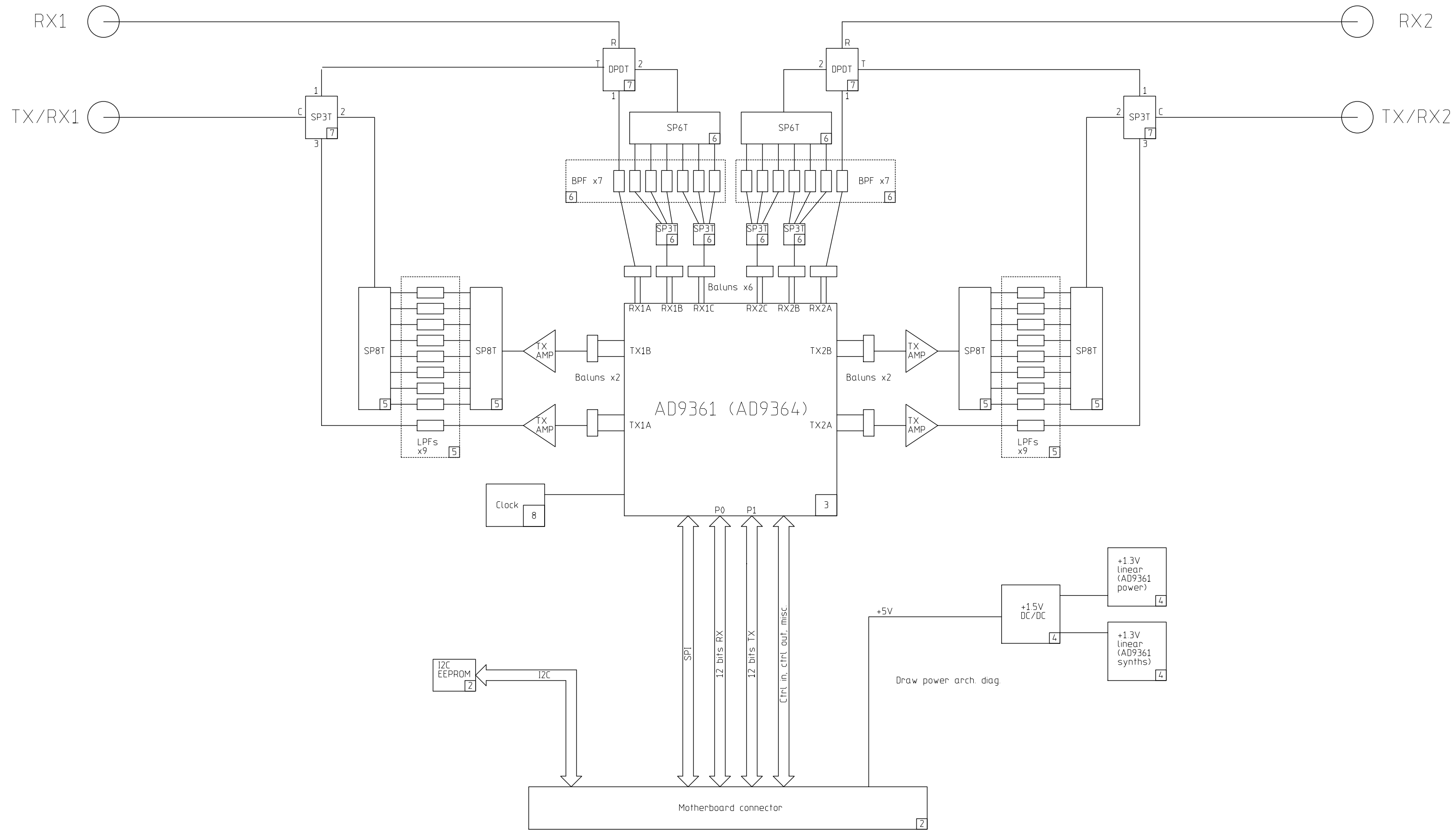


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REVISIONS	
REV	DESCRIPTION
1	REFER TO DATABASE FOR DWG STATUS



GLOBAL FIDUCIALS	
NC_FD.1	FD1
NC_FD.2	FD3
NC_FD.3	FD2
NC_FD.4	FD5
NC_FD.5	FD6
NC_FD.6	FD4

TOOLING HOLES	
NTP_NC.1	1MH1
NTP_NC.2	1MH2
NTP_NC.3	1MH3
NTP_NC.4	1MH4

DESIGN TEAM	
DRAWN Nick Foster, J. Kiser	DATE 05/07/2015
REVISED	DATE
CHECKED Jorge Quintero	
TECH Ryan Reyes	
ENGR Nick Foster	

