Product Name: **ZX182D FMC Vita 57.1 Tektronix D-MAX test board - breakout adapter passive FPGA Mezzanine Card**
TekTronix – D-MAX probes P6980 P6982 differential probe or P6450 P6962 P6960HS

Product Description: FPGA Mezzanine card , FMC , passive breakout adapter, meeting VITA 57.1 standard bus interfacing with Tektronix D-Max differential / single ended probes, P6980 P6982. Includes 10 rows x 40 pins, totaling **400** pins High Pin Count, HPC, (**200** pins for LPC – Low Pin Count), FCI Meg-Array, housing both CC (Carrier Card - Host) and MC (Mezzanine Card) connectors.

ZX182D is offered in HPC, LPC and FCI Meg-Array connector configuration, see ordering information

Fully compatible with 10 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
- 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

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

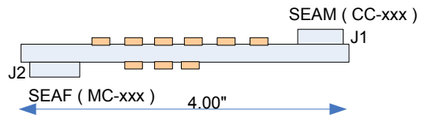
Access: 2x4 pin header, SMD 0402 Package footprint as well as P68xx designated connectors

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 CC-LPC-xxx CC-HPC-xxx MC-HPC-xxx MC-LPC-xxx
where xxx is 10L, 10, 8.5L 8.5
Samtec Molex HI-SPEED HI-DENSITY SEARRAY design connectors.
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:

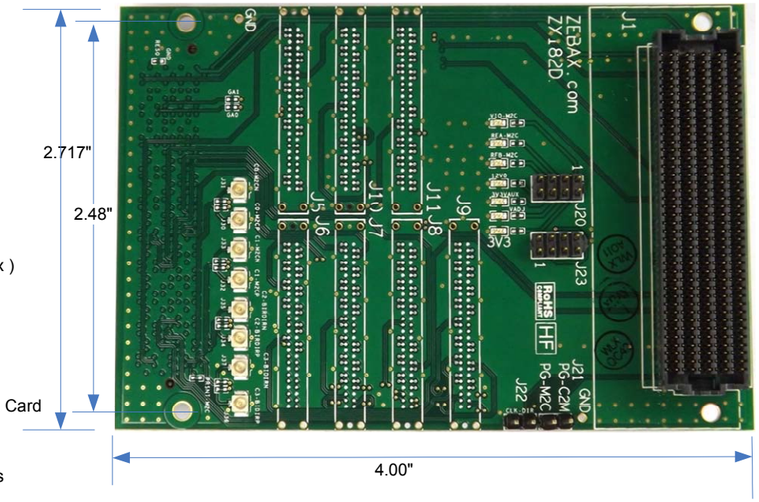
ZX182D Block diagram, See Page 2

ZX182D , Passive FMC VITAL 57.1 breakout adapter – test board



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

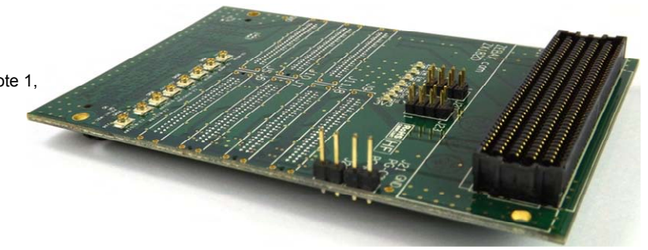
Probe connector, headers, IPEX-37 access points

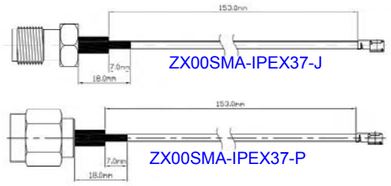


ZX182D-X-X Package includes:

Part number	Quantity	Description
ZX182D-X-X	1	FMC Mezzanine Module
ZX00SMA-IPEX37-X	4	SMA to IPEX-37 cable assembly , Note 1, See ordering information

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





ZX182D-F-X Mates with any and all FMC VITA 57.1 compliant design using FCI Meg-Array 400 pins design. Meg-Array 10 rows x 40 pins FPGA Mezzanine Card (daughter)

