EKF
SYSTEM

Product Information

SK5-BALL

CompactPCI® Serial • XMC Module Carrier PCIe® x8
Full Length Module 74mm x 149mm • Rear I/O Option

Document No. 8819 • 27 November 2018

General

The SK5-BALL is a peripheral slot board for CompactPCI® Serial systems and acts as carrier card for an XMC-style mezzanine module. XMC modules are specified by ANSI/VITA 42, as an advanced replacement for PMC modules. While using a similar form factor as PMC cards, XMC modules are provided with a PCI Express® interface. The SK5-BALL can be used together with 74x149mm² full length or 74x139mm² short length XMC mezzanine cards.

The SK5-BALL is equipped with a bidirectional 8-lane PCI Express® Gen3 redriver, for optimum high speed signal integrity, and should be installed into a fat pipe peripheral slot of a CompactPCI® Serial backplane. As an option, the SK5-BALL can be populated with rear I/O connectors. The XMC carrier connector J16 signals are available across the CompactPCI® Serial backplane connectors P4/P5, and J14 has been routed to P3.

SK5-0200-BALL w. Sample 149mm Length XMC Module

Theory of Operation

The SK5-BALL requires at least a single PCI Express® lane from the backplane, passed over across the backplane connector P1 to the on-board PCIe redriver circuit. Up to eight PCI Express® lanes are supported, when the SK5-BALL is installed into a CompactPCI® Serial *fat pipe* peripheral slot (P1/P2 backplane connectors in use). With a total link bandwidth of 64Gbps, even very demanding applications can be realized, such as a 10/40GBps Ethernet or USB 3.1 Gen2 XMC mezzanine module e.g.

The on-board 8-lane bidirectional redriver is suitable up to 8.0Gbps (PCIe 3.0) data transfer rate per lane, and ensures optimum signal integrity (wider opening with respect to the eye diagrams). The XMC module connector J15 is directly tied to the redriver circuit. In addition, a zero delay PCIe Gen3 clock buffer is provided on-board. The SK5-BALL front panel is covered by a 17.5mm protruding metal shell, which allows 149mm full length XMC mezzanine modules to be accommodated.

Feature Summary

Dimensions

▸ PICMG® CompactPCI® Serial standard (CPCI-S.0) peripheral slot card
▸ Single size Eurocard 3U 4HP 100x160mm^2
▸ CompactPCI® Serial backplane connectors P1 & P2 (fat pipe slot up to PCIe x8)
▸ Optional backplane connectors P3, P4, P5 for rear I/O usage

XMC Mezzanine I/F

▸ Suitable for 74x149mm^2 or 74x139mm^2 XMC modules according to VITA 42
▸ XMC module connector J15 (specified by VITA 42 as PCIe Gen1 interface)
▸ Option XMC 2.0 module connector J15 (VITA 61) recommended for PCIe Gen2
▸ 8 x PCI Express® lanes Gen1 (2.5GT/s as specified by VITA 42), Gen2 (5.0GT/s as specified by VITA 61) or Gen3 (8GT/s)
▸ 8-lane bidirectional PCIe Gen3 redriver/repeater for optimum signal integrity
▸ PCI Express® Gen3 clock buffer for optimum signal integrity
▸ +12V XMC VPWR
▸ -12V regulator option (J15 Pin F8)
▸ Option XMC module connector J14 (usable for rear I/O across P3)
▸ Option XMC module connector J16 (usable for rear I/O across P4/P5)

Option Rear I/O

▸ Option CompactPCI® Serial backplane connectors P3, P4, P5
▸ XMC rear I/O connector J14 wired to P3 (32 differential pair signals)
▸ XMC rear I/O connector J16 wired to P4 and P5 (78 signals)
▸ P5 can also deliver power to the rear I/O module (+12V, +5V, +3.3V)
▸ Suitable e.g. for PIM carrier rear I/O module (VITA 36 Draft)
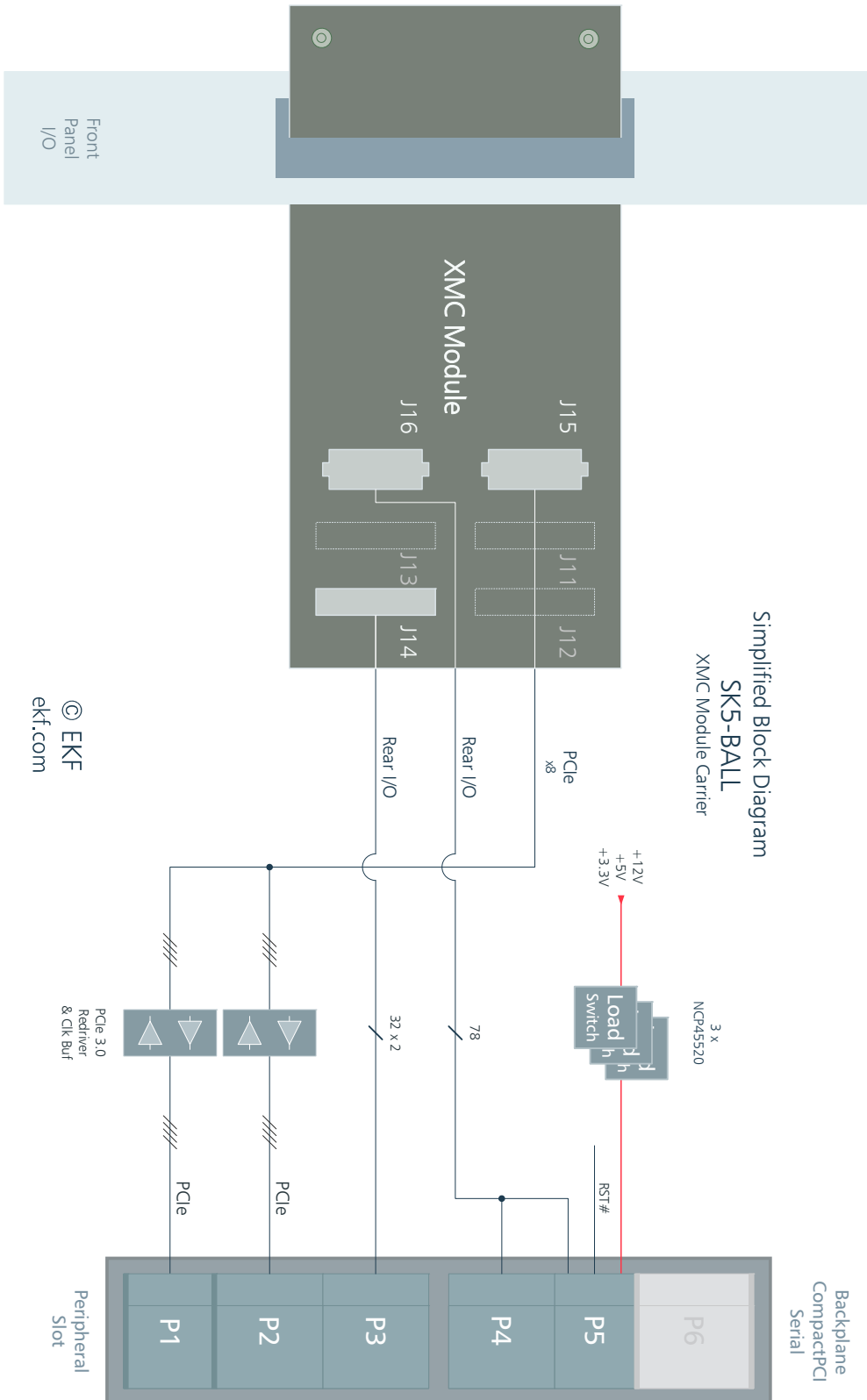▸ EKF offers custom specific rear I/O module development

