AMD TR4(X399)

Promontry X370

01 Cover Sheet	27 Promontory GND	65 ACPI uPI-5VDIMM&3VSB
02 Block Diagram	28 SIO NCT6797D	66~70 CPU Power IR35201 16Phase
03 SP3 USB/LPC/UART/HDA	29 SIO HWM/PS2/Debug LED	71/72 CPU Power SOC IR35204 2Phase
04 SP3 SVI2/WAFL/JTAG/MISC	30 PCIE X16 Slot1	73 CPU Power VDDCR_SOC_S5
05 SP3 ACPI/SPI/I2C/CLK/GPIO	31 PCIE X8 Slot3	74 CPU Power Connector/RT9553B
06 SP3 PCIE	32 PCIE X16 Slot4	75 CPU Power 1P8V-MP2147
07 SP3 MEMORY A	33 PCIE X8 Slot5	76 CPU Power Audio-GS7133
08 SP3 MEMORY B	34 PCIE X1 Slot2	77 DDR PWR VPP25-MP2145/VTT
09 SP3 MEMORY C	35 SATA Connector	78/79 DDR01/02 PV4210-2 phase
10 SP3 MEMORY D	36/37 M2_1/M2_2/M2_3 Connector	80 VTTDDR
11 SP3 POWER	38 M2_4 WIFI+BT	81 PM-SY8288 1.05V/GS7133-2.5V
12 SP3 Reserved	39 NCT5635Y FAN NCT7718 Temp	82 CPU Power Good
13 SP3 DECOUPLING Cap	40 CPU FAN1-TYPE J	83 ATX/Front Panel
14 SP3 GND	41 CPU FAN2-TYPE K(PUMP)	84 RTC/Clear CMOS Circuit
15 DDR4 - DIMM_A	42/43/44 SYSTEM FAN1/2/3/4/5-TYPE K	85 OV Control/NCT3933/NCT5635Y
16 DDR4 - DIMM_B	45/46/47 EXTFAN1/2/3-NCT7802 IC	86/87 LED MCU Control JRGB/JCORSAIR/JRAINBOW
17 DDR4 - DIMM_C	48/49 LAN1/LAN2-Intel I211AT	88 LED BOARD SIDE
18 DDR4 - DIMM_D	50/52 Audio ALC1220P-48PIN	90 LED DIMM/Debug
19 DDR4 - POWER	53 USB2.0 Flash BIOS F75504	91/92 Clock Gen Clock Buffer
20 DDR4 - GND	54 USB Power	93 APU_HDT_DEBUG
21 CPU STRAPS	55/56 USB3.0 Rear Side	94 BOM Option
22 Promontory USB	57/58 Pericom1004 Redriver Rear Side-TYPE-C	95 EMI CAP/ SLG IC
23 Promontory PCIE/SATA	59/60 USB3.1 ASM3142	
24 Promontory CLOCK	61 USB2.0 Front Side-JUSB1/2	
25 Promontory GPIO/SMB/SPI	62 USB3.0 Front Side-JUSB4	
26 Promontory POWER	63/64 USB3.0 Front Side-JUSB5(Charge port)	

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Title: COVER SHEET

Size: Custom | Document Number: MS-7B92 | Rev: 12

Date: Friday, August 03, 2018 | Sheet 1 of 99

MS-7B92 Ver:12

CPU:
AMD Colfax

System Chipset:
Promontory X399
(XPOWER Enthusiast GAMING/SLI PLUS)

Main Memory:
DDR IV * 8 MAX:256 GB

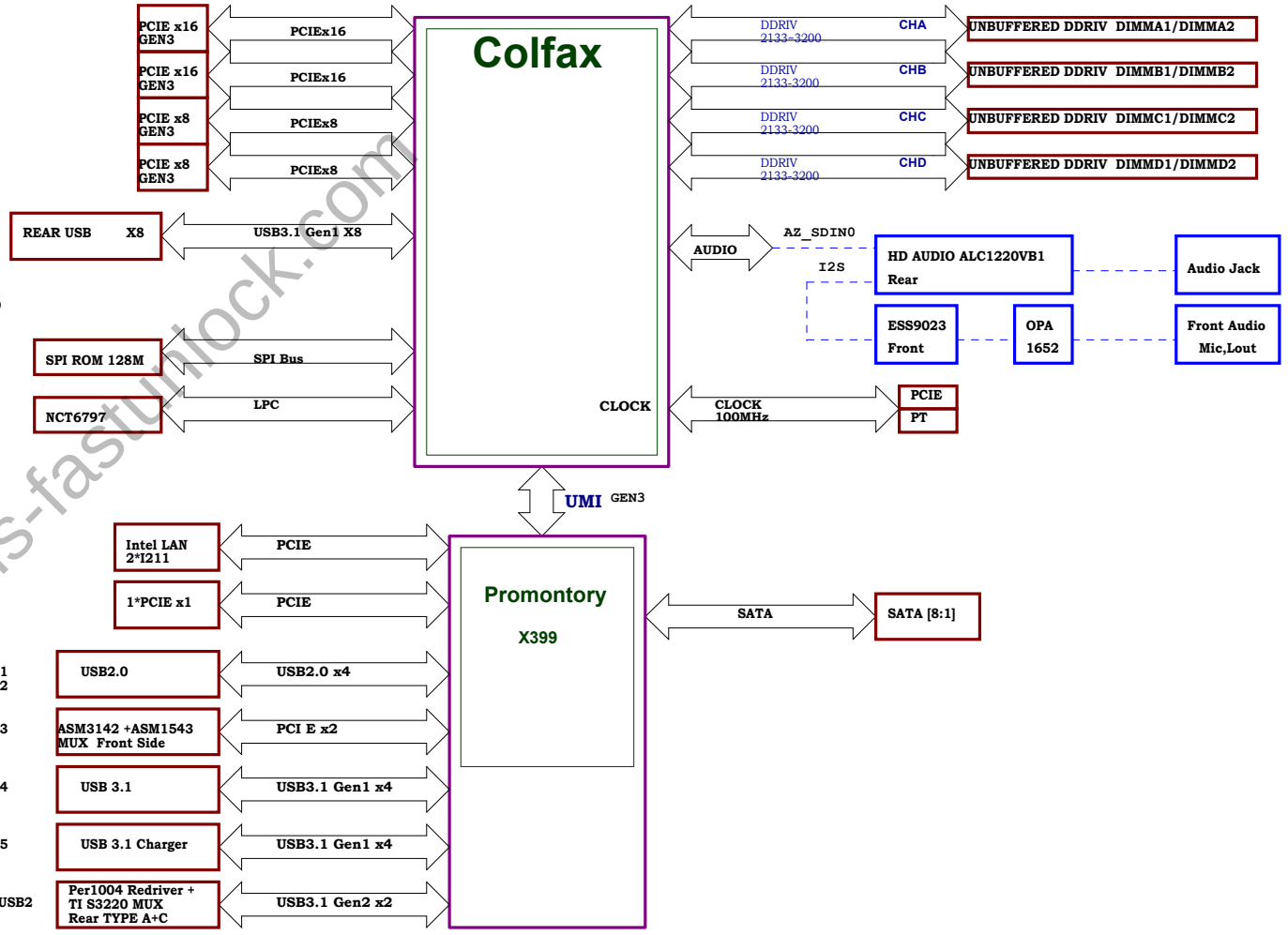
VRM
IR35201-16Phase
IR35204-3Phase

On Board Chipset:
LPC Super I/O --NCT6797
LAN Intel 211AT*2
Azalia CODEC - Realtek ALC1220P-VB + ESS 9023
ASM3142 +ASM1543 MUX Front Side

Expansion Slots:
From CPU
PCI Express X16 Slot * 2
PCI Express X8 Slot * 2

From FCH
PCI Express X1 Slot * 1

X399 BLOCK DIAGRAM



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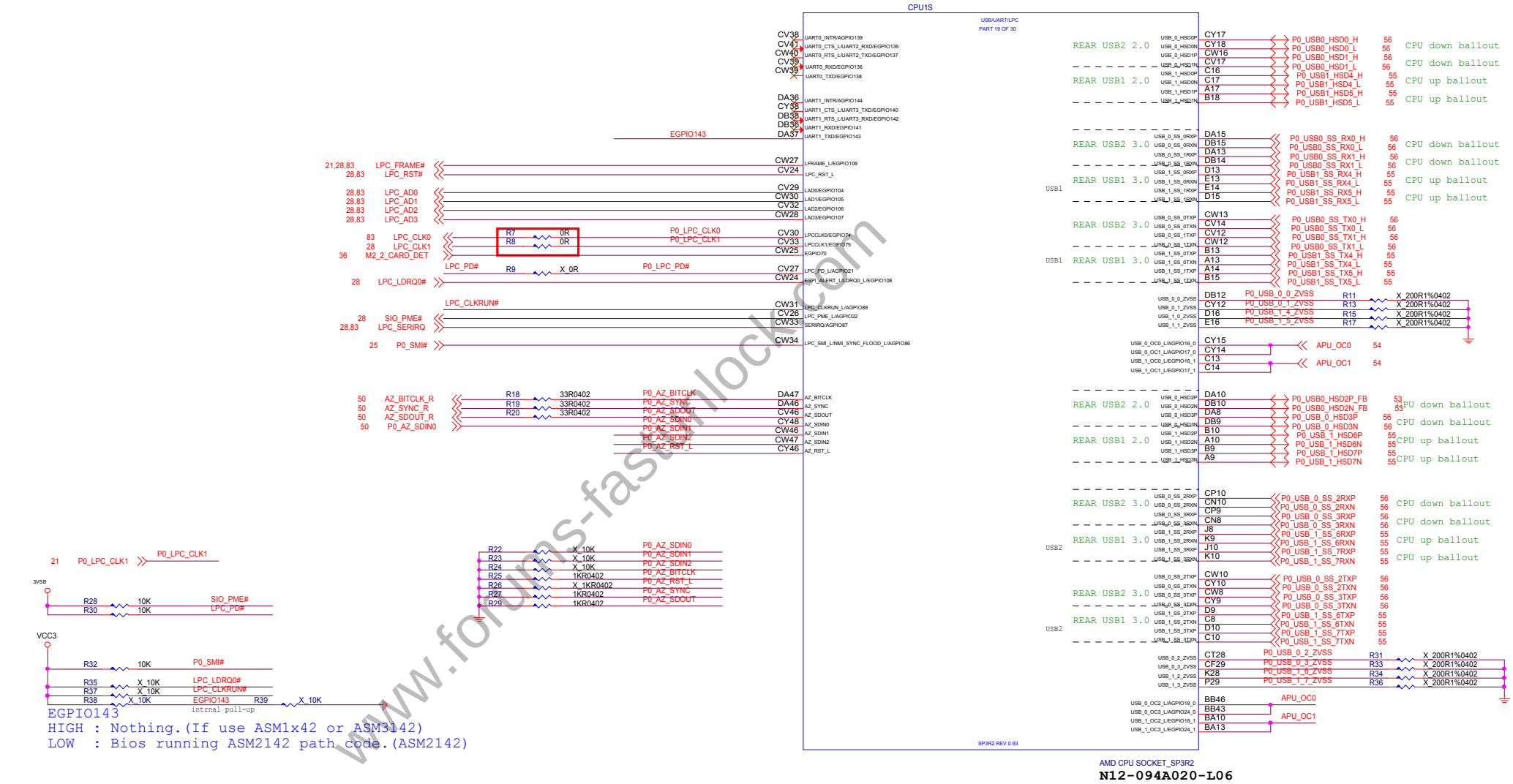
Title: Block Diagram		
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 2 of 99	

USB/LPC/UART/HDA



Title	TR USB/LPC/UART/HDA	
Size	Document Number MS-7B92	Rev 12
Date:	Friday, August 03, 2018	Sheet 3 of 99

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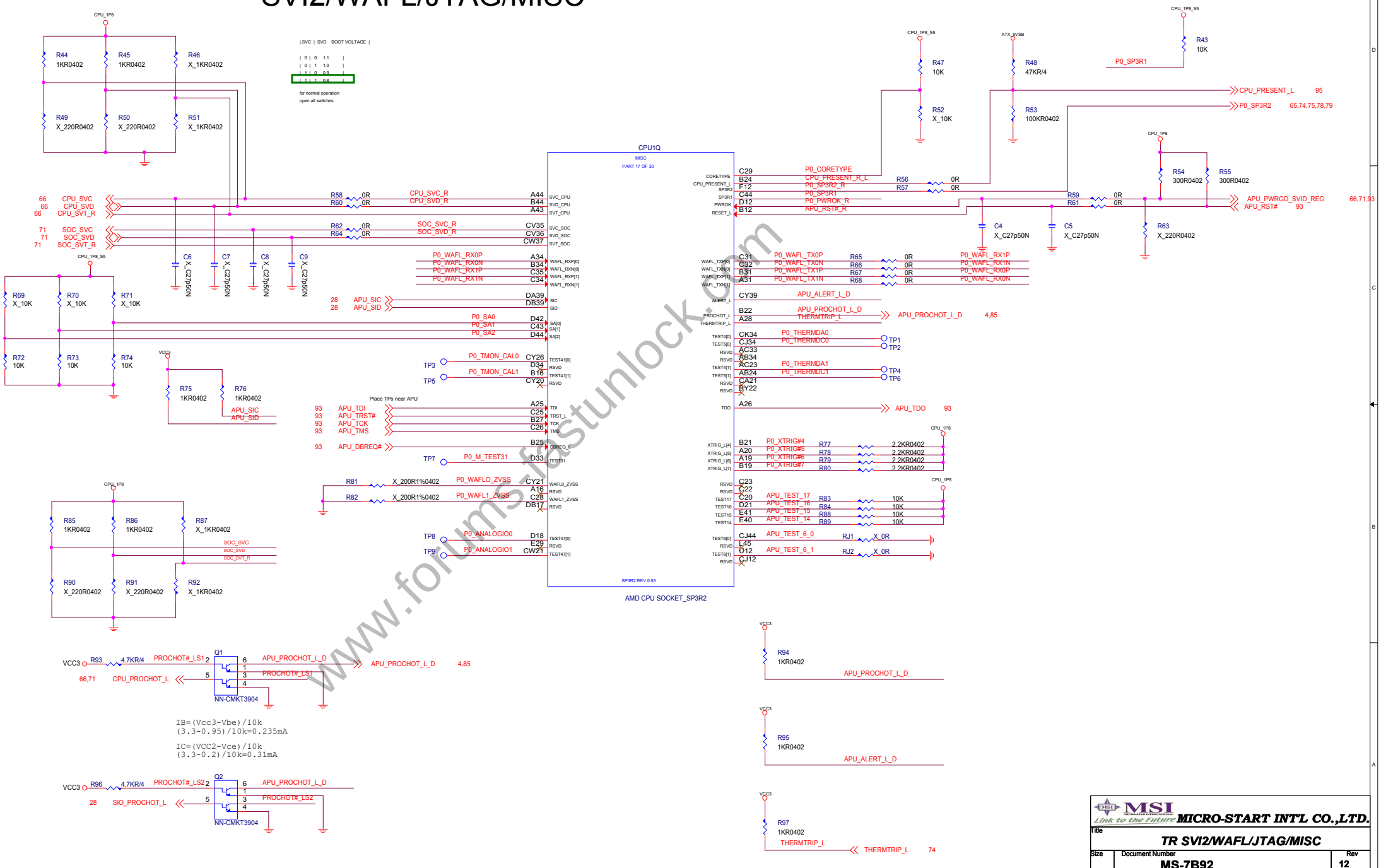
SVI2/WAFL/JTAG/MISC



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Size	Document Number: MS-7B92
Rev	12
Date:	Friday, August 03, 2018
Sheet	4 of 99

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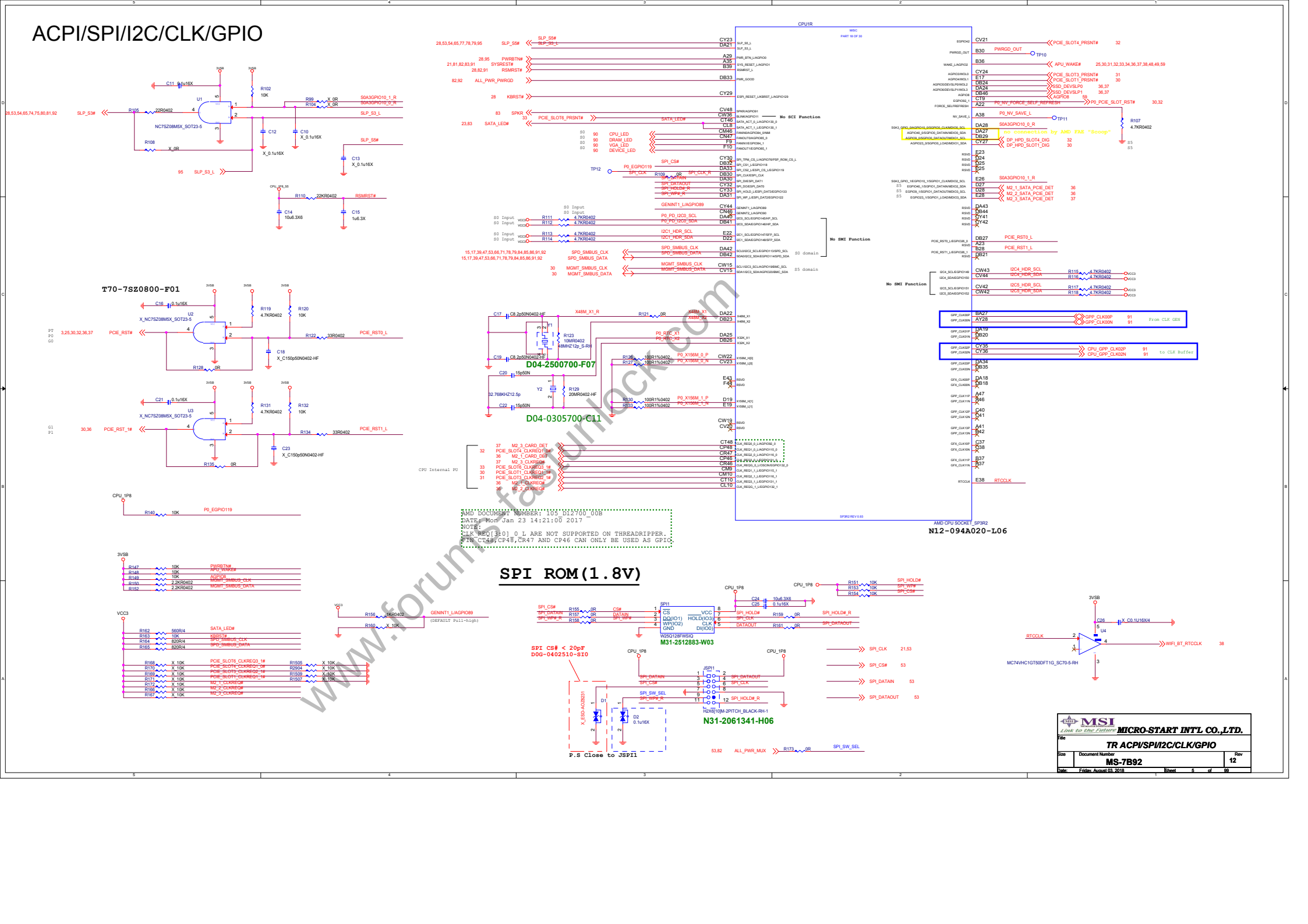
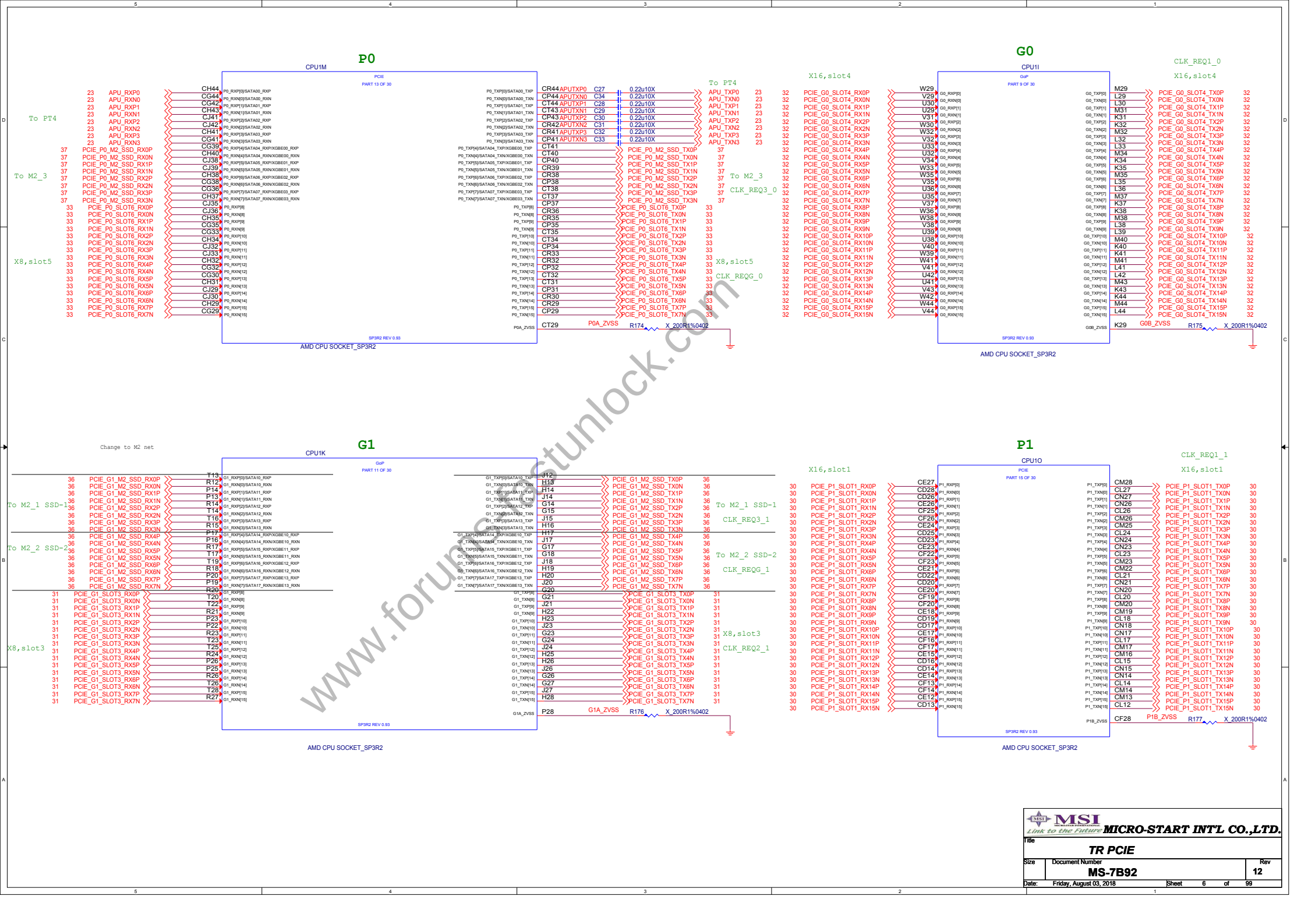
ACPI/SPI/I2C/CLK/GPIO





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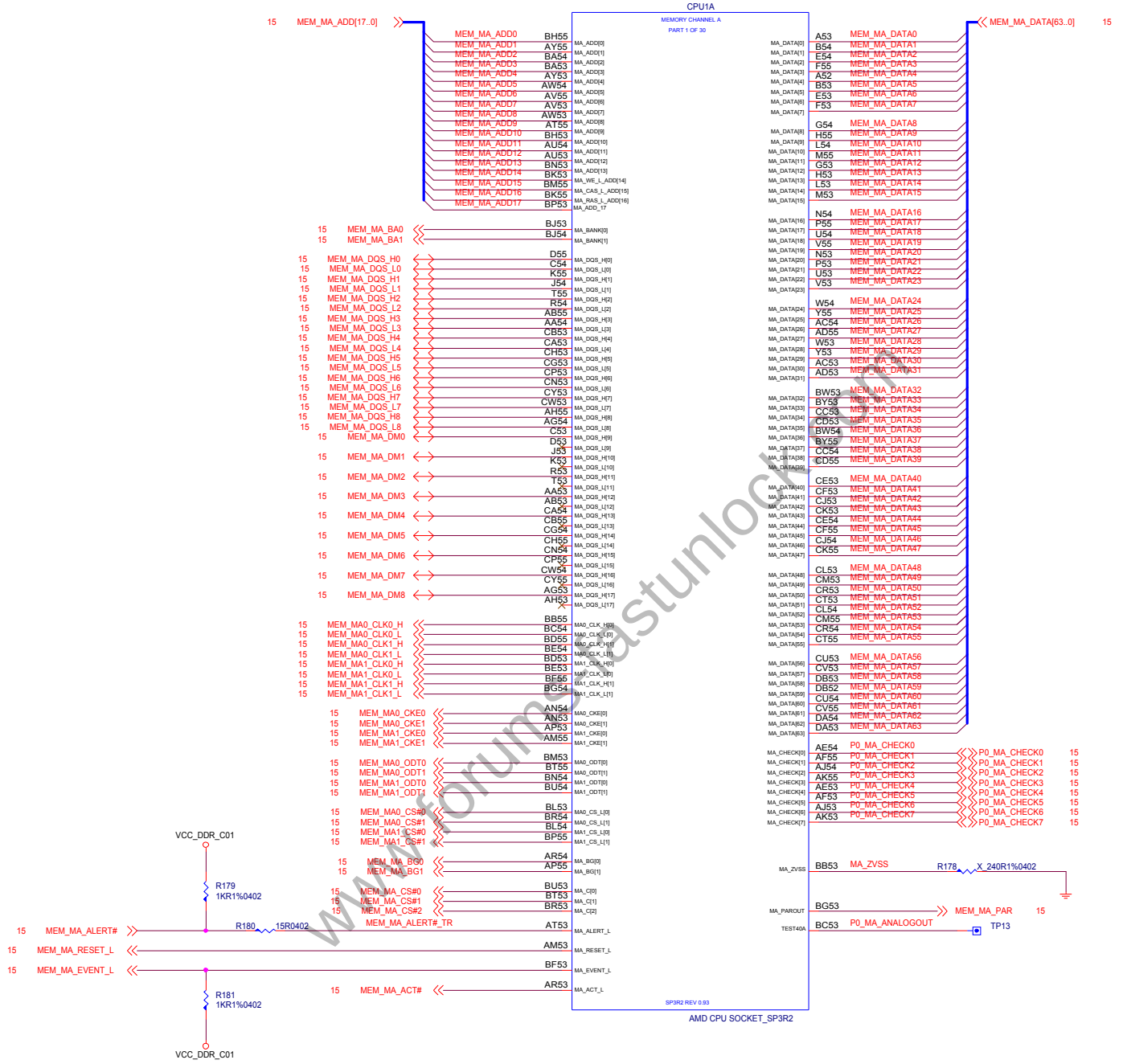
Size	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 6 of 99	



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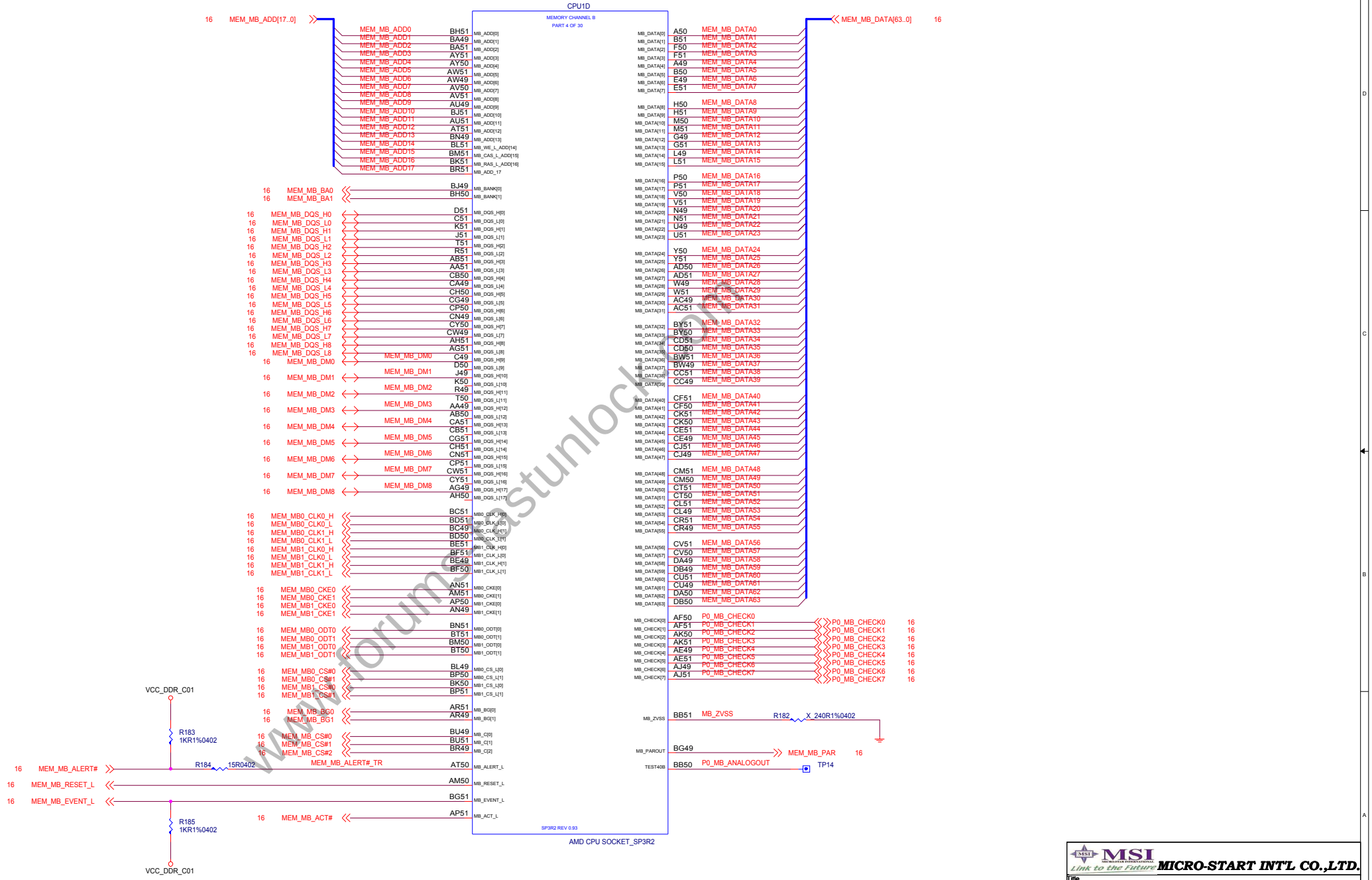
Size	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 7 of 99	



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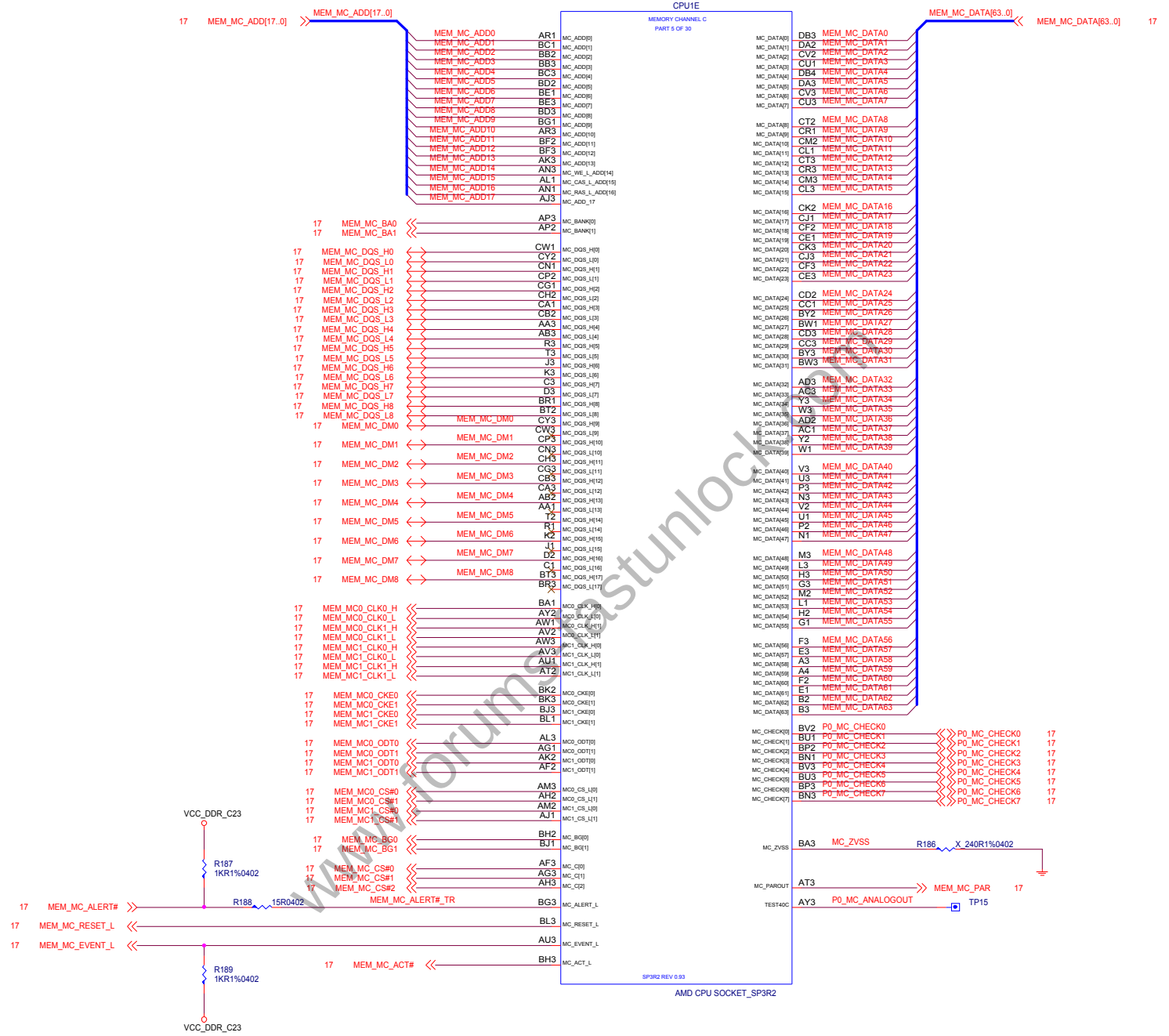
Size	Document Number MS-7B92	Rev 12
Date: Friday, August 03, 2018	Sheet 8 of 99	



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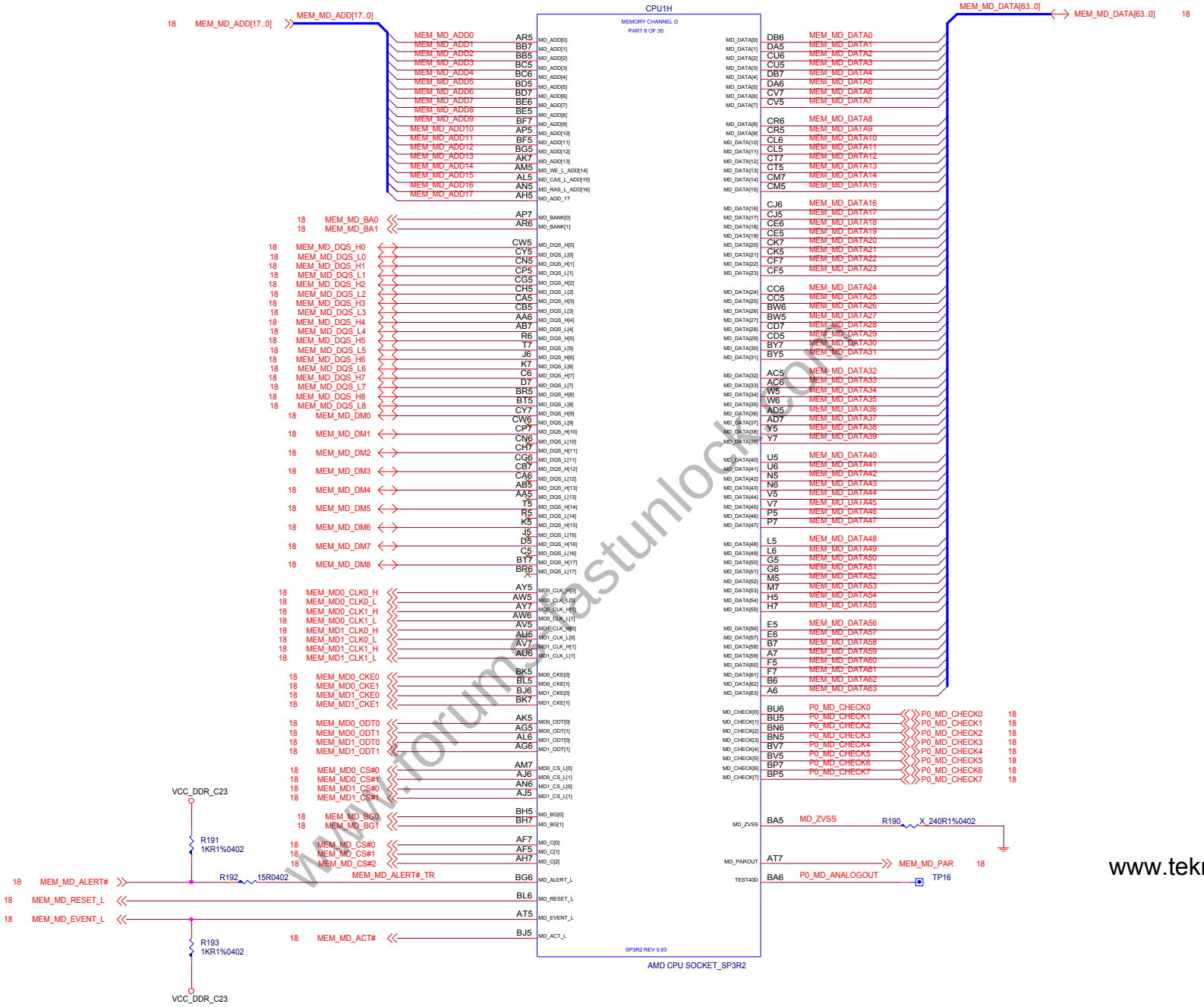
Size	Document Number MS-7B92	Rev 12
Date: Friday, August 03, 2018	Sheet 9 of 99	



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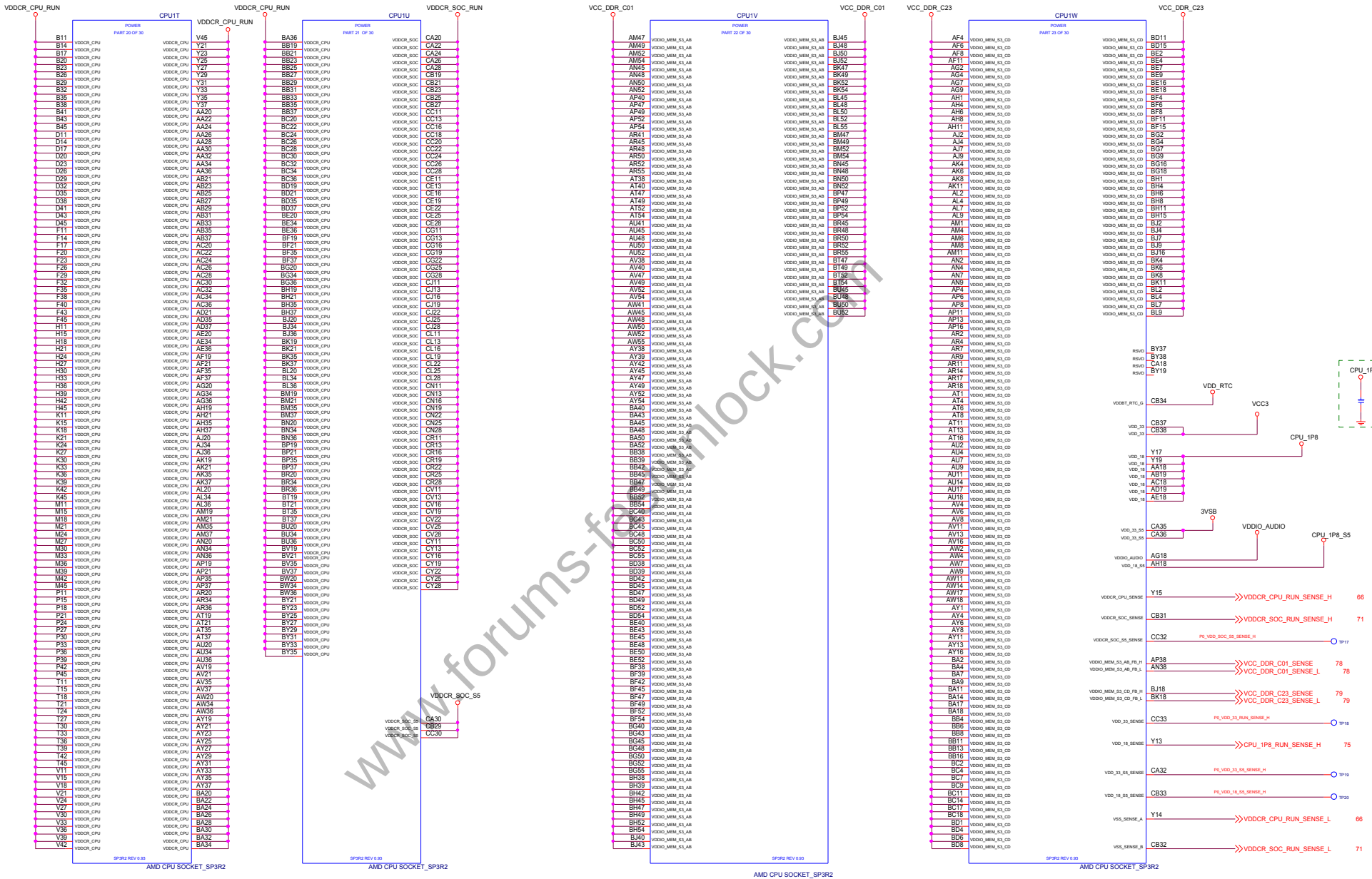
Link to the Future

Title	TR MEMORY D	
Size	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 10 of 99	

POWER



VDD: 180A(TDC)/240A(EDC);OC:200A(TDC)/264A(EDC)
VDDSOC: 60A(TDC)/80A(EDC)
VDDCR_SOC_S5: 2A(TDC/EDC)
VDDIO_MEM_AB: 15A(TDC/EDC)(CPU)+45A(TDC/EDC)(MEMORY)--EXCEPTED THIS INCLUDES OC
VDDIO_MEM_CD: 15A(TDC/EDC)(CPU)+45A(TDC/EDC)(MEMORY)--EXCEPTED THIS INCLUDES OC
VDD_1.8V: 3A(TDC)/3A(EDC)
VDD_1.8V_S5: 1A(TDC)/1A(EDC)

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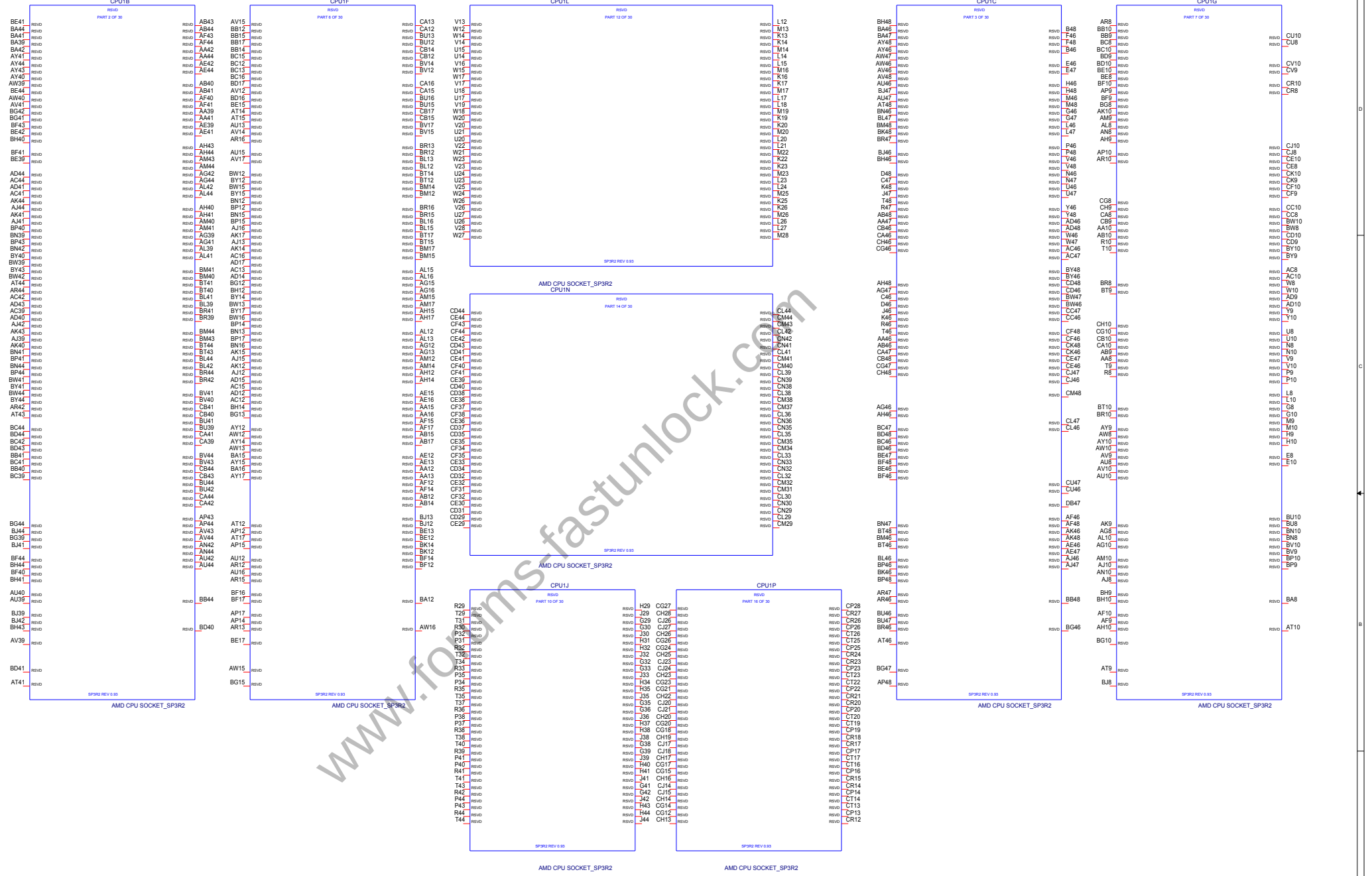
Title: TR POWER		
Size	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 11 of 99	



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Title

TR Reserved

Size	Document Number	Rev
	MS-7B92	12

Date: Friday, August 03, 2018 Sheet 12 of 99

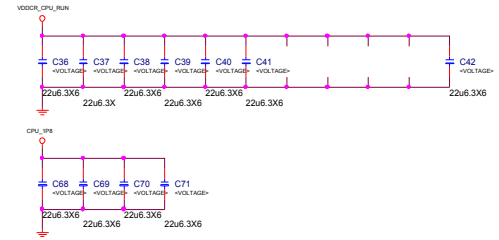
Decoupling Grouped by Placement Location

VDDCR_CPU Bottom Side Decoupling:

Top Side Decoupling:

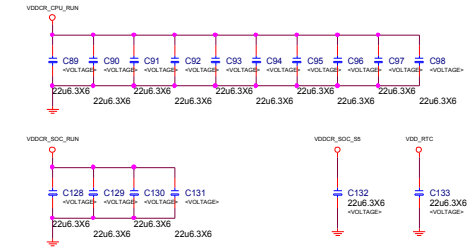
Bottom Side - Mirrored with Top Cavity - North

OEM Skt: 15; SLT Skt: 13



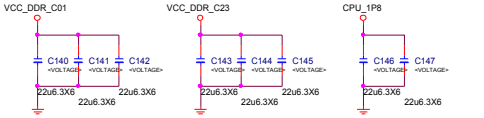
Bottom Side - Mirrored with Top Cavity - South

