Product Name: ZX182S-LPC FMC Vita 57.1 test mezzanine card designed to work with Agilent Samtec Logic Analyzer or any flying probe using breakout adapter
Agilent Probes: E5378A E5379A E5385A

Product Description: FPGA Mezzanine card , FMC , passive breakout adapter, meeting VITA 57.1 standard bus interfacing with Agilent Samtec differential / single ended probes Includes 4 rows x 40 pins, totaling 160 pins Low Pin Count, LPC. Onboard both CC (Carrier Card - Host) and MC (Mezzanine Card) connectors.

ZX182S-LPC is designed for LPC connector configuration, however; it may be used on HPC applications accessing only the LPC enabled signals.

Fully compatible with 4 rows x 40 pins single ended or differential pairs design configuration
- **All** signals are accessible via designated probe's connector, IPEX, Header, and 0402 SMD package.
- All Clocks are accessible via IPEX-37 connectors – SMA to IPEX cable assembly is provided
- JTAG signals accessible via 2x4 pin header
- All Power Supply signals accessible via 2x4 pin headers with on-board LEDs indicators.
- Improved signal integrity and crosstalk with **12 layers PCB** with each layers guarded by GROUND plane.
- Designed for **50Ω** single ended and **100Ω** differential trace impedance exceeding VITA 57.1 standard.
- DC to 10GHz bandwidth applications

GND test point for easy access as well as applying external ground reference
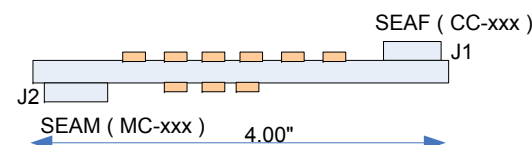
ZX182S-LPC Block diagram, See Page 2, 3

Application: FMC VITA 57.1 daughter card Bringup, testing, emulation, Xilinx development Virtex 6 Virtex 7 interface testing daughter board to host, modular design evaluations

Access: 2x4 header, SMD 0402 Package footprint and Logic Analyzer connector interface mating with E5379A, E5378A, E5379A, E5385A probes

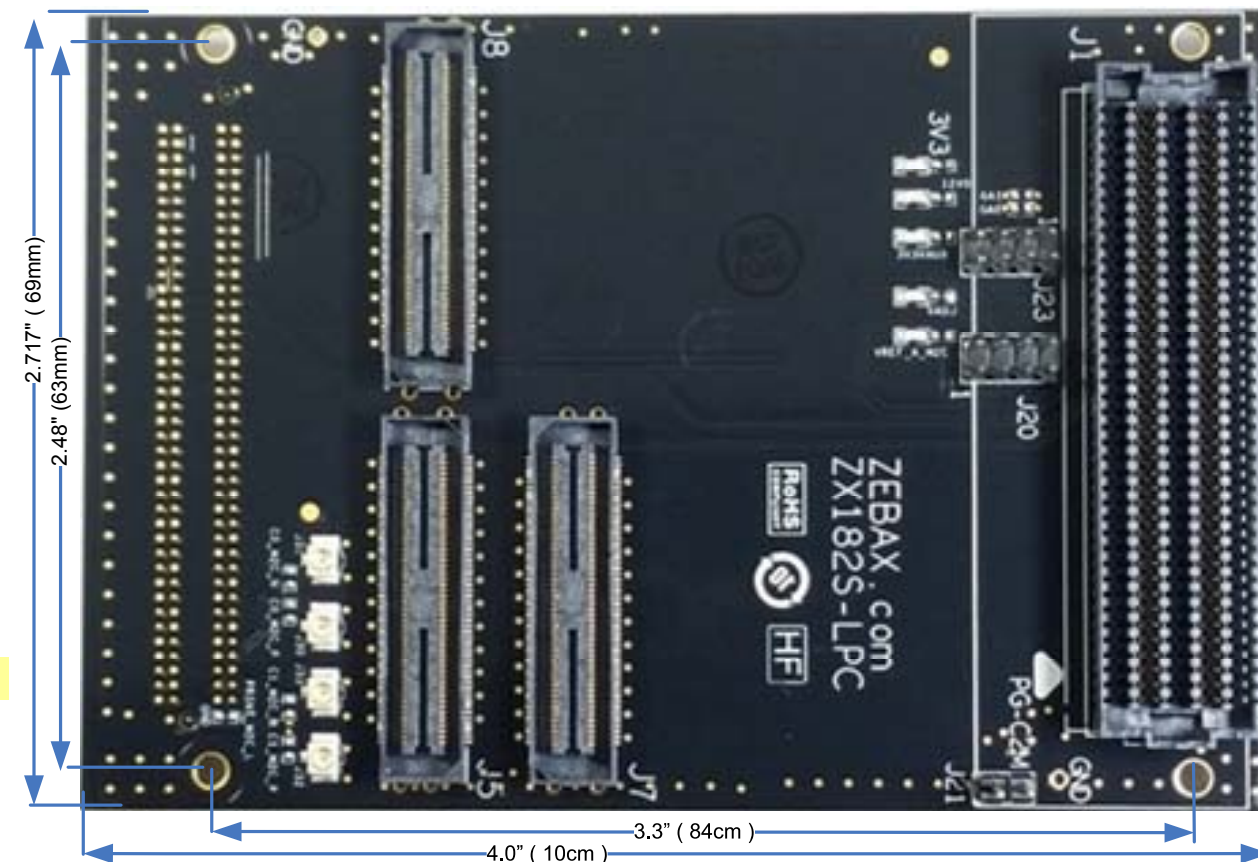**Pitch:** 1.27mm (0.05") High Speed connector