Applications

▸ System integration of special functions not available as CompactPCI® Serial card
▸ I/O controllers with front I/O connectors
▸ FPGA or GPU based parallel computing XMC modules

Feature Summary

Regulatory, Environment

▸ Designed & manufactured in Germany

▸ ISO 9001 certified quality management system

▸ Long term availability

▸ Coating, sealing, underfilling on request

▸ RoHS compliant 2011/65/EC

▸ Operating temperature -40°C to +85°C (industrial temperature range)

▸ Storage temperature -40°C to +85°C, max. gradient 5°C/min

▸ Humidity 5% ... 95% RH non condensing

▸ Altitude -300m ... +3000m

▸ Shock 15g 0.33ms, 6g 6ms

▸ Vibration 1g 5-2000Hz

▸ MTBF 62.2 years

▸ EC Regulatory EN55022, EN55024, EN60950-1 (UL60950-1/IEC60950-1)

Block Diagram
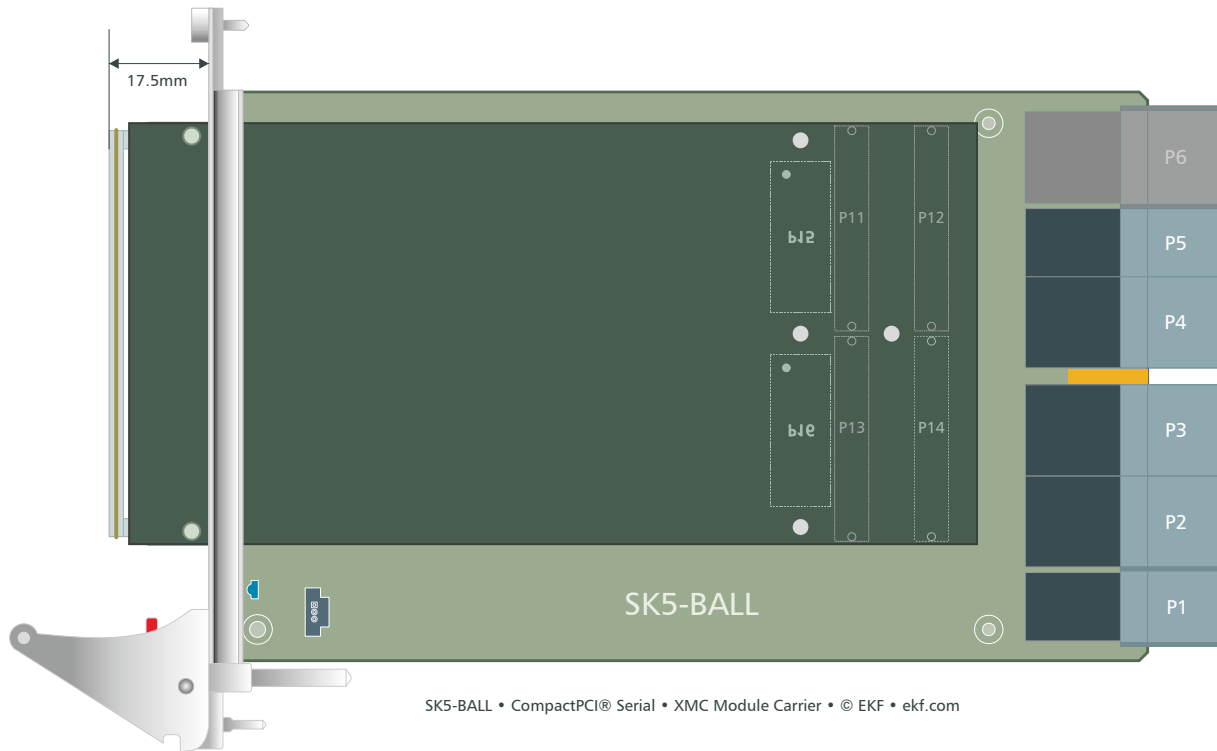
Simplified Block Diagram
SK5-BALL
XMC Module Carrier

