MS-1453(Switchable) & MS-1454(UMA) Ver : 10

2009/07/07

Calpella Platform

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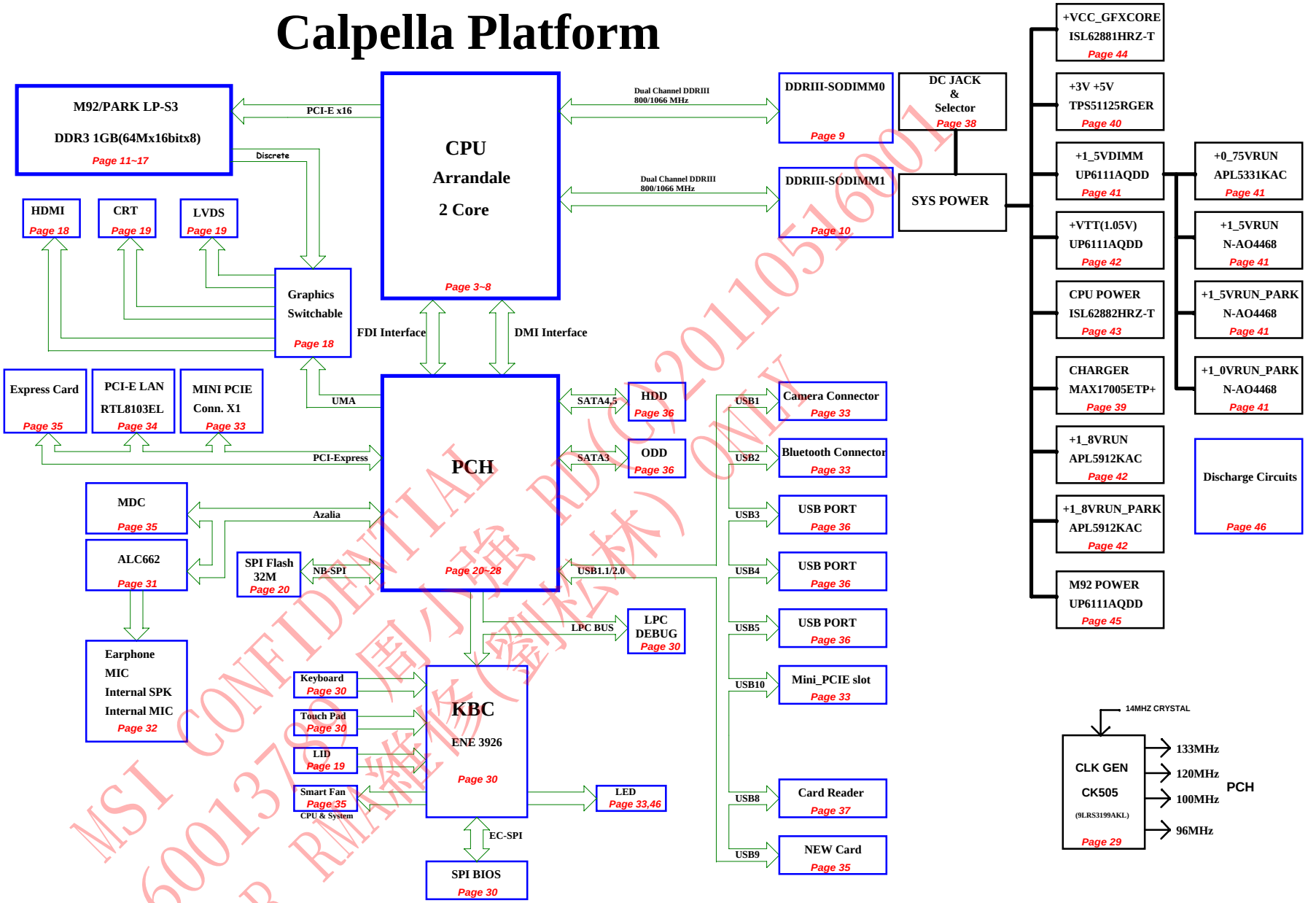

MICRO-STAR INT'L CO.,LTD.

Title: BLOCK DIAGRAM

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SCHEMATIC ANNOTATIONS AND BOARD INFORMATION

Voltage Rails

POWER PLANE	VOLTAGE	ACTIVE IN	DESCRIPTION
PWR_SRC	19V	S0,(S3-S5)	
+5VALW	5V	S0,(S3-S5)	
+5VRUN	5V	S0	
+5VSUS	5V	S0	
+3VALW	3.3V	S0,(S3-S5)	
+3VSUS	3.3V	S0,(S3-S5)	LAN
+3VRUN	3.3V	S0	
+1_5VDIMM	1.5V	S0,S3	DDRIII core
+1_5VRUN	1.5V	S0,S3	
VTT	1.05V	S0	PCH
+0_75VRUN	0.75V	S0	DDRIII command & control pull up.
+VCC_CORE	1.05V-1.1V	S0	CPU core rail
+VCC_GFXCORE	1.1V	S0	Graphics core rail (Dual Core only)
		S0	
M92S_VDD_CORE	0.95V	S0	GPU core power
+1_8VRUN_PARK	1.8V	S0	GPU PCIE power
+1_5VRUN_PARK	1.5V	S0	GPU DDR3 power
+1_0VRUN_PARK	1.0V	S0	GPU PCIE power
VDDR3	3.3V	S0	GPU I/O and DAC power

Net Naming Conventions

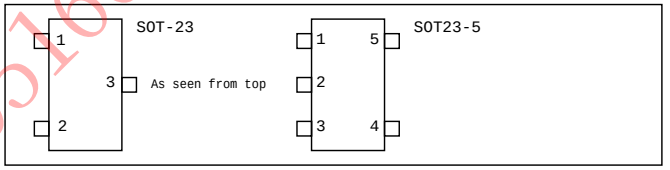
Suffix

\# = Active Low Signal

Prefix

H = Host
M = DDR Memory
TP = Test Point (does not connect anywhere else)

PCB Footprints



AC Mode

Power States	SLP_S3#	SLP_S4#	SLP_S5#	SLP_LAN#	+V*ALWAYS	+V*SUS	+V*RUN	CLK
S0 (Full on)	HIGH	HIGH	HIGH	HIGH	ON	ON	ON	ON
S3 (Suspend to RAM)	LOW	HIGH	HIGH	HIGH	ON	ON	OFF	OFF
S4 (Suspend to Disk)	LOW	LOW	HIGH	HIGH	ON	ON	OFF	OFF
S5 (Soft Off)	LOW	LOW	LOW	HIGH	ON	ON	OFF	OFF

Battery Mode

Power States	SLP_S3#	SLP_S4#	SLP_S5#	SLP_LAN#	+V*ALWAYS	+V*SUS	+V*RUN	CLK
S0 (Full on)	HIGH	HIGH	HIGH	HIGH	ON	ON	ON	ON
S3 (Suspend to RAM)	LOW	HIGH	HIGH	HIGH	ON	ON	OFF	OFF
S4 (Suspend to Disk)	LOW	LOW	HIGH	HIGH	ON	OFF	OFF	OFF
S5 (Soft Off)	LOW	LOW	LOW	HIGH	ON	OFF	OFF	OFF

MICRO-STAR INT'L CO.,LTD.

Title: PLATFORM

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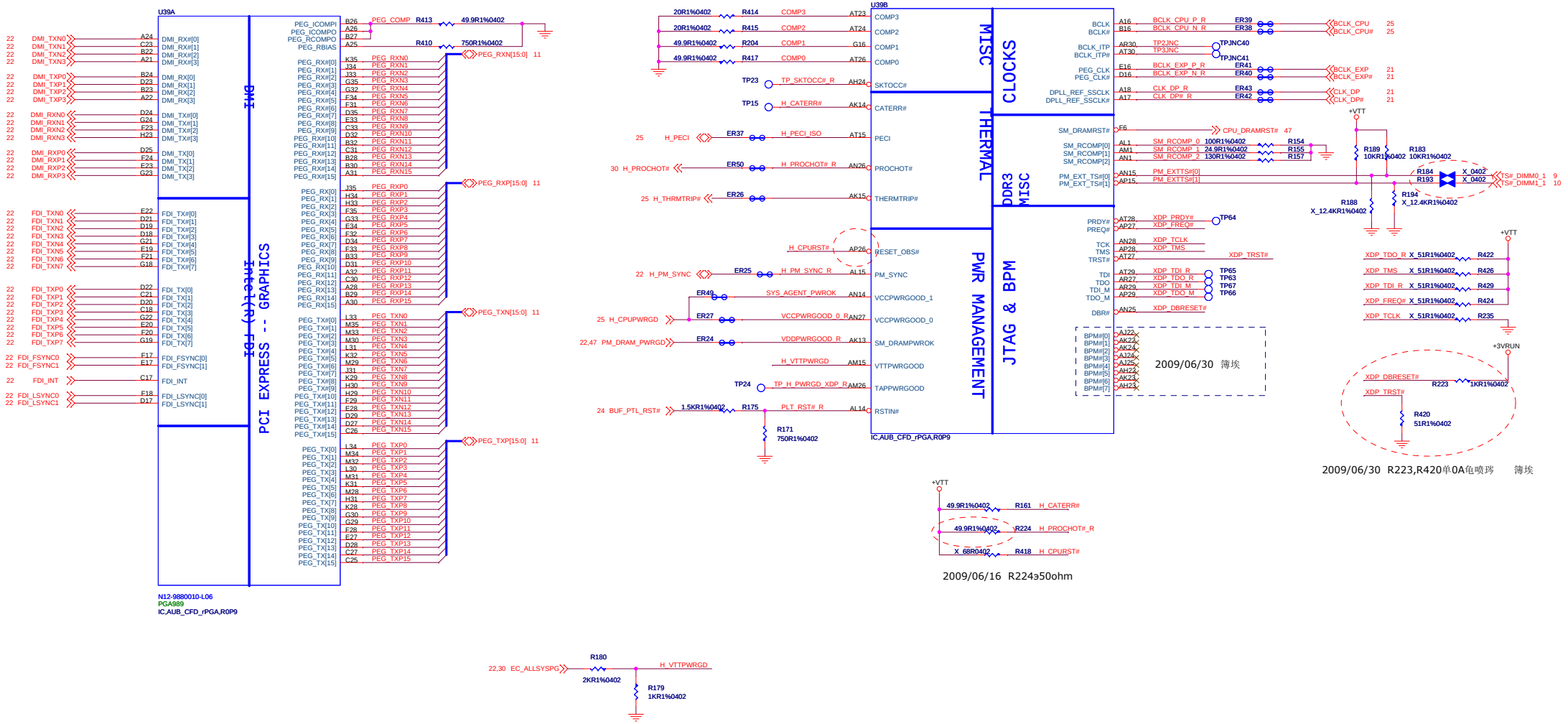
ARRANDALE PROCESSOR (CLK,MISC,JTAG)



Title	MICRO-STAR INT'L CO.,LTD.	
	PROCESSOR	
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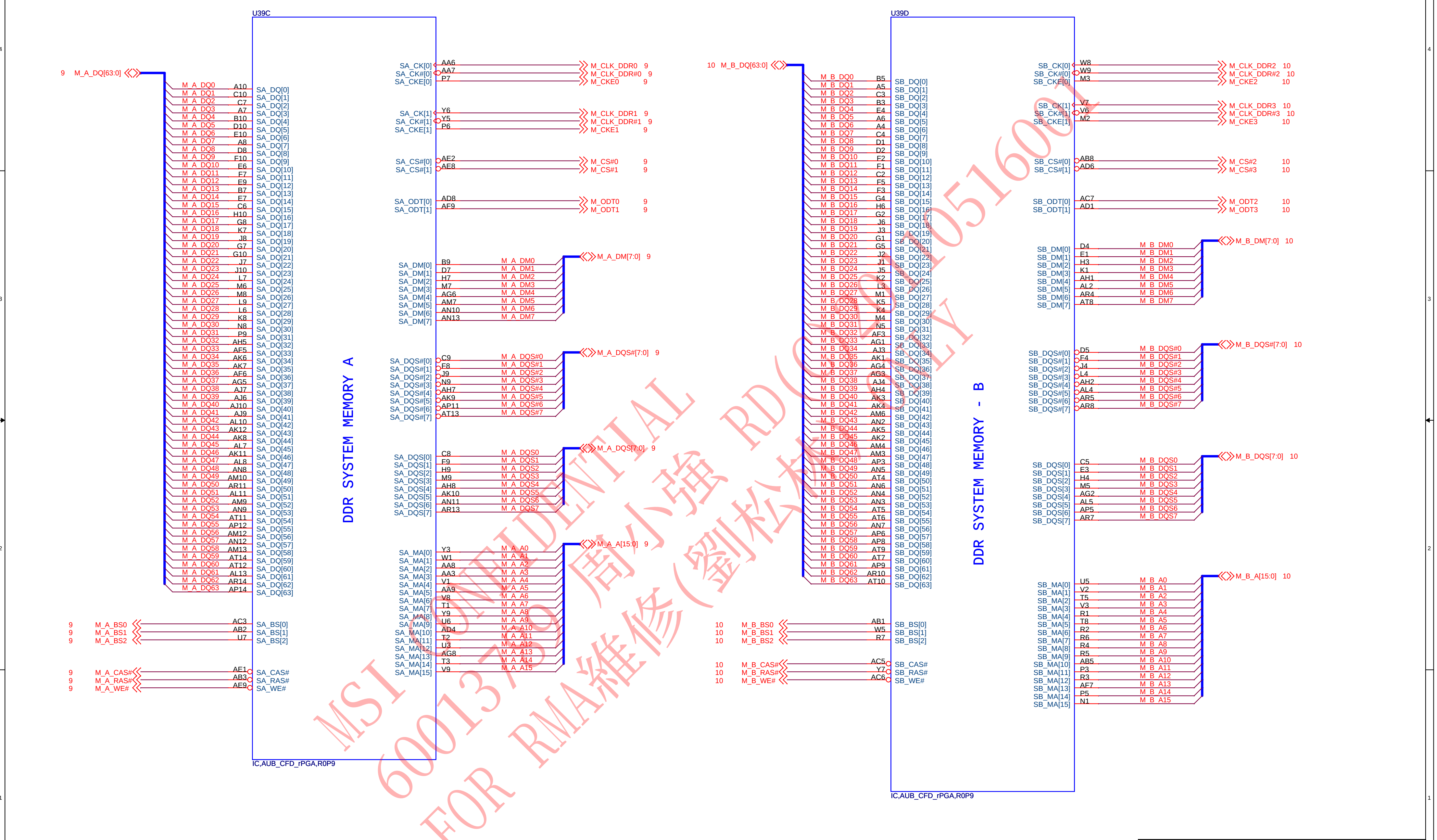
ARRANDALE PROCESSOR (DDR3)



U39C
DDR SYSTEM MEMORY A
9 M_A_DQ[63:0]
M_A_DQ0 … M_A_DQ63
SA_DQ[0] … SA_DQ[63]
SA_CK[0] AA6 M_CLK_DDR0 9
SA_CK#[0] AA7 M_CLK_DDR#0 9
SA_CKE[0] P7 M_CKE0 9
SA_CK[1] Y6 M_CLK_DDR1 9
SA_CK#[1] Y5 M_CLK_DDR#1 9
SA_CKE[1] P6 M_CKE1 9
SA_CS#[0] AE2 M_CS#0 9
SA_CS#[1] AE8 M_CS#1 9
SA_ODT[0] AD8 M_ODT0 9
SA_ODT[1] AF9 M_ODT1 9
M_A_DM[7:0] 9
M_A_DQS#[7:0] 9
M_A_DQS[7:0] 9
M_A_A[15:0] 9
9 M_A_BS0
9 M_A_BS1
9 M_A_BS2
9 M_A_CAS#
9 M_A_RAS#
9 M_A_WE#
SA_BS[0] SA_BS[1] SA_BS[2] SA_CAS# SA_RAS# SA_WE#
IC,AUB_CFD_rPGA,R0P9
U39D
DDR SYSTEM MEMORY - B
10 M_B_DQ[63:0]
M_B_DQ0 … M_B_DQ63
SB_DQ[0] … SB_DQ[63]
SB_CK[0] W8 M_CLK_DDR2 10
SB_CK#[0] W9 M_CLK_DDR#2 10
SB_CKE[0] M3 M_CKE2 10
SB_CK[1] V7 M_CLK_DDR3 10
SB_CK#[1] V6 M_CLK_DDR#3 10
SB_CKE[1] M2 M_CKE3 10
SB_CS#[0] AB8 M_CS#2 10
SB_CS#[1] AD6 M_CS#3 10
SB_ODT[0] AC7 M_ODT2 10
SB_ODT[1] AD1 M_ODT3 10
M_B_DM[7:0] 10
M_B_DQS#[7:0] 10
M_B_DQS[7:0] 10
M_B_A[15:0] 10
10 M_B_BS0
10 M_B_BS1
10 M_B_BS2
10 M_B_CAS#
10 M_B_RAS#
10 M_B_WE#
SB_BS[0] SB_BS[1] SB_BS[2] SB_CAS# SB_RAS# SB_WE#
IC,AUB_CFD_rPGA,R0P9

MSI	MICRO-STAR INT'L CO.,LTD.
Title	DDR3
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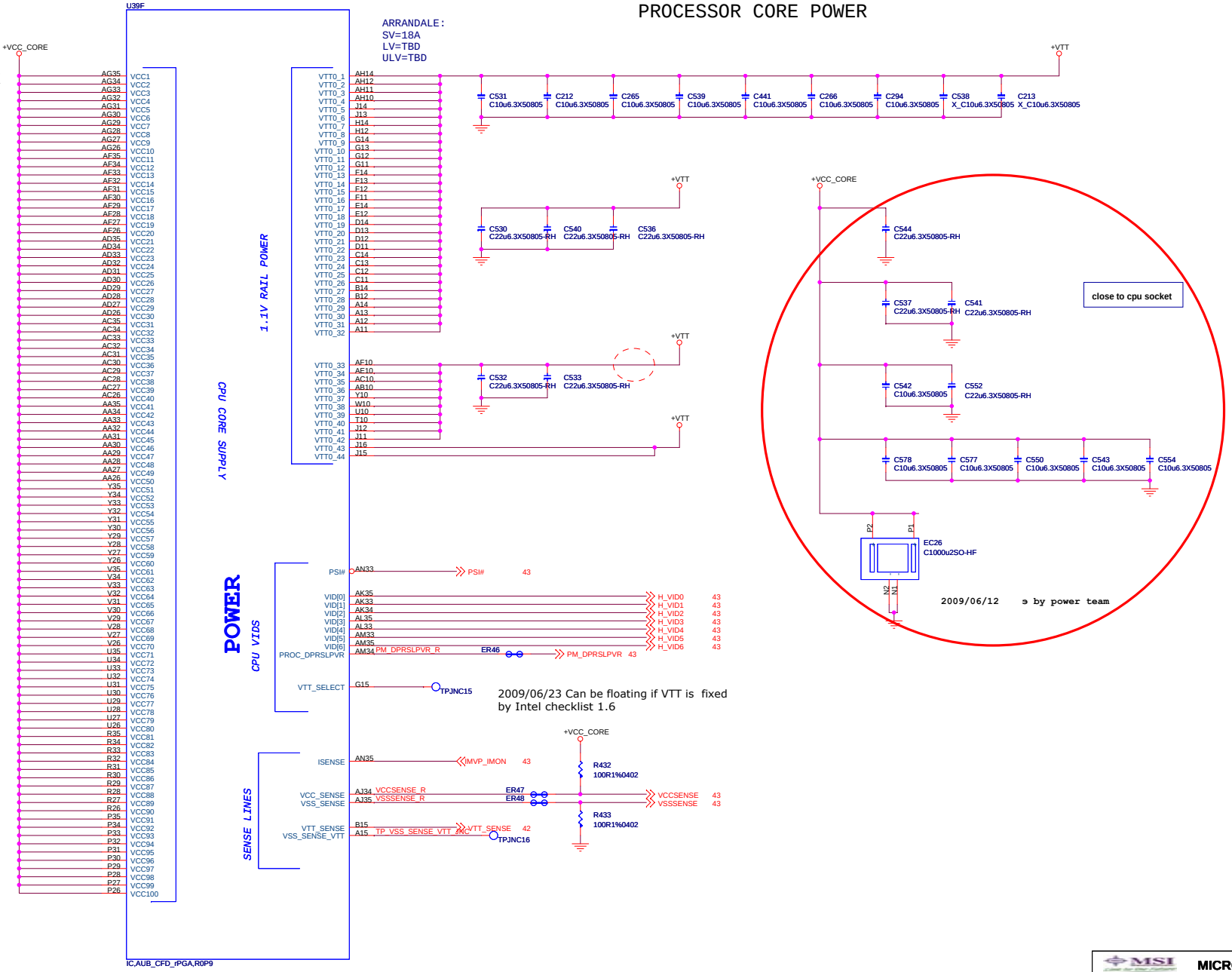
ARRANDALE PROCESSOR (POWER)

ARRANDALE:
SV=48A
LV=35A
ULV=27A

PROCESSOR CORE POWER

ARRANDALE:
SV=18A
LV=TBD
ULV=TBD

PROCESSOR CORE POWER



MSI MICRO-STAR INT'L CO.,LTD.

Title: PROCESSOR POWER

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ARRANDALE PROCESSOR (GRAPHICS POWER)

ARRANDALE:
SV=15A
LV=TBD
ULV=TBD

I=14A

+VCC_GFXCORE

C529 C22u6.3X50805-RH
C549 C22u6.3X50805-RH
C526 C22u6.3X50805-RH
C527 X_C22u6.3X50805-RH
C528 X_C22u6.3X50805-RH
C548 C22u6.3X50805-RH
C547 C10u6.3X50805
C546 X_C10u6.3X50805

U39G

AT21 AT19 AT18 AT16 AR21 AR19 AR18 AR16 AP21 AP19 AP18 AP16 AN21 AN19 AN18 AN16 AM21 AM19 AM18 AM16 AL21 AL19 AL18 AL16 AK21 AK19 AK18 AK16 AJ21 AJ19 AJ18 AJ16 AH21 AH19 AH18 AH16

VAXG1 VAXG2 VAXG3 VAXG4 VAXG5 VAXG6 VAXG7 VAXG8 VAXG9 VAXG10 VAXG11 VAXG12 VAXG13 VAXG14 VAXG15 VAXG16 VAXG17 VAXG18 VAXG19 VAXG20 VAXG21 VAXG22 VAXG23 VAXG24 VAXG25 VAXG26 VAXG27 VAXG28 VAXG29 VAXG30 VAXG31 VAXG32 VAXG33 VAXG34 VAXG35 VAXG36

GRAPHICS

SENSE LINES

VAXG_SENSE AR22
VSSAXG_SENSE AT22

VCC_AXG_SENSE 44
VSS_AXG_SENSE 44

GRAPHICS VIDs

GFX_VID[0] AM22
GFX_VID[1] AP22
GFX_VID[2] AN22
GFX_VID[3] AP23
GFX_VID[4] AM23
GFX_VID[5] AP24
GFX_VID[6] AN24

GFXVR_VID_0 44
GFXVR_VID_1 44
GFXVR_VID_2 44
GFXVR_VID_3 44
GFXVR_VID_4 44
GFXVR_VID_5 44
GFXVR_VID_6 44

GFX_VR_EN AR25
GFX_DPRSLPVR AT25
GFX_IMON AM24

GFXVR_DPRSLPVR_R

GFXVR_EN 44
GFXVR_DPRSLPVR 44
GFXVR_IMON 44

ARRANDALE:
3A

+1_5VRUN

VDDQ1 VDDQ2 VDDQ3 VDDQ4 VDDQ5 VDDQ6 VDDQ7 VDDQ8 VDDQ9 VDDQ10 VDDQ11 VDDQ12 VDDQ13 VDDQ14 VDDQ15 VDDQ16 VDDQ17 VDDQ18

AJ1 AF1 AE7 AF4 AC1 AB7 AB4 Y1 W7 W4 U1 T7 T4 P1 N7 N4 L1 H1

C223 C1u16X-RH
C222 C1u16X-RH
C221 C1u16X-RH
C217 C1u16X-RH
C216 C1u16X-RH
C215 C22u6.3X50805-RH
C207 C22u6.3X50805-RH
C208 C330u2.5pSO-1

DDR3 - 1.5V RAILS

+VTT

C579 C22u6.3X50805-RH
C259 C22u6.3X50805-RH

J24 J23 H25

VTT1_45 VTT1_46 VTT1_47

FDI

POWER

VTT0_59 VTT0_60 VTT0_61 VTT0_62

P10 N10 L10 K10

+VTT

C270 C10u6.3X5-RH
C288 C10u6.3X5-RH

VTT1_63 VTT1_64 VTT1_65 VTT1_66 VTT1_67 VTT1_68

J22 J20 J18 H21 H20 H19

+VTT

C284 C22u6.3X50805-RH
C289 C22u6.3X50805-RH

1.1V

+VTT

C300 C22u6.3X50805-RH
C211 C22u6.3X50805-RH
C534 C22u6.3X50805-RH
C535 C22u6.3X50805-RH

K26 J27 J26 J25 H27 G28 G27 G26 F26 E26 E25

VTT1_48 VTT1_49 VTT1_50 VTT1_51 VTT1_52 VTT1_53 VTT1_54 VTT1_55 VTT1_56 VTT1_57 VTT1_58

PEG & DMI

VCCPLL1 VCCPLL2 VCCPLL3

L26 L27 M26

+1_8VRUN

C372 C1u16X-RH
C381 C1u16X-RH
C370 C2.2u6.3X5
C389 C4.7u6.3X
C369 C22u6.3X50805-RH

1.8V

ARRANDALE:
0.6A

IC_AUB_CFD_rPGA_R0P9

MICRO-STAR INT'L CO.,LTD.

Title: GRAPHICS POWER

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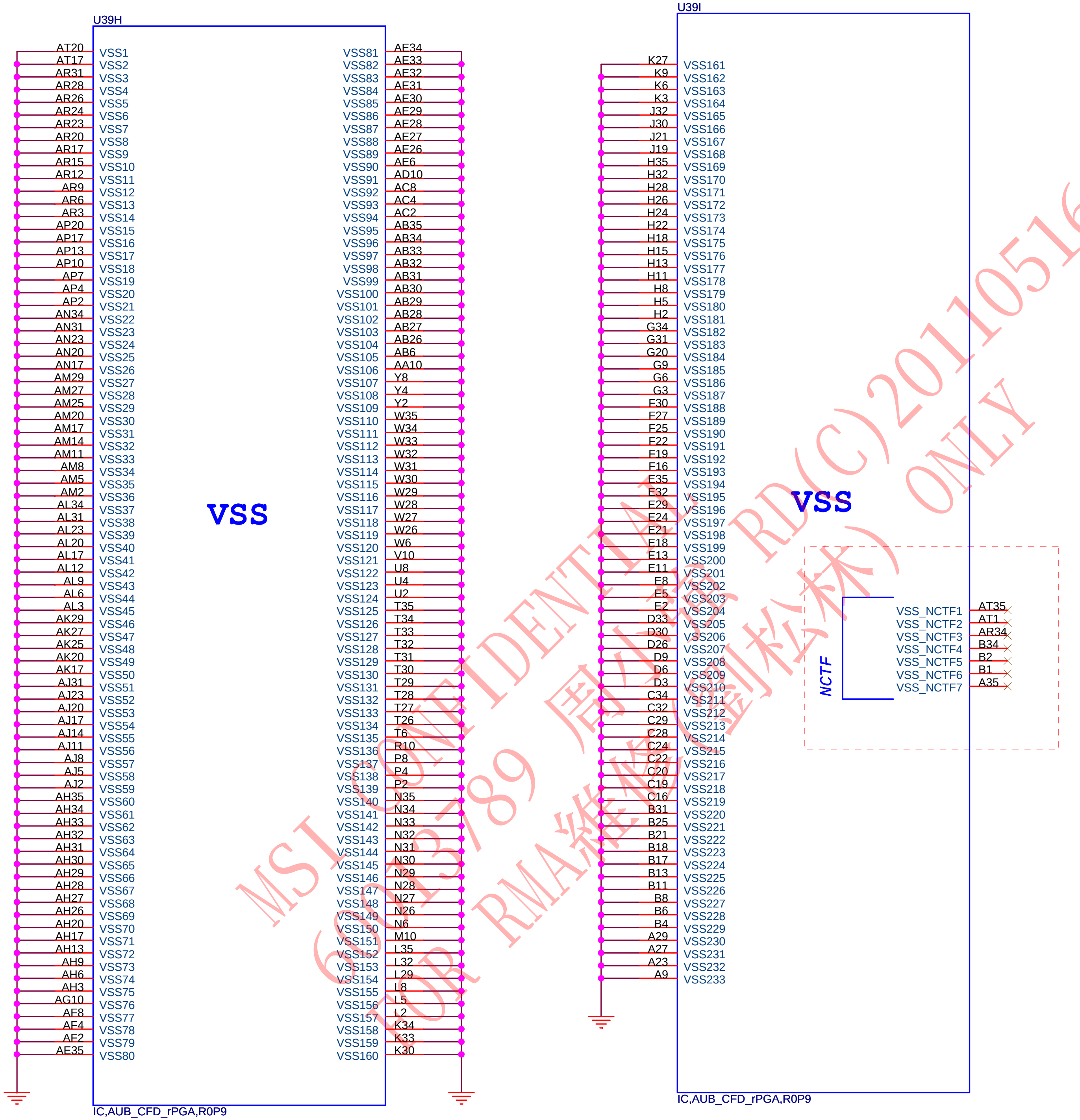
ARRANDALE PROCESSOR (GND)



U39H
VSS
AT20 VSS1
AT17 VSS2
AR31 VSS3
AR28 VSS4
AR26 VSS5
AR24 VSS6
AR23 VSS7
AR20 VSS8
AR17 VSS9
AR15 VSS10
AR12 VSS11
AR9 VSS12
AR6 VSS13
AR3 VSS14
AP20 VSS15
AP17 VSS16
AP13 VSS17
AP10 VSS18
AP7 VSS19
AP4 VSS20
AP2 VSS21
AN34 VSS22
AN31 VSS23
AN23 VSS24
AN20 VSS25
AN17 VSS26
AM29 VSS27
AM27 VSS28
AM25 VSS29
AM20 VSS30
AM17 VSS31
AM14 VSS32
AM11 VSS33
AM8 VSS34
AM5 VSS35
AM2 VSS36
AL34 VSS37
AL31 VSS38
AL23 VSS39
AL20 VSS40
AL17 VSS41
AL12 VSS42
AL9 VSS43
AL6 VSS44
AL3 VSS45
AK29 VSS46
AK27 VSS47
AK25 VSS48
AK20 VSS49
AK17 VSS50
AJ31 VSS51
AJ23 VSS52
AJ20 VSS53
AJ17 VSS54
AJ14 VSS55
AJ11 VSS56
AJ8 VSS57
AJ5 VSS58
AJ2 VSS59
AH35 VSS60
AH34 VSS61
AH33 VSS62
AH32 VSS63
AH31 VSS64
AH30 VSS65
AH29 VSS66
AH28 VSS67
AH27 VSS68
AH26 VSS69
AH20 VSS70
AH17 VSS71
AH13 VSS72
AH9 VSS73
AH6 VSS74
AH3 VSS75
AG10 VSS76
AF8 VSS77
AF4 VSS78
AF2 VSS79
AE35 VSS80
VSS81 AE34
VSS82 AE33
VSS83 AE32
VSS84 AE31
VSS85 AE30
VSS86 AE29
VSS87 AE28
VSS88 AE27
VSS89 AE26
VSS90 AE6
VSS91 AD10
VSS92 AC8
VSS93 AC4
VSS94 AC2
VSS95 AB35
VSS96 AB34
VSS97 AB33
VSS98 AB32
VSS99 AB31
VSS100 AB30
VSS101 AB29
VSS102 AB28
VSS103 AB27
VSS104 AB26
VSS105 AB6
VSS106 AA10
VSS107 Y8
VSS108 Y4
VSS109 Y2
VSS110 W35
VSS111 W34
VSS112 W33
VSS113 W32
VSS114 W31
VSS115 W30
VSS116 W29
VSS117 W28
VSS118 W27
VSS119 W26
VSS120 W6
VSS121 V10
VSS122 U8
VSS123 U4
VSS124 U2
VSS125 T35
VSS126 T34
VSS127 T33
VSS128 T32
VSS129 T31
VSS130 T30
VSS131 T29
VSS132 T28
VSS133 T27
VSS134 T26
VSS135 T6
VSS136 R10
VSS137 P8
VSS138 P4
VSS139 P2
VSS140 N35
VSS141 N34
VSS142 N33
VSS143 N32
VSS144 N31
VSS145 N30
VSS146 N29
VSS147 N28
VSS148 N27
VSS149 N26
VSS150 N6
VSS151 M10
VSS152 L35
VSS153 L32
VSS154 L29
VSS155 L8
VSS156 L5
VSS157 L2
VSS158 K34
VSS159 K33
VSS160 K30
IC,AUB_CFD_rPGA,R0P9
U39I
VSS
K27 VSS161
K9 VSS162
K6 VSS163
K3 VSS164
J32 VSS165
J30 VSS166
J21 VSS167
J19 VSS168
H35 VSS169
H32 VSS170
H28 VSS171
H26 VSS172
H24 VSS173
H22 VSS174
H18 VSS175
H15 VSS176
H13 VSS177
H11 VSS178
H8 VSS179
H5 VSS180
H2 VSS181
G34 VSS182
G31 VSS183
G20 VSS184
G9 VSS185
G6 VSS186
G3 VSS187
F30 VSS188
F27 VSS189
F25 VSS190
F22 VSS191
F19 VSS192
F16 VSS193
E35 VSS194
E32 VSS195
E29 VSS196
E24 VSS197
E21 VSS198
E18 VSS199
E13 VSS200
E11 VSS201
E8 VSS202
E5 VSS203
E2 VSS204
D33 VSS205
D30 VSS206
D26 VSS207
D9 VSS208
D6 VSS209
D3 VSS210
C34 VSS211
C32 VSS212
C29 VSS213
C28 VSS214
C24 VSS215
C22 VSS216
C20 VSS217
C19 VSS218
C16 VSS219
B31 VSS220
B25 VSS221
B21 VSS222
B18 VSS223
B17 VSS224
B13 VSS225
B11 VSS226
B8 VSS227
B6 VSS228
B4 VSS229
A29 VSS230
A27 VSS231
A23 VSS232
A9 VSS233
NCTF
VSS_NCTF1 AT35
VSS_NCTF2 AT1
VSS_NCTF3 AR34
VSS_NCTF4 B34
VSS_NCTF5 B2
VSS_NCTF6 B1
VSS_NCTF7 A35
IC,AUB_CFD_rPGA,R0P9

MICRO-STAR INT'L CO.,LTD.			
Title: PROCESSOR GND			
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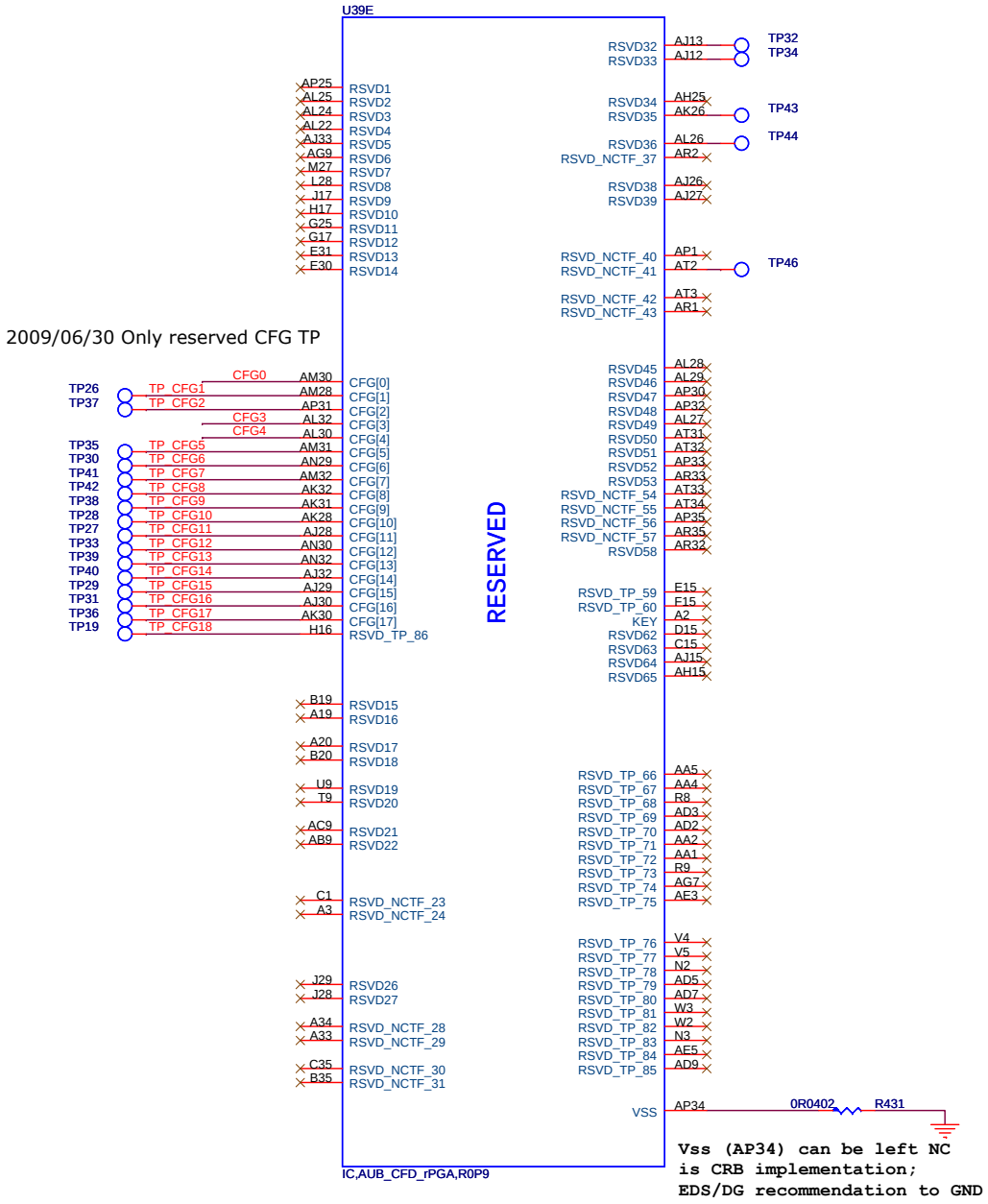
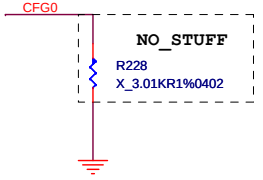
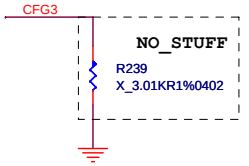
ARRANDALE PROCESSOR (RESERVED)



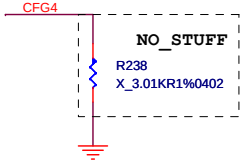
PCI-Express Configuration Select	
CFG0	1:Single PEG 0:Bifurcation enabled



CFG3 - PCI-Express Static Lane Reversal	
CFG3	1 :Normal Operation 0 :Lane Numbers Reversed 15 -> 0, 14 -> 1, ...