Mates with : Xilinx FPGA development systems Virtex 6 Virtex 7 connecting daughter board to Host
Any and all FMC VITA 57.1 compliant design
SEAM SADL SEAMP SEAR SEAMI SEAC FMC HPC LCP
SEAF-040-08.0-L-10-2-A SEAF-040-08-L-10-2-A
SEAFP-40 SEAMP-040 SEAMI-040 SEAR-040-10-10- SEAM-040
All listed Samtec Molex FMC connectors listed, table below:

2.717" (69mm)
2.48" (63mm)
3.3" (84cm)
4.0" (10cm)

ZX182S-LPC , Passive FMC VITAL 57.1 test mezzanine card

SEAF (CC-xxx)
J1
J2
SEAM (MC-xxx)   4.00"

CC: Carrier Card typically located on Host
MC: Mezzanine Card, typically located on Mezzanine Card
SEAF: SEARRAY Female connector
SEAM: SEARRAY Plug (Male) connector

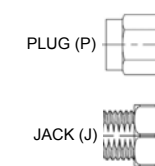■ Probe connector, headers, IPEX-37 access points

153.0mm 7.0mm 18.0mm
ZX00SMA-IPEX37-J

153.0mm 7.0mm 18.0mm
ZX00SMA-IPEX37-P

ZX132x (from Zebax) products complement ZX182S providing flying leads interface to any scope or Logic Analyzer.

ZX18x FMC breakout adapter mates with the following Samtec Molex CC / MC SEARAY™ VITA 57.1 Connectors				
Molex PN	**Samtec PN**	**VITA PN**	**Description**	**Mated Stack Height**
45971-4307	ASP-127796-01*	CC-LPC-10L	female	
45971-4317	ASP-134485-01*	CC-HPC-10L	female	
45971-4315	ASP-134486-01	CC-HPC-10	female	
45971-4305	ASP-134603-01	CC-LPC-10	female	
45970-4117	ASP-134601-01*	MC-HPC-8.5L	male	8.5 mm
45970-4115	ASP-134602-01	MC-HPC-8.5	male	8.5 mm
45970-4107	ASP-134605-01*	MC-LPC-8.5L	male	8.5 mm
45970-4105	ASP-134606-01	MC-LPC-8.5	male	8.5 mm
45970-4307	ASP-127797-01	MC-LPC-10L	male	10 mm
45970-4317	ASP-134487-01	MC-HPC-10L	male	10 mm
45970-4315	ASP-134488-01	MC-HPC-10	male	10 mm
45970-4305	ASP-134604-01	MC-LPC-10	male	10 mm

ZX182S-LPC-X Package includes:

Part number	Quantity	Description
ZX182S-LPC-X	1	LPC FMC Mezzanine Module
ZX00SMA-IPEX37-X	4	SMA to IPEX-37 cable assembly , Note 1
ZX132S10-RA	0	Single ended Samtec Breakout adapter
ZX132DS10-RA	0	Differential pairs Samtec Breakout adapter
ZX132x	0	Samtec breakout adapter

Notes:
1- Used for measuring or supplying external Clocks. See ordering information

Ordering INFO:
Part Number
ZX182S-LPC-X options
J : SMA Jack (Standard)
P: SMA Plug connector

PLUG (P)
JACK (J)

Note
ALL ZEBAX products are **RoHS** compliant and **Lead Free** unless otherwise indicated.