NATIONAL INSTRUMENTS® AUSTIN, TEXAS

TITLE
SCHEMATIC DIAGRAM
E310 DAUGHTERBOARD,
70 MHz - 6 GHz, 2x2 MIMO

SIZE C	CODE IDENT NO. 7U296	DRAWING NO. 154906E-01	REV 1
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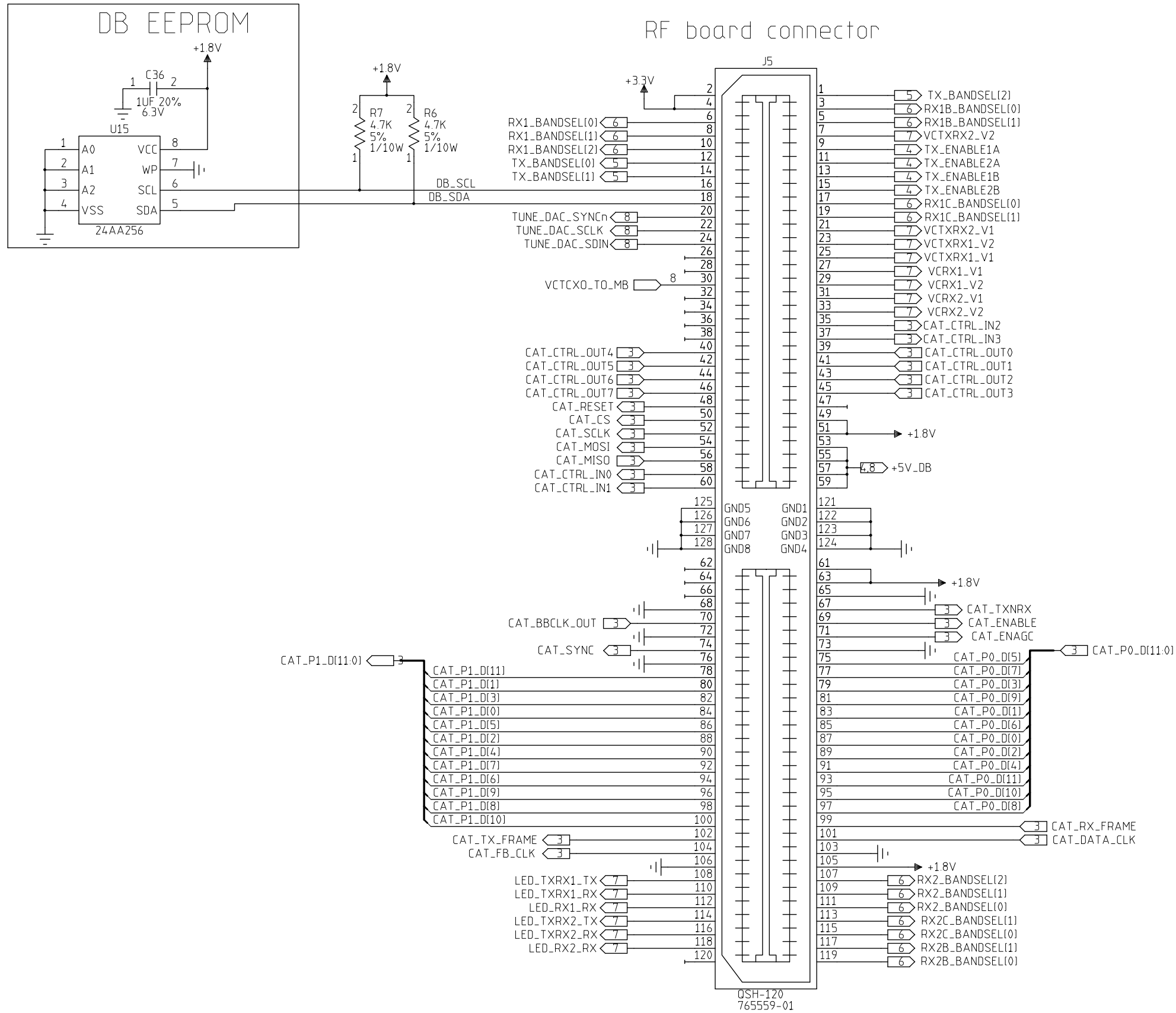
SCALE: NONE SHEET 01 OF 08

154906E-01

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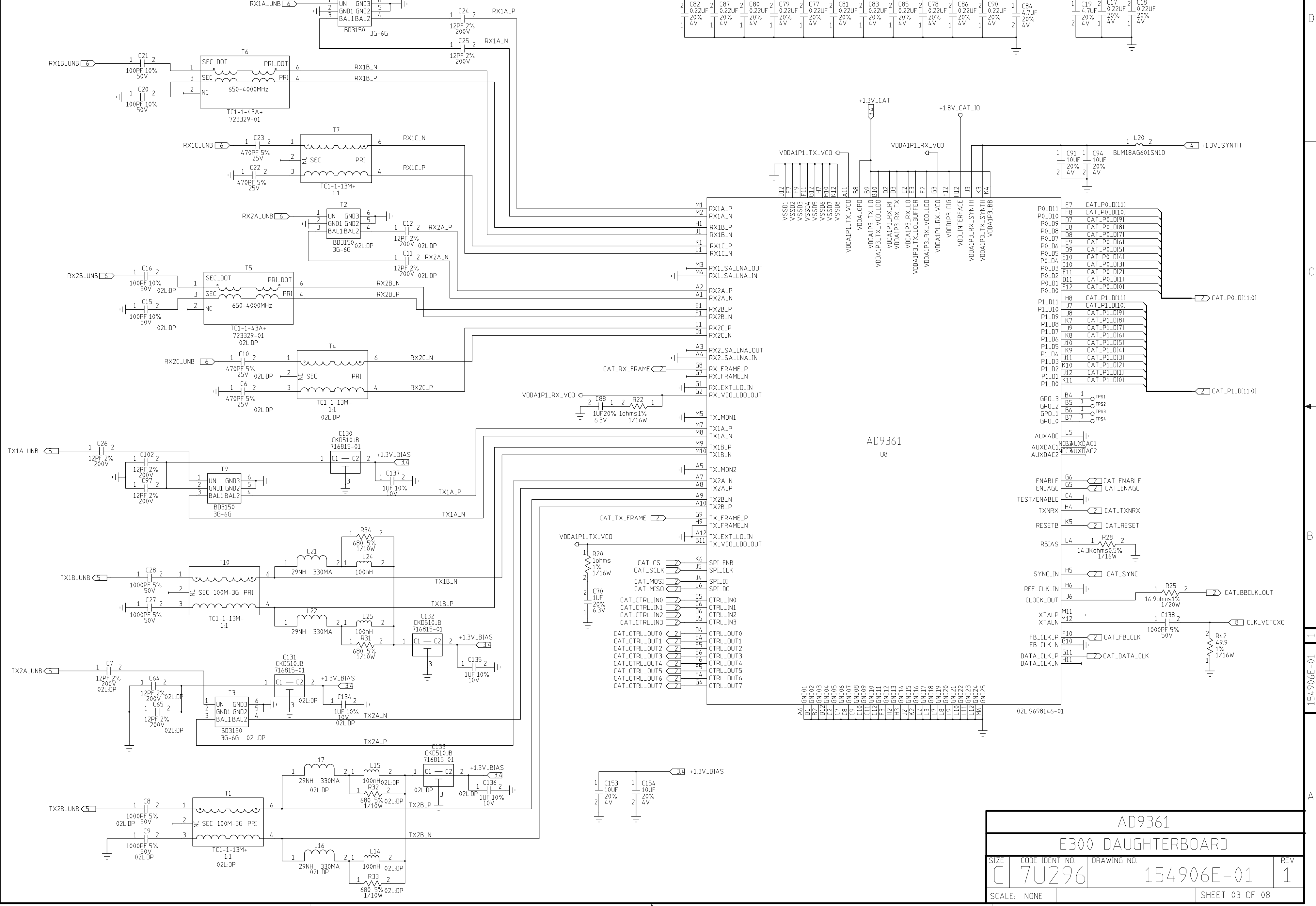
Daughterboard connector			
E300 DAUGHTERBOARD			
SIZE	CODE IDENT NO.	DRAWING NO.	REV
C	7U296	154906E-01	1
SCALE: NONE		SHEET 02 OF 08	

154906E-01

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AD9361			
E300 DAUGHTERBOARD			
SIZE	CODE IDENT NO	DRAWING NO.	REV
C	7U296	154906E-01	1
SCALE: NONE		SHEET 03 OF 08	

