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EB_IMX-DSI-SDSB

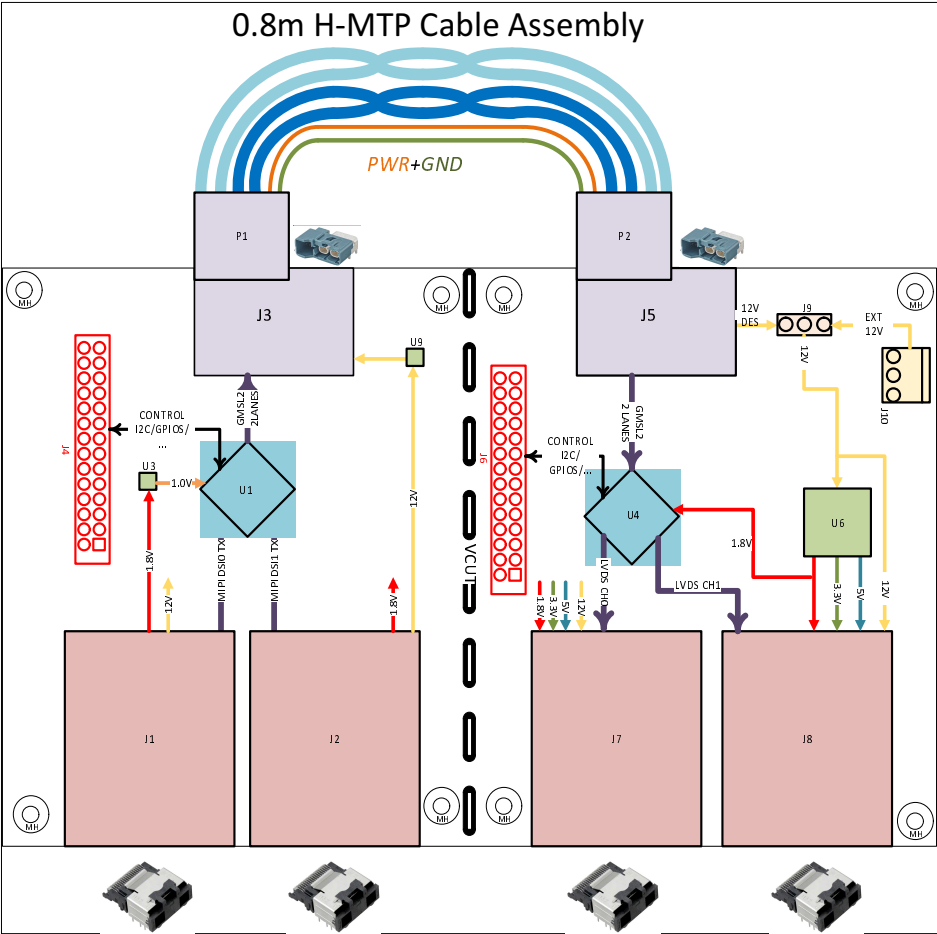
REV B1

(DSI SERDES BOARD)

Revisions			
Rev	Description	Date	Approved
X1	DRAFT FOR REVIEW	5/20/22	
X2	-Updated review comments -PMIC change to VR5500	5/31/22	
X3	Updated review comments from Dylan	6/13/22	
X4	GMSL connector changed to H-MIP	6/28/22	
X5	LDO U3 changed to AP7361C	7/14/22	
X6	Comments from Dylan. 1. J4, J6 connectors changed to 2x15. 2. LVDS_EN from PGOOD of U6. 3. 2x3 jumpers with PU-PD added.	7/14/22	
X7	Comments from Johnson: 1. Changed 12V switch U10 2. Enable of U10 switch driven from DSI_EN from MIPI connector 3. I2C connections to LVDS1 made separate	8/3/22	
A	1. 12V and GND connection on HMTD connector chnaged for easy route. 2. Release design for mfg	8/12/22	
AX1	1. MAX96789 SDA_RX&SCL_TX is connected to MIPI_DSI0 port and SDA1_RX1&SCL1_TX1 is connected to MIPI_DSI1 port. 2. MAX96752 SDA_RX&SCL_TX (PIN8&9) to both LVDS0 and LVDS1 miniSAS connectors.	7/24/23	
AX2	Comments from Johnson - Move MAX96752_I2C1 and MAX96752_I2C connections to both LVDS connectors through jumper selection.	7/25/23	
B	Release for MFG	8/1/23	
B1	Defined R71 and R72 as DNP.	26/7/24	

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Designer: KINJALK	Drawing Title: IMX-DSI-SDSB		
Drawn by: KINJALK	Page Title: 01 TITLE		
Approved: Johnson	Size C	Document Number SCH-55284 PDF: SPF-55284	Rev B1
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BLOCK DIAGRAM



BOM

Item	Quantity	Alt Part	Assy Opt	Reference	Description	MFG. NAME1	MFG. PART	Value
1	4	11-00-139		U1, U2, U3, U4	CON 2X 18 RASKY W/ 18 LEMO 18MM SP 339H ALU	MOLEX	075785-2-132	CON 2X 18
2	2	11-00-144		U5, U6	CON 10 PLANTY 10A 10MM SP 339H ALU	MOLEX	075785-2-132	CON 10 2X 18
3	2	11-00-179	200P	U7, U8	CON 2X 10 10MM LCT 339H ALU	MOLEX	075785-2-132	CON 2X 10
4	1	11-00-173		U9	CON 3X 12 3.4MM SP 3444 ALU	MOLEX	075785-2-132	CON 3X 12
5	1	11-00-184		U10	CON 3X 12 3.4MM SP 3444 ALU	MOLEX	075785-2-132	CON 3X 12
6	1	11-00-185		U11	CON 3X 12 3.4MM SP 3444 ALU	MOLEX	075785-2-132	CON 3X 12
7	1	11-00-186		U12	CON 3X 12 3.4MM SP 3444 ALU	MOLEX	075785-2-132	CON 3X 12
8	1	11-00-187		U13	CON 3X 12 3.4MM SP 3444 ALU	MOLEX	075785-2-132	CON 3X 12
9	1	11-00-188		U14	CON 3X 12 3.4MM SP 3444 ALU	MOLEX	075785-2-132	CON 3X 12
10	1	11-00-189		U15	CON 3X 12 3.4MM SP 3444 ALU	MOLEX	075785-2-132	CON 3X 12

Stackup Information:

