Product Information

SV1-CLIP

CompactPCI ® *Serial* • Carrier for MXM 3.0 Graphics Module

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SV1-CLIP

General

The SV1-CLIP is a peripheral slot board for PICMG® CompactPCI® Serial systems and acts as carrier for a MXM 3.0 graphics module. The SV1-CLIP is provided with four DisplayPort front panel connectors and accommodates a type A graphics module (82x70mm²).

Industry standard MXM graphics modules are available from several vendors. With respect to a reasonable thermal management, a low power GPU is recommended for usage with the SV1-CLIP, e.g. the AMD Radeon™ E6460 MXM module, which supports up to four displays.

SV1-CLIP

Theory of Operation

For best performance, the SV1-CLIP should be operated in a CompactPCI® Serial fat pipe slot, which provides a PCI Express® x8 host interface. The SV1-CLIP is equipped with a PCIe Gen3 redriver for optimum signal integrity.
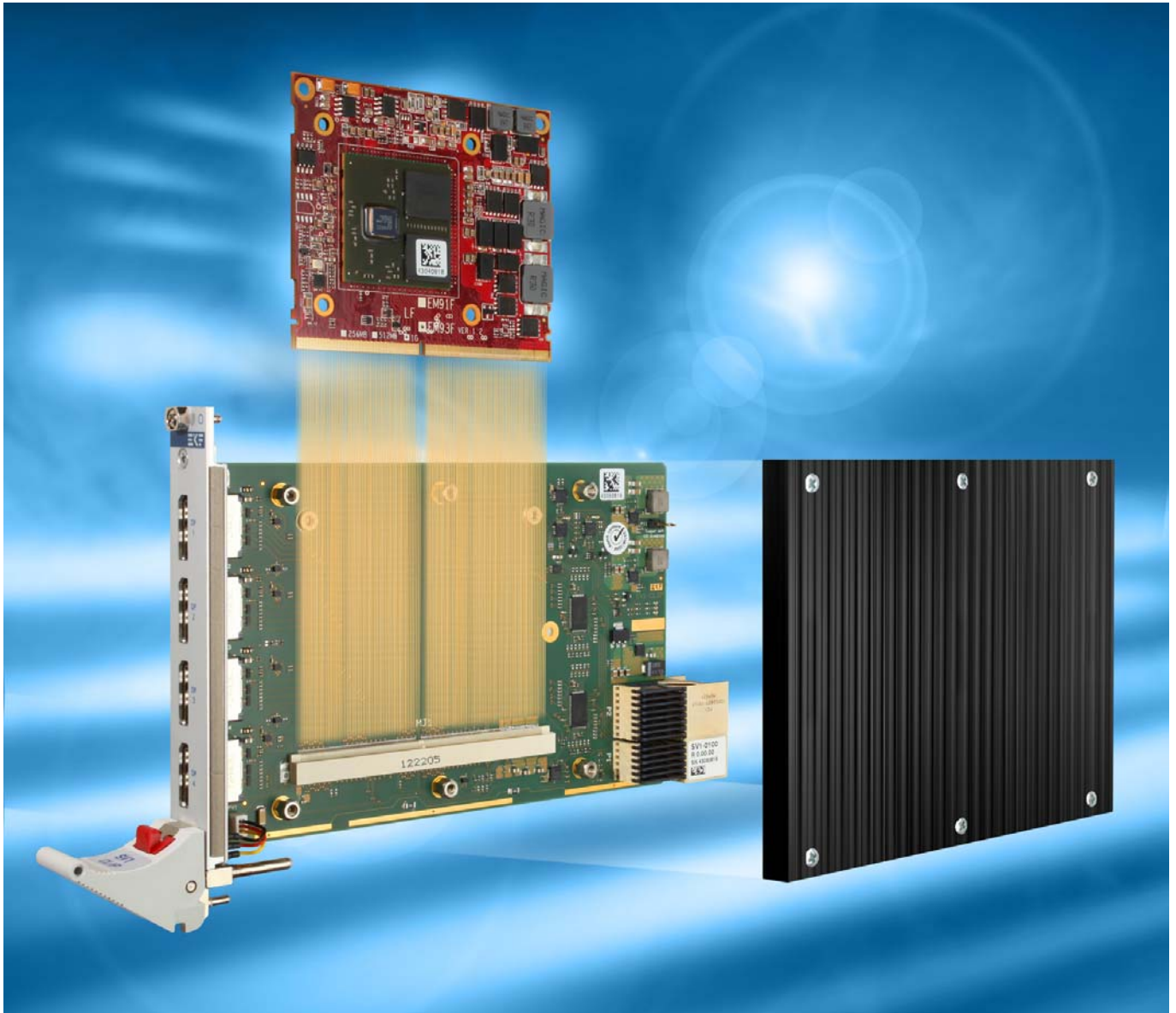
For use with the E6460 MXM graphics module, a low profile passive heatspreader is available, which fits into the 4HP envelope. In addition, the CompactPCI® Serial rack must provide suitable forced airflow (e.g. by fans).

