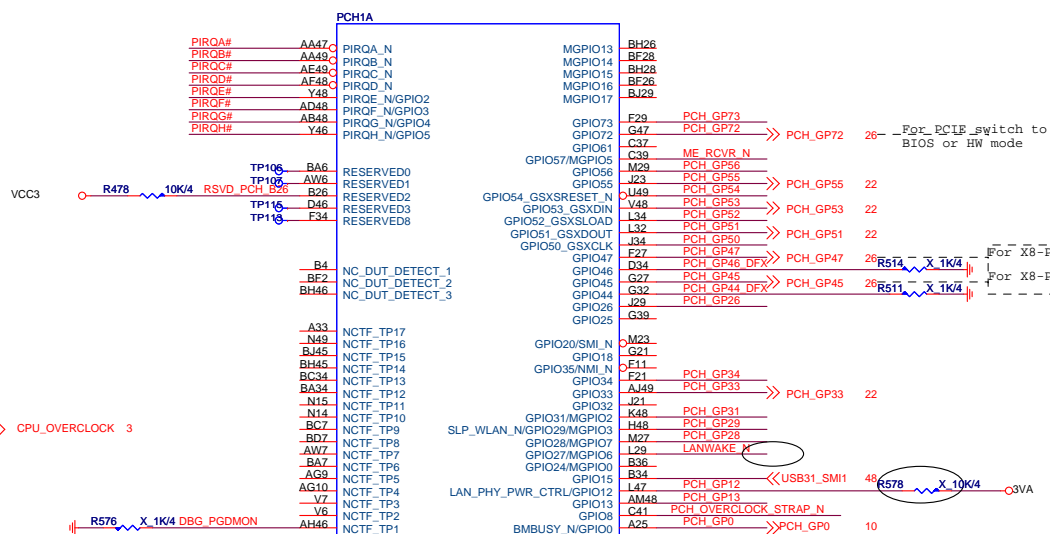
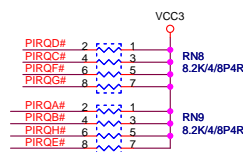
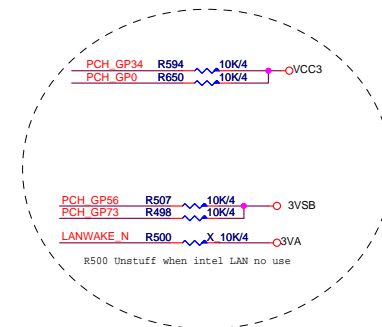
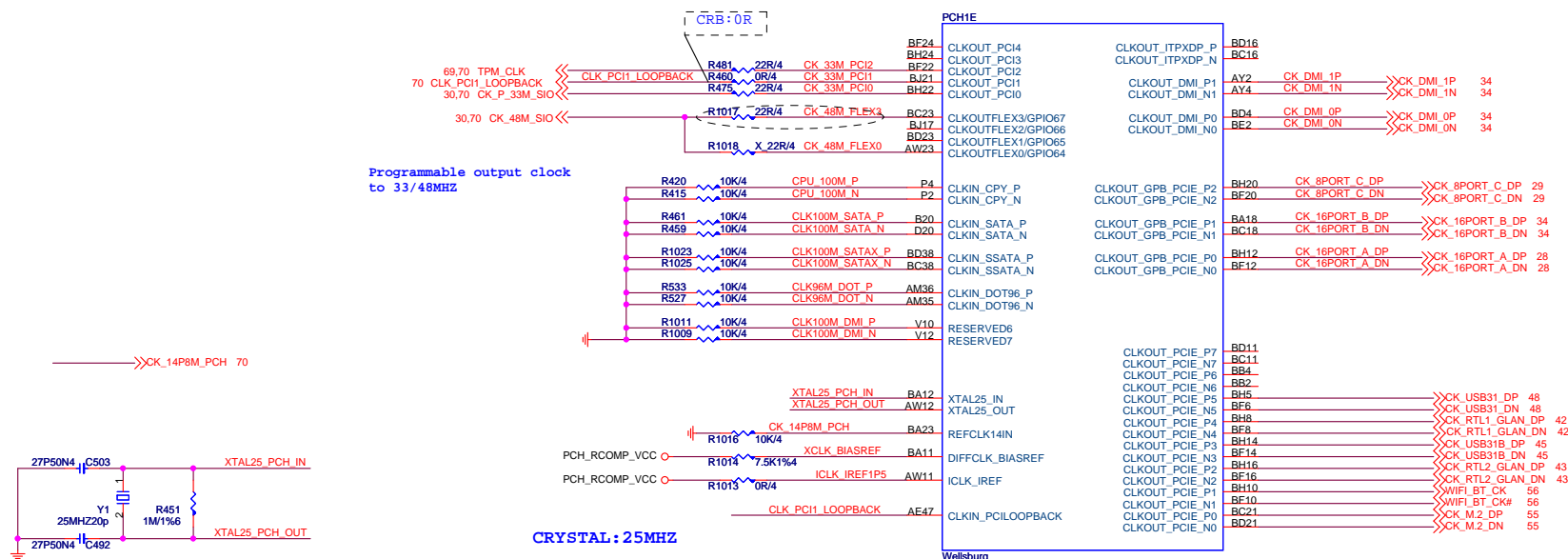
Size Custom	Document Description PCH-LPC/HDA/RTC/MISC/SPI	Rev 1.0
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PCH-DMI/PCIE/USB/SATA



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PCH-CLK/GPIO



INTEGRATED CLOCK ENABLE

PCH_OVERCLOCK_STRAP_N R544 2.2K/4

HIGH: DISABLE

LOW : ENABLE

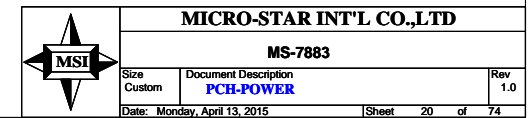
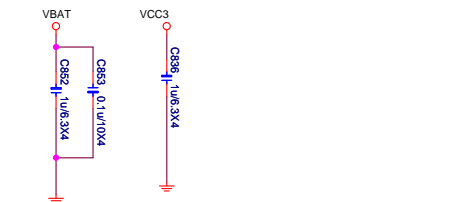


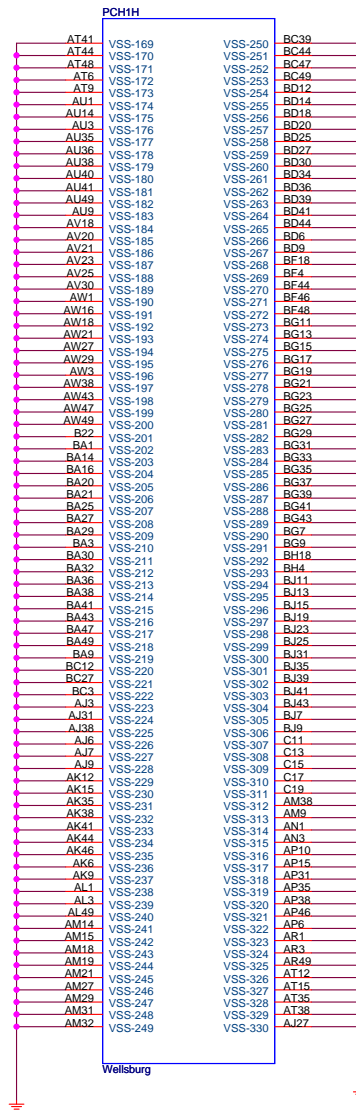
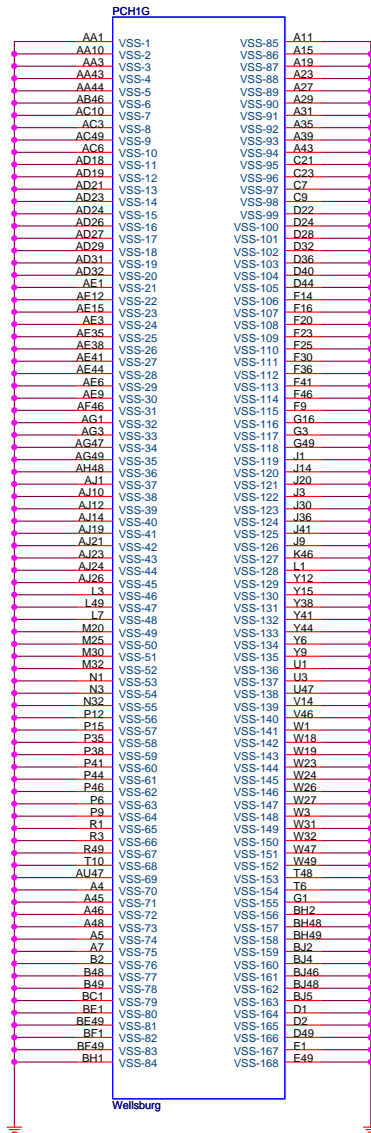
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+VCCIO_IN: 0.004A





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17 PCH_SPI_CS0# << PCH_SPI_CS0#

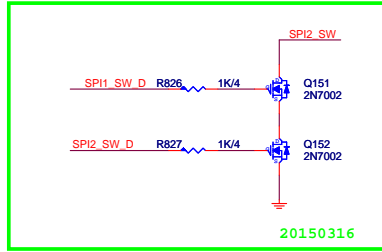
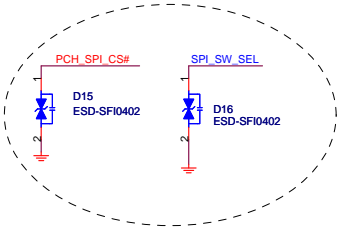
17 PCH_SPI_MOSI << PCH_SPI_MOSI

17 PCH_SPI_MISO << PCH_SPI_MISO

17 PCH_SPI_CLK << PCH_SPI_CLK

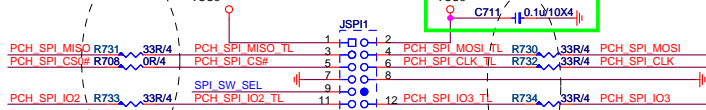
17 PCH_SPI_IO2 << PCH_SPI_IO2

17 PCH_SPI_IO3 << PCH_SPI_IO3



SPI DEBUG PROT

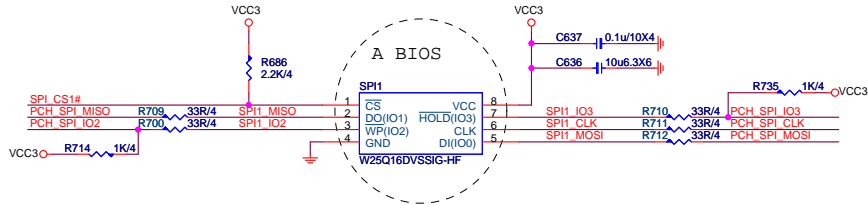
Close to SPI ROM



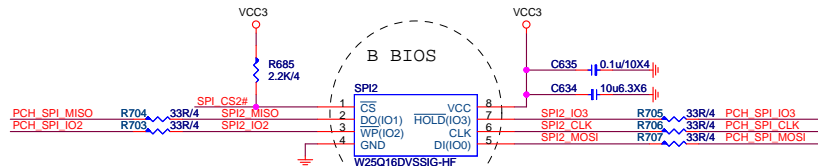
Part Number: N31-2061341-H06

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17 PCH_PWROK >> PCH_PWROK R1065 0R/4 SPI_SW_SEL 2014.06.05 Add for support TL624-1.1



16M ROM



SPI FLASH ROM

Place close to SB.

*SPI_CLK & SPI_MOSI must be length matched to within 500mils.
*SPI_CLK & SPI_CS0# must be length matched to within 500mils.

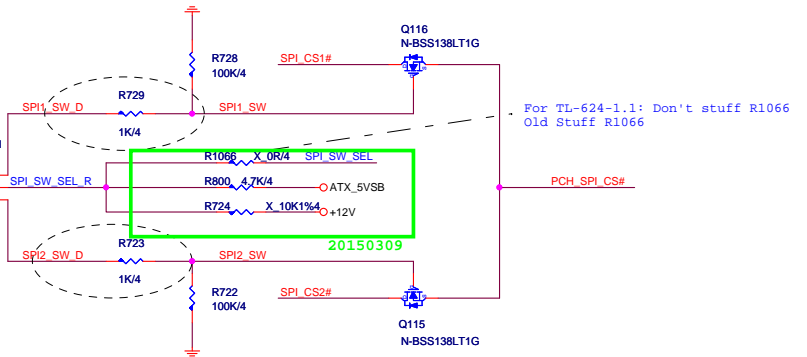
OPTION BIOS

HW MODE

A BIOS

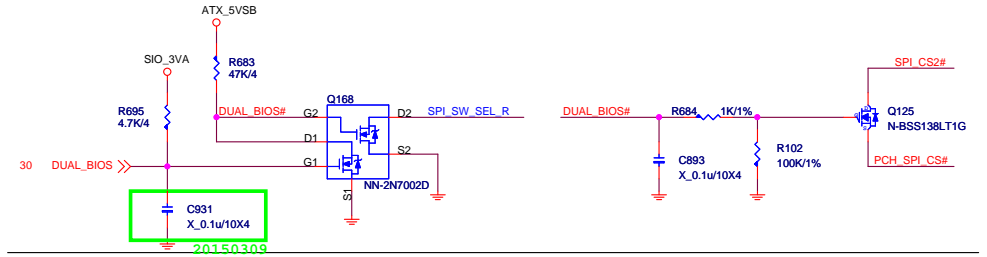
B BIOS

SW-DIP1_BLACK-RH-1



For TL-624-1.1: Don't stuff R1066
Old Stuff R1066

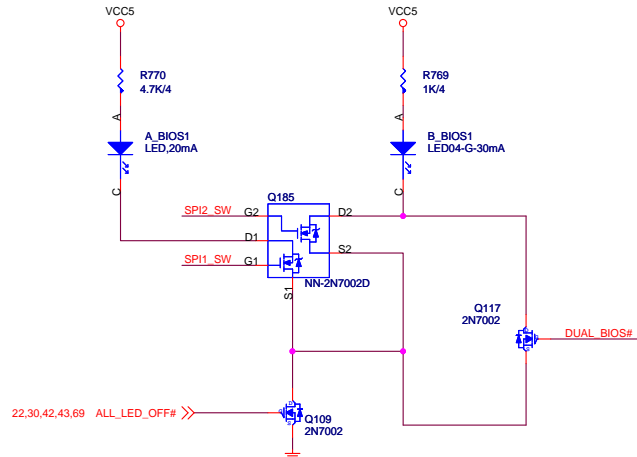
For auto testing in factory. Modify 2014.12.18



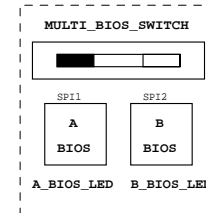
* if you not support Standby power in S5 Status, component "MULTI_BIOS_SWITCH1.B(PIN B)" Pull-high to +12V & Q12/Q13 MOS select 2N7002

* if you support Standby power in S5 Status(Ex: PCH is B75 Chipset), component "MULTI_BIOS_SWITCH1.B(PIN B)" pull-igh to ATX_5VSB, component Q12/Q13 must select "Vth" under 1V (Component Suggestion as below)

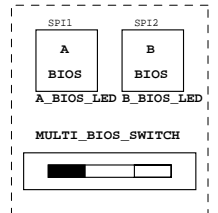
D03-0341409-A68 / D03-0230019-A30



Placement 1



Placement 2

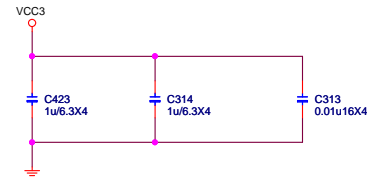
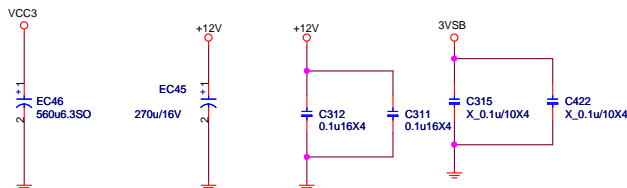
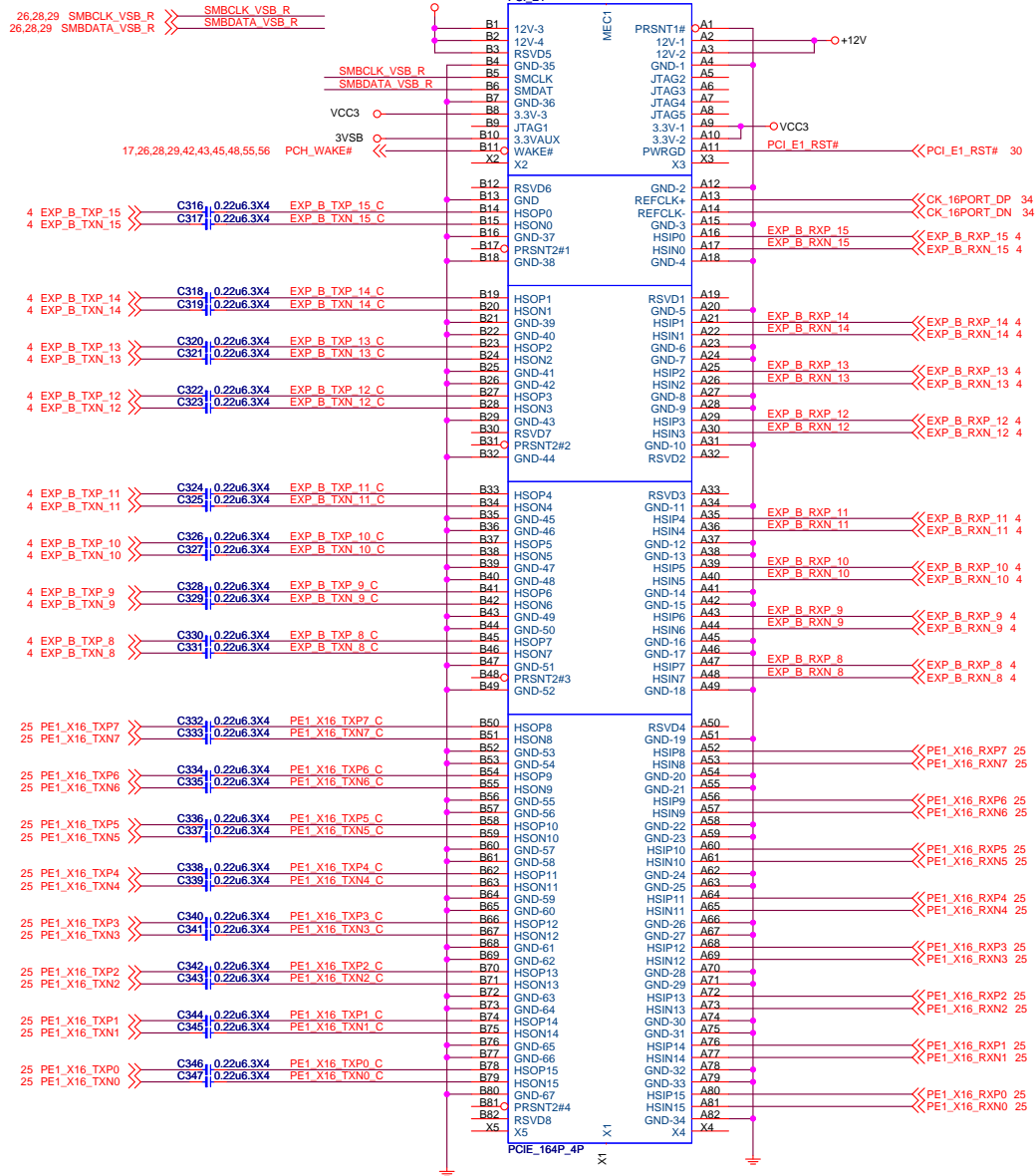


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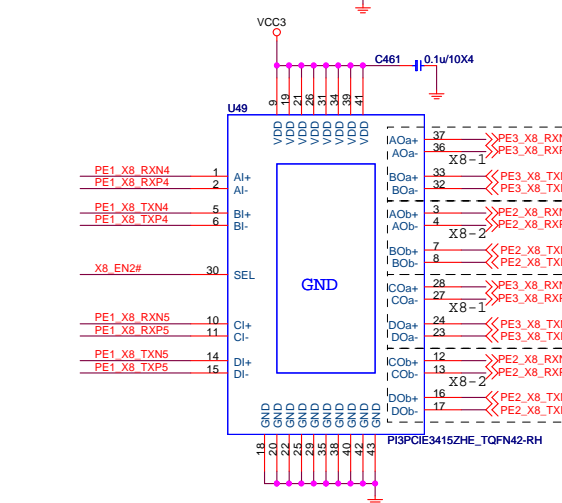
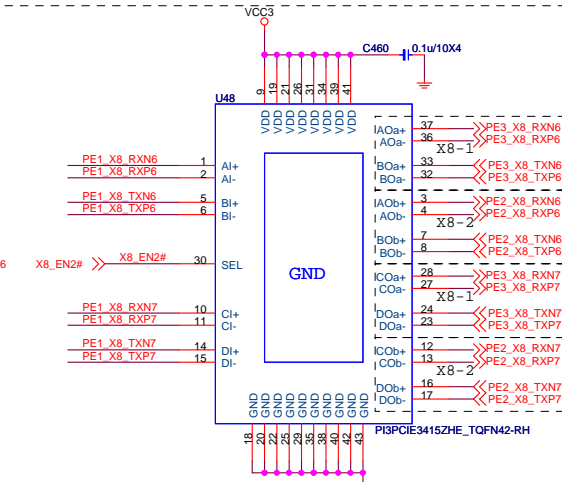
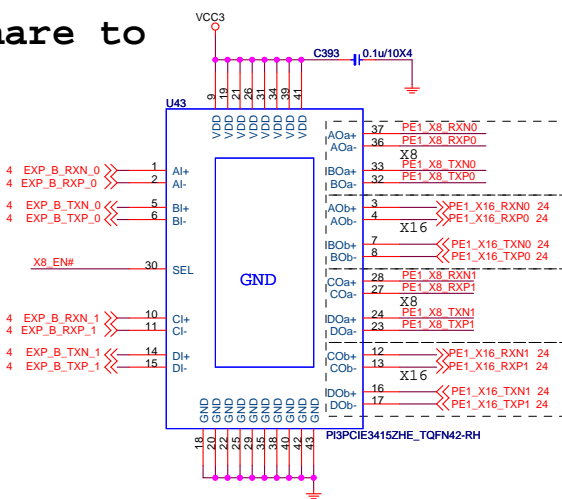
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Custom	Dual BIOS	1.0
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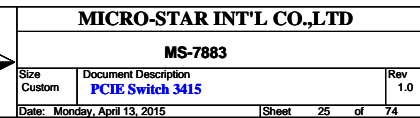
PCIE1(X16) & PCIE2(X1) Slots