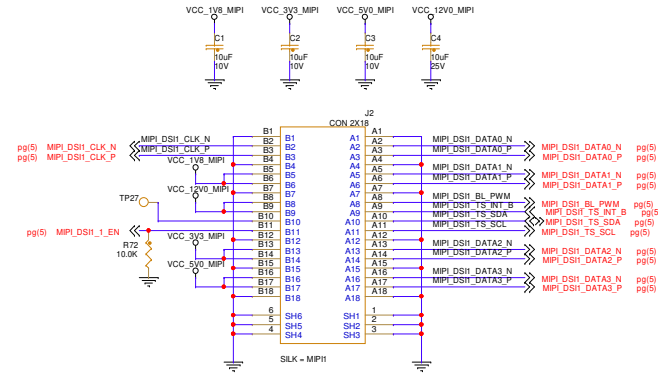
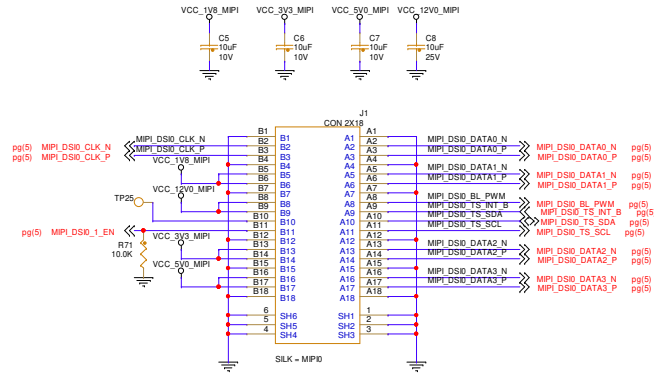
Layer	DK	Info	DF	Thickness
TOP		=====		0.5 OZ+Plating=1.5mil
	4.15	TU768-PP 3313	0.019	3.48 (mil)
L2		=====		H Oz=0.6mil
	4.30	TU768-Core 0.1MM	0.019	3.94 (mil)
L3		=====		H Oz=0.6mil
		TU768-PP 1080*2		5.19(mil)
	3.80	TU768-Core (No copper)	0.019	27.95(mil)
		TU768-PP 1080*2		5.19(mil)
L4		=====		H Oz=0.6mil
	4.30	TU768-Core 0.1MM	0.019	3.94 (mil)
L5		=====		H Oz=0.6mil
	4.15	TU768-PP 3313	0.019	3.48 (mil)
BOT		=====		0.5 OZ+Plating=1.5mil

Finished:	61.8(6.2/-6.2) mil	1.57+0.16/-0.16) MM
Designed:	62 mil	1.6 MM
Material:	TU768	

Impedance Information:

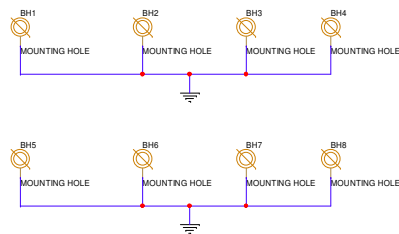
Ctrl	Ref	Imp_type	Cust_req	Imp_req	HB_des	Imp_des	mask	H1	Er1	H2	Er2
L1	L2	Single-Ended	5.4	50+/-10%	5.4	49.97		3.48	4.15		
L1	L2	Differential	4.5/7.0	100+/-10%	4.5/7.0	100.28		3.48	4.15		
L3	L2/L4	Single-Ended	5.5	50+/-10%	5.5	49.88		3.94	4.3	40.1	3.8
L3	L2/L4	Differential	4.3/8.0	100+/-10%	4.3/8.0	100.89		3.94	4.3	40.1	3.8
L4	L3/L5	Single-Ended	5.5	50+/-10%	5.5	49.88		3.94	4.3	40.1	3.8
L4	L3/L5	Differential	4.3/8.0	100+/-10%	4.3/8.0	100.89		3.94	4.3	40.1	3.8
L6	L5	Single-Ended	5.4	50+/-10%	5.4	49.97		3.48	4.15		
L6	L5	Differential	4.5/7.0	100+/-10%	4.5/7.0	100.28		3.48	4.15		

MIPI DSI (MINI SAS CONNECTORS)

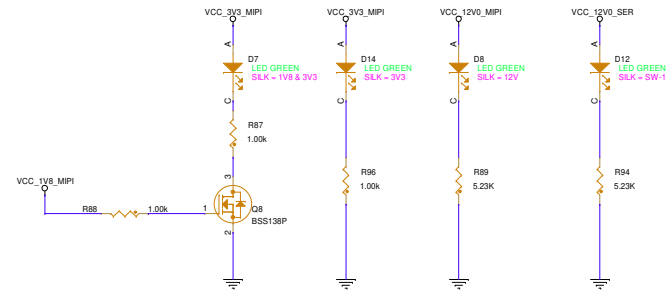


Mini-SAS cables cross connect the Ax pins to Bx (x=1 to 18)

MOUNTING HOLES (Place on corners of VCUT boards)



LED for POWER



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Drawing Title: IMX-DSI-SDSB			
Page Title: 04 MIPI_DSI			
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[illegible]

GMSL2+ SERIALISER

H-MTD CONNECTOR

CONNECTOR 12V SWITCH

HEADER FOR ALL SER PINS

CFG JUMPERS

1V LDO

LED's LOCK AND ERRB

IMX-DSI-SDSB

05 MIPI TO GMSL2 SERIALISER

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Page Title:

Size C

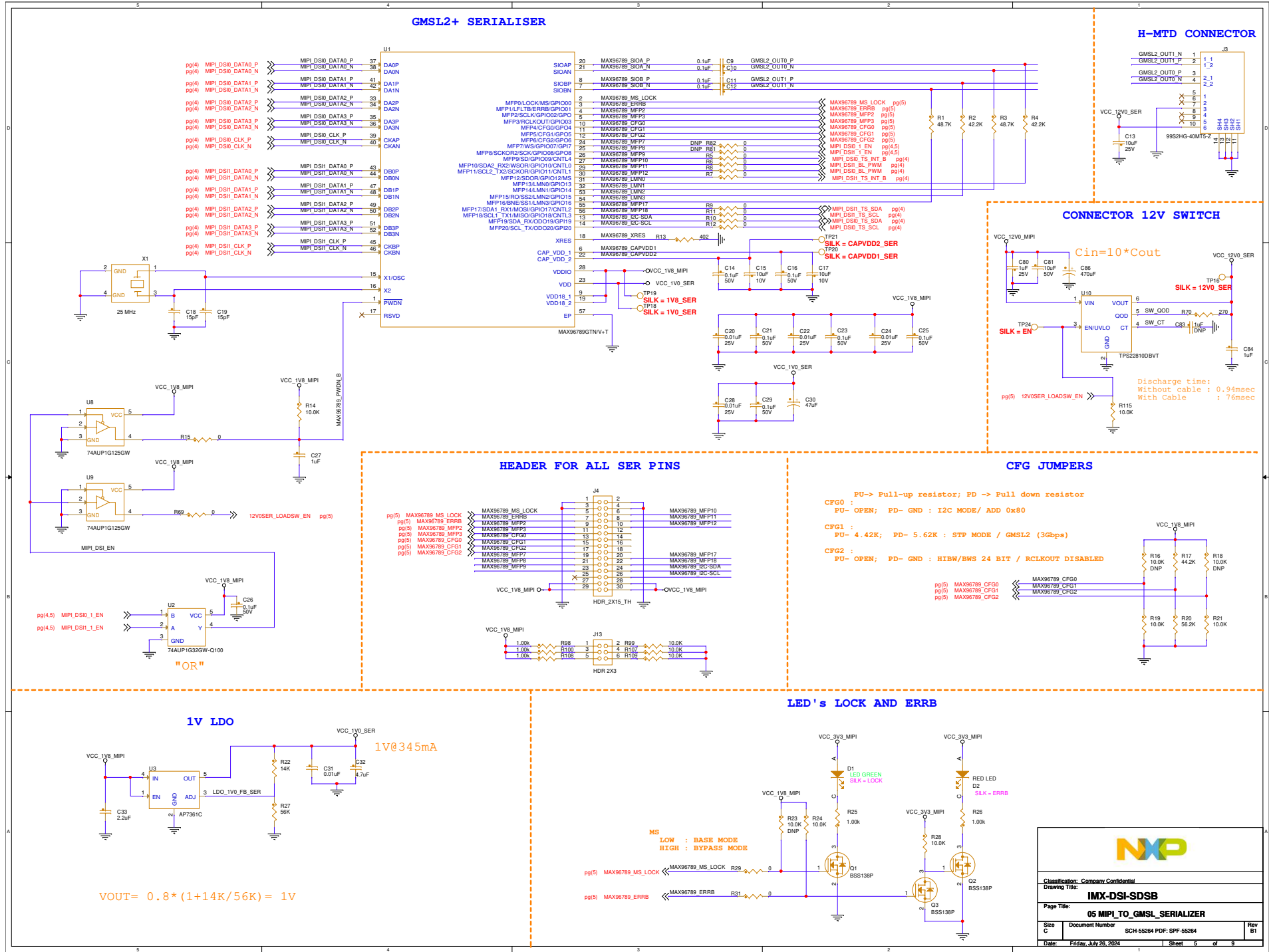
Document Number

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1V LDO

VOUT = 0.8 * (1 + 14K/56K) = 1V

LED's LOCK AND ERRB

MS LOW : BASE MODE
HIGH : BYPASS MODE

12V SWITCH

Cin = 10 * Cout

SILK = 12V0_SER

SILK = EN

H-MTD CONNECTOR

GMSL2_OUT1_N 1 1-1
GMSL2_OUT1_P 2 1-2
GMSL2_OUT0_P 3 2-1
GMSL2_OUT0_N 4 2-2

CONNECTOR 12V SWITCH

VCC_12V0_SER

VCC_12V0_MIP1

SILK = 12V0_SER

SILK = EN

Discharge time:
Without cable : 0.94msec
With Cable : 76msec

HEADER FOR ALL SER PINS

J4

J13

CFG JUMPERS

PU -> Pull-up resistor; PD -> Pull down resistor

CFG0 :
PU - OPEN; PD - GND : I2C MODE/ ADD 0x80

CFG1 :
PU - 4.42K; PD - 5.62K : STP MODE / GMSL2 (3Gbps)

CFG2 :
PU - OPEN; PD - GND : HIBW/BWS 24 BIT / RCLKOUT DISABLED

MAX96789 Pin List

Pin	Signal	Pin	Signal
1	MAX96789 MS_LOCK	27	MAX96789 MFP10
2	MAX96789 ERRB	28	MAX96789 MFP11
3	MAX96789 MFP2	29	MAX96789 MFP12
4	MAX96789 MFP3	30	MAX96789 MFP17
5	MAX96789 CF00	31	MAX96789 MFP18
6	MAX96789 CF01	32	MAX96789 MFP19
7	MAX96789 CF02	33	MAX96789 MFP20
8	MAX96789 CF03	34	MAX96789 MFP21
9	MAX96789 CF04	35	MAX96789 MFP22
10	MAX96789 CF05	36	MAX96789 MFP23
11	MAX96789 CF06	37	MAX96789 MFP24
12	MAX96789 CF07	38	MAX96789 MFP25
13	MAX96789 CF08	39	MAX96789 MFP26
14	MAX96789 CF09	40	MAX96789 MFP27
15	MAX96789 CF10	41	MAX96789 MFP28
16	MAX96789 CF11	42	MAX96789 MFP29
17	MAX96789 CF12	43	MAX96789 MFP30
18	MAX96789 CF13	44	MAX96789 MFP31
19	MAX96789 CF14	45	MAX96789 MFP32
20	MAX96789 CF15	46	MAX96789 MFP33
21	MAX96789 CF16	47	MAX96789 MFP34
22	MAX96789 CF17	48	MAX96789 MFP35
23	MAX96789 CF18	49	MAX96789 MFP36
24	MAX96789 CF19	50	MAX96789 MFP37
25	MAX96789 CF20	51	MAX96789 MFP38
26	MAX96789 CF21	52	MAX96789 MFP39
27	MAX96789 CF22	53	MAX96789 MFP40
28	MAX96789 CF23	54	MAX96789 MFP41
29	MAX96789 CF24	55	MAX96789 MFP42
30	MAX96789 CF25	56	MAX96789 MFP43
31	MAX96789 CF26	57	MAX96789 MFP44
32	MAX96789 CF27	58	MAX96789 MFP45
33	MAX96789 CF28	59	MAX96789 MFP46
34	MAX96789 CF29	60	MAX96789 MFP47
35	MAX96789 CF30	61	MAX96789 MFP48
36	MAX96789 CF31	62	MAX96789 MFP49
37	MAX96789 CF32	63	MAX96789 MFP50
38	MAX96789 CF33	64	MAX96789 MFP51
39	MAX96789 CF34	65	MAX96789 MFP52
40	MAX96789 CF35	66	MAX96789 MFP53
41	MAX96789 CF36	67	MAX96789 MFP54
42	MAX96789 CF37	68	MAX96789 MFP55
43	MAX96789 CF38	69	MAX96789 MFP56
44	MAX96789 CF39	70	MAX96789 MFP57
45	MAX96789 CF40	71	MAX96789 MFP58
46	MAX96789 CF41	72	MAX96789 MFP59
47	MAX96789 CF42	73	MAX96789 MFP60
48	MAX96789 CF43	74	MAX96789 MFP61
49	MAX96789 CF44	75	MAX96789 MFP62
50	MAX96789 CF45	76	MAX96789 MFP63
51	MAX96789 CF46	77	MAX96789 MFP64
52	MAX96789 CF47	78	MAX96789 MFP65
53	MAX96789 CF48	79	MAX96789 MFP66
54	MAX96789 CF49	80	MAX96789 MFP67
55	MAX96789 CF50	81	MAX96789 MFP68
56	MAX96789 CF51	82	MAX96789 MFP69
57	MAX96789 CF52	83	MAX96789 MFP70
58	MAX96789 CF53	84	MAX96789 MFP71
59	MAX96789 CF54	85	MAX96789 MFP72
60	MAX96789 CF55	86	MAX96789 MFP73
61	MAX96789 CF56	87	MAX96789 MFP74
62	MAX96789 CF57	88	MAX96789 MFP75
63	MAX96789 CF58	89	MAX96789 MFP76
64	MAX96789 CF59	90	MAX96789 MFP77
65	MAX96789 CF60	91	MAX96789 MFP78
66	MAX96789 CF61	92	MAX96789 MFP79
67	MAX96789 CF62	93	MAX96789 MFP80
68	MAX96789 CF63	94	MAX96789 MFP81
69	MAX96789 CF64	95	MAX96789 MFP82
70	MAX96789 CF65	96	MAX96789 MFP83