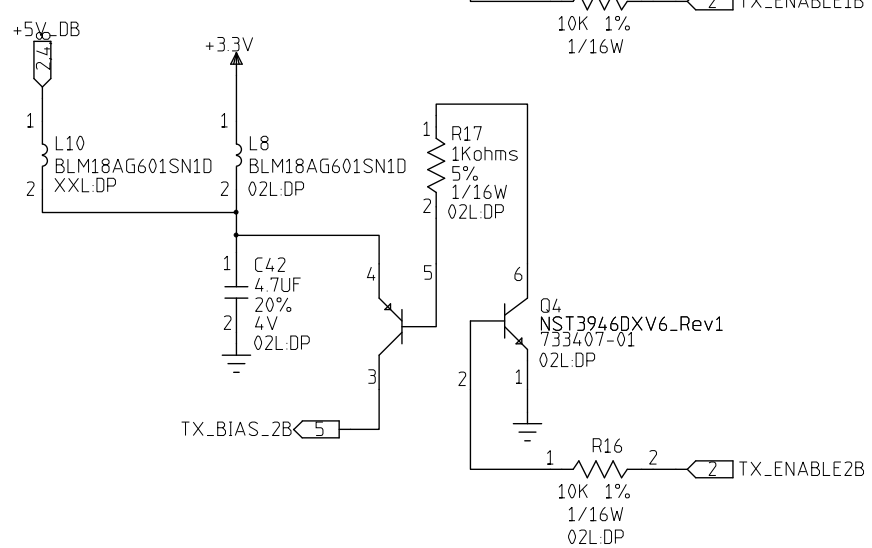
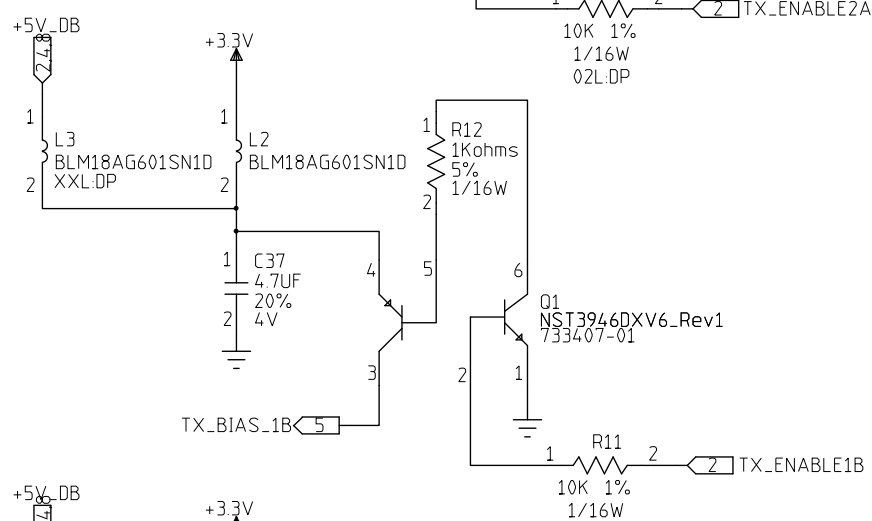
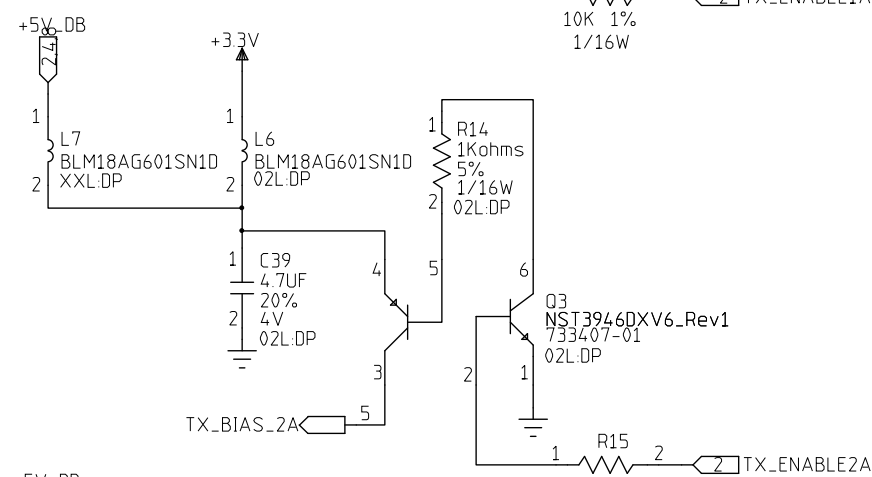
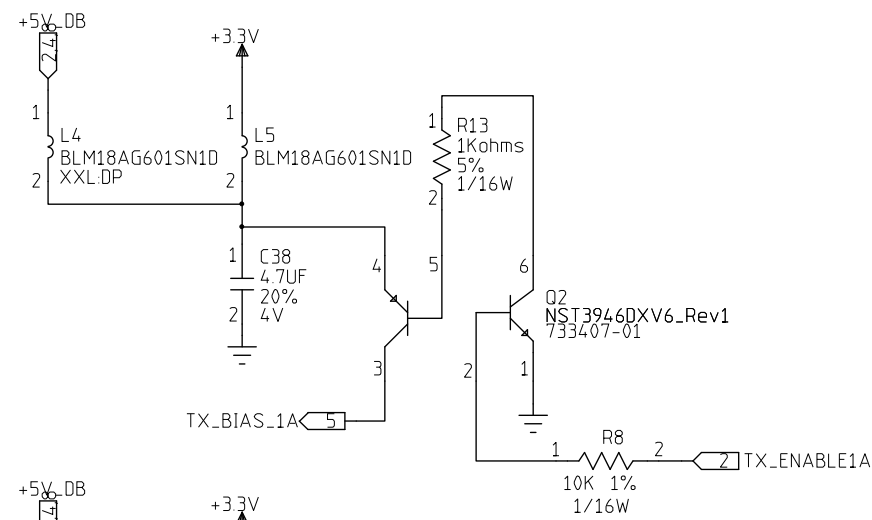
154906E-01