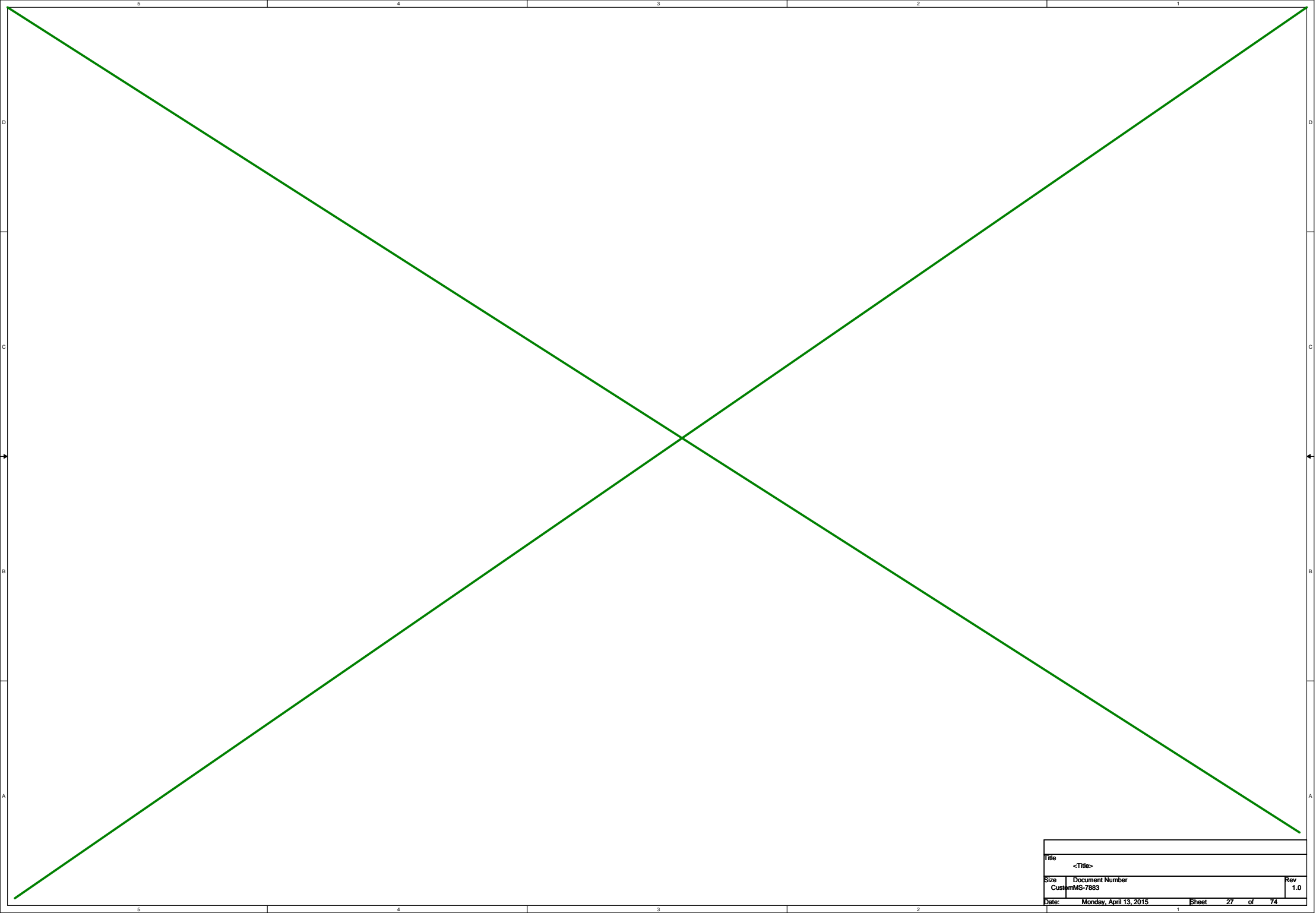
VCC3



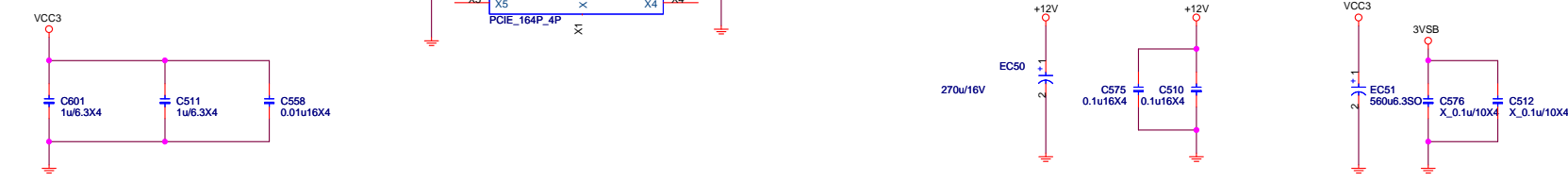
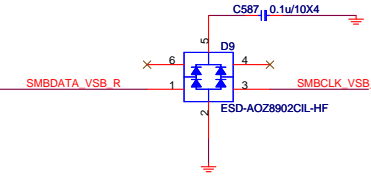
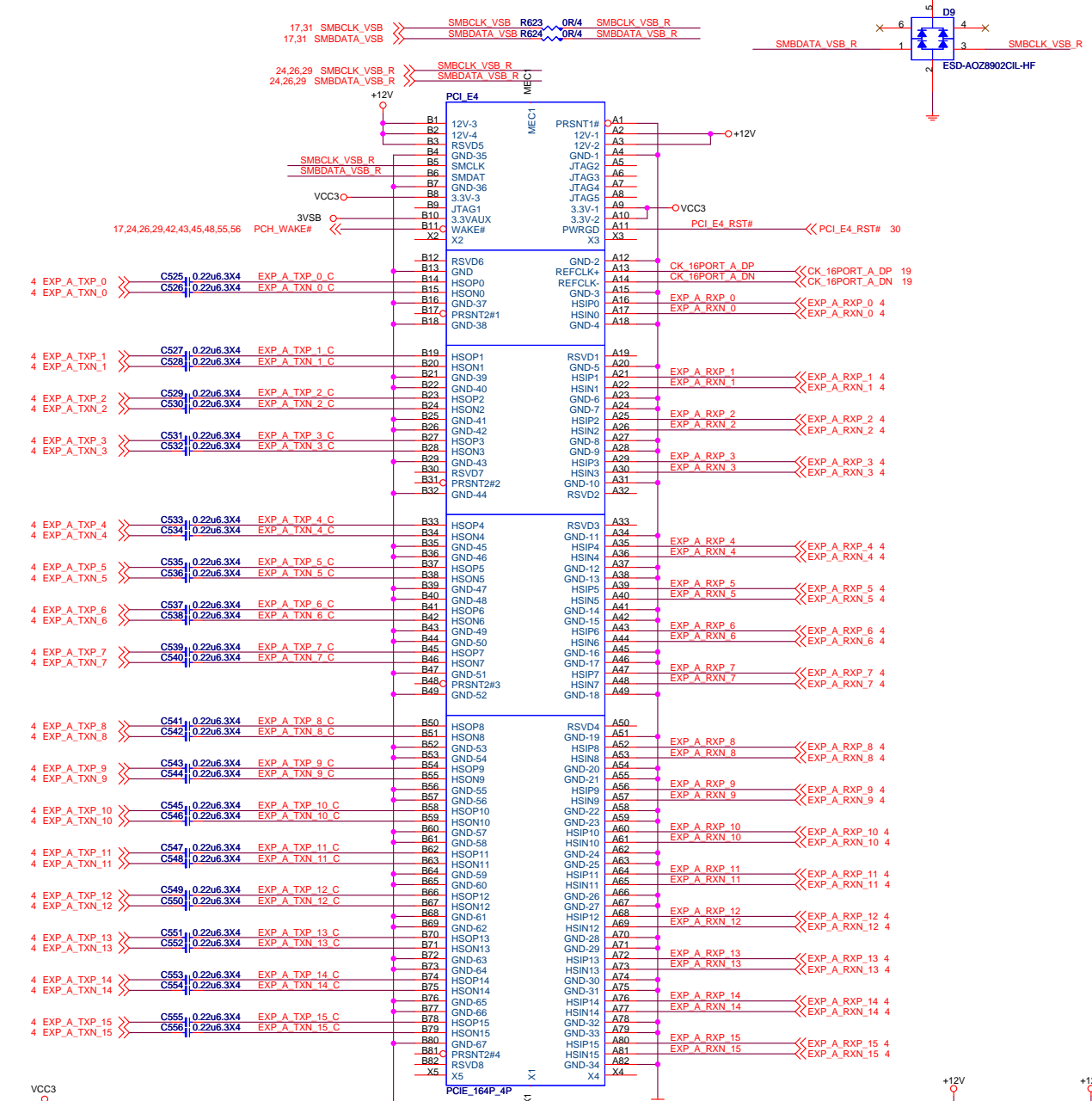
Switch




Size Custom	Document Description PCIE2&3(X8) /PCIE3415	Rev 1.0
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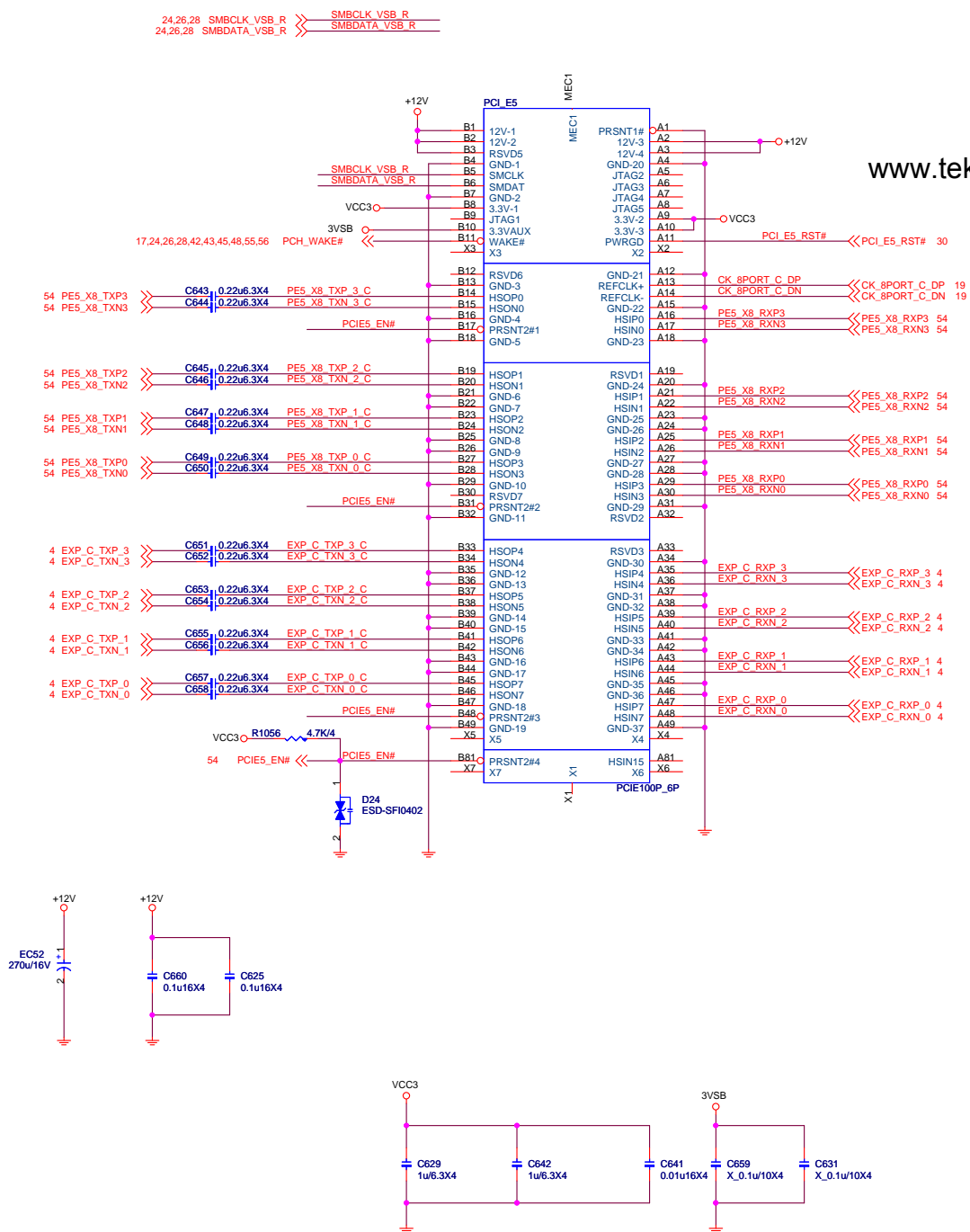


PCIE3(X16) & PCIE4(X16) Slots



	MICRO-STAR INT'L CO.,LTD		
	MS-7883		
	Size Custom	Document Description PCIE3(X1) & PCIE4(X16) Slots	Rev 1.0
	Date: Monday, April 13, 2015	Sheet 28 of 74	

PCIE5(X8) Slots



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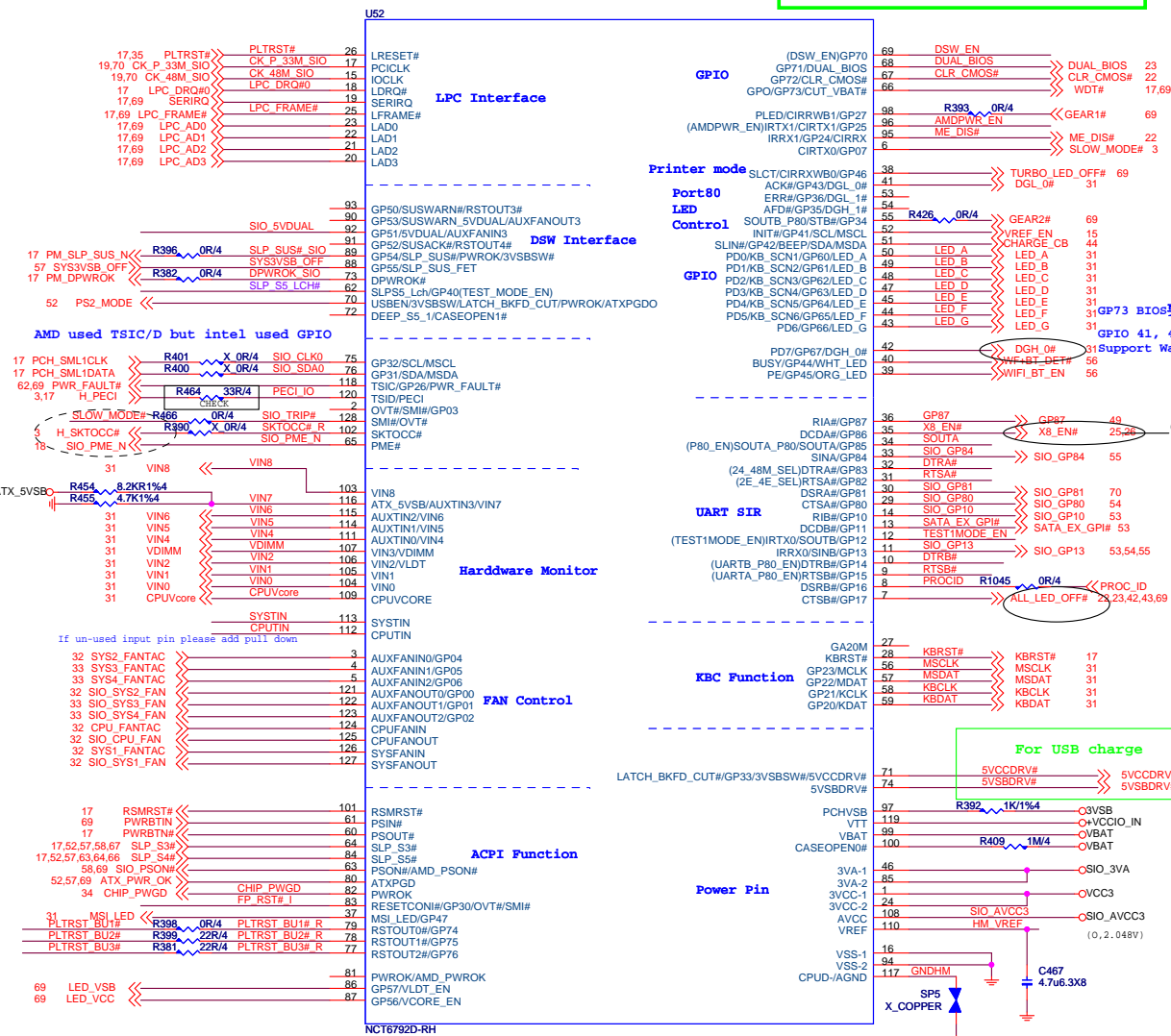


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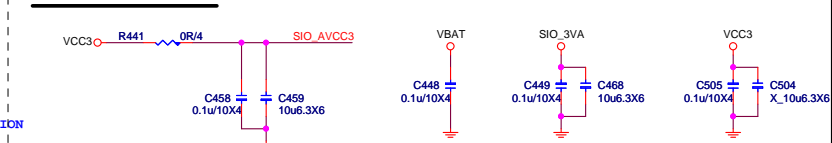
MS-7883

Size Custom	Document Description PCIE6(X8) Slots	Rev 1.0
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SIO-NTC6792D/PS2



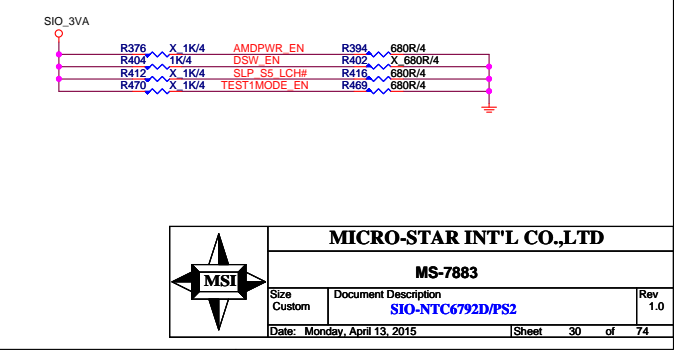
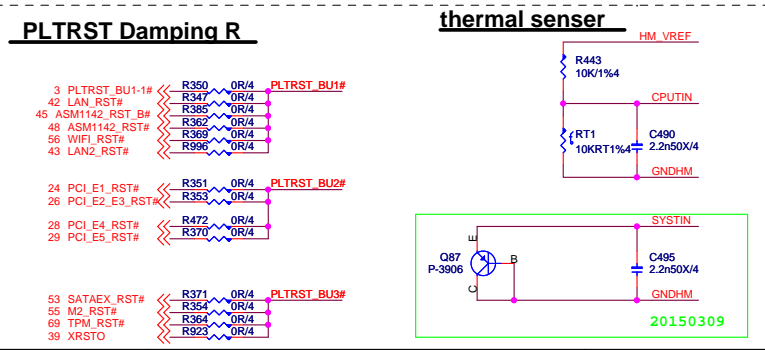
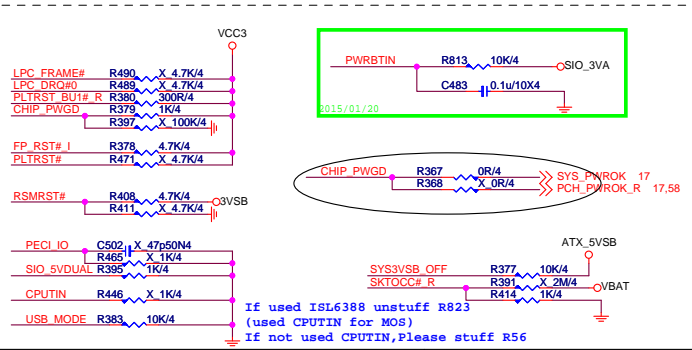
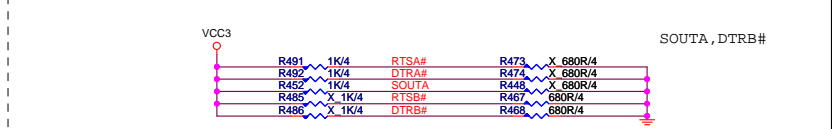
3V Analog Power



POWER ON STRAPPING PIN FOR NCT6792

PIN	6792 NAME	Circuit NAME	0	1	Strap Point
9	UARTA_P80_EN	RTSB#	DISABLE UARTA80	ENABLE UARTA80	LRESET
10	UARTB_P80_EN	DTRB#	DISABLE UARTB80	ENABLE UARTB80	LRESET
12	TEST1MODE_EN	TEST1MODE	DISABLE TEST1MODE	ENABLE TEST1MODE	LRESET
31	2E_4E_SEL	RTSA#	I/O ADDRESS 2E	I/O ADDRESS 4E	LRESET
32	24_48_SEL	DTRA#	24M CLOCK SOURCE	48M CLOCK SOURCE	INTERNAL PWROK
34	P80_EN	SOUTA	ENABLE Non_PORT80	ENABLE PORT80	LRESET
62	TESTMODE_EN	SLP_S5_LCH#	DISABLE TESTMODE	ENABLE TESTMODE	INTERNAL RSMRST
69	DSW_EN	DSW_EN	DISABLE INTEL DSW	ENABLE INTEL DSW	INTERNAL RSMRST
96	AMDPWR_EN	AMDPWR_EN	DISABLE AMD PWR SEQ	ENABLE AMD PWR SEQ	INTERNAL RSMRST

Note:
If PIN34 strapping low, BIOS must programming LPT or GPIO

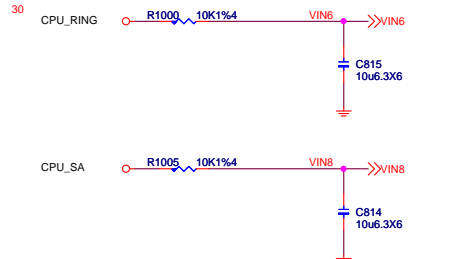
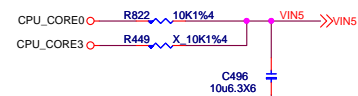
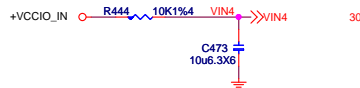
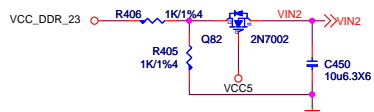
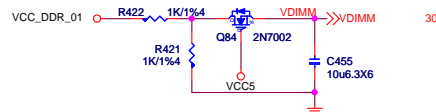
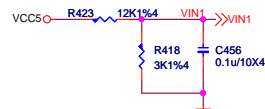
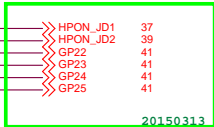
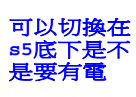


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Size: Custom Document Description: SIO-NTC6792D/PS2 Rev: 1.0

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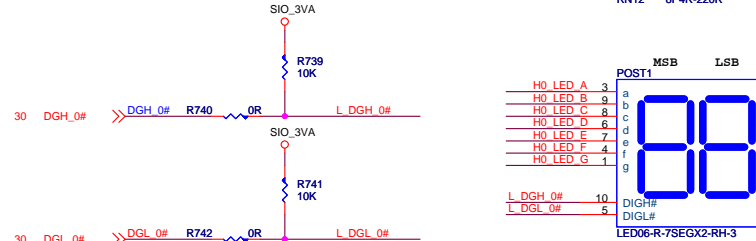
The diagram illustrates two possible placements for the four posts in a 2x2 grid. In the left scenario, POST4 and POST3 are in the top row, while POST2 and POST1 are in the bottom row. In the right scenario, POST2 and POST1 are in the top row, while POST4 and POST3 are in the bottom row.

RN13 **8P4R-220R**

	LED A	LED B	LED C	LED D	LED E	LED F	LED G
30	LED A	LED B	LED C	LED D	LED E	LED F	LED G
30	LED B	LED C	LED D	LED E	LED F	LED G	
30	LED C	LED D	LED E	LED F	LED G		
30	LED D	LED E	LED F	LED G			
30	LED E	LED F	LED G				
30	LED F	LED G					
30	LED G						

RN12 **8P4R-220R**

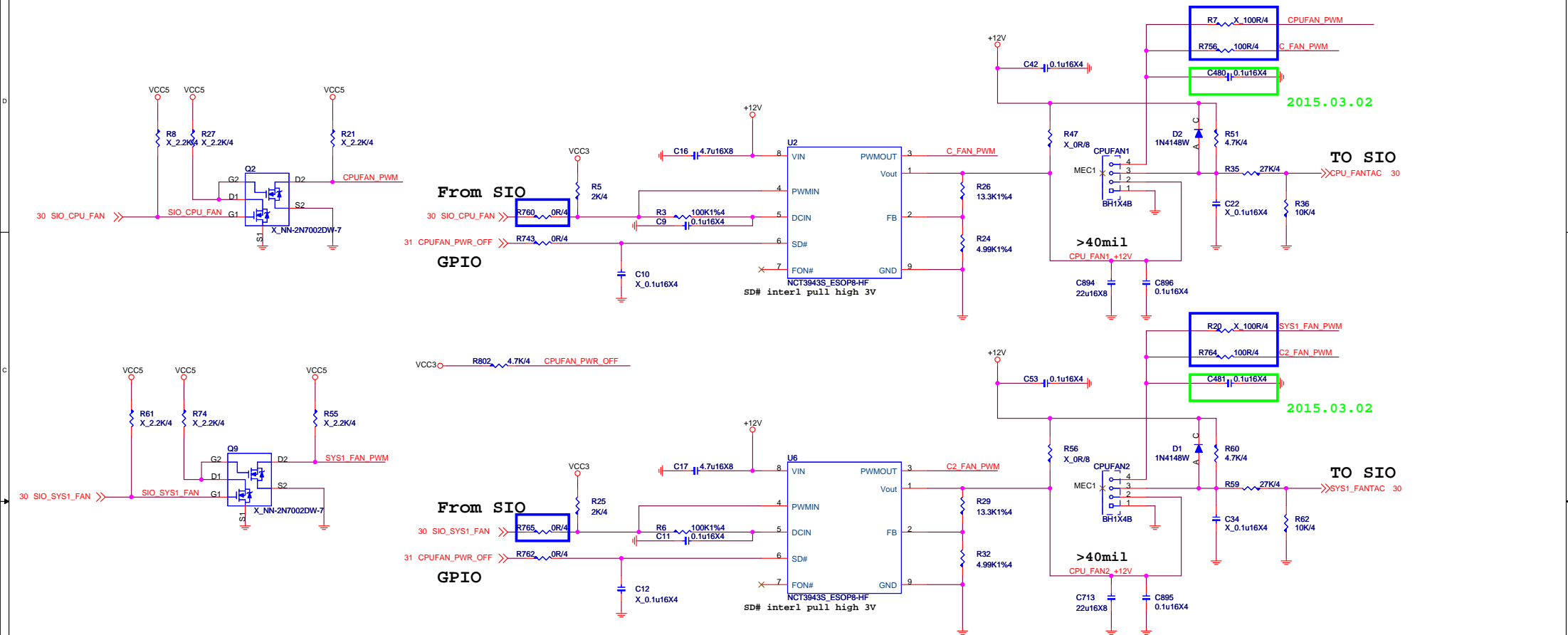
	LED A	LED B	LED C	LED D	LED E	LED F	LED G
7	LED A	LED B	LED C	LED D	LED E	LED F	LED G
8	LED B	LED C	LED D	LED E	LED F	LED G	
9	LED C	LED D	LED E	LED F	LED G		
10	LED D	LED E	LED F	LED G			
11	LED E	LED F	LED G				
12	LED F	LED G					
13	LED G						



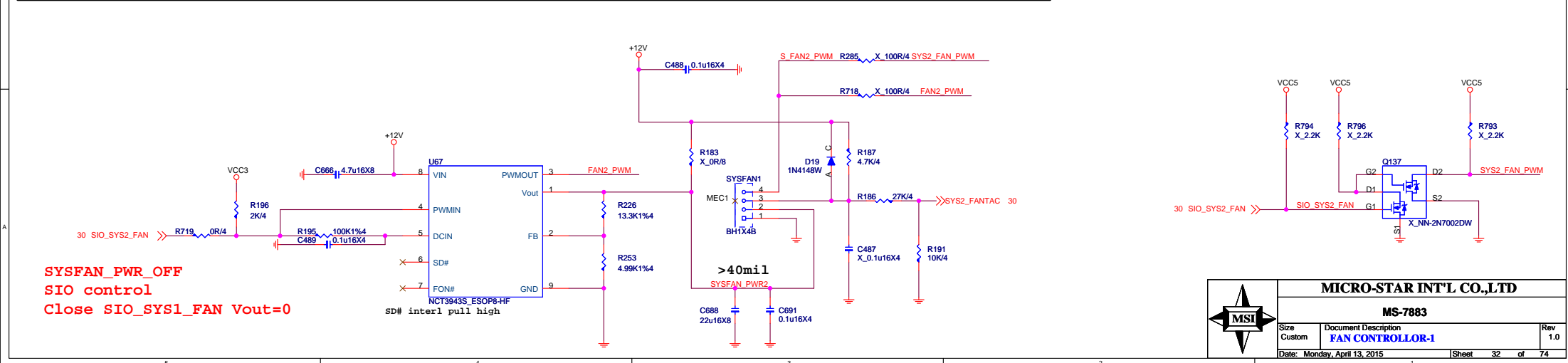
MS-7883

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Date: Monday, April 13, 2015		Sheet 31 of 74