CFG4 - Display Port Presence	
CFG4	1:Disabled; No Physical Display Port attached to Embedded Display Port 0:Enabled; An external Display Port device is connected to the Embedded Display Port



Layout Note:
Location of all CFG strap resistors needs to be close to trace to minimize stub

MICRO-STAR INT'L CO.,LTD.

Title: PROCESSOR RESERVED

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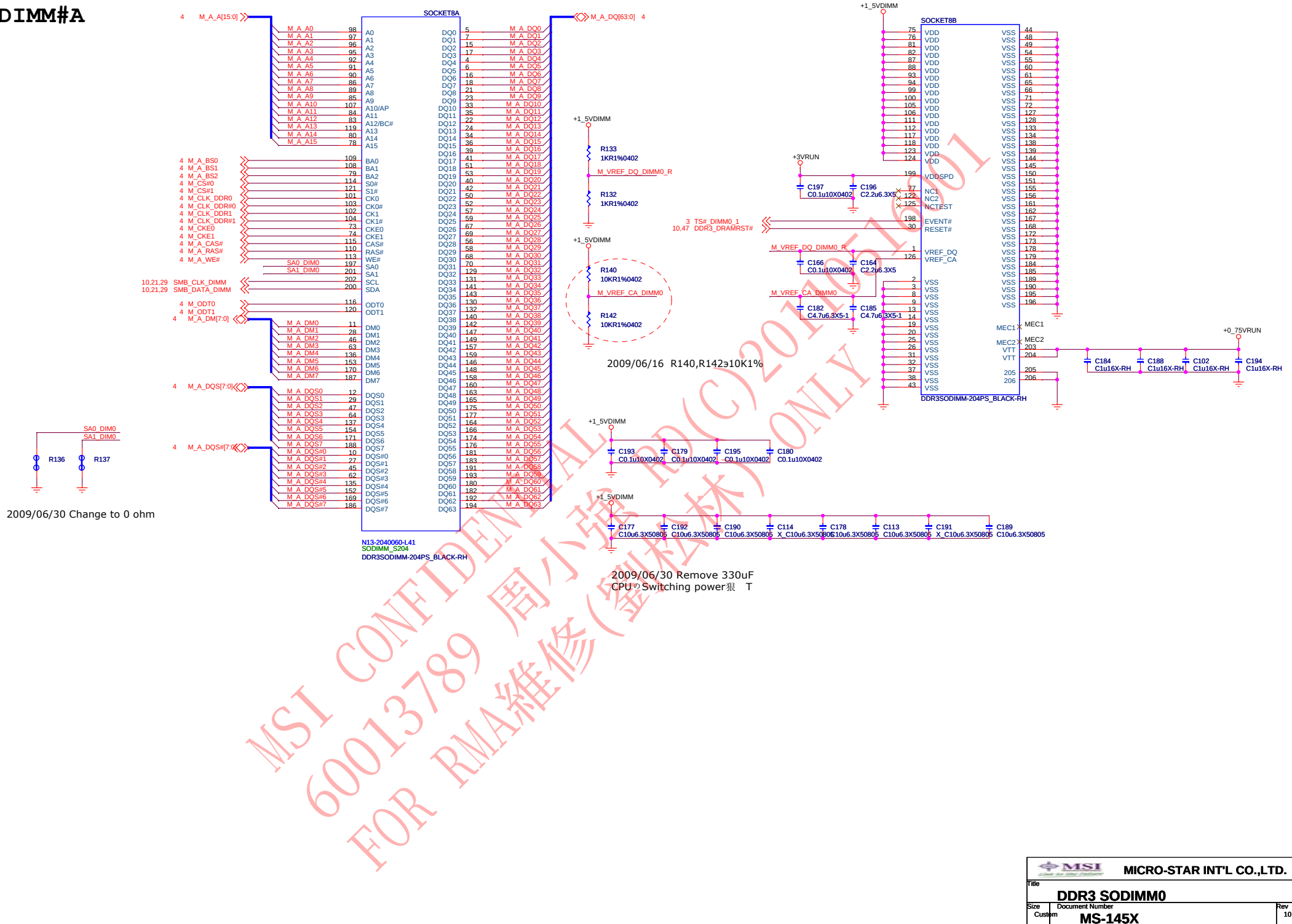
SODIMM#A



MICRO-STAR INT'L CO.,LTD.

Title: DDR3 SODIMM0

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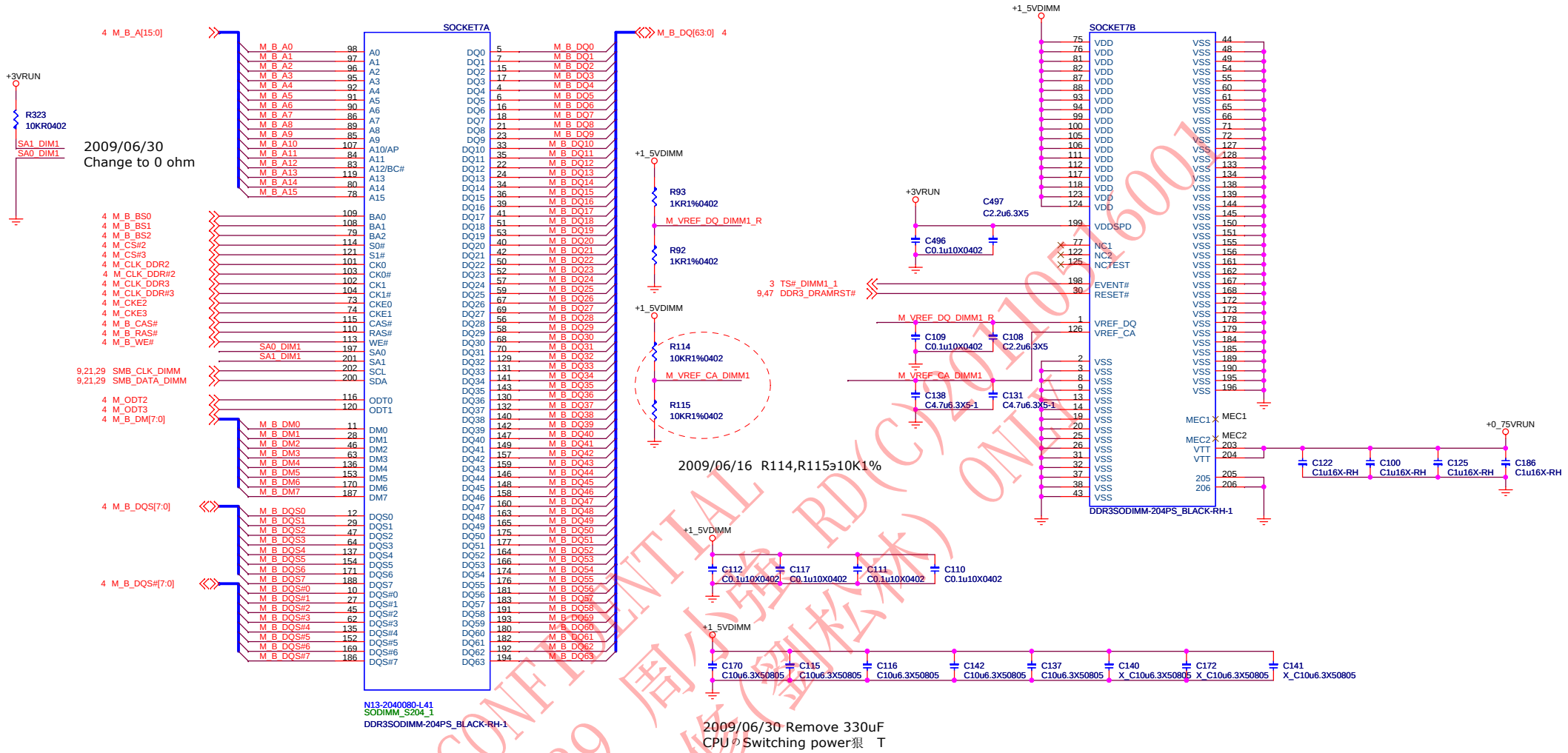
SODIMM#B



MSI	MICRO-STAR INT'L CO.,LTD.		
Title	DDR3 SODIMM1		
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2009/06/30 綽　CPU(TX)

U40A

PCI EXPRESS INTERFACE

PEG_TXP0	C555	C0.1u10X0402	GFX_RXP0	AE30	PCIE_RX0P	PCIE_TX0P	AH30	GFX_TXP0	C260	C0.1u10X0402	PEG_RXP0
PEG_TXN0	C557	C0.1u10X0402	GFX_RXN0	AE31	PCIE_RX0N	PCIE_TX0N	AG31	GFX_TXN0	C264	C0.1u10X0402	PEG_RXN0
PEG_TXP1	C559	C0.1u10X0402	GFX_RXP1	AE29	PCIE_RX1P	PCIE_TX1P	AG29	GFX_TXP1	C267	C0.1u10X0402	PEG_RXP1
PEG_TXN1	C561	C0.1u10X0402	GFX_RXN1	AD28	PCIE_RX1N	PCIE_TX1N	AF28	GFX_TXN1	C263	C0.1u10X0402	PEG_RXN1
PEG_TXP2	C563	C0.1u10X0402	GFX_RXP2	AD30	PCIE_RX2P	PCIE_TX2P	AE27	GFX_TXP2	C272	C0.1u10X0402	PEG_RXP2
PEG_TXN2	C564	C0.1u10X0402	GFX_RXN2	AC31	PCIE_RX2N	PCIE_TX2N	AF26	GFX_TXN2	C268	C0.1u10X0402	PEG_RXN2
PEG_TXP3	C565	C0.1u10X0402	GFX_RXP3	AC29	PCIE_RX3P	PCIE_TX3P	AD27	GFX_TXP3	C271	C0.1u10X0402	PEG_RXP3
PEG_TXN3	C566	C0.1u10X0402	GFX_RXN3	AB28	PCIE_RX3N	PCIE_TX3N	AD26	GFX_TXN3	C276	C0.1u10X0402	PEG_RXN3
PEG_TXP4	C567	C0.1u10X0402	GFX_RXP4	AB30	PCIE_RX4P	PCIE_TX4P	AC25	GFX_TXP4	C287	C0.1u10X0402	PEG_RXP4
PEG_TXN4	C570	C0.1u10X0402	GFX_RXN4	AA31	PCIE_RX4N	PCIE_TX4N	AB25	GFX_TXN4	C283	C0.1u10X0402	PEG_RXN4
PEG_TXP5	C572	C0.1u10X0402	GFX_RXP5	AA29	PCIE_RX5P	PCIE_TX5P	Y23	GFX_TXP5	C286	C0.1u10X0402	PEG_RXP5
PEG_TXN5	C573	C0.1u10X0402	GFX_RXN5	Y28	PCIE_RX5N	PCIE_TX5N	Y24	GFX_TXN5	C291	C0.1u10X0402	PEG_RXN5
PEG_TXP6	C574	C0.1u10X0402	GFX_RXP6	Y30	PCIE_RX6P	PCIE_TX6P	AB27	GFX_TXP6	C295	C0.1u10X0402	PEG_RXP6
PEG_TXN6	C575	C0.1u10X0402	GFX_RXN6	W31	PCIE_RX6N	PCIE_TX6N	AB26	GFX_TXN6	C299	C0.1u10X0402	PEG_RXN6
PEG_TXP7	C576	C0.1u10X0402	GFX_RXP7	W29	PCIE_RX7P	PCIE_TX7P	Y27	GFX_TXP7	C298	C0.1u10X0402	PEG_RXP7
PEG_TXN7	C586	C0.1u10X0402	GFX_RXN7	V28	PCIE_RX7N	PCIE_TX7N	Y26	GFX_TXN7	C302	C0.1u10X0402	PEG_RXN7
PEG_TXP8	C587	C0.1u10X0402	GFX_RXP8	V30	PCIE_RX8P	PCIE_TX8P	W24	GFX_TXP8	C304	C0.1u10X0402	PEG_RXP8
PEG_TXN8	C588	C0.1u10X0402	GFX_RXN8	U31	PCIE_RX8N	PCIE_TX8N	W23	GFX_TXN8	C313	C0.1u10X0402	PEG_RXN8
PEG_TXP9	C596	C0.1u10X0402	GFX_RXP9	U29	PCIE_RX9P	PCIE_TX9P	V27	GFX_TXP9	C307	C0.1u10X0402	PEG_RXP9
PEG_TXN9	C595	C0.1u10X0402	GFX_RXN9	T28	PCIE_RX9N	PCIE_TX9N	U26	GFX_TXN9	C314	C0.1u10X0402	PEG_RXN9
PEG_TXP10	C585	C0.1u10X0402	GFX_RXP10	T30	PCIE_RX10P	PCIE_TX10P	U24	GFX_TXP10	C318	C0.1u10X0402	PEG_RXP10
PEG_TXN10	C584	C0.1u10X0402	GFX_RXN10	R31	PCIE_RX10N	PCIE_TX10N	U23	GFX_TXN10	C323	C0.1u10X0402	PEG_RXN10
PEG_TXP11	C594	C0.1u10X0402	GFX_RXP11	R29	PCIE_RX11P	PCIE_TX11P	T26	GFX_TXP11	C322	C0.1u10X0402	PEG_RXP11
PEG_TXN11	C593	C0.1u10X0402	GFX_RXN11	P28	PCIE_RX11N	PCIE_TX11N	T27	GFX_TXN11	C325	C0.1u10X0402	PEG_RXN11
PEG_TXP12	C583	C0.1u10X0402	GFX_RXP12	P30	PCIE_RX12P	PCIE_TX12P	T24	GFX_TXP12	C329	C0.1u10X0402	PEG_RXP12
PEG_TXN12	C582	C0.1u10X0402	GFX_RXN12	N31	PCIE_RX12N	PCIE_TX12N	T23	GFX_TXN12	C333	C0.1u10X0402	PEG_RXN12
PEG_TXP13	C592	C0.1u10X0402	GFX_RXP13	N29	PCIE_RX13P	PCIE_TX13P	P27	GFX_TXP13	C332	C0.1u10X0402	PEG_RXP13
PEG_TXN13	C591	C0.1u10X0402	GFX_RXN13	M28	PCIE_RX13N	PCIE_TX13N	P26	GFX_TXN13	C336	C0.1u10X0402	PEG_RXN13
PEG_TXP14	C581	C0.1u10X0402	GFX_RXP14	M30	PCIE_RX14P	PCIE_TX14P	P24	GFX_TXP14	C343	C0.1u10X0402	PEG_RXP14
PEG_TXN14	C580	C0.1u10X0402	GFX_RXN14	L31	PCIE_RX14N	PCIE_TX14N	P23	GFX_TXN14	C347	C0.1u10X0402	PEG_RXN14
PEG_TXP15	C590	C0.1u10X0402	GFX_RXP15	L29	PCIE_RX15P	PCIE_TX15P	M27	GFX_TXP15	C348	C0.1u10X0402	PEG_RXP15
PEG_TXN15	C589	C0.1u10X0402	GFX_RXN15	K30	PCIE_RX15N	PCIE_TX15N	N26	GFX_TXN15	C345	C0.1u10X0402	PEG_RXN15

PEG_RXN[15:0] → PEG_RXN[15:0] 3
PEG_RXP[15:0] → PEG_RXP[15:0] 3
PEG_TXP[15:0] → PEG_TXP[15:0] 3
PEG_TXN[15:0] → PEG_TXN[15:0] 3

CLOCK

21 CLK_PEGA_MXM_P → AK30 PCIE_REFCLKP
21 CLK_PEGA_MXM_N → AK32 PCIE_REFCLKN

CALIBRATION

PCIE_CALRP Y22 VGA_PE_CP R203 1.27KR%
PCIE_CALRN AA22 VGA_PE_CN R205 2KR1%0402 +1_0VRUN_PARK

N10 PWRGOOD
24 PCIE_RST# → AL27 PERSTB

216-0774009-00-A11-RH

CheckResetSequence

For Park-S3: PWRGOOD pin must need to pull low

For M92-S2/S3: PWRGOOD pin should be NC

R215 10KR0402

	M92-S2	PARK-S3
R215	X	-

MICRO-STAR INT'L CO.,LTD.

Title: M92/Pak-Sx (PCIE_Interface)

Size: Custom | Document Number: MS-145X | Rev: 10

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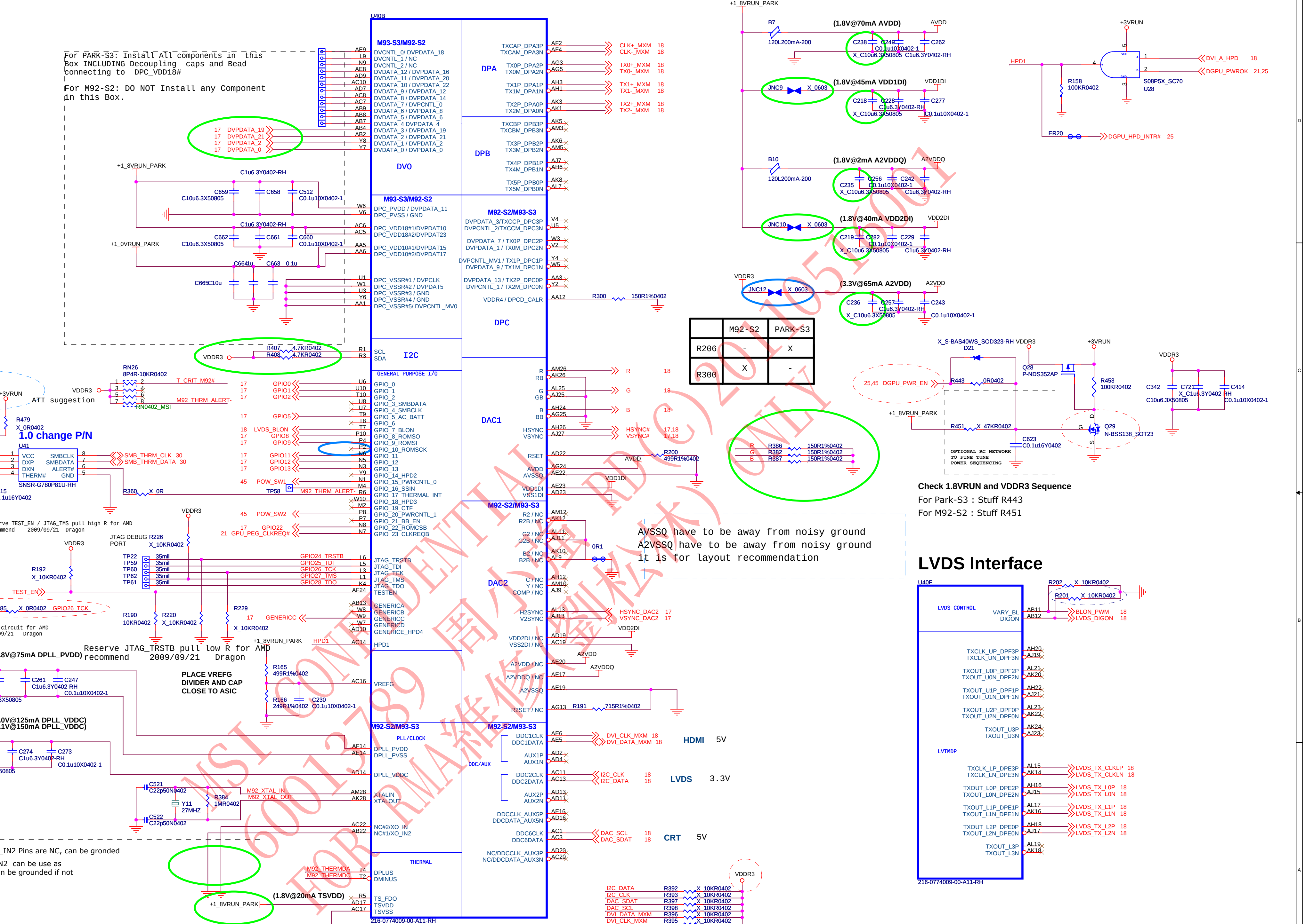
	M92-S2	PARK-S3
R210	X	-
R195	X	-
R208	X	-
C659	X	-
C658	X	-
C512	X	-
C662	X	-
C661	X	-
C660	X	-
R197	X	-
R356	X	-
C665	X	-
C664	X	-
C663	X	-
R406	X	-
R404	X	-
R402	X	-



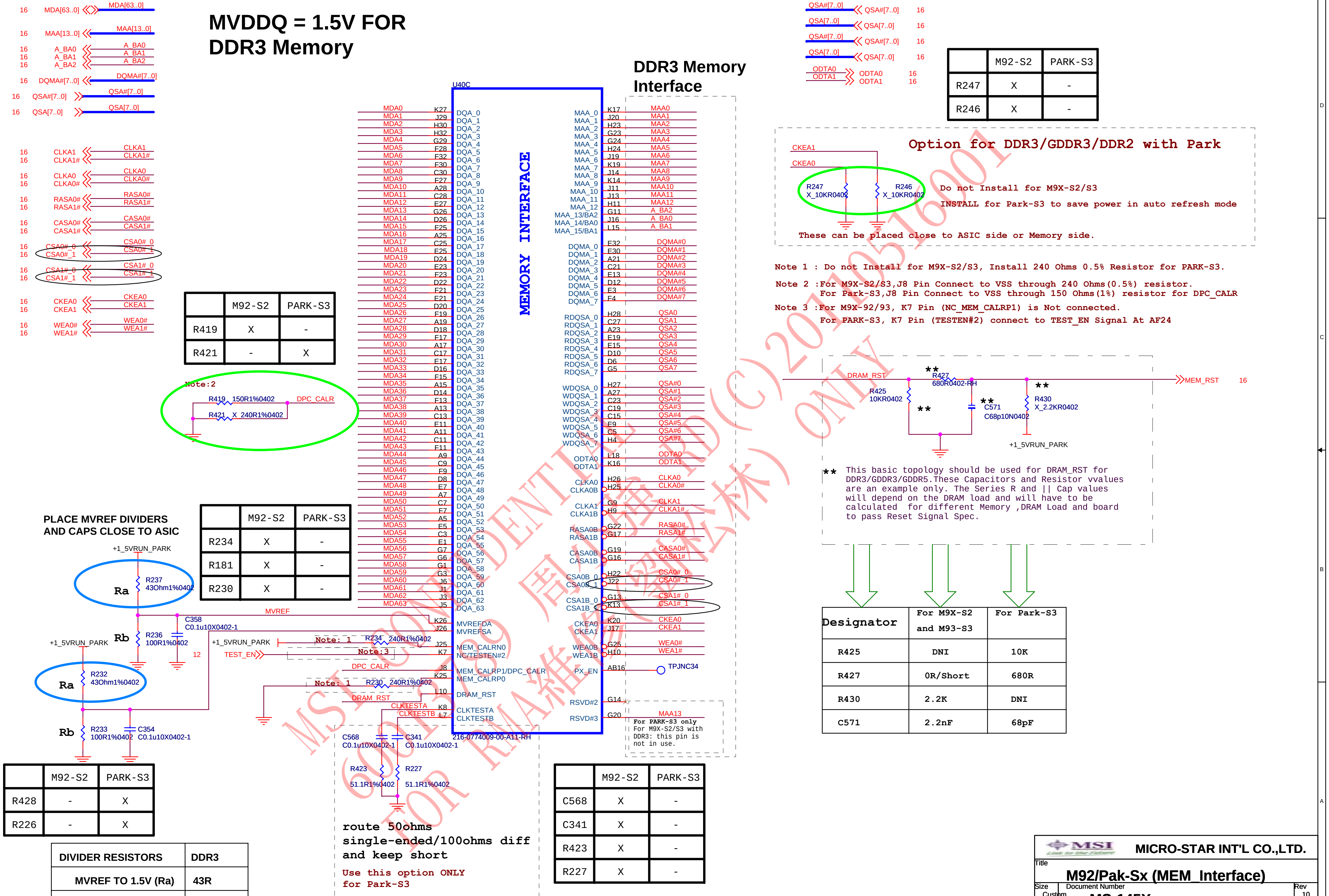
For PARK-S3: Install All components in this Box INCLUDING Decoupling caps and Bead connecting to DPC_VDD18#
For M92-S2: DO NOT Install any Component in this Box.
U40B
DVO
DPA
DPB
DPC
DAC1
DAC2
I2C
ATI suggestion
1.0 change P/N
Sequence
Reserve TEST_EN / JTAG_TMS pull high R for AMD recommend 2009/09/21 Dragon
Reserve GPIO26_TCK circuit for AMD recommend 2009/09/21 Dragon
Reserve JTAG_TRSTB pull low R for AMD recommend 2009/09/21 Dragon
PLACE VREFG DIVIDER AND CAP CLOSE TO ASIC
(1.8V@75mA DPLL_PVDD)
(1.0V@125mA DPLL_VDDC)
(1.1V@150mA DPLL_VDDC)
(1.8V@20mA TSVDD)
(1.8V@70mA AVDD)
(1.8V@45mA VDD1DI)
(1.8V@2mA A2VDDQ)
(1.8V@40mA VDD2DI)
(3.3V@65mA A2VDD)
AVSSQ have to be away from noisy ground
A2VSSQ have to be away from noisy ground
it is for layout recommendation
OPTIONAL RC NETWORK TO FINE TUNE POWER SEQUENCING
Check 1.8VRUN and VDDR3 Sequence
For Park-S3 : Stuff R443
For M92-S2 : Stuff R451
LVDS Interface
U40F
LVDS CONTROL
LVTMDP
HDMI 5V
LVDS 3.3V
CRT 5V
216-0774009-00-A11-RH

	M92-S2	PARK-S3
R206	-	X
R300	X	-

Note:1
For M9x-S2/S3 XO_IN and XO_IN2 Pins are NC, can be gronded
For Park-S3: XO_IN and XO_IN2 can be use as 3.3V CLK Input. These poins can be grounded if not in use.

MVDDQ = 1.5V FOR DDR3 Memory

DDR3 Memory Interface



PLACE MVREF DIVIDERS AND CAPS CLOSE TO ASIC

	M92-S2	PARK-S3
R419	X	-
R421	-	X

	M92-S2	PARK-S3
R234	X	-
R181	X	-
R230	X	-

	M92-S2	PARK-S3
R428	-	X
R226	-	X

DIVIDER RESISTORS	DDR3
MVREF TO 1.5V (Ra)	43R
MVREF TO GND (Rb)	100R

route 50ohms single-ended/100ohms diff and keep short

Use this option ONLY for Park-S3

	M92-S2	PARK-S3
C568	X	-
C341	X	-
R423	X	-
R227	X	-

	M92-S2	PARK-S3
R247	X	-
R246	X	-

Option for DDR3/GDDR3/DDR2 with Park

Do not Install for M9X-S2/S3

INSTALL for Park-S3 to save power in auto refresh mode

These can be placed close to ASIC side or Memory side.

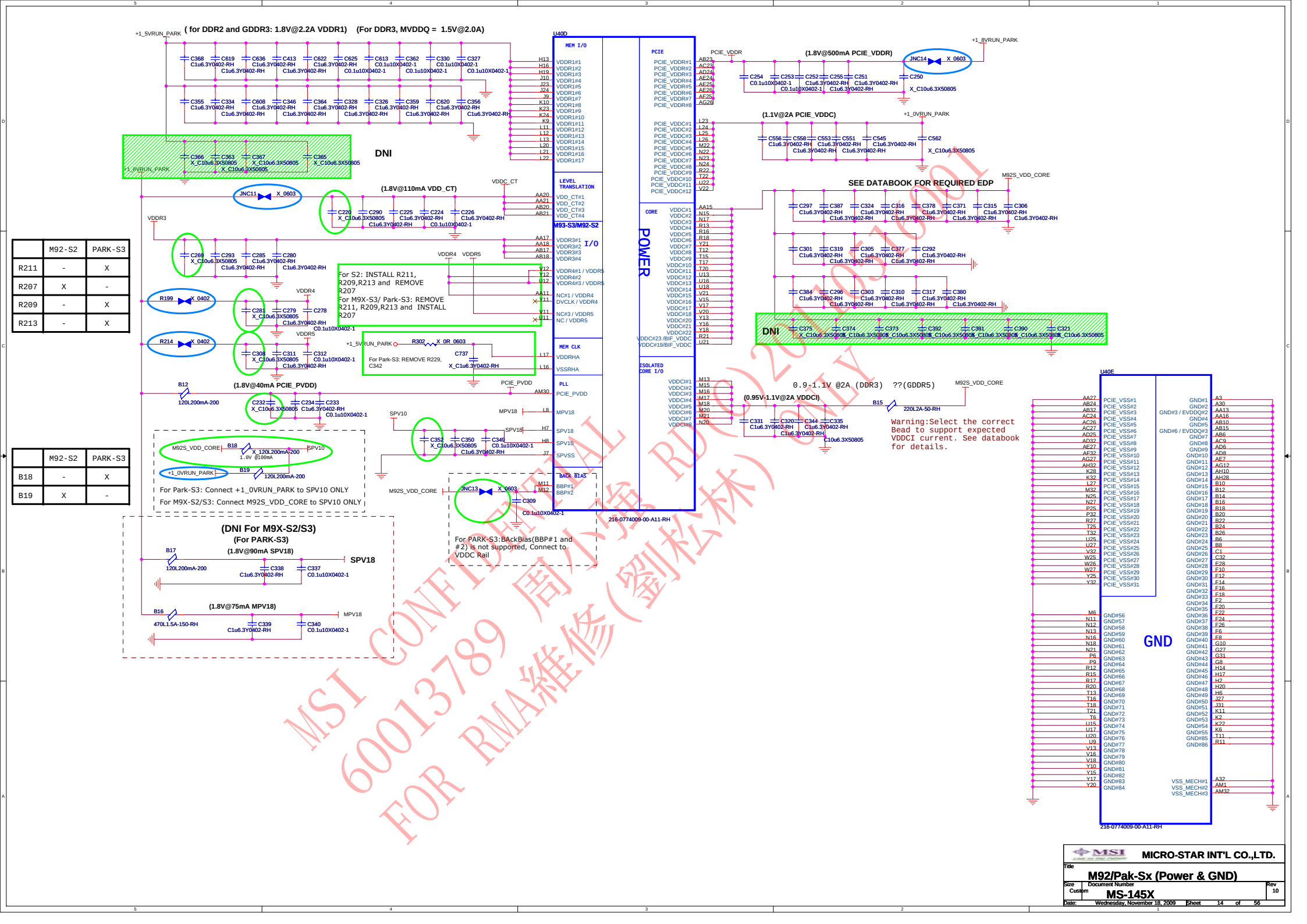
Note 1 : Do not Install for M9X-S2/S3, Install 240 Ohms 0.5% Resistor for PARK-S3.

Note 2 :For M9X-S2/S3,J8 Pin Connect to VSS through 240 Ohms(0.5%) resistor.
For Park-S3,J8 Pin Connect to VSS through 150 Ohms(1%) resistor for DPC_CALR

Note 3 :For M9X-92/93, K7 Pin (NC_MEM_CALRP1) is Not connected.
For PARK-S3, K7 Pin (TESTEN#2) connect to TEST_EN Signal At AF24

** This basic topology should be used for DRAM_RST for DDR3/GDDR3/GDDR5.These Capacitors and Resistor vvalues are an example only. The Series R and || Cap values will depend on the DRAM load and will have to be calculated for different Memory ,DRAM Load and board to pass Reset Signal Spec.

Designator	For M9X-S2 and M93-S3	For Park-S3
R425	DNI	10K
R427	0R/Short	680R
R430	2.2K	DNI
C571	2.2nF	68pF



	M92-S2	PARK-S3
R211	-	X
R207	X	-
R209	-	X
R213	-	X

	M92-S2	PARK-S3
B18	-	X
B19	X	-

MICRO-STAR INT'L CO.,LTD.

