

PAGE SUMMARY:

Page 1: TABLE OF CONTENTS & REVISION HISTORY

Page 2: PCI EXPRESS 16X, NVVDD DECOUPLING CAPS,PEX, IOVDD/Q DECOUPLING CAPS

Page 3: FBA MEMORY INTERFACE, GPU FBVDD/Q DECOUPLING CAPS, FBVTT TERMINATION

Page 4: FBA 16Mx16 DDR2 MEMORIES, BANK 0..31

Page 5: FBA 16Mx16 DDR2 MEMORIES, 1ST BANK 32..63

Page 6: FBC MEMORY INTERFACE, GPU FBVTT, FBVDDQ

Page 7: FBC 16MX16 DDR2 MEMORIES, 2ND BANK 0..31

Page 8: FBC 16MX16 DDR2 MEMORIES, 2ND BANK 32..63

Page 9: DACA FILTERS, DACA SYNC BUFFERS & DB15 SOUTH

Page 10: DACC FILTERS, DACC SYNC BUFFERS & DB15 MID

Page 11: TMDS LINK A & PU's, DVI CONNECTOR SOUTH

Page 12: TMDS LINK C

Page 13: MIOA & MIOB

Page 14: DACB FILTERS, SYNC STRIPPER, MINIDIN CONNECTOR NORTH,HDTV HEADER

Page 15: GPU GND CONNECTION, XTAL

Page 16: JTAG, BIOS ROM, HDCP ROM, FAN CONTROL, GPIO

Page 17: BIOS STRAPS & MECHANICALS

Page 18: POWER SUPPLY: TMDS IOVDD,5V,A3V3

Page 19: PowerSupplyI: NVVDD, A1V8

Page 20: PowerSupplyII: FBVDDQ, PEX1V2

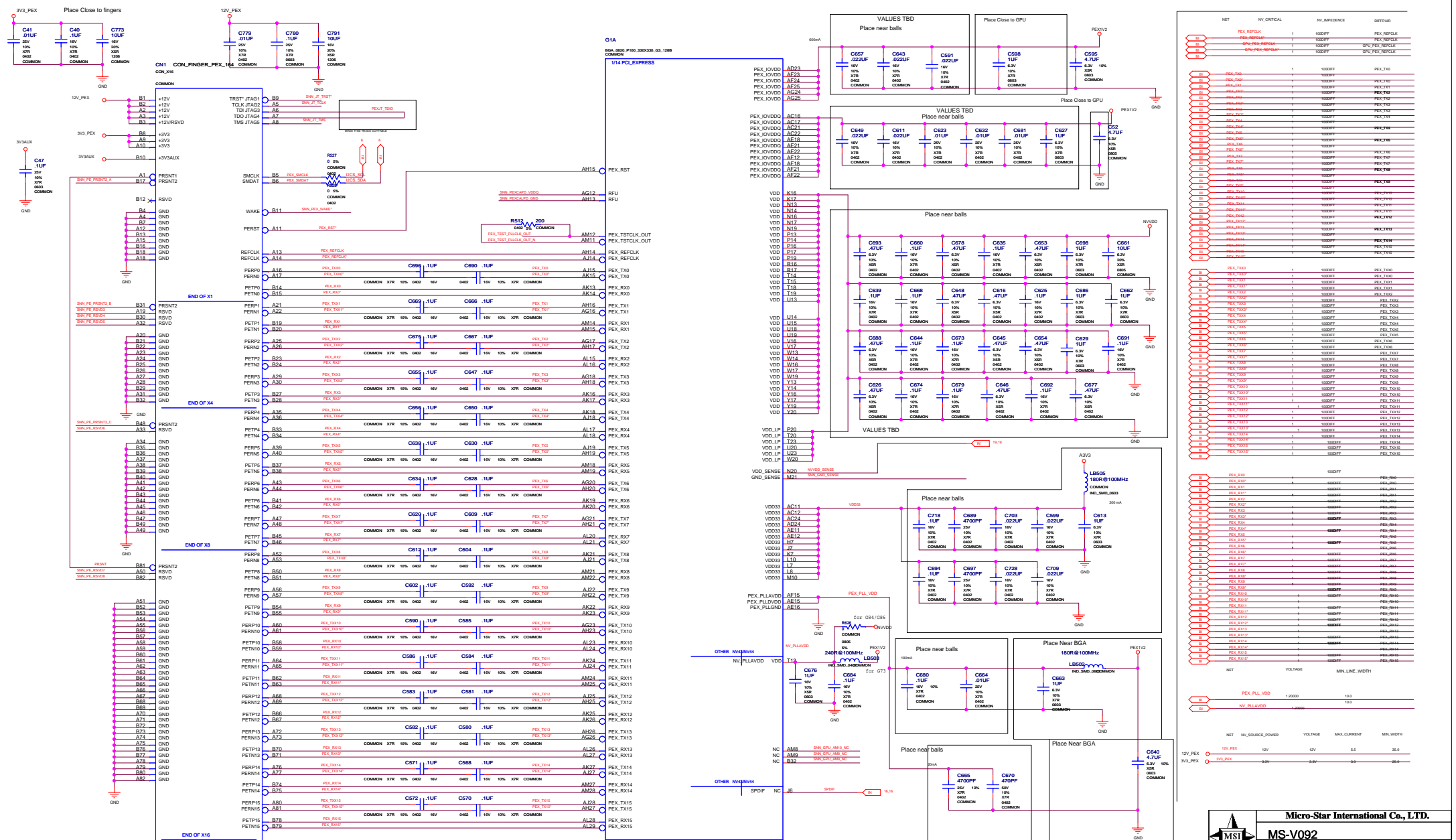
REV
HISTORY

Base on V092-0A modify

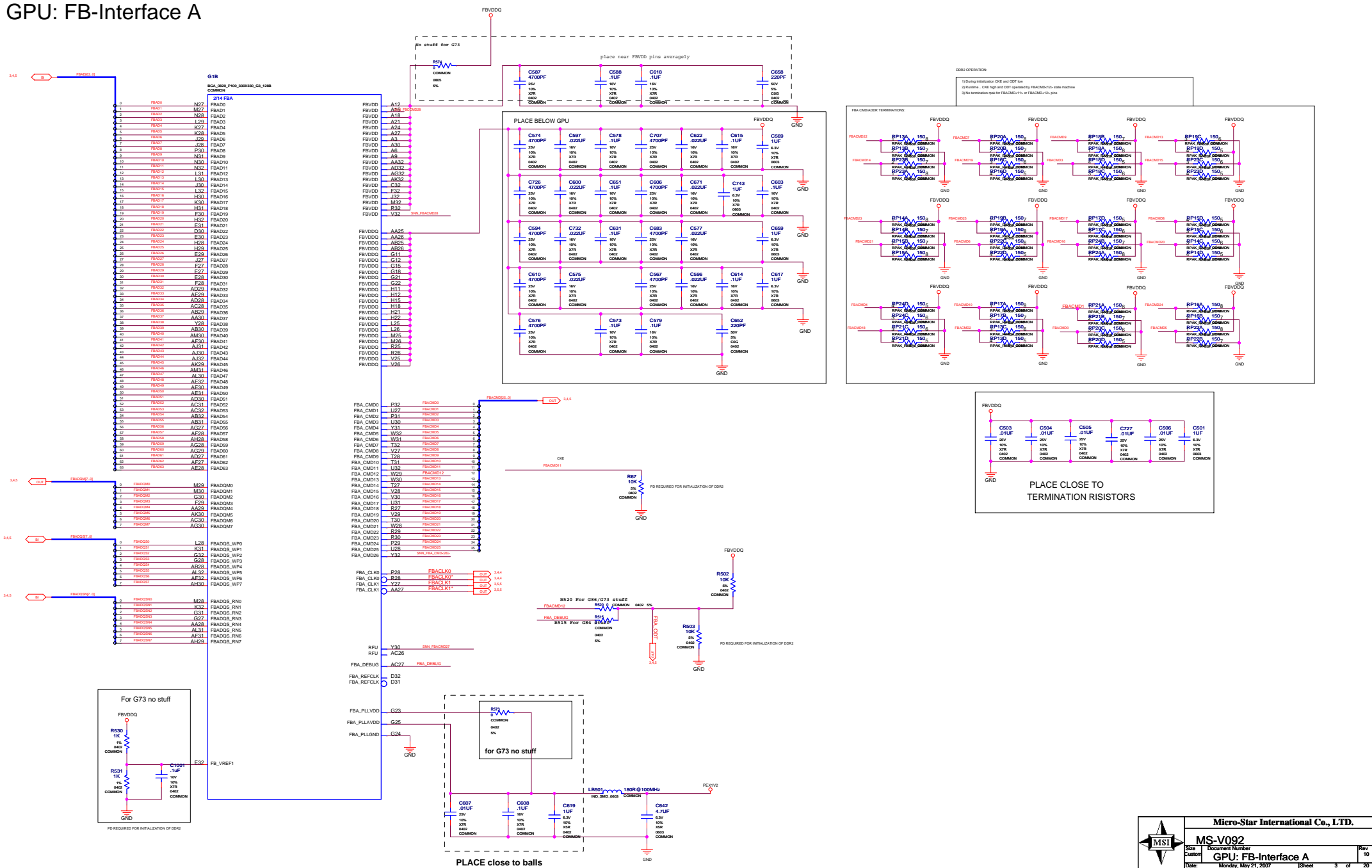
1.page 3: R574 footprint change to 0805 ;
2.C20 C11 C16 C48 footprint change to 15000P_8_3V ;
3.page 19: Q20 8 Q21 8 for 8VDDQ ;
4.page 2: GPU pin 711 add 50M R624 connect to 8VDDQ ;
5.page 6: add PRCSN 11 for CSE head 108 pull 1u
6.page 17: MIOA+5vadd R77 pull down to GND ;
7.page 17: R572 R568 change to pull1 down to GND ;
8.page 17: add pull up R627 + and connect to MIOB_R579C(G1.AF3) ;