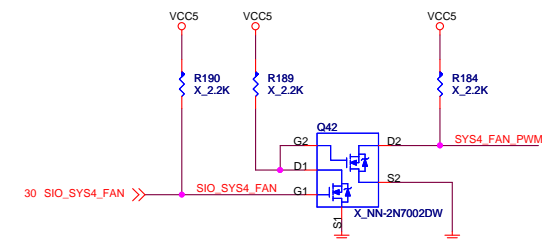
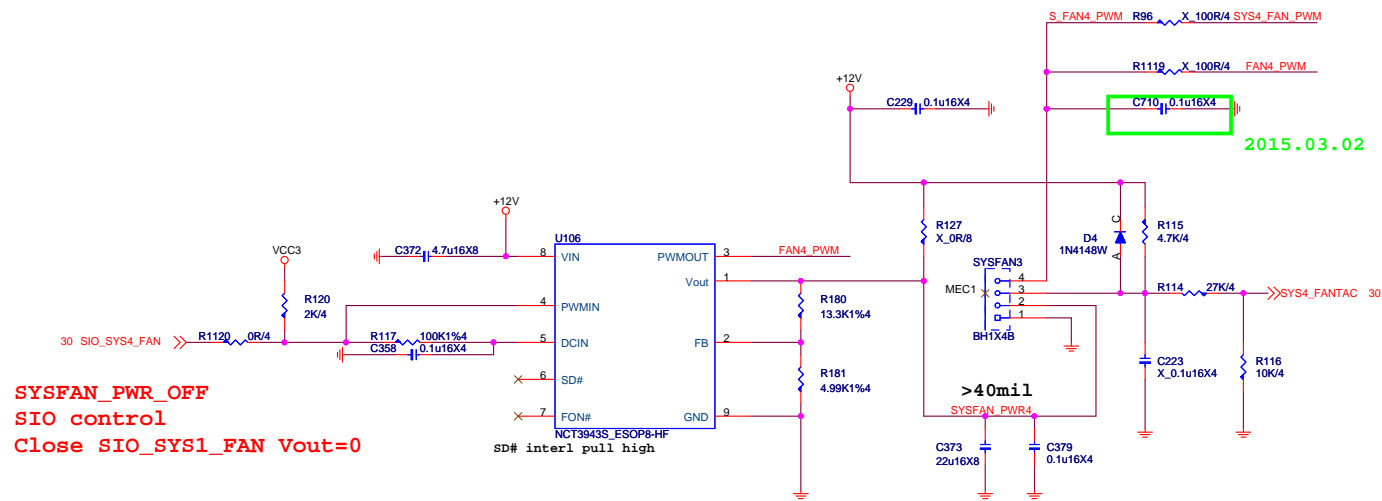
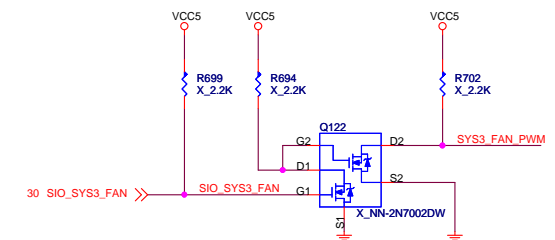
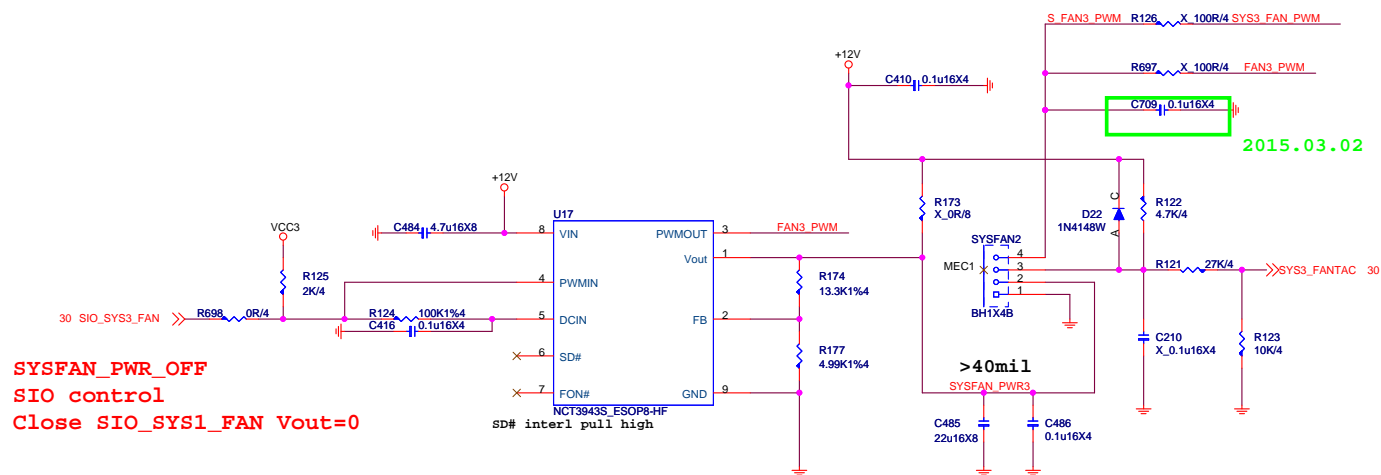
Type E : 4 PIN CPU FAN FROM SIO (Smart Fan/PWM MODE)(FOR NCT6792)



Type F : 4 PIN SYSTEM FAN FROM SIO (Smart Fan/PWM MODE)(FOR NCT6792)



Type F : 4 PIN SYSTEM FAN FROM SIO (Smart Fan/PWM MODE)(FOR NCT6792)

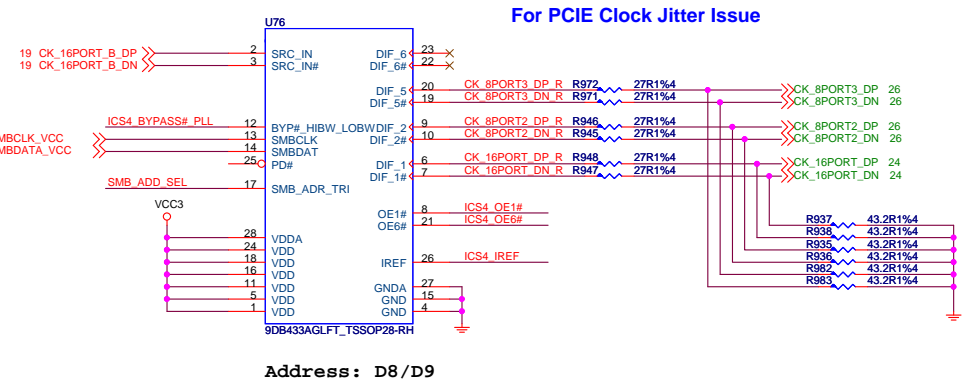
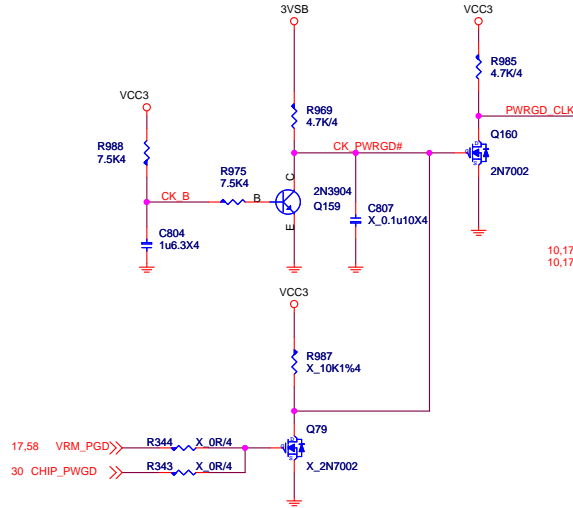
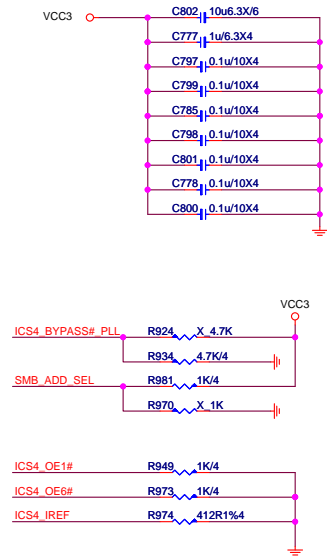


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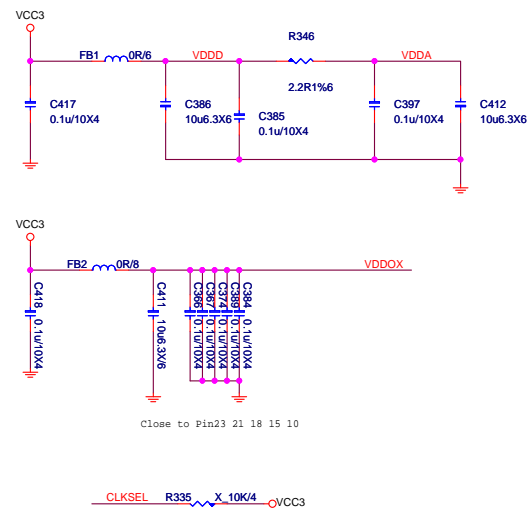
Size Custom	Document Description FAN CONTROLLER-2	Rev 1.0
Date: Monday, April 13, 2015		Sheet 33 of 74

CLK Buffer_9DB433

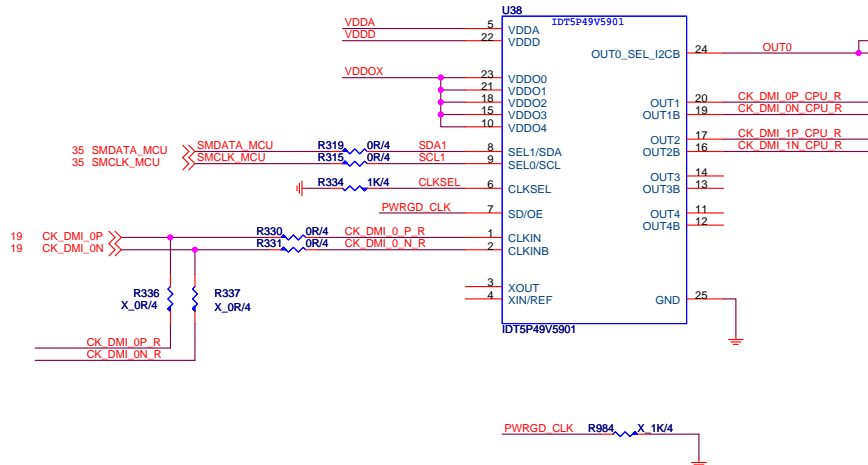


Address: D8/D9

CLK GEN-IDT5P49V5901

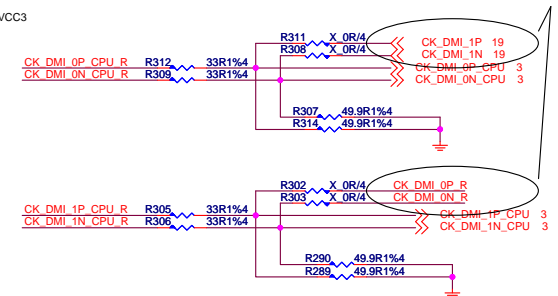


SMBDATA_VCC R323 X_0R/4 SDA1
SMBCLK_VCC R310 X_0R/4 SCL1



DMI0-to-BCLK1 have the shorter route length compared to DMI1-to-BCLK0

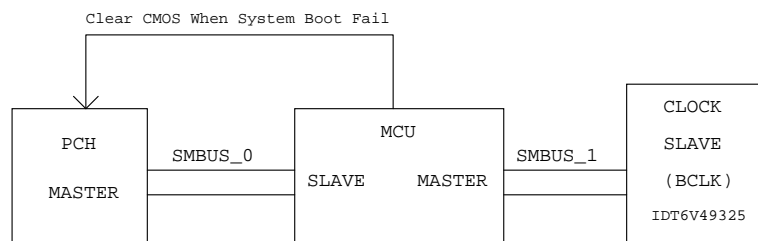
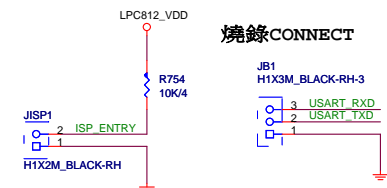
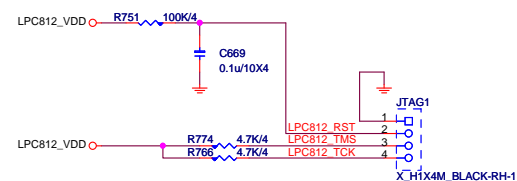
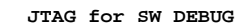
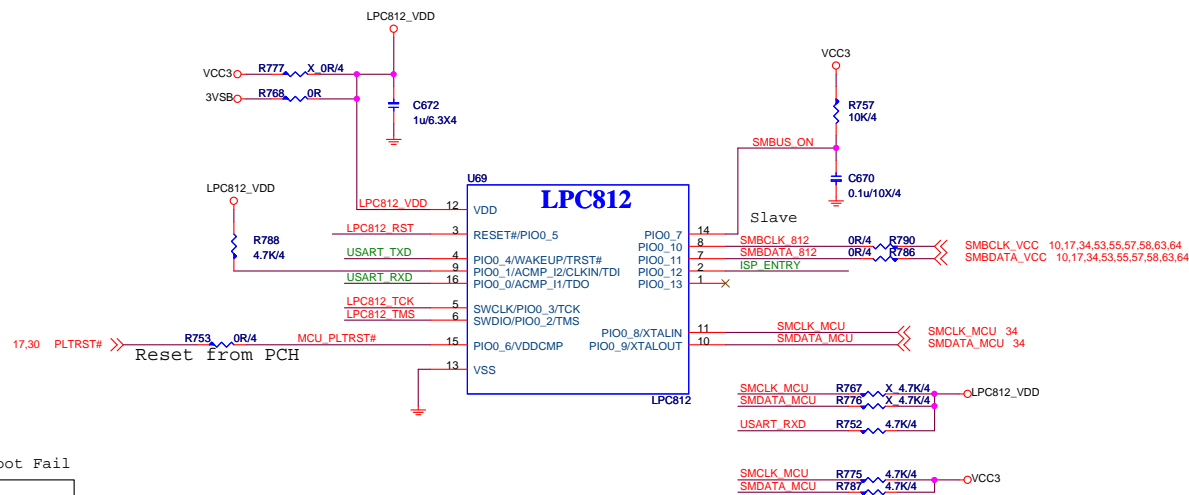
DMI1-to-BCLK0 pair and DMI0-to-BCLK1



PIN:CLKSEL. Input clock select. Selects the active input reference source in manual switchover mode.
0 = XIN/REF, XOUT (default)
1 = CLKIN, CLKINB

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Size	Document Description	Rev	
Custom	CLK Buffer_9DB433/IDT49325	1.0	
Date:	Monday, April 13, 2015	Sheet	34 of 74

SIO 6792 , GPIO13
default low , active high

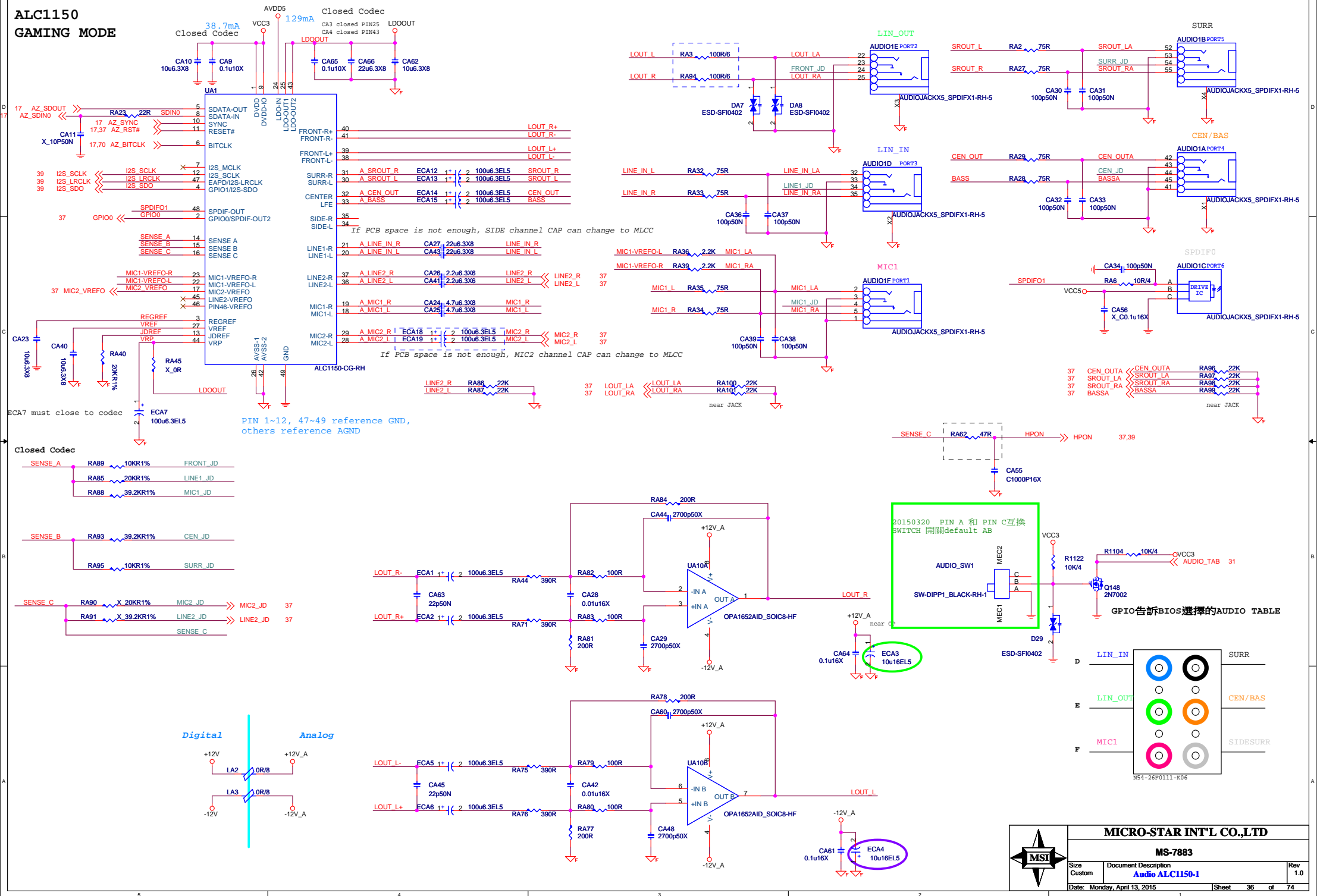


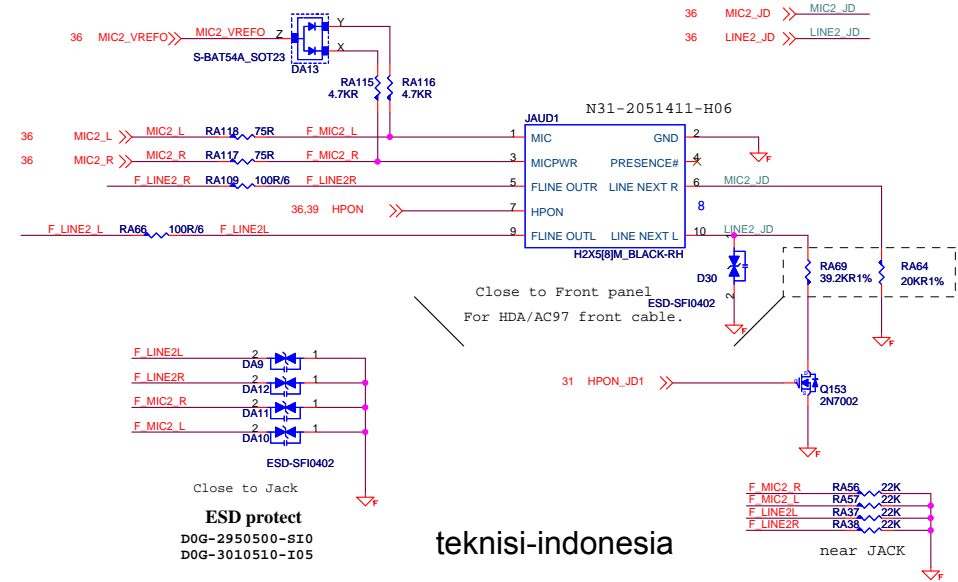
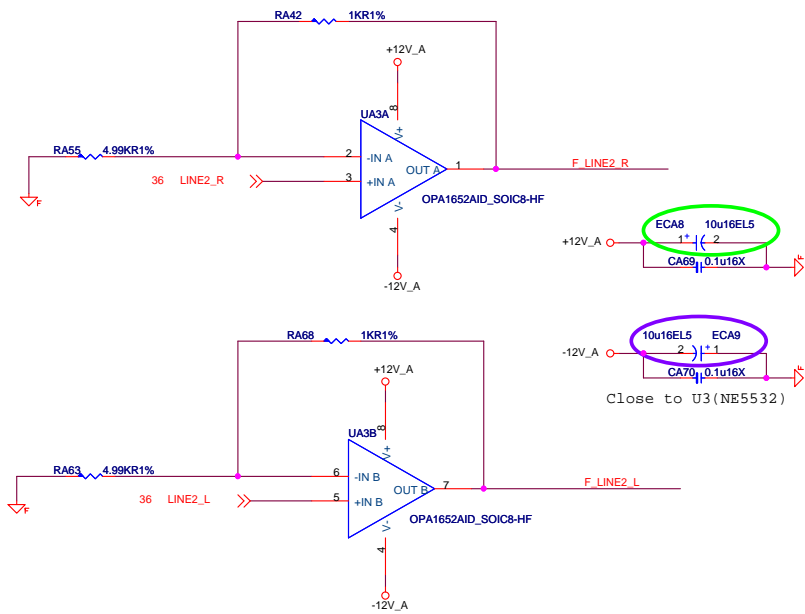
MICRO-STAR INT'L CO.,LTD

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Size Custom	Document Description MCU-LPC812	Rev 1.0
Date: Monday, April 13, 2015		Sheet 35 of 74

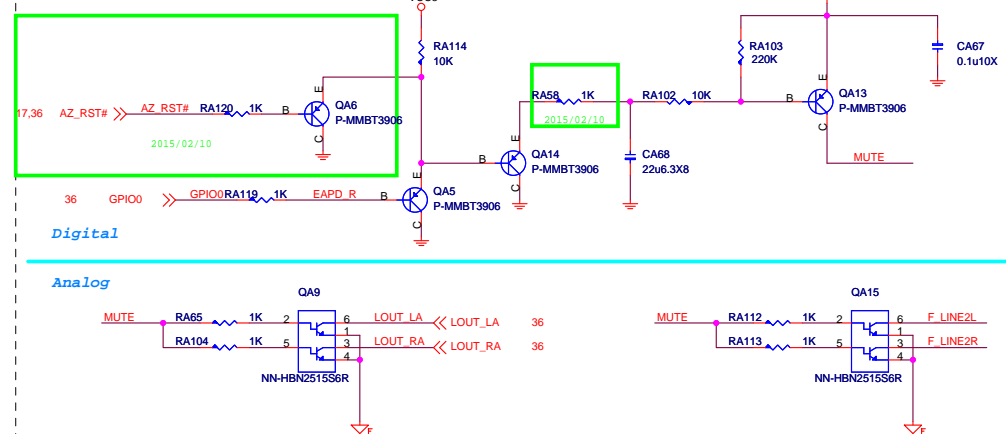
ALC1150
GAMING MODE



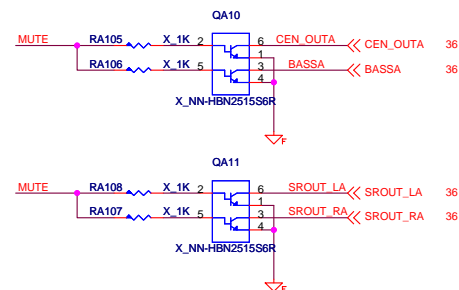


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Rear Line OUT De-POP circuit (De-pop circuit for Rear Line out & Front Headphone out)

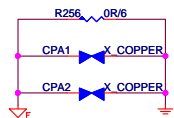
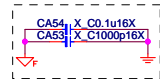


(add de-pop circuit by PM spec or customer request,
NOTE: add de-pop circuit need to change CA6,CA7, CA12, CA13, CA23, CA24 to TVS)

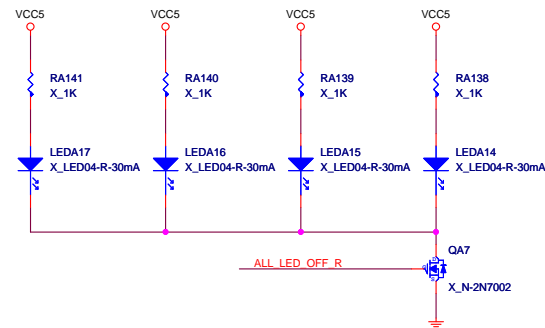
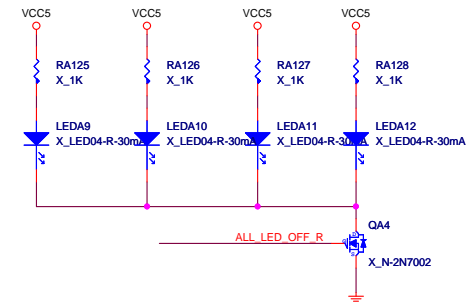
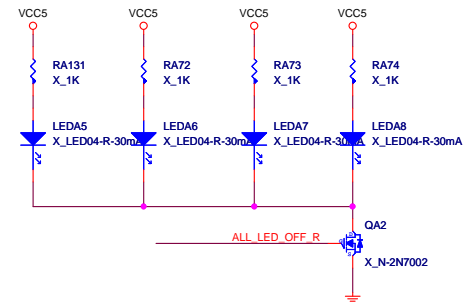
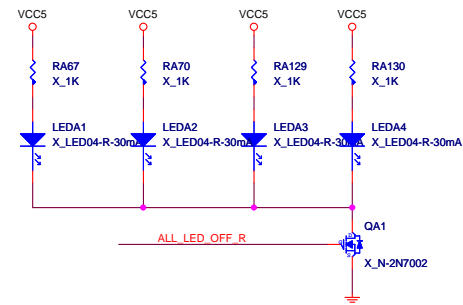
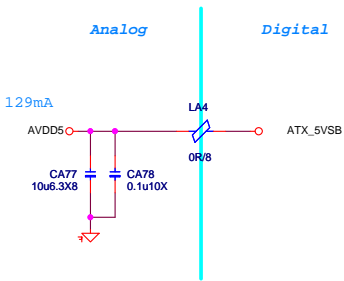


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MS-7883			
Size	Document Description	Rev	
Custom	Audio ALC1150-2	1.0	
Date:	Monday, April 13, 2015	Sheet	37 of 74