OEM Skt: 15; SLT Skt: 13



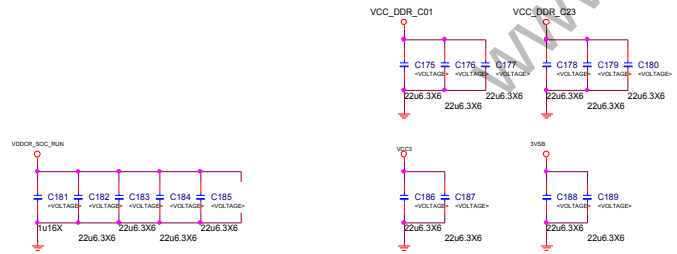
Bottom Side - North

OEM Skt: 24; SLT Skt: 24



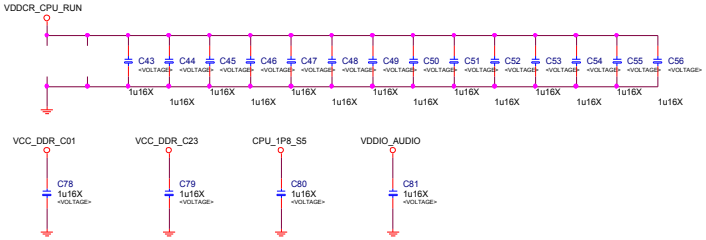
Bottom Side - South

OEM Skt: 24; SLT Skt: 24



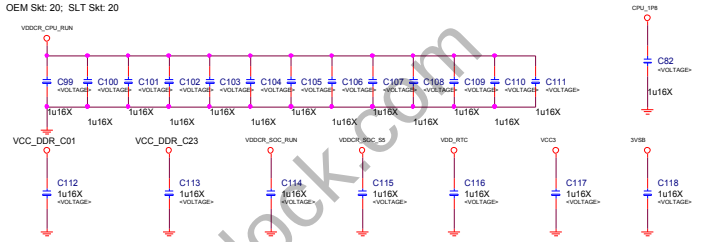
Bottom Side - North

OEM Skt: 20; SLT Skt: 20



Bottom Side - South

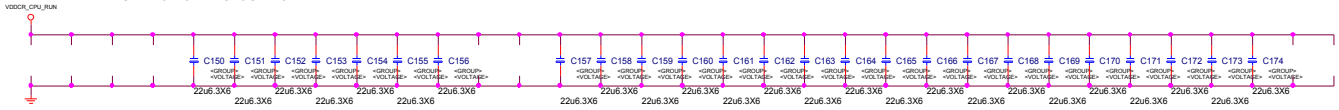
OEM Skt: 20; SLT Skt: 20



Bottom Side - In the socket split regions

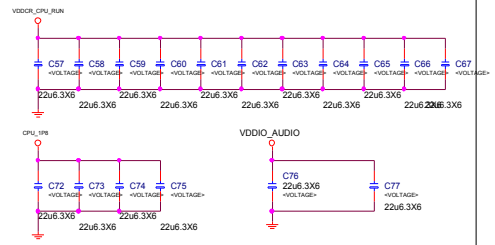
OEM SKT ONLY; NOT AVAILABLE IN SLT; CAN BE USED FOR RESISTORS

RSVD FOR OVER CLOCKING



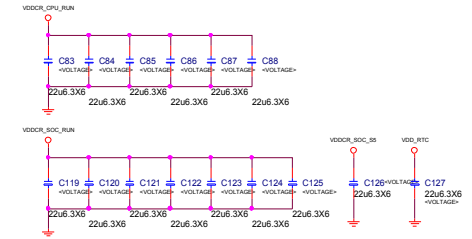
Top Cavity - North Decoupling

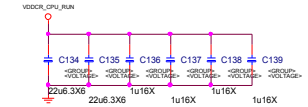
OEM Skt: 15; SLT Skt: 13



Top Cavity South Decoupling

OEM Skt: 15; SLT Skt: 13





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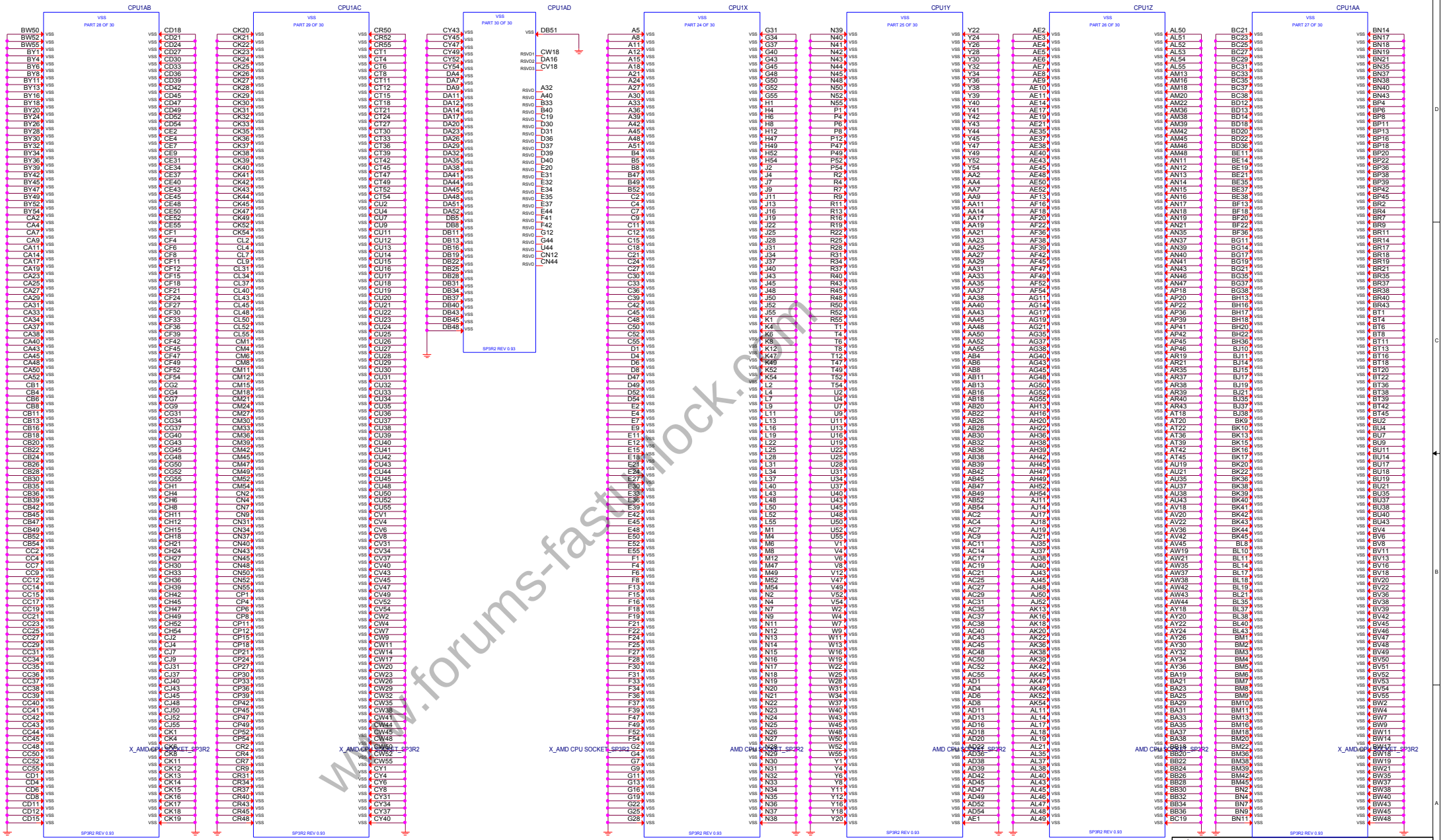
Title: TR DECOUPLING Cap

Size	Document Number	Rev
	MS-7B92	12

Date: Friday, August 03, 2018 Sheet 13 of 99



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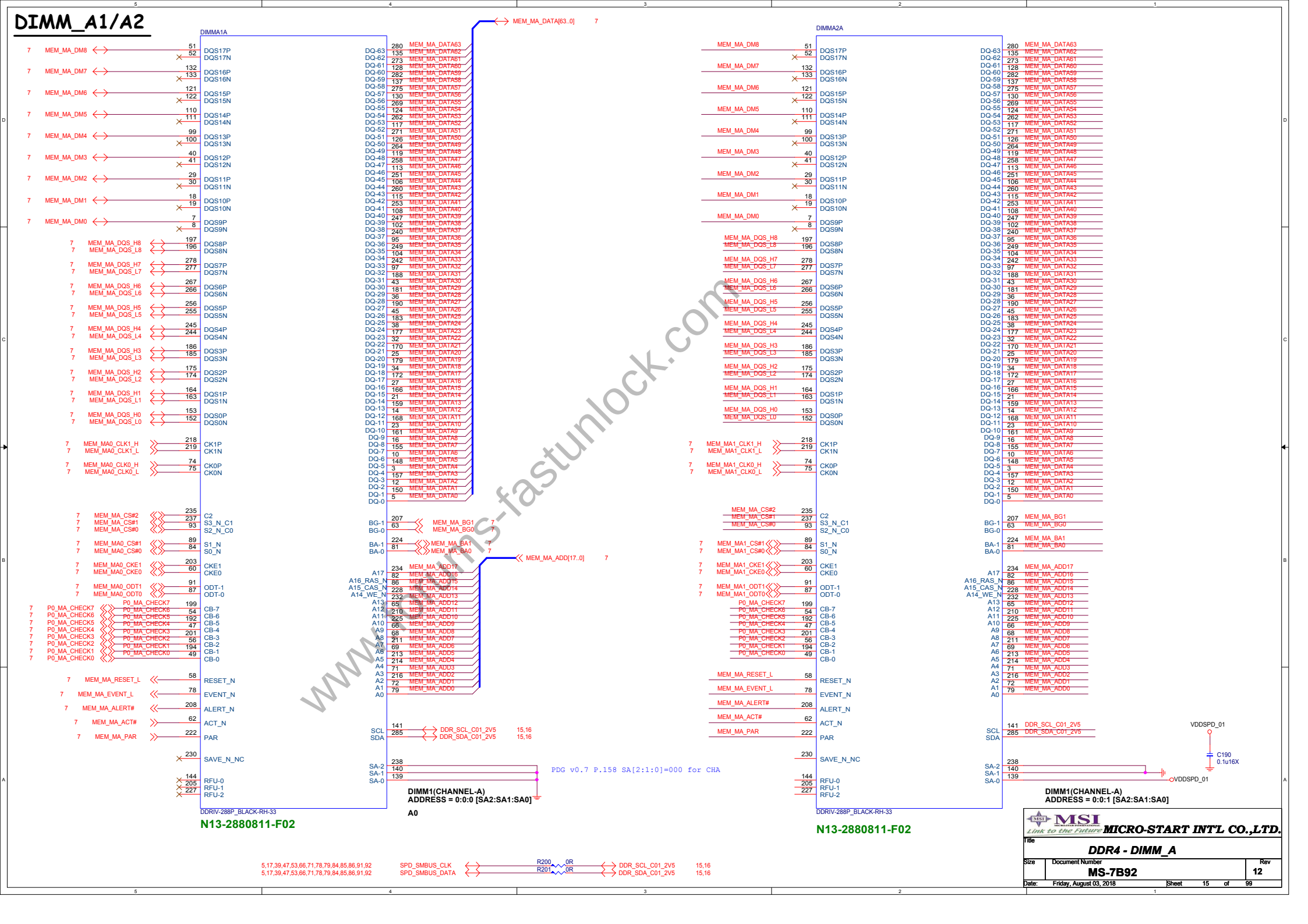
Title: TR GND		
Size	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 14 of 99	

DIMM_A1/A2



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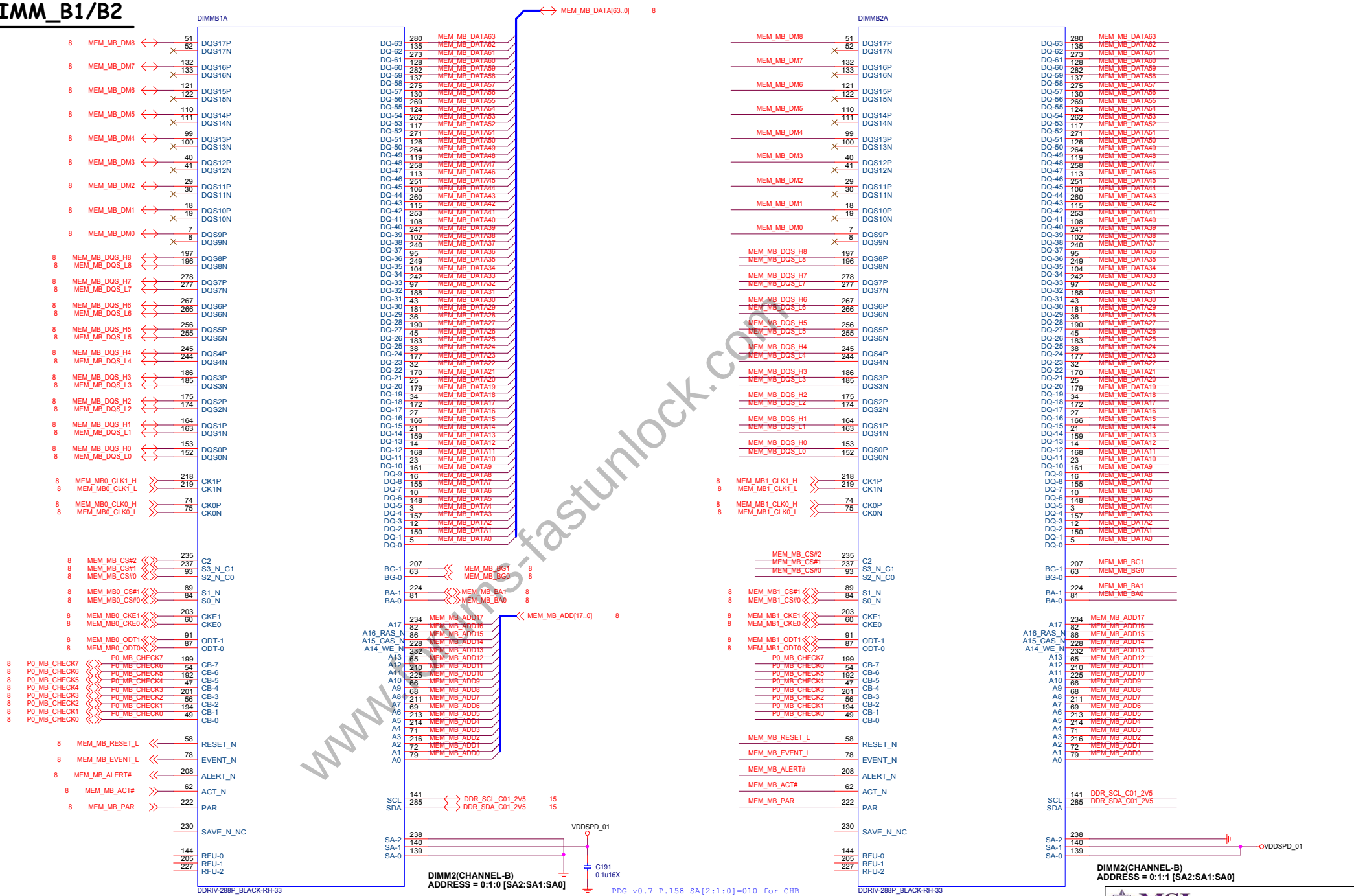
Title	DDR4 - DIMM_A	
Size	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 15 of 99	

DIMM_B1/B2



N13-2880811-F02

N13-2880811-F02

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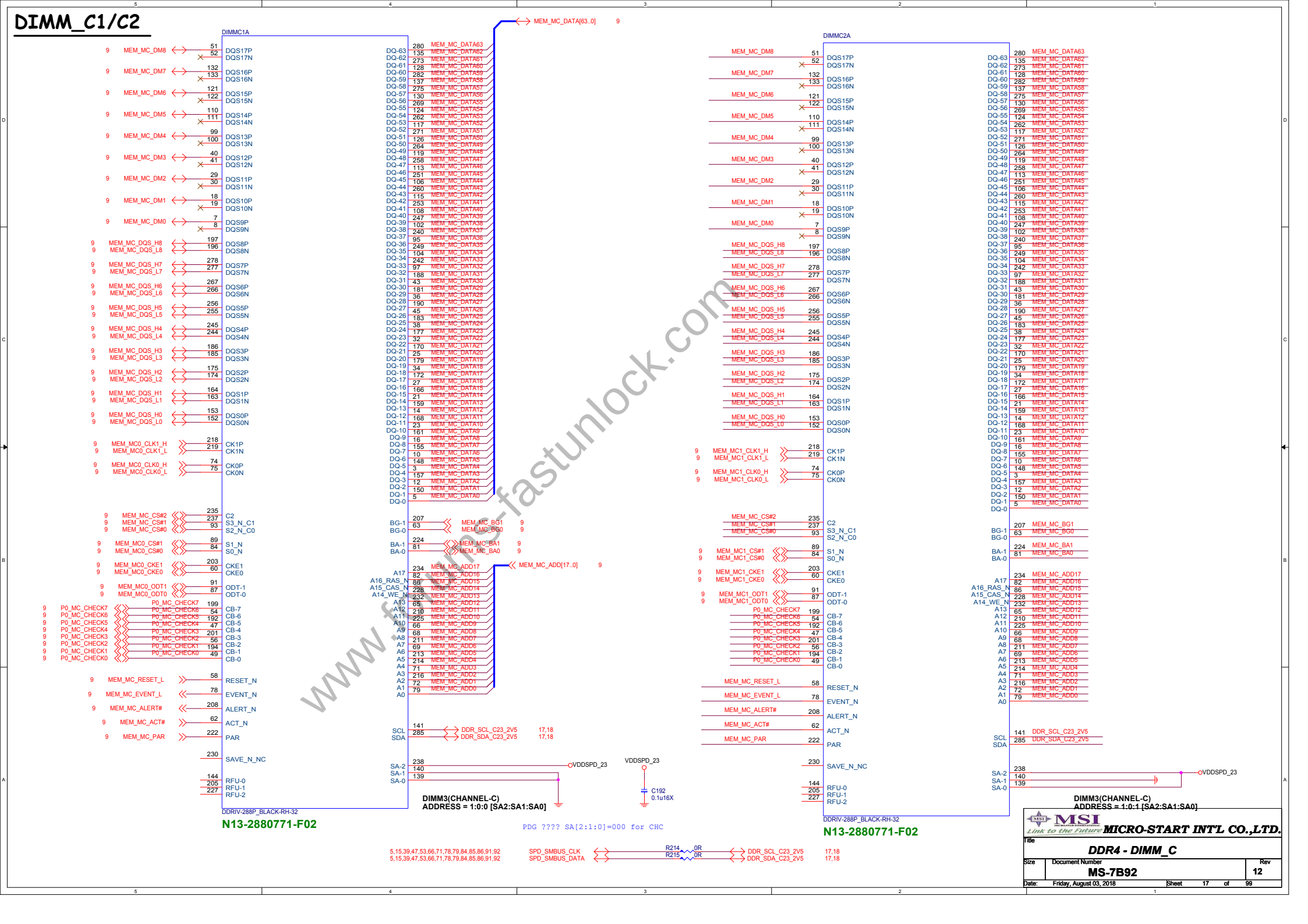
Title	DDR4 - DIMM_B	
Size	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 16 of 99	

DIMM_C1/C2



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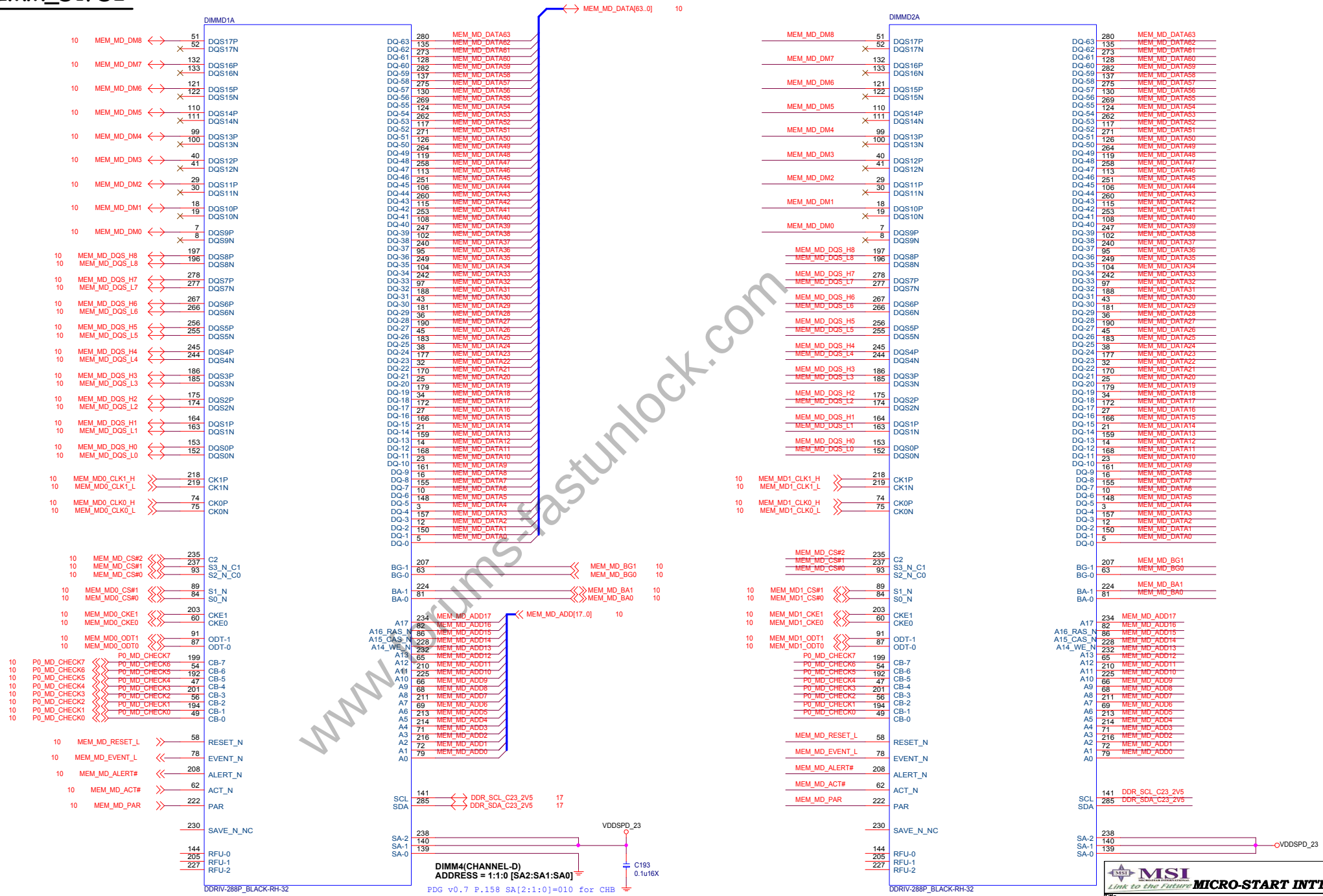
Title	DDR4 - DIMM_C	
Size	Document Number MS-7B92	Rev 12
Date: Friday, August 03, 2018	Sheet 17 of 99	

DIMM_D1/D2



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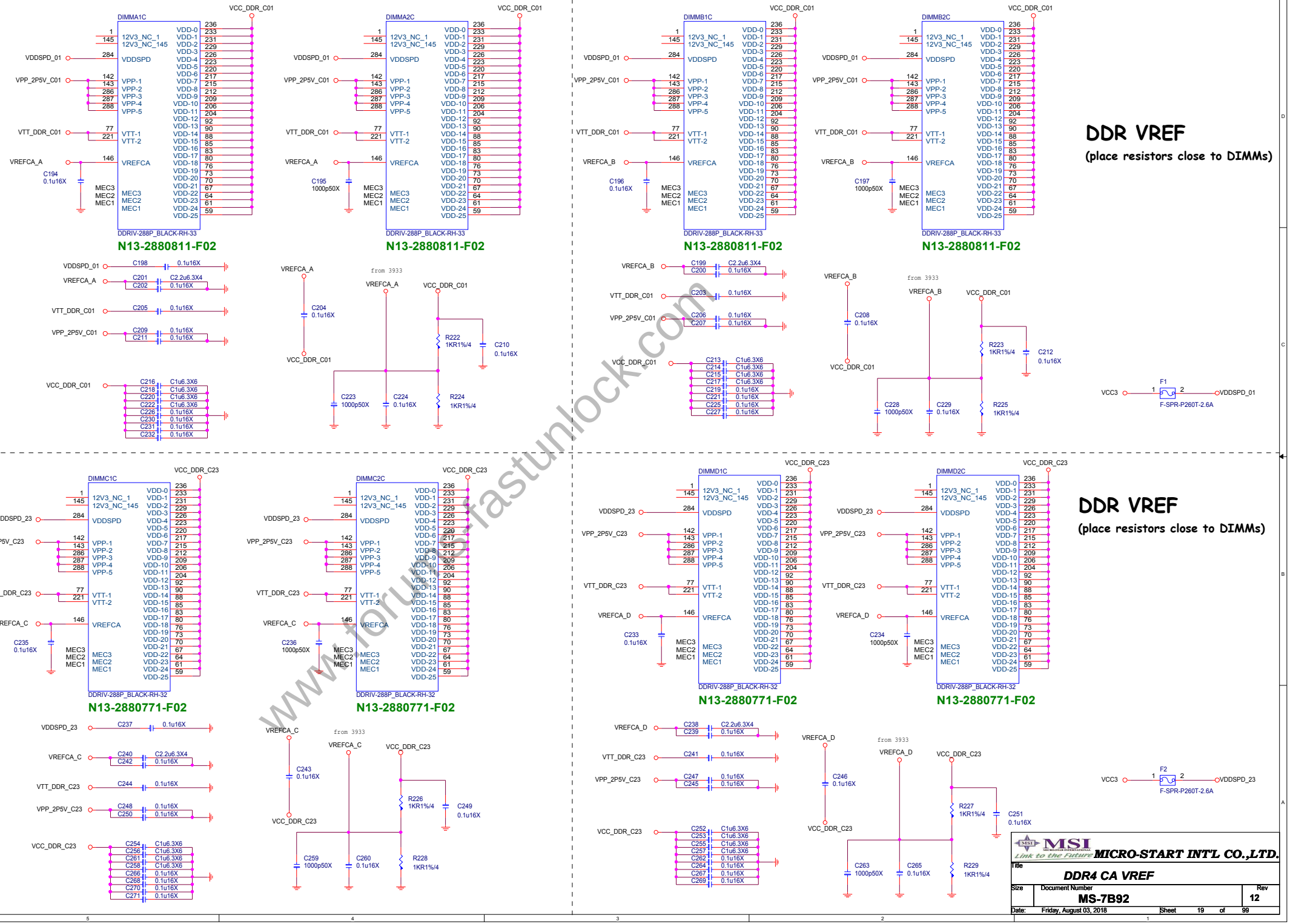
Size	Document Number: MS-7B92
Rev	12
Date:	Friday, August 03, 2018
Sheet	18 of 99



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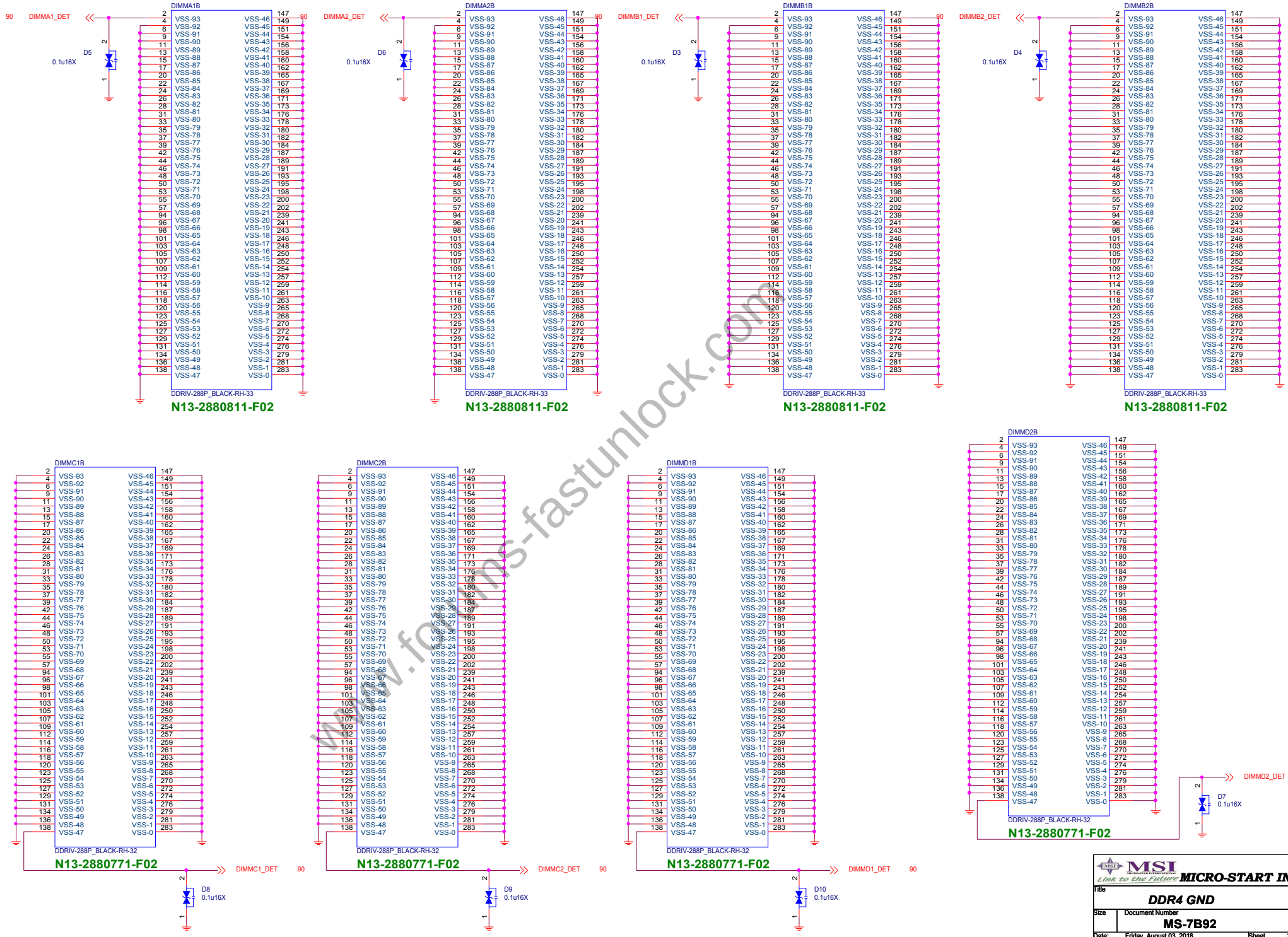
Title	DDR4 CA VREF	
Size	Document Number MS-7B92	Rev 12
Date: Friday, August 03, 2018	Sheet 19 of 99	



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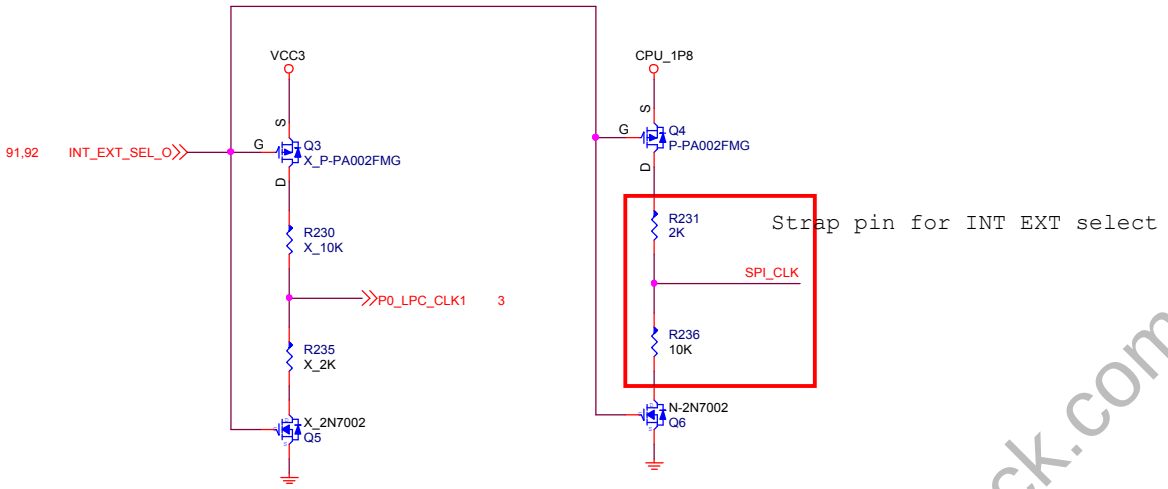
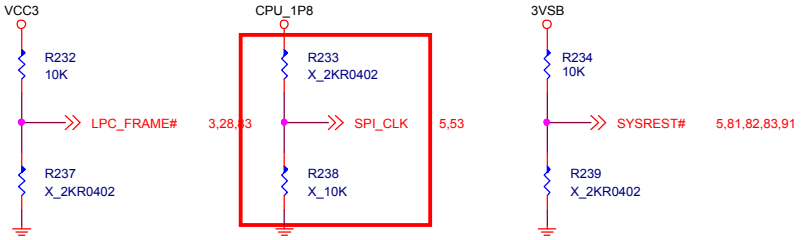
Title	DDR4 GND	
Size	Document Number MS-7B92	Rev 12
Date: Friday, August 03, 2018	Sheet 20 of 99	



Strap pin for INT EXT select

CPU STRAPS

STRAP	DEFINITION
SPI_CLK	1:USE 48MHZ CRYSTAL CLOCK AND GENERATE BOTH INTERNAL AND EXTERNAL CLOCKS(DEFAULT) 0:USE 100MHZ PCIE CLOCK AS REFERENCE CLOCK AND GENERATE INTERNAL CLOCKS ONLY
SYS_RST#	1:NORMAL RESET MODE(DEFAULT) 0:SHORT RESET MODE
LPC_FRAME_L	ROM TYPE SELECT 1:BOOT FROM SPI ROM(DEFAULT) 0:BOOT FROM LPC ROM



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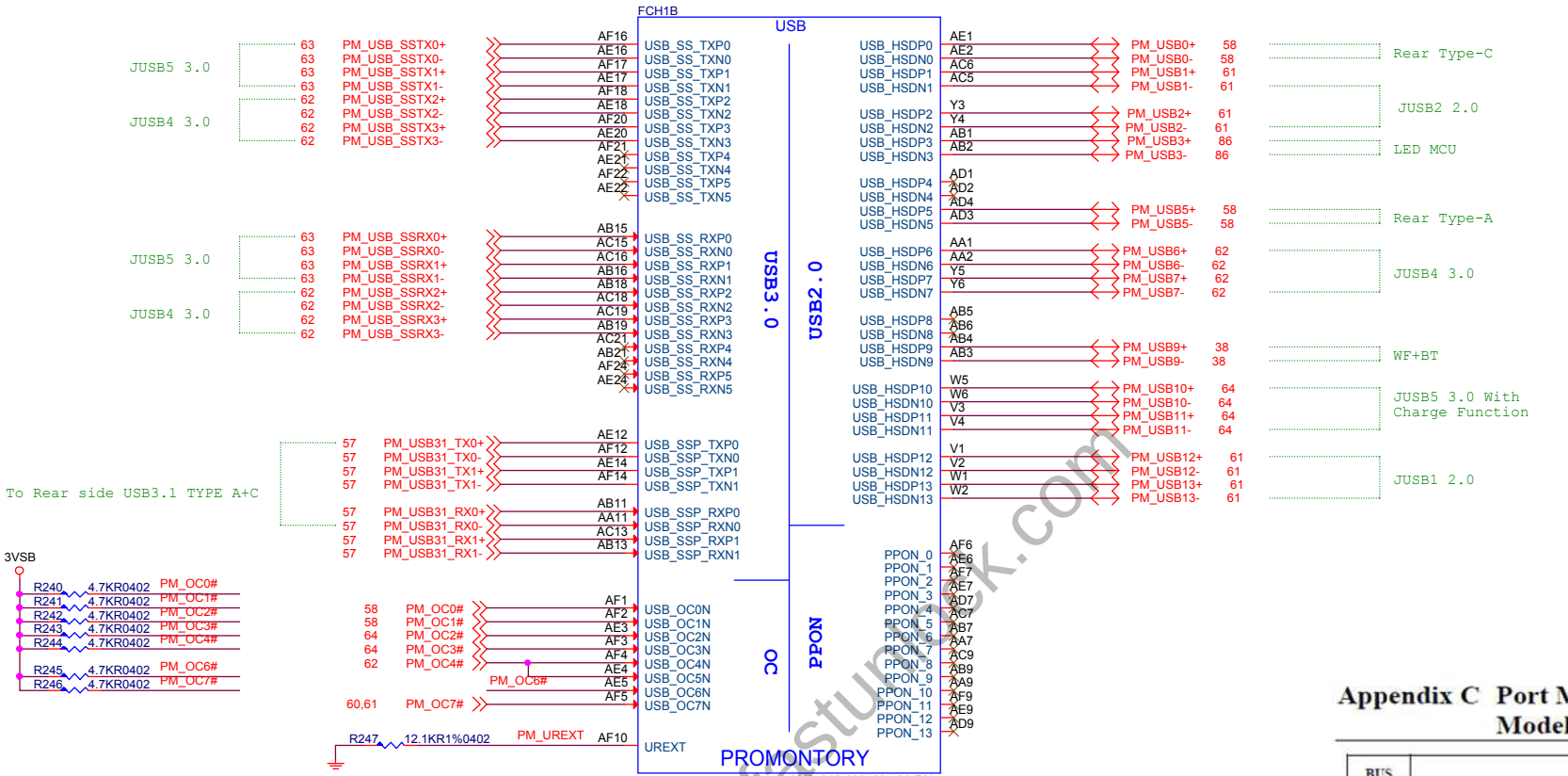
Link to the Future

Title	CPU STRAPS	
Size	Document Number MS-7B92	Rev 12
Date: Friday, August 03, 2018	Sheet 21 of 99	



Appendix D USB Port to OC Pin Mapping

USB3.1	USB2.0	USB_OC
USB_SSP_TX/RXP/N[0]	USB_HSDP/N[5]	USB_OC0N
USB_SSP_TX/RXP/N[1]	USB_HSDP/N[0]	USB_OC1N
USB3.0	**USB2.0**	**USB_OC**
USB_SS_TX/RXP/N[0]	USB_HSDP/N[10]	USB_OC2N
USB_SS_TX/RXP/N[1]	USB_HSDP/N[11]	USB_OC3N
USB_SS_TX/RXP/N[2]	USB_HSDP/N[6]	USB_OC4N
USB_SS_TX/RXP/N[3]	USB_HSDP/N[7]	USB_OC5N
USB_SS_TX/RXP/N[4]	USB_HSDP/N[8]	USB_OC6N
USB_SS_TX/RXP/N[5]	USB_HSDP/N[9]	USB_OC7N
	USB_HSDP/N[1]	USB_OC7N
	USB_HSDP/N[2]	USB_OC7N
	USB_HSDP/N[3]	USB_OC7N
	USB_HSDP/N[4]	USB_OC7N
	USB_HSDP/N[12]	USB_OC7N
	USB_HSDP/N[13]	USB_OC7N

Appendix C Port Mapping for Different Bus Models

BUS Model	USB			
	3.1 Gen2 10 Gbps	3.1 Gen1 5 Gbps	2.0	Debug Port
PROM4	USB_SSP Port0~1	USB_SS Port 0~3	USB_HSD Port0~13	USB_SSP Port0
PROM2	USB_SSP Port0~1	USB_SS Port 0~1	USB_HSD Port0~5 USB_HSD Port10~13	USB_SSP Port0
PROM1	USB_SSP Port0	USB_SS Port0 USB_SSP Port1	USB_HSD Port0~5 USB_HSD Port10, 12~13	USB_SSP Port0

BUS Model	SATA 3.0	SATA Express	PCI Express® Gen2 GPP	PCI Express® CLK
PROM4	SATA port0~3	SATAE port0~3	GPP lane0~7	CLK0~7
PROM2	SATA port0~1	SATAE port0~1	GPP lane0~1 GPP lane4~7	CLK0~1 CLK4~7
PROM1	SATA port0~1	SATAE port0~1	GPP lane4~7	CLK4~7

CLK2.3不能用
CLK1-3不能用

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Link to the Future

Title	Promontory USB	
Size	Document Number MS-7B92	Rev 12
Date: Friday, August 03, 2018	Sheet 22 of 99	

SATA port	DEVSLP signal
SATA_TX/RXP/N[0]	DEVSLP0
SATA_TX/RXP/N[1]	DEVSLP1
SATA_TX/RXP/N[2]	DEVSLP2
SATA_TX/RXP/N[3]	DEVSLP3
SATAE_TX/RXP/N[0]	SATAE_CLKREQ0N
SATAE_TX/RXP/N[1]	DEVSLP4
SATAE_TX/RXP/N[2]	SATAE_CLKREQ1N
SATAE_TX/RXP/N[3]	DEVSLP5

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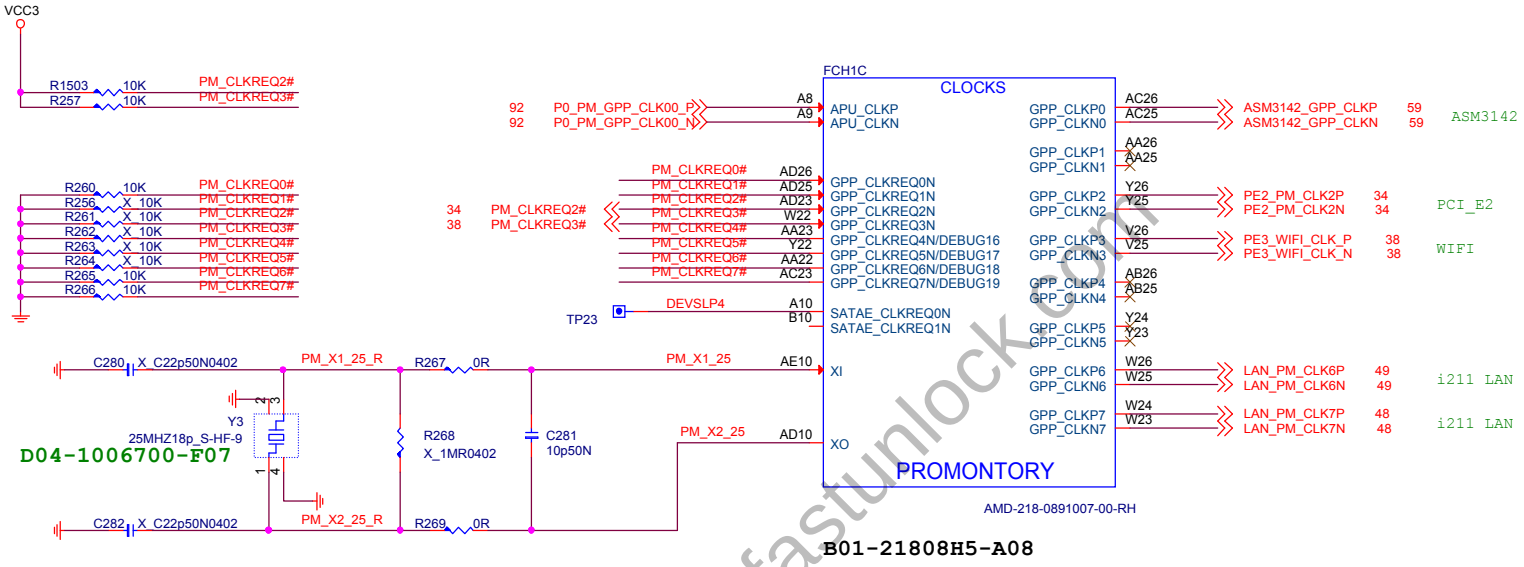
Title: Promontory PCIE/SATA

Size | Document Number: MS-7B92 | Rev: 12

Date: Friday, August 03, 2018 | Sheet 23 of 99



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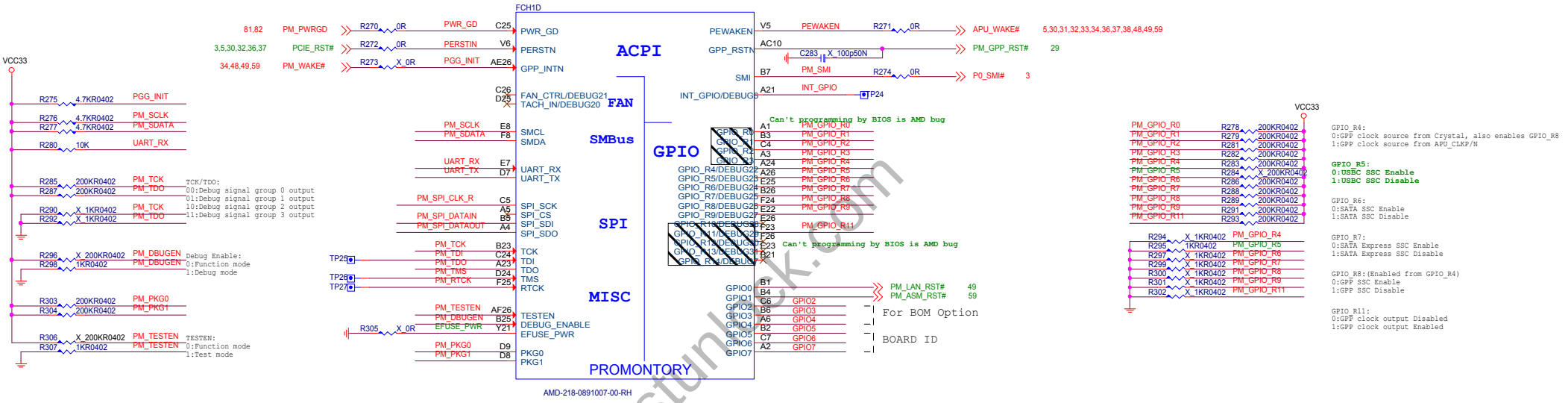
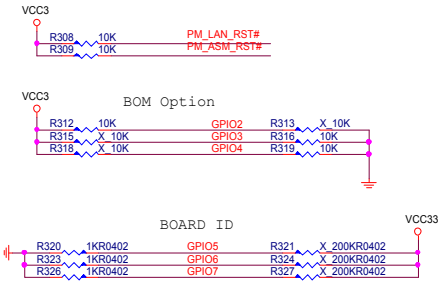
Title	Promontory CLOCK	
Size	Document Number MS-7B92	Rev 12
Date: Friday, August 03, 2018	Sheet 24 of 99	



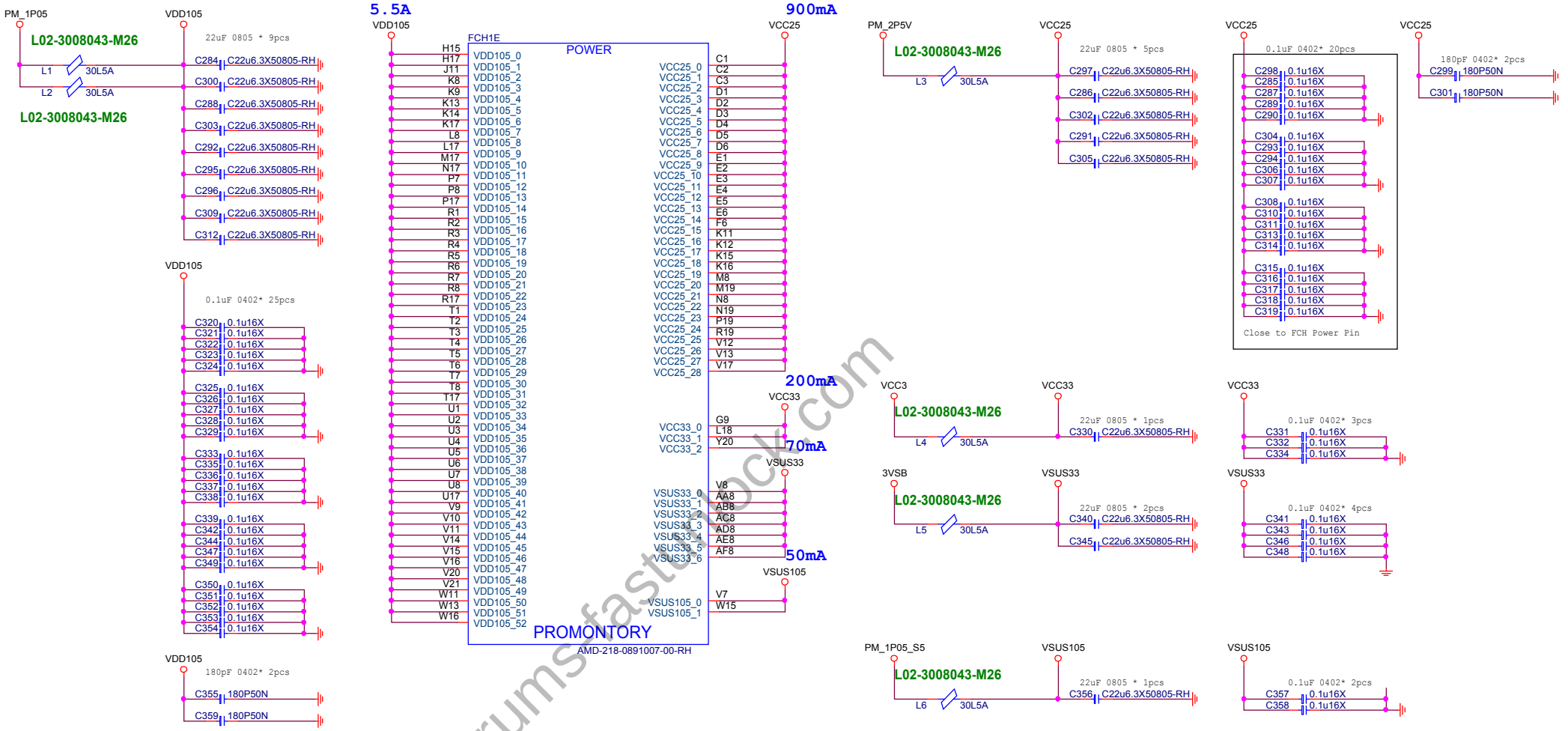


GPIO2=0 --> SLG41837
Slave Address:PCB1.0 version
00110000 , Wite , 30
00110001 , Read , 31

GPIO2=1 --> SLG41837
Slave Address:PCB1.1 version
01010000 , Wite , 50
01010001 , Read , 51

MICRO-START INT'L CO.,LTD.

Title	Promontory GPIO/SMB/SPI	
Size	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 25 of 99	

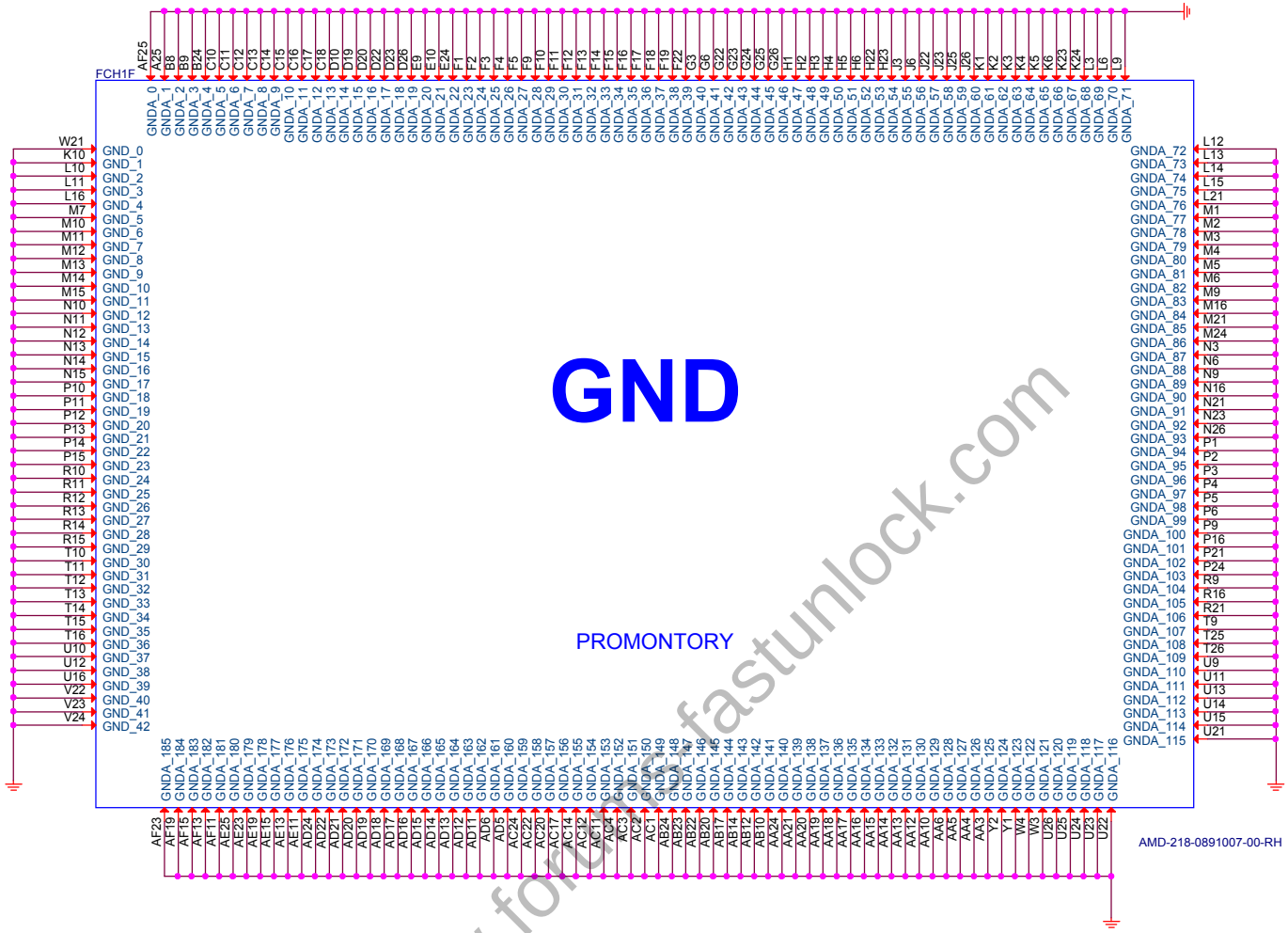


MICRO-START INT'L CO.,LTD.

