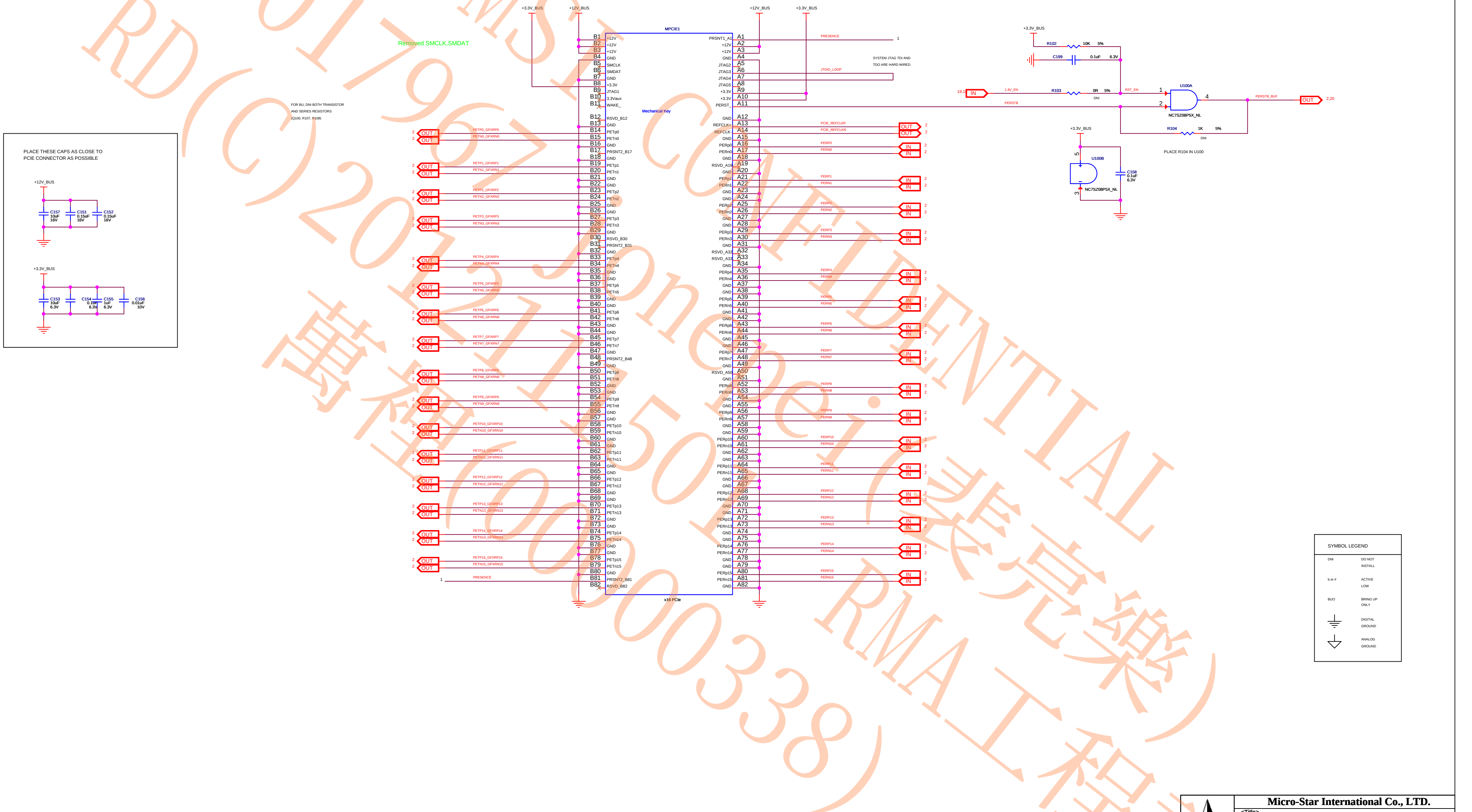
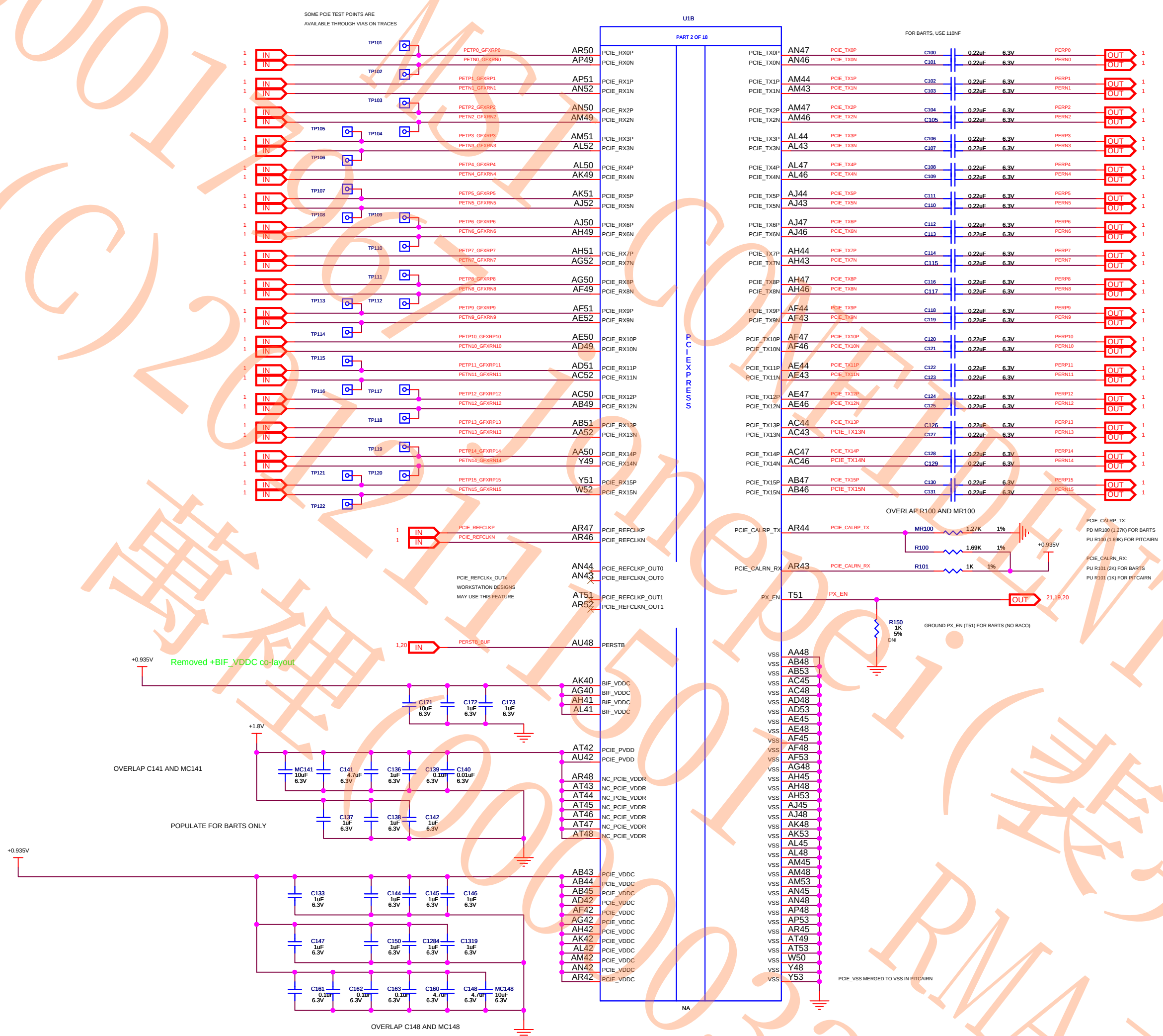
(1) PCI-EXPRESS EDGE CONNECTOR



Micro-Star International Co., LTD.		
<Title>		
Size: Custom	Document Number: <Doc>	Rev: <RevCode>
Date: Friday, February 24, 2012	Sheet 1 of 26	

(2) PITCAIRN PCIE INTERFACE

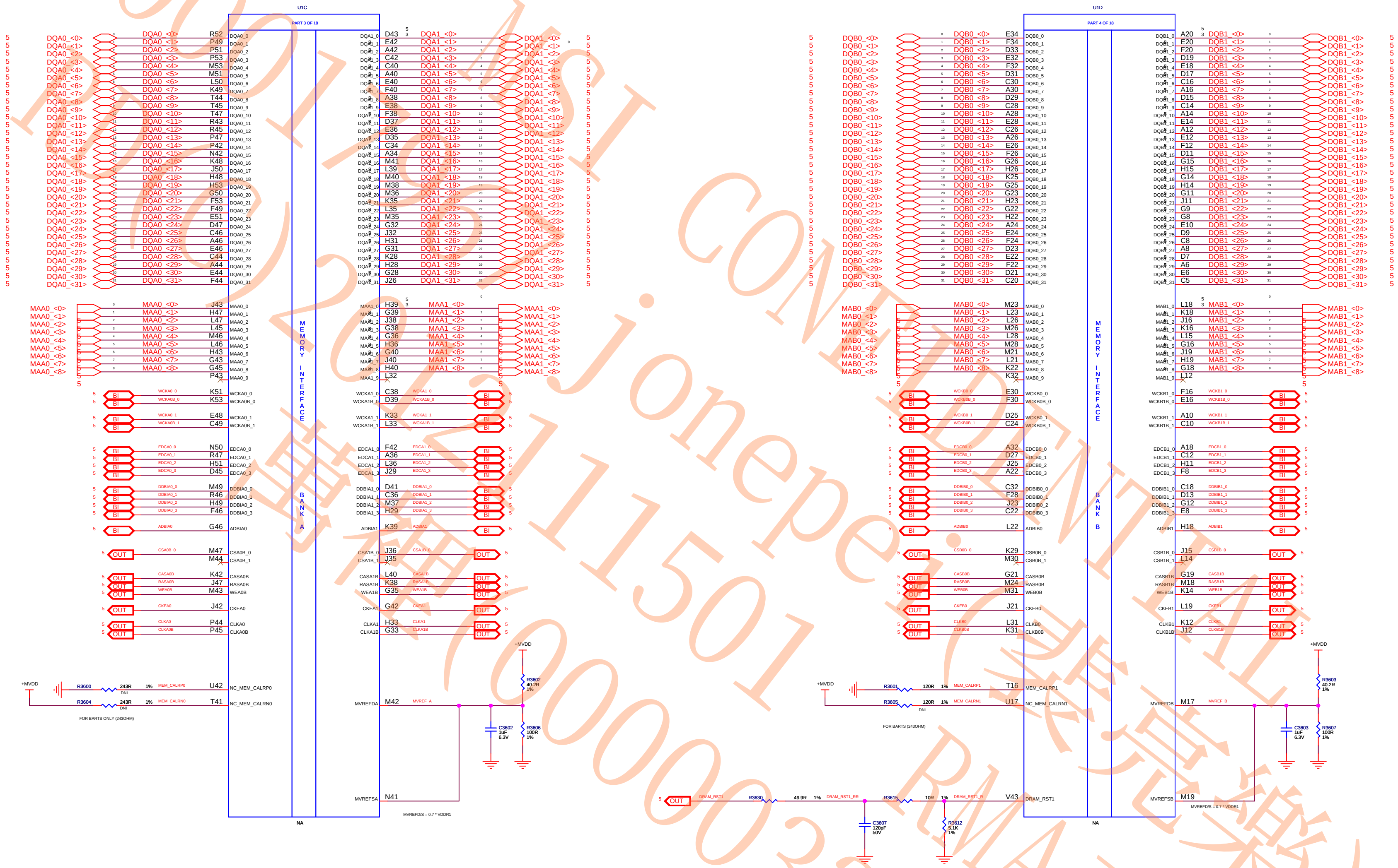


Micro-Star International Co., LTD.