EMI



Audio moat is transparent and width 40mil



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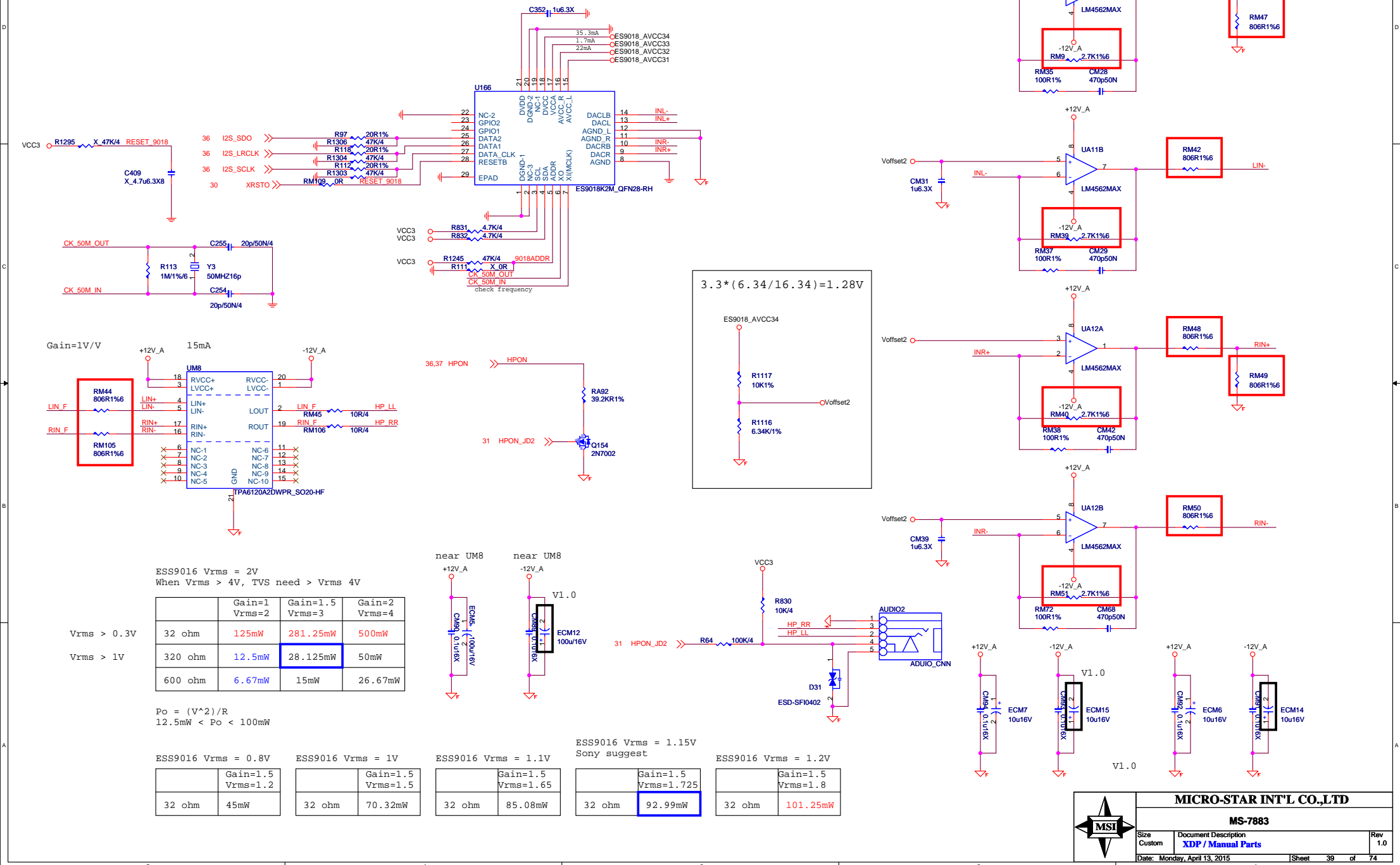
MS-7883

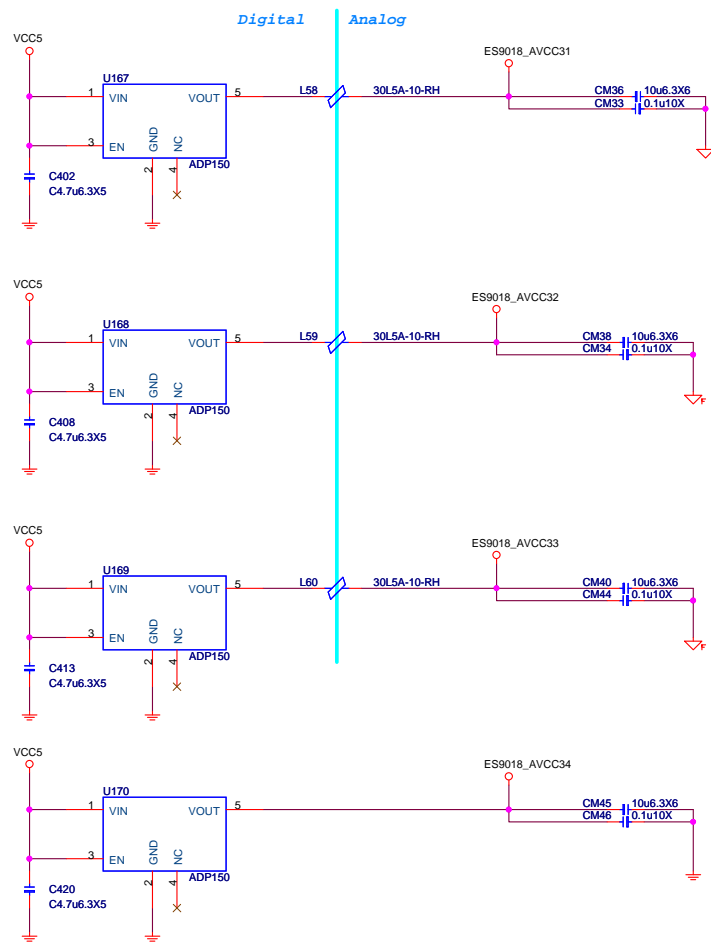
Size	Document Description	Rev
Custom	Audio power/ LED	1.0
Date: Monday, April 13, 2015		Sheet 38 of 74

ADDR	CHIP ADDRESS
0	0x90
1	0x92

AVCCDAC3.3 (MCLK=50MHz, Fs=192kHz): max W=71.5mW, I=21.667mA
DVCC3.3 (MCLK=50MHz, Fs=192kHz): max W=116.48mW, I=35.3mA
VCCA3.3 (MCLK=50MHz, Fs=192kHz): max W=5.5mW, I=1.667mA
DVDD1.2: max I=0A
Total (MCLK=50MHz, Fs=192kHz): max W=193.48mW, I=58.63mA

MVCC3:35.3mA
M AVCC3:23.7mA

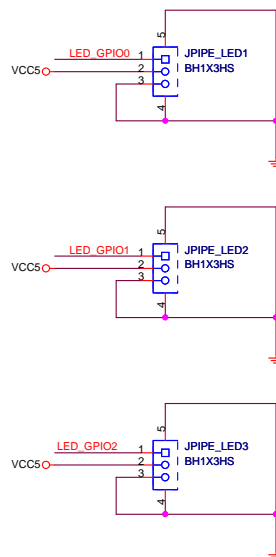
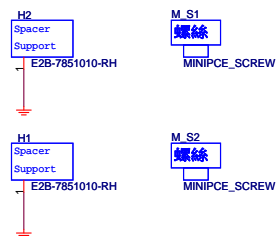
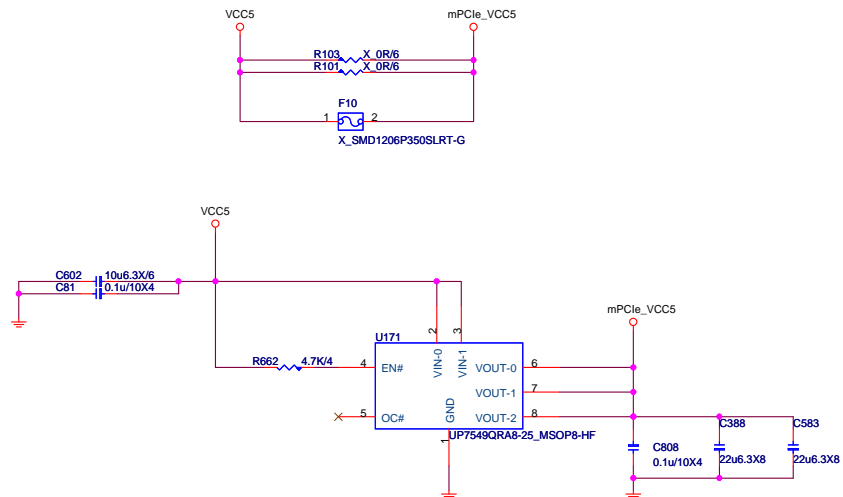
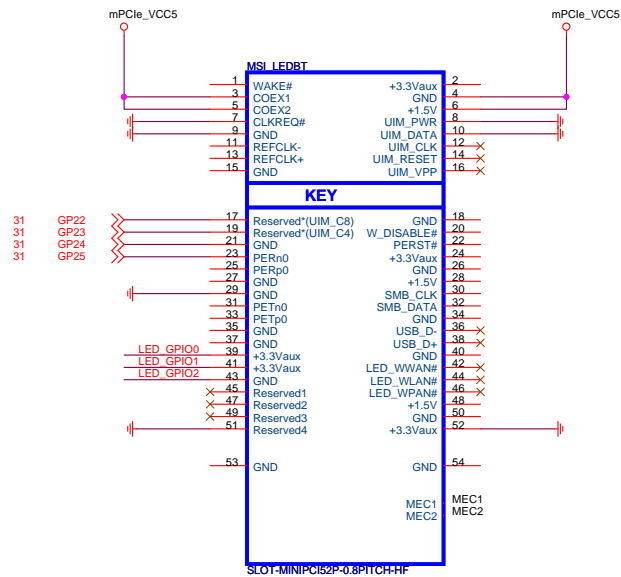




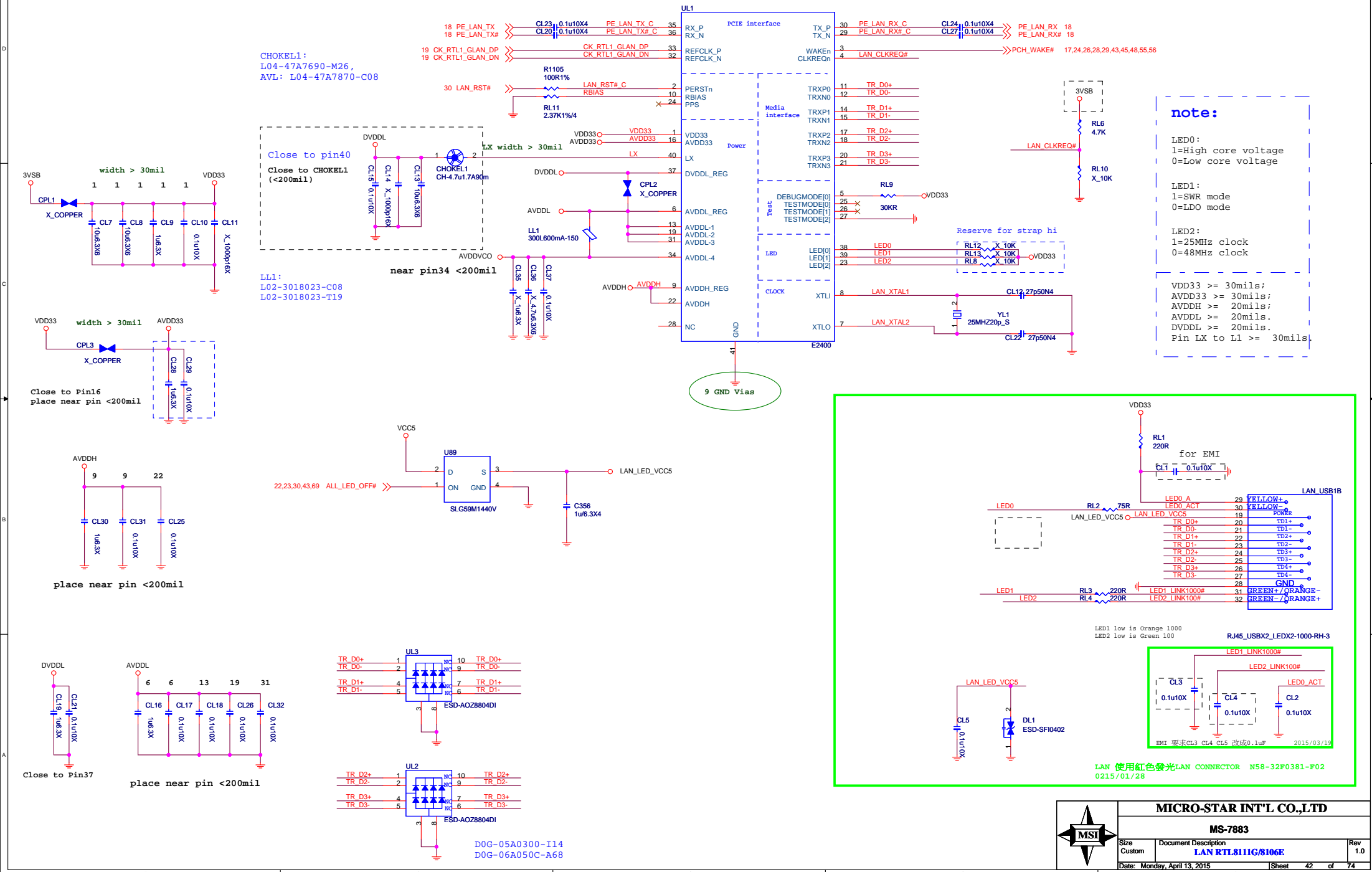
MICRO-STAR INT'L CO.,LTD

MS-7883

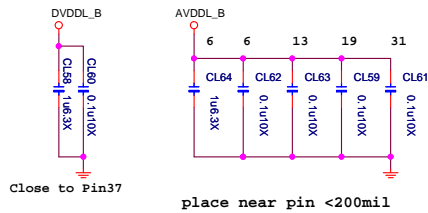
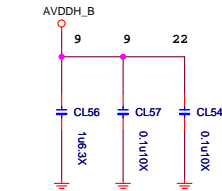
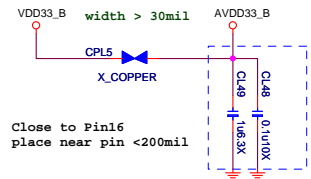
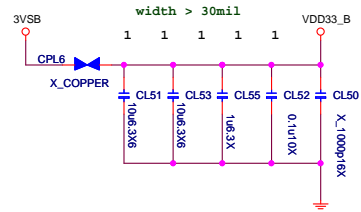
Size Custom	Document Description XDP / Manual Parts	Rev 1.0
Date: Monday, April 13, 2015	Sheet 40 of 74	



E2400 Giga LAN



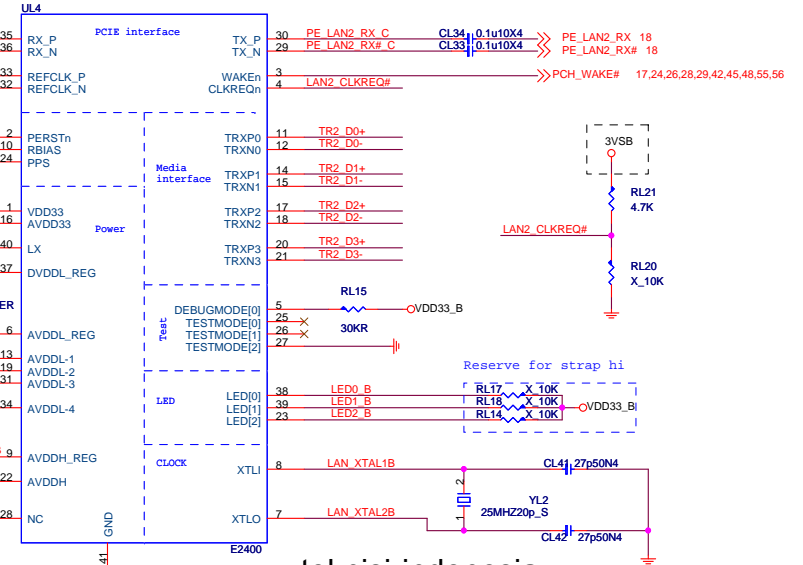
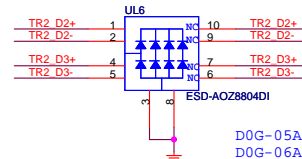
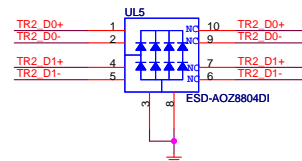
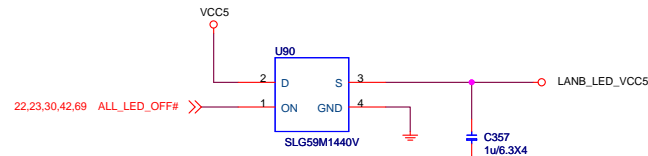
E2240 Giga LAN



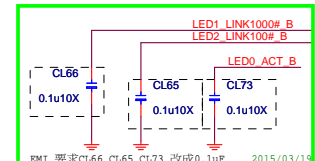
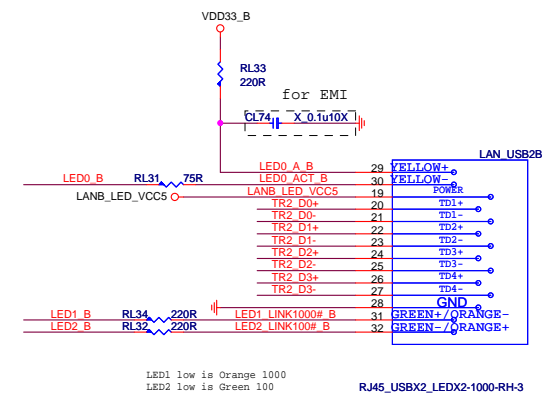
CHOKEL1:
L04-47A7690-M26,
AVL: L04-47A7870-C08

Close to pin40
Close to CHOKEL1
(<200mil)

LL1:
L02-3018023-C08
L02-3018023-T19

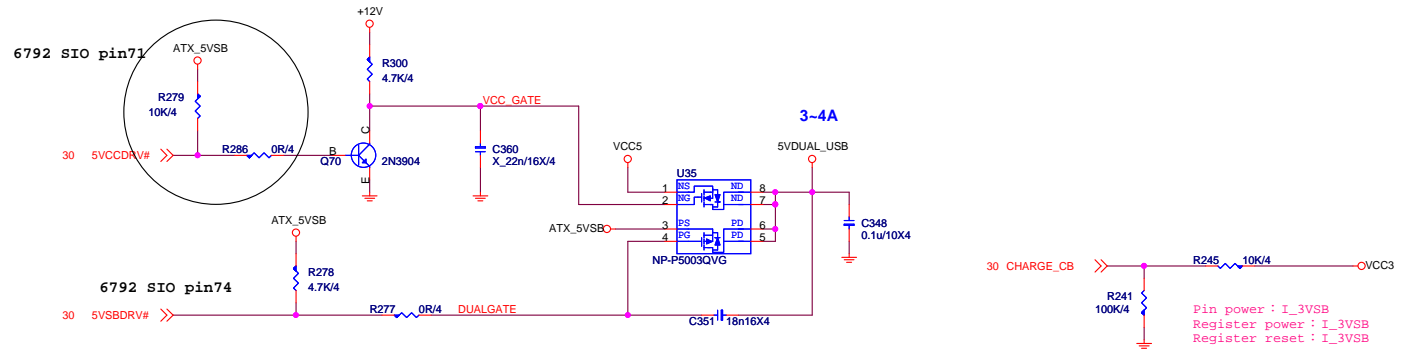


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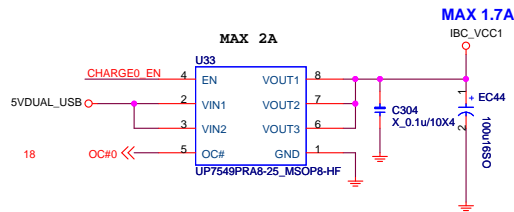


MICRO-STAR INT'L CO.,LTD			
MS-7883			
Size	Document Description	Rev	
Custom	PCH Power - OP+MOS	1.0	
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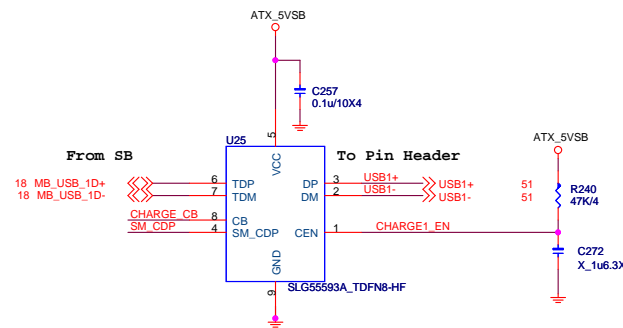
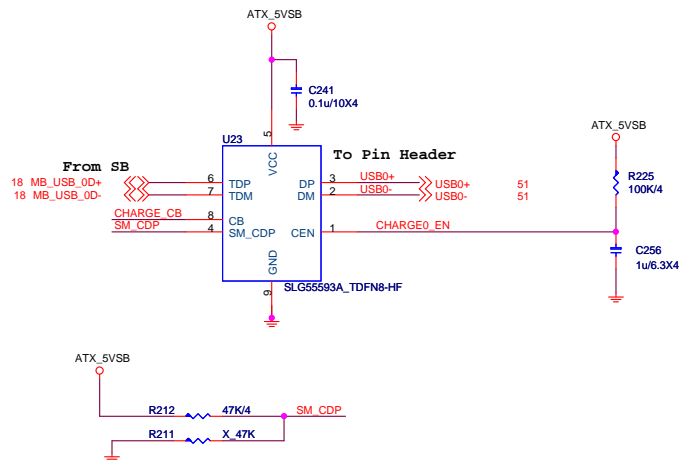
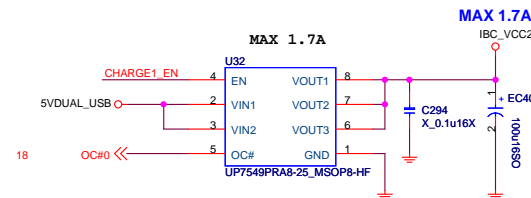
5VDUAL_USB



USB POWER PORT 0 For USB Charging



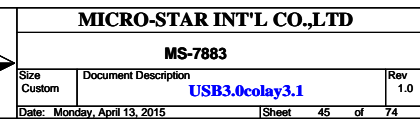
USB POWER PORT 1 For USB Charging

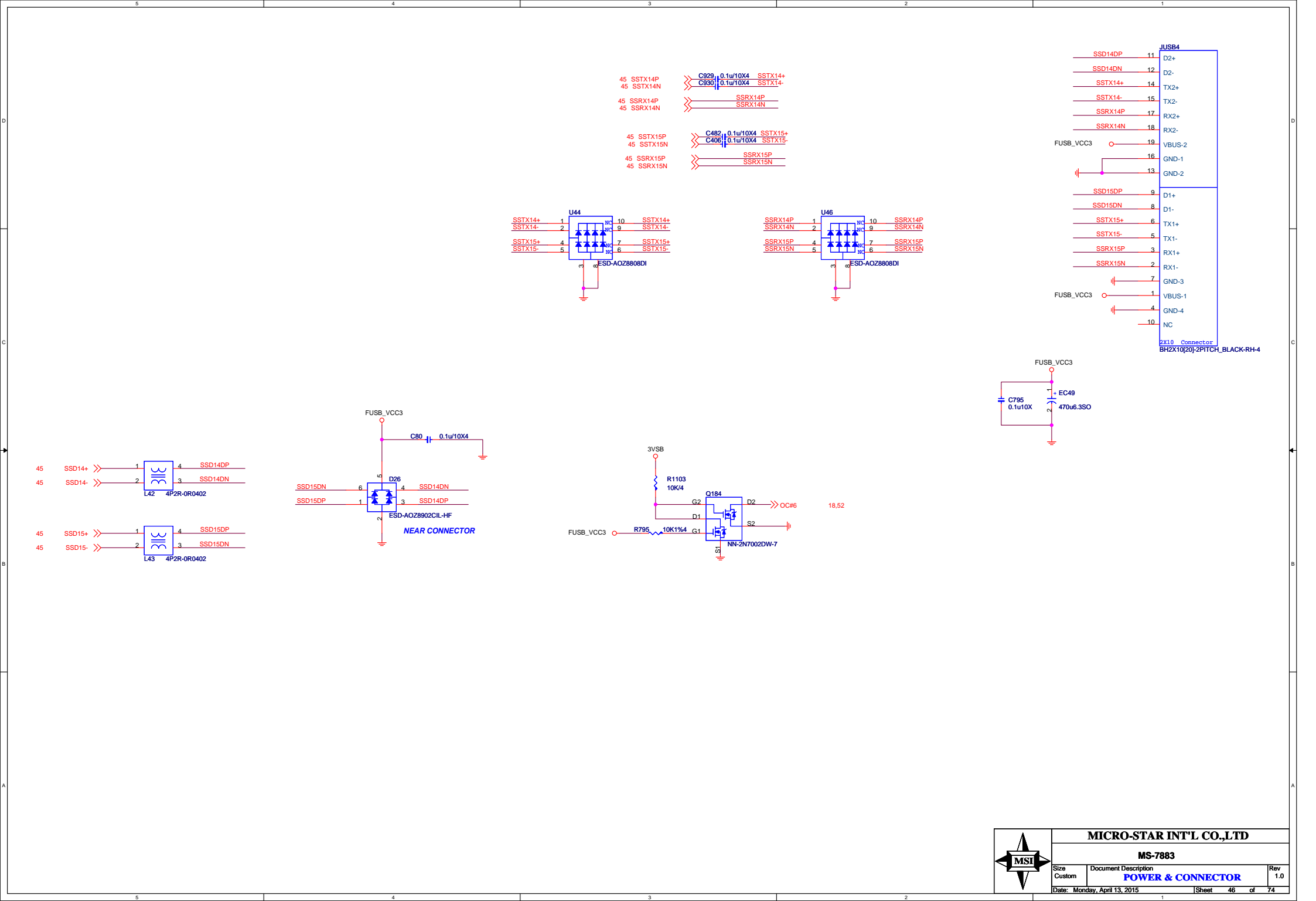


MICRO-STAR INT'L CO.,LTD

MS-7883

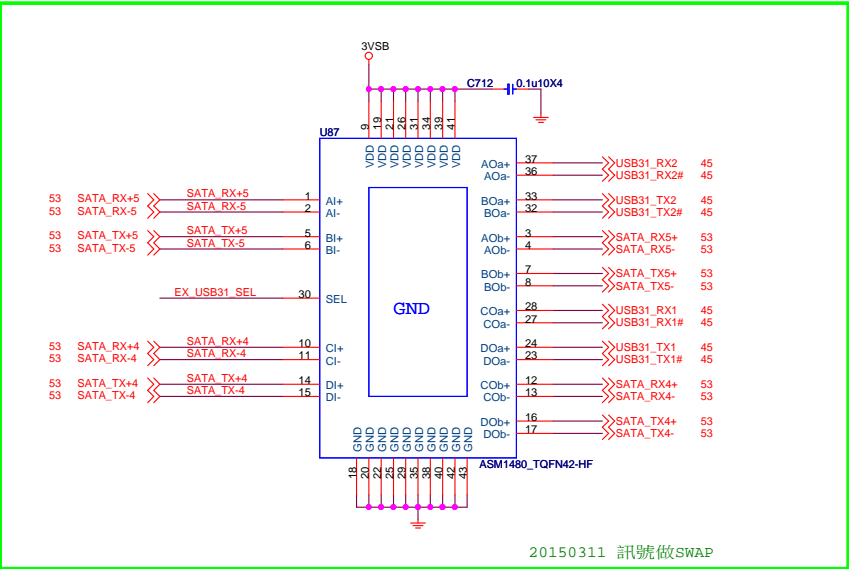
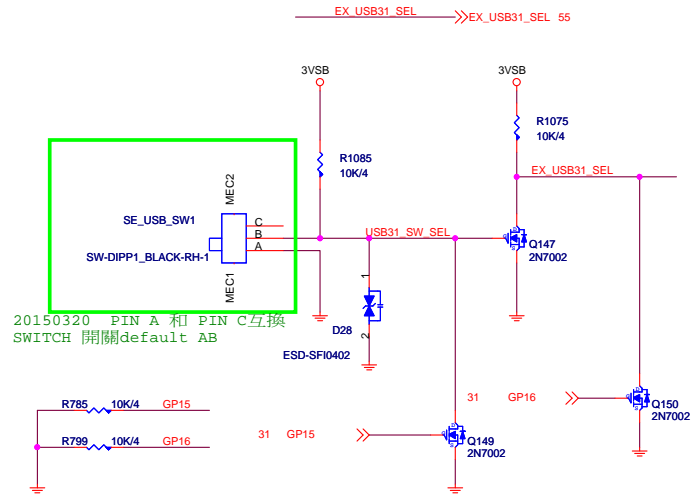
Size Custom	Document Description USB CHARGE_SLG55593A	Rev 1.0
Date: Monday, April 13, 2015	Sheet 44 of 74	





確認一下default 是否為為BC

增加一個GPIO給BIOS判斷為PCIE或SATAEXPRESS



BIOS_MODE

GP23	GP24	SEL	Mode
0	0	SATA	default
1	0	SATA	
1	1	USB3.1	

Switch_MODE

Switch	SEL	Mode	
A_B	SATA	default	
B_C	USB3.1		

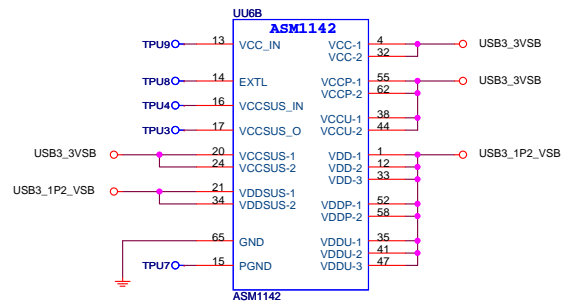


Minimun gap should be greater of
>15mil with other signal.