Notice

ZEBAX TECHNOLOGIES
SANTA CRUZ, CA U.S.A (831) 2 2 2 – 0717
WWW.ZEBAX.COM

SPECIFIED DIMENSIONS ARE INCHES (MM). ROHS COMPLIANT

ASSEMBLY DRAWING
ITEM: ZX182S-LPC

DESCRIPTION: FMC VITA 57.1 LPC test board for E5379A Agilent probe – passive mezzanine card

CHECKED: M. MARINA
DRAWN: SLAVIK
REVISSION: 1.0
SHEET: 1 OF 3

Product Name: ZX182S-LPC FMC Vita 57.1 test mezzanine card designed to work with Agilent Samtec Logic Analyzer or any flying probe using breakout adapter
Agilent Probes: E5378A E5379A E5385A

ZX182S-LPC , Passive FMC VITAL 57.1
breakout adapter – test board
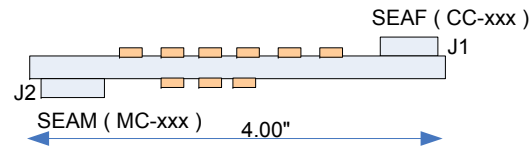
SEAF (CC-xxx)
J1
J2
SEAM (MC-xxx)   4.00"

CC: Carrier Card typically located on Host
MC: Mezzanine Card, typically located on Mezzanine Card
SEAF: SEARRAY Female connector
SEAM: SEARRAY Plug (Male) connector

▭ Probe connector, headers, IPEX-37 access points

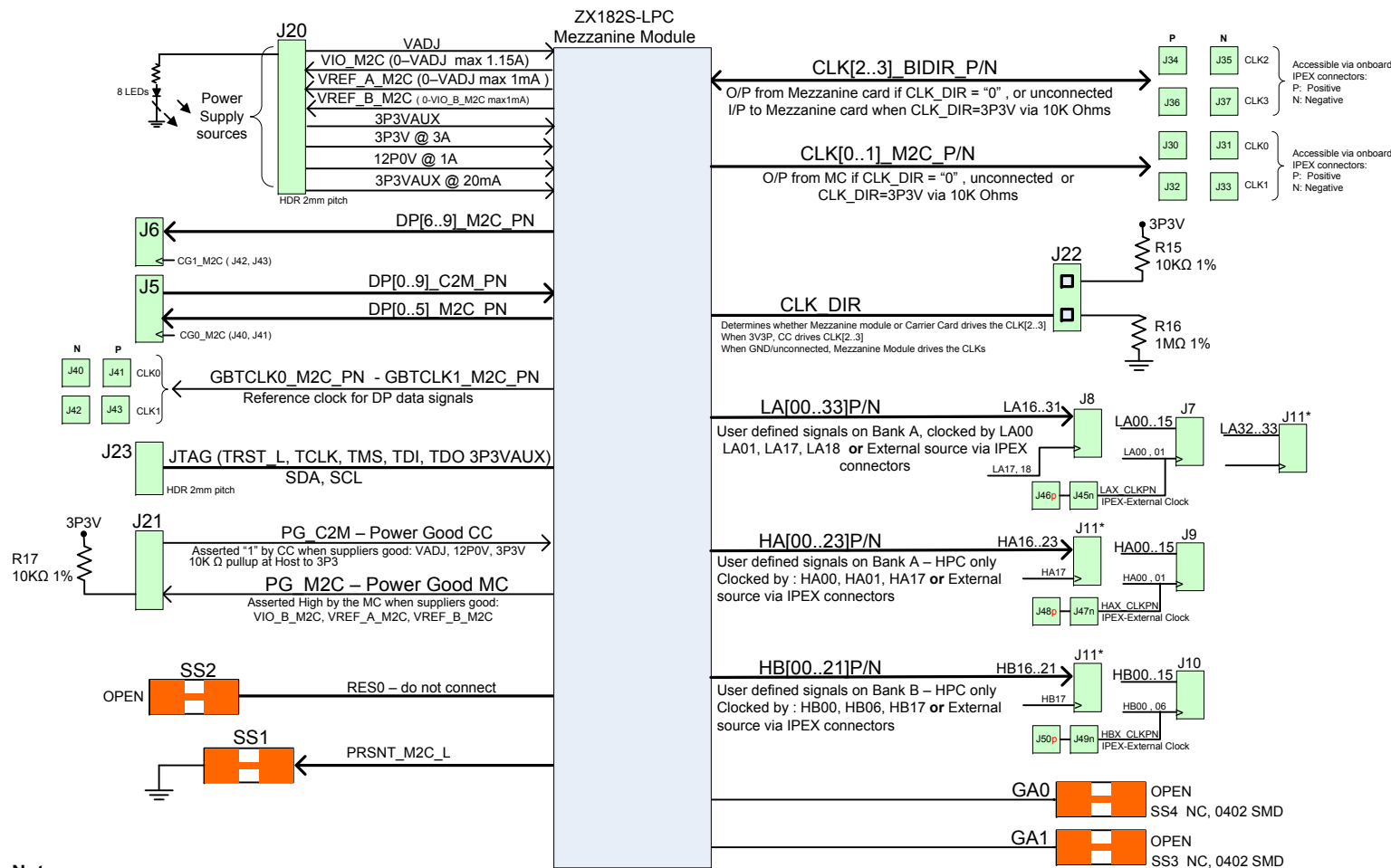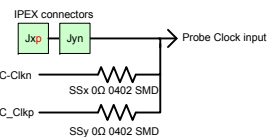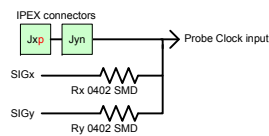Typical SS signal connection
using 0402 SMD Package

