KSZ8041TL-FTL Eval Board Revision 1.1

REVISION HISTORY

DATE	DESCRIPTION	REVISION *
8/9/07	Initial Release	2.0

NOTE: * Schematic Revision 1.x is for KSZ8041TL-FTL Eval Board Revision 1.0.
Schematic Revision 2.x is for KSZ8041TL-FTL Eval Board Revision 1.1.

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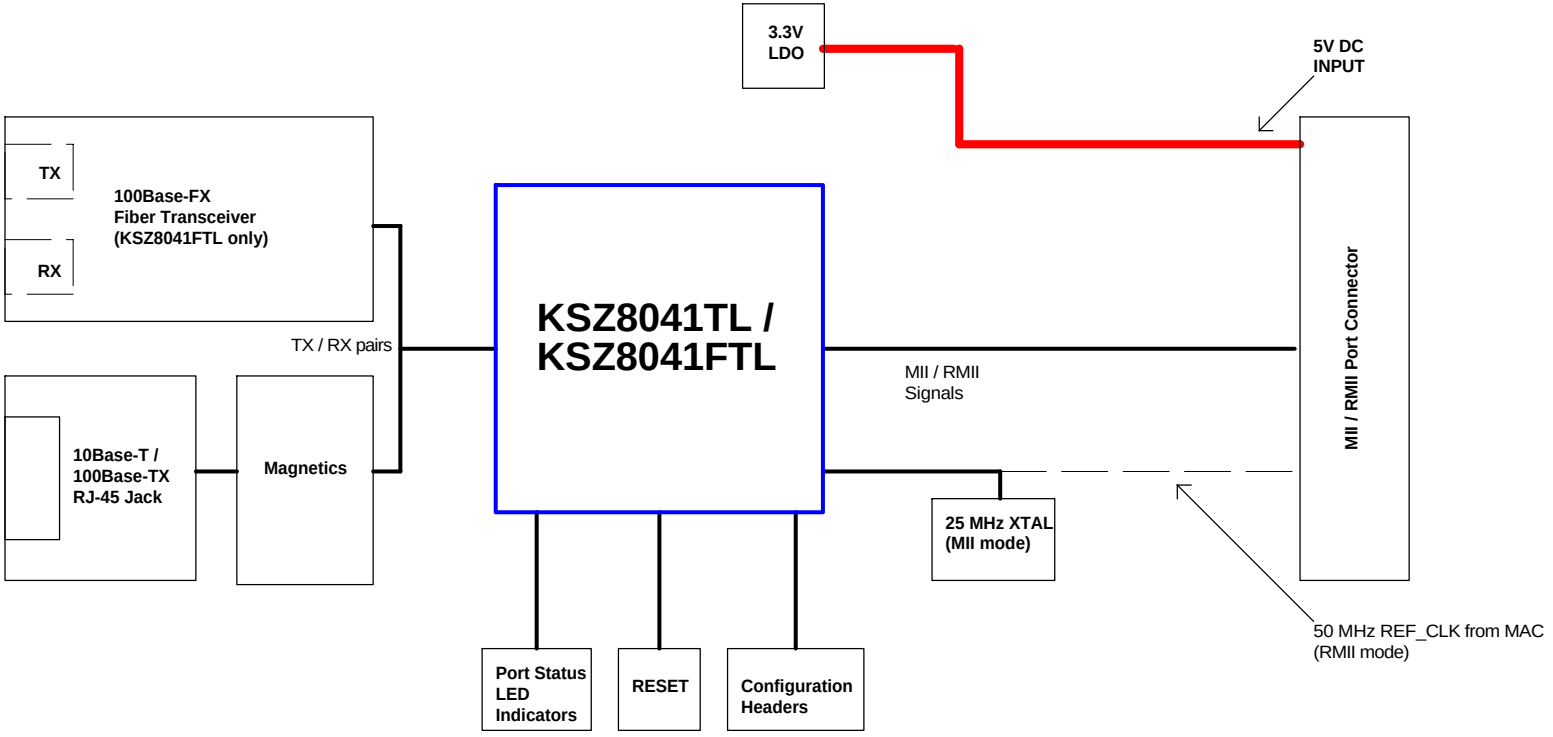
KSZ8041TL_FTL EVAL BOARD - BLOCK DIAGRAM