Mated Stack Height: 4mm 6mm 8mm 10mm 12mm 14mm
Meets Telcordia GR-1217-CORE and NPS25298-2 Specifications

ZX18x FMC breakout adapter mates with the following Samtec Molex CC / MC SEARAY™ VITA 57.1 Connectors

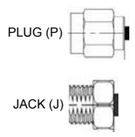
Molex PN	Samtec PN	VITA PN	Description	Mated Stack Height
45971-4307	ASP-127796-01*	CC-LPC-10L	female	
45971-4317	ASP-134485-01*	CC-HPC-10L	female	
45971-4315	ASP-134486-01	CC-HPC-10	female	
45971-4305	ASP-134603-01	CC-LPC-10	female	
45970-4117	ASP-134601-01*	MC-HPC-8.5L	male	8.5 mm
45970-4115	ASP-134602-01	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

ZX18x-F-X FCI Meg-Array 10rows x 40 pins FMC breakout adapter mates with the following FCI Meg-Array VITA 57.1 Connectors

Plug (CC)		Receptacle (MC)		
84520-002LF	84740-002LF	74221-001LF	74388-001LF	74390-001LF*
84520-101LF	84740-102LF	74221-101LF	74388-101LF	74390-101LF
84520-202LF*	84740-202LF	74221-201LF	74388-201LF	74390-201LF
84520-092LF	84740-092LF	74221-091LF	74388-091LF	74390-091LF
84520-192LF	84740-192LF	74221-191LF	74388-191LF	74390-191LF
84520-292LF	84740-292LF	74221-291LF	74388-291LF	74390-201LF
6mm Plug	0mm Plug	4mm	6mm	8mm
Mated Stack Height				

*** Used on ZX182P-F-X**
LF : Lead Free

Ordering INFO:
Part Number
ZX182D-X-X options
- J : SMA Jack (Standard)
- P: SMA Plug connector
- H : HPC - High Pin Count connector
- L : LPC - Low Pin Count connector
- F : FCI - FCI Meg-Array connector



Note
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SPECIFIED DIMENSIONS ARE INCHES (MM).
ROHS COMPLIANT

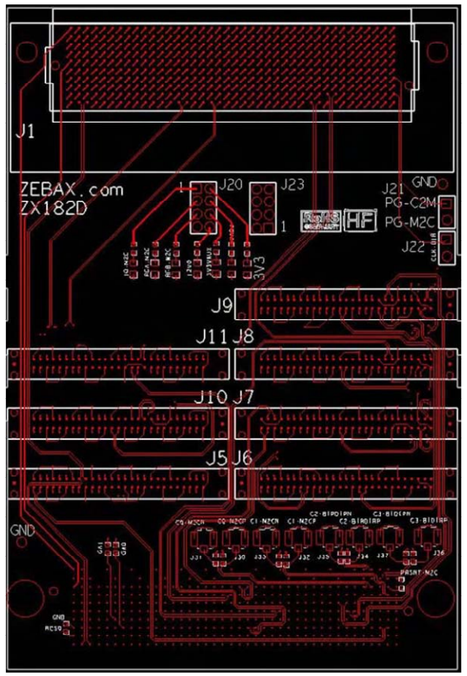
ASSEMBLY DRAWING

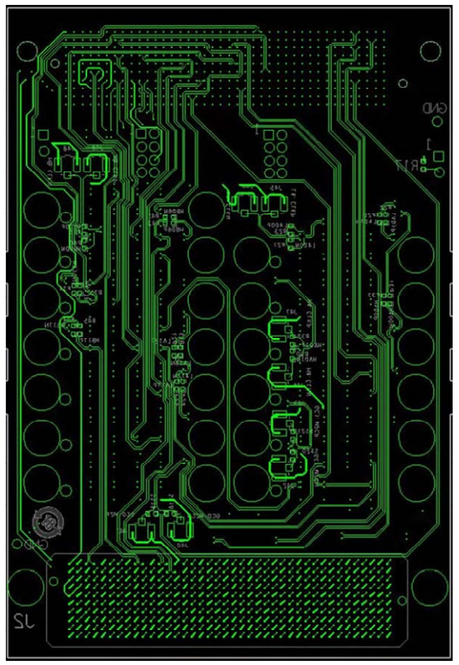
ITEM: ZX182D

DESCRIPTION: FMC VITA 57.1 test board Tektronix D-MAX probe P6980 P6982 – passive mezzanine