XMC Module

J16

J15

J13

J11

J14

J12

Rear I/O

Rear I/O

PCIe x8

+12V
+5V
+3.3V

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ekf.com

PCIe 3.0
Redriver
& Clk Buf

32 x 2

78

3 x
NCP45520

Load
Switch

PCIe

PCIe

RST#

Front
Panel
I/O

Peripheral
Slot

Backplane
CompactPCI
Serial

P1

P2

P3

P4

P5

P6

Board Assembly

17.5mm

P6
P5
P4
P3
P2
P1

P11
P12
P13
P14

SK5-BALL

SK5-BALL • CompactPCI® Serial • XMC Module Carrier • © EKF • ekf.com

Front Shell not Shown

+12V
Fan

J15 J11 J12
A1

CL Y=57.5mm

J16 J13 J14
A1

SK5-BALL

P6
P5
P4
P3
P2
P1
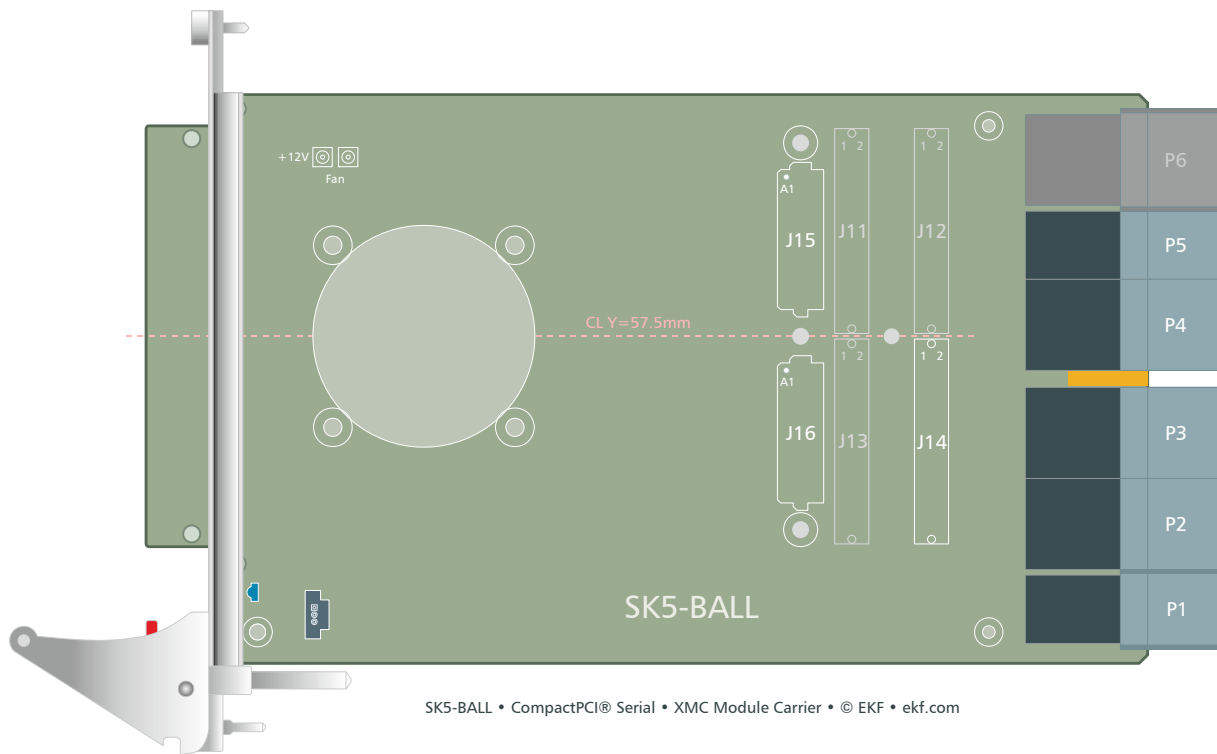
SK5-BALL • CompactPCI® Serial • XMC Module Carrier • © EKF • ekf.com