Title: M92/Pak-Sx (Power & GND)

Size: Custom | Document Number: MS-145X | Rev: 10

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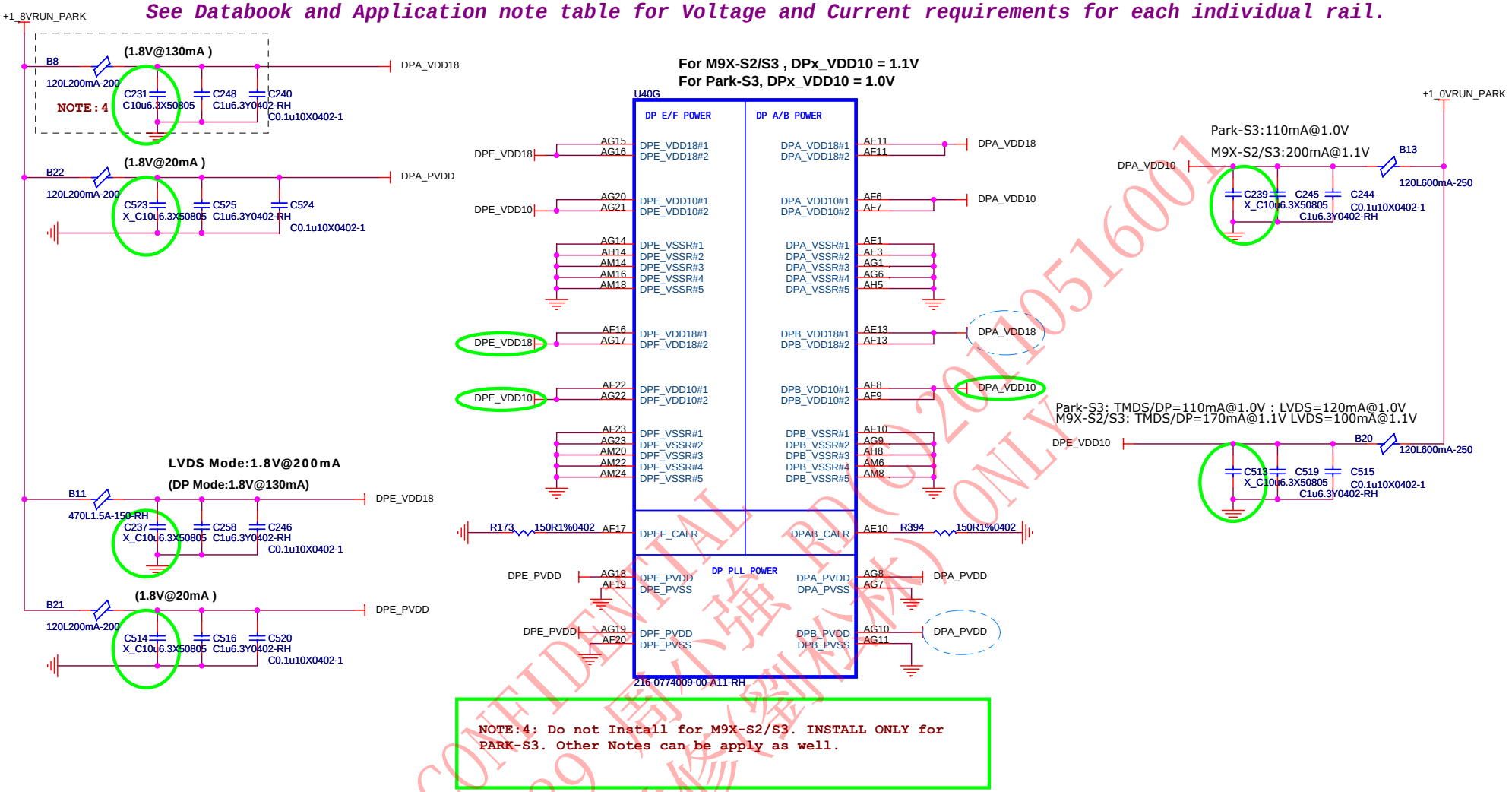
See Databook and Application note table for Voltage and Current requirements for each individual rail.



MSI	MICRO-STAR INT'L CO.,LTD.	
Title	M92/Pak-Sx (DP_Power)	
Size: Custom	Document Number: MS-145X	Rev: 10
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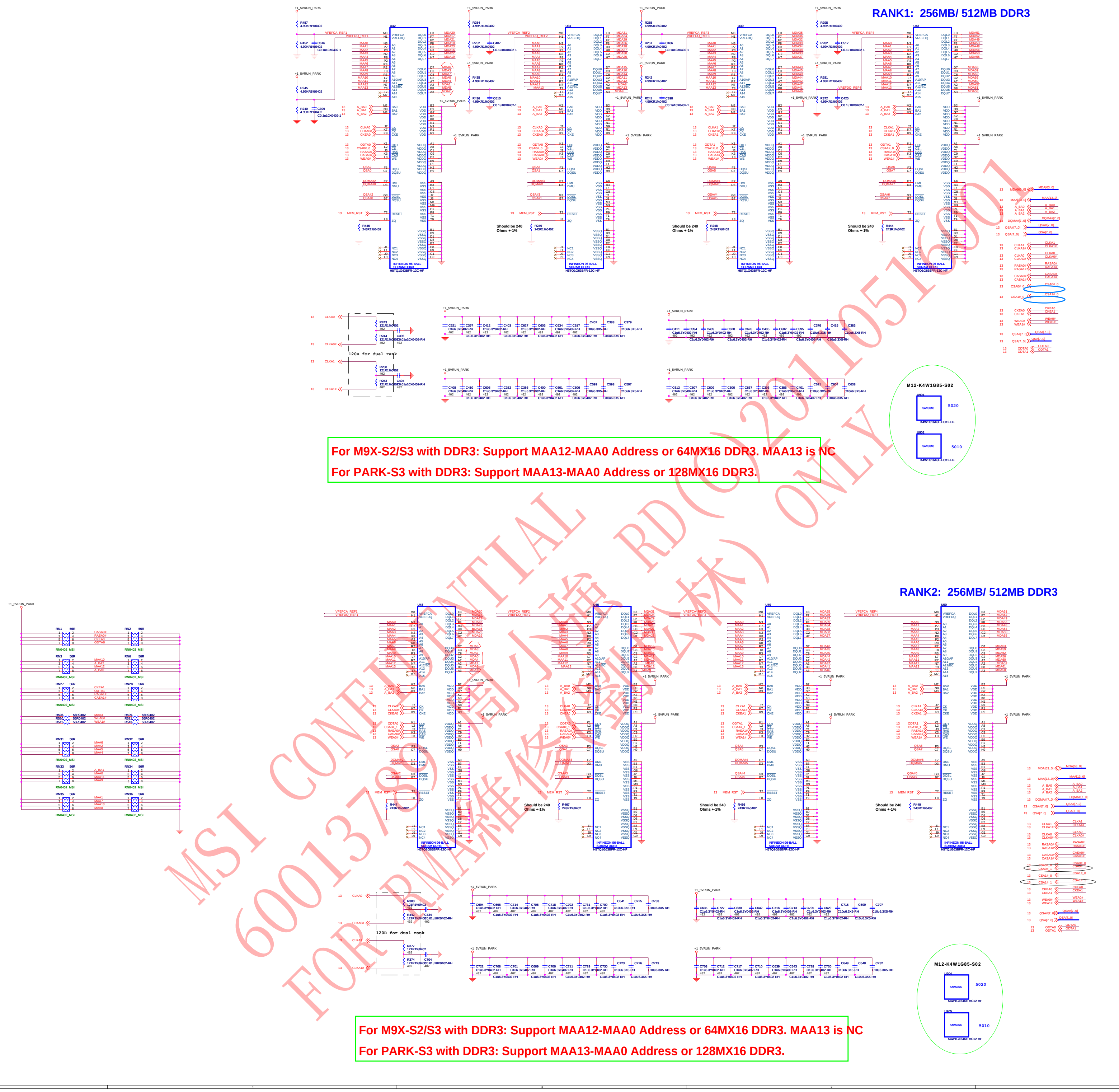

MICRO-STAR INT'L CO.,LTD.

DDR2 (64Mx16bit)

MS-145X

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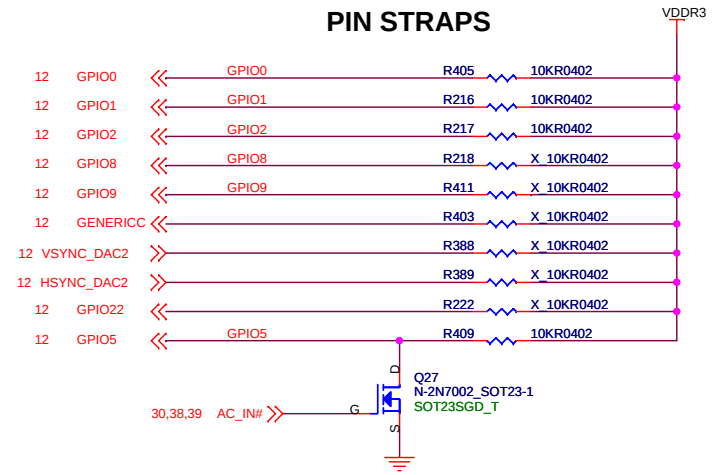
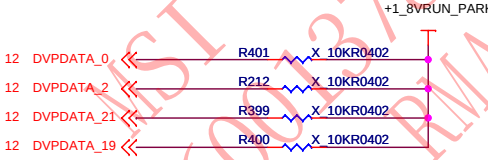
PIN STRAPS



GPIO_5_AC_BATT is an optional input which allows the system to request (AC) performance mode or battery mode operation.
AC (Performance mode) = H
Battery saving mode = L



CONFIGURATION STRAPS

PIN	M92-S2 LP	PARK LP S3	DESCRIPTION OF DEFAULT SETTINGS
GPIO0	1		GPIO=0 50% TX output swing GPIO=1 Full TX output swing
GPIO1	1		GPIO=0 TX de-emphasis disabled GPIO=1 TX de-emphasis enabled
GPIO2	1		GPIO=0 Advertises the PCIE device as 2.5 GT/S capable at power -on GPIO=1 Advertises the PCIE device as 5 GT/S capable at power -on
GPIO9	0		GPIO=0 VGA controller capacity enabled. GPIO=1 The device will not be recognized as the system's VGA controler.
VSYNC_DAC2	0		GPIO=0 Driver would ignore the value sampled on DVPDATA_20 during reset.
GPIO22	0		GPIO=0 not used external BIOS ROM GPIO=1 if used

PIN	M92-S2 LP	PARK LP S3	DESCRIPTION OF DEFAULT SETTINGS
GPIO 13 GPIO 12 GPIO 11			0 0 0=128 MB
	0 0 1		0 0 1=256 MB
			0 1 0=64 MB

PIN	M92-S2 LP	PARK LP S3	DESCRIPTION OF DEFAULT SETTINGS
VGA_HSYNC# VGA_VSYNC#			0 0=No audio function
			0 1=Audio for display port only
			1 0=Audio for display port and HDMI if dongle is detected
	1 1		1 1=Audio for both displayport and HDMI

DVPDATA19	DVPDATA21	DVPDATA2	DVPDATA0	MEM_TYPE
0	0	0	0	Hynix 64Mx16 DDR3 (M12-5TQ1G25-H23)
0	0	0	1	Samsung 64Mx16 DDR3 (M12-K4W1G85-S02)
0	0	1	0	
0	0	1	1	

MICRO-STAR INT'L CO.,LTD.

Title: M92/Pak-Sx (Straps & Thermal)

Size: B | Document Number: MS-145X | Rev: 10

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CRT Switch

2009/07/14 Change RGB SW

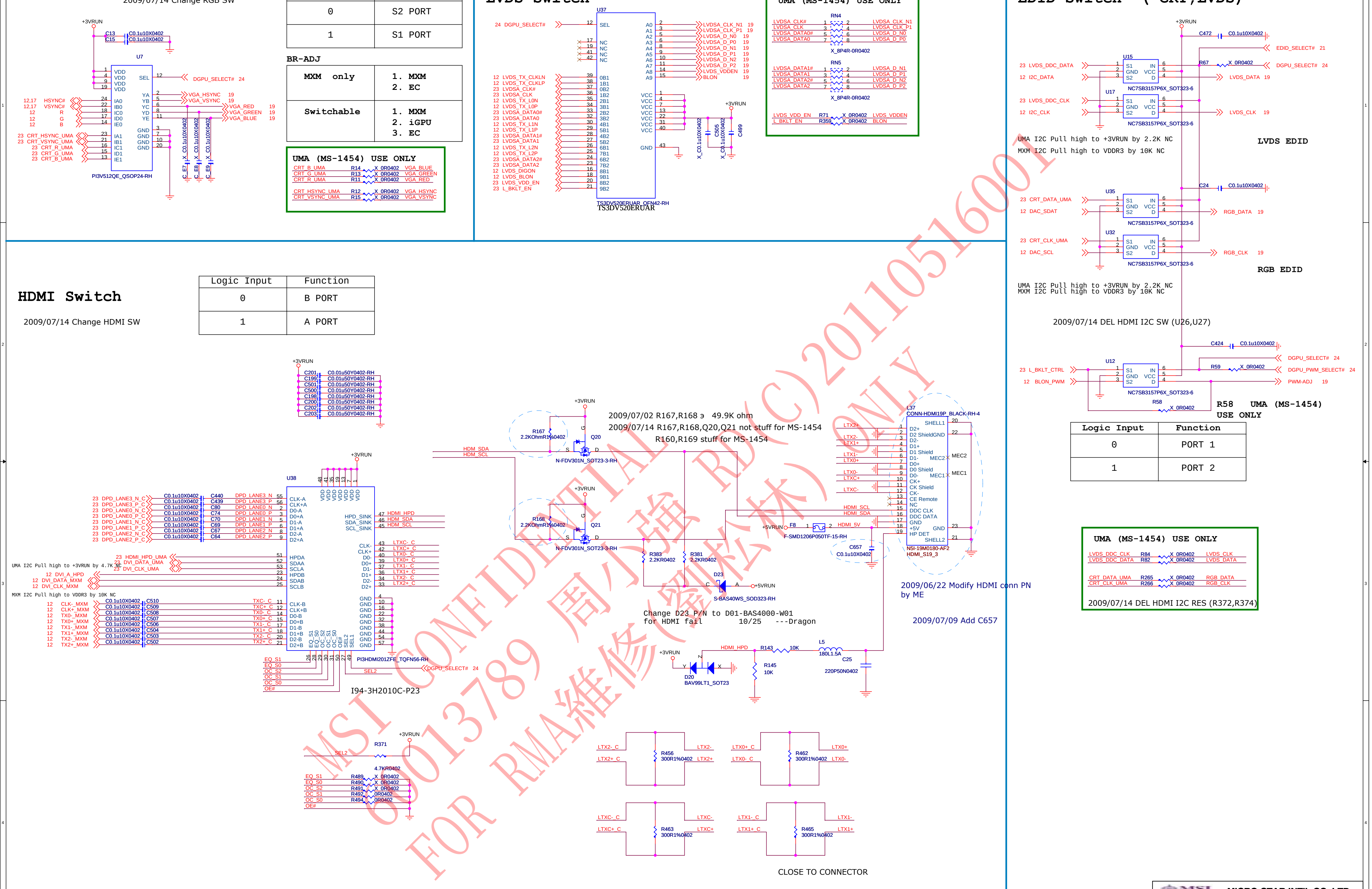
Logic Input	Function
0	S2 PORT
1	S1 PORT

BR-ADJ

MXM only	1. MXM 2. EC
Switchable	1. MXM 2. iGPU 3. EC

LVDS Switch

EDID Switch (CRT,LVDS)



UMA I2C Pull high to +3VRUN by 2.2K NC
MXM I2C Pull high to VDDR3 by 10K NC

UMA I2C Pull high to +3VRUN by 2.2K NC
MXM I2C Pull high to VDDR3 by 10K NC

2009/07/14 DEL HDMI I2C SW (U26,U27)

R58 UMA (MS-1454) USE ONLY

Logic Input	Function
0	PORT 1
1	PORT 2

UMA (MS-1454) USE ONLY

2009/07/14 DEL HDMI I2C RES (R372,R374)

HDMI Switch

2009/07/14 Change HDMI SW

Logic Input	Function
0	B PORT
1	A PORT

2009/07/02 R167,R168 ϶ 49.9K ohm
2009/07/14 R167,R168,Q20,Q21 not stuff for MS-1454
R160,R169 stuff for MS-1454

UMA I2C Pull high to +3VRUN by 4.7K NC
MXM I2C Pull high to VDDR3 by 10K NC

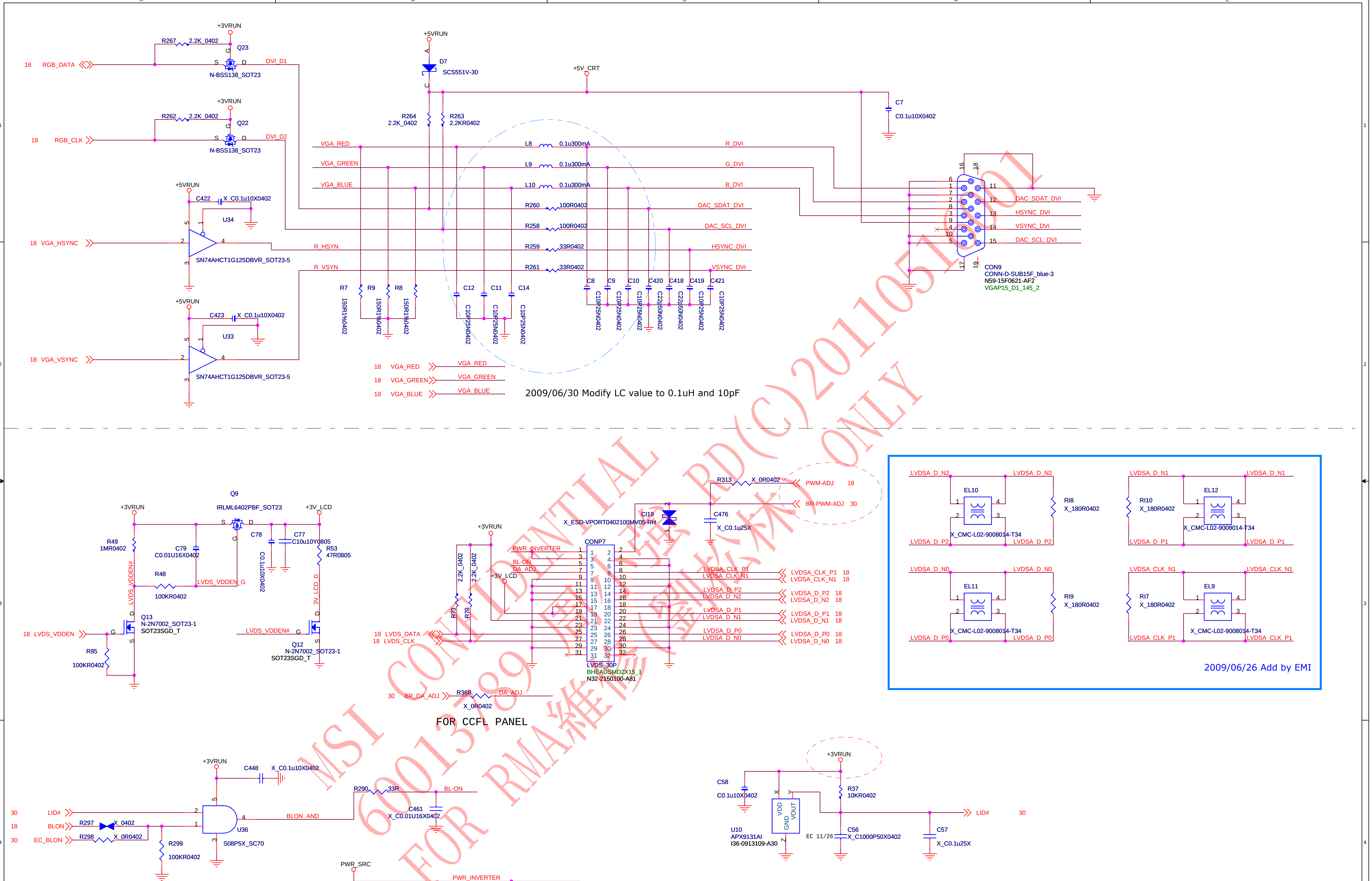
Change D23 P/N to D01-BAS4000-W01 for HDMI fail 10/25 ---Dragon

2009/06/22 Modify HDMI conn PN by ME

2009/07/09 Add C657

I94-3H2010C-P23

CLOSE TO CONNECTOR


+3VRUN
R267 2.2K_0402
Q23
N-BSS138_SOT23
18 RGB_DATA
DVI_D1
R262 2.2K_0402
Q22
N-BSS138_SOT23
18 RGB_CLK
DVI_D2
+5VRUN
D7
SCS551V-30
+5V_CRT
R264 2.2K_0402
R263 2.2KR0402
C7
C0.1u10X0402
VGA_RED
VGA_GREEN
VGA_BLUE
L8 0.1u300mA
L9 0.1u300mA
L10 0.1u300mA
R_DVI
G_DVI
B_DVI
R260 100R0402
R258 100R0402
R259 33R0402
R261 33R0402
DAC_SDAT_DVI
DAC_SCL_DVI
HSYNC_DVI
VSYNC_DVI
C422 X_C0.1u10X0402
U34
18 VGA_HSYNC
SN74AHCT1G125DBVR_SOT23-5
R_HSYN
R_VSYN
C423 X_C0.1u10X0402
U33
18 VGA_VSYNC
SN74AHCT1G125DBVR_SOT23-5
R7 R9 R8
150R1%0402
C12 C11 C14
C10P25N0402
C8 C9 C10 C420 C418 C419 C421
C22P25N0402
CON9
CONN-D-SUB15F_blue-3
N59-15F0621-AF2
VGAP15_D1_145_2
18 VGA_RED
18 VGA_GREEN
18 VGA_BLUE
2009/06/30 Modify LC value to 0.1uH and 10pF
Q9
IRLML6402PBF_SOT23
+3VRUN
+3V_LCD
R49 1MR0402
C79 C0.01U16X0402
C78 C0.1u10X0402
C77 C10u10Y0805
R53 47R0805
R48 100KR0402
LVDS_VDDEN#
LVDS_VDDEN_G
3V_LCD_D
Q13 N-2N7002_SOT23-1 SOT23SGD_T
18 LVDS_VDDEN
R85 100KR0402
Q12 N-2N7002_SOT23-1 SOT23SGD_T
R313 X_0R0402
PWM-ADJ 18
BR-PWM-ADJ 30
CI19
X_ESD-VPORT0402100MV05-RH
C476 X_C0.1u25X
PWR_INVERTER
BL-ON
DA_ADJ
R73 R79 2.2K_0402
18 LVDS_DATA
18 LVDS_CLK
CONP7
LVDS_30P
BHEADSMD2X15_1
N32-2150100-A81
LVDSA_CLK_P1 18
LVDSA_CLK_N1 18
LVDSA_D_P2 18
LVDSA_D_N2 18
LVDSA_D_P1 18
LVDSA_D_N1 18
LVDSA_D_P0 18
LVDSA_D_N0 18
30 BR_DA_ADJ
R368 X_0R0402
FOR CCFL PANEL
EL10 EL11 EL12 EL9
X_CMC-L02-9008014-T34
RI8 RI9 RI10 RI7 X_180R0402
2009/06/26 Add by EMI
C448 X_C0.1u10X0402
30 LID#
18 BLON
30 EC_BLON
R297 X_0402
R298 X_0R0402
R299 100KR0402
U36 S08P5X_SC70
BLON_AND
R290 33R
C461 X_C0.01U16X0402
PWR_SRC
C82 X_C0.1u25X
C76 C0.1u25X
C58 C0.1u10X0402
U10 APX9131AI I36-0913109-A30
R37 10KR0402
C56 X_C1000P50X0402
EC 11/26
C57 X_C0.1u25X
LID# 30

MICRO-STAR INT'L CO.,LTD.

Title: CRT & LVDS

Size	Document Number	Rev
Custom	MS-145X	10

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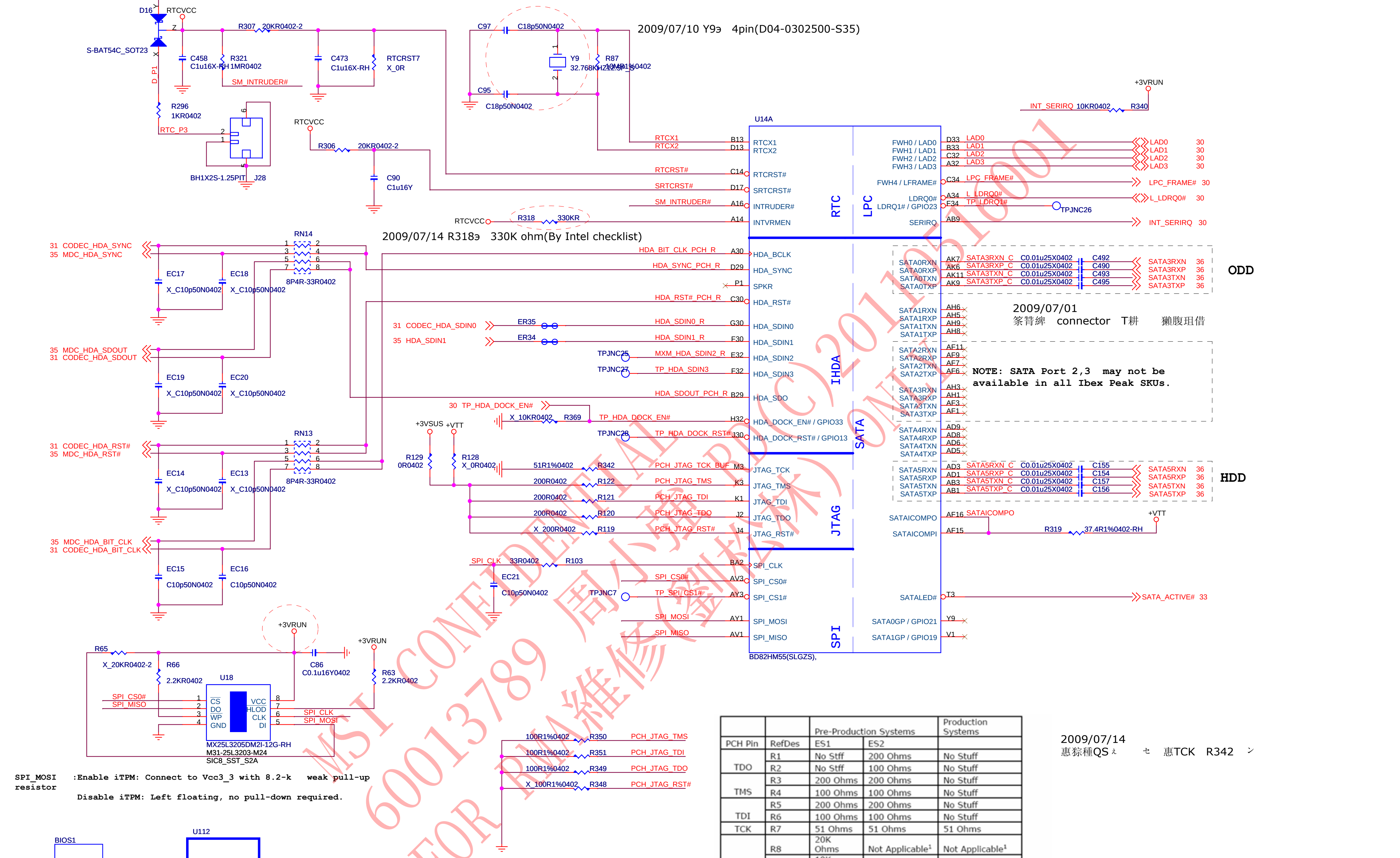
IBEXPEAK - M (HDA,JTAG,SATA)



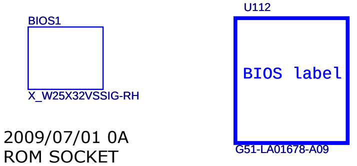
SPI_MOSI :Enable iTPM: Connect to Vcc3_3 with 8.2-k weak pull-up resistor

Disable iTPM: Left floating, no pull-down required.

PCH Pin	RefDes	Pre-Production Systems ES1	ES2	Production Systems
TDO	R1	No Stff	200 Ohms	No Stuff
	R2	No Stff	200 Ohms	No Stuff
TMS	R3	200 Ohms	200 Ohms	No Stuff
	R4	100 Ohms	100 Ohms	No Stuff
TDI	R5	200 Ohms	200 Ohms	No Stuff
	R6	100 Ohms	100 Ohms	No Stuff
TCK	R7	51 Ohms	51 Ohms	51 Ohms
TRST#	R8	20K Ohms	Not Applicable[1]	Not Applicable[1]
	R9	10K Ohms	Not Applicable[1]	Not Applicable[1]

Note 1: For IBX ES2 and later, TRST# does not require an external pull-up; but should be routed to a test point pad for PCH JTAG debug purposes

2009/07/14
惠痵種QSぇ セ 惠TCK R342 ン



2009/07/01 0A
ROM SOCKET

MICRO-STAR INT'L CO.,LTD.

Title: IBEXPEAK - M (HDA,JTAG,SATA)

Size: Custom | Document Number: MS-145X | Rev: 10

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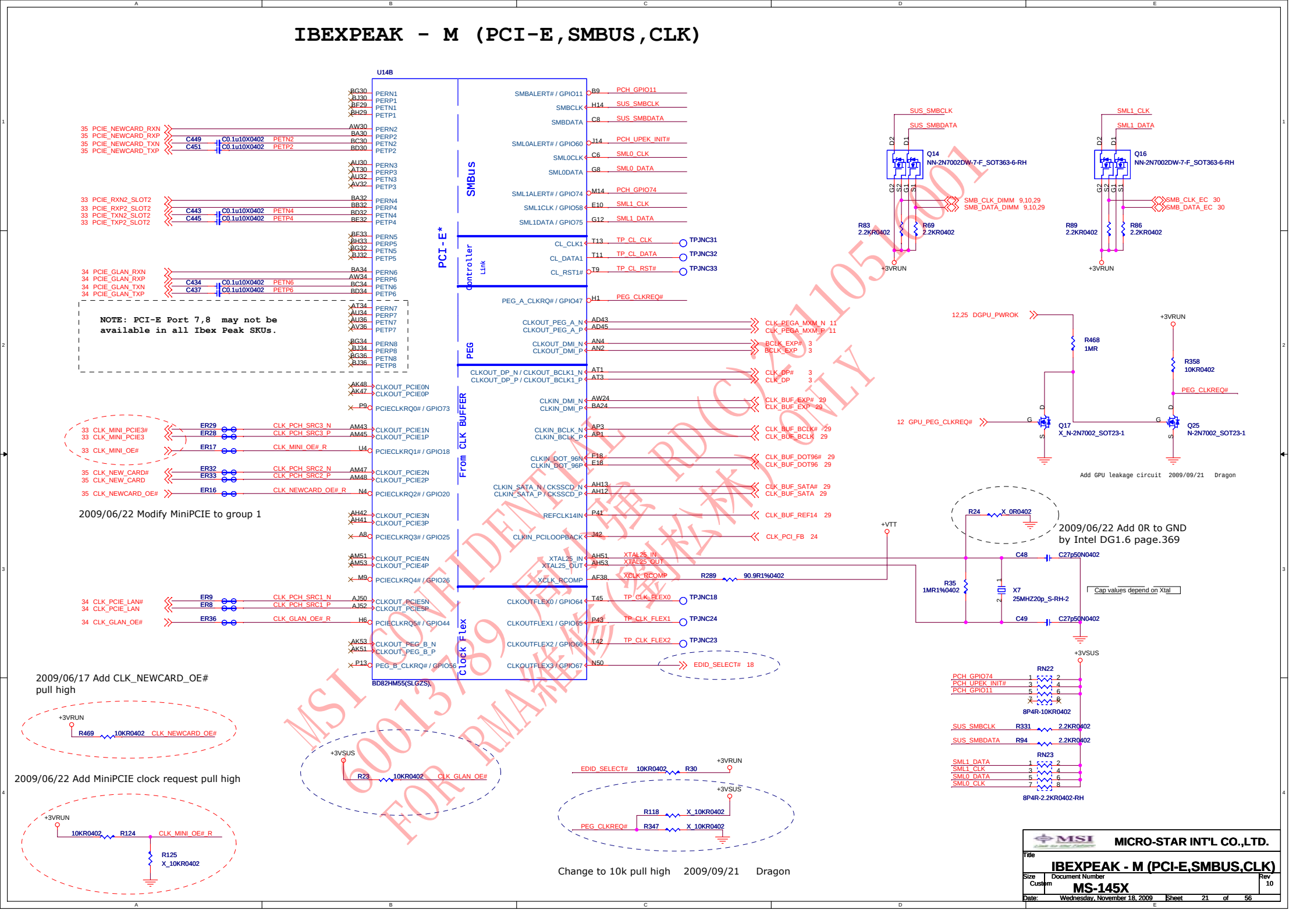
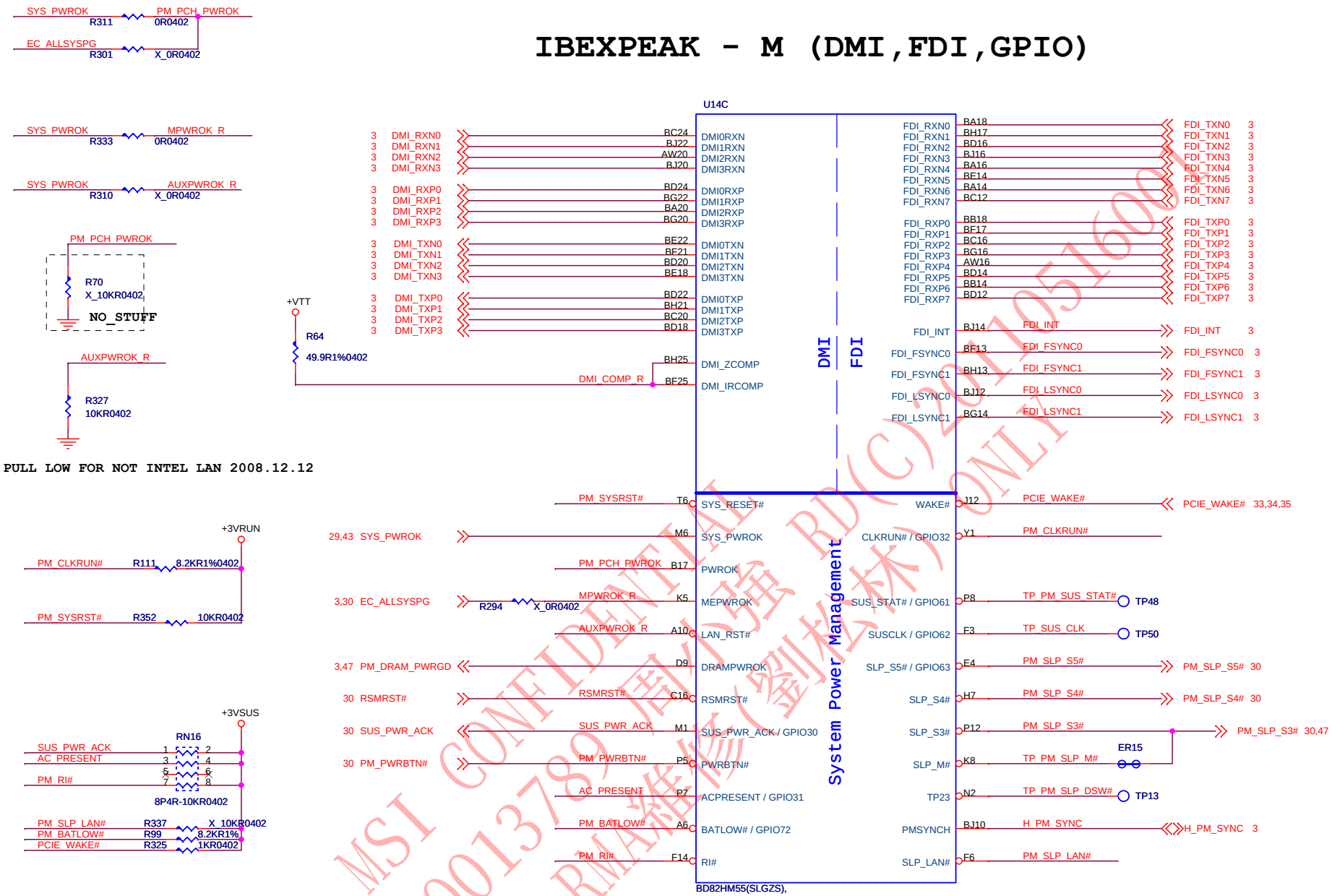
IBEXPEAK - M (PCI-E,SMBUS,CLK)