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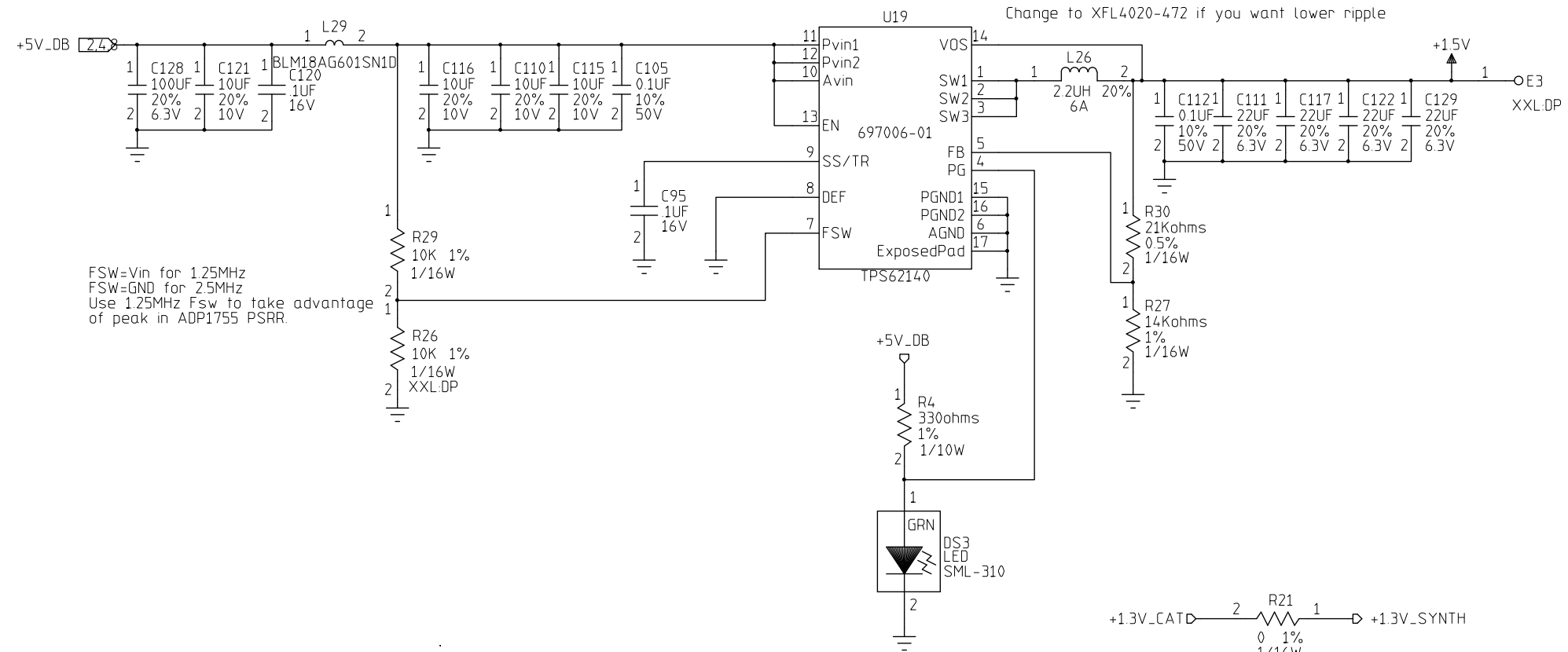
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Populate the DNP ferrites (and not the rest) for use with 5V amps (PSA-0012+, for instance).

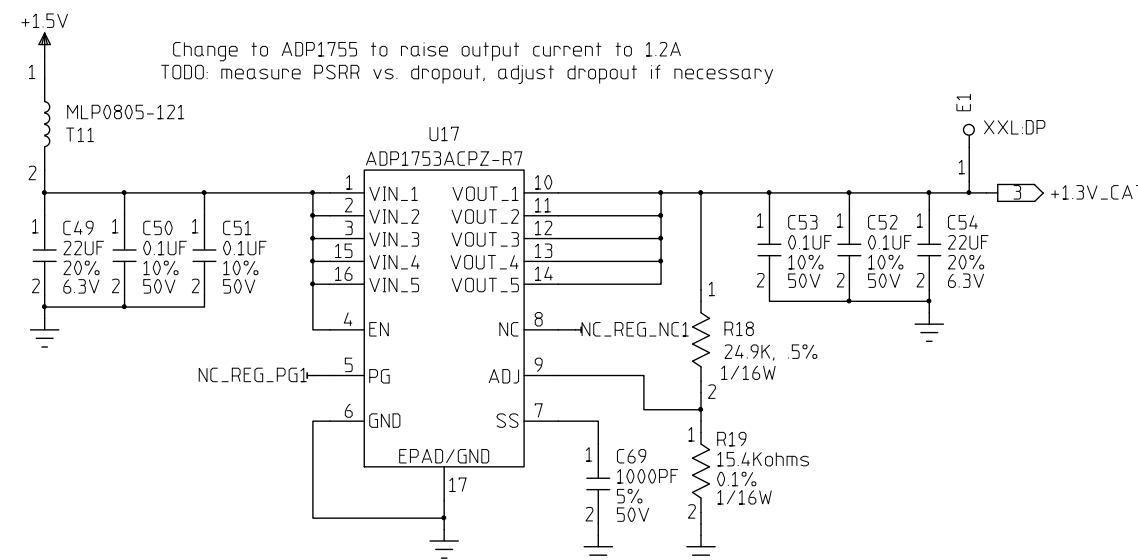


Note: Amps want 30V, Vcesat is around 0.3V.

