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FEB146-001 User's Guide
FIN24AC μSerDes™ 22-Bit Bi-Directional Serializer/Deserializer Evaluation Board

Featured Fairchild Product: FIN24AC

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Contents

The following user's guide supports the Evaluation Board system for the FIN micro Serializer and Deserializer devices (µSerDes™). It should be used in conjunction with the FIN24AC datasheet, as well as Fairchild's application notes and µSerDes Technical support team. Interface questions@fairchildsemi.com.

1. Overview

The µSerDes micro evaluation system is comprised of two separate boards. The FIN24AC µSerDes evaluation board are each labeled FM050503B. Either board may be configured as a Serializer or Deserializer. The boards sections are identical except for the pin out of the serial connector, as well as the orientation of the printing. The two sections are connected through the included flex cable that carries the serial data, clock and power supplies. In addition to basic connectivity, the cable may be utilized for relative near field EMI testing. Each board is capable of being configured in multiple ways. The µSerDes demo can be conducted through use of lab equipment such as signal generators and logic analyzers. The demo boards provide via holes for connection to test systems. A description of the connections is included in this demo board guide.
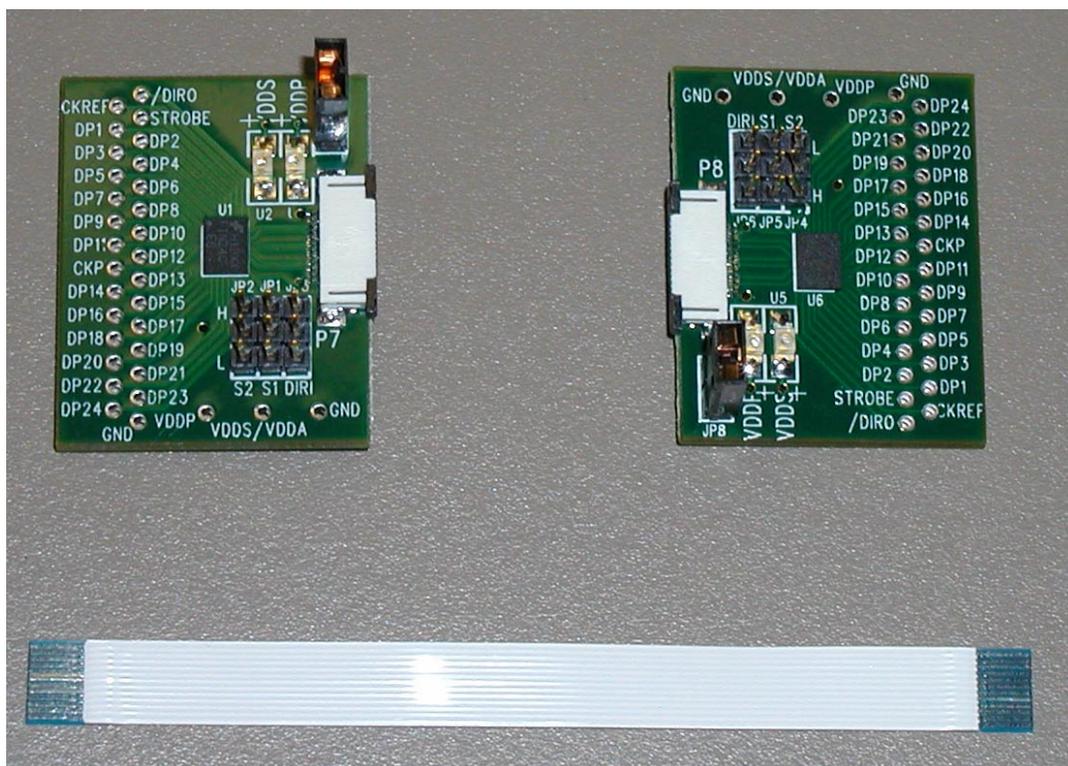
Figure 1: Micro Demo Boards

4.2 Connecting Power to the Board

Each board has two power supply connections, plus ground. When the flex cable supplied is utilized, power from one board is fed to the other board through the flex. Consequently, only one board needs to be powered. All power supplies must be connected to an appropriate voltage range. Table 2 lists typical voltages utilized. An LED on each board confirms the operation of the power supply.

Note 1: An LED may illuminate rather dimly with a power supply set to a low setting. In addition, if power is connected to the board on only 1 side, a brief glance at the LEDs on the opposite will show that the flex is connected correctly and supplying power to the opposite side.

Note 2: The power supplies between sections of the board are connected together by default. (VDDP Board 1 to VDDP Board 2, and VDDS/VDDA Board 1 to VDDS/VDDA Board 2))

Note 3: For proper operation, make sure all power supplies are activated before input signal is provided to the serializer.