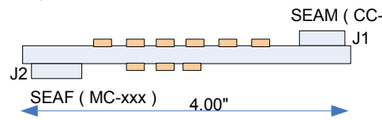
CHECKED:	DRAWN:	REVISSION: 1.0
M. MARINA	SLAVIK	SHEET: 1 OF 3

Product Name: **ZX182D FMC Vita 57.1 Tektronix D-MAX P6980 P6982 test board - breakout adapter passive FPGA Mezzanine Card**





ZX182D , Passive FMC VITAL 57.1 breakout adapter – test board



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

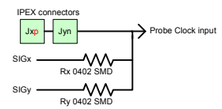
Typical SS signal connection using 0402 SMD Package

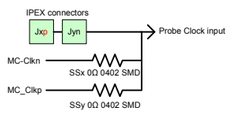
Break signal path:

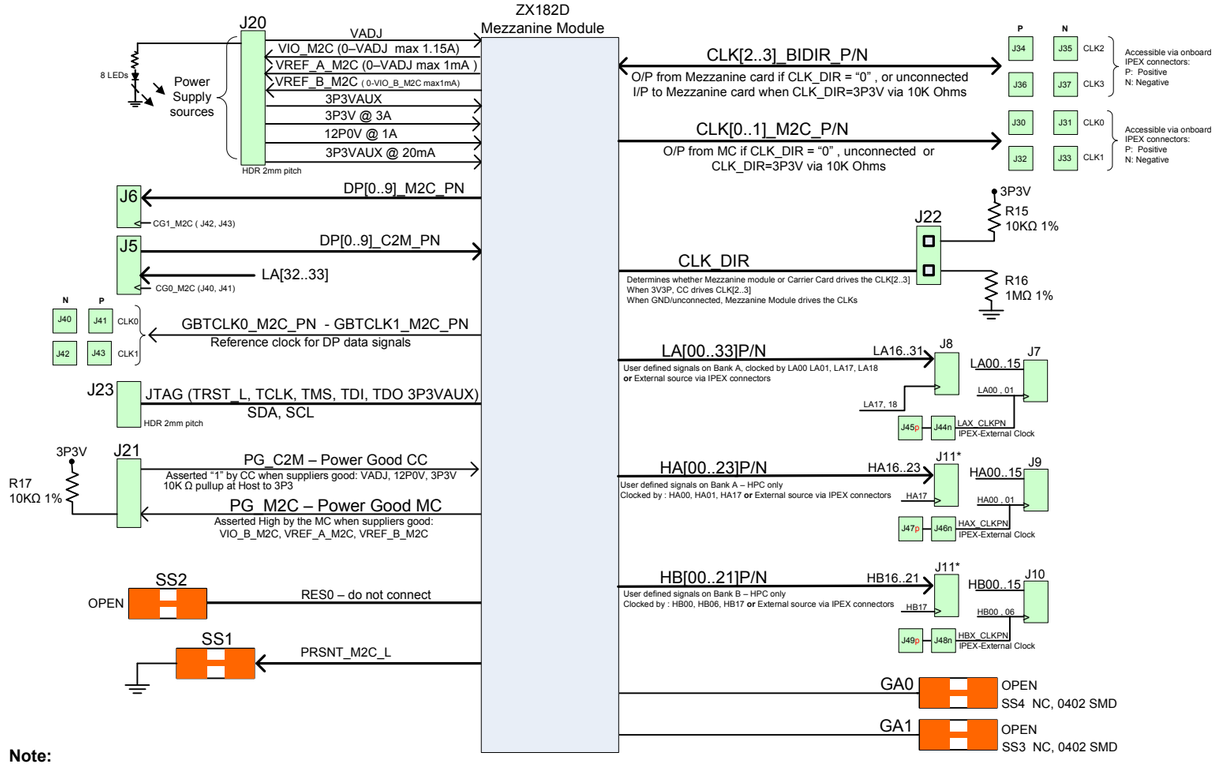
Clock routing technique

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.