MICRO-STAR INT'L CO.,LTD.	
Title	IBEXPEAK - M (PCI-E,SMBUS,CLK)
Size: Custom	Document Number: MS-145X
Rev	10
Date: Wednesday, November 18, 2009	Sheet 21 of 56

IBEXPEAK - M (DMI,FDI,GPIO)



MICRO-STAR INT'L CO.,LTD.			
Title: IBEXPEAK - M (DMI,FDI,GPIO)			
Size: Custom	Document Number: MS-145X		Rev: 10
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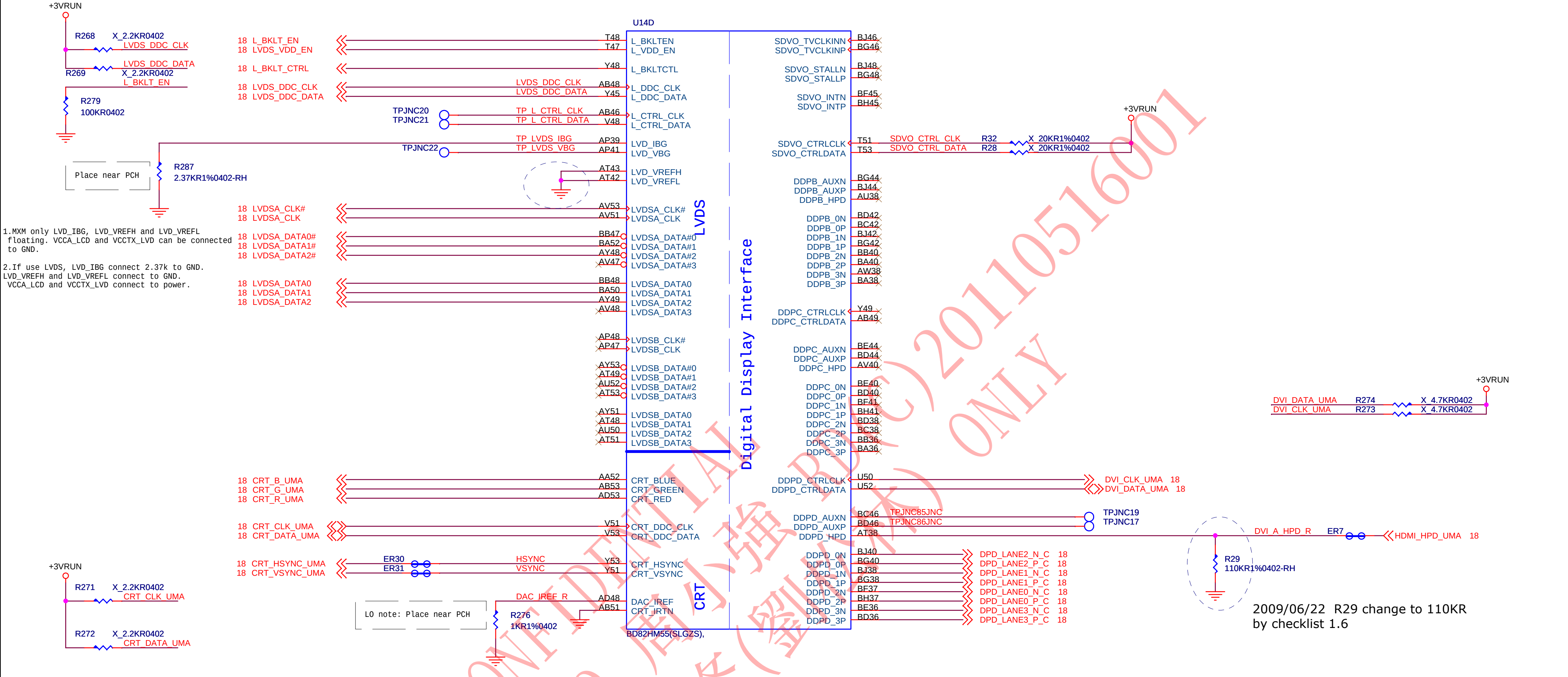
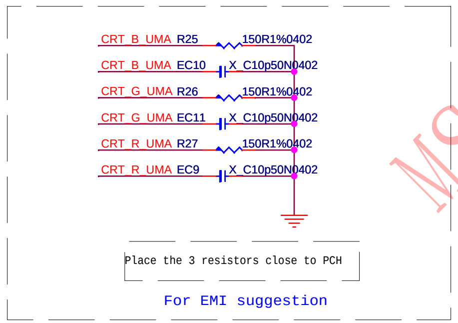
IBEXPEAK - M (LVDS,DDI)



+3VRUN
R268 X_2.2KR0402 LVDS_DDC_CLK
R269 X_2.2KR0402 LVDS_DDC_DATA
L_BKLT_EN
R279 100KR0402
Place near PCH
R287 2.37KR1%0402-RH
1.MXM only LVD_IBG, LVD_VREFH and LVD_VREFL floating. VCCA_LCD and VCCTX_LVD can be connected to GND.
2.If use LVDS, LVD_IBG connect 2.37k to GND. LVD_VREFH and LVD_VREFL connect to GND. VCCA_LCD and VCCTX_LVD connect to power.
U14D
18 L_BKLT_EN
18 LVDS_VDD_EN
18 L_BKLT_CTRL
18 LVDS_DDC_CLK
18 LVDS_DDC_DATA
TPJNC20
TPJNC21
TPJNC22
TP_L_CTRL_CLK
TP_L_CTRL_DATA
TP_LVDS_IBG
TP_LVDS_VBG
18 LVDSA_CLK#
18 LVDSA_CLK
18 LVDSA_DATA0#
18 LVDSA_DATA1#
18 LVDSA_DATA2#
18 LVDSA_DATA0
18 LVDSA_DATA1
18 LVDSA_DATA2
L_BKLTEN
L_VDD_EN
L_BKLTCTL
L_DDC_CLK
L_DDC_DATA
L_CTRL_CLK
L_CTRL_DATA
LVD_IBG
LVD_VBG
LVD_VREFH
LVD_VREFL
LVDSA_CLK#
LVDSA_CLK
LVDSA_DATA#0
LVDSA_DATA#1
LVDSA_DATA#2
LVDSA_DATA#3
LVDSA_DATA0
LVDSA_DATA1
LVDSA_DATA2
LVDSA_DATA3
LVDSB_CLK#
LVDSB_CLK
LVDSB_DATA#0
LVDSB_DATA#1
LVDSB_DATA#2
LVDSB_DATA#3
LVDSB_DATA0
LVDSB_DATA1
LVDSB_DATA2
LVDSB_DATA3
LVDS
Digital Display Interface
CRT
18 CRT_B_UMA
18 CRT_G_UMA
18 CRT_R_UMA
18 CRT_CLK_UMA
18 CRT_DATA_UMA
18 CRT_HSYNC_UMA
18 CRT_VSYNC_UMA
ER30
ER31
HSYNC
VSYNC
CRT_BLUE
CRT_GREEN
CRT_RED
CRT_DDC_CLK
CRT_DDC_DATA
CRT_HSYNC
CRT_VSYNC
DAC_IREF
CRT_IRTN
DAC_IREF_R
R276 1KR1%0402
LO note: Place near PCH
BD82HM55(SLGZS),
+3VRUN
R271 X_2.2KR0402 CRT_CLK_UMA
R272 X_2.2KR0402 CRT_DATA_UMA
SDVO_TVCLKINN
SDVO_TVCLKINP
SDVO_STALLN
SDVO_STALLP
SDVO_INTN
SDVO_INTP
SDVO_CTRLCLK
SDVO_CTRLDATA
SDVO_CTRL_CLK R32 X_20KR1%0402
SDVO_CTRL_DATA R28 X_20KR1%0402
DDPB_AUXN
DDPB_AUXP
DDPB_HPD
DDPB_0N
DDPB_0P
DDPB_1N
DDPB_1P
DDPB_2N
DDPB_2P
DDPB_3N
DDPB_3P
DDPC_CTRLCLK
DDPC_CTRLDATA
DDPC_AUXN
DDPC_AUXP
DDPC_HPD
DDPC_0N
DDPC_0P
DDPC_1N
DDPC_1P
DDPC_2N
DDPC_2P
DDPC_3N
DDPC_3P
DDPD_CTRLCLK
DDPD_CTRLDATA
DDPD_AUXN
DDPD_AUXP
DDPD_HPD
DDPD_0N
DDPD_0P
DDPD_1N
DDPD_1P
DDPD_2N
DDPD_2P
DDPD_3N
DDPD_3P
DVI_DATA_UMA R274 X_4.7KR0402
DVI_CLK_UMA R273 X_4.7KR0402
DVI_CLK_UMA 18
DVI_DATA_UMA 18
TPJNC85JNC TPJNC19
TPJNC86JNC TPJNC17
DVI_A_HPD_R ER7 HDMI_HPD_UMA 18
R29 110KR1%0402-RH
DPD_LANE2_N_C 18
DPD_LANE2_P_C 18
DPD_LANE1_N_C 18
DPD_LANE1_P_C 18
DPD_LANE0_N_C 18
DPD_LANE0_P_C 18
DPD_LANE3_N_C 18
DPD_LANE3_P_C 18
2009/06/22 R29 change to 110KR by checklist 1.6



DisplayPort	DVI/HDMI
DP_X_L0	TX_x_D2
DP_X_L0#	TX_x_D2#
DP_X_L1	TX_x_D1
DP_X_L1#	TX_x_D1#
DP_X_L2	TX_x_D0
DP_X_L2#	TX_x_D0#
DP_X_L3	TX_x_CLK
DP_X_L3#	TX_x_CLK#
DP_X_AUX	DDC_x_CLK
DP_X_AUX#	DDC_x_DATA

MICRO-STAR INT'L CO.,LTD.

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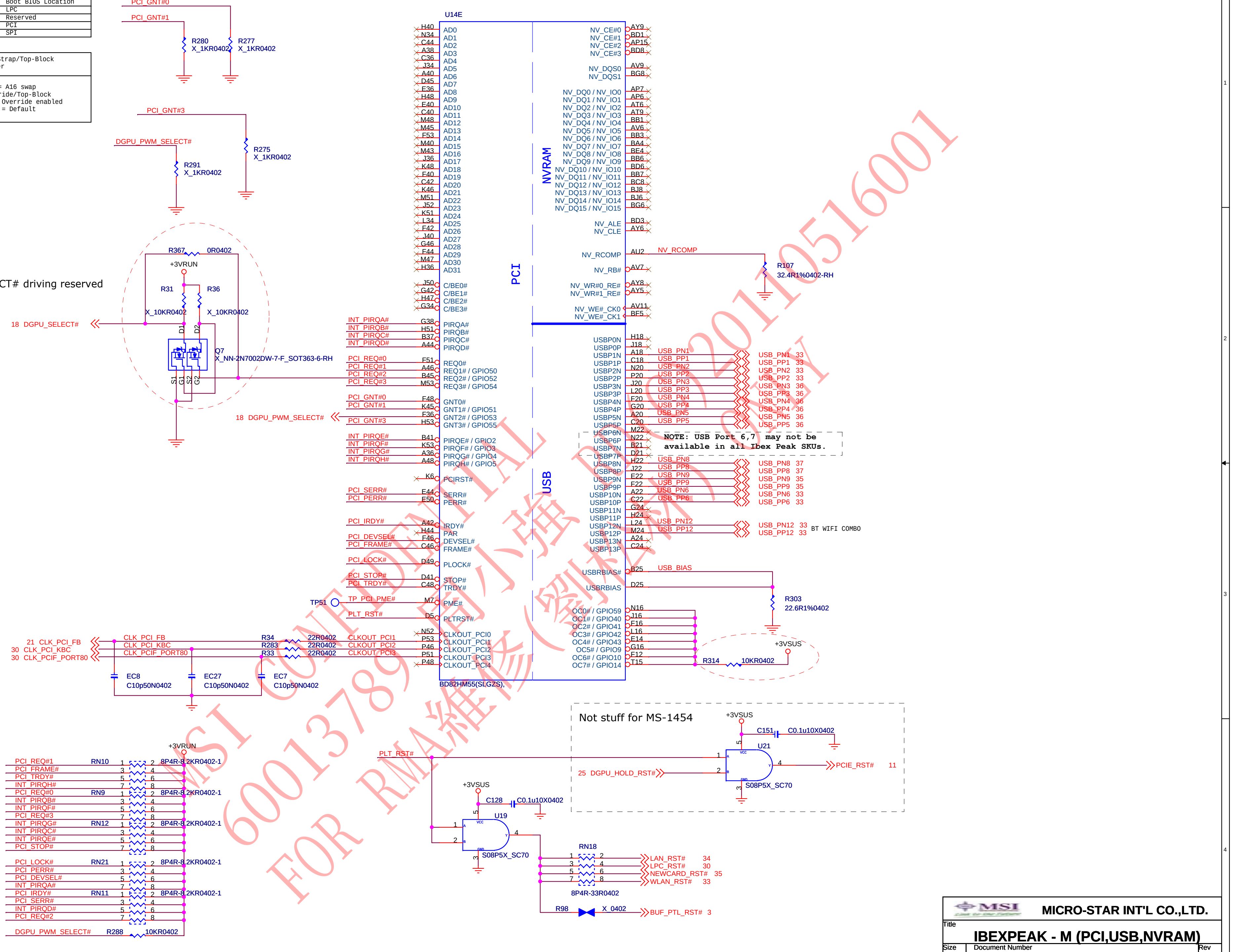
IBEXPEAK - M (PCI,USB,NVRAM)

Boot BIOS Strap		
PCI_GNT#0	PCI_GNT#1	Boot BIOS Location
0	0	LPC
0	1	Reserved
1	0	PCI
1	1	SPI

A16 swap override Strap/Top-Block Swap Override jumper	
PCI_GNT#3	Low = A16 swap override/Top-Block Swap Override enabled High = Default

2009/06/26 For DGPU_SELECT# driving reserved
(No need for MS-1454)
R367 not stuff for MS-1454



U14E
BD82HM55(SLGZS)
PCI
NVRAM
USB
NOTE: USB Port 6,7 may not be available in all Ibex Peak SKUs.
BT WIFI COMBO
Not stuff for MS-1454
R280 X_1KR0402
R277 X_1KR0402
R275 X_1KR0402
R291 X_1KR0402
R367 0R0402
R31 X_10KR0402
R36 X_10KR0402
Q7 X_NN-2N7002DW-7-F_SOT363-6-RH
18 DGPU_SELECT#
18 DGPU_PWM_SELECT#
R107 32.4R1%0402-RH
R303 22.6R1%0402
R314 10KR0402
EC8 C10p50N0402
EC27 C10p50N0402
EC7 C10p50N0402
21 CLK_PCI_FB
30 CLK_PCI_KBC
30 CLK_PCIF_PORT80
U19 S08P5X_SC70
U21 S08P5X_SC70
C128 C0.1u10X0402
C151 C0.1u10X0402
25 DGPU_HOLD_RST#
PCIE_RST# 11
RN18 8P4R-33R0402
LAN_RST# 34
LPC_RST# 30
NEWCARD_RST# 35
WLAN_RST# 33
R98 X_0402
BUF_PTL_RST# 3
RN10 8P4R-8.2KR0402-1
RN9 8P4R-8.2KR0402-1
RN12 8P4R-8.2KR0402-1
RN21 8P4R-8.2KR0402-1
RN11 8P4R-8.2KR0402-1
R288 10KR0402

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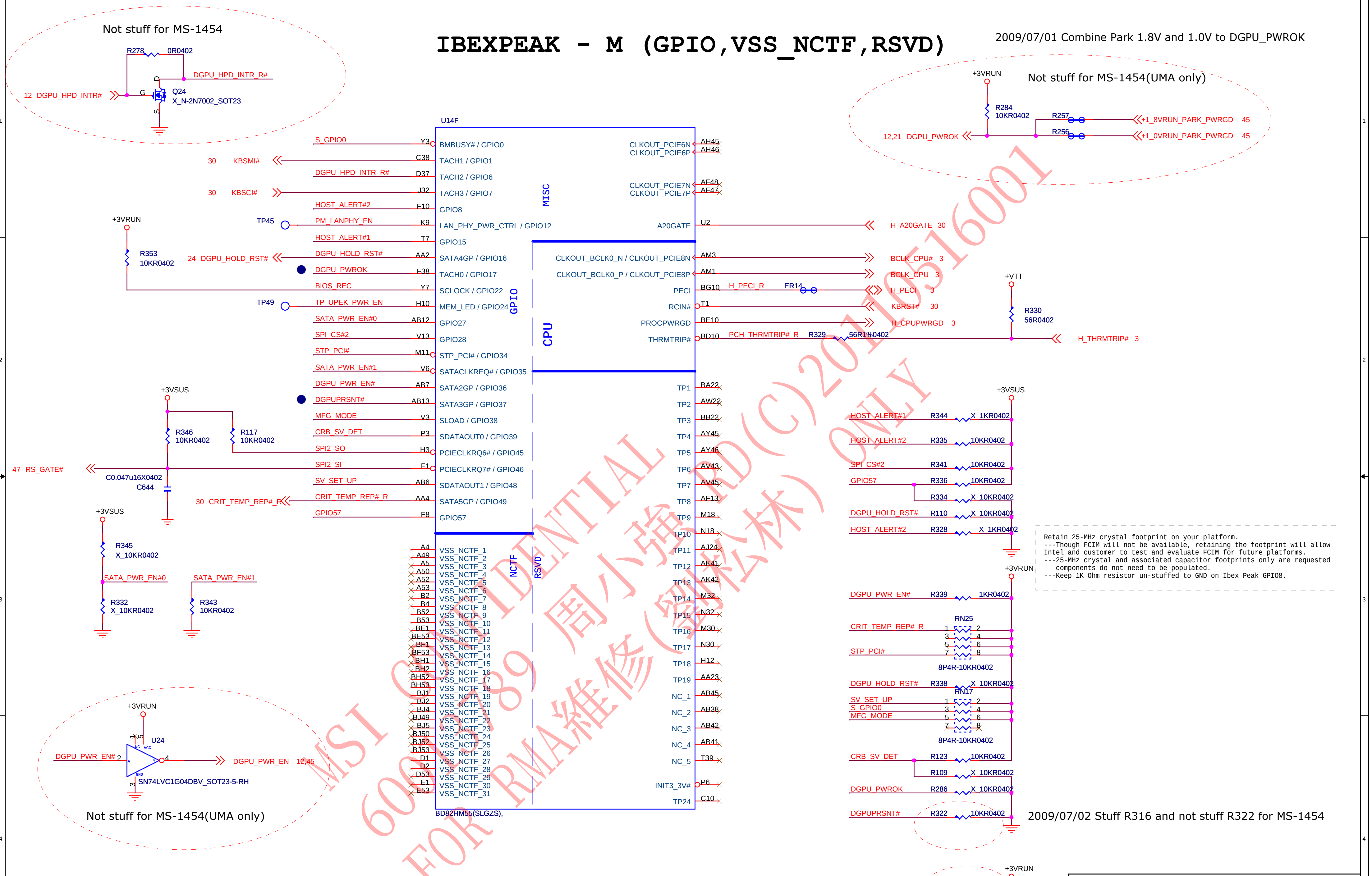
IBEXPEAK - M (GPIO,VSS_NCTF,RSVD)

2009/07/01 Combine Park 1.8V and 1.0V to DGPU_PWROK



Not stuff for MS-1454
R278 0R0402
DGPU_HPD_INTR_R#
12 DGPU_HPD_INTR#
Q24
X_N-2N7002_SOT23
Not stuff for MS-1454(UMA only)
+3VRUN
R284 10KR0402
R257
R256
+1_8VRUN_PARK_PWRGD 45
+1_0VRUN_PARK_PWRGD 45
12,21 DGPU_PWROK
U14F
S_GPIO0 Y3 BMBUSY# / GPIO0
30 KBSMI# C38 TACH1 / GPIO1
DGPU_HPD_INTR_R# D37 TACH2 / GPIO6
30 KBSCI# J32 TACH3 / GPIO7
HOST_ALERT#2 F10 GPIO8
TP45 PM_LANPHY_EN K9 LAN_PHY_PWR_CTRL / GPIO12
HOST_ALERT#1 T7 GPIO15
24 DGPU_HOLD_RST# AA2 SATA4GP / GPIO16
DGPU_PWROK F38 TACH0 / GPIO17
BIOS_REC Y7 SCLOCK / GPIO22
TP49 TP_UPEK_PWR_EN H10 MEM_LED / GPIO24
SATA_PWR_EN#0 AB12 GPIO27
SPI_CS#2 V13 GPIO28
STP_PCI# M11 STP_PCI# / GPIO34
SATA_PWR_EN#1 V6 SATACLKREQ# / GPIO35
DGPU_PWR_EN# AB7 SATA2GP / GPIO36
DGPUPRSNT# AB13 SATA3GP / GPIO37
MFG_MODE V3 SLOAD / GPIO38
CRB_SV_DET P3 SDATAOUT0 / GPIO39
SPI2_SO H3 PCIECLKRQ6# / GPIO45
47 RS_GATE# SPI2_SI F1 PCIECLKRQ7# / GPIO46
SV_SET_UP AB6 SDATAOUT1 / GPIO48
30 CRIT_TEMP_REP#_R AA4 SATA5GP / GPIO49
GPIO57 F8 GPIO57
MISC
GPIO
CPU
NCTF
RSVD
CLKOUT_PCIE6N AH45
CLKOUT_PCIE6P AH46
CLKOUT_PCIE7N AF48
CLKOUT_PCIE7P AF47
A20GATE U2 H_A20GATE 30
CLKOUT_BCLK0_N / CLKOUT_PCIE8N AM3 BCLK_CPU# 3
CLKOUT_BCLK0_P / CLKOUT_PCIE8P AM1 BCLK_CPU 3
PECI BG10 H_PECI_R ER14 H_PECI 3
RCIN# T1 KBRST# 30
PROCPWRGD BE10 H_CPUPWRGD 3
THRMTRIP# BD10 PCH_THRMTRIP#_R R329 56R1%0402 H_THRMTRIP# 3
+VTT
R330 56R0402
TP1 BA22
TP2 AW22
TP3 BB22
TP4 AY45
TP5 AY46
TP6 AV43
TP7 AV45
TP8 AF13
TP9 M18
TP10 N18
TP11 AJ24
TP12 AK41
TP13 AK42
TP14 M32
TP15 N32
TP16 M30
TP17 N30
TP18 H12
TP19 AA23
NC_1 AB45
NC_2 AB38
NC_3 AB42
NC_4 AB41
NC_5 T39
INIT3_3V# P6
TP24 C10
A4 VSS_NCTF_1
A49 VSS_NCTF_2
A5 VSS_NCTF_3
A50 VSS_NCTF_4
A52 VSS_NCTF_5
A53 VSS_NCTF_6
B2 VSS_NCTF_7
B4 VSS_NCTF_8
B52 VSS_NCTF_9
B53 VSS_NCTF_10
BE1 VSS_NCTF_11
BE53 VSS_NCTF_12
BF1 VSS_NCTF_13
BF53 VSS_NCTF_14
BH1 VSS_NCTF_15
BH2 VSS_NCTF_16
BH52 VSS_NCTF_17
BH53 VSS_NCTF_18
BJ1 VSS_NCTF_19
BJ2 VSS_NCTF_20
BJ4 VSS_NCTF_21
BJ49 VSS_NCTF_22
BJ5 VSS_NCTF_23
BJ50 VSS_NCTF_24
BJ52 VSS_NCTF_25
BJ53 VSS_NCTF_26
D1 VSS_NCTF_27
D2 VSS_NCTF_28
D53 VSS_NCTF_29
E1 VSS_NCTF_30
E53 VSS_NCTF_31
BD82HM55(SLGZS),
+3VRUN
R353 10KR0402
+3VSUS
R346 10KR0402
R117 10KR0402
C0.047u16X0402
C644
+3VSUS
R345 X_10KR0402
SATA_PWR_EN#0
SATA_PWR_EN#1
R332 X_10KR0402
R343 10KR0402
+3VRUN
U24
DGPU_PWR_EN# 2
4 DGPU_PWR_EN 12,45
SN74LVC1G04DBV_SOT23-5-RH
Not stuff for MS-1454(UMA only)
+3VSUS
HOST_ALERT#1 R344 X_1KR0402
HOST_ALERT#2 R335 10KR0402
SPI_CS#2 R341 10KR0402
GPIO57 R336 10KR0402
R334 X_10KR0402
DGPU_HOLD_RST# R110 X_10KR0402
HOST_ALERT#2 R328 X_1KR0402
+3VRUN
DGPU_PWR_EN# R339 1KR0402
RN25
CRIT_TEMP_REP#_R
STP_PCI#
8P4R-10KR0402
DGPU_HOLD_RST# R338 X_10KR0402
RN17
SV_SET_UP
S_GPIO0
MFG_MODE
8P4R-10KR0402
CRB_SV_DET R123 10KR0402
R109 X_10KR0402
DGPU_PWROK R286 X_10KR0402
DGPUPRSNT# R322 10KR0402
+3VRUN
DGPUPRSNT# R316 X_10KR0402
VDDR3
DGPU_HPD_INTR# R357 X_10KR0402

Retain 25-MHz crystal footprint on your platform.
---Though FCIM will not be available, retaining the footprint will allow Intel and customer to test and evaluate FCIM for future platforms.
---25-MHz crystal and associated capacitor footprints only are requested components do not need to be populated.
---Keep 1K Ohm resistor un-stuffed to GND on Ibex Peak GPIO8.

2009/07/02 Stuff R316 and not stuff R322 for MS-1454

MICRO-STAR INT'L CO.,LTD.

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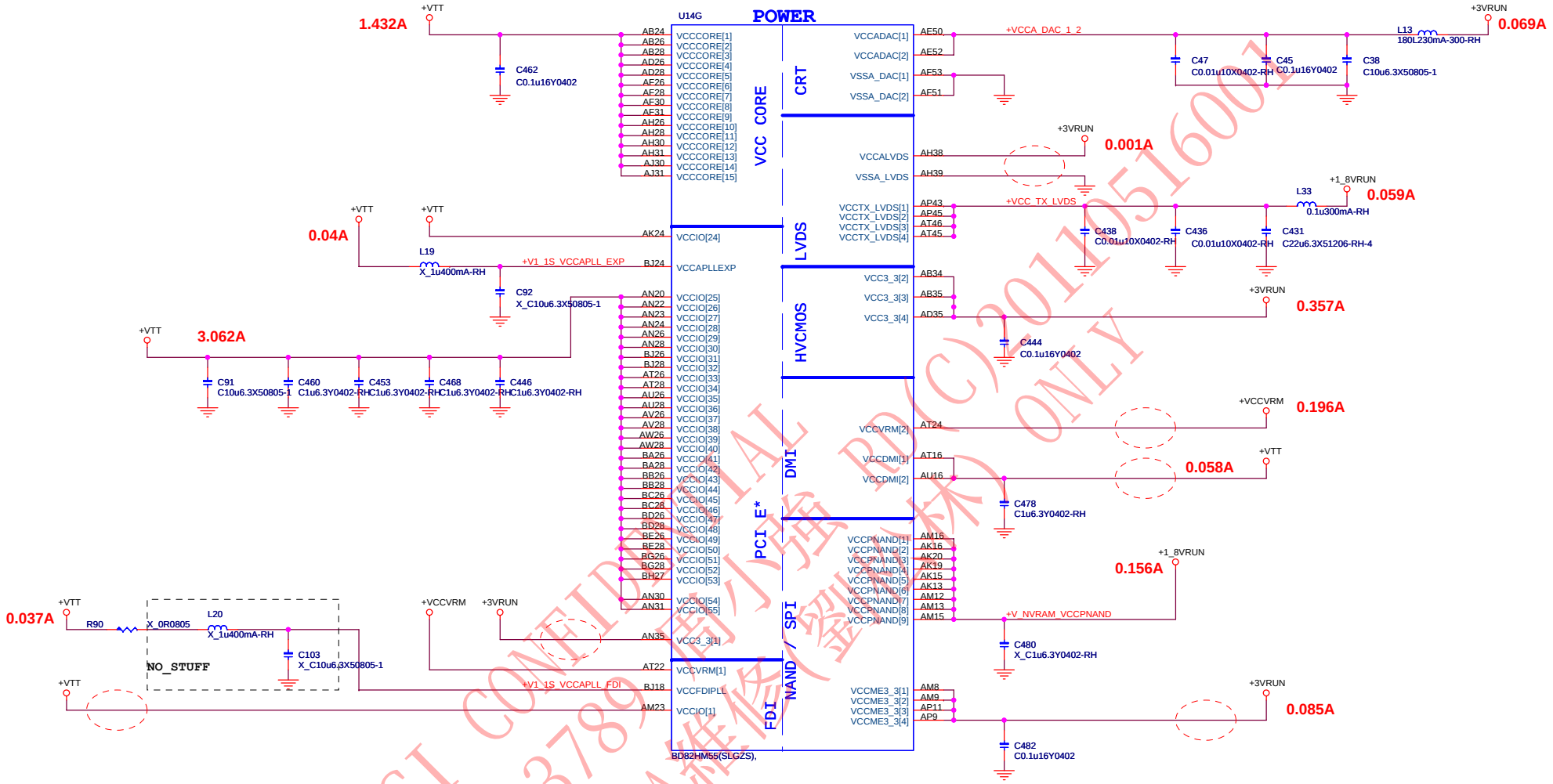
IBEXPEAK - M (POWER)



The VCCVRM rail (1.8 V/1.5 V) powers an internal voltage regulator module (VRM) that regulates clean 1.05-V voltage supply for analog rails (VCCAClk, VccapllEXP, VCCFDIPLL, and VCCSATAPLL). This solution will allow us to remove the LC filter requirements for those rails, thereby reducing platform BOM cost. VCCVRM is enabled by default via internal pull up to GPIO27, therefore GPIO27 should be left as No Connect. The following diagram shows implementation details on how to enable and disable VccVRM.