REV	VARIANT	MPN	ASSEMBLY
B	0000	600-10501-0000-100	G79 400/350MHz 256MB 128bit DDR2 16MX16 DVI+H+VGA+HDTVOUT
1	0001	600-10501-0001-100	G73+V 375/350MHz 256MB 128bit DDR2 16MX16 DVI+H+VGA+HDTVOUT
2	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
3	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
4	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
5	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
6	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
7	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
8	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
9	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
10	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
11	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
12	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
13	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
14	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
15	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>

16X PCIe Interface

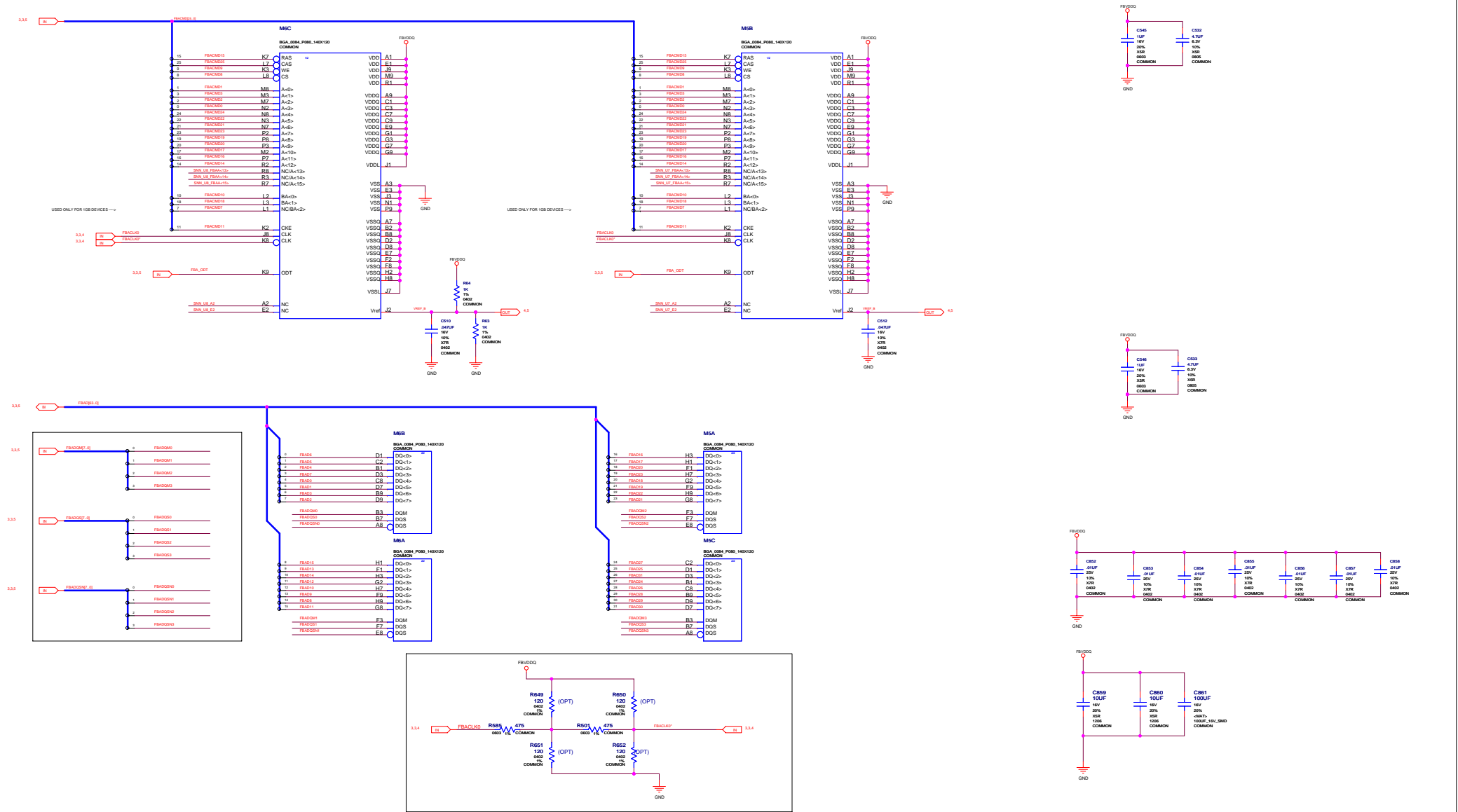


GPU: FB-Interface A



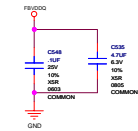
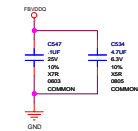
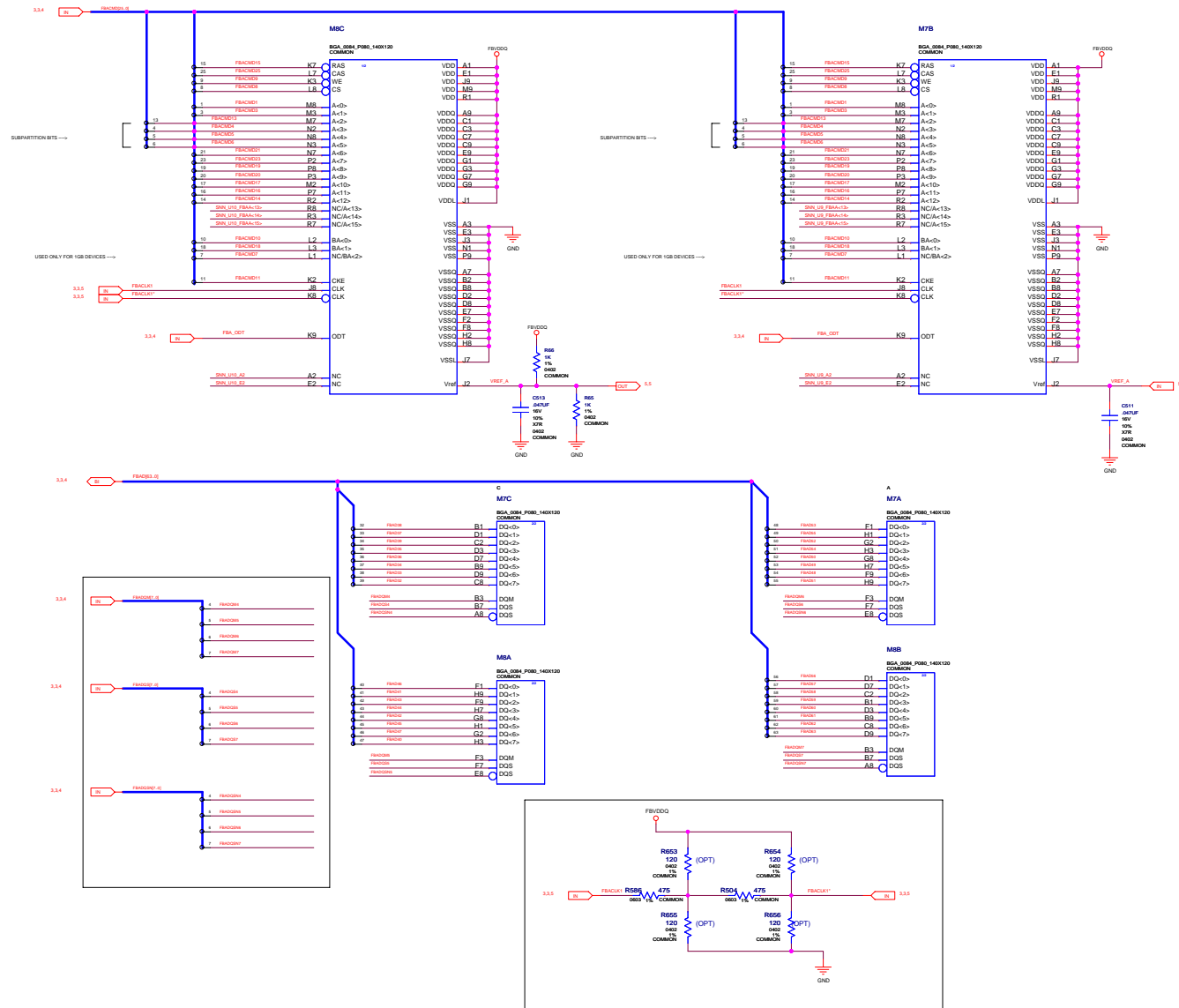
FBA MEMORY 1st bank 0..31

PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY

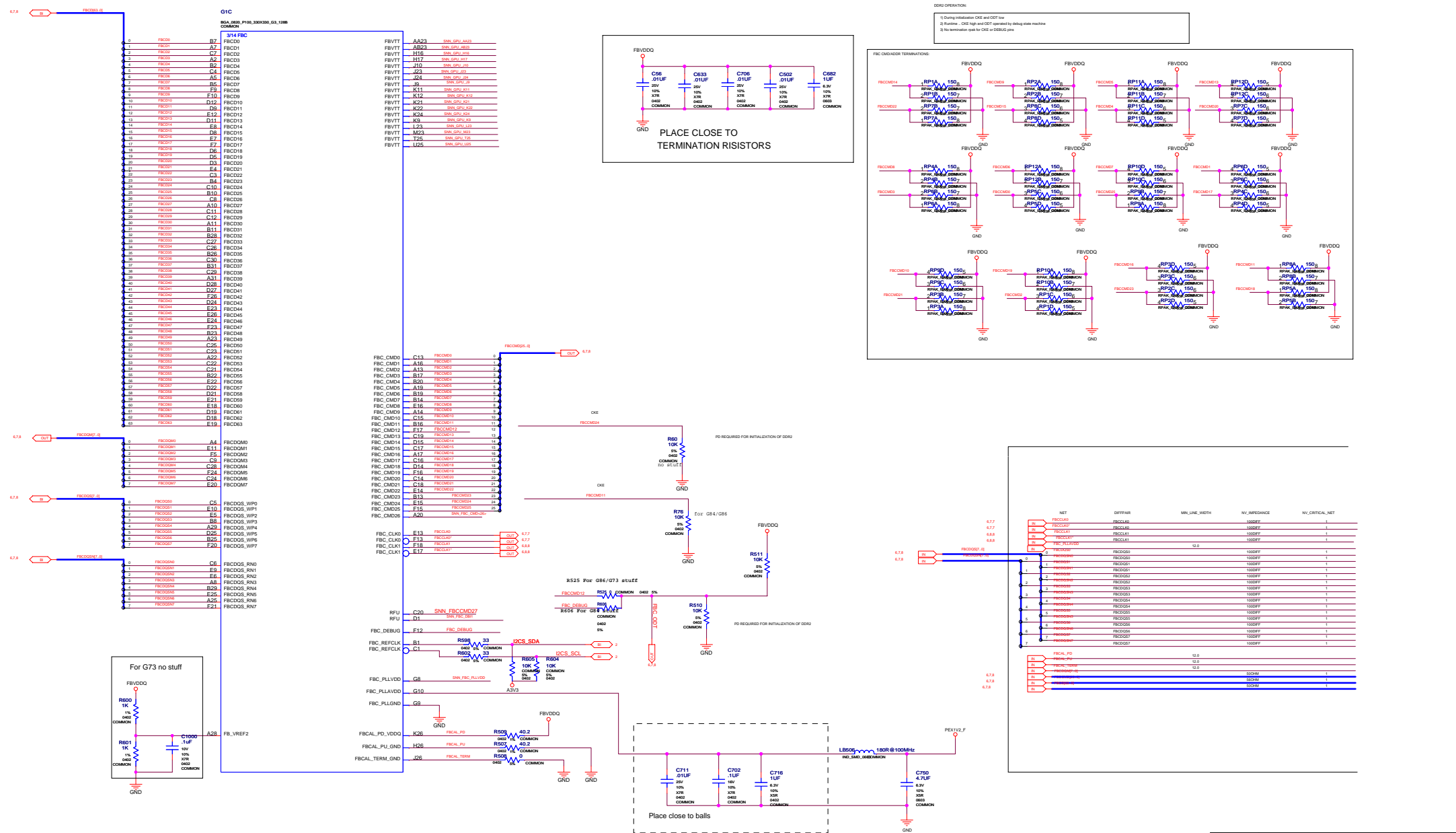


FBA MEMORY 1st bank 32..63

PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY

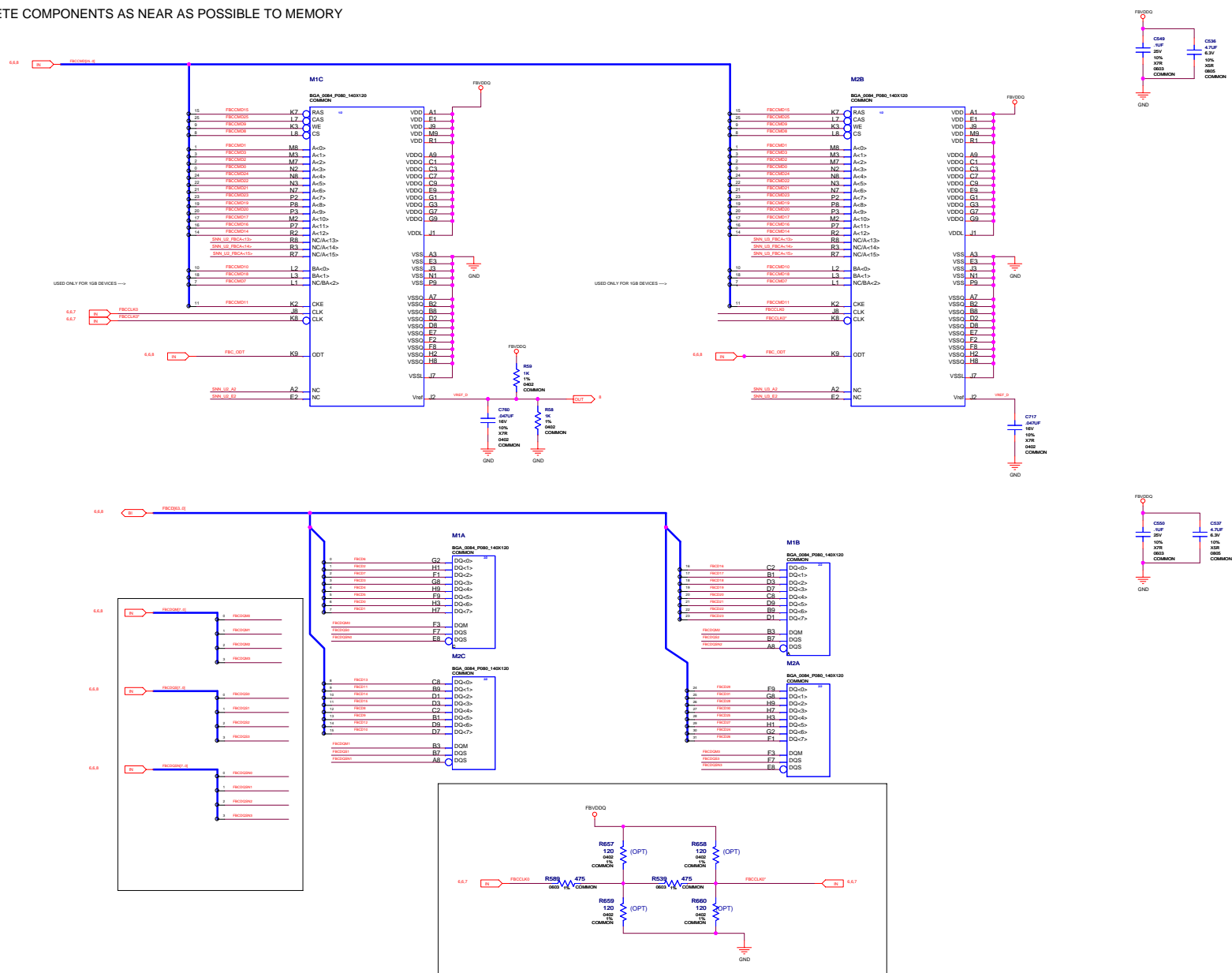


GPU: FB-Interface C



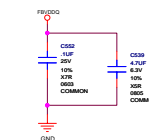
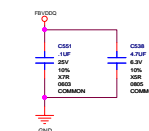
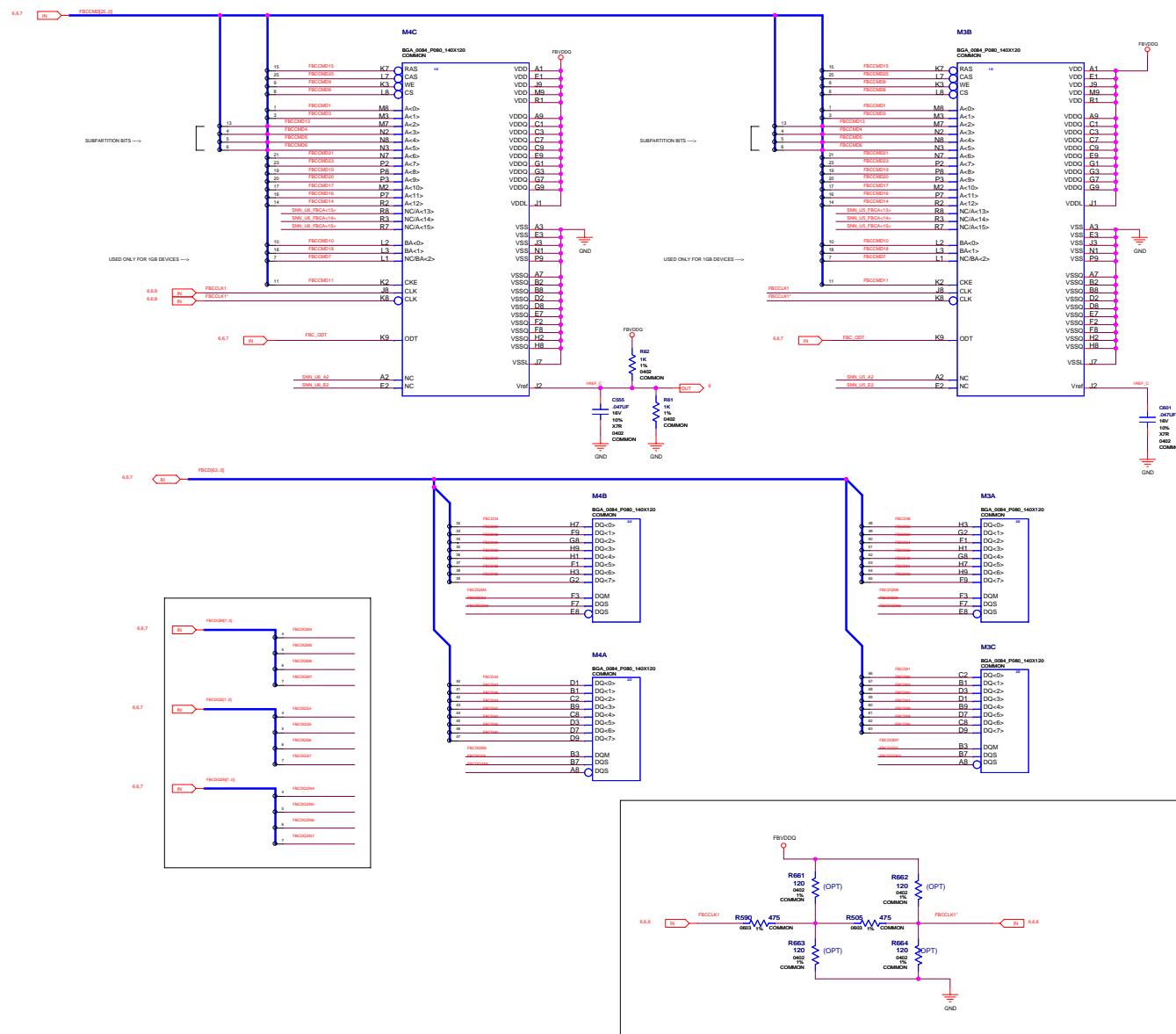
FBC MEMORY 2nd bank 0..31

PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY



FBC MEMORY 2nd bank 32..63

PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY

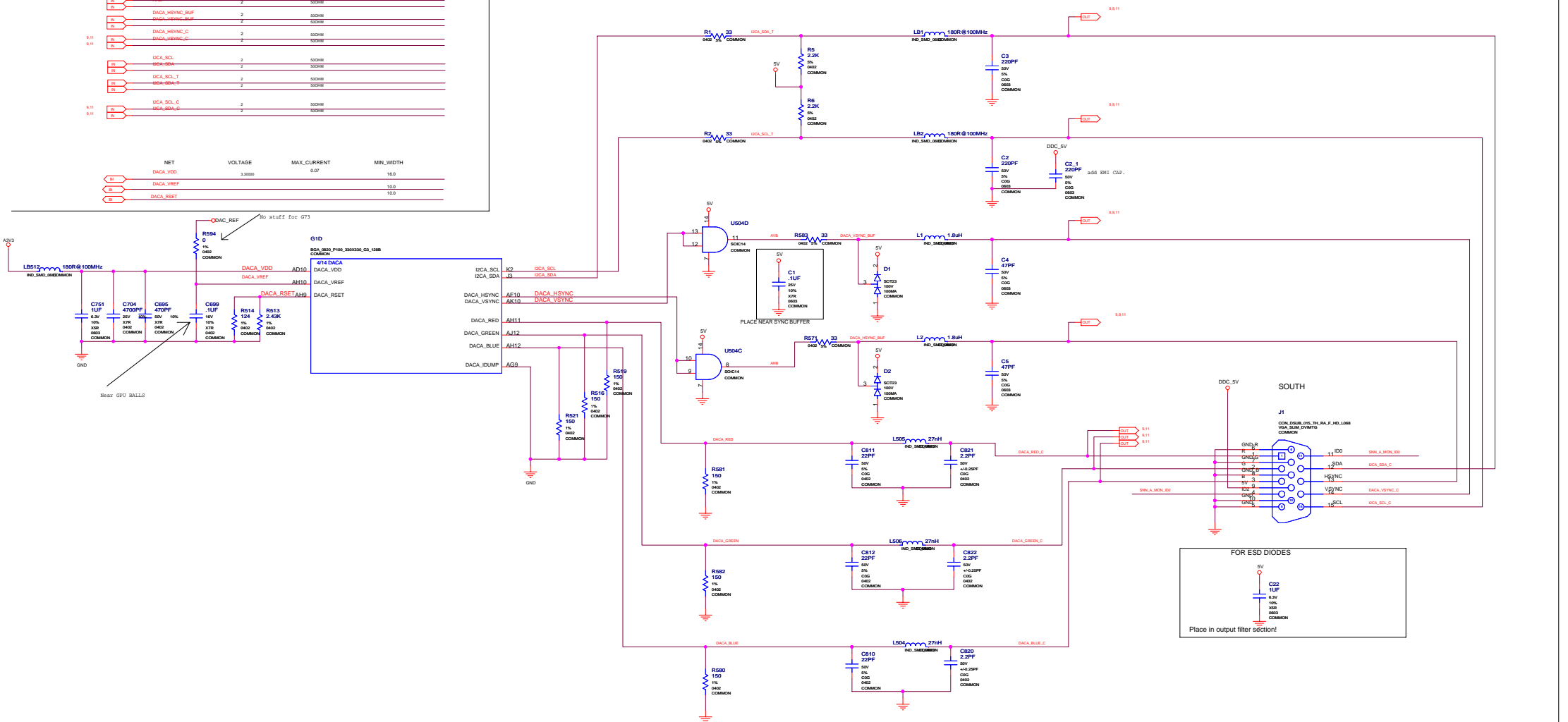


Primary Display (DACA), Slim DB15

DACA NET RULES

NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR
DACA_RED	1	50OHM	
DACA_GREEN	1	50OHM	
DACA_BLUE	1	50OHM	
DACA_RED_C	1	50OHM	
DACA_GREEN_C	1	50OHM	
DACA_BLUE_C	1	50OHM	
DACA_HSYNC	2	50OHM	
DACA_VSYNC	2	50OHM	
AVB	2	50OHM	
DACA_HSYNC_BUF	2	50OHM	
DACA_VSYNC_BUF	2	50OHM	
DACA_HSYNC_C	2	50OHM	
DACA_VSYNC_C	2	50OHM	
DACA_SCL	2	50OHM	
DACA_SDA	2	50OHM	
DACA_SCL_T	2	50OHM	
DACA_SDA_T	2	50OHM	
DACA_SCL_C	2	50OHM	
DACA_SDA_C	2	50OHM	
DACA_VDD	3.3000	0.07	16.0
DACA_VREF			10.0
DACA_RST			10.0

DACA RGB-FILTER

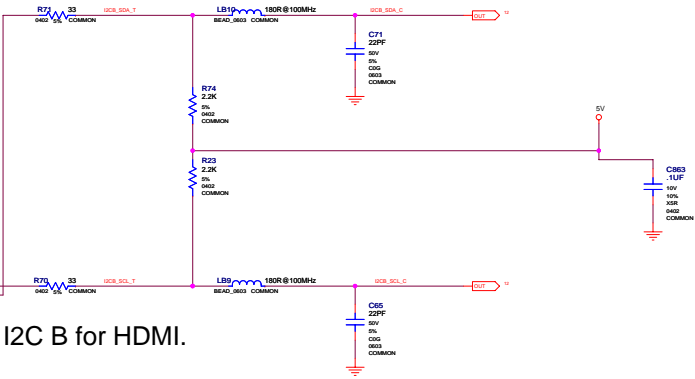
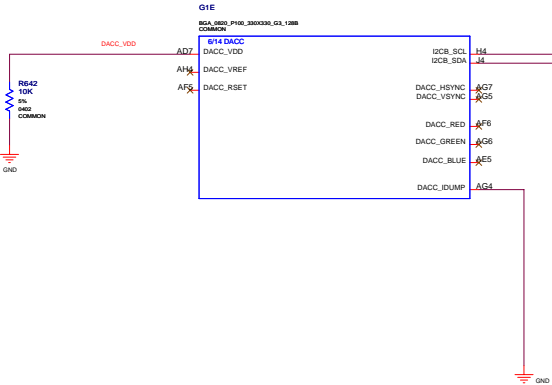


Secondary Display (DACC), DB15

DACC NET RULES

NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR
DACC_RED	1	50OHM	
DACC_GREEN	1	50OHM	
DACC_BLUE	1	50OHM	
DACC_RED_C	1	50OHM	
DACC_GREEN_C	1	50OHM	
DACC_BLUE_C	1	50OHM	
DACC_HSYNC	2	50OHM	
DACC_VSYNC	2	50OHM	
CVB	2	50OHM	
FVB	2	50OHM	
DACC_HSYNC_BUF	2	50OHM	
DACC_HSYNC_BUF	2	50OHM	
DACC_HSYNC_C	2	50OHM	
DACC_VSYNC_C	2	50OHM	
DCB_SCL	2	50OHM	
DCB_SDA	2	50OHM	
DCB_SCL_T	2	50OHM	
DCB_SDA_T	2	50OHM	
DCB_SCL_C	2	50OHM	
DCB_SDA_C	2	50OHM	
NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
DACC_VDD	3.30000	0.14	16.0
DACC_VREF			10.0
DACC_RSET			10.0