GMSL2+ SERIALISER

H-MTD CONNECTOR

CONNECTOR 12V SWITCH

HEADER FOR ALL SER PINS

CFG JUMPERS

LED's LOCK AND ERBB

1V LDO

VOUT = 0.8 * (1 + 14K/56K) = 1V

Discharge time:
Without cable : 0.94msec
With Cable : 76msec

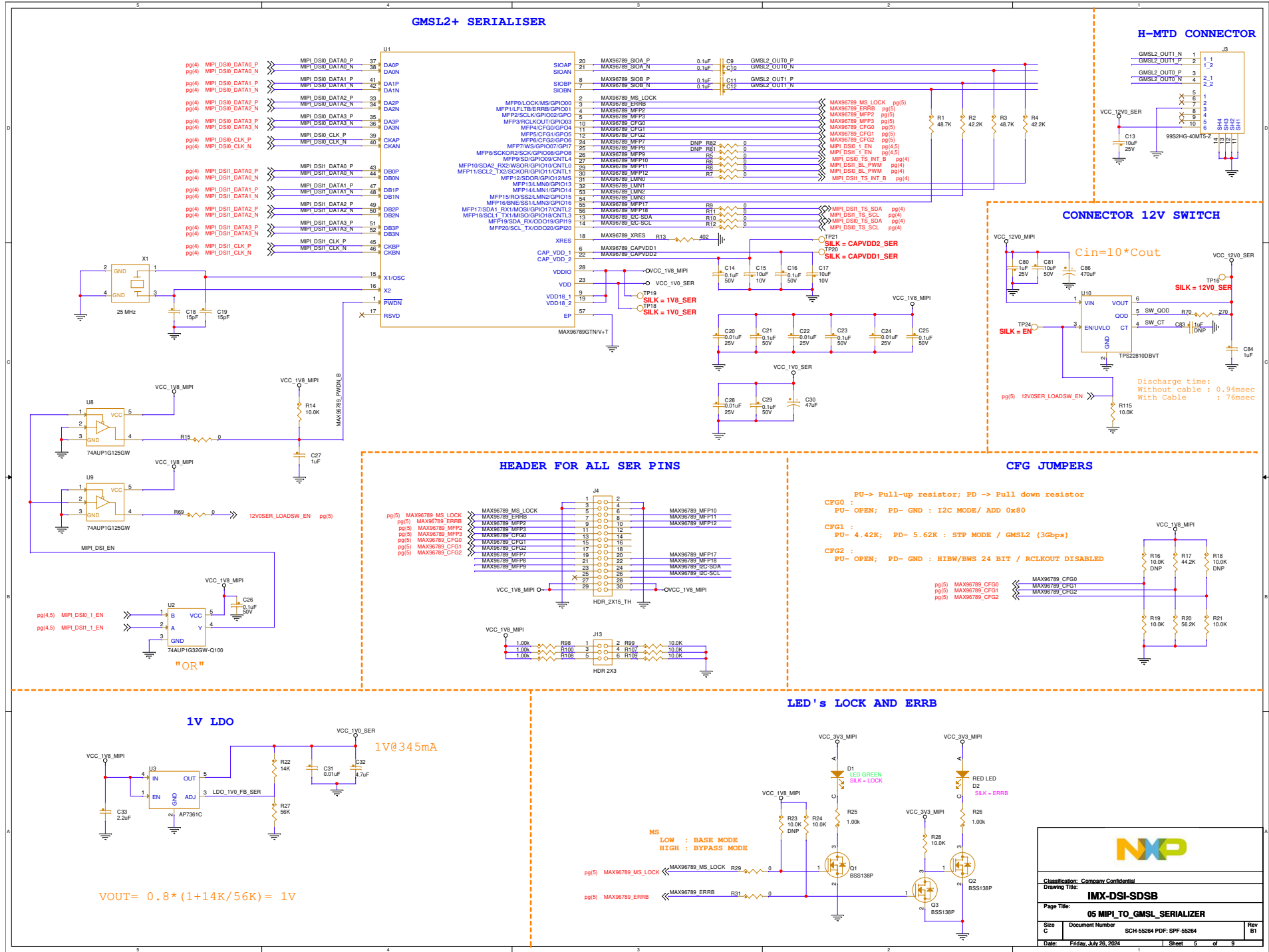
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Drawing 1 of 1