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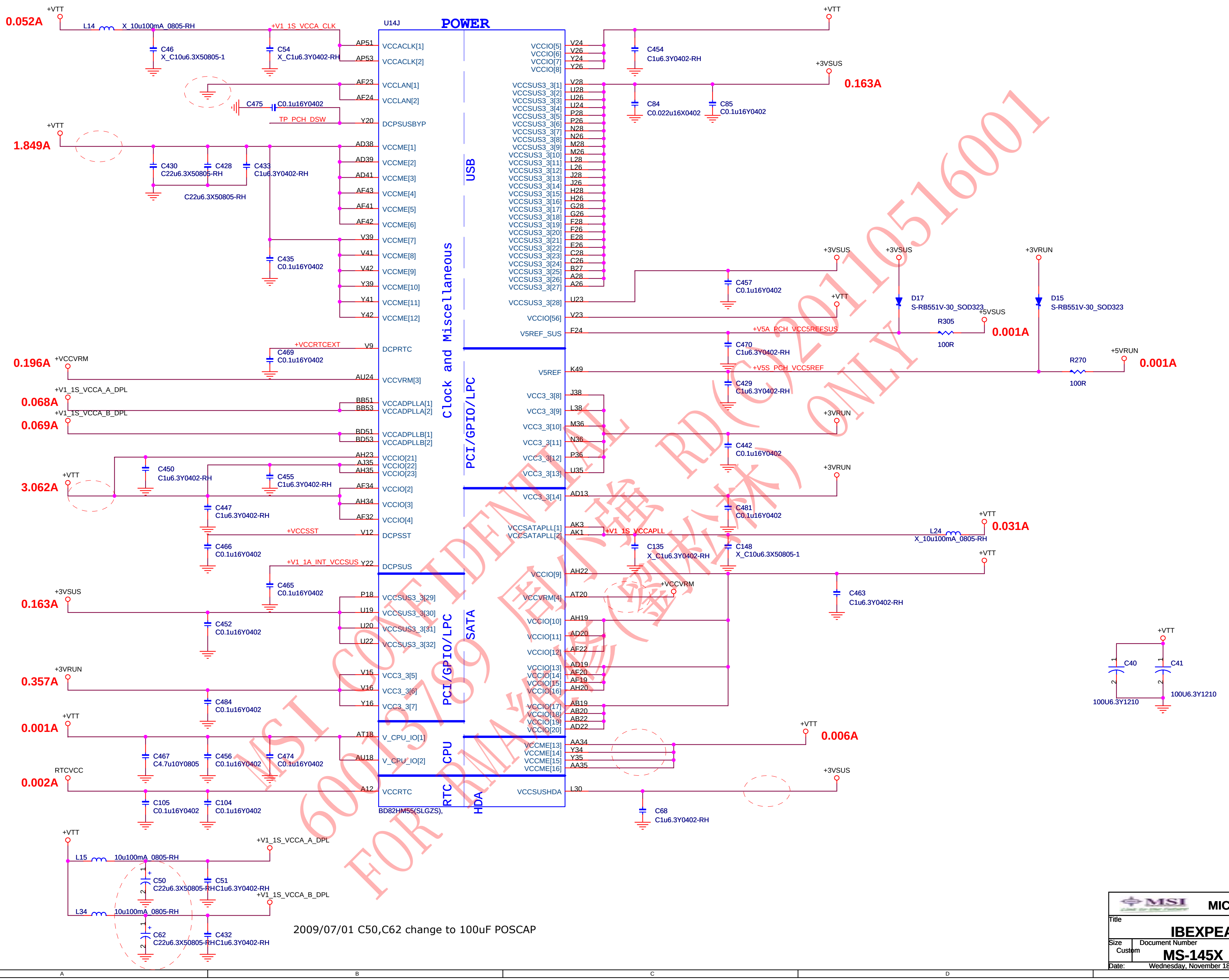
IBEXPEAK - M (POWER)



U14J
POWER
0.052A
+VTT
L14
X_10u100mA_0805-RH
+V1_1S_VCCA_CLK
C46
X_C10u6.3X50805-1
C54
X_C1u6.3Y0402-RH
AP51 VCCACLK[1]
AP53 VCCACLK[2]
AF23 VCCLAN[1]
AF24 VCCLAN[2]
C475
C0.1u16Y0402
TP_PCH_DSW
Y20 DCPSUSBYP
1.849A
C430
C22u6.3X50805-RH
C428
C433
C1u6.3Y0402-RH
C22u6.3X50805-RH
AD38 VCCME[1]
AD39 VCCME[2]
AD41 VCCME[3]
AF43 VCCME[4]
AF41 VCCME[5]
AF42 VCCME[6]
V39 VCCME[7]
V41 VCCME[8]
V42 VCCME[9]
Y39 VCCME[10]
Y41 VCCME[11]
Y42 VCCME[12]
C435
C0.1u16Y0402
+VCCRTCEXT
C469
C0.1u16Y0402
V9 DCPRTC
0.196A
+VCCVRM
AU24 VCCVRM[3]
0.068A
+V1_1S_VCCA_A_DPL
BB51 VCCADPLLA[1]
BB53 VCCADPLLA[2]
0.069A
+V1_1S_VCCA_B_DPL
BD51 VCCADPLLB[1]
BD53 VCCADPLLB[2]
AH23 VCCIO[21]
AJ35 VCCIO[22]
AH35 VCCIO[23]
C450
C1u6.3Y0402-RH
C455
C1u6.3Y0402-RH
3.062A
AF34 VCCIO[2]
AH34 VCCIO[3]
AF32 VCCIO[4]
C447
C1u6.3Y0402-RH
+VCCSST
V12 DCPSST
C466
C0.1u16Y0402
+V1_1A_INT_VCCSUS
Y22 DCPSUS
C465
C0.1u16Y0402
0.163A
+3VSUS
P18 VCCSUS3_3[29]
U19 VCCSUS3_3[30]
U20 VCCSUS3_3[31]
U22 VCCSUS3_3[32]
C452
C0.1u16Y0402
0.357A
+3VRUN
V15 VCC3_3[5]
V16 VCC3_3[6]
Y16 VCC3_3[7]
C484
C0.1u16Y0402
0.001A
AT18 V_CPU_IO[1]
AU18 V_CPU_IO[2]
C467
C4.7u10Y0805
C456
C0.1u16Y0402
C474
C0.1u16Y0402
0.002A
RTCVCC
A12 VCCRTC
C105
C0.1u16Y0402
C104
C0.1u16Y0402
BD82HM55(SLGZS),
Clock and Miscellaneous
USB
PCI/GPIO/LPC
SATA
CPU
RTC
HDA
V24 VCCIO[5]
V26 VCCIO[6]
Y24 VCCIO[7]
Y26 VCCIO[8]
C454
C1u6.3Y0402-RH
V28 VCCSUS3_3[1]
U28 VCCSUS3_3[2]
U26 VCCSUS3_3[3]
U24 VCCSUS3_3[4]
P28 VCCSUS3_3[5]
P26 VCCSUS3_3[6]
N28 VCCSUS3_3[7]
N26 VCCSUS3_3[8]
M28 VCCSUS3_3[9]
M26 VCCSUS3_3[10]
L28 VCCSUS3_3[11]
L26 VCCSUS3_3[12]
J28 VCCSUS3_3[13]
J26 VCCSUS3_3[14]
H28 VCCSUS3_3[15]
H26 VCCSUS3_3[16]
G28 VCCSUS3_3[17]
G26 VCCSUS3_3[18]
F28 VCCSUS3_3[19]
F26 VCCSUS3_3[20]
E28 VCCSUS3_3[21]
E26 VCCSUS3_3[22]
C28 VCCSUS3_3[23]
C26 VCCSUS3_3[24]
B27 VCCSUS3_3[25]
A28 VCCSUS3_3[26]
A26 VCCSUS3_3[27]
U23 VCCSUS3_3[28]
V23 VCCIO[56]
F24 V5REF_SUS
C84
C0.022u16X0402
C85
C0.1u16Y0402
0.163A
C457
C0.1u16Y0402
D17
S-RB551V-30_SOD323
D15
S-RB551V-30_SOD323
+5VSUS
R305
100R
+V5A_PCH_VCC5REFSUS
0.001A
C470
C1u6.3Y0402-RH
K49 V5REF
+V5S_PCH_VCC5REF
R270
100R
+5VRUN
0.001A
C429
C1u6.3Y0402-RH
J38 VCC3_3[8]
L38 VCC3_3[9]
M36 VCC3_3[10]
N36 VCC3_3[11]
P36 VCC3_3[12]
U35 VCC3_3[13]
C442
C0.1u16Y0402
AD13 VCC3_3[14]
C481
C0.1u16Y0402
AK3 VCCSATAPLL[1]
AK1 VCCSATAPLL[2]
+V1_1S_VCCAPLL
L24
X_10u100mA_0805-RH
0.031A
C135
X_C1u6.3Y0402-RH
C148
X_C10u6.3X50805-1
AH22 VCCIO[9]
C463
C1u6.3Y0402-RH
AT20 VCCVRM[4]
AH19 VCCIO[10]
AD20 VCCIO[11]
AF22 VCCIO[12]
AD19 VCCIO[13]
AF20 VCCIO[14]
AF19 VCCIO[15]
AH20 VCCIO[16]
AB19 VCCIO[17]
AB20 VCCIO[18]
AB22 VCCIO[19]
AD22 VCCIO[20]
AA34 VCCME[13]
Y34 VCCME[14]
Y35 VCCME[15]
AA35 VCCME[16]
0.006A
L30 VCCSUSHDA
C68
C1u6.3Y0402-RH
C40
100U6.3Y1210
C41
100U6.3Y1210
L15
10u100mA_0805-RH
+V1_1S_VCCA_A_DPL
C50
C22u6.3X50805-RH
C51
C1u6.3Y0402-RH
+V1_1S_VCCA_B_DPL
L34
10u100mA_0805-RH
C62
C22u6.3X50805-RH
C432
C1u6.3Y0402-RH

2009/07/01 C50,C62 change to 100uF POSCAP

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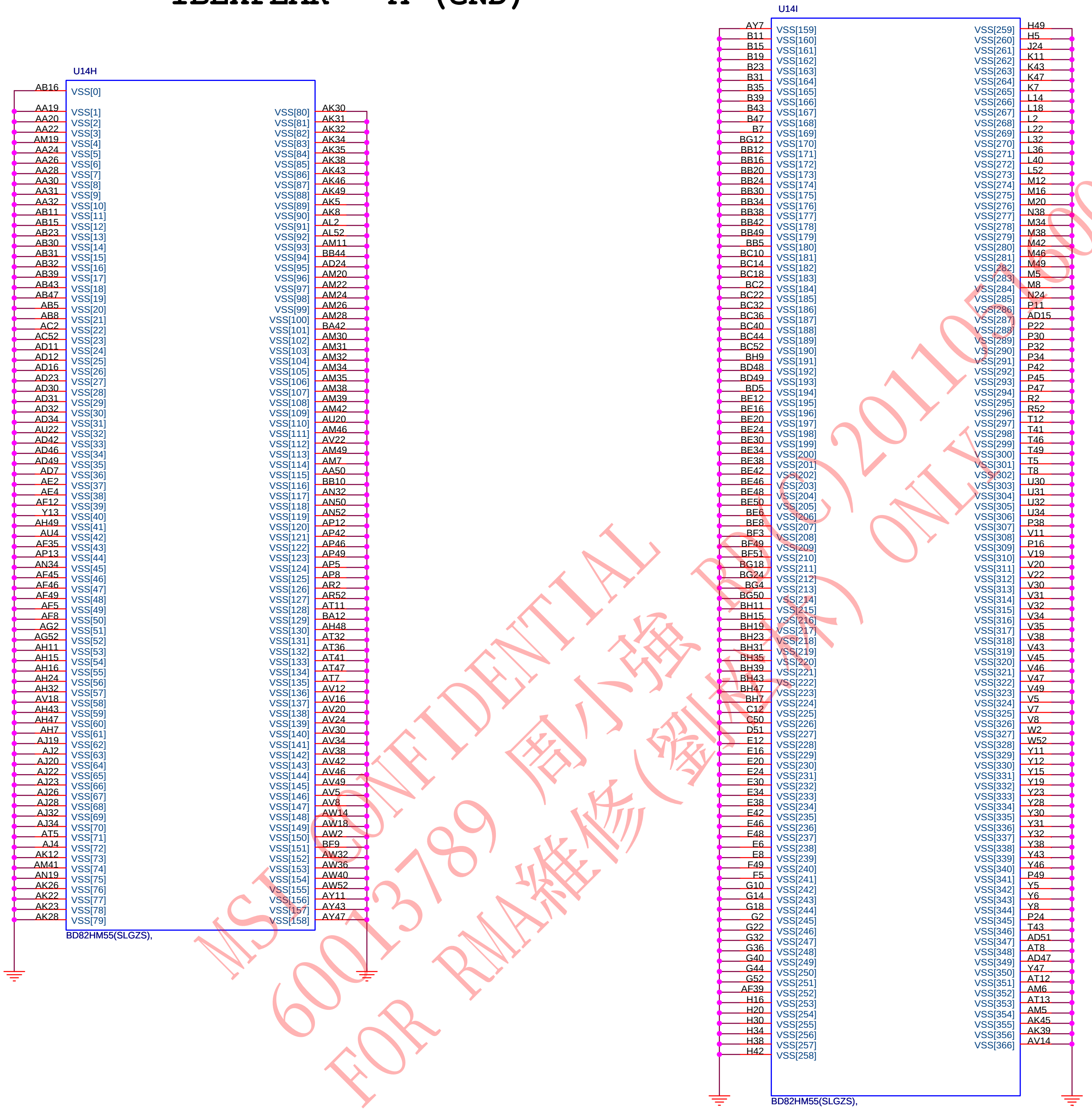
IBEXPEAK - M (GND)


U14H
AB16 VSS[0]
AA19 VSS[1]
AA20 VSS[2]
AA22 VSS[3]
AM19 VSS[4]
AA24 VSS[5]
AA26 VSS[6]
AA28 VSS[7]
AA30 VSS[8]
AA31 VSS[9]
AA32 VSS[10]
AB11 VSS[11]
AB15 VSS[12]
AB23 VSS[13]
AB30 VSS[14]
AB31 VSS[15]
AB32 VSS[16]
AB39 VSS[17]
AB43 VSS[18]
AB47 VSS[19]
AB5 VSS[20]
AB8 VSS[21]
AC2 VSS[22]
AC52 VSS[23]
AD11 VSS[24]
AD12 VSS[25]
AD16 VSS[26]
AD23 VSS[27]
AD30 VSS[28]
AD31 VSS[29]
AD32 VSS[30]
AD34 VSS[31]
AU22 VSS[32]
AD42 VSS[33]
AD46 VSS[34]
AD49 VSS[35]
AD7 VSS[36]
AE2 VSS[37]
AE4 VSS[38]
AF12 VSS[39]
Y13 VSS[40]
AH49 VSS[41]
AU4 VSS[42]
AF35 VSS[43]
AP13 VSS[44]
AN34 VSS[45]
AF45 VSS[46]
AF46 VSS[47]
AF49 VSS[48]
AF5 VSS[49]
AF8 VSS[50]
AG2 VSS[51]
AG52 VSS[52]
AH11 VSS[53]
AH15 VSS[54]
AH16 VSS[55]
AH24 VSS[56]
AH32 VSS[57]
AV18 VSS[58]
AH43 VSS[59]
AH47 VSS[60]
AH7 VSS[61]
AJ19 VSS[62]
AJ2 VSS[63]
AJ20 VSS[64]
AJ22 VSS[65]
AJ23 VSS[66]
AJ26 VSS[67]
AJ28 VSS[68]
AJ32 VSS[69]
AJ34 VSS[70]
AT5 VSS[71]
AJ4 VSS[72]
AK12 VSS[73]
AM41 VSS[74]
AN19 VSS[75]
AK26 VSS[76]
AK22 VSS[77]
AK23 VSS[78]
AK28 VSS[79]
VSS[80] AK30
VSS[81] AK31
VSS[82] AK32
VSS[83] AK34
VSS[84] AK35
VSS[85] AK38
VSS[86] AK43
VSS[87] AK46
VSS[88] AK49
VSS[89] AK5
VSS[90] AK8
VSS[91] AL2
VSS[92] AL52
VSS[93] AM11
VSS[94] BB44
VSS[95] AD24
VSS[96] AM20
VSS[97] AM22
VSS[98] AM24
VSS[99] AM26
VSS[100] AM28
VSS[101] BA42
VSS[102] AM30
VSS[103] AM31
VSS[104] AM32
VSS[105] AM34
VSS[106] AM35
VSS[107] AM38
VSS[108] AM39
VSS[109] AM42
VSS[110] AU20
VSS[111] AM46
VSS[112] AV22
VSS[113] AM49
VSS[114] AM7
VSS[115] AA50
VSS[116] BB10
VSS[117] AN32
VSS[118] AN50
VSS[119] AN52
VSS[120] AP12
VSS[121] AP42
VSS[122] AP46
VSS[123] AP49
VSS[124] AP5
VSS[125] AP8
VSS[126] AR2
VSS[127] AR52
VSS[128] AT11
VSS[129] BA12
VSS[130] AH48
VSS[131] AT32
VSS[132] AT36
VSS[133] AT41
VSS[134] AT47
VSS[135] AT7
VSS[136] AV12
VSS[137] AV16
VSS[138] AV20
VSS[139] AV24
VSS[140] AV30
VSS[141] AV34
VSS[142] AV38
VSS[143] AV42
VSS[144] AV46
VSS[145] AV49
VSS[146] AV5
VSS[147] AV8
VSS[148] AW14
VSS[149] AW18
VSS[150] AW2
VSS[151] BF9
VSS[152] AW32
VSS[153] AW36
VSS[154] AW40
VSS[155] AW52
VSS[156] AY11
VSS[157] AY43
VSS[158] AY47
BD82HM55(SLGZS),
U14I
AY7 VSS[159]
B11 VSS[160]
B15 VSS[161]
B19 VSS[162]
B23 VSS[163]
B31 VSS[164]
B35 VSS[165]
B39 VSS[166]
B43 VSS[167]
B47 VSS[168]
B7 VSS[169]
BG12 VSS[170]
BB12 VSS[171]
BB16 VSS[172]
BB20 VSS[173]
BB24 VSS[174]
BB30 VSS[175]
BB34 VSS[176]
BB38 VSS[177]
BB42 VSS[178]
BB49 VSS[179]
BB5 VSS[180]
BC10 VSS[181]
BC14 VSS[182]
BC18 VSS[183]
BC2 VSS[184]
BC22 VSS[185]
BC32 VSS[186]
BC36 VSS[187]
BC40 VSS[188]
BC44 VSS[189]
BC52 VSS[190]
BH9 VSS[191]
BD48 VSS[192]
BD49 VSS[193]
BD5 VSS[194]
BE12 VSS[195]
BE16 VSS[196]
BE20 VSS[197]
BE24 VSS[198]
BE30 VSS[199]
BE34 VSS[200]
BE38 VSS[201]
BE42 VSS[202]
BE46 VSS[203]
BE48 VSS[204]
BE50 VSS[205]
BE6 VSS[206]
BE8 VSS[207]
BF3 VSS[208]
BF49 VSS[209]
BF51 VSS[210]
BG18 VSS[211]
BG24 VSS[212]
BG4 VSS[213]
BG50 VSS[214]
BH11 VSS[215]
BH15 VSS[216]
BH19 VSS[217]
BH23 VSS[218]
BH31 VSS[219]
BH35 VSS[220]
BH39 VSS[221]
BH43 VSS[222]
BH47 VSS[223]
BH7 VSS[224]
C12 VSS[225]
C50 VSS[226]
D51 VSS[227]
E12 VSS[228]
E16 VSS[229]
E20 VSS[230]
E24 VSS[231]
E30 VSS[232]
E34 VSS[233]
E38 VSS[234]
E42 VSS[235]
E46 VSS[236]
E48 VSS[237]
E6 VSS[238]
E8 VSS[239]
F49 VSS[240]
F5 VSS[241]
G10 VSS[242]
G14 VSS[243]
G18 VSS[244]
G2 VSS[245]
G22 VSS[246]
G32 VSS[247]
G36 VSS[248]
G40 VSS[249]
G44 VSS[250]
G52 VSS[251]
AF39 VSS[252]
H16 VSS[253]
H20 VSS[254]
H30 VSS[255]
H34 VSS[256]
H38 VSS[257]
H42 VSS[258]
VSS[259] H49
VSS[260] H5
VSS[261] J24
VSS[262] K11
VSS[263] K43
VSS[264] K47
VSS[265] K7
VSS[266] L14
VSS[267] L18
VSS[268] L2
VSS[269] L22
VSS[270] L32
VSS[271] L36
VSS[272] L40
VSS[273] L52
VSS[274] M12
VSS[275] M16
VSS[276] M20
VSS[277] N38
VSS[278] M34
VSS[279] M38
VSS[280] M42
VSS[281] M46
VSS[282] M49
VSS[283] M5
VSS[284] M8
VSS[285] N24
VSS[286] P11
VSS[287] AD15
VSS[288] P22
VSS[289] P30
VSS[290] P32
VSS[291] P34
VSS[292] P42
VSS[293] P45
VSS[294] P47
VSS[295] R2
VSS[296] R52
VSS[297] T12
VSS[298] T41
VSS[299] T46
VSS[300] T49
VSS[301] T5
VSS[302] T8
VSS[303] U30
VSS[304] U31
VSS[305] U32
VSS[306] U34
VSS[307] P38
VSS[308] V11
VSS[309] P16
VSS[310] V19
VSS[311] V20
VSS[312] V22
VSS[313] V30
VSS[314] V31
VSS[315] V32
VSS[316] V34
VSS[317] V35
VSS[318] V38
VSS[319] V43
VSS[320] V45
VSS[321] V46
VSS[322] V47
VSS[323] V49
VSS[324] V5
VSS[325] V7
VSS[326] V8
VSS[327] W2
VSS[328] W52
VSS[329] Y11
VSS[330] Y12
VSS[331] Y15
VSS[332] Y19
VSS[333] Y23
VSS[334] Y28
VSS[335] Y30
VSS[336] Y31
VSS[337] Y32
VSS[338] Y38
VSS[339] Y43
VSS[340] Y46
VSS[341] P49
VSS[342] Y5
VSS[343] Y6
VSS[344] Y8
VSS[345] P24
VSS[346] T43
VSS[347] AD51
VSS[348] AT8
VSS[349] AD47
VSS[350] Y47
VSS[351] AT12
VSS[352] AM6
VSS[353] AT13
VSS[354] AM5
VSS[355] AK45
VSS[356] AK39
VSS[366] AV14
BD82HM55(SLGZS),

MICRO-STAR INT'L CO.,LTD.

Title: IBEXPEAK - M (GND)

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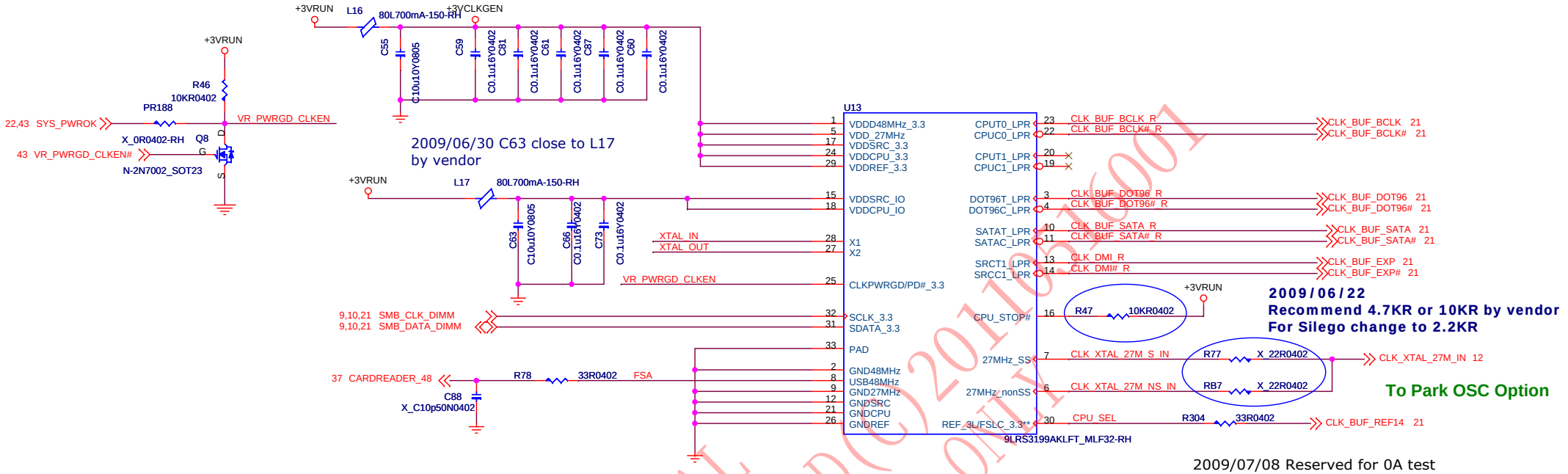
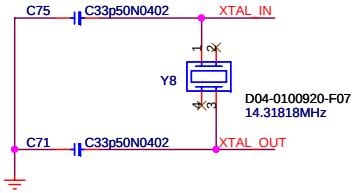
C59 Close to L16 ; C60,C61,C81,C87 Close to power pin



2009/07/08 Reserved for 0A test
R3211 is for Spread clock(Default use)
RB8 is for non-Spread clock

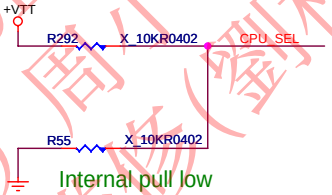
2009/07/08
Y4传Θ49S type(cost down as MS-1122)



Capacity select

If Cload=20pf C71/C75=33pf
If Cload=32pf C71/C75=56pf

2009/06/30 R292 not stuff



Internal pull low

For CPU frequency select (133MHz)

CPU_SEL	CPU0	CPU1
0(Default)	133MHz	133MHz
1(1.05~1.5V)	100MHz	100MHz

Clock GEN. Vendor Table

	9LRS3199	SLG8SP587V
VDDIO spec	0.9975~3.465	1.05~3.466
BOM	R39 stuff	R40 stuff

MICRO-STAR INT'L CO.,LTD.

Title: Clock Generator (9LRS3199AKLFT)

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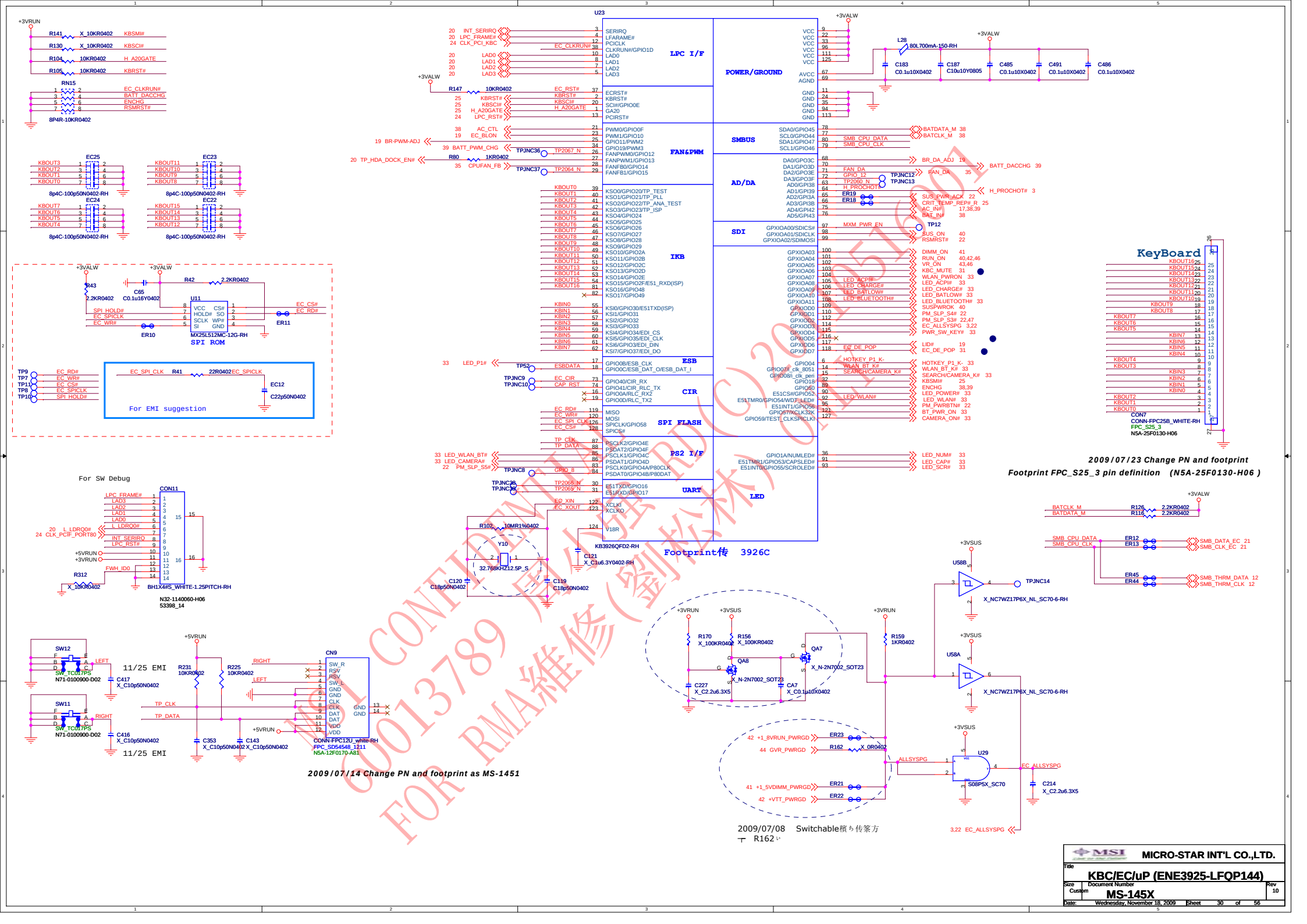

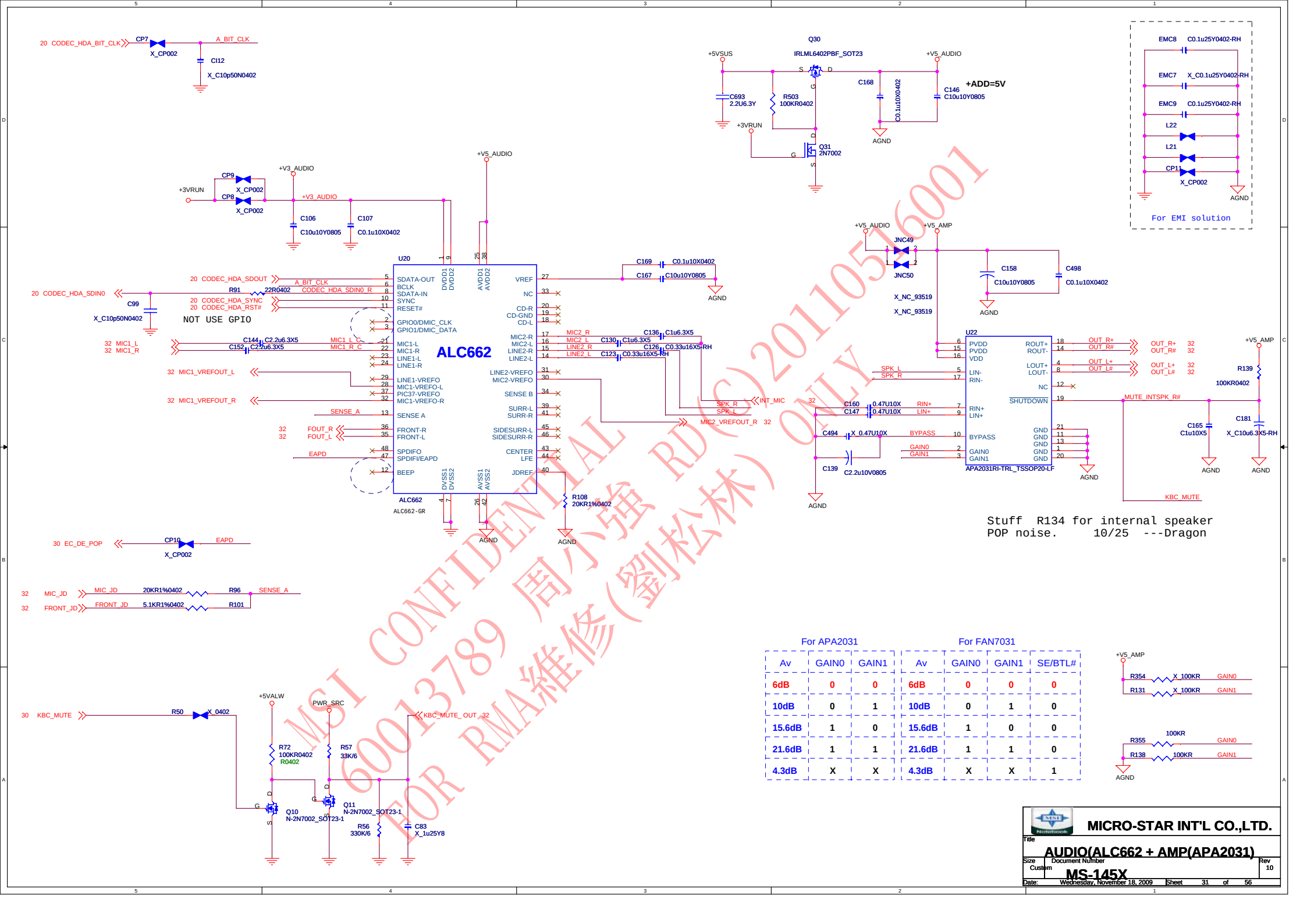

For APA2031			For FAN7031			
Av	GAIN0	GAIN1	Av	GAIN0	GAIN1	SE/BTL#
6dB	0	0	6dB	0	0	0
10dB	0	1	10dB	0	1	0
15.6dB	1	0	15.6dB	1	0	0
21.6dB	1	1	21.6dB	1	1	0
4.3dB	X	X	4.3dB	X	X	1

MICRO-STAR INT'L CO.,LTD.