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 HA and HB signals. It has HA17 and HB17 clocking options

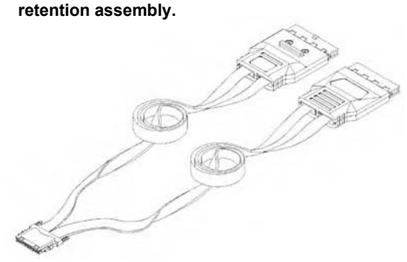
Tektronix D-MAX probe P6890 P6892

D-MAX probe technology is conuntorless using compression Land Grid Array, cLGA, connector that provides electrical connection between PCB and the probe.

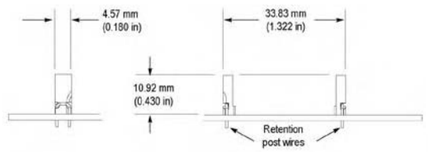
D-MAX probe can be installed to ZX182D using :
1- Probe retention posts Tektronix part number: 020-2539-00

2- Alternate retention assembly – Tektronix part number:
020-2908-xx qty of 2
020-2910-xx qty of 50

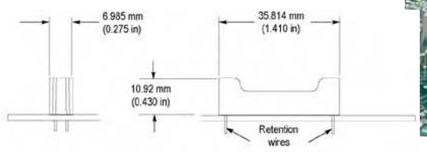
ZX182D does NOT contain the retention posts or the Alternate retention assembly.



Probe retention posts Tektronix part number: 020-2539-00



Alternate retention assembly – Tektronix part number:
020-2908-xx qty of 2
020-2910-xx qty of 50



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ASSEMBLY DRAWING

ITEM: **ZX182D**

DESCRIPTION: **FMC VITA 57.1 test board Tektronix D-MAX probe P6980 P6982 - passive mezzanine**

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

J2

Probe signal map: Below are signal and clock mapping for the designated P6980 P6982 probe connectors

J5					
Assigned	Pin	Signal	Signal	Pin	Assigned
DP0-C2M-P	A1	D0+	GND	B1	GND
DP0-C2M-N	A2	D0-	D1-	B2	DP1-C2M-N
GND	A3	GND	D1+	B3	DP1-C2M-P
DP2-C2M-P	A4	D2+	GND	B4	GND
DP2-C2M-N	A5	D2-	D3-	B5	DP3-C2M-N
GND	A6	GND	D3+	B6	DP3-C2M-P
DP4-C2M-P	A7	D4+	GND	B7	GND
DP4-C2M-N	A8	D4-	D5-	B8	DP5-C2M-N
GND	A9	GND	D5+	B9	DP5-C2M-P
DP6-C2M-P	A10	D6+	GND	B10	GND
DP6-C2M-N	A11	D6-	D7-	B11	DP7-C2M-N
GND	A12	GND	D7+	B12	DP7-C2M-P
NC	A13	NC	GND	B13	GND
NC	A14	NC	CLK-	B14	GBTCLK0-M2C-N J40 - SS18
GND	A15	GND	CLK+	B15	GBTCLK0-M2C-P J41 - SS19
DP8-C2M-P	A16	D8+	GND	B16	GND
DP8-C2M-N	A17	D8-	D9-	B17	DP9-C2M-N
GND	A18	GND	D9+	B18	DP9-C2M-P
NC	A19	D10+	GND	B19	GND
NC	A20	D10-	D11-	B20	NC
GND	A21	GND	D11+	B21	NC
NC	A22	D12+	GND	B22	GND
NC	A23	D12-	D13-	B23	NC
GND	A24	GND	D13+	B24	NC
LA32-P	A25	D14+	GND	B25	GND
LA32-N	A26	D14-	D15-	B26	LA33-N
GND	A27	GND	D15+	B27	L:A33-P