Feature Summary

▸ PICMG® CompactPCI® Serial Standard (CPCI-S.0) Peripheral Slot or Fat Pipe Slot Card

▸ Single Size Eurocard 3U 4HP 100x160mm^2

▸ cPCI-S Backplane Connectors P1/P2, for PCIe x 8 Fat Pipe Slot
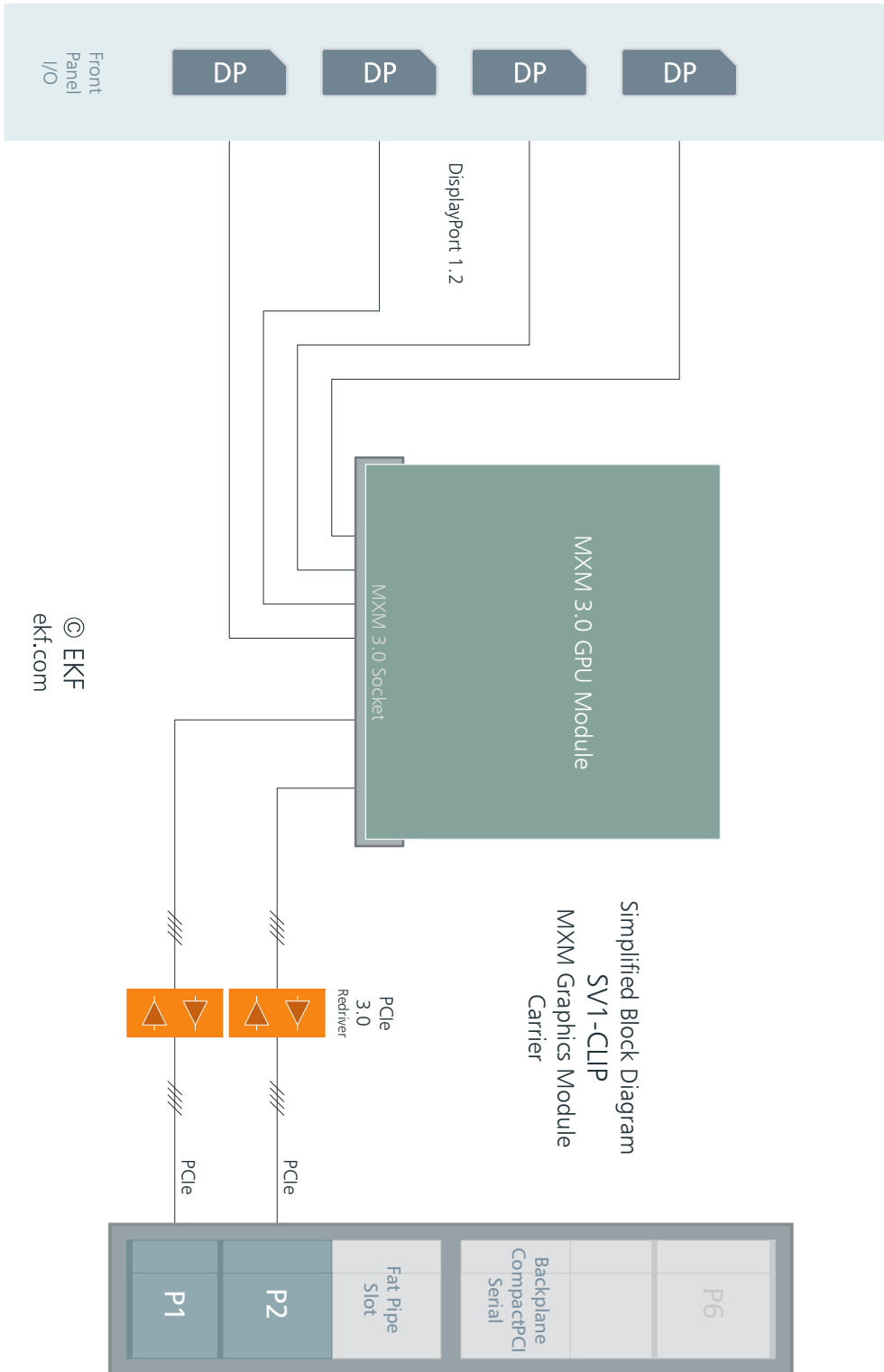
▸ Four DisplayPort Front Panel Receptacles