<Title>

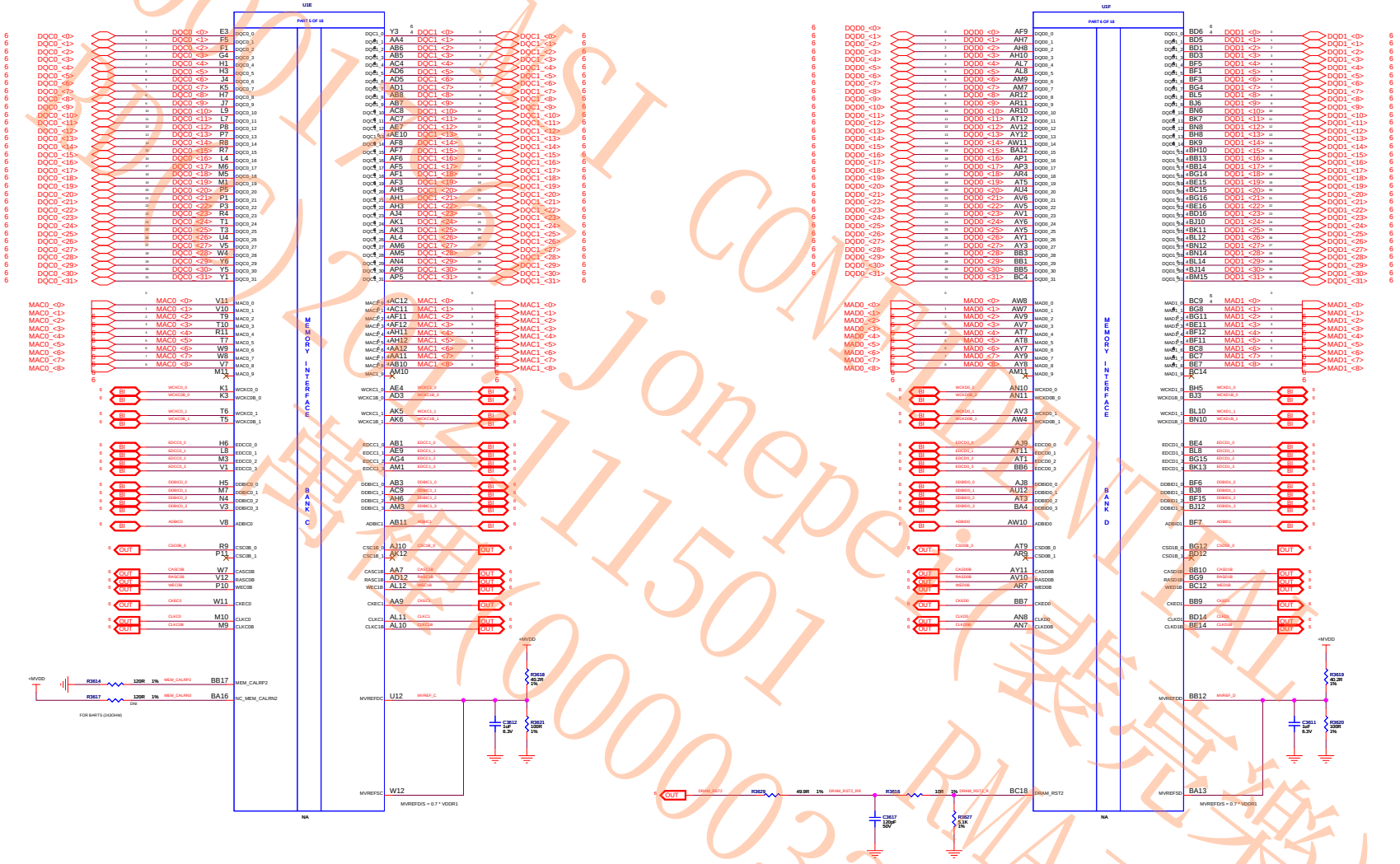
Size	Document Number	Rev
Custom	<Doc>	<RevCode>
Date: Friday, February 24, 2012	Sheet 2 of 26	

(3) PITCAIRN MEM INTERFACE CH A/B



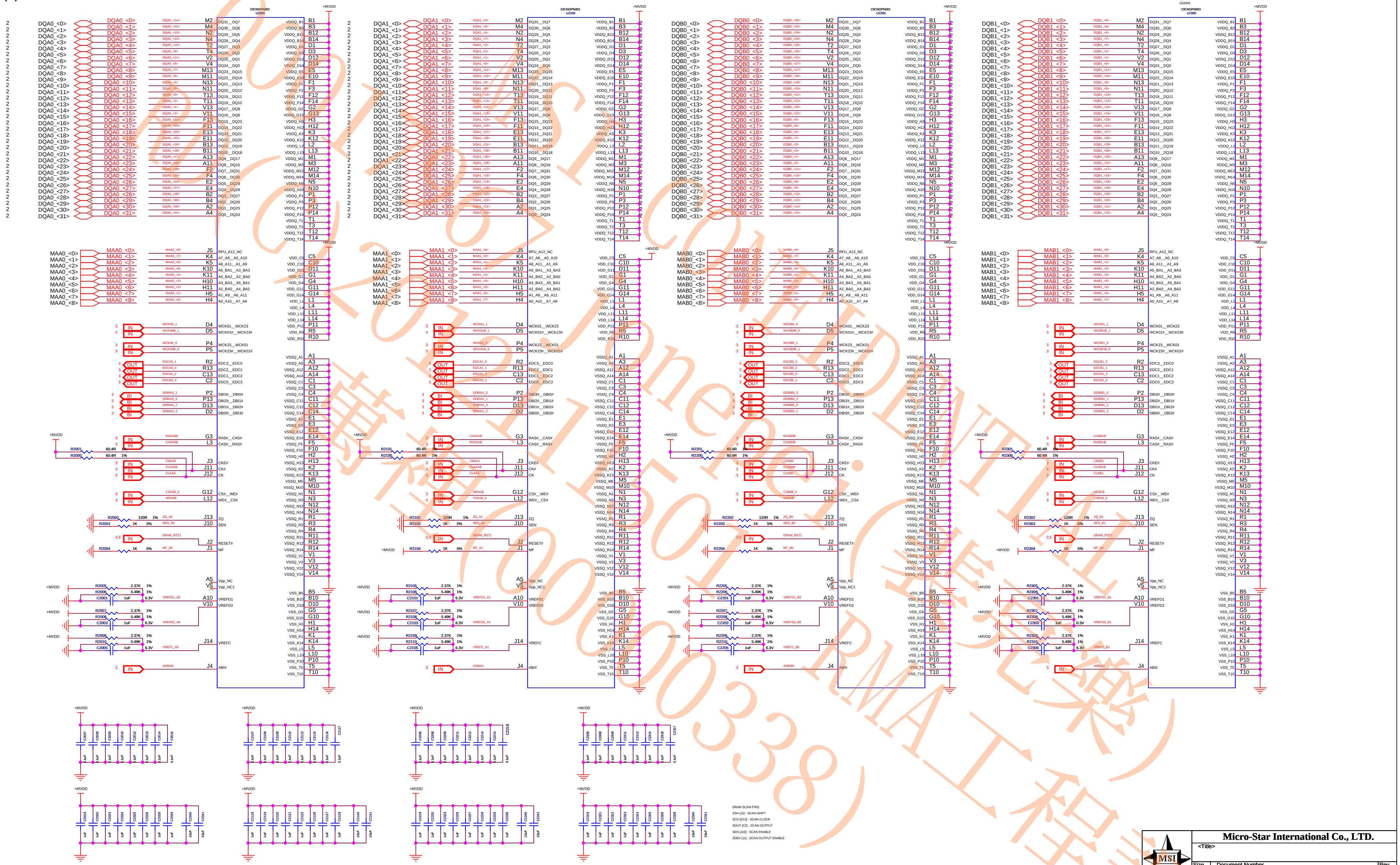
Micro-Star International Co., LTD.		
<Title>		
Size: Custom	Document Number: <Doc>	Rev: <RevCode>
Date: Friday, February 24, 2012	Sheet 3 of 26	

(4) PITCAIRN MEM INTERFACE CH C/D



Micro-Star International Co., LTD.			
<Title>			
Size: Custom	Document Number: <Doc>	Rev: <RevCode>	
Date: Friday, February 24, 2012	Sheet 4 of 26		

(5) GDDR5 MEMORY CH A/B



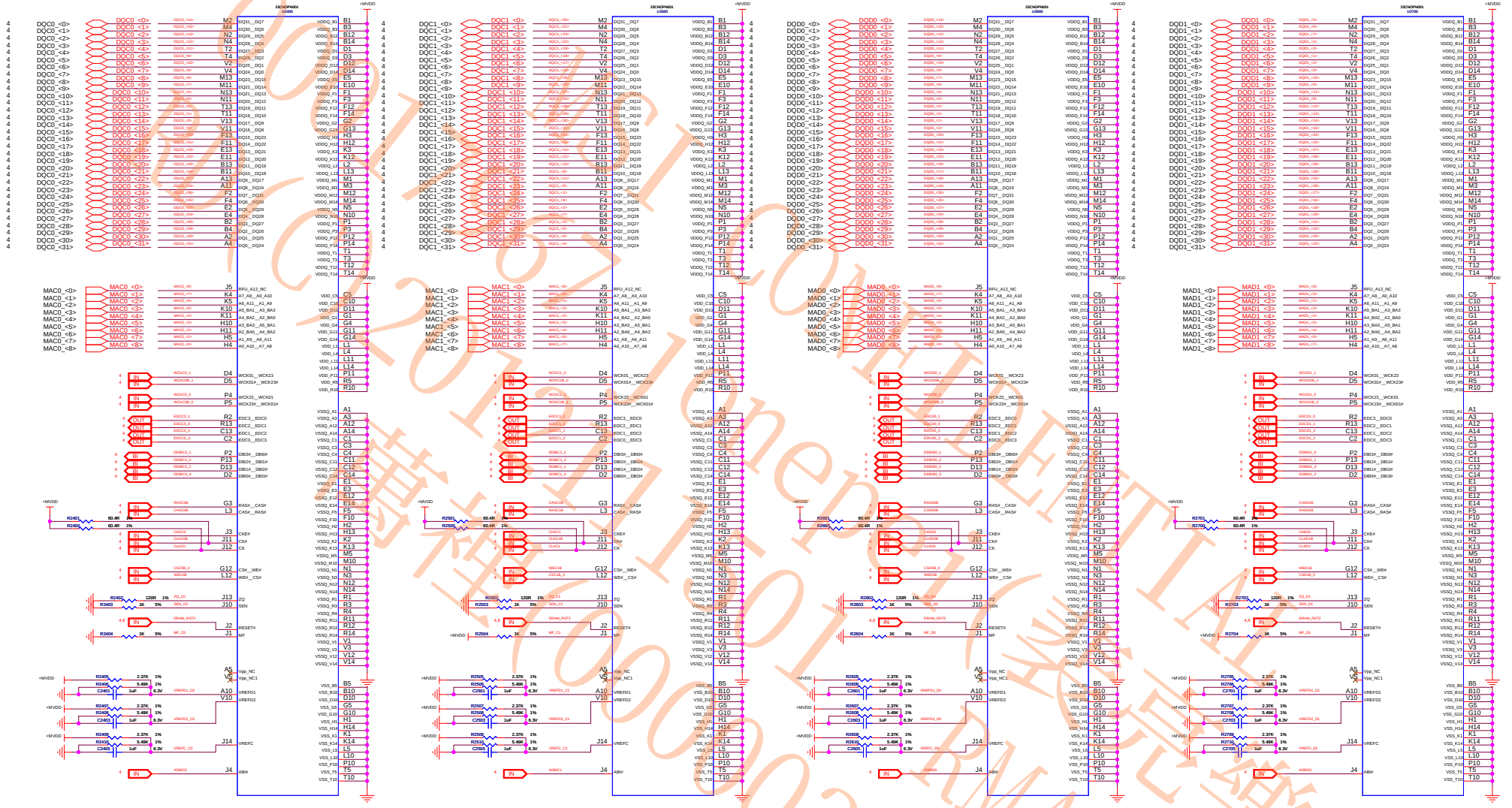
Micro-Star International Co., LTD.