Title: AUDIO(ALC662 + AMP(APA2031)

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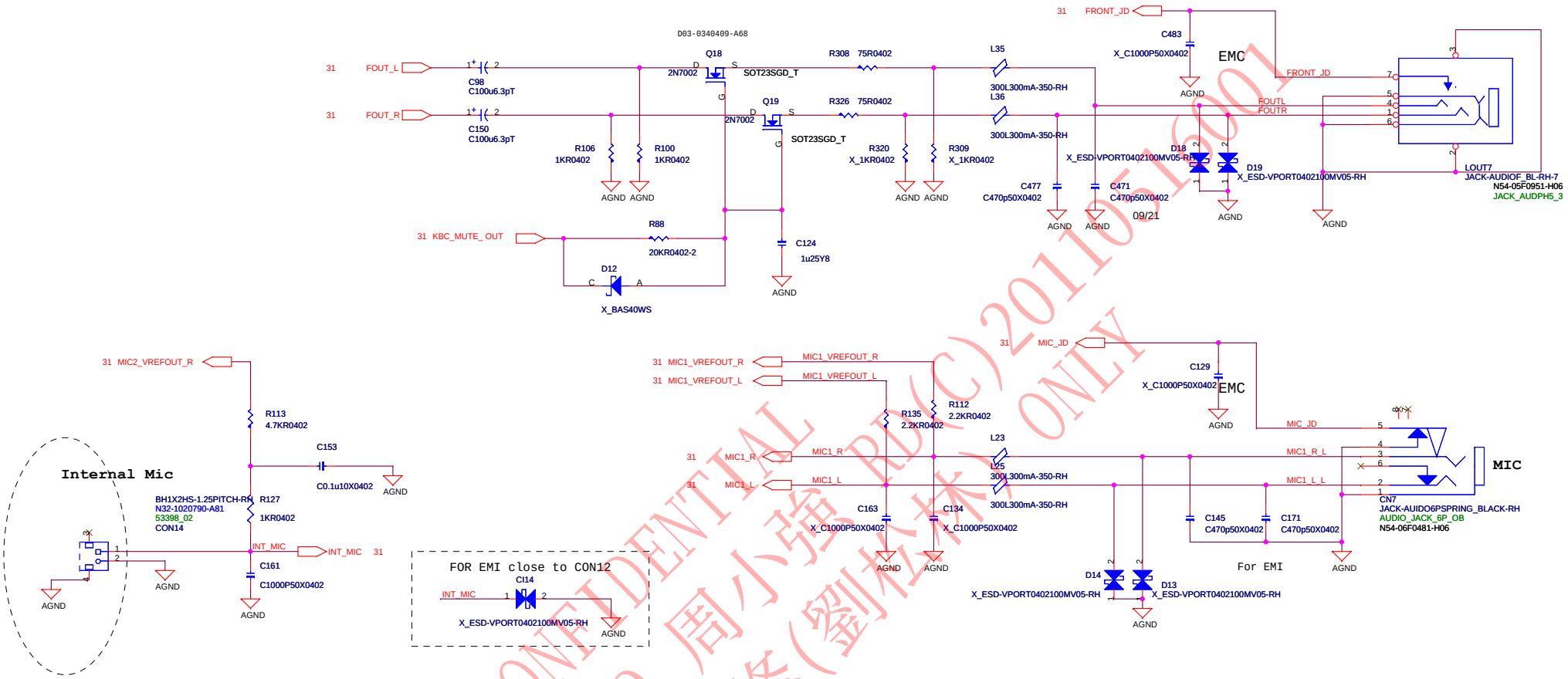

2009/06/29 Modify internal MIC PN to N32-1020790-A81

MICRO-STAR INT'L CO.,LTD.			
Title: SPK / HP / MIC			
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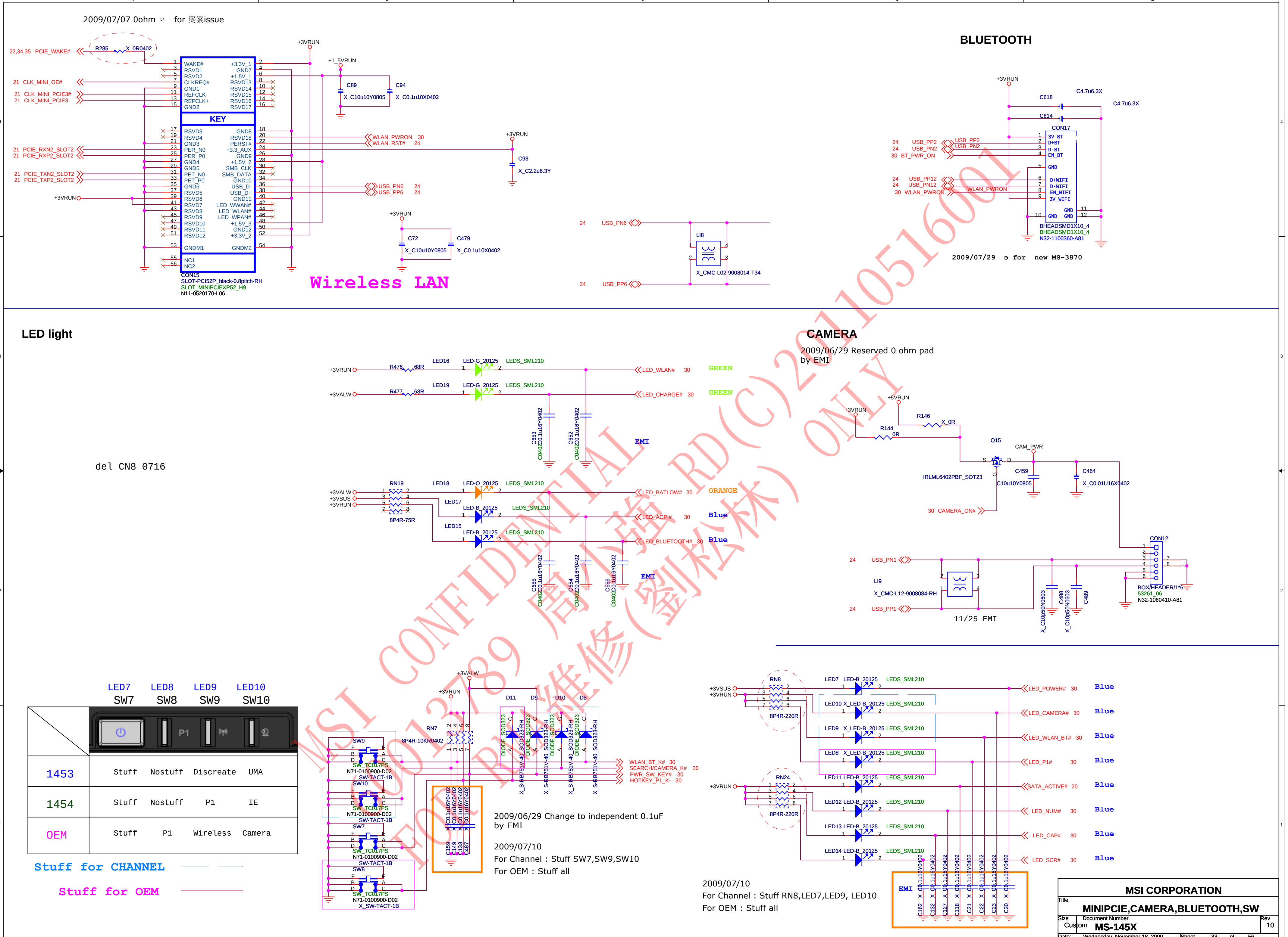

	LED7 SW7	LED8 SW8	LED9 SW9	LED10 SW10
1453	Stuff	Nostuff	Discreate	UMA
1454	Stuff	Nostuff	P1	IE
OEM	Stuff	P1	Wireless	Camera

MSI CORPORATION

Title: MINIPCIE,CAMERA,BLUETOOTH,SW

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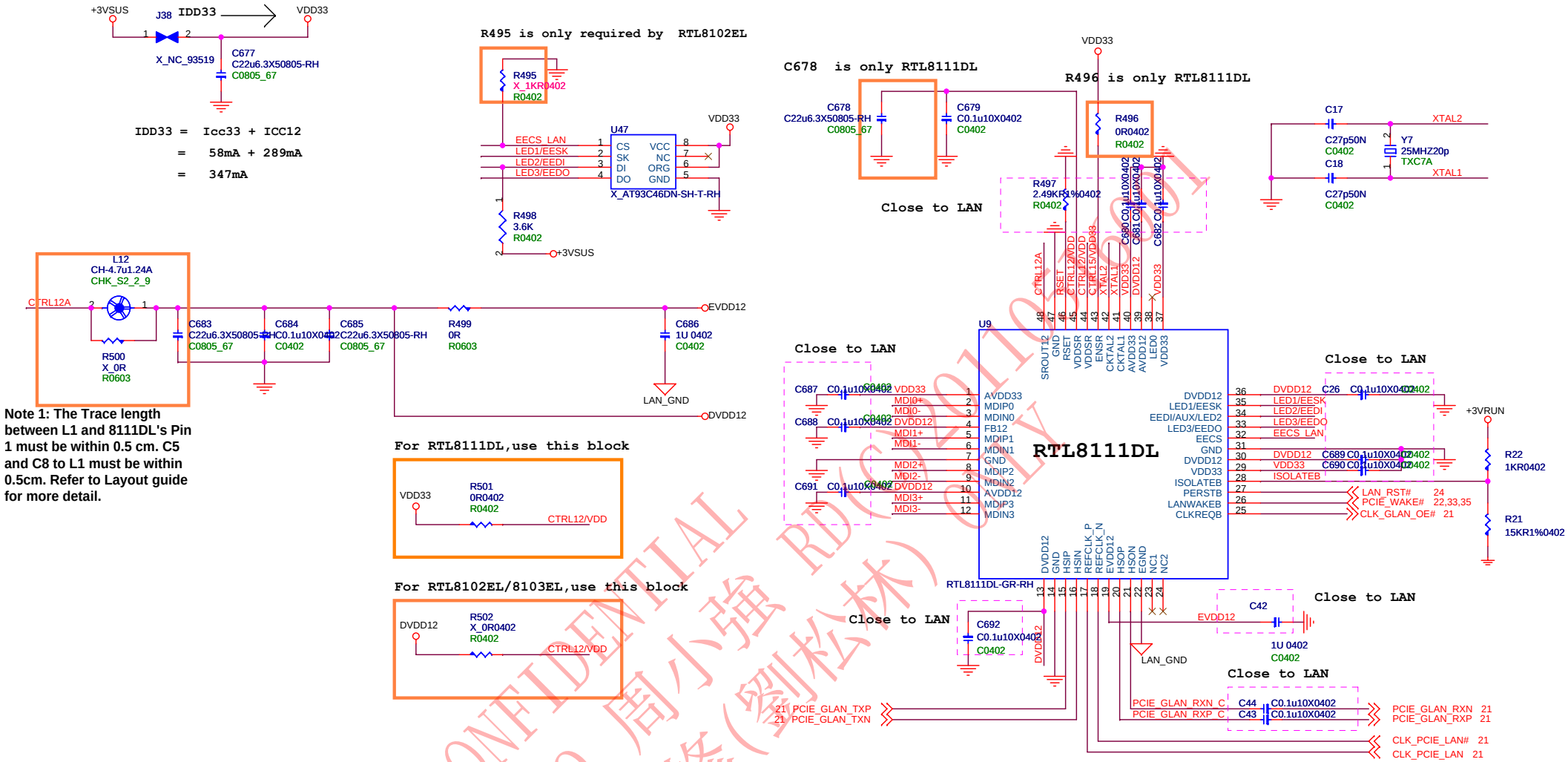

MICRO-STAR INT'L CO.,LTD.

Title: PCIE 1G LAN (RTL8111DL)

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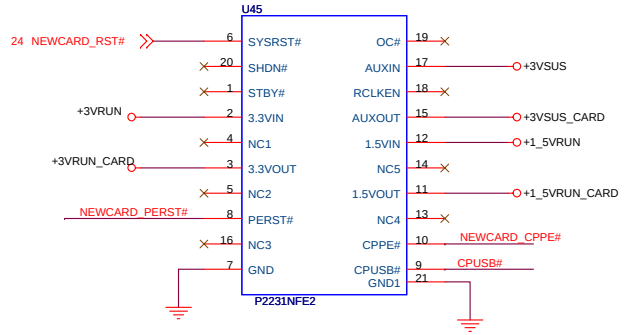
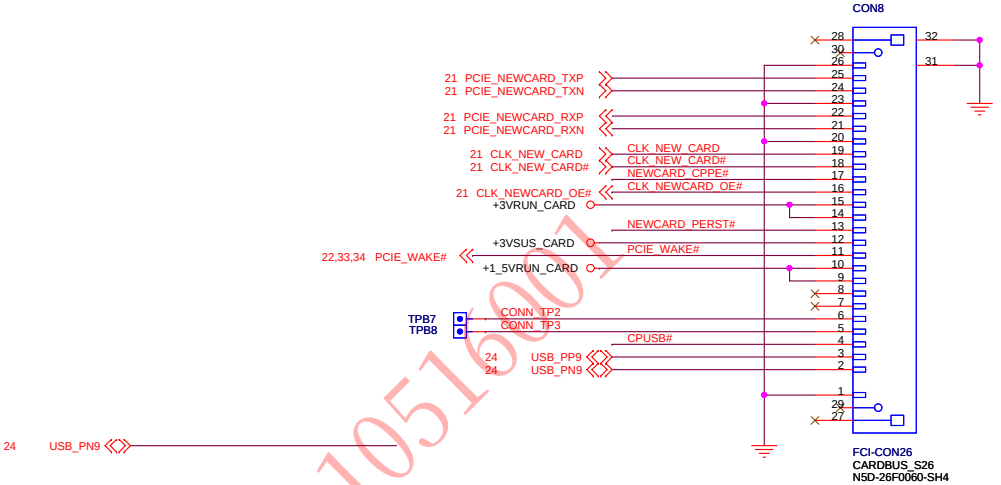
NEW CARD



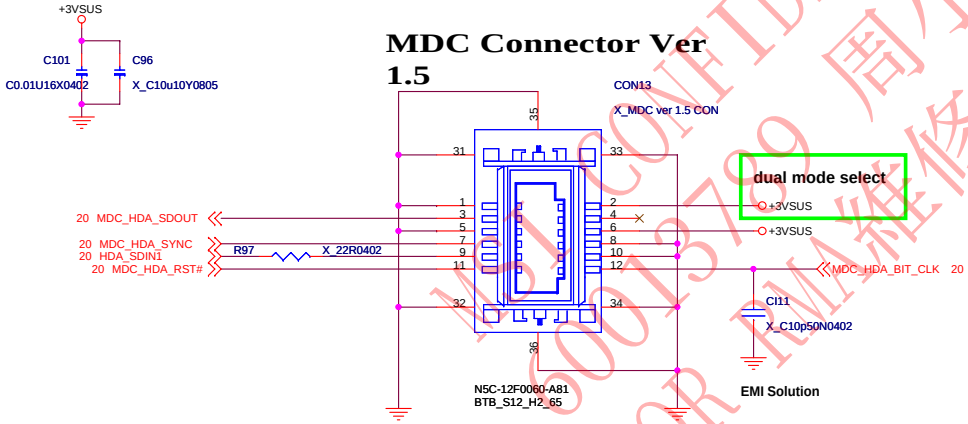


24 USB_PN9

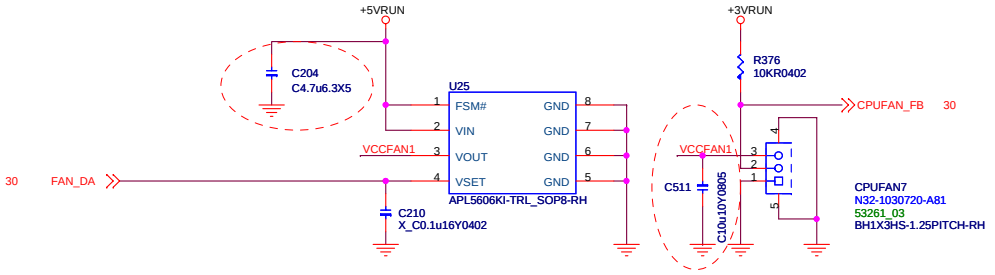
24 USB_PP9

MDC Connector

MDC 1453 NO STUFF; 1454 STUFF!



CPU FAN



MICRO-STAR INT'L CO.,LTD.

Title: NEWCARD,FAN

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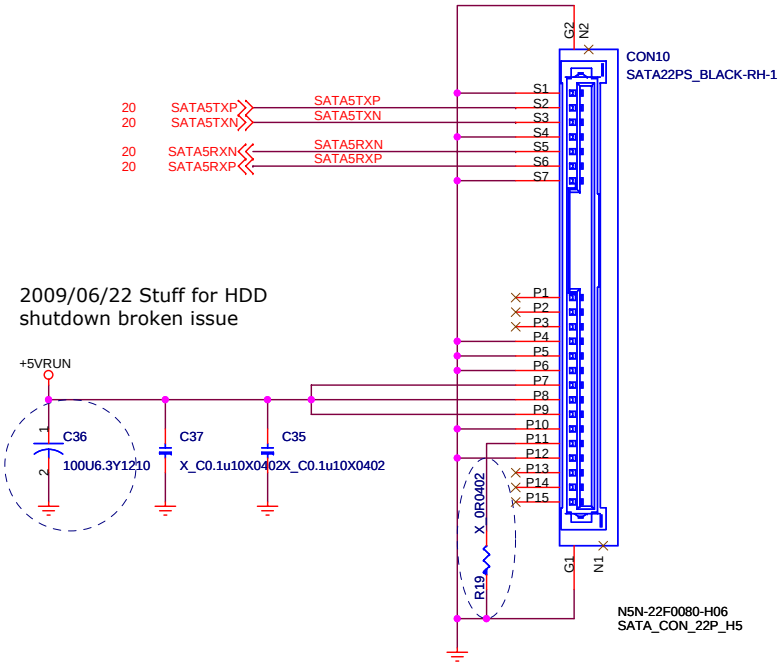
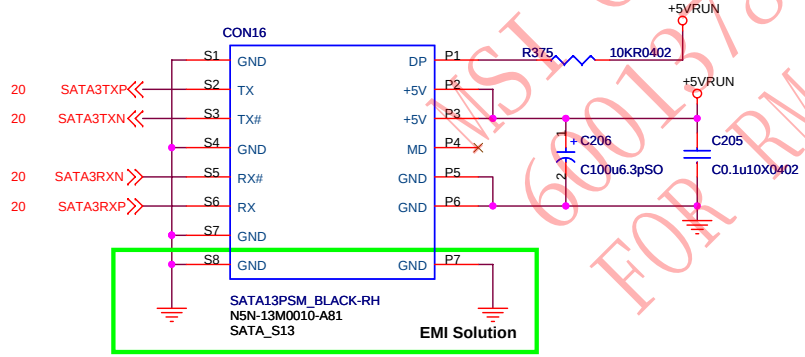
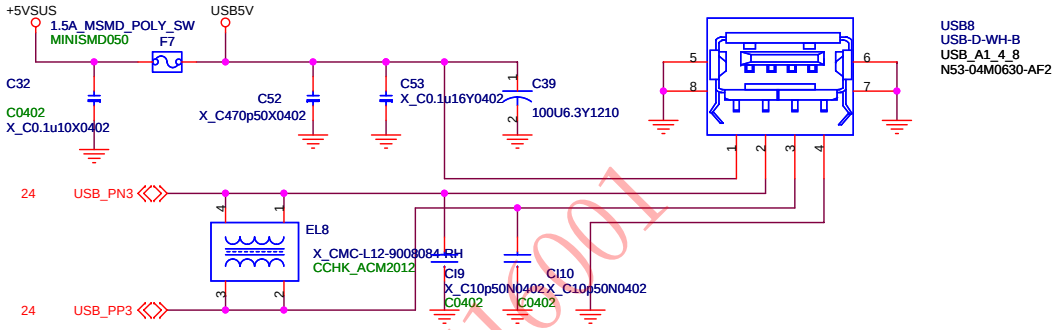
SATA HDD

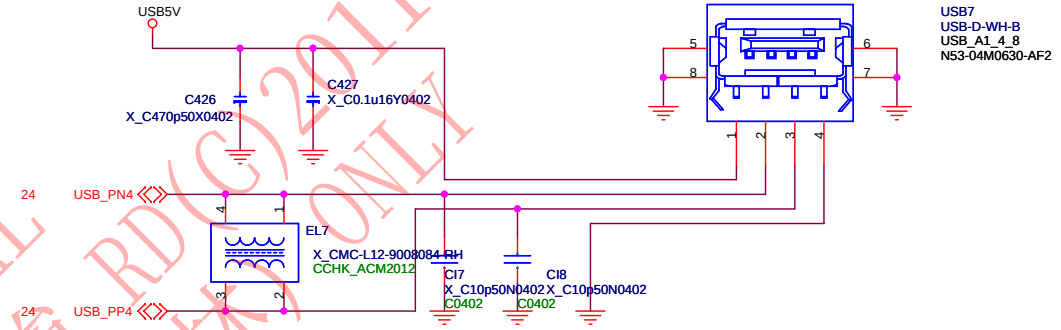


2009/06/22 SATA HDD P11 is Staggered Spinup function

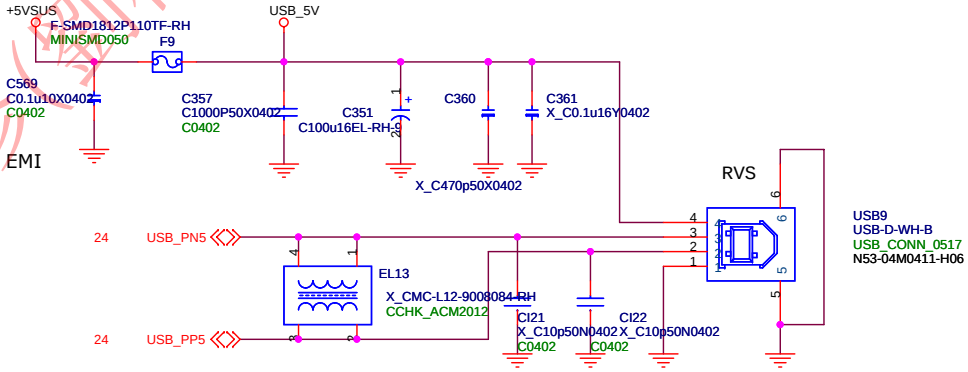
SATA ODD







C569 FOR EMI



MICRO-STAR INT'L CO.,LTD.

Title: HDD,CDROM,USB

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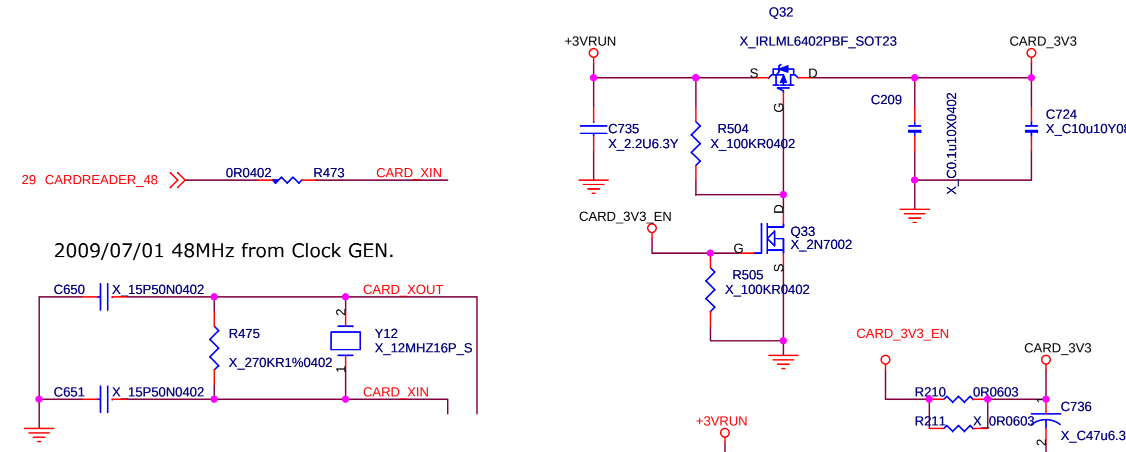
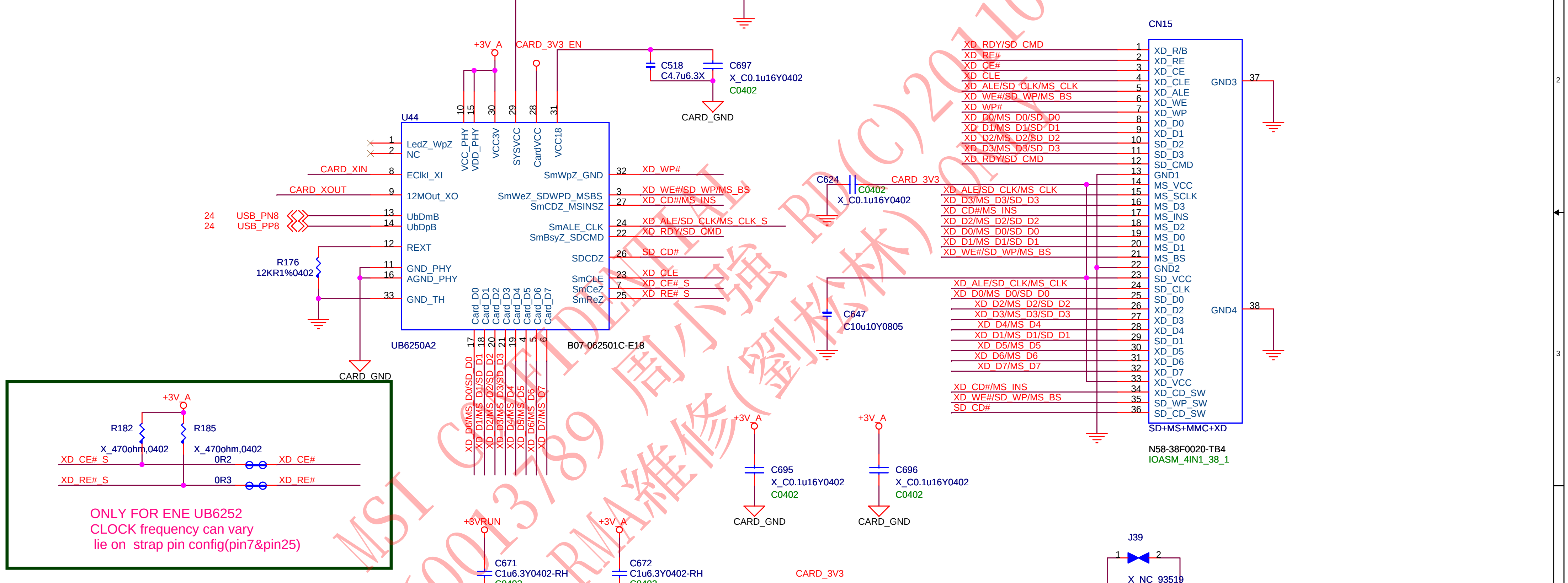
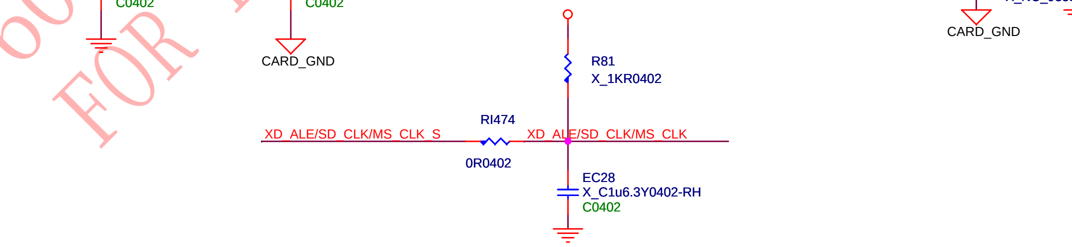

Q32
X_IRLML6402PBF_SOT23
+3VRUN
CARD_3V3
C735
X_2.2U6.3Y
R504
X_100KR0402
C209
X_C0.1u10X0402
C724
X_C10u10Y0805
29 CARDREADER_48
0R0402
R473
CARD_XIN
CARD_3V3_EN
Q33
X_2N7002
R505
X_100KR0402
2009/07/01 48MHz from Clock GEN.
C650
X_15P50N0402
CARD_XOUT
R475
X_270KR1%0402
Y12
X_12MHZ16P_S
C651
X_15P50N0402
CARD_XIN
R210
0R0603
R211
X_0R0603
C736
X_C47u6.3Y1210

ENE UB6250 USB20 Flash Card Reader Controller						
Pins for SD, MMC, MS, and xD memory cards						
Name	No	I/O	XD	SD	MMC	MS
xDCeZ	7	O	xD card EN			
xDCle	23	O	xD CMD latch EN			
xDAle	24	O	xD ADDR latch EN	SD clock	MMC clock	MS serial clock
xDBsyZ	22	B	xD Ready/busy	SD CMD/response	MMC CMD/response	
xDData0	17	B	xD D0	SD D0	MMC D0	MS D0
xDData1	18	B	xD D1	SD D1	MMC D1	MS D1
xDData2	20	B	xD D2	SD D2	MMC D2	MS D2
xDData3	21	B	xD D3	SD D3	MMC D3	MS D3
xDData4	19	B	xD D4		MMC D4	MS D4
xDData5	4	B	xD D5		MMC D5	MS D5
xDData6	5	B	xD D6		MMC D6	MS D6
xDData7	6	B	xD D7		MMC D7	MS D7
xDWeZ	3	B	xD W EN	SD WP		MS Busy
xDReZ	25	O	xD R EN			
xDWpZ	32	O	xD WP			
SdCdZ	26	I		SD CD	MMC CD	
xDCdZ	27	I	xD CD			MS CD


U44
UB6250A2
B07-062501C-E18
CN15
SD+MS+MMC+XD
N58-38F0020-TB4
IOASM_4IN1_38_1
C518
C4.7u6.3X
C697
X_C0.1u16Y0402
C624
X_C0.1u16Y0402
C647
C10u10Y0805
R176
12KR1%0402
USB_PN8
USB_PP8
CARD_GND
R182
R185
X_470ohm,0402
XD_CE#_S
XD_CE#
XD_RE#_S
XD_RE#
ONLY FOR ENE UB6252
CLOCK frequency can vary
lie on strap pin config(pin7&pin25)
C695
C696
J39
X_NC_93519

Configurations for Clock Source Selection:

4.7K Pull-high Resistor on		Frequency of external clock source to EClkin pin
xDReZ	xDCeZ	
NC	NC	48MHz
NC	O	24MHz
O	NC	12MHz



MICRO-STAR INT'L CO.,LTD.

Title: CARD_READER (UB6250)

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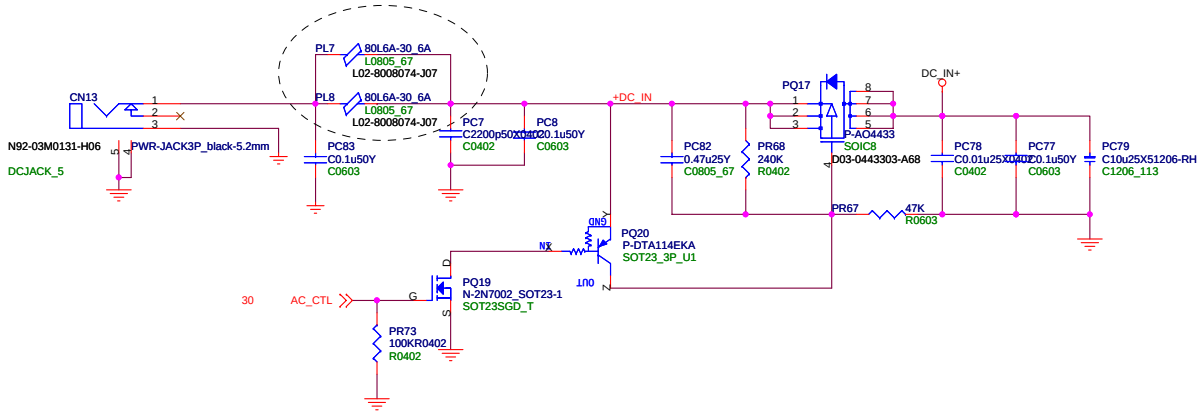
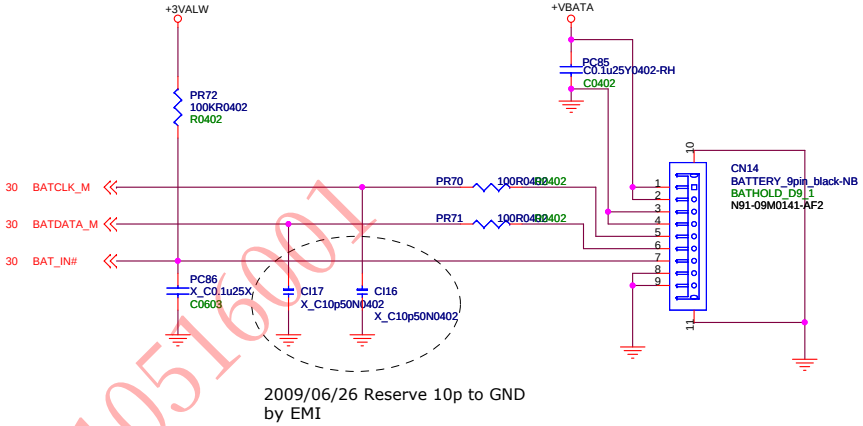
2009/07/10 65W adaptor 惠瑾 BEAD

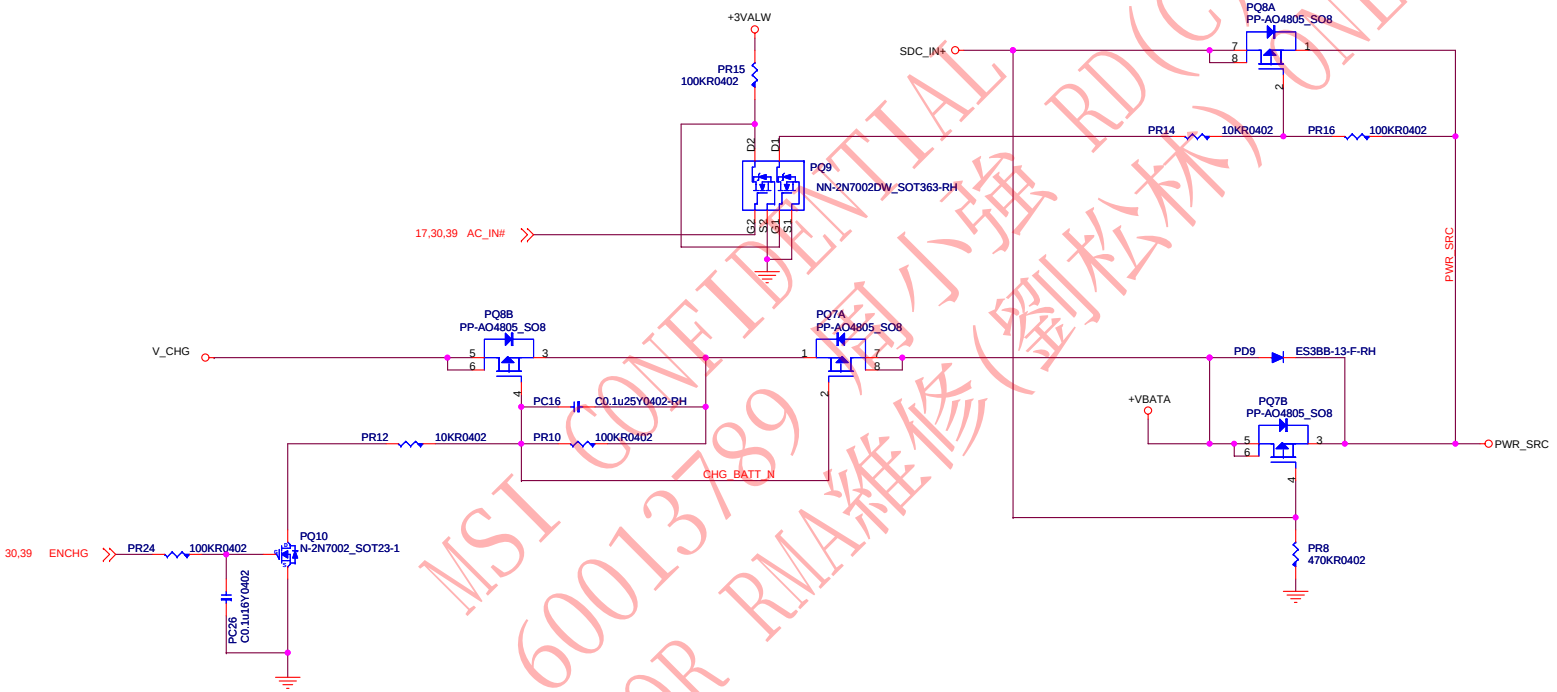




2009/06/26 Reserve 10p to GND
by EMI

JBAT1 Pin Definition

1: VBATA+
2: VBATA+
3: NC
4: NC
5: SMBCLK
6: SMBDATA
7: BAT_IN#
8: GND
9: GND



MICRO-STAR INT'L CO.,LTD.