Title: Promontory POWER

Size	Document Number	Rev
	MS-7B92	12

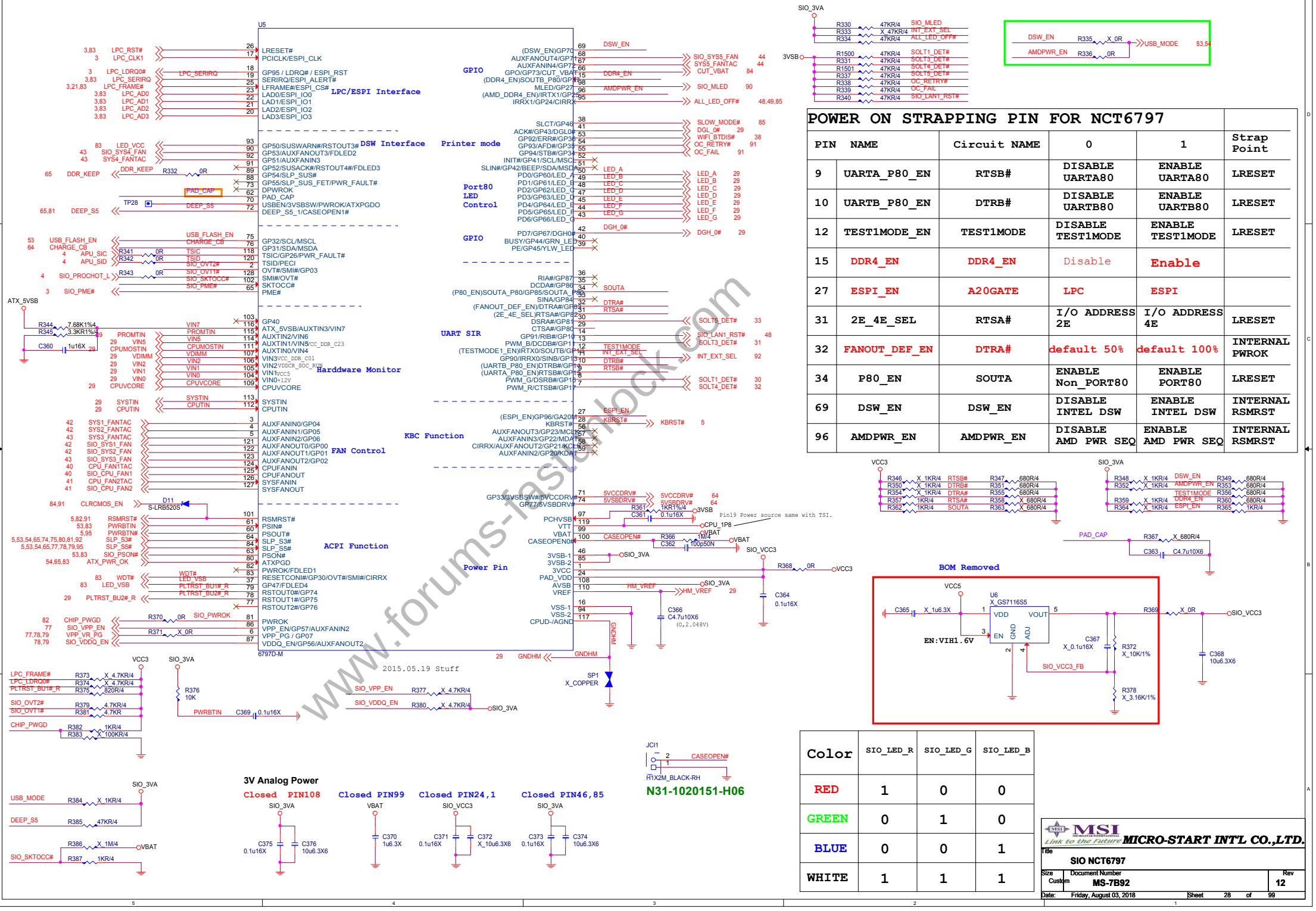
Date: Friday, August 03, 2018 Sheet 26 of 99



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

Link to the Future

Title: Promontory GND		
Size	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 27 of 99	



POWER ON STRAPPING PIN FOR NCT6797

PIN	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
15	DDR4_EN	DDR4_EN	Disable	Enable	
27	ESPI_EN	A20GATE	LPC	ESPI	
31	2E_4E_SEL	RTSA#	I/O ADDRESS 2E	I/O ADDRESS 4E	LRESET
32	FANOUT_DEF_EN	DTRA#	default 50%	default 100%	INTERNAL PWROK
34	P80_EN	SOUTA	ENABLE Non_PORT80	ENABLE PORT80	LRESET
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

Color	SIO_LED_R	SIO_LED_G	SIO_LED_B
RED	1	0	0
GREEN	0	1	0
BLUE	0	0	1
WHITE	1	1	1

MICRO-START INT'L CO.,LTD.

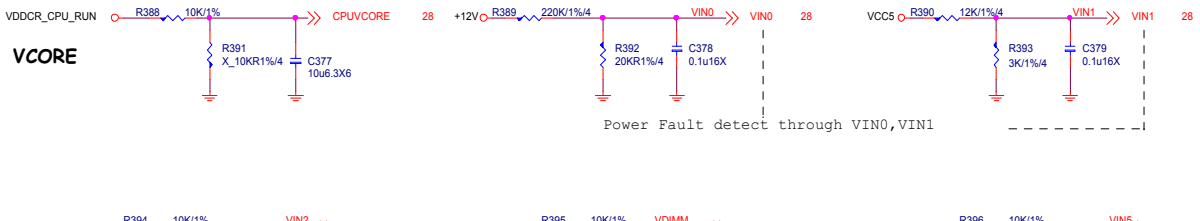
Title: SIO NCT6797

Size: Custom | Document Number: MS-7B92 | Rev: 12

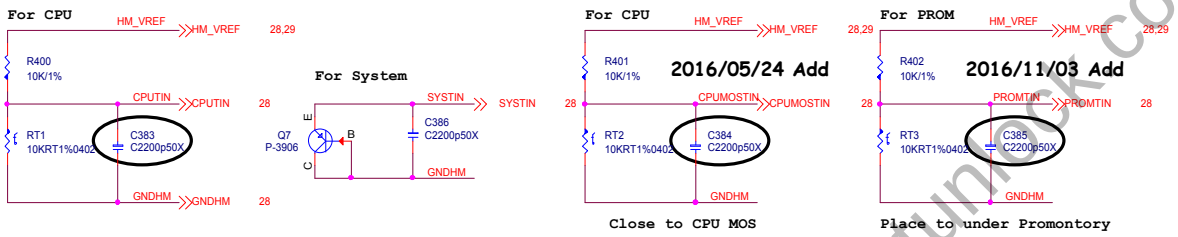
Date: Friday, August 03, 2018 | Sheet 28 of 99

HW Monitor - Voltage

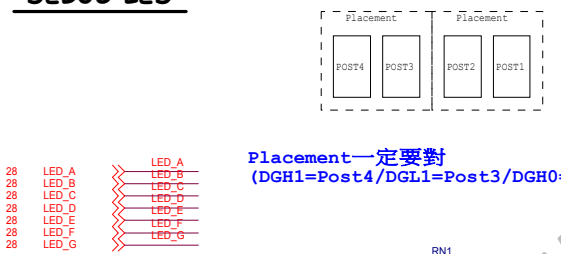
SIO HM Voltage over 2.048V will not detect



TEMP SENSOR

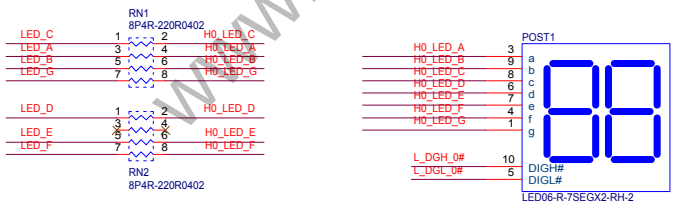


DEBUG LED



Placement一定要對
(DGH1=Post4/DGL1=Post3/DGH0=Post2/DGL0=Post1)

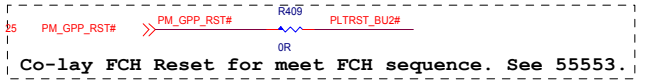
Debug LED OFF BIOS control



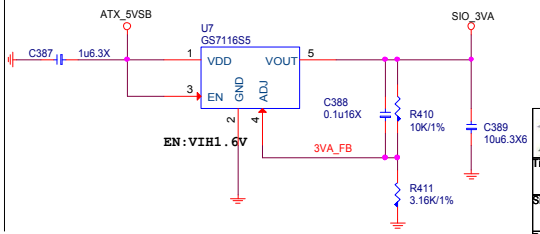
D0C-0603001-L05

COM PORT

RESET



SIO_3VA

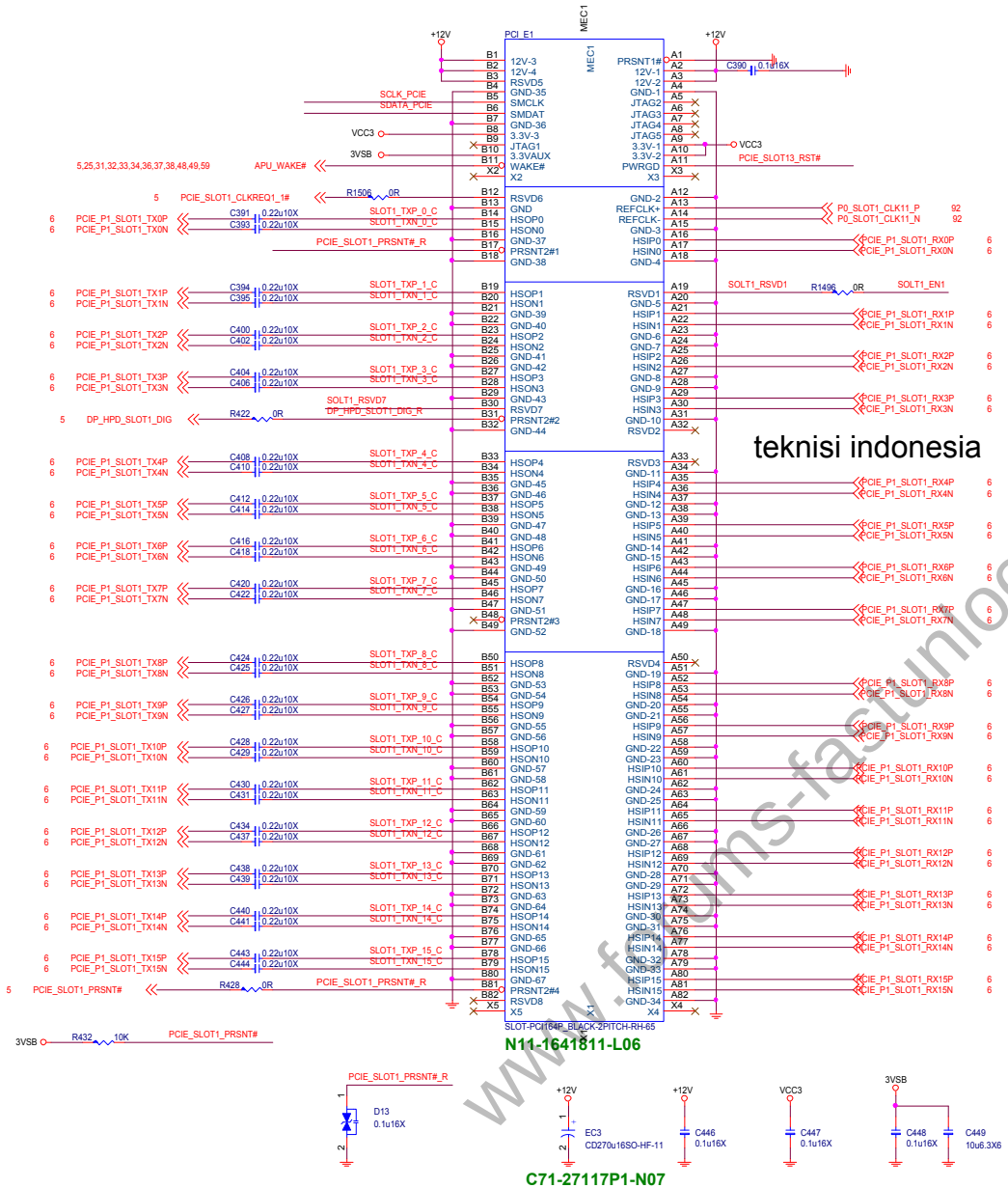


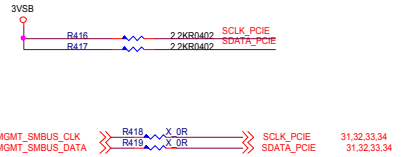
MSI MICRO-START INT'L CO.,LTD.
Link to the Future

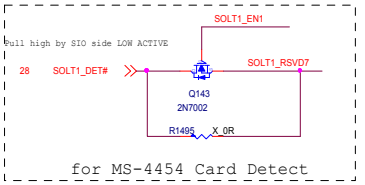
Title	HWM/PS2/Debug LED	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 29 of 99	

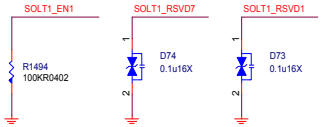
PCI_E1

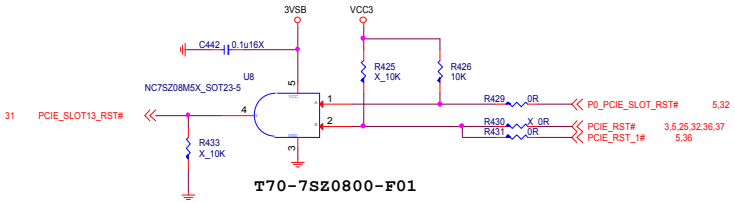
PCI EXPRESS X16 SLOT

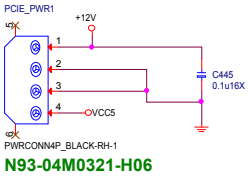












MSI MICRO-START INT'L CO.,LTD.

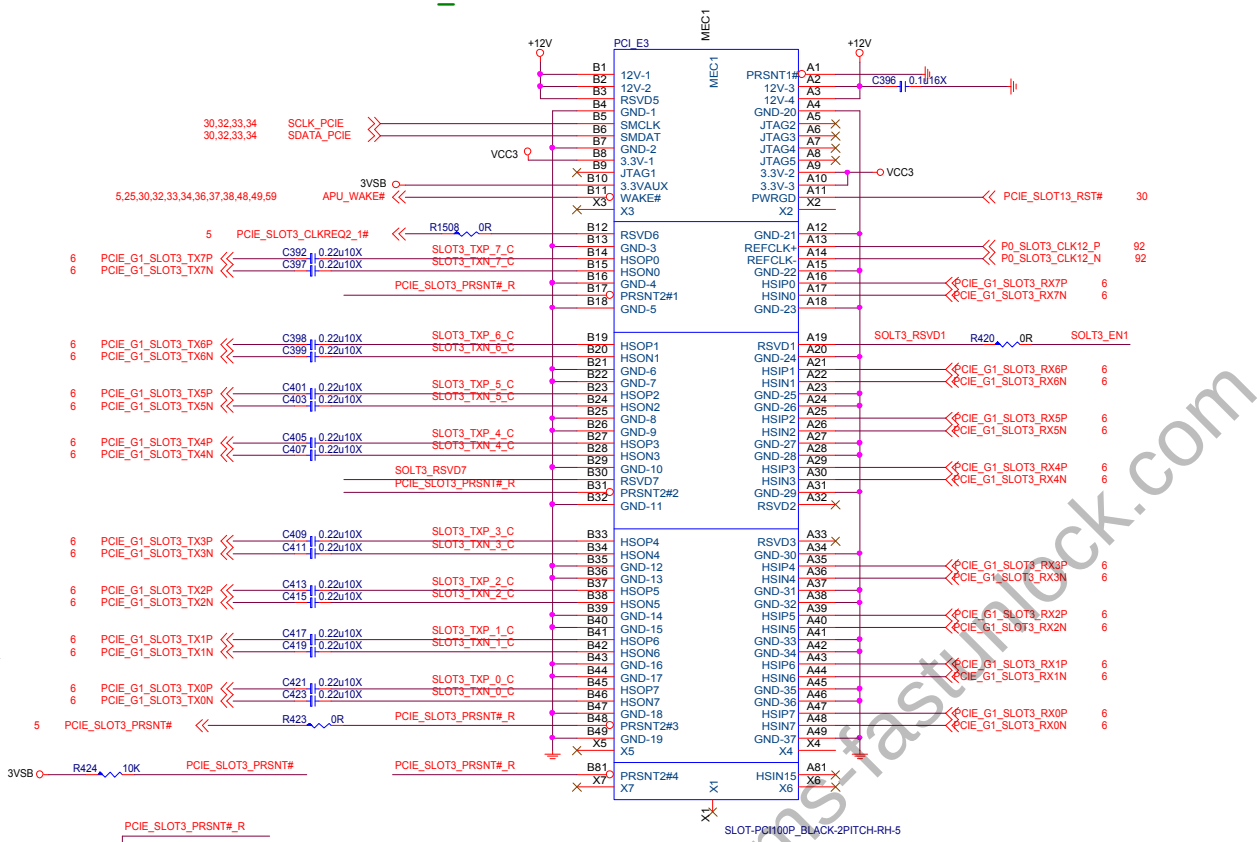
Title: PCIE X16 Slot1

Size	Document Number	Rev
	MS-7B92	12

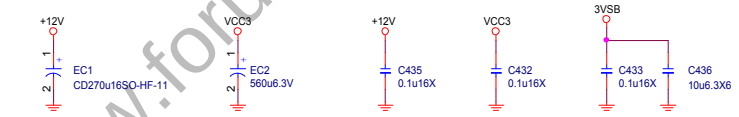
Date: Friday, August 03, 2018 Sheet 30 of 99

PCI_E3

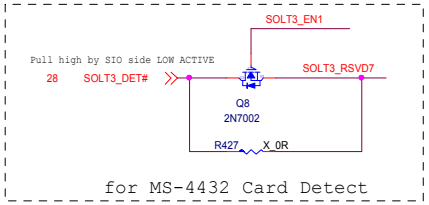
PCI EXPRESS X8 SLOT

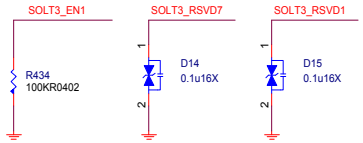


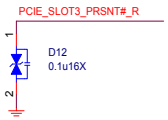
N11-1000221-L06



C71-27117P1-N07 C71-56106J1-N07







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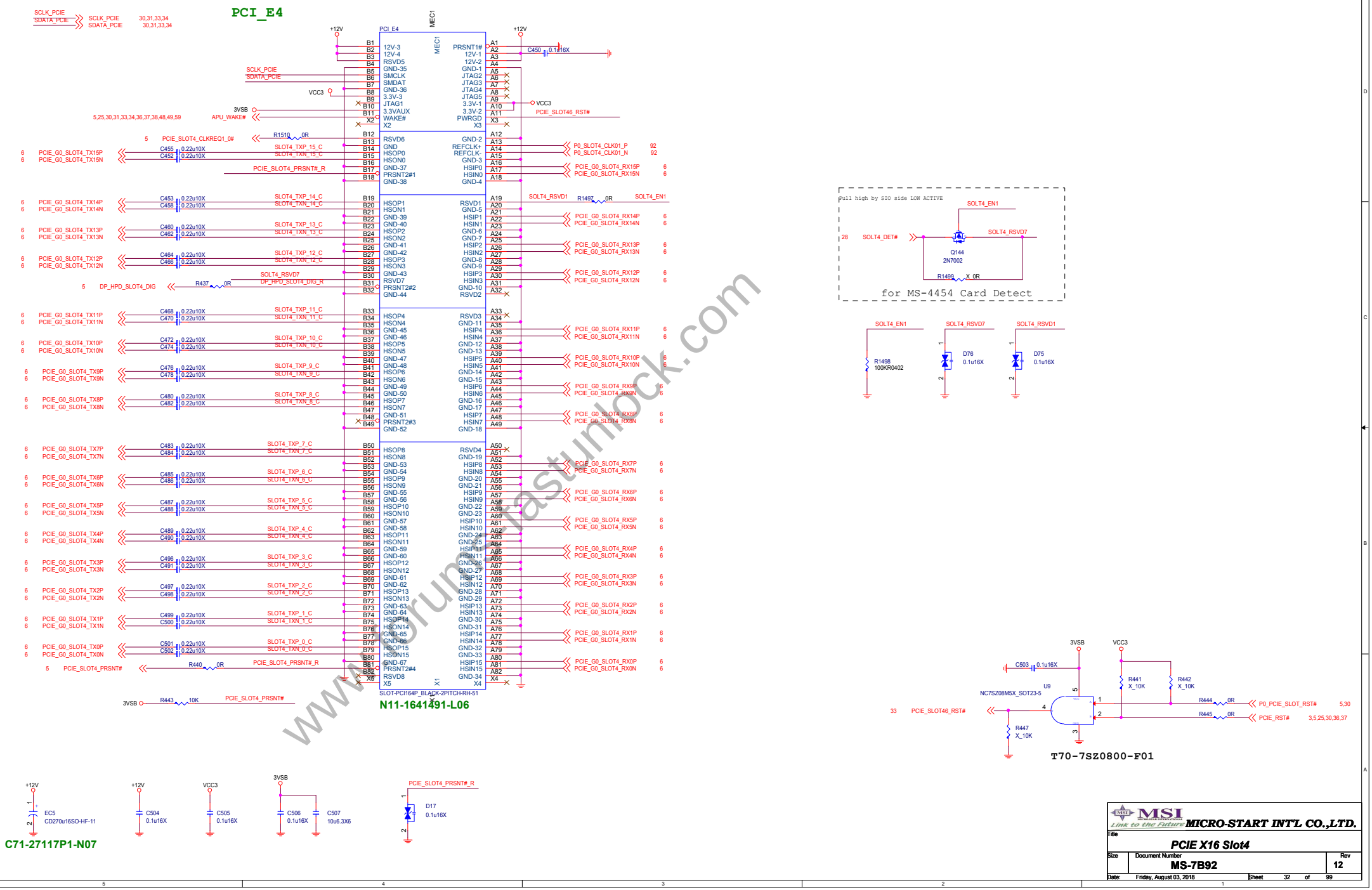
Link to the Future

Title	PCIE X8 Slot3	
Size	Document Number MS-7B92	Rev 12
Date: Friday, August 03, 2018	Sheet 31 of 99	

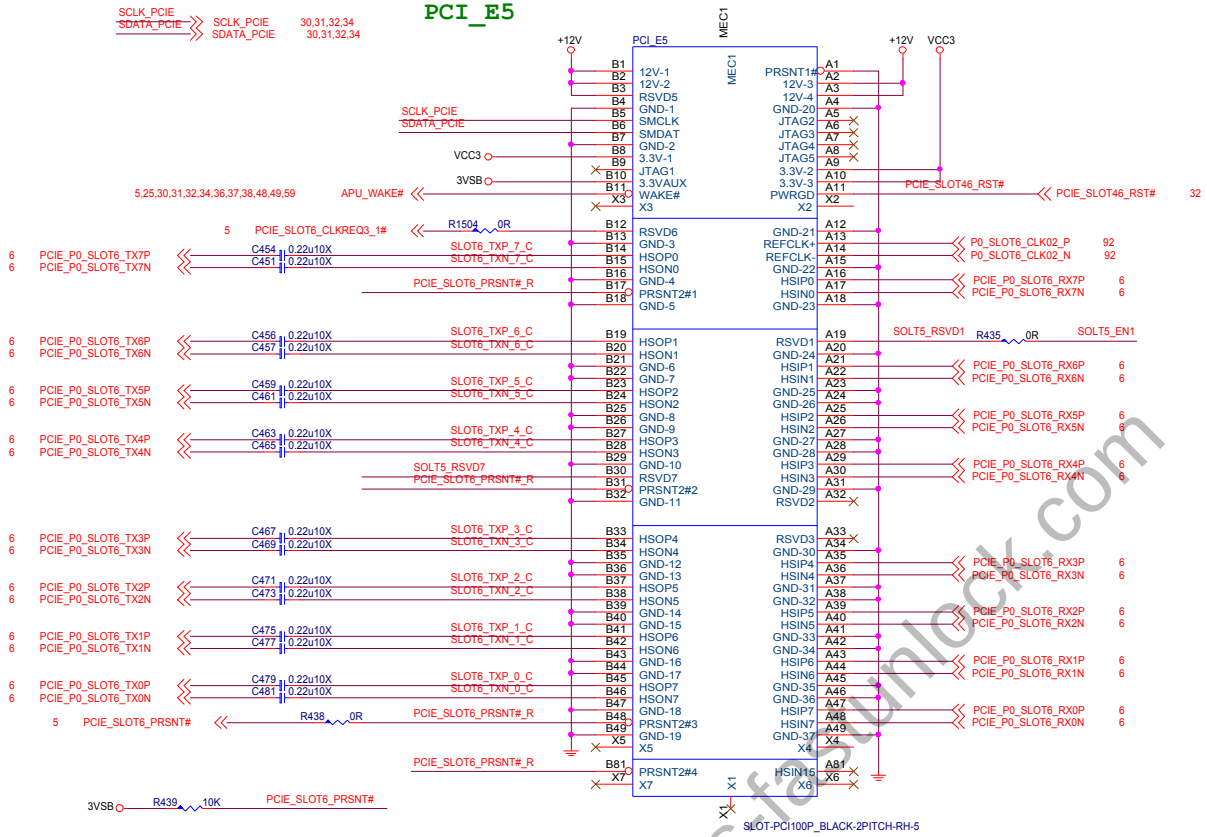
PCI EXPRESS X16 SLOT



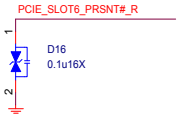
MSI MICRO-START INT'L CO.,LTD.			
Title: PCIE X16 Slot4			
Size	Document Number: MS-7B92		Rev: 12
Date: Friday, August 03, 2018	Sheet 32 of 99		

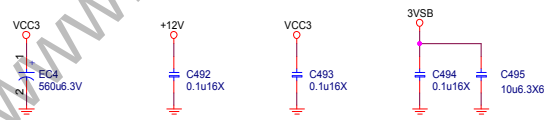
PCI EXPRESS X8 SLOT

PCI_E5

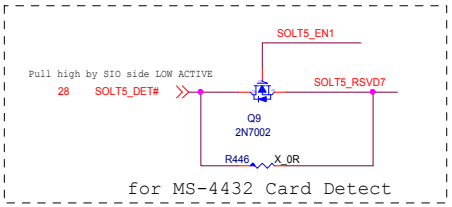


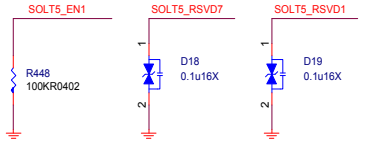
N11-1000221-L06





C71-56106J1-N07





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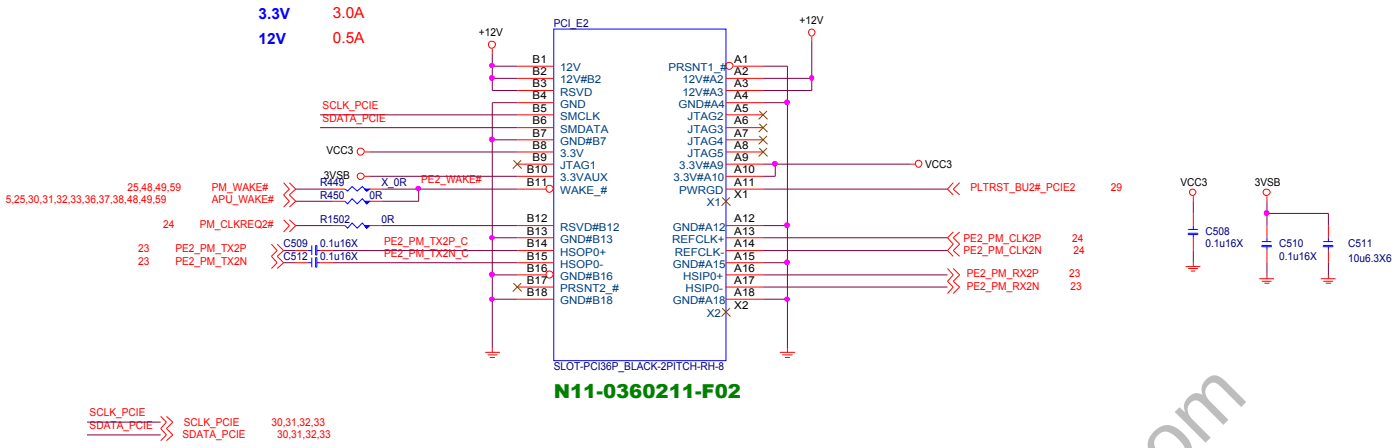
Link to the Future

Title	PCIE X8 Slot5	
Size	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 33 of 99	

PCIEX1 12V 0.5A
3.3V weak 375mA

PCI_E2



N11-0360211-F02

SCLK_PCIE → SCLK_PCIE 30,31,32,33
SDATA_PCIE → SDATA_PCIE 30,31,32,33

PCI Express X1 slot	
+12V	- 1 A
+3.3Vaux (wake)	- 750mA
+3.3Vaux (no wake)	- 40mA
+3.3V	- 6.0A

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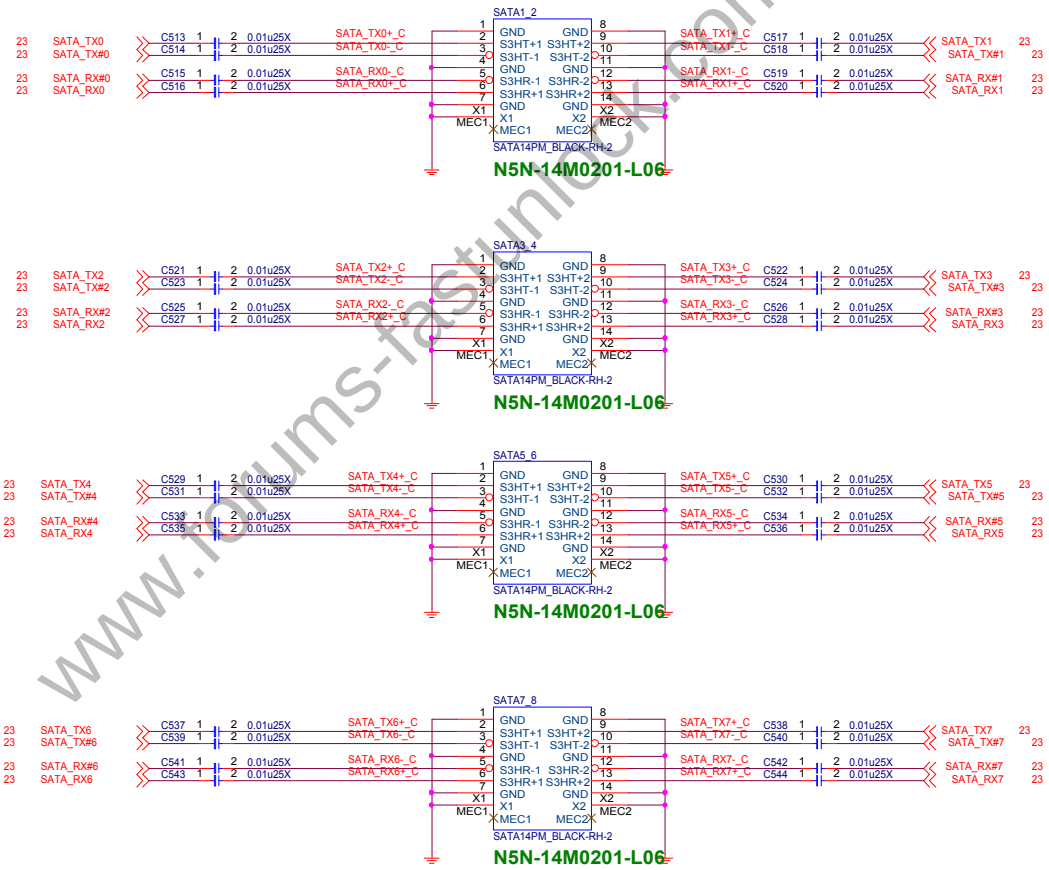
Link to the Future

Title: PCIE X1 & PCI_E2		
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 34 of 99	

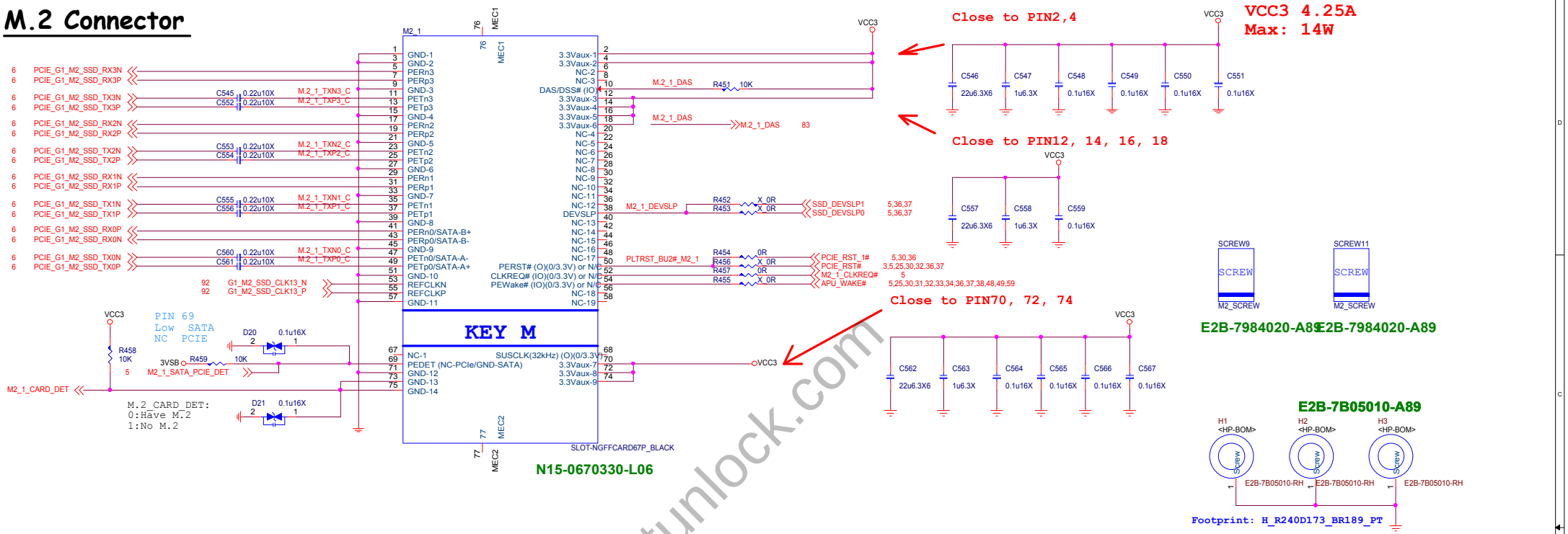
SATA Connector



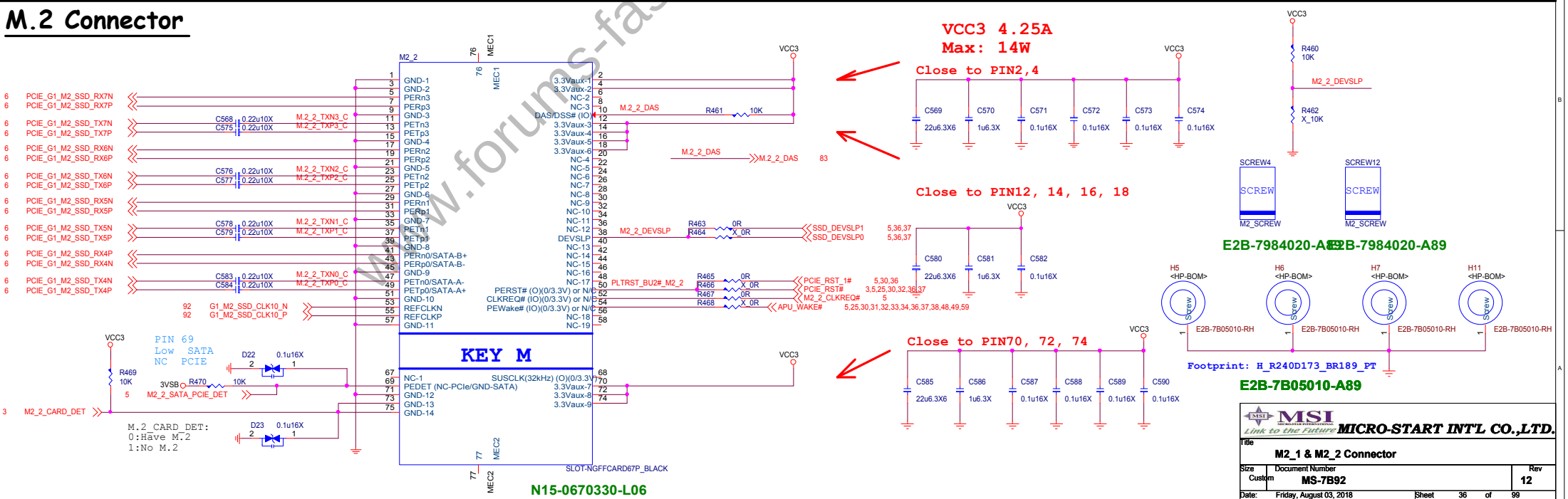
MSI MICRO-STAR INT'L CO.,LTD.
Link to the Future

Title: SATA Connector		
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 35 of 99	

M.2 Connector



M.2 Connector



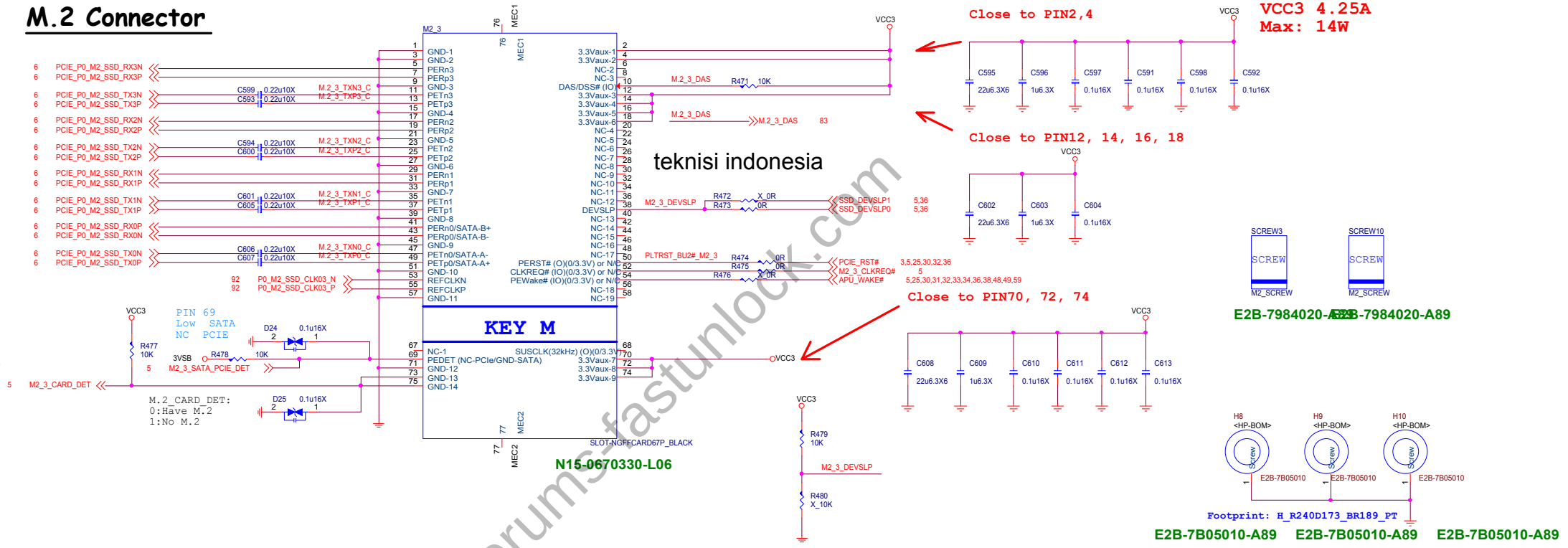
MICRO-START INT'L CO.,LTD.

Title: M2_1 & M2_2 Connector

Size: Custom | Document Number: MS-7B92 | Rev: 12

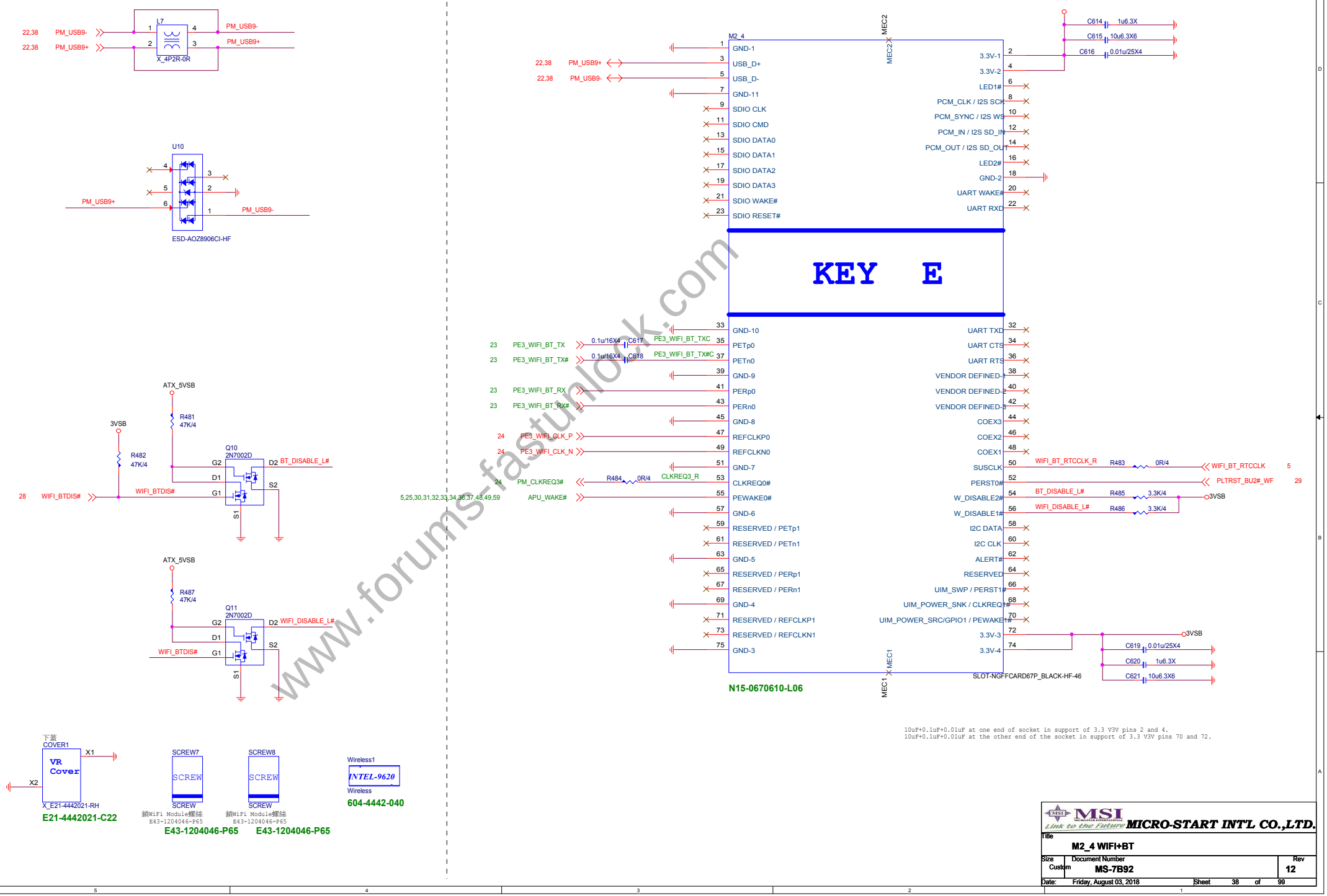
Date: Friday, August 03, 2018 | Sheet 36 of 99

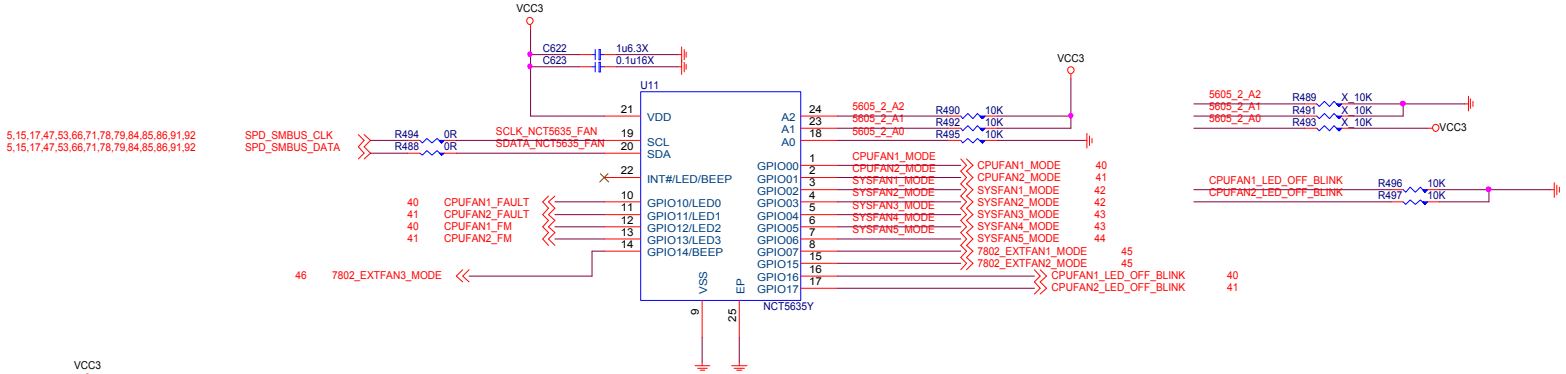
M.2 Connector



MSI MICRO-STAR INT'L CO.,LTD.
Link to the Future

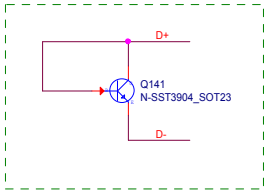
Title	M2_3 Connector	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 37 of 99	





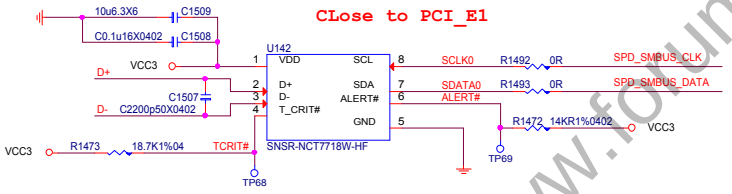
use avoid S5 leakage

slave address :
Write 4CH
Read 4DH



CLose to PCI_E4

NCT7718W



NCT7718W SM Bus address is 98h (1001100xb)

Default: ALERT# Output Comparator Mode

Layout notice:
1. Put the C1 2200pF to close the NCT7718W.
2. Add Ground Shielding For D+ and D- Traces.
3. D+/D- Route Has to be Away From the High Noise Area.
4. The Recommended Traces Width and Ground Shielding Spacing are 10mils.