Name	Description
V_{DDA}	Voltage Reference Supply Range: 2.5V to 2.9V
V_{DDS}	Supply Voltage for the Core and Serial I/O. Must be at 2.5V to 2.9V
V_{DDP}	Parallel and Translation Supply Range: 1.65V to 3.6V
Ground	Common to all supplies, and to µSerDes ground slug beneath the part.

Table 2: Voltage Ranges

4.3 Flex Connection

The flex connectors have a limited insertion/removal life. Consequently, it is not advisable to insert and remove the cable repeatedly. In addition, the flex cable supplied by Fairchild should be the only one used with this board. Please contact your Fairchild µSerDes representative to obtain a cable of different specifications.

The flex cable may be inserted or removed, but must be done so with care. To do so, gently slide the flex cable connector snap away from the board and remove the flex cable. When inserting the flex cable, ensure that the connector snap is first in the unlatched position (toward the outside of the board). Gently insert the cable with the contacts facing **upward**.
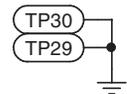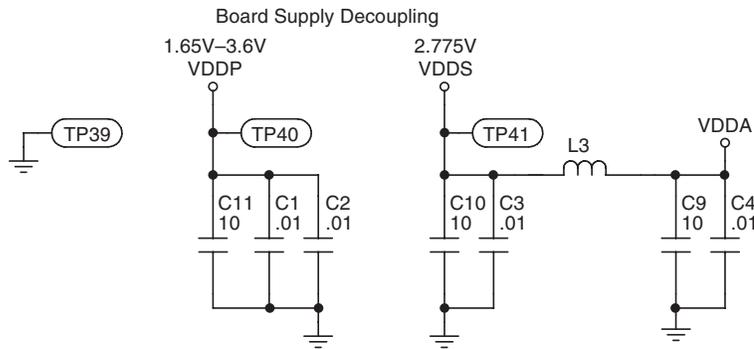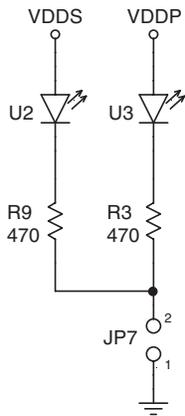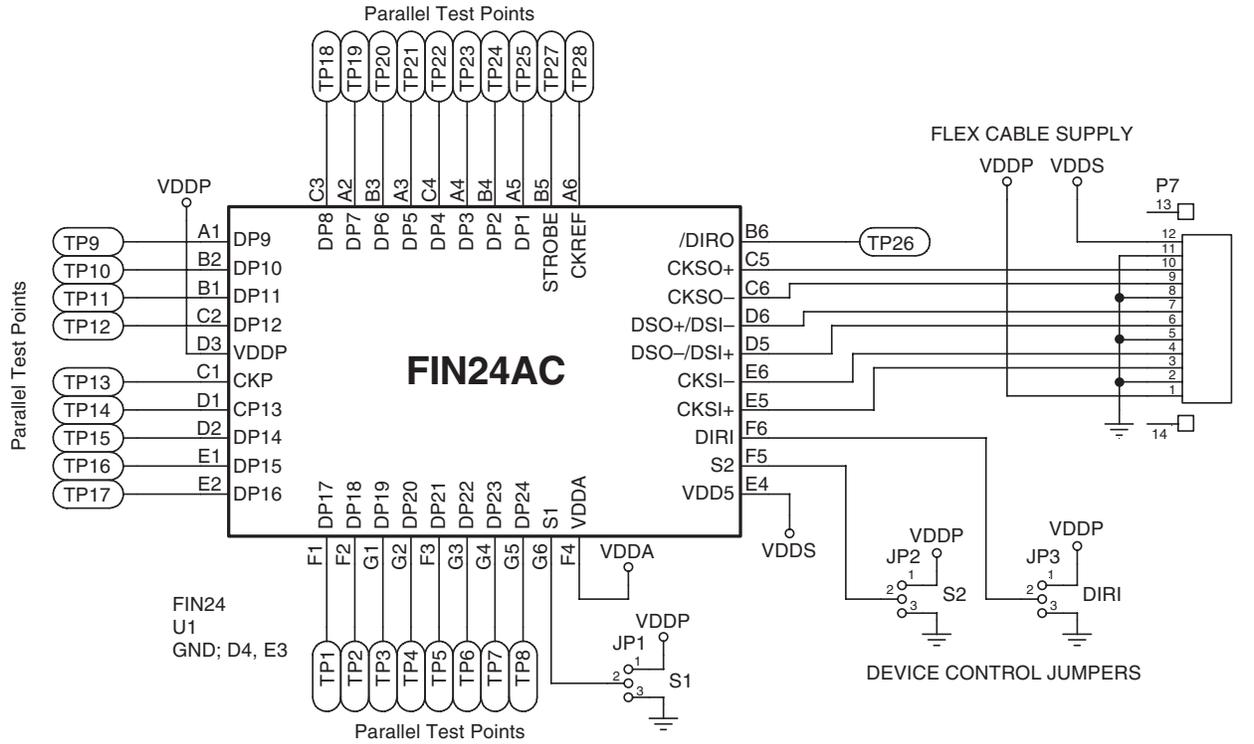
Note: An inadvertent short of power supplies on opposite sides of the board while connecting cables may result in extreme current passing through the board and flex cable, which may render the flex cable intermittent or inoperative. Be sure to turn off power before connecting the flex cable.

