

P699-B00: GT215/6/8 MXM V3.0 TYPE A  
512/1024MB 128/64-BIT DDR3  
LVDS, QUAD DP, DVI, VGA

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20091009

SKU	VARIANT	NVPN	ASSEMBLY
B	BASE	600-10699-base-sch	BASE LEVEL GENERIC SCHEMATIC ONLY. COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL.
1	SKU0001	600-10699-0001-000	P699-A00 SKU1 GT216-630 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
2	SKU0002	600-10699-0002-000	P699-A00 SKU2 GT216-600 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
3	SKU0003	600-10699-0003-000	P699-A00 SKU3 GT218-730 MXM3.0 TYPE-A 512 MB 4pcs 64Mx16
4	SKU0005	600-10699-0005-000	P699-A00 SKU5 GT216-640 MXM3.0 TYPE-A 1024 MB 8pcs 64Mx16
5	SKU0501	600-50699-0501-000	P699-A00 SKU501 GT216-950 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
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7	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
8	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
9	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
10	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
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12	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
13	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
14	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
15	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>

ASSEMBLY	P699-A00 SKU1 GT216-630 MXM3.0 TYPE-A 1024MB 8pcs 64MX16			SANTA CLARA, CA 95050, USA		
PAGE DETAIL	Cover Page			NV_PN 600-10699-0001-100 A		
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				NAME	tlanger	DATE 03-MAR-2009

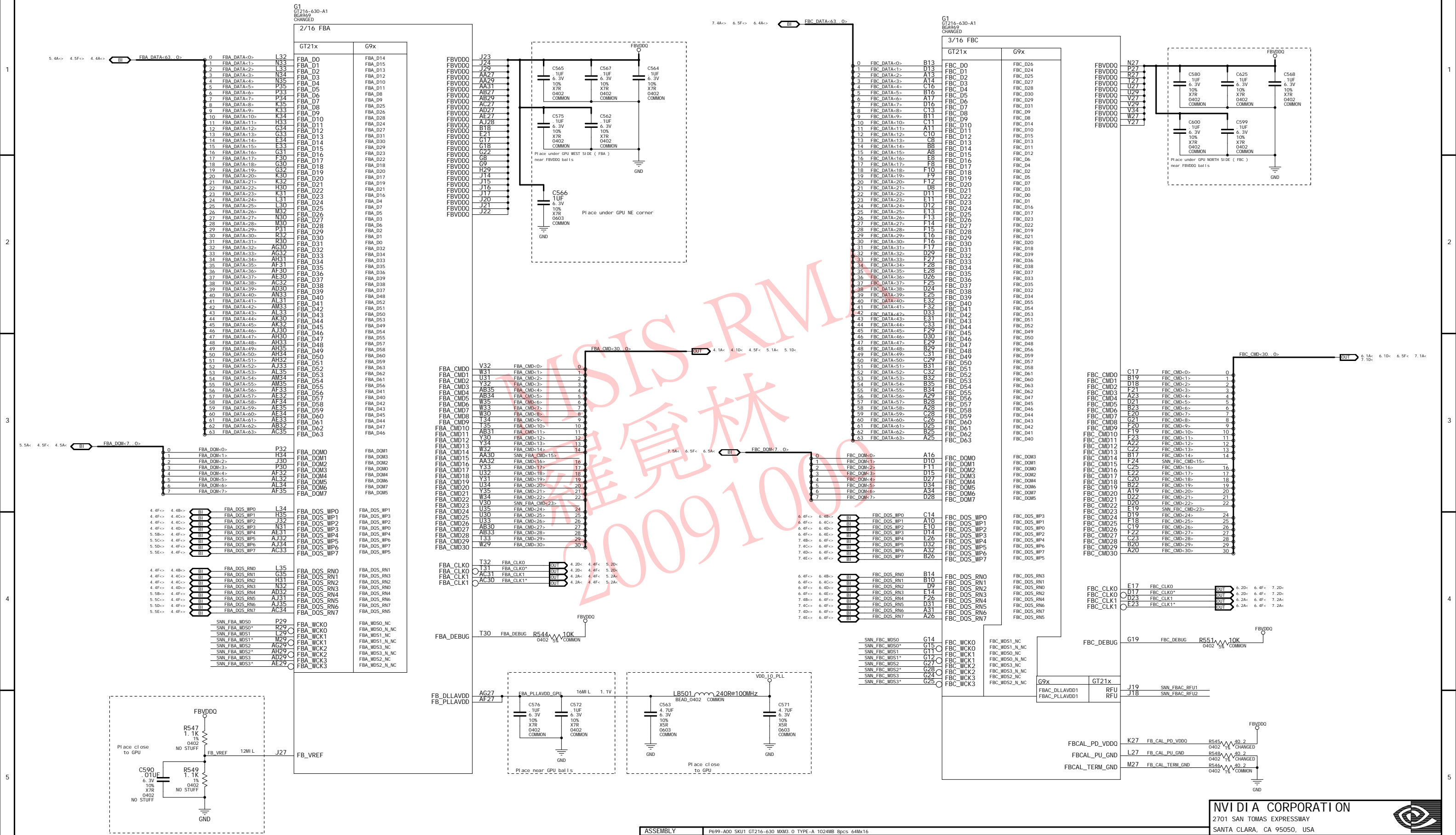
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2. MXM 3.0 CONNECTOR, PCI EXPRESS INTERFACE

The diagram illustrates the MXM 3.0 Connector, PCI Express Interface. It shows the connection between the connector pins (A-H) and the internal components of the board. The diagram is divided into sections for power, signal, and test mode. A large watermark 'NVIDIA 2009' is visible across the center.

**Power Section:** Shows the connection of power planes (3V3, 5V, PWR\_SRC) to the connector pins. It includes components like capacitors (C2, C663, C530, C521, C509, C514) and inductors (L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, L15, L16, L17, L18, L19, L20, L21, L22, L23, L24, L25, L26, L27, L28, L29, L30, L31, L32, L33, L34, L35, L36, L37, L38, L39, L40, L41, L42, L43, L44, L45, L46, L47, L48, L49, L50, L51, L52, L53, L54, L55, L56, L57, L58, L59, L60, L61, L62, L63, L64, L65, L66, L67, L68, L69, L70, L71, L72, L73, L74, L75, L76, L77, L78, L79, L80, L81, L82, L83, L84, L85, L86, L87, L88, L89, L90, L91, L92, L93, L94, L95, L96, L97, L98, L99, L100, L101, L102, L103, L104, L105, L106, L107, L108, L109, L110, L111, L112, L113, L114, L115, L116, L117, L118, L119, L120, L121, L122, L123, L124, L125, L126, L127, L128, L129, L130, L131, L132, L133, L134, L135, L136, L137, L138, L139, L140, L141, L142, L143, L144, L145, L146, L147, L148, L149, L150, L151, L152, L153, L154, L155, L156, L157, L158, L159, L160, L161, L162, L163, L164, L165, L166, L167, L168, L169, L170, L171, L172, L173, L174, L175, L176, L177, L178, L179, L180, L181, L182, L183, L184, L185, L186, L187, L188, L189, L190, L191, L192, L193, L194, L195, L196, L197, L198, L199, L200, L201, L202, L203, L204, L205, L206, L207, L208, L209, L210, L211, L212, L213, L214, L215, L216, L217, L218, L219, L220, L221, L222, L223, L224, L225, L226, L227, L228, L229, L230, L231, L232, L233, L234, L235, L236, L237, L238, L239, L240, L241, L242, L243, L244, L245, L246, L247, L248, L249, L250, L251, L252, L253, L254, L255, L256, L257, L258, L259, L260, L261, L262, L263, L264, L265, L266, L267, L268, L269, L270, L271, L272, L273, L274, L275, L276, L277, L278, L279, L280, L281, L282, L283, L284, L285, L286, L287, L288, L289, L290, L291, L292, L293, L294, L295, L296, L297, L298, L299, L300, L301, L302, L303, L304, L305, L306, L307, L308, L309, L310, L311, L312, L313, L314, L315, L316, L317, L318, L319, L320, L321, L322, L323, L324, L325, L326, L327, L328, L329, L330, L331, L332, L333, L334, L335, L336, L337, L338, L339, L340, L341, L342, L343, L344, L345, L346, L347, L348, L349, L350, L351, L352, L353, L354, L355, L356, L357, L358, L359, L360, L361, L362, L363, L364, L365, L366, L367, L368, L369, L370, L371, L372, L373, L374, L375, L376, L377, L378, L379, L380, L381, L382, L383, L384, L385, L386, L387, L388, L389, L390, L391, L392, L393, L394, L395, L396, L397, L398, L399, L400, L401, L402, L403, L404, L405, L406, L407, L408, L409, L410, L411, L412, L413, L414, L415, L416, L417, L418, L419, L420, L421, L422, L423, L424, L425, L426, L427, L428, L429, L430, L431, L432, L433, L434, L435, L436, L437, L438, L439, L440, L441, L442, L443, L444, L445, L446, L447, L448, L449, L450, L451, L452, L453, L454, L455, L456, L457, L458, L459, L460, L461, L462, L463, L464, L465, L466, L467, L468, L469, L470, L471, L472, L473, L474, L475, L476, L477, L478, L479, L480, L481, L482, L483, L484, L485, L486, L487, L488, L489, L490, L491, L492, L493, L494, L495, L496, L497, L498, L499, L500, L501, L502, L503, L504, L505, L506, L507, L508, L509, L510, L511, L512, L513, L514, L515, L516, L517, L518, L519, L520, L521, L522, L523, L524, L525, L526, L527, L528, L529, L530, L531, L532, L533, L534, L535, L536, L537, L538, L539, L540, L541, L542, L543, L544, L545, L546, L547, L548, L549, L550, L551, L552, L553, L554, L555, L556, L557, L558, L559, L560, L561, L562, L563, L564, L565, L566, L567, L568, L569, L570, L571, L572, L573, L574, L575, L576, L577, L578, L579, L580, L581, L582, L583, L584, L585, L586, L587, L588, L589, L590, L591, L592, L593, L594, L595, L596, L597, L598, L599, L600, L601, L602, L603, L604, L605, L606, L607, L608, L609, L610, L611, L612, L613, L614, L615, L616, L617, L618, L619, L620, L621, L622, L623, L624, L625, L626, L627, L628, L629, L630, L631, L632, L633, L634, L635, L636, L637, L638, L639, L640, L641, L642, L643, L644, L645, L646, L647, L648, L649, L650, L651, L652, L653, L654, L655, L656, L657, L658, L659, L660, L661, L662, L663, L664, L665, L666, L667, L668, L669, L670, L671, L672, L673, L674, L675, L676, L677, L678, L679, L680, L681, L682, L683, L684, L685, L686, L687, L688, L689, L690, L691, L692, L693, L694, L695, L696, L697, L698, L699, L700, L701, L702, L703, L704, L705, L706, L707, L708, L709, L710, L711, L712, L713, L714, L715, L716, L717, L718, L719, L720, L721, L722, L723, L724, L725, L726, L727, L728, L729, L730, L731, L732, L733, L734, L735, L736, L737, L738, L739, L740, L741, L742, L743, L744, L745, L746, L747, L748, L749, L750, L751, L752, L753, L754, L755, L756, L757, L758, L759, L760, L761, L762, L763, L764, L765, L766, L767, L768, L769, L770, L771, L772, L773, L774, L775, L776, L777, L778, L779, L780, L781, L782, L783, L78