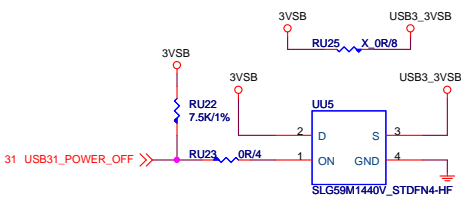
Power Consumption

	3.3V	1.05V(1.2V)	3.3VSUS	1.05VSUS(1.2VSUS)	Total Power
ASM1042AE	95mA	300mA	65mA	9.5mA	852.975(mW)
ASM1142	245mA	634mA	1mA	1mA	1573.8(mW)

3.3V: 95mA
3.3VSUS: 65mA
1.05V: 300mA
1.05VSUS: 5.8mA

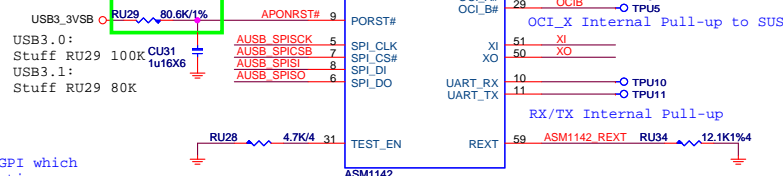


USB3.1 power switch

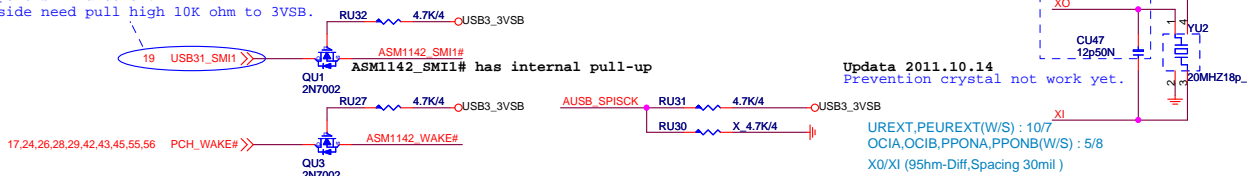


USB3.0:
Stuff RU40 & RU42
Unstuff RU39 & RU41
USB3.1:
Stuff RU39 & RU41
Unstuff RU40 & RU42

20150309 换成80.6K



SMI connect to GPI which
support smi function.
SB side need pull high 10K ohm to 3VSB.

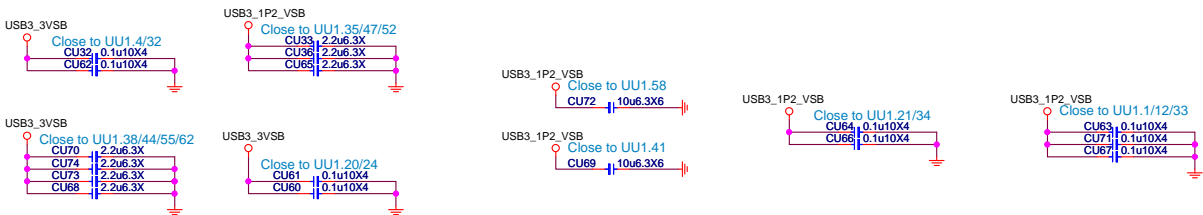


Update 2011.10.14
Prevention crystal not work yet.

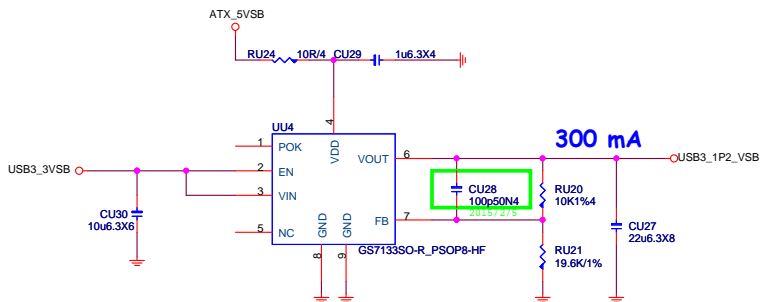
UREXT,PEUREXT(W/S): 10/7
OCIA,OCIB,PPONA,PPONB(W/S): 5/8
X0/X1 (95hm-Diff,Spacing 30mil)

ASM1042 3VSB Circuit

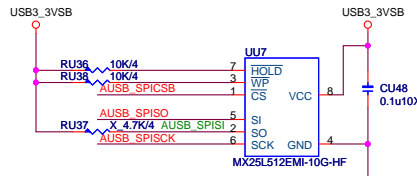
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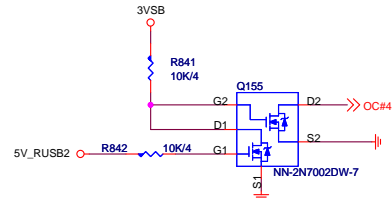


ASM1042 1.2VSB Power



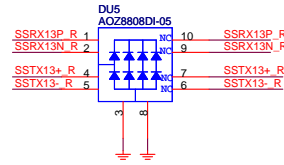
EEPROM





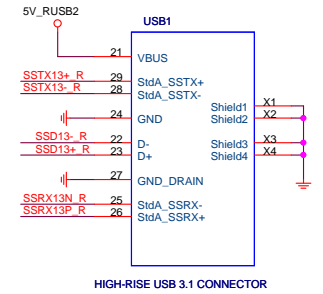
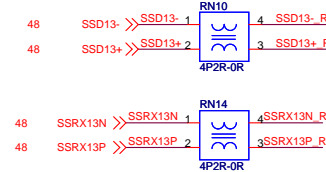
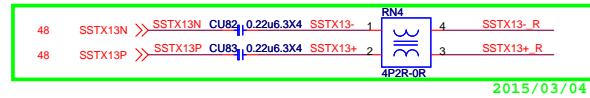
OC# signal connect to SB OC pin.

ESD Protection NEAR CONNECTOR



USB3_0
D0G-06A050C-A68 Main
D0G-05A0300-I14 AVL

若layout空間不足不可預留CMC



0.9 A

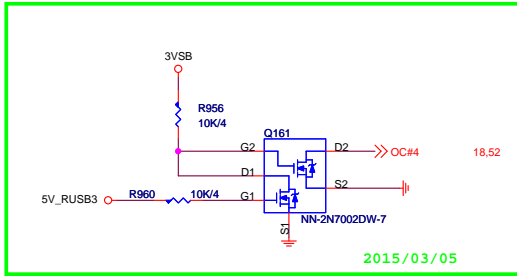
min 40mil.

close to USB1 Connector



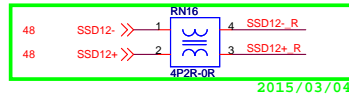
ECU2
470u6.350

C707
0.1u10X

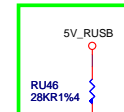
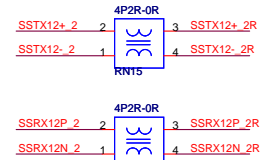


Important--
If USB3.0 signal connect to front pin header,
please must less than 1.5 inch, short trace
has better eye diagram with some bad fly cable by SI customer.

Rear USB3 CONN



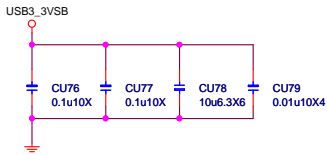
2015/03/04



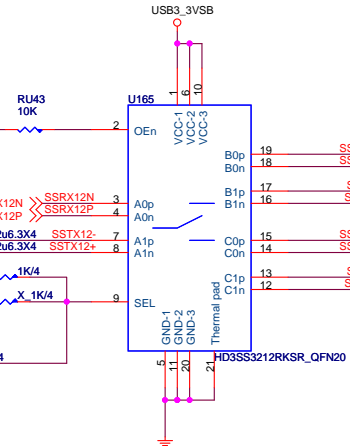
20150331

20150331

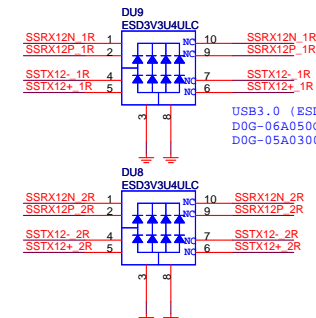
3 A



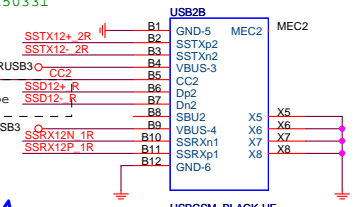
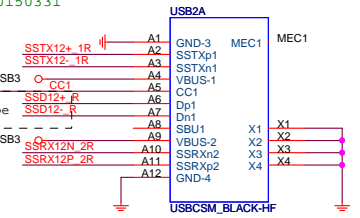
SEL:
Low A->B
High A->C



ESD Protection NEAR CONNECTOR



USB3_0 (ESD)
D0G-06A050C-A68 (M)
D0G-05A0300-I14



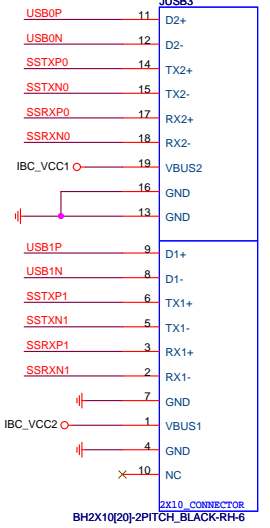
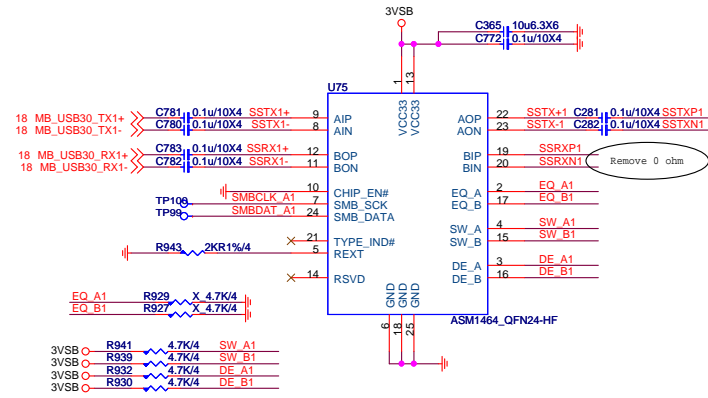
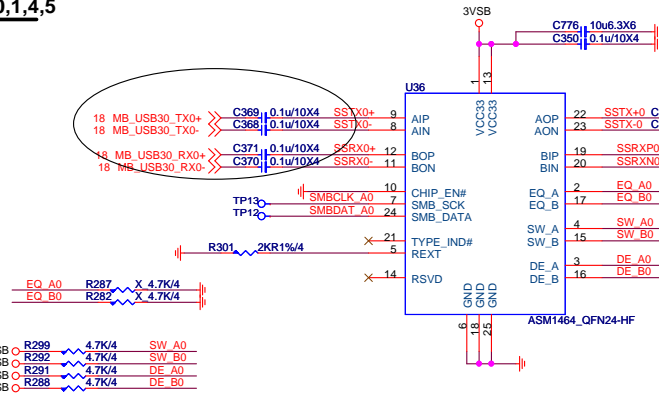
MICRO-STAR INT'L CO.,LTD

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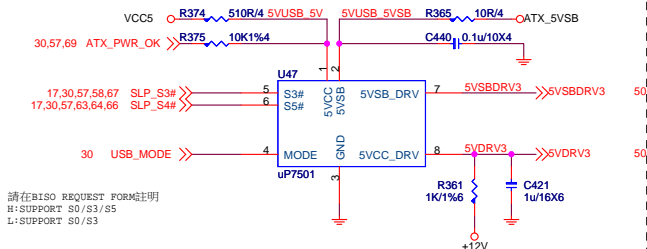
Size	Document Description	Rev
Custom	USB3.1 Connector	1.0
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FRONT USB30 PORT 0,1,4,5

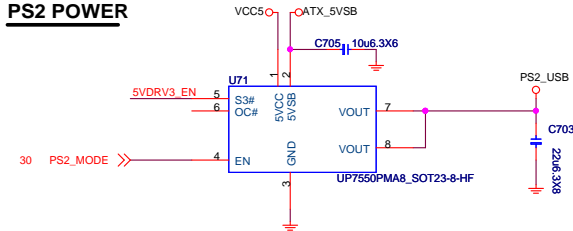
USB3.0 FRONT



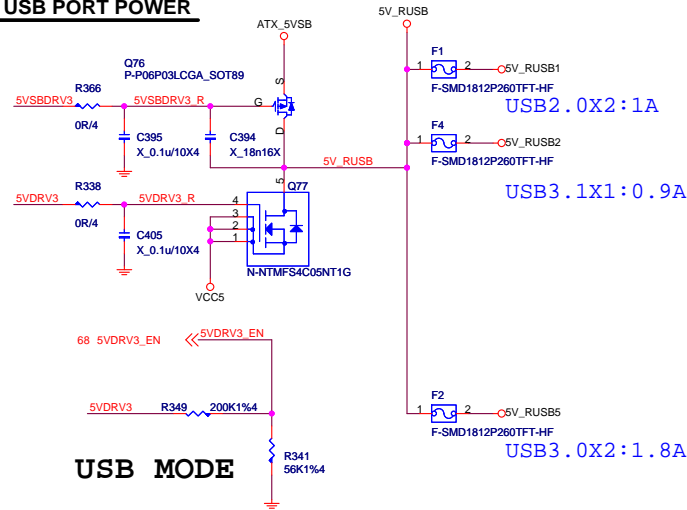
USB POWER



PS2 POWER

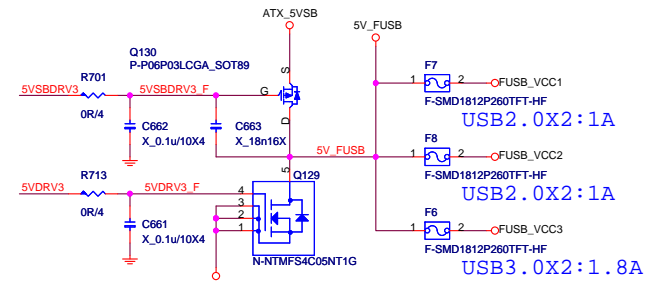


REAR USB PORT POWER

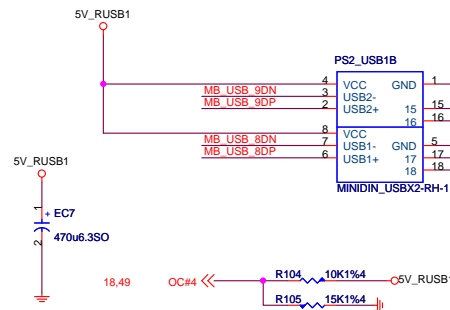
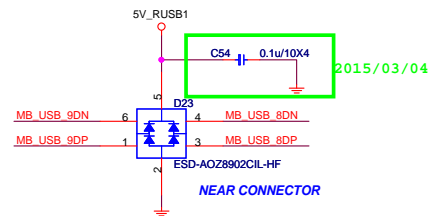
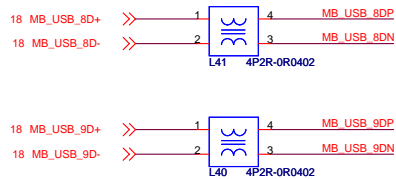


USB MODE

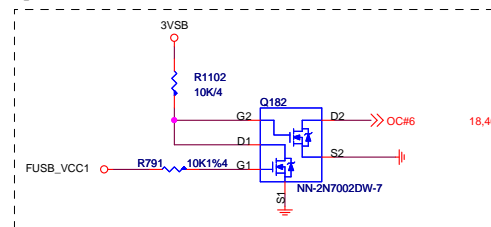
Front USB PORT POWER



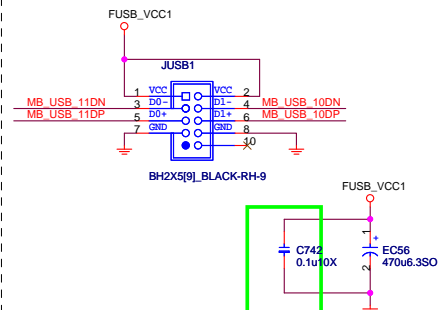
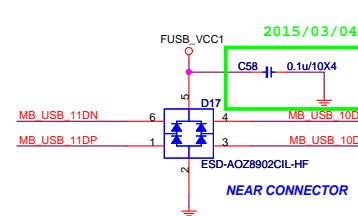
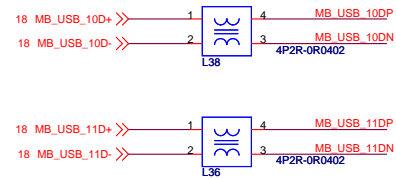
REAR USB PORT 8,9 (With PS2)



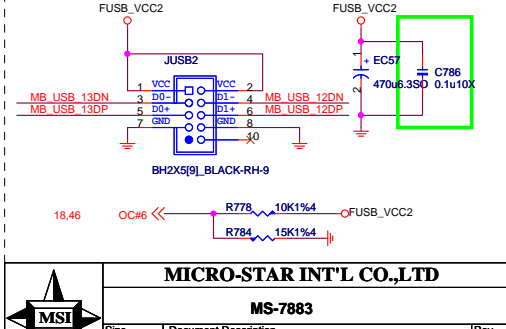
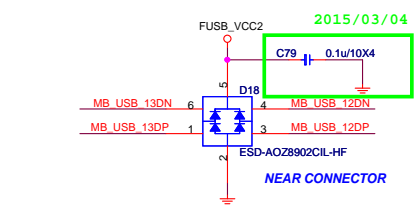
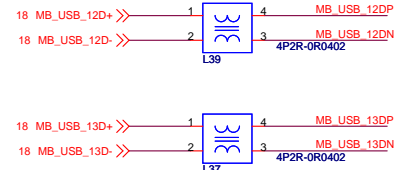
Modify 2014.12.18
From OC5 to OC6
Update 2014.12.30



FRONT USB PORT 10,11



FRONT USB PORT 12,13

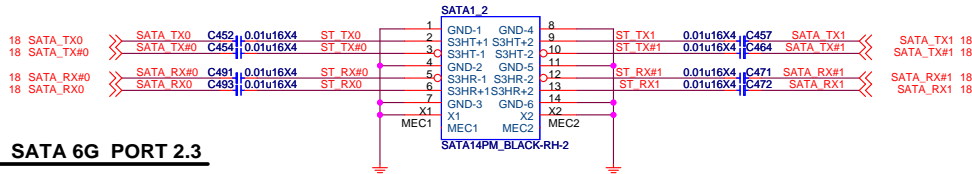


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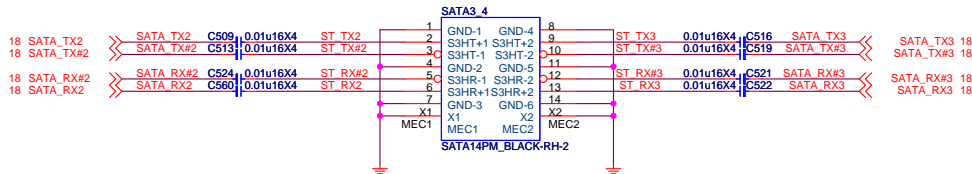
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Size	Document Description	Rev
Custom	Rear/Front USB2.0	1.0
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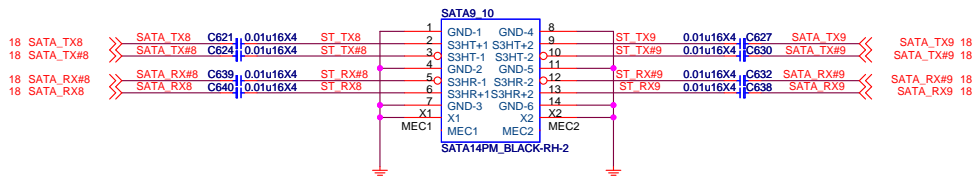
SATA 6G PORT 0.1