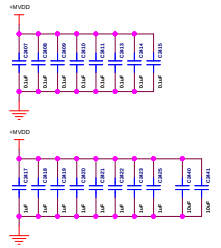
<Title>

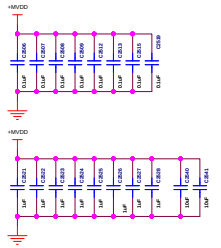
Size	Document Number	Rev
Custom	<Doc>	<RevCode>

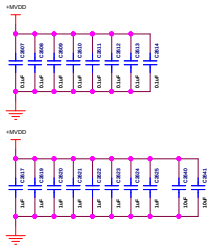
Date: Friday, February 24, 2012 Sheet 5 of 26

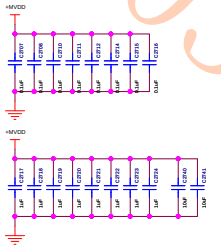
(6) GDDR5 MEMORY CH C/D







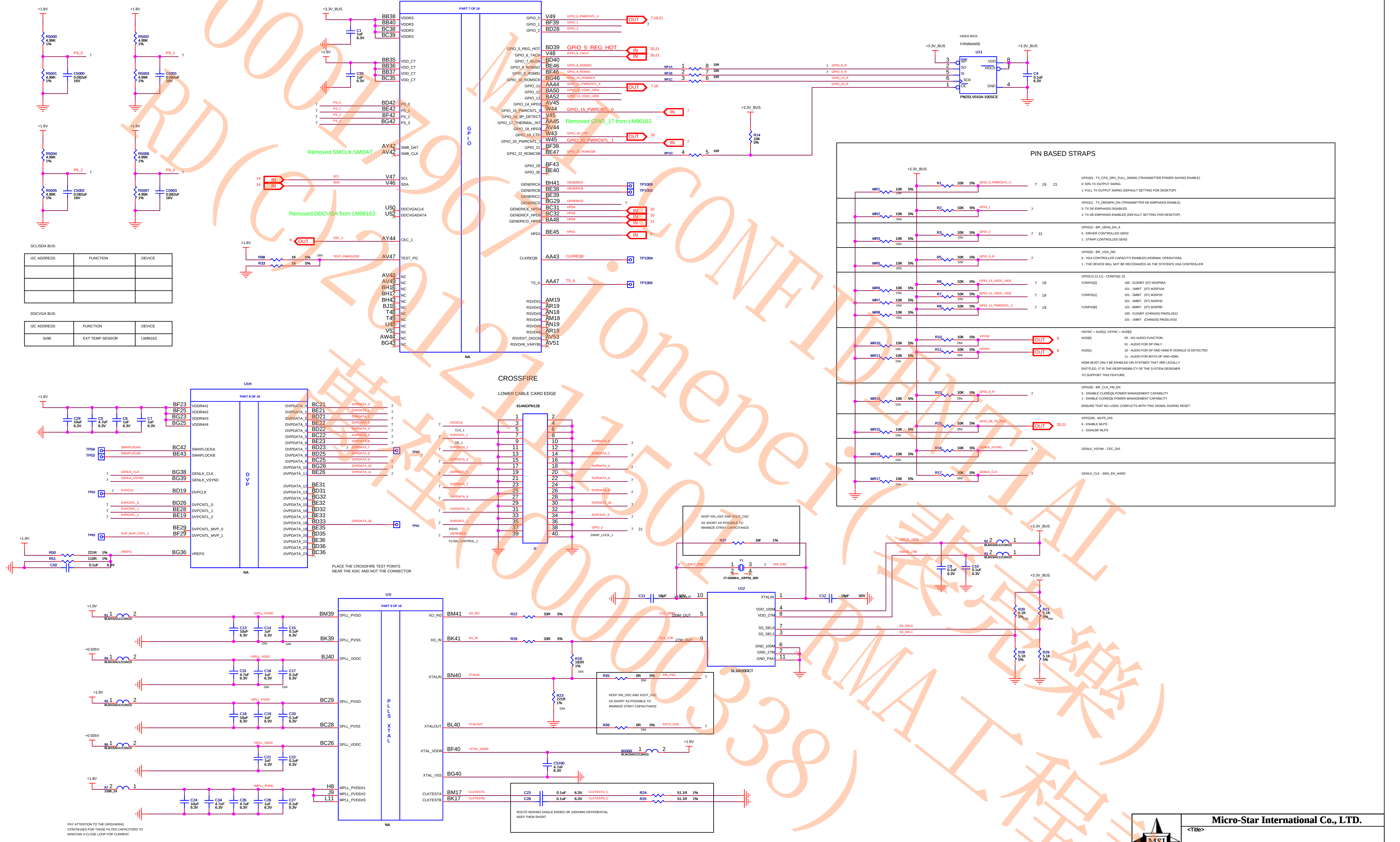




DRAM SCAN PINS
SIN [J2] - SCAN SHIFT
SCK [G12] - SCAN CLOCK
SOUT [C3] - SCAN OUTPUT
SEN [J10] - SCAN ENABLE
SOEB [J1] - SCAN OUTPUT ENABLE

Micro-Star International Co., LTD.
<Title>
Size: Custom | Document Number: <Doc> | Rev: <RevCode>
Date: Friday, February 24, 2012 | Sheet 6 of 26

(7) PITCAIRN GPIO STRAP CF XTAL



SCL/SDA BUS:

I2C ADDRESS	FUNCTION	DEVICE

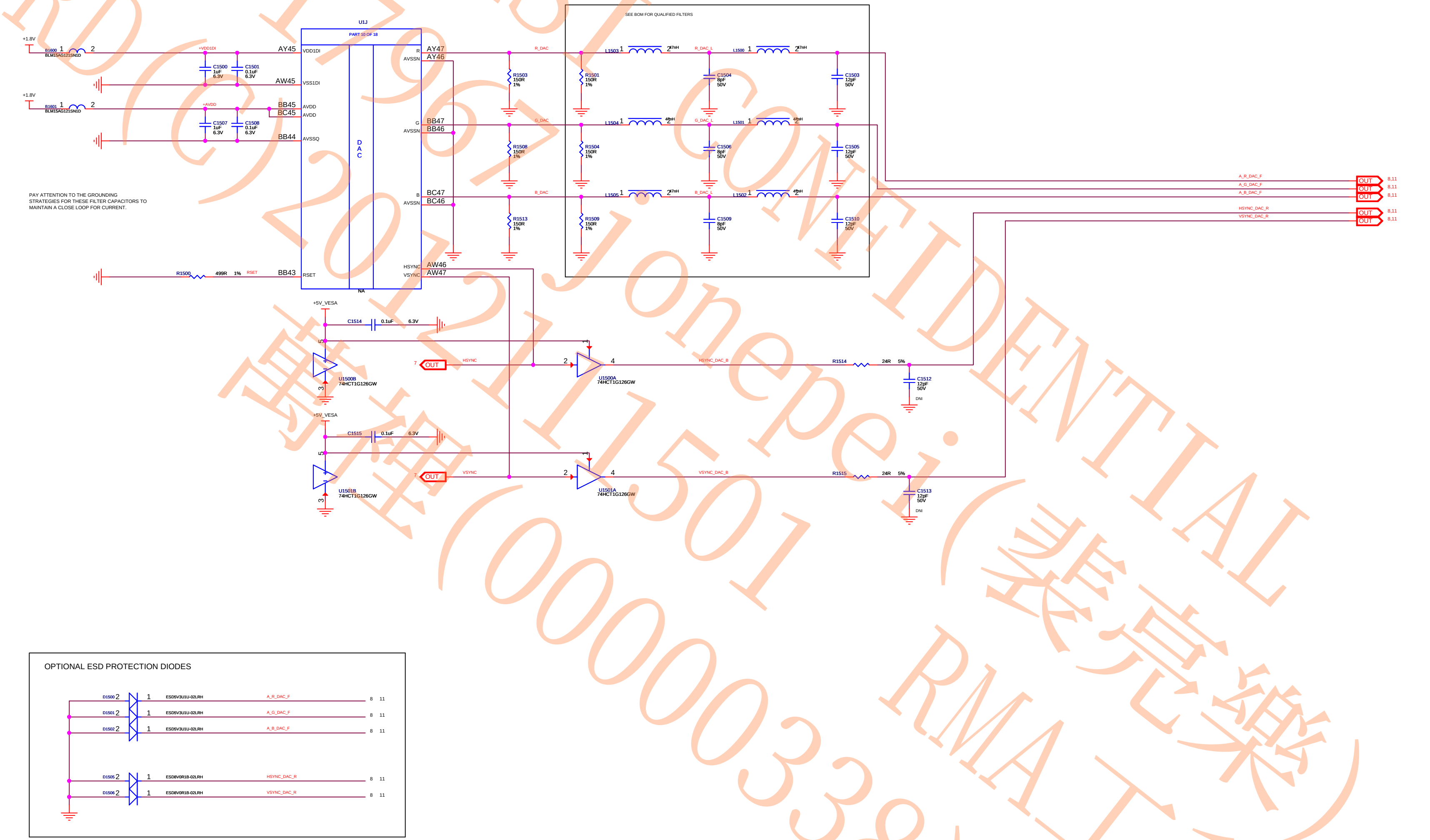
DDCVGA BUS:

I2C ADDRESS	FUNCTION	DEVICE
0x98	EXT TEMP SENSOR	LM96163

Micro-Star International Co., LTD.

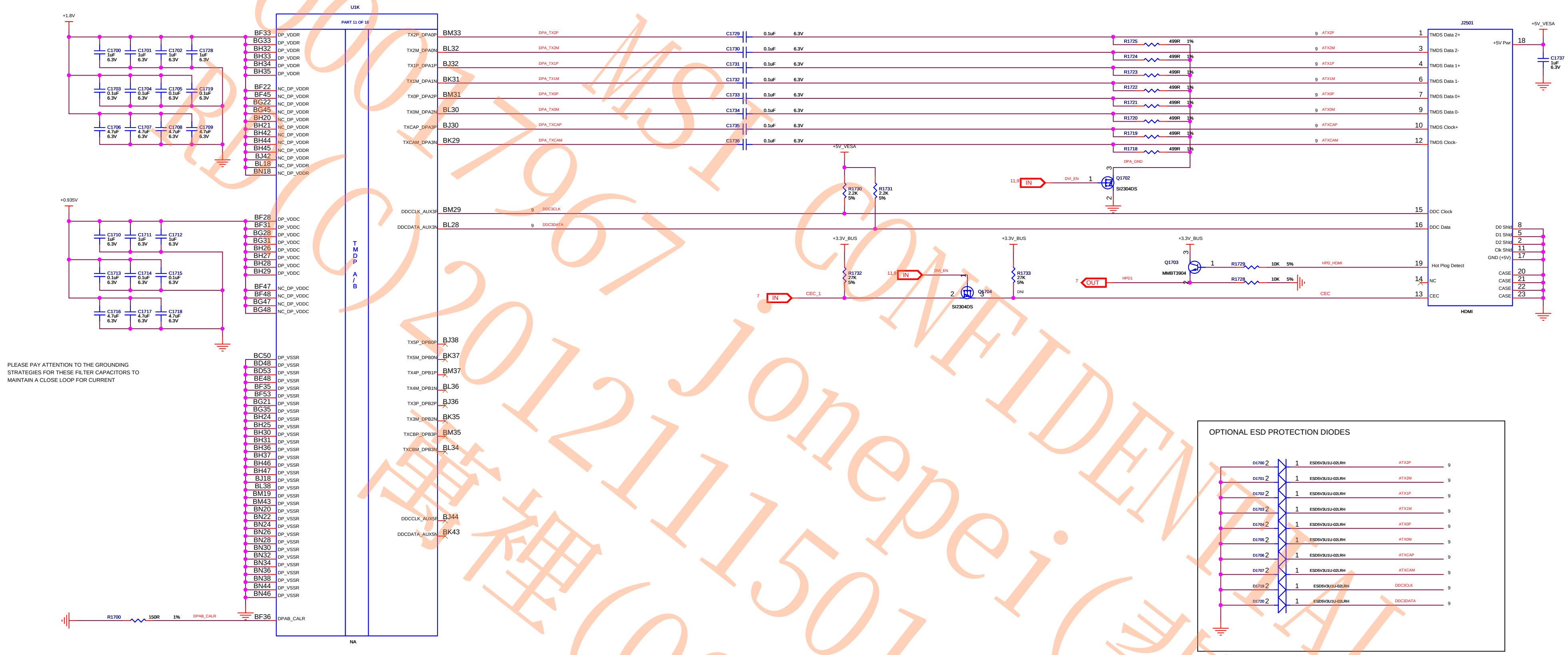
<Title>		
Size: Custom	Document Number: <Doc>	Rev: <RevCode>
Date: Friday, February 24, 2012	Sheet 7 of 26	