▸ Carrier Board for Type A MXM 3.0/3.1 Graphics Module

▸ Module Dimensions 70mm x 82mm x 7mm

▸ MXM 3.0 Edge Card Connector 314/281 Pins

▸ PCI Express® Gen3 (8GT/s) Redriver on-Board, PCIe x 8

▸ Recommended MXM GPU Module: AMD Radeon™ E6460

▸ Up to 4 x DP1.2 Independent Video Outputs

▸ Heatsink Available (4HP Envelope), for Racks with Adequate Forced Airflow

▸ CUDA (Compute Unified Device Architecture) capable with NVIDIA MXM GPU

▸ Designed & manufactured in Germany

▸ ISO 9000 certified quality management

▸ Long Term Availability

▸ Rugged Solution (Coating/Sealing Available on Request)

▸ RoHS Compliant

▸ Commercial and Industrial Temperature Range

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

▸ Altitude -300m ... +3000m

▸ Shock 15g 0.33ms, 6g 6ms

▸ Vibration 1g 5-2000H

▸ MTBF tbd

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

SV1-CLIP w. 4HP Cooler Plate

Block Diagram

Front Panel I/O

DP   DP   DP   DP

DisplayPort 1.2

MXM 3.0 Socket

MXM 3.0 GPU Module

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ekf.com

PCIe 3.0 Redriver

PCIe

PCIe

Simplified Block Diagram
SV1-CLIP
MXM Graphics Module
Carrier

P1

P2

Fat Pipe Slot

Backplane CompactPCI Serial

P6

Component Assembly
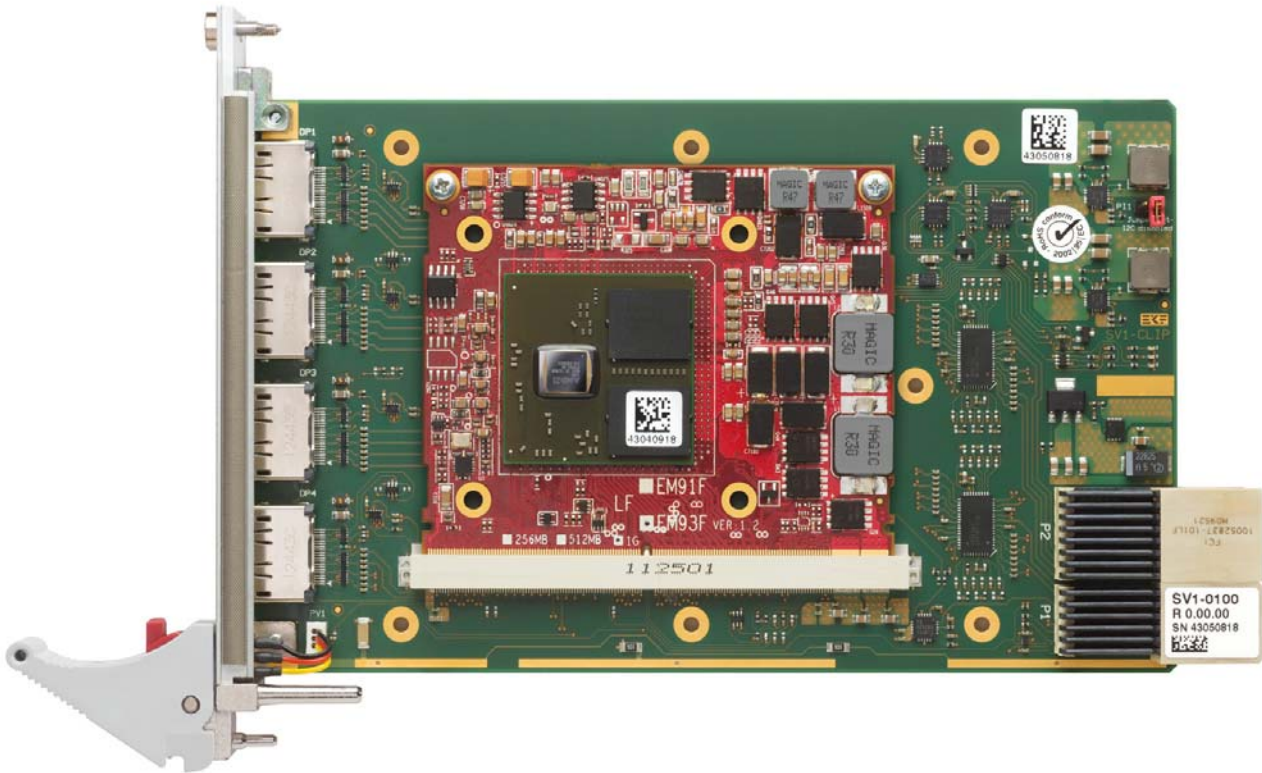
SV1-CLIP

Front Panel

DP
1

DP
2

DP
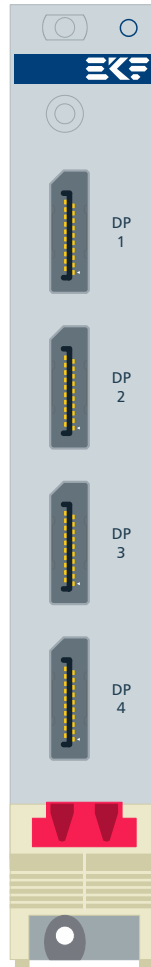3

DP
4

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SV1-CLIP
MXM GPU

DisplayPort Connectors

The SV1-CLIP supports up to four independent displays, attached to the front panel display connectors 1-4. DisplayPort serves as the state of the art interface for computer monitors, replacing legacy VGA and DVI video connectors since integrated in all main-stream GPUs and chipsets. The latest specification DisplayPort 1.2 adds multi-stream transport (MST), allowing up to 63 separate A/V streams across a single DisplayPort connection. Please refer to the MXM Graphics Module actually in use on the SV1-CLIP for the number of DP video outputs available, resolution and other parameters.