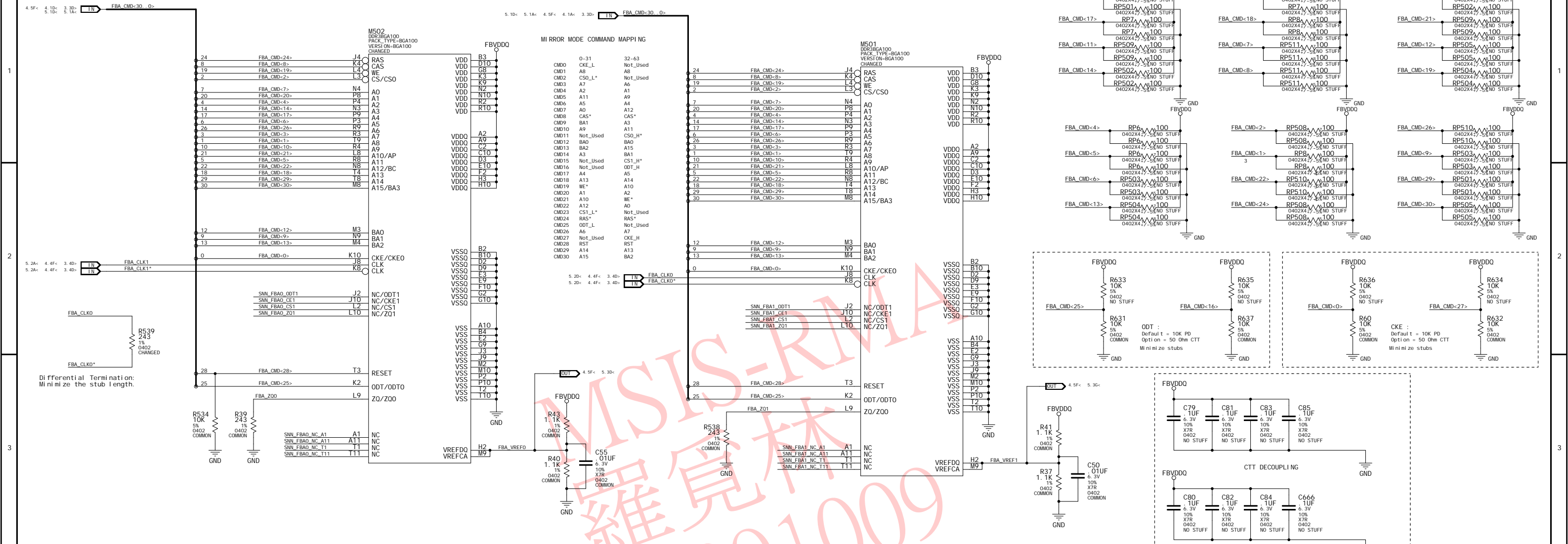
3. GPU MEMORY INTERFACE



NVIDIA CORPORATION  
2701 SAN TOMAS EXPRESSWAY  
SANTA CLARA, CA 95050, USA



#### 4. MEMORY PARTITION A LOWER 32 BITS



## MEMORY PARTITION AND SIGNAL CONSTRAINTS

		NET		DI FFPAR R		CRI T1 CAL		I MPEDANCE	
5. 2D<	4. 2D<	3. 4D>	1 N	FBA_CLK0	FBA_CLK0		1	70DI FF	
5. 2D<	4. 2D<	3. 4D>	1 N	FBA_CLK0*	FBA_CLK0		1	70DI FF	
5. 2A<	4. 2A<	3. 4D>	1 N	FBA_CLK1	FBA_CLK1		1	70DI FF	
5. 2A<	4. 2A<	3. 4D>	1 N	FBA_CLK1*	FBA_CLK1		1	70DI FF	
4. 4B<>	3. 4A<>		BI	FBA_DQS_WP0	FBA_DQS0		1	80DI FF	
4. 4B<>	3. 4A<>		BI	FBA_DQS_RN0	FBA_DQS0		1	80DI FF	
4. 4C<>	3. 4A<>		BI	FBA_DQS_WP1	FBA_DQS1		1	80DI FF	
4. 4C<>	3. 4A<>		BI	FBA_DQS_RN1	FBA_DQS1		1	80DI FF	
4. 4C<>	3. 4A<>		BI	FBA_DQS_WP2	FBA_DQS2		1	80DI FF	
4. 4C<>	3. 4A<>		BI	FBA_DQS_RN2	FBA_DQS2		1	80DI FF	
4. 4D<>	3. 4A<>		BI	FBA_DQS_WP3	FBA_DQS3		1	80DI FF	
4. 4D<>	3. 4A<>		BI	FBA_DQS_RN3	FBA_DQS3		1	80DI FF	
5. 5B<>	3. 4A<>		BI	FBA_DQS_WP4	FBA_DQS4		1	80DI FF	
5. 5B<>	3. 4A<>		BI	FBA_DQS_RN4	FBA_DQS4		1	80DI FF	
5. 5C<>	3. 4A<>		BI	FBA_DQS_WP5	FBA_DQS5		1	80DI FF	
5. 5C<>	3. 4A<>		BI	FBA_DQS_RN5	FBA_DQS5		1	80DI FF	
5. 5D<>	3. 4A<>		BI	FBA_DQS_WP6	FBA_DQS6		1	80DI FF	
5. 5D<>	3. 4A<>		BI	FBA_DQS_RN6	FBA_DQS6		1	80DI FF	
5. 5E<>	3. 4A<>		BI	FBA_DQS_WP7	FBA_DQS7		1	80DI FF	
5. 5E<>	3. 4A<>		BI	FBA_DQS_RN7	FBA_DQS7		1	80DI FF	
5. 4A<>	4. 4A<>	3. 1A<>	BI	FBA_DATA<63.. 0>			2	40QHM	
5. 5A<	4. 5A<	3. 3A<>	1 N	FBA_DMA<7.. 0>			2	40QHM	
5. 1D<	5. 1A<	4. 1D<	1 N	FBA_CMD<30.. 0>			2	40QHM	
		NET		MI N_LI NE_WI DTH		VOLTAGE			
			1 N	FBA_VREF_PD	16mV I	0. 5V			
5. 3D<	4. 3D>		1 N	FBA_VREF0	16mV I	0. 5V			
5. 3G<	4. 3G>		1 N	FBA_VREF1	16mV I	0. 5V			
			BI	FBA_Z00	16mV L	1. 80V			
			BI	FBA_Z01	16mV L	1. 80V			
5. 3B<>			BI	FBA_Z02	16mV L	1. 80V			
5. 3E<>			BI	FBA_Z03	16mV L	1. 80V			

