Design Notes

1) PCB initially tested with ADC34J45 AD device (160 MSPS, 14 bit). Several variants of the ADC34JXX family will work with this PCB.

TABLE OF CONTENTS:

1- Cover sheet
2- HSMC connector Bank1 and Bank2
3- HSMC connector Bank3
4- Quad analog to digital converter, JESD204B
5- Clock circuits
6- Clock circuits, LMK04826
7- Front end, AC coupled
8- Front end, DC coupled
9- Power supply

REVISION TABLE

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision</th>
<th>Description</th>
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<tbody>
<tr>
<td>03-14-14</td>
<td>A ET</td>
<td>Initial release of the schematic.</td>
</tr>
<tr>
<td>03-28-14</td>
<td>A1 ET</td>
<td>1.8V ADC power regulator. Biased to 1.86V output voltage.</td>
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</tbody>
</table>
| 06-02-14 | B ET | 1.18V-1.2A device, F1->2A device, Ser 240Ohm R33 etc as DNP. Add 1UF to VCXO and
  |         | 90C input filter. U5 VREG. HS solder mask. Change part numbers L13, L16, L17 |
| 07-03-14 | B1 ET | For more current, change 93 ADC SYNC input termination to LVDS, LMK loop filter adjust. |
|         |         | 39nH L1, L2, L3, L4. R7, R9, R16, R17 was 27.4 Ohm, now 59 Ohm. |
|         |         | C14, C26 was 10pF, now DNP. C13, C27 was 10pF, now 1.3pF. |
|         |         | All changes SH7, increase input BW from 80MHz to 200MHz. |
3.3V Power Rail from SOCkit is rated for 8A

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COC11
PIC1901
PIC1902
PIC1501
PIC1502
PIC1101
PIC1102
PIC2101
PIC2102
PIC2001
PIC2002

DCC
PIC4101
PIC4102
PIC3201
PIC3202
PIC1601
PIC1602
PIC4201
PIC4202
PIC1801
PIC1802

C42
C32
C22
C12
C11
C10
C9
C8
C7
C6
C5
C4
C3
C2
C1
C0

Bank1_GND_Rail1
Bank1_GND_Rail2
Bank1_GND_Rail3

Bank2_GND_Rail1
Bank2_GND_Rail2
Bank2_GND_Rail3

POHSMC0GXB0RX00P
POHSMC0GXB0RX00N
POHSMC0GXB0RX10P
POHSMC0GXB0RX10N
POHSMC0GXB0RX20P
POHSMC0GXB0RX20N
POHSMC0GXB0RX30N
POHSMC0GXB0RX30P

POHSMC0GXB0RX4_P
POHSMC0GXB0RX4_N
POHSMC0GXB0RX5_P
POHSMC0GXB0RX5_N
POHSMC0GXB0RX6_P
POHSMC0GXB0RX6_N
POHSMC0GXB0RX7_P
POHSMC0GXB0RX7_N

POADS0MISO
POADS0PDN
POLMK0MISO
POLMK0PDN
ADS_MISO
ADS_PDN
LMK_MISO
LMK_MOSI
LMK_SCLK
LMK_SCL
HSMC_CLK_OUT0
HSMC_CLK_IN0
HSMC_SYSREF_P
HSMC_SYSREF_N
HSMC_GXB_RX0_P
HSMC_GXB_RX0_N
HSMC_GXB_RX1_P
HSMC_GXB_RX1_N
HSMC_GXB_RX2_P
HSMC_GXB_RX2_N
HSMC_GXB_RX3_P
HSMC_GXB_RX3_N
HSMC_GXB_RX4_P
HSMC_GXB_RX4_N
HSMC_GXB_RX5_P
HSMC_GXB_RX5_N
HSMC_GXB_RX6_P
HSMC_GXB_RX6_N
HSMC_GXB_RX7_P
HSMC_GXB_RX7_N
HSMC_SYSREF_P
HSMC_SYSREF_N
HSMC_CLK_P
HSMC_CLK_N
HSMC_TCK
HSMC_SDA
HSMC_TMS
HSMC_TDI
HSMC_TDO
HSMC_CLK_OUT0
HSMC_CLK_IN0

HSMC, AD Converter, TI AD34JXX

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ADC AVDD set at 1.86 volts, allows direct input to FPGA 2.5V IO pin per specs.

CLK and SYSREF inputs are self biasing.

Place termination devices near ADC.
No active input buffering for best jitter performance.

EXTERNAL CLOCK IN

J1
901-143-6RFX
GND
R64
1M
C50
0.1UF
GND
R841
299
3.3V
GND
EXTERNAL_CLKIN
4(1B)

EXTERNAL TRIGGER IN

J1
901-143-6RFX
GND
R4
10
C1
0.1UF
GND
R61
59
GND
R64
1
GND
R61
10
3.3V-0.1J
T1
9.0V-0.1J
AC voltage rating is 6.4V
GND
R2
59
GND
R64
10
GND
B1
1
4
GND
3
VCC
5
NC
U1
SN74LVC1G17
A2 Y 4
GND 3VCC5
NC1
U1
SN74LVC1G17
The diagram shows a circuit with various components such as capacitors (C191, C192), resistors (R72), and ICs (PIC, PIL). The labels indicate connections and values, such as "12PF" and "10.0K." The layout includes sections labeled "CLOCK 2" and "LMK04828 Loop Filter."
POWER SUPPLY

Calculated \( \text{VOUT} = 1.864 \text{V} \)

\( \text{VOUT} = \left( \frac{\text{R3} + \text{R1}}{\text{R1}} \right) \times 0.8 \)

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