For attachment of either a classic style analog RGB monitor or DVI type display to any DP front panel receptacle, there are both adapters and also adapter cables available, from DisplayPort to the VGA or DVI connector.
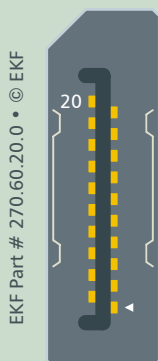
Cable Adapter DP to DVI

Cable Adapter DP to VGA

DP • DisplayPort Video
Standard DisplayPort Receptacle, 20-lead (270.60.20.0)

20	Power +3.3V 0.5A	19	Return
18	Hot Plug Detect	17	AUX(N)
16	GND	15	AUX(P)
14	CONFIG2	13	CONFIG1
12	LANE3(N)	11	GND
10	LANE3(P)	9	LANE2(N)
8	GND	7	LANE2(P)
6	LANE1(N)	5	GND
4	LANE1(P)	3	LANE0(N)
2	GND	1	LANE0(P)

Specified by the VESA DisplayPort connector standard is a dedicated power pin 20 (+3.3V 0.5A). Both the GPU (source side) and a DP monitor (sink side) must provide power via this pin. A VESA specified DisplayPort cable however must not connect the pins 20 of both cable ends, in order to avoid a back driving conflict. Unfortunately there are cable assemblies available with pin 20 passed through, with unpredictable results on the system behaviour. Before ordering DP cable assemblies, verify the associated wiring diagram.

Sample VESA Compliant DisplayPort Cable Assemblies
2.0m Plug to Plug, w. Latches • EKF Part. #270.66.1.02.0

Manhattan	307116, 391931
Molex	68783-0007
TE (Tyco)	2040687-2, 2040638-2

MXM Module Connector

The SV1-CLIP is provided with a right angled edge card connector for MXM 3.0 graphics modules. If the SV1-CLIP has been installed into a Fat Pipe peripheral slot of the CompactPCI® Serial backplane, a PCI Express® x 8 link is available at the MXM connector. As of current, MXM GPU modules come with a PCIe 2 interface (5GT/s). However, the SV1-CLIP is already equipped with PCIe 3 redrivers (8GT/s) for future MXM graphics cards.