TEMPERATURE (℃)		T_CRIT#				
		2KΩ	7.5KΩ	10.5KΩ	14KΩ	18.7KΩ
ALERT#	2KΩ	77	87	97	107	117
	7.5KΩ	79	89	99	109	119
	10.5KΩ	81	91	101	111	121
	14KΩ	83	93	103	113	123
	18.7KΩ	85	95	105	115	125

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Link to the Future

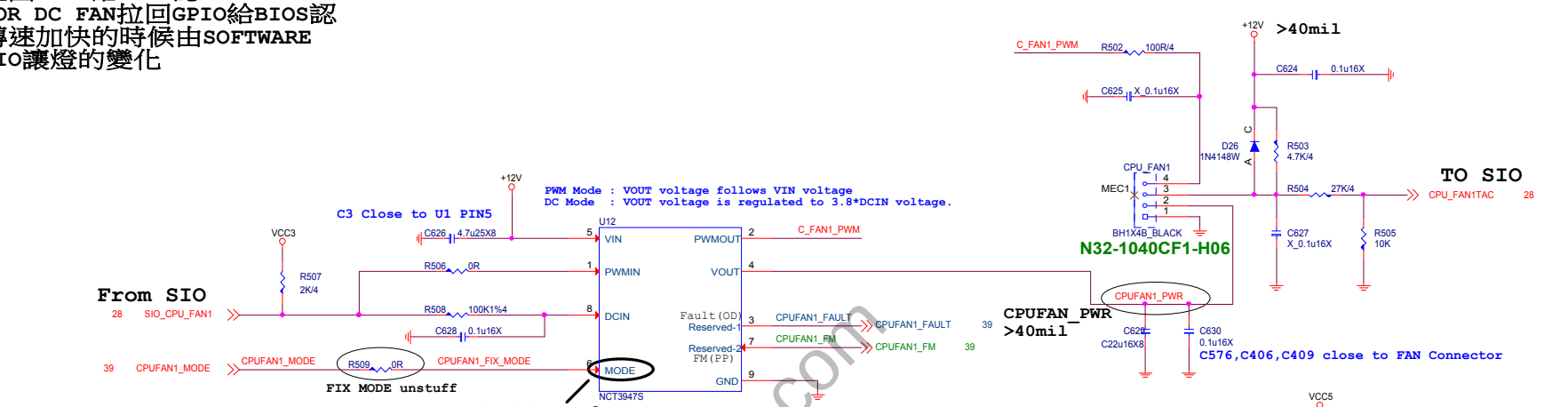
Title: CPU FAN Control NCT5635Y

Size: Custom | Document Number: MS-7B92 | Rev: 12

Date: Friday, August 03, 2018 | Sheet 39 of 99

TYPE J : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO

1.PWM/DC/OCP LED(現在是改成R/G/B3色LED)
2.GPIO可以由BIOS切換 PWM/DC MODE
3.OCP拉回GPIO給BIOS認
4.PWM OR DC FAN拉回GPIO給BIOS認
5.FAN轉速加快的時候由SOFTWARE
控制GPIO讓燈的變化



GPIO Control I22-3947S12-N62

	PCH GPIO
PWM MODE	HIGH
DC MODE	LOW
AUTO MODE	GPI(Floating)

Default

NCT3947S Internall pull up 1.65V

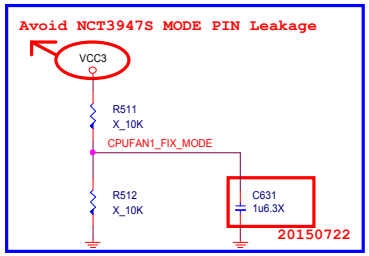
colay NCT3961

OCSET	R1
1.2~1.8A	100K
2.2~2.8A	49.9K
3.2~3.8A	10K

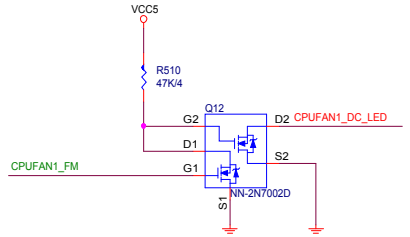
default

OC SET By PM SPEC

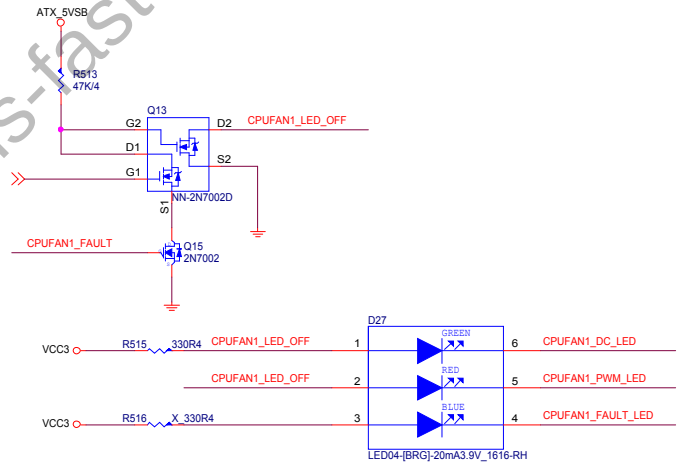
CPUFANX_FAULT

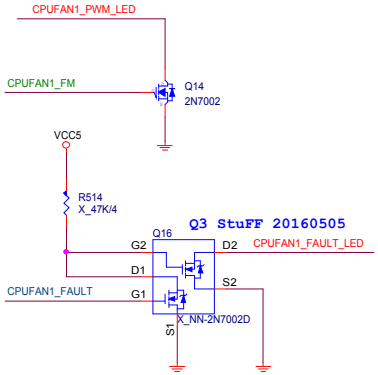


Resever For FIX DC or PWM MODE USE By PM SPEC



CHECK NCT3947S Sink Current





CHECK NCT3947S Sink Current

RGB
D0C-040S400-H91

20161024 Update
DC_FAN_LED(綠)
PWM_FAN_LED(藍)
FAN_OCP_LED(紅)

1.MODE : USE MODE PIN change FAN MODE(PWM or DC FAN)
2.FAULT : USE FAULT PIN Triger OVT/OCP Protection,LOW Atcive (Reserve NEW IC)
3.FM : USE FM PIN For BIOS USE to Detect PWM or DC FAN & Show information(Reserve NEW IC)

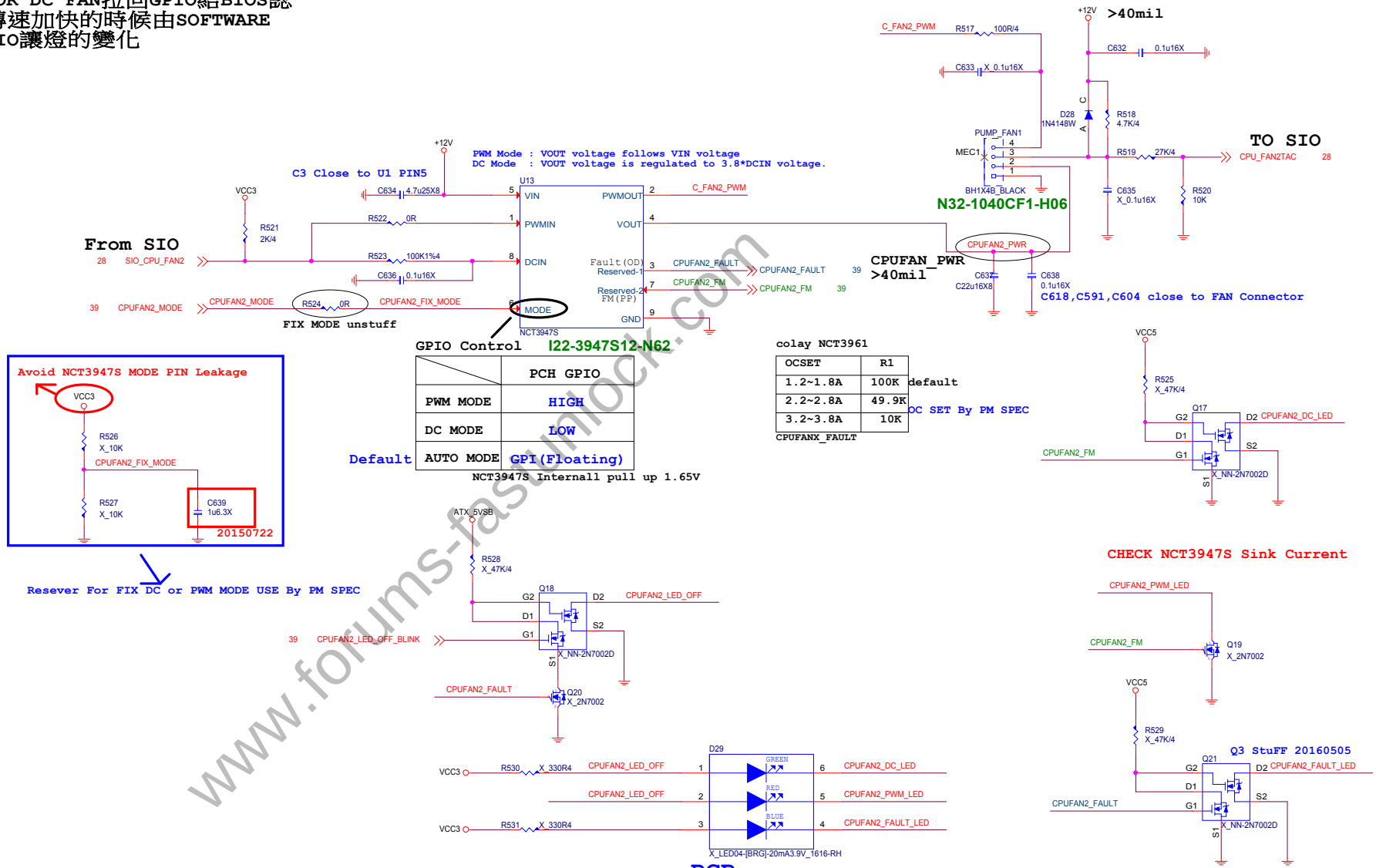
MSI MICRO-START INT'L CO.,LTD.
Link to the Future

Title	CPU FAN1-TYPE J	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 40 of 99	

TYPE J : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO

1.PWM/DC/OCP LED(現在是改成R/G/B3色LED)
2.GPIO可以由BIOS切換 PWM/DC MODE
3.OCP拉回GPIO給BIOS認
4.PWM OR DC FAN拉回GPIO給BIOS認
5.FAN轉速加快的時候由SOFTWARE
控制GPIO讓燈的變化

PM SPEC更新成TYPE-K , 只改BOM



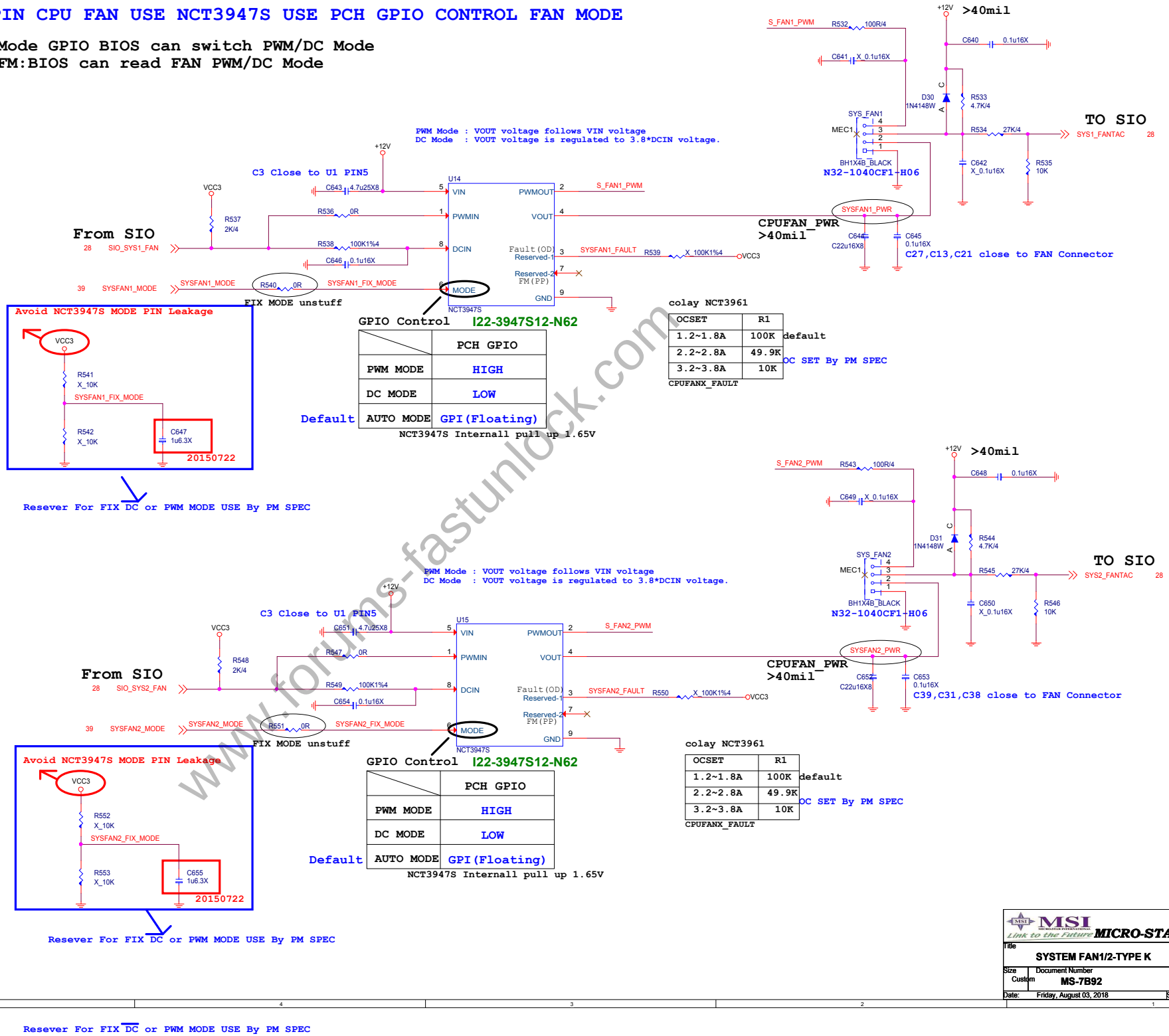
1.MODE : USE MODE PIN change FAN MODE(PWM or DC FAN)
2.FAULT : USE FAULT PIN Triger OVT/OCP Protection,LOW Atcive (Reserve NEW IC)
3.FM : USE FM PIN For BIOS USE to Detect PWM or DC FAN & Show information(Reserve NEW IC)

MICRO-START INT'L CO.,LTD.

Title	CPU FAN2-TYPE J(PUMP)	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 41 of 99	

TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE

1. Mode GPIO BIOS can switch PWM/DC Mode
2. FM:BIOS can read FAN PWM/DC Mode



	PCH GPIO
PWM MODE	HIGH
DC MODE	LOW
AUTO MODE	GPI(Floating)

OCSET	R1	
1.2~1.8A	100K	default
2.2~2.8A	49.9K	
3.2~3.8A	10K	

Resever For FIX DC or PWM MODE USE By PM SPEC

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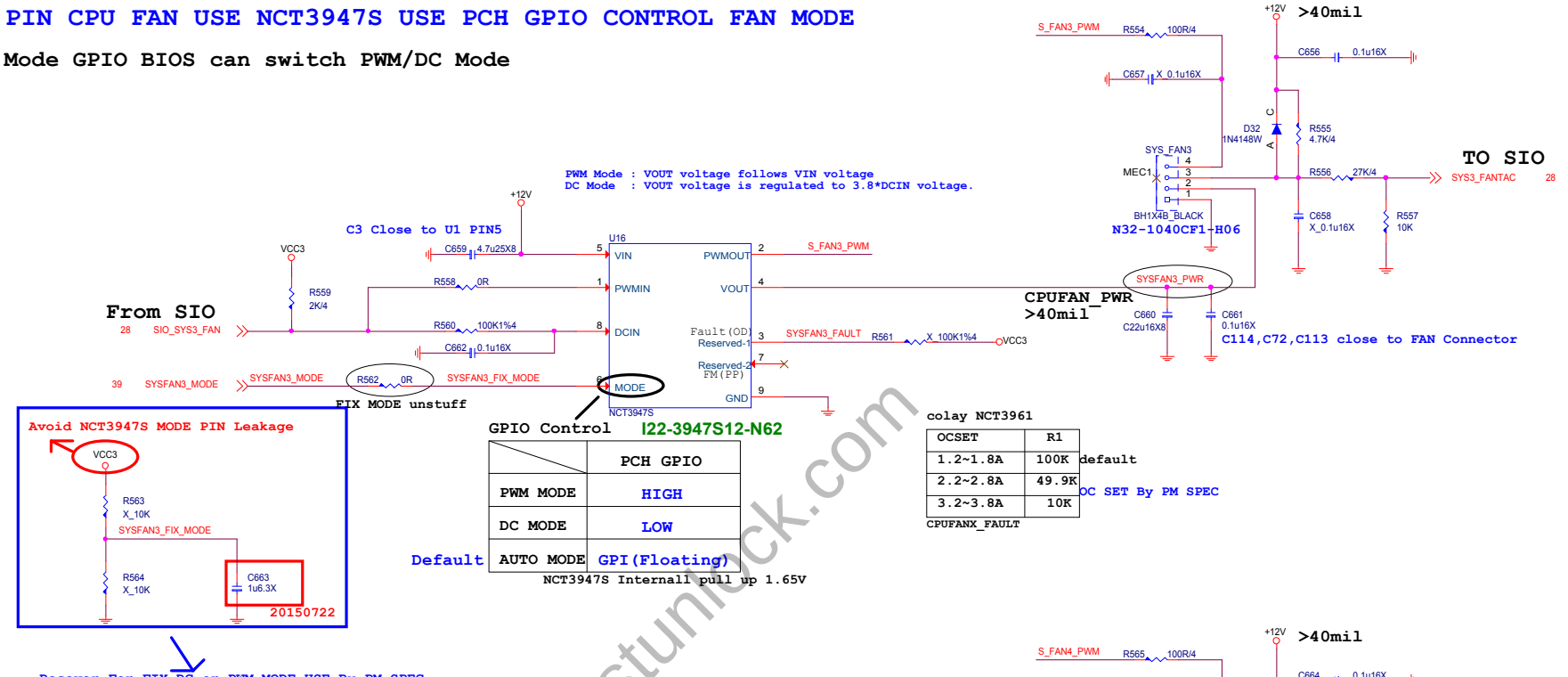
Title: SYSTEM FAN1/2-TYPE K

Size: Custom | Document Number: MS-7B92 | Rev: 12

Date: Friday, August 03, 2018 | Sheet 42 of 99

TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE

1. Mode GPIO BIOS can switch PWM/DC Mode



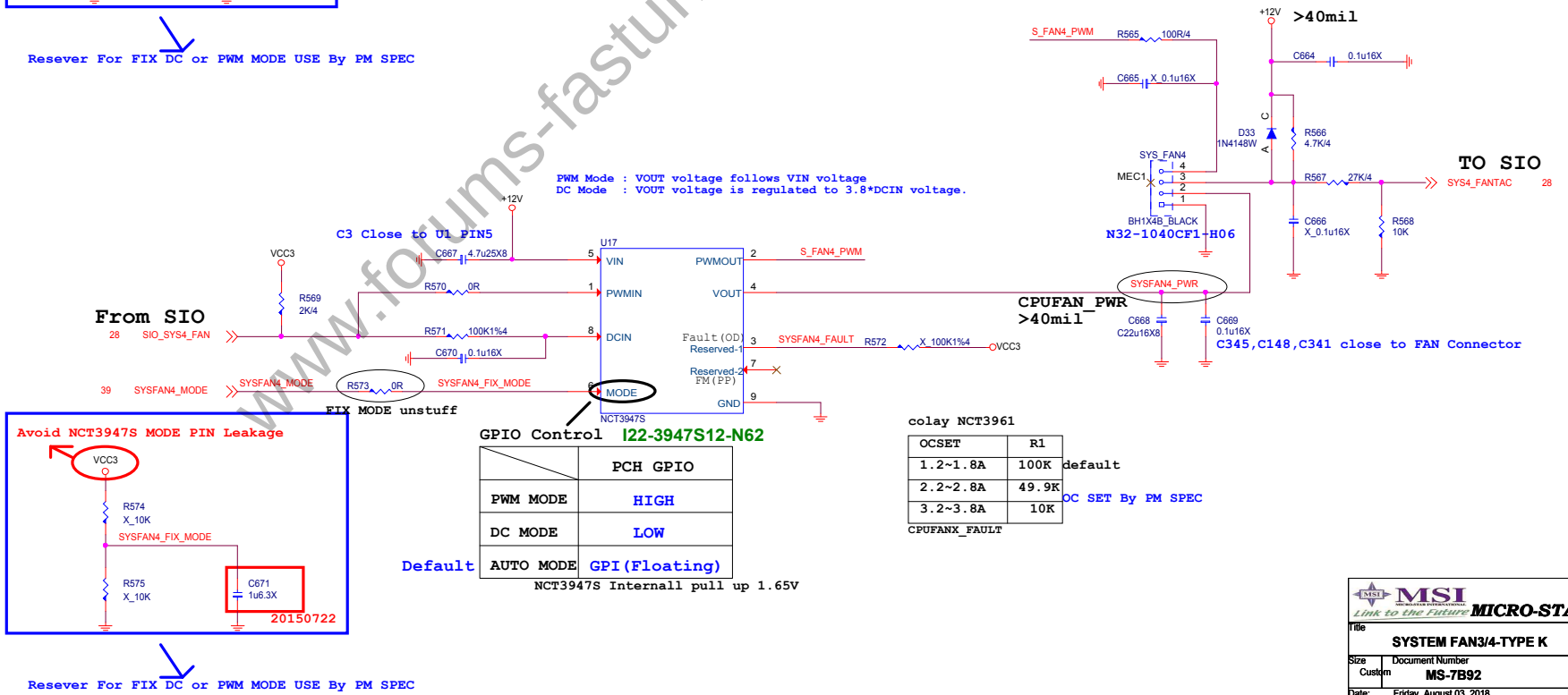
	PCH GPIO
PWM MODE	HIGH
DC MODE	LOW
Default AUTO MODE	GPI(Floating)

NCT3947S Internall pull up 1.65V

colay NCT3961

OCSET	R1	
1.2~1.8A	100K	default
2.2~2.8A	49.9K	OC SET By PM SPEC
3.2~3.8A	10K	

CPUFANX_FAULT



	PCH GPIO
PWM MODE	HIGH
DC MODE	LOW
Default AUTO MODE	GPI(Floating)

NCT3947S Internall pull up 1.65V

colay NCT3961

OCSET	R1	
1.2~1.8A	100K	default
2.2~2.8A	49.9K	OC SET By PM SPEC
3.2~3.8A	10K	

CPUFANX_FAULT

MICRO-START INT'L CO.,LTD.

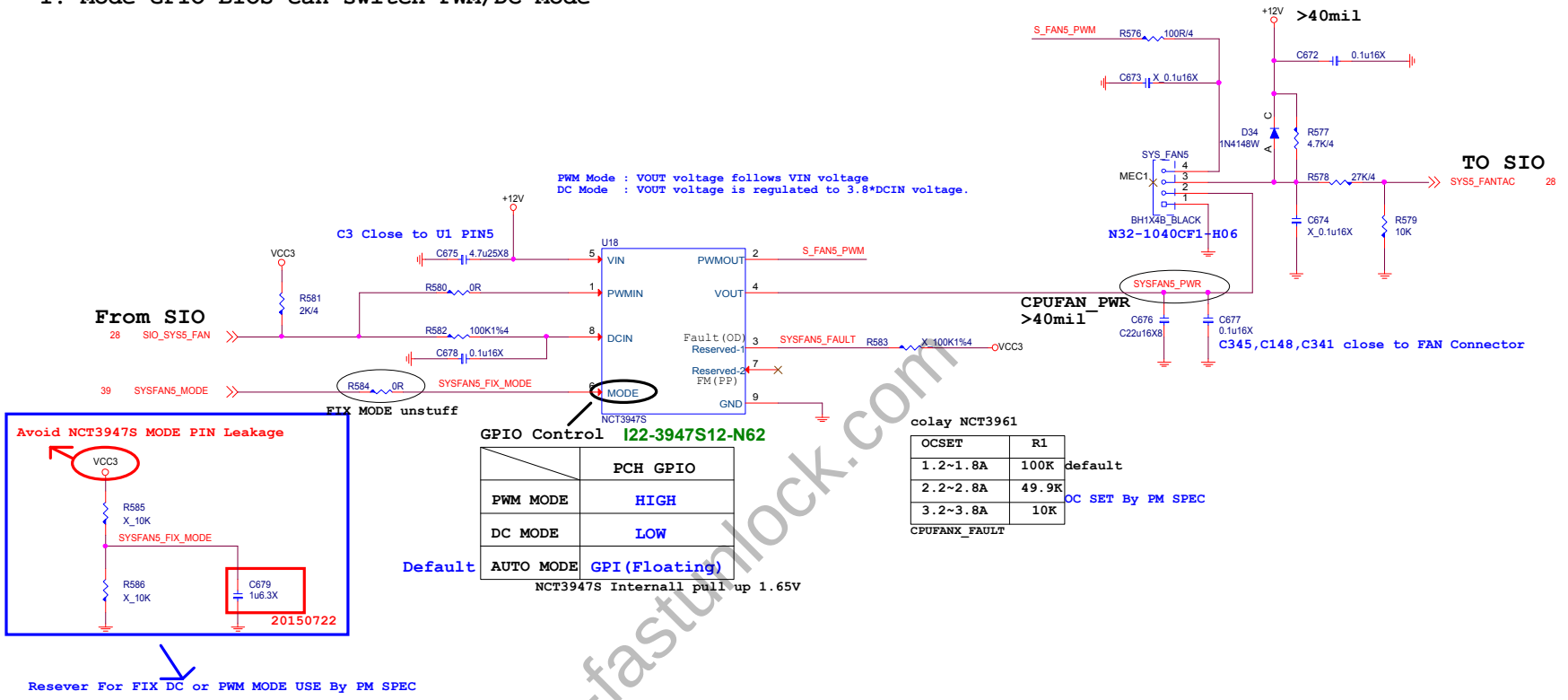
Title: SYSTEM FAN3/4-TYPE K

Size: Custom | Document Number: MS-7B92 | Rev: 12

Date: Friday, August 03, 2018 | Sheet 43 of 99

TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE

1. Mode GPIO BIOS can switch PWM/DC Mode



	PCH GPIO
PWM MODE	HIGH
DC MODE	LOW
Default AUTO MODE	GPI(Floating)

OCSET	R1	
1.2~1.8A	100K	default
2.2~2.8A	49.9K	
3.2~3.8A	10K	

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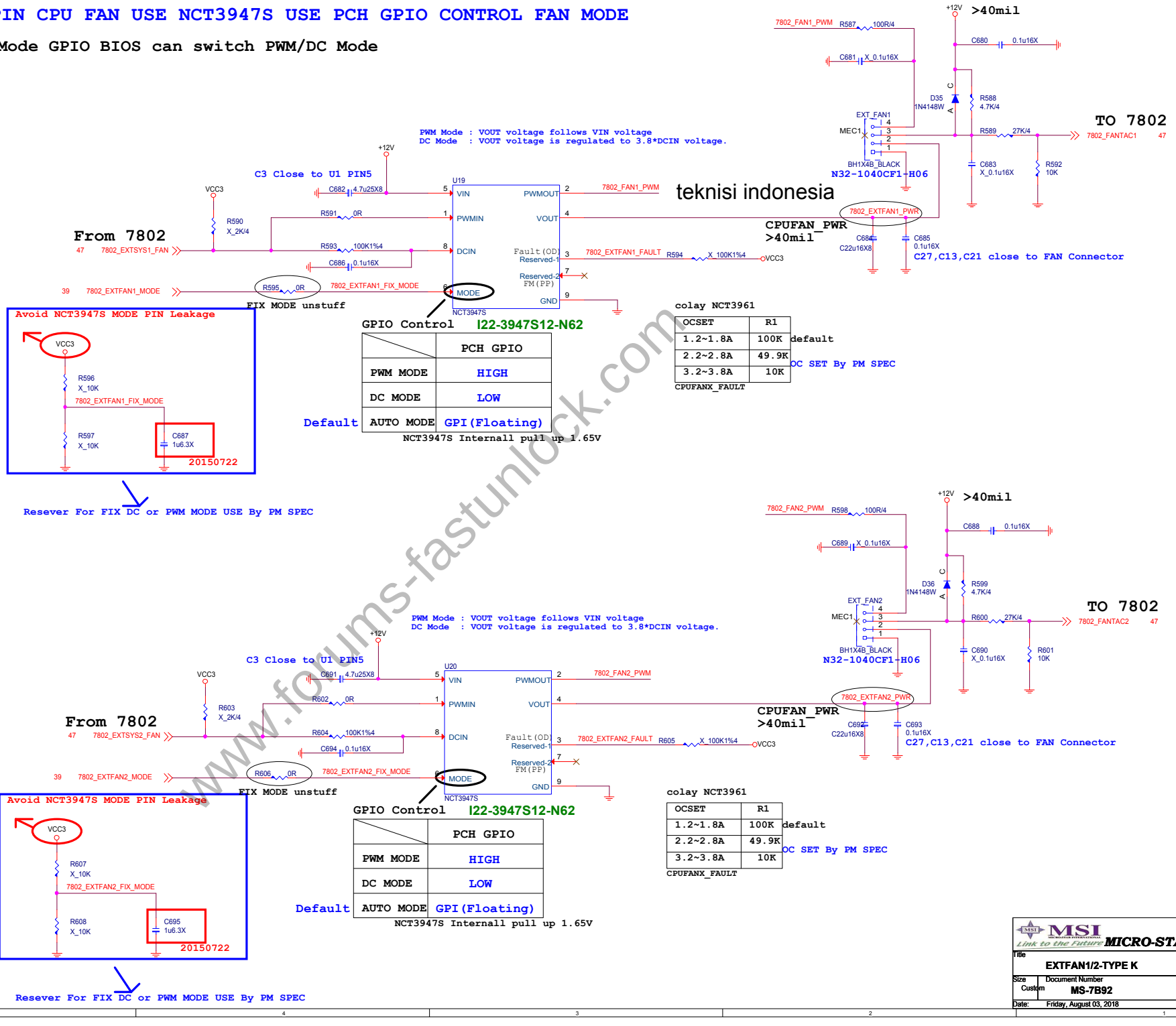
Title: SYSTEM FAN5-TYPE K		
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 44 of 99	

TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE

1. Mode GPIO BIOS can switch PWM/DC Mode



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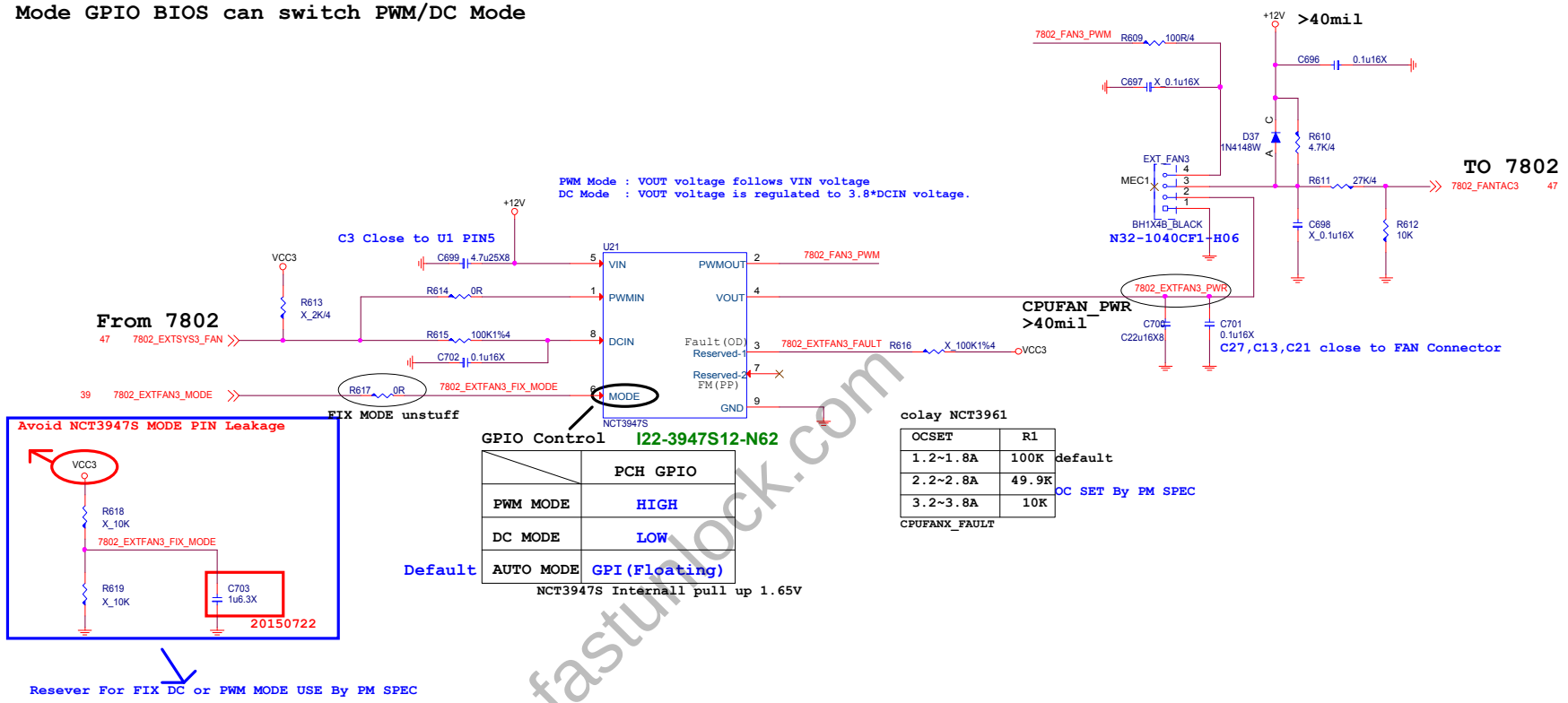
Title	EXTFAN1/2-TYPE K	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 45 of 99	

TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE

1. Mode GPIO BIOS can switch PWM/DC Mode



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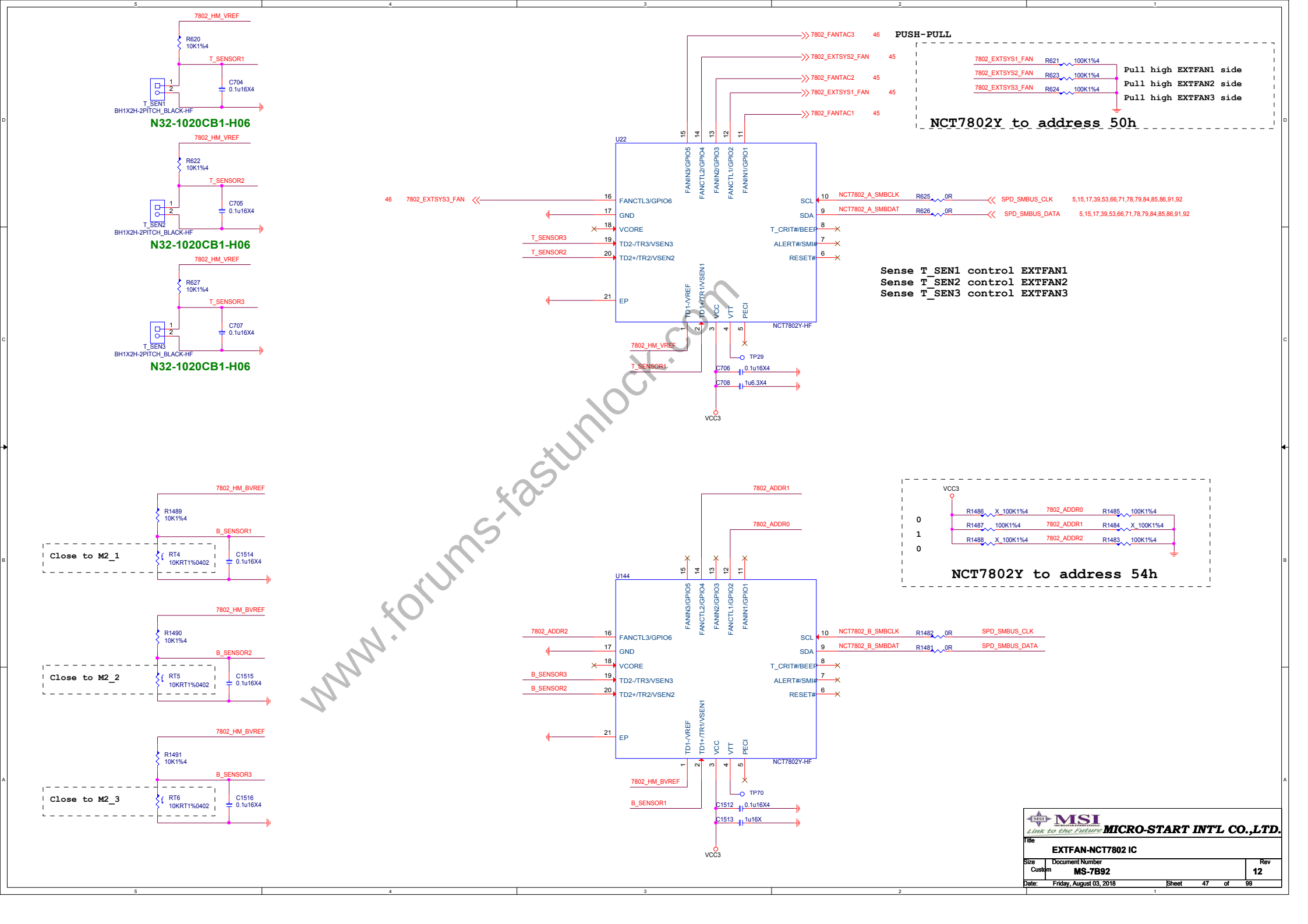
Title	EX FAN3-TYPE K	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 46 of 99	


7802_HM_VREF
R620 10K1%4
T_SENSOR1
C704 0.1u16X4
T_SEN1
BH1X2H-2PITCH_BLACK-HF
N32-1020CB1-H06
7802_HM_VREF
R622 10K1%4
T_SENSOR2
C705 0.1u16X4
T_SEN2
BH1X2H-2PITCH_BLACK-HF
N32-1020CB1-H06
7802_HM_VREF
R627 10K1%4
T_SENSOR3
C707 0.1u16X4
T_SEN3
BH1X2H-2PITCH_BLACK-HF
N32-1020CB1-H06
7802_FANTAC3 46
7802_EXTSYS2_FAN 45
7802_FANTAC2 45
7802_EXTSYS1_FAN 45
7802_FANTAC1 45
PUSH-PULL
7802_EXTSYS1_FAN R621 100K1%4 Pull high EXTFAN1 side
7802_EXTSYS2_FAN R623 100K1%4 Pull high EXTFAN2 side
7802_EXTSYS3_FAN R624 100K1%4 Pull high EXTFAN3 side
NCT7802Y to address 50h
U22
FANIN3/GPIO5
FANCTL2/GPIO4
FANIN2/GPIO3
FANCTL1/GPIO2
FANIN1/GPIO1
46 7802_EXTSYS3_FAN
FANCTL3/GPIO6
GND
VCORE
T_SENSOR3
T_SENSOR2
TD2-/TR3/VSEN3
TD2+/TR2/VSEN2
EP
SCL
SDA
T_CRIT#/BEEP
ALERT#/SMI#
RESET#
NCT7802_A_SMBCLK R625 0R SPD_SMBUS_CLK 5,15,17,39,53,66,71,78,79,84,85,86,91,92
NCT7802_A_SMBDAT R626 0R SPD_SMBUS_DATA 5,15,17,39,53,66,71,78,79,84,85,86,91,92
TD1-/VREF
TD1+/TR1/VSEN1
VCC
VTT
PECI
NCT7802Y-HF
7802_HM_VREF
T_SENSOR1
TP29
C706 0.1u16X4
C708 1u6.3X4
VCC3
Sense T_SEN1 control EXTFAN1
Sense T_SEN2 control EXTFAN2
Sense T_SEN3 control EXTFAN3
7802_HM_BVREF
R1489 10K1%4
B_SENSOR1
Close to M2_1
RT4 10KRT1%0402
C1514 0.1u16X4
7802_HM_BVREF
R1490 10K1%4
B_SENSOR2
Close to M2_2
RT5 10KRT1%0402
C1515 0.1u16X4
7802_HM_BVREF
R1491 10K1%4
B_SENSOR3
Close to M2_3
RT6 10KRT1%0402
C1516 0.1u16X4
7802_ADDR1
7802_ADDR0
U144
7802_ADDR2
B_SENSOR3
B_SENSOR2
NCT7802_B_SMBCLK R1482 0R SPD_SMBUS_CLK
NCT7802_B_SMBDAT R1481 0R SPD_SMBUS_DATA
7802_HM_BVREF
B_SENSOR1
TP70
C1512 0.1u16X4
C1513 1u16X
VCC3
VCC3
0
1
0
R1486 X_100K1%4 7802_ADDR0 R1485 100K1%4
R1487 100K1%4 7802_ADDR1 R1484 X_100K1%4
R1488 X_100K1%4 7802_ADDR2 R1483 100K1%4
NCT7802Y to address 54h
www.forums-fastunlock.com
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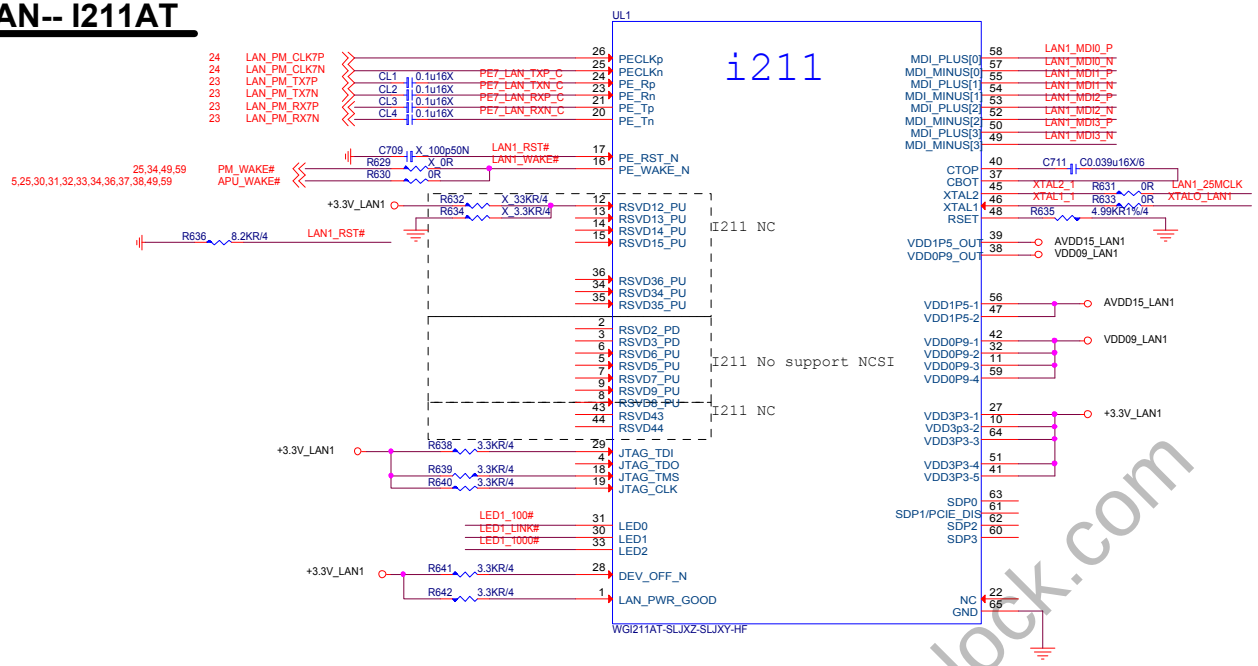
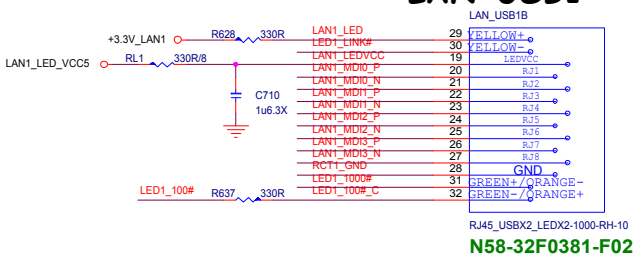
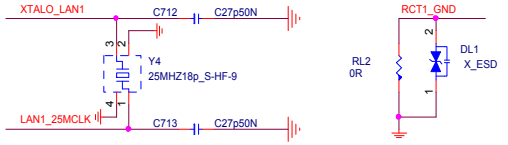
Link to the Future
Title
EXTFAN-NCT7802 IC
Size Custom
Document Number MS-7B92
Rev 12
Date: Friday, August 03, 2018
Sheet 47 of 99

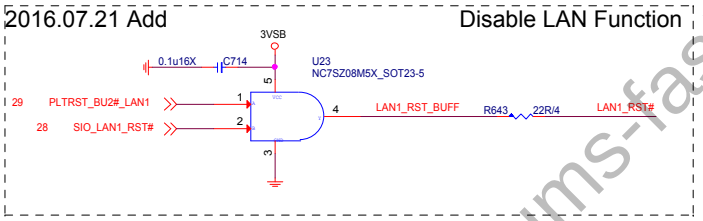
LAN-- I211AT

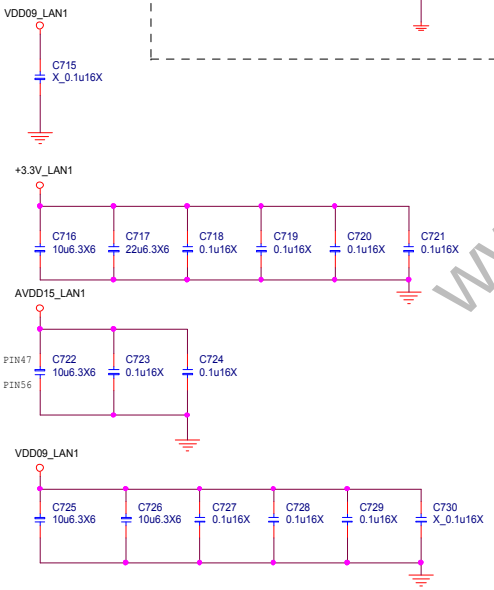


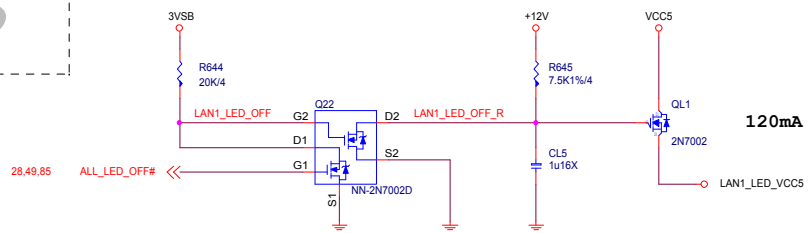
LAN+USB1

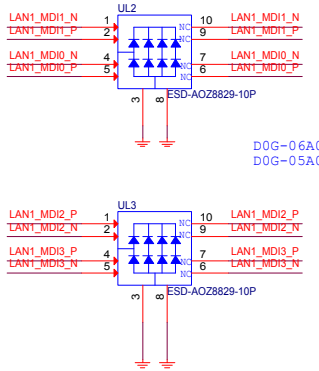


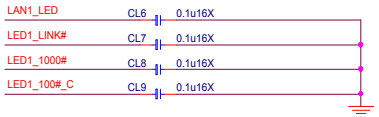






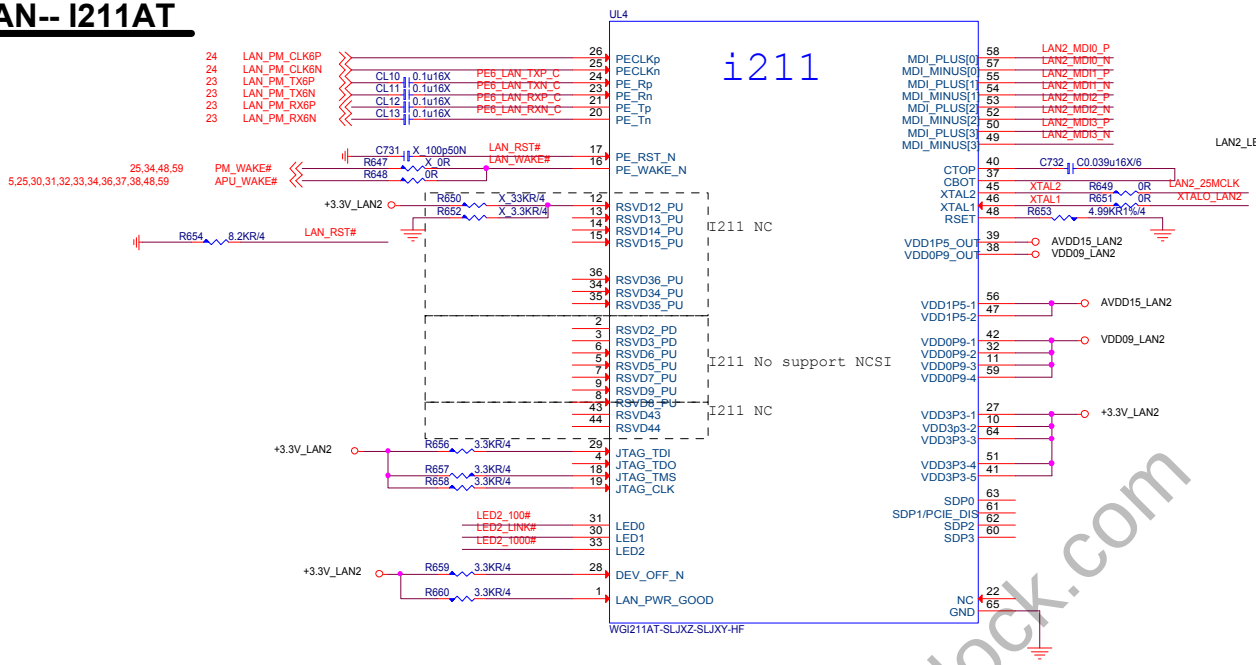


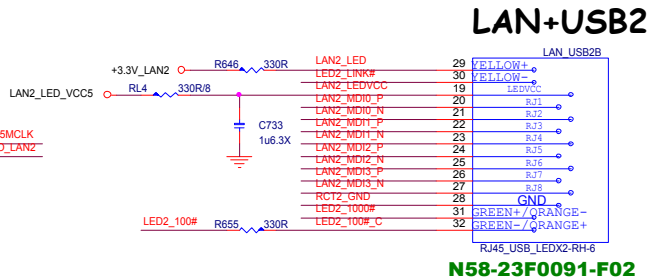


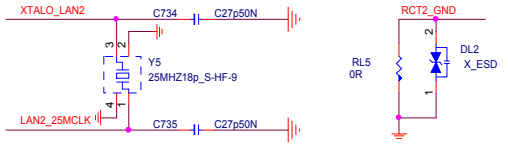


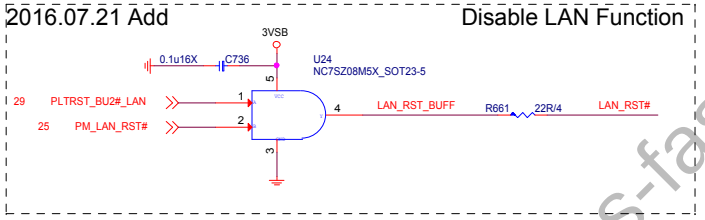
Title	LAN1-Intel I211AT		
Size	Document Number		Rev
Custom	MS-7B92		12
Date:	Friday, August 03, 2018	Sheet 48 of 99	