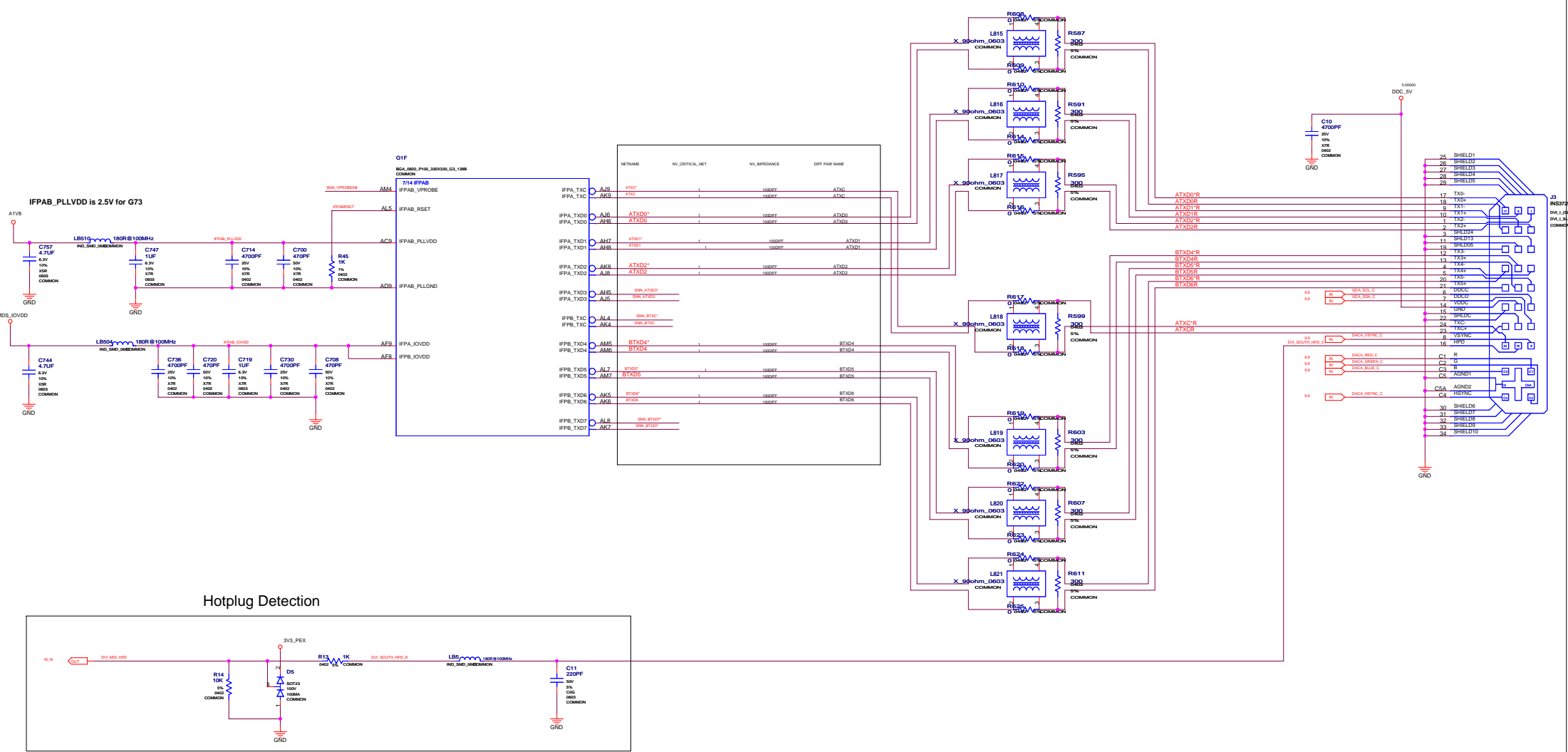
I2C B for HDMI.



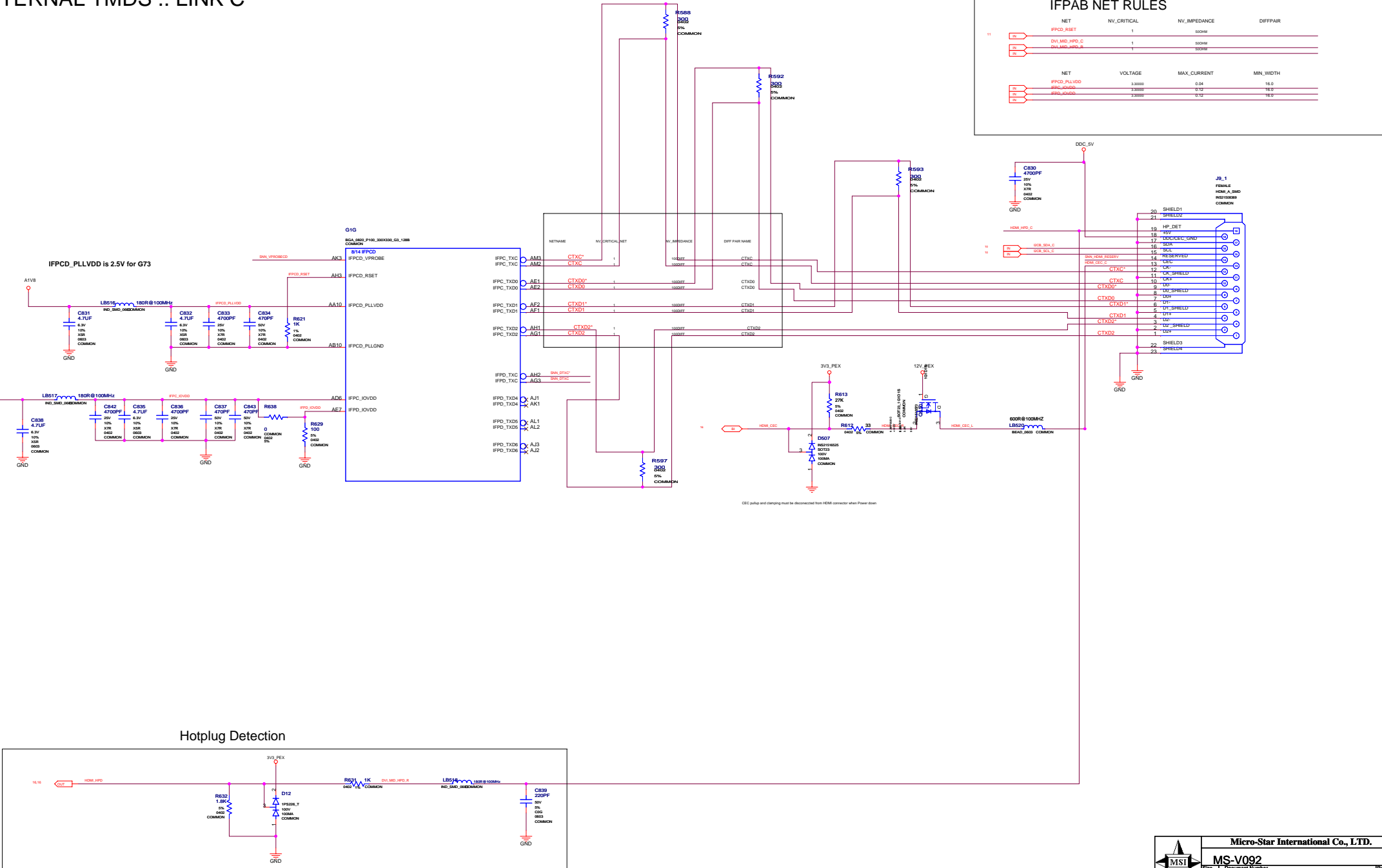
INTERNAL TMDS .. LINK A & B

IFPAB NET RULES

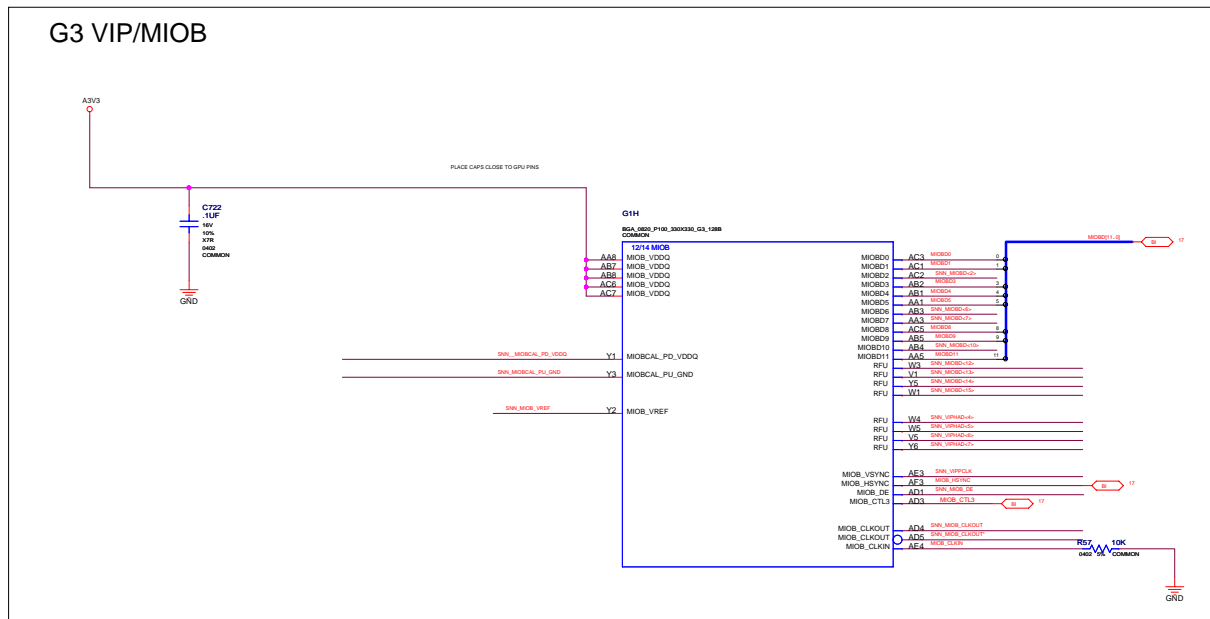
	NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR
	NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
1	IFPAB_PLVDDO	2.500V	0.05	16.0
2	IFPAB_PVDDO	2.500V	0.24	16.0
3	IFPABSET			12.0
4	DVI_SOUTH_HPD_C	1	500NM	
5	DVI_SOUTH_HPD_R	1	500NM	