The SV1-CLIP is equipped with 4 DisplayPort connectors 1-4, which are related to the MXM module DP outputs A, B, C, and E. Please note, that the AMD Radeon™ E6460 has its video output B wired to the MXM connector pins originally assigned to port C, and vice versa. The MXM connector table herafter shows the E6460 DP pin usage, and not the MXM 3.0 connector specification assignments.

+3.3V is sourced from an on-board regulator. The current should not exceed 3A. +5V is sourced from an on-board regulator. The current should not exceed 3A. +12V is the main power rail, passed through from the CompacPCI® Serial backplane connector P1. The current should not exceed 5A. Actually the total maximum power consumption for the E6460 MXM module is rated <22W. All power rails will be disabled if the front panel handle built-in microswitch has been activated.

External Documents	
MXM Graphics Module Mobile PCI Express Module Electromechanical Specification Version 3.1 Rev. 1.0 March 1, 2012	www.mxm-sig.org
AMD Radeon™ E6460 MXM 3.0 Type A Module Specification Rev. 1.0, November 2012	www.amd.com

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	MXM 3.0 Connector Part #255.8.1.314.10		
E1	PWR (+12V)	PWR (+12V)	E2
E3	GND	GND	E4
1	+5V	+12V	2
3	+5V	WAKE#	4
5	+5V	PWR_GOOD	6
7	+5V	PWR_EN	8
9	+5V	*27MHz*	10
11	GND	GND	12
13	GND	*LVDS_U_HPD*	14
15	GND	*JTAG_TESTEN*	16
17	GND	PWR_LEVEL	18
19	PEX_STD_SW#	TH_OVERT#	20
21	VGA_DISABLE#	TH_ALERT#	22
23	*PNL_PWR_EN*	*TH_PWM*	24
25	*PNL_BL_EN*	*GPIO0*	26
27	*PNL_BL_PWM*	*GPIO1*	28
29	*HDMI_CEC*	*GPIO2*	30
31	DP_E_HPD	SMB_DAT	32
33	DP_E_AUX#	SMB_CLK	34
35	DP_E_AUX	GND	36
37	GND	*OEM0*	38
39	*OEM1*	*OEM2*	40
41	*OEM3*	*OEM4*	42
43	*OEM5*	*OEM6*	44
45	*OEM7*	GND	46
47	GND	*PEX_TX15#*	48
49	*PEX_RX15#*	*PEX_TX15*	50
51	*PEX_RX15*	GND	52
53	GND	*PEX_TX14#*	54
55	*PEX_RX14#*	*PEX_TX14*	56
57	*PEX_RX14*	GND	58
59	GND	*PEX_TX14#*	60
61	*PEX_RX13#*	*PEX_TX14*	62
63	*PEX_RX13*	GND	64
65	GND	*PEX_TX14#*	66
67	*PEX_RX12#*	*PEX_TX14*	68
69	*PEX_RX12*	GND	70

to be continued on next page

MXM 3.0 Connector Part #255.8.1.314.10			
71	GND	PEX_TX11#	72
73	PEX_RX11#	PEX_TX11	74
75	PEX_RX11	GND	76
77	GND	PEX_TX10#	78
79	PEX_RX10#	PEX_TX10	80
81	PEX_RX10	GND	82
83	GND	PEX_TX9#	84
85	PEX_RX9#	PEX_TX9	86
87	PEX_RX9	GND	88
89	GND	PEX_TX8#	90
91	PEX_RX8#	PEX_TX8	92
93	PEX_RX8	GND	94
95	GND	PEX_TX7#	96
97	PEX_RX7#	PEX_TX7	98
99	PEX_RX7	GND	100
101	GND	PEX_TX6#	102
103	PEX_RX6#	PEX_TX6	104
105	PEX_RX6	GND	106
107	GND	PEX_TX5#	108
109	PEX_RX5#	PEX_TX5	110
111	PEX_RX5	GND	112
113	GND	PEX_TX4#	114
115	PEX_RX4#	PEX_TX4	116
117	PEX_RX4	GND	118
119	GND	PEX_TX3#	120
121	PEX_RX3#	PEX_TX3	122
123	PEX_RX3	GND	124
125	GND		
133	GND	GND	134
135	PEX_RX2#	PEX_TX2#	136
137	PEX_RX2	PEX_TX2	138
139	GND	GND	140
141	PEX_RX1#	PEX_TX1#	142
143	PEX_RX1	PEX_TX1	144