Break signal path:

Clock routing technique

Probe clocks are routed using IPEX connectors for use with external clock sources as well as optional resistor stuffing as exhibited below. Jxp, Jxn are IPEX positive and negative IPEX connectors. The Rx, Ry (0402 SMD package) are not stuffed as default. SIGx, SIGy are defined signals reserved as probe clock option, if available. Please see Probe signal assignment table for assigned IPEX and availability of SIGx, SIGy per designed probe access.

MC clock source routing to probes are accessible at IPEX connectors. SS (0402 SMD package) can be used to disconnect MC from providing the Clock or install appropriate filtering, if applicable.

IPEX connectors
Jxp   Jyn → Probe Clock input
SIGx   Rx 0402 SMD
SIGy   Ry 0402 SMD

IPEX connectors
Jxp   Jyn → Probe Clock input
MC-Clkn   SSx 0Ω 0402 SMD
MC-Clkp   SSy 0Ω 0402 SMD

J20
VADJ
VIO_M2C (0–ADJ max 1.15v)
VREF_A_M2C (0–VADJ max 1mA)
VREF_B_M2C (0–VIO_B_M2C max1mA)
3P3VAUX
3P3V @ 3A
12P0V @ 1A
3P3VAUX @ 20mA
8 LEDs
Power Supply sources
HDR 2mm pitch

ZX182S-LPC Mezzanine Module

CLK[2..3]_BIDIR_P/N
O/P from Mezzanine card if CLK_DIR = "0" , or unconnected
I/P to Mezzanine card when CLK_DIR=3P3V via 10K Ohms

P   N
J34   J35   CLK2   Accessible via onboard IPEX connectors: P: Positive N: Negative
J36   J37   CLK3

CLK[0..1]_M2C_P/N
O/P from MC if CLK_DIR = "0" , unconnected or CLK_DIR=3P3V via 10K Ohms

J30   J31   CLK0   Accessible via onboard IPEX connectors: P: Positive N: Negative
J32   J33   CLK1

J6
DP[6..9]_M2C_PN
CG1_M2C (J42, J43)

J5
DP[0..9]_C2M_PN
DP[0..5]_M2C_PN
CG0_M2C (J40, J41)

N   P
J40   J41   CLK0
J42   J43   CLK1
GBTCLK0_M2C_PN - GBTCLK1_M2C_PN
Reference clock for DP data signals

3P3V
R15   10KΩ 1%

J22
CLK_DIR
Determines whether Mezzanine module or Carrier Card drives the CLK[2..3]
When 3V3P, CC drives CLK[2..3]
When GND/unconnected, Mezzanine Module drives the CLKs