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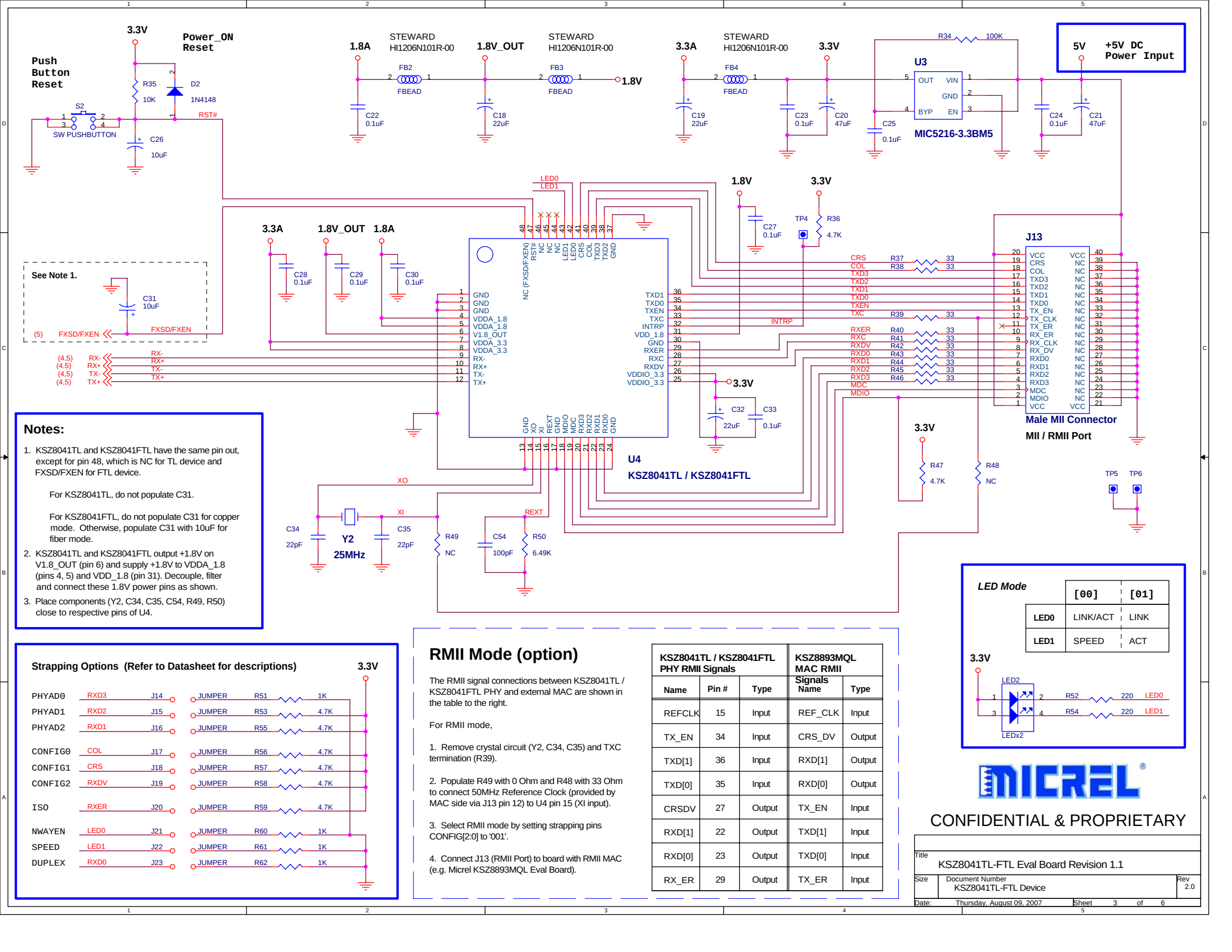

Notes:

1. KSZ8041TL and KSZ8041FTL have the same pin out, except for pin 48, which is NC for TL device and FXSD/FXEN for FTL device.

   For KSZ8041TL, do not populate C31.

   For KSZ8041FTL, do not populate C31 for copper mode. Otherwise, populate C31 with 10uF for fiber mode.
2. KSZ8041TL and KSZ8041FTL output +1.8V on V1.8_OUT (pin 6) and supply +1.8V to VDDA_1.8 (pins 4, 5) and VDD_1.8 (pin 31). Decouple, filter and connect these 1.8V power pins as shown.
3. Place components (Y2, C34, C35, C54, R49, R50) close to respective pins of U4.