MXM 3.0 Connector			
	Part #255.8.1.314.10		
145	GND	GND	146
147	PEX_RX0#	PEX_TX0#	148
149	PEX_RX0	PEX_TX0	150
151	GND	GND	152
153	PEX_REFCLK#	PEX_CLK_REQ#	154
155	PEX_REFCLK	PEX_RST#	156
157	GND	VGA_DDC_DAT	158
159	JTAG_TDO	VGA_DDC_CLK	160
161	JTAG_TDI	VGA_VSYNC	162
163	JTAG_TCLK	VGA_HSYNC	164
165	JTAG_TMS	GND	166
167	JTAG_TRST#	VGA_RED	168
169	LVDS_UCLK#	VGA_GREEN	170
171	LVDS_UCLK	VGA_BLUE	172
173	GND	GND	174
175	LVDS_UTX3#	DP_E_L3#	176
177	LVDS_UTX3	DP_E_L3	178
179	GND	GND	180
181	LVDS_UTX2#	LVDS_LTX3#	182
183	LVDS_UTX2	LVDS_LTX3	184
185	GND	GND	186
187	LVDS_UTX1#	DP_E_L0#	188
189	LVDS_UTX1	DP_E_L0	190
191	GND	GND	192
193	LVDS_UTX0#	DP_E_L1#	194
195	LVDS_UTX0	DP_E_L1	196
197	GND	GND	198
199	DP_B_L0#	DP_E_L2#	200
201	DP_B_L0	DP_E_L2	202
203	GND	GND	204
205	DP_B_L1#	DP_D_L0#	206
207	DP_B_L1	DP_D_L0	208
209	GND	GND	210
211	DP_B_L2#	DP_D_L1#	212
213	DP_B_L2	DP_D_L1	214

to be continued on next page

MXM 3.0 Connector Part #255.8.1.314.10			
215	GND	GND	216
217	DP_B_L3#	*DP_D_L2#*	218
219	DP_B_L3	*DP_D_L2*	220
221	GND	GND	222
223	DP_B_AUX#	*DP_D_L3#*	224
225	DP_B_AUX	*DP_D_L3*	226
227	*RSVD*	GND	228
229	*RSVD*	*DP_D_AUX#*	230
231	*RSVD*	*DP_D_AUX*	232
233	*RSVD*	DP_B_HPD	234
235	*RSVD*	*DP_D_HPD*	236
237	*RSVD*	*RSVD*	238
239	*RSVD*	RSVD / +3.3V	240
241	*RSVD*	RSVD / +3.3V	242
243	*RSVD*	GND	244
245	*RSVD*	DP_C_L0#	246
247	*RSVD*	DP_C_L0	248
249	*RSVD*	GND	250
251	GND	DP_C_L1#	252
253	DP_A_L0#	DP_C_L1	254
255	DP_A_L0	GND	256
257	GND	DP_C_L2#	258
259	DP_A_L1#	DP_C_L2	260
261	DP_A_L1	GND	262
263	GND	DP_C_L3#	264
265	DP_A_L2#	DP_C_L3	266
267	DP_A_L2	GND	268
269	GND	DP_C_AUX#	270
271	DP_A_L3#	DP_C_AUX	272
273	DP_A_L3	DP_C_HPD	274
275	GND	DP_A_HPD	276
277	DP_A_AUX#	+3.3V	278
279	DP_A_AUX	+3.3V	280
281	*PRSNT_L#*		

P1/P2 CompactPCI® Serial Backplane Connectors

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

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

CUDA (Compute Unified Device Architecture)

The SV1-CLIP is suitable for modest parallel computing when equipped with a CUDA capable graphics module (NVIDIA). For details please refer to www.nvidia.com/object/cuda_home_new.html.