R16   1MΩ 1%

J23
JTAG (TRST_L, TCLK, TMS, TDI, TDO 3P3VAUX)
SDA, SCL
HDR 2mm pitch

3P3V
R17   10KΩ 1%

J21
PG_C2M – Power Good CC
Asserted "1" by CC when suppliers good: VADJ, 12P0V, 3P3V
10K Ω pullup at Host to 3P3

PG_M2C – Power Good MC
Asserted High by the MC when suppliers good:
VIO_B_M2C, VREF_A_M2C, VREF_B_M2C

LA[00..33]P/N   LA16..31   J8   LA00..15   J7   LA32..33   J11*
User defined signals on Bank A, clocked by LA00
LA01, LA17, LA18 or External source via IPEX connectors
LA17, 18
LA00 , 01
J46p   J45n   LAX_CLKPN   IPEX-External Clock

HA[00..23]P/N   HA16..23   J11*   HA00..15   J9
User defined signals on Bank A – HPC only
Clocked by : HA00, HA01, HA17 or External source via IPEX connectors
HA17
HA00 , 01
J48p   J47n   HAX_CLKPN   IPEX-External Clock

HB[00..21]P/N   HB16..21   J11*   HB00..15   J10
User defined signals on Bank B – HPC only
Clocked by : HB00, HB06, HB17 or External source via IPEX connectors
HB17
HB00 , 06
J50p   J49n   HBX_CLKPN   IPEX-External Clock

SS2
OPEN   RES0 – do not connect

SS1
PRSNT_M2C_L

GA0
OPEN   SS4 NC, 0402 SMD

GA1
OPEN   SS3 NC, 0402 SMD

Note:
1- **MC** Mezzanine Card - **CC** Carrier Card (Host)
2- All Clocks are accessible via onboard IPEX connectors
3- IPEX Jxxp is positive terminal, Jxxn is negative terminal of the external clock source.
4- J11* - J11 is shared connector supporting LA, HA, and HB signals. It has HA17 and HB17 clocking options

ZEBAX TECHNOLOGIES
SANTA CRUZ, CA U.S.A (831) 2 2 2 – 0717
WWW.ZEBAX.COM

SPECIFIED DIMENSIONS ARE INCHES (MM). ROHS COMPLIANT

ASSEMBLY DRAWING
ITEM: ZX182S-LPC

DESCRIPTION: **FMC VITA 57.1 LPC test board for E5379A**
Agilent probe – passive mezzanine card

CHECKED: M. MARINA
DRAWN: SLAVIK
REVISSION: 1.0
SHEET: 2 OF 3

Probe signal map: Below are signal and clock mapping for the designated probe connectors

ZX182S-LPC Bottom

J5

Assigned	Pin	Signal	Signal	Pin	Assigned
GND	1	GND	GND	2	GND
NC	3	NC	NC	4	NC
GND	5	GND	GND	6	GND
DP0-C2M-N	7	D0-	D0+	8	DP0-C2M-P
	9	GND	GND	10	
GND	11	D1-	D1+	12	GND
	13	GND	GND	14	
GND	15	D2-	D2+	16	GND
	17	GND	GND	18	
GND	19	D3-	D3+	20	
	21	GND	GND	22	GND
GND	23	D4-	D4+	24	
	25	GND	GND	26	GND
GND	27	D5-	D5+	28	
	29	GND	GND	30	GND
GND	31	D6-	D6+	32	
	33	GND	GND	34	GND
GND	35	D7-	D7+	36	
	37	GND	GND	38	GND
GND	39	D8-	D8+	40	
	41	GND	GND	42	GND
GND	43	D9-	D9+	44	
	45	GND	GND	46	GND
DP0-M2C-N	47	D10-	D10+	48	DP0-M2C-P
GND	49	GND	GND	50	GND
	51	D11-	D11+	52	
GND	53	GND	GND	54	GND
	55	D12-	D12+	56	
GND	57	GND	GND	58	GND
	59	D13-	D13+	60	
GND	61	GND	GND	62	
	63	D14-	D14+	64	GND
GND	65	GND	GND	66	GND
	67	D15-	D15+	68	
GND	69	GND	GND	70	GND
NC	71	NC	NC	72	NC
GND	73	GND	GND	74	GND
NC	75	NC	NC	76	NC
GND	77	GND	GND	78	GND
GBTCLK0-M2C-N (J40 - SS18)	79	D16-CLK-	D16-CLK+	80	GBTCLK0-M2C-P (J41 - SS19)
GND	81	GND	GND	82	GND
NC	83	NC	NC	84	NC
GND	85	GND	GND	86	GND
NC	87	NC	NC	88	NC
NC	89	NC	NC	90	NC
NC	91	NC	NC	92	NC
GND	93	GND	GND	94	GND
GND	95	GND	GND	96	GND
NC	97	NC	NC	98	NC
NC	99	NC	NC	100	NC