Strapping Options (Refer to Datasheet for descriptions)

PHYAD0	RXD3	J14	JUMPER	R51	1K	
PHYAD1	RXD2	J15	JUMPER	R53	4.7K	
PHYAD2	RXD1	J16	JUMPER	R55	4.7K	
CONFIG0	COL	J17	JUMPER	R56	4.7K	
CONFIG1	CRS	J18	JUMPER	R57	4.7K	
CONFIG2	RXDV	J19	JUMPER	R58	4.7K	
ISO	RXER	J20	JUMPER	R59	4.7K	
NWAYEN	LED0	J21	JUMPER	R60	1K	
SPEED	LED1	J22	JUMPER	R61	1K	
DUPLEX	RXD0	J23	JUMPER	R62	1K	

RMII Mode (option)

The RMII signal connections between KSZ8041TL / KSZ8041FTL PHY and external MAC are shown in the table to the right.

For RMII mode,

1. Remove crystal circuit (Y2, C34, C35) and TXC termination (R39).
2. Populate R49 with 0 Ohm and R48 with 33 Ohm to connect 50MHz Reference Clock (provided by MAC side via J13 pin 12) to U4 pin 15 (XI input).
3. Select RMII mode by setting strapping pins CONFIG[2:0] to '001'.
4. Connect J13 (RMII Port) to board with RMII MAC (e.g. Micrel KSZ8893MQL Eval Board).

KSZ8041TL / KSZ8041FTL PHY RMII Signals			KSZ8893MQL MAC RMII Signals	
Name	Pin #	Type	Name	Type
REFCLK	15	Input	REF_CLK	Input
TX_EN	34	Input	CRS_DV	Output
TXD[1]	36	Input	RXD[1]	Output
TXD[0]	35	Input	RXD[0]	Output
CRSDV	27	Output	TX_EN	Input
RXD[1]	22	Output	TXD[1]	Input
RXD[0]	23	Output	TXD[0]	Input
RX_ER	29	Output	TX_ER	Input

LED Mode	[00]	[01]
LED0	LINK/ACT	LINK
LED1	SPEED	ACT

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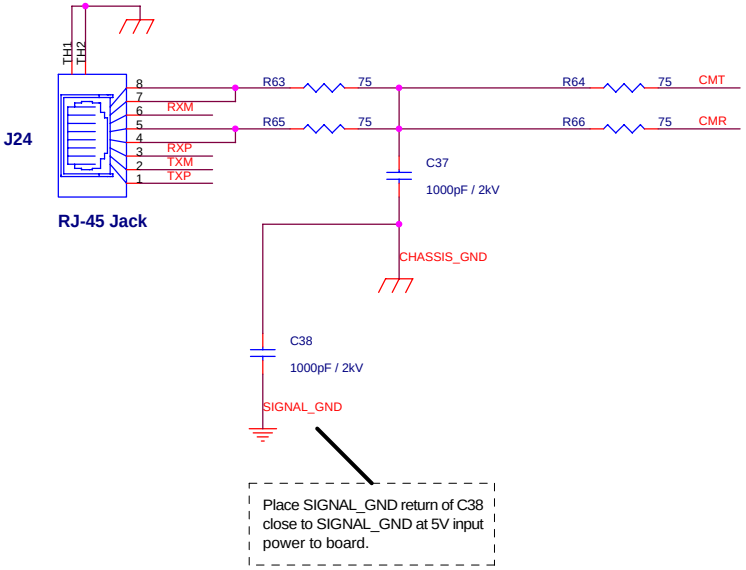
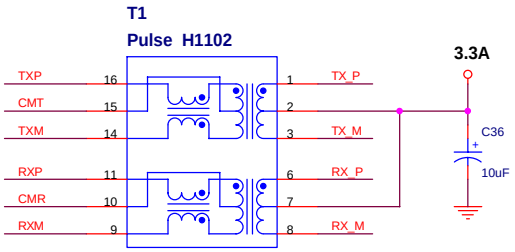
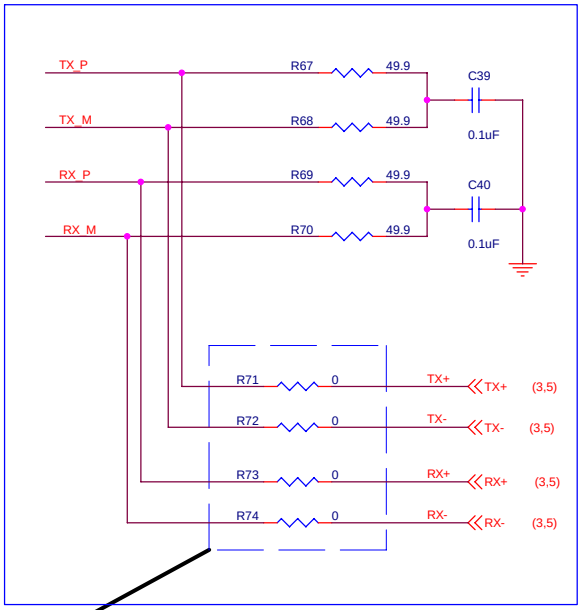


Place SIGNAL_GND return of C38 close to SIGNAL_GND at 5V input power to board.