Front Shell not Shown

Front Panel

XMC MEZZANINE
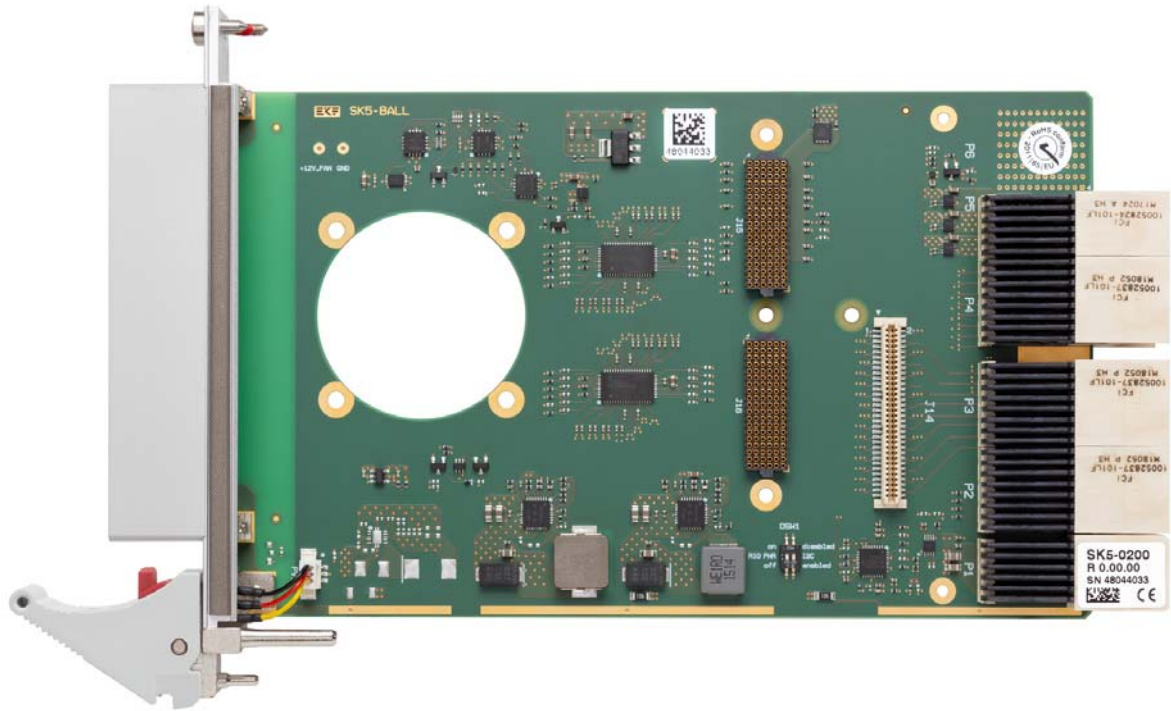
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SK5-BALL

XMC Socket J15

ANSI/VITA 42.3 defines a primary **XMC** connector, which is mandatory for PCIe fabric. The secondary XMC connector is optional (either fabric or user I/O).

The SK5-BALL is an XMC carrier board with a 8-Lane PCI Express® host interface, which is wired through the primary connector XMC J15. A secondary connector is not provided.
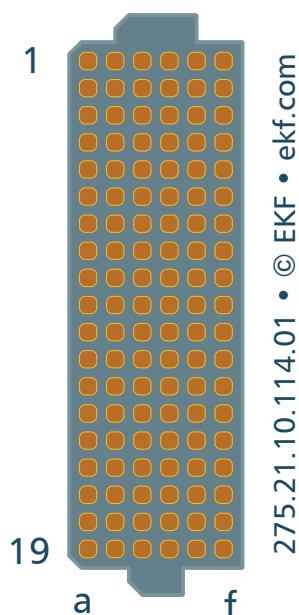
XMC Receptacle

CompactPCI® Serial cards are supplied by +12V only. This voltage is therefore used to fed the XMC connector J15 VPWR pins, across a power FET which is turned on when the front panel microswitch is activated (ejector lever position up = card locked). A switching regulator on the SK5-BALL provides +3.3V up to 3A to the XMC connector J15 3.3V pins. In addition, -12V can be generated by an optional inverting regulator.