Page Title:
IMX-DSI-SDSB
05 MIPI_TO_GMSL_SERIALISER

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GMSL2+ SERIALISER

H-MTD CONNECTOR

CONNECTOR 12V SWITCH

HEADER FOR ALL SER PINS

CFG JUMPERS

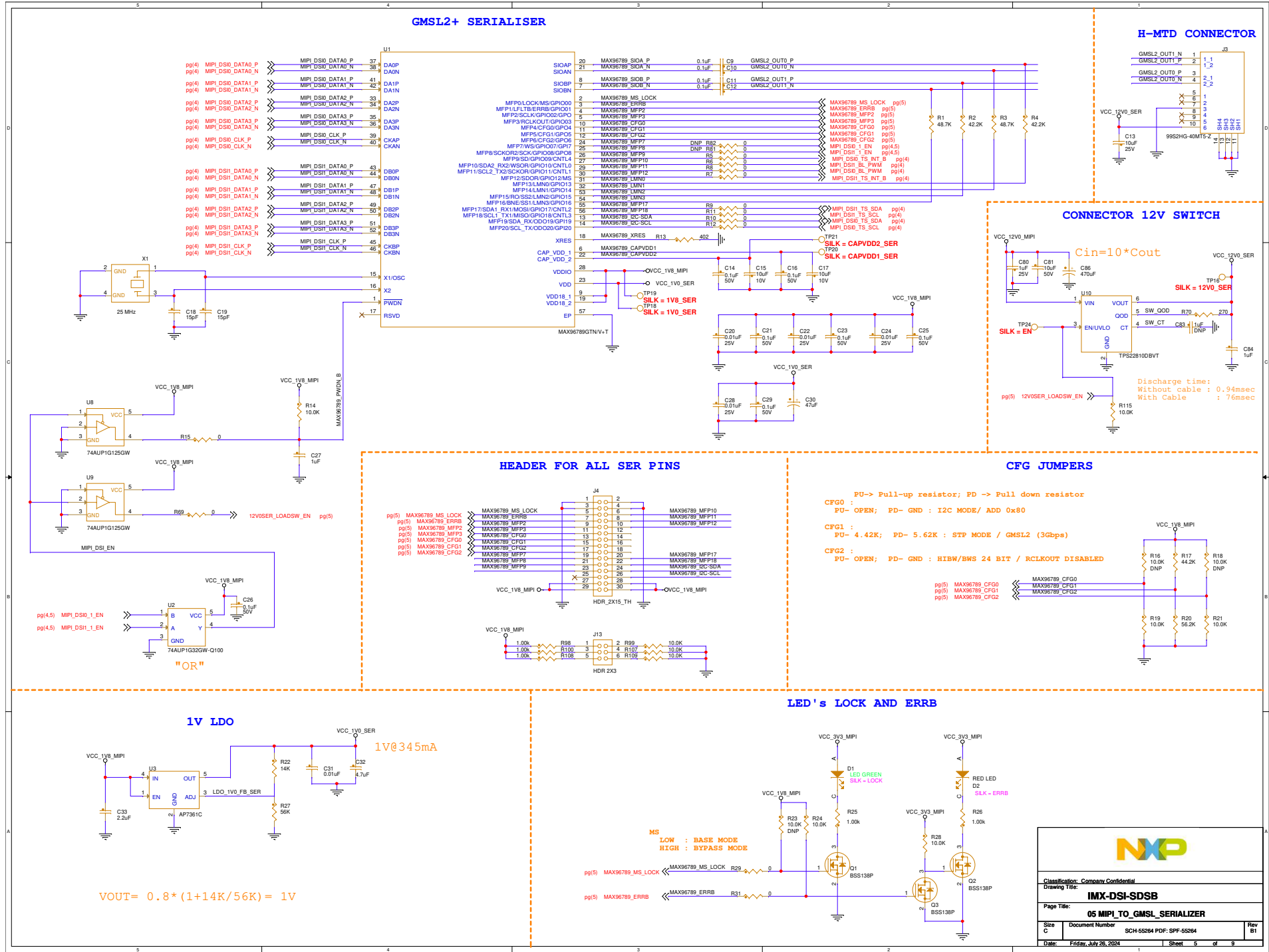
LED's LOCK AND ERRB

1V LDO

VOUT = 0.8 * (1 + 14K / 56K) = 1V

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Drawing 1 of 1
IMX-DSI-SDSB
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05 MIPI_TO_GMSL_SERIALISER
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GMSL2+ SERIALISER

H-MTD CONNECTOR

CONNECTOR 12V SWITCH

HEADER FOR ALL SER PINS

CFG JUMPERS

1V LDO

LED's LOCK AND ERRB

IMX-DSI-SDSB 05 MIPI TO GMSL2 SERIALISER

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GMSL2+ SERIALISER

H-MTD CONNECTOR

CONNECTOR 12V SWITCH

HEADER FOR ALL SER PINS

CFG JUMPERS

1V LDO

LED's LOCK AND ERRB

IMX-DSI-SDSB 05 MIPI TO GMSL2 SERIALISER

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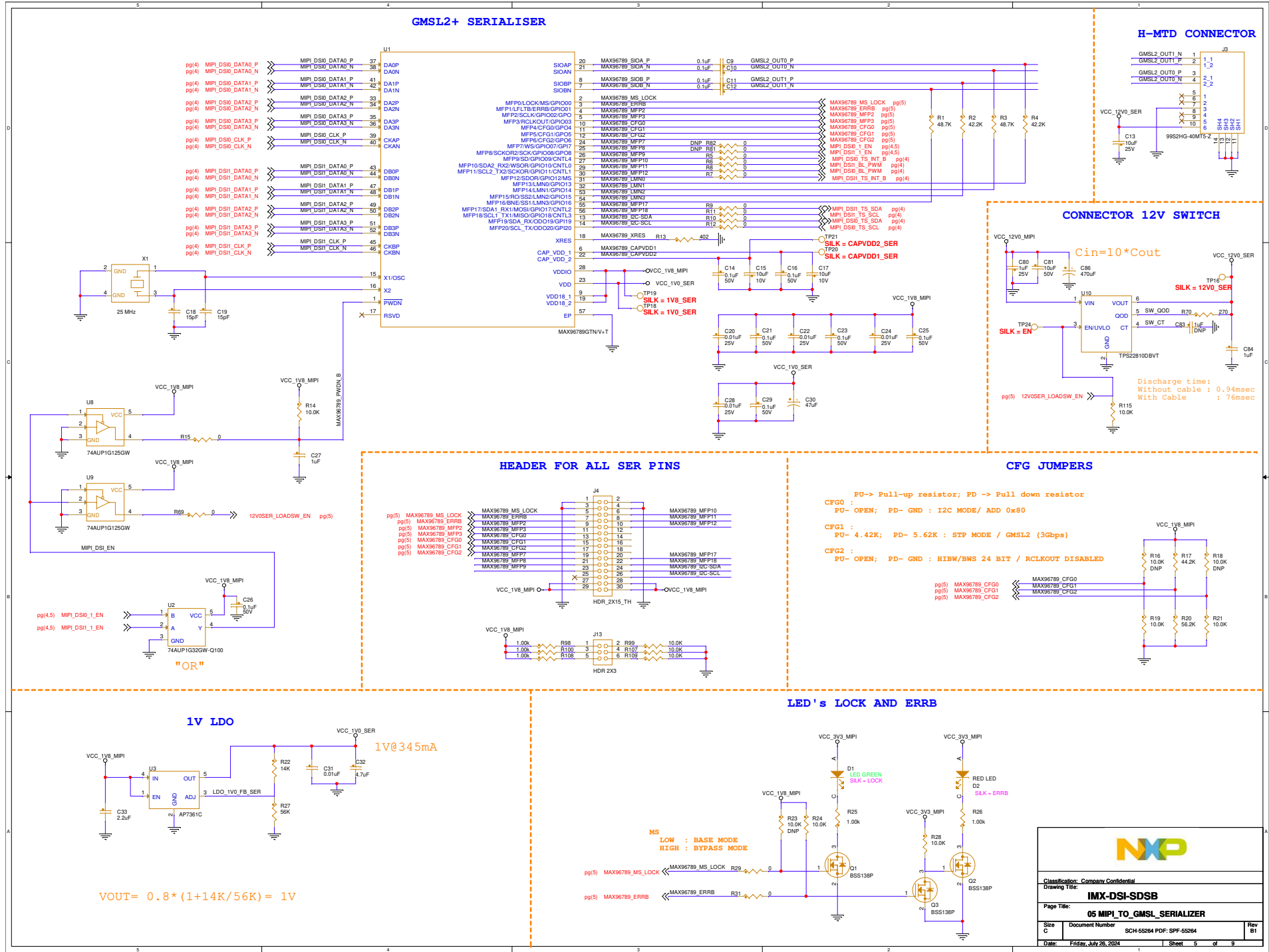
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GMSL2+ SERIALISER