(8) PITCAIRN DAC1 LOCK



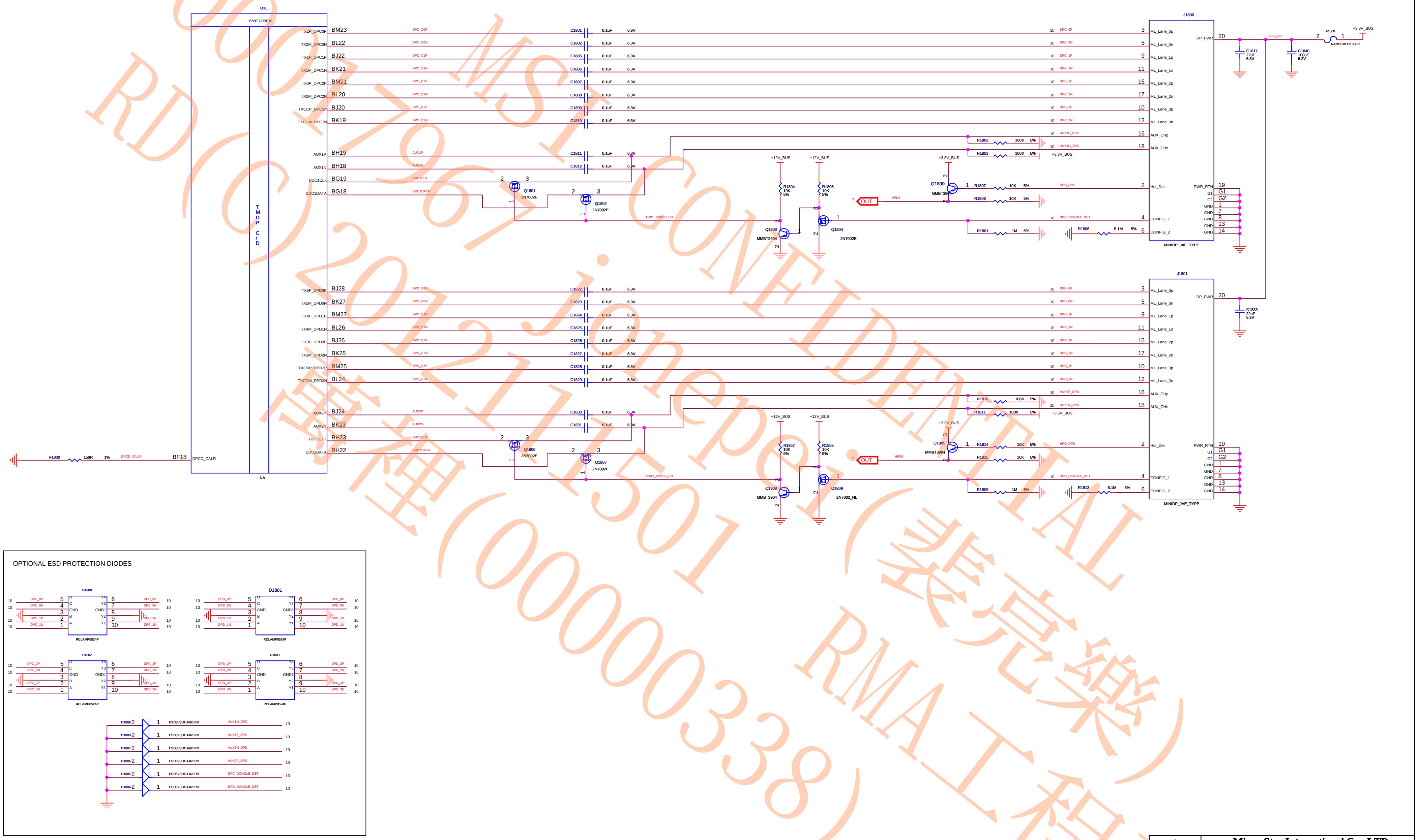
Micro-Star International Co., LTD.		
<Title>		
Size: Custom	Document Number: <Doc>	Rev: <RevCode>
Date: Friday, February 24, 2012	Sheet 8 of 26	

(9) PITCAIRN TMDP A/B



Micro-Star International Co., LTD.		
<Title>		
Size: Custom	Document Number: <Doc>	Rev: <RevCode>
Date: Friday, February 24, 2012	Sheet 9 of 26	

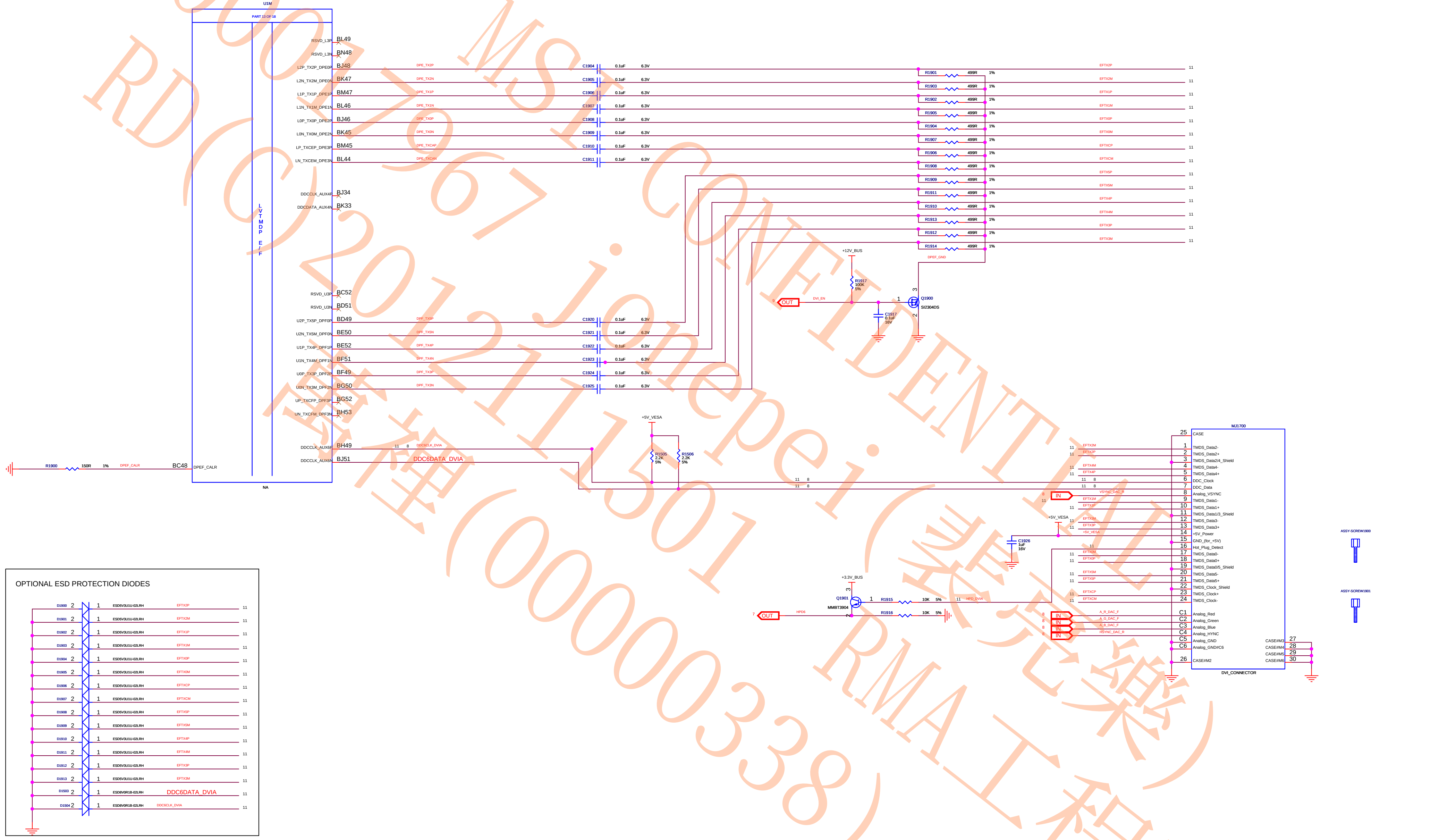
(10) PITCAIRN TMDP C/D



Micro-Star International Co., LTD.

<Title>		
Size: Custom	Document Number: <Doc>	Rev: <RevCode>
Date: Friday, February 24, 2012	Sheet 10 of 26	

(11) PITCAIRN LVTMDP E/F



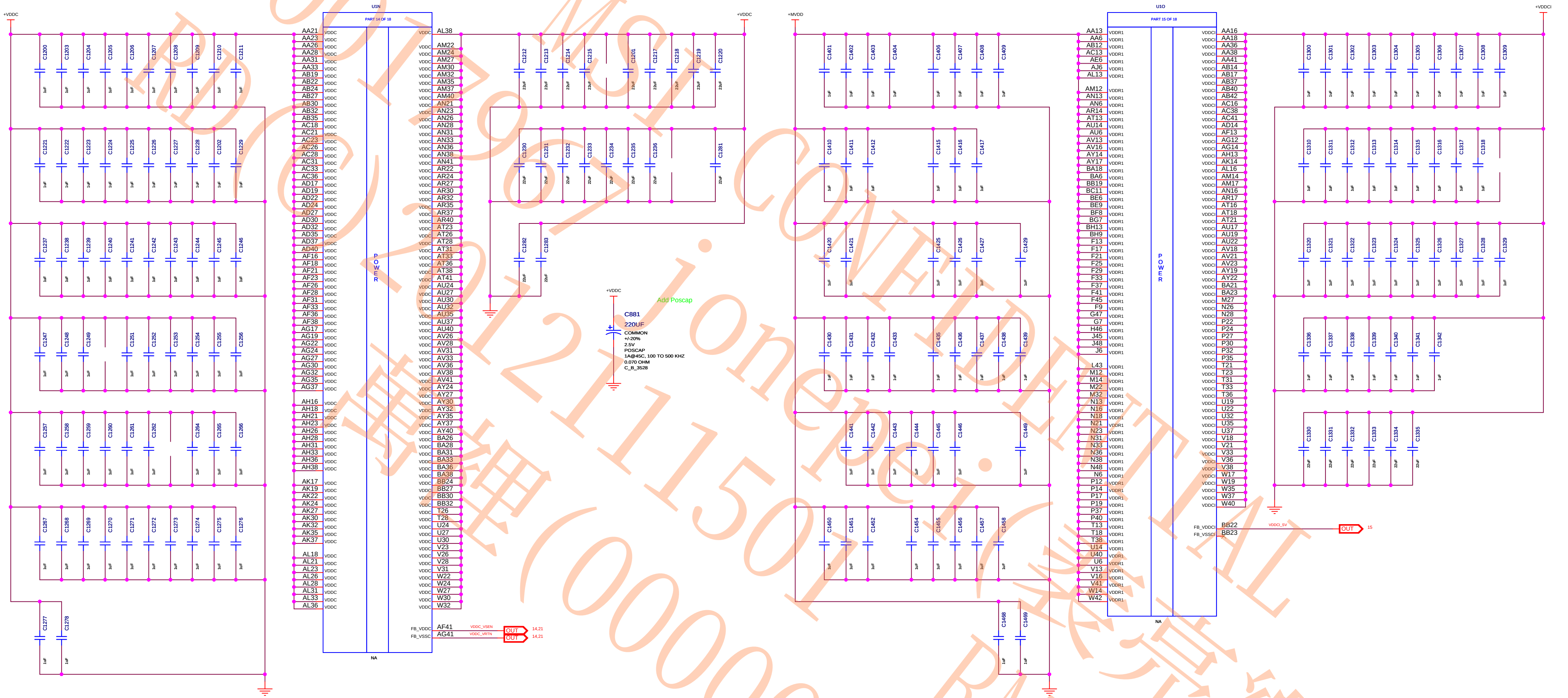
Micro-Star International Co., LTD.