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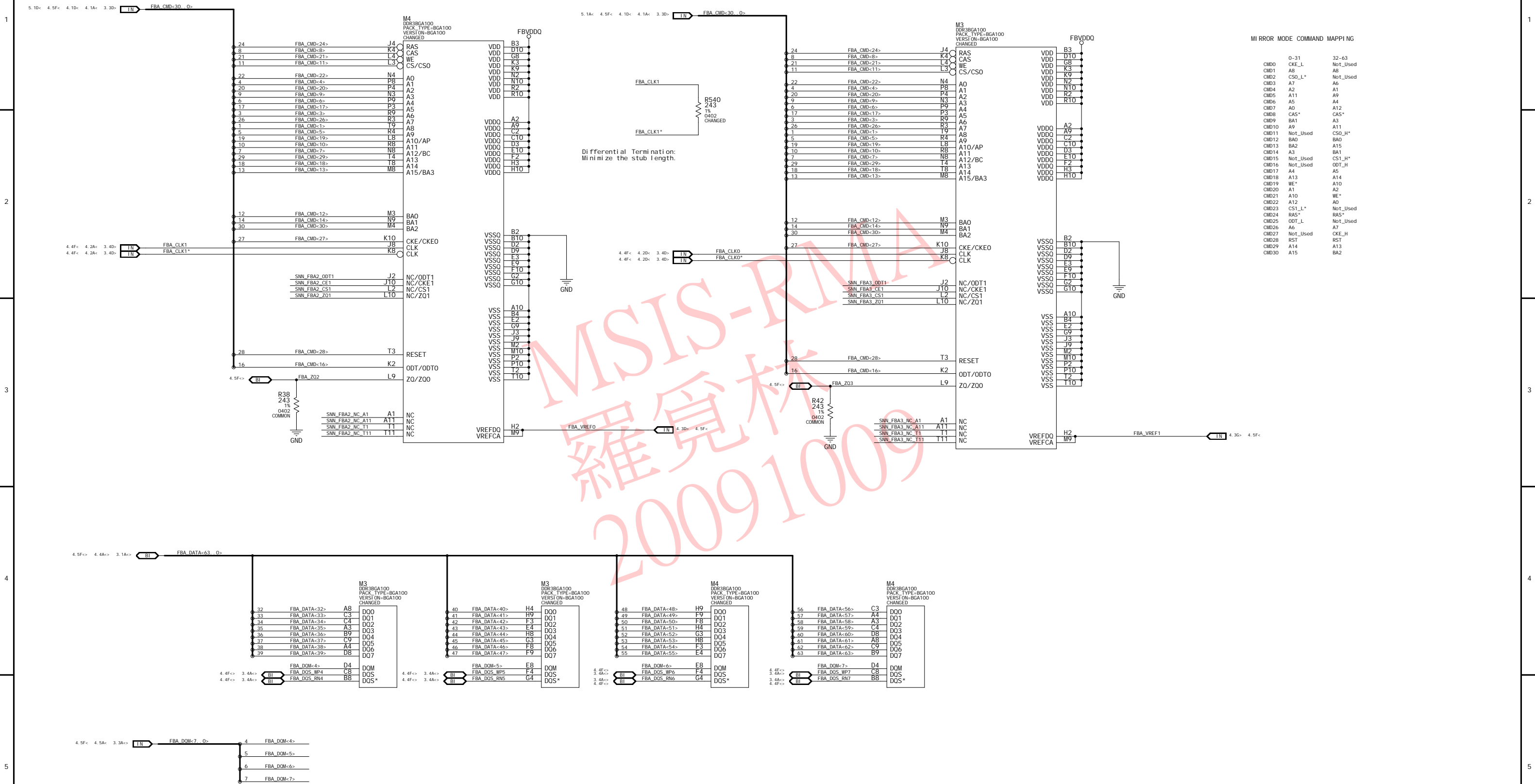


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NAME	tlanger	DATE	03-MAR-2009

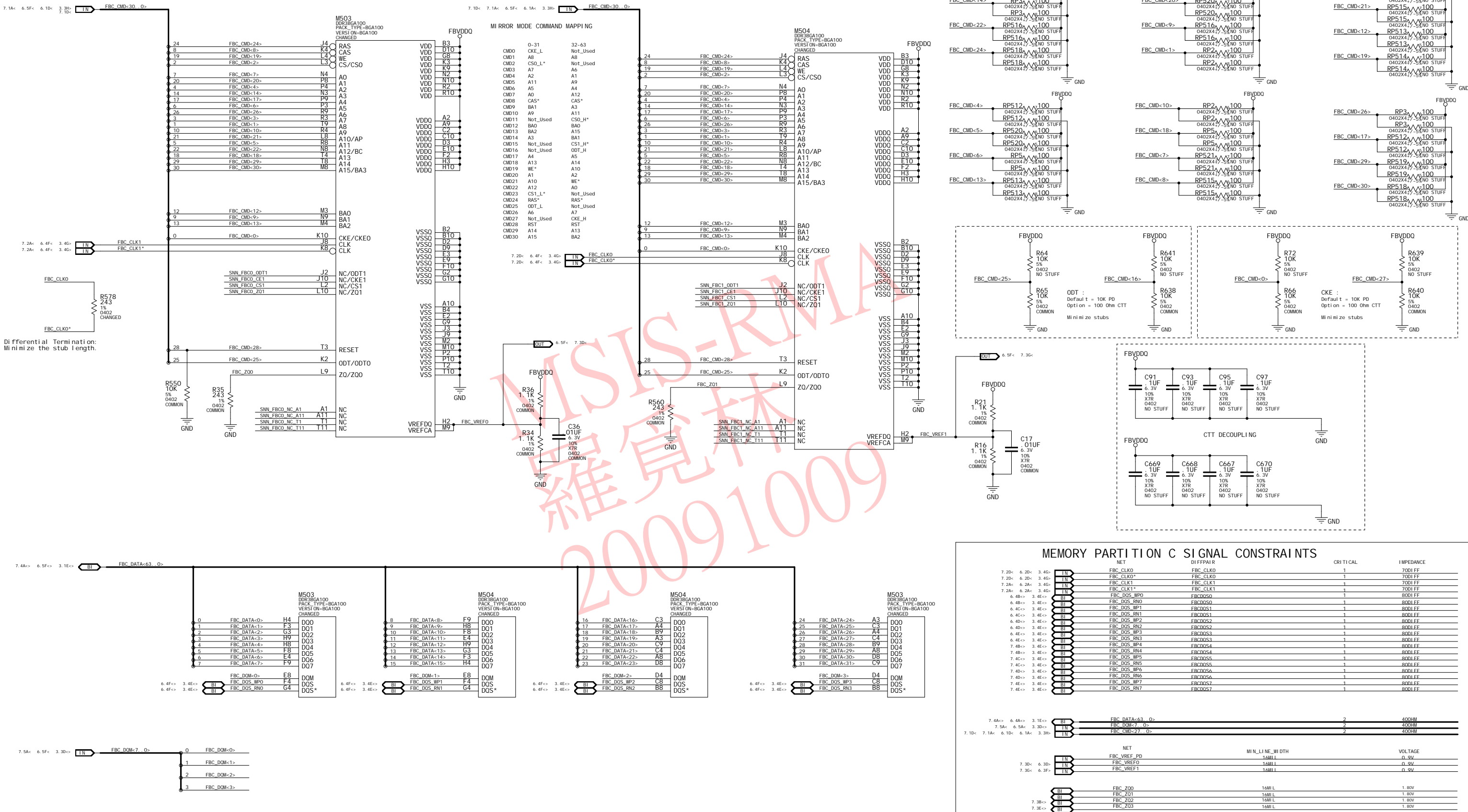
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PAGE DETAIL	Frame Buffer Partition A Lower 32 Bits

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5. MEMORY PARTITION A UPPER 32 BITS