H-MTD CONNECTOR

CONNECTOR 12V SWITCH

HEADER FOR ALL SER PINS

CFG JUMPERS

1V LDO

LED's LOCK AND ERRB

IMX-DSI-SDSB 05 MIPI TO GMSL2 SERIALISER

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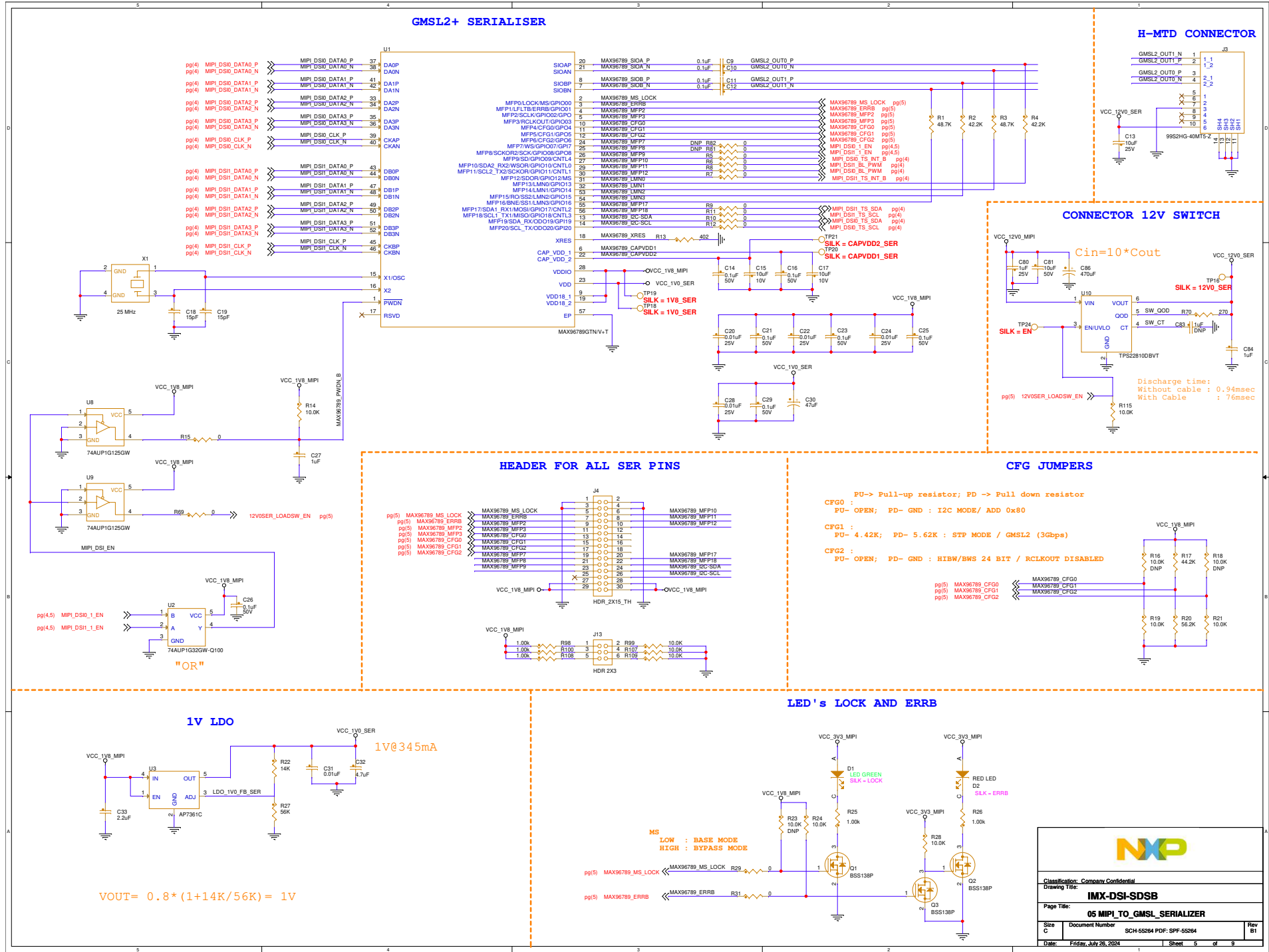
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1V LDO

VOUT = $0.8 * (1 + 14K / 56K) = 1V$

LED's LOCK AND ERRB

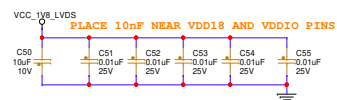
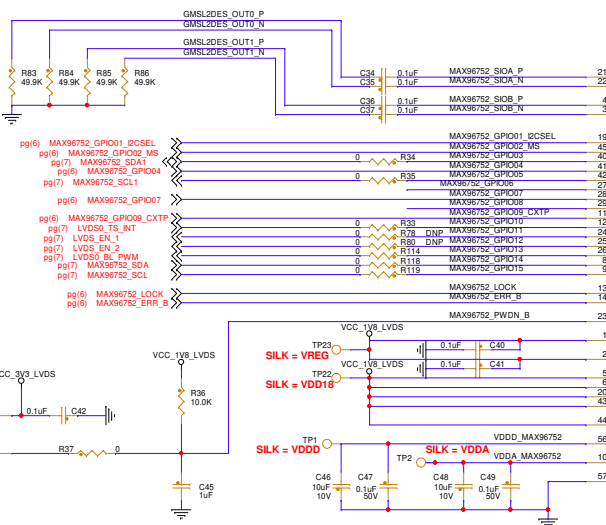
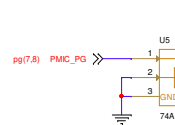
12V SWITCH

H-MTD CONNECTOR

SERIALIZER

Table:

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05 MIPI TO GMSL2 SERIALISER	
Size C	Document Number SCH-55264 PDF: SPF-55264
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U14

Pin	Label	Signal	Target
38	TXOUT_A0P	LVD50_CH0_TX0_P	pg1(f)
39	TXOUT_A0N	LVD50_CH0_TX0_N	pg1(f)
36	TXOUT_A1P	LVD50_CH0_TX1_P	pg1(f)
37	TXOUT_A1N	LVD50_CH0_TX1_N	pg1(f)
34	TXCLK_OUTAP	LVD50_CH0_CLK_P	pg1(f)
35	TXCLK_OUTAN	LVD50_CH0_CLK_N	pg1(f)
32	TXOUT_A2P	LVD50_CH0_TX2_P	pg1(f)
33	TXOUT_A2N	LVD50_CH0_TX2_N	pg1(f)
30	TXOUT_A3P	LVD50_CH0_TX3_P	pg1(f)
31	TXOUT_A3N	LVD50_CH0_TX3_N	pg1(f)
54	TXOUT_B0P	LVD50_CH1_TX0_P	pg1(f)
55	TXOUT_B0N	LVD50_CH1_TX0_N	pg1(f)
52	TXOUT_B1P	LVD50_CH1_TX1_P	pg1(f)
53	TXOUT_B1N	LVD50_CH1_TX1_N	pg1(f)
50	TXCLK_OUTBP	LVD50_CH1_CLK_P	pg1(f)
51	TXCLK_OUTBN	LVD50_CH1_CLK_N	pg1(f)
48	TXOUT_B2P	LVD50_CH1_TX2_P	pg1(f)
49	TXOUT_B2N	LVD50_CH1_TX2_N	pg1(f)
46	TXOUT_B3P	LVD50_CH1_TX3_P	pg1(f)
47	TXOUT_B3N	LVD50_CH1_TX3_N	pg1(f)

X1:OSC
X2
XRES
RSVD_1
RSVD_2

MAX96752_X1
MAX96752_X2
MAX96752_XRES

C43 15pF
C44 15pF
25 Mhz
402 R38

Figure 1: Pin connections for MAX96752. The diagram shows two connector pin headers, J6 and J14, with their respective pin numbers and connections to the MAX96752 chip. J6 (30 pins) connects to various chip pins: 1 to 10, 13 to 16, 19 to 21, 24 to 26, 28 to 29, and 30 to 30. J14 (6 pins) connects to pins R104, R105, R106, R101, R102, and R103. Power and ground connections are also shown, including VCC_1V8_LVDS and HDR_2X15_TH.

LED's FOR LOCK AND ERRB

VCC_3V3 LVDS

D3 LED GREEN
SILK=LOCK

VCC_3V3 LVDS

RED LED
D4

VCC_3V3 LVDS

R45 10.0K
R46 10.0K
DNP

R47 1.00k

R43 10.0K
R44 10.0K

R48 1.00k

Q4 BSS138P

Q5 BSS138P

MAX96752_LOCK

MAX96752_ERRB

R50 0

R51 0

pg(6) MAX96752_LOCK

pg(6) MAX96752_ERRB

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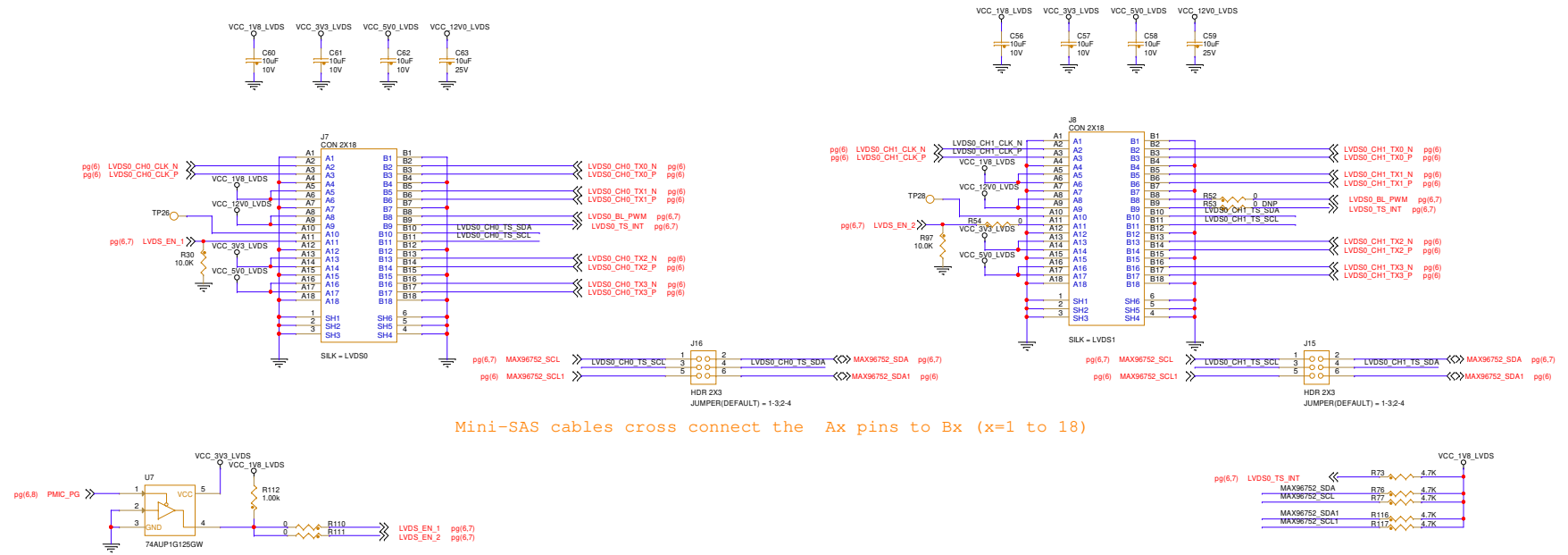
MS
  LOW  : BASE MODE
  HIGH : BYPASS MODE

CXTF
  LOW  : TWISTED PAIR MODE
  HIGH : COAX MODE

I2CSEL
  LOW  : UART ENABLED
  HIGH : I2C ENABLED

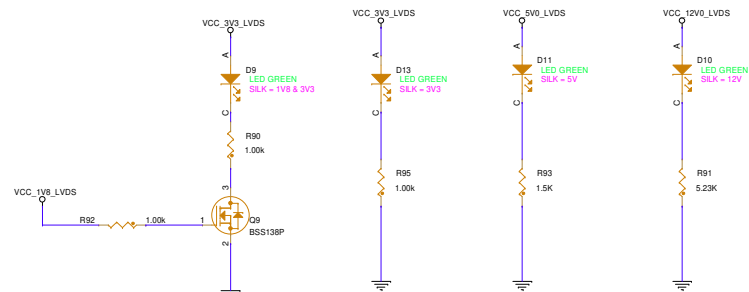
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LVDS CONNECTIONS (MINI-SAS CONNECTORS)



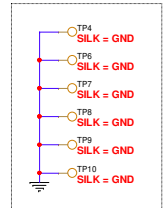
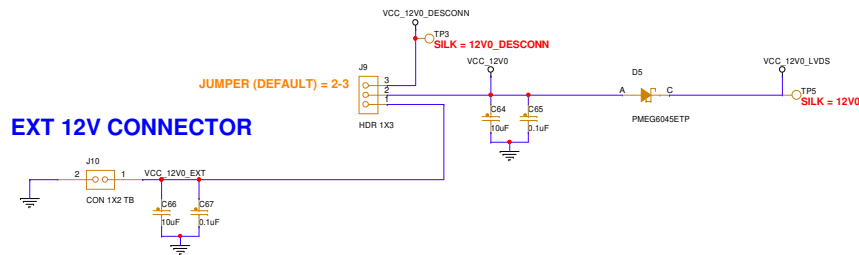
LED for POWER

Resistors chosen for 2mA If current

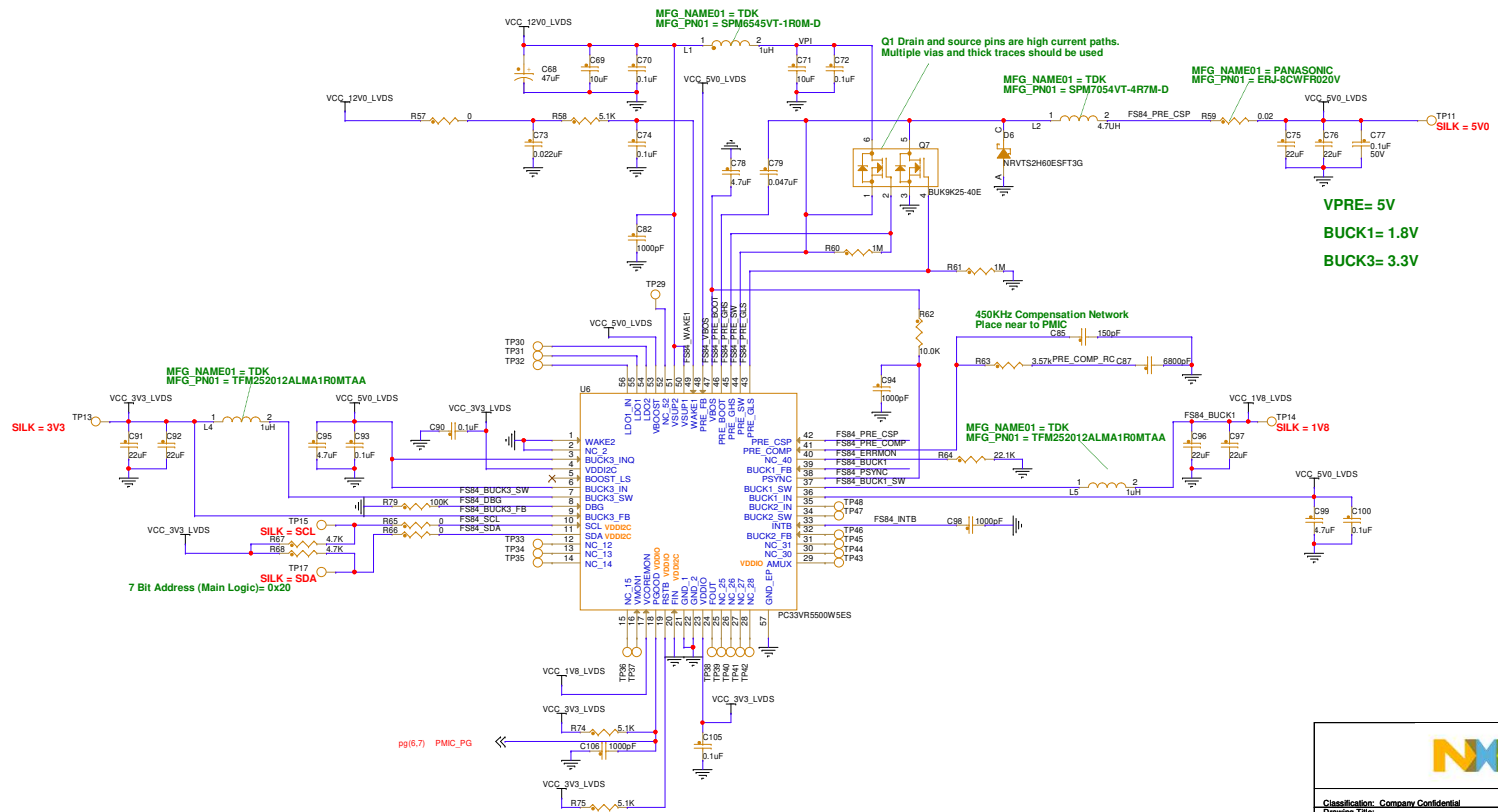


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Page Title: 07 LVDS_CONNECTORS			
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EXT 12V CONNECTOR



VPRE= 5V
BUCK1= 1.8V
BUCK3= 3.3V



IMX-DSI-SDSB

08 PMIC_LVDS_SUPPLIES

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REF DES	JUMPER(DEFAULT)	PAGE NAME
J15,J16	1-3,2-4	07 LVDS CONNECTORS
J9	2-3	08 PMIC LVDS SUPPLIES

REF DES	ASSY OPT	PAGE NAME
C83,R16,R18,R23	DNP	05 MIPI TO GMSL SERIALIZER
R39,R40,R44,R45,R78,R80	DNP	06 GMSL TO LVDS DESERIALISE
R53	DNP	07 LVDS CONNECTORS
J11,J12	DNP	09 Jumper Tables

Only for TEST

Mount connectors and
Connect wires between J11 and J12
to test the SERIALISER when power is not available from MIPI (mSAS) cables