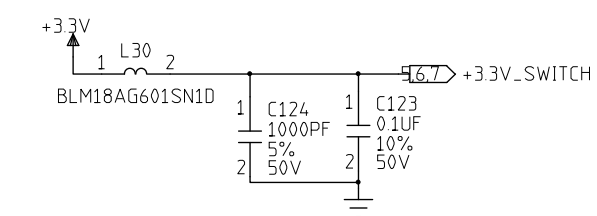
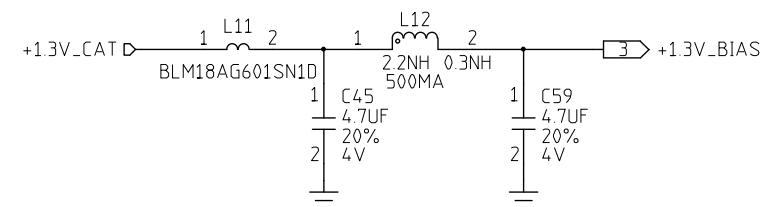
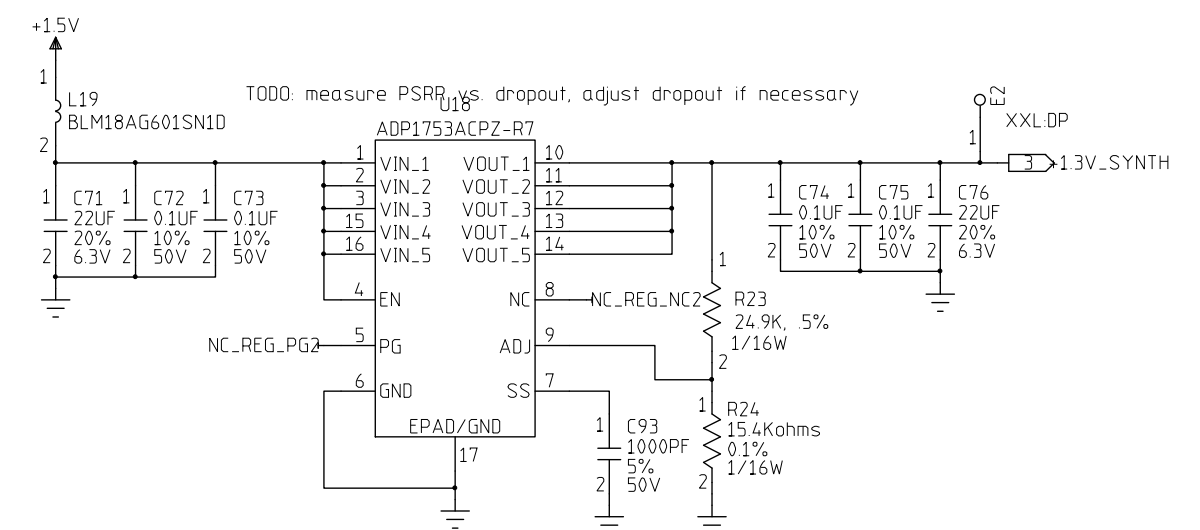
Separate the ground plane of the switcher from the rest of the daughterboard, connect only at a single point. Alternatively, use a top-layer ground "island" connected to the plane with vias in a single point.



Change to ADP1755 to raise output current to 1.2A
TODO: measure PSRR vs dropout, adjust dropout if necessary



Populate to use single reg for both main supply and synth supply

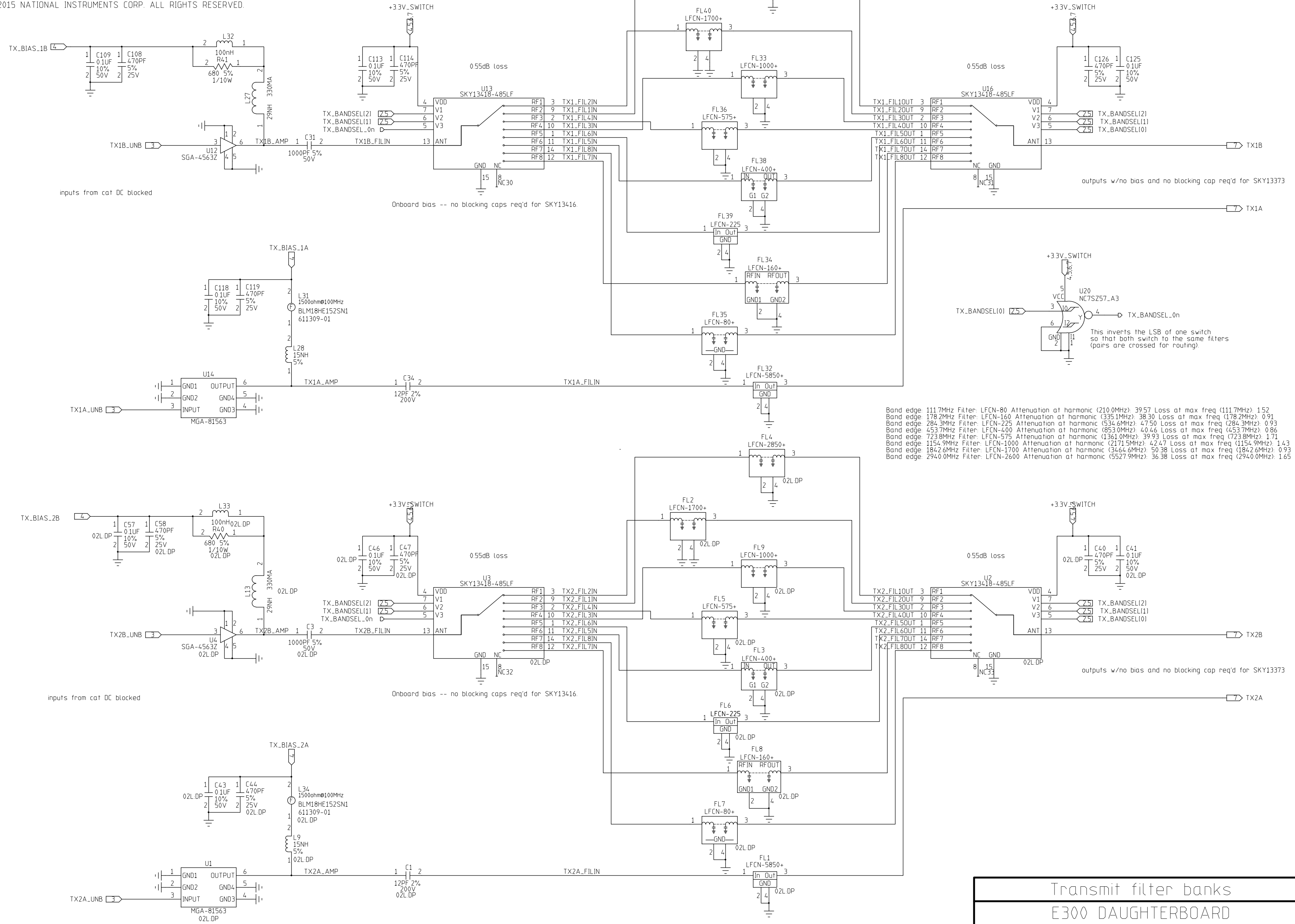


Power supplies			
E300 DAUGHTERBOARD			
SIZE	CODE IDENT NO.	DRAWING NO.	REV
C	7U296	154906E-01	1
SCALE: NONE		SHEET 04 OF 08	