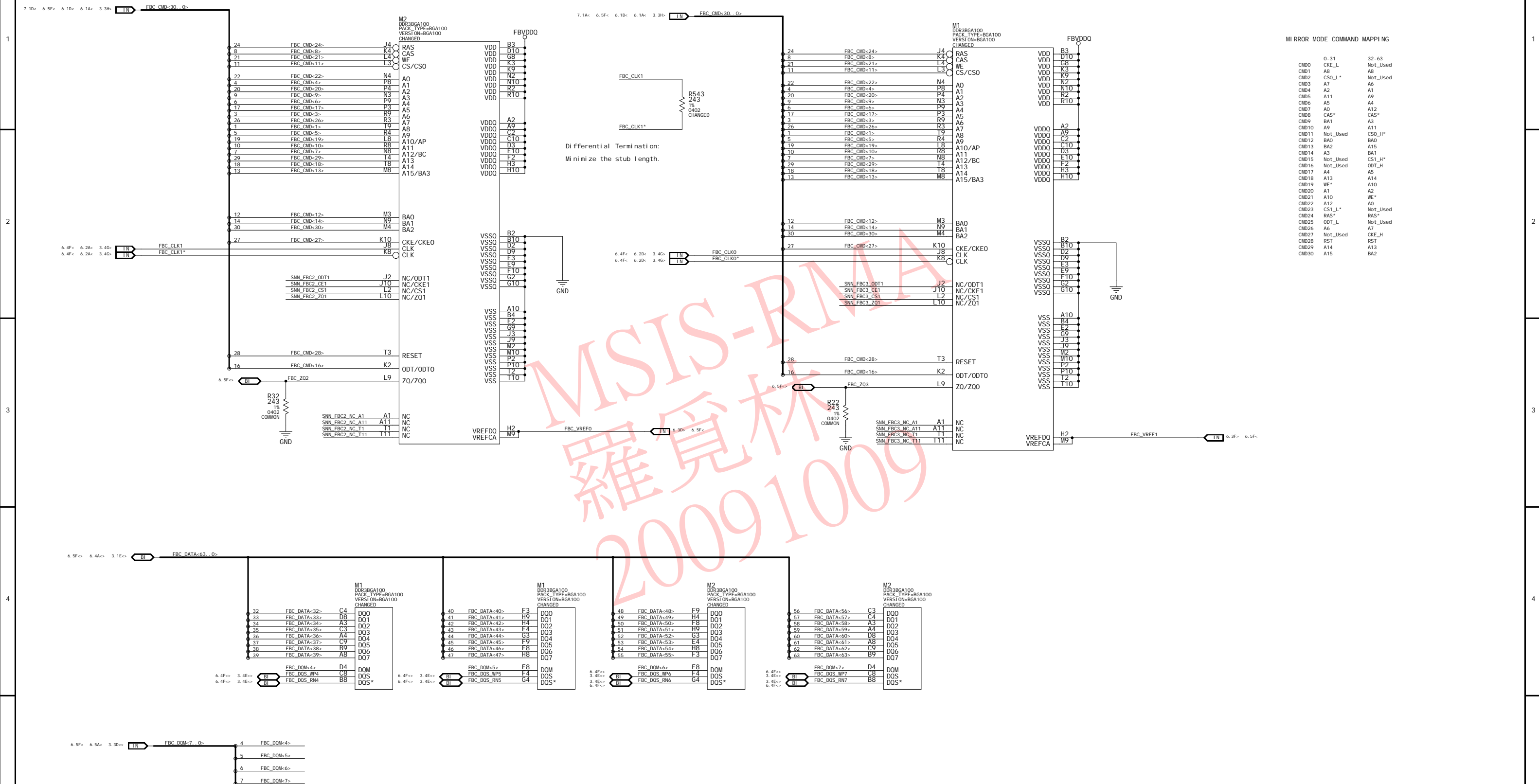
6. MEMORY PARTITION C LOWER 32 BITS



MEMORY PARTITION C SIGNAL CONSTRAINTS

NET		DIFFPAIR	CRITICAL	IMPEDANCE				
7.2D<	6.2D<	3.4E<	[T1]	FBC_CLK0	FBC_CLK0	1	70OH	FF
7.2D<	6.2D<	3.4E<	[T1]	FBC_CLK0*	FBC_CLK0	1	70OH	FF
7.2A<	6.2A<	3.4E<	[T1]	FBC_CLK1	FBC_CLK1	1	70OH	FF
7.2A<	6.2A<	3.4E<	[T1]	FBC_CLK1*	FBC_CLK1	1	70OH	FF
6.4B<	3.4E<		[B1]	FBC_DQS_WP0	FBCDQS0	1	80OH	FF
6.4B<	3.4E<		[B1]	FBC_DQS_WP0	FBCDQS0	1	80OH	FF
6.4C<	3.4E<		[B1]	FBC_DQS_WP1	FBCDQS1	1	80OH	FF
6.4C<	3.4E<		[B1]	FBC_DQS_WP1	FBCDQS1	1	80OH	FF
6.4D<	3.4E<		[B1]	FBC_DQS_WP2	FBCDQS2	1	80OH	FF
6.4D<	3.4E<		[B1]	FBC_DQS_WP2	FBCDQS2	1	80OH	FF
6.4E<	3.4E<		[B1]	FBC_DQS_WP3	FBCDQS3	1	80OH	FF
6.4E<	3.4E<		[B1]	FBC_DQS_WP3	FBCDQS3	1	80OH	FF
7.4B<	3.4E<		[B1]	FBC_DQS_WP4	FBCDQS4	1	80OH	FF
7.4B<	3.4E<		[B1]	FBC_DQS_WP4	FBCDQS4	1	80OH	FF
7.4C<	3.4E<		[B1]	FBC_DQS_WP5	FBCDQS5	1	80OH	FF
7.4C<	3.4E<		[B1]	FBC_DQS_WP5	FBCDQS5	1	80OH	FF
7.4D<	3.4E<		[B1]	FBC_DQS_WP6	FBCDQS6	1	80OH	FF
7.4D<	3.4E<		[B1]	FBC_DQS_WP6	FBCDQS6	1	80OH	FF
7.4E<	3.4E<		[B1]	FBC_DQS_WP7	FBCDQS7	1	80OH	FF
7.4E<	3.4E<		[B1]	FBC_DQS_WP7	FBCDQS7	1	80OH	FF
7.4A<	6.4A<	3.1E<	[B1]	FBC_DATA<63>_O>		2	40OH	
7.5A<	6.5A<	3.3D<	[T1]	FBC_CMD<27>_O>		2	40OH	
7.1D<	7.1A<	6.1D<	6.1A<	3.3H<		2	40OH	
NET		MIN_L1_NE_WDTH	VOLTAGE					
7.3D<	6.3D<	[T1]	FBC_VREF_PD	16MIL	0.9V			
7.3G<	6.3F<	[T1]	FBC_VREF0	16MIL	0.9V			
7.3G<	6.3F<	[T1]	FBC_VREF1	16MIL	0.9V			
		[B1]	FBC_Z00	16MIL	1.80V			
		[B1]	FBC_Z01	16MIL	1.80V			
7.3B<		[B1]	FBC_Z02	16MIL	1.80V			
7.3E<		[B1]	FBC_Z03	16MIL	1.80V			

## 7. MEMORY PARTITION C UPPER 32 BITS



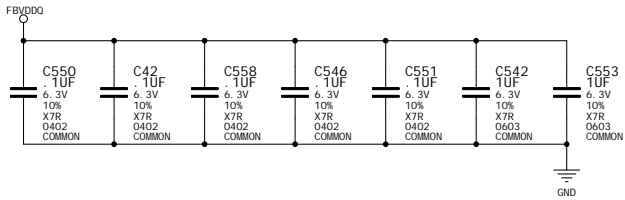
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	0-31	32-63
CM00	CKE_L	Not_Used
CM01	A8	A6
CM02	CS0_L*	Not_Used
CM03	A7	A8
CM04	A2	A4
CM05	A11	A9
CM06	A5	A1
CM07	A0	A12
CM08	CAS*	CAS*
CM09	BA1	BA0
CM10	A9	A11
CM11	Not_Used	CS0_H*
CM12	BA0	BA0
CM13	BA2	A15
CM14	A3	BA1
CM15	Not_Used	CS1_H*
CM16	Not_Used	ODT_H
CM17	A4	A10
CM18	A13	A5
CM19	WE*	A14
CM20	A1	A2*
CM21	A10	WE*
CM22	A12	A0
CM23	CS1_L*	Not_Used
CM24	RAS*	RAS*
CM25	NOT_L	Not_Used
CM26	Not_Used	A7
CM27	A6	CKE_H
CM28	RST	RST
CM29	A14	A13
CM30	A15	BA2

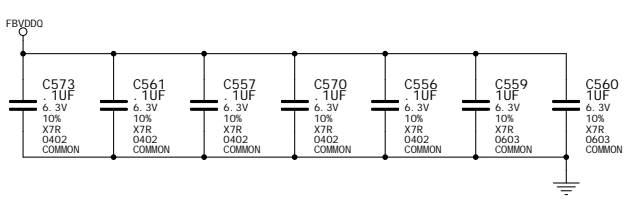


8. MEMORY DECOUPLING CAPS

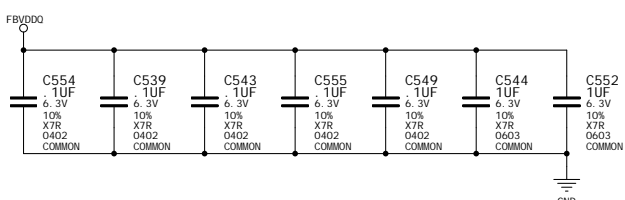
DECOUPLING CAPS FOR ONE MEMORY OF PARTION A LOWER BITS 0-15



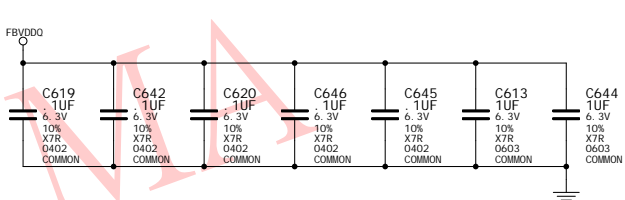
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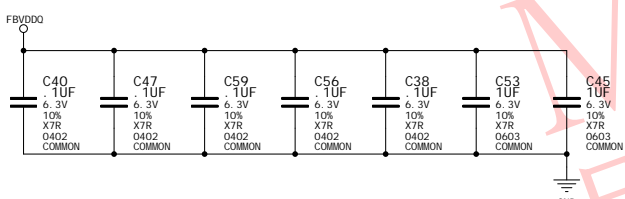
DECOUPLING CAPS FOR ONE MEMORY OF PARTION A LOWER BITS 16-31



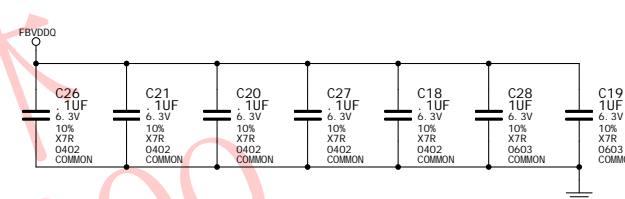
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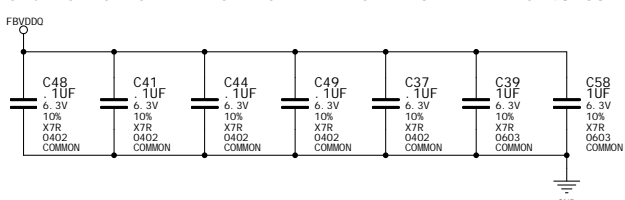
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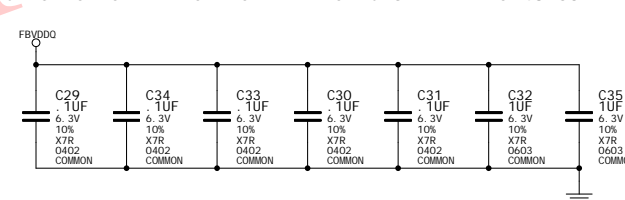
DECOUPLING CAPS FOR ONE MEMORY OF PARTION C UPPER BITS 32-47