Title: **Battery Select**

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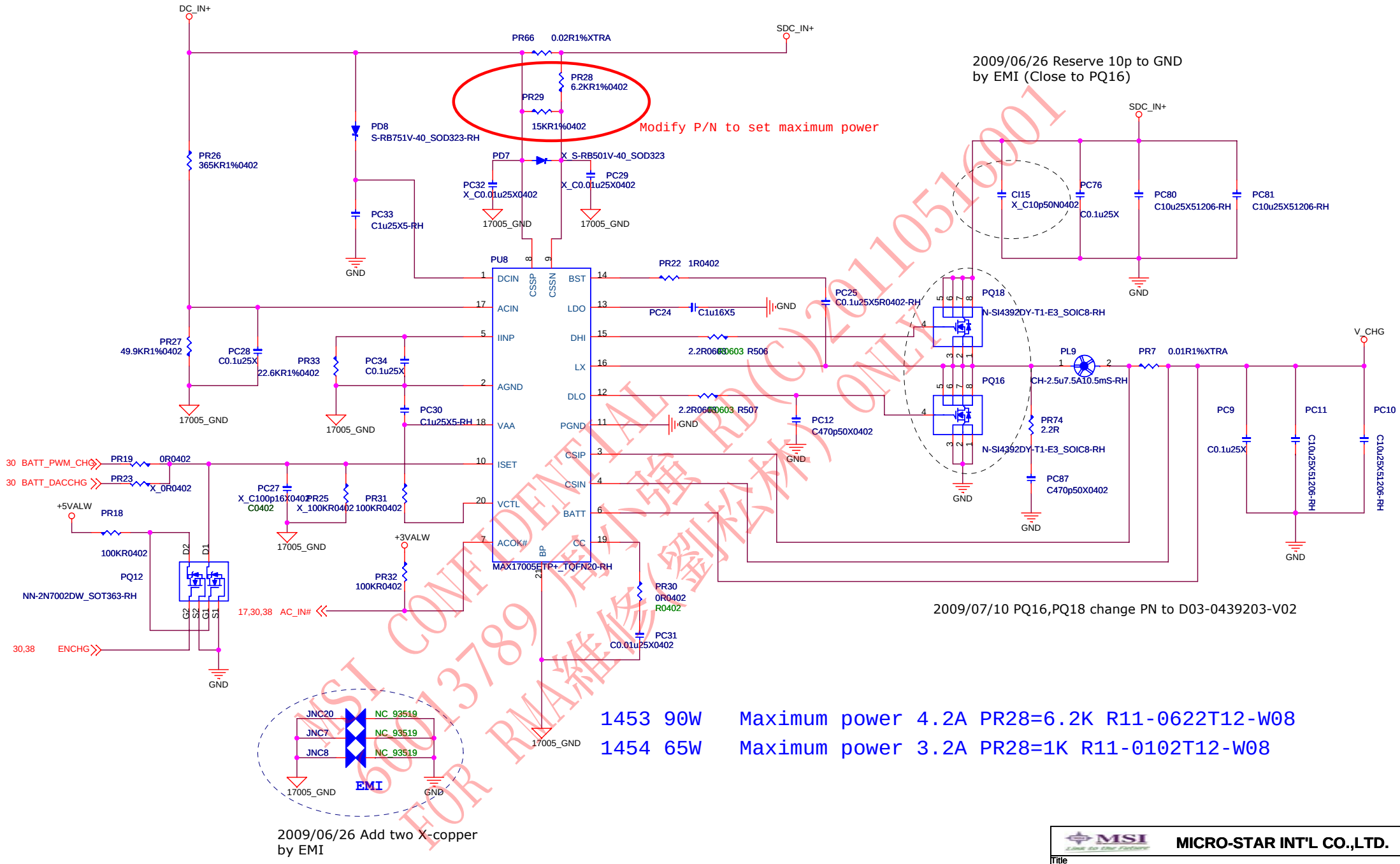

MSI Link to the Future	MICRO-STAR INT'L CO.,LTD.	
Title: Battery Charger		
Size: Custom	Document Number: MS-145X	Rev: 10
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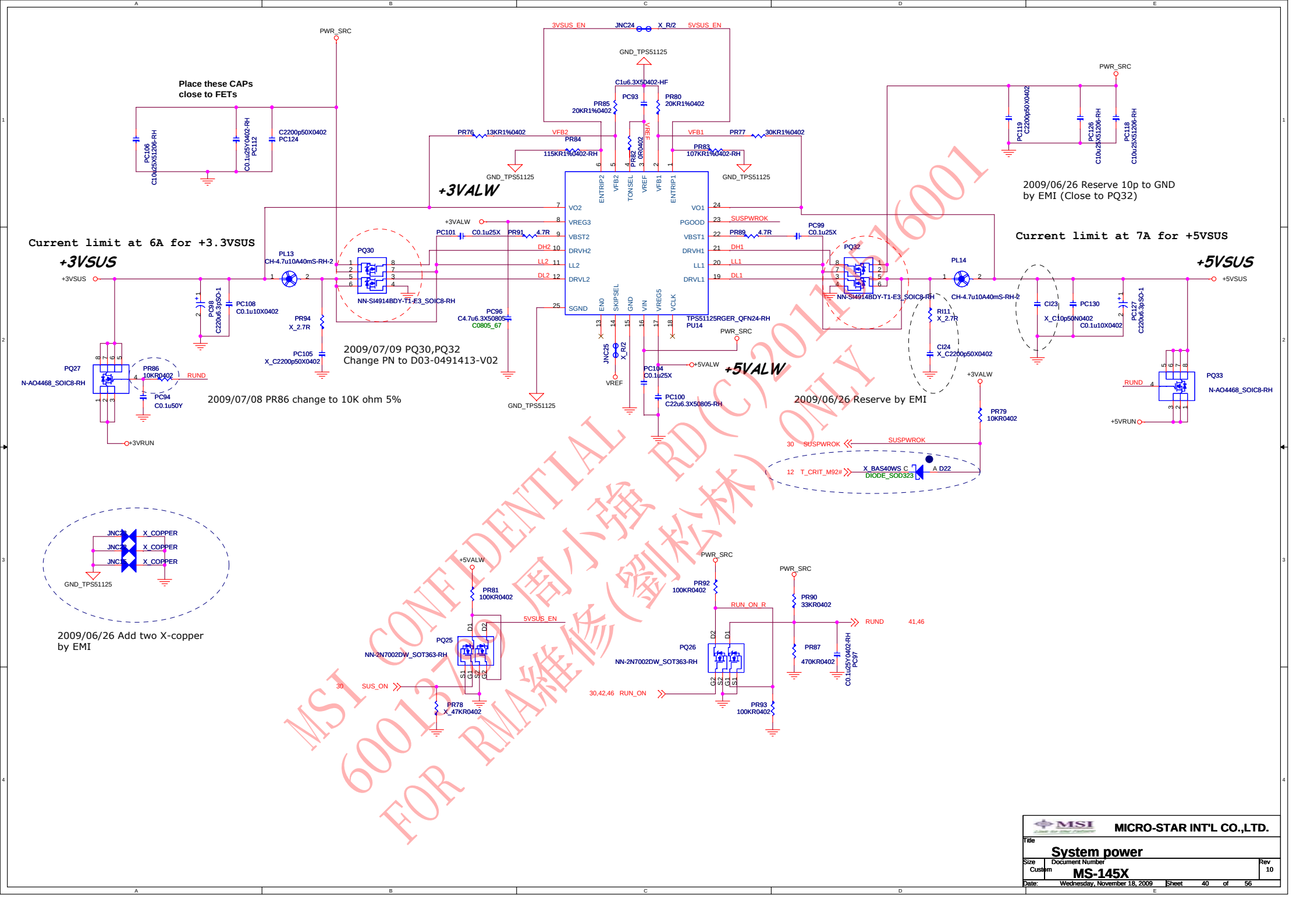

MSI MICRO-STAR INT'L CO.,LTD.

Title: System power

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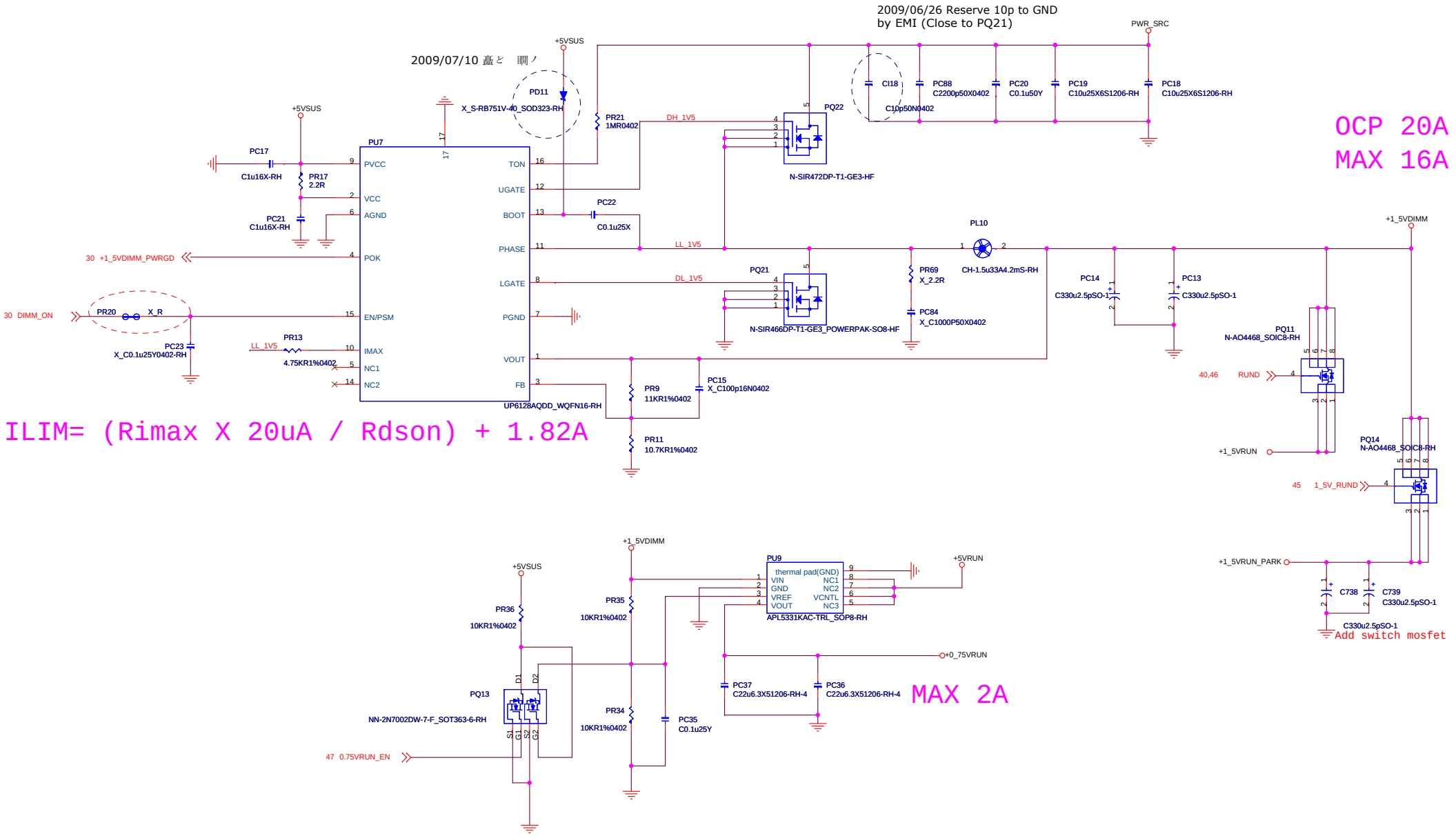
2009/06/26 Reserve 10p to GND
by EMI (Close to PQ21)
2009/07/10 矗と　瞷ノ
OCP 20A
MAX 16A
ILIM= (Rimax X 20uA / Rdson) + 1.82A
MAX 2A
Add switch mosfet
+5VSUS
PWR_SRC
+1_5VDIMM
+1_5VRUN
+0_75VRUN
PU7
UP6128AQDD_WQFN16-RH
PU9
APL5331KAC-TRL_SOP8-RH
PQ13
NN-2N7002DW-7-F_SOT363-6-RH
PQ22
N-SIR472DP-T1-GE3-HF
PQ21
N-SIR466DP-T1-GE3_POWERPAK-SO8-HF
PQ11
PQ14
N-AO4468_SOIC8-RH
PL10
CH-1.5u33A4.2mS-RH
PD11
X_S-RB751V-40_SOD323-RH
PC17
C1u16X-RH
PC21
C1u16X-RH
PC22
C0.1u25X
PC23
X_C0.1u25Y0402-RH
PC84
X_C1000P50X0402
PC88
C2200p50X0402
PC20
C0.1u50Y
PC19
C10u25X6S1206-RH
PC18
C10u25X6S1206-RH
CI18
C10p50N0402
PC14
C330u2.5pSO-1
PC13
C330u2.5pSO-1
C738
C739
C330u2.5pSO-1
PC15
X_C100p16N0402
PC35
C0.1u25Y
PC36
C22u6.3X51206-RH-4
PC37
C22u6.3X51206-RH-4
PR17
2.2R
PR21
1MR0402
PR20
X_R
PR13
4.75KR1%0402
PR9
11KR1%0402
PR11
10.7KR1%0402
PR69
X_2.2R
PR35
10KR1%0402
PR36
10KR1%0402
PR34
10KR1%0402
30 +1_5VDIMM_PWRGD
30 DIMM_ON
LL_1V5
DH_1V5
DL_1V5
40,46 RUND
45 1_5V_RUND
47 0.75VRUN_EN
+1_5VRUN_PARK
PVCC
VCC
AGND
POK
EN/PSM
IMAX
NC1
NC2
TON
UGATE
BOOT
PHASE
LGATE
PGND
VOUT
FB
thermal pad(GND)
VIN
GND
VREF
VOUT
NC1
NC2
VCNTL
NC3
MICRO-STAR INT'L CO.,LTD.
SMDDR_VTERM /1_5VRUN
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Custom
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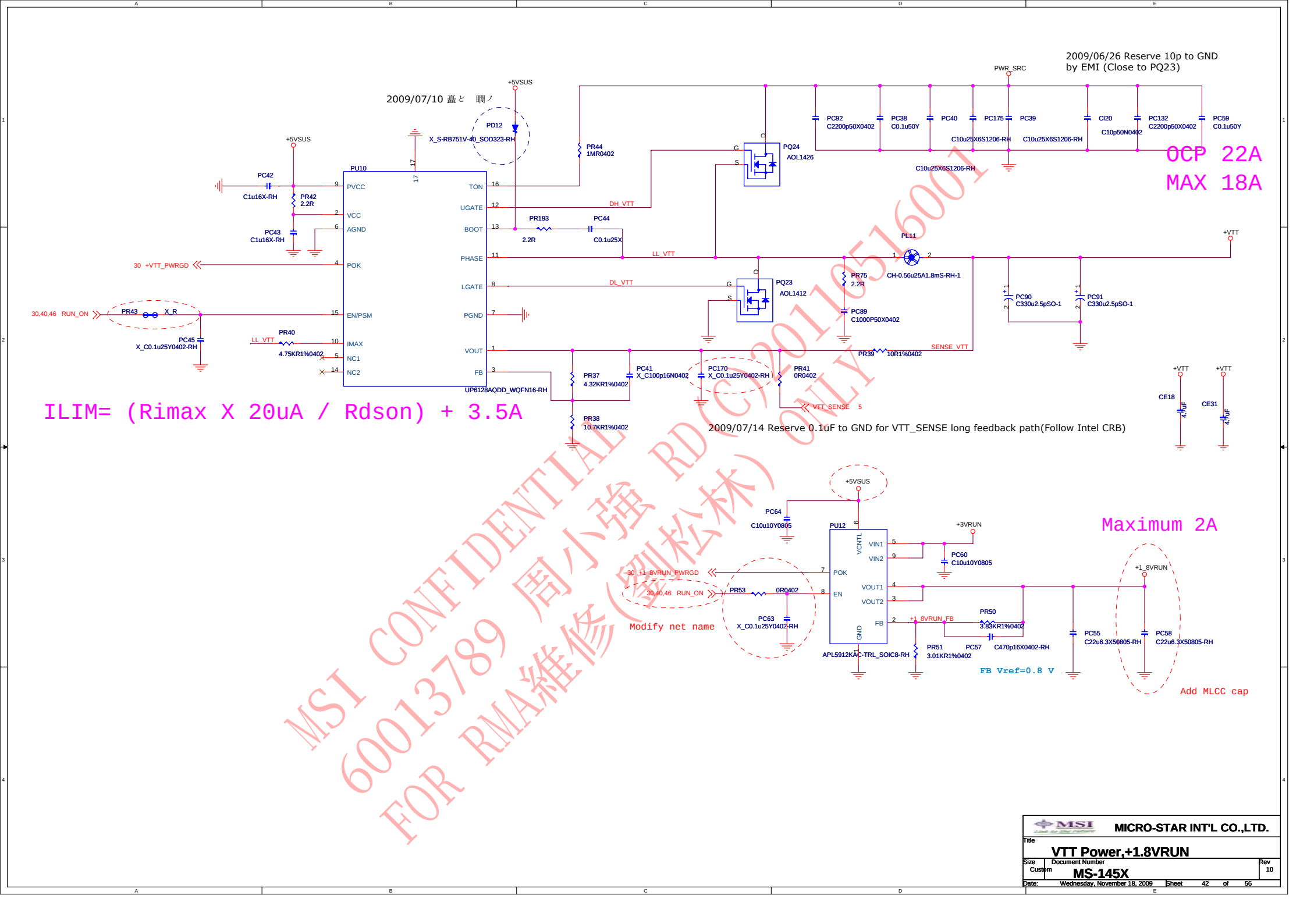
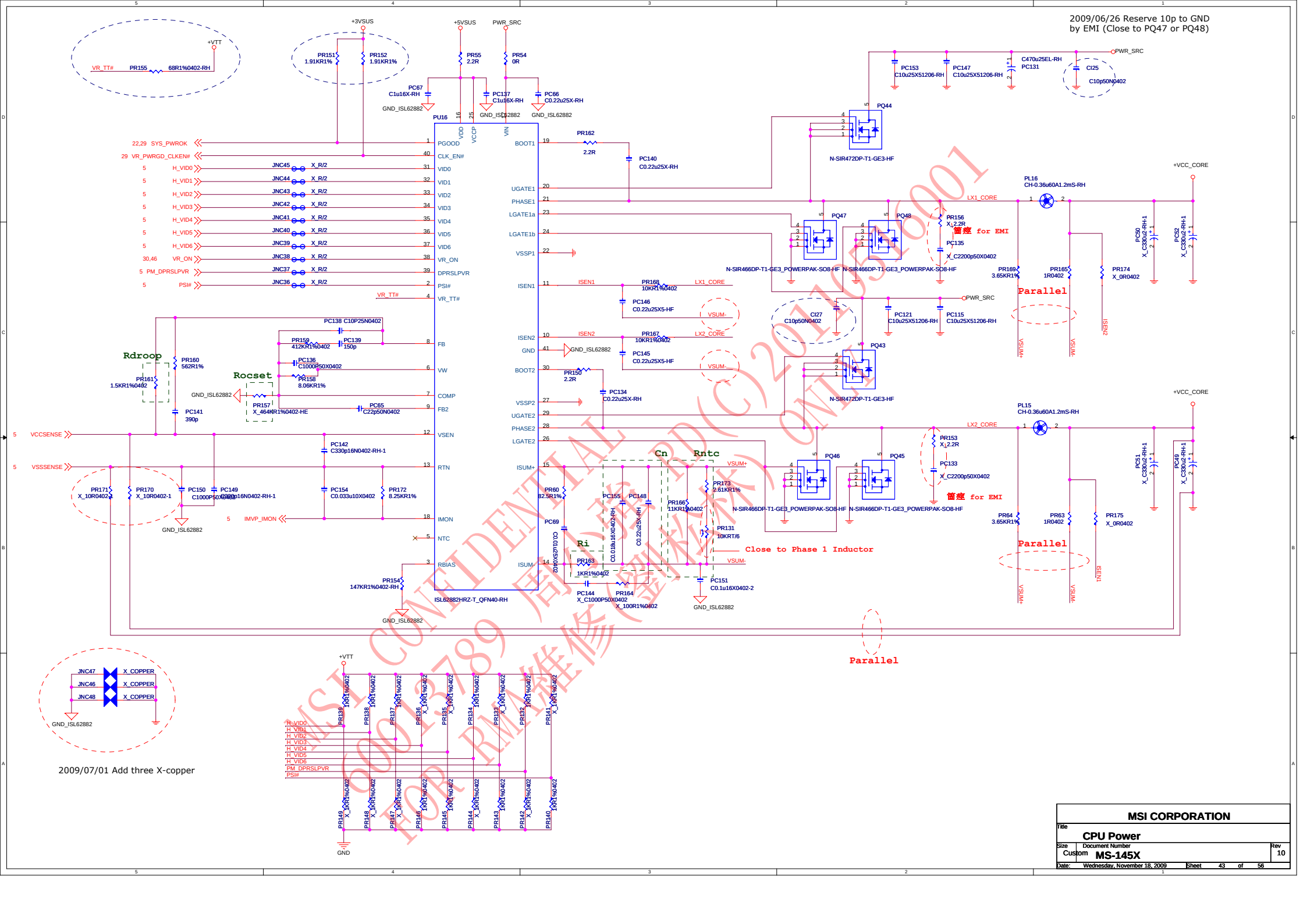
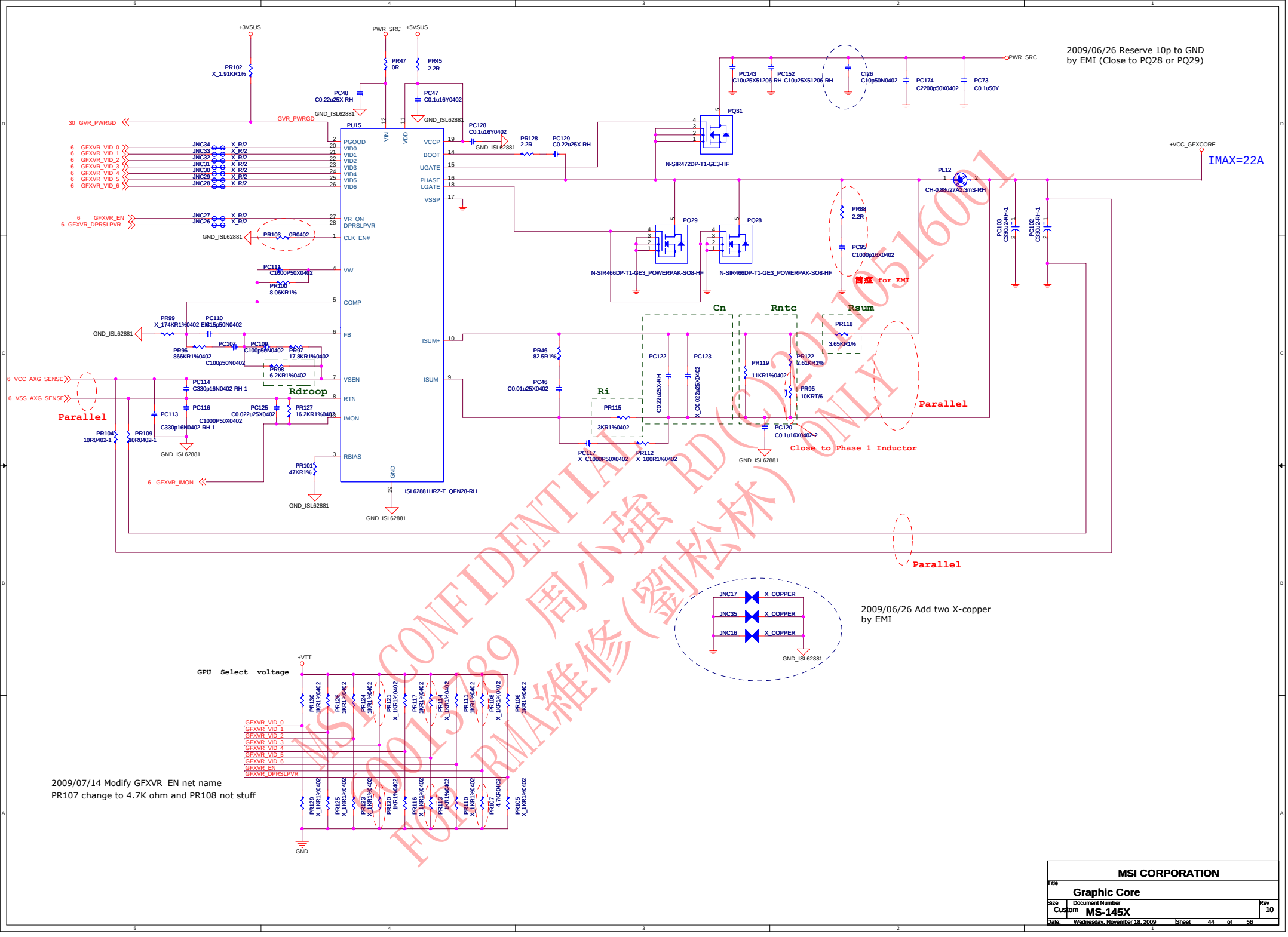

2009/06/26 Reserve 10p to GND
by EMI (Close to PQ23)
2009/07/10 矗と 瞷ノ
OCP 22A
MAX 18A
ILIM= (Rimax X 20uA / Rdson) + 3.5A
2009/07/14 Reserve 0.1uF to GND for VTT_SENSE long feedback path(Follow Intel CRB)
Maximum 2A
Modify net name
FB Vref=0.8 V
Add MLCC cap
UP6128AQDD_WQFN16-RH
APL5912KAC-TRL_SOIC8-RH
MSI CONFIDENTIAL
60013789 周小強 RD(C)20110516001
FOR RMA維修(張松林) ONLY
MICRO-STAR INT'L CO.,LTD.
VTT Power,+1.8VRUN
MS-145X
Wednesday, November 18, 2009


2009/06/26 Reserve 10p to GND
by EMI (Close to PQ47 or PQ48)
PU16
ISL62882HRZ-T_QFN40-RH
Rdroop
Rocset
Cn
Rntc
Ri
Close to Phase 1 Inductor
Parallel
固態 for EMI
N-SIR472DP-T1-GE3-HF
N-SIR466DP-T1-GE3_POWERPAK-SO8-HF
2009/07/01 Add three X-copper
MSI CONFIDENTIAL
600137789 周小强 PD(C)20110516001
FOR RMA维修(资保科) ONLY
MSI CORPORATION
CPU Power
MS-145X
Wednesday, November 18, 2009


2009/06/26 Reserve 10p to GND by EMI (Close to PQ28 or PQ29)
IMAX=22A
Parallel
Close to Phase 1 Inductor
Rdroop
Cn
Rntc
Rsum
Ri
2009/06/26 Add two X-copper by EMI
GPU Select voltage
2009/07/14 Modify GFXVR_EN net name
PR107 change to 4.7K ohm and PR108 not stuff
MSI CONFIDENTIAL
6001516001
FOR RMA維修(劉松林) ONLY
MSI CORPORATION
Graphic Core
MS-145X
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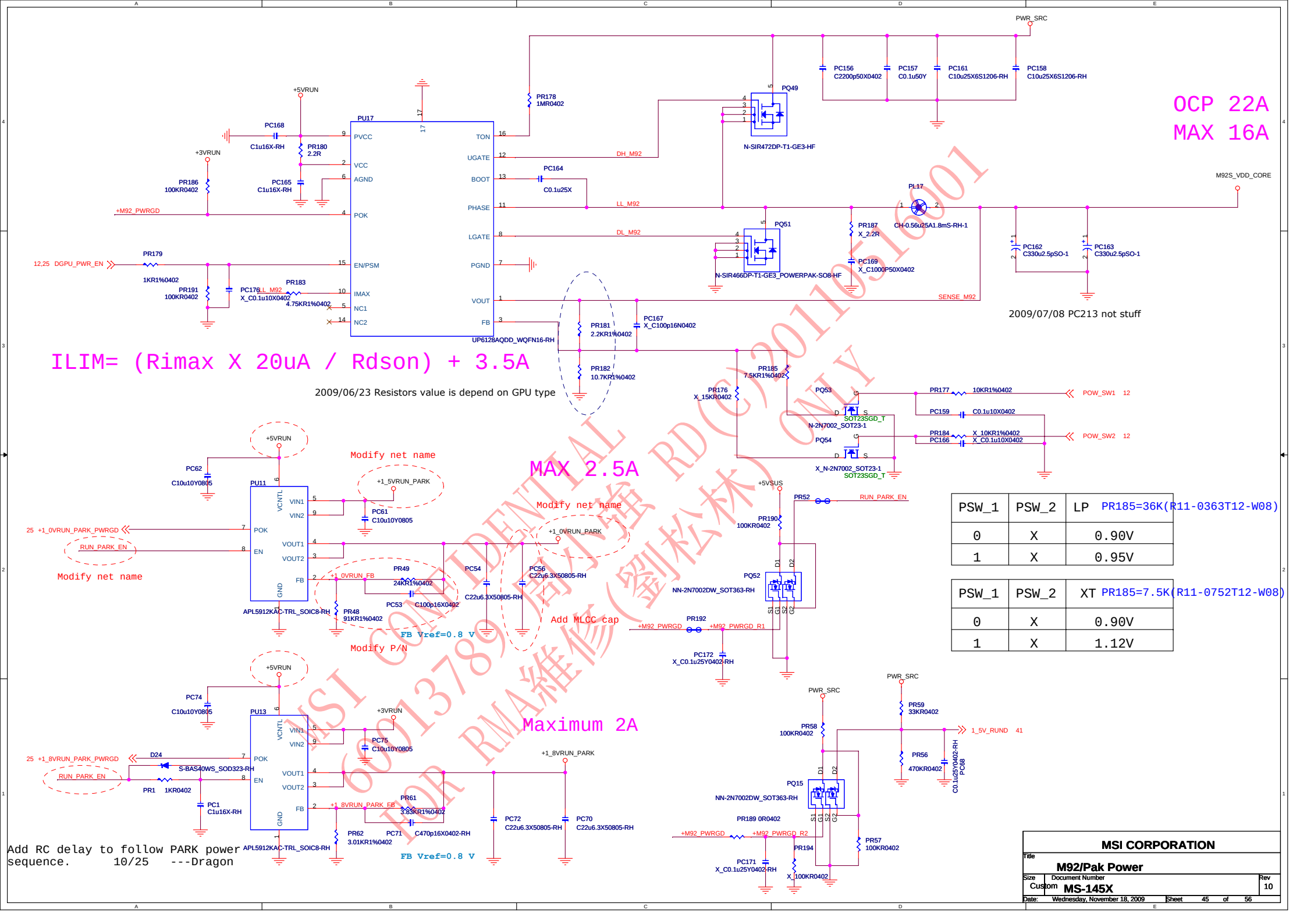

PSW_1	PSW_2	LP PR185=36K(R11-0363T12-W08)
0	X	0.90V
1	X	0.95V

PSW_1	PSW_2	XT PR185=7.5K(R11-0752T12-W08)
0	X	0.90V
1	X	1.12V

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	M92/Pak Power
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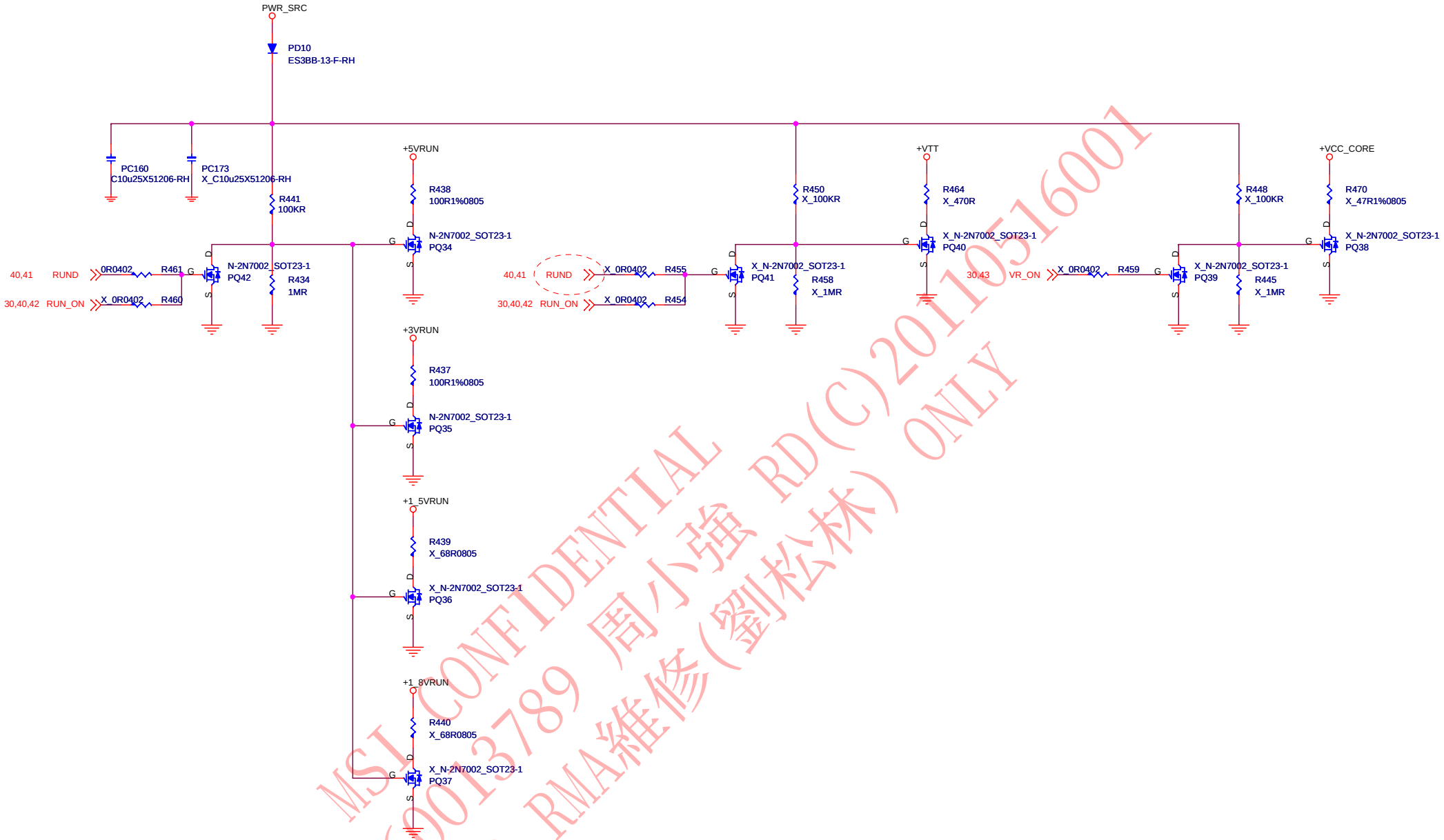

MICRO-STAR INT'L CO.,LTD.

Title: Discharge Circuits

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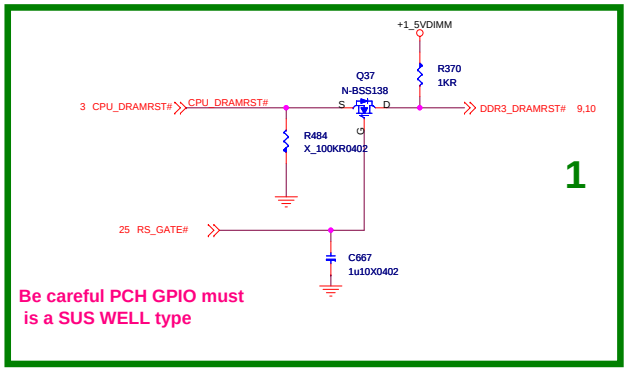

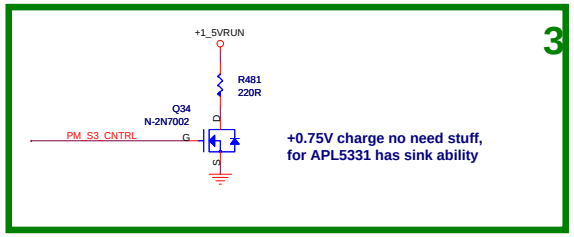

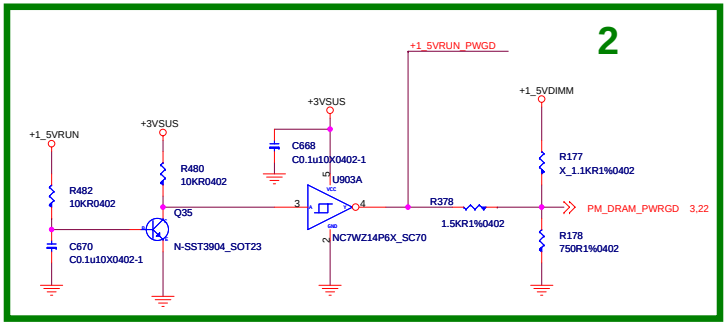

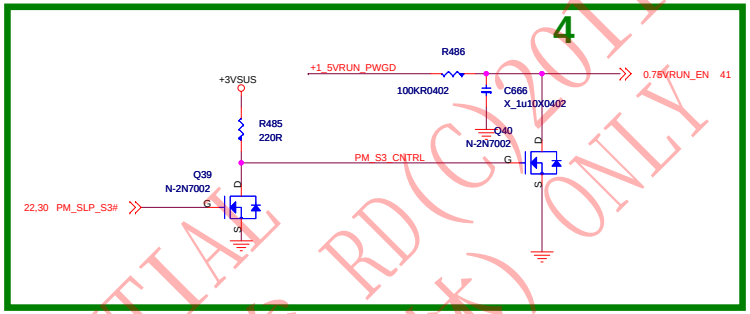

MICRO-STAR INT'L CO.,LTD.