<Title>

Size	Document Number	Rev
Custom	<Doc>	<RevCode>

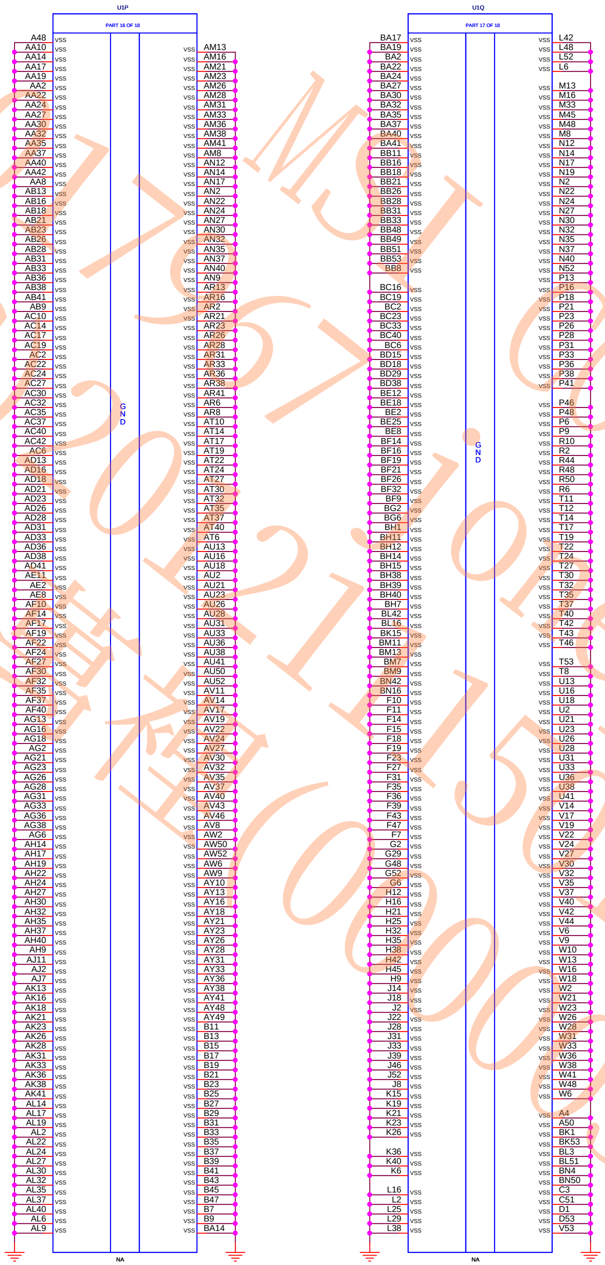
Date: Friday, February 24, 2012 Sheet 11 of 26

(12) PITCAIRN POWER

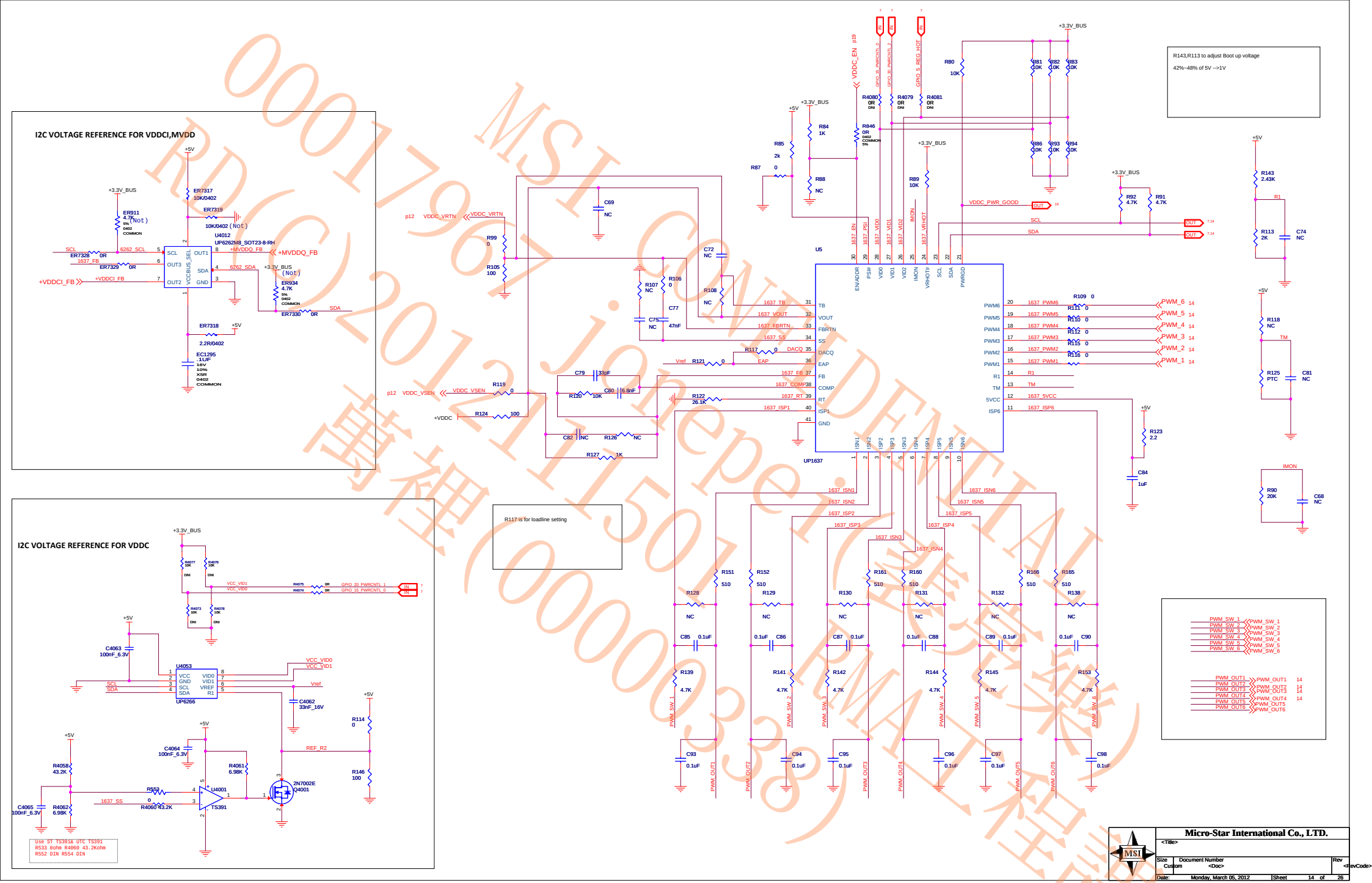


Micro-Star International Co., LTD.		
<Title>		
Size: Custom	Document Number: <Doc>	Rev: <RevCode>
Date: Friday, February 24, 2012	Sheet 12 of 26	

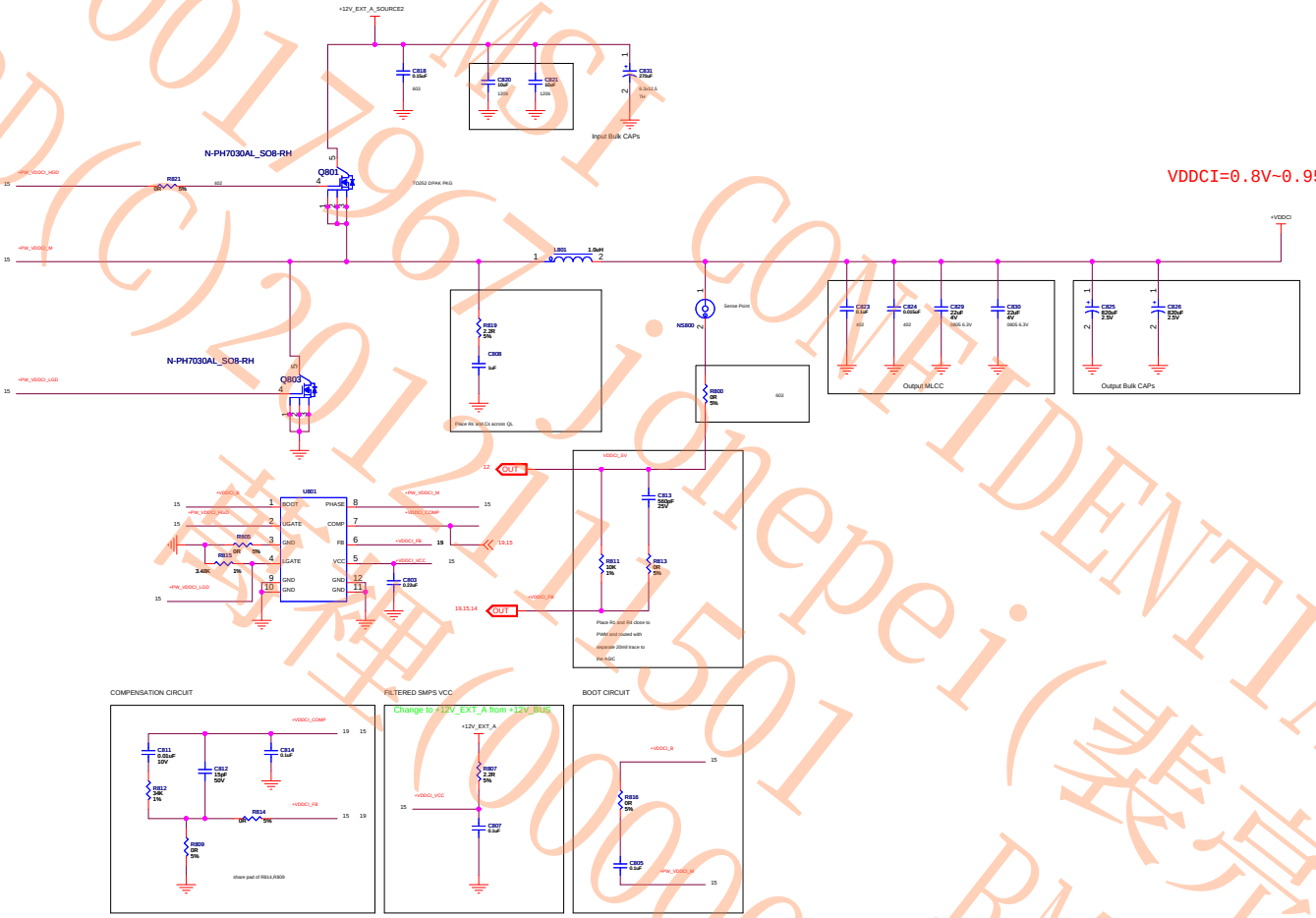
(13) PITCAIRN GROUND



Micro-Star International Co., LTD.		
<Title>		
Size: Custom	Document Number: <Doc>	Rev: <RevCode>
Date: Friday, February 24, 2012	Sheet 13 of 26	


I2C VOLTAGE REFERENCE FOR VDDCI,MVDD
I2C VOLTAGE REFERENCE FOR VDDC
R143,R113 to adjust Boot up voltage
42%~48% of 5V -->1V
R117 is for loadline setting
U5
UP1637
U4012
UP6262M8_SOT23-8-RH
U4053
UP6266
U4001
TS391
2N7002E
Q4001
VDDC_EN
VDDC_PWR_GOOD
VDDC_VRTN
VDDC_VSEN
+VDDCI_FB
+MVDDQ_FB
SCL
SDA
Micro-Star International Co., LTD.
Monday, March 05, 2012
Sheet 14 of 26