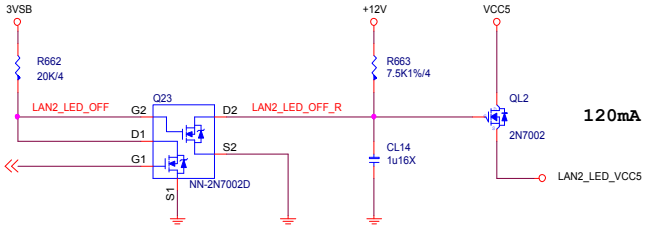
LAN-- I211AT

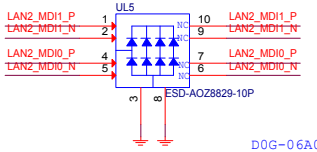


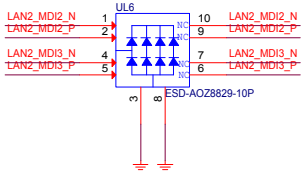












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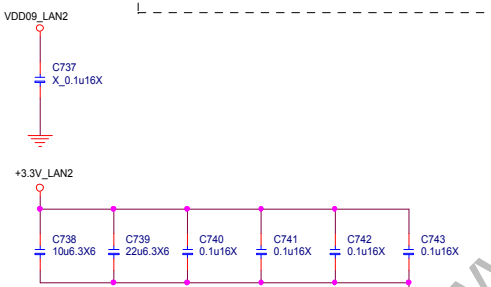
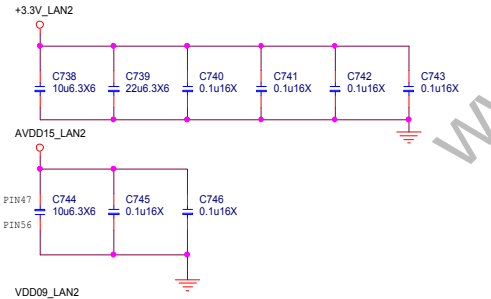
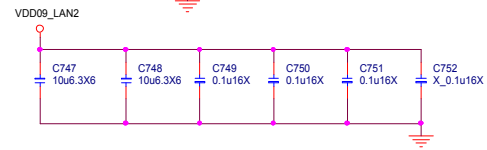
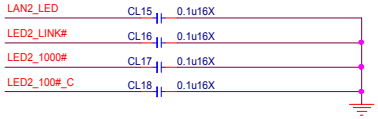
D0G-05A0300-I14









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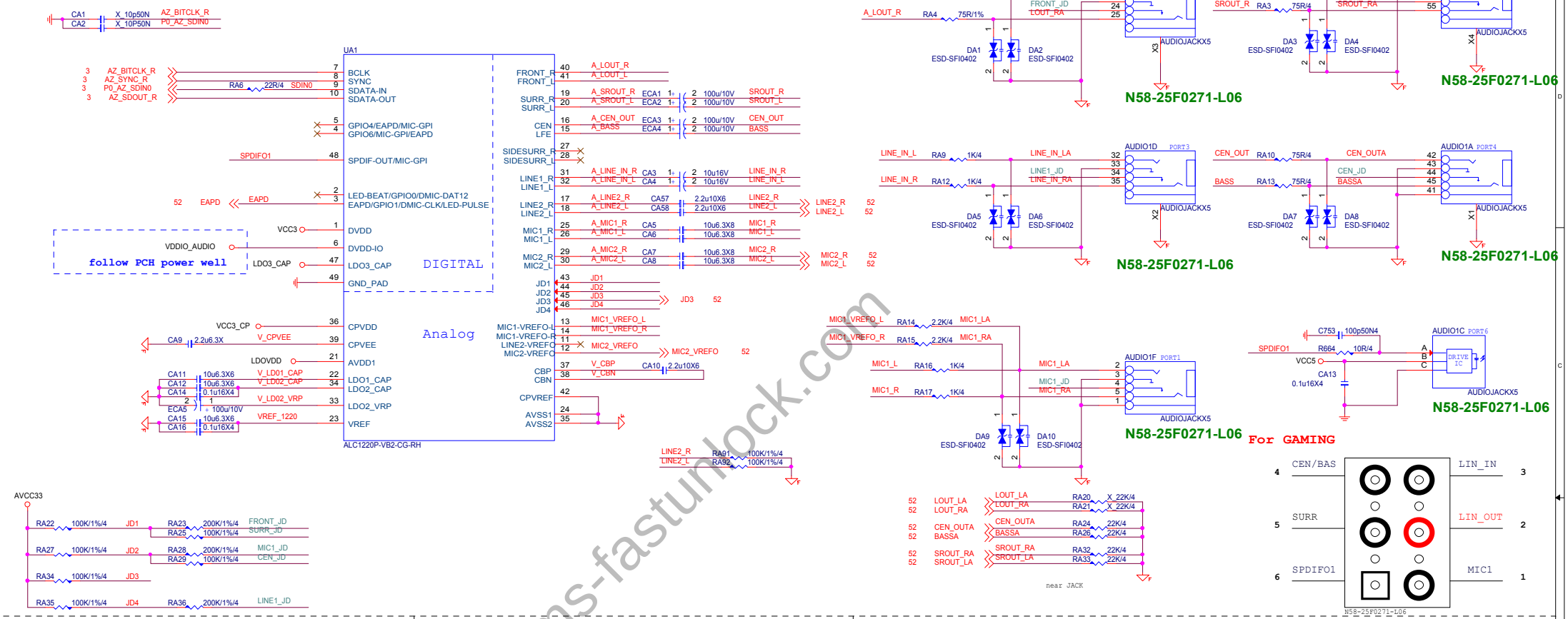
Title	LAN2-Intel I211AT	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 49 of 99	

ALC1220P-VB2(48PIN)



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Title: Audio ALC1220P

Size: Custom | Document Number: MS-7B92 | Rev: 12

Date: Friday, August 03, 2018 | Sheet 50 of 99

Ess9023

Removed Ess9023

Analong SW1

Analong SW2

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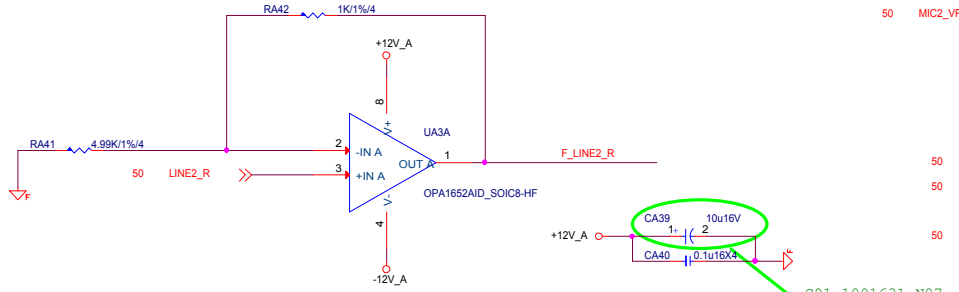
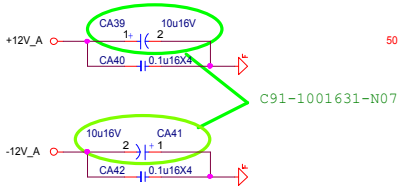
Link to the Future

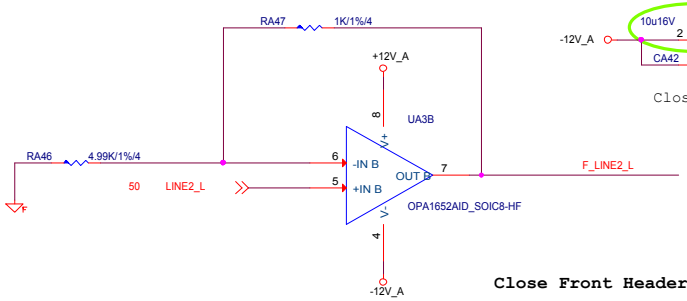
Title: Audio ALC1220-2		
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 51 of 99	



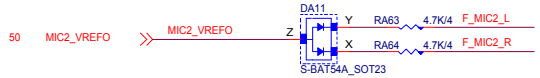


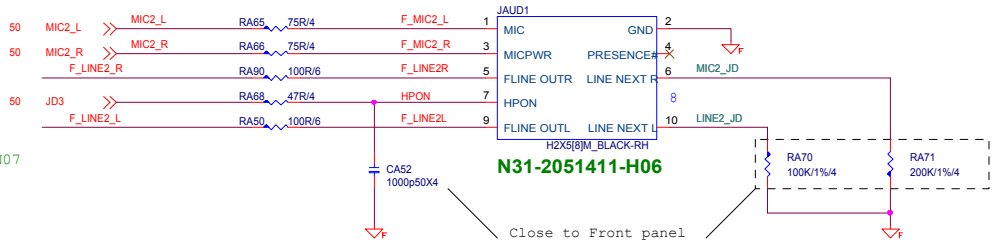
C91-1001631-N07

Close to UA3



Close Front Header, JAUD1



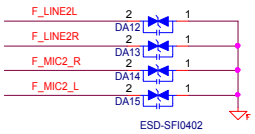


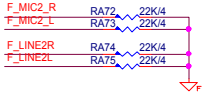
N31-2051411-H06

Close to Front panel
For HDA/AC97 front cable.

Close to Jack

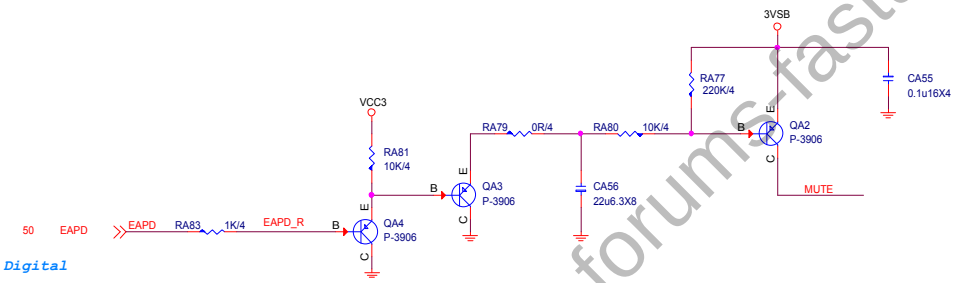
ESD protect
D0G-2950500-SI0
D0G-3010510-I05





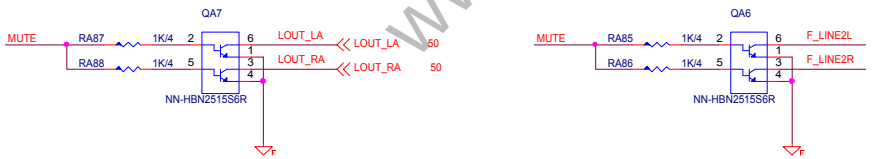
Rear Line OUT De-POP circuit

(De-pop circuit for Rear Line out)

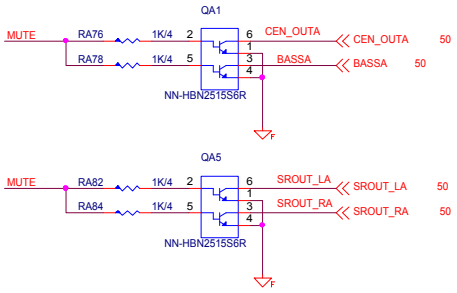


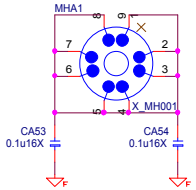
Digital

Analog



(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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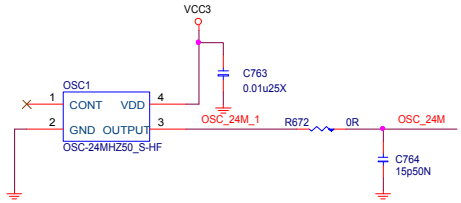
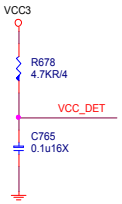
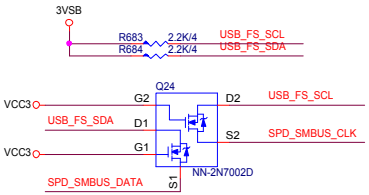
Title	Audio ALC1220P	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 52 of 99	

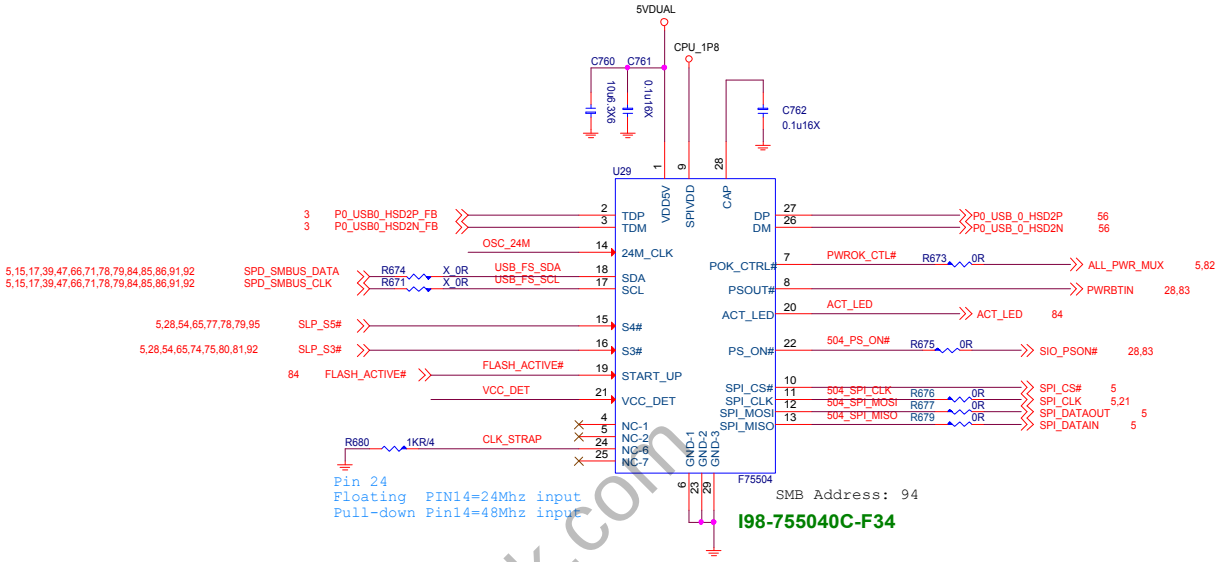
USB Flash BIOS

Host USB connector







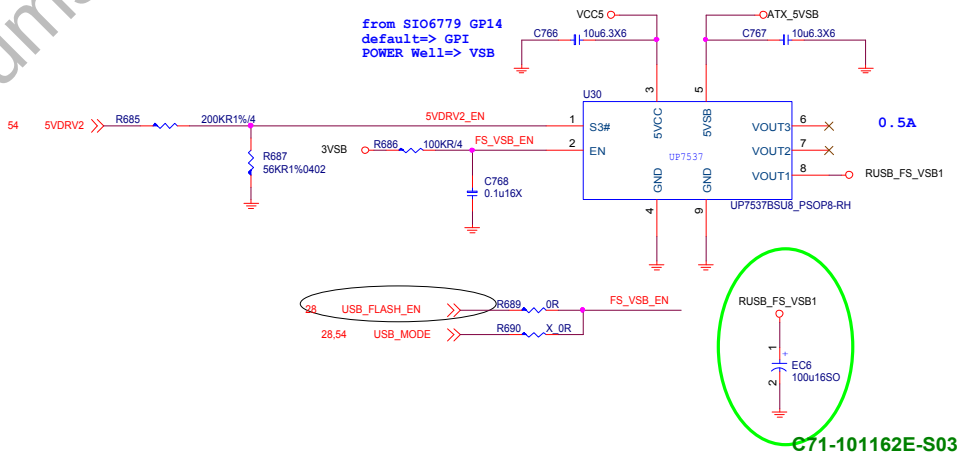


Pin 24
Floating PIN14=24Mhz input
Pull-down Pin14=48Mhz input

SMB Address: 94

I98-755040C-F34

REAR Flash BIOS USB PORT



C71-101162E-S03

Reserved for when F75501 Hotkey device fail use

* All close to Front IO side

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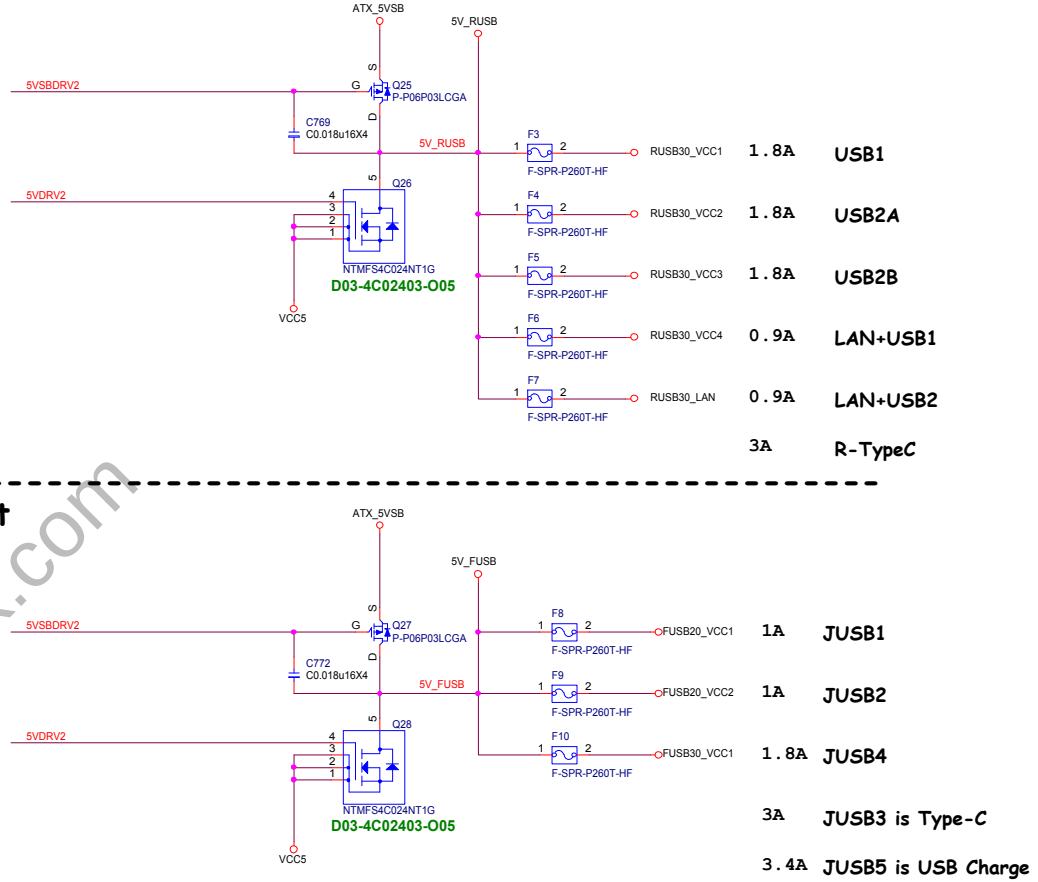
Link to the Future

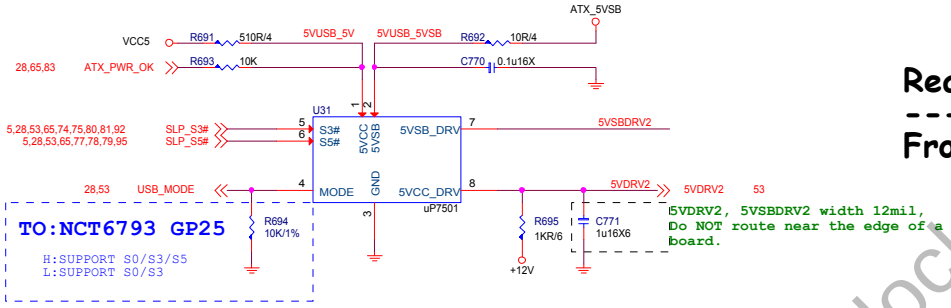
Title: USB Flash BIOS F75504		
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 53 of 99	

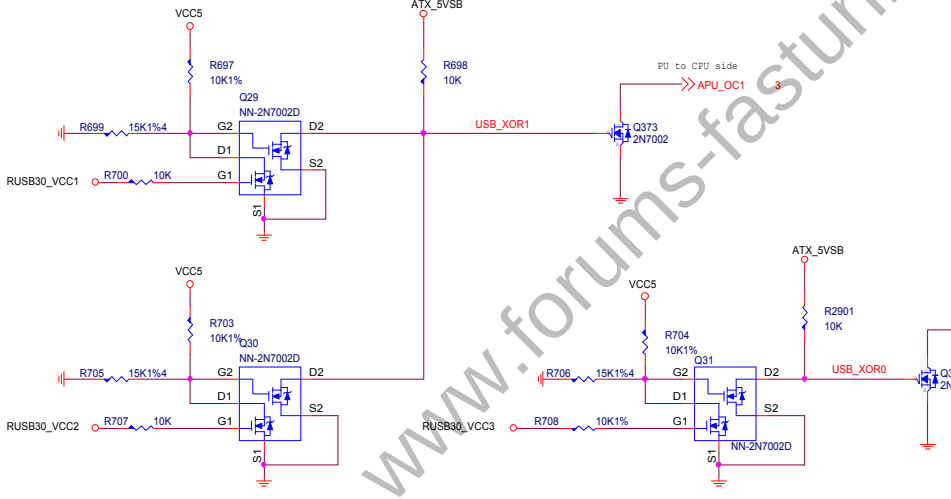
USB Power



Rear

Front





	CORETYPE1(A)	USB_PWR(B)	APU_USB_OC(Y)
BR	0	0	0
Act. Low	0	1	1
SR	1	0	1
Act. High	1	1	0

OC# signal connect to
SB OC pin.

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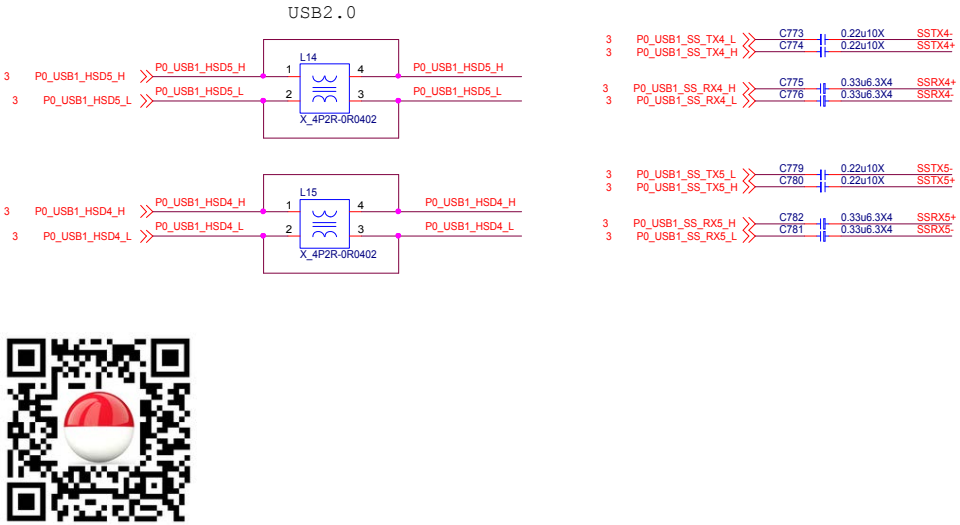
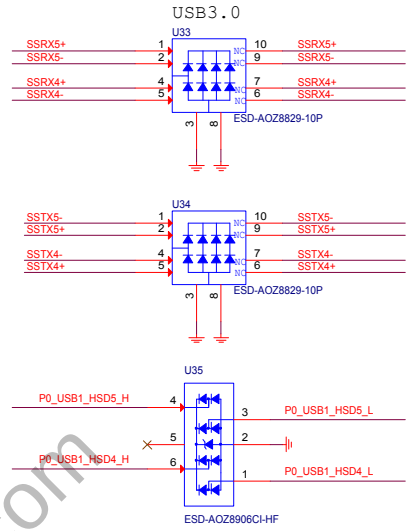
Title: USB Power

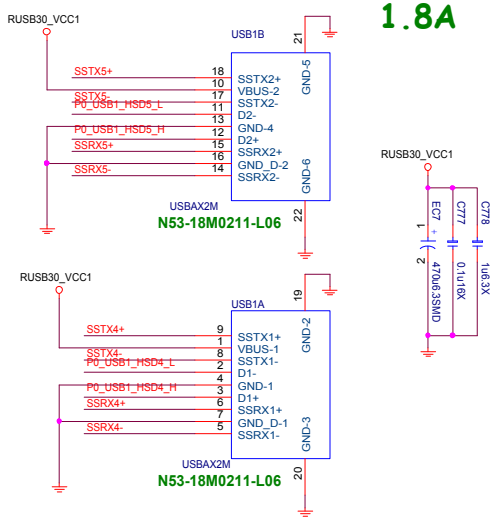
Size: Custom | Document Number: MS-7B92 | Rev: 12

Date: Friday, August 03, 2018 | Sheet 54 of 99

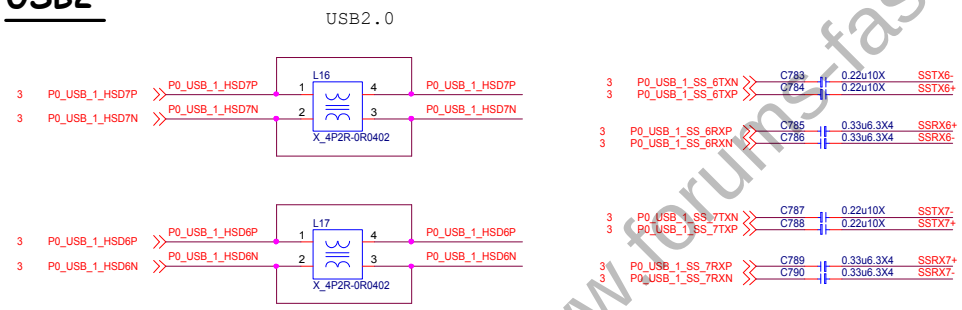
USB1

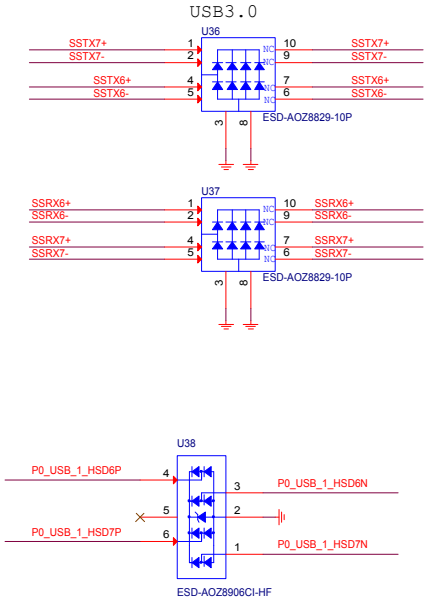


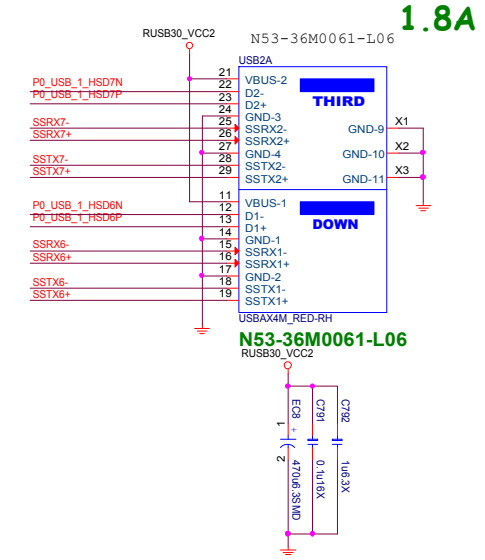




USB2

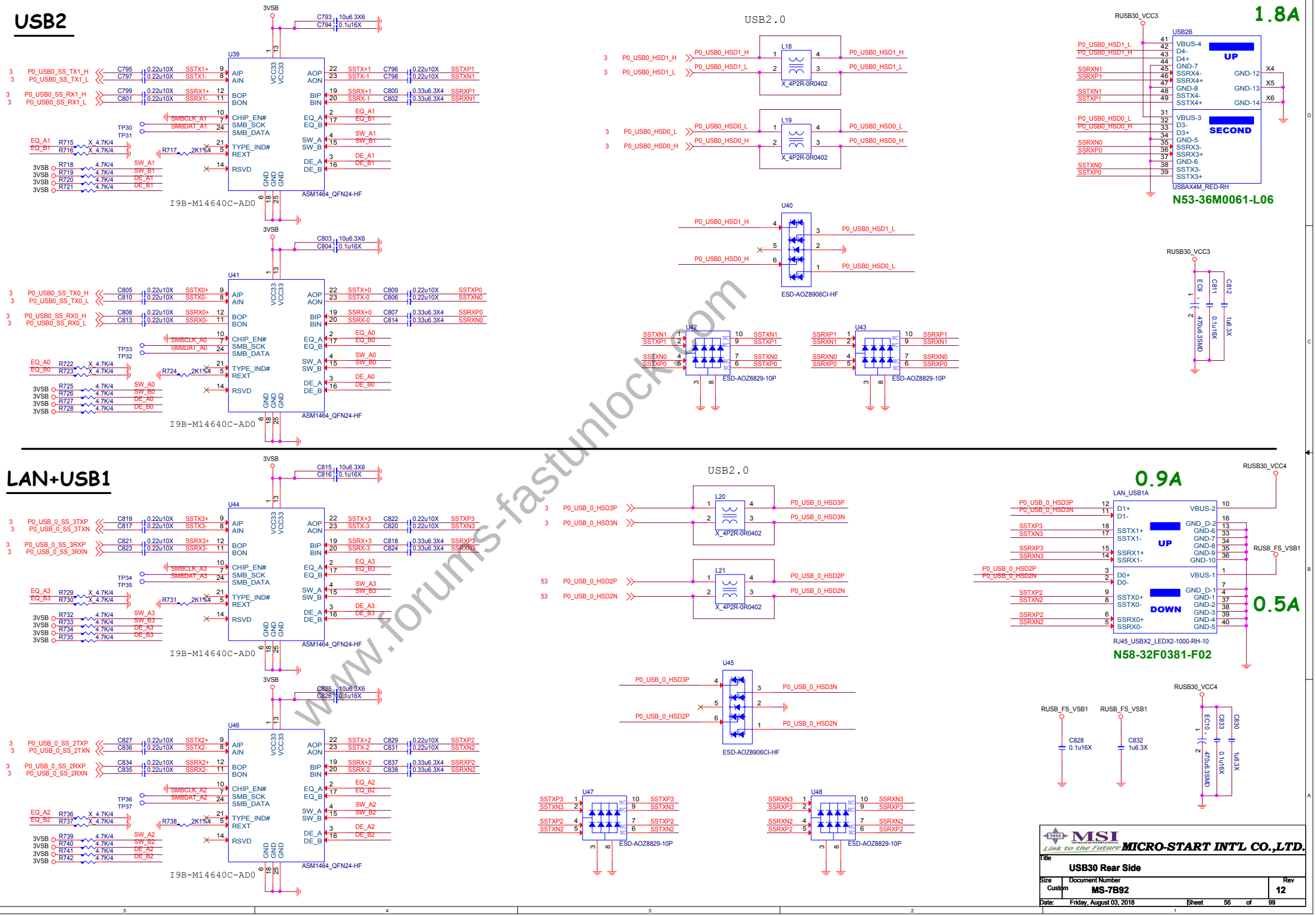


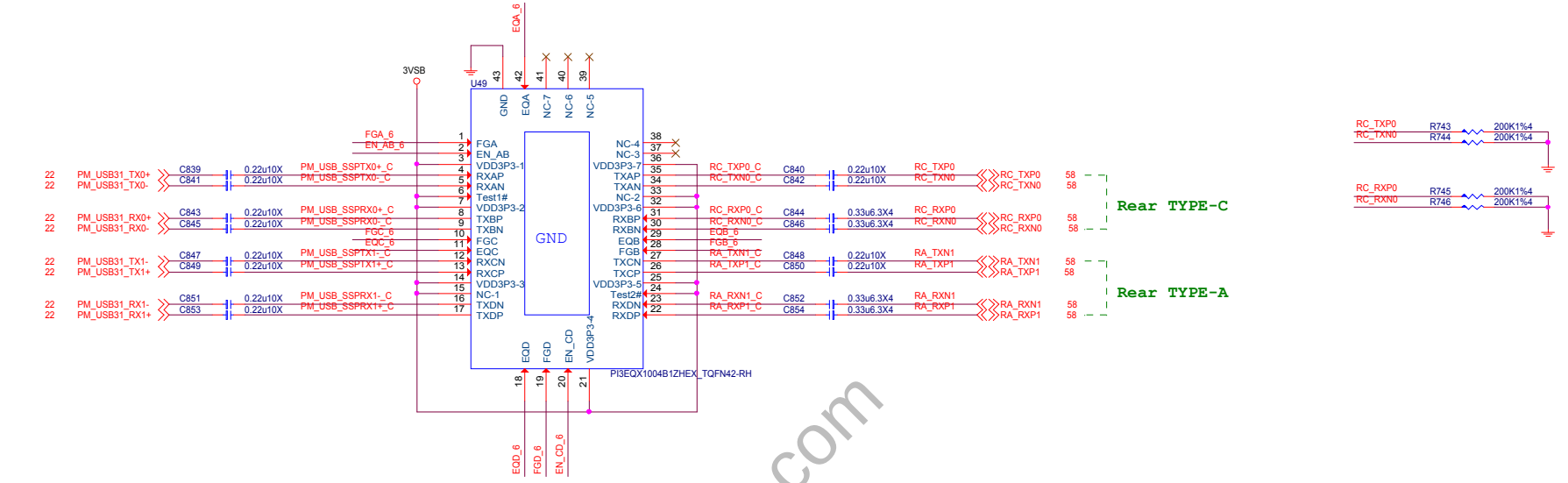


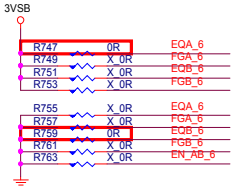


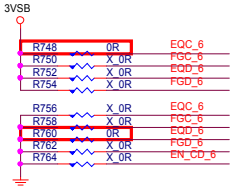
MICRO-START INT'L CO.,LTD.

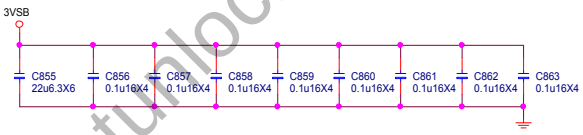
Title: USB30 Rear Side		
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 55 of 99	







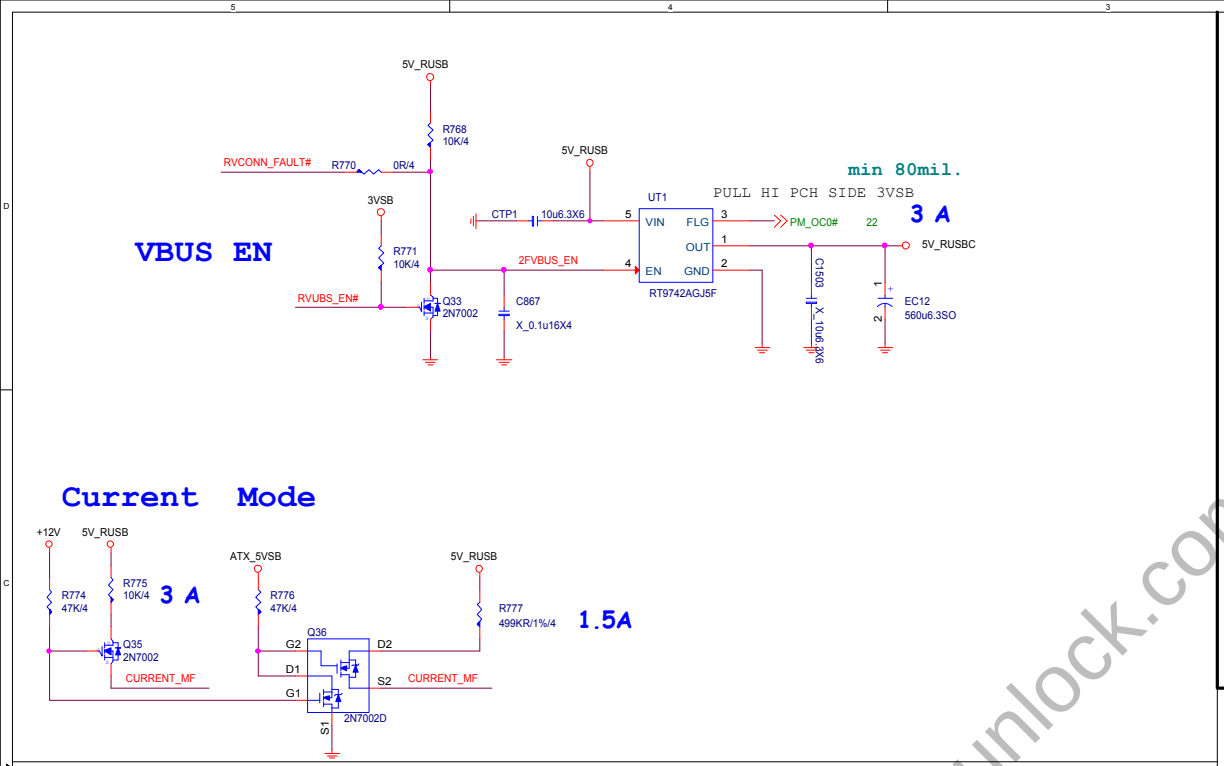


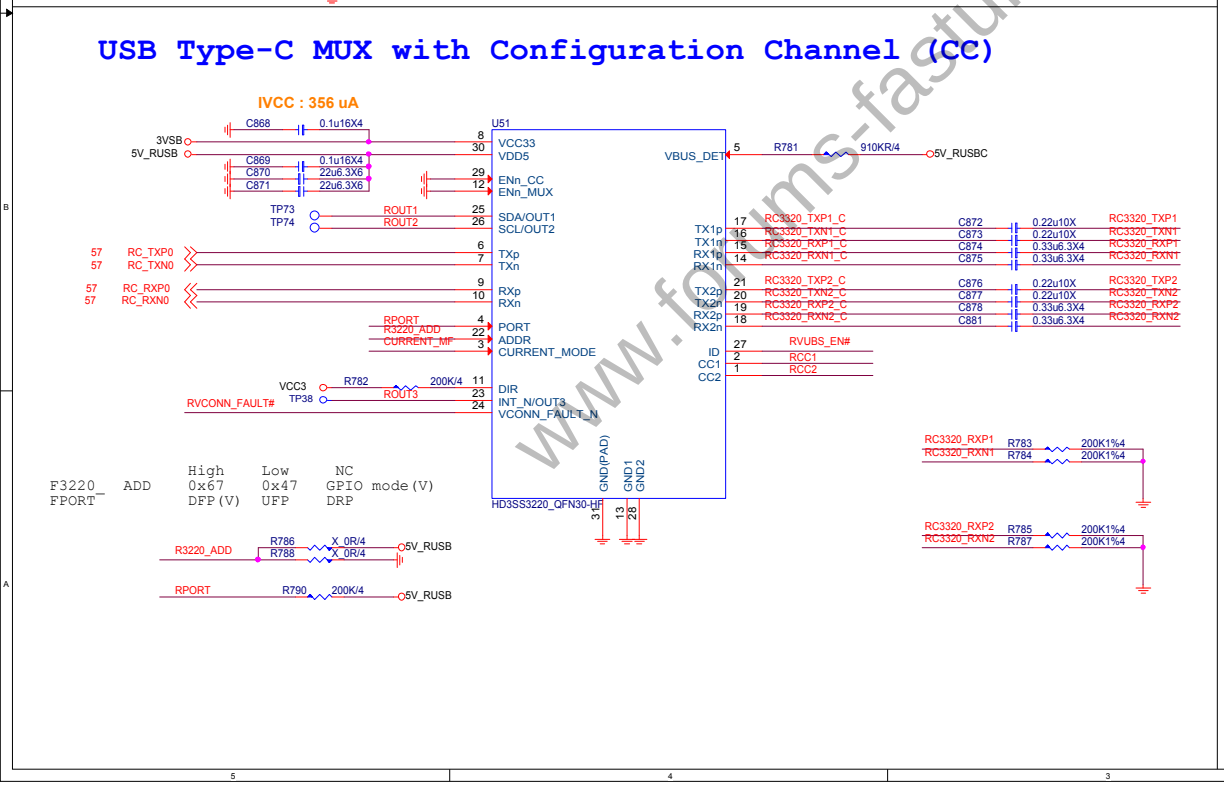


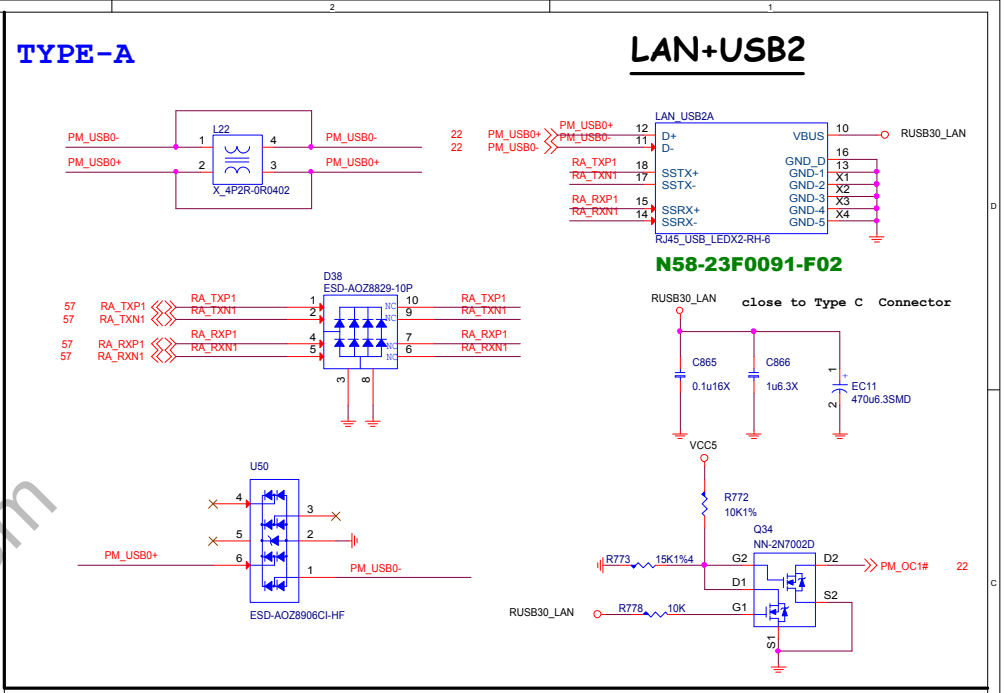
EQ	dB	
0	12.4	0 to GND
R	8	68K to GND
F	10.6	NC
1	14.6	0 to VDD

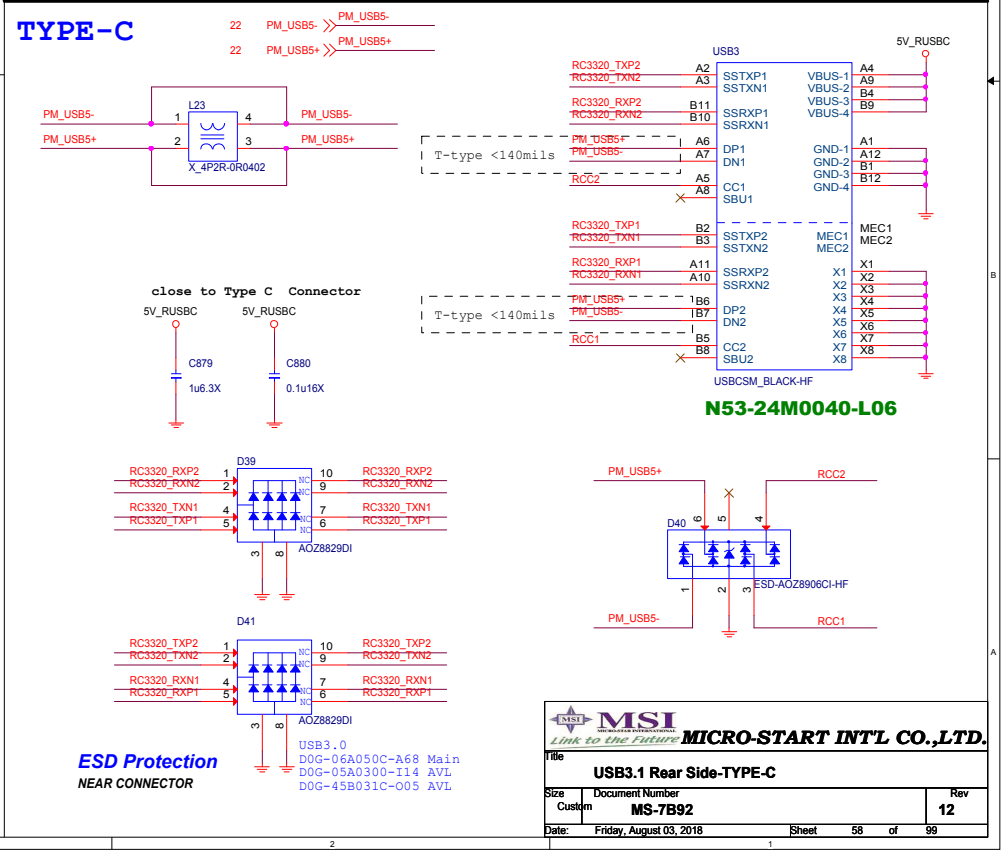
FG	dB	
0	-1.6	0 to GND
R	-0.5	68K to GND
F	1.0	NC
1	2.7	0 to VDD

Title	Pericom 1004 Redriver	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 57 of 99	









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Title	USB3.1 Rear Side-TYPE-C		
Size: Custom	Document Number: MS-7B92		Rev: 12
Date: Friday, August 03, 2018	Sheet 58 of 99		

Use pure PCIE must provide CLK

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

USB HS (90Ohm-Diff)

Chip to Connector ~1.5 inch.

Front side USB3.1 TYPE C

USB SS (80Ohm-Diff)

USB HS (90Ohm-Diff)

PCIE Rule (Follow PM PDG)

Layout Guide:

1.) USB3.1 to Connector Total Length < 1.5"
2.) VIA hole <2

Power Consumption

	3.3V	3.3VSUS	2.5V	1.1V	1.1VSUS	Unit
ASM3142	TBD	TBD	TBD	TBD	TBD	mA
ASM2142	4	9	220	470	10	mA

ASM3142

B02-031420C-AD0

ASM3142-RH

SMI connect to GPI which support smi function.
SB side pull high 10K ohm to 3VSB.
(Intel 8X & 9X series use GPIO10)
(Intel SKL use GPP_C23)

PPON_X Internal Pull-up to VCC3

OCI_X Internal Pull-up to SUS

RX/TX Internal Pull-up

For SRIS mode

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

SMD Crystal use 3225 size
M:D04-0900900-SC6
S:D04-0901100-T16
S:D04-0901200-F07

atx5vsb change to vcc5

ASM_SMI has internal Pull-up to VCC
ASM_WAKE has internal Pull-up to VCCSUS

2016.07.21 Add

Disable ASM1142 Function

ASM3142 1.1v Core Power

SN:L01-0107108-C08

MP2143DJ_TSOT23-8-RH

ASM3142 1.1v Suspend Power

2.2V * 0.47A = 1.034W

ASM3142 2.5v Analog Power

0.8V * 0.2A = 0.16W

EEPROM

M31-25L1022-M24

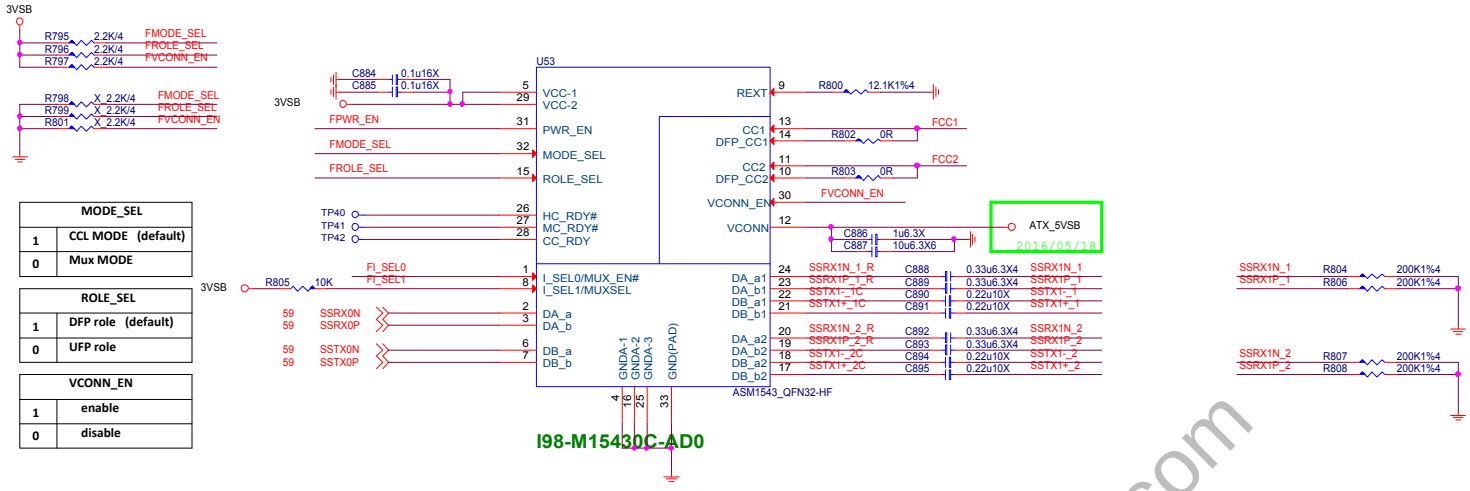
M:M31-25L1022-M24 (1M)
S:M31-25X2023-W03 (2M)

MICRO-START INT'L CO.,LTD.