J11					
Assigned	Pin	Signal	Signal	Pin	Assigned
HB16-P	A1	D0+	GND	B1	GND
HB16-N	A2	D0-	D1-	B2	HB17-N
GND	A3	GND	D1+	B3	HB17-P
HB18-P	A4	D2+	GND	B4	GND
HB18-N	A5	D2-	D3-	B5	HB19-N
GND	A6	GND	D3+	B6	HB19-P
HB20-P	A7	D4+	GND	B7	GND
HB20-N	A8	D4-	D5-	B8	HB21-N
GND	A9	GND	D5+	B9	HB21-P
NC	A10	D6+	GND	B10	GND
NC	A11	D6-	D7-	B11	NC
GND	A12	GND	D7+	B12	NC
NC	A13	NC	GND	B13	GND
NC	A14	NC	CLK-	B14	HB17-N - R44 HA17-N - R45
GND	A15	GND	CLK+	B15	HB17-P - R46 HA17-P - R47
HA16-P	A16	D8+	GND	B16	GND
HA16-N	A17	D8-	D9-	B17	HA17-N
GND	A18	GND	D9+	B18	HA17-P
HA18-P	A19	D10+	GND	B19	GND
HA18-N	A20	D10-	D11-	B20	HA19-N
GND	A21	GND	D11+	B21	HA19-P
HA20-P	A22	D12+	GND	B22	GND
HA20-N	A23	D12-	D13-	B23	HA21-N
GND	A24	GND	D13+	B24	HA21-P
HA22-P	A25	D14+	GND	B25	GND
HA22-N	A26	D14-	D15-	B26	HA23-N
GND	A27	GND	D15+	B27	HA23-P

J8					
Assigned	Pin	Signal	Signal	Pin	Assigned
LA16-P	A1	D0+	GND	B1	GND
LA16-N	A2	D0-	D1-	B2	LA17-N
GND	A3	GND	D1+	B3	LA17-P
LA18-P	A4	D2+	GND	B4	GND
LA18-N	A5	D2-	D3-	B5	LA19-N
GND	A6	GND	D3+	B6	LA19-P
LA20-P	A7	D4+	GND	B7	GND
LA20-N	A8	D4-	D5-	B8	LA21-N
GND	A9	GND	D5+	B9	LA21-P
LA22-P	A10	D6+	GND	B10	GND
LA22-N	A11	D6-	D7-	B11	LA23-N
GND	A12	GND	D7+	B12	LA23-P
NC	A13	NC	GND	B13	GND
NC	A14	NC	CLK-	B14	LA17-N - R24 LA18-N - R25
GND	A15	GND	CLK+	B15	LA17-P - R26 LA18-P - R27
LA24-P	A16	D8+	GND	B16	GND
LA24-N	A17	D8-	D9-	B17	LA25-N
GND	A18	GND	D9+	B18	LA25-P
LA26-P	A19	D10+	GND	B19	GND
LA26-N	A20	D10-	D11-	B20	LA27-N
GND	A21	GND	D11+	B21	LA27-P
LA28-P	A22	D12+	GND	B22	GND
LA28-N	A23	D12-	D13-	B23	LA29-N
GND	A24	GND	D13+	B24	LA29-P
LA30-P	A25	D14+	GND	B25	GND
LA30-N	A26	D14-	D15-	B26	LA31-N
GND	A27	GND	D15+	B27	LA31-P

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.