DECOUPLING CAPS FOR ONE MEMORY OF PARTION A UPPER BITS 48-63



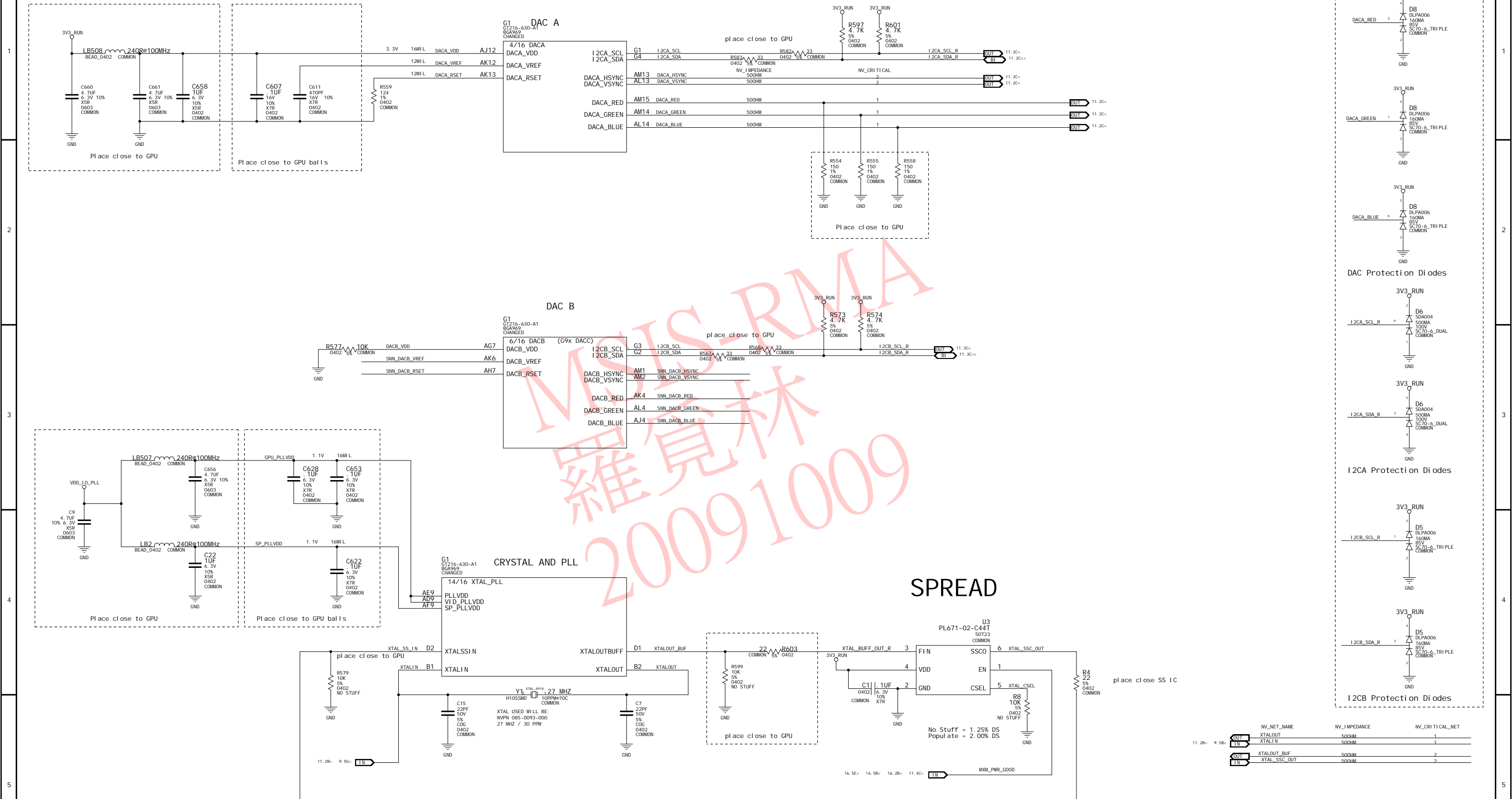
DECOUPLING CAPS FOR ONE MEMORY OF PARTION C UPPER BITS 48-63



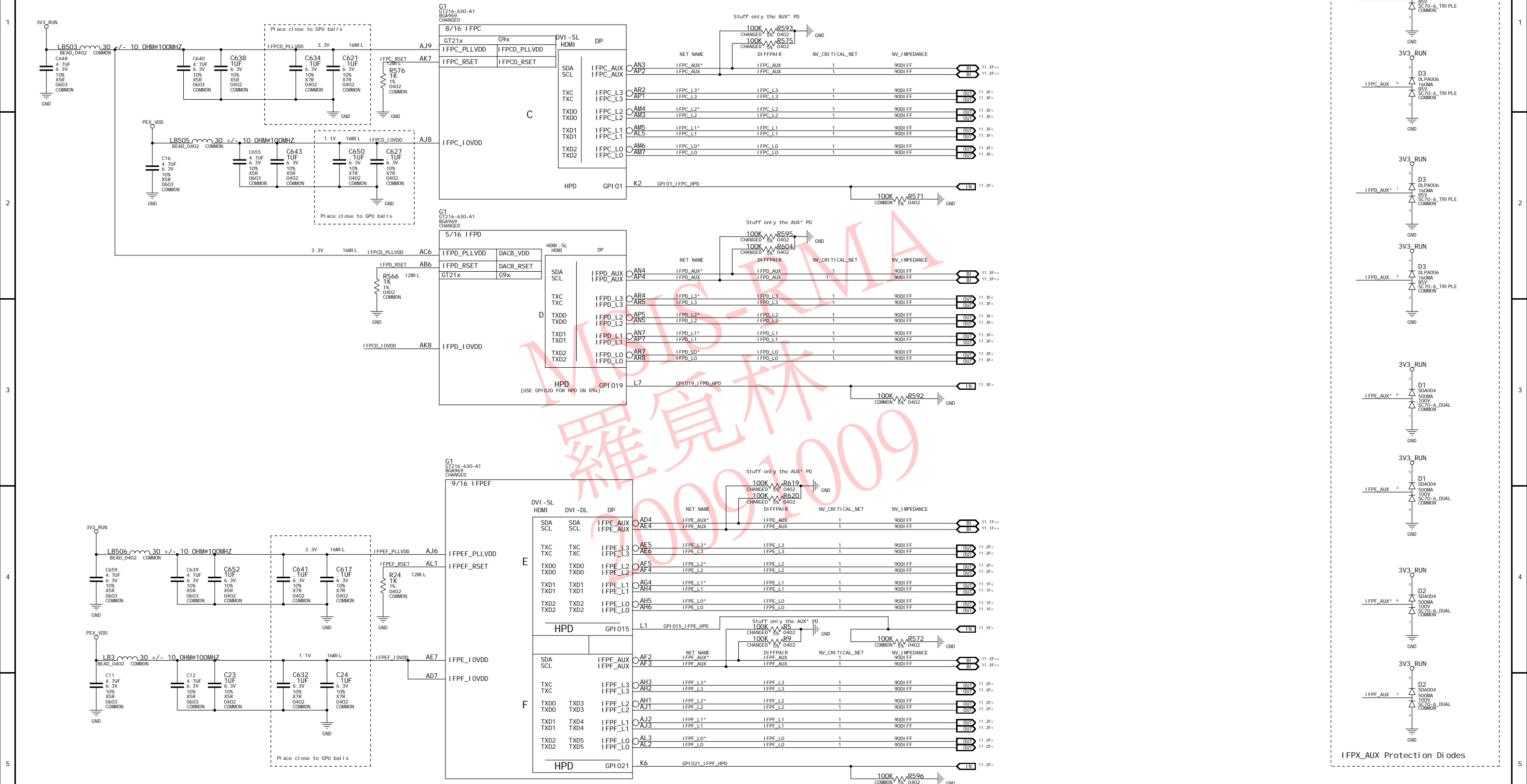
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9. DAC\_A, DAC\_B, SPREAD, PLL, CRYSTAL