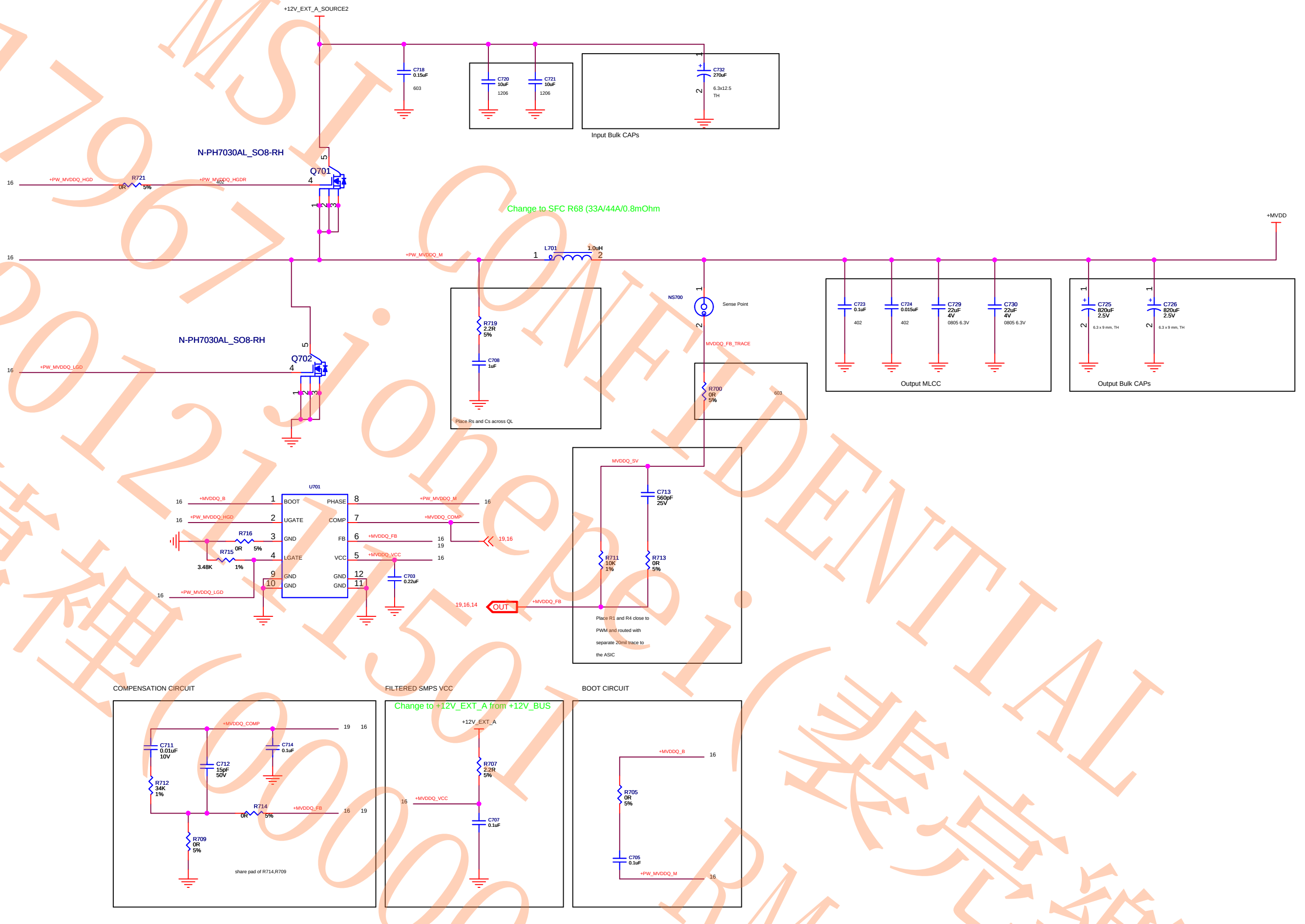
(15) VDDCI



VDDCI=0.8V~0.95V@A

	Micro-Star International Co., LTD.	
	<Title>	
Size: Custom	Document Number: <Doc>	Rev: <RevCode>
Date: Friday, February 24, 2012	Sheet 15 of 26	

(16) MVDD

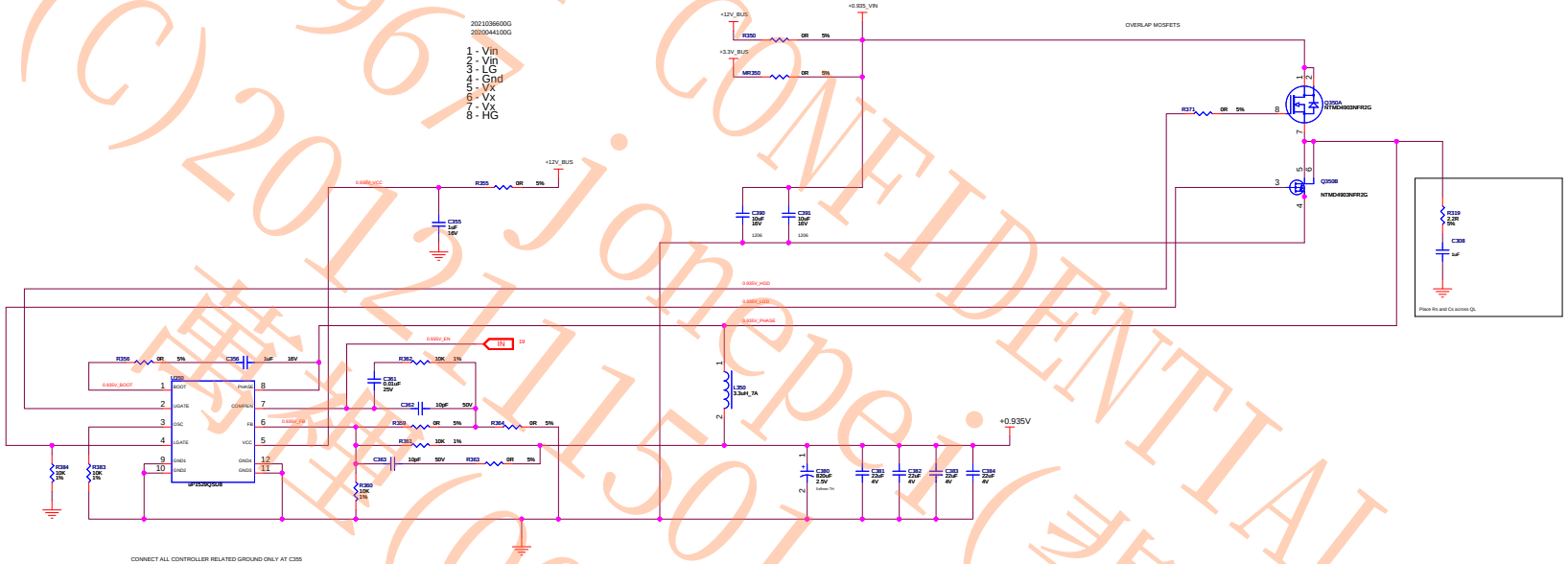


Layout guideline

1-Position the controller (U703) such that LGate(pin4) is the closet to gate of the MOSFETs. You can place the gate resistors R721 and R722 next to the gate of the MOSFETs. Make the gate drive traces(PW MVDDC LGD and PW MVDDC HGD) as short and as wide as possible to reduce the trace inductance.
2-Place the bypass capacitors for Vcc as well as Boost caps as close to the controller as possible. They are as follows;
Vcc bypass cap is C703, and Boost cap is C705.
3-Voltage amplifier compensation network. Place C714 close to the pin 7. Place the rest of the compensation network close to the pins 7 and 6. These are R710, R711, R713, C713 and R712, C711 and C712.

Micro-Star International Co., LTD.			
<Title>			
Size: Custom	Document Number: <Doc>		Rev: <RevCode>
Date: Friday, February 24, 2012		Sheet 16 of 26	

(17) 0.935V

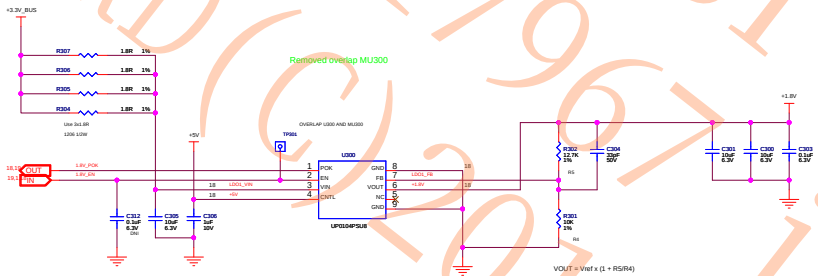


MSI	Micro-Star International Co., LTD.	
	<Title>	
Size: Custom	Document Number: <Doc>	Rev: <RevCode>
Date: Friday, February 24, 2012	Sheet 17 of 26	