INTERNAL TMDS .. LINK C



G3 VIP/MIOB

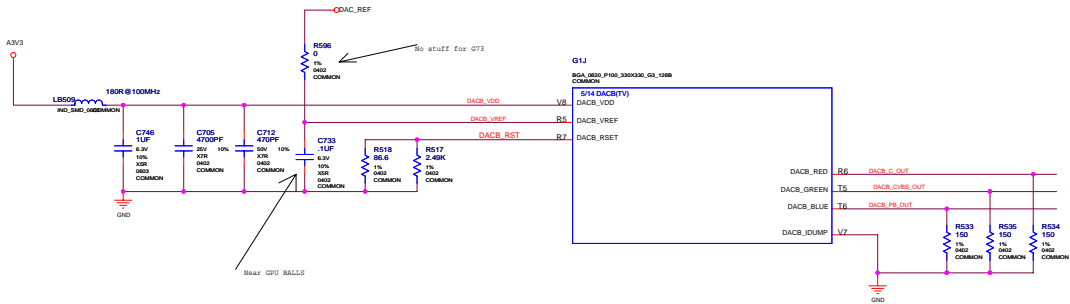
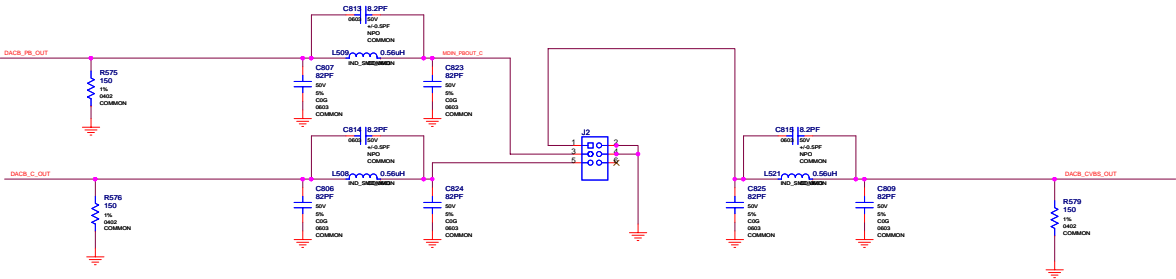


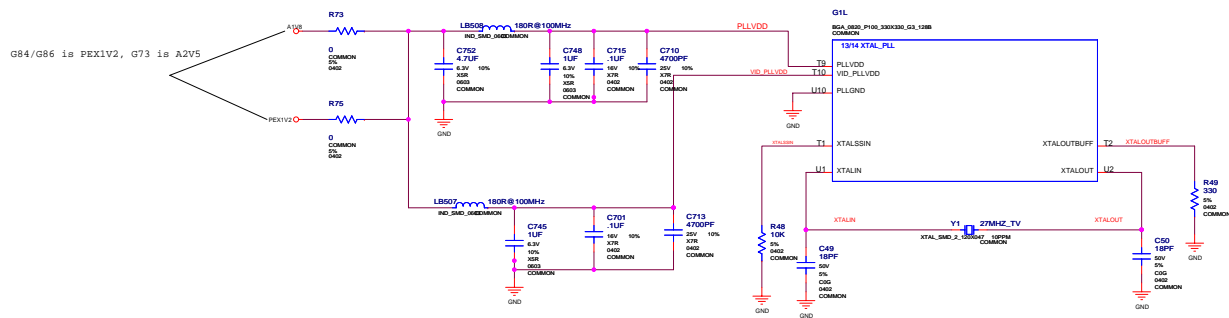
DACB .. MiniDIN VIDEO OUT CONNECTOR


DACB .. MiniDIN VIDEO OUT CONNECTOR

DACB NET RULES

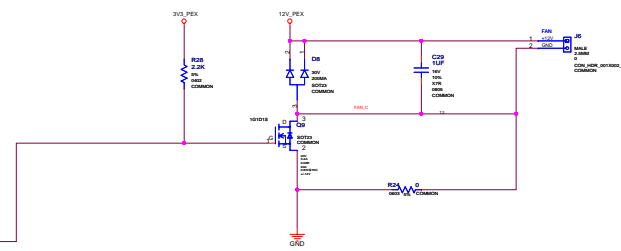
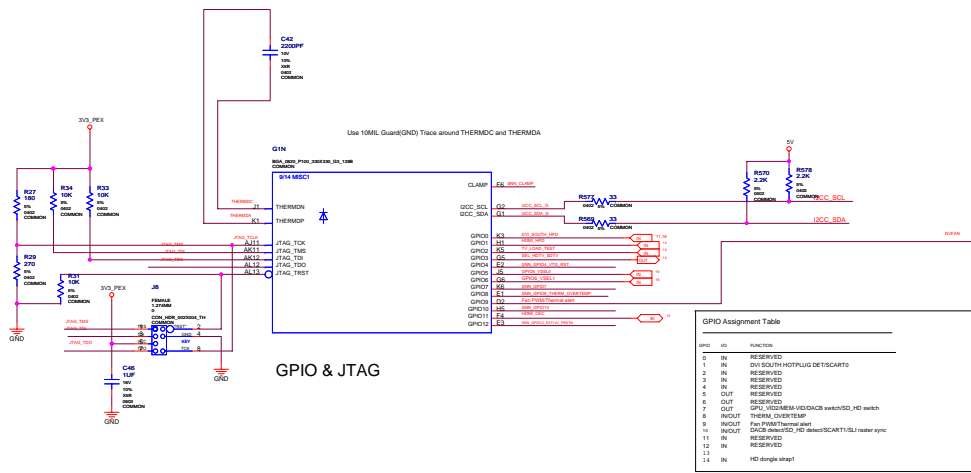
NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR
DACB_C_OUT	1	50OHM	
MDN_COUT_C	1	50OHM	
DACB_CVBS_OUT	1	50OHM	
MDN_YOUT_C	1	50OHM	
DACB_PB_OUT	1	50OHM	
MDN_PBOUT_C	1	50OHM	
MDN_SCL_C	2	50OHM	
MDN_SDA_C	2	50OHM	
NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
DACB_VDD	3.3000V	0.07	16.0
DACB_VREF			16.0
DACB_RST			16.0



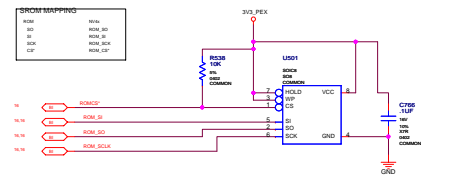


	Micro-Star International Co., LTD.		
	MS-V092		
	Size Custom	Document Number GND/XTAL/PLLVD	Rev 10
	Date: Monday May 21, 2007	Sheet 16 of 20	

GPIO / JTAG / HDCP / BIOS / SPDIF



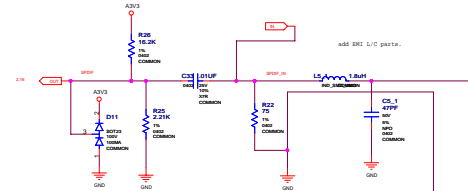
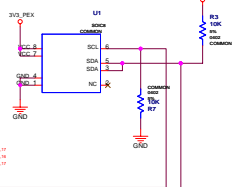
BIOS (serial)



MISC NET RULES

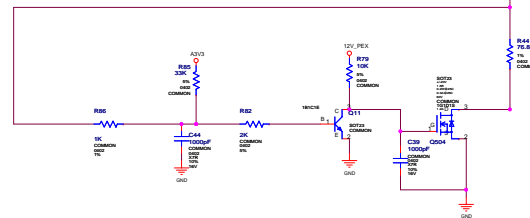
	SET	NV_CRITICAL	NV_IMPEDANCE	DIFFRACTION
15.18	SDC SOL	2	SDC SOL	
15.19	SDC SOL	2	SDC SOL	
15.20	SDC SOL 1	2	SDC SOL	
15.21	SDC SOL 2	2	SDC SOL	
15.22	SDC SOL	2	SDC SOL	
15.23	SDC SOL	2	SDC SOL	
15.24	SDC SOL	2	SDC SOL	
15.25	SDC SOL	2	SDC SOL	
15.26	SDC SOL	2	SDC SOL	
15.27	SDC SOL	2	SDC SOL	
15.28	SDC SOL	2	SDC SOL	
15.29	SDC SOL	2	SDC SOL	
15.30	SDC SOL	2	SDC SOL	
15.31	SDC SOL	2	SDC SOL	
15.32	SDC SOL	2	SDC SOL	
15.33	SDC SOL	2	SDC SOL	
15.34	SDC SOL	2	SDC SOL	
15.35	SDC SOL	2	SDC SOL	
15.36	SDC SOL	2	SDC SOL	
15.37	SDC SOL	2	SDC SOL	
15.38	SDC SOL	2	SDC SOL	
15.39	SDC SOL	2	SDC SOL	
15.40	SDC SOL	2	SDC SOL	
15.41	SDC SOL	2	SDC SOL	
15.42	SDC SOL	2	SDC SOL	
15.43	SDC SOL	2	SDC SOL	
15.44	SDC SOL	2	SDC SOL	
15.45	SDC SOL	2	SDC SOL	
15.46	SDC SOL	2	SDC SOL	
15.47	SDC SOL	2	SDC SOL	
15.48	SDC SOL	2	SDC SOL	
15.49	SDC SOL	2	SDC SOL	
15.50	SDC SOL	2	SDC SOL	
15.51	SDC SOL	2	SDC SOL	
15.52	SDC SOL	2	SDC SOL	
15.53	SDC SOL	2	SDC SOL	
15.54	SDC SOL	2	SDC SOL	
15.55	SDC SOL	2	SDC SOL	
15.56	SDC SOL	2	SDC SOL	
15.57	SDC SOL	2	SDC SOL	
15.58	SDC SOL	2	SDC SOL	
15.59	SDC SOL	2	SDC SOL	
15.60	SDC SOL	2	SDC SOL	
15.61	SDC SOL	2	SDC SOL	
15.62	SDC SOL	2	SDC SOL	
15.63	SDC SOL	2	SDC SOL	
15.64	SDC SOL	2	SDC SOL	
15.65	SDC SOL	2	SDC SOL	
15.66	SDC SOL	2	SDC SOL	
15.67	SDC SOL	2	SDC SOL	
15.68	SDC SOL	2	SDC SOL	
15.69	SDC SOL	2	SDC SOL	
15.70	SDC SOL	2	SDC SOL	
15.71	SDC SOL	2	SDC SOL	
15.72	SDC SOL	2	SDC SOL	
15.73	SDC SOL	2	SDC SOL	
15.74	SDC SOL	2	SDC SOL	
15.75	SDC SOL	2	SDC SOL	
15.76	SDC SOL	2	SDC SOL	
15.77	SDC SOL	2	SDC SOL	
15.78	SDC SOL	2	SDC SOL	
15.79	SDC SOL	2	SDC SOL	
15.80	SDC SOL	2	SDC SOL	
15.81	SDC SOL	2	SDC SOL	
15.82	SDC SOL	2	SDC SOL	
15.83	SDC SOL	2	SDC SOL	
15.84	SDC SOL	2	SDC SOL	
15.85	SDC SOL	2	SDC SOL	
15.86	SDC SOL	2	SDC SOL	
15.87	SDC SOL	2	SDC SOL	
15.88	SDC SOL	2	SDC SOL	
15.89	SDC SOL	2	SDC SOL	
15.90	SDC SOL	2	SDC SOL	
15.91	SDC SOL	2	SDC SOL	
15.92	SDC SOL	2	SDC SOL	
15.93	SDC SOL	2	SDC SOL	
15.94	SDC SOL	2	SDC SOL	
15.95	SDC SOL	2	SDC SOL	
15.96	SDC SOL	2	SDC SOL	
15.97	SDC SOL	2	SDC SOL	
15.98	SDC SOL	2	SDC SOL	
15.99	SDC SOL	2	SDC SOL	
16.00	SDC SOL	2	SDC SOL	
16.01	SDC SOL	2	SDC SOL	