Title: INTEL S3 POWER

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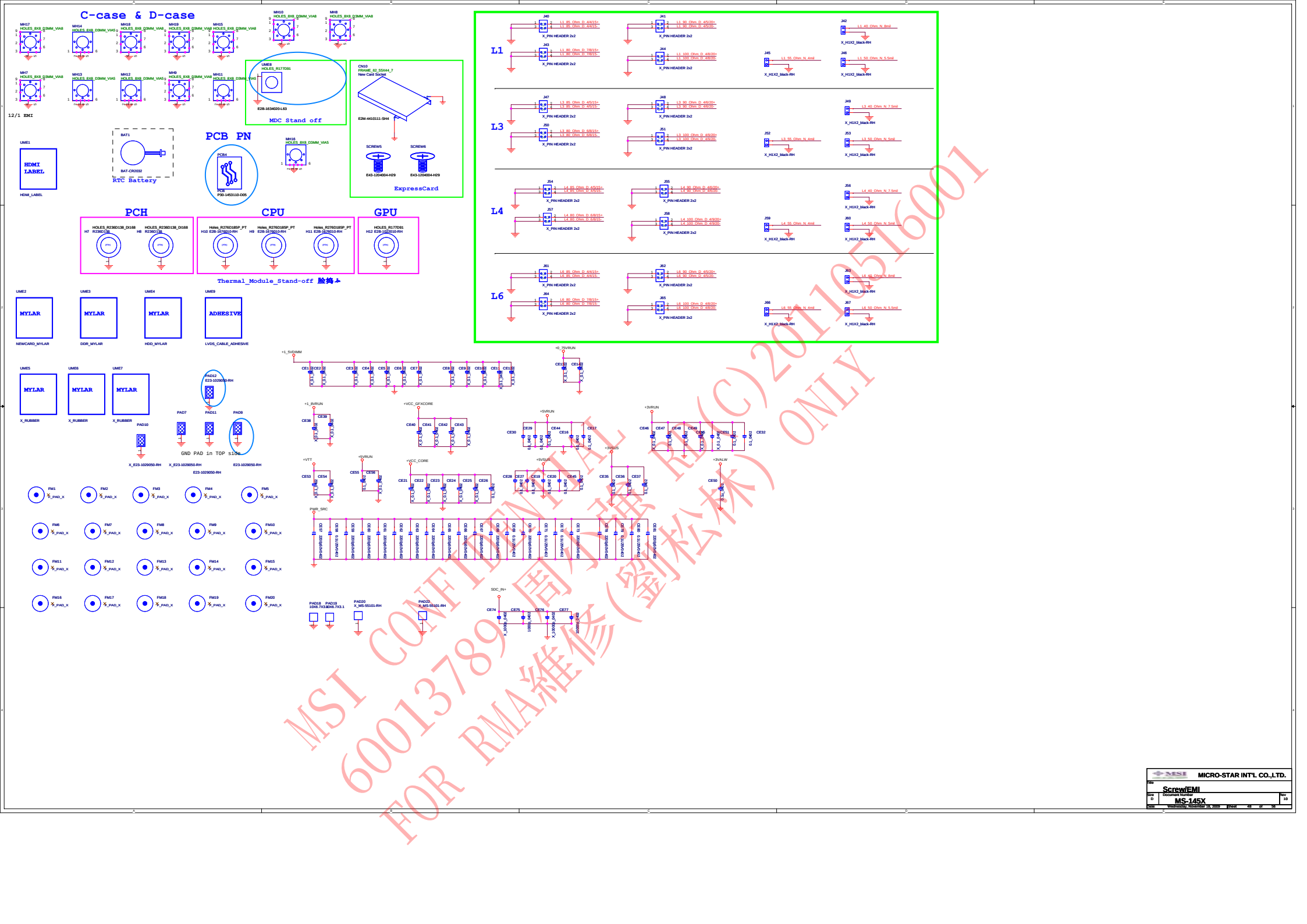

Title	Screw/EMI
Size	D
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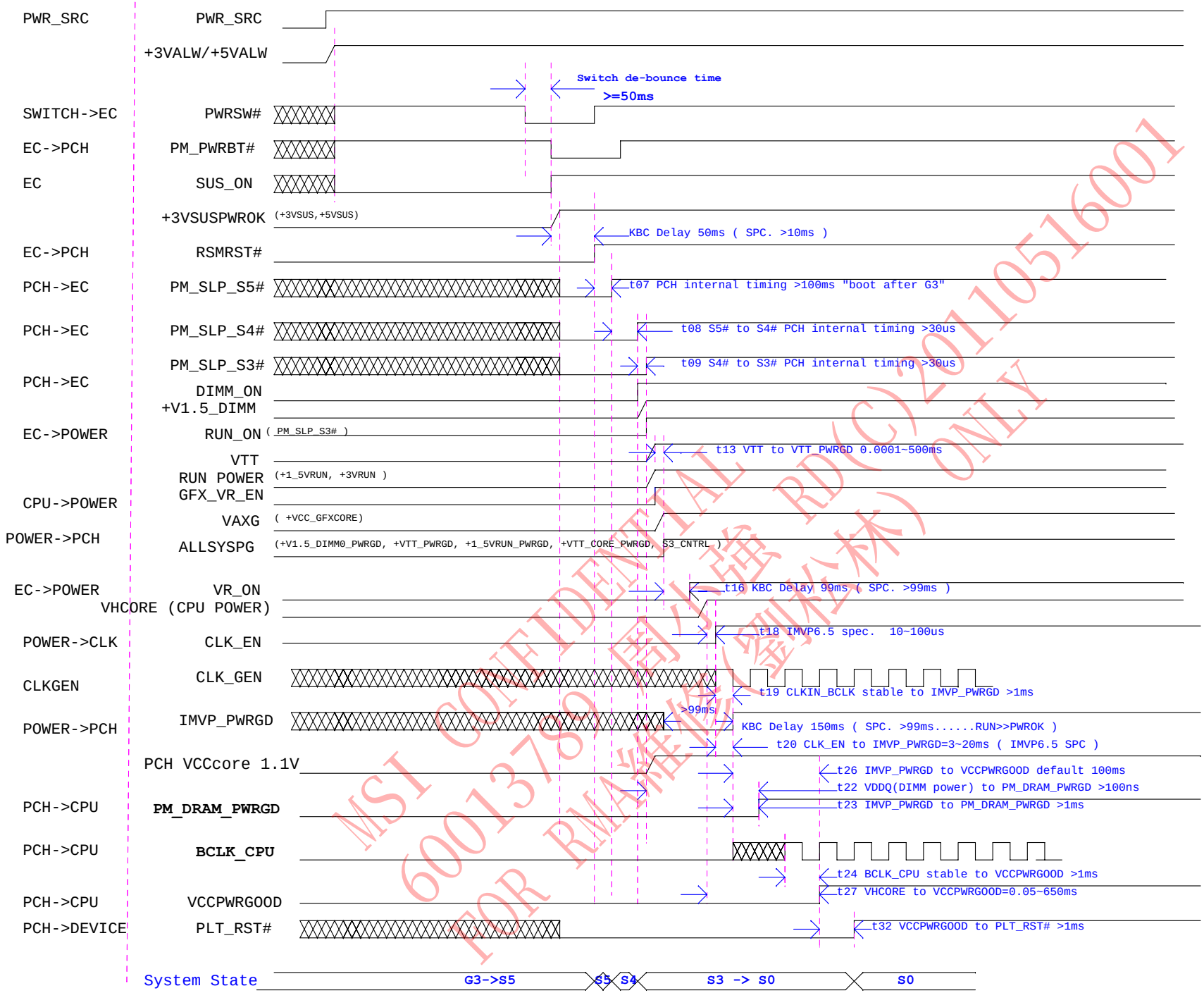
MICRO-STAR INT'L CO.,LTD.

Calpella System Power on Sequence DC mode



MSI MICRO-STAR INT'L CO.,LTD.

Title: Power on Sequency

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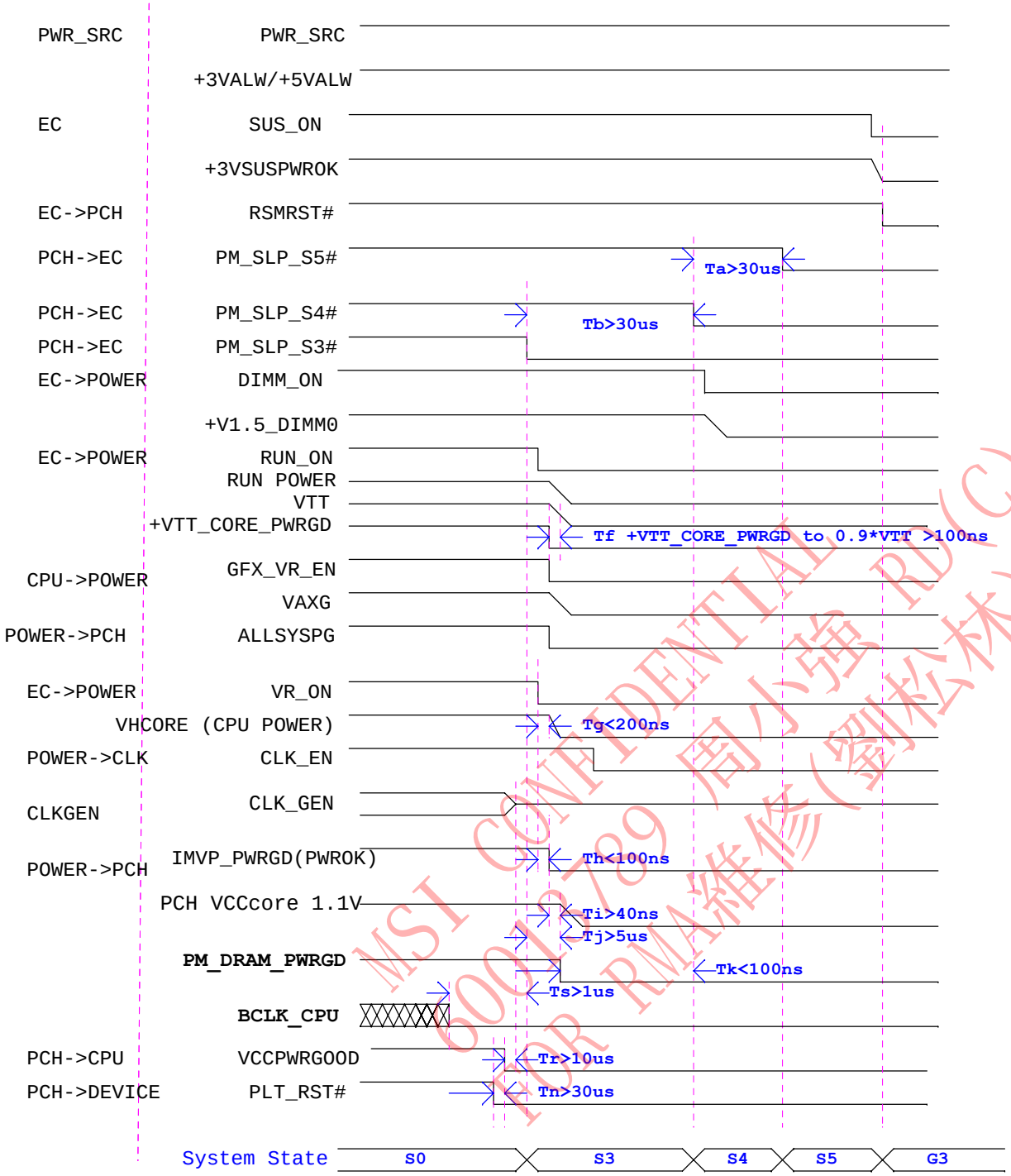
Power down Sequence DC mode S0 to G3



MICRO-STAR INT'L CO.,LTD.

Title: Power on Sequency

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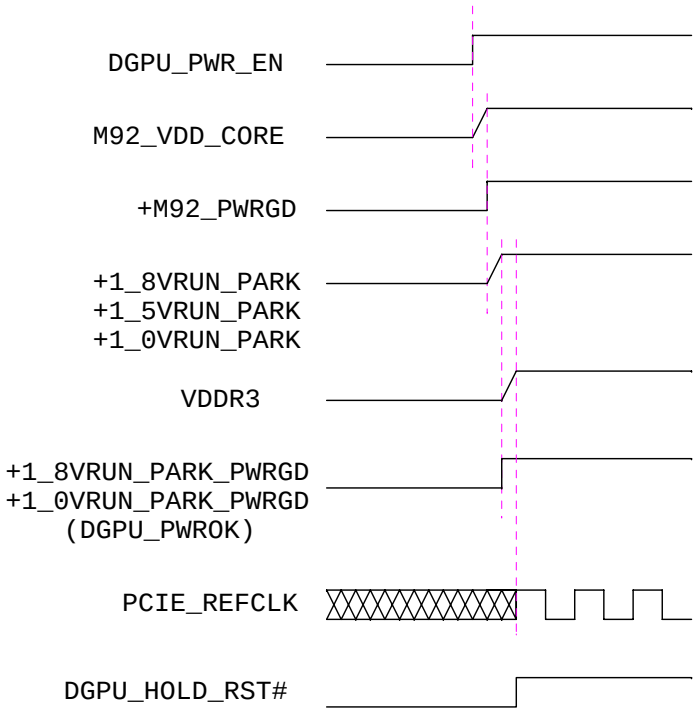
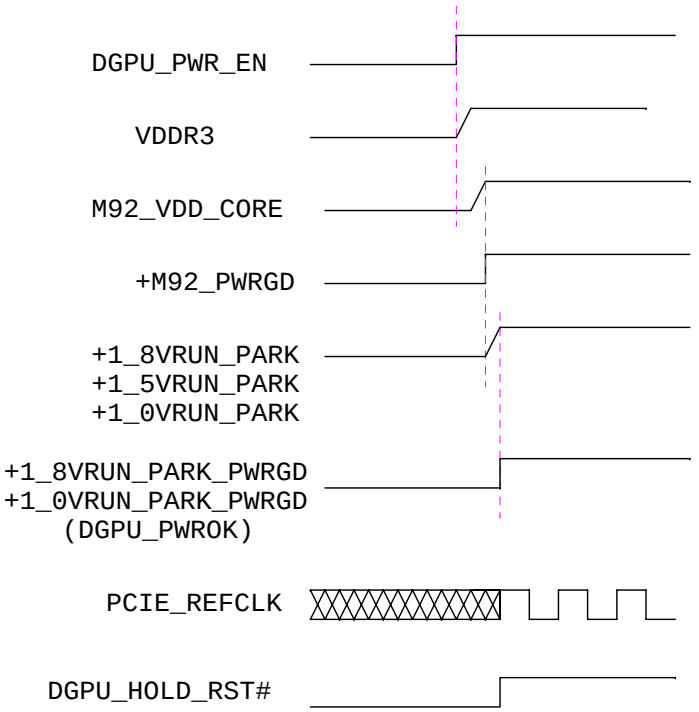
M92 Power on Sequence



PARK Power on Sequence



MICRO-STAR INT'L CO.,LTD.

Title: M92/PARK Power on Sequence

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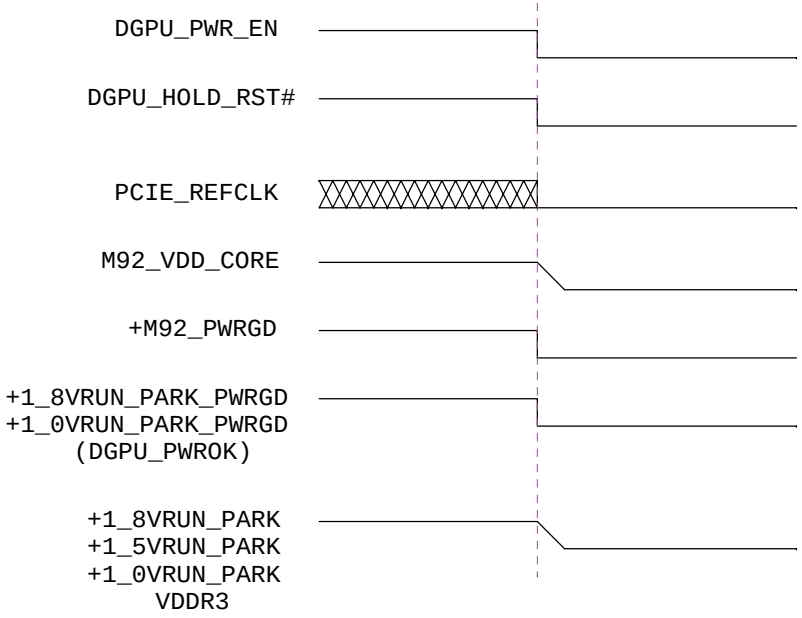
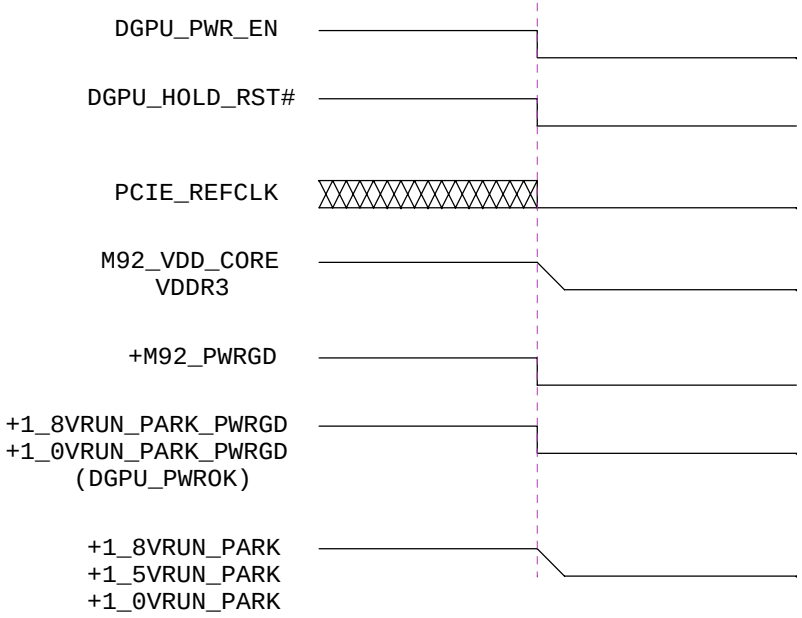
M92 Power down Sequence



PARK Power down Sequence



MICRO-STAR INT'L CO.,LTD.

Title: M92/PARK Power down Sequence

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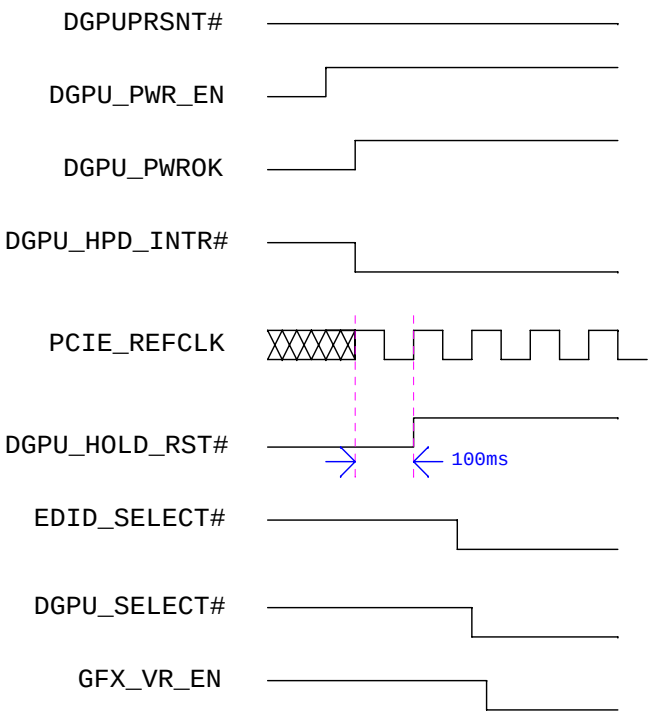
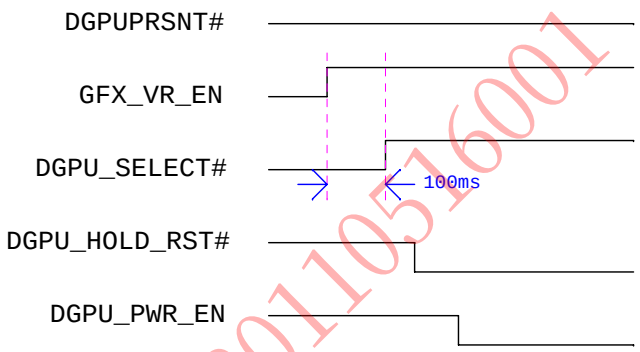
Switchable DGPU Power on Sequence
Discrete Mode



Switchable DGPU Power off Sequence
UMA Mode



MICRO-STAR INT'L CO.,LTD.

Title: Switchable Power Sequence

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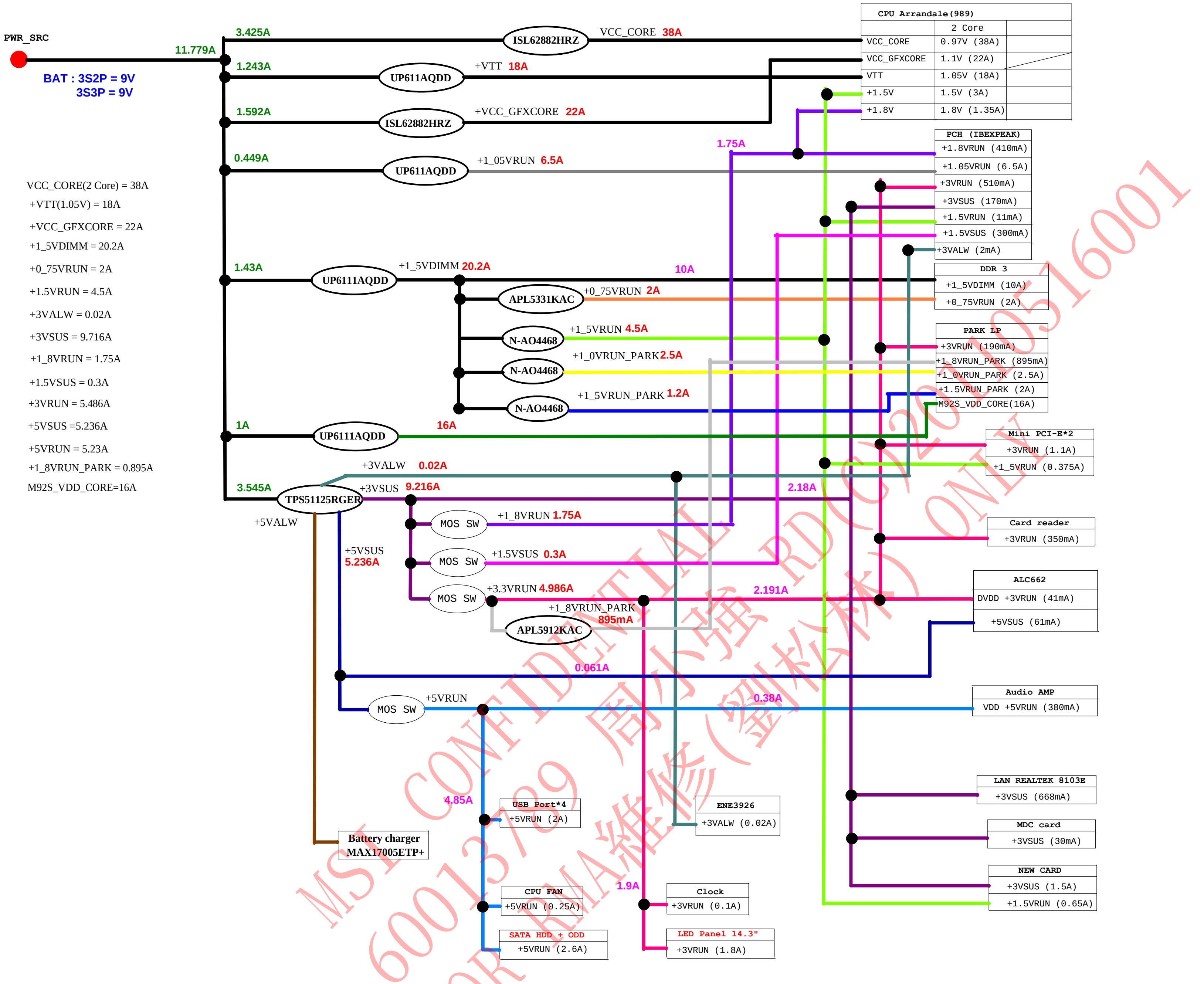

PWR_SRC
BAT : 3S2P = 9V
3S3P = 9V
11.779A
3.425A
ISL62882HRZ
VCC_CORE 38A
1.243A
UP611AQDD
+VTT 18A
1.592A
ISL62882HRZ
+VCC_GFXCORE 22A
0.449A
UP611AQDD
+1_05VRUN 6.5A
1.75A
VCC_CORE(2 Core) = 38A
+VTT(1.05V) = 18A
+VCC_GFXCORE = 22A
+1_5VDIMM = 20.2A
+0_75VRUN = 2A
+1.5VRUN = 4.5A
+3VALW = 0.02A
+3VSUS = 9.716A
+1_8VRUN = 1.75A
+1.5VSUS = 0.3A
+3VRUN = 5.486A
+5VSUS =5.236A
+5VRUN = 5.23A
+1_8VRUN_PARK = 0.895A
M92S_VDD_CORE=16A
1.43A
UP6111AQDD
+1_5VDIMM 20.2A
10A
APL5331KAC
+0_75VRUN 2A
N-AO4468
+1_5VRUN 4.5A
N-AO4468
+1_0VRUN_PARK 2.5A
N-AO4468
+1_5VRUN_PARK 1.2A
1A
UP6111AQDD
16A
+3VALW 0.02A
3.545A
TPS51125RGER
+3VSUS 9.216A
2.18A
+5VALW
MOS SW
+1_8VRUN 1.75A
+5VSUS
5.236A
MOS SW
+1.5VSUS 0.3A
MOS SW
+3.3VRUN 4.986A
2.191A
+1_8VRUN_PARK
895mA
APL5912KAC
0.061A
MOS SW
+5VRUN
0.38A
4.85A
1.9A
CPU Arrandale(989)
2 Core
VCC_CORE 0.97V (38A)
VCC_GFXCORE 1.1V (22A)
VTT 1.05V (18A)
+1.5V 1.5V (3A)
+1.8V 1.8V (1.35A)
PCH (IBEXPEAK)
+1.8VRUN (410mA)
+1.05VRUN (6.5A)
+3VRUN (510mA)
+3VSUS (170mA)
+1.5VRUN (11mA)
+1.5VSUS (300mA)
+3VALW (2mA)
DDR 3
+1_5VDIMM (10A)
+0_75VRUN (2A)
PARK LP
+3VRUN (190mA)
+1_8VRUN_PARK (895mA)
+1_0VRUN_PARK (2.5A)
+1.5VRUN_PARK (2A)
M92S_VDD_CORE(16A)
Mini PCI-E*2
+3VRUN (1.1A)
+1_5VRUN (0.375A)
Card reader
+3VRUN (350mA)
ALC662
DVDD +3VRUN (41mA)
+5VSUS (61mA)
Audio AMP
VDD +5VRUN (380mA)
LAN REALTEK 8103E
+3VSUS (668mA)
MDC card
+3VSUS (30mA)
NEW CARD
+3VSUS (1.5A)
+1.5VRUN (0.65A)
ENE3926
+3VALW (0.02A)
USB Port*4
+5VRUN (2A)
Battery charger
MAX17005ETP+
CPU FAN
+5VRUN (0.25A)
SATA HDD + ODD
+5VRUN (2.6A)
Clock
+3VRUN (0.1A)
LED Panel 14.3"
+3VRUN (1.8A)

MICRO-STAR INT'L CO.,LTD.

Title: Power MAP

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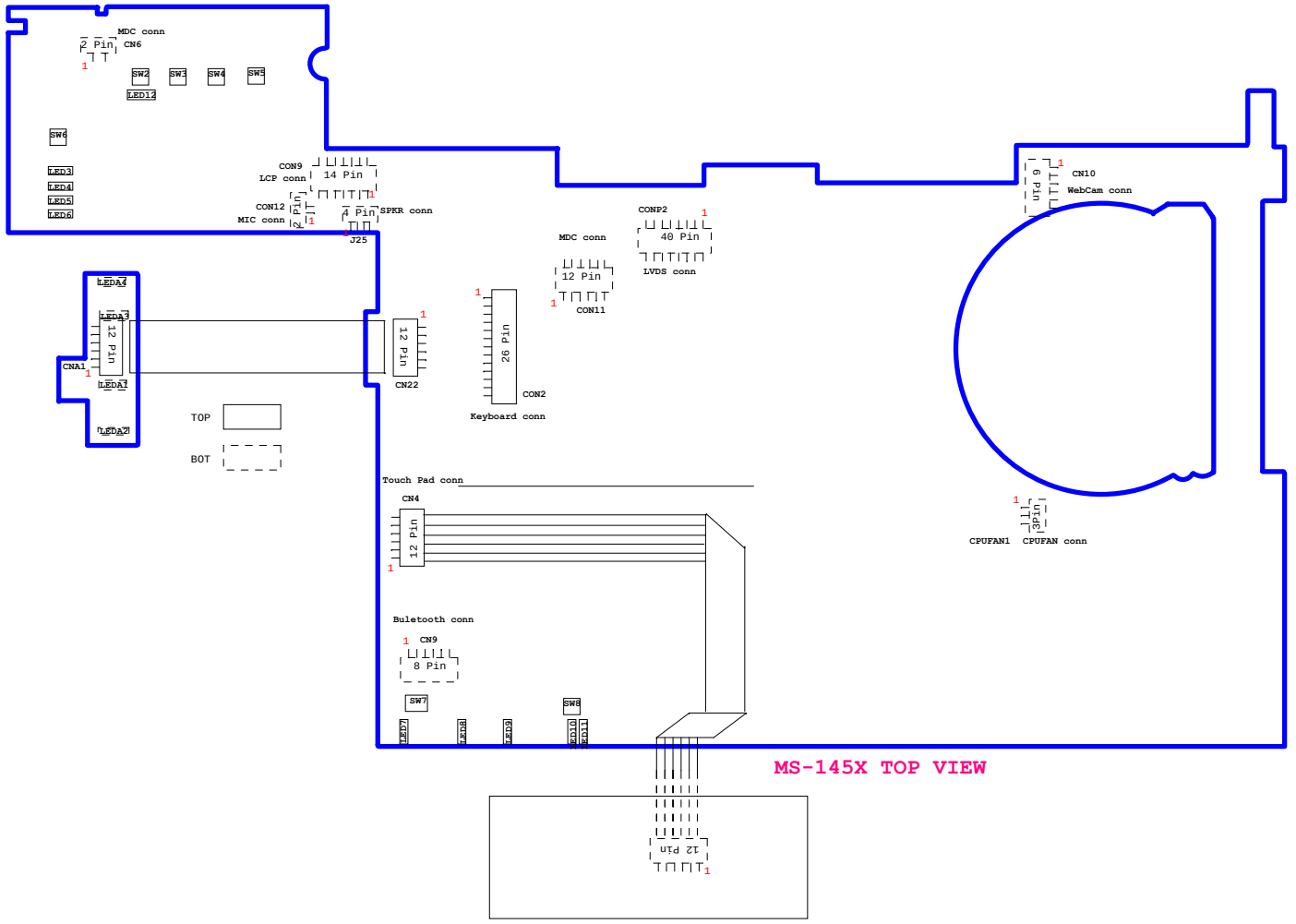
MS-145X	
SW2	Power_button(FOR OEM)
SW3	HotKeyP1_button(FOR OEM)
SW4	WLAN/BT_button(FOR OEM)
SW5	Search/Webcam_button (FOR OEM)
SW6	Power_button(FOR Channel)
SW7	Right_button
SW8	Left_button

MS-145X	
LED3	HDD LED(FOR OEM)
LED4	NUM_LED(FOR OEM)
LED5	CAP_LED(FOR OEM)
LED6	SCR_LED (FOR OEM)
LED7	BT_LED
LED8	WLAN_LED
LED9	ACPI_LED
LED10	CHARGE_LED
LED11	BATTERY_LOW_LED
LED12	POWER_LED

MS-145XA	
LEDA1	NUM_LED(FOR OEM)
LEDA2	HDD_LED(FOR OEM)
LEDA3	CAP_LED(FOR OEM)
LEDA4	SCR_LED (FOR OEM)

MS-145X : Main Board
MS-145XA : LED board



MS-145X TOP VIEW

MICRO-STAR INT'L CO.,LTD.

Title: Topology

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2009/06/25 [Page33] Add LED and switch function for OEM reserved
[Page30] Delete KBOUT16,KBOUT17 for MS-1451 keyboard matrix
[Page41/42] Modify APL5912 VCNTL to +5VSUS
[Page43/44] Modify some RC footprint and value

2009/06/26 Modify circuit to Switchable
[Page19] Add LVDS common choke by EMI
[Page12] Reserve RGB 10p to GND
[Page38] Reserve BAT CLK and DATA 10p to GND
[Page39] Reserve 10p SDC_IN+ to GND and close to PQ57
Add two X-Copper
[Page40] Reserve 10p +5VSUS to GND and close to PQ60
Reserve 2.2R+2200p
[Page41] Reserve 10p PWR_SRC to GND and close to PQ68
[Page42] Reserve 10p PWR_SRC to GND and close to PQ72
[Page43] Reserve 10p PWR_SRC to GND and close to PQ75 or PQ76
Reserve 10p PWR_SRC to GND and close to PQ78 or PQ79
[Page43] Reserve 10p PWR_SRC to GND and close to PQ81 or PQ82
Add two X-Copper

2009/06/29 [Page35] Modify CPU FAN.Add C121 and C304 by datasheet.Add one more RC for FAN speed calculation(as MS-1122)
Modify PARK circuit
Modify PCH PN to OB1-1675001 for Mobile IntelR 5 Series Chipset Full Feature
Modify Audio jack PN to N54-05F0951-H06
Modify internal MIC PN to N32-1020790-A81
Modify power sequence map

2009/07/01 [Page3] R234,R412单0A龟喷挡獬 /》琇 簿埃
BPM#[0~7] remove
BCLK 獳痙from PCH,簿埃from CLOCK GEN.
[Page5] Short bead
[Page6] Short bead
[Page7] VSS_NCTF1~7 remove
[Page8] 獳痙CFG 代骾,尢緇簿埃
[Page9] SA0_DIM0のSA1_DIM0э 0 ohm癸
簿埃330uF, CPU のswitching power狠 T
[Page10] SA0_DIM1э 0 ohm癸
簿埃330uF, CPU のswitching power狠 T
[Page12] 干 HPD絽隔
[Page16] MDA0~MDA7 swap
[Page18] CRTのLVDS 箇痙篆 (for MS-1454)Aэ 虫聋 0 ohm
EDID switch 篆方pin 0.1uF
R3238,R3239э 10K ohm
簿埃BR-AD-ADJ,BR-PWM-ADJ 嘿э PWM-ADJ,HDMI DDC 嘿э HDM_SDAのHDM_SCL
[Page19] 耻獦LC э 0.1uH+10pF
穗糟LVDS DDC pull high,backlight adj箇痙net PWM-ADJ

[Page25] DGPUPRSNT#э钡pull down
[Page30] э+1_8VRUN_PARK_PWRGDの+1_0VRUN_PARK_PWRGD挡 DGPU_PWROK
[Page34] C47,C49э 0.1uF
[Page43] Add three X-copper

10 VER

[Page21] Add GPU leakage circuit

[Page12] Reserve TEST_EN / JTAG_TMS pull high R for AMD recommend
Reserve GPIO26_TCK circuit for AMD recommend
Reserve JTAG_TRSTB pull low R for AMD recommend

[Page18] Change D23 P/N to D01-BAS4000-W01
for HDMI fail

[Page36] Change F9 P/N to D08-0100110-P16
for USB HDD shut down issue

[Page36] Change C351 P/N to C98-1011650-P01
for USB HDD shut down issue

[Page31] Stuff R134 for internal speaker POP noise.

[Page45] Add RC delay to follow PARK power sequence.

[Page12] GPIO26_TCK pull down through 10k R229.

MICRO-STAR INT'L CO.,LTD.
Title: History
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