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Band edge 111.7MHz Filter: LFCN-80 Attenuation at harmonic (210.0MHz): 39.57 Loss at max freq (111.7MHz): 1.52
 Band edge 178.2MHz Filter: LFCN-160 Attenuation at harmonic (335.1MHz): 38.30 Loss at max freq (178.2MHz): 0.91
 Band edge 284.3MHz Filter: LFCN-225 Attenuation at harmonic (534.6MHz): 47.50 Loss at max freq (284.3MHz): 0.93
 Band edge 453.7MHz Filter: LFCN-400 Attenuation at harmonic (853.0MHz): 40.46 Loss at max freq (453.7MHz): 0.86
 Band edge 723.8MHz Filter: LFCN-575 Attenuation at harmonic (1361.0MHz): 39.93 Loss at max freq (723.8MHz): 1.71
 Band edge 1154.9MHz Filter: LFCN-1000 Attenuation at harmonic (2171.5MHz): 42.47 Loss at max freq (1154.9MHz): 1.43
 Band edge 1842.6MHz Filter: LFCN-1700 Attenuation at harmonic (3464.6MHz): 50.38 Loss at max freq (1842.6MHz): 0.93
 Band edge 2940.0MHz Filter: LFCN-2600 Attenuation at harmonic (5527.9MHz): 36.38 Loss at max freq (2940.0MHz): 1.65

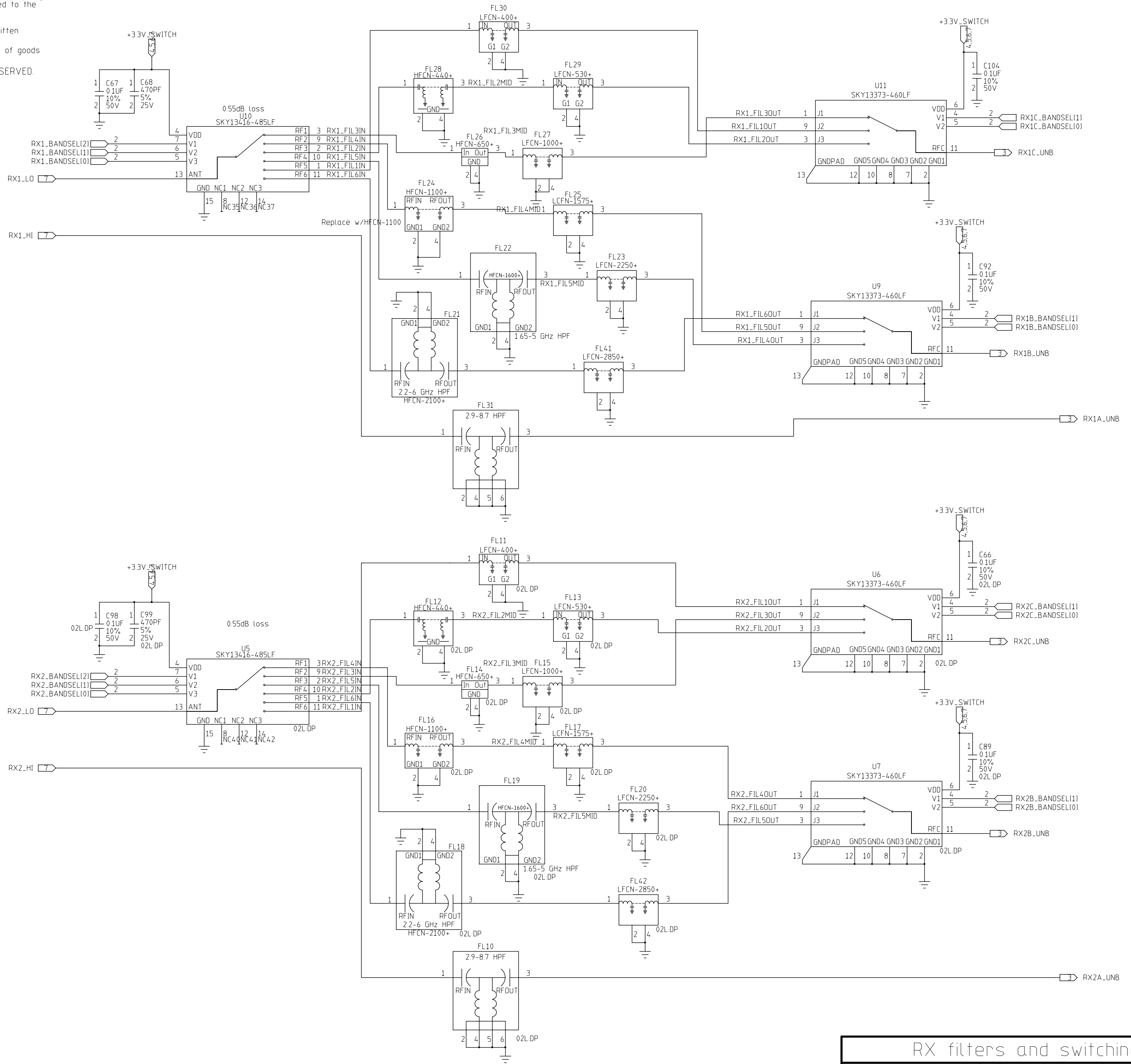
Transmit filter banks			
E300 DAUGHTERBOARD			
SIZE	CODE IDENT NO.	DRAWING NO.	REV
C	7U296	154906E-01	1
SCALE: NONE		SHEET 05 OF 08	