As an option, the SK5-BALL can be equipped with a **XMC 2.0** type connector J15, as specified by VITA 61.0. With MIL/Aero environment in mind, the new connector incorporates a number of features for improved mechanical performance, and has been electrically characterized to support 5GHz+ allowing PCI Express® 2.0 (the VITA 42 connector in contrast has only been characterized to 3.125 Ghz). Since XMC (VITA 42) and XMC 2.0 (VITA 61) connectors are not intermateable, both the XMC carrier card and the XMC module must be populated with the same type of connector. The VITA 61 XMC 2.0 connector housing is off-white in colour as a visual key to differentiate it from the black VITA 42 legacy connector. Please specify your needs to sales@ekf.com when ordering the SK5-BALL.
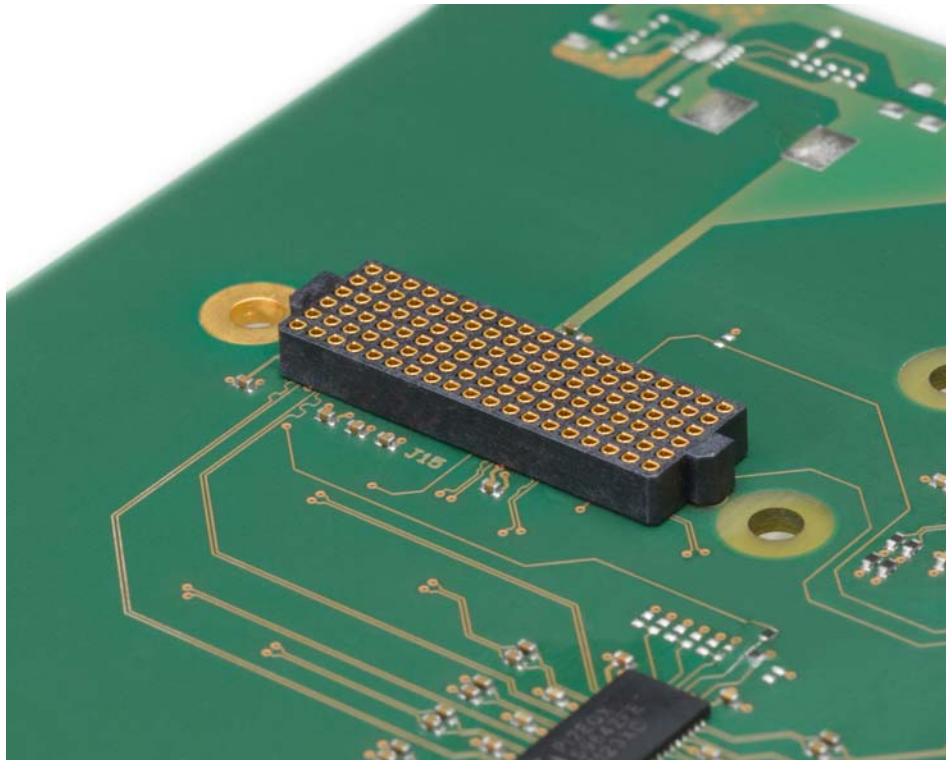
Classic J15 XMC Connector
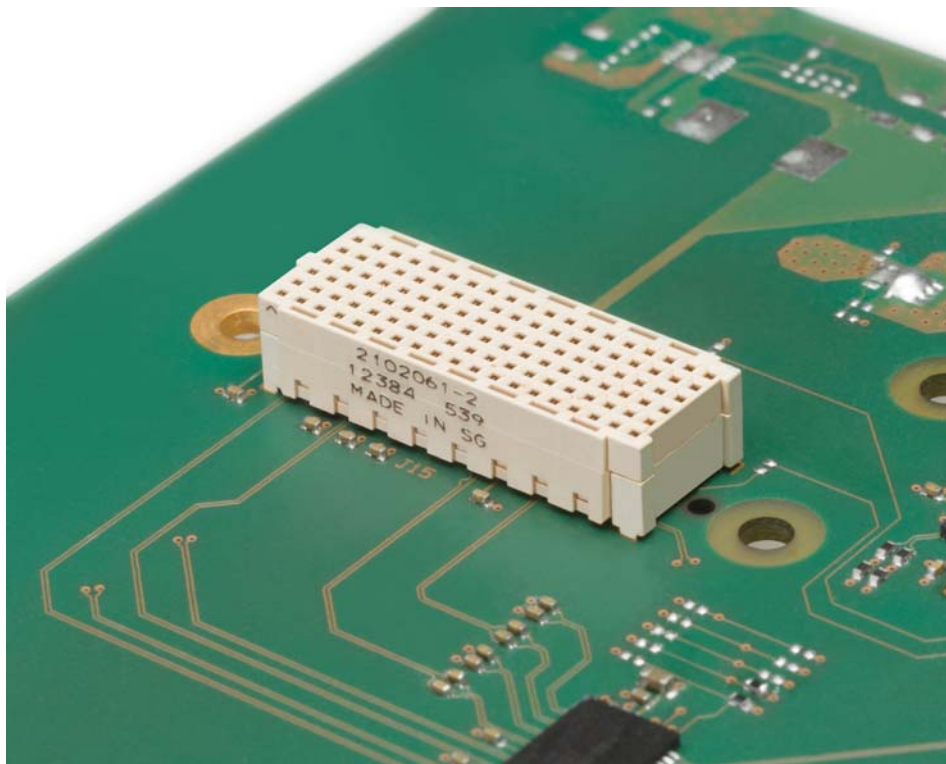
Advanced J15 XMC 2.0 Connector (Option)

XMC Connector J15 - PCIe Fabric • EKF Part No. 275.21.10.114.01					
	a	b	c	d	e	f
1	PET0P0	PET0N0	+3.3V	PET0P1	PET0N1	+12V VPWR
2	GND	GND	TRST# 11)	GND	GND	MRSTI# 6)
3	PET0P2	PET0N2	+3.3V	PET0P3	PET0N3	+12V VPWR
4	GND	GND	*TCK*	GND	GND	MRSTO# 7)
5	PET0P4	PET0N4	+3.3V	PET0P5	PET0N5	+12V VPWR
6	GND	GND	*TMS*	GND	GND	+12V VPWR
7	PET0P6	PET0N6	+3.3V	PET0P7	PET0N7	+12V VPWR
8	GND	GND	*TDI*	GND	GND	-12V 8)
9	*RFU*	*RFU*	*RFU*	*RFU*	*RFU*	+12V VPWR
10	GND	GND	*TDO*	GND	GND	GA0 3)
11	PER0P0	PER0N0	*MBIST#*	PER0P1	PER0N1	+12V VPWR
12	GND	GND	GA1 3)	GND	GND	MPRESENT# 9)
13	PER0P2	PER0N2	+3.3V 4)	PER0P3	PER0N3	+12V VPWR
14	GND	GND	GA2 3)	GND	GND	MSDA 10)
15	PER0P4	PER0N4	*RFU*	PER0P5	PER0N5	+12V VPWR
16	GND	GND	MVMRO 5)	GND	GND	MSCL 10)
17	PER0P6	PER0N6	*RFU*	PER0P7	PER0N7	*RFU*
18	GND	GND	*RFU*	GND	GND	*RFU*
19	CLKP_XMC	CLKN_XMC	*RFU*	WAKE#	*ROOT0#*	*RFU*

pin positions printed italic/gray: reserved by specification / not connected

3)   GA2 GA1 GA0 (I2C address assigned to module) strapped to 1 0 1 by default

4)   Module +3.3V AUX

5)   MVMRO (Module Volatile Memory Read Only) is an optional input to the XMC module, connected to an optional on-board GPIO

6)   MRSTI# (Module Reset Input) tied to platform reset

7)   MRSTO# (Module Reset Output) is an optional output by the XMC module, connected to an optional on-board GPIO

8)   -12V is provided by the SK5-BALL as an option only (inverting regulator, -12V 0.2A)

9)   MPRESENT# (Module Present), connected to backplane connector P1 signal PCIE_EN#

10)   MSCL/MSDA derived from backplane connector P1 signals I2C SDA/SCL via optional I2C switch

11)   10k to GND

XMC Connector J14 - Rear I/O (Option)