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

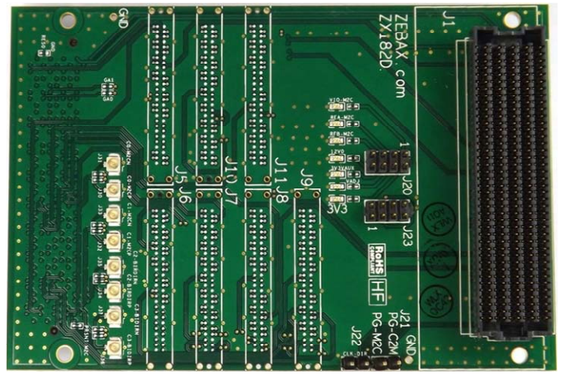
J6					
Assigned	Pin	Signal	Signal	Pin	Assigned
DP0-M2C-P	A1	D0+	GND	B1	GND
DP0-M2C-N	A2	D0-	D1-	B2	DP1-M2C-N
GND	A3	GND	D1+	B3	DP1-M2C-P
DP2-M2C-P	A4	D2+	GND	B4	GND
DP2-M2C-N	A5	D2-	D3-	B5	DP3-M2C-N
GND	A6	GND	D3+	B6	DP3-M2C-P
DP4-M2C-P	A7	D4+	GND	B7	GND
DP4-M2C-N	A8	D4-	D5-	B8	DP5-M2C-N
GND	A9	GND	D5+	B9	DP5-M2C-P
DP6-M2C-P	A10	D6+	GND	B10	GND
DP6-M2C-N	A11	D6-	D7-	B11	DP7-M2C-N
GND	A12	GND	D7+	B12	DP7-M2C-P
NC	A13	NC	GND	B13	GND
NC	A14	NC	CLK-	B14	GBTCLK1-M2C-N J42 - SS20
GND	A15	GND	CLK+	B15	GBTCLK1-M2C-P J43 - SS21
DP8-M2C-P	A16	D8+	GND	B16	GND
DP8-M2C-N	A17	D8-	D9-	B17	DP9-M2C-N
GND	A18	GND	D9+	B18	DP9-M2C-P
NC	A19	D10+	GND	B19	GND
NC	A20	D10-	D11-	B20	NC
GND	A21	GND	D11+	B21	NC
NC	A22	D12+	GND	B22	GND
NC	A23	D12-	D13-	B23	NC
GND	A24	GND	D13+	B24	NC
NC	A25	D14+	GND	B25	GND
NC	A26	D14-	D15-	B26	NC
GND	A27	GND	D15+	B27	NC

J9					
Assigned	Pin	Signal	Signal	Pin	Assigned
HA00-P	A1	D0+	GND	B1	GND
HA00-N	A2	D0-	D1-	B2	HA01-N
GND	A3	GND	D1+	B3	HA01-P
HA02-P	A4	D2+	GND	B4	GND
HA02-N	A5	D2-	D3-	B5	HA03-N
GND	A6	GND	D3+	B6	HA03-P
HA04-P	A7	D4+	GND	B7	GND
HA04-N	A8	D4-	D5-	B8	HA05-N
GND	A9	GND	D5+	B9	HA05-P
HA06-P	A10	D6+	GND	B10	GND
HA06-N	A11	D6-	D7-	B11	HA07-N
GND	A12	GND	D7+	B12	HA07-P
NC	A13	NC	GND	B13	GND
NC	A14	NC	CLK-	B14	XHA-CLKN - J46 HA00-N - R30 HA01-N - R31
GND	A15	GND	CLK+	B15	XHA-CLKP - J47 HA00-P - R32 HA01-N - R33
HA08-P	A16	D8+	GND	B16	GND
HA08-N	A17	D8-	D9-	B17	HA09-N
GND	A18	GND	D9+	B18	HA09-P
HA10-P	A19	D10+	GND	B19	GND
HA10-N	A20	D10-	D11-	B20	HA11-N
GND	A21	GND	D11+	B21	HA11-P
HA12-P	A22	D12+	GND	B22	GND
HA12-N	A23	D12-	D13-	B23	HA13-N
GND	A24	GND	D13+	B24	HA13-P
HA14-P	A25	D14+	GND	B25	GND
HA14-N	A26	D14-	D15-	B26	HA15-N
GND	A27	GND	D15+	B27	HA15-P