J7

Assigned	Pin	Signal	Signal	Pin	Assigned
GND	1	GND	GND	2	GND
NC	3	NC	NC	4	NC
GND	5	GND	GND	6	GND
LA00-N	7	D0-	D0+	8	LA00-P
	9	GND	GND	10	
LA01-N	11	D1-	D1+	12	LA01-P
	13	GND	GND	14	
LA02-N	15	D2-	D2+	16	LA02-P
	17	GND	GND	18	
LA03-N	19	D3-	D3+	20	LA03-P
	21	GND	GND	22	GND
LA04-N	23	D4-	D4+	24	LA04-P
	25	GND	GND	26	GND
LA05-N	27	D5-	D5+	28	LA05-P
	29	GND	GND	30	GND
LA06-N	31	D6-	D6+	32	LA06-P
	33	GND	GND	34	GND
LA07-N	35	D7-	D7+	36	LA07-P
	37	GND	GND	38	GND
LA08-N	39	D8-	D8+	40	LA08-P
	41	GND	GND	42	GND
LA09-N	43	D9-	D9+	44	LA09-P
	45	GND	GND	46	GND
LA10-N	47	D10-	D10+	48	LA10-P
	49	GND	GND	50	GND
LA11-N	51	D11-	D11+	52	LA11-P
	53	GND	GND	54	GND
LA12-N	55	D12-	D12+	56	LA12-P
	57	GND	GND	58	GND
LA13-N	59	D13-	D13+	60	LA13-P
	61	GND	GND	62	
LA14-N	63	D14-	D14+	64	LA14-P
	65	GND	GND	66	GND
LA15-N	67	D15-	D15+	68	LA15-P
	69	GND	GND	70	GND
NC	71	NC	NC	72	NC
GND	73	GND	GND	74	GND
NC	75	NC	NC	76	NC
GND	77	GND	GND	78	GND
XLA-CLKN - J45 LA00-N (R20) LA01-N (R21)	79	D16-CLK-	D16-CLK+	80	XLA-CLKP - J46 (R22) LA00-P (R23) LA01-P
	81	GND	GND	82	
NC	83	NC	NC	84	NC
GND	85	GND	GND	86	GND
NC	87	NC	NC	88	NC
NC	89	NC	NC	90	NC
NC	91	NC	NC	92	NC
GND	93	GND	GND	94	GND
GND	95	GND	GND	96	GND
NC	97	NC	NC	98	NC
NC	99	NC	NC	100	NC

J8

Assigned	Pin	Signal	Signal	Pin	Assigned
GND	1	GND	GND	2	GND
NC	3	NC	NC	4	NC
GND	5	GND	GND	6	GND
LA16-N	7	D0-	D0+	8	LA16-P
	9	GND	GND	10	
LA17-N	11	D1-	D1+	12	LA17-P
	13	GND	GND	14	
LA18-N	15	D2-	D2+	16	LA18-P
	17	GND	GND	18	
LA19-N	19	D3-	D3+	20	LA19-P
	21	GND	GND	22	GND
LA20-N	23	D4-	D4+	24	LA20-P
	25	GND	GND	26	GND
LA21-N	27	D5-	D5+	28	LA21-P
	29	GND	GND	30	GND
LA22-N	31	D6-	D6+	32	LA22-P
	33	GND	GND	34	GND
LA23-N	35	D7-	D7+	36	LA23-P
	37	GND	GND	38	GND
LA24-N	39	D8-	D8+	40	LA24-P
	41	GND	GND	42	GND
LA25-N	43	D9-	D9+	44	LA25-P
	45	GND	GND	46	GND
LA26-N	47	D10-	D10+	48	LA26-P
	49	GND	GND	50	GND
LA27-N	51	D11-	D11+	52	LA27-P
	53	GND	GND	54	GND
LA28-N	55	D12-	D12+	56	LA28-P
	57	GND	GND	58	GND
LA29-N	59	D13-	D13+	60	LA29-P
	61	GND	GND	62	
LA30-N	63	D14-	D14+	64	LA30-P
	65	GND	GND	66	GND
LA31-N	67	D15-	D15+	68	LA31-P
	69	GND	GND	70	GND
NC	71	NC	NC	72	NC
GND	73	GND	GND	74	GND
NC	75	NC	NC	76	NC
GND	77	GND	GND	78	GND
LA17-N (R24) LA18-N (R25)	79	D16-CLK-	D16-CLK+	80	(R26) LA17-P (R27) LA18-P
	81	GND	GND	82	
NC	83	NC	NC	84	NC
GND	85	GND	GND	86	GND
NC	87	NC	NC	88	NC
NC	89	NC	NC	90	NC
NC	91	NC	NC	92	NC
GND	93	GND	GND	94	GND
GND	95	GND	GND	96	GND
NC	97	NC	NC	98	NC
NC	99	NC	NC	100	NC