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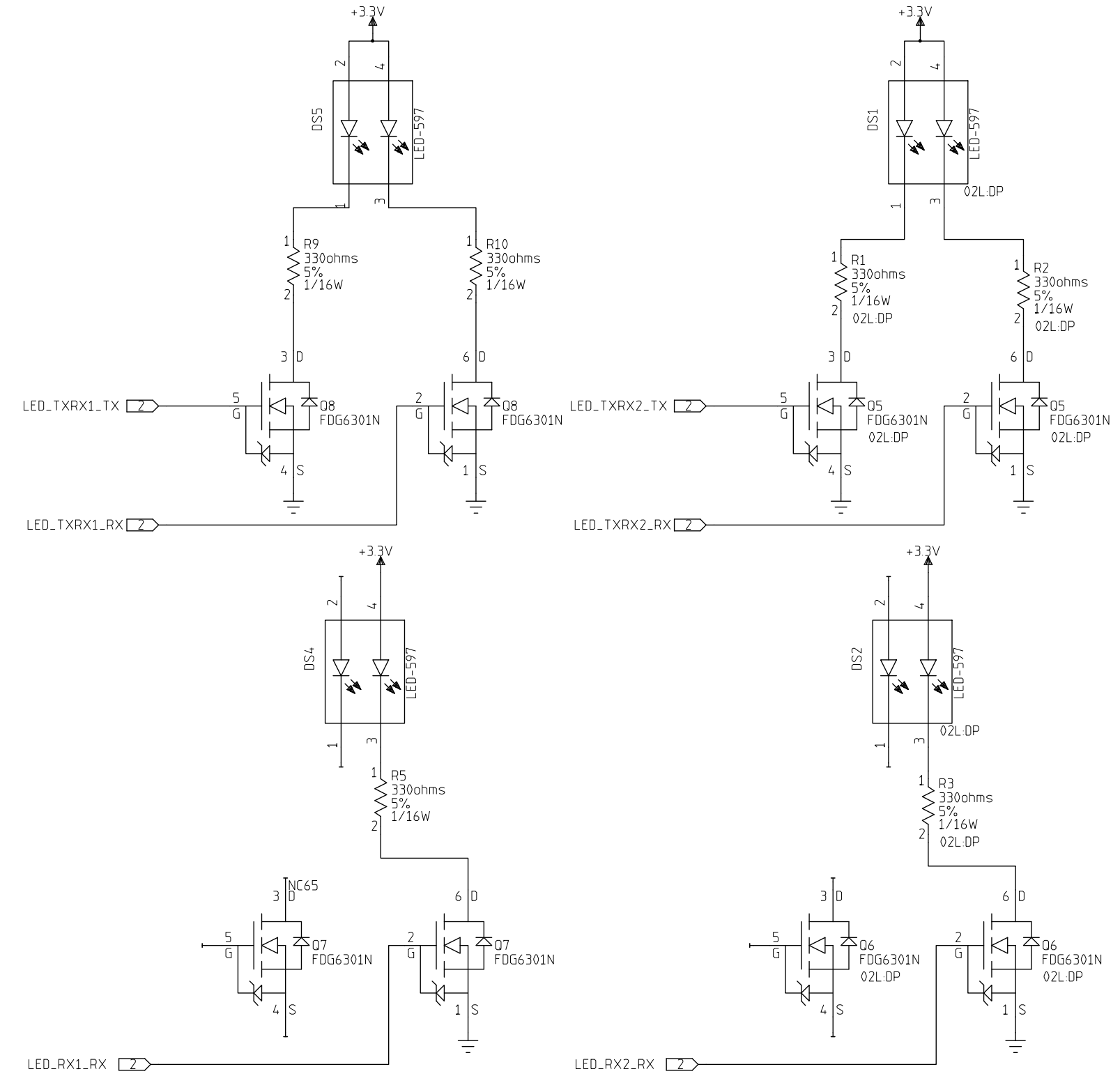
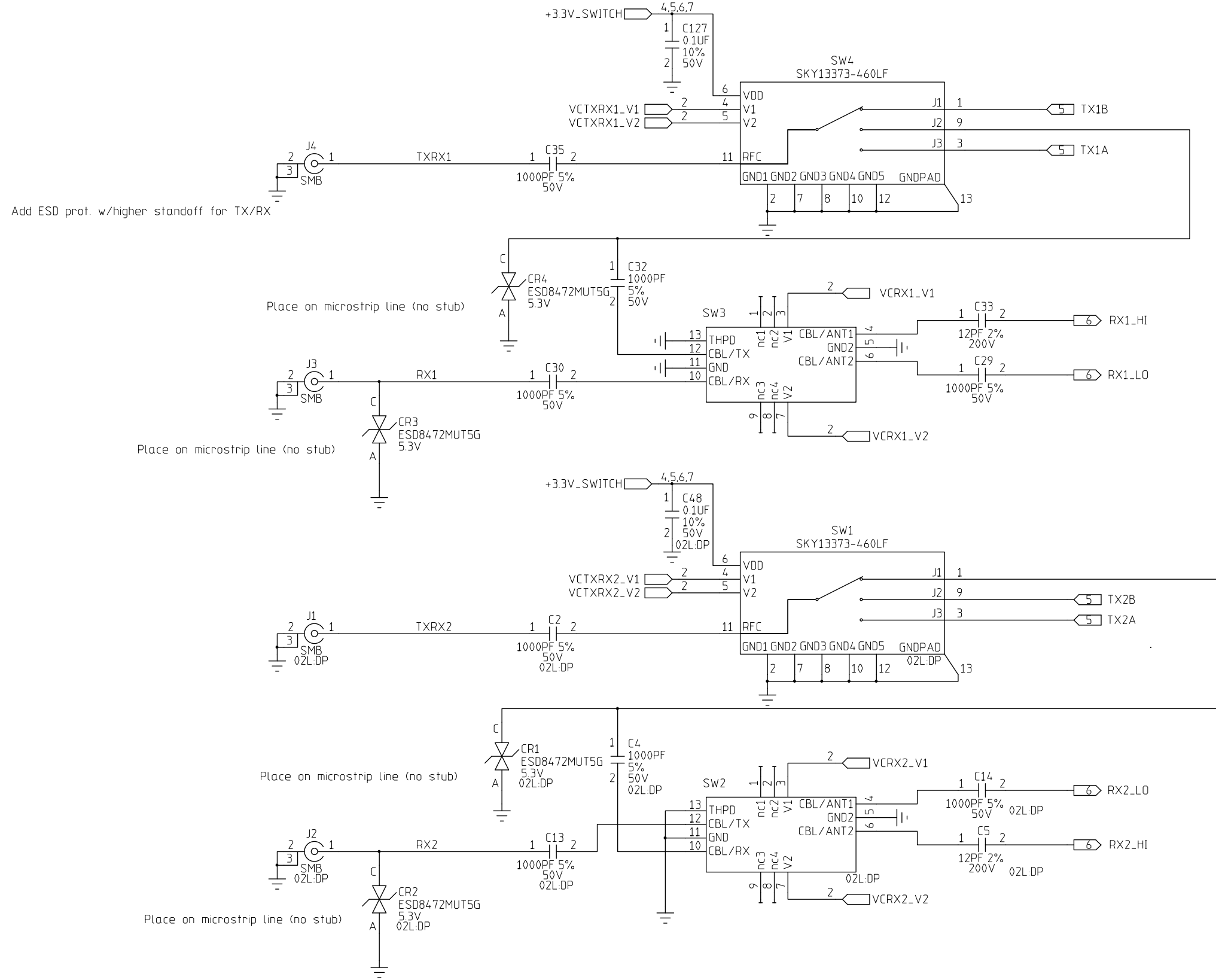
RX filters and switching			
E300 DAUGHTERBOARD			
SIZE	CODE IDENT NO.	DRAWING NO.	REV
C	7U296	154906E-01	1
SCALE: NONE			SHEET 06 OF 08

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Inputs: TXBAND[0-2], RXBAND[0-2], FDX, TxnRX, TX_EN[0-1]