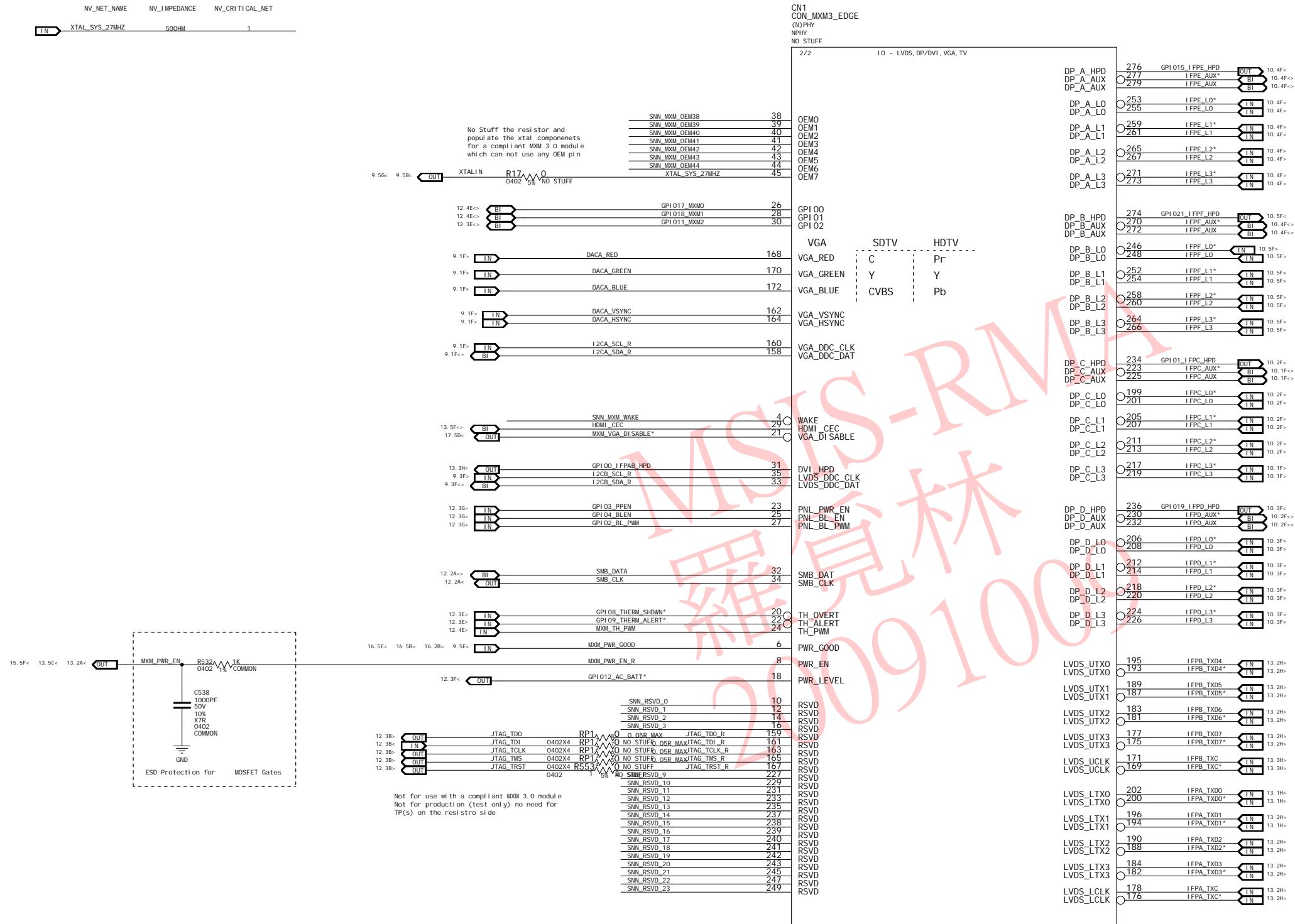


10. DP LINKS CD, LINK EF



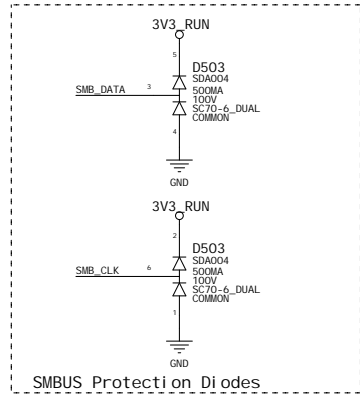
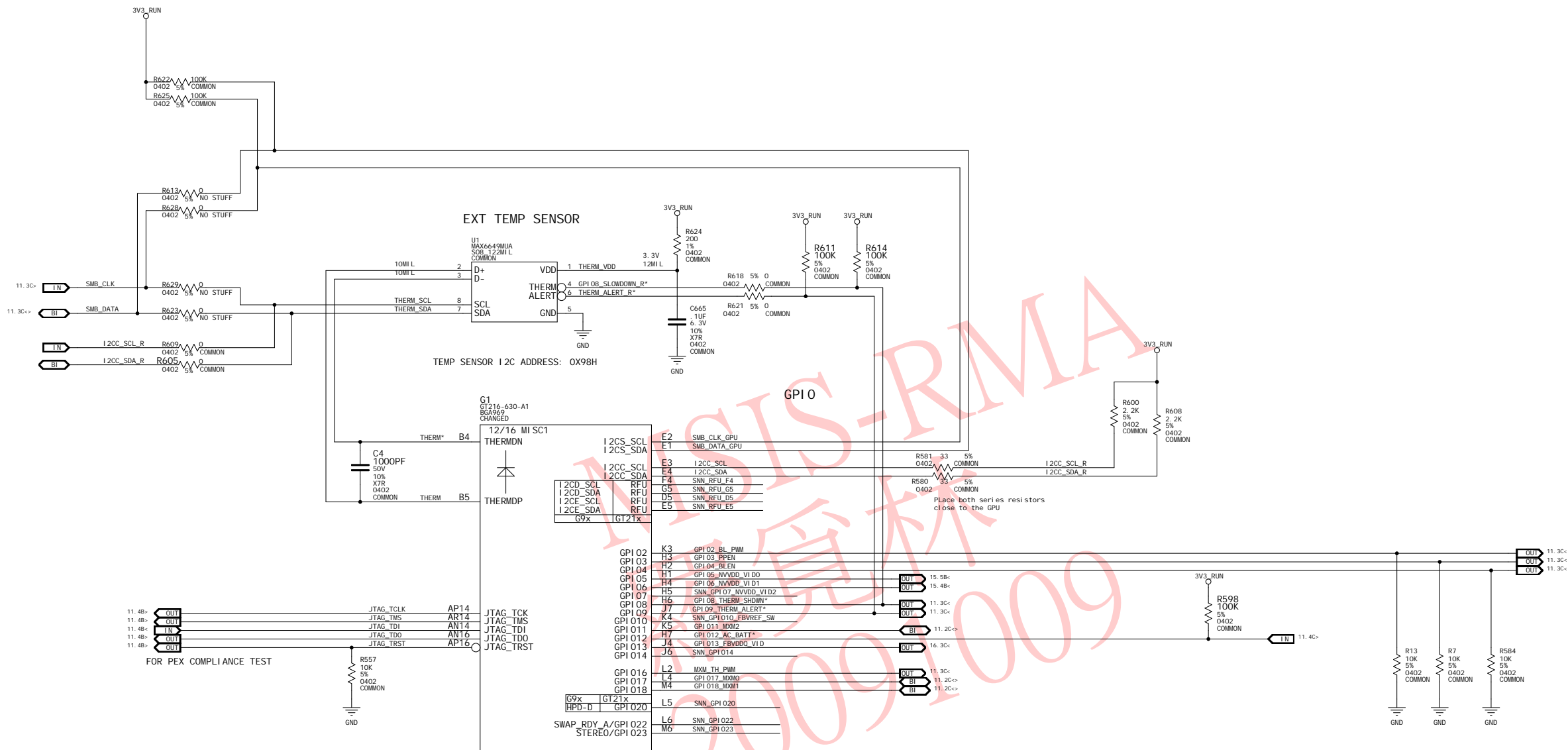
11. MXM CONNECTOR

MXM CONNECTOR



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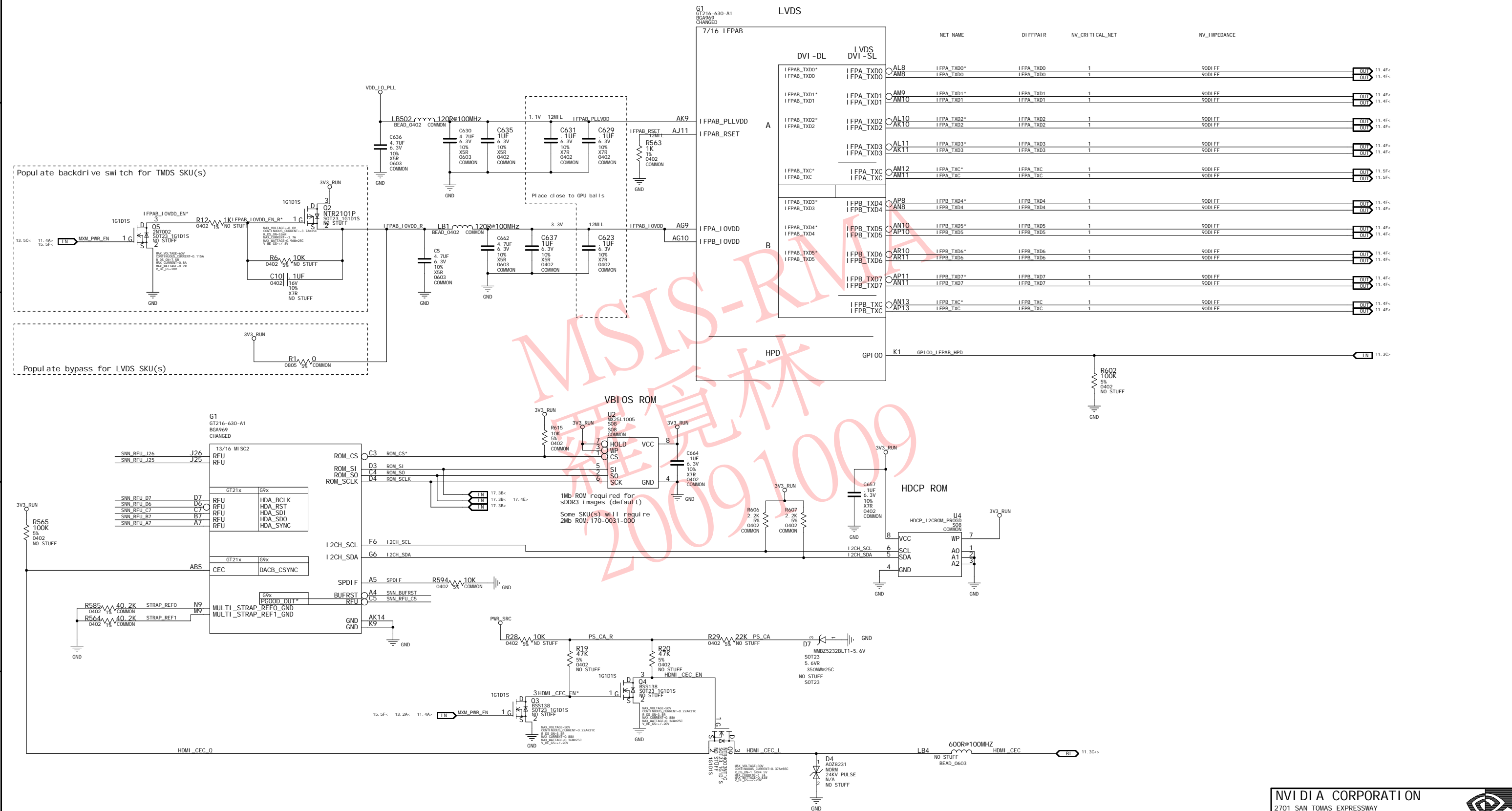
12. GPIO, JTAG, TEMP SENSOR



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## 13. LVDS, VBI OS, HDCP ROM, CEC



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ASSEMBLY	P699-A00 SKU1 GT216-630 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
PAGE DETAIL	LVDS, VBIOS HDCP ROM, and CEC