(18) SMALL RAIL REGULATORS

LDO #1: VIN = 3.0V TO 3.6V MAX VOUT = +1.8V +/- 2% IOUT = 1.3A RMS MAX

PCB: 50 TO 70mm SQ. COPPER AREA FOR COOLING



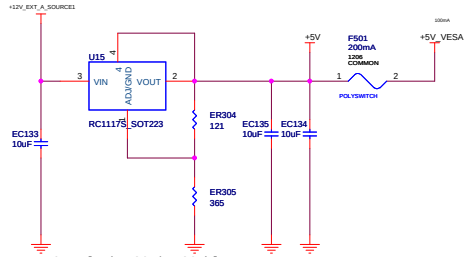
BIF_VDDC VOUT = TBD +/- 2% IOUT = TBD

Removed +BIF_VDDC

REGULATOR FOR +5V RAILS

IOUT MAX = 150mA

Removed 78M05 ,change to 1117

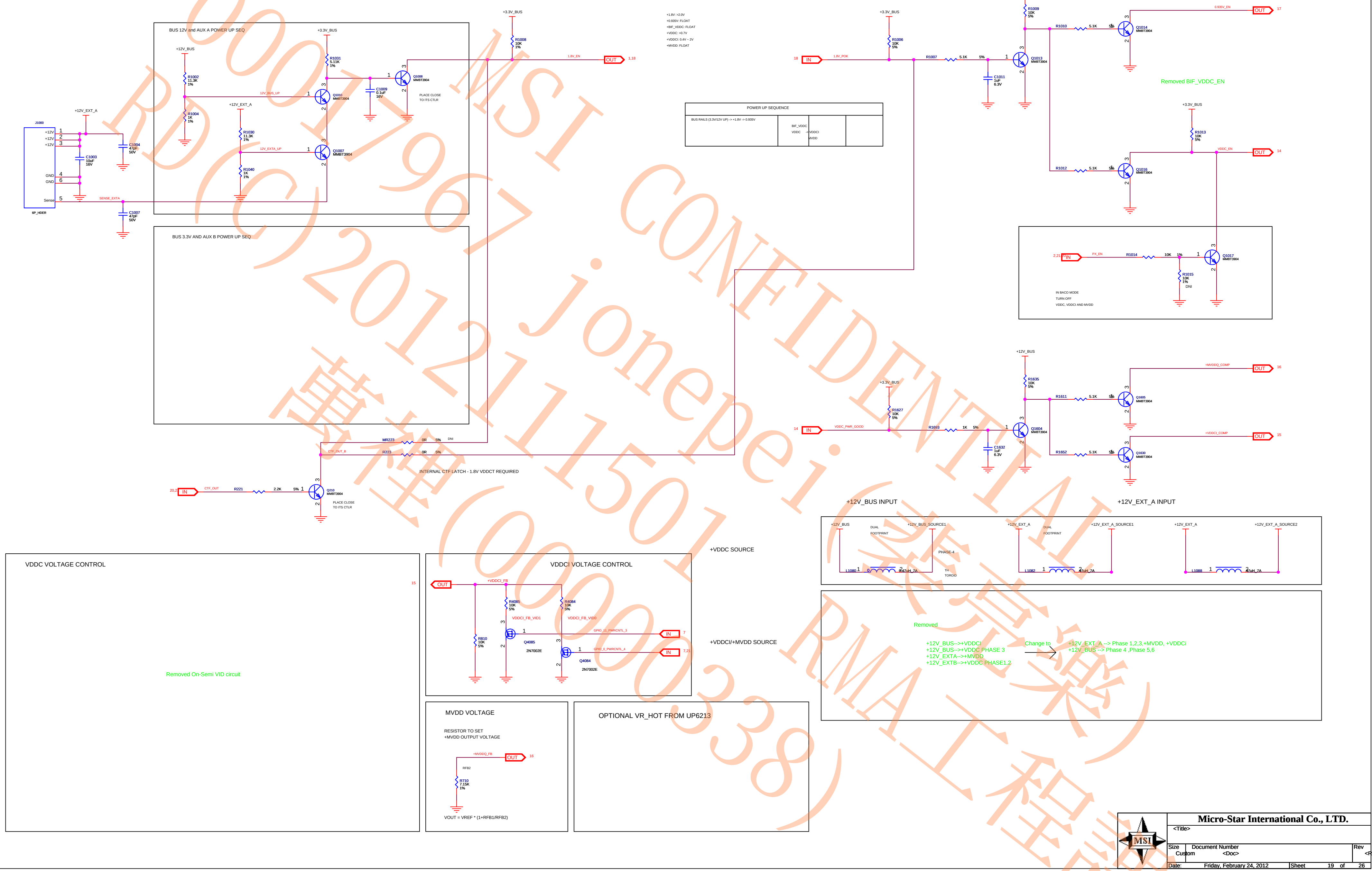


Vout=1.25V* [1+(ER305/ER304)]

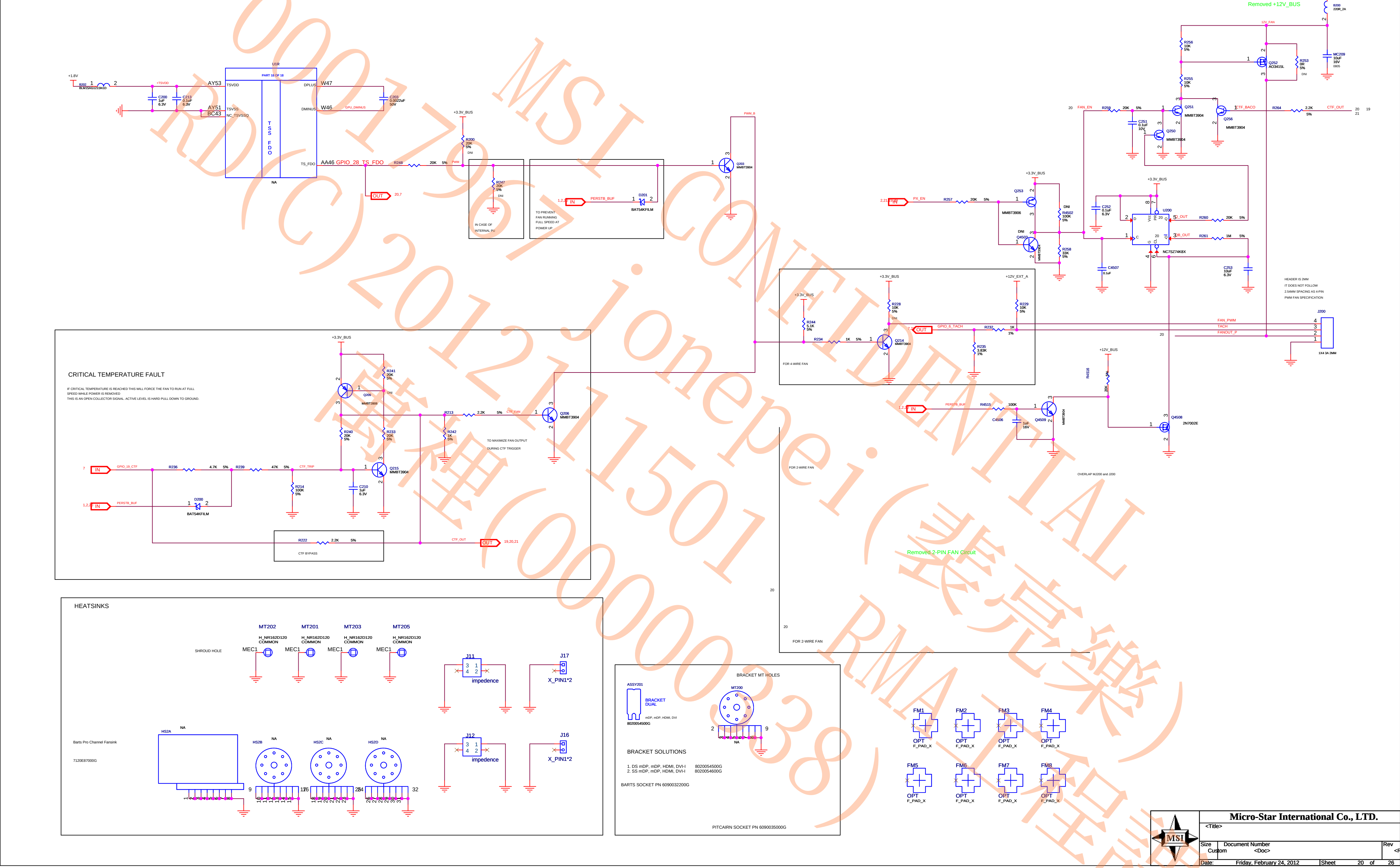
1 - Vin
2 - Vin
3 - LG
4 - Gnd
5 - Vx
6 - Vx
7 - Vx
8 - HG

Micro-Star International Co., LTD.		
<Title>		
Size: Custom	Document Number: <Doc>	Rev: <RevCode>
Date: Friday, February 24, 2012	Sheet 18 of 26	

(19) POWER MANAGEMENT

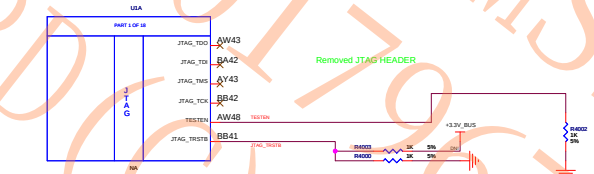


(20) MECHANICAL AND THERMAL MANAGEMENT



(21) DEBUG CIRCUITS

JTAG



Removed JTAG HEADER

FOR ALL BRING UP BOARDS DNI R4000 AND STUFF R4003
OTHERWISE THE TAPC WILL BE STUCK IN TEST-LOGIG-RESET
AND BE USELESS SINCE TRSTb IS NOT ON THE CONNECTOR

Removed SMBUS HEADER and PEX_EN HEADER

LM96163 FOR BACKUP THERMAL CONTROL

Removed LM96163

TACH CONNECTION IS FOR TESTING
AND RPM MEASUREMENT ONLY

SWITCH CONNECTIONS TO PINSTRAPS

Removed SWITCH

GPIO(28) - MLPS_DIS
0 - ENABLE MLPS
1 - DISALBE MLPS

GPIO(0) - TX_CFG_DRV_FULL_SWING
0: 50% TX OUTPUT SWING
1: FULL TX OUTPUT SWING (DEFAULT SETTING FOR DESKTOP)

GPIO(2) - BIF_GEN3_EN_A
0 : DRIVER CONTROLLED GEN3
1 : STRAP CONTROLLED GEN3

BYPASS CTF

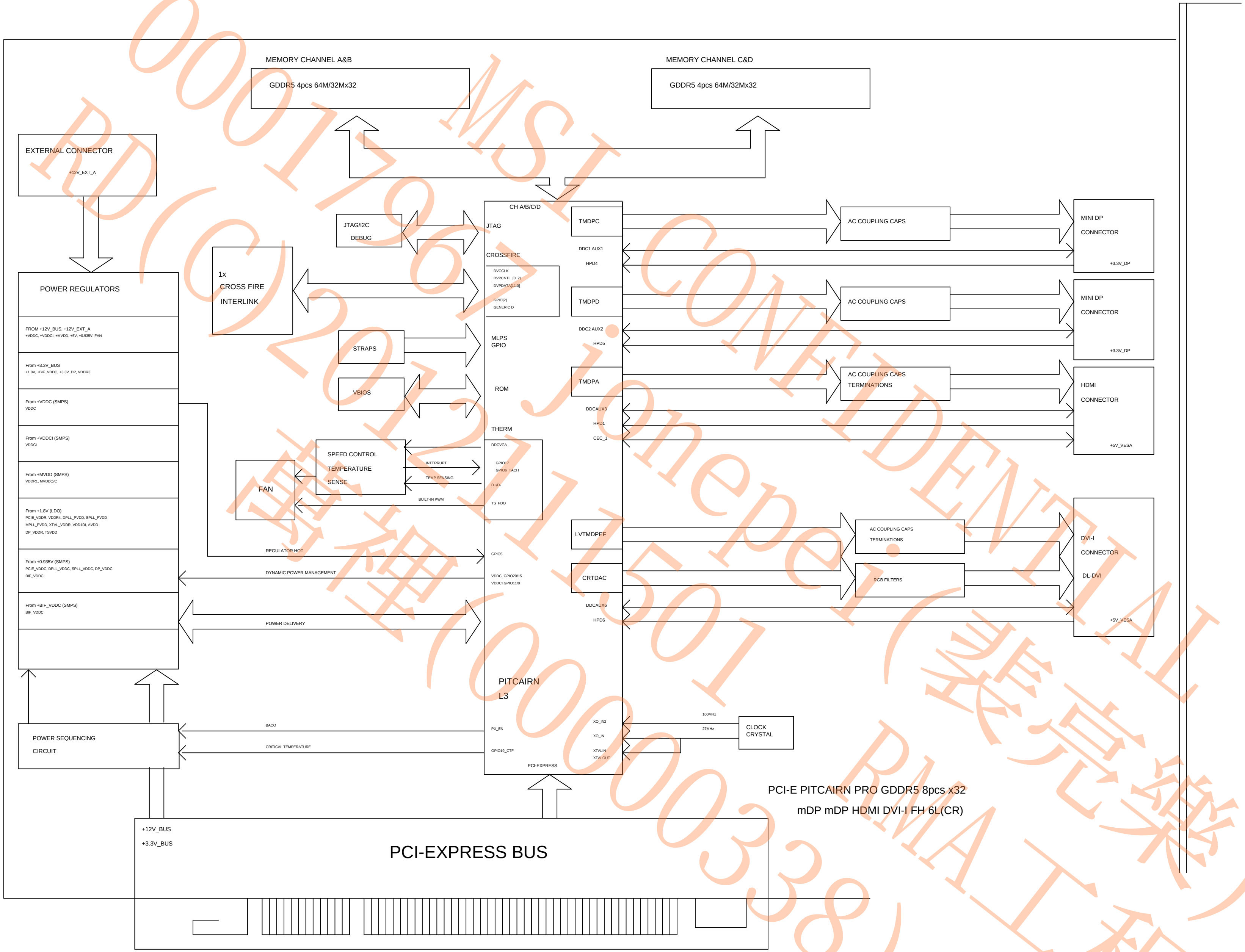
MAXIMIZE FAN

I2C ACCESS POINTS FOR VDDC CONTROLLER

I2C VDDC Control

Should be
placed near
SPMS, NOT
near U4050

MSI	Micro-Star International Co., LTD.	
	<Title>	
Size: Custom	Document Number: <Doc>	Rev: <RevCode>
Date: Friday, February 24, 2012	Sheet 21 of 26	



PCI-E PITCAIRN PRO GDDR5 8pcs x32
mDP mDP HDMI DVI-I FH 6L(CR)

Micro-Star International Co., LTD.			
<Title>			
Size	Document Number		Rev
Custom	<Doc>	1	<RevCode>
Date:	Friday, February 24, 2012	Sheet 22 of 26	