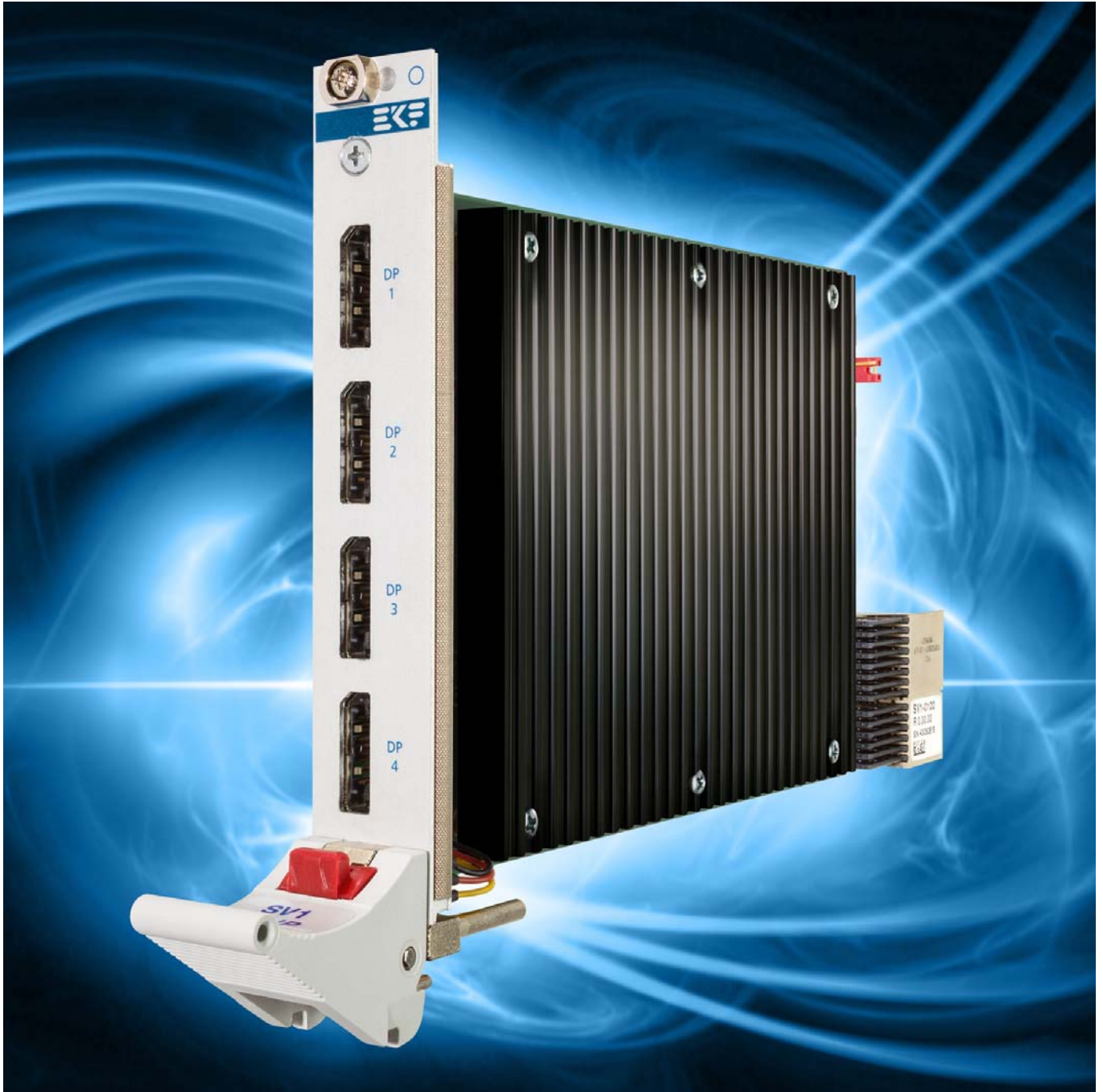SV1-CLIP w. NVIDIA MXM 3.0 GPU

SV1-CLIP w. NVIDIA MXM 3.0 GPU

SV1-CLIP Links	
SV1-CLIP Home	www.ekf.com/s/sv1/sv1.html
CompactPCI® Serial Overview	www.ekf.com/s/smart_solution.pdf

Ordering Information

Ordering Information
For popular SV1-CLIP SKUs please refer to www.ekf.com/liste/liste_21.html#SV1

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