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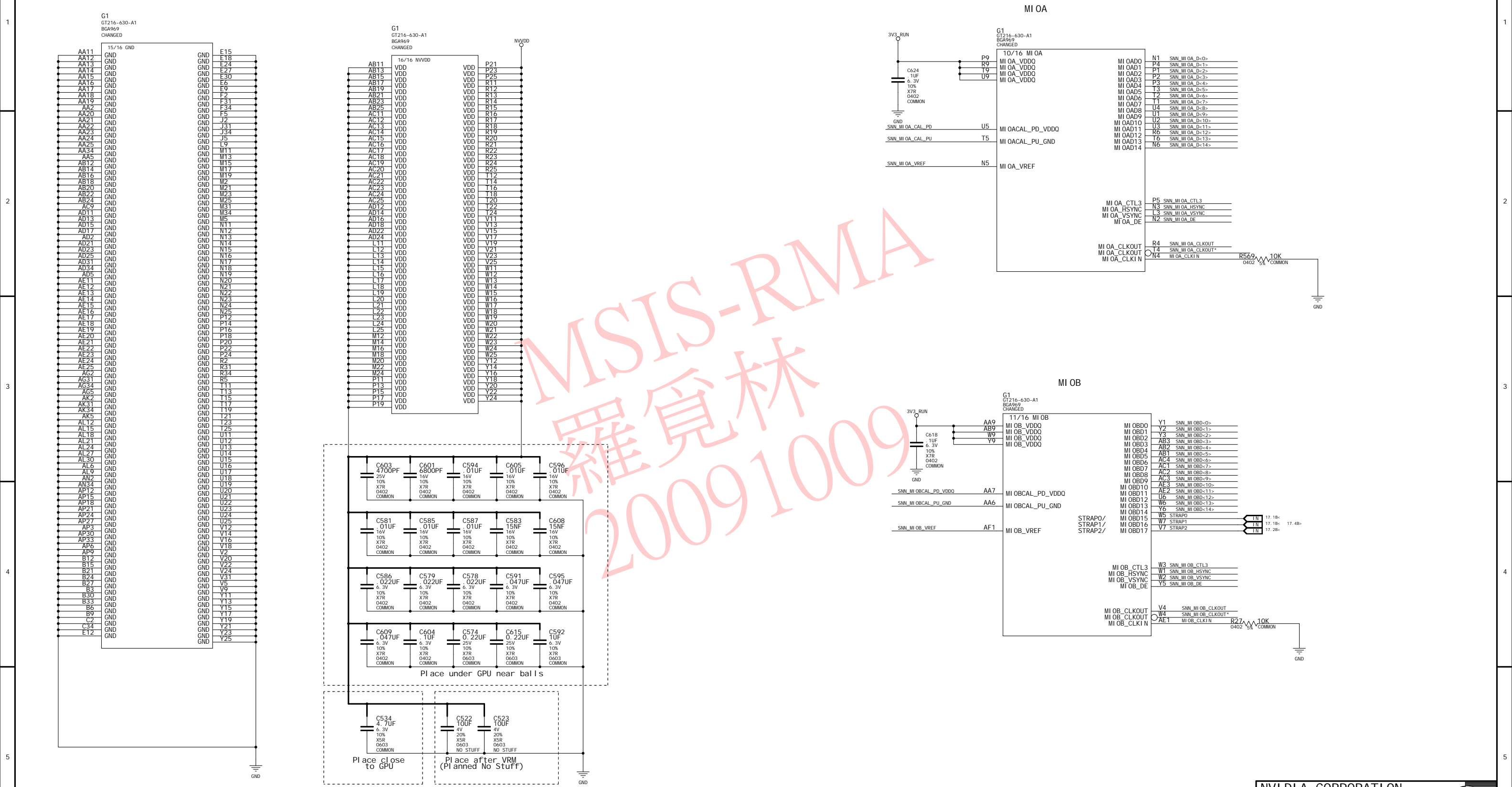
SANTA CLARA, CA 95050, USA

NV_PN	600-10699-0001-100 A
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ID	p699	PAGE	13 OF 17
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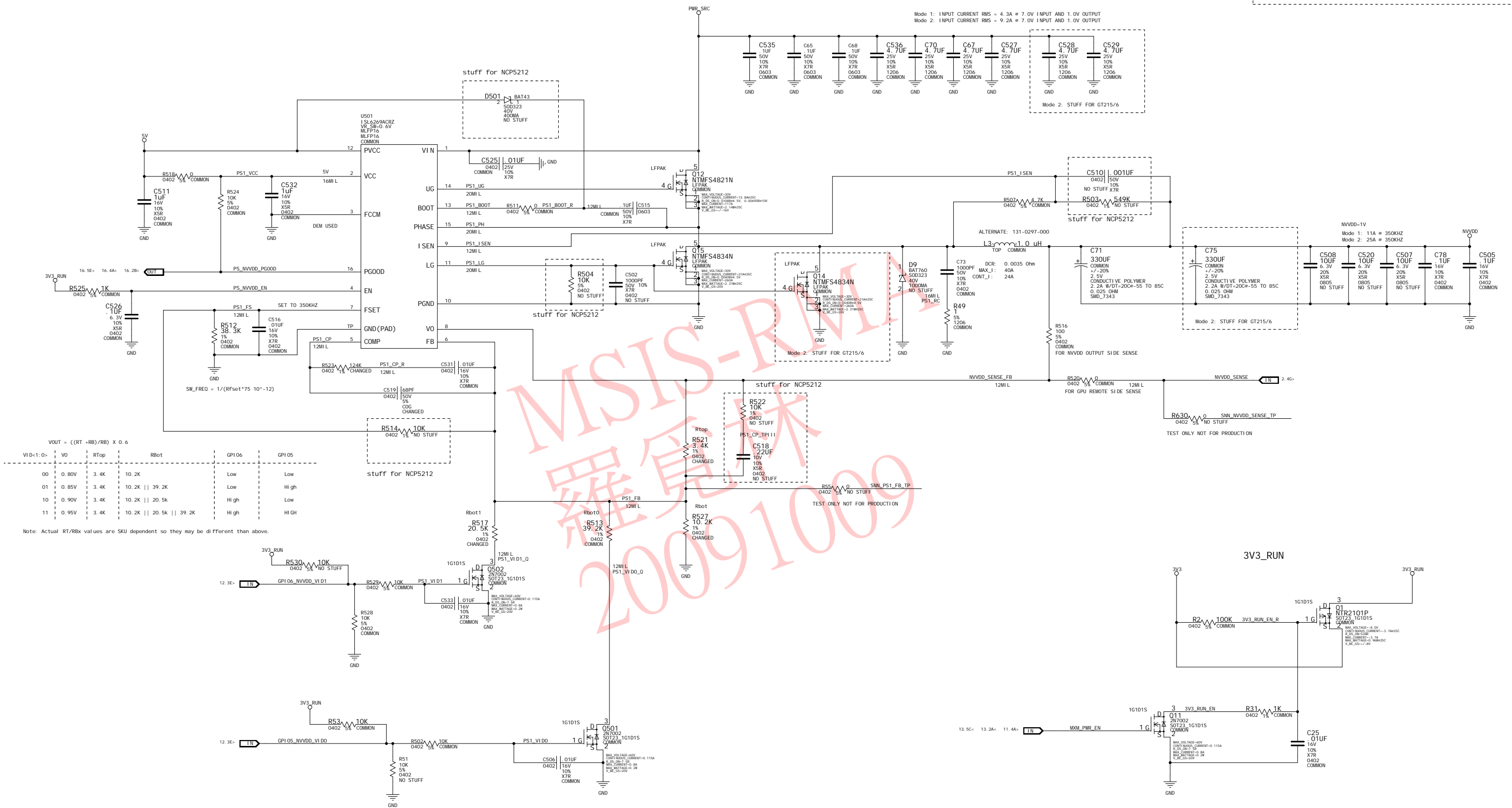
NAME	tl anger	DATE	03-MAR-20
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14. MI OA, MI OB, GPU VDD/DCPLNG/GND