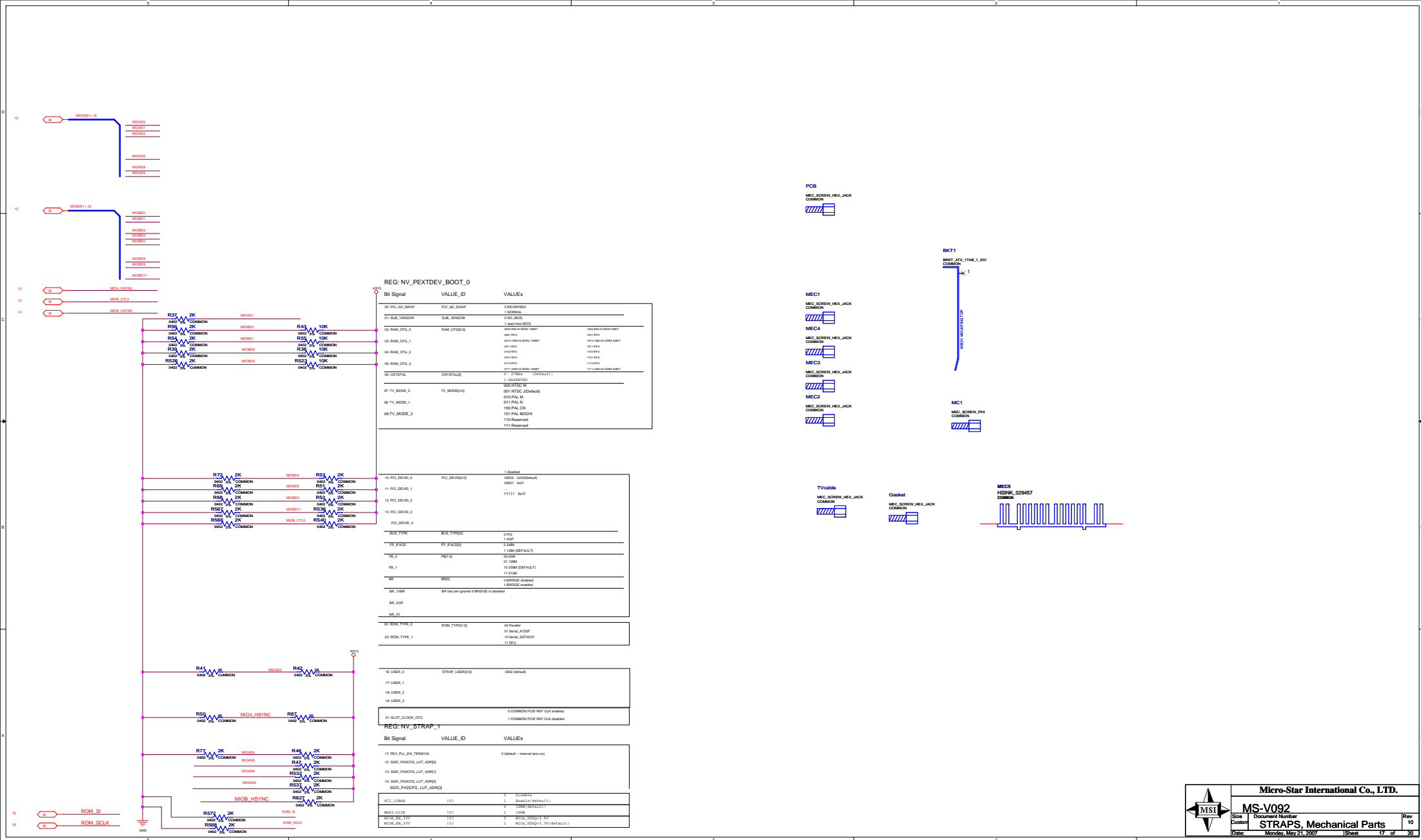
11,106 11,107 11,108 11,109 11,110 11,111 11,112 11,113 11,114 11,115 11,116 11,117 11,118 11,119 11,120 11,121 11,122 11,123 11,124 11,125 11,126 11,127 11,128 11,129 11,130 11,131 11,132 11,133 11,134 11,135 11,136 11,137 11,138 11,139 11,140 11,141 11,142 11,143 11,144 11,145 11,146 11,147 11,148 11,149 11,150 11,151 11,152 11,153 11,154 11,155 11,156 11,157 11,158 11,159 11,160 11,161 11,162 11,163 11,164 11,165 11,166 11,167 11,168 11,169 11,170 11,171 11,172 11,173 11,174 11,175 11,176 11,177 11,178 11,179 11,180 11,181 11,182 11,183 11,184 11,185 11,186 11,187 11,188 11,189 11,190 11,191 11,192 11,193 11,194 11,195 11,196 11,197 11,198 11,199 11,200 11,201 11,202 11,203 11,204 11,205 11,206 11,207 11,208 11,209 11,210 11,211 11,212 11,213 11,214 11,215 11,216 11,217 11,218 11,219 11,220 11,221 11,222 11,223 11,224 11,225 11,226 11,227 11,228 11,229 11,230 11,231 11,232 11,233 11,234 11,235 11,236 11,237 11,238 11,239 11,240 11,241 11,242 11,243 11,244 11,245 11,246 11,247 11,248 11,249 11,250 11,251 11,252 11,253 11,254 11,255 11,256 11,257 11,258 11,259 11,260 11,261 11,262 11,263 11,264 11,265 11,266 11,267 11,268 11,269 11,270 11,271 11,272 11,273 11,274 11,275 11,276 11,277 11,278 11,279 11,280 11,281 11,282 11,283 11,284 11,285 11,286 11,287 11,288 11,289 11,290 11,291 11,292 11,293 11,294 11,295 11,296 11,297 11,298 11,299 11,300 11,301 11,302 11,303 11,304 11,305 11,306 11,307 11,308 11,309 11,310 11,311 11,312 11,313 11,314 11,315 11,316 11,317 11,318 11,319 11,320 11,321 11,322 11,323 11,324 11,325 11,326 11,327 11,328 11,329 11,330 11,331 11,332 11,333 11,334 11,335 11,336 11,337 11,338 11,339 11,340 11,341 11,342 11,343 11,344 11,345 11,346 11,347 11,348 11,349 11,350 11,351 11,352 11,353 11,354 11,355 11,356 11,357 11,358 11,359 11,360 11,361 11,362 11,363 11,364 11,365 11,366 11,367 11,368 11,369 11,370 11,371 11,372 11,373 11,374 11,375 11,376 11,377 11,378 11,379 11,380 11,381 11,382 11,383 11,384 11,385 11,386 11,387 11,388 11,389 11,390 11,391 11,392 11,393 11,394 11,395 11,396 11,397 11,398 11,399 11,400 11,401 11,402 11,403 11,404 11,405 11,406 11,407 11,408 11,409 11,410 11,411 11,412 11,413 11,414 11,415 11,416 11,417 11,418 11,419 11,420 11,421 11,422 11,423 11,424 11,425 11,426 11,427 11,428 11,429 11,430 11,431 11,432 11,433 11,434 11,435 11,436 11,437 11,438 11,439 11,440 11,441 11,442 11,443 11,444 11,445 11,446 11,447 11,448 11,449 11,450 11,451 11,452 11,453 11,454 11,455 11,456 11,457 11,458 11,459 11,460 11,461 11,462 11,463 11,464 11,465 11,466 11,467 11,468 11,469 11,470 11,471 11,472 11,473 11,474 11,475 11,476 11,477 11,478 11,479 11,480 11,481 11,482 11,483 11,484 11,485 11,486 11,487 11,488 11,489 11,490 11,491 11,492 11,493 11,494 11,495 11,496 11,497 11,498 11,499 11,500 11,501 11,502 11,503 11,504 11,505 11,506 11,507 11,508 11,509 11,510 11,511 11,512 11,513 11,514 11,515 11,516 11,517 11,518 11,519 11,520 11,521 11,522 11,523 11,524 11,525 11,526 11,527 11,528 11,529 11,530 11,531 11,532 11,533 11,534 11,535 11,536 11,537 11,538 11,539 11,540 11,541 11,542 11,543 11,544 11,545 11,546 11,547 11,548 11,549 11,550 11,551 11,552 11,553 11,554 11,555 11,556 11,557 11,558 11,559 11,560 11,561 11,562 11,563 11,564 11,565 11,566 11,567 11,568 11,569 11,570 11,571 11,572 11,573 11,574 11,575 11,576 11,577 11,578 11,579 11,580 11,581 11,582 11,583 11,584 11,585 11,586 11,587 11,588 11,589 11,590 11,591 11,592 11,593 11,594 11,595 11,596 11,597 11,598 11,599 11,600 11,601 11,602 11,603 11,604 11,605 11,606 11,607 11,608 11,609 11,610 11,611 11,612 11,613 11,614 11,615 11,616 11,617 11,618 11,619 11,620 11,621 11,622 11,623 11,624 11,625 11,626 11,627 11,628 11,629 11,630 11,631 11,632 11,633 11,634 11,635 11,636 11,637 11,638 11,639 11,640 11,641 11,642 11,643 11,644 11,645 11,646 11,647 11,648 11,649 11,650 11,651 11,652 11,653 11,654 11,655 11,656 11,657 11,658 11,659 11,660 11,661 11,662 11,663 11,664 11,665 11,666 11,667 11,668 11,669 11,670 11,671 11,672 11,673 11,674 11,675 11,676 11,677 11,678 11,679 11,680 11,681 11,682 11,683 11,684 11,685 11,686 11,687 11,688 11,689 11,690

[illegible]

SPDIF-2

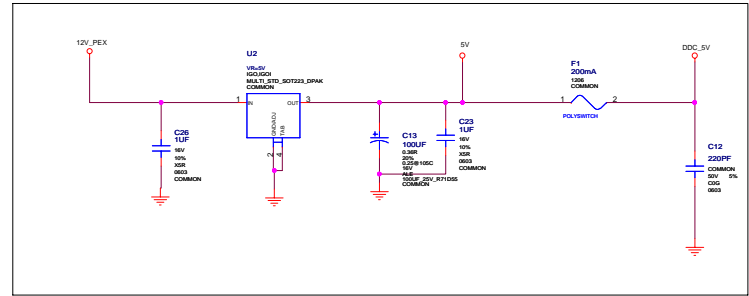
When select SPOIF-2, L5_1=5ohm resistor, C33=0.1uF



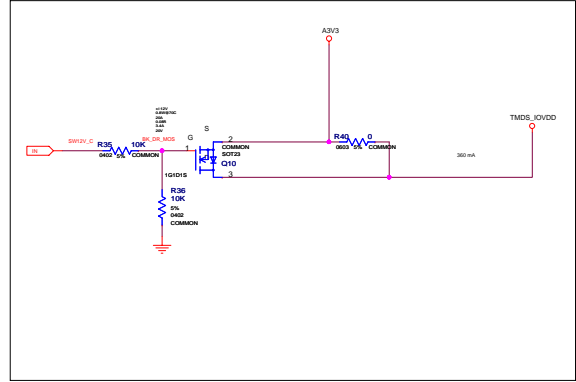


Power Supply:TMDS_IOVDD/A3V3/5V/DAC_REF

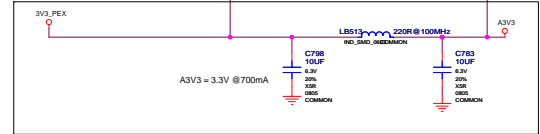
DDC 5V



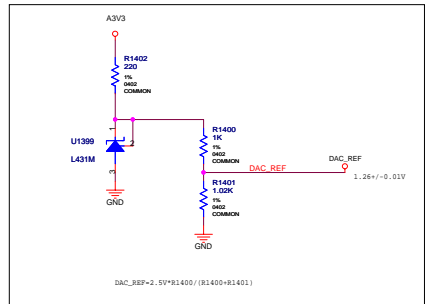
TMDS IO SUPPLY WITH BACKDRIVE PROTECTION



A3V3 Power Supply



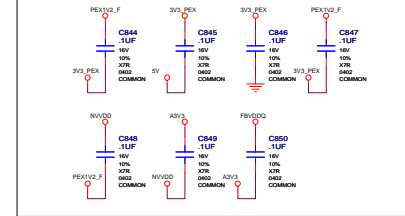
DAC_REF



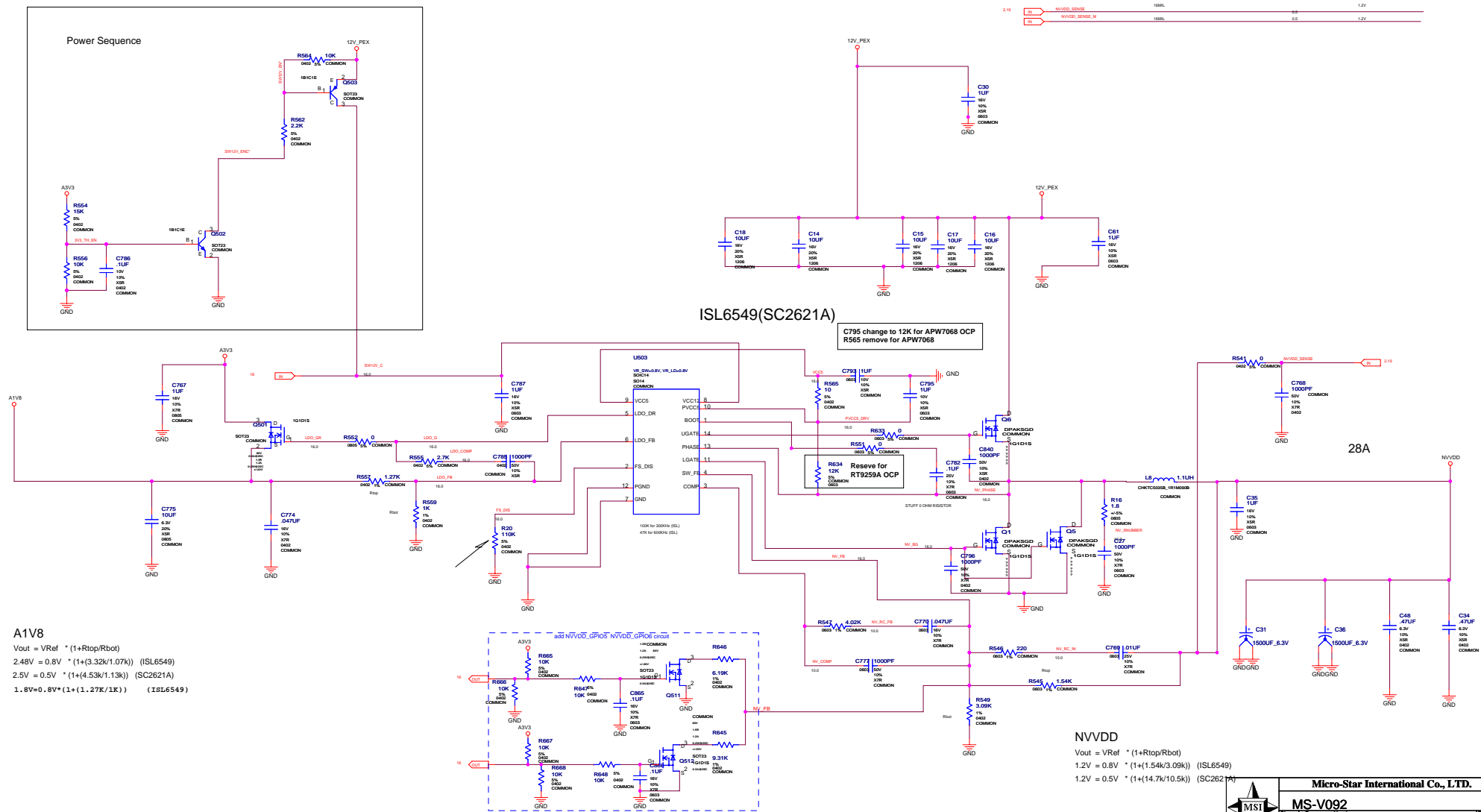
NETNAME	MAX_CURRENT	MIN_LINE_WIDTH	VOLTAGE
DDC_5V	0.1	10.0	5.00000
A3V3	0.06	20.0	3.30000
TMDS_IOVDD	0.24	30.0	3.30000
A3V3	1	30.0	3.30000
GND	30.0	30.0	0.00000



EMC suggestion reserve



PowerSupply: NVVDD, A1V8



NVVDD

$$V_{out} = V_{Ref} * (1 + R_{top}/R_{bot})$$
$$1.2V = 0.8V * (1 + (1.54k/3.09k)) \quad (ISL6549)$$
$$1.2V = 0.5V * (1 + (14.7k/10.5k)) \quad (SC2621A)$$

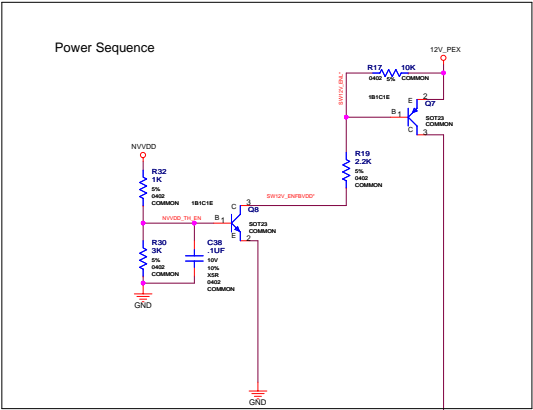

Micro-Star International Co., LTD.

MS-V092	
Size Custom	Document Number NVVDD

MS-V092	
Size	Document Number
Custom	NVVDD, A1V8

Date:	Monday, May 21, 2007	Sheet	19 of 20
-------	----------------------	-------	----------

PowerSupplyIII: FBVDDQ,PEX1V2



Net Name	LINE_WIDTH	CURRENT	Voltage
FBVDDQ	12MIL		2V
PEX1V2_F	2MIL	2.5A	1.2V