Title	USB3.1 ASM1142-1		
Size: Custom	Document Number: MS-7B92		Rev: 12
Date: Friday, August 03, 2018	Sheet 59 of 99		

ASM3142 USB 3.1-Front Type-C

USB Type-C MUX with Configuration Channel (CC)



I98-M15430C-AD0

MODE_SEL	
1	CCL MODE (default)
0	Mux MODE

ROLE_SEL	
1	DFP role (default)
0	UFP role

VCONN_EN	
1	enable
0	disable

EQA/B are the selection pins for the equalization selection

	Equalizer setting (dB)	
EQA/B	*@2.5GHz*	*@5GHz*
0	5.1	10.9
R	1.9	6.7
F	3.5	8.9 (Default)
1	6.8	13.1

Flat Gain Setting:

FGA/B are the selection bits for the DC gain

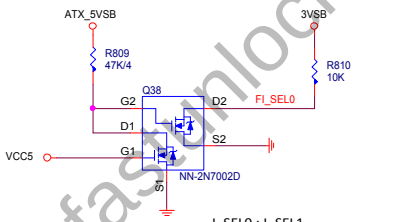
	Flat Gain Settings
FGA/B	*dB*
0	-3
R	-1.5
F	0 (Default)
1	+2

-1dB compression point linear Swing Setting:

SWA/B are the selection bits for the output linear swing setting

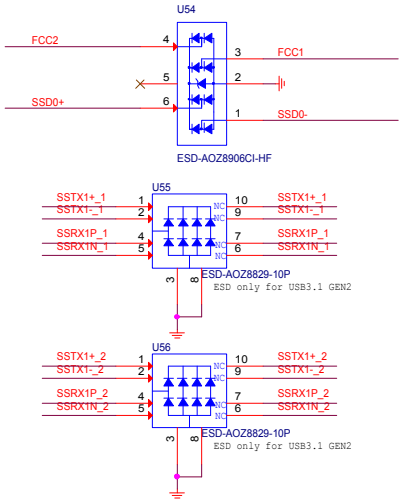
	Output Linear Swing Settings
SWA/B	*mVppd*
0	800
R	1200
F	1000 (Default)
1	1100

Current Mode

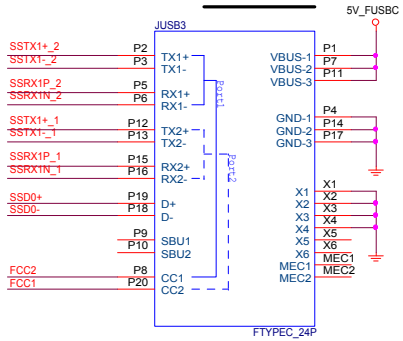


I_SEL0 : I_SEL1		
X	0	Default for 900mA
0	1	1.5A @5V
1	1	3A @5V

1.5A under S3 mode
3A under S0 mode



JUSB3

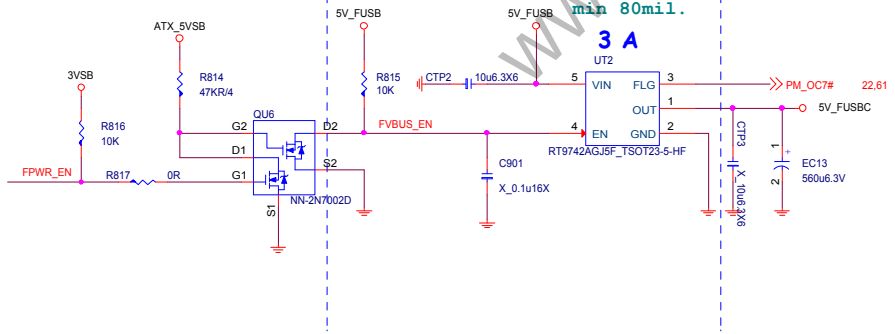


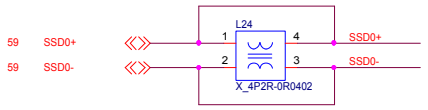
N53-20M0010-804

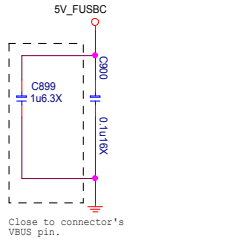
VCOM OC#

VBUS EN

VBUS OC#







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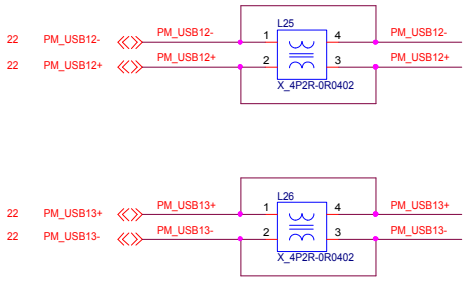
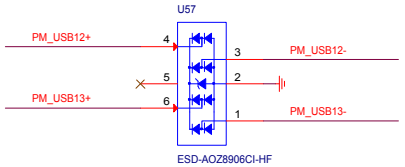
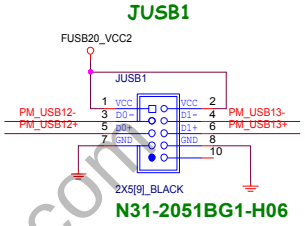
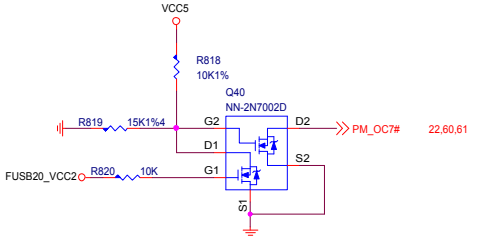
Title	USB3.1 ASM2142-2 JUSB3	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 60 of 99	

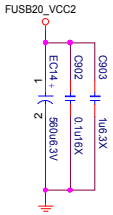
JUSB1+JUAB2

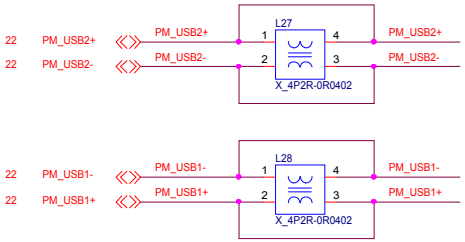


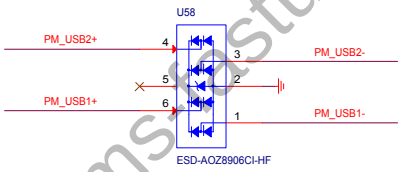


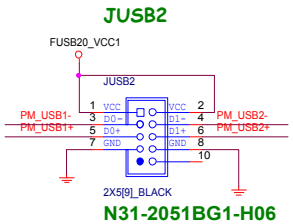


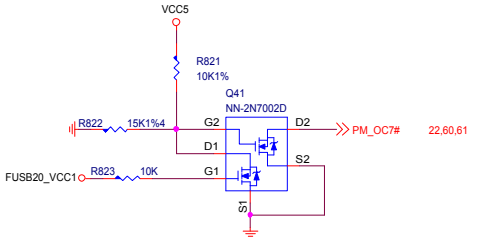


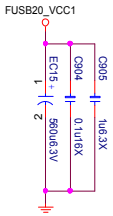












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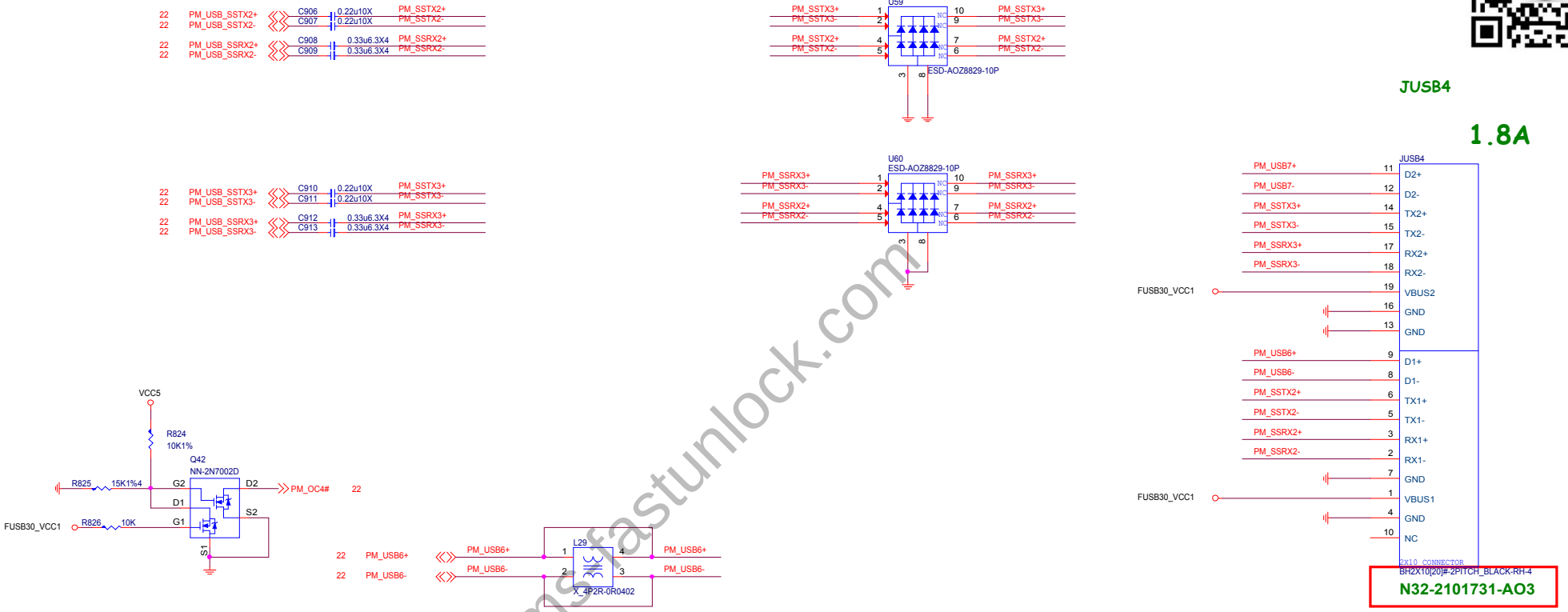
Title: USB2.0 Front Side-JUSB1/2		
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 61 of 99	

USB 3.0-JUSB4

JUSB4

1.8A



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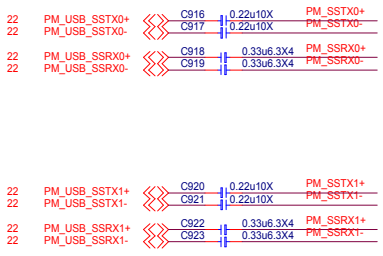
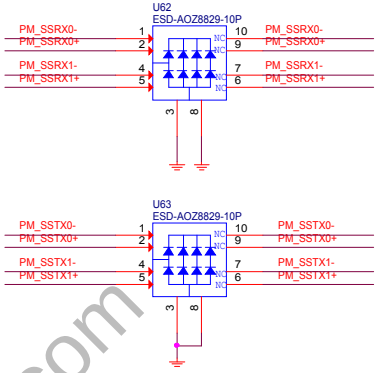
Title	USB30 Front Side-JUSB4	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 62 of 99	

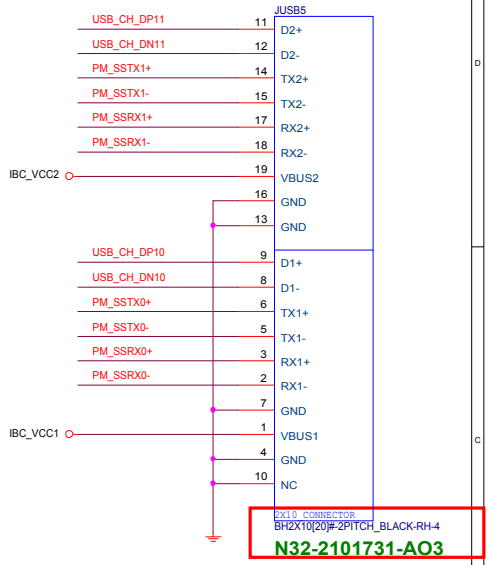
USB 3.0-JUSB5 With Charge(BC1.2)

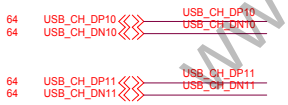
JUSB5

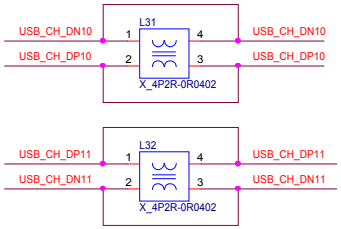
1.7A+1.7A

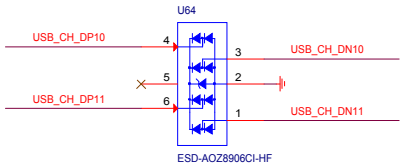


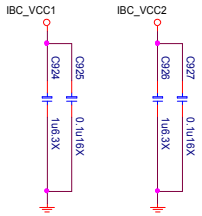










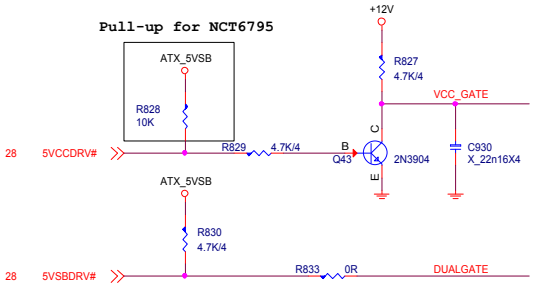


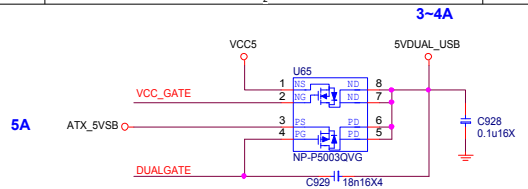
MICRO-START INT'L CO.,LTD.

Link to the Future

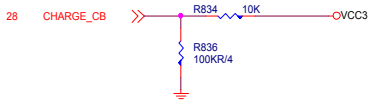
Title: USB30 Front Side-JUSB5		
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 63 of 99	

5VDUAL_USB

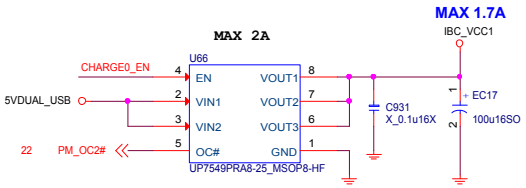


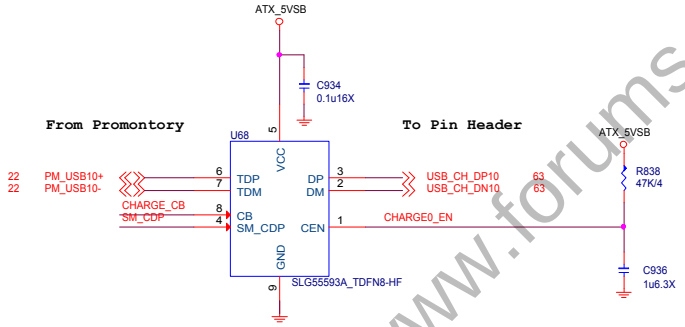


Pin power : I_3VSB
Register power : I_3VSB
Register reset : I_3VSB



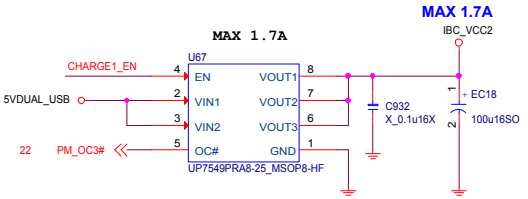
USB POWER PORT 0 For USB Charging

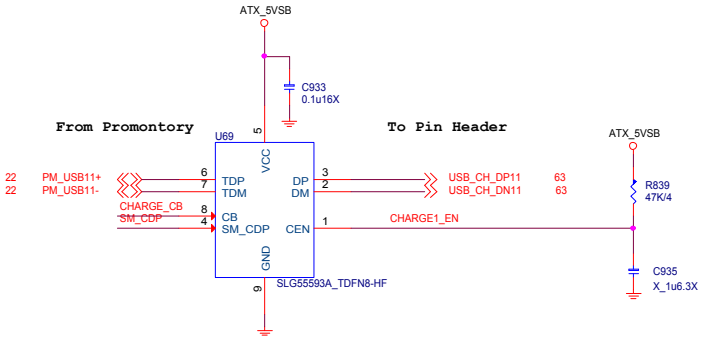




I98-555930C-SF9

USB POWER PORT 1 For USB Charging





I98-555930C-SF9

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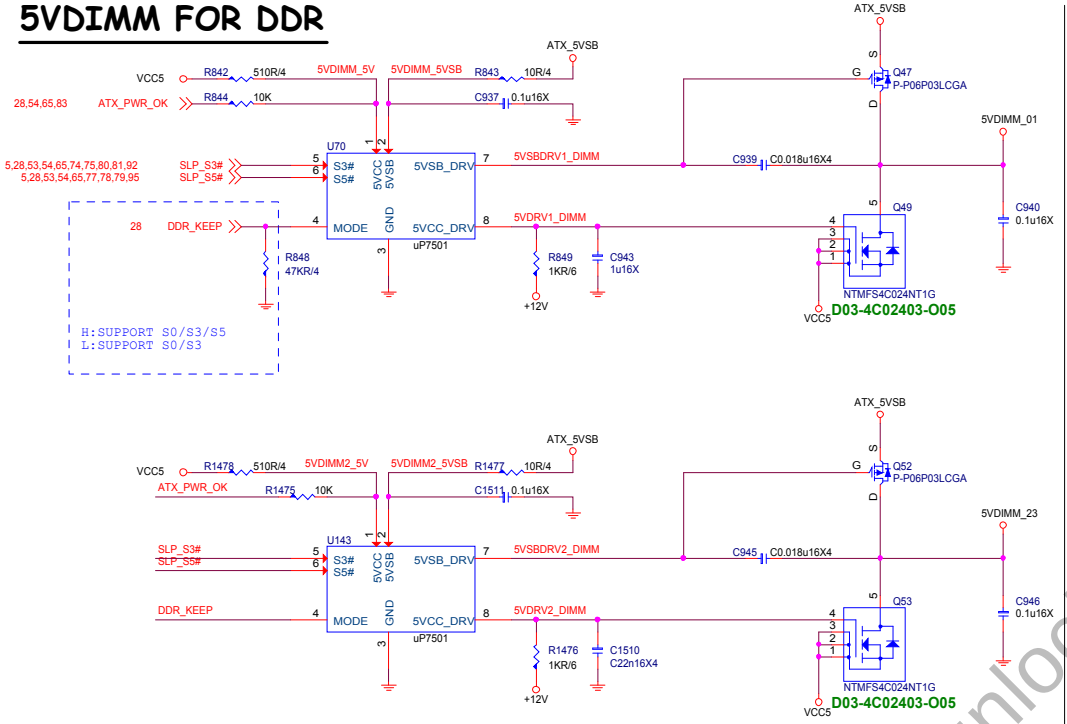
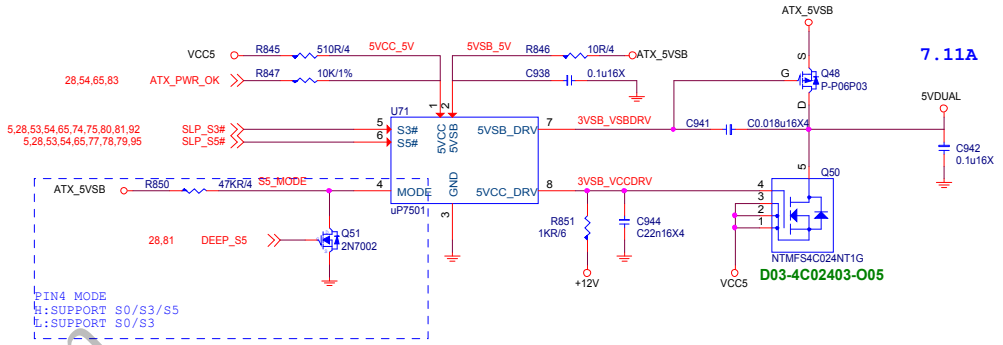
Link to the Future

Title	USB Charger(JUSB5)	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 64 of 99	

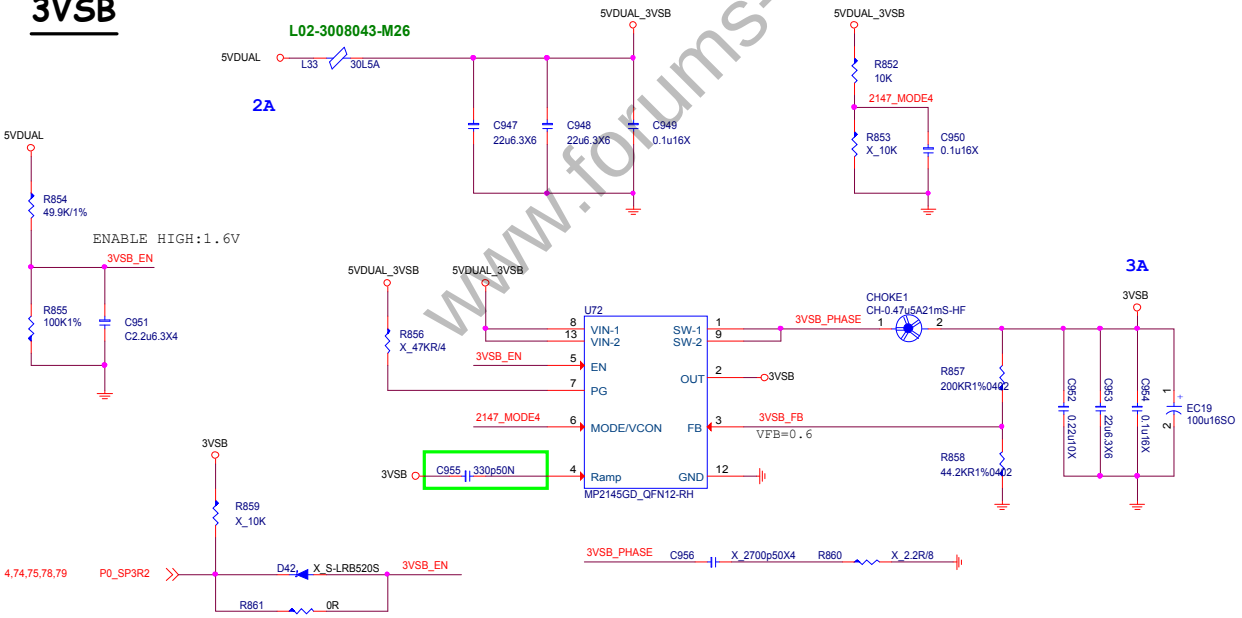
5VDIMM FOR DDR



5VDUAL For 3VSB、CPU 1.8V



3VSB



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Link to the Future

Title	ACPI uPI-5VDIMM&3VSB	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 65 of 99	

Note: VID Override Circuit

SVC	SVD	BOOT VOLTAGE Pre_PWROK Metal VID
0	0	1.1
0	1	1.0
1	0	0.9
1	1	0.8

Vcore: ICC Max 255A(Group-C EDC 300A)
LL: 0.3 mohm
Total OCP: 640A(Per Phase OCP=40A)
Vcore 8+0 (Extender 16-Phase)

teknisi indonesia

Phase 1 close to CPU power pin.

VR_HOT = 125D
VR_Shutdown = 135D

SMB Address: 0X70

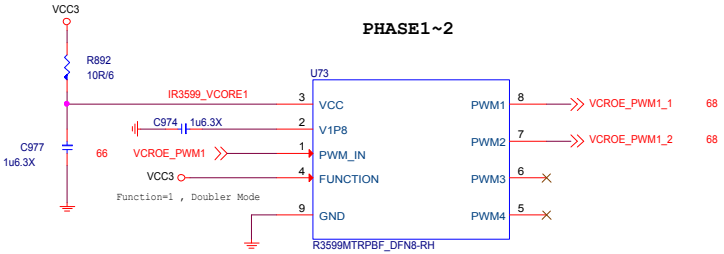
N31-2021041-H06

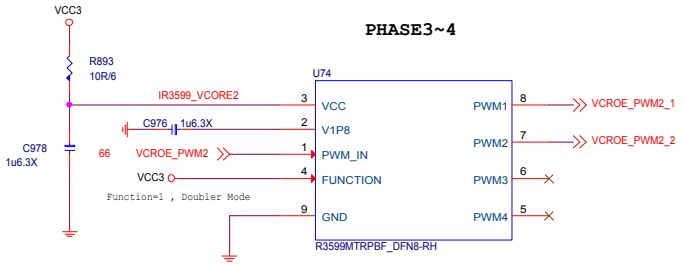
Title	CPU Power-IR35201 16-Phase
Size	Custom
Document Number	MS-7B92
Rev	12
Date:	Friday, August 03, 2018
Sheet	66 of 99

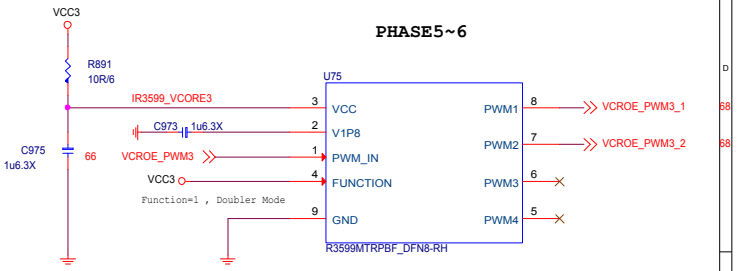
MICRO-START INT'L CO.,LTD.

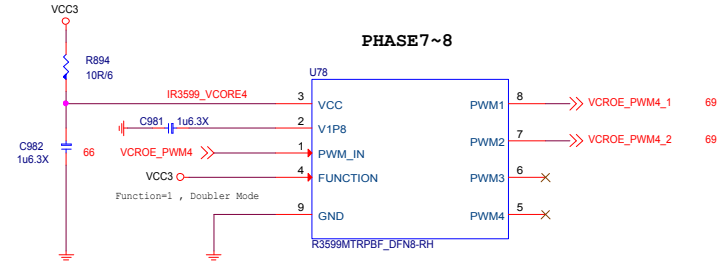
CPU_CORE Driver IC

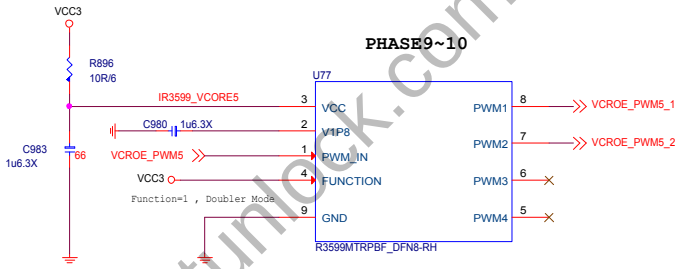
VCORE Double 16-PHASE

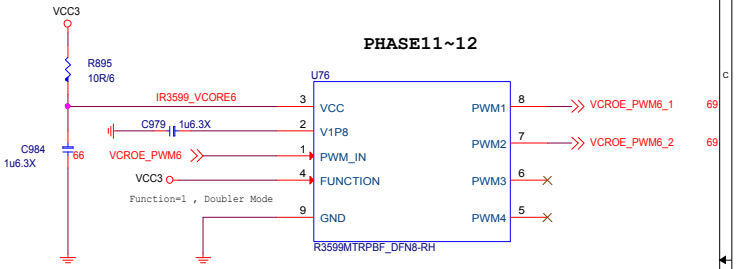


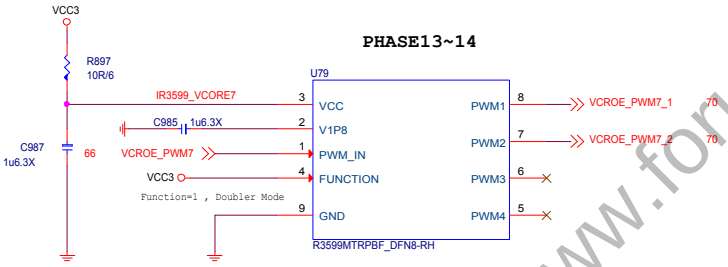


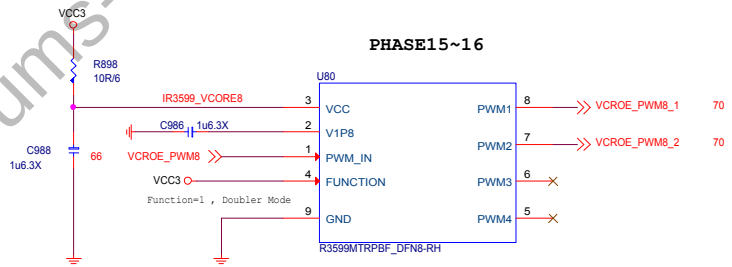












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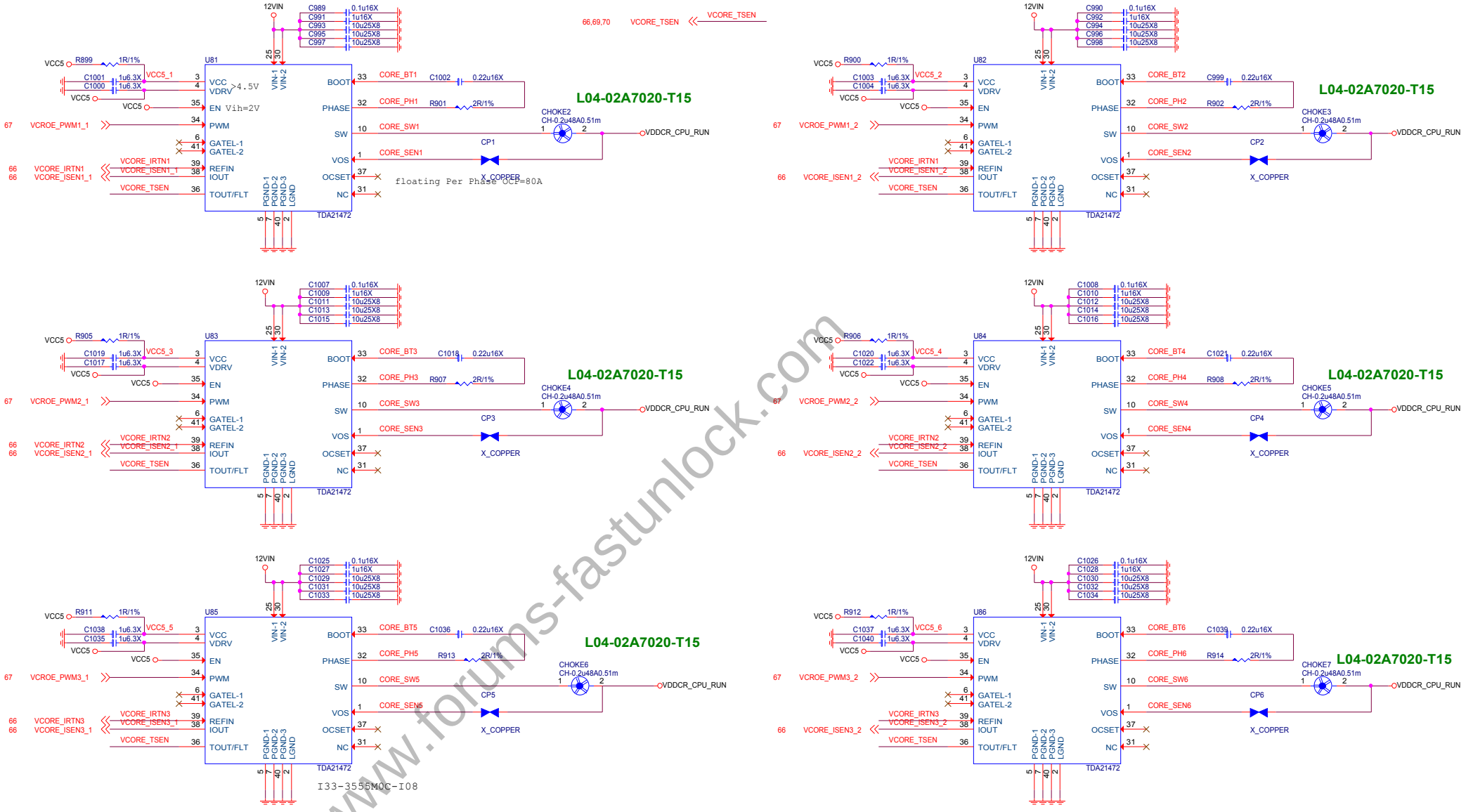
Link to the Future

Title: CPU Power IR3599		
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 67 of 99	



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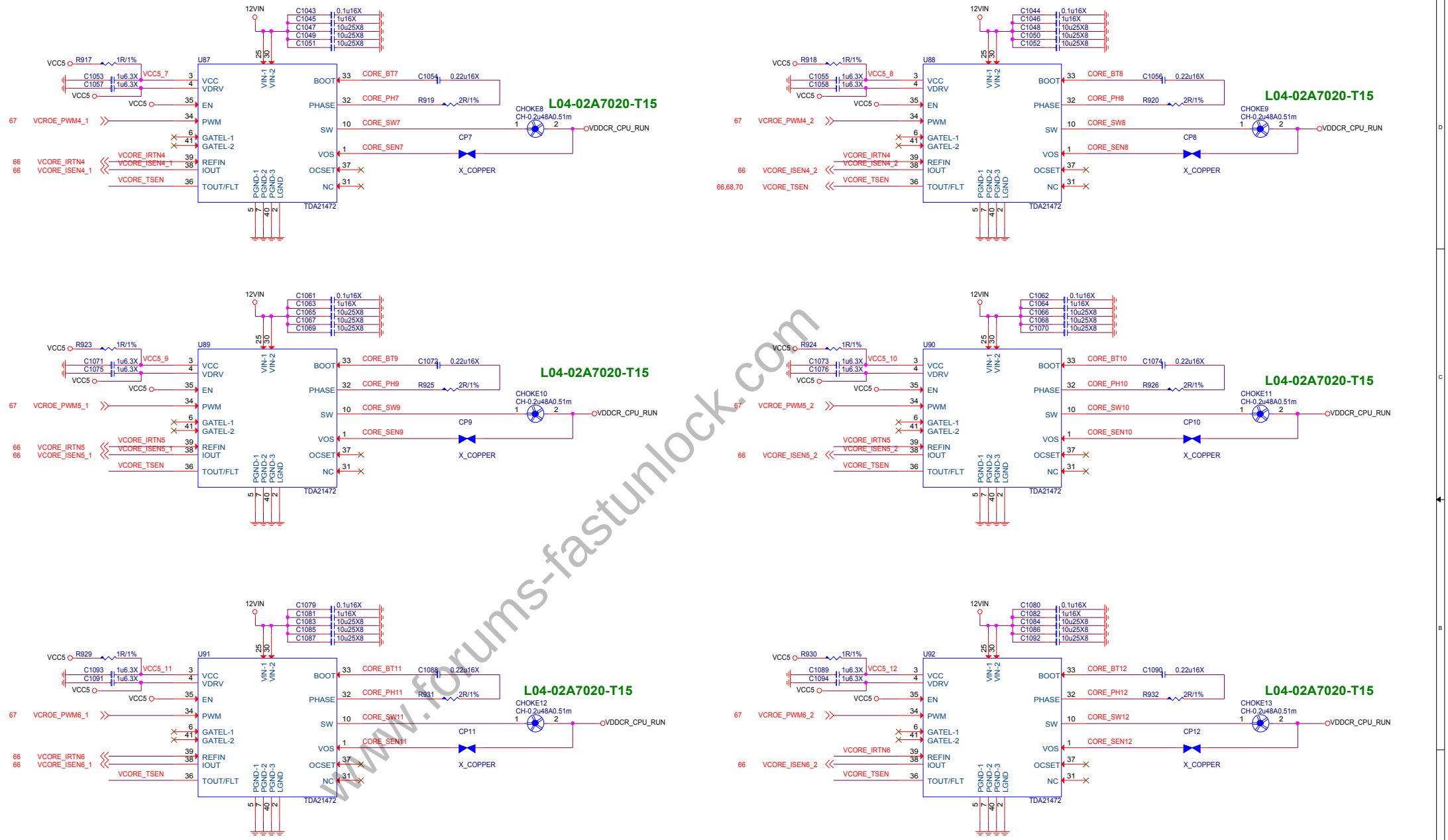
Link to the Future

Title	CPU Power Phase 1-6	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 68 of 99	



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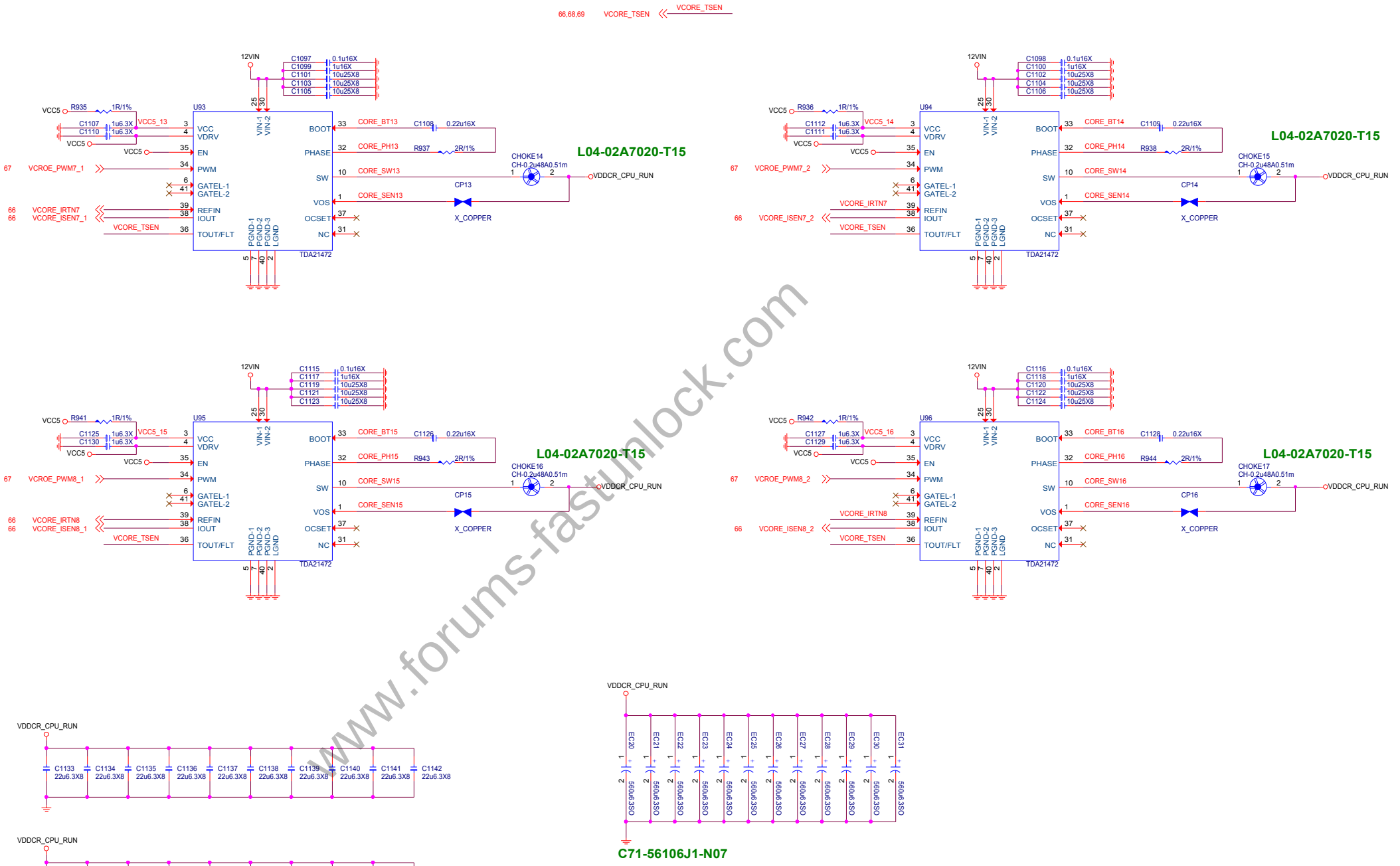
Link to the Future

Title	CPU Power Phase 7-12	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 69 of 99	



MSI MICRO-STAR INT'L CO.,LTD.		
Title: CPU Power Phase 13-16		
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 70 of 99	

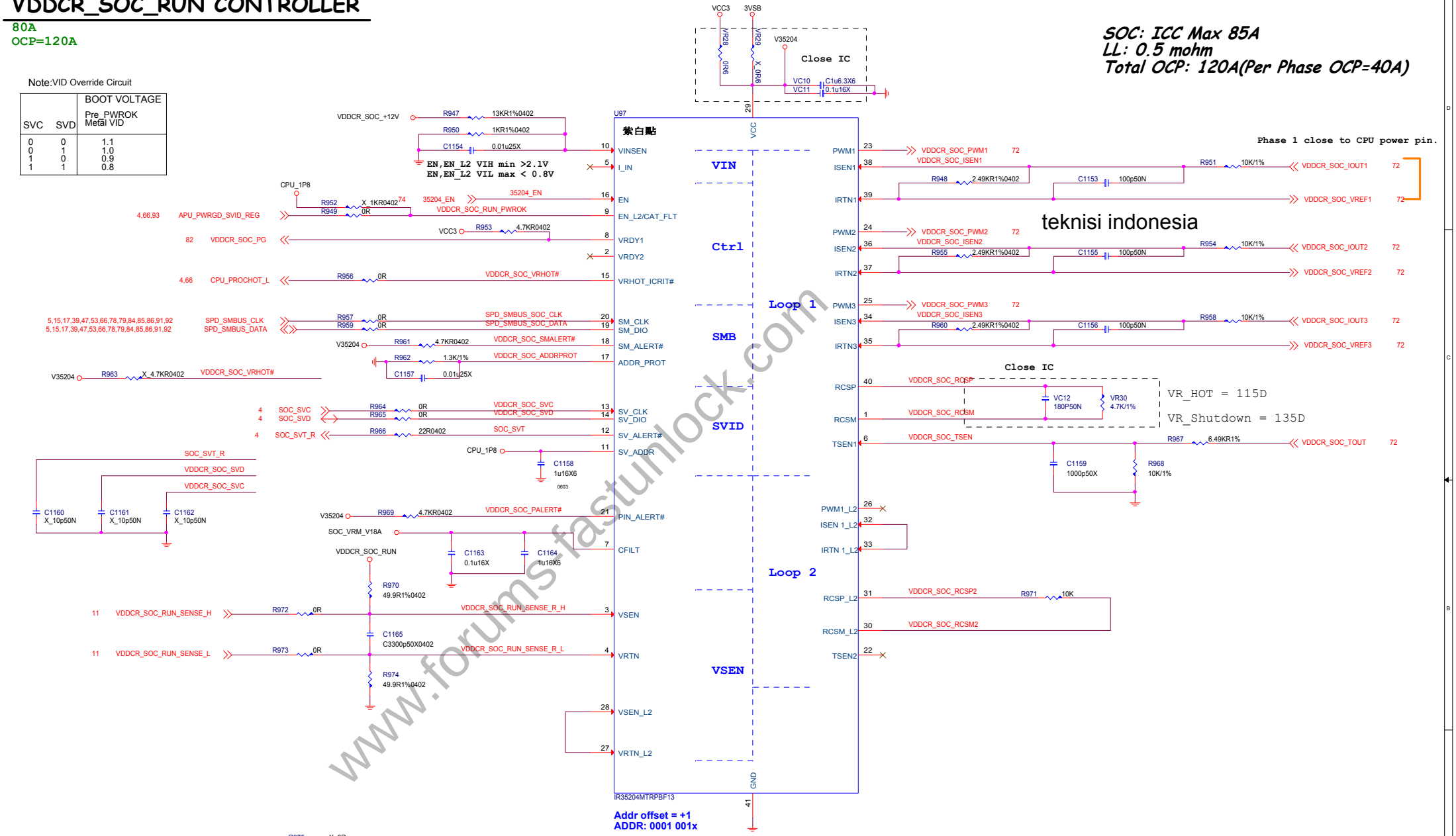
VDDCR_SOC_RUN CONTROLLER

80A
OCP=120A

SOC: ICC Max 85A
LL: 0.5 mohm
Total OCP: 120A(Per Phase OCP=40A)

Note:VID Override Circuit

SVC	SVD	BOOT VOLTAGE Pre_PWROK Metal VID
0	0	1.1
0	1	1.0
1	0	0.9
1	1	0.8

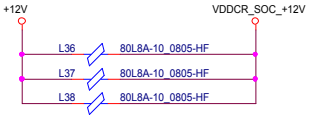


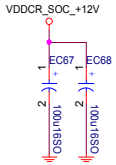
MICRO-START INT'L CO.,LTD.

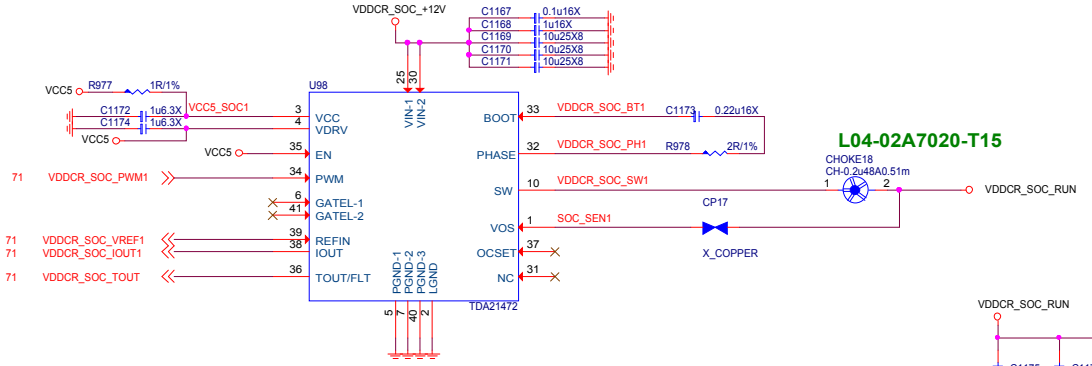
Title	CPU VDDCR_SOC Power IR35204 3-Phase	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 71 of 99	

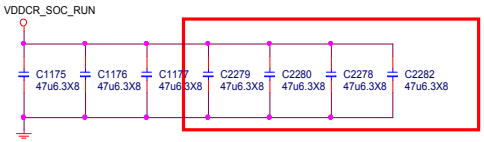
CPU_SOC Driver+MOS IC

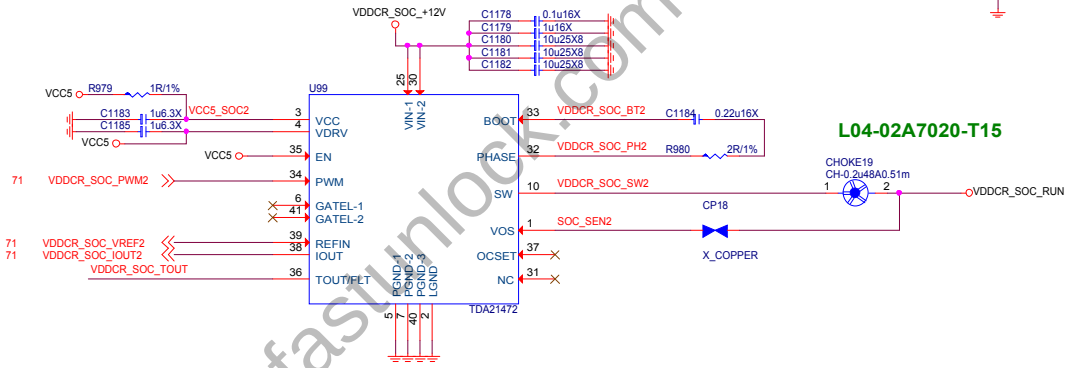
3-PHASE

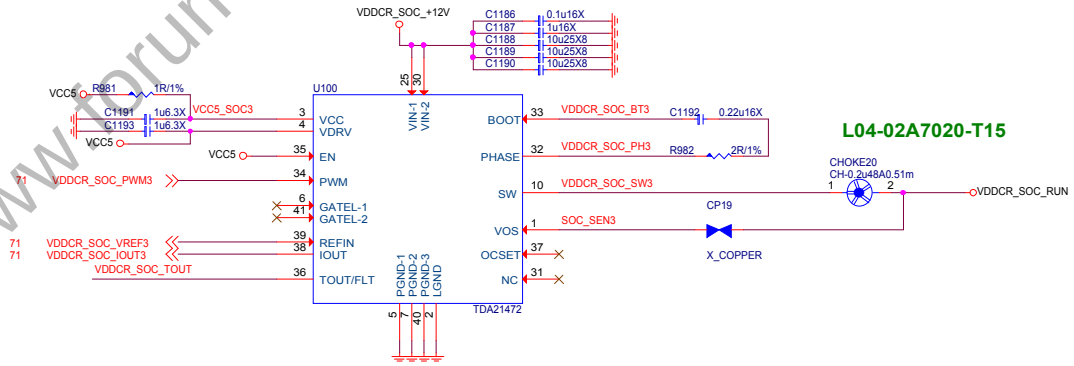


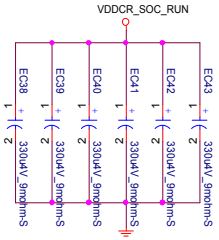


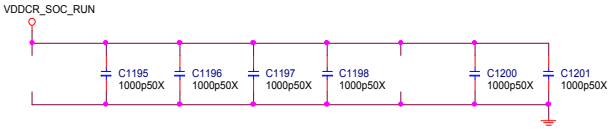










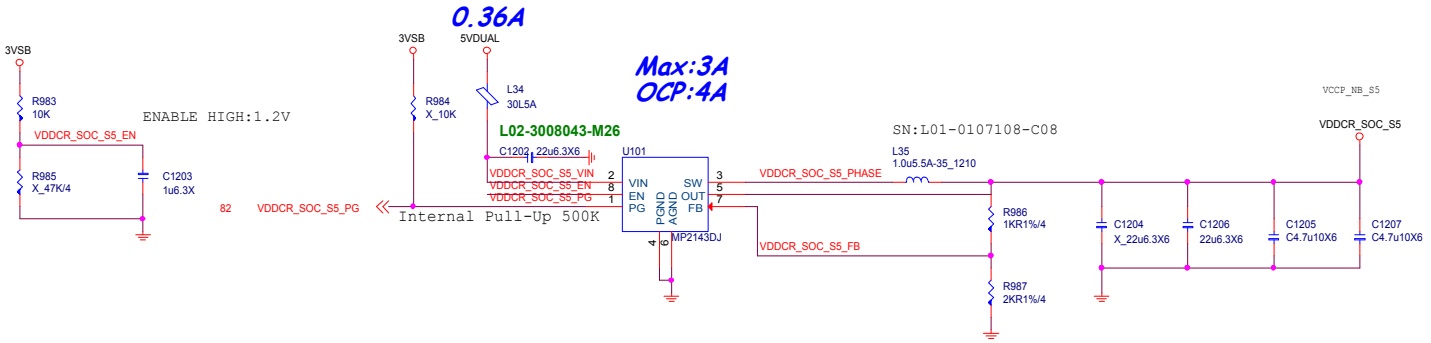


MICRO-START INT'L CO.,LTD.

Title	CPU VDDCR_SOC Power TDA21472 PS1-3	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 72 of 99	

VDDCR_SOC_S5 0.9V

2A



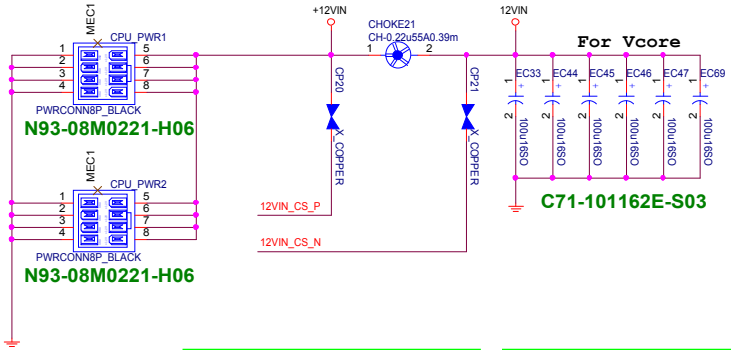
MSI MICRO-STAR INT'L CO.,LTD.

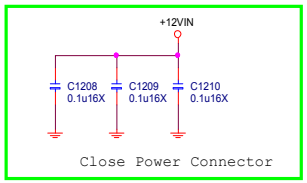
Link to the Future

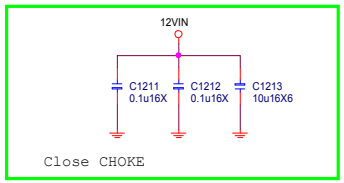
Title	CPU Power VDDCR_SOC_S5	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 73 of 99	

CPU POWER CONNECTOR

Iripple = 5.6A



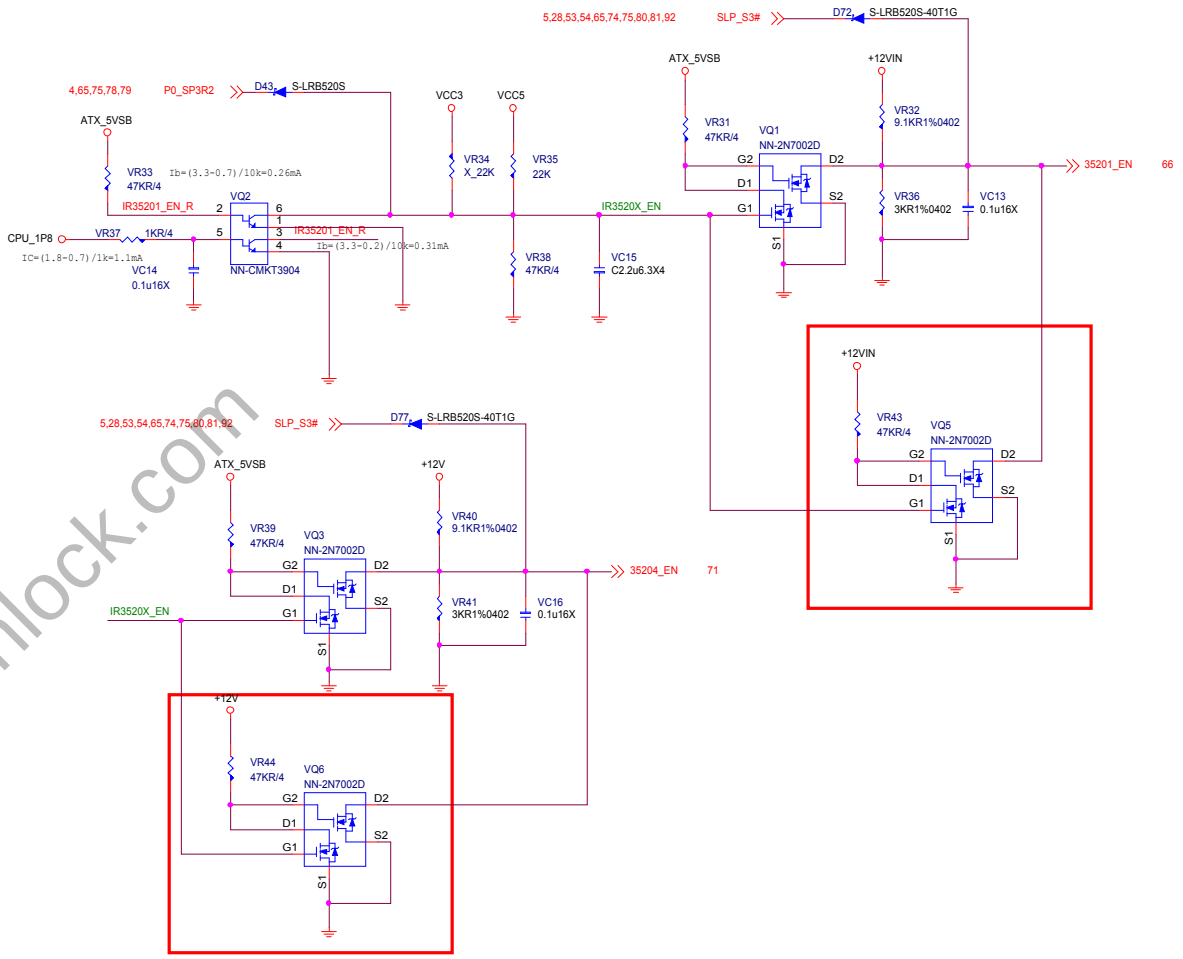




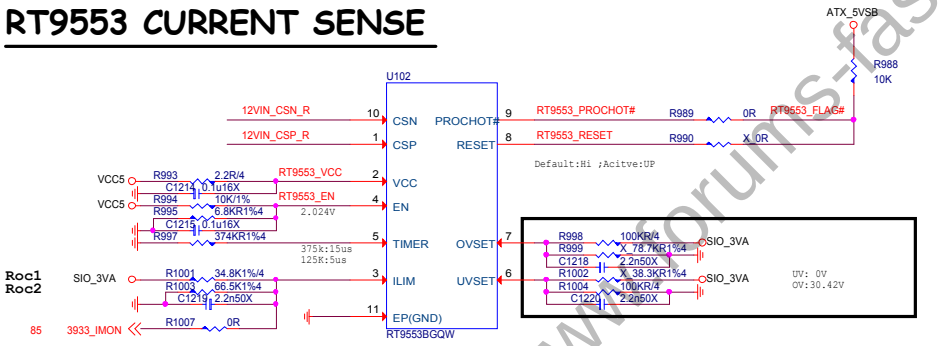
VRM_Enable circuit

12*(3/12.1)=2.975V >1V

Make sure +12VIN connector plug in



RT9553 CURRENT SENSE

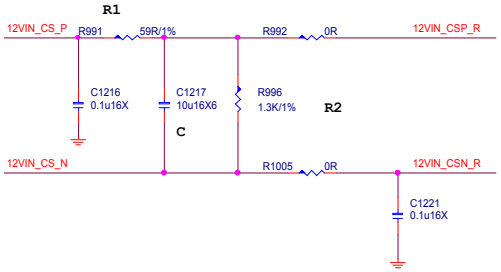


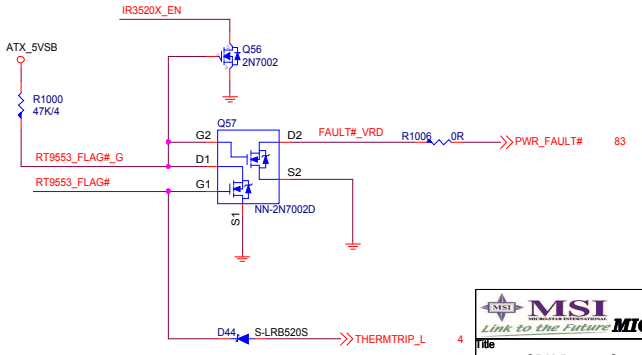
OCP:57A (Without CPU_SOC PWR)
Real OCP:57A~73A

ΔVILIM=10uA*[(34.8K*66.5K)/(34.8K+66.5K)]
=228mV

Isense = VILIM / 100*Rsense

ΔIsense=228mV/100*0.39m=5.846A





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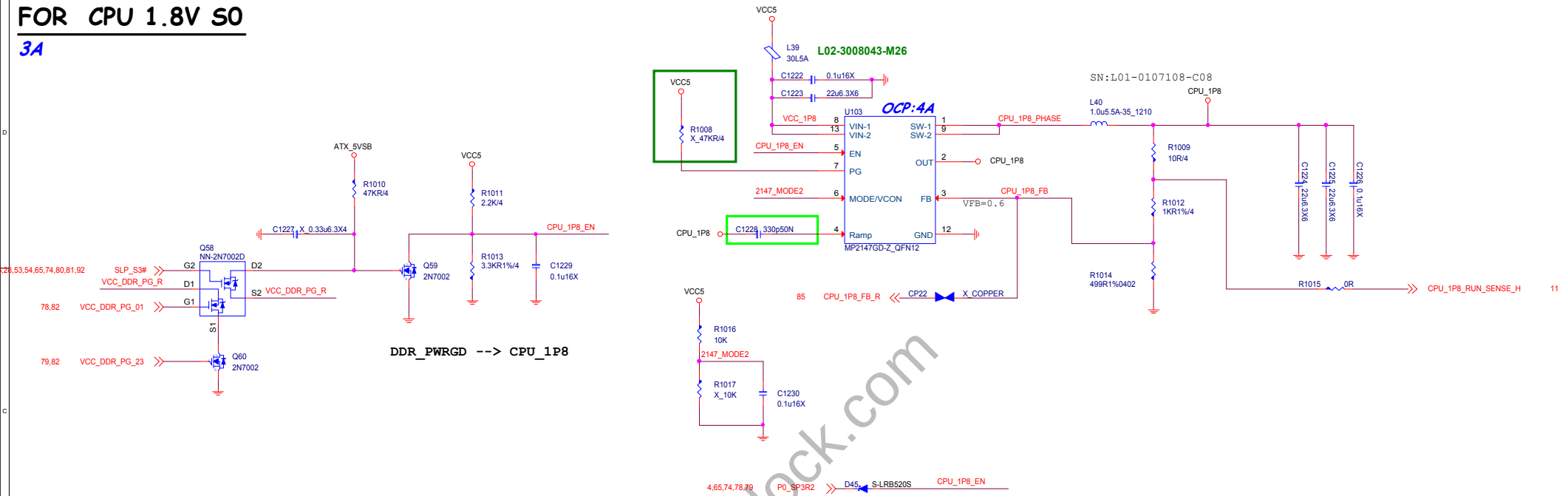
Link to the Future

Title: CPU Power Connector/RT9553B		
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 74 of 99	

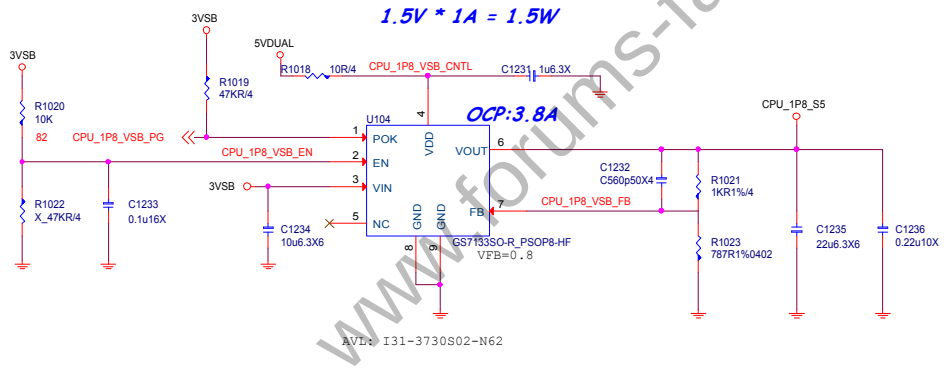
FOR CPU 1.8V S0

3A



FOR CPU 1.8V S5

1A



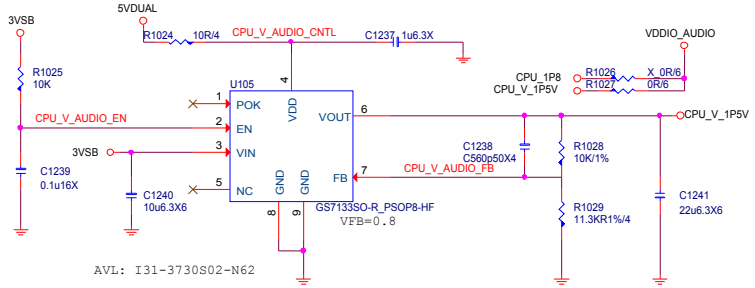
MSI MICRO-STAR INT'L CO.,LTD.
Link to the Future

Title: CPU Power 1P8V-MP2147		
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 75 of 99	

VDDIO_AUDIO Circuit

1.5V
0.25A

*1.8V * 0.25A = 0.45W*



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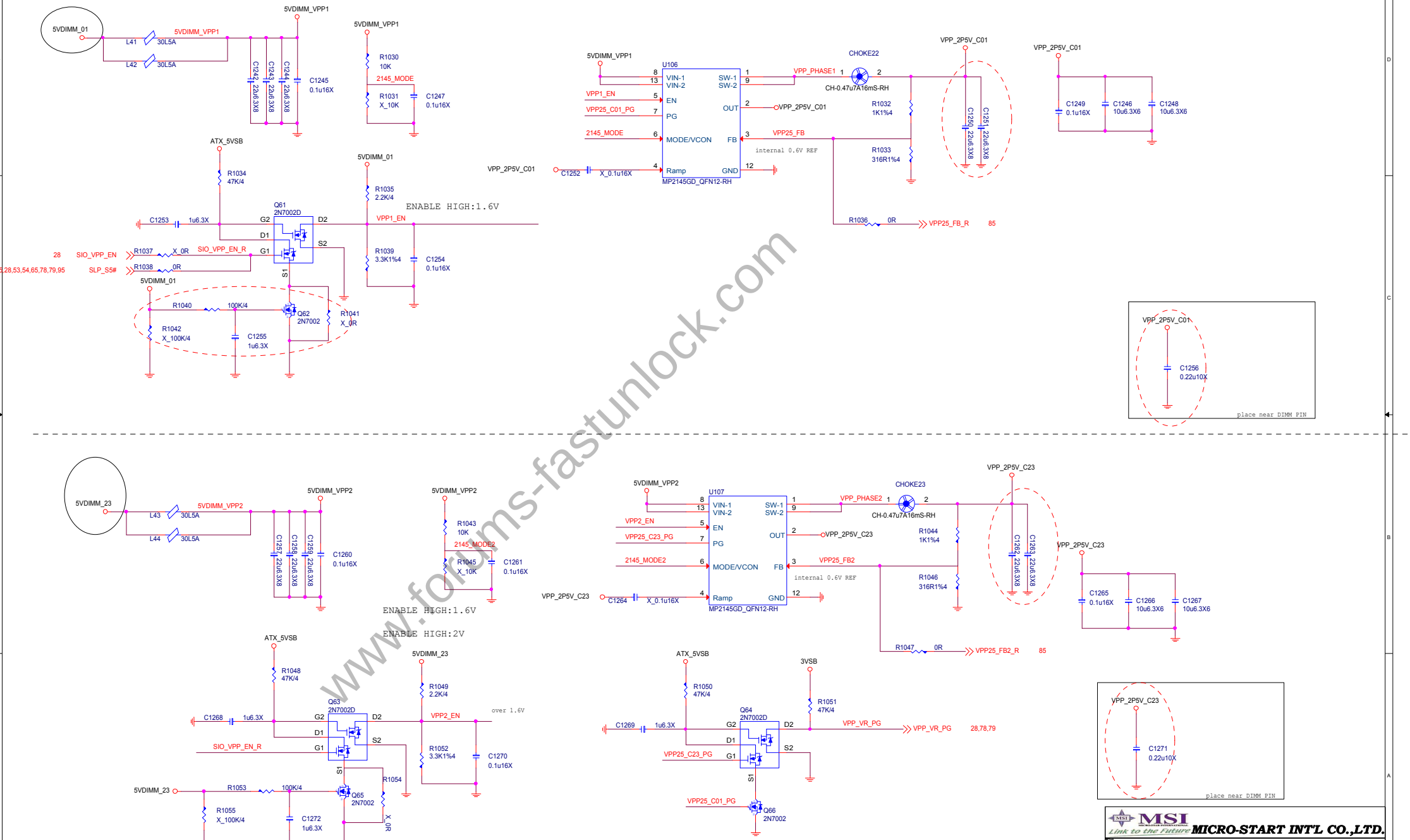
Link to the Future

Title: CPU Power Audio-GS7133		
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 76 of 99	

4DIMM :2.24A FOR DDR VPP2.5V

2.5+0.25/-0.125V
JESD79 DDR4 max 3V



MICRO-START INT'L CO.,LTD.

Title	DDR PWR VPP25/VTT-MP2145	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 77 of 99	

DDR Power1-PV4210-2-Phase

DDR4_1.2V 15A+9.5A+1.2A=26A

15A FOR CPU

9.5A FOR 4DIMM

1.2A FOR DDR VTT

OCP: 50A

Iin ripple =5.2A

C71-56106J1-N07

C71-56106J1-N07

I32-421000C-R06

Address=0X42

MSI MICRO-STAR INT'L CO.,LTD.			
Title: DDR01 Power-PV4201 2-Phase			
Size: Custom	Document Number: MS-7B92		Rev: 12
Date: Friday, August 03, 2018		Sheet 78 of 99	

DDR Power1-PV4210-2-Phase

DDR4_1.2V 15A+9.5A+1.2A=26A

15A FOR CPU

9.5A FOR 4DIMM

1.2A FOR DDR VTT

OCP: 50A

Iin ripple =5.2A

Table6#=1.21V

I32-421000C-R06

Address=0X44

PROC_ID1	Config	CPU TYPE
1	133K	SKX-X (VR13) (SVID)
0	110K	KBL-X(IMVP8) (non SVID)

Title	DDR23 Power-PV4201 2-Phase
Size	Custom
Document Number	MS-7B92
Rev	12
Date:	Friday, August 03, 2018
Sheet	79 of 99

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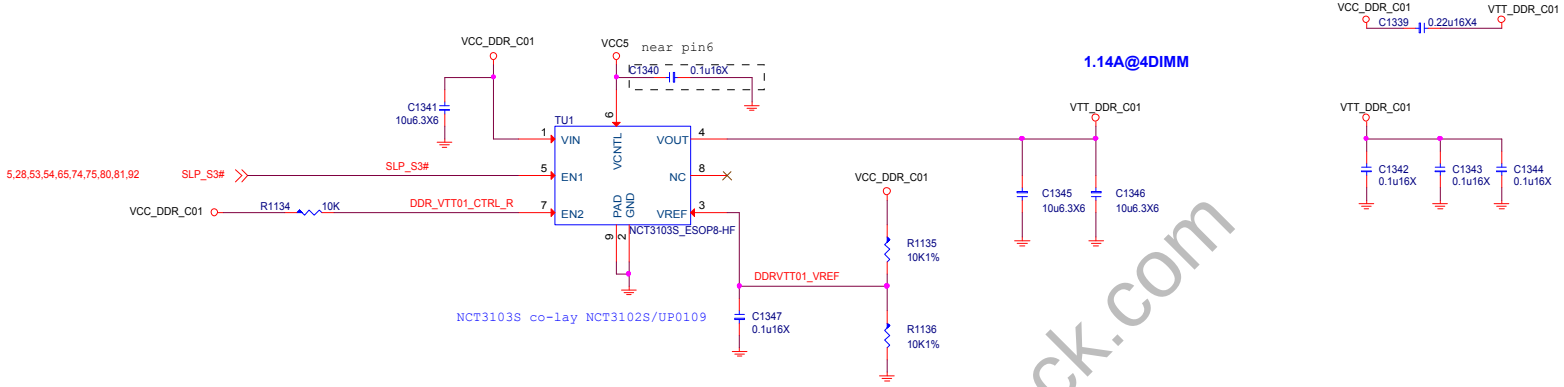
DDR VTT Power

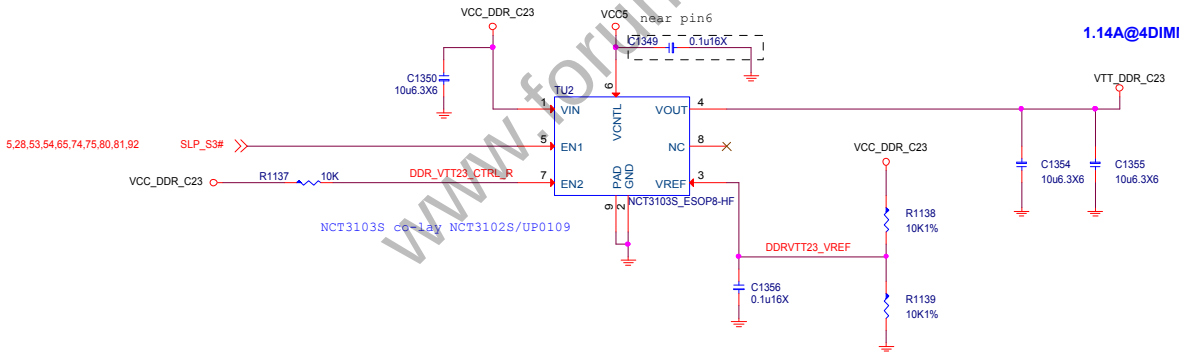
To CPU Copper trace width > 250mils , Fill island behind DIMM > 400mils .



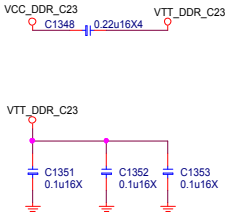
1.14A@4DIMM

DDR VTT Power

To CPU Copper trace width > 250mils , Fill island behind DIMM > 400mils .



1.14A@4DIMM

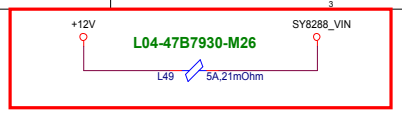


MSI MICRO-STAR INT'L CO.,LTD.
Link to the Future

Title: VTTDDR		
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 80 of 99	

FOR Promontory 1.05V_S0

1.05V
S0:5.5A
S5:0.05A



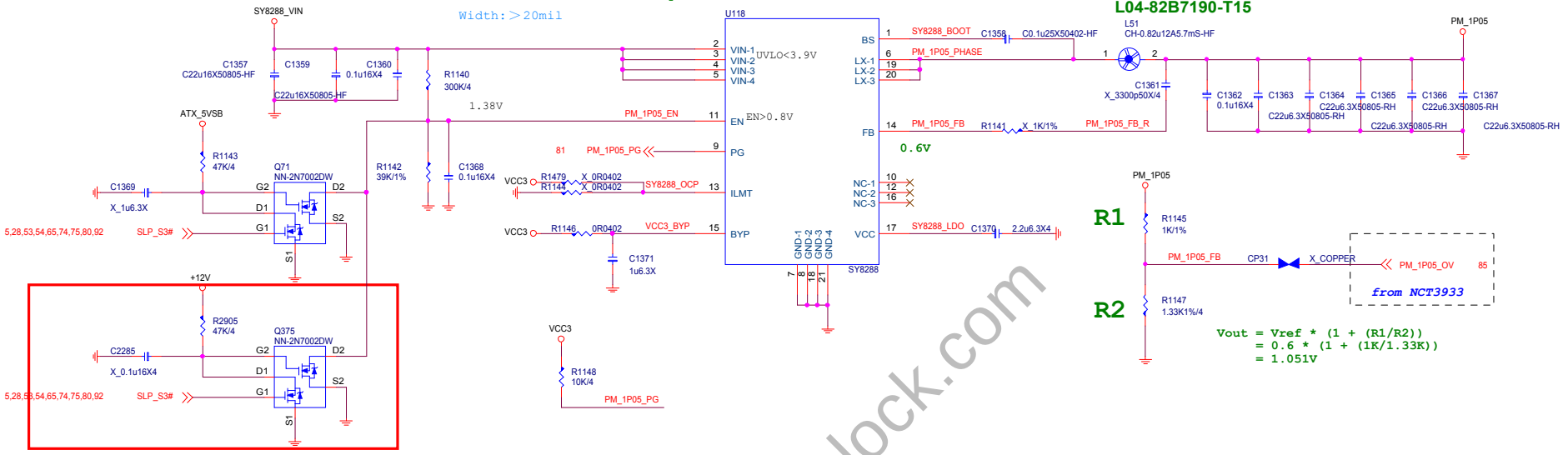
SY8288_OCP	OCP
0	8A
floating	12A
1	16A

OCP=12A

1.05V@5.5A

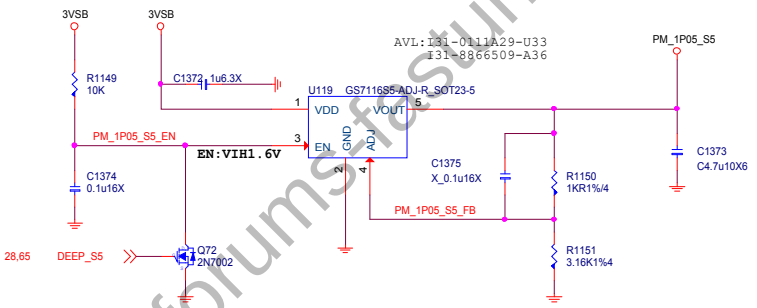
Input Current= (5.5A*1.05V)/12V/0.8=0.6A

L04-82B7190-T15



FOR Promontory 1.05V_S5

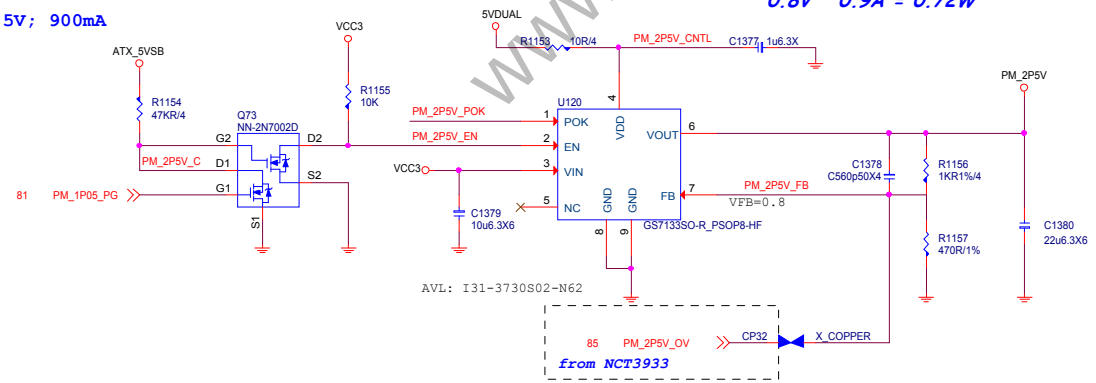
0.05A

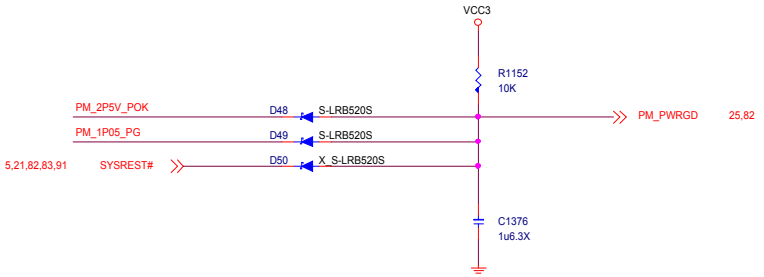


Promontory-2.5V

2.5V; 900mA

0.8V * 0.9A = 0.72W





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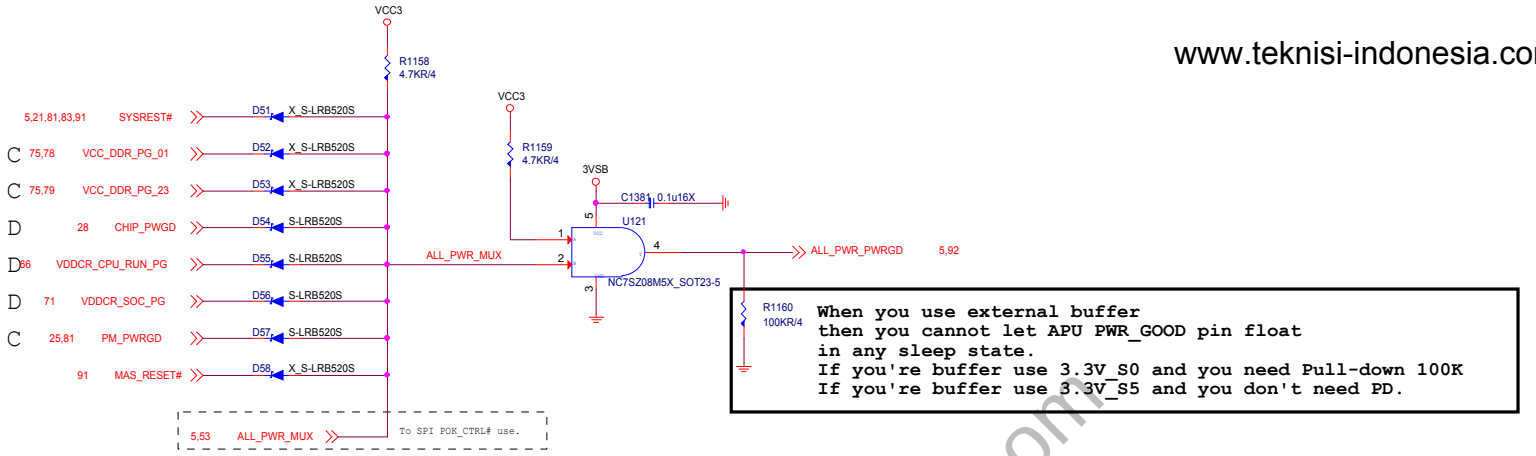
Link to the Future

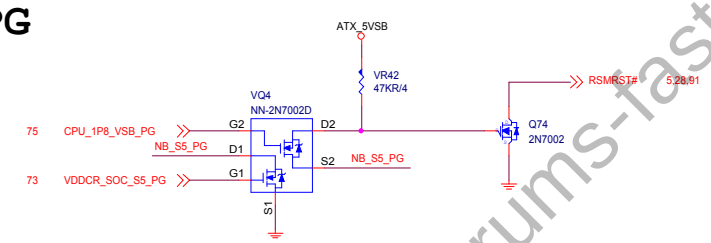
Title: Promontory-SY8288RAC-1.05V / GS7133-2.5V		
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 81 of 99	

ALL POWER GOOD MUX



S0 PG

S5 PG



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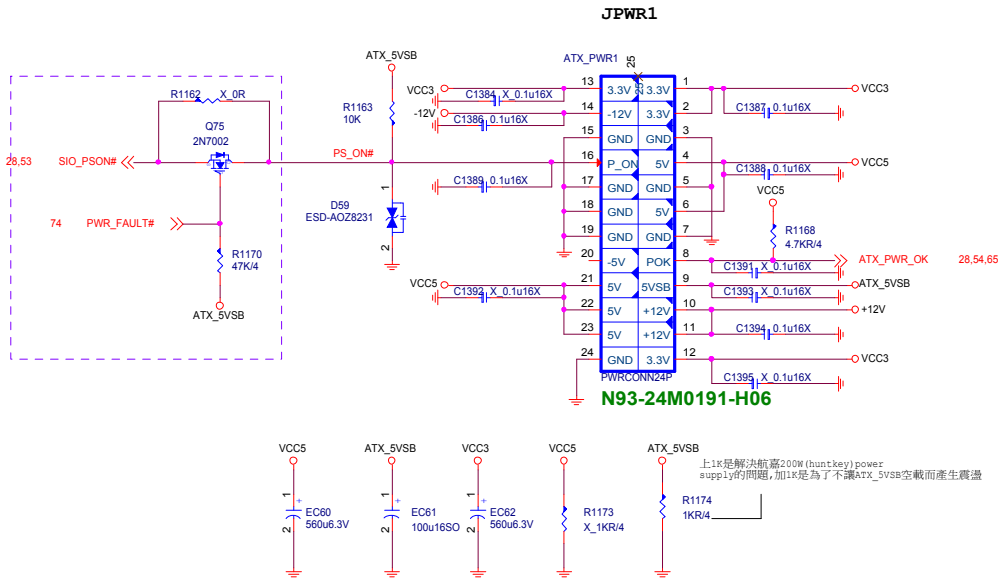
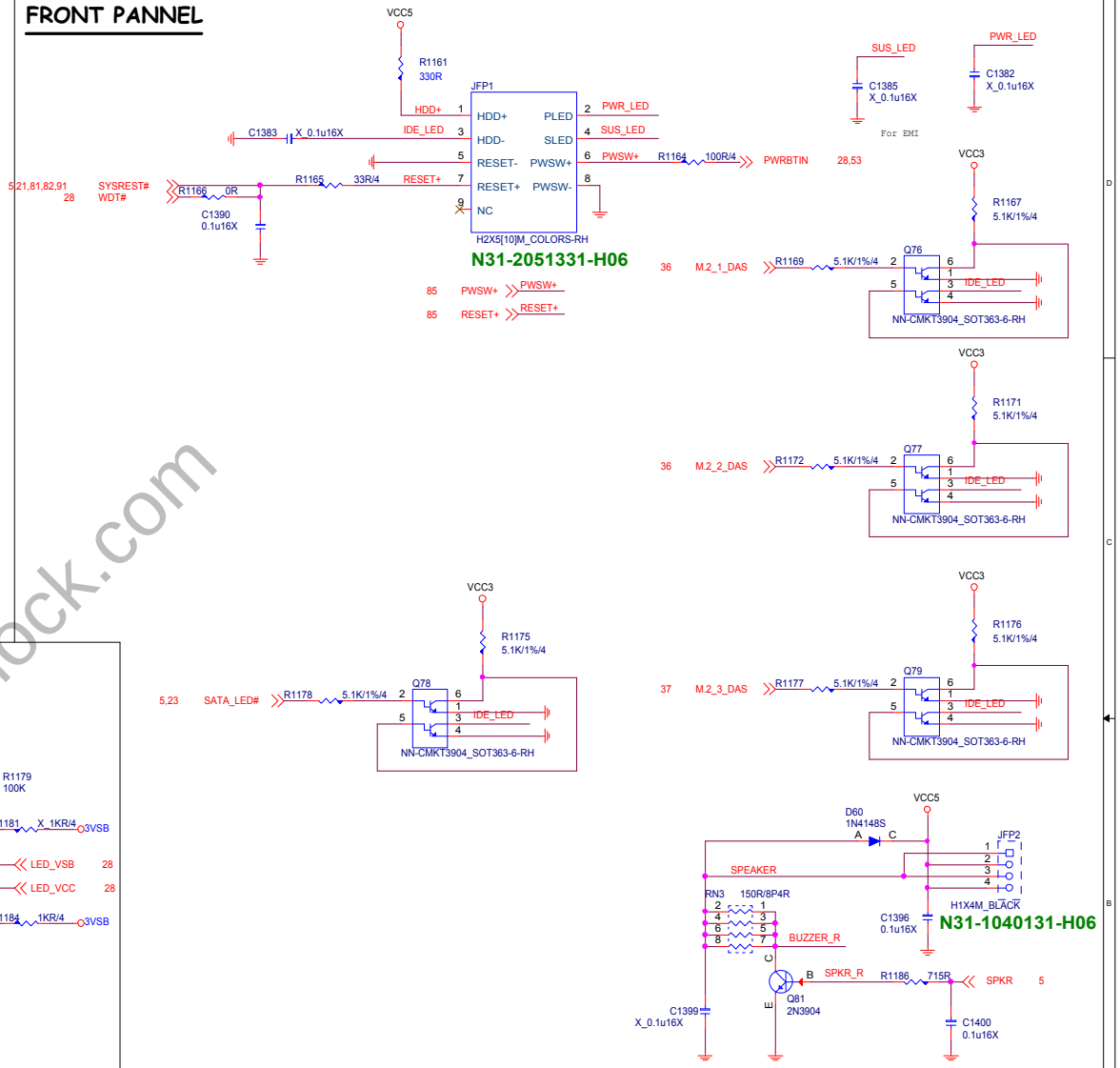
Link to the Future

Title: CPU Power Good		
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 82 of 99	

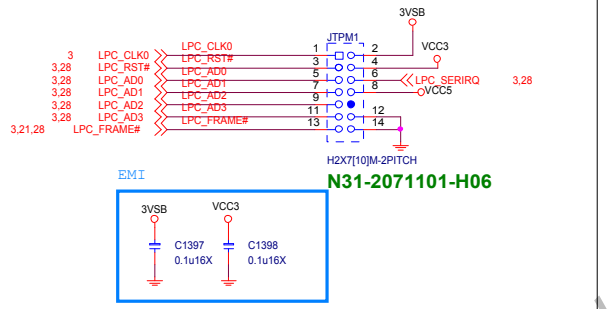
ATX POWER CONNECTOR



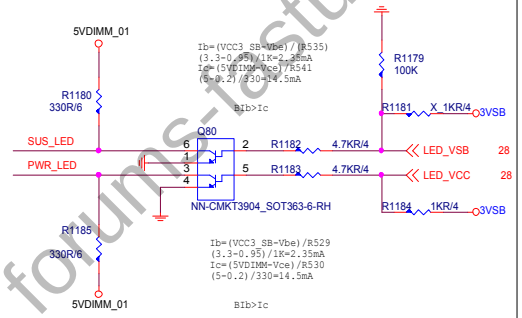
FRONT PANNEL



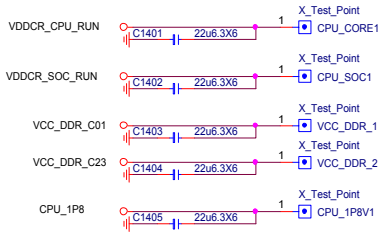
TPM



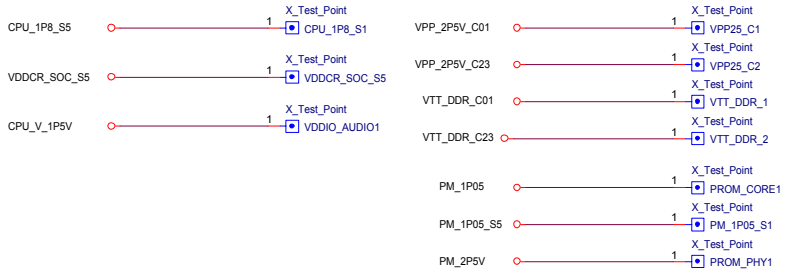
LED (for NCT6795D)



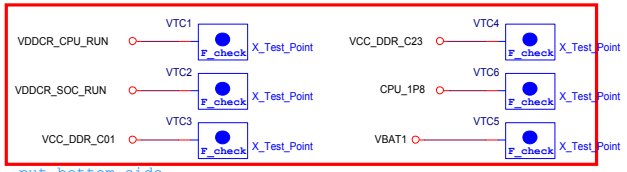
Voltage Mearsure Point



Close to output of IC



Factory check point



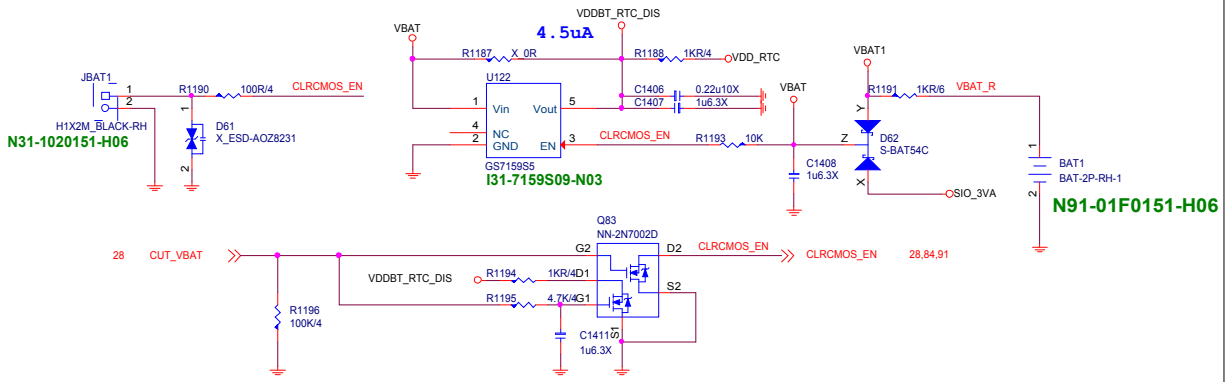
put bottom side

MICRO-START INT'L CO.,LTD.

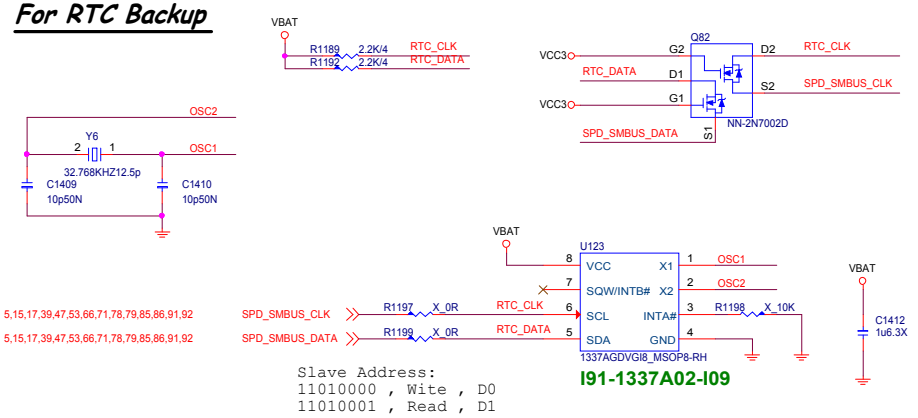
Title	ATX/Front Panel	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 83 of 99	

RTC & Clear CMOS Circuit

1.5V * 0.9A = 6.75uW

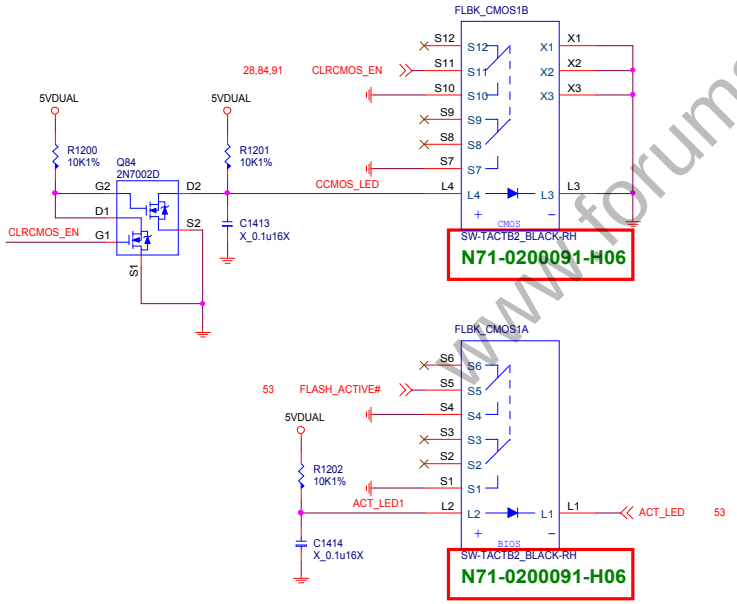


For RTC Backup



Slave Address:
11010000 , Wite , D0
11010001 , Read , D1

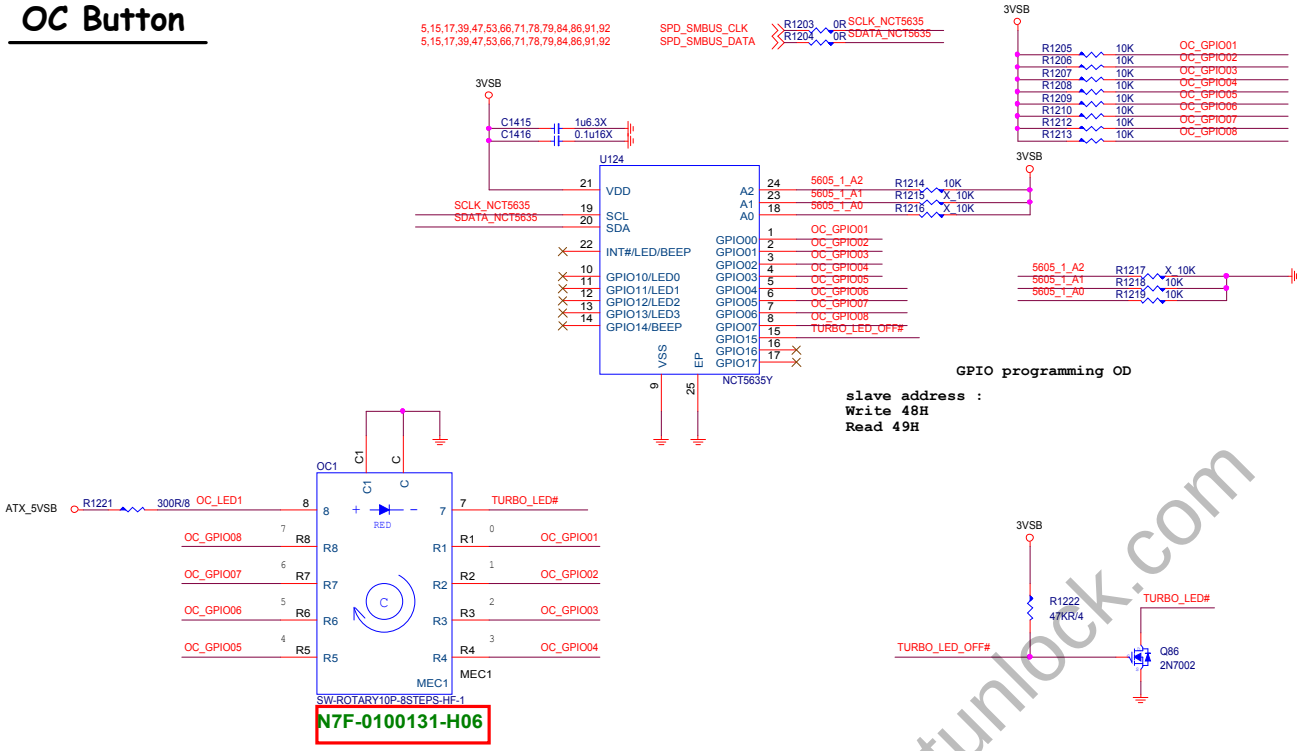
Clear CMOS&Flash Back button



MSI MICRO-START INT'L CO.,LTD.
Link to the Future

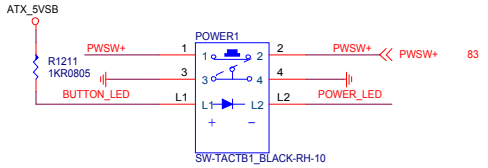
Title: RTC/Clear CMOS Circuit		
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 84 of 99	

OC Button



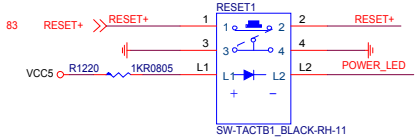
N7F-0100131-H06

Power ON Button

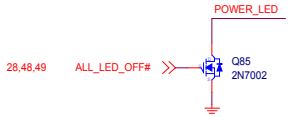


N71-0103161-H06

Reset Button



N71-0103151-H06

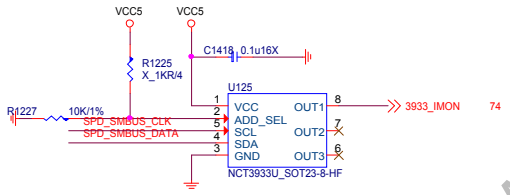


Over Voltage Control IC

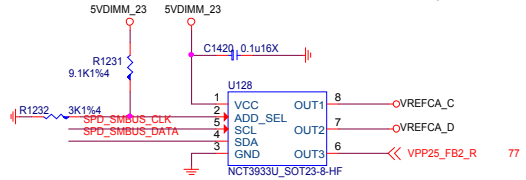
UPI VOLTAGE CONSOLE

ADDRESS	0x2A	0X28	0x26	0x24	0x22	0x20
RH (KOhm)	OPEN	3.9	3	2.2	1.3	10
RL (KOhm)	10	1.3	2.3	3	3.9	OPEN
BUS_SEL	0%	25%	40%	60%	75%	100%

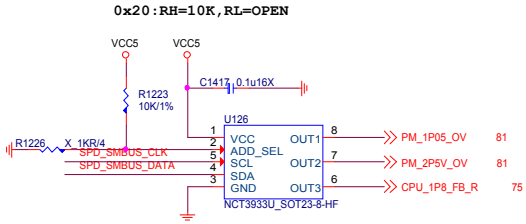
0x2A:RH=OPEN,RL=10K



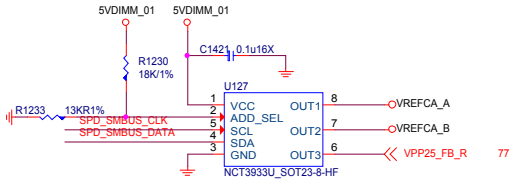
0x28:RH=9.1K,RL=3K



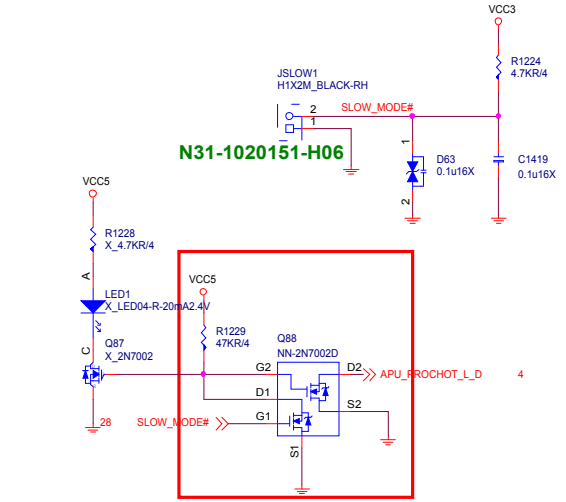
0x20:RH=10K,RL=OPEN



0x26:RH=18K,RL=13K



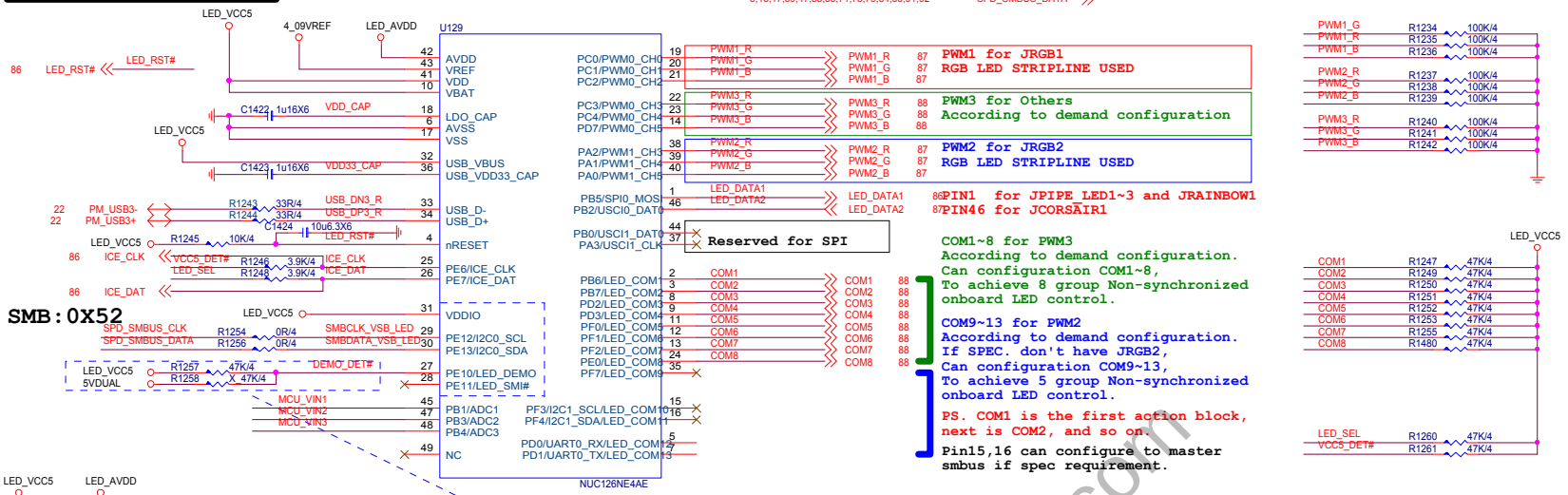
Slow Mode



MSI MICRO-STAR INT'L CO.,LTD.
Link to the Future

Title	Button/OV Control/NCT3933	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 85 of 99	

48 PIN LED MCU



PWM1 for JRGB1
RGB LED STRIPLINE USED

PWM3 for Others
According to demand configuration

PWM2 for JRGB2
RGB LED STRIPLINE USED

PIN1 for JPIPE_LED1~3 and JRAINBOW1
PIN46 for JCORSAIR1

COM1~8 for PWM3
According to demand configuration.
Can configuration COM1~8,
To achieve 8 group Non-synchronized onboard LED control.