(TX_EN[0-1] = TXBAND[2] AND TXBAND[1])
 (TX_RX_SW = FDX OR TX)
 VCTX_TXA = TXHI AND TXSW
 VCTX_TXB = ITXHI AND TXSW
 VCTX1_RX = ITXSW
 VCRX_V1 = IVCRX_V2
 VCRX_V2 = (RXHI AND FDX) OR (RXHI OR FDX)
 TX_ENABLE1A = RXHI AND TX_EN[0]
 TX_ENABLE1B = RXHI AND TX_EN[1]
 TX_ENABLE2A = RXHI AND TX_EN[1]
 TX_ENABLE2B = RXHI AND TX_EN[1]
 RXB_BANDSEL_1 = RX_BANDSEL[0-2] == 0
 RXB_BANDSEL_2 = RX_BANDSEL[0-2] == 1
 RXB_BANDSEL_3 = RX_BANDSEL[0-2] == 2
 RXC_BANDSEL_1 = RX_BANDSEL[0-2] == 3
 RXC_BANDSEL_2 = RX_BANDSEL[0-2] == 4
 RXC_BANDSEL_2 = RX_BANDSEL[0-2] == 5
 RX_BANDSEL_A = RX_BANDSEL[0]
 RX_BANDSEL_B = RX_BANDSEL[1]
 RX_BANDSEL_C = RX_BANDSEL[2]
 TX_BANDSEL_A = TX_BANDSEL[0]
 TX_BANDSEL_B = TX_BANDSEL[1]
 TX_BANDSEL_C = TX_BANDSEL[2]

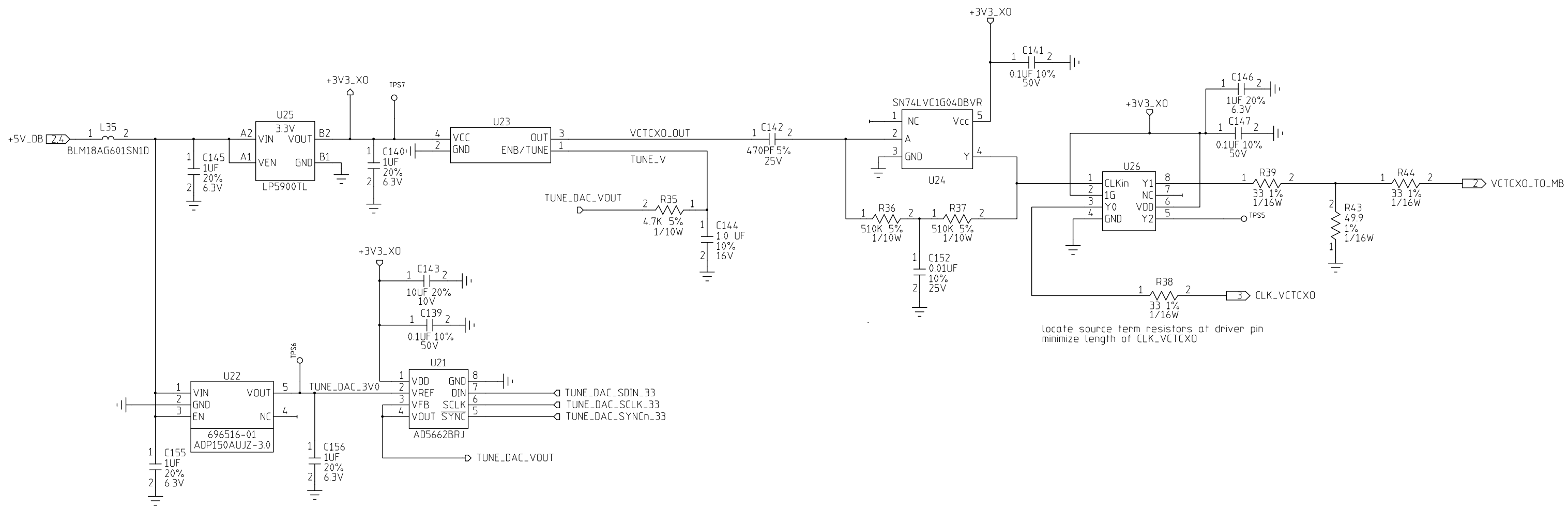
T/R switches, RF connectors, LEDs			
E300 DAUGHTERBOARD			
SIZE	CODE IDENT NO.	DRAWING NO.	REV
C	7U296	154906E-01	1
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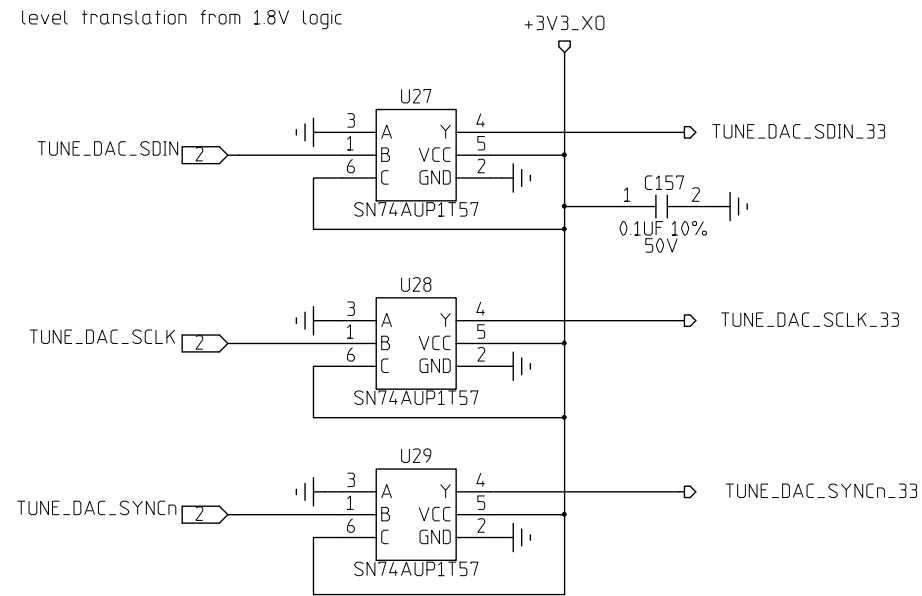
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locate source term resistors at driver pin
minimize length of CLK_VCTCXO

Level translation from 18V logic



Clock (VCTCXO)			
E300 DAUGHTERBOARD			
SIZE	CODE IDENT NO.	DRAWING NO.	REV
C	7U296	154906E-01	1
SCALE: NONE		SHEET 08 OF 08	

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