## 15. NVVDD POWER SUPPLY AND 3V3\_RUN

NET	VOLTAGE	MIN_WIDTH	MIN_LENGTH	MAX_CURRENT
NVDD	1V	20MIL		30A

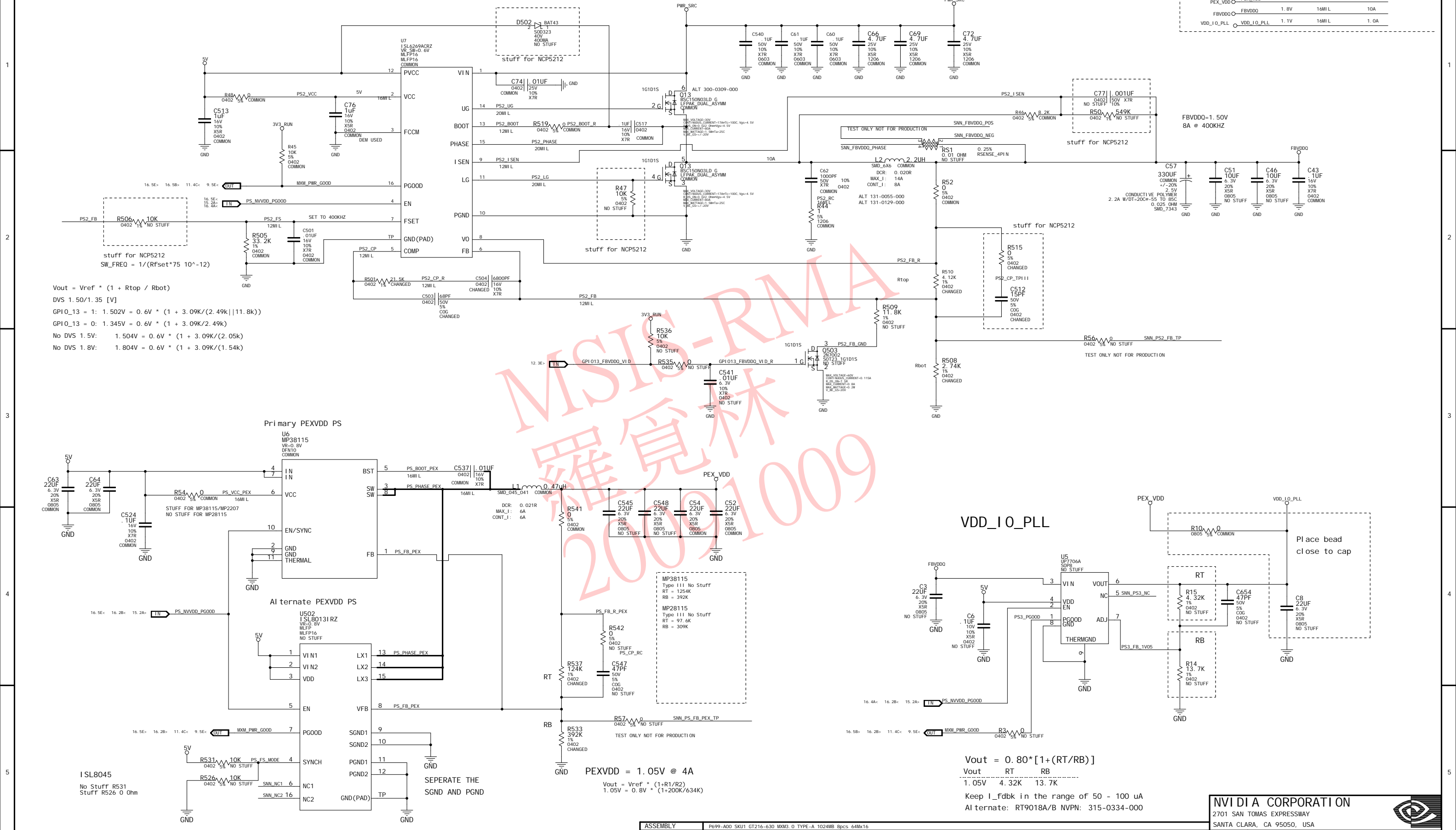


ASSEMBLY	P699-A00 SKU1 GT216-630 MXM3.0 TYPE-A 1024MB 8pcs 64Mx16
PAGE DETAIL	NVVD Power Supply and 3V3_RUN

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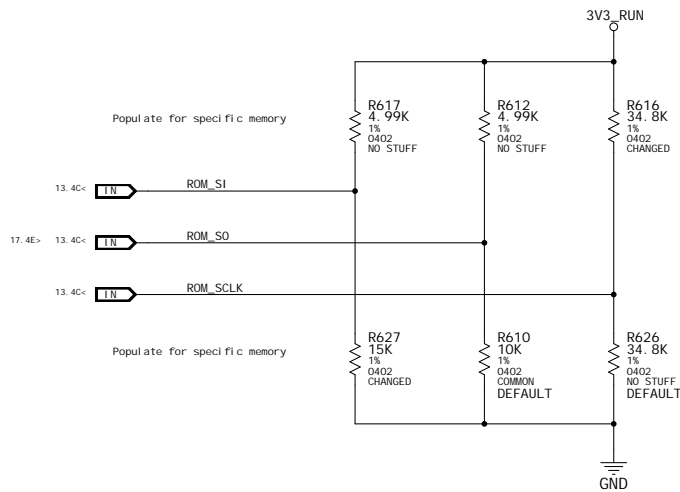
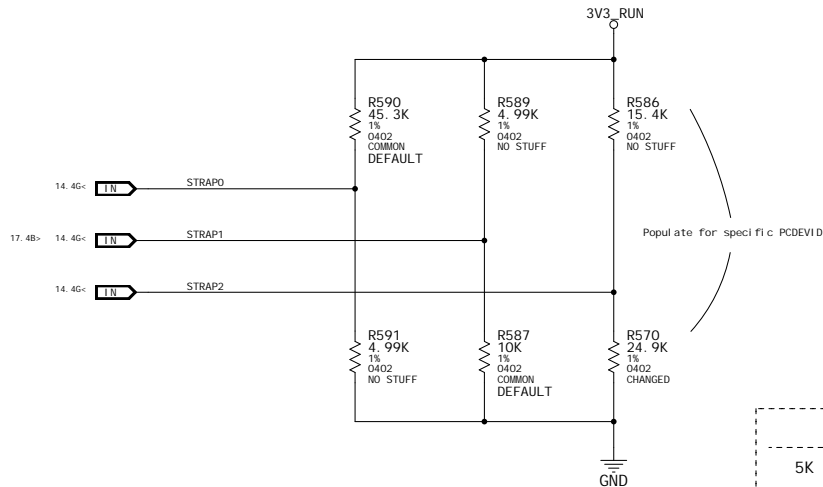
16. FBVDDQ, PEXVDD, AND VDD\_I O\_PLL POWER SUPPLIES



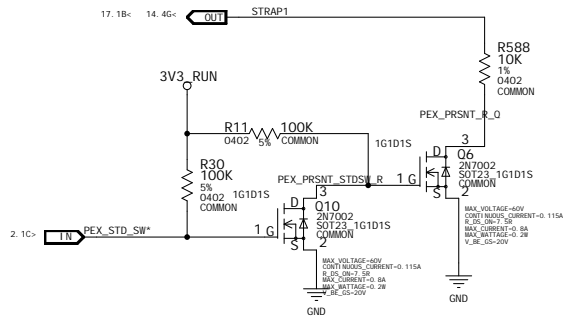
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17. STRAPS, MOUNTING HOLES



PEX\_PADCFG DETECT



PEX_PRSNT_STDSW*	R_STRAP1	3_GI_O_PADCFG_LUT<3..0>
FLOAT	10k	0x1 MOBILE_DEFAULT
GND	5k (10k    10k)	0x0 DESKTOP_DEFAULT

STRAP0

STRAP1

STRAP2

ROM\_SO

ROM\_SI

ROM\_SCLK

USER\_BI TO

USER\_BI T1

USER\_BI T2

USER\_BI T3

Default All SKU(s):

0xF = 45K PU

LVDS Panel EDID Mode

3GI\_O\_PADCFG\_LUT\_ADR0

3GI\_O\_PADCFG\_LUT\_ADR1

3GI\_O\_PADCFG\_LUT\_ADR2

3GI\_O\_PADCFG\_LUT\_ADR3

Set at HW reset by the PEX\_PADCFG Circuit

0x0: Desktop default (normal swing) - 5k PD

0x1: Mobile default (low swing) - 10k PD

PCI\_DEVID\_0

PCI\_DEVID\_1

PCI\_DEVID\_2

PCI\_DEVID\_3

PCDEVID\_3:0] Definitions (Note Actual DEVID set also depends on PCI\_DEVID\_4 )

	GT218	GT216	GT215
1000	5K PU	GT218-700	1000 5K PU GT216-600
0100	25K PD	GT218-730	0100 25K PD GT216-630
1100	25K PD		1100 25K PD GT216-640
			1100 25K PD GT216-950

VGA\_DEVICE

0: 3D DEVICE

Set at HW reset by the Device Detect Circuit

1: VGA\_DEVICE

SMB\_ALT\_ADDR

0: Thermal Sensor ADR = 0x9E

0x1 = 10K PD

FB\_O\_BAR\_SIZE

0: Default

XCLK\_417

0: Default

RAM\_CFG[3:0] Definitions

	GT218 64Mx16	GT215/6
0000	5K PD Reserved	0001 64Mx16 128-bit 10K PD Reserved
0001	10K PD QIMONDA	0010 64Mx16 128-bit 15K PD Hynix
0010	15K PD HYNIX	0011 64Mx16 128-bit 20K PD Samsung
0011	20K PD SAMSUNG	0100 Reserved
		0101 32Mx16 128-bit 30K PD Qimonda
0100	25K PD Reserved	0110 32Mx16 128-bit 35K PD Hynix
0101	30K PD QIMONDA	0111 32Mx16 128-bit 45K PD Samsung
0110	35K PD HYNIX	
0111	45K PD SAMSUNG	

\* 32Mx16 MAY BE 64Mx16 run at 1/2 density

PEX\_PLL\_EN\_TERM100

0: DISABLED

SLOT\_CLK\_CONFIG

1: GPU and MCH COMMON REFCLK

0x6 = 35K PD PCDEVID\_EXT=0

SUB\_VENDOR

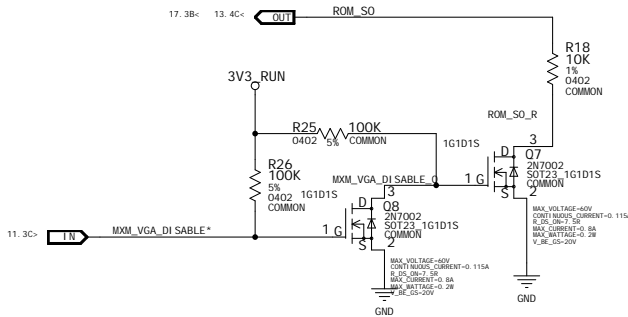
1: VBIOS ROM IS PRESENT

0xE = 35K PU PCDEVID\_EXT=1

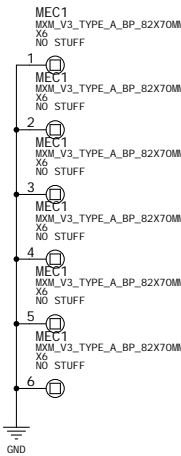
PCI\_DEVID\_EXT

0: PCDEVID[4] = 0 or 1 (SKU Specific)

DEVICE DETECT



VGA_DISABLE#	R_ROM_SO	MODE
FLOAT	10k	0x1 VGA MODE
GND	5k (10k    10k)	0x0 3D ACCELERATOR



NVIDIA CORPORATION

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SANTA CLARA, CA 95050, USA



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NAME t1anger DATE 03-MAR-2009

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