4.4 Troubleshooting

- The µSerDes Evaluation boards and the µSerDes ICs are both completely tested and should not cause problems.

- If deserializer output is not correct, ensure that the proper power-up sequence is being used. For correct operation, power up the devices first, then provide data and clock signals.

- To effectively troubleshoot, the data and clock paths may be probed on either side of the flex. Be aware when probing these locations, as the signals are LVDS by design, meaning the peak to peak voltage will be approximately 200mV, with slightly less than 1.0 Volt bias.

- True differential probes must be used to examine the LVDS signals. Using a terminated oscilloscope with a probe ground to one side of an LVDS signal, will force the 1.0 Volt bias to ground, resulting in a very incorrect signal. Alternatively, a board ground may be offset to accommodate the ground of an oscilloscope. Contact your Fairchild µSerDes representative for further assistance with this.

- Be aware with the FIN24A Serializer that input data Terminal 21 is output from Terminal 23 on the Deserializer, and Serializer input data Terminal 22 is output at the Deserializer on Terminal 24.

- Be aware that the FIN24 has a set frequency range, and that S1 and S2 control the direction of data bits[21:24].

- A careful examination of the serial clock will result in periodic discontinuities. This is normal and represents the imbedded word boundary.

- For additional information pertaining to µSerDes, please see Application Note *AN-5058 µSerDes Family Frequently Asked Questions (FAQ)* and the corresponding device data sheets.

5. Board Schematics

5.1 FIN24AC Serializer Evaluation Board

5.2 FIN24AC Deserializer Evaluation Board

DEVICE CONTROL JUMPERS

VDDP
JP5
S1
1
2
3

Parallel Test Points
TP67 TP66 TP65 TP64 TP63 TP62 TP61 TP68

VDDP
JP6
1
2
3
DIRI

VDDP
JP4
1
2
3
S2

GND: D4, E3
U6
BGA42_P5MM

VDDA
F4
G6
VDDA
S1
G5 DP24
G4 DP23
G3 DP22
F3 DP21
G2 DP20
G1 DP19
F2 DP18
F1 DP17

VDDP

E4 VDD5
F5 S2
F6 DIRI
E5 CKSI+
E6 CKSI–
D5 DSO–/DSI+
D6 DSO+/DSI–
C6 CKSO–
C55 CKSO+
B6 /DIRO

FIN24AC

DP16 E2 — TP60
DP15 E1 — TP59
DP14 D2 — TP58
DP13 D1 — TP57
CKP C1 — TP56
VDDP D3
DP12 C2 — TP55
DP11 B1 — TP54
DP10 B2 — TP53
DP9 A1 — TP52

Parallel Test Points

14
1
2
3
4
5
6
7
8
9
10
11
12
13
P8

TP82

CKREF A6
STROBE B5
DP1 A5
DP2 B4
DP3 A4
DP4 C4
DP5 A3
DP6 B3
DP7 A2
DP8 C3

VDDP VDDS
FLEX CABLE SUPPLY

Parallel Test Points
TP51 TP48 TP47 TP46 TP45 TP44 TP50 TP49 TP42 TP43

Parallel Test Points

VDDS VDDP

U5 U4

R5 470 R6 470

JP8
2
1

TP31

1.65V–3.6V
VDDP

TP80

C12 10 C8 .01 C6.01

2.775V
VDDS

TP81

C13 10 C5 .01

L4

VDDA

C14 10 C7 .01

Note:
To accurately measure the device power: removal of jumpers JP7 and JP8 will be necessary.

WARNING AND DISCLAIMER

Replace components on the Evaluation Board only with those parts shown on the parts list in the User's Guide. Contact an authorized Fairchild representative with any questions.

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