COM9~13 for PWM2
According to demand configuration.
If SPEC. don't have JRGB2,
Can configuration COM9~13,
To achieve 5 group Non-synchronized onboard LED control.

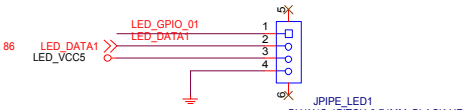
PS. COM1 is the first action block, next is COM2, and so on.

Pin15,16 can configure to master smbus if spec requirement.

Control	Net Name	PWM USE
PCH	LED_DATA1	No Use
AUDIO Cover	LED_GPIO_01	No Use
MOS/IO cover	LED_GPIO_02	No Use
JRAINBOW1	LED_GPIO_03	No Use
JCORSAIR1	LED_DATA2	No Use
JRGB1/JRGB2	PWM1/ PWM2	PWM1/ PWM2
Board Side LED	COM 1~8	PWM3
Board Side LED	COM 9~13	PWM2

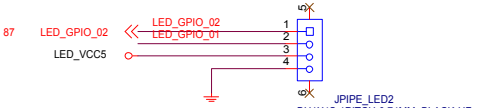
teknisi indonesia

1 PCH HEATSINK LED
PCS LED*0.16W=W



N32-1040FH0-H06

2 AUDIO/IO Cover LED
PCS LED*0.16W=W



N32-1040FH0-H06

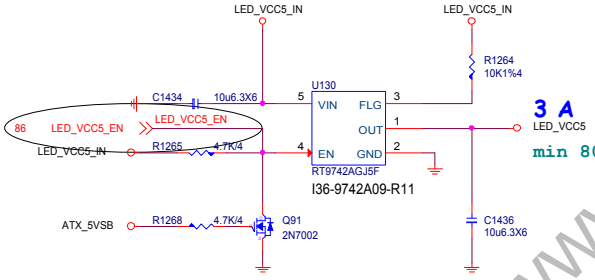
3 MOS HEATSINK LED
PCS LED*0.16W=W

JPIPE:PIN1:output ,PIN2:input
PIN2:MCU IN
PIN1:HEATSINK OUT

C1822 & C1823 near AVDD Pin. C1820 & C1821 near VDD Pin.
C1824 near VBAT Pin.
C1827 & C1828 near VDDIO & USB_VBUS Pin.

If SPEC hes LED demo function without demo button, DEMO_DET# must pull up to LED_VCC5,Q319 need to stuff and control by LED_VCC5_EN.
PS. R2069 remove, R2032 and Q319 need to stuff

EXTERNAL POWER INPUT

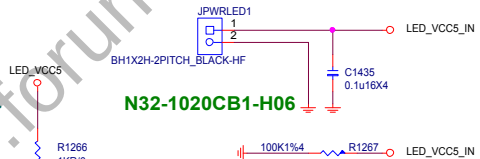


3 A
LED_VCC5
min 80mil.

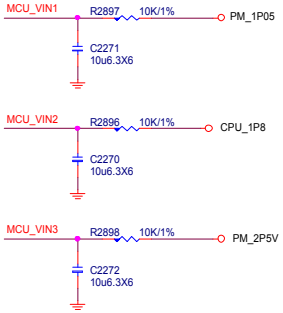
I36-9742A09-R11

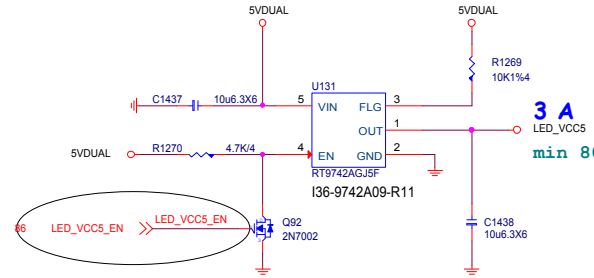
External Power

2A Connector



N32-1020CB1-H06

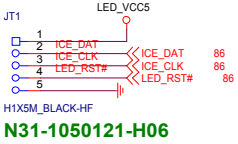




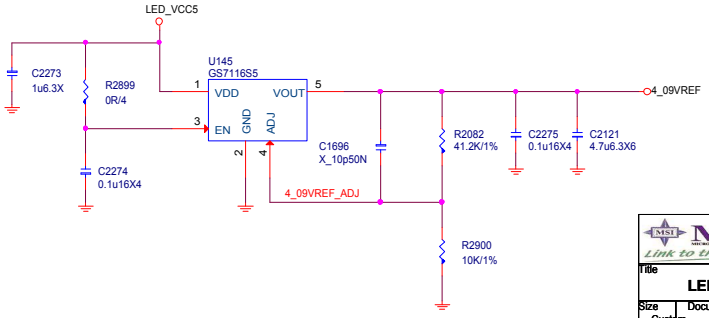
3 A
LED_VCC5
min 80mil.

I36-9742A09-R11

JT1 for FW update



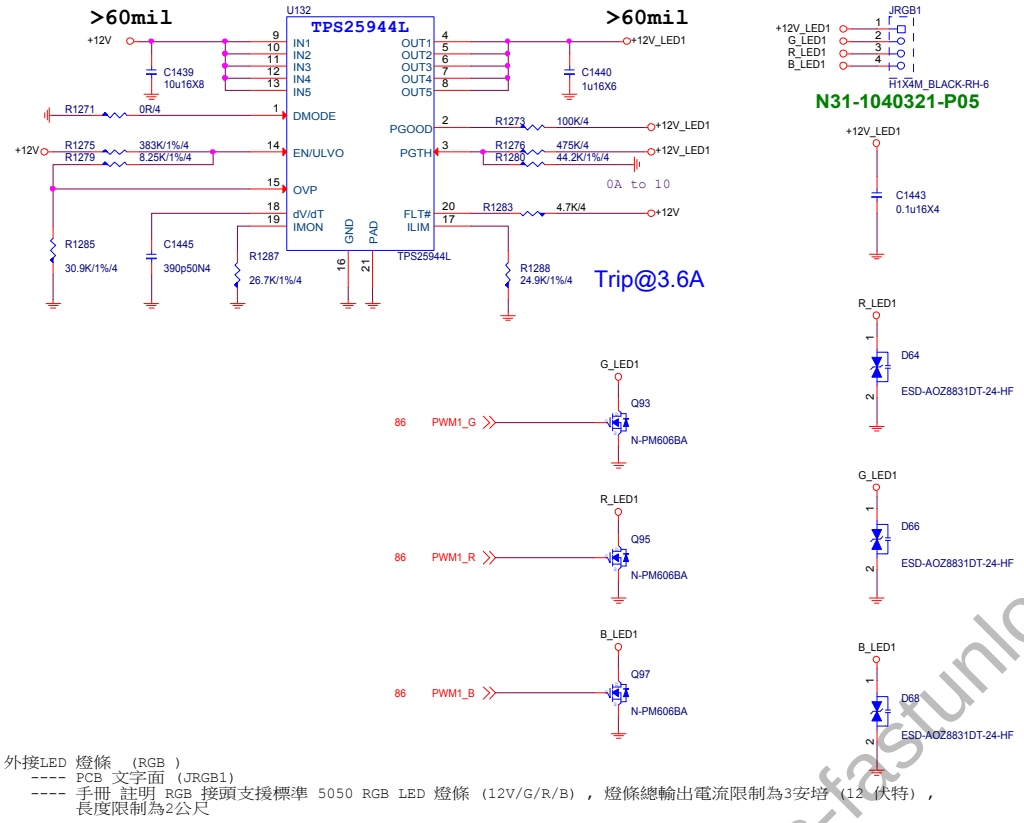
N31-1050121-H06



MSI MICRO-STAR INT'L CO.,LTD.
Link to the Future

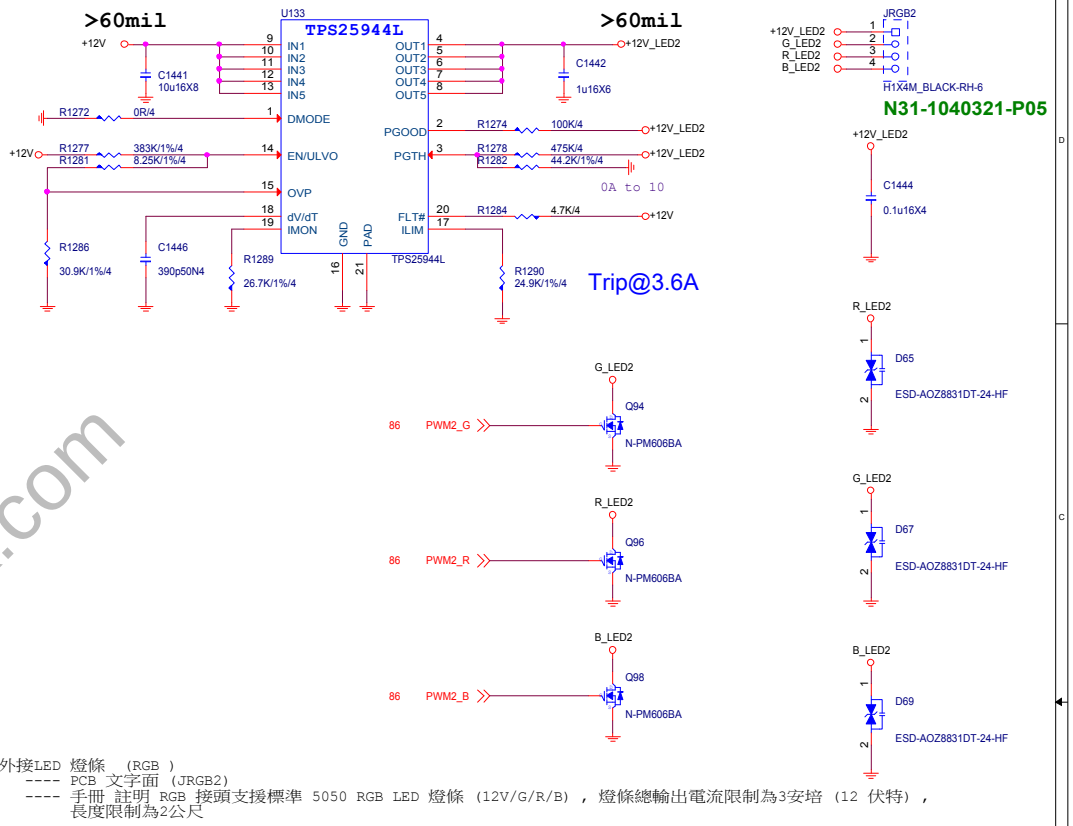
Title	LED MCU Control	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 86 of 99	

JRGB1



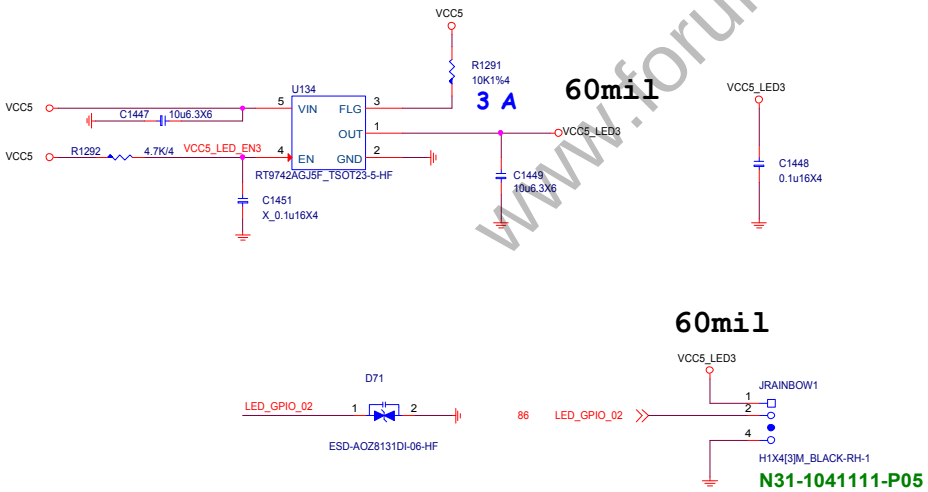
外接LED 燈條 (RGB)
---- PCB 文字面 (JRGB1)
---- 手冊 註明 RGB 接頭支援標準 5050 RGB LED 燈條 (12V/G/R/B) , 燈條總輸出電流限制為3安培 (12 伏特) , 長度限制為2公尺

JRGB2

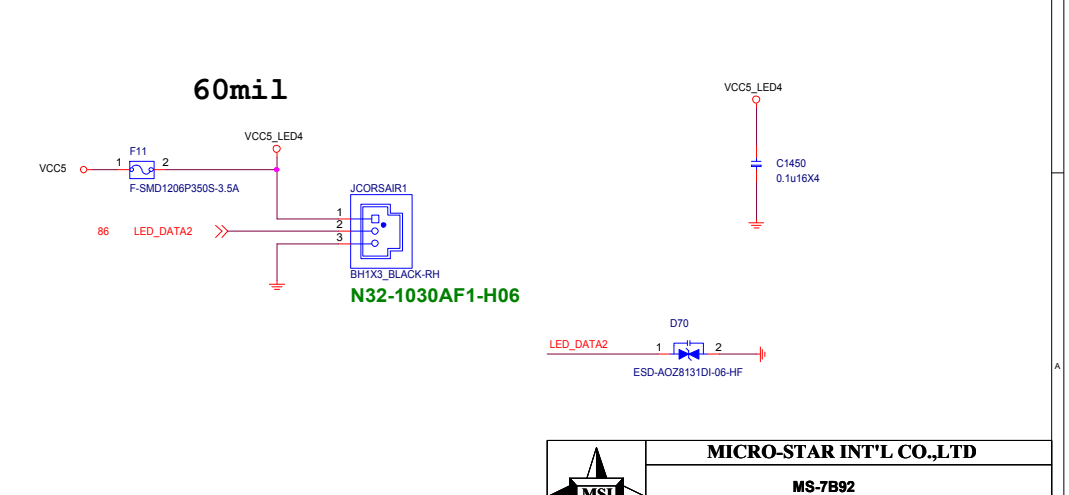


外接LED 燈條 (RGB)
---- PCB 文字面 (JRGB2)
---- 手冊 註明 RGB 接頭支援標準 5050 RGB LED 燈條 (12V/G/R/B) , 燈條總輸出電流限制為3安培 (12 伏特) , 長度限制為2公尺

JRAINBOW1

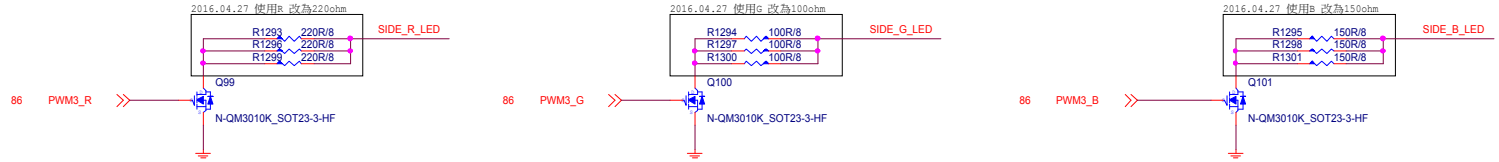


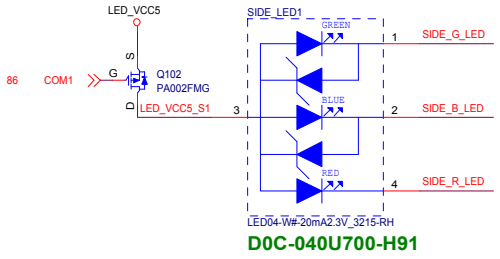
JCORSAIR1



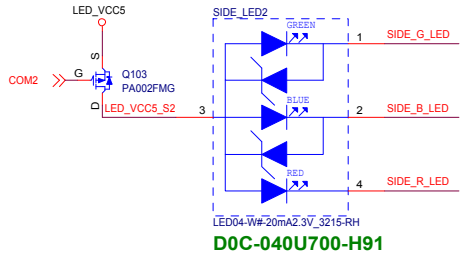
MICRO-STAR INT'L CO.,LTD		
MS-7B92		
Size: Custom	Document Description: LED JRGB/JCORSAIR/JRAINBOW	Rev: 12
Date: Friday, August 03, 2018	Sheet 87 of 99	

BOARD SIDE LED*8 SET
FORM MCU

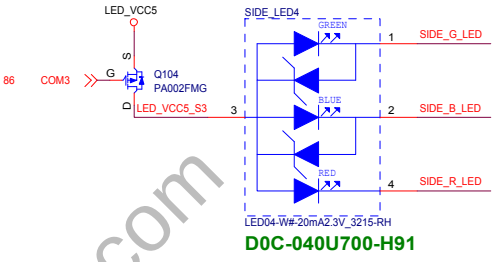




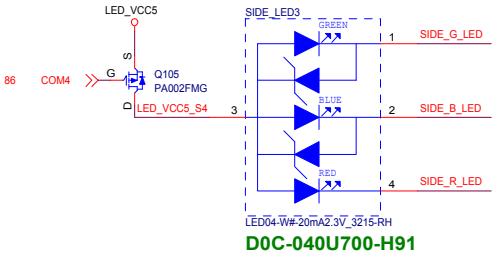
D0C-040U700-H91



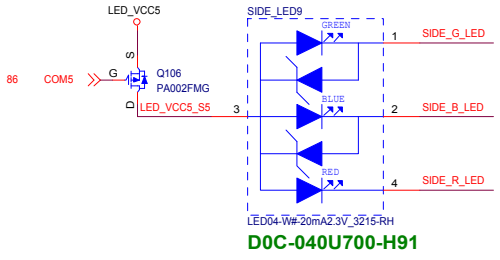
D0C-040U700-H91



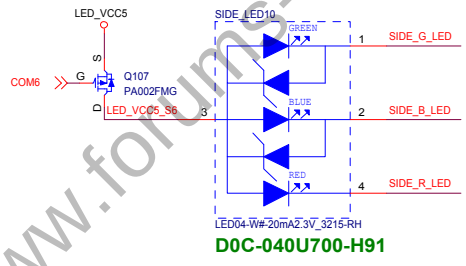
D0C-040U700-H91



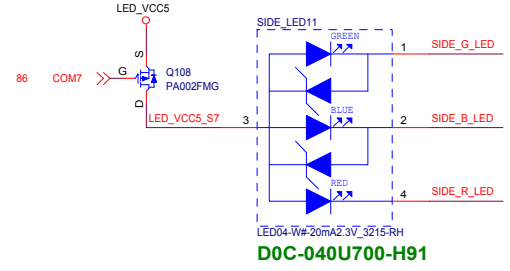
D0C-040U700-H91



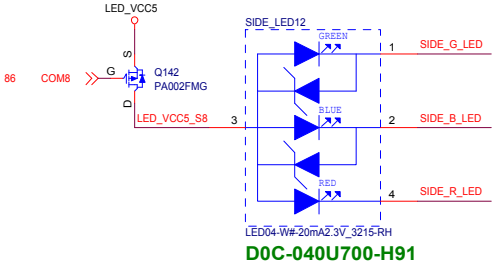
D0C-040U700-H91



D0C-040U700-H91



D0C-040U700-H91



D0C-040U700-H91

MICRO-STAR INT'L CO.,LTD

MS-7B92

Size	Document Description	Rev
Custom	LED BOARD SIDE	12

Date: Friday, August 03, 2018 Sheet 88 of 99

PCIE_SLOT LED*4

FORM SIO

MICRO-STAR INT'L CO.,LTD

MS-7B92

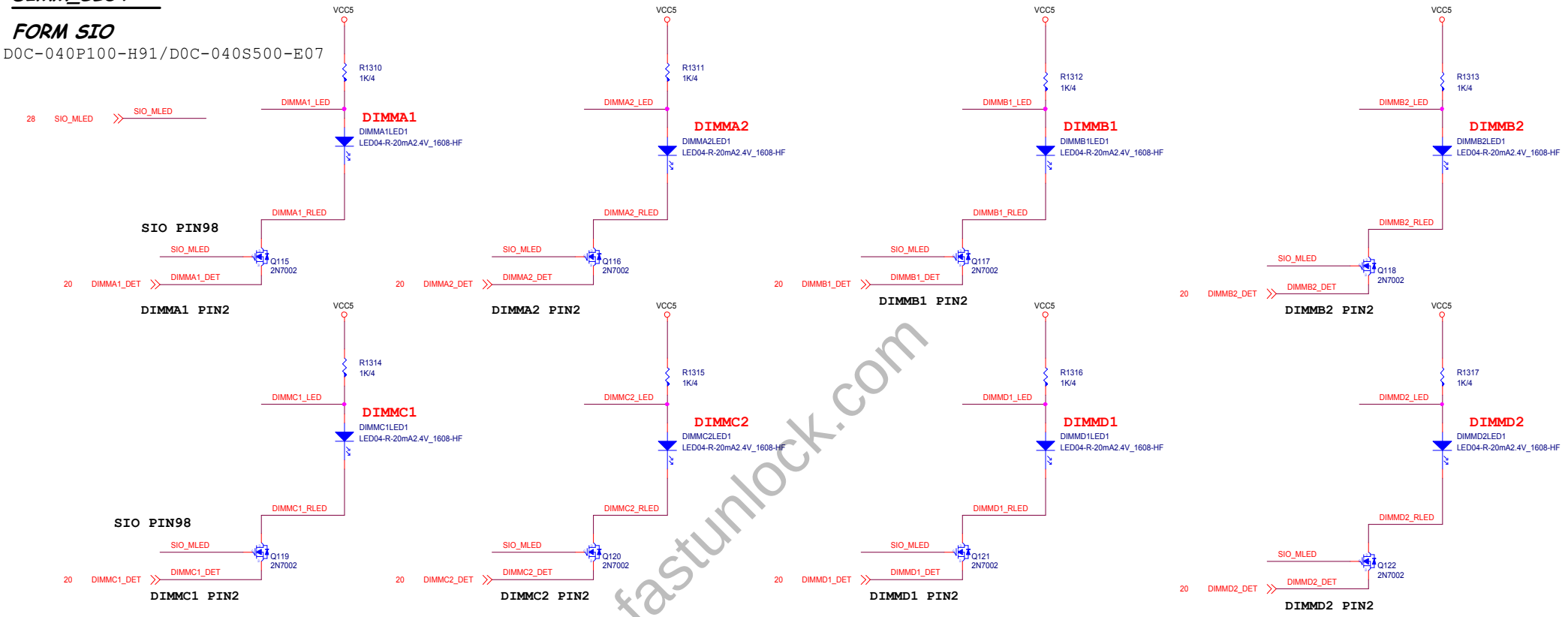
Size	Document Description	Rev
Custom	LED PCIE SIDE	12

Date: Friday, August 03, 2018 Sheet 89 of 99

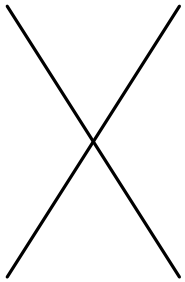
DIMM_SLOT

FORM SIO

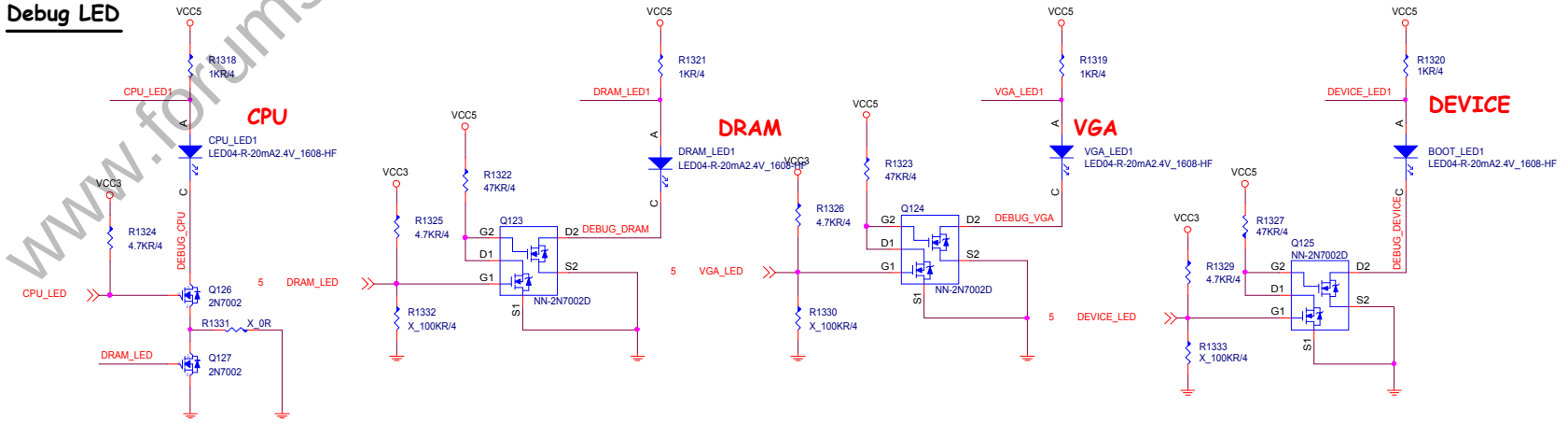
D0C-040P100-H91/D0C-040S500-E07



AMD AMP Detect LED



Debug LED



LED \ GPIO	AGPIO84_0	AGPIO85_0	EGPIO84_1	EGPIO85_1
亮	GPI PULL HIGH	GPO PO LOW	GPO PO LOW	GPO PO LOW
滅	GPO LOW	GPO HIGH (default HIGH)	GPO HIGH (default HIGH)	GPO HIGH (default HIGH)

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

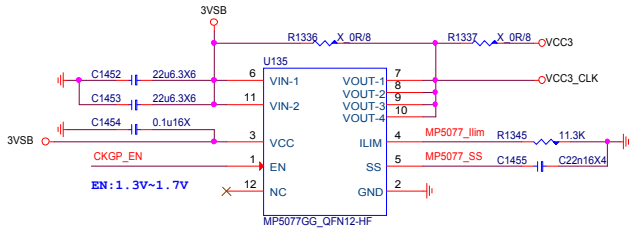
Link to the Future

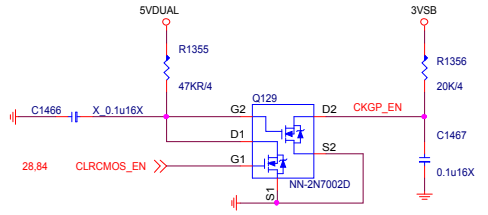
Title: DIMM/DEBUG LED

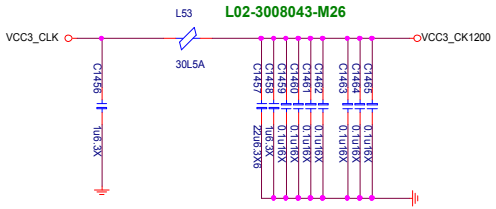
Size: Custom | Document Number: MS-7B92 | Rev: 12

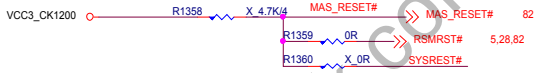
Date: Friday, August 03, 2018 | Sheet 90 of 99

CLOCK GEN

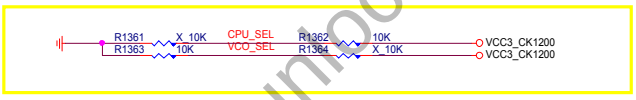


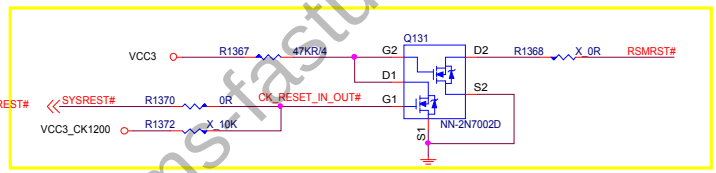


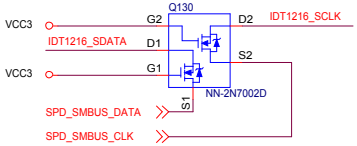


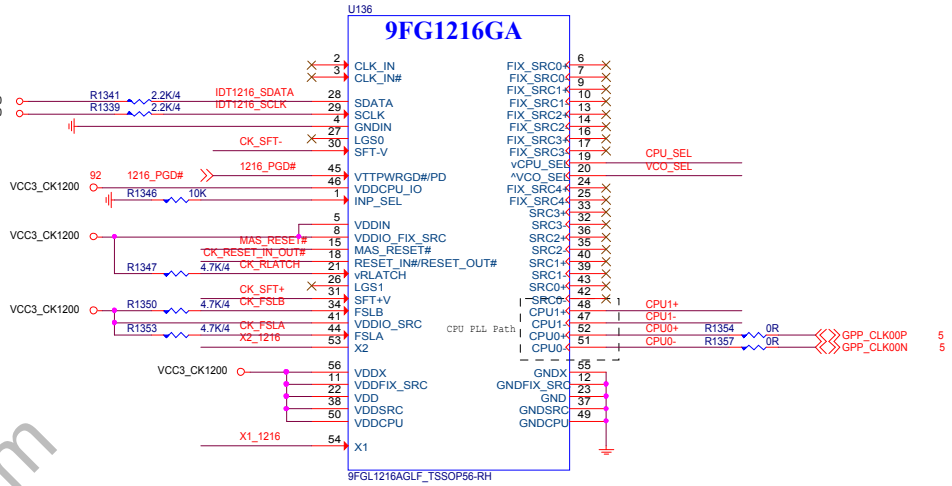


Input latch pin to select CPUCLK PLL source.
0 = SRC PLL (default), 1 = CPU PLL

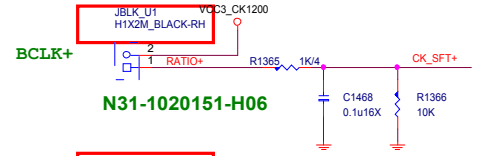


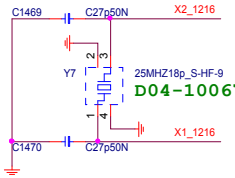


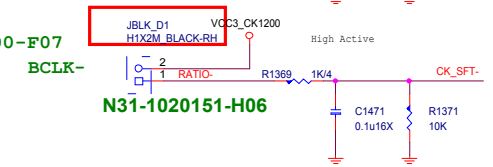




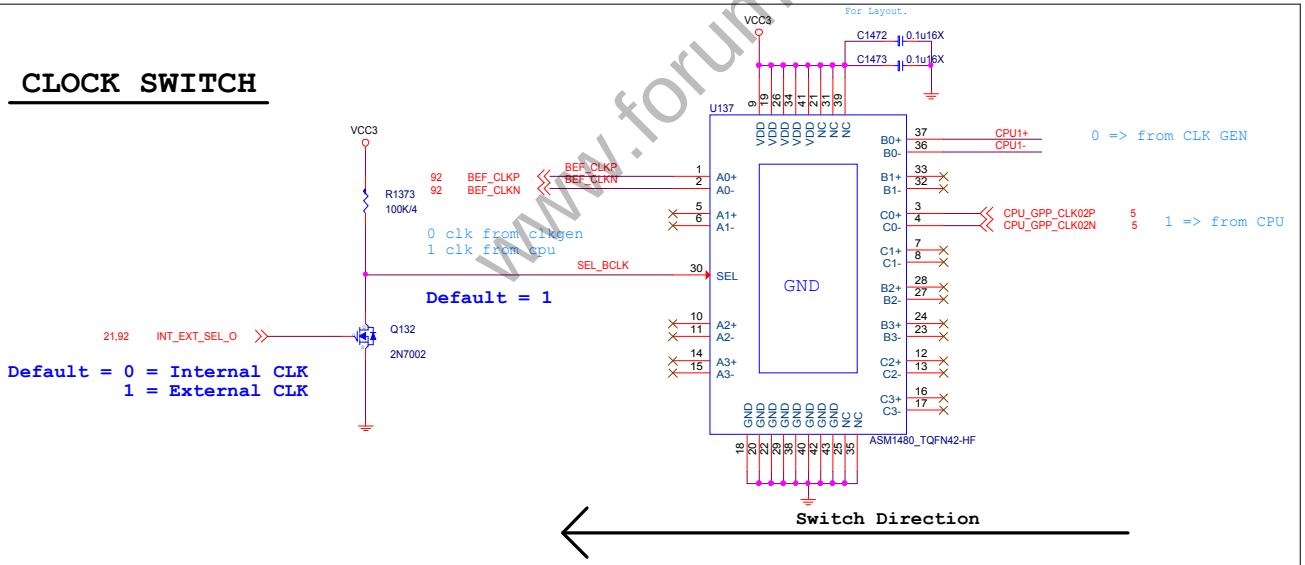
SMB=0XD6



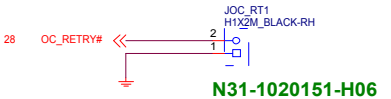




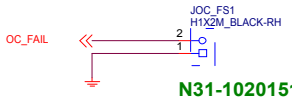
CLOCK SWITCH



OC Retry Botton



OC Fail Setting Botton



MICRO-START INT'L CO.,LTD.

Title: CLOCK GEN1216

Size | Document Number: MS-7B92 | Rev: 12

Date: Friday, August 03, 2018 | Sheet 91 of 99

CLOCK BUFFER

5,15,17,39,47,53,66,71,78,79,84,85,86,91
5,15,17,39,47,53,66,71,78,79,84,85,86,91

SPD_SMBUS_CLK
SPD_SMBUS_DATA

SPD_SMBUS_CLK
SPD_SMBUS_DATA

1.5V * 0.5A = 0.75W

VCC5 1.5mA R1384 10R/4 831_VCC5 C1474 1u6.3X

VCC3 R1386 47K/4 C1475 0.1u16X VCC1P8_EN

U138 GS7133SO
POK EN VIN NC VDD VOUT GND GND FB
VCC1P8_EN VCC3 831_FB

C1476 X_0.015u16X/4 R1390 1.5K1%/4 R1399 1.2KR1%/4 C1477 10u6.3X6 C1478 22u6.3X/8 C1479 0.1u16X

VCC1P8_CLK

500 mA

Vref=0.8

VCC1P8_CLK L54 220L2A-50 VCC1P8_CLK1
C1480 22u6.3X/8 C1481 0.1u16X C1482 0.1u16X C1483 0.1u16X

VCC1P8_CLK L55 220L2A-50 VCC1P8_CLK2
C1484 22u6.3X/8 C1485 0.1u16X C1486 0.1u16X C1487 0.1u16X C1488 0.1u16X C1489 0.1u16X

VCC1P8_CLK1 R1417 1R/6 VCC1P8_CLK3
C1490 0.1u16X C1491 0.1u16X C1492 0.1u16X

U139 **9DBV0831**

91 BEF_CLKP BEF_CLKP
91 BEF_CLKN BEF_CLKN
CLK_IN CLK_IN#
FB_DNC FB_DNC#
VCC1P8_CLK R1385 1K1%/4 R1379 1K1%/4 831_PLL ^vHIBW_BYPM_LOBW#
VCC1P8_CLK R1388 4.7K/4 R1389 X_4.7K/4 vSADR_tri
SPD_SMBUS_CLK R1391 0R IDT831_SMBCLK SCLK_3.3
SPD_SMBUS_DATA R1392 0R IDT831_SMBDATA SDATA_3.3

high active

CK831_PGD ^CKPWRGD_PD#
VCC1P8_CLK1 VDD1.8 VDD1.8
VCC1P8_CLK3 VDDA1.8
VCC1P8_CLK1 VDDR1.8
VCC1P8_CLK2 VDDDIG1.8
VDDIO VDDIO VDDIO VDDIO VDDIO

GNDA GNDR GNDDIG GND GND GND

9DBV0831

SMBUS adress:D5

Close U139

DIF0 R1381 27R/1% P0_PM_GPP_CLK00_P 24
DIF0# R1376 27R/1% P0_PM_GPP_CLK00_N 24 Promontory
DIF1 R1387 27R/1% P0_SLOT4_CLK01_P 32
DIF1# R1380 27R/1% P0_SLOT4_CLK01_N 32 Slot 4 x16
DIF2 R1395 27R/1% P0_M2_SSD_CLK03_P 37
DIF2# R1397 27R/1% P0_M2_SSD_CLK03_N 37 M.2_3
DIF3 R1402 27R/1% P0_SLOT1_CLK11_P 30
DIF3# R1404 27R/1% P0_SLOT1_CLK11_N 30 Slot 1 x16
DIF4 R1408 27R/1% P0_SLOT3_CLK12_P 31
DIF4# R1409 27R/1% P0_SLOT3_CLK12_N 31 Slot 3 x8
DIF5 R1412 27R/1% G1_M2_SSD_CLK13_P 36
DIF5# R1414 27R/1% G1_M2_SSD_CLK13_N 36 M.2_1
DIF6 R1419 27R/1% P0_SLOT6_CLK02_P 33
DIF6# R1421 27R/1% P0_SLOT6_CLK02_N 33 Slot 5 x8
DIF7 R1425 27R/1% G1_M2_SSD_CLK10_P 36
DIF7# R1427 27R/1% G1_M2_SSD_CLK10_N 36 M.2_2

vOE0# vOE1# vOE2# vOE3# vOE4# vOE5# vOE6# vOE7#

OE# = internal pull-down

5VDUAL VCC3 R1430 47K/4 R1431 X_10K CK_PGD
5,82 ALL_PWR_PWRGD R1432 7.5K04 C1495 1u6.3X Q134 2N7002 Q135 2N7002

VCC1P8_CLK R1429 4.7K/4 CK831_PGD Q133 2N7002 C1493 0.1u16X C1494 X_0.1u16X

VCC3_CK1200 R1433 4.7K/4 1216_PGD# 91
21,91,92 INT_EXT_SEL_O R1434 100KR/4 Q136 2N7002 C1496 X_0.1u16X

Default = 0 = Internal CLK
1 = External CLK

5VDUAL R1438 47K/4 Q137 2N7002
VCC3 R1440 10K Q138 2N7002 C1499 1u6.3X

INPUTS			OUTPUTS
CLR	CLK	D	Q
H	↑	L	L
H	↑	H	H
H	H or L	X	Qo
L	X	X	L

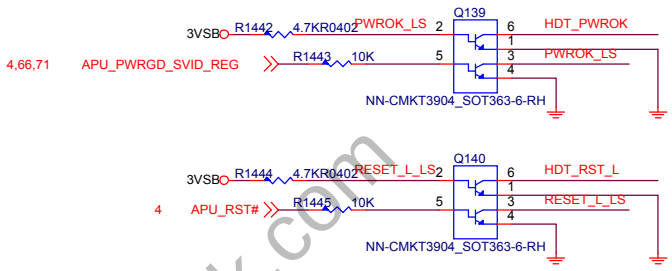
5,28,53,54,65,74,75,80,81 SLP_S3# R1435 0R/4
VCC3 R1436 X_0R C1497 X_0.1u16X
28 INT_EXT_SEL R1439 47K/4

SN74LVC1G175DCKR_SC70-6-RH
U140 CLK CLR GND VCC D Q
R1437 0R/4 C1498 0.1u16X 3VSB
INT_EXT_SEL_O 21,91,92
R1441 X_0R

MSI MICRO-STAR INT'L CO.,LTD.
Link to the Future

Title	CLOCK Buffer0831	
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 92 of 99	

Stuff for first model



IB=(AMD_HDTPWR-Vbe)/4.7k
(1.8-0.95)/4.7k=0.181mA

IC=(Vc-Vce)/10k
(1.8-0.2)/10k=0.16mA

B*Ib>Ic=10*0.181=1.81>0.16

IB=(Vb-Vbe)/10k
(1.75-0.95)/10k=0.08mA

B*Ib>Ic=10*0.08=0.8>0.16

IC=(Vc-Vce)/10k
(3.3-0.2)/10k=0.16mA

IB=(AMD_HDTPWR-Vbe)/4.7k
(1.8-0.95)/4.7k=0.181mA

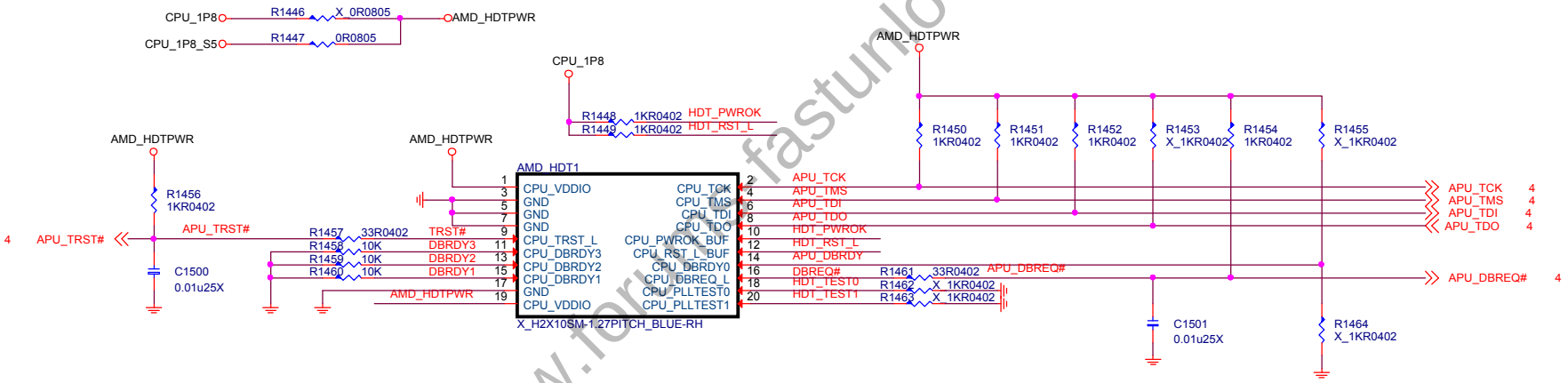
IC=(Vc-Vce)/10k
(1.8-0.2)/10k=0.16mA

B*Ib>Ic=10*0.181=1.81>0.16

IB=(Vb-Vbe)/10k
(1.75-0.95)/10k=0.08mA

B*Ib>Ic=10*0.08=0.8>0.16

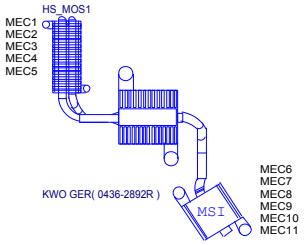
IC=(Vc-Vce)/10k
(3.3-0.2)/10k=0.16mA



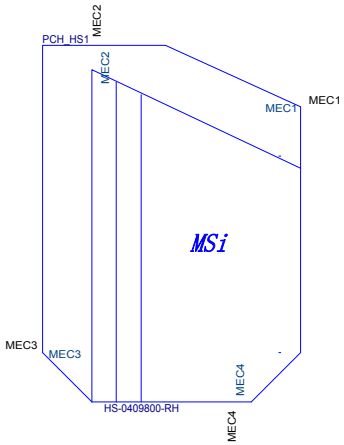
MSI MICRO-STAR INT'L CO.,LTD.
Link to the Future

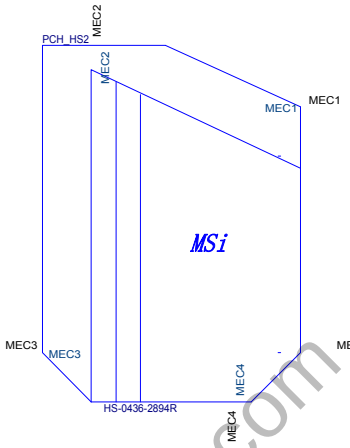
Title	APU HDT DEBUG	
Size	Document Number MS-7B92	Rev 12
Date: Friday, August 03, 2018	Sheet 93 of 99	

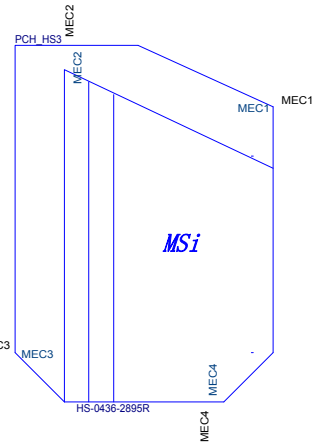
CPU HEAT SINK



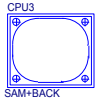
PCH HEAT SINK



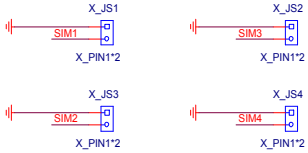




CPU Socket



Simulation



PCH_HS2與PCH_HS3出BOM前要再加回來

MANUAL PART

AMI1
AMI LABEL
G51-M1SPXXA-A09

CFOS1
Label
VIRTUAL
CFOS
Y02-MU00170-CFO

NAHIMIC1
Label
BUNDLE
NAHIMIC
Y02-MU00100-NAH

SLI1
Label
VIRTUAL
SLI
Y01-RNVIDIN-000

MKT1
Label
BUNDLE
X_MKT
G51-M1SPL82-Q13

XSPLIT1
Label
BUNDLE
X_XSPLIT
Y02-MA00401-XSP

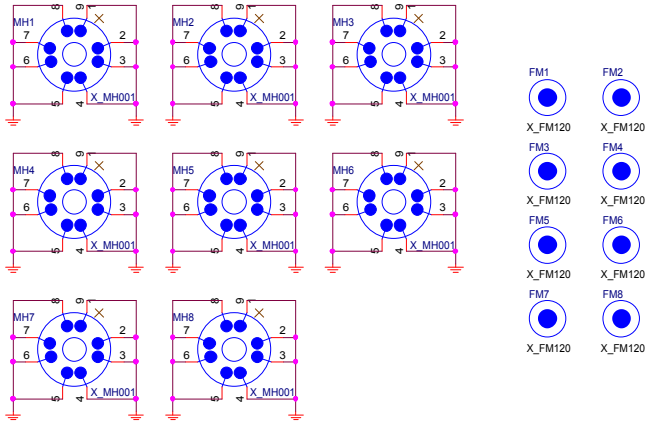
SSE1
Label
VIRTUAL
X_SSE
Y02-MA00101-SSE

BAT1_X1
BAT-CR2032-RH
D06-0100101-P01

PCB1
7B92-1.2
PD0-07B9212-G37,精成-深圳,0,寶安恩斯邁廠(MSIS)

601-7B92-020 .001 MP

Optics Orientation Holes



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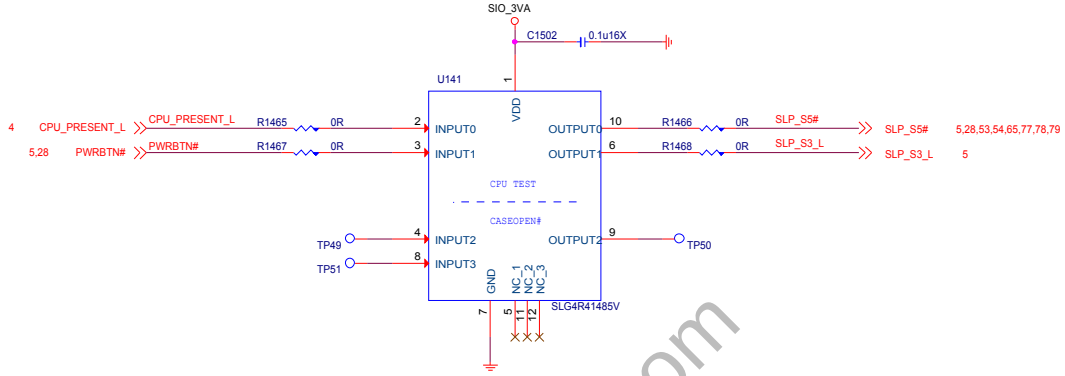
Link to the Future

Title: BOM OPTION		
Size: Custom	Document Number: MS-7B92	Rev: 12
Date: Friday, August 03, 2018	Sheet 94 of 99	

Add for EMI



MICRO-START INT'L CO.,LTD.

Title: EMI CAP/SLG IC

Size: Custom | Document Number: MS-7B92 | Rev: 12

Date: Friday, August 03, 2018 | Sheet 95 of 99