XMC-J14 - Rear I/O			
1	P3 F8 N16	P3 C8 N0	2
3	P3 E8 P16	P3 B8 P0	4
5	P3 L8 N17	P3 I8 N1	6
7	P3 K8 P17	P3 H8 P1	8
9	P3 E7 N18	P3 B7 N2	10
11	P3 D7 P18	P3 A7 P2	12
13	P3 K7 N19	P3 H7 N3	14
15	P3 J7 P19	P3 G7 P3	16
17	P3 F6 N20	P3 C6 N4	18
19	P3 E6 P20	P3 B6 P4	20
21	P3 L6 N21	P3 I6 N5	22
23	P3 K6 P21	P3 H6 P5	24
25	P3 E5 N22	P3 B5 N6	26
27	P3 D5 P22	P3 A5 P6	28
29	P3 K5 N23	P3 H5 N7	30
31	P3 J5 P23	P3 G5 P7	32
33	P3 F4 N24	P3 C4 N8	34
35	P3 E4 P24	P3 B4 P8	36
37	P3 L4 N25	P3 I4 N9	38
39	P3 K4 P25	P3 H4 P9	40
41	P3 E3 N26	P3 B3 N10	42
43	P3 D3 P26	P3 A3 P10	44
45	P3 K3 N27	P3 H3 N11	46
47	P3 J3 P27	P3 G3 P11	48
49	P3 F2 N28	P3 C2 N12	50
51	P3 E2 P28	P3 B2 P12	52
53	P3 L2 N29	P3 I2 N13	54
55	P3 K2 P29	P3 H2 P13	56
57	P3 E1 N30	P3 B1 N14	58
59	P3 D1 P30	P3 A1 P14	60
61	P3 K1 N31	P3 H1 N15	62
63	P3 J1 P31	P3 G1 P15	64

Part No. 275.01.08.064.03 • © EKF • ekf.com — IEEE1386 Receptacle

Despite the PMC connector J14 was originally defined for 64 single-ended signals, the SK5-BALL here follows a differential pair routing schema, similar to VITA 46.9. Any differential pair N/P 0-31 is comprised of two J14 connector signal pins, with J14 pin numbers n and n+2. All signal pairs are available via the backplane connector P3.

XMC Connector J16 - Rear I/O (Option)

XMC Connector J16 - Rear I/O • EKF Part No. 275.21.10.114.01					
	a	b	c	d	e	f
1	P5 J3 DP00+	P5 K3 DP00-	P5 L2 UD_SE	P5 E4 DP01+	P5 F4 DP01-	P5 E3 UD_SE
2	GND	GND	P5 K2 UD_SE	GND	GND	P5 D3 UD_SE
3	P5 J1 DP02+	P5 K1 DP02-	P5 L8 UD15-	P5 E2 DP03+	P5 F2 DP03-	P5 E1 UD14-
4	GND	GND	P4 K8 UD15+	GND	GND	P5 D1 UD14+
5	P4 E8 DP04+	P4 F8 DP04-	P4 K7 UD13-	P4 H8 DP05+	P4 I8 DP05-	P4 C8 UD12-
6	GND	GND	P4 J7 UD13+	GND	GND	P4 B8 UD12+
7	P4 D7 DP06+	P4 E7 DP06-	P4 L6 UD5-	P4 G7 DP07+	P4 H7 DP07-	P4 B7 UD17-
8	GND	GND	P4 K6 UD5+	GND	GND	P4 A7 UD17+
9	P4 E6 DP08+	P4 F6 DP08-	P4 K5 UD4-	P4 H6 DP09+	P4 I6 DP09-	P4 C6 UD1-
10	GND	GND	P4 J5 UD4+	GND	GND	P4 B6 UD1+
11	P4 D5 DP10+	P4 E5 DP10-	P4 L5 UD11-	P4 G5 DP11+	P4 H5 DP11-	P4 B5 UD6-
12	GND	GND	P4 K4 UD11+	GND	GND	P4 A5 UD6+
13	P4 E4 DP12+	P4 E5 DP12-	P4 K3 UD16-	P4 H4 DP13+	P4 I4 DP13-	P4 C4 UD2-
14	GND	GND	P4 J3 UD16+	GND	GND	P4 B4 UD2+
15	P4 D3 DP14+	P4 E3 DP14-	P4 L2 UD3-	P4 G3 DP15+	P4 H3 DP15-	P4 B3 UD8-
16	GND	GND	P4 K2 UD3+	GND	GND	P4 A3 UD8+
17	P4 E2 DP16+	P4 F2 DP16-	P4 K1 UD9-	P4 H2 DP17+	P4 I2 DP17-	P4 C2 UD7-
18	GND	GND	P4 J1 UD9+	GND	GND	P4 B2 UD7+
19	P4 A1 DP18+	P4 B1 DP18-	P4 D1 UD_SE	P4 G1 DP19+	P4 H1 DP19-	P4 E1 UD_SE

P1/P2 CompactPCI® Serial Backplane Connectors

P1 CompactPCI® Serial Peripheral Slot Backplane Connector											
EKF Part #250.3.1206.20.02 • 72 pos. 12x6, 14mm Width											
P1	A	B	C	D	E	F	G	H	I	J	K	L
6	GND	PE TX02+	PE TX02-	GND	PE RX02+	PE RX02-	GND	PE TX03+	PE TX03-	GND	PE RX03+	PE RX03-
5	PE TX00+	PE TX00-	GND	PE RX00+	PE RX00-	GND	PE TX01+	PE TX01-	GND	PE RX01+	PE RX01-	GND
4	GND	USB2+	USB2-	GND	PE CLK+	PE CLK-	GND	SATA TX+	SATA TX-	GND	SATA RX+	SATA RX-
3	USB3 TX+	USB3 TX-	GA0	USB3 RX+	USB3 RX-	GA1	SATA SDI	SATA SDO	GA2	SATA SCL	SATA SL	GA3
2	GND	I2C SCL	I2C SDA	GND	RSV	RSV	GND	RST#	WAKE#	GND	PE EN#	SYS EN#
1	+12V	STBY	GND	+12V	+12V	GND	+12V	+12V	GND	+12V	+12V	GND