Place components in box below close to KSZ8041

Route both traces of each differential pair as identical to each other as possible at 6mil width/6mil parallel spacing, and at least 18 mils away from all other signals



For 10Base-T and 100Base-TX modes, populate each of these four resistors with 0 Ohm and remove R81, R82, R83 and R84 on page 5.

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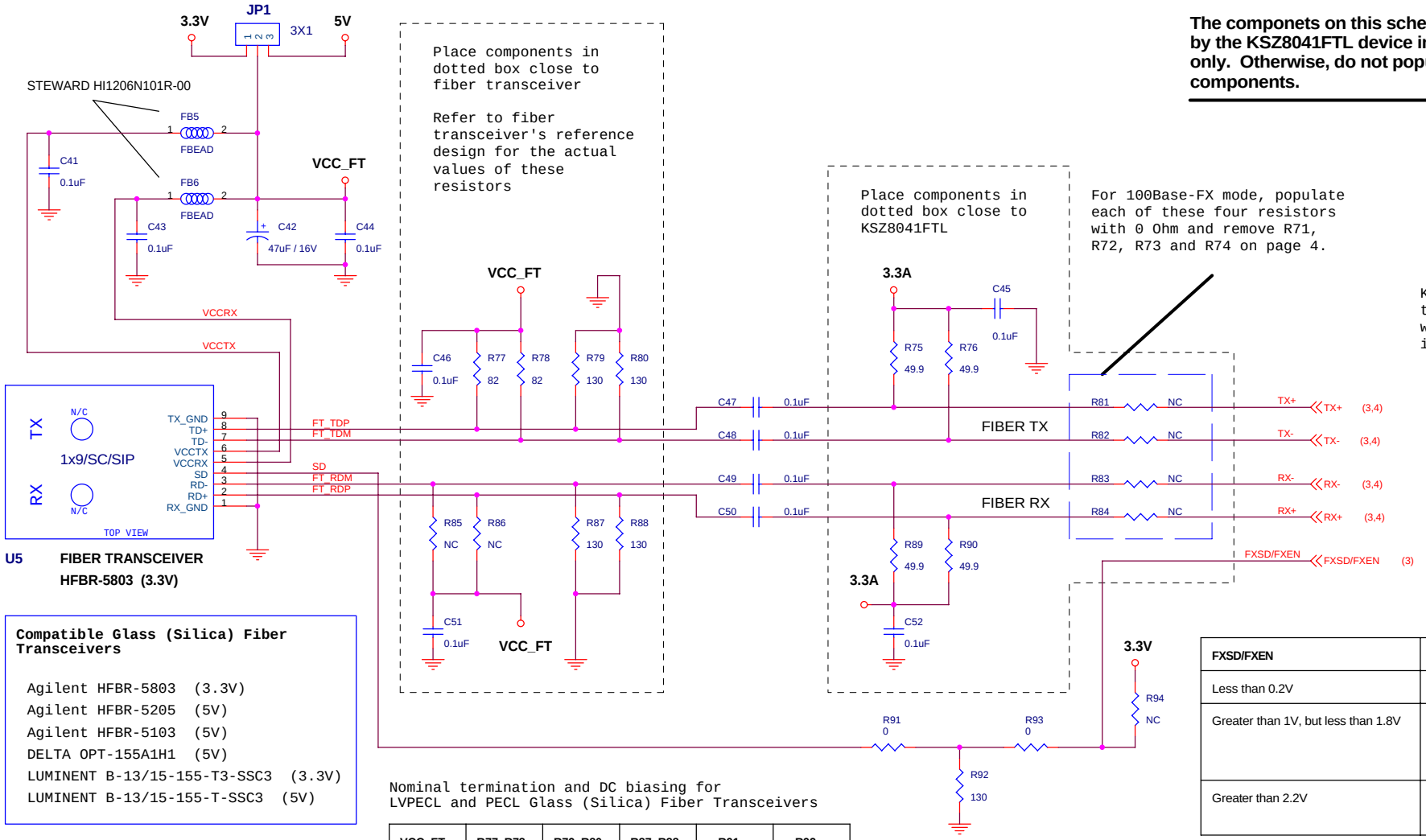
The componets on this schematic page are used by the KSZ8041FTL device in 100Base-FX mode only. Otherwise, do not populate any of these components.