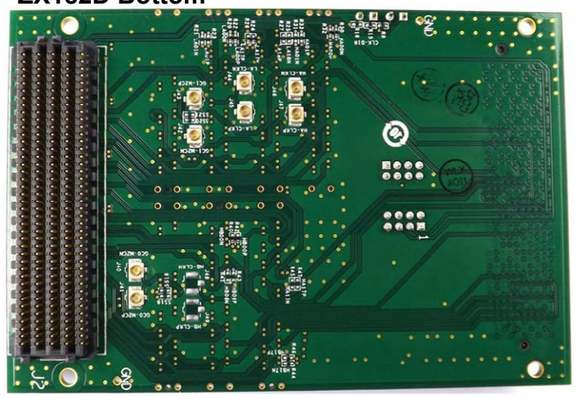
J7					
Assigned	Pin	Signal	Signal	Pin	Assigned
LA00-P	A1	D0+	GND	B1	GND
LA00-N	A2	D0-	D1-	B2	LA01-N
GND	A3	GND	D1+	B3	LA01-P
LA02-P	A4	D2+	GND	B4	GND
LA02-N	A5	D2-	D3-	B5	LA03-N
GND	A6	GND	D3+	B6	LA03-P
LA04-P	A7	D4+	GND	B7	GND
LA04-N	A8	D4-	D5-	B8	LA05-N
GND	A9	GND	D5+	B9	LA05-P
LA06-P	A10	D6+	GND	B10	GND
LA06-N	A11	D6-	D7-	B11	LA07-N
GND	A12	GND	D7+	B12	LA07-P
NC	A13	NC	GND	B13	GND
NC	A14	NC	CLK-	B14	XLA-CLKN - J44 LA00-N - R20 LA01-N - R21
GND	A15	GND	CLK+	B15	XLA-CLKP - J45 LA00-P - R22 LA01-P - R23
LA08-P	A16	D8+	GND	B16	GND
LA08-N	A17	D8-	D9-	B17	LA09-N
GND	A18	GND	D9+	B18	LA09-P
LA10-P	A19	D10+	GND	B19	GND
LA10-N	A20	D10-	D11-	B20	LA11-N
GND	A21	GND	D11+	B21	LA11-P
LA12-P	A22	D12+	GND	B22	GND
LA12-N	A23	D12-	D13-	B23	LA13-N
GND	A24	GND	D13+	B24	LA13-P
LA14-P	A25	D14+	GND	B25	GND
LA14-N	A26	D14-	D15-	B26	LA15-N
GND	A27	GND	D15+	B27	LA15-P

J10					
Assigned	Pin	Signal	Signal	Pin	Assigned
HB00-P	A1	D0+	GND	B1	GND
HB00-N	A2	D0-	D1-	B2	HB01-N
GND	A3	GND	D1+	B3	HB01-P
HB02-P	A4	D2+	GND	B4	GND
HB02-N	A5	D2-	D3-	B5	HB03-N
GND	A6	GND	D3+	B6	HB03-P
HB04-P	A7	D4+	GND	B7	GND
HB04-N	A8	D4-	D5-	B8	HB05-N
GND	A9	GND	D5+	B9	HB05-P
HB06-P	A10	D6+	GND	B10	GND
HB06-N	A11	D6-	D7-	B11	HB07-N
GND	A12	GND	D7+	B12	HB07-P
NC	A13	NC	GND	B13	GND
NC	A14	NC	CLK-	B14	XHB-CLKN - J46 HB00-N - R40 HB06-N - R41
GND	A15	GND	CLK+	B15	XHB-CLKP - J49 HB00-P - R42 HB06-P - R43
HB08-P	A16	D8+	GND	B16	GND
HB08-N	A17	D8-	D9-	B17	HB09-N
GND	A18	GND	D9+	B18	HB09-P
HB10-P	A19	D10+	GND	B19	GND
HB10-N	A20	D10-	D11-	B20	HB11-N
GND	A21	GND	D11+	B21	HB11-P
HB12-P	A22	D12+	GND	B22	GND
HB12-N	A23	D12-	D13-	B23	HB13-N
GND	A24	GND	D13+	B24	HB13-P
HB14-P	A25	D14+	GND	B25	GND
HB14-N	A26	D14-	D15-	B26	HB15-N
GND	A27	GND	D15+	B27	HB15-P

ZX182D Top



ZX182D Bottom



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.

Note

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

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SPECIFIED DIMENSIONS ARE INCHES (MM). ROHS COMPLIANT

ASSEMBLY DRAWING

ITEM: ZX182D

DESCRIPTION: FMC VITA 57.1 test board Tektronix D-MAX probe P6980 P6982 – passive mezzanine

CHECKED: M. MARINA

DRAWN: SLAVIK

REVISSION: 1.0

SHEET: 3 OF 3