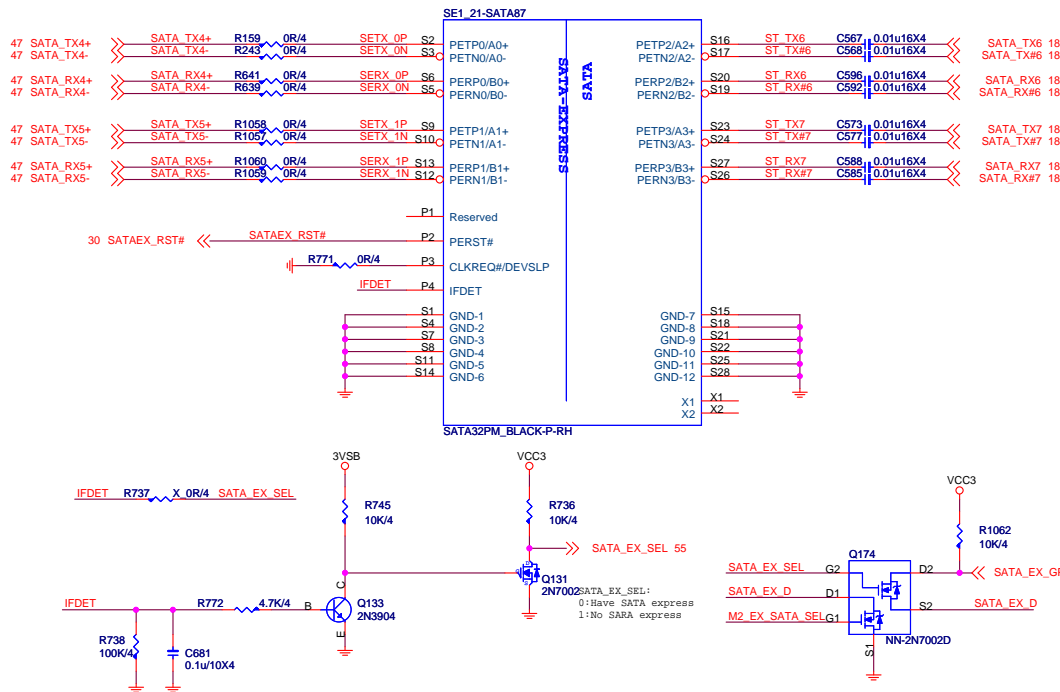
SATA 6G PORT 2.3



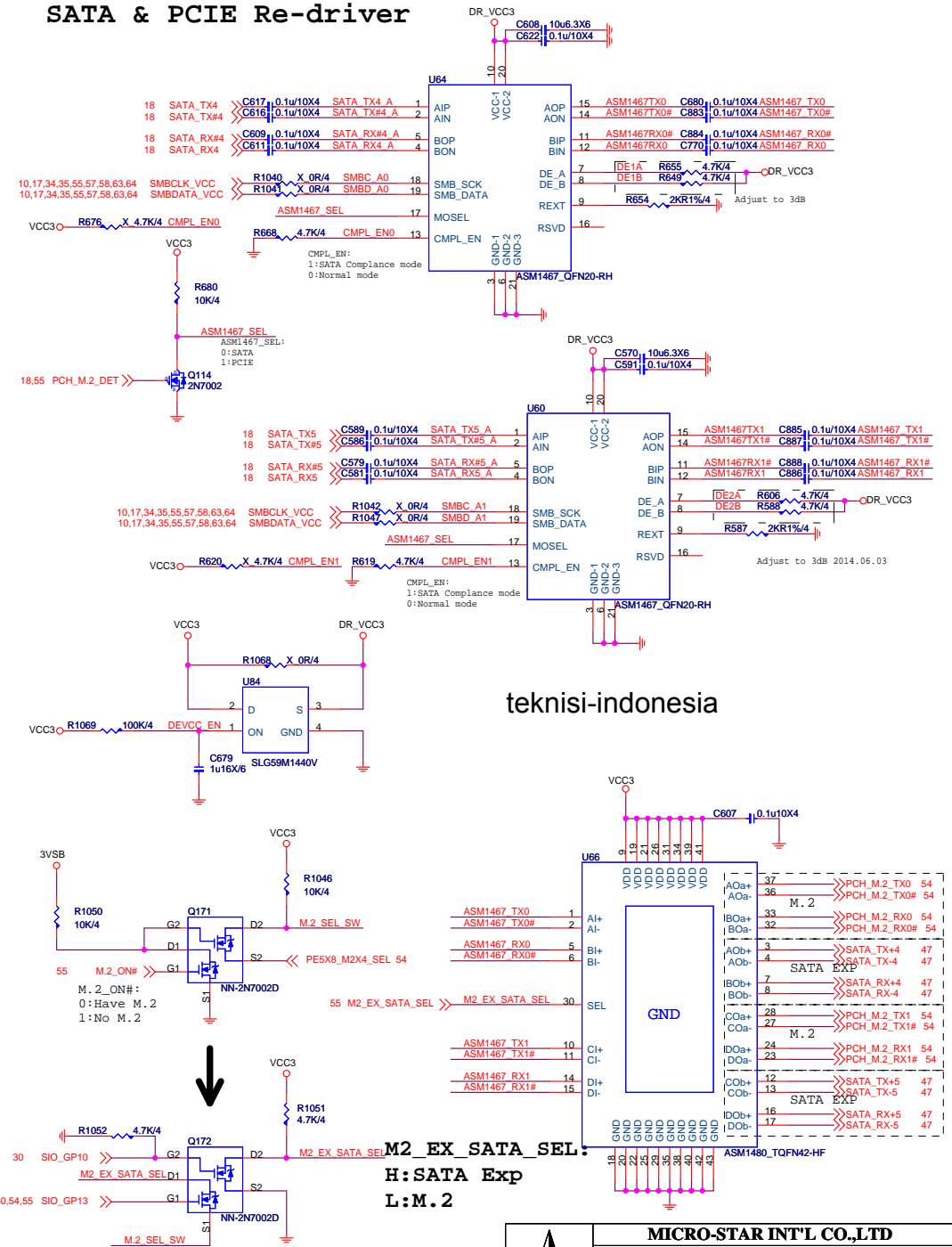
SATA 6G PORT 8.9



SATA 6G PORT 4.5.6.7 & SATA Express

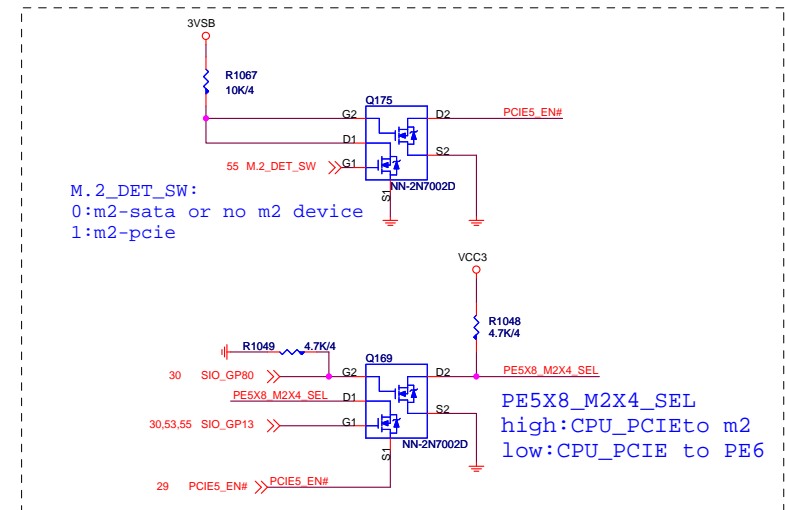
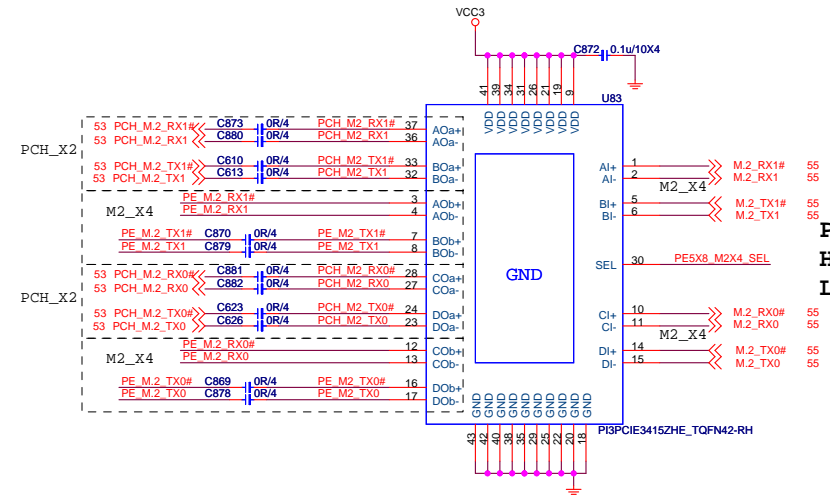
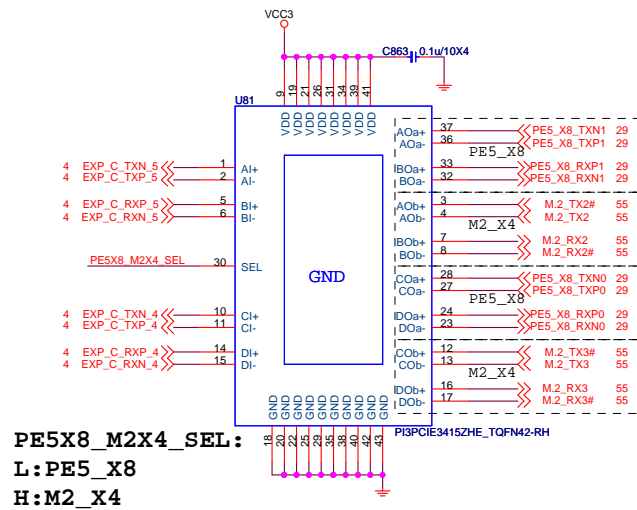
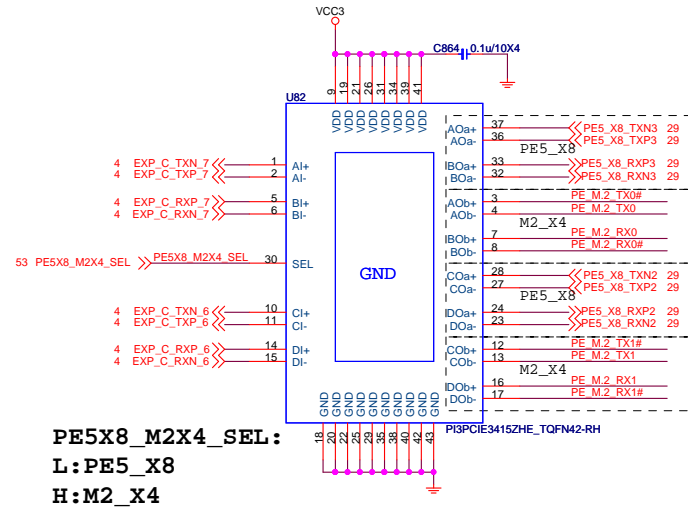


SATA & PCIE Re-driver



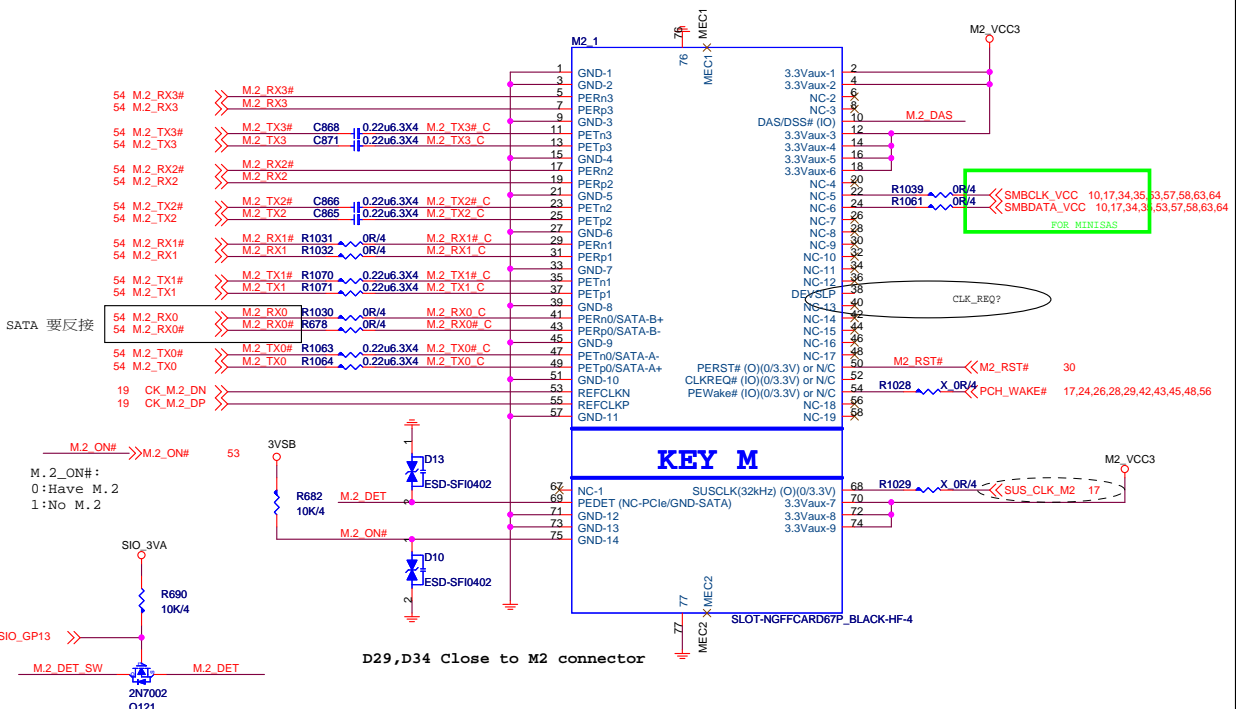
teknisi-indonesia

PCIE5 & M.2 Switch



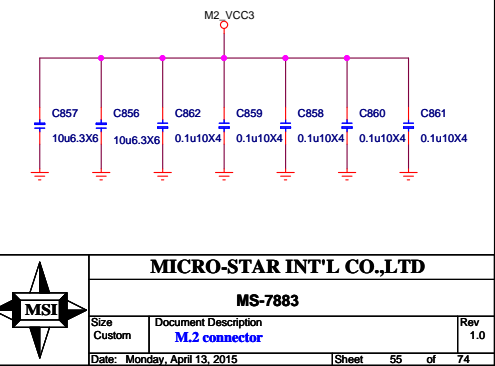
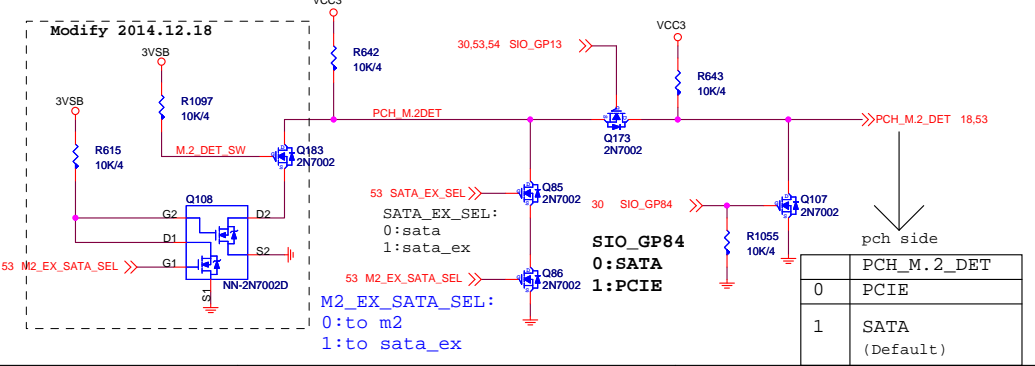
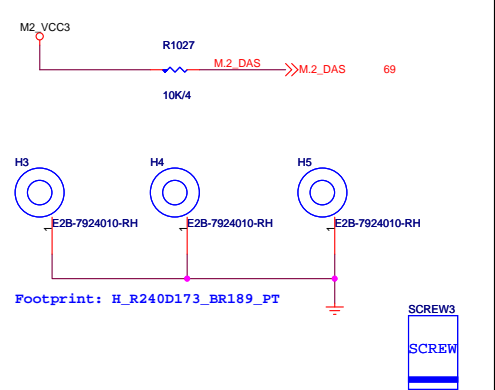
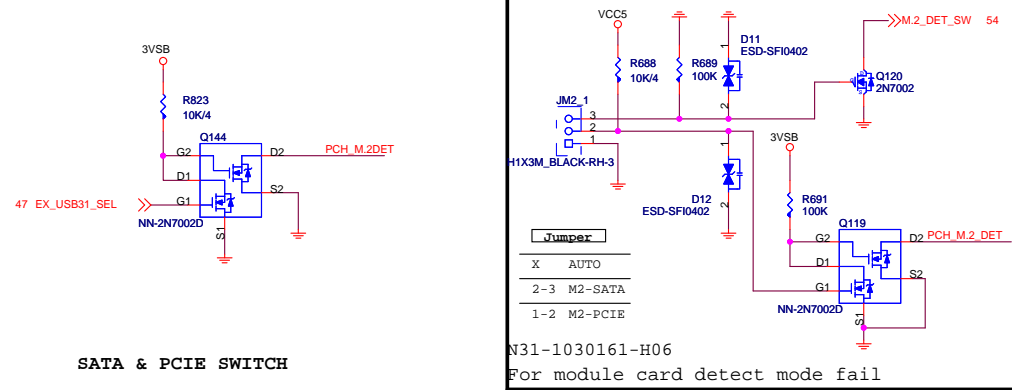
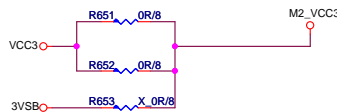
BIOS_MODE

SIO_GP10	SIO_GP80	SIO_GP84	SIO_GP13	Mode
1	0	1:PCIE 0:SATA	0	M2-PCH
X	1	X	0	PCIEX8
X	0	X	0	M2-X4
0	X	1:PCIE 0:SATA	X	SATA Express
GPI(:0)	GPI(:0)	GPI(:0)	1	AUTO



M2 cut power

2.5A



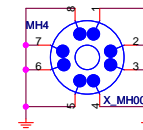
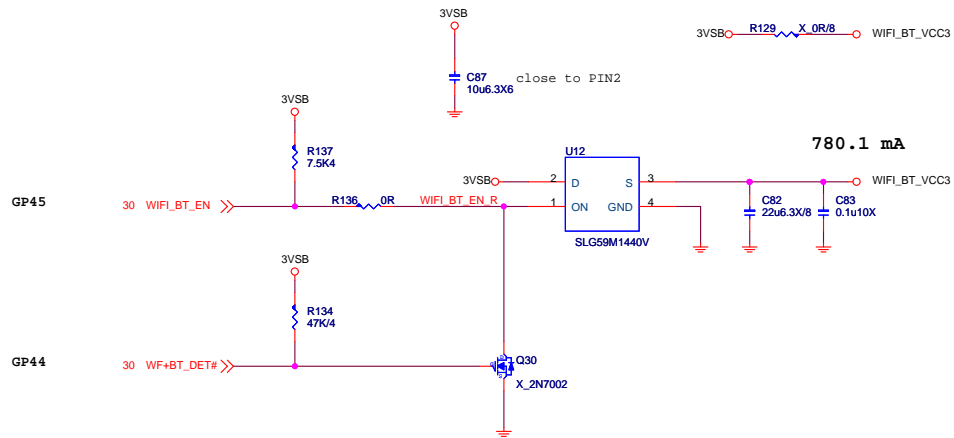
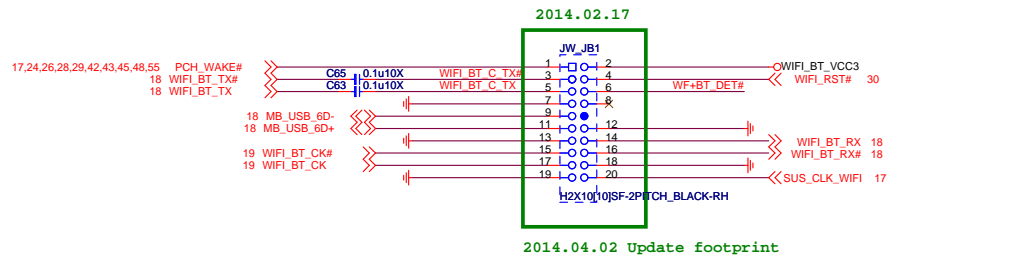
MICRO-STAR INT'L CO.,LTD

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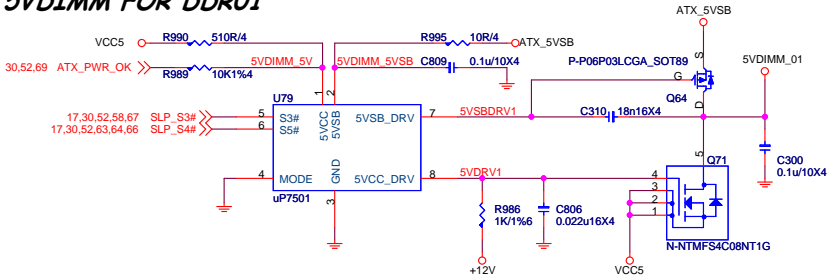
Size	Document Description	Rev
Custom	M.2 connector	1.0

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WIFI + Buletooth



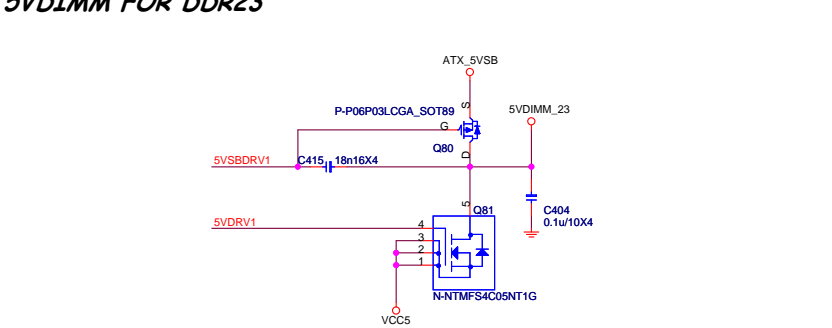
5VDIMM FOR DDR01



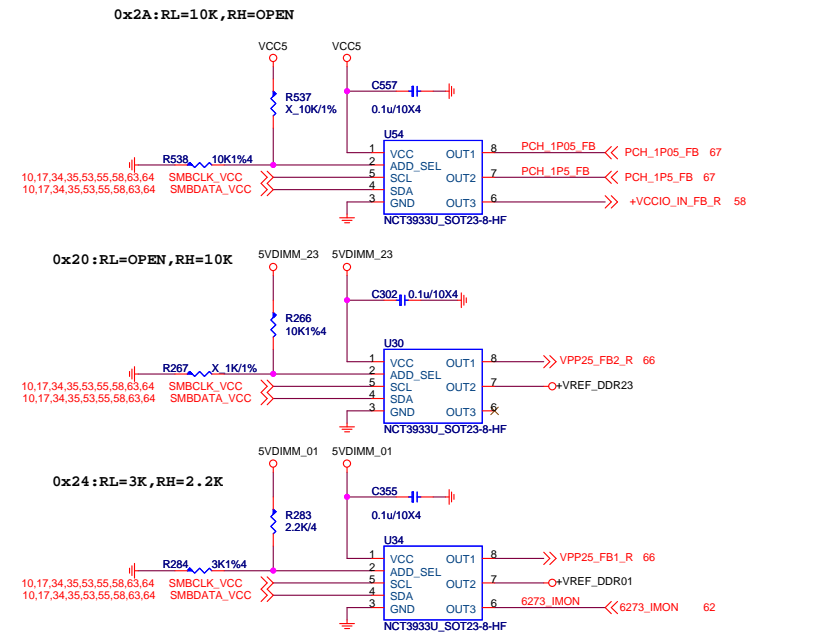
7501 Mode
H:Support S0/S3/S5
L:Support S0/S3

5VDRV1看VCC5起來6~10ms後起來,因為當初挑power

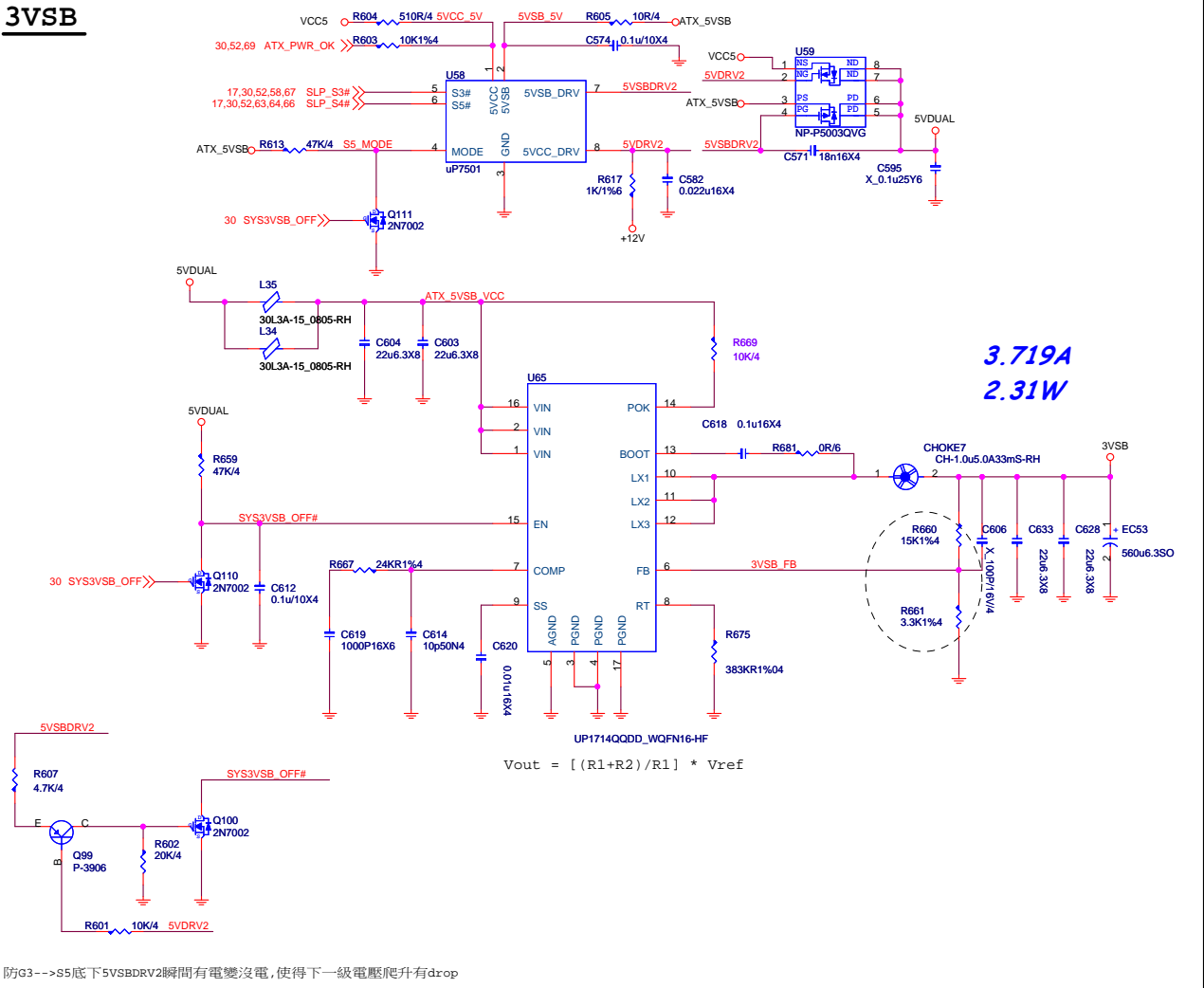
5VDIMM FOR DDR23



VOLTAGE CONSOLE

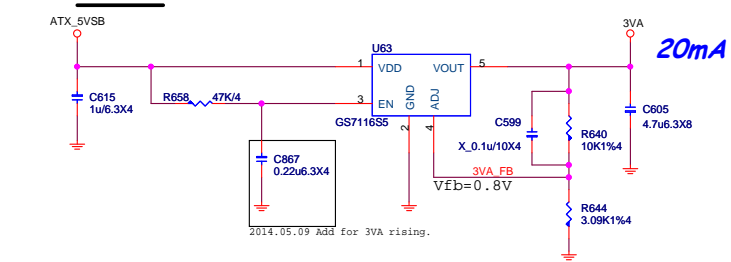


3VSB



防G3-->S5底下5VSBDRV2瞬間有電變沒電,使得下一級電壓爬升有drop

3VA

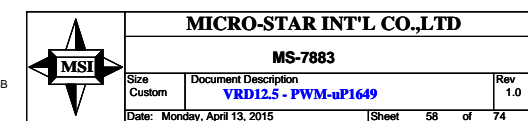
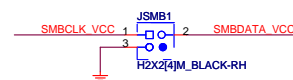
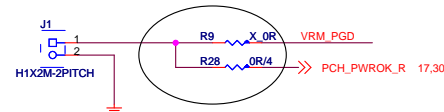
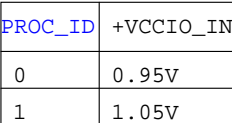