J20

Assigned	Pin	Pin	Assigned
VIO-B-M2C	1	2	3P3
VREF-A-M2C	3	4	VADJ
VREF-B-M2C	5	6	3P3VAUX
GND	7	8	12P0V

J23

Assigned	Pin	Pin	Assigned
TDI	1	2	TDO
3P3VAUX	3	4	TCK
I2C-SCL	5	6	TRST-L
I2C-SDA	7	8	TMS

J21

Assigned	Pin	Pin	Assigned
PG-C2M	1	2	PG-M2C*

* 10 K Ω (R17) pullup resistor to 3P3 supply rail

J22

Assigned	Pin	Pin	Assigned
CLK-DIR*	1	2	GND**

* 10 K Ω Pullup resistor R15 to 3P3 supply rail
** 1M K Ω Pulldown resistor R16 to GND

Vita57.1 Power Supply rails

Voltage supply	Voltage	Max. Current HPC (LPC)	Description
VADJ	0- 3.3V	4A (2A)	Adjustable supply voltage from CC to the IO MC module.
VIO-B-M2C	0 - VADJ	1.15 (NA)	Supplied voltage generated by MC powering the IO banks on the FPGA interfacing to the Bank B IO pins of the connector
VREF-A-M2C	0 - VADJ	1mA*	Reference voltage used by the bank A data pins, LAxx, HAxx. No Connect if Bank A reference voltage is not required.
VREF-B-M2C	0 - VIO-B-M2C	1mA (NA)*	Reference voltage used by the bank B data pins, HBxx. No Connect if Bank A reference voltage is not required.
3P3VAUX	3.3V	20mA*	Auxiliary power supply from CC to the IO MC module.
3P3	3.3V	3A	Power supply from CC to the IO MC module.
12P0V	12.0V	1A	Power supply from CC to the IO MC module.

NA: Not available for LPC connector **CC**: Carrier Card (Host) **MC**: Mezzanine Card
* Due to supply rail's max. current limitation, the onboard LED indicator is populated but the current limiting resistor is NOT populated.

NOTES:
+ IPEX connector access to the probe connector. The SSxx (0402 SMD package) enables MC Signal source. The SSxx Can be replaced by bead, ac coupling cap or filter.

++ Probe clock can be supplied from listed source, IPEX connector (if Jxx is listed) (X - Rx) and (Y-Ry) where X is the signal source followed by the enabled resistor, Rx. The Rx (0 Ω 0402 SMD package) must be installed in order to enable the signal as clock to the probe. Please see "Clock routing technique" section for more details.

ZX182S-LPC is designed to mate with Keysight (Agilent) Samtec Logic Analyzer probe or any flying probe using breakout adapter- ZX132x

ZEBAX TECHNOLOGIES
SANTA CRUZ, CA U.S.A (831) 2 2 2 – 0717
WWW.ZEBAX.COM

ASSEMBLY DRAWING

SPECIFIED DIMENSIONS ARE INCHES (MM). ROHS COMPLIANT

ITEM: ZX182S-LPC

DESCRIPTION: FMC VITA 57.1 LPC test board for E5379A Agilent probe – passive mezzanine card

CHECKED: M. MARINA	DRAWN: SLAVIK	REVISSION: 1.0
		SHEET 3 OF 3