pin positions printed gray: not connected

The on-board PCI Express® signal redrivers/repeaters are suitable for generation 1, 2 and 3 (up to 8Gbps). Both the PE receive/transmit signals and the PE reference clock are buffered. Operation with Gen2 or Gen3 speed may be functional but cannot be guaranteed however, since not specified by VITA42, mainly with respect to the XMC mezzanine connector. If possible, choose XMC 2.0 connectors (white housings) on both the carrier card and the XMC mezzanine card for reliable PCI Express® Gen2/3 operation.

A maximum of eight PCI Express® lanes is provided over the backplane connectors P1/P2, when the SK5-BALL is positioned on a 'Fat Pipe' CompactPCI® Serial peripheral slot (typically adjacent to the system slot).

For XMC modules which employ only a single PCIe lane, the SK5-BALL can also be installed in any ordinary CompactPCI® Serial peripheral slot, whithout any performance loss.

P2 CompactPCI® Serial Peripheral Slot Backplane Connector
EKF Part #250.3.1208.20.00 • 96 pos. 12x8, 16mm Width

P2	A	B	C	D	E	F	G	H	I	J	K	L
8	GND			GND			GND			GND		
7			GND			GND			GND			GND
6	GND			GND			GND			GND		
5			GND			GND			GND			GND
4	GND			GND			GND			GND		
3			GND			GND			GND			GND
2	GND	PE TX06+	PE TX06-	GND	PE RX06+	PE RX06-	GND	PE TX07+	PE TX07-	GND	PE RX07+	PE RX07-
1	PE TX04+	PE TX04-	GND	PE RX04+	PE RX04-	GND	PE TX05+	PE TX05-	GND	PE RX05+	PE RX05-	GND

pin positions left empty: not connected

P3 CompactPCI® Serial Backplane Connector (Option Rear I/O)

| P3 CompactPCI® Serial Peripheral Slot Backplane Connector | | | | | | | | | | | |
| EKF Part #250.3.1208.20.00 • 96 pos. 12x8, 16mm Width | | | | | | | | | | | |
P3	A	B	C	D	E	F	G	H	I	J	K	L
8	GND	J14 4 P0	J14 2 N0	GND	J14 3 P16	J14 1 N16	GND	J14 8 P1	J14 6 N1	GND	J14 7 P17	J14 5 N17
7	J14 12 P2	J14 10 N2	GND	J14 11 P18	J14 9 N18	GND	J14 16 P3	J14 14 N3	GND	J14 15 P19	J14 13 N19	GND
6	GND	J14 20 P4	J14 18 N4	GND	J14 19 P20	J14 17 N20	GND	J14 24 P5	J14 22 N5	GND	J14 23 P21	J14 21 N21
5	J14 28 P6	J14 26 N6	GND	J14 27 P22	J14 25 N22	GND	J14 32 P7	J14 30 N7	GND	J14 31 P23	J14 29 N23	GND
4	GND	J14 36 P8	J14 34 N8	GND	J14 35 P24	J14 33 N24	GND	J14 40 P9	J14 38 N9	GND	J14 39 P25	J14 37 N25
3	J14 44 P10	J14 42 N10	GND	J14 43 P26	J14 41 N26	GND	J14 48 P11	J14 46 N11	GND	J14 47 P27	J14 45 N27	GND
2	GND	J14 52 P12	J14 50 N12	GND	J14 51 P28	J14 49 N28	GND	J14 56 P13	J14 54 N13	GND	J14 55 P29	J14 53 N29
1	J14 60 P14	J14 58 N14	GND	J14 59 P30	J14 57 N30	GND	J14 64 P15	J14 62 N15	GND	J14 63 P31	J14 61 N31	GND

P3 can be used e.g. for a rear I/O PIM carrier module. XMC P14/J14 derived signals would be routed across P3/rJ3 to the J14/P14 connectors of a VITA 36 PMC I/O module (aka PIM).

Despite the PMC connector J14 was originally defined for 64 single-ended signals, the SK5-BALL here follows a differential pair routing schema, similar to VITA 46.9. Any differential pair N/P 0-31 is comprised of two J14 connector signal pins, with J14 pin numbers n and n+2.

P4 CompactPCI® Serial Backplane Connector (Option Rear I/O)