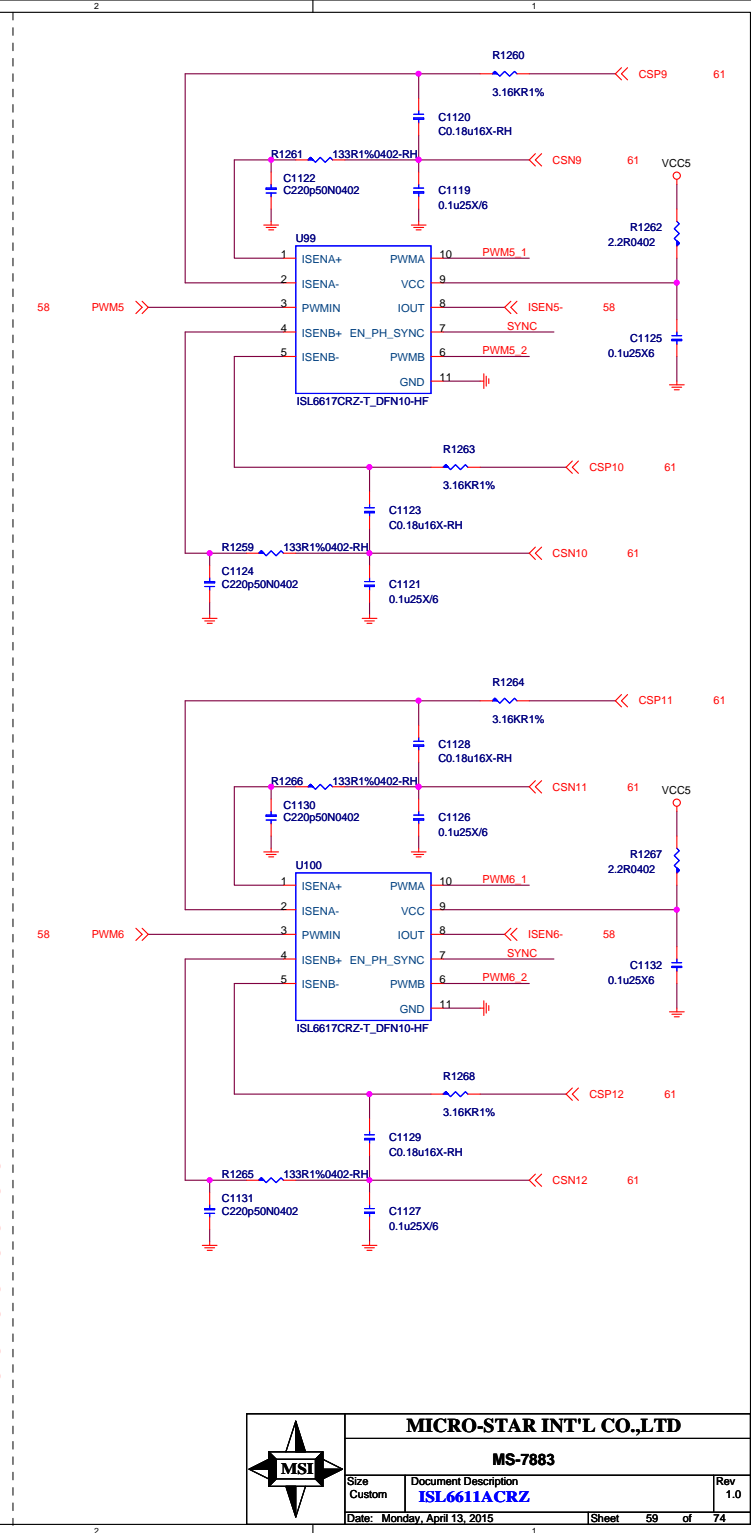
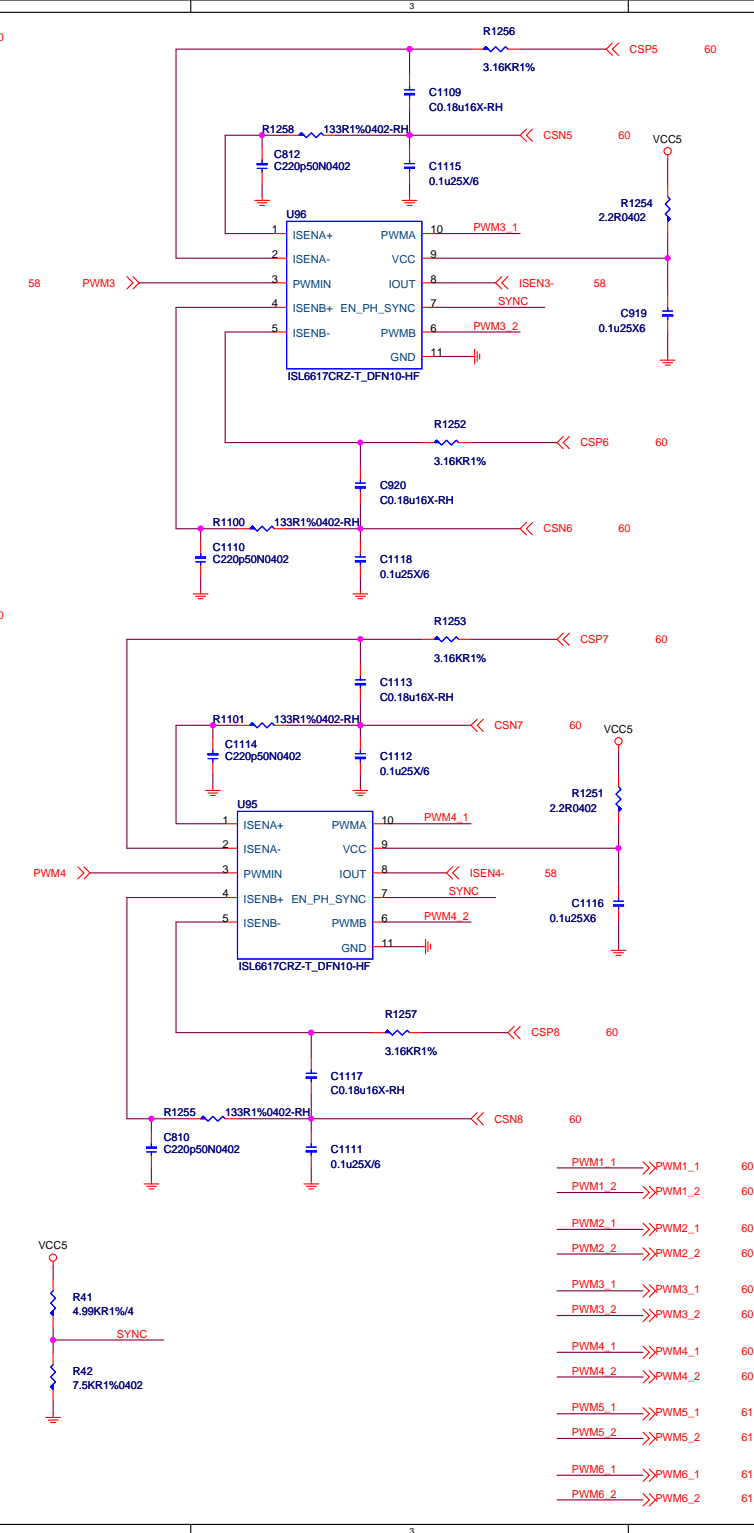
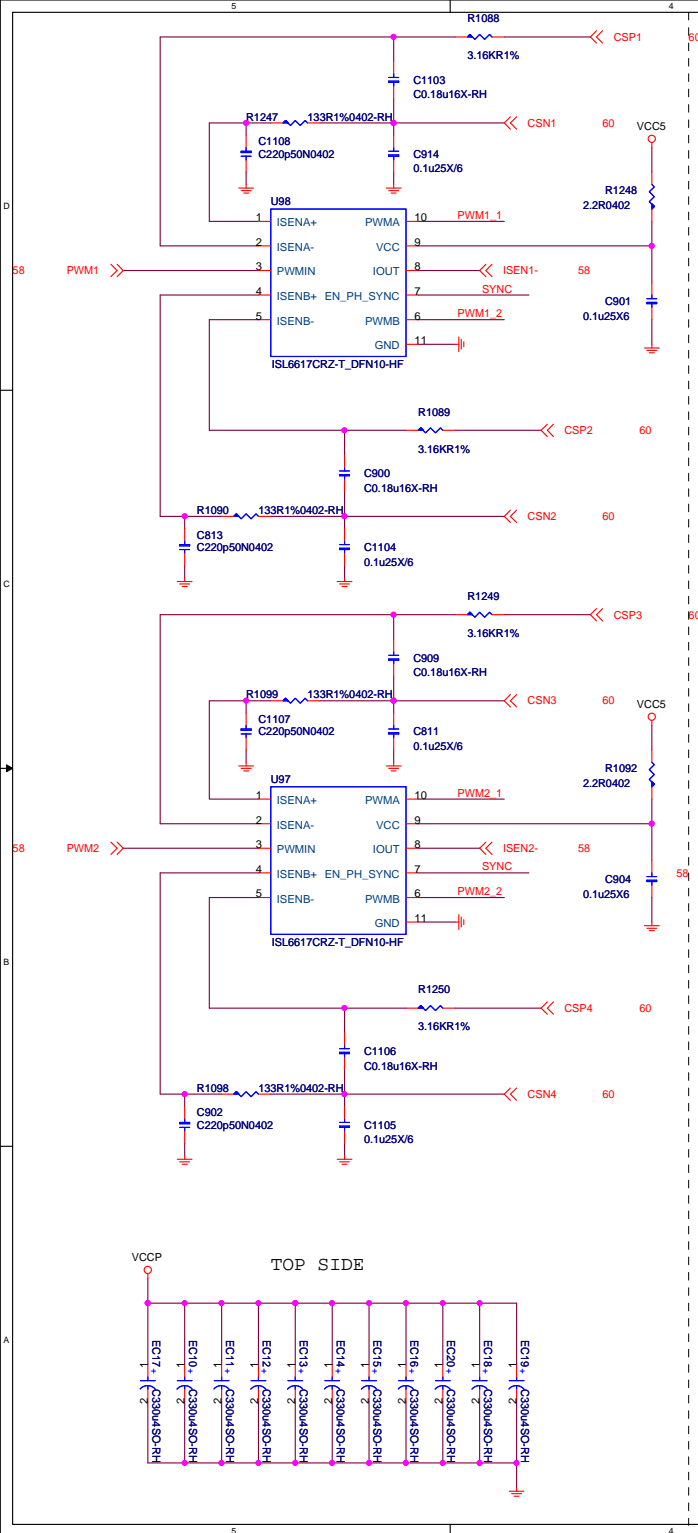
MICRO-STAR INT'L CO.,LTD

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Custom	ACPI controller UPI	1.0
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OCP:336A for 12Phase





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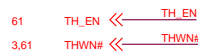
Size	Custom
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	Document Description
	ISL6611ACRZ

Rev
1.0

Date: Monday, April 13, 2015

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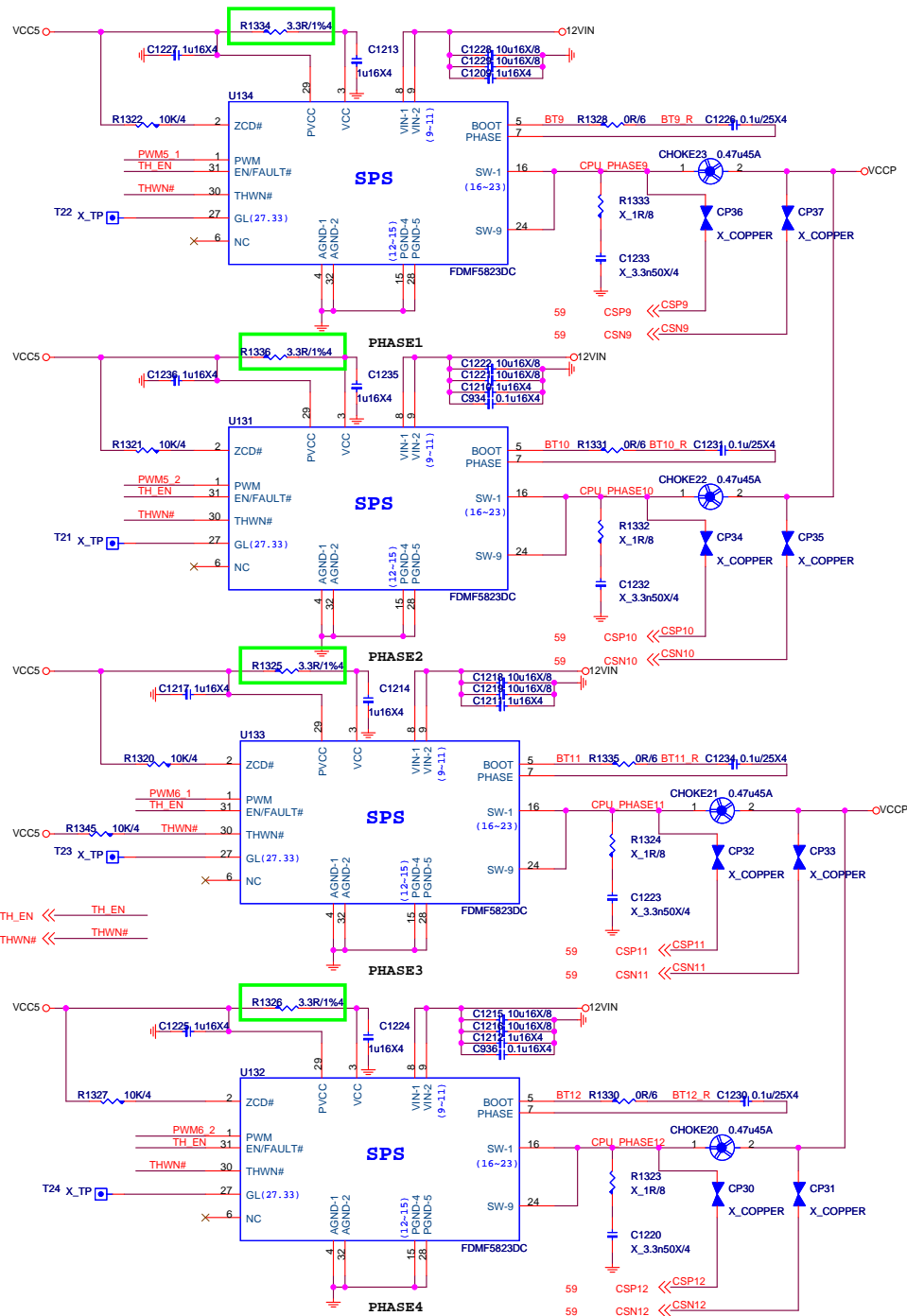
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Cust	

Document Description
CPU Power -M

Rev	1.0
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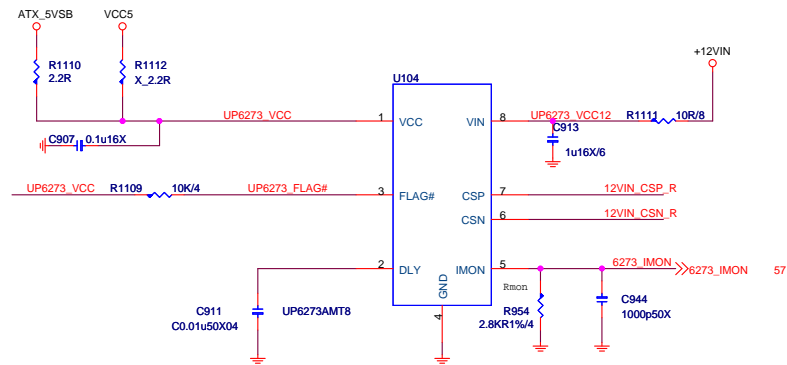
Date: Monday, April 13, 2015

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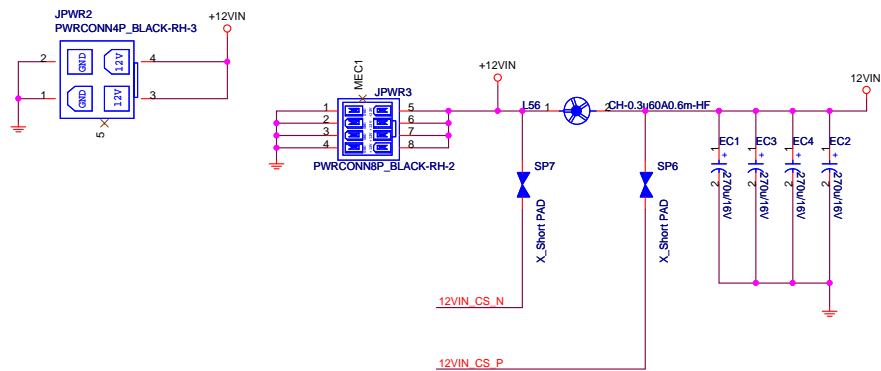
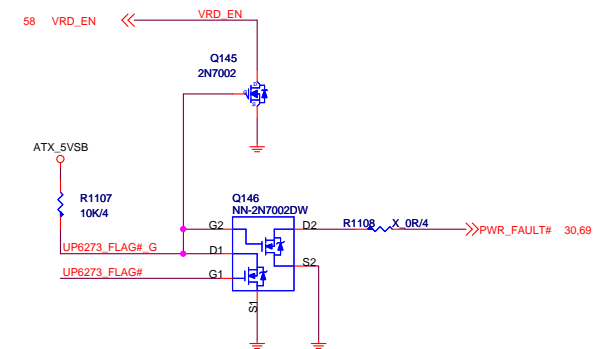
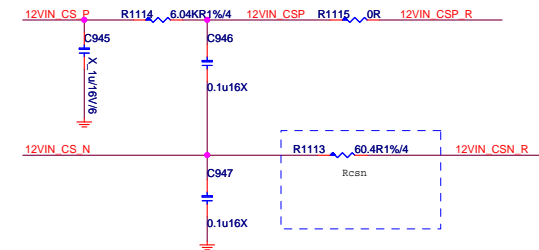


59 PWM5_1 >> PWM5_1
 59 PWM5_2 >> PWM5_2
 59 PWM6_1 >> PWM6_1
 59 PWM6_2 >> PWM6_2

POWER METER
OCP: 120A



$I_{in} = (V_{mon} * R_{csn}) / (R_{mon} * R_{dc})$
 $V_{mon} = 1.2$
 can change OCP trigger level by R_{csn} and R_{mon}
 $(1.2 * 0.2) / (10K * 0.3m) = 80A$

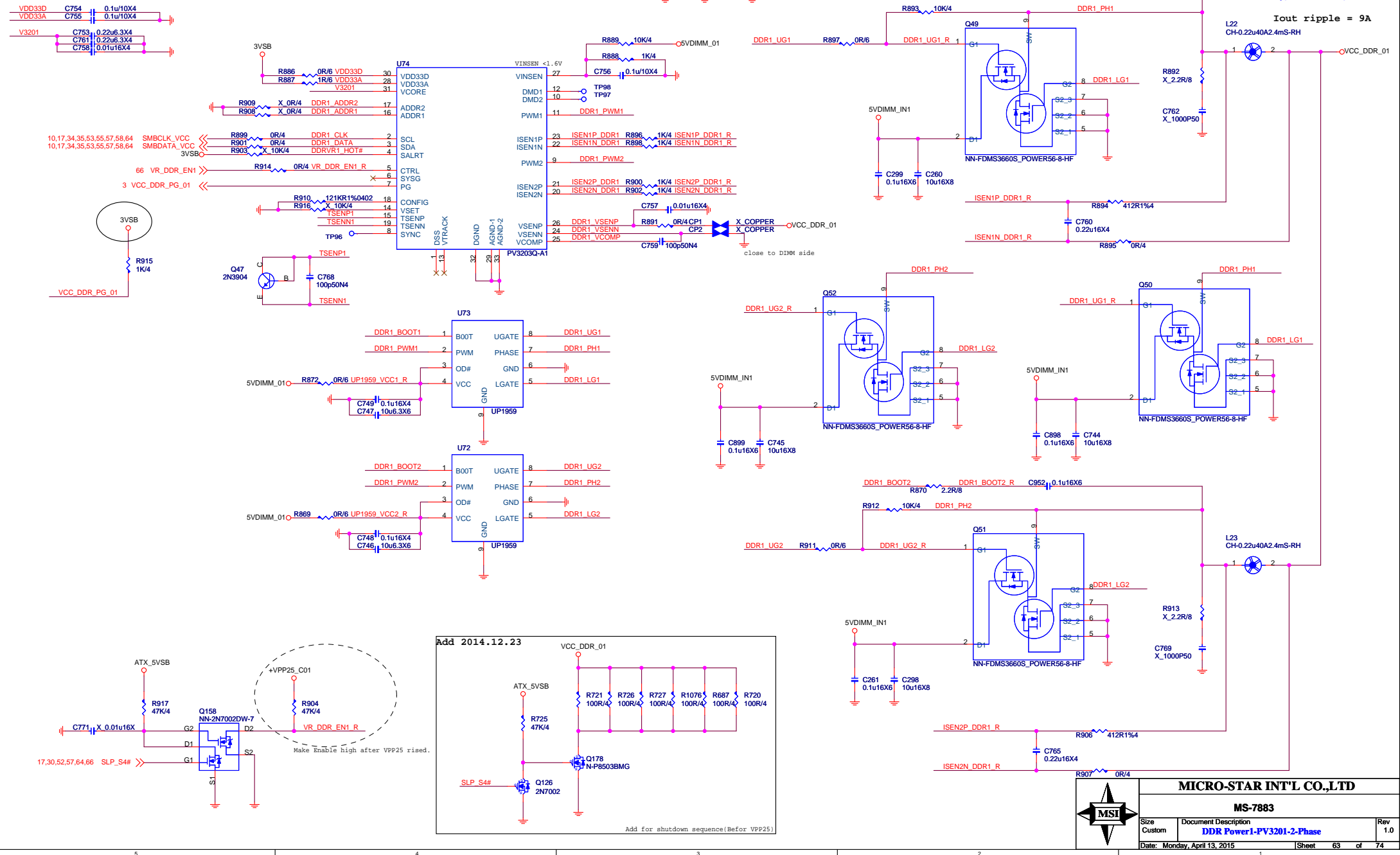


Title <Title>			
Size	Document Number		
Customer	MS-7883		
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			Rev 1.0

DDR Power1-PV3203-2-Phase

DDR4_1.2V 11A, OC margin=44A
OCP:66A for 2Phase

OCP=64A
OC margin=44A
Imax: 20.75A



DDR Power1-PV3203-2-Phase

DDR4_1.2V 11A, OC margin=44A

OCP:66A for 2Phase

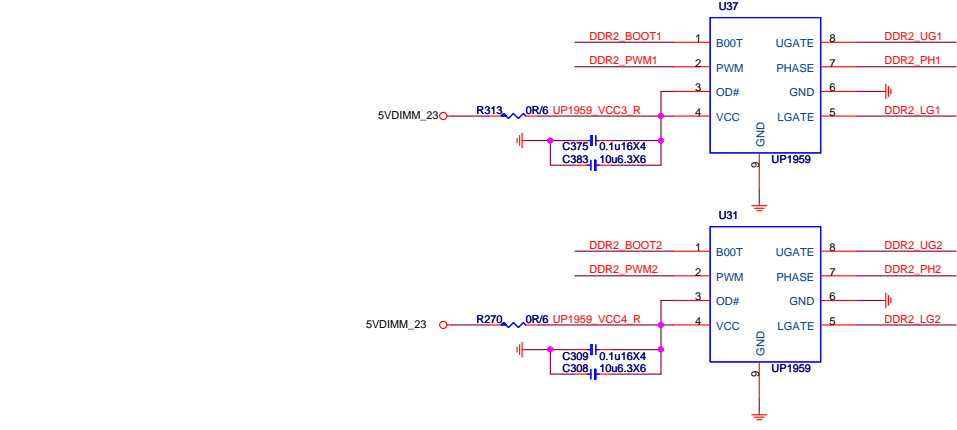
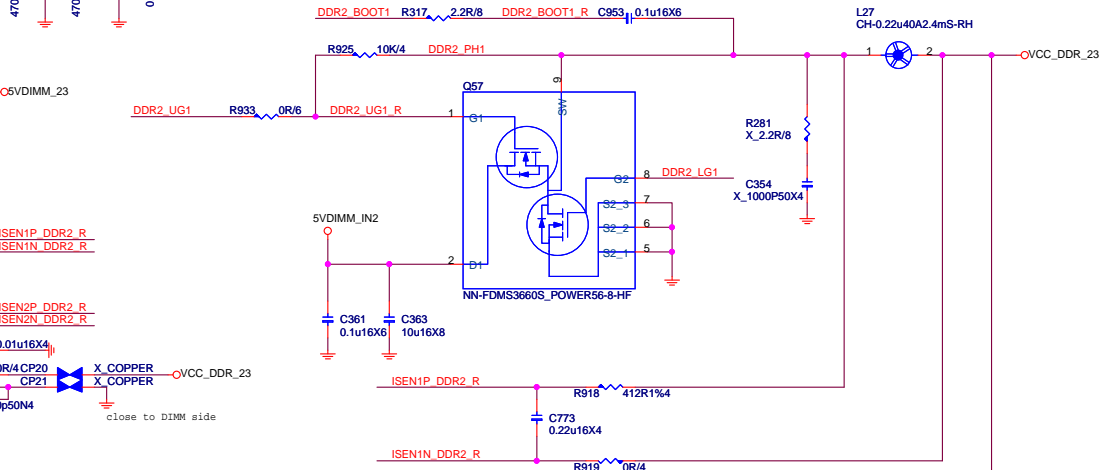
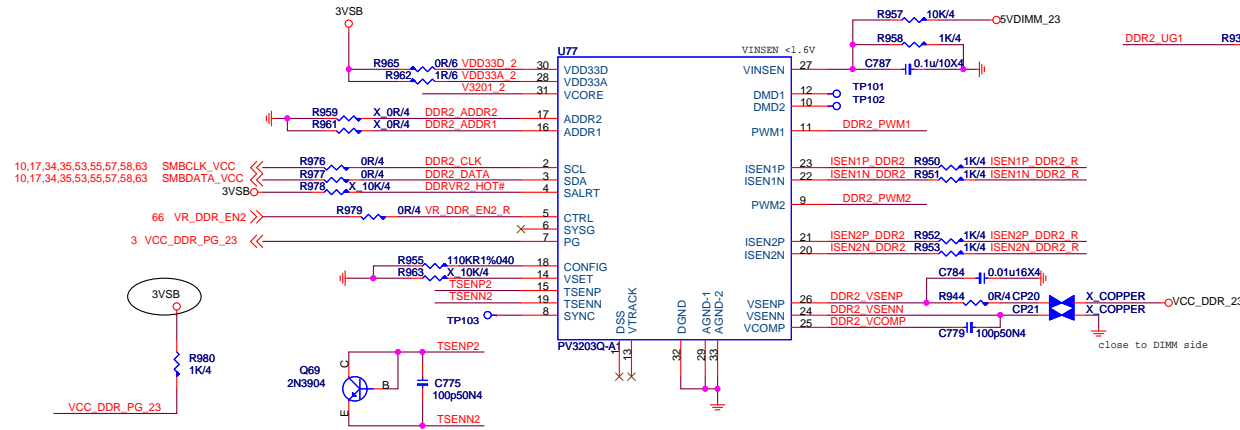
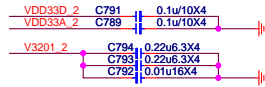
Iin ripple = 5.082A

OCP=64A

OC margin=44A

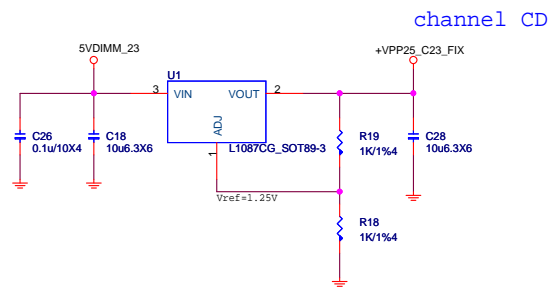
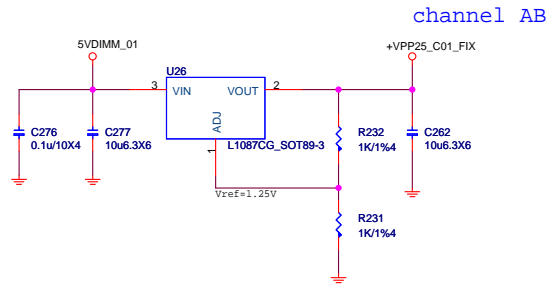
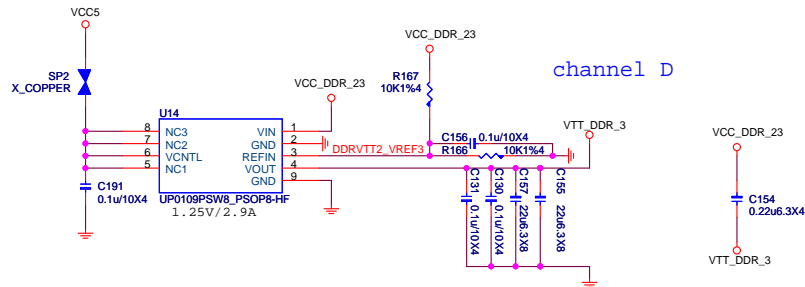
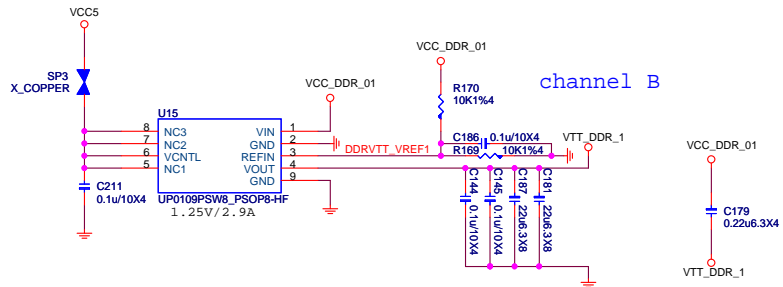
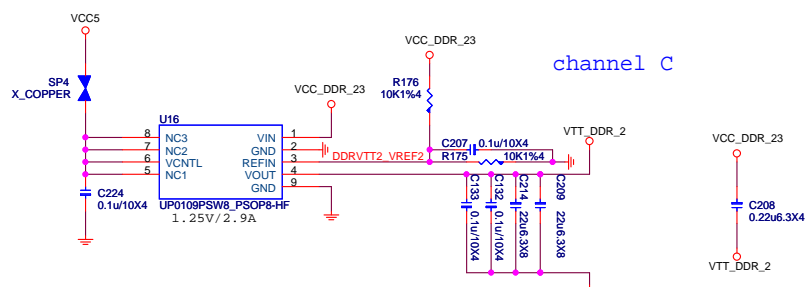
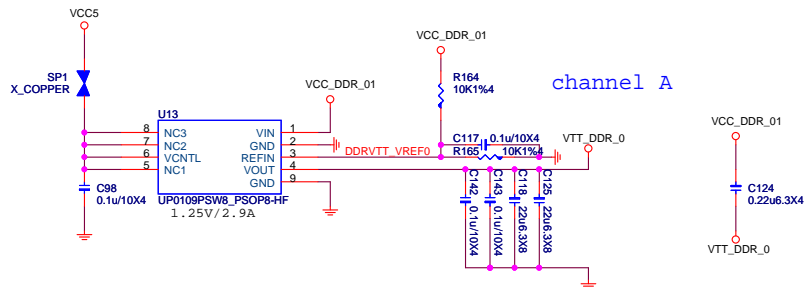
Imax: 20.75A

Iout ripple = 9A

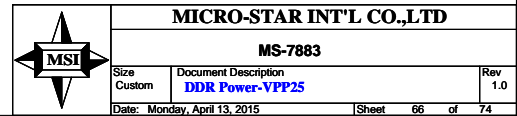
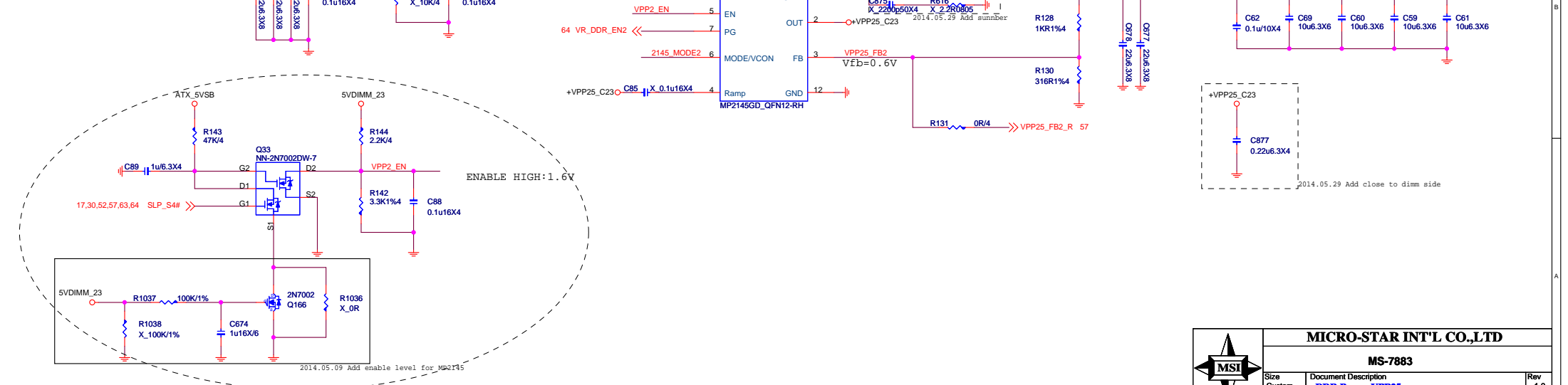
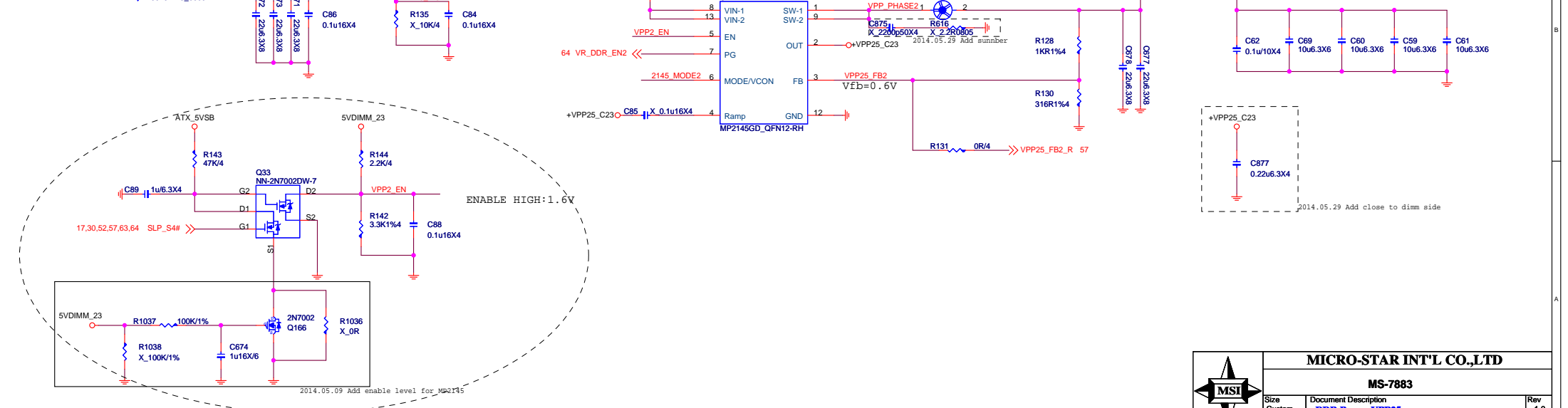
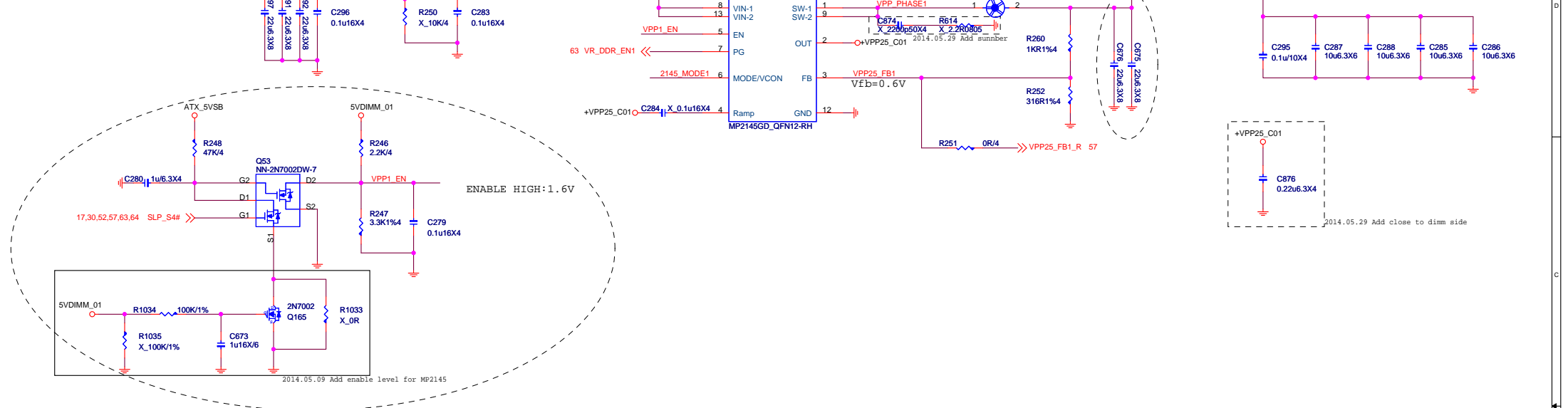


4DIMM :1.2A FOR DDR VTT

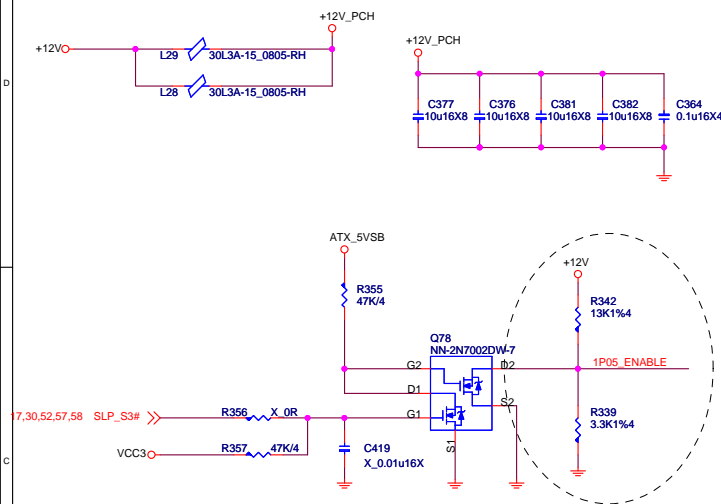
4DIMM :3A FOR OC margin



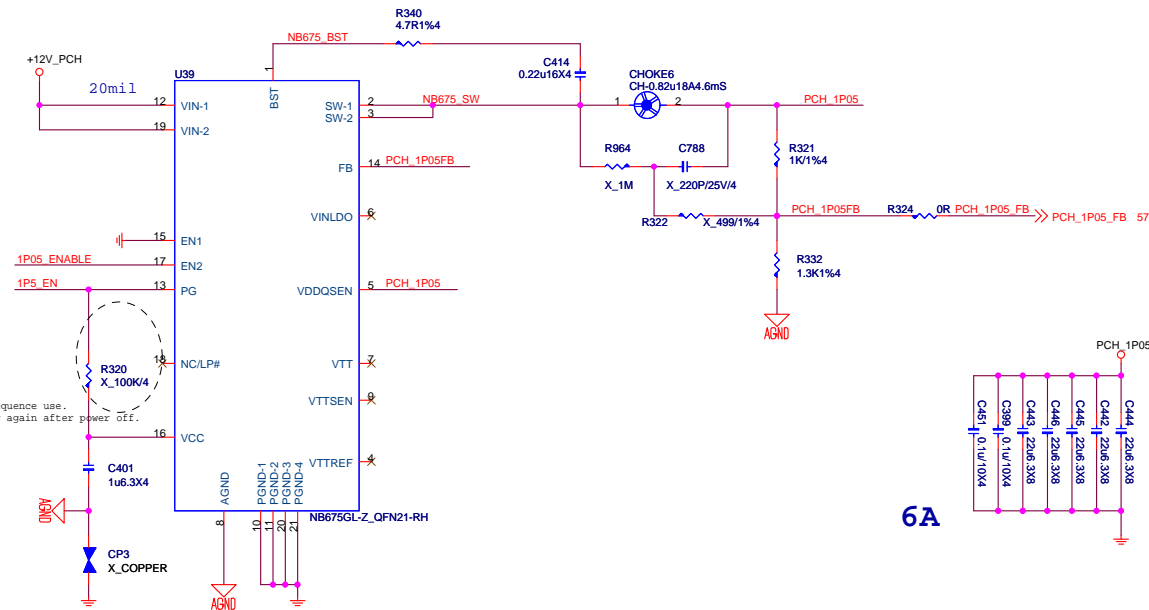
5	4	3	2	1
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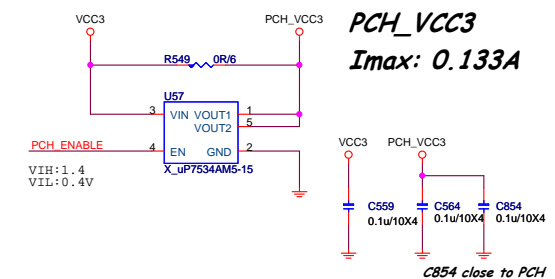
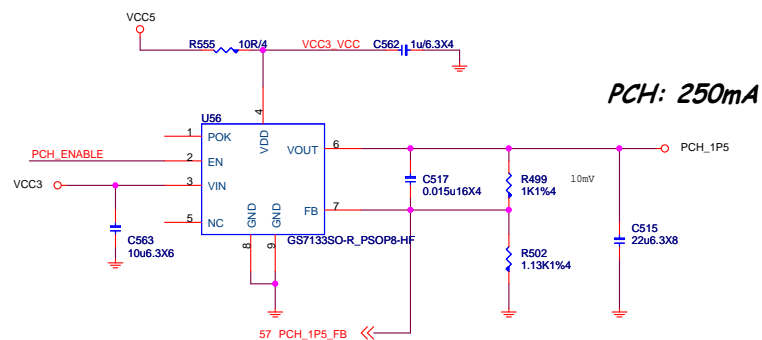
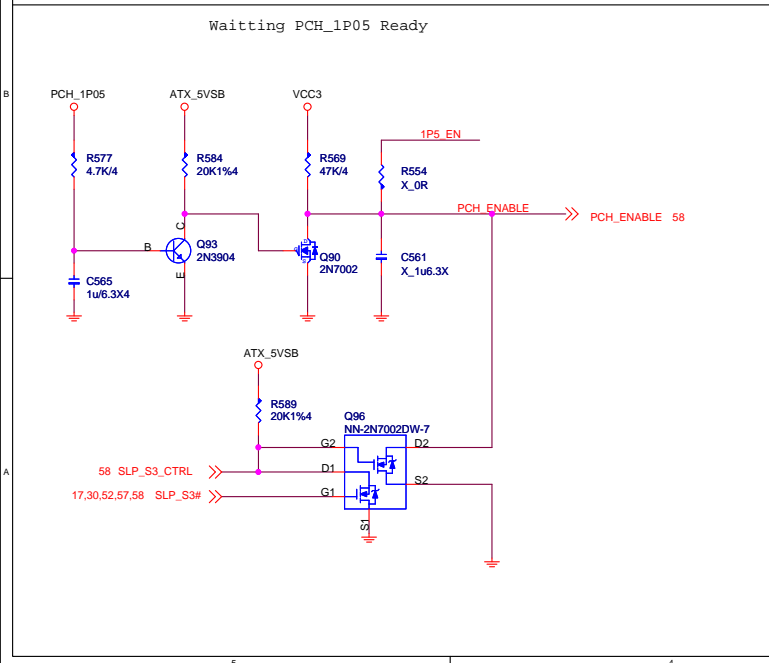
PCH Power:1.05V
PCH Core 6.504A



MAX 10A
ILIMIT=10A~12A 峰谷



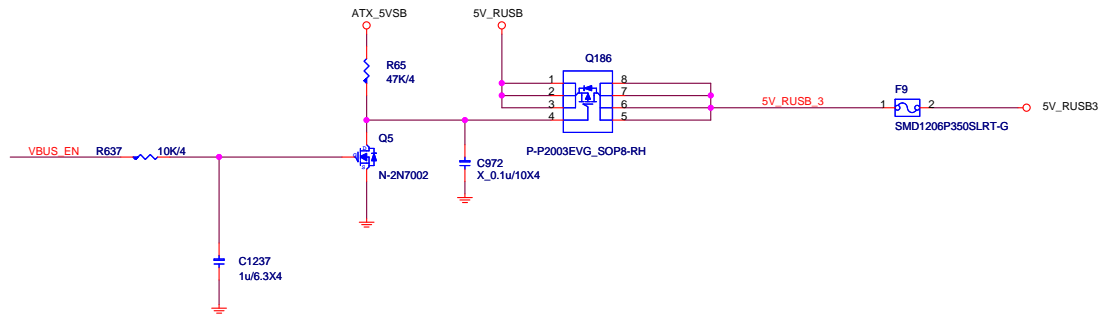
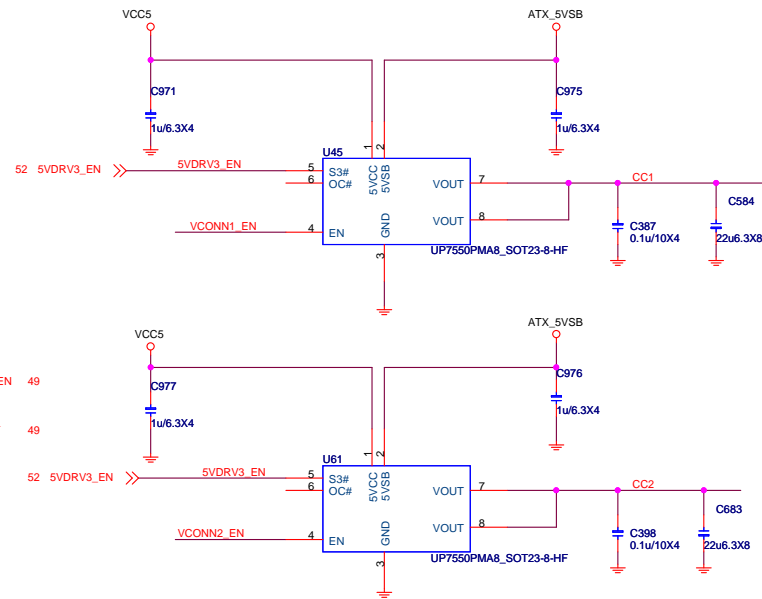
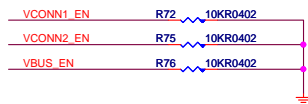
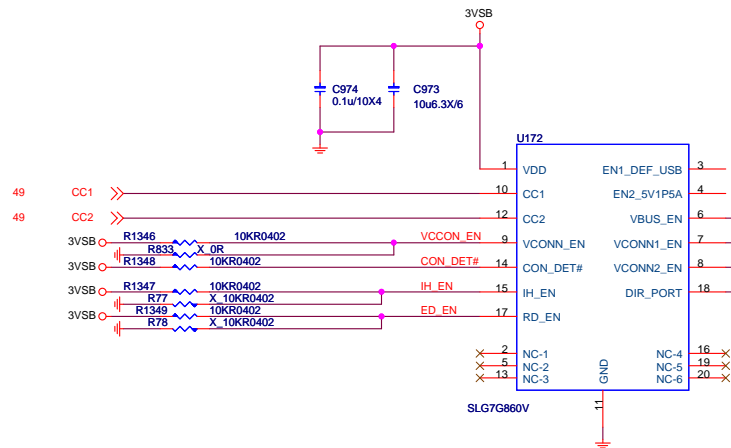
6A



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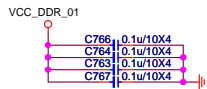
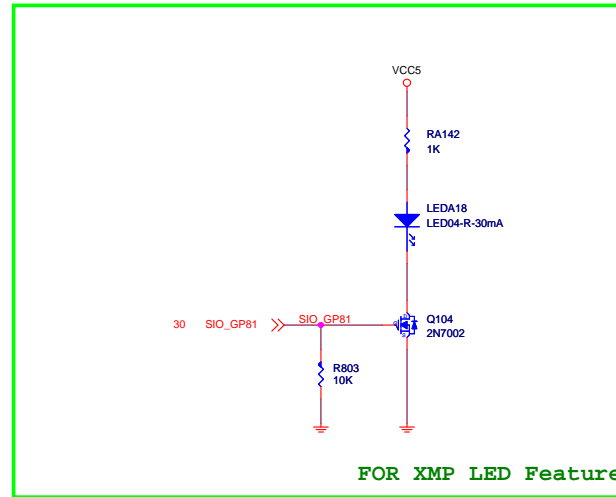


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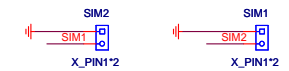
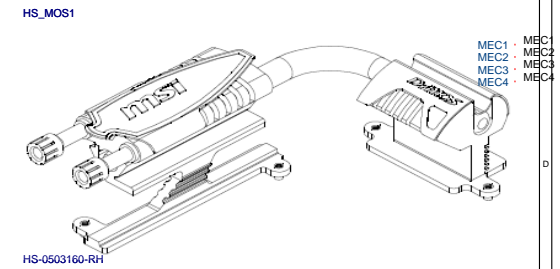
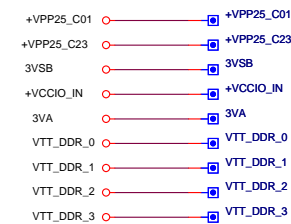
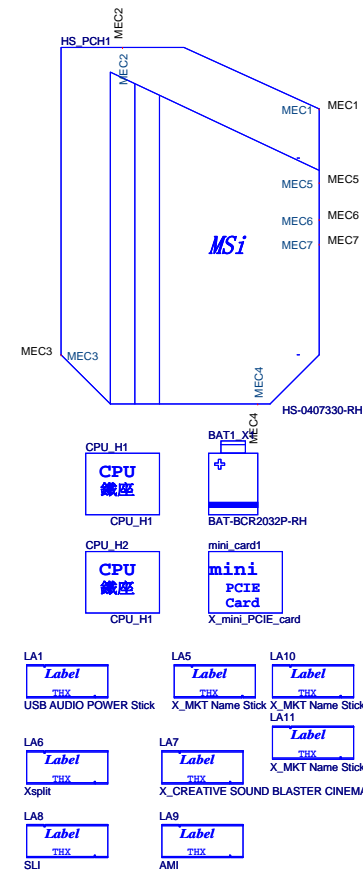
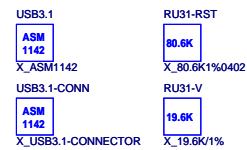
Reserve debug port 5020



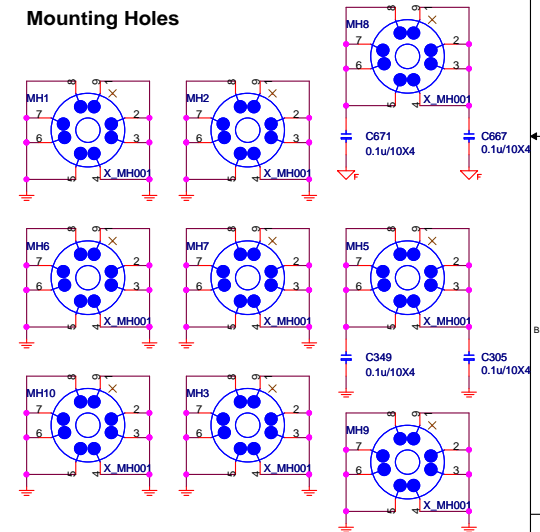
7 CPU_DEBUG_EN_N << CPU_DEBUG_EN_N R942 976R1%4
3 CPU_TDO << CPU_TDO R940 75R/4

+VCCIO_IN

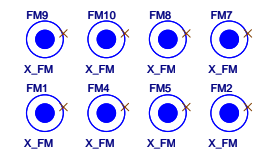
WITHIN 250MILS OF XDP CONNECTOR PIN



Mounting Holes



Optical Fiducial Marks-120



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