AMD

TITLE: TITLE

DOCUMENT NUMBER: 105-CXXX00-00A

DATE: Tue Dec 13 20:26:17 2011

SHEET NUMBER: 23 OF 23

REV: 1.0

REVISION HISTORY

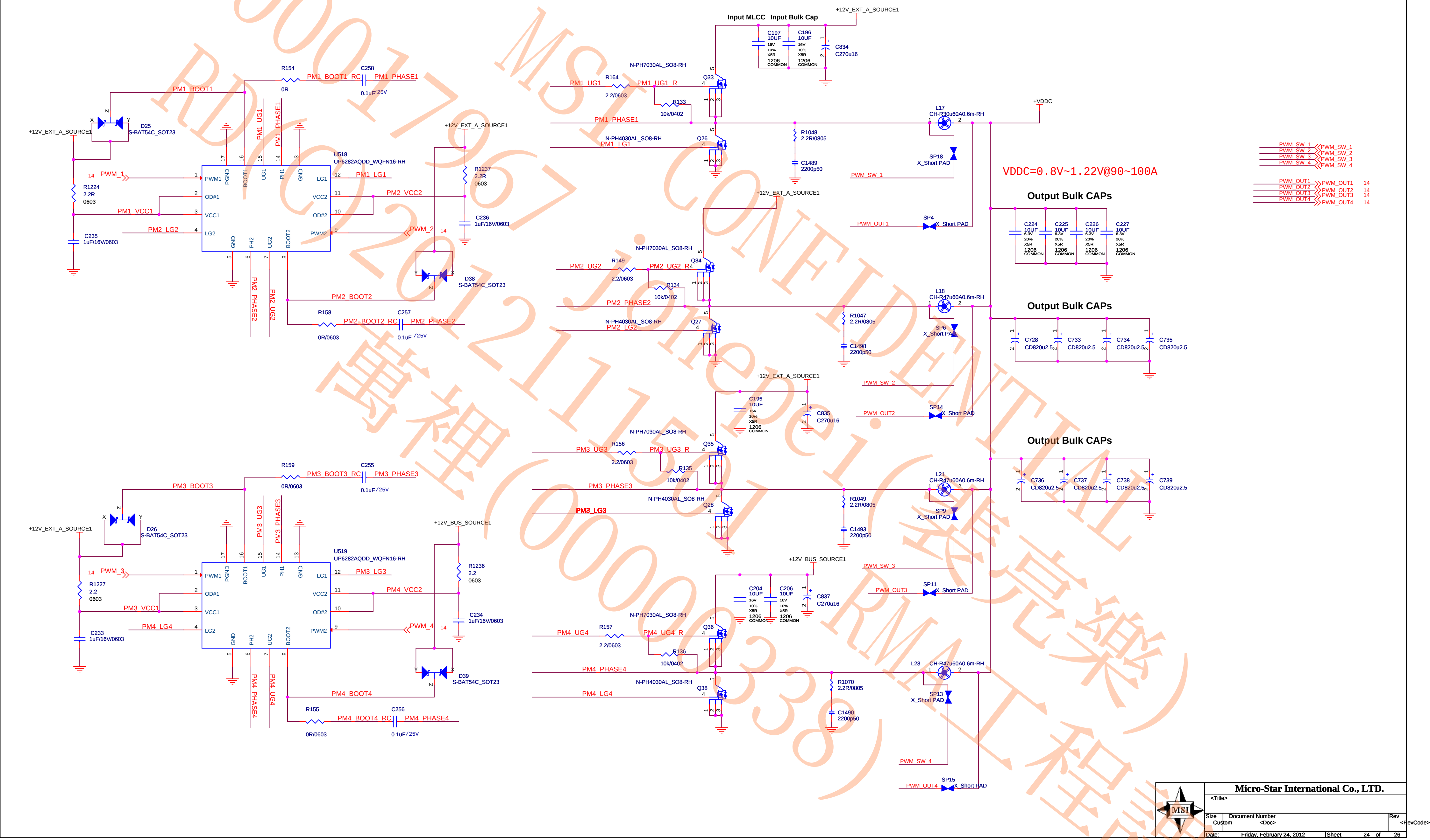
ENGINEER: XXX

NOTES: NOTE

AMD - GRAPHICS
1 COMMERCE VALLEY
MARKHAM, ONTARIO, L3T 7X6

SCH Rev	PCB Rev	Date	REVISION DESCRIPTON
0	00A	01/07/2010	PITCAIRN PRO CR DESIGN
0	00B	06/11/2011	Update Baco delay circuitry for 2-pin fan

Micro-Star International Co., LTD.
<Title>
Size: Custom | Document Number: <Doc> | Rev: 1 <RevCode>
Date: Friday, February 24, 2012 | Sheet 23 of 26

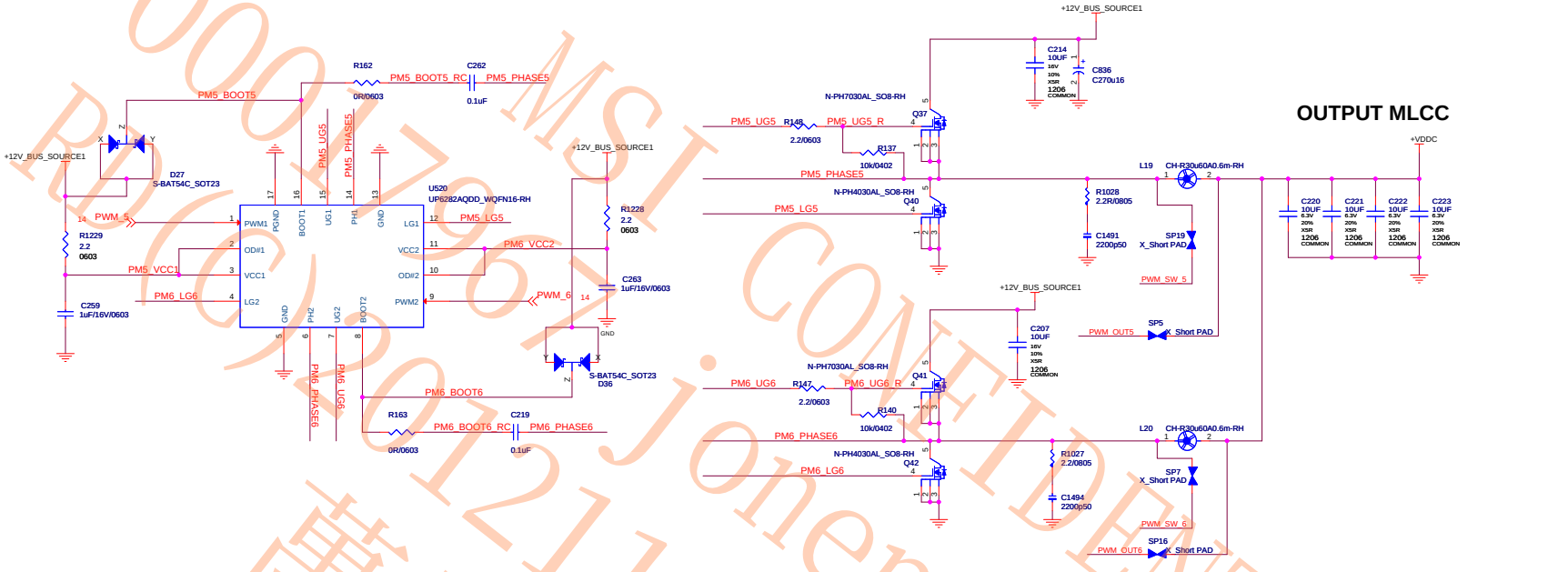


Micro-Star International Co., LTD.

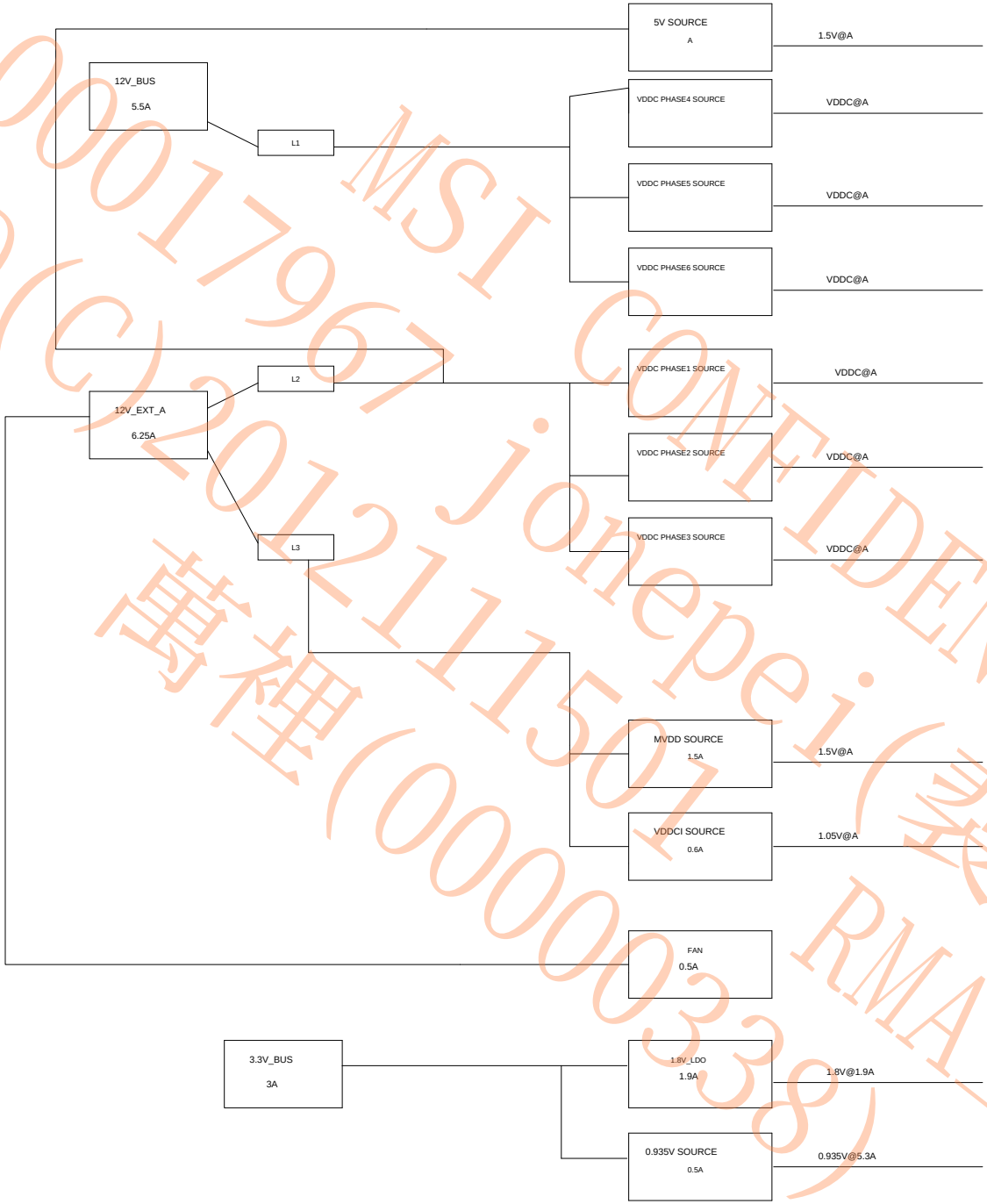
<Title>

Size	Document Number	Rev
Custom	<Doc>	<RevCode>

Date: Friday, February 24, 2012 Sheet 24 of 26



Micro-Star International Co., LTD.			
<Title>			
Size: Custom	Document Number: <Doc>		Rev: <RevCode>
Date: Friday, February 24, 2012	Sheet 25 of 26		



	Micro-Star International Co., LTD.	
	<Title>	
Size: Custom	Document Number: <Doc>	Rev: <RevCode>
Date: Friday, March 09, 2012	Sheet 26 of 26	