P4	A	B	C	D	E	F	G	H	I	J	K	L
	P4 CompactPCI® Serial Peripheral Slot Backplane Connector EKF Part #250.3.1208.20.00 • 96 pos. 12x8, 16mm Width											
8	GND	J16 F6 UD12+	J16 F5 UD12-	GND	J16 A5 DP04+	J16 B5 DP04-	GND	J16 D5 DP05+	J16 E5 DP05-	GND	J16 C4 UD15+	J16 C3 UD15-
7	J16 F8 UD17+	J16 F7 UD17-	GND	J16 A7 DP06+	J16 B7 DP06-	GND	J16 D7 DP07+	J16 E7 DP07-	GND	J16 C6 UD13+	J16 C5 UD13-	GND
6	GND	J16 F10 UD1+	J16 F9 UD1-	GND	J16 A9 DP08+	J16 B9 DP08-	GND	J16 D9 DP09+	J16 E9 DP09-	GND	J16 C8 UD5+	J16 C7 UD5-
5	J16 F12 UD6+	J16 F11 UD6-	GND	J16 A11 DP10+	J16 B11 DP10-	GND	J16 D11 DP11+	J16 E11 DP11-	GND	J16 C10 UD4+	J16 C9 UD4-	GND
4	GND	J16 F14 UD2+	J16 F13 UD2-	GND	J16 A13 DP12+	J16 B13 DP12-	GND	J16 D13 DP13+	J16 E13 DP13-	GND	J16 C12 UD11+	J16 C11 UD11-
3	J16 F16 UD8+	J16 F15 UD8-	GND	J16 A15 DP14+	J16 B15 DP14-	GND	J16 D15 DP15+	J16 E15 DP15-	GND	J16 C14 UD16+	J16 C13 UD16-	GND
2	GND	J16 F18 UD7+	J16 F17 UD7-	GND	J16 A17 DP16+	J16 B17 DP16-	GND	J16 D17 DP17+	J16 E17 DP17-	GND	J16 C16 UD3+	J16 C15 UD3-
1	J16 A19 DP18+	J16 B19 DP18-	GND	J16 C19 UD_SE	J16 F19 UD_SE	GND	J16 D19 DP19+	J16 E19 DP19-	GND	J16 C18 UD9+	J16 C17 UD9-	GND

pin positions printed white/italic: not connected

DP**+/DP**- are differential signal pairs, assignment according VITA 42.0 table 5-4
UD**+/UD**- are differential signal pairs, user definable by customer
UD_SE are single ended signals, user definable by customer

P5 CompactPCI® Serial Backplane Connector (Option Rear I/O)

P5	A	B	C	D	E	F	G	H	I	J	K	L
P5 CompactPCI® Serial Peripheral Slot Backplane Connector EKF Part #250.3.1206.20.00 • 72 pos. 12x6, 12mm Width												
6	GND	+12V	+12V	GND	+12V	+12V	GND	+5V	+5V	GND	+5V	+5V
5	+3.3V	+3.3V	GND	+3.3V	+3.3V	GND	GPIO SATA SDI *	GPIO SATA SDO *	GND	GPIO SATA SCL *	GPIO SATA SL *	GND
4	GND	IO	IO	GND	J16 D1 DP01+	J16 E1 DP01-	GND	IO	IO	GND	RST 1)	IO
3	IO	IO	GND	J16 F2 UD_SE	J16 F1 UD_SE	GND	I2C Data 2)	I2C Clock 2)	GND	J16 A1 DP00+	J16 B1 DP00-	GND
2	GND	IO	IO	GND	J16 D3 DP03+	J16 E3 DP03-	GND	IO	IO	GND	J16 C2 UD_SE	J16 C1 UD_SE
1	IO	IO	GND	J16 F4 UD14+	J16 F3 UD14-	GND	IO	IO	GND	J16 A3 DP02+	J16 B3 DP02-	GND

pin positions printed white/italic: not connected

* custom specific usage - wired to P1 - partial support only by EKF CPU cards
1) buffered platform reset signal from P1
2) wired to on-board SMBus/I2C logic

DP**+/DP**- are differential signal pairs, assignment according VITA 42.0 table 5-4
UD**+/UD**- are differential signal pairs, user definable by customer
UD_SE are single ended signals, user definable by customer

Option 12V Axial Fan

As an option, the SK5-BALL can be equipped with a bottom mount 12V DC compact fan, for cooling of high power consuming XMC mezzanine modules. This would result in an 8HP or even wider front panel width assembly (backplane with system slot and fat pipe slots on the right side recommended). The mounting holes would be suitable for a 40mm axial fan. The pigtail wires of the cooling fan can be soldered directly to the SK5-BALL PCB, using the adjacent terminal pads.

Ordering Information
For popular SK5-BALL SKUs please refer to www.ekf.com/liste/liste_21.html#SK4

SK5-BALL Links	
SK5-BALL Home	www.ekf.com/s/sk5/sk5.html

Related Links	
SK2-SESSION Home Suitable for 149mm Length XMC PCIe x4	www.ekf.com/s/sk2/sk2.html
SK3-MEDLEY Home Suitable for 139mm Length XMC PCIe x8	www.ekf.com/s/sk3/sk3.html
SK4-WALTZ Home Suitable for 149mm Length XMC PCIe x8	www.ekf.com/s/sk4/sk4.html
EK4-WALTZ Home CompactPCI® Express (PXI Express™)	www.ekf.com/e/ek4/ek4.html
CompactPCI® Serial Overview	www.ekf.com/s/smart_solution.pdf

XMC Mezzanine Modules from EKF		
XMC Overview		www.ekf.com/d/xmc_concise.pdf
DB4-EAGLE	USB 3.0	www.ekf.com/d/dusb/db4/db4.html
DC2-STAG	PCIe Cabling	www.ekf.com/d/dpxc/dc2/dc2.html
DN1-PIKE	GbE	www.ekf.com/d/dnic/dn1/dn1.html
DN3-SHARK	10GbE	www.ekf.com/d/dnic/dn3/dn3.html
DS1-LEOPARD	SAS	www.ekf.com/d/dsas/ds1/ds1.html
DU1-MUSTANG	RS-485 iso	www.ekf.com/d/dcom/du1/du1.html
DU2-PONY	RS-232 iso	www.ekf.com/d/dcom/du2/du2.html
DV1-DRAGON	VGA/DVI	www.ekf.com/d/dgxa/dv1/dv1.html
DX2-COUGAR	SATA	www.ekf.com/d/dide/dx2/dx2.html
DX4-BADGER	mSATA	www.ekf.com/d/dide/dx4/dx4.html
DX5-ANT	M.2 SATA	www.ekf.com/d/dide/dx5/dx5.html

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