Compatible Glass (Silica) Fiber Transceivers

Agilent HFBR-5803 (3.3V)
Agilent HFBR-5205 (5V)
Agilent HFBR-5103 (5V)
DELTA OPT-155A1H1 (5V)
LUMINENT B-13/15-155-T3-SSC3 (3.3V)
LUMINENT B-13/15-155-T-SSC3 (5V)

Nominal termination and DC biasing for LVPECL and PECL Glass (Silica) Fiber Transceivers

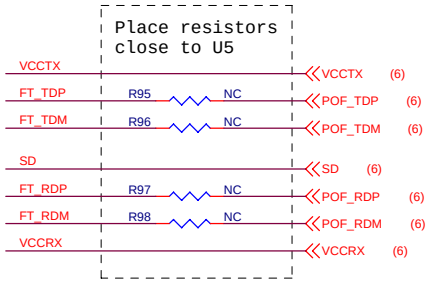
VCC_FT	R77, R78	R79, R80	R87, R88	R91	R92
+3.3V	82 Ohms	130 Ohms	130 Ohms	0 Ohm	130 Ohms
+5V	68 Ohms	191 Ohms	270 Ohms	4.75K 1%	5.62K 1%

FXSD/FXEN	Mode
Less than 0.2V	10Base-T / 100Base-TX
Greater than 1V, but less than 1.8V	100Base-FX No fiber signal detected Far-end fault generated
Greater than 2.2V	100Base-FX Fiber signal detected

POF (Plastic Optical Fiber) Option

For POF option,

1. Close JP1 pins 1 and 2 to select 3.3V for POF Transceiver.
2. Do not populate R77, R78, R79, R80, R85, R86, R87 and R88.
3. Populate R94 (5.11K), R93 (3.92K), R92 (3.92K), R95 thru R98 (0 Ohm), C49 (1uF) and C50 (1uF).
4. Besides items 2 and 3 (above) all components should be populated as shown on this schematic page.
5. Populate POF components on page 6.



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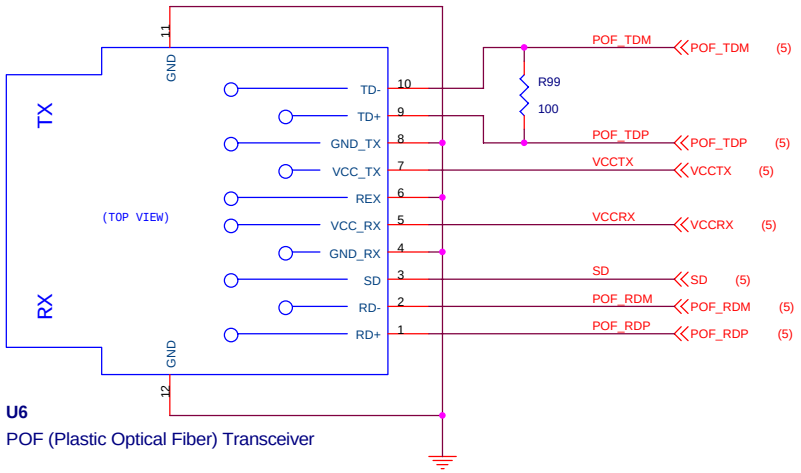
POF (Plastic Optical Fiber) Option

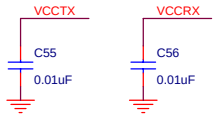
For POF option,

1. Populate all components on this schematic page.
2. Follow POF Option instructions on schematic page 5.
3. Change R50 to 13K on schematic page 3.

The componets on this schematic page are used by the KSZ8041FTL device in 100Base-FX mode for the POF option only. Otherwise, do not populate any of these components.

Place R99, C55 and C56 close to respective pins of U6





U6

POF (Plastic Optical Fiber) Transceiver

PCB Footprint supports

Firecomms EDL300T-120 in SMI
Firecomms OptoLock - EDL300T-220

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