SOLUTION SUPPLIER PALTEK

CONFIDENTIAL

Image CUBE2

Specification

2017/1/20

Design Service Division

株式会社ＰＡＬＴＥＫ
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来歴

版数	更新内容	更新日	更新者	備考
0.0	新規作成	2016.11.30	井ノ原	—
1.0	初版リリース	2016.12.28	井ノ原	—
1.1	図 6 のクロック系統図差し替え。	2017.01.20	井ノ原	—

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1. 要旨

本書は、Image CUBE2 MAIN 基板の仕様について記載する。

1.1. 基板概要

・12V 単一で動作する。
・12V から内部で用いる電圧を生成する(3.3V/2.5V/1.8V/1.2V/1.0V/0.95V /0.6V)。
・Kintex Ultrascale(XCKU115-2FLVB1760E)FPGA を搭載。
・FireFly コネクタを有している。
・基板サイズ：170mm×170mm

主要部品

FPGA

・Kintex Ultrascale(XCKU115-2FLVB1760E)　1 個

メモリ

・DDR4 Memory(MT40A256M16GE-083E)　12 個

インターフェース

・FireFly コネクタ　10 個
・LINEAR JTAG コネクタ　1 個
・電源コネクタ(87427-2442, 39-28-8080)　各 1 個
・Xilinx JTAG コネクタ　1 個
・基板間コネクタ　2 個
・SMA コネクタ　4 個
・USB mini B コネクタ　USB UART　1 個

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2. 基板詳細

2.1. 基板外形図

基板サイズは 170×170mm である。

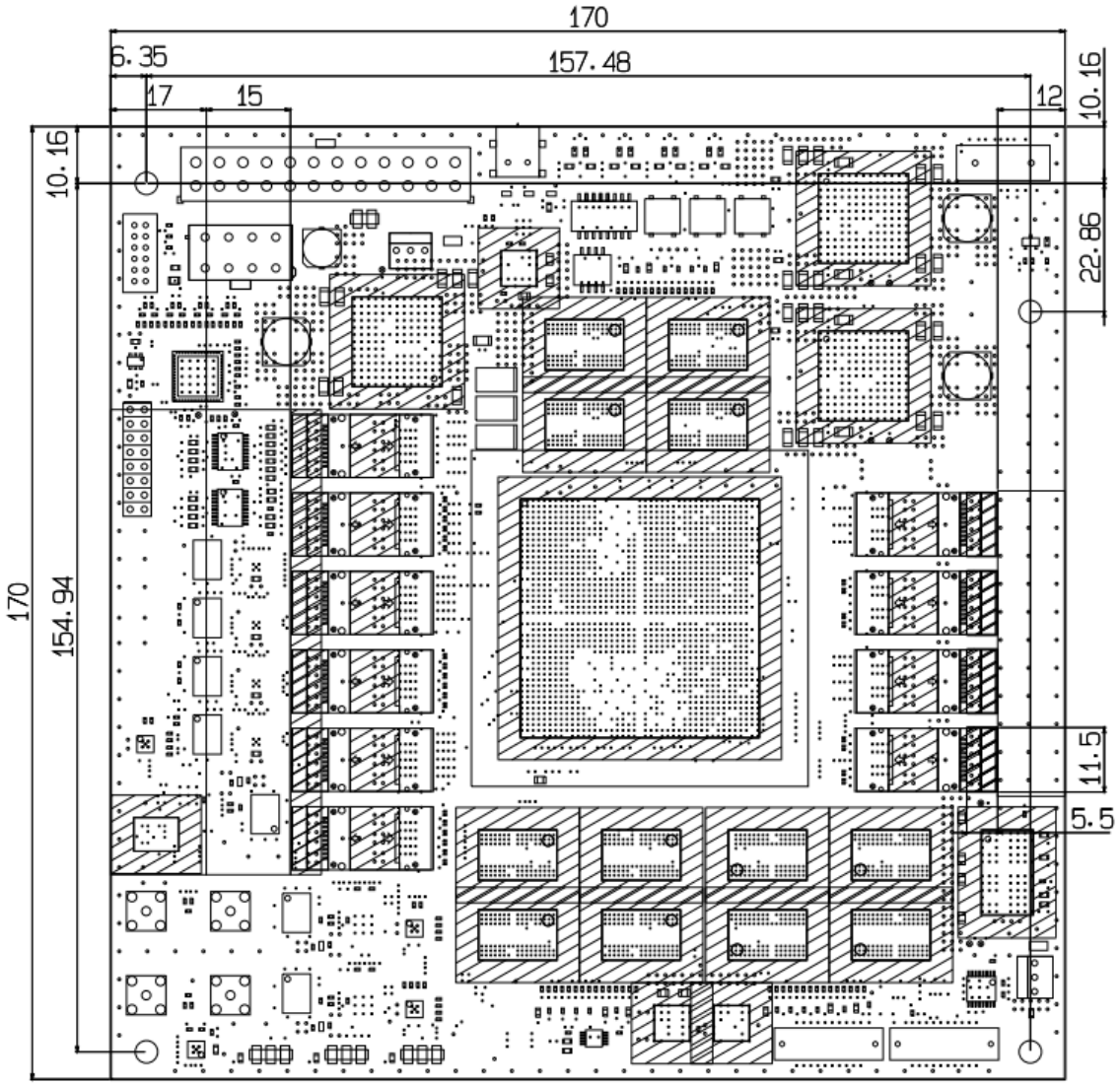

図 1 基板外形図

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2.2. 実装図

リファレンス番号が明記されている実装図(実装面)を以下に示す。また、黄色枠は、表 1 の搭載番号で説明されている。

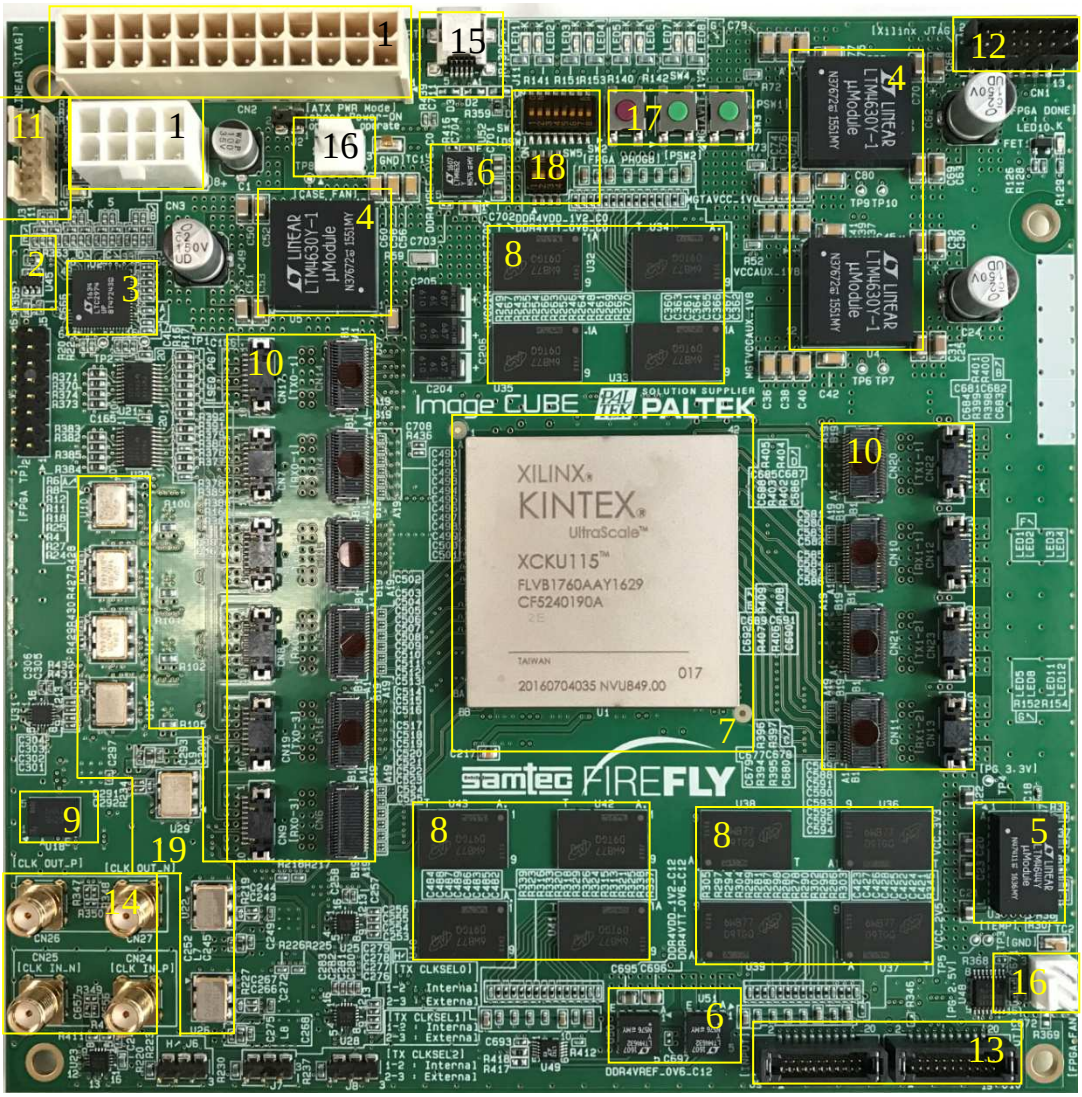

図 2 基板(実装面)のリファレンス番号

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次に、リファレンス番号が明記されている実装図(はんだ面)を以下に示す。

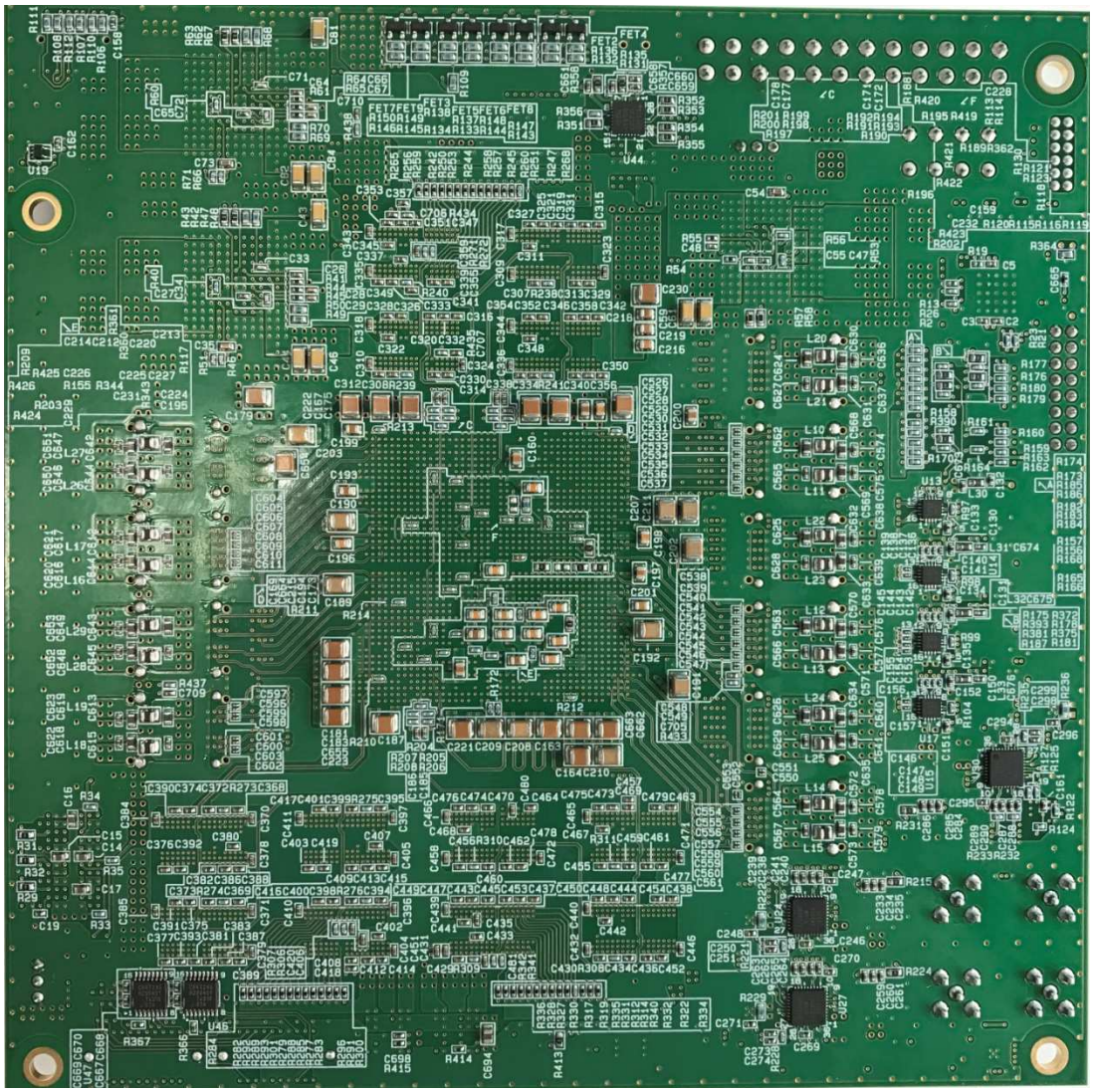

図 3 基板(はんだ面)のリファレンス番号

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表 1　基板の主要部品表

搭載番号	構成説明	リファレンス番号	Maker	Part No.	ページ
1	電源コネクタ	CN2	molex	87427-2442	46
		CN3		39-28-8080	46
2	電源監視	U45	maximintegrated	MAX16052AUT+T	_
3	電源シーケンサ	U2	Linear Technology	LTC2974IUP#PBF	_
4	0.95V, 1.0V,1.2V,1.8V 用電源デバイス	U4,U5,U6	Linear Technology	LTM4630EY-1A#PBF	_
5	3.3V, 2.5V 用電源出力デバイス	U3	Linear Technology	LTM4644EY#PBF	_
6	DDR4 用電源デバイス	U50,U51,U52	Linear Technology	LTM4632EY#PBF	_
7	FPGA	U1	Xilinx	XCKU115-2FLVB1760E	13
8	DDR4 Memory	U32,U33,U34,U35,U36,U37U38,U39, U40,U41,U42,U43	Micron Technology	MT40A256M16GE-083E	14
9	SPI Flash Memory	U18	Micron Technology	MT25QU02GCBB8E12-0SIT	45
10	FireFly コネクタ	CN4,CN5,CN6,CN7,CN8,CN9,CN10,CN11,CN12,CN13,CN14 ,CN15,CN16,CN17 ,CN18,CN19,CN20,CN21 ,CN22,CN23	Samtec	UEC5-019-1-H-D-RA-1-A UCC8-010-1-H-S-1-A	47
11	LINEAR JTAG	J3	Amphenol FCI	98414-G06-12ULF	55
12	Xilinx JTAG	CN1	molex	87832-1420	56
13	制御コネクタ	J9,J10	Samtec	TFM-110-02-L-D-WT	57
14	SMA コネクタ	CN24, CN25, CN26, CN27	Samtec	SMA-J-P-H-ST-TH1	60
15	USB mini B コネクタ	J11	Hirose	UX60-MB-5ST	61
16	FAN コネクタ	J1, J4	molex	22-23-2031	62
17	プッシュスイッチ	SW2	ALPS	SKHUAME010	63
		SW3,SW4		SKHUAKE010	
18	DIP スイッチ	SW1,SW5	Copal Electronics	CHS-08B	63
19	オシレーター	U10	Pericom	NX7032C0200.000000	_
		U11(148.5MHz),U12(148.352MHz),U16(106.92MHz)	Silicon Labs	570NCAXXXXXXDGR	_
		U22,U26,U29	EPSON	SG7050EBN 114.285000M-CJGA3	_

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2.3. 側面図

本基板に搭載されている XCKU115-2FLVB1760E 上にアルファ　FS40-15M42 を搭載。

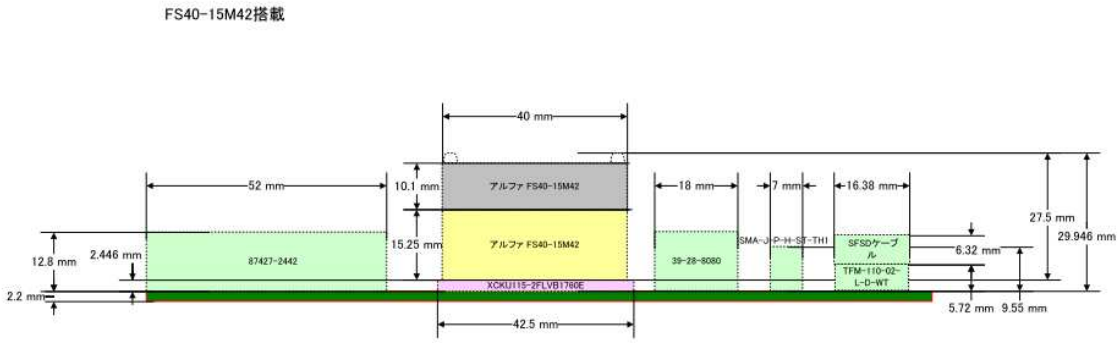

図 4 基板側面図

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2.4. 系統図

2.4.1. 電源系統

以下に、本基板に搭載されている電源部品の系統図を示す。
電源投入シーケンスは、灰色で示してある数字を参照すること。

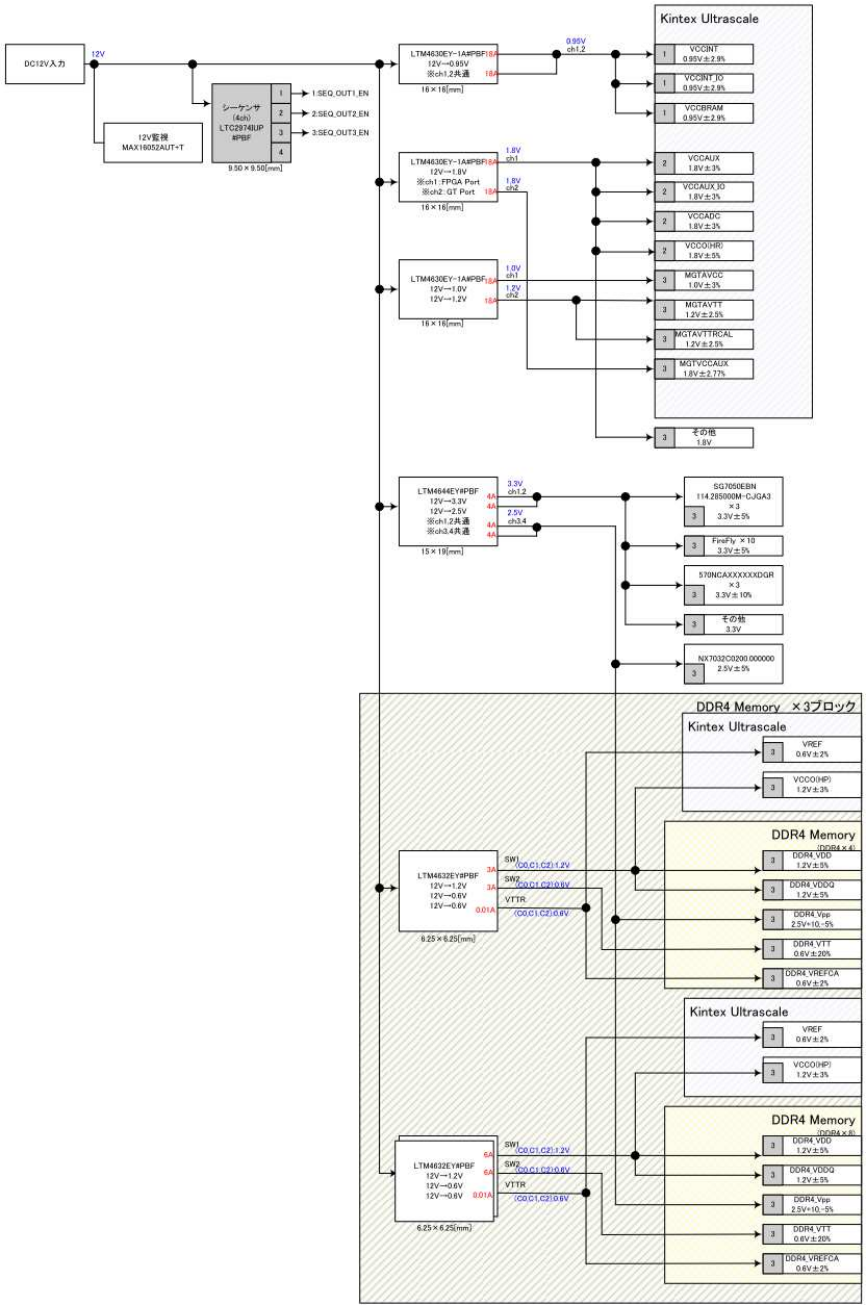

図 5 電源系統図

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2.4.2. クロック系統

以下に、本基板に搭載されているクロックの系統図を示す。また、図中における U24,28,U31 の CKIN1/CKIN2 はジャンパー端子で切り替えを行っている(4.10 参照)。

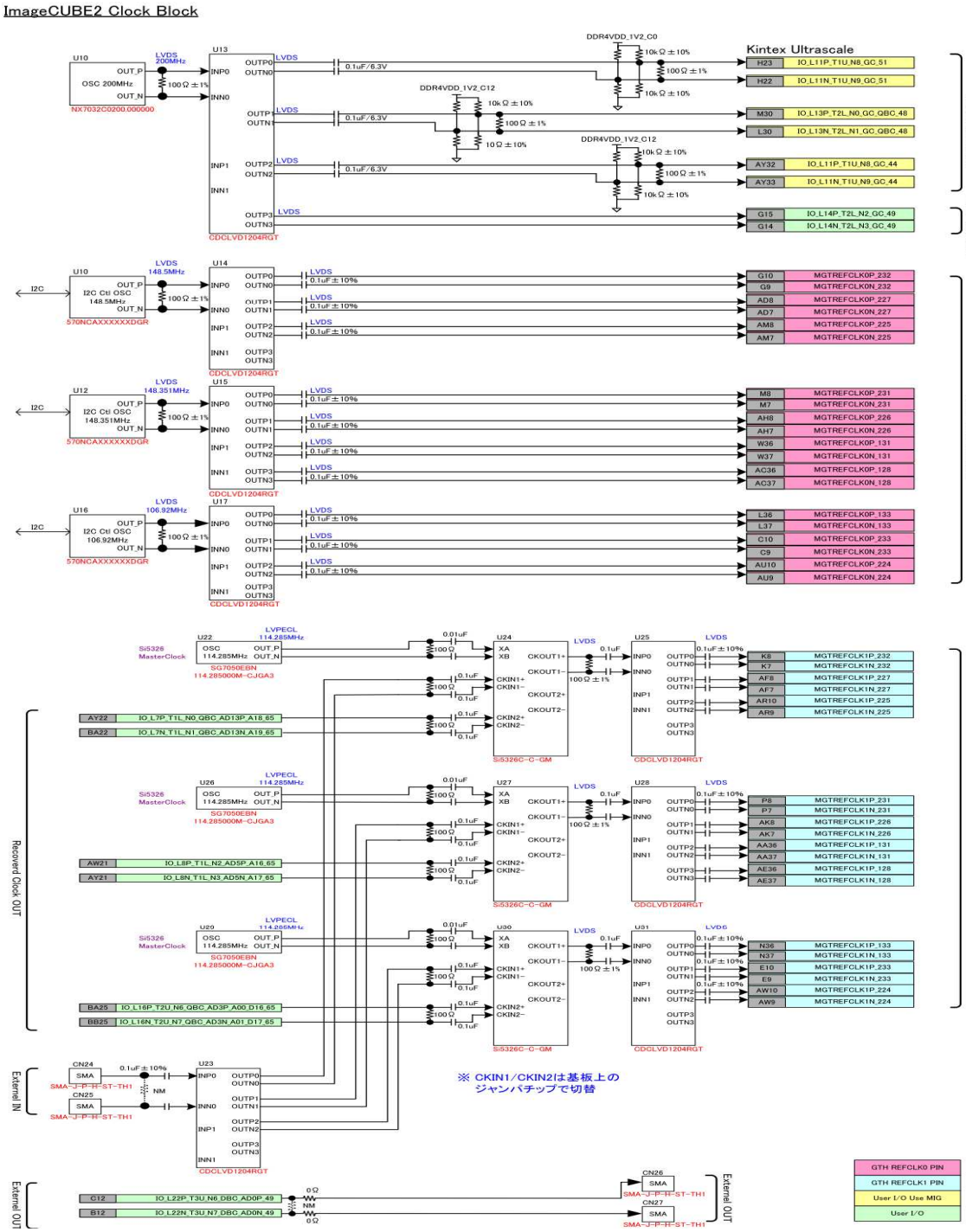

図 6 クロック系統図

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2.4.3. GTH REFCLK 接続図

下記に、GTH REFCLK 接続を示す。

REF CK0 : OSC(Si570) (default clock 148.5M/148.351M/106.92M)
REF CK1 : ClockCleaner(Si5326)

※入力されたREFCLKは上下2Quadまで伝達可能
ただしSSI境界は超えられない(緑/オレンジのQuad境界)

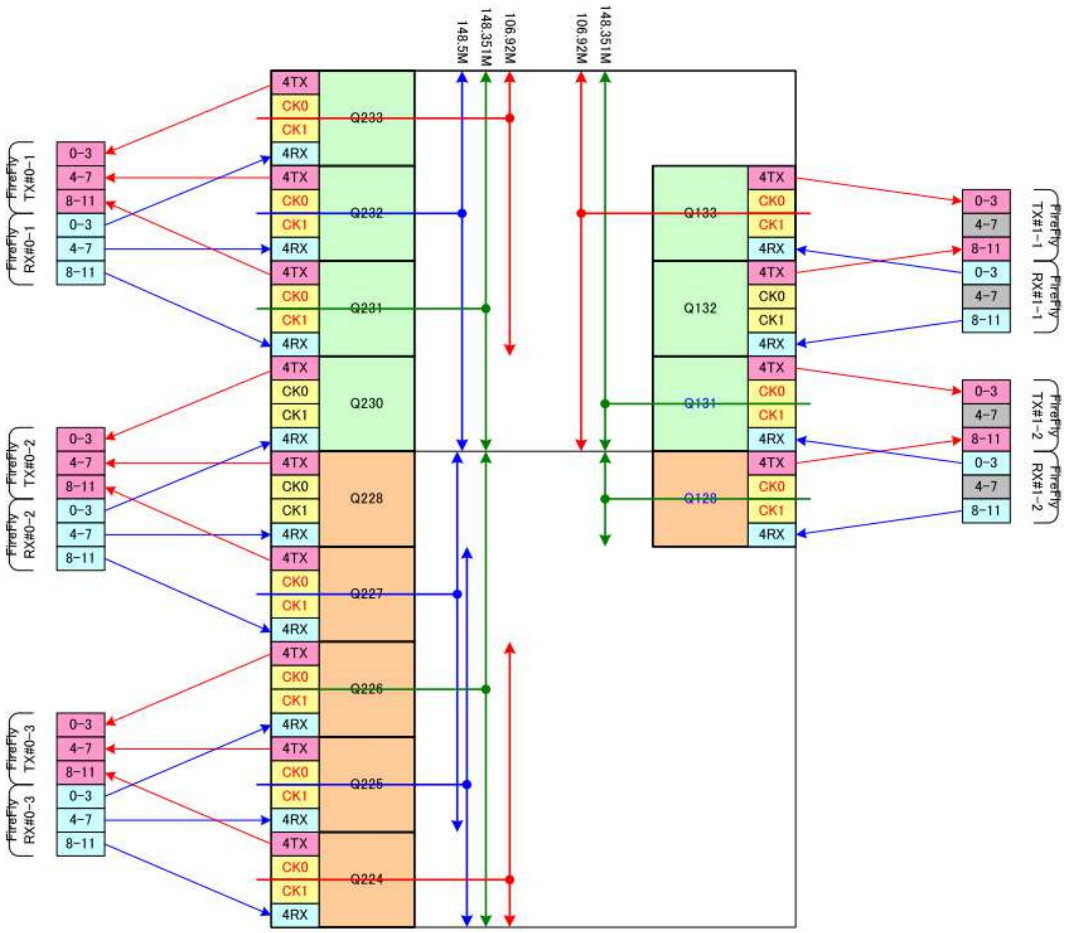

図 7 GTH REFCLK/FireFly Connect

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3. 主要デバイス

3.1. FPGA(XCKU115-2FLVB1760E)

本 FPGA には、左側 12ch の FireFly が TX/RX 各 3 個、右側 8ch の FireFly が TX/RX 各 2 個搭載されている。また、DDR4(16bit)×4(64bit)が 3 系統分接続されている。

以下に、本 FPGA の BANK 配置図と使用用途について図で示す。

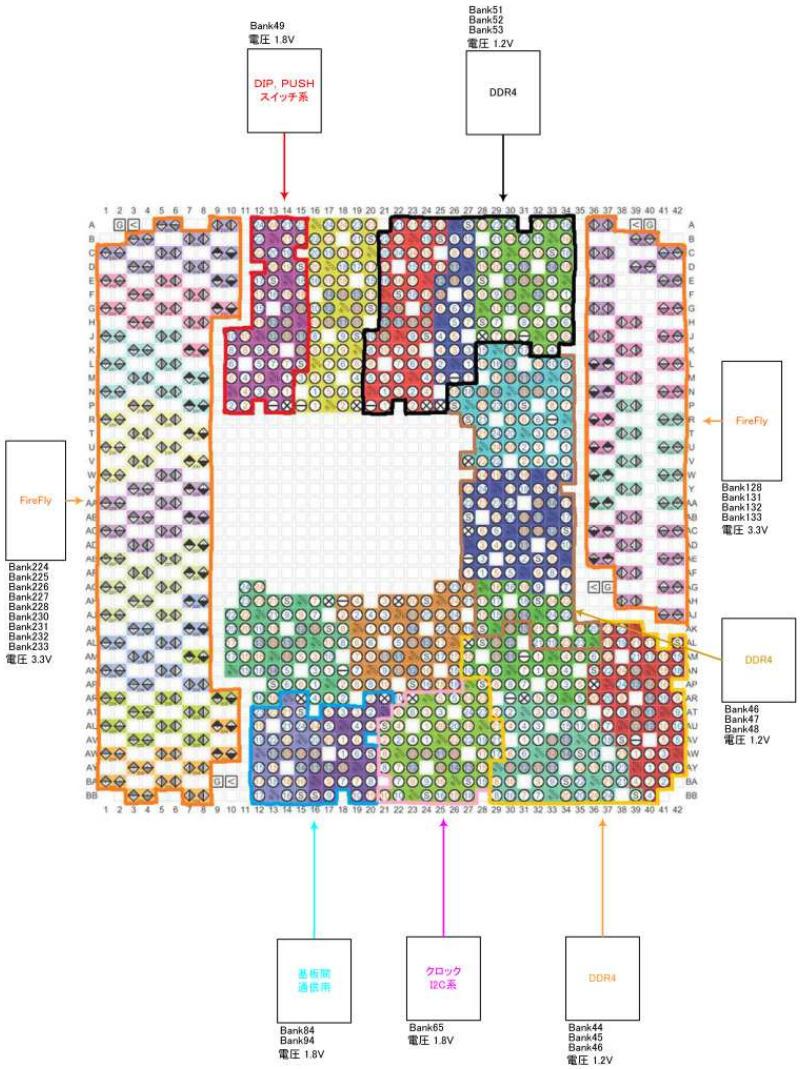

図 8 BANK 配置図

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3.2. DDR4 Memory(MT40A256M16GE-083E)

3.2.1. DDR4 Memory のスペックと FPGA の接続関係

FPGA と本基板に搭載されている DDR4(MT40A256M16GE-083E)の関係を以下に記載する。
まず、本基板に搭載されている DDR4 のスペックについて述べる。
本 DDR4 は、データ幅 16bit の Memory を 4 個 64bit として 3set 実装されている。また、2400(MT/s)のデータレートを有している。以下の表 2 に、DDR4 の 1 個あたりの詳細なスペックを記載する。

表 2 DDR4 のスペック

Description	Value
Density	4Gb
Depth	256Mb
Width	×16
Voltage	1.2V
Clock Rate	1200MHz
Speed Grade	-083E[3]
Data Rate(MT/s)	2400
Target ^{t}RCD-^{t}RP-CL	16-16-16
^{t}RCD(nc)	13.32
^{t}RP(ns)	13.32
CL(ns)	13.32

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FPGA と DDR4 のピン配置を以下に示す。また、各 set が同じ構造をしているため、U32～U35 まで一部の信号は、一部のピン配置を省略して掲載する。

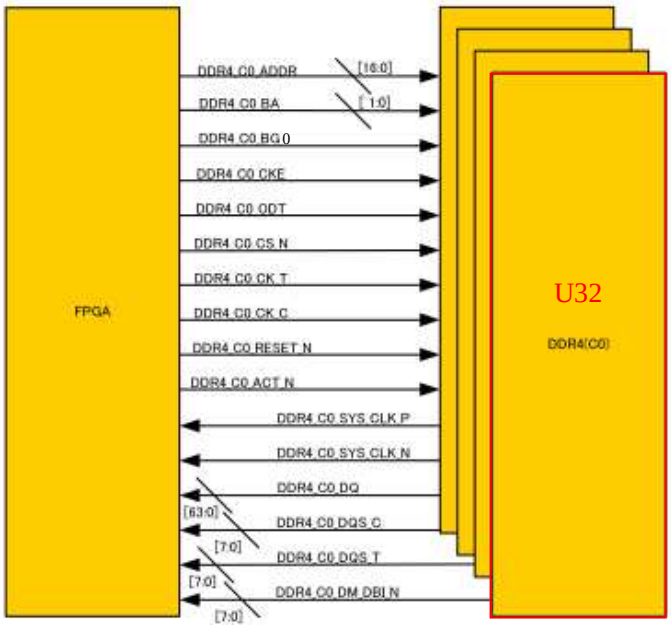

図 9 DDR4 Memory U32

表 3 DDR4 MT40A256M16GE-083E U32 ピン配置

DDR4 Memory U32,		Schematic Net Name	I/O	FPGA U1l,U1J,U1K	
Pin No.	Pin Name			Pin No.	Pin Name
P3	A0	DDR4_C0_ADDR0	O	P21	IO_L1P_T0L_N0_DBC_51
P7	A1	DDR4_C0_ADDR1	O	N21	IO_L1N_T0L_N1_DBC_51
R3	A2	DDR4_C0_ADDR2	O	P23	IO_L2P_T0L_N2_51
N7	A3	DDR4_C0_ADDR3	O	N23	IO_L2N_T0L_N3_51
N3	A4	DDR4_C0_ADDR4	O	N22	IO_L3P_T0L_N4_AD15P_51
P8	A5	DDR4_C0_ADDR5	O	M22	IO_L3N_T0L_N5_AD15N_51
P2	A6	DDR4_C0_ADDR6	O	M21	IO_L5P_T0U_N8_AD14P_51
R8	A7	DDR4_C0_ADDR7	O	M20	IO_L5N_T0U_N9_AD14N_51
R2	A8	DDR4_C0_ADDR8	O	L24	IO_L6P_T0U_N10_AD6P_51
R7	A9	DDR4_C0_ADDR9	O	L23	IO_L6N_T0U_N11_AD6N_51
M3	A10/AP	DDR4_C0_ADDR1	O	L22	IO_L7P_T1L_N0_QBC_AD13P_51

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		0			
T2	A11	DDR4_C0_ADDR11	O	K22	IO_L7N_T1L_N1_QBC_AD13N_51
M7	A12/BC_n	DDR4_C0_ADDR12	O	L20	IO_L8P_T1L_N2_AD5P_51
T8	A13	DDR4_C0_ADDR13	O	K20	IO_L8N_T1L_N3_AD5N_51
L2	WE_n/A14	DDR4_C0_ADDR14	O	K23	IO_L9P_T1L_N4_AD12P_51
M8	CAS_n/A15	DDR4_C0_ADDR15	O	J23	IO_L9N_T1L_N5_AD12N_51
L8	RAS_n/A16	DDR4_C0_ADDR16	O	K21	IO_L10P_T1U_N6_QBC_AD4P_51
N2	BA0	DDR4_C0_BA0	O	J20	IO_L10N_T1U_N7_QBC_AD4N_51
N8	BA1	DDR4_C0_BA1	O	J21	IO_L12P_T1U_N10_GC_51
M2	BG0	DDR4_C0_BG0	O	H21	IO_L12N_T1U_N11_GC_51
K7	CK_t	DDR4_C0_CK_T0	O	N24	IO_L4P_T0U_N6_DBC_AD7P_51
K8	CK_c	DDR4_C0_CK_C0	O	M24	IO_L4N_T0U_N7_DBC_AD7N_51
K2	CKE	DDR4_C0_CKE0	O	G24	IO_L13N_T2L_N1_GC_QBC_51
K3	ODT	DDR4_C0_ODT0	O	F22	IO_T2U_N12_51
T3	PAR	DDR4_C0_PAR	_	FPGA には接続されていない	
N9	TEN	DDR4_C0_TEN	_	FPGA には接続されていない	
L3	ACT_n	DDR4_C0_ACT_N	O	B24	IO_L19N_T3L_N1_DBC_AD9N_51
L7	CS_n	DDR4_C0_CS_N0	O	J24	IO_T1U_N12_51
E2	NF/UDM_n/UDBI_n	DDR4_C0_DM_DBI_N1	I	C24	IO_L19P_T3L_N0_DBC_AD9P_51
E7	NF/LDM_n/LDBI_n	DDR4_C0_DM_DBI_N0	I	H24	IO_L13P_T2L_N0_GC_QBC_51
P1	RESET_n	DDR4_C0_RESET_N	O	B25	IO_T3U_N12_51
F9	ZQ	DDR4_C0_ZQ0	_	GND	
G2	DQ0	DDR4_C0_DQ0	IO	D24	IO_L17N_T2U_N9_AD10N_51

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F7	DQ1	DDR4_C0_DQ1	IO	G22	IO_L14P_T2L_N2_GC_51
H3	DQ2	DDR4_C0_DQ2	IO	D23	IO_L15N_T2L_N5_AD11N_51
H7	DQ3	DDR4_C0_DQ3	IO	F24	IO_L18P_T2U_N10_AD2P_51
H2	DQ4	DDR4_C0_DQ4	IO	E23	IO_L15P_T2L_N4_AD11P_51
H8	DQ5	DDR4_C0_DQ5	IO	G21	IO_L14N_T2L_N3_GC_51
J3	DQ6	DDR4_C0_DQ6	IO	D25	IO_L17P_T2U_N8_AD10P_51
J7	DQ7	DDR4_C0_DQ7	IO	F23	IO_L18N_T2U_N11_AD2N_51
A3	DQ8	DDR4_C0_DQ8	IO	A25	IO_L23P_T3U_N8_51
B8	DQ9	DDR4_C0_DQ9	IO	C22	IO_L24N_T3U_N11_51
C3	DQ10	DDR4_C0_DQ10	IO	A23	IO_L21P_T3L_N4_AD8P_51
C7	DQ11	DDR4_C0_DQ11	IO	A22	IO_L21N_T3L_N5_AD8N_51
C2	DQ12	DDR4_C0_DQ12	IO	A24	IO_L23N_T3U_N9_51
C8	DQ13	DDR4_C0_DQ13	IO	C21	IO_L20N_T3L_N3_AD1N_51
D3	DQ14	DDR4_C0_DQ14	IO	C23	IO_L24P_T3U_N10_51
D7	DQ15	DDR4_C0_DQ15	IO	D21	IO_L20P_T3L_N2_AD1P_51
G3	LDQS_t	DDR4_C0_DQS_T0	IO	E22	IO_L16P_T2U_N6_QBC_AD3P_51
F3	LDQS_c	DDR4_C0_DQS_C0	IO	E21	IO_L16N_T2U_N7_QBC_AD3N_51
B7	UDQS_t	DDR4_C0_DQS_T1	IO	B22	IO_L22P_T3U_N6_DBC_AD0P_51
A7	UDQS_c	DDR4_C0_DQS_C1	IO	B21	IO_L22N_T3U_N7_DBC_AD0N_51
P9	ALERT_n	DDR4_C0_ALERT_n	_	FPGA には接続されていない	

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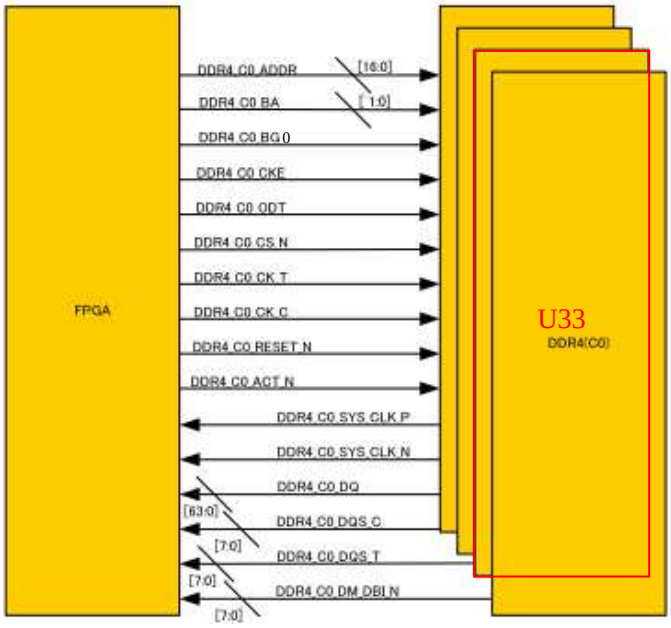

図 10 DDR4 Memory U33

表 4 DDR4 MT40A256M16GE-083E U33 ピン配置

DDR4 MemoryU33		Schematic Net Name	I/O	FPGA U1l,U1J,U1K	
Pin No.	Pin Name			Pin No.	Pin Name
E2	NF/UDM_n/UDBI_n	DDR4_C0_DM_DBI_N3	I	J29	IO_L7P_T1L_N0_QBC_AD13P_52
E7	NF/LDM_n/LDBI_n	DDR4_C0_DM_DBI_N2	I	G34	IO_L1P_T0L_N0_DBC_52
F9	ZQ	DDR4_C0_ZQ1	_	GND	
G2	DQ0	DDR4_C0_DQ16	IO	J34	IO_L6P_T0U_N10_AD6P_52
F7	DQ1	DDR4_C0_DQ17	IO	E33	IO_L3N_T0L_N5_AD15N_52
H3	DQ2	DDR4_C0_DQ18	IO	J33	IO_L5P_T0U_N8_AD14P_52
H7	DQ3	DDR4_C0_DQ19	IO	F33	IO_L3P_T0L_N4_AD15P_52
H2	DQ4	DDR4_C0_DQ20	IO	H34	IO_L6N_T0U_N11_AD6N_52
H8	DQ5	DDR4_C0_DQ21	IO	G32	IO_L2N_T0L_N3_52
J3	DQ6	DDR4_C0_DQ22	IO	H33	IO_L5N_T0U_N9_AD14N_52
J7	DQ7	DDR4_C0_DQ23	IO	H32	IO_L2P_T0L_N2_52
A3	DQ8	DDR4_C0_DQ24	IO	J30	IO_L8P_T1L_N2_AD5P_52

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B8	DQ9	DDR4_C0_DQ25	IO	E30	IO_L11N_T1U_N9_GC_52
C3	DQ10	DDR4_C0_DQ26	IO	G31	IO_L12P_T1U_N10_GC_52
C7	DQ11	DDR4_C0_DQ27	IO	F29	IO_L9N_T1L_N5_AD12N_52
C2	DQ12	DDR4_C0_DQ28	IO	H31	IO_L8N_T1L_N3_AD5N_52
C8	DQ13	DDR4_C0_DQ29	IO	F30	IO_L11P_T1U_N8_GC_52
D3	DQ14	DDR4_C0_DQ30	IO	F32	IO_L12N_T1U_N11_GC_52
D7	DQ15	DDR4_C0_DQ31	IO	F28	IO_L9P_T1L_N4_AD12P_52
G3	LDQS_t	DDR4_C0_DQS_T2	IO	K32	IO_L4P_T0U_N6_DBC_AD7P_52
F3	LDQS_c	DDR4_C0_DQS_C2	IO	K33	IO_L4N_T0U_N7_DBC_AD7N_52
B7	UDQS_t	DDR4_C0_DQS_T3	IO	G29	IO_L10P_T1U_N6_QBC_AD4P_52
A7	UDQS_c	DDR4_C0_DQS_C3	IO	G30	IO_L10N_T1U_N7_QBC_AD4N_52

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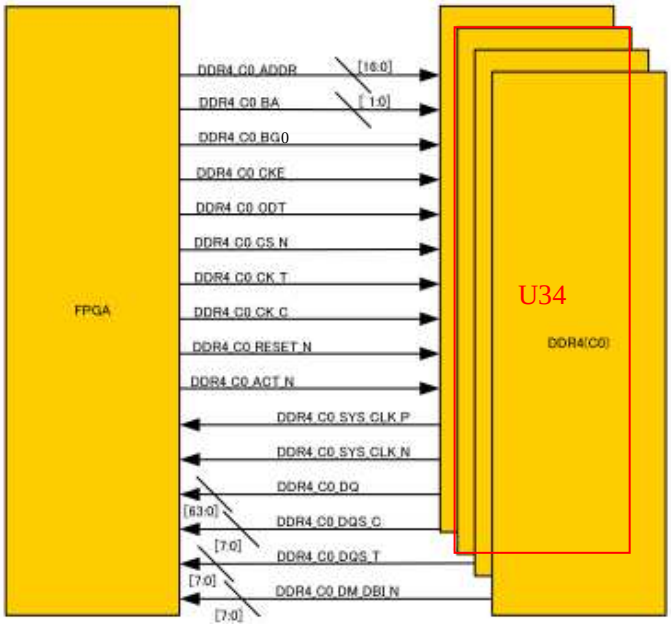

図 11 DDR4 Memory U34

表 5 DDR4 MT40A256M16GE-083E U34 ピン配置

DDR4 MemoryU34		Schematic Net Name	I/O	FPGA U1l,U1J,U1K	
Pin No.	Pin Name			Pin No.	Pin Name
E2	NF/UDM_n/UDBI_n	DDR4_C0_DM_DBI_N5	I	D28	IO_L19P_T3L_N0_DBC_AD9P_52
E7	NF/LDM_n/LDBI_n	DDR4_C0_DM_DBI_N4	I	E31	IO_L13P_T2L_N0_GC_QBC_52
F9	ZQ	DDR4_C0_ZQ2	_	GND	
G2	DQ0	DDR4_C0_DQ32	IO	D33	IO_L14N_T2L_N3_GC_52
F7	DQ1	DDR4_C0_DQ33	IO	B32	IO_L15N_T2L_N5_AD11N_52
H3	DQ2	DDR4_C0_DQ34	IO	C34	IO_L18N_T2U_N11_AD2N_52
H7	DQ3	DDR4_C0_DQ35	IO	A33	IO_L17N_T2U_N9_AD10N_52
H2	DQ4	DDR4_C0_DQ36	IO	D34	IO_L18P_T2U_N10_AD2P_52
H8	DQ5	DDR4_C0_DQ37	IO	A32	IO_L17P_T2U_N8_AD10P_52
J3	DQ6	DDR4_C0_DQ38	IO	E32	IO_L14P_T2L_N2_GC_52
J7	DQ7	DDR4_C0_DQ39	IO	C32	IO_L15P_T2L_N4_AD11P_52
A3	DQ8	DDR4_C0_DQ40	IO	B29	IO_L21N_T3L_N5_AD8N_52

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B8	DQ9	DDR4_C0_DQ41	IO	B30	IO_L24P_T3U_N10_52
C3	DQ10	DDR4_C0_DQ42	IO	C29	IO_L21P_T3L_N4_AD8P_52
C7	DQ11	DDR4_C0_DQ43	IO	D30	IO_L20N_T3L_N3_AD1N_52
C2	DQ12	DDR4_C0_DQ44	IO	D29	IO_L20P_T3L_N2_AD1P_52
C8	DQ13	DDR4_C0_DQ45	IO	A30	IO_L24N_T3U_N11_52
D3	DQ14	DDR4_C0_DQ46	IO	A28	IO_L23P_T3U_N8_52
D7	DQ15	DDR4_C0_DQ47	IO	A29	IO_L23N_T3U_N9_52
G3	LDQS_t	DDR4_C0_DQS_T4	IO	B34	IO_L16P_T2U_N6_QBC_AD3P_52
F3	LDQS_c	DDR4_C0_DQS_C4	IO	A34	IO_L16N_T2U_N7_QBC_AD3N_52
B7	UDQS_t	DDR4_C0_DQS_T5	IO	C31	IO_L22P_T3U_N6_DBC_AD0P_52
A7	UDQS_c	DDR4_C0_DQS_C5	IO	B31	IO_L22N_T3U_N7_DBC_AD0N_52

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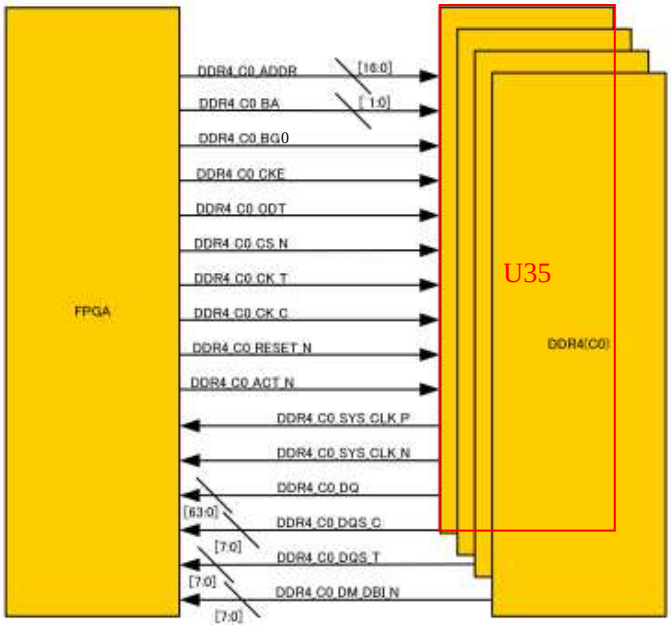

図 12 DDR4 Memory U35

表 6 DDR4 MT40A256M16GE-083E U35 ピン配置

DDR4 MemoryU35		Schematic Net Name	I/O	FPGA U1l,U1J,U1K	
Pin No.	Pin Name			Pin No.	Pin Name
E2	NF/UDM_n/UDBI_n	DDR4_C0_DM_DBI_N7	I	H27	IO_L7P_T1L_N0_QBC_AD13P_53
E7	NF/LDM_n/LDBI_n	DDR4_C0_DM_DBI_N6	I	M27	IO_L1P_T0L_N0_DBC_53
F9	ZQ	DDR4_C0_ZQ3	_	GND	
G2	DQ0	DDR4_C0_DQ48	IO	G26	IO_L6N_T0U_N11_AD6N_53
F7	DQ1	DDR4_C0_DQ49	IO	L25	IO_L2N_T0L_N3_53
H3	DQ2	DDR4_C0_DQ50	IO	G25	IO_L6P_T0U_N10_AD6P_53
H7	DQ3	DDR4_C0_DQ51	IO	K27	IO_L3N_T0L_N5_AD15N_53
H2	DQ4	DDR4_C0_DQ52	IO	H26	IO_L5N_T0U_N9_AD14N_53
H8	DQ5	DDR4_C0_DQ53	IO	M25	IO_L2P_T0L_N2_53
J3	DQ6	DDR4_C0_DQ54	IO	J26	IO_L5P_T0U_N8_AD14P_53
J7	DQ7	DDR4_C0_DQ55	IO	K26	IO_L3P_T0L_N4_AD15P_53
A3	DQ8	DDR4_C0_DQ56	IO	C26	IO_L8P_T1L_N2_AD5P_53
B8	DQ9	DDR4_C0_DQ57	IO	E26	IO_L11P_T1U_N8_GC_53

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C3	DQ10	DDR4_C0_DQ58	IO	F27	IO_L9P_T1L_N4_AD12P_53
C7	DQ11	DDR4_C0_DQ59	IO	E27	IO_L9N_T1L_N5_AD12N_53
C2	DQ12	DDR4_C0_DQ60	IO	E25	IO_L12N_T1U_N11_GC_53
C8	DQ13	DDR4_C0_DQ61	IO	B26	IO_L8N_T1L_N3_AD5N_53
D3	DQ14	DDR4_C0_DQ62	IO	F25	IO_L12P_T1U_N10_GC_53
D7	DQ15	DDR4_C0_DQ63	IO	D26	IO_L11N_T1U_N9_GC_53
G3	LDQS_t	DDR4_C0_DQS_T6	IO	K25	IO_L4P_T0U_N6_DBC_AD7P_53
F3	LDQS_c	DDR4_C0_DQS_C6	IO	J25	IO_L4N_T0U_N7_DBC_AD7N_53
B7	UDQS_t	DDR4_C0_DQS_T7	IO	C27	IO_L10P_T1U_N6_QBC_AD4P_53
A7	UDQS_c	DDR4_C0_DQS_C7	IO	B27	IO_L10N_T1U_N7_QBC_AD4N_53

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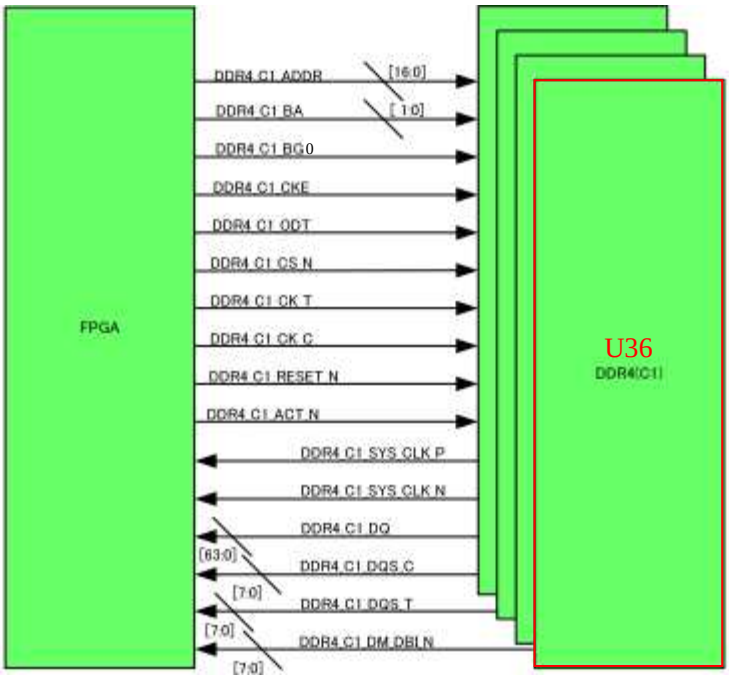

図 13 DDR4 Memory U36

表 7 DDR4 MT40A256M16GE-083E U36 ピン配置

DDR4 Memory U36		Schematic Net Name	I/O	FPGA U1F,U1E	
Pin No.	Pin Name			Pin No.	Pin Name
P3	A0	DDR4_C1_ADDR0	O	P29	IO_L23N_T3U_N9_48
P7	A1	DDR4_C1_ADDR1	O	M29	IO_L16P_T2U_N6_QBC_AD3P_48
R3	A2	DDR4_C1_ADDR2	O	N34	IO_L7N_T1L_N1_QBC_AD13N_48
N7	A3	DDR4_C1_ADDR3	O	P28	IO_L23P_T3U_N8_48
N3	A4	DDR4_C1_ADDR4	O	P30	IO_L19N_T3L_N1_DBC_AD9N_48
P8	A5	DDR4_C1_ADDR5	O	T30	IO_L20N_T3L_N3_AD1N_48
P2	A6	DDR4_C1_ADDR6	O	N28	IO_L14P_T2L_N2_GC_48
R8	A7	DDR4_C1_ADDR7	O	T29	IO_L24N_T3U_N11_48
R2	A8	DDR4_C1_ADDR8	O	N29	IO_L14N_T2L_N3_GC_48
R7	A9	DDR4_C1_ADDR9	O	L29	IO_L16N_T2U_N7_QBC_AD3N_48
M3	A10/AP	DDR4_C1_ADDR10	O	P31	IO_T1U_N12_48
T2	A11	DDR4_C1_ADDR11	O	K28	IO_L15N_T2L_N5_AD11N_48
M7	A12/BC_	DDR4_C1_ADDR12	O	V28	IO_L22P_T3U_N6_DBC_AD0P_48

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	n				
T8	A13	DDR4_C1_ADDR13	O	L28	IO_L15P_T2L_N4_AD11P_48
L2	WE_n/A14	DDR4_C1_ADDR14	O	R30	IO_L19P_T3L_N0_DBC_AD9P_48
M8	CAS_n/A15	DDR4_C1_ADDR15	O	U30	IO_L20P_T3L_N2_AD1P_48
L8	RAS_n/A16	DDR4_C1_ADDR16	O	V29	IO_L22N_T3U_N7_DBC_AD0N_48
N2	BA0	DDR4_C1_BA0	O	N26	IO_L18P_T2U_N10_AD2P_48
N8	BA1	DDR4_C1_BA1	O	U29	IO_L24P_T3U_N10_48
M2	BG0	DDR4_C1_BG0	O	P26	IO_T2U_N12_48
K7	CK_t	DDR4_C1_CK_T0	O	K30	IO_L17P_T2U_N8_AD10P_48
K8	CK_c	DDR4_C1_CK_C0	O	K31	IO_L17N_T2U_N9_AD10N_48
K2	CKE	DDR4_C1_CKE0	O	T28	IO_L21P_T3L_N4_AD8P_48
K3	ODT	DDR4_C1_ODT0	O	R28	IO_L21N_T3L_N5_AD8N_48
T3	PAR	DDR4_C1_PAR	_	FPGA には接続されていない	
N9	TEN	DDR4_C1_TEN	_	FPGA には接続されていない	
L3	ACT_n	DDR4_C1_ACT_N	O	R27	IO_T3U_N12_48
L7	CS_n	DDR4_C1_CS_N0	O	U34	IO_L1N_T0L_N1_DBC_48
E2	NF/UDM_n/UDBI_n	DDR4_C1_DM_DBI_N1	I	V34	IO_L1P_T0L_N0_DBC_48
E7	NF/LDM_n/LDBI_n	DDR4_C1_DM_DBI_N0	I	P34	IO_L7P_T1L_N0_QBC_AD13P_48
P1	RESET_n	DDR4_C1_RESET_N	O	N27	IO_L18N_T2U_N11_AD2N_48
F9	ZQ	DDR4_C1_ZQ0	_	GND	
G2	DQ0	DDR4_C1_DQ0	IO	N31	IO_L11P_T1U_N8_GC_48
F7	DQ1	DDR4_C1_DQ1	IO	L34	IO_L9N_T1L_N5_AD12N_48
H3	DQ2	DDR4_C1_DQ2	IO	P33	IO_L8P_T1L_N2_AD5P_48
H7	DQ3	DDR4_C1_DQ3	IO	M32	IO_L12N_T1U_N11_GC_48
H2	DQ4	DDR4_C1_DQ4	IO	N32	IO_L12P_T1U_N10_GC_48

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H8	DQ5	DDR4_C1_DQ5	IO	M31	IO_L11N_T1U_N9_GC_48
J3	DQ6	DDR4_C1_DQ6	IO	N33	IO_L8N_T1L_N3_AD5N_48
J7	DQ7	DDR4_C1_DQ7	IO	M34	IO_L9P_T1L_N4_AD12P_48
A3	DQ8	DDR4_C1_DQ8	IO	U31	IO_L2N_T0L_N3_48
B8	DQ9	DDR4_C1_DQ9	IO	R31	IO_L6P_T0U_N10_AD6P_48
C3	DQ10	DDR4_C1_DQ10	IO	T32	IO_L3N_T0L_N5_AD15N_48
C7	DQ11	DDR4_C1_DQ11	IO	T34	IO_L5N_T0U_N9_AD14N_48
C2	DQ12	DDR4_C1_DQ12	IO	V31	IO_L2P_T0L_N2_48
C8	DQ13	DDR4_C1_DQ13	IO	R32	IO_L6N_T0U_N11_AD6N_48
D3	DQ14	DDR4_C1_DQ14	IO	U32	IO_L3P_T0L_N4_AD15P_48
D7	DQ15	DDR4_C1_DQ15	IO	T33	IO_L5P_T0U_N8_AD14P_48
G3	LDQS_t	DDR4_C1_DQS_T0	IO	K30	IO_L17P_T2U_N8_AD10P_48
F3	LDQS_c	DDR4_C1_DQS_C0	IO	K31	IO_L17N_T2U_N9_AD10N_48
B7	UDQS_t	DDR4_C1_DQS_T1	IO	V32	IO_L4P_T0U_N6_DBC_AD7P_48
A7	UDQS_c	DDR4_C1_DQS_C1	IO	V33	IO_L4N_T0U_N7_DBC_AD7N_48
P9	ALERT_n	DDR4_C1_ALERT_n	–	FPGA には接続されていない	

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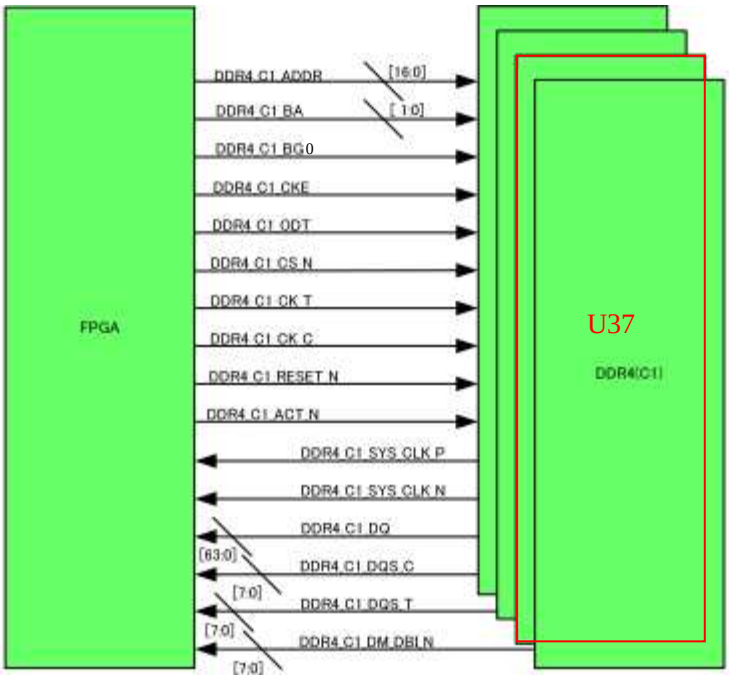

図 14 DDR4 Memory U37

表 8 DDR4 MT40A256M16GE-083E U37 ピン配置

DDR4 MemoryU37		Schematic Net Name	I/O	FPGA U1F,U1E	
Pin No.	Pin Name			Pin No.	Pin Name
E2	NF/UDM_n/UDBI_n	DDR4_C1_DM_DBI_N3	I	AB31	IO_L13P_T2L_N0_GC_QBC_47
E7	NF/LDM_n/LDBI_n	DDR4_C1_DM_DBI_N2	I	W29	IO_L19P_T3L_N0_DBC_AD9P_47
F9	ZQ	DDR4_C1_ZQ1	_	GND	
G2	DQ0	DDR4_C1_DQ16	IO	AB30	IO_L20N_T3L_N3_AD1N_47
F7	DQ1	DDR4_C1_DQ17	IO	AA28	IO_L23P_T3U_N8_47
H3	DQ2	DDR4_C1_DQ18	IO	AA29	IO_L23N_T3U_N9_47
H7	DQ3	DDR4_C1_DQ19	IO	Y30	IO_L21P_T3L_N4_AD8P_47
H2	DQ4	DDR4_C1_DQ20	IO	AB29	IO_L20P_T3L_N2_AD1P_47
H8	DQ5	DDR4_C1_DQ21	IO	Y28	IO_L24N_T3U_N11_47
J3	DQ6	DDR4_C1_DQ22	IO	AA30	IO_L21N_T3L_N5_AD8N_47
J7	DQ7	DDR4_C1_DQ23	IO	W28	IO_L24P_T3U_N10_47

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A3	DQ8	DDR4_C1_DQ24	IO	AA33	IO_L14N_T2L_N3_GC_47
B8	DQ9	DDR4_C1_DQ25	IO	Y33	IO_L15N_T2L_N5_AD11N_47
C3	DQ10	DDR4_C1_DQ26	IO	AA34	IO_L17P_T2U_N8_AD10P_47
C7	DQ11	DDR4_C1_DQ27	IO	Y32	IO_L15P_T2L_N4_AD11P_47
C2	DQ12	DDR4_C1_DQ28	IO	AB34	IO_L17N_T2U_N9_AD10N_47
C8	DQ13	DDR4_C1_DQ29	IO	Y31	IO_L18N_T2U_N11_AD2N_47
D3	DQ14	DDR4_C1_DQ30	IO	AA32	IO_L14P_T2L_N2_GC_47
D7	DQ15	DDR4_C1_DQ31	IO	W31	IO_L18P_T2U_N10_AD2P_47
G3	LDQS_t	DDR4_C1_DQS_T2	IO	Y27	IO_L22P_T3U_N6_DBC_AD0P_47
F3	LDQS_c	DDR4_C1_DQS_C2	IO	AA27	IO_L22N_T3U_N7_DBC_AD0N_47
B7	UDQS_t	DDR4_C1_DQS_T3	IO	W33	IO_L16P_T2U_N6_QBC_AD3P_47
A7	UDQS_c	DDR4_C1_DQS_C3	IO	W34	IO_L16N_T2U_N7_QBC_AD3N_47

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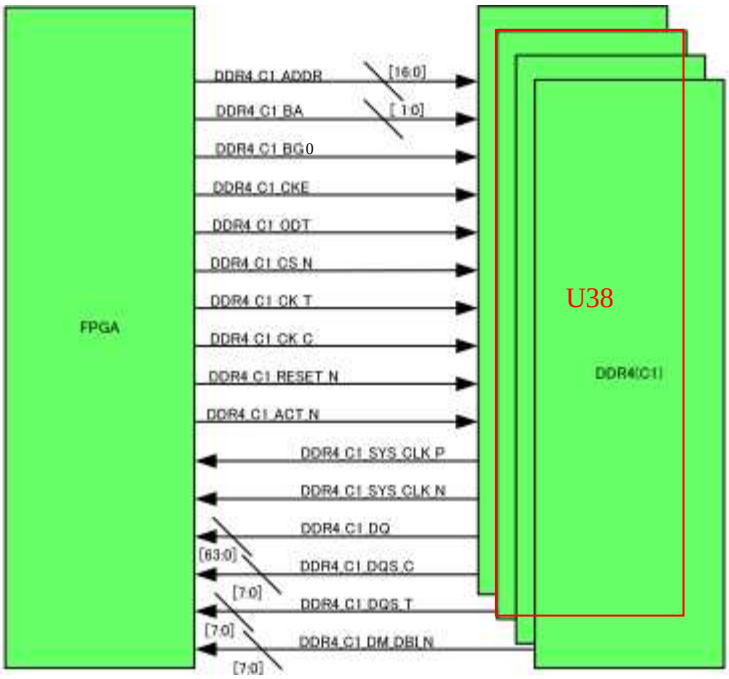

図 15 DDR4 Memory U38

表 9 DDR4 MT40A256M16GE-083E U38 ピン配置

DDR4 MemoryU38		Schematic Net Name	I/O	FPGA U1F,U1E	
Pin No.	Pin Name			Pin No.	Pin Name
E2	NF/UDM_n/UDBI_n	DDR4_C1_DM_DBI_N5	I	AF27	IO_L1P_T0L_N0_DBC_47
E7	NF/LDM_n/LDBI_n	DDR4_C1_DM_DBI_N4	I	AF34	IO_L7P_T1L_N0_QBC_AD13P_47
F9	ZQ	DDR4_C1_ZQ2	_	GND	
G2	DQ0	DDR4_C1_DQ32	IO	AG32	IO_L9N_T1L_N5_AD12N_47
F7	DQ1	DDR4_C1_DQ33	IO	AE33	IO_L8P_T1L_N2_AD5P_47
H3	DQ2	DDR4_C1_DQ34	IO	AF33	IO_L8N_T1L_N3_AD5N_47
H7	DQ3	DDR4_C1_DQ35	IO	AD31	IO_L11N_T1U_N9_GC_47
H2	DQ4	DDR4_C1_DQ36	IO	AF32	IO_L9P_T1L_N4_AD12P_47
H8	DQ5	DDR4_C1_DQ37	IO	AC32	IO_L12P_T1U_N10_GC_47
J3	DQ6	DDR4_C1_DQ38	IO	AC33	IO_L12N_T1U_N11_GC_47
J7	DQ7	DDR4_C1_DQ39	IO	AC31	IO_L11P_T1U_N8_GC_47

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A3	DQ8	DDR4_C1_DQ40	IO	AF30	IO_L5N_T0U_N9_AD14N_47
B8	DQ9	DDR4_C1_DQ41	IO	AE28	IO_L3N_T0L_N5_AD15N_47
C3	DQ10	DDR4_C1_DQ42	IO	AE31	IO_L2N_T0L_N3_47
C7	DQ11	DDR4_C1_DQ43	IO	AC28	IO_L6P_T0U_N10_AD6P_47
C2	DQ12	DDR4_C1_DQ44	IO	AF29	IO_L5P_T0U_N8_AD14P_47
C8	DQ13	DDR4_C1_DQ45	IO	AE30	IO_L2P_T0L_N2_47
D3	DQ14	DDR4_C1_DQ46	IO	AC29	IO_L6N_T0U_N11_AD6N_47
D7	DQ15	DDR4_C1_DQ47	IO	AD28	IO_L3P_T0L_N4_AD15P_47
G3	LDQS_t	DDR4_C1_DQS_T4	IO	AD33	IO_L10P_T1U_N6_QBC_AD4P_47
F3	LDQS_c	DDR4_C1_DQS_C4	IO	AD34	IO_L10N_T1U_N7_QBC_AD4N_47
B7	UDQS_t	DDR4_C1_DQS_T5	IO	AD29	IO_L4P_T0U_N6_DBC_AD7P_47
A7	UDQS_c	DDR4_C1_DQS_C5	IO	AD30	IO_L4N_T0U_N7_DBC_AD7N_47

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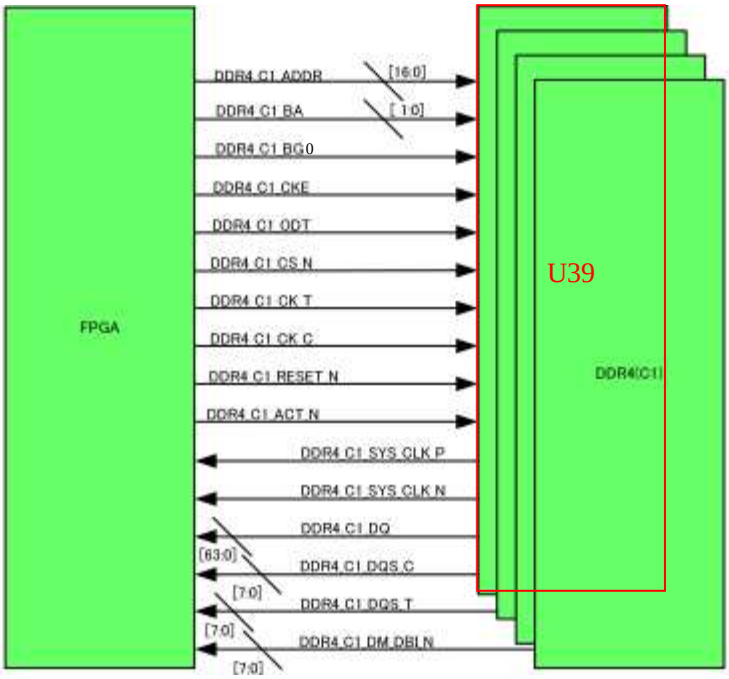

図 16 DDR4 Memory U39

表 10 DDR4 MT40A256M16GE-083E U39 ピン配置

DDR4 MemoryU39		Schematic Net Name	I/O	FPGA U1F,U1E	
Pin No.	Pin Name			Pin No.	Pin Name
E2	NF/UDM_n/UDBI_n	DDR4_C1_DM_DBI_N7	I	AK30	IO_L13P_T2L_N0_GC_QBC_46
E7	NF/LDM_n/LDBI_n	DDR4_C1_DM_DBI_N6	I	AK33	IO_L19P_T3L_N0_DBC_AD9P_46
F9	ZQ	DDR4_C1_ZQ2	_	GND	
G2	DQ0	DDR4_C1_DQ48	IO	AP33	IO_L2P_T0L_N2_46
F7	DQ1	DDR4_C1_DQ49	IO	AP35	IO_L5P_T0U_N8_AD14P_46
H3	DQ2	DDR4_C1_DQ50	IO	AP34	IO_L3N_T0L_N5_AD15N_46
H7	DQ3	DDR4_C1_DQ51	IO	AR35	IO_L5N_T0U_N9_AD14N_46
H2	DQ4	DDR4_C1_DQ52	IO	AR33	IO_L2N_T0L_N3_46
H8	DQ5	DDR4_C1_DQ53	IO	AM35	IO_L6P_T0U_N10_AD6P_46
J3	DQ6	DDR4_C1_DQ54	IO	AL34	IO_L23P_T3U_N8_46
J7	DQ7	DDR4_C1_DQ55	IO	AJ33	IO_L24N_T3U_N11_46

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A3	DQ8	DDR4_C1_DQ56	IO	AJ30	IO_L14P_T2L_N2_GC_46
B8	DQ9	DDR4_C1_DQ57	IO	AN29	IO_L9N_T1L_N5_AD12N_46
C3	DQ10	DDR4_C1_DQ58	IO	AM30	IO_L11N_T1U_N9_GC_46
C7	DQ11	DDR4_C1_DQ59	IO	AP29	IO_L8P_T1L_N2_AD5P_46
C2	DQ12	DDR4_C1_DQ60	IO	AL29	IO_L12P_T1U_N10_GC_46
C8	DQ13	DDR4_C1_DQ61	IO	AH28	IO_L17P_T2U_N8_AD10P_46
D3	DQ14	DDR4_C1_DQ62	IO	AL30	IO_L12N_T1U_N11_GC_46
D7	DQ15	DDR4_C1_DQ63	IO	AN28	IO_L9P_T1L_N4_AD12P_46
G3	LDQS_t	DDR4_C1_DQS_T6	IO	AH34	IO_L22P_T3U_N6_DBC_AD0P_46
F3	LDQS_c	DDR4_C1_DQS_C6	IO	AJ34	IO_L22N_T3U_N7_DBC_AD0N_46
B7	UDQS_t	DDR4_C1_DQS_T7	IO	AM27	IO_L10P_T1U_N6_QBC_AD4P_46
A7	UDQS_c	DDR4_C1_DQS_C7	IO	AN27	IO_L10N_T1U_N7_QBC_AD4N_46

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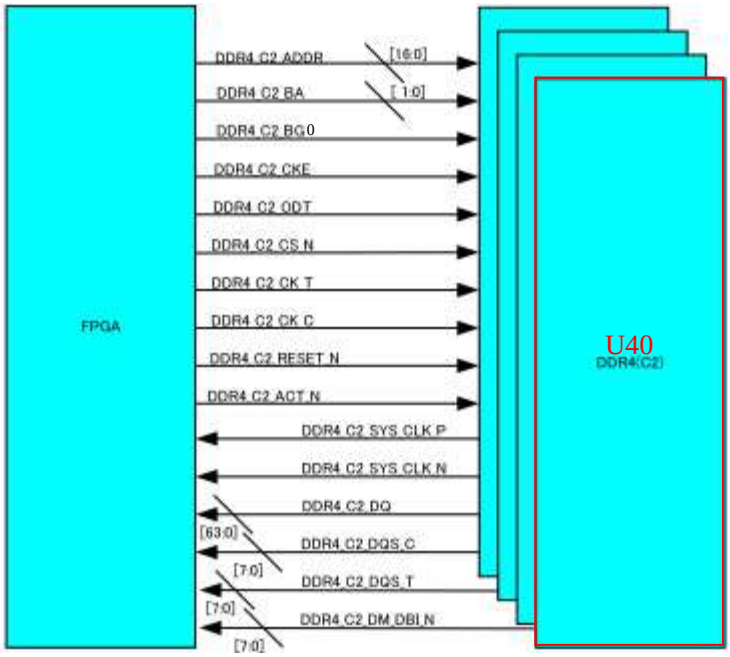

図 17 DDR4 Memory U40

表 11 DDR4 MT40A256M16GE-083E U40 ピン配置

DDR4 Memory U40		Schematic Net Name	I/O	FPGA U1F,U1E	
Pin No.	Pin Name			Pin No.	Pin Name
P3	A0	DDR4_C2_ADDR0	O	AR32	IO_L5P_T0U_N8_AD14P_44
P7	A1	DDR4_C2_ADDR1	O	BA33	IO_L9N_T1L_N5_AD12N_44
R3	A2	DDR4_C2_ADDR2	O	AV34	IO_L13N_T2L_N1_GC_QBC_44
N7	A3	DDR4_C2_ADDR3	O	BA30	IO_L10P_T1U_N6_QBC_AD4P_44
N3	A4	DDR4_C2_ADDR4	O	AT33	IO_L5N_T0U_N9_AD14N_44
P8	A5	DDR4_C2_ADDR5	O	BA34	IO_T1U_N12_44
P2	A6	DDR4_C2_ADDR6	O	AW35	IO_T2U_N12_44
R8	A7	DDR4_C2_ADDR7	O	AW30	IO_L6P_T0U_N10_AD6P_44
R2	A8	DDR4_C2_ADDR8	O	AY37	IO_L19N_T3L_N1_DBC_AD9N_44
R7	A9	DDR4_C2_ADDR9	O	AW31	IO_L6N_T0U_N11_AD6N_44
M3	A10/AP	DDR4_C2_ADDR10	O	AT32	IO_L3P_T0L_N4_AD15P_44
T2	A11	DDR4_C2_ADDR11	O	BB39	IO_T3U_N12_44
M7	A12/BC_n	DDR4_C2_ADDR12	O	BB29	IO_L8N_T1L_N3_AD5N_44

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T8	A13	DDR4_C2_ADDR13	O	AT30	IO_L2N_T0L_N3_44
L2	WE_n/ A14	DDR4_C2_ADDR14	O	AY31	IO_L12N_T1U_N11_GC_44
M8	CAS_n/ A15	DDR4_C2_ADDR15	O	BB31	IO_L7P_T1L_N0_QBC_AD13P_44
L8	RAS_n/ A16	DDR4_C2_ADDR16	O	BB32	IO_L7N_T1L_N1_QBC_AD13N_44
N2	BA0	DDR4_C2_BA0	O	AV32	IO_L1N_T0L_N1_DBC_44
N8	BA1	DDR4_C2_BA1	O	BA29	IO_L8P_T1L_N2_AD5P_44
M2	BG0	DDR4_C2_BG0	O	AV31	IO_L1P_T0L_N0_DBC_44
K7	CK_t	DDR4_C2_CK_T0	O	AU30	IO_L4P_T0U_N6_DBC_AD7P_44
K8	CK_c	DDR4_C2_CK_C0	O	AU31	IO_L4N_T0U_N7_DBC_AD7N_44
K2	CKE	DDR4_C2_CKE0	O	AY30	IO_L12P_T1U_N10_GC_44
K3	ODT	DDR4_C2_ODT0	O	BA32	IO_L9P_T1L_N4_AD12P_44
T3	PAR	DDR4_C2_PAR	_	FPGA には接続されていない	
N9	TEN	DDR4_C2_TEN	_	FPGA には接続されていない	
L3	ACT_n	DDR4_C2_ACT_N	O	AT29	IO_L2P_T0L_N2_44
L7	CS_n	DDR4_C2_CS_N0	O	BB30	IO_L10N_T1U_N7_QBC_AD4N_44
E2	NF/UDM_n/UDBI_n	DDR4_C2_DM_DBI_N1	I	AY36	O_L19P_T3L_N0_DBC_AD9P_44
E7	NF/LDM_n/LDBI_n	DDR4_C2_DM_DBI_N0	I	AV33	IO_L13P_T2L_N0_GC_QBC_44
P1	RESET_n	DDR4_C2_RESET_N	O	AU32	IO_L3N_T0L_N5_AD15N_44
F9	ZQ	DDR4_C2_ZQ0	_	GND	
G2	DQ0	DDR4_C2_DQ0	IO	AU34	IO_L15N_T2L_N5_AD11N_44
F7	DQ1	DDR4_C2_DQ1	IO	AU36	IO_L18P_T2U_N10_AD2P_44
H3	DQ2	DDR4_C2_DQ2	IO	AU35	IO_L17N_T2U_N9_AD10N_44
H7	DQ3	DDR4_C2_DQ3	IO	AW34	IO_L14N_T2L_N3_GC_44
H2	DQ4	DDR4_C2_DQ4	IO	AT35	IO_L17P_T2U_N8_AD10P_44
H8	DQ5	DDR4_C2_DQ5	IO	AV37	IO_L18N_T2U_N11_AD2N_44

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J3	DQ6	DDR4_C2_DQ6	IO	AT34	IO_L15P_T2L_N4_AD11P_44
J7	DQ7	DDR4_C2_DQ7	IO	AW33	IO_L14P_T2L_N2_GC_44
A3	DQ8	DDR4_C2_DQ8	IO	BA38	IO_L21N_T3L_N5_AD8N_44
B8	DQ9	DDR4_C2_DQ9	IO	BB37	IO_L24N_T3U_N11_44
C3	DQ10	DDR4_C2_DQ10	IO	BB34	IO_L20P_T3L_N2_AD1P_44
C7	DQ11	DDR4_C2_DQ11	IO	BB35	IO_L20N_T3L_N3_AD1N_44
C2	DQ12	DDR4_C2_DQ12	IO	AY38	IO_L23N_T3U_N9_44
C8	DQ13	DDR4_C2_DQ13	IO	BB36	IO_L24P_T3U_N10_44
D3	DQ14	DDR4_C2_DQ14	IO	AW38	IO_L23P_T3U_N8_44
D7	DQ15	DDR4_C2_DQ15	IO	BA37	IO_L21P_T3L_N4_AD8P_44
G3	LDQS_t	DDR4_C2_DQS_T0	IO	AV36	IO_L16P_T2U_N6_QBC_AD3P_44
F3	LDQS_c	DDR4_C2_DQS_C0	IO	AW36	IO_L16N_T2U_N7_QBC_AD3N_44
B7	UDQS_t	DDR4_C2_DQS_T1	IO	AY35	IO_L22P_T3U_N6_DBC_AD0P_44
A7	UDQS_c	DDR4_C2_DQS_C1	IO	BA35	IO_L22N_T3U_N7_DBC_AD0N_44
P9	ALERT_n	DDR4_C2_ALERT_n	–	FPGA には接続されていない	

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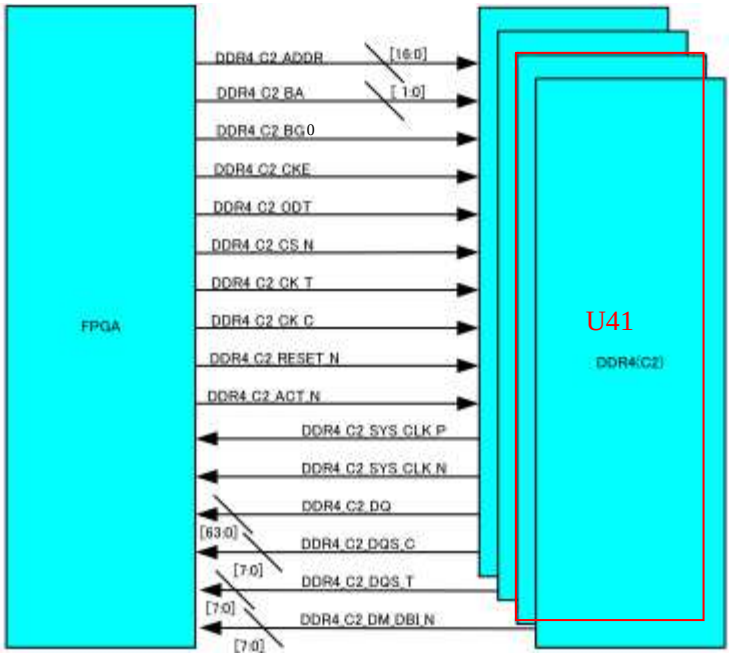

図 18 DDR4 Memory U41

表 12 DDR4 MT40A256M16GE-083E U41 ピン配置

DDR4 MemoryU41		Schematic Net Name	I/O	FPGA U1F,U1E	
Pin No.	Pin Name			Pin No.	Pin Name
E2	NF/UDM_n/UDBI_n	DDR4_C2_DM_DBI_N3	I	AT37	IO_L7P_T1L_N0_QBC_AD13P_45
E7	NF/LDM_n/LDBI_n	DDR4_C2_DM_DBI_N2	I	AW39	IO_L1P_T0L_N0_DBC_45
F9	ZQ	DDR4_C2_ZQ1	_	GND	
G2	DQ0	DDR4_C2_DQ16	IO	AY41	IO_L6P_T0U_N10_AD6P_45
F7	DQ1	DDR4_C2_DQ17	IO	AV42	IO_L5N_T0U_N9_AD14N_45
H3	DQ2	DDR4_C2_DQ18	IO	BA41	IO_L2N_T0L_N3_45
H7	DQ3	DDR4_C2_DQ19	IO	AY42	IO_L6N_T0U_N11_AD6N_45
H2	DQ4	DDR4_C2_DQ20	IO	AW40	IO_L3P_T0L_N4_AD15P_45
H8	DQ5	DDR4_C2_DQ21	IO	AV41	IO_L5P_T0U_N8_AD14P_45
J3	DQ6	DDR4_C2_DQ22	IO	BA40	IO_L2P_T0L_N2_45
J7	DQ7	DDR4_C2_DQ23	IO	AW41	IO_L3N_T0L_N5_AD15N_45

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A3	DQ8	DDR4_C2_DQ24	IO	AU39	IO_L12P_T1U_N10_GC_45
B8	DQ9	DDR4_C2_DQ25	IO	AT42	IO_L9N_T1L_N5_AD12N_45
C3	DQ10	DDR4_C2_DQ26	IO	AT39	IO_L11P_T1U_N8_GC_45
C7	DQ11	DDR4_C2_DQ27	IO	AT40	IO_L11N_T1U_N9_GC_45
C2	DQ12	DDR4_C2_DQ28	IO	AT38	IO_L8N_T1L_N3_AD5N_45
C8	DQ13	DDR4_C2_DQ29	IO	AR42	IO_L9P_T1L_N4_AD12P_45
D3	DQ14	DDR4_C2_DQ30	IO	AR38	IO_L8P_T1L_N2_AD5P_45
D7	DQ15	DDR4_C2_DQ31	IO	AU40	IO_L12N_T1U_N11_GC_45
G3	LDQS_t	DDR4_C2_DQS_T2	IO	BA39	IO_L4P_T0U_N6_DBC_AD7P_45
F3	LDQS_c	DDR4_C2_DQS_C2	IO	BB40	IO_L4N_T0U_N7_DBC_AD7N_45
B7	UDQS_t	DDR4_C2_DQS_T3	IO	AU41	IO_L10P_T1U_N6_QBC_AD4P_45
A7	UDQS_c	DDR4_C2_DQS_C3	IO	AU42	IO_L10N_T1U_N7_QBC_AD4N_45

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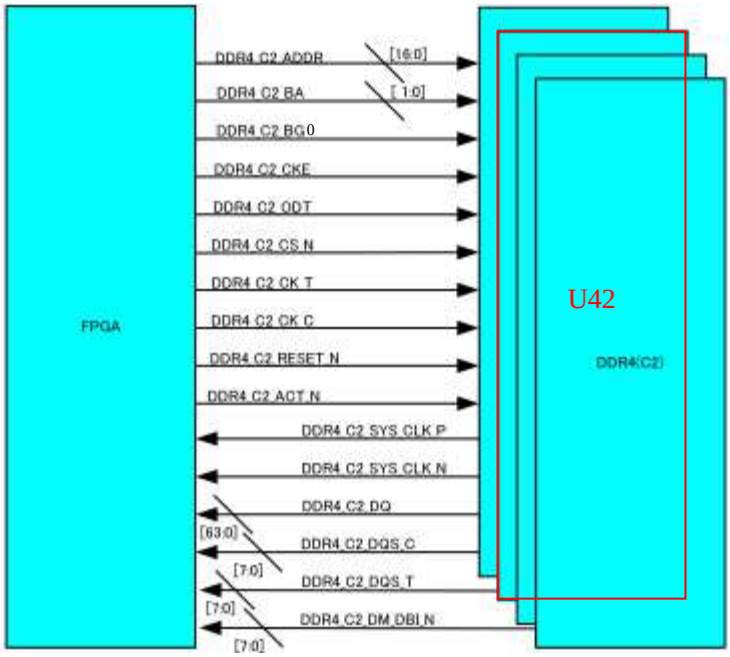

図 19 DDR4 Memory U42

表 13 DDR4 MT40A256M16GE-083E U42 ピン配置

DDR4 MemoryU42		Schematic Net Name	I/O	FPGA U1F,U1E	
Pin No.	Pin Name			Pin No.	Pin Name
E2	NF/UDM_n/UDBI_n	DDR4_C2_DM_DBI_N5	I	AL37	IO_L19P_T3L_N0_DBC_AD9P_45
E7	NF/LDM_n/LDBI_n	DDR4_C2_DM_DBI_N4	I	AN39	IO_L13P_T2L_N0_GC_QBC_45
F9	ZQ	DDR4_C2_ZQ2	_	GND	
G2	DQ0	DDR4_C2_DQ32	IO	AM42	IO_L15N_T2L_N5_AD11N_45
F7	DQ1	DDR4_C2_DQ33	IO	AR40	IO_L14N_T2L_N3_GC_45
H3	DQ2	DDR4_C2_DQ34	IO	AN42	IO_L18N_T2U_N11_AD2N_45
H7	DQ3	DDR4_C2_DQ35	IO	AM41	IO_L15P_T2L_N4_AD11P_45
H2	DQ4	DDR4_C2_DQ36	IO	AP40	IO_L14P_T2L_N2_GC_45
H8	DQ5	DDR4_C2_DQ37	IO	AM40	IO_L17N_T2U_N9_AD10N_45
J3	DQ6	DDR4_C2_DQ38	IO	AN41	IO_L18P_T2U_N10_AD2P_45
J7	DQ7	DDR4_C2_DQ39	IO	AL40	IO_L17P_T2U_N8_AD10P_45

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A3	DQ8	DDR4_C2_DQ40	IO	AN38	IO_L24P_T3U_N10_45
B8	DQ9	DDR4_C2_DQ41	IO	AK38	IO_L23N_T3U_N9_45
C3	DQ10	DDR4_C2_DQ42	IO	AP38	IO_L24N_T3U_N11_45
C7	DQ11	DDR4_C2_DQ43	IO	AM39	IO_L21N_T3L_N5_AD8N_45
C2	DQ12	DDR4_C2_DQ44	IO	AR37	IO_L20N_T3L_N3_AD1N_45
C8	DQ13	DDR4_C2_DQ45	IO	AL39	IO_L21P_T3L_N4_AD8P_45
D3	DQ14	DDR4_C2_DQ46	IO	AR36	IO_L20P_T3L_N2_AD1P_45
D7	DQ15	DDR4_C2_DQ47	IO	AK37	IO_L23P_T3U_N8_45
G3	LDQS_t	DDR4_C2_DQS_T4	IO	AP41	IO_L16P_T2U_N6_QBC_AD3P_45
F3	LDQS_c	DDR4_C2_DQS_C4	IO	AR41	IO_L16N_T2U_N7_QBC_AD3N_45
B7	UDQS_t	DDR4_C2_DQS_T5	IO	AM37	IO_L22P_T3U_N6_DBC_AD0P_45
A7	UDQS_c	DDR4_C2_DQS_C5	IO	AN37	IO_L22N_T3U_N7_DBC_AD0N_45

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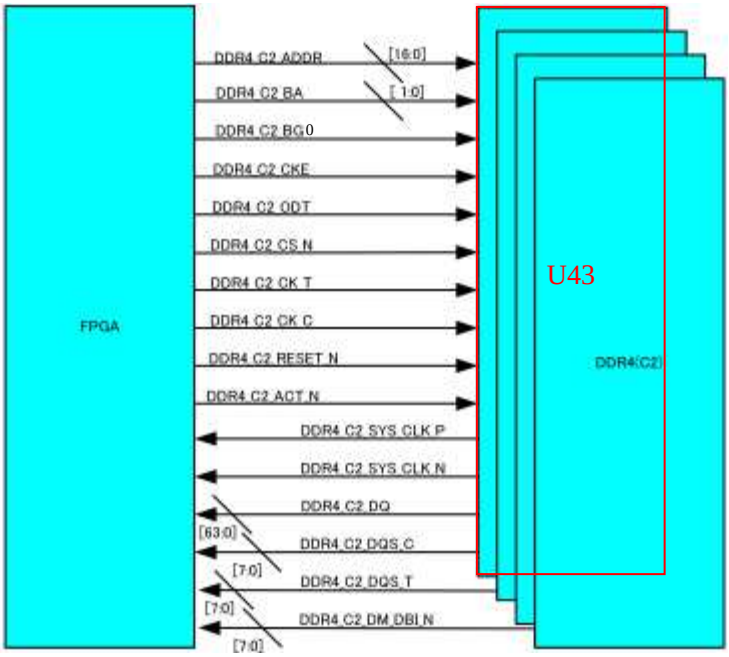

図 20 DDR4 Memory U43

表 14 DDR4 MT40A256M16GE-083E U43 ピン配置

DDR4 MemoryU43		Schematic Net Name	I/O	FPGA U1F,U1E	
Pin No.	Pin Name			Pin No.	Pin Name
E2	NF/UDM_n/UDBI_n	DDR4_C2_DM_DBI_N7	I	AN31	IO_L7P_T1L_N0_QBC_AD13P_46
E7	NF/LDM_n/LDBI_n	DDR4_C2_DM_DBI_N6	I	AK33	IO_L19P_T3L_N0_DBC_AD9P_46
F9	ZQ	DDR4_C2_ZQ3	_	GND	
G2	DQ0	DDR4_C2_DQ48	IO	AP33	IO_L2P_T0L_N2_46
F7	DQ1	DDR4_C2_DQ49	IO	AP35	IO_L5P_T0U_N8_AD14P_46
H3	DQ2	DDR4_C2_DQ50	IO	AP34	IO_L3N_T0L_N5_AD15N_46
H7	DQ3	DDR4_C2_DQ51	IO	AR35	IO_L5N_T0U_N9_AD14N_46
H2	DQ4	DDR4_C2_DQ52	IO	AR33	IO_L2N_T0L_N3_46
H8	DQ5	DDR4_C2_DQ53	IO	AM35	IO_L6P_T0U_N10_AD6P_46
J3	DQ6	DDR4_C2_DQ54	IO	AL34	O_L23P_T3U_N8_46
J7	DQ7	DDR4_C2_DQ55	IO	AJ33	IO_L24N_T3U_N11_46

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A3	DQ8	DDR4_C2_DQ56	IO	AJ30	IO_L14P_T2L_N2_GC_46
B8	DQ9	DDR4_C2_DQ57	IO	AH29	IO_L17N_T2U_N9_AD10N_46
C3	DQ10	DDR4_C2_DQ58	IO	AJ29	IO_L15N_T2L_N5_AD11N_46
C7	DQ11	DDR4_C2_DQ59	IO	AP29	IO_L8P_T1L_N2_AD5P_46
C2	DQ12	DDR4_C2_DQ60	IO	AL29	IO_L12P_T1U_N10_GC_46
C8	DQ13	DDR4_C2_DQ61	IO	AP30	IO_L8N_T1L_N3_AD5N_46
D3	DQ14	DDR4_C2_DQ62	IO	AL30	IO_L12N_T1U_N11_GC_46
D7	DQ15	DDR4_C2_DQ63	IO	AN28	IO_L9P_T1L_N4_AD12P_46
G3	LDQS_t	DDR4_C2_DQS_T6	IO	AM34	IO_L4P_T0U_N6_DBC_AD7P_46
F3	LDQS_c	DDR4_C2_DQS_C6	IO	AN34	IO_L4N_T0U_N7_DBC_AD7N_46
B7	UDQS_t	DDR4_C2_DQS_T7	IO	AM27	IO_L10P_T1U_N6_QBC_AD4P_46
A7	UDQS_c	DDR4_C2_DQS_C7	IO	AN27	IO_L10N_T1U_N7_QBC_AD4N_46

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3.2.2. DDR4 Memory に対する FPGA 端子機能表

以下に、DDR4 Memory における FPGA 端子機能表を示す。

表 15 DDR4 Memory に対する FPGA 端子機能表

機能	信号名	本数	方向	I/O Std.	極性	VCCO	Bank	From/To	信号説明
DDR4-SDRAM C0	DDR4_C0_SYS_CLK_P	1	I	DIFF_SSTL12	↑	1.2V	51	ClockBuffer	DDR4 System Clock Pos
	DDR4_C0_SYS_CLK_N	1	I	DIFF_SSTL12	↓	1.2V	51	ClockBuffer	DDR4 System Clock Neg
	DDR4_C0_CK_T	1	O	DIFF_SSTL12_DCI	P	1.2V	51	DDR4 C0	DDR4 Clock Pos
	DDR4_C0_CK_C	1	O	DIFF_SSTL12_DCI	N	1.2V	51	DDR4 C0	DDR4 Clock Neg
	DDR4_C0_RESET_N	1	O	LVCMOS12	N	1.2V	51	DDR4 C0	DDR4 Reset
	DDR4_C0_ADDR[16:0]	17	O	SSTL12_DCI	_	1.2V	51	DDR4 C0	DDR4 Address
	DDR4_C0_BA[1:0]	2	O	SSTL12_DCI	_	1.2V	51	DDR4 C0	DDR4 Bank Address
	DDR4_C0_BG	1	O	SSTL12_DCI	_	1.2V	51	DDR4 C0	DDR4 Bank Group
	DDR4_C0_CS_N	1	O	SSTL12_DCI	N	1.2V	51	DDR4 C0	DDR4 Chip Select
	DDR4_C0_CKE	1	O	SSTL12_DCI	P	1.2V	51	DDR4 C0	DDR4 Clock Enable
	DDR4_C0_ACT_N	1	O	SSTL12_DCI	_	1.2V	51	DDR4 C0	DDR4 Command
	DDR4_C0_ODT	1	O	SSTL12_DCI	–	1.2V	51	DDR4 C0	DDR4 On-Die Termination
	DDR4_C0_DQ[63:0]	64	IO	POD12_DCI	_	1.2V	52/53	DDR4 C0	DDR4 Data
	DDR4_C0_DQS_T[7:0]	8	IO	DIFF_POD12_DCI	_	1.2V	52/53	DDR4 C0	DDR4 Data Strobe Pos
	DDR4_C0_DQS_C[7:0]	8	IO	DIFF_POD12_DCI	_	1.2V	52/53	DDR4 C0	DDR4 Data Strobe Neg
117	DDR4_C0_DM_DBI_N[7:0]	8	I	POD12_DCI	_	1.2V	52/53	DDR4 C0	DDR4 Data Mask
DDR4-SDRAM C1	DDR4_C1_SYS_CLK_P	1	I	DIFF_SSTL12	↑	1.2V	48	ClockBuffer	DDR4 System Clock Pos
	DDR4_C1_SYS_CLK_N	1	I	DIFF_SSTL12	↓	1.2V	48	ClockBuffer	DDR4 System Clock Neg
	DDR4_C1_CK_T	1	O	DIFF_SSTL12_DCI	P	1.2V	48	DDR4 C1	DDR4 Clock Pos
	DDR4_C1_CK_C	1	O	DIFF_SSTL12_DCI	N	1.2V	48	DDR4 C1	DDR4 Clock Neg
	DDR4_C1_RESET_N	1	O	LVCMOS12	N	1.2V	48	DDR4 C1	DDR4 Reset
	DDR4_C1_ADDR[16:0]	17	O	SSTL12_DCI	_	1.2V	48	DDR4 C1	DDR4 Address
	DDR4_C1_BA[1:0]	2	O	SSTL12_DCI	_	1.2V	48	DDR4 C1	DDR4 Bank Address
	DDR4_C1_BG	1	O	SSTL12_DCI	_	1.2V	48	DDR4 C1	DDR4 Bank Group

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	DDR4_C1_CS_N	1	O	SSTL12_DCI	N	1.2V	48	DDR4 C1	DDR4 Chip Select
	DDR4_C1_CKE	1	O	SSTL12_DCI	P	1.2V	48	DDR4 C1	DDR4 Clock Enable
	DDR4_C1_ACT_N	1	O	SSTL12_DCI	_	1.2V	48	DDR4 C1	DDR4 Command
	DDR4_C1_ODT	1	O	SSTL12_DCI	–	1.2V	48	DDR4 C1	DDR4 On-Die Termination
	DDR4_C1_DQ[63:0]	64	IO	POD12_DCI	_	1.2V	46/47	DDR4 C1	DDR4 Data
	DDR4_C1_DQS_T[7:0]	8	IO	DIFF_POD12_DCI	_	1.2V	46/47	DDR4 C1	DDR4 Data Strobe Pos
	DDR4_C1_DQS_C[7:0]	8	IO	DIFF_POD12_DCI	_	1.2V	46/47	DDR4 C1	DDR4 Data Strobe Neg
117	DDR4_C1_DM_DBI_N[7:0]	8	I	POD12_DCI	_	1.2V	46/47	DDR4 C1	DDR4 Data Mask
DDR4-SDRAM C2	DDR4_C2_SYS_CLK_P	1	I	DIFF_SSTL12	↑	1.2V	44	ClockBuffer	DDR4 System Clock Pos
	DDR4_C2_SYS_CLK_N	1	I	DIFF_SSTL12	↓	1.2V	44	ClockBuffer	DDR4 System Clock Neg
	DDR4_C2_CK_T	1	O	DIFF_SSTL12_DCI	P	1.2V	44	DDR4 C2	DDR4 Clock Pos
	DDR4_C2_CK_C	1	O	DIFF_SSTL12_DCI	N	1.2V	44	DDR4 C2	DDR4 Clock Neg
	DDR4_C2_RESET_N	1	O	LVCMOS12	N	1.2V	44	DDR4 C2	DDR4 Reset
	DDR4_C2_ADDR[16:0]	17	O	SSTL12_DCI	_	1.2V	44	DDR4 C2	DDR4 Address
	DDR4_C2_BA[1:0]	2	O	SSTL12_DCI	_	1.2V	44	DDR4 C2	DDR4 Bank Address
	DDR4_C2_BG	1	O	SSTL12_DCI	_	1.2V	44	DDR4 C2	DDR4 Bank Group
	DDR4_C2_CS_N	1	O	SSTL12_DCI	N	1.2V	44	DDR4 C2	DDR4 Chip Select
	DDR4_C2_CKE	1	O	SSTL12_DCI	P	1.2V	44	DDR4 C2	DDR4 Clock Enable
	DDR4_C2_ACT_N	1	O	SSTL12_DCI	_	1.2V	44	DDR4 C2	DDR4 Command
	DDR4_C2_ODT	1	O	SSTL12_DCI	–	1.2V	44	DDR4 C2	DDR4 On-Die Termination
	DDR4_C2_DQ[63:0]	64	IO	POD12_DCI	_	1.2V	45/46	DDR4 C2	DDR4 Data
	DDR4_C2_DQS_T[7:0]	8	IO	DIFF_POD12_DCI	_	1.2V	45/46	DDR4 C2	DDR4 Data Strobe Pos
	DDR4_C2_DQS_C[7:0]	8	IO	DIFF_POD12_DCI	_	1.2V	45/46	DDR4 C2	DDR4 Data Strobe Neg
117	DDR4_C2_DM_DBI_N[7:0]	8	I	POD12_DCI	_	1.2V	45/46	DDR4 C2	DDR4 Data Mask

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3.3. SPI Flash Memory(MT25QU02GCBB8E12-0SIT)

本基板には、以下の図のように FPGA コンフィグレーションメモリとして、Micron Technology 社製の MT25QU02GCBB8E12-0SIT が搭載されている。

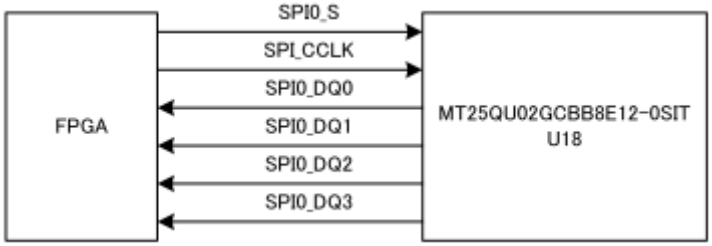

図 21 SPI Flash Memory U18

また以下の表は、フラッシュメモリの接続表である。未接続の DNU 端子は省略している。

表 16 [SPI Flash Memory] MT25QU02GCBB8E12-0SIT (U18) メーカー : Micron Technology

SPI Flash Memory U18		Schematic Net Name	I/O	FPGA U1A	
Pin No.	Pin Name			Pin No.	Pin Name
C2	S#	SPI0_S	I	AD9	RDWR_FCS_B_0
B2	C	SPI_CCLK	I	AC11	CCLK_0
A4	RESET#/ DNU	VCCAUX_1V8			
B4	Vcc	VCCAUX_1V8			
B3	Vss	GND			
D3	DQ0	SPI0_DQ0	IO	AH9	D00_MOSI_0
D2	DQ1	SPI0_DQ1	IO	AG9	D01_DIN_0
C4	W#/DQ2	SPI0_DQ2	IO	AE9	D02_0
D4	DQ3	SPI0_DQ3	IO	AF9	D03_0

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4. 搭載部品

4.1. 給電コネクタ

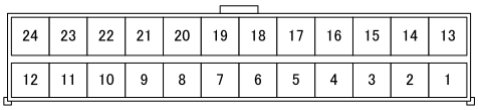

図 22 87427-2442 ピン配置

給電コネクタは ATX24 ピンに準拠している。HWP-2P-G-T(J2)にリモート制御の端子を引き出し、本端子をジャンパーすることで、Power ON になる。1 端子最大 13A の電流を入力することが可能。

表 17 [DC12V] 87427-2442 (CN2) メーカー：Molex

PIN	Signal	Note	PIN	Signal	Note
1	+3.3V	未使用	13	+3.3V	未使用
2	+3.3V	未使用	14	-12V	未使用
3	GND	GND	15	GND	GND
4	+5V	未使用	16	PS_ON	J2(HWP-2P-G-T)の 1 番ピンに接続
5	GND	GND	17	GND	GND
6	+5V	未使用	18	GND	GND
7	GND	GND	19	GND	GND
8	PWR_OK	未使用	20	-5V	未使用
9	+5VSB	未使用	21	+5V	未使用
10	+12V	12V 入力	22	+5V	未使用
11	+12V	12V 入力	23	+5V	未使用
12	+3.3V	未使用	24	GND	GND

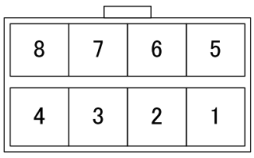

図 23 39-28-8080 ピン配置

EPS12 で給電。1 端子最大 9A の電流を入力することが可能。

表 18 [DC12V] 39-28-8080 (CN3) メーカー：Molex

PIN	Signal	Note	PIN	Signal	Note
1	GND	GND	5	+12V	12V 入力
2	GND	GND	6	+12V	12V 入力
3	GND	GND	7	+12V	12V 入力
4	GND	GND	8	+12V	12V 入力

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4.2. FireFly
4.2.1. FireFly 接続図およびピン配置

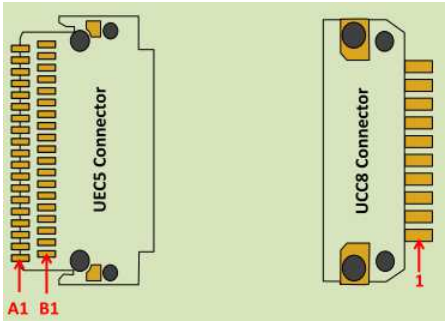

図 24 FireFly ピン配置

本基板に搭載されている Samtec 社製の FireFly コネクタは、上図の場所に 1 ピンを有する。12 ペアのシリアルデータの接続が可能であり、12 ペア使用しているコネクタが CN4, CN5, CN6, CN14, CN15, CN16 である。また 8 ペアで FPGA と接続されているコネクタは、CN10 ,CN11, CN20, CN21 である。

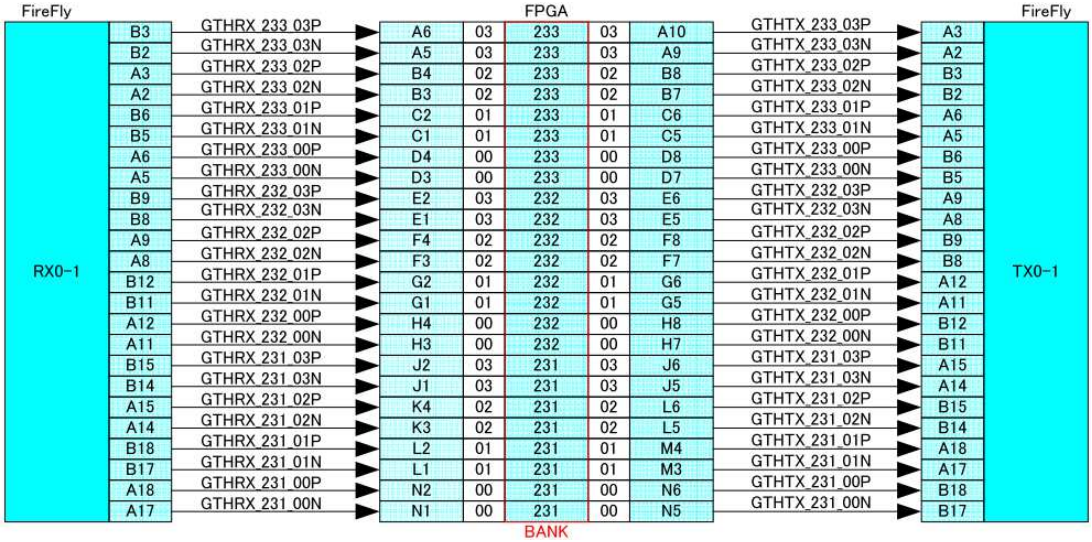

図 25 [FireFly] UEC5-019-1-H-D-RA-1-A (RX 側 CN4,TX 側 CN14)

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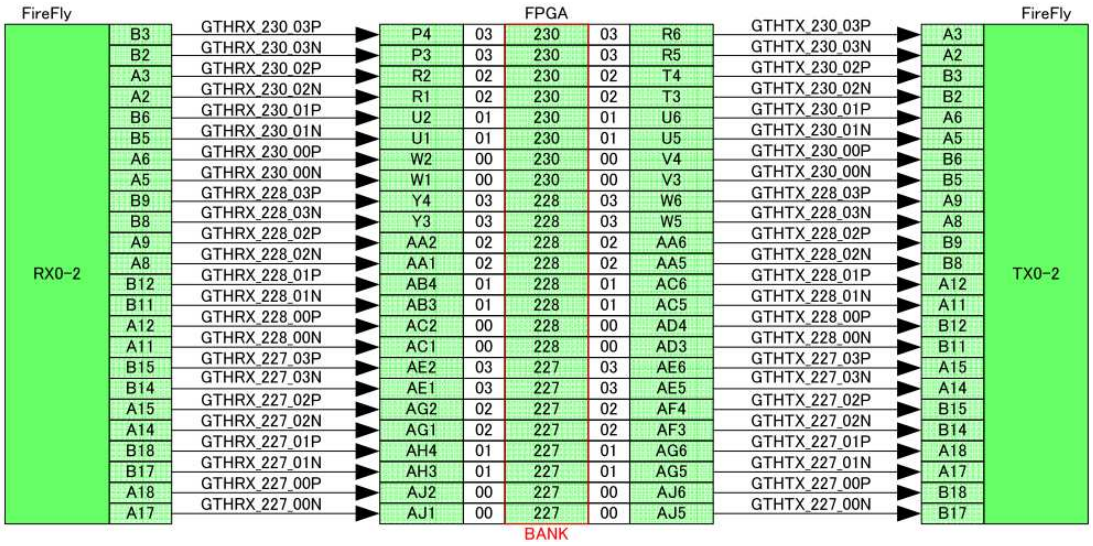

図 26 [FireFly] UEC5-019-1-H-D-RA-1-A (RX 側 CN5, TX 側 CN15)

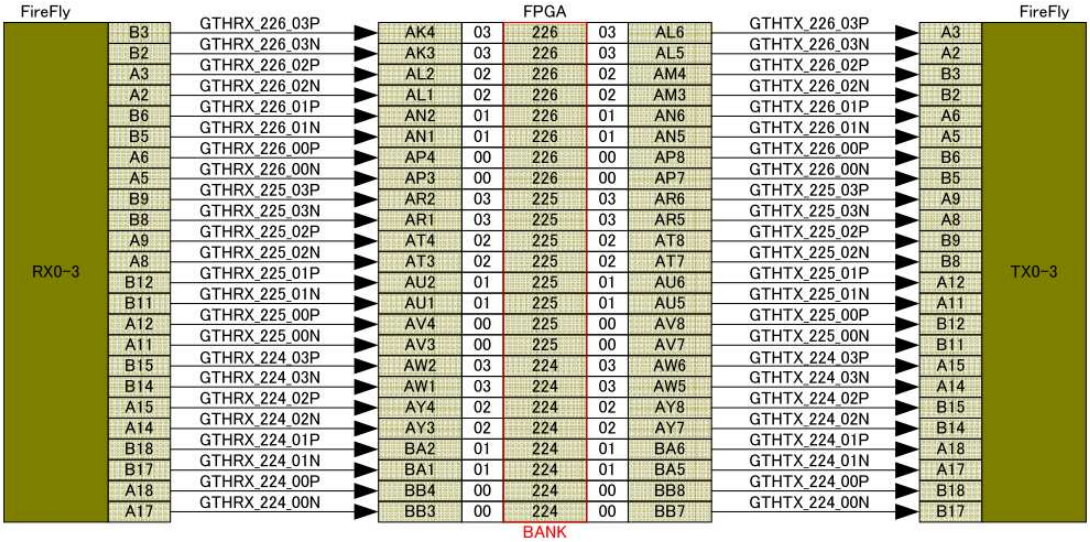

図 27 [FireFly] UEC5-019-1-H-D-RA-1-A (RX 側 CN6, TX 側 CN16)

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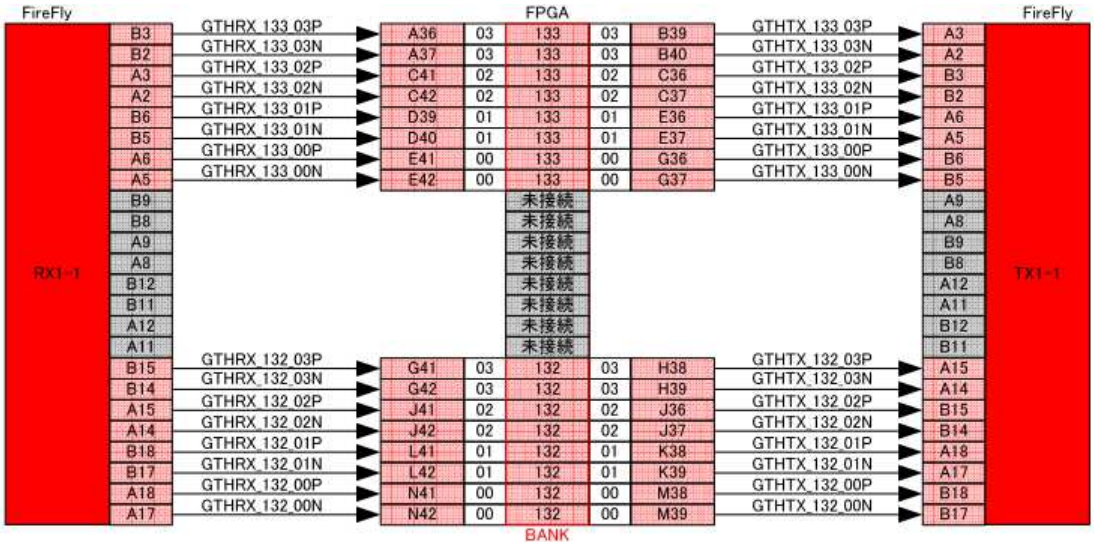

図 28 [FireFly] UEC5-019-1-H-D-RA-1-A (RX 側 CN10, TX 側 CN20)

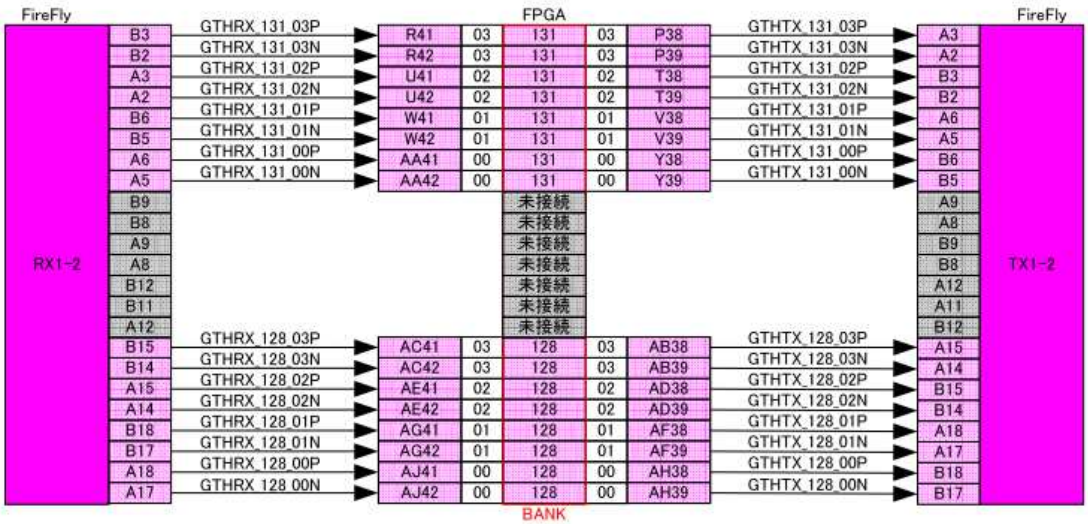

図 29 [FireFly] UEC5-019-1-H-D-RA-1-A (RX 側 CN11, TX 側 CN21)

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4.2.2. FireFly に対する FPGA 端子機能表

以下に、FireFly における FPGA 端子機能表を示す。

表 19 FireFly に対する FPGA 端子機能表

機能	信号名	本数	方向	極性	VCCO	Bank	From/To	信号説明
GTH-FIREFLY	GTH_FPGA_233_1P	1	I	P	_	233	FireFly	GTH Reference Clock Pos
	GTH_FPGA_233_1N	1	I	N	_	233	FireFly	GTH Reference Clock Neg
	GTH_FPGA_233_0P	1	I	P	_	233	FireFly	GTH Reference Clock Pos
	GTH_FPGA_233_0N	1	I	N	_	233	FireFly	GTH Reference Clock Neg
	GTH_FPGA_232_1P	1	I	P	_	232	FireFly	GTH Reference Clock Pos
	GTH_FPGA_232_1N	1	I	N	_	232	FireFly	GTH Reference Clock Neg
	GTH_FPGA_232_0P	1	I	P	_	232	FireFly	GTH Reference Clock Pos
	GTH_FPGA_232_0N	1	I	N	_	232	FireFly	GTH Reference Clock Neg
	GTH_FPGA_231_1P	1	I	P	_	231	FireFly	GTH Reference Clock Pos
	GTH_FPGA_231_1N	1	I	N	_	231	FireFly	GTH Reference Clock Neg
	GTH_FPGA_231_0P	1	I	P	_	231	FireFly	GTH Reference Clock Pos
	GTH_FPGA_231_0N	1	I	N	_	231	FireFly	GTH Reference Clock Neg
	GTH_FPGA_227_1P	1	I	P	_	227	FireFly	GTH Reference Clock Pos
	GTH_FPGA_227_1N	1	I	N	_	227	FireFly	GTH Reference Clock Neg
	GTH_FPGA_227_0P	1	I	P	_	227	FireFly	GTH Reference Clock Pos
	GTH_FPGA_227_0N	1	I	N	_	227	FireFly	GTH Reference Clock Neg
	GTH_FPGA_226_1P	1	I	P	_	226	FireFly	GTH Reference Clock Pos
	GTH_FPGA_226_1N	1	I	N	_	226	FireFly	GTH Reference Clock Neg
	GTH_FPGA_226_0P	1	I	P	_	226	FireFly	GTH Reference Clock Pos
	GTH_FPGA_226_0N	1	I	N	_	226	FireFly	GTH Reference Clock Neg
	GTH_FPGA_225_1P	1	I	P	_	225	FireFly	GTH Reference Clock Pos
	GTH_FPGA_225_1N	1	I	N	_	225	FireFly	GTH Reference Clock Neg
	GTH_FPGA_225_0P	1	I	P	_	225	FireFly	GTH Reference Clock Pos
	GTH_FPGA_225_0N	1	I	N	_	225	FireFly	GTH Reference Clock Neg
	GTH_FPGA_224_1P	1	I	P	_	224	FireFly	GTH Reference Clock Pos
	GTH_FPGA_224_1N	1	I	N	_	224	FireFly	GTH Reference Clock Neg

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GTH_FPGA_224_0P	1	I	P	_	224	FireFly	GTH Reference Clock Pos
GTH_FPGA_224_0N	1	I	N	_	224	FireFly	GTH Reference Clock Neg
GTHRX_233_P[3:0]	4	I	P	_	233	FireFly RX0-1	GTH RX Pos
GTHRX_233_N[3:0]	4	I	N	_	233	FireFly RX0-1	GTH RX Neg
GTHRX_232_P[3:0]	4	I	P	_	232	FireFly RX0-1	GTH RX Pos
GTHRX_232_N[3:0]	4	I	N	_	232	FireFly RX0-1	GTH RX Neg
GTHRX_231_P[3:0]	4	I	P	_	231	FireFly RX0-1	GTH RX Pos
GTHRX_231_N[3:0]	4	I	N	_	231	FireFly RX0-1	GTH RX Neg
GTHRX_230_P[3:0]	4	I	P	_	230	FireFly RX0-2	GTH RX Pos
GTHRX_230_N[3:0]	4	I	N	_	230	FireFly RX0-2	GTH RX Neg
GTHRX_228_P[3:0]	4	I	P	_	228	FireFly RX0-2	GTH RX Pos
GTHRX_228_N[3:0]	4	I	N	_	228	FireFly RX0-2	GTH RX Neg
GTHRX_227_P[3:0]	4	I	P	_	227	FireFly RX0-2	GTH RX Pos
GTHRX_227_N[3:0]	4	I	N	_	227	FireFly RX0-2	GTH RX Neg
GTHRX_226_P[3:0]	4	I	P	_	226	FireFly RX0-3	GTH RX Pos
GTHRX_226_N[3:0]	4	I	N	_	226	FireFly RX0-3	GTH RX Neg
GTHRX_225_P[3:0]	4	I	P	_	225	FireFly RX0-3	GTH RX Pos
GTHRX_225_N[3:0]	4	I	N	_	225	FireFly RX0-3	GTH RX Neg
GTHRX_224_P[3:0]	4	I	P	_	224	FireFly RX0-3	GTH RX Pos

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GTHRX_224_N[3:0]	4	I	N	_	224	FireFly RX0-3	GTH RX Neg
GTHTX_233_P[3:0]	4	O	P	1.8V	233	FireFly TX0-1	GTH TX Pos
GTHTX_233_N[3:0]	4	O	N	1.8V	233	FireFly TX0-1	GTH TX Neg
GTHTX_232_P[3:0]	4	O	P	1.8V	232	FireFly TX0-1	GTH TX Pos
GTHTX_232_N[3:0]	4	O	N	1.8V	232	FireFly TX0-1	GTH TX Neg
GTHTX_231_P[3:0]	4	O	P	1.8V	231	FireFly TX0-1	GTH TX Pos
GTHTX_231_N[3:0]	4	O	N	1.8V	231	FireFly TX0-1	GTH TX Neg
GTHTX_230_P[3:0]	4	O	P	1.8V	230	FireFly TX0-2	GTH TX Pos
GTHTX_230_N[3:0]	4	O	N	1.8V	230	FireFly TX0-2	GTH TX Neg
GTHTX_228_P[3:0]	4	O	P	1.8V	228	FireFly TX0-2	GTH TX Pos
GTHTX_228_N[3:0]	4	O	N	1.8V	228	FireFly TX0-2	GTH TX Neg
GTHTX_227_P[3:0]	4	O	P	1.8V	227	FireFly TX0-2	GTH TX Pos
GTHTX_227_N[3:0]	4	O	N	1.8V	227	FireFly TX0-2	GTH TX Neg
GTHTX_226_P[3:0]	4	O	P	1.8V	226	FireFly TX0-3	GTH TX Pos
GTHTX_226_N[3:0]	4	O	N	1.8V	226	FireFly TX0-3	GTH TX Neg
GTHTX_225_P[3:0]	4	O	P	1.8V	225	FireFly TX0-3	GTH TX Pos
GTHTX_225_N[3:0]	4	O	N	1.8V	225	FireFly TX0-3	GTH TX Neg
GTHTX_224_P[3:0]	4	O	P	1.8V	224	FireFly TX0-3	GTH TX Pos

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GTHTX_224_N[3:0]	4	O	N	1.8V	224	FireFly TX0-3	GTH TX Neg
GTH_FPGA_133_1P	1	I	P	_	133	FireFly	GTH Reference Clock Pos
GTH_FPGA_133_1N	1	I	N	_	133	FireFly	GTH Reference Clock Neg
GTH_FPGA_133_0P	1	I	P	_	133	FireFly	GTH Reference Clock Pos
GTH_FPGA_133_0N	1	I	N	_	133	FireFly	GTH Reference Clock Neg
GTH_FPGA_131_1P	1	I	P	_	131	FireFly	GTH Reference Clock Pos
GTH_FPGA_131_1N	1	I	N	_	131	FireFly	GTH Reference Clock Neg
GTH_FPGA_131_0P	1	I	P	_	131	FireFly	GTH Reference Clock Pos
GTH_FPGA_131_0N	1	I	N	_	131	FireFly	GTH Reference Clock Neg
GTH_FPGA_128_1P	1	I	P	_	128	FireFly	GTH Reference Clock Pos
GTH_FPGA_128_1N	1	I	N	_	128	FireFly	GTH Reference Clock Neg
GTH_FPGA_128_0P	1	I	P	_	128	FireFly	GTH Reference Clock Pos
GTH_FPGA_128_0N	1	I	N	_	128	FireFly	GTH Reference Clock Neg
GTHRX_133_P[3:0]	4	I	P	_	133	FireFly RX1-1	GTH RX Pos
GTHRX_133_N[3:0]	4	I	N	_	133	FireFly RX1-1	GTH RX Neg
GTHRX_132_P[3:0]	4	I	P	_	132	FireFly RX1-1	GTH RX Pos
GTHRX_132_N[3:0]	4	I	N	_	132	FireFly RX1-1	GTH RX Neg
GTHRX_131_P[3:0]	4	I	P	_	131	FireFly RX1-0	GTH RX Pos
GTHRX_131_N[3:0]	4	I	N	_	131	FireFly RX1-0	GTH RX Neg
GTHRX_128_P[3:0]	4	I	P	_	128	FireFly RX1-0	GTH RX Pos
GTHRX_128_N[3:0]	4	I	N	_	128	FireFly RX1-0	GTH RX Neg
GTHTX_133_P[3:0]	4	O	P	1.8V	133	FireFly TX1-1	GTH TX Pos
GTHTX_133_N[3:0]	4	O	N	1.8V	133	FireFly TX1-1	GTH TX Neg

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	GTHTX_132_P[3:0]	4	O	P	1.8V	132	FireFly TX1-1	GTH TX Pos
	GTHTX_132_N[3:0]	4	O	N	1.8V	132	FireFly TX1-1	GTH TX Neg
	GTHTX_131_P[3:0]	4	O	P	1.8V	131	FireFly TX1-0	GTH TX Pos
	GTHTX_131_N[3:0]	4	O	N	1.8V	131	FireFly TX1-0	GTH TX Neg
	GTHTX_128_P[3:0]	4	O	P	1.8V	128	FireFly TX1-0	GTH TX Pos
248	GTHTX_128_N[3:0]	4	O	N	1.8V	128	FireFly TX1-0	GTH TX Neg

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4.3. LINEAR JTAG

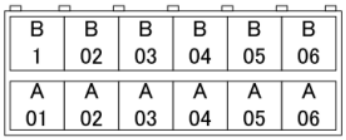

図 30 98414-G06-12ULF ピン配置

LINEAR JTAG は、電源シーケンステストが可能なように 12 ピンで構成されている。
ピンの割り振りは、以下の表に示す。

表 20 [LINEAR JTAG] 98414-G06-12ULF (J3) メーカー：Amphenol FCI

PIN	Signal	Note	PIN	Signal	Note
1:(A1)	open	未使用	2:(B1)	SEQ_SDA	inout
3:(A2)	GND	GND	4:(B2)	SEQ_SCL	inout
5:(A3)	open	未使用	6:(B3)	SEQ_ALARTB	inout
7:(A4)	open	未使用	8:(B4)	open	未使用
9:(A5)	open	未使用	10:(B5)	GND	GND
11:(A6)	open	未使用	12:(B6)	open	未使用

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4.4. Xilinx JTAG

本基板には、プログラミングテストが可能なように 14 ピンで構成されている JTAG コネクタ(図中赤枠)が搭載されている。マスターSPI コンフィギュレーションで使用する。以下は Xilinx が提供しているインターフェースの例である。

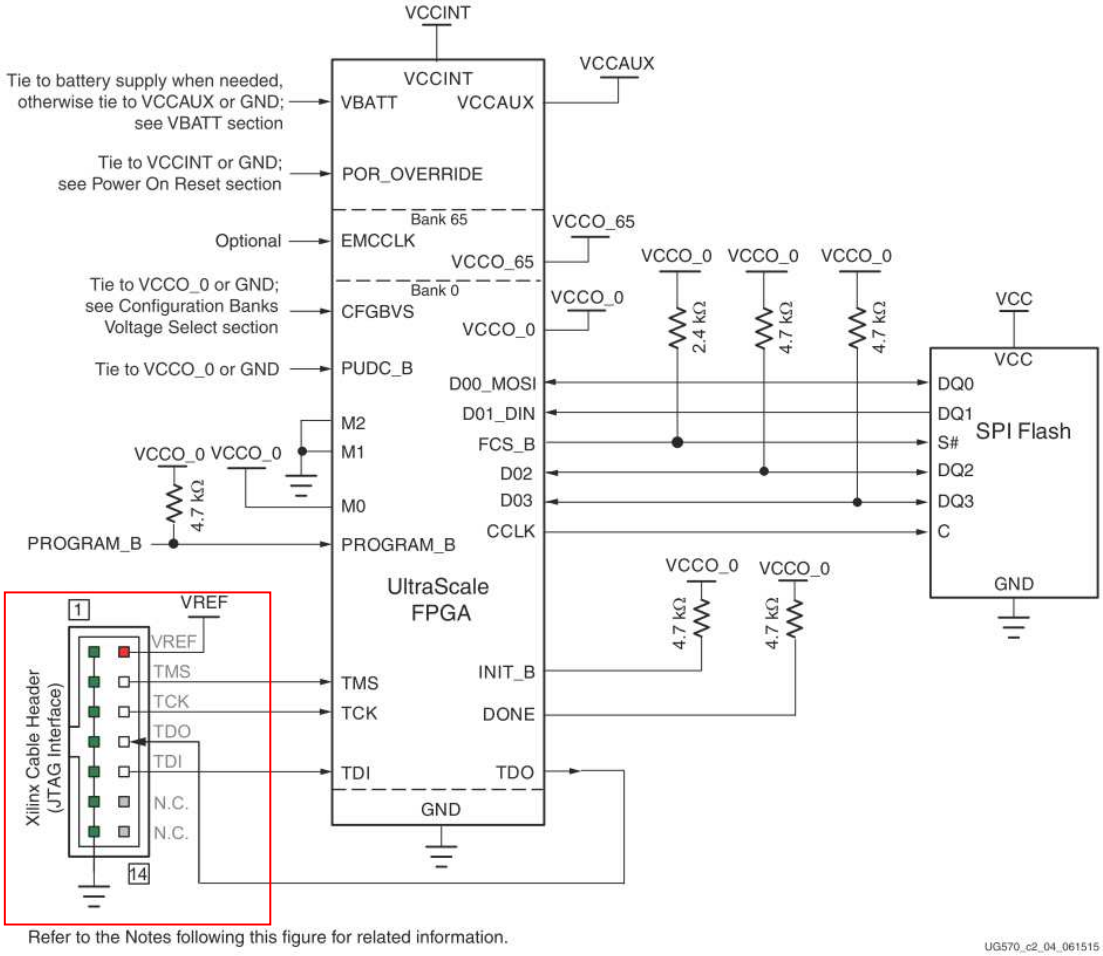

図 31 マスターSPI クワッド(×8)コンフィギュレーションインターフェースの例

表 21 [Xilinx JTAG] 87832-1420 (CN1)　メーカー：Molex

PIN	Signal	Note	PIN	Signal	Note
1	GND	GND	2	VCCAUX_1V8	1.8V 入力
3	GND	GND	4	JTAG_TMS_0	in
5	GND	GND	6	JTAG_TCK_0	in
7	GND	GND	8	JTAG_TDO_0	out
9	GND	GND	10	JTAG_TDI_0	in
11	GND	GND	12	open	未使用
13	GND	GND	14	open	未使用

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4.5. 基板間コネクタ

4.5.1. 基板間コネクタの接続表とピン配置

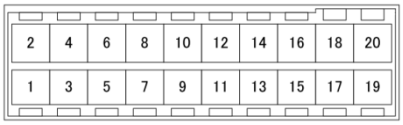

図 32 TFM-110-02-L-D-WT ピン配置

表 22 [基板間コネクタ] TFM-110-02-L-D-WT (J10) メーカー：Samtec

TFM-110-02-L-D-WT PIN	Schematic Net Name	I/O	FPGA U1P (Note)	
			Pin No.	Pin Name
1	VCCAUX_1V8	_	1.8V 入力	
2	VCCAUX_1V8	_	1.8V 入力	
3	EXT_O_VCLK	O	AY18	IO_L12P_T1U_N10_GC_94
4	EXT_O_RESET	O	AW19	IO_L6N_T0U_N11_AD6N_94
5	EXT_O_VSYNC	O	BA19	IO_L7P_T1L_N0_QBC_AD13P_94
6	EXT_O_HSYNC	O	BA18	IO_L7N_T1L_N1_QBC_AD13N_94
7	GND	_	GND	
8	GND	_	GND	
9	EXT_O_SCLK	O	AY17	IO_L12N_T1U_N11_GC_94
10	EXT_O_GPIO0	O	BA17	IO_L9P_T1L_N4_AD12P_94
11	EXT_O_SCS	O	AV19	IO_L6P_T0U_N10_AD6P_94
12	EXT_O_GPIO1	I	BB17	IO_L9N_T1L_N5_AD12N_94
13	GND	_	GND	
14	GND	_	GND	
15	EXT_O_SMOSI	O	AY20	IO_L8P_T1L_N2_AD5P_94
16	EXT_O_GPIO2	I	BB20	IO_L10P_T1U_N6_QBC_AD4P_94
17	EXT_O_SMISO	I	BA20	IO_L8N_T1L_N3_AD5N_94
18	EXT_O_GPIO3	I	BB19	IO_L10N_T1U_N7_QBC_AD4N_94
19	VCCAUX_1V8	_	1.8V 入力	
20	VCCAUX_1V8	_	1.8V 入力	

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表 23 [基板間コネクタ] TFM-110-02-L-D-WT (J9) メーカー：Samtec

TFM-110-02-L-D-WT PIN	Schematic Net Name	I/O	FPGA U1P (Note)	
			Pin No.	Pin Name
1	VCCIN_1V8	_	1.8V 入力	
2	VCCIN_1V8	_	1.8V 入力	
3	EXT_I_VCLK	I	AW14	IO_L13P_T2L_N0_GC_QBC_84
4	EXT_I_RESET	I	BB14	IO_L16N_T2U_N7_QBC_AD3N_84
5	EXT_I_VSYNC	I	AU12	IO_L19P_T3L_N0_DBC_AD9P_84
6	EXT_I_HSYNC	I	AV12	IO_L19N_T3L_N1_DBC_AD9N_84
7	GND	_	GND	
8	GND	_	GND	
9	EXT_I_SCLK	I	AW13	IO_L13N_T2L_N1_GC_QBC_84
10	EXT_I_GPIO0	I	BA12	IO_L17P_T2U_N8_AD10P_84
11	EXT_I_SCS	I	BA15	IO_L16P_T2U_N6_QBC_AD3P_84
12	EXT_I_GPIO1	O	BB12	IO_L17N_T2U_N9_AD10N_84
13	GND		GND	
14	GND		GND	
15	EXT_I_SMOSI	I	AY13	IO_L15P_T2L_N4_AD11P_84
16	EXT_I_GPIO2	O	BA14	IO_L18P_T2U_N10_AD2P_84
17	EXT_I_SMISO	O	AY12	IO_L15N_T2L_N5_AD11N_84
18	EXT_I_GPIO3	O	BA13	IO_L18N_T2U_N11_AD2N_84
19	VCCIN_1V8		1.8V 入力	
20	VCCIN_1V8		1.8V 入力	

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4.5.2. 基板間コネクタに対する FPGA 端子機能表

表 24 基板間コネクタに対する FPGA 端子機能表

機能	信号名	本数	方向	I/O Std.	極性	VCCO	Bank	From/To	信号説明
EXT_CON	EXT_CLK_OUT_P	1	O	LVCMOS18	↑	1.8V	49	外部制御コネクタ	EXT Clock Pos
	EXT_CLK_OUT_N	1	O	LVCMOS18	↓	1.8V	49	外部制御コネクタ	EXT Clock Neg
	EXT_I_GPIO_0_I	1	I	LVCMOS18	P	1.8V	84	外部制御コネクタ	_
	EXT_I_GPIO_1_I	1	O	LVCMOS18	P	1.8V	84	外部制御コネクタ	_
	EXT_I_GPIO_2_I	1	O	LVCMOS18	P	1.8V	84	外部制御コネクタ	_
	EXT_I_GPIO_3_I	1	O	LVCMOS18	P	1.8V	84	外部制御コネクタ	_
	EXT_I_HSYNC_I	1	I	LVCMOS18	N	1.8V	84	外部制御コネクタ	_
	EXT_I_RESET_I	1	I	LVCMOS18	N	1.8V	84	外部制御コネクタ	_
	EXT_I_SCLK_I	1	I	LVCMOS18	↑	1.8V	84	外部制御コネクタ	_
	EXT_I_SCS_I	1	I	LVCMOS18	N	1.8V	84	外部制御コネクタ	_
	EXT_I_SMISO_I	1	O	LVCMOS18	_	1.8V	84	外部制御コネクタ	_
	EXT_I_SMOSI_I	1	I	LVCMOS18	_	1.8V	84	外部制御コネクタ	_
	EXT_I_VCLK_I	1	I	LVCMOS18	↑	1.8V	84	外部制御コネクタ	_
	EXT_I_VSYNC_I	1	I	LVCMOS18	N	1.8V	84	外部制御コネクタ	_
	EXT_O_GPIO_0	1	O	LVCMOS18	P	1.8V	94	外部制御コネクタ	_
	EXT_O_GPIO_1	1	I	LVCMOS18	P	1.8V	94	外部制御コネクタ	_
	EXT_O_GPIO_2	1	I	LVCMOS18	P	1.8V	94	外部制御コネクタ	_
	EXT_O_GPIO_3	1	I	LVCMOS18	P	1.8V	94	外部制御コネクタ	_
	EXT_O_HSYNC	1	O	LVCMOS18	N	1.8V	94	外部制御コネクタ	_
	EXT_O_RESET	1	O	LVCMOS18	N	1.8V	94	外部制御コネクタ	_
	EXT_O_SCLK	1	O	LVCMOS18	↑	1.8V	94	外部制御コネクタ	_
	EXT_O_SCS	1	O	LVCMOS18	N	1.8V	94	外部制御コネクタ	_
	EXT_O_SMISO_I	1	I	LVCMOS18	_	1.8V	94	外部制御コネクタ	_
	EXT_O_SMOSI	1	O	LVCMOS18	_	1.8V	94	外部制御コネクタ	_
	EXT_O_VCLK	1	O	LVCMOS18	↑	1.8V	94	外部制御コネクタ	_
26	EXT_O_VSYNC	1	O	LVCMOS18	N	1.8V	94	外部制御コネクタ	_

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4.6. SMA コネクタ

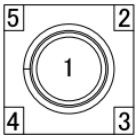

図 33 SMA コネクタ(SMA-J-P-H-ST-TH1)

外部クロック用と FPGA から生成されるクロックを出力するコネクタ 2 組が存在する。
詳細は、クロック系統図を参照すること。

表 25 [CLK IN_P] SMA-J-P-H-ST-TH1 (CN24) メーカー：Samtec

PIN	Signal
1	SMA_CLK_INP
2	GND
3	GND
4	GND
5	GND

表 26 [CLK IN_N] SMA-J-P-H-ST-TH1 (CN25) メーカー：Samtec

PIN	Signal
1	SMA_CLK_INP
2	GND
3	GND
4	GND
5	GND

表 27 [CLK OUT_P] SMA-J-P-H-ST-TH1 (CN26) メーカー：Samtec

PIN	Signal
1	SMA_CLK_OUTP
2	GND
3	GND
4	GND
5	GND

表 28 [CLK OUT_N] SMA-J-P-H-ST-TH1 (CN27) メーカー：Samtec

PIN	Signal
1	SMA_CLK_OUTN
2	GND
3	GND
4	GND
5	GND

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4.7. USB mini B コネクタ

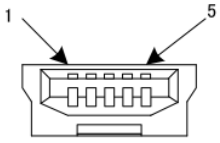

図 34 UX60-MB-5ST ピン配置

USB UART に用いられるコネクタである。

表 29 [USB UART] UX60-MB-5ST (J11) メーカー：Hirose Electric

PIN	Signal	I/O	CP2103GM U44 (Note)	
			Pin No	Pin Name
1	USB_VBUS	IO	8	VBUS
2	USB_D-	IO	4	D-
3	USB_D+	IO	3	D+
4	open	_	未使用	
5	GND	_	GND	
6	GND	_	GND	
7	GND	_	GND	
8	GND	_	GND	
9	GND	_	GND	

4.8. USB-UART ブリッジ

4.8.1. UART ブリッジに対する FPGA 機能端子表

USB mini B コネクタとつながっている CP2103GM は、FPGA とつながっている。その CP2103GM に対する FPGA 機能端子表を以下に表で示す。

表 30 UART ブリッジに対する FPGA 機能端子表

機能	信号名	本数	方向	極性	I/O Std.	VCCO	Bank	From/To	信号説明
USB_UART	UART_CTS	1	I	N	LVCMOS18	1.8V	65	USB mini B コネクタ	UART CTS
	UART_RSTN	1	I	N	LVCMOS18	1.8V	65	USB mini B コネクタ	UART Reset
	UART_RTS	1	O	N	LVCMOS18	1.8V	65	USB mini B コネクタ	UART RTS
	UART_RXD	1	I	–	LVCMOS18	1.8V	65	USB mini B コネクタ	UART RXD
5	UART_TXD	1	O	–	LVCMOS18	1.8V	65	USB mini B コネクタ	UART TXD

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4.9. FAN 電源コネクタ

本基板には、Molex 社製の FAN 電源コネクタが 2 個搭載(J1,J4)されている。以下に、ピン配置表を掲載する。

表 31 CASE FAN 電源コネクタ

CASE FAN (J1)	
1 ピン	open
2 ピン	12V 入力
3 ピン	GND

表 32 FPGA FAN 電源コネクタ

FPGA FAN (J4)	
1 ピン	open
2 ピン	12V 入力
3 ピン	GND

4.10.クロック切り替え用ジャンパー端子

SG7050EBN 114.285000M-CJGA3(U22,26.29)から出力されるクロックまたは FPGA から出力されるクロックの信号の切り替えに用いているマックエイト社製の HWP-3P-G-T ジャンパーピン、J6,7,8 を以下に紹介する。

表 33 J6 ジャンパー端子表

TX CLKSEL0 (J6)	
1-2 ピン	Internal
2-3 ピン	External

表 34 J7 ジャンパー端子表

TX CLKSEL1 (J7)	
1-2 ピン	Internal
2-3 ピン	External

表 35 J8 ジャンパー端子表

TX CLKSEL2 (J8)	
1-2 ピン	Internal
2-3 ピン	External

2-3 番ピンの時には、SG7050EBN 114.285000M-CJGA3(U22,26.29)から出力されるクロックが選択される。また、1-2 番ピンの時には、FPGA から出力されるクロックが選択される。詳細については、Si5326C-C-GM のデータシートを参照すること。

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4.11.ユーザーインターフェース

4.11.1. プッシュスイッチ

アルプス電気社製のユーザーが使用できるプッシュスイッチを 2 個実装している。また、コンフィグレーションリセットを行うスイッチ 1 個(SW2)も実装している。
本スイッチを使用する場合、FPGA 内部でプルアップが必要。

表 36 [プッシュスイッチ] SKHUAK010 (SW3,SW4) SKHUAME010(SW2)

Push Switch		Schematic Net Name	I/O	FPGA	
Polarity	Pin Name			Pin No.	Pin Name
Push = 0	SW3	FPGA_PSW0	I	K13	IO_L9P_T1L_N4_AD12P_49
Push = 0	SW4	FPGA_PSW1	I	K12	IO_L9N_T1L_N5_AD12N_49
Push = 0	SW2	FPGA_PROGRAM_B_0	I	AC9	PROGRAM_B_0

4.11.2. DIP スイッチ

本基板では、ユーザーが使用できる Copal Electronics 社製の CHS-08B、8 極 DIP スイッチを実装している。

表 37[DIP スイッチ] CHS-08B(SW1)

DIP Switch		Schematic Net Name	I/O	FPGA	
Polarity	Pin No.			Pin No.	Pin Name
ON = 0	1	FPGA_DSW0	I	M12	IO_L5P_T0U_N8_AD14P_49
ON = 0	2	FPGA_DSW1	I	L12	IO_L5N_T0U_N9_AD14N_49
ON = 0	3	FPGA_DSW2	I	M10	IO_L6P_T0U_N10_AD6P_49
ON = 0	4	FPGA_DSW3	I	L10	IO_L6N_T0U_N11_AD6N_49
ON = 0	5	FPGA_DSW4	I	L14	IO_L7P_T1L_N0_QBC_AD13P_49
ON = 0	6	FPGA_DSW5	I	L13	IO_L7N_T1L_N1_QBC_AD13N_49
ON = 0	7	FPGA_DSW6	I	K11	IO_L8P_T1L_N2_AD5P_49
ON = 0	8	FPGA_DSW7	I	K10	IO_L8N_T1L_N3_AD5N_49

また、本基板には、リニアシーケンスが書き込み時に、スイッチを全て ON の状態にしなければならい Copal Electronics 社製の CHS-04B、4 極 DIP スイッチを実装している(通常時には使わない)。

表 38[DIP スイッチ] CHS-04B(SW5)

DIP Switch		Schematic Net Name	LTC2974IUP#PBF	
Polarity	Pin No.		Pin No.	Pin Name
ON = 0	1	SEQ_CONTROL0	32	CONTROL0
ON = 0	2	SEQ_CONTROL1	33	CONTROL1
ON = 0	3	SEQ_CONTROL2	22	CONTROL2
ON = 0	4	SEQ_CONTROL3	23	CONTROL3

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4.11.3. LED

本基板には、ユーザーが使用できる LITEON TECHNOLOGY 社製の LED 計 8 個が実装されている。また、ステータス確認用の LED9,LED10 が実装されている。LED9 は 12V 確認用の LED であり、LED10 は OFF でコンフィギュレーションが終了し、通常動作となることを示している。DONE の LED は、電源投入時において赤点灯し、コンフィグ終了すると消灯する。以下に、LED の品番とロケーションを示す。

表 39 LED の設定

LED	Part No.	FPGA		Schematic Net Name	I/O	Function
		Pin No.	Pin Name			
LED 1	LTST-C191TBKT	N14	IO_L1P_T0L_N0_DBC_49	FPGA_LED0	O	アクティブハイで LED1 点灯
LED 2	LTST-C191TBKT	M14	IO_L1N_T0L_N1_DBC_49	FPGA_LED1	O	アクティブハイで LED2 点灯
LED 3	LTST-C191KGKT	P11	IO_L2P_T0L_N2_49	FPGA_LED2	O	アクティブハイで LED3 点灯
LED 4	LTST-C191KGKT	P10	IO_L2N_T0L_N3_49	FPGA_LED3	O	アクティブハイで LED4 点灯
LED 5	LTST-C191KSKT	N13	IO_L3P_T0L_N4_AD15P_49	FPGA_LED4	O	アクティブハイで LED5 点灯
LED 8	LTST-C191KSKT	N12	IO_L3N_T0L_N5_AD15N_49	FPGA_LED5	O	アクティブハイで LED8 点灯
LED 11	LTST-C191KFKT	N11	IO_L4P_T0U_N6_DBC_AD7P_49	FPGA_LED6	O	アクティブハイで LED11 点灯
LED 12	LTST-C191KFKT	M11	IO_L4N_T0U_N7_DBC_AD7N_49	FPGA_LED7	O	アクティブハイで LED12 点灯
LED 9	LTW-170TK	_	_	_		アクティブハイで LED9 点灯
LED10	LTST-C190KRKT	R9	DONE_0	_		アクティブハイで LED10 点灯

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4.11.4. ピンヘッダ(2×8 ピン　2.54mm)

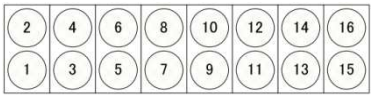

図 35 WLW-1-8PW ピン配置

本基板には、マックエイトの 2 列×2.54mm のピンヘッダ(J5)が搭載されている。

表 40 [FPGA TP] WLW-1-8PW (J5) メーカー：マックエイト

Pin header	Schematic Net Name	I/O	FPGA U1G (Note)	
PIN			Pin No	Pin Name
1	FPGA_TP0	O	H12	IO_L15P_T2L_N4_AD11P_49
2	FPGA_TP1	O	G12	IO_L15N_T2L_N5_AD11N_49
3	FPGA_TP2	O	F14	IO_L16P_T2U_N6_QBC_AD3P_49
4	FPGA_TP3	O	F13	IO_L16N_T2U_N7_QBC_AD3N_49
5	FPGA_TP4	O	F12	IO_L17P_T2U_N8_AD10P_49
6	FPGA_TP5	O	E12	IO_L17N_T2U_N9_AD10N_49
7	FPGA_TP6	O	F15	IO_L18P_T2U_N10_AD2P_49
8	FPGA_TP7	O	E15	IO_L18N_T2U_N11_AD2N_49
9	FPGA_TP8	O	D14	IO_L19P_T3L_N0_DBC_AD9P_49
10	FPGA_TP9	O	C14	IO_L19N_T3L_N1_DBC_AD9N_49
11	FPGA_TP10	O	D13	IO_L20P_T3L_N2_AD1P_49
12	FPGA_TP11	O	C13	IO_L20N_T3L_N3_AD1N_49
13	FPGA_TP12	O	B14	IO_L21P_T3L_N4_AD8P_49
14	FPGA_TP13	O	A14	IO_L21N_T3L_N5_AD8N_49
15	GND		GND	
16	GND		GND	

4.11.5. ユーザーインターフェースに対する FPGA 端子機能表

以下に、表で FPGA の端子機能を掲載する。

表 41 ユーザーインターフェースに対する FPGA 端子機能表

機能	信号名	本数	方向	極性	I/O Std.	VCCO	Bank	From/To	信号説明
MISC I/O	FPGA_LED [7:0]	8	O	P	LVCMOS18	1.8V	49	LED	LED
	FPGA_DSW[7:0]	8	I	−	LVCMOS18	1.8V	49	DIP SW	DIP SW
	FPGA_PSW [1:0]	2	I	N	LVCMOS18	1.8V	49	PUSH SW	PUSH SW
32	FPGA_TP[13:0]	14	O	−	LVCMOS18	1.8V	49	2.54mmHeader	Test Point

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5. I2C インターフェース

本基板は 3 系統の I2C インターフェースを有している。詳細は以下を参照のこと。

5.1. Si570

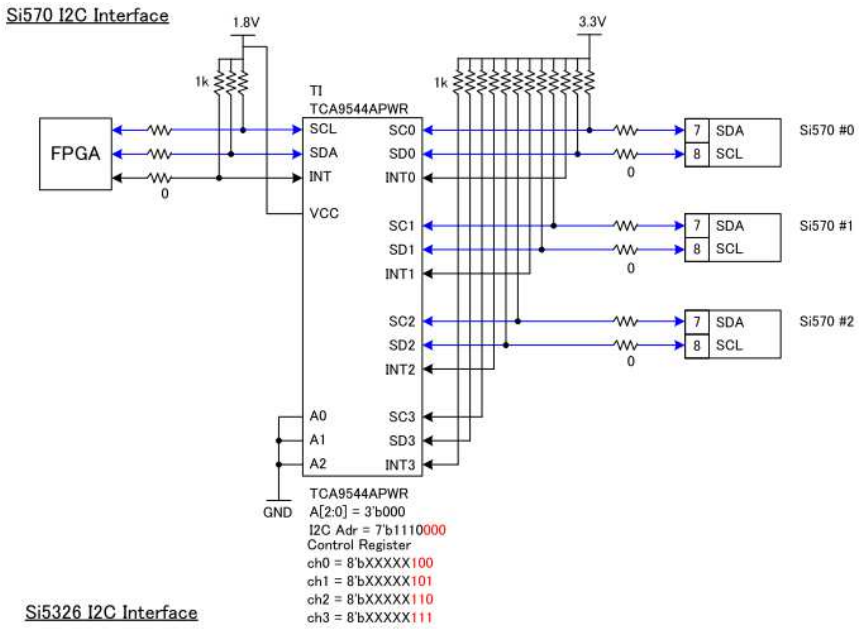

図 36 Si570 I2C インターフェース

5.2. Si5326

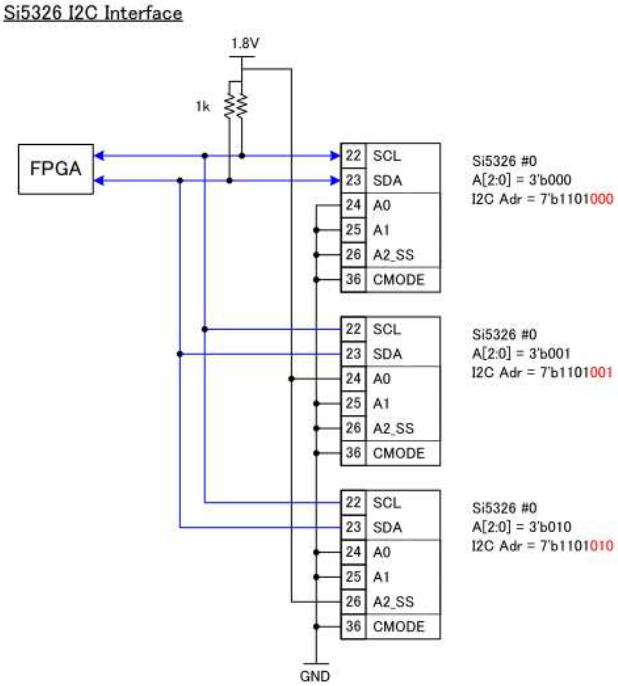

図 37 Si5326 I2C インターフェース

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5.3. FireFly

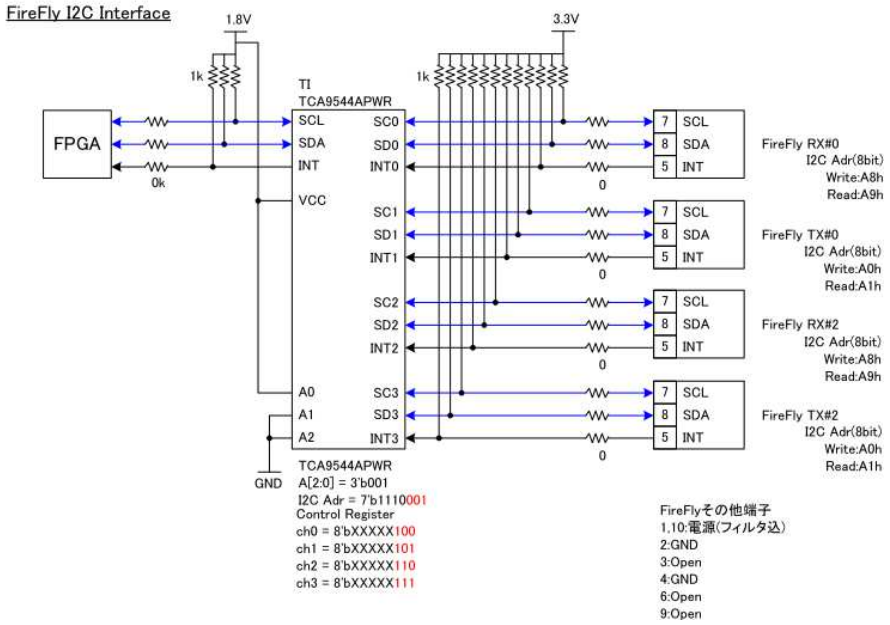

図 38 FireFly I2C インターフェース

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また、以下に FPGA I2C に対する FPGA 端子機能表を示す。

表 42 FireFly,Si5326,Si570 I2C インターフェースにおける FPGA 端子機能表

機能	信号名	本数	方向	極性	I/O Std.	VCCO	Bank	From/To	信号説明
FPGA_I2C	FIREFLY_INT	1	I	N	LVCMOS18	1.8V	65	FireFly	I2C Interupt
	FIREFLY_SCL	1	O	↑	LVCMOS18	1.8V	65	FireFly	I2C Clock
	FIREFLY_SDA	1	IO	−	LVCMOS18	1.8V	65	FireFly	I2C Data
	SI570_INT	1	I	N	LVCMOS18	1.8V	65	Si570	I2C Interupt
	SI570_SCL	1	O	↑	LVCMOS18	1.8V	65	Si570	I2C Clock
	SI570_SDA	1	IO	_	LVCMOS18	1.8V	65	Si570	I2C Data
	SI5326_SCL	1	O	↑	LVCMOS18	1.8V	65	Si5326	I2C Clock
	SI5326_SDA	1	IO	−	LVCMOS18	1.8V	65	Si5326	I2C Data
	FPGAOUT_CLK0_N	1	O	↓	LVCMOS18	1.8V	65	Si5326	Si5326 Clock Neg
	FPGAOUT_CLK0_P	1	O	↑	LVCMOS18	1.8V	65	Si5326	Si5326 Clock Pos
	FPGAOUT_CLK1_N	1	O	↓	LVCMOS18	1.8V	65	Si5326	Si5326 Clock Neg
	FPGAOUT_CLK1_P	1	O	↑	LVCMOS18	1.8V	65	Si5326	Si5326 Clock Pos
	FPGAOUT_CLK2_N	1	O	↓	LVCMOS18	1.8V	65	Si5326	Si5326 Clock Neg
14	FPGAOUT_CLK2_P	1	O	↑	LVCMOS18	1.8V	65	Si5326	Si5326 Clock Pos

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6. FPGA の端子表

FPGA の端子の詳細を以下に表でまとめる。

表 43 FPGA 端子表

Pin Number	Signal Name	Bank	Type	Pin Name	SLR Region	Use	IO Standard	IO Bank	Drive (mA)	Output Impedance (ohms)
A2				MGTRREF_RN		Gigabit				
A3				MGTAVTTRCAL_RN		Gigabit				
A4				GND		GND				
A5	GTHRX_233_03N			MGTHRXN3_233	1	INPUT				
A6	GTHRX_233_03P			MGTHRXP3_233	1	INPUT				
A7				GND		GND				
A8				GND		GND				
A9	GTHTX_233_03N			MGTHTXN3_233	1	OUTPUT				
A10	GTHTX_233_03P			MGTHTXP3_233	1	OUTPUT				
A11				GND		GND				
A12		High	Performance	IO_L24N_T3U_N11_49	1	User IO		49		
A13		High	Performance	IO_L24P_T3U_N10_49	1	User IO		49		
A14	FPGA_TP[13]	High	Performance	IO_L21N_T3L_N5_AD8N_49	1	OUTPUT	LVCMOS18	49	12	
A15		High	Performance	IO_L23N_T3U_N9_49	1	User IO		49		
A16		High	Performance	VCCO_50		VCCO		50		
A17		High	Performance	IO_L24N_T3U_N11_50	1	User IO		50		
A18		High	Performance	IO_L24P_T3U_N10_50	1	User IO		50		
A19		High	Performance	IO_L23N_T3U_N9_50	1	User IO		50		
A20		High	Performance	IO_L23P_T3U_N8_50	1	User IO		50		
A21				GND		GND				
A22	DDR4_C0_DQ[11]	High	Performance	IO_L21N_T3L_N5_AD8N_51	1	BIDIR	POD12_DCI	51		40

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A23	DDR4_C0_DQ[10]	High	Performance	IO_L21P_T3L_N4_AD8P_51	1	BIDIR	POD12_DCI	51		40
A24	DDR4_C0_DQ[12]	High	Performance	IO_L23N_T3U_N9_51	1	BIDIR	POD12_DCI	51		40
A25	DDR4_C0_DQ[8]	High	Performance	IO_L23P_T3U_N8_51	1	BIDIR	POD12_DCI	51		40
A26		High	Performance	VCCO_53		VCCO		53		
A27		High	Performance	IO_T1U_N12_53	1	User IO		53		
A28	DDR4_C0_DQ[46]	High	Performance	IO_L23P_T3U_N8_52	1	BIDIR	POD12_DCI	52		40
A29	DDR4_C0_DQ[47]	High	Performance	IO_L23N_T3U_N9_52	1	BIDIR	POD12_DCI	52		40
A30	DDR4_C0_DQ[45]	High	Performance	IO_L24N_T3U_N11_52	1	BIDIR	POD12_DCI	52		40
A31				GND		GND				
A32	DDR4_C0_DQ[37]	High	Performance	IO_L17P_T2U_N8_AD10P_52	1	BIDIR	POD12_DCI	52		40
A33	DDR4_C0_DQ[35]	High	Performance	IO_L17N_T2U_N9_AD10N_52	1	BIDIR	POD12_DCI	52		40
A34	DDR4_C0_DQS_C[4]	High	Performance	IO_L16N_T2U_N7_QBC_AD3N_52	1	BIDIR	DIFF_POD12_DCI	52		40
A35				GND		GND				
A36	GTHTX_133_03P			MGTHTXP3_133	1	OUTPUT				
A37	GTHTX_133_03N			MGTHTXN3_133	1	OUTPUT				
A38				GND		GND				
A39				MGTAVTTRCAL_LN		Gigabit				
A40				MGTRREF_LN		Gigabit				
A41				GND		GND				
AA1	GTHRX_228_02N			MGTHRXN2_228	0	INPUT				
AA2	GTHRX_228_02P			MGTHRXP2_228	0	INPUT				
AA3				GND		GND				
AA4				MGTAVTT_RS		Gigabit Power				
AA5	GTHTX_228_02N			MGTHTXN2_228	0	OUTPUT				
AA6	GTHTX_228_02P			MGTHTXP2_228	0	OUTPUT				
AA7				GND		GND				

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AA8				MGTAVCC_RN		Gigabit Power				
AA9		Dedi	cated	M2_0		Config		0		
AA10				VCCBRAM		VCCBRAM				
AA11		Dedi	cated	TMS_0		Config		0		
AA12				VCCINT		VCCINT				
AA13				GND		GND				
AA14				VCCINT		VCCINT				
AA15				GND		GND				
AA16		Dedi	cated	VREFN		XADC		0		
AA17				VP	0	XADC				
AA18				VCCINT		VCCINT				
AA19				GND		GND				
AA20				VCCINT		VCCINT				
AA21				GND		GND				
AA22				VCCINT		VCCINT				
AA23				GND		GND				
AA24				VCCAUX_IO		VCCAUX				
AA25				GND		GND				
AA26				VCCAUX		VCCAUX				
AA27	DDR4_C1_DQS_C[2]	High	Performance	IO_L22N_T3U_N7_DBC_AD0N_47	0	BIDIR	DIFF_POD12_DCI	47		40
AA28	DDR4_C1_DQ[17]	High	Performance	IO_L23P_T3U_N8_47	0	BIDIR	POD12_DCI	47		40
AA29	DDR4_C1_DQ[18]	High	Performance	IO_L23N_T3U_N9_47	0	BIDIR	POD12_DCI	47		40
AA30	DDR4_C1_DQ[22]	High	Performance	IO_L21N_T3L_N5_AD8N_47	0	BIDIR	POD12_DCI	47		40
AA31				GND		GND				
AA32	DDR4_C1_DQ[30]	High	Performance	IO_L14P_T2L_N2_GC_47	0	BIDIR	POD12_DCI	47		40
AA33	DDR4_C1_DQ[24]	High	Performance	IO_L14N_T2L_N3_GC_47	0	BIDIR	POD12_DCI	47		40

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AA34	DDR4_C1_DQ[26]	High	Performance	IO_L17P_T2U_N8_AD10P_47	0	BIDIR	POD12_DCI	47		40
AA35				GND		GND				
AA36	GTH_FPGA_131_0P			MGTREFCLK0P_131	1	INPUT				
AA37	GTH_FPGA_131_0N			MGTREFCLK0N_131	1	INPUT				
AA38				MGTAVTT_L		Gigabit Power				
AA39				GND		GND				
AA40				GND		GND				
AA41	GTHRX_131_00P			MGTHRXP0_131	1	INPUT				
AA42	GTHRX_131_00N			MGTHRXN0_131	1	INPUT				
AB1				GND		GND				
AB2				GND		GND				
AB3	GTHRX_228_01N			MGTHRXN1_228	0	INPUT				
AB4	GTHRX_228_01P			MGTHRXP1_228	0	INPUT				
AB5				GND		GND				
AB6				MGTAVTT_RS		Gigabit Power				
AB7				MGTREFCLK0N_228	0	Gigabit				
AB8				MGTREFCLK0P_228	0	Gigabit				
AB9		Dedi	cated	POR_OVERRIDE		Config		0		
AB10				GND		GND				
AB11				VCCINT		VCCINT				
AB12				GND		GND				
AB13				VCCINT		VCCINT				
AB14				GND		GND				
AB15				VCCINT		VCCINT				
AB16				VN	0	XADC				
AB17		Dedi	cated	VREFP		XADC		0		
AB18				GND		GND				

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AB19				VCCINT		VCCINT				
AB20				GND		GND				
AB21				VCCINT		VCCINT				
AB22				GND		GND				
AB23				VCCINT_IO		VCCINT				
AB24				GND		GND				
AB25				VCCAUX_IO		VCCAUX				
AB26				GND		GND				
AB27		High	Performance	IO_T3U_N12_47	0	User IO		47		
AB28				GND		GND				
AB29	DDR4_C1_DQ[20]	High	Performance	IO_L20P_T3L_N2_AD1P_47	0	BIDIR	POD12_DCI	47		40
AB30	DDR4_C1_DQ[16]	High	Performance	IO_L20N_T3L_N3_AD1N_47	0	BIDIR	POD12_DCI	47		40
AB31	DDR4_C1_DM_DBI_N[3]	High	Performance	IO_L13P_T2L_N0_GC_QBC_47	0	BIDIR	POD12_DCI	47		40
AB32		High	Performance	IO_L13N_T2L_N1_GC_QBC_47	0	GCLK		47		
AB33		High	Performance	VCCO_47		VCCO		47		
AB34	DDR4_C1_DQ[28]	High	Performance	IO_L17N_T2U_N9_AD10N_47	0	BIDIR	POD12_DCI	47		40
AB35				GND		GND				
AB36				MGTVCCAUX_L		Gigabit Power				
AB37				GND		GND				
AB38	GTHTX_128_03P			MGTHTXP3_128	0	OUTPUT				
AB39	GTHTX_128_03N			MGTHTXN3_128	0	OUTPUT				
AB40				GND		GND				
AB41				GND		GND				
AB42				GND		GND				
AC1	GTHRX_228_00N			MGTHRXN0_228	0	INPUT				
AC2	GTHRX_228_00P			MGTHRXP0_228	0	INPUT				

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AC3				GND		GND				
AC4				MGTAVTT_RS		Gigabit Power				
AC5	GTHTX_228_01N			MGTHTXN1_228	0	OUTPUT				
AC6	GTHTX_228_01P			MGTHTXP1_228	0	OUTPUT				
AC7				GND		GND				
AC8				MGTVCCAUX_RS		Gigabit Power				
AC9		Dedi	cated	PROGRAM_B_0		Config		0		
AC10				VCCBRAM		VCCBRAM				
AC11		Dedi	cated	CCLK_0		Config		0		
AC12				VCCINT		VCCINT				
AC13				GND		GND				
AC14				VCCINT		VCCINT				
AC15				GND		GND				
AC16		Dedi	cated	DXN		Temp Sensor		0		
AC17		Dedi	cated	DXP		Temp Sensor		0		
AC18				VCCINT		VCCINT				
AC19				GND		GND				
AC20				VCCINT		VCCINT				
AC21				GND		GND				
AC22				VCCINT		VCCINT				
AC23				GND		GND				
AC24				VCCAUX_IO		VCCAUX				
AC25				GND		GND				
AC26				VCCAUX		VCCAUX				
AC27		High	Performance	VREF_47		Voltage		47		
AC28	DDR4_C1_DQ[43]	High	Performance	IO_L6P_T0U_N10_AD6P_47	0	BIDIR	POD12_DCI	47		40
AC29	DDR4_C1_DQ[46]	High	Performance	IO_L6N_T0U_N11_AD6N_47	0	BIDIR	POD12_DCI	47		40

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AC30		High	Performance	VCCO_47		VCCO		47		
AC31	DDR4_C1_DQ[39]	High	Performance	IO_L11P_T1U_N8_GC_47	0	BIDIR	POD12_DCI	47		40
AC32	DDR4_C1_DQ[37]	High	Performance	IO_L12P_T1U_N10_GC_47	0	BIDIR	POD12_DCI	47		40
AC33	DDR4_C1_DQ[38]	High	Performance	IO_L12N_T1U_N11_GC_47	0	BIDIR	POD12_DCI	47		40
AC34		High	Performance	IO_T2U_N12_47	0	User IO		47		
AC35				GND		GND				
AC36	GTH_FPGA_128_1P			MGTREFCLK1P_128	0	INPUT				
AC37	GTH_FPGA_128_1N			MGTREFCLK1N_128	0	INPUT				
AC38				GND		GND				
AC39				MGTAVTT_L		Gigabit Power				
AC40				GND		GND				
AC41	GTHRX_128_03P			MGTHRXP3_128	0	INPUT				
AC42	GTHRX_128_03N			MGTHRXN3_128	0	INPUT				
AD1				GND		GND				
AD2				MGTAVTT_RS		Gigabit Power				
AD3	GTHTX_228_00N			MGTHTXN0_228	0	OUTPUT				
AD4	GTHTX_228_00P			MGTHTXP0_228	0	OUTPUT				
AD5				GND		GND				
AD6				MGTAVCC_RS		Gigabit Power				
AD7	GTH_FPGA_227_1N			MGTREFCLK1N_227	0	INPUT				
AD8	GTH_FPGA_227_1P			MGTREFCLK1P_227	0	INPUT				
AD9		Dedi	cated	RDWR_FCS_B_0		Config		0		
AD10				GND		GND				
AD11				VCCINT		VCCINT				
AD12				GND		GND				
AD13				VCCINT		VCCINT				
AD14				GND		GND				

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AD15				VCCINT		VCCINT				
AD16				GND		GND				
AD17				VCCINT		VCCINT				
AD18				GND		GND				
AD19				VCCINT		VCCINT				
AD20				GND		GND				
AD21				VCCINT		VCCINT				
AD22				GND		GND				
AD23				VCCINT_IO		VCCINT				
AD24				GND		GND				
AD25				VCCAUX_IO		VCCAUX				
AD26				GND		GND				
AD27		High	Performance	VCCO_47		VCCO		47		
AD28	DDR4_C1_DQ[47]	High	Performance	IO_L3P_T0L_N4_AD15P_47	0	BIDIR	POD12_DCI	47		40
AD29	DDR4_C1_DQS_T[5]	High	Performance	IO_L4P_T0U_N6_DBC_AD7P_47	0	BIDIR	DIFF_POD12_DCI	47		40
AD30	DDR4_C1_DQS_C[5]	High	Performance	IO_L4N_T0U_N7_DBC_AD7N_47	0	BIDIR	DIFF_POD12_DCI	47		40
AD31	DDR4_C1_DQ[35]	High	Performance	IO_L11N_T1U_N9_GC_47	0	BIDIR	POD12_DCI	47		40
AD32				GND		GND				
AD33	DDR4_C1_DQS_T[4]	High	Performance	IO_L10P_T1U_N6_QBC_AD4P_47	0	BIDIR	DIFF_POD12_DCI	47		40
AD34	DDR4_C1_DQS_C[4]	High	Performance	IO_L10N_T1U_N7_QBC_AD4N_47	0	BIDIR	DIFF_POD12_DCI	47		40
AD35				GND		GND				
AD36				GND		GND				
AD37				MGTAVCC_L		Gigabit Power				
AD38	GTHTX_128_02P			MGTHTXP2_128	0	OUTPUT				
AD39	GTHTX_128_02N			MGTHTXN2_128	0	OUTPUT				

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AD40				GND		GND				
AD41				GND		GND				
AD42				GND		GND				
AE1	GTHRX_227_03N			MGTHRXN3_227	0	INPUT				
AE2	GTHRX_227_03P			MGTHRXP3_227	0	INPUT				
AE3				GND		GND				
AE4				MGTAVTT_RS		Gigabit Power				
AE5	GTHTX_227_03N			MGTHTXN3_227	0	OUTPUT				
AE6	GTHTX_227_03P			MGTHTXP3_227	0	OUTPUT				
AE7				GND		GND				
AE8				MGTAVCC_RS		Gigabit Power				
AE9		Dedi	cated	D02_0		Config		0		
AE10		Dedi	cated	VCCO_0		VCCO		0		
AE11		Dedi	cated	TCK_0		Config		0		
AE12				VCCINT		VCCINT				
AE13				GND		GND				
AE14				VCCINT		VCCINT				
AE15				GND		GND				
AE16				VCCINT		VCCINT				
AE17				GND		GND				
AE18				VCCINT		VCCINT				
AE19				GND		GND				
AE20				VCCINT		VCCINT				
AE21				GND		GND				
AE22				VCCINT_IO		VCCINT				
AE23				GND		GND				
AE24				VCCAUX_IO		VCCAUX				

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AE25				GND		GND				
AE26				VCCAUX		VCCAUX				
AE27		High	Performance	IO_T0U_N12_VRP_47	0	User IO		47		
AE28	DDR4_C1_DQ[41]	High	Performance	IO_L3N_T0L_N5_AD15N_47	0	BIDIR	POD12_DCI	47		40
AE29				GND		GND				
AE30	DDR4_C1_DQ[45]	High	Performance	IO_L2P_T0L_N2_47	0	BIDIR	POD12_DCI	47		40
AE31	DDR4_C1_DQ[42]	High	Performance	IO_L2N_T0L_N3_47	0	BIDIR	POD12_DCI	47		40
AE32		High	Performance	IO_T1U_N12_47	0	User IO		47		
AE33	DDR4_C1_DQ[33]	High	Performance	IO_L8P_T1L_N2_AD5P_47	0	BIDIR	POD12_DCI	47		40
AE34		High	Performance	VCCO_47		VCCO		47		
AE35				GND		GND				
AE36	GTH_FPGA_128_0P			MGTREFCLK0P_128	0	INPUT				
AE37	GTH_FPGA_128_0N			MGTREFCLK0N_128	0	INPUT				
AE38				MGTAVTT_L		Gigabit Power				
AE39				GND		GND				
AE40				GND		GND				
AE41	GTHRX_128_02P			MGTHRXP2_128	0	INPUT				
AE42	GTHRX_128_02N			MGTHRXN2_128	0	INPUT				
AF1				GND		GND				
AF2				GND		GND				
AF3	GTHTX_227_02N			MGTHTXN2_227	0	OUTPUT				
AF4	GTHTX_227_02P			MGTHTXP2_227	0	OUTPUT				
AF5				GND		GND				
AF6				MGTAVTT_RS		Gigabit Power				
AF7	GTH_FPGA_227_0N			MGTREFCLK0N_227	0	INPUT				
AF8	GTH_FPGA_227_0P			MGTREFCLK0P_227	0	INPUT				
AF9		Dedi	cated	D03_0		Config		0		

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AF10				GND		GND				
AF11				VCCINT		VCCINT				
AF12				GND		GND				
AF13				VCCINT		VCCINT				
AF14				GND		GND				
AF15				VCCINT		VCCINT				
AF16				GND		GND				
AF17				VCCINT		VCCINT				
AF18				GND		GND				
AF19				VCCINT		VCCINT				
AF20				GND		GND				
AF21				VCCINT		VCCINT				
AF22				GND		GND				
AF23				VCCAUX_IO		VCCAUX				
AF24				GND		GND				
AF25				VCCAUX		VCCAUX				
AF26				GND		GND				
AF27	DDR4_C1_DM_DBI_N[5]	High	Performance	IO_L1P_T0L_N0_DBC_47	0	BIDIR	POD12_DCI	47		40
AF28		High	Performance	IO_L1N_T0L_N1_DBC_47	0	User IO		47		
AF29	DDR4_C1_DQ[44]	High	Performance	IO_L5P_T0U_N8_AD14P_47	0	BIDIR	POD12_DCI	47		40
AF30	DDR4_C1_DQ[40]	High	Performance	IO_L5N_T0U_N9_AD14N_47	0	BIDIR	POD12_DCI	47		40
AF31		High	Performance	VCCO_47		VCCO		47		
AF32	DDR4_C1_DQ[36]	High	Performance	IO_L9P_T1L_N4_AD12P_47	0	BIDIR	POD12_DCI	47		40
AF33	DDR4_C1_DQ[34]	High	Performance	IO_L8N_T1L_N3_AD5N_47	0	BIDIR	POD12_DCI	47		40
AF34	DDR4_C1_DM_DBI_N[4]	High	Performance	IO_L7P_T1L_N0_QBC_AD13P_47	0	BIDIR	POD12_DCI	47		40
AF35				GND		GND				

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AF36				MGTAVCC_L		Gigabit Power				
AF37				GND		GND				
AF38	GTHTX_128_01P			MGTHTXP1_128	0	OUTPUT				
AF39	GTHTX_128_01N			MGTHTXN1_128	0	OUTPUT				
AF40				GND		GND				
AF41				GND		GND				
AF42				GND		GND				
AG1	GTHRX_227_02N			MGTHRXN2_227	0	INPUT				
AG2	GTHRX_227_02P			MGTHRXP2_227	0	INPUT				
AG3				GND		GND				
AG4				MGTAVTT_RS		Gigabit Power				
AG5	GTHTX_227_01N			MGTHTXN1_227	0	OUTPUT				
AG6	GTHTX_227_01P			MGTHTXP1_227	0	OUTPUT				
AG7				GND		GND				
AG8				MGTVCCAUX_RS		Gigabit Power				
AG9		Dedi	cated	D01_DIN_0		Config		0		
AG10		Dedi	cated	VCCO_0		VCCO		0		
AG11		High	Performance	IO_L24N_T3U_N11_66	0	User IO		66		
AG12		High	Performance	IO_L24P_T3U_N10_66	0	User IO		66		
AG13				GND		GND				
AG14				VCCINT		VCCINT				
AG15				GND		GND				
AG16				VCCINT		VCCINT				
AG17				GND		GND				
AG18				VCCINT		VCCINT				
AG19				GND		GND				
AG20				VCCINT		VCCINT				

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AG21				GND		GND				
AG22				VCCINT_IO		VCCINT				
AG23				GND		GND				
AG24				VCCAUX_IO		VCCAUX				
AG25		High	Performance	IO_L23P_T3U_N8_67	0	User IO		67		
AG26		High	Performance	IO_L23N_T3U_N9_67	0	User IO		67		
AG27		High	Performance	IO_L21P_T3L_N4_AD8P_67	0	User IO		67		
AG28		High	Performance	VCCO_46		VCCO		46		
AG29	DDR4_C1_DQS_T[7]	High	Performance	IO_L16P_T2U_N6_QBC_AD3P_46	0	BIDIR	DIFF_POD12_DCI	46		40
AG30	DDR4_C1_DQS_C[7]	High	Performance	IO_L16N_T2U_N7_QBC_AD3N_46	0	BIDIR	DIFF_POD12_DCI	46		40
AG31	DDR4_C1_DQ[59]	High	Performance	IO_L18P_T2U_N10_AD2P_46	0	BIDIR	POD12_DCI	46		40
AG32	DDR4_C1_DQ[32]	High	Performance	IO_L9N_T1L_N5_AD12N_47	0	BIDIR	POD12_DCI	47		40
AG33				GND		GND				
AG34		High	Performance	IO_L7N_T1L_N1_QBC_AD13N_47	0	User IO		47		
AG35				GND		GND				
AG36				MGTAVTTRCAL_LS		Gigabit				
AG37				MGTRREF_LS		Gigabit				
AG38				GND		GND				
AG39				MGTAVTT_L		Gigabit Power				
AG40				GND		GND				
AG41	GTHRX_128_01P			MGTHRXP1_128	0	INPUT				
AG42	GTHRX_128_01N			MGTHRXN1_128	0	INPUT				
AH1				GND		GND				
AH2				MGTAVTT_RS		Gigabit Power				
AH3	GTHRX_227_01N			MGTHRXN1_227	0	INPUT				

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AH4	GTHRX_227_01P			MGTHRXP1_227	0	INPUT				
AH5				GND		GND				
AH6				MGTAVCC_RS		Gigabit Power				
AH7	GTH_FPGA_226_1N			MGTREFCLK1N_226	0	INPUT				
AH8	GTH_FPGA_226_1P			MGTREFCLK1P_226	0	INPUT				
AH9		Dedi	cated	D00_MOSI_0		Config		0		
AH10				GND		GND				
AH11		High	Performance	IO_L23N_T3U_N9_66	0	User IO		66		
AH12		High	Performance	IO_L23P_T3U_N8_66	0	User IO		66		
AH13		High	Performance	IO_L21P_T3L_N4_AD8P_66	0	User IO		66		
AH14		High	Performance	IO_T3U_N12_66	0	User IO		66		
AH15		High	Performance	VCCO_66		VCCO		66		
AH16		High	Performance	IO_L7P_T1L_N0_QBC_AD13P_66	0	User IO		66		
AH17		High	Performance	VREF_66		Voltage		66		
AH18		High	Performance	IO_T0U_N12_VRP_67	0	User IO		67		
AH19		High	Performance	IO_L4P_T0U_N6_DBC_AD7P_67	0	User IO		67		
AH20				GND		GND				
AH21		High	Performance	IO_L3P_T0L_N4_AD15P_67	0	User IO		67		
AH22		High	Performance	VREF_67		Voltage		67		
AH23		High	Performance	IO_L20P_T3L_N2_AD1P_67	0	User IO		67		
AH24		High	Performance	IO_T3U_N12_67	0	User IO		67		
AH25		High	Performance	VCCO_67		VCCO		67		
AH26		High	Performance	IO_L24P_T3U_N10_67	0	User IO		67		
AH27		High	Performance	IO_L21N_T3L_N5_AD8N_67	0	User IO		67		
AH28	DDR4_C1_DQ[61]	High	Performance	IO_L17P_T2U_N8_AD10P_46	0	BIDIR	POD12_DCI	46		40
AH29	DDR4_C1_DQ[57]	High	Performance	IO_L17N_T2U_N9_AD10N_46	0	BIDIR	POD12_DCI	46		40
AH30				GND		GND				

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AH31	DDR4_C1_DQ[62]	High	Performance	IO_L18N_T2U_N11_AD2N_46	0	BIDIR	POD12_DCI	46		40
AH32		High	Performance	IO_T3U_N12_46	0	User IO		46		
AH33	DDR4_C1_DQ[53]	High	Performance	IO_L24P_T3U_N10_46	0	BIDIR	POD12_DCI	46		40
AH34	DDR4_C1_DQS_T[6]	High	Performance	IO_L22P_T3U_N6_DBC_AD0P_46	0	BIDIR	DIFF_POD12_DCI	46		40
AH35				GND		GND				
AH36				GND		GND				
AH37				MGTAVCC_L		Gigabit Power				
AH38	GTHTX_128_00P			MGTHTXP0_128	0	OUTPUT				
AH39	GTHTX_128_00N			MGTHTXN0_128	0	OUTPUT				
AH40				GND		GND				
AH41				GND		GND				
AH42				GND		GND				
AJ1	GTHRX_227_00N			MGTHRXN0_227	0	INPUT				
AJ2	GTHRX_227_00P			MGTHRXP0_227	0	INPUT				
AJ3				GND		GND				
AJ4				GND		GND				
AJ5	GTHTX_227_00N			MGTHTXN0_227	0	OUTPUT				
AJ6	GTHTX_227_00P			MGTHTXP0_227	0	OUTPUT				
AJ7				GND		GND				
AJ8				MGTAVCC_RS		Gigabit Power				
AJ9		Dedi	cated	VBATT		Config		0		
AJ10		High	Performance	IO_L22N_T3U_N7_DBC_AD0N_66	0	User IO		66		
AJ11		High	Performance	IO_L22P_T3U_N6_DBC_AD0P_66	0	User IO		66		
AJ12		High	Performance	VCCO_66		VCCO		66		
AJ13		High	Performance	IO_L21N_T3L_N5_AD8N_66	0	User IO		66		
AJ14		High	Performance	IO_L9N_T1L_N5_AD12N_66	0	User IO		66		

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AJ15		High	Performance	IO_L9P_T1L_N4_AD12P_66	0	User IO		66		
AJ16		High	Performance	IO_L7N_T1L_N1_QBC_AD13N_66	0	User IO		66		
AJ17				GND		GND				
AJ18		High	Performance	IO_L2P_T0L_N2_67	0	User IO		67		
AJ19		High	Performance	IO_L2N_T0L_N3_67	0	User IO		67		
AJ20		High	Performance	IO_L4N_T0U_N7_DBC_AD7N_67	0	User IO		67		
AJ21		High	Performance	IO_L3N_T0L_N5_AD15N_67	0	User IO		67		
AJ22		High	Performance	VCCO_67		VCCO		67		
AJ23		High	Performance	IO_L14P_T2L_N2_GC_67	0	GCLK		67		
AJ24		High	Performance	IO_L20N_T3L_N3_AD1N_67	0	User IO		67		
AJ25		High	Performance	IO_L22P_T3U_N6_DBC_AD0P_67	0	User IO		67		
AJ26		High	Performance	IO_L24N_T3U_N11_67	0	User IO		67		
AJ27				GND		GND				
AJ28	DDR4_C1_DQ[63]	High	Performance	IO_L15P_T2L_N4_AD11P_46	0	BIDIR	POD12_DCI	46		40
AJ29	DDR4_C1_DQ[58]	High	Performance	IO_L15N_T2L_N5_AD11N_46	0	BIDIR	POD12_DCI	46		40
AJ30	DDR4_C1_DQ[56]	High	Performance	IO_L14P_T2L_N2_GC_46	0	BIDIR	POD12_DCI	46		40
AJ31	DDR4_C1_DQ[60]	High	Performance	IO_L14N_T2L_N3_GC_46	0	BIDIR	POD12_DCI	46		40
AJ32		High	Performance	VCCO_46		VCCO		46		
AJ33	DDR4_C1_DQ[55]	High	Performance	IO_L24N_T3U_N11_46	0	BIDIR	POD12_DCI	46		40
AJ34	DDR4_C1_DQS_C[6]	High	Performance	IO_L22N_T3U_N7_DBC_AD0N_46	0	BIDIR	DIFF_POD12_DCI	46		40
AJ35				GND		GND				
AJ36				GND		GND				
AJ37				GND		GND				
AJ38				GND		GND				
AJ39				GND		GND				
AJ40				GND		GND				

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AJ41	GTHRX_128_00P			MGTHRXP0_128	0	INPUT				
AJ42	GTHRX_128_00N			MGTHRXN0_128	0	INPUT				
AK1				GND		GND				
AK2				GND		GND				
AK3	GTHRX_226_03N			MGTHRXN3_226	0	INPUT				
AK4	GTHRX_226_03P			MGTHRXP3_226	0	INPUT				
AK5				GND		GND				
AK6				MGTAVTT_RS		Gigabit Power				
AK7	GTH_FPGA_226_0N			MGTREFCLK0N_226	0	INPUT				
AK8	GTH_FPGA_226_0P			MGTREFCLK0P_226	0	INPUT				
AK9				GND		GND				
AK10		High	Performance	IO_L20N_T3L_N3_AD1N_66	0	User IO		66		
AK11		High	Performance	IO_L20P_T3L_N2_AD1P_66	0	User IO		66		
AK12		High	Performance	IO_L19N_T3L_N1_DBC_AD9N_66	0	User IO		66		
AK13		High	Performance	IO_L19P_T3L_N0_DBC_AD9P_66	0	User IO		66		
AK14				GND		GND				
AK15		High	Performance	IO_L12N_T1U_N11_GC_66	0	GCLK		66		
AK16		High	Performance	IO_L12P_T1U_N10_GC_66	0	GCLK		66		
AK17		High	Performance	IO_T1U_N12_66	0	User IO		66		
AK18		High	Performance	IO_L8P_T1L_N2_AD5P_66	0	User IO		66		
AK19		High	Performance	VCCO_67		VCCO		67		
AK20		High	Performance	IO_L1P_T0L_N0_DBC_67	0	User IO		67		
AK21		High	Performance	IO_L1N_T0L_N1_DBC_67	0	User IO		67		
AK22		High	Performance	IO_L5P_T0U_N8_AD14P_67	0	User IO		67		
AK23		High	Performance	IO_L14N_T2L_N3_GC_67	0	GCLK		67		
AK24				GND		GND				

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AK25		High	Performance	IO_L22N_T3U_N7_DBC_AD0N_67	0	User IO		67		
AK26		High	Performance	IO_L19P_T3L_N0_DBC_AD9P_67	0	User IO		67		
AK27		High	Performance	IO_L19N_T3L_N1_DBC_AD9N_67	0	User IO		67		
AK28		High	Performance	IO_T2U_N12_46	0	User IO		46		
AK29		High	Performance	VCCO_46		VCCO		46		
AK30	DDR4_C1_DM_DBI_N[7]	High	Performance	IO_L13P_T2L_N0_GC_QBC_46	0	BIDIR	POD12_DCI	46		40
AK31		High	Performance	IO_L13N_T2L_N1_GC_QBC_46	0	GCLK		46		
AK32	DDR4_C1_DQ[52]	High	Performance	IO_L21P_T3L_N4_AD8P_46	0	BIDIR	POD12_DCI	46		40
AK33	DDR4_C1_DM_DBI_N[6]	High	Performance	IO_L19P_T3L_N0_DBC_AD9P_46	0	BIDIR	POD12_DCI	46		40
AK34				GND		GND				
AK35	DDR4_C1_DQ[49]	High	Performance	IO_L20P_T3L_N2_AD1P_46	0	BIDIR	POD12_DCI	46		40
AK36	DDR4_C1_DQ[51]	High	Performance	IO_L20N_T3L_N3_AD1N_46	0	BIDIR	POD12_DCI	46		40
AK37	DDR4_C2_DQ[47]	High	Performance	IO_L23P_T3U_N8_45	0	BIDIR	POD12_DCI	45		40
AK38	DDR4_C2_DQ[41]	High	Performance	IO_L23N_T3U_N9_45	0	BIDIR	POD12_DCI	45		40
AK39		High	Performance	VCCO_45		VCCO		45		
AK40				GND		GND				
AK41				GND		GND				
AK42				GND		GND				
AL1	GTHRX_226_02N			MGTHRXN2_226	0	INPUT				
AL2	GTHRX_226_02P			MGTHRXP2_226	0	INPUT				
AL3				GND		GND				
AL4				MGTAVTT_RS		Gigabit Power				
AL5	GTHTX_226_03N			MGTHTXN3_226	0	OUTPUT				
AL6	GTHTX_226_03P			MGTHTXP3_226	0	OUTPUT				
AL7				GND		GND				

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AL8				MGTAVCC_RS		Gigabit Power				
AL9				GND		GND				
AL10		High	Performance	IO_L17P_T2U_N8_AD10P_66	0	User IO		66		
AL11				GND		GND				
AL12		High	Performance	IO_L13N_T2L_N1_GC_QBC_66	0	GCLK		66		
AL13		High	Performance	IO_L13P_T2L_N0_GC_QBC_66	0	GCLK		66		
AL14		High	Performance	IO_L11N_T1U_N9_GC_66	0	GCLK		66		
AL15		High	Performance	IO_L11P_T1U_N8_GC_66	0	GCLK		66		
AL16		High	Performance	VCCO_66		VCCO		66		
AL17		High	Performance	IO_L10P_T1U_N6_QBC_AD4P_66	0	User IO		66		
AL18		High	Performance	IO_L8N_T1L_N3_AD5N_66	0	User IO		66		
AL19		High	Performance	IO_L6P_T0U_N10_AD6P_67	0	User IO		67		
AL20		High	Performance	IO_L6N_T0U_N11_AD6N_67	0	User IO		67		
AL21				GND		GND				
AL22		High	Performance	IO_L5N_T0U_N9_AD14N_67	0	User IO		67		
AL23		High	Performance	IO_L13P_T2L_N0_GC_QBC_67	0	GCLK		67		
AL24		High	Performance	IO_L13N_T2L_N1_GC_QBC_67	0	GCLK		67		
AL25		High	Performance	IO_L17P_T2U_N8_AD10P_67	0	User IO		67		
AL26		High	Performance	VCCO_67		VCCO		67		
AL27		High	Performance	VREF_46		Voltage		46		
AL28		High	Performance	IO_T1U_N12_46	0	User IO		46		
AL29	DDR4_C2_DQ[60]	High	Performance	IO_L12P_T1U_N10_GC_46	0	BIDIR	POD12_DCI	46		40
AL30	DDR4_C2_DQ[62]	High	Performance	IO_L12N_T1U_N11_GC_46	0	BIDIR	POD12_DCI	46		40
AL31				GND		GND				
AL32	DDR4_C1_DQ[48]	High	Performance	IO_L21N_T3L_N5_AD8N_46	0	BIDIR	POD12_DCI	46		40
AL33		High	Performance	IO_L19N_T3L_N1_DBC_AD9N_46	0	User IO		46		

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AL34	DDR4_C1_DQ[54]	High	Performance	IO_L23P_T3U_N8_46	0	BIDIR	POD12_DCI	46		40
AL35	DDR4_C1_DQ[50]	High	Performance	IO_L23N_T3U_N9_46	0	BIDIR	POD12_DCI	46		40
AL36		High	Performance	VCCO_46		VCCO		46		
AL37	DDR4_C2_DM_DBI_N[5]	High	Performance	IO_L19P_T3L_N0_DBC_AD9P_45	0	BIDIR	POD12_DCI	45		40
AL38		High	Performance	IO_L19N_T3L_N1_DBC_AD9N_45	0	User IO		45		
AL39	DDR4_C2_DQ[45]	High	Performance	IO_L21P_T3L_N4_AD8P_45	0	BIDIR	POD12_DCI	45		40
AL40	DDR4_C2_DQ[39]	High	Performance	IO_L17P_T2U_N8_AD10P_45	0	BIDIR	POD12_DCI	45		40
AL41				GND		GND				
AL42		High	Performance	IO_T2U_N12_45	0	User IO		45		
AM1				GND		GND				
AM2				MGTAVTT_RS		Gigabit Power				
AM3	GTHTX_226_02N			MGTHTXN2_226	0	OUTPUT				
AM4	GTHTX_226_02P			MGTHTXP2_226	0	OUTPUT				
AM5				GND		GND				
AM6				MGTAVCC_RS		Gigabit Power				
AM7	GTH_FPGA_225_1N			MGTREFCLK1N_225	0	INPUT				
AM8	GTH_FPGA_225_1P			MGTREFCLK1P_225	0	INPUT				
AM9				GND		GND				
AM10		High	Performance	IO_L17N_T2U_N9_AD10N_66	0	User IO		66		
AM11		High	Performance	IO_L15P_T2L_N4_AD11P_66	0	User IO		66		
AM12		High	Performance	IO_L18P_T2U_N10_AD2P_66	0	User IO		66		
AM13		High	Performance	VCCO_66		VCCO		66		
AM14		High	Performance	IO_L14P_T2L_N2_GC_66	0	GCLK		66		
AM15		High	Performance	IO_L5P_T0U_N8_AD14P_66	0	User IO		66		
AM16		High	Performance	IO_L3P_T0L_N4_AD15P_66	0	User IO		66		
AM17		High	Performance	IO_L10N_T1U_N7_QBC_AD4N_6	0	User IO		66		

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				6						
AM18				GND		GND				
AM19		High	Performance	IO_L7P_T1L_N0_QBC_AD13P_67	0	User IO		67		
AM20		High	Performance	IO_L9P_T1L_N4_AD12P_67	0	User IO		67		
AM21		High	Performance	IO_L11P_T1U_N8_GC_67	0	GCLK		67		
AM22		High	Performance	IO_L11N_T1U_N9_GC_67	0	GCLK		67		
AM23		High	Performance	VCCO_67		VCCO		67		
AM24		High	Performance	IO_T2U_N12_67	0	User IO		67		
AM25		High	Performance	IO_L17N_T2U_N9_AD10N_67	0	User IO		67		
AM26		High	Performance	IO_L15P_T2L_N4_AD11P_67	0	User IO		67		
AM27	DDR4_C2_DQS_T[7]	High	Performance	IO_L10P_T1U_N6_QBC_AD4P_46	0	BIDIR	DIFF_POD12_DCI	46		40
AM28				GND		GND				
AM29	DDR4_C2_DQ[56]	High	Performance	IO_L11P_T1U_N8_GC_46	0	BIDIR	POD12_DCI	46		40
AM30	DDR4_C2_DQ[58]	High	Performance	IO_L11N_T1U_N9_GC_46	0	BIDIR	POD12_DCI	46		40
AM31		High	Performance	IO_T0U_N12_VRP_46	0	User IO		46		
AM32	DDR4_C2_DM_DBI_N[6]	High	Performance	IO_L1P_T0L_N0_DBC_46	0	BIDIR	POD12_DCI	46		40
AM33		High	Performance	VCCO_46		VCCO		46		
AM34	DDR4_C2_DQS_T[6]	High	Performance	IO_L4P_T0U_N6_DBC_AD7P_46	0	BIDIR	DIFF_POD12_DCI	46		40
AM35	DDR4_C2_DQ[53]	High	Performance	IO_L6P_T0U_N10_AD6P_46	0	BIDIR	POD12_DCI	46		40
AM36	DDR4_C2_DQ[55]	High	Performance	IO_L6N_T0U_N11_AD6N_46	0	BIDIR	POD12_DCI	46		40
AM37	DDR4_C2_DQS_T[5]	High	Performance	IO_L22P_T3U_N6_DBC_AD0P_45	0	BIDIR	DIFF_POD12_DCI	45		40
AM38				GND		GND				
AM39	DDR4_C2_DQ[43]	High	Performance	IO_L21N_T3L_N5_AD8N_45	0	BIDIR	POD12_DCI	45		40
AM40	DDR4_C2_DQ[37]	High	Performance	IO_L17N_T2U_N9_AD10N_45	0	BIDIR	POD12_DCI	45		40
AM41	DDR4_C2_DQ[35]	High	Performance	IO_L15P_T2L_N4_AD11P_45	0	BIDIR	POD12_DCI	45		40

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AM42	DDR4_C2_DQ[32]	High	Performance	IO_L15N_T2L_N5_AD11N_45	0	BIDIR	POD12_DCI	45		40
AN1	GTHRX_226_01N			MGTHRXN1_226	0	INPUT				
AN2	GTHRX_226_01P			MGTHRXP1_226	0	INPUT				
AN3				GND		GND				
AN4				MGTAVTT_RS		Gigabit Power				
AN5	GTHTX_226_01N			MGTHTXN1_226	0	OUTPUT				
AN6	GTHTX_226_01P			MGTHTXP1_226	0	OUTPUT				
AN7				GND		GND				
AN8				MGTAVCC_RS		Gigabit Power				
AN9				GND		GND				
AN10		High	Performance	VCCO_66		VCCO		66		
AN11		High	Performance	IO_L15N_T2L_N5_AD11N_66	0	User IO		66		
AN12		High	Performance	IO_L18N_T2U_N11_AD2N_66	0	User IO		66		
AN13		High	Performance	IO_L14N_T2L_N3_GC_66	0	GCLK		66		
AN14		High	Performance	IO_L5N_T0U_N9_AD14N_66	0	User IO		66		
AN15				GND		GND				
AN16		High	Performance	IO_L3N_T0L_N5_AD15N_66	0	User IO		66		
AN17		High	Performance	IO_L1P_T0L_N0_DBC_66	0	User IO		66		
AN18		High	Performance	IO_T0U_N12_VRP_66	0	User IO		66		
AN19		High	Performance	IO_L7N_T1L_N1_QBC_AD13N_67	0	User IO		67		
AN20		High	Performance	VCCO_67		VCCO		67		
AN21		High	Performance	IO_L9N_T1L_N5_AD12N_67	0	User IO		67		
AN22		High	Performance	IO_L12P_T1U_N10_GC_67	0	GCLK		67		
AN23		High	Performance	IO_L12N_T1U_N11_GC_67	0	GCLK		67		
AN24		High	Performance	IO_L16P_T2U_N6_QBC_AD3P_67	0	User IO		67		
AN25				GND		GND				

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AN26		High	Performance	IO_L15N_T2L_N5_AD11N_67	0	User IO		67		
AN27	DDR4_C2_DQS_C[7]	High	Performance	IO_L10N_T1U_N7_QBC_AD4N_46	0	BIDIR	DIFF_POD12_DCI	46		40
AN28	DDR4_C2_DQ[63]	High	Performance	IO_L9P_T1L_N4_AD12P_46	0	BIDIR	POD12_DCI	46		40
AN29	DDR4_C2_DQ[57]	High	Performance	IO_L9N_T1L_N5_AD12N_46	0	BIDIR	POD12_DCI	46		40
AN30		High	Performance	VCCO_46		VCCO		46		
AN31	DDR4_C2_DM_DBI_N[7]	High	Performance	IO_L7P_T1L_N0_QBC_AD13P_46	0	BIDIR	POD12_DCI	46		40
AN32		High	Performance	IO_L1N_T0L_N1_DBC_46	0	User IO		46		
AN33	DDR4_C2_DQ[54]	High	Performance	IO_L3P_T0L_N4_AD15P_46	0	BIDIR	POD12_DCI	46		40
AN34	DDR4_C2_DQS_C[6]	High	Performance	IO_L4N_T0U_N7_DBC_AD7N_46	0	BIDIR	DIFF_POD12_DCI	46		40
AN35				GND		GND				
AN36		High	Performance	IO_T3U_N12_45	0	User IO		45		
AN37	DDR4_C2_DQS_C[5]	High	Performance	IO_L22N_T3U_N7_DBC_AD0N_45	0	BIDIR	DIFF_POD12_DCI	45		40
AN38	DDR4_C2_DQ[40]	High	Performance	IO_L24P_T3U_N10_45	0	BIDIR	POD12_DCI	45		40
AN39	DDR4_C2_DM_DBI_N[4]	High	Performance	IO_L13P_T2L_N0_GC_QBC_45	0	BIDIR	POD12_DCI	45		40
AN40		High	Performance	VCCO_45		VCCO		45		
AN41	DDR4_C2_DQ[38]	High	Performance	IO_L18P_T2U_N10_AD2P_45	0	BIDIR	POD12_DCI	45		40
AN42	DDR4_C2_DQ[34]	High	Performance	IO_L18N_T2U_N11_AD2N_45	0	BIDIR	POD12_DCI	45		40
AP1				GND		GND				
AP2				GND		GND				
AP3	GTHRX_226_00N			MGTHRXN0_226	0	INPUT				
AP4	GTHRX_226_00P			MGTHRXP0_226	0	INPUT				
AP5				GND		GND				
AP6				MGTAVTT_RS		Gigabit Power				
AP7	GTHTX_226_00N			MGTHTXN0_226	0	OUTPUT				
AP8	GTHTX_226_00P			MGTHTXP0_226	0	OUTPUT				

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AP9				GND		GND				
AP10				GND		GND				
AP11				GND		GND				
AP12				GND		GND				
AP13		High	Performance	IO_T2U_N12_66	0	User IO		66		
AP14		High	Performance	IO_L6N_T0U_N11_AD6N_66	0	User IO		66		
AP15		High	Performance	IO_L6P_T0U_N10_AD6P_66	0	User IO		66		
AP16		High	Performance	IO_L1N_T0L_N1_DBC_66	0	User IO		66		
AP17		High	Performance	VCCO_66		VCCO		66		
AP18		High	Performance	IO_L2P_T0L_N2_66	0	User IO		66		
AP19		High	Performance	IO_L8P_T1L_N2_AD5P_67	0	User IO		67		
AP20		High	Performance	IO_L8N_T1L_N3_AD5N_67	0	User IO		67		
AP21		High	Performance	IO_L10P_T1U_N6_QBC_AD4P_67	0	User IO		67		
AP22				GND		GND				
AP23		High	Performance	IO_T1U_N12_67	0	User IO		67		
AP24		High	Performance	IO_L16N_T2U_N7_QBC_AD3N_67	0	User IO		67		
AP25		High	Performance	IO_L18P_T2U_N10_AD2P_67	0	User IO		67		
AP26		High	Performance	IO_L18N_T2U_N11_AD2N_67	0	User IO		67		
AP27		High	Range	VCCO_65		VCCO		65		
AP28		High	Range	IO_T3U_N12_PERSTN0_65	0	User IO		65		
AP29	DDR4_C2_DQ[59]	High	Performance	IO_L8P_T1L_N2_AD5P_46	0	BIDIR	POD12_DCI	46		40
AP30	DDR4_C2_DQ[61]	High	Performance	IO_L8N_T1L_N3_AD5N_46	0	BIDIR	POD12_DCI	46		40
AP31		High	Performance	IO_L7N_T1L_N1_QBC_AD13N_46	0	User IO		46		
AP32				GND		GND				
AP33	DDR4_C2_DQ[48]	High	Performance	IO_L2P_T0L_N2_46	0	BIDIR	POD12_DCI	46		40
AP34	DDR4_C2_DQ[50]	High	Performance	IO_L3N_T0L_N5_AD15N_46	0	BIDIR	POD12_DCI	46		40

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AP35	DDR4_C2_DQ[49]	High	Performance	IO_L5P_T0U_N8_AD14P_46	0	BIDIR	POD12_DCI	46		40
AP36		High	Performance	VREF_45		Voltage		45		
AP37		High	Performance	VCCO_45		VCCO		45		
AP38	DDR4_C2_DQ[42]	High	Performance	IO_L24N_T3U_N11_45	0	BIDIR	POD12_DCI	45		40
AP39		High	Performance	IO_L13N_T2L_N1_GC_QBC_45	0	GCLK		45		
AP40	DDR4_C2_DQ[36]	High	Performance	IO_L14P_T2L_N2_GC_45	0	BIDIR	POD12_DCI	45		40
AP41	DDR4_C2_DQS_T[4]	High	Performance	IO_L16P_T2U_N6_QBC_AD3P_45	0	BIDIR	DIFF_POD12_DCI	45		40
AP42				GND		GND				
AR1	GTHRX_225_03N			MGTHRXN3_225	0	INPUT				
AR2	GTHRX_225_03P			MGTHRXP3_225	0	INPUT				
AR3				GND		GND				
AR4				MGTAVTT_RS		Gigabit Power				
AR5	GTHTX_225_03N			MGTHTXN3_225	0	OUTPUT				
AR6	GTHTX_225_03P			MGTHTXP3_225	0	OUTPUT				
AR7				GND		GND				
AR8				MGTAVCC_RS		Gigabit Power				
AR9	GTH_FPGA_225_0N			MGTREFCLK0N_225	0	INPUT				
AR10	GTH_FPGA_225_0P			MGTREFCLK0P_225	0	INPUT				
AR11				GND		GND				
AR12		High	Performance	IO_L16N_T2U_N7_QBC_AD3N_66	0	User IO		66		
AR13		High	Performance	IO_L16P_T2U_N6_QBC_AD3P_66	0	User IO		66		
AR14		High	Range	VCCO_84		VCCO		84		
AR15		High	Range	VREF_84		Voltage		84		
AR16		High	Performance	IO_L4N_T0U_N7_DBC_AD7N_66	0	User IO		66		
AR17		High	Performance	IO_L4P_T0U_N6_DBC_AD7P_66	0	User IO		66		
AR18		High	Performance	IO_L2N_T0L_N3_66	0	User IO		66		

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AR19				GND		GND				
AR20		High	Range	IO_L2P_T0L_N2_94	0	User IO		94		
AR21		High	Range	VREF_94		Voltage		94		
AR22		High	Performance	IO_L10N_T1U_N7_QBC_AD4N_67	0	User IO		67		
AR23		High	Range	VREF_65		Voltage		65		
AR24		High	Range	VCCO_65		VCCO		65		
AR25		High	Range	IO_L5P_T0U_N8_AD14P_A22_65	0	User IO		65		
AR26		High	Range	IO_L5N_T0U_N9_AD14N_A23_65	0	User IO		65		
AR27		High	Range	IO_L24P_T3U_N10_EMCCLK_65	0	User IO		65		
AR28		High	Range	IO_L23P_T3U_N8_I2C_SCLK_65	0	User IO		65		
AR29				GND		GND				
AR30		High	Performance	IO_T0U_N12_VRP_44	0	User IO		44		
AR31		High	Performance	VREF_44		Voltage		44		
AR32	DDR4_C2_ADDR[0]	High	Performance	IO_L5P_T0U_N8_AD14P_44	0	OUTPUT	SSTL12_DCI	44		40
AR33	DDR4_C2_DQ[52]	High	Performance	IO_L2N_T0L_N3_46	0	BIDIR	POD12_DCI	46		40
AR34		High	Performance	VCCO_46		VCCO		46		
AR35	DDR4_C2_DQ[51]	High	Performance	IO_L5N_T0U_N9_AD14N_46	0	BIDIR	POD12_DCI	46		40
AR36	DDR4_C2_DQ[46]	High	Performance	IO_L20P_T3L_N2_AD1P_45	0	BIDIR	POD12_DCI	45		40
AR37	DDR4_C2_DQ[44]	High	Performance	IO_L20N_T3L_N3_AD1N_45	0	BIDIR	POD12_DCI	45		40
AR38	DDR4_C2_DQ[30]	High	Performance	IO_L8P_T1L_N2_AD5P_45	0	BIDIR	POD12_DCI	45		40
AR39				GND		GND				
AR40	DDR4_C2_DQ[33]	High	Performance	IO_L14N_T2L_N3_GC_45	0	BIDIR	POD12_DCI	45		40
AR41	DDR4_C2_DQS_C[4]	High	Performance	IO_L16N_T2U_N7_QBC_AD3N_45	0	BIDIR	DIFF_POD12_DCI	45		40
AR42	DDR4_C2_DQ[29]	High	Performance	IO_L9P_T1L_N4_AD12P_45	0	BIDIR	POD12_DCI	45		40
AT1				GND		GND				
AT2				MGTAVTT_RS		Gigabit Power				

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AT3	GTHRX_225_02N			MGTHRXN2_225	0	INPUT				
AT4	GTHRX_225_02P			MGTHRXP2_225	0	INPUT				
AT5				GND		GND				
AT6				MGTAVCC_RS		Gigabit Power				
AT7	GTHTX_225_02N			MGTHTXN2_225	0	OUTPUT				
AT8	GTHTX_225_02P			MGTHTXP2_225	0	OUTPUT				
AT9				GND		GND				
AT10				MGTAVCC_RS		Gigabit Power				
AT11				GND		GND				
AT12		High	Range	IO_L23N_T3U_N9_84	0	User IO		84		
AT13		High	Range	IO_L23P_T3U_N8_84	0	User IO		84		
AT14		High	Range	IO_L21P_T3L_N4_AD8P_84	0	User IO		84		
AT15		High	Range	IO_T3U_N12_84	0	User IO		84		
AT16				GND		GND				
AT17		High	Range	IO_L5P_T0U_N8_AD14P_94	0	User IO		94		
AT18		High	Range	IO_L3N_T0L_N5_AD15N_94	0	User IO		94		
AT19		High	Range	IO_L3P_T0L_N4_AD15P_94	0	User IO		94		
AT20		High	Range	IO_L2N_T0L_N3_94	0	User IO		94		
AT21		High	Range	VCCO_94		VCCO		94		
AT22		High	Range	IO_L6P_T0U_N10_AD6P_A20_65	0	User IO		65		
AT23		High	Range	IO_L6N_T0U_N11_AD6N_A21_65	0	User IO		65		
AT24	UART_CTS	High	Range	IO_L3P_T0L_N4_AD15P_A26_65	0	INPUT	LVCMOS18	65		
AT25		High	Range	IO_L3N_T0L_N5_AD15N_A27_65	0	User IO		65		
AT26				GND		GND				
AT27		High	Range	IO_L24N_T3U_N11_DOUT_CSO_B_65	0	User IO		65		
AT28		High	Range	IO_L23N_T3U_N9_I2C_SDA_65	0	User IO		65		

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AT29	DDR4_C2_ACT_N	High	Performance	IO_L2P_T0L_N2_44	0	OUTPUT	SSTL12_DCI	44		40
AT30	DDR4_C2_ADDR[13]	High	Performance	IO_L2N_T0L_N3_44	0	OUTPUT	SSTL12_DCI	44		40
AT31		High	Performance	VCCO_44		VCCO		44		
AT32	DDR4_C2_ADDR[10]	High	Performance	IO_L3P_T0L_N4_AD15P_44	0	OUTPUT	SSTL12_DCI	44		40
AT33	DDR4_C2_ADDR[4]	High	Performance	IO_L5N_T0U_N9_AD14N_44	0	OUTPUT	SSTL12_DCI	44		40
AT34	DDR4_C2_DQ[6]	High	Performance	IO_L15P_T2L_N4_AD11P_44	0	BIDIR	POD12_DCI	44		40
AT35	DDR4_C2_DQ[4]	High	Performance	IO_L17P_T2U_N8_AD10P_44	0	BIDIR	POD12_DCI	44		40
AT36				GND		GND				
AT37	DDR4_C2_DM_DBI_N[3]	High	Performance	IO_L7P_T1L_N0_QBC_AD13P_45	0	BIDIR	POD12_DCI	45		40
AT38	DDR4_C2_DQ[28]	High	Performance	IO_L8N_T1L_N3_AD5N_45	0	BIDIR	POD12_DCI	45		40
AT39	DDR4_C2_DQ[26]	High	Performance	IO_L11P_T1U_N8_GC_45	0	BIDIR	POD12_DCI	45		40
AT40	DDR4_C2_DQ[27]	High	Performance	IO_L11N_T1U_N9_GC_45	0	BIDIR	POD12_DCI	45		40
AT41		High	Performance	VCCO_45		VCCO		45		
AT42	DDR4_C2_DQ[25]	High	Performance	IO_L9N_T1L_N5_AD12N_45	0	BIDIR	POD12_DCI	45		40
AU1	GTHRX_225_01N			MGTHRXN1_225	0	INPUT				
AU2	GTHRX_225_01P			MGTHRXP1_225	0	INPUT				
AU3				GND		GND				
AU4				GND		GND				
AU5	GTHTX_225_01N			MGTHTXN1_225	0	OUTPUT				
AU6	GTHTX_225_01P			MGTHTXP1_225	0	OUTPUT				
AU7				GND		GND				
AU8				MGTAVCC_RS		Gigabit Power				
AU9	GTH_FPGA_224_1N			MGTREFCLK1N_224	0	INPUT				
AU10	GTH_FPGA_224_1P			MGTREFCLK1P_224	0	INPUT				
AU11				GND		GND				
AU12	EXT_I_VSYNC_I	High	Range	IO_L19P_T3L_N0_DBC_AD9P_84	0	INPUT	LVCMOS18	84		

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AU13				GND		GND				
AU14		High	Range	IO_L21N_T3L_N5_AD8N_84	0	User IO		84		
AU15		High	Range	IO_L24N_T3U_N11_84	0	User IO		84		
AU16		High	Range	IO_L24P_T3U_N10_84	0	User IO		84		
AU17		High	Range	IO_L5N_T0U_N9_AD14N_94	0	User IO		94		
AU18		High	Range	VCCO_94		VCCO		94		
AU19		High	Range	IO_L4N_T0U_N7_DBC_AD7N_94	0	User IO		94		
AU20		High	Range	IO_L4P_T0U_N6_DBC_AD7P_94	0	User IO		94		
AU21		High	Range	IO_T0U_N12_A28_65	0	User IO		65		
AU22		High	Range	IO_L4P_T0U_N6_DBC_AD7P_A24_65	0	User IO		65		
AU23				GND		GND				
AU24	UART_RSTN	High	Range	IO_L1P_T0L_N0_DBC_RS0_65	0	INPUT	LVCMOS18	65		
AU25		High	Range	IO_L20P_T3L_N2_AD1P_D08_65	0	User IO		65		
AU26		High	Range	IO_L20N_T3L_N3_AD1N_D09_65	0	User IO		65		
AU27		High	Range	IO_L19P_T3L_N0_DBC_AD9P_D10_65	0	User IO		65		
AU28		High	Range	VCCO_65		VCCO		65		
AU29		High	Range	IO_L21P_T3L_N4_AD8P_D06_65	0	User IO		65		
AU30	DDR4_C2_CK_T[0]	High	Performance	IO_L4P_T0U_N6_DBC_AD7P_44	0	OUTPUT	DIFF_SSTL12_DCI	44		40
AU31	DDR4_C2_CK_C[0]	High	Performance	IO_L4N_T0U_N7_DBC_AD7N_44	0	OUTPUT	DIFF_SSTL12_DCI	44		40
AU32	DDR4_C2_RESET_N	High	Performance	IO_L3N_T0L_N5_AD15N_44	0	OUTPUT	LVCMOS12	44	8	
AU33				GND		GND				
AU34	DDR4_C2_DQ[0]	High	Performance	IO_L15N_T2L_N5_AD11N_44	0	BIDIR	POD12_DCI	44		40
AU35	DDR4_C2_DQ[2]	High	Performance	IO_L17N_T2U_N9_AD10N_44	0	BIDIR	POD12_DCI	44		40
AU36	DDR4_C2_DQ[1]	High	Performance	IO_L18P_T2U_N10_AD2P_44	0	BIDIR	POD12_DCI	44		40
AU37		High	Performance	IO_L7N_T1L_N1_QBC_AD13N_45	0	User IO		45		

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AU38		High	Performance	VCCO_45		VCCO		45		40
AU39	DDR4_C2_DQ[24]	High	Performance	IO_L12P_T1U_N10_GC_45	0	BIDIR	POD12_DCI	45		40
AU40	DDR4_C2_DQ[31]	High	Performance	IO_L12N_T1U_N11_GC_45	0	BIDIR	POD12_DCI	45		40
AU41	DDR4_C2_DQS_T[3]	High	Performance	IO_L10P_T1U_N6_QBC_AD4P_45	0	BIDIR	DIFF_POD12_DCI	45		40
AU42	DDR4_C2_DQS_C[3]	High	Performance	IO_L10N_T1U_N7_QBC_AD4N_45	0	BIDIR	DIFF_POD12_DCI	45		
AV1				GND		GND				
AV2				GND		GND				
AV3	GTHRX_225_00N			MGTHRXN0_225	0	INPUT				
AV4	GTHRX_225_00P			MGTHRXP0_225	0	INPUT				
AV5				GND		GND				
AV6				MGTAVTT_RS		Gigabit Power				
AV7	GTHTX_225_00N			MGTHTXN0_225	0	OUTPUT				
AV8	GTHTX_225_00P			MGTHTXP0_225	0	OUTPUT				
AV9				GND		GND				
AV10				MGTAVCC_RS		Gigabit Power				
AV11				GND		GND				
AV12	EXT_I_HSYNC_I	High	Range	IO_L19N_T3L_N1_DBC_AD9N_84	0	INPUT	LVCMOS18	84		
AV13		High	Range	IO_L22N_T3U_N7_DBC_AD0N_84	0	User IO		84		
AV14		High	Range	IO_L22P_T3U_N6_DBC_AD0P_84	0	User IO		84		
AV15		High	Range	VCCO_84		VCCO		84		
AV16		High	Range	IO_L20N_T3L_N3_AD1N_84	0	User IO		84		
AV17		High	Range	IO_L20P_T3L_N2_AD1P_84	0	User IO		84		
AV18		High	Range	IO_L1P_T0L_N0_DBC_94	0	User IO		94		
AV19	EXT_O_SCS	High	Range	IO_L6P_T0U_N10_AD6P_94	0	OUTPUT	LVCMOS18	94	12	
AV20				GND		GND				

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AV21	UART_RXD	High	Range	IO_L2P_T0L_N2_FOE_B_65	0	INPUT	LVCMOS18	65		
AV22	UART_RTS	High	Range	IO_L2N_T0L_N3_FWE_FCS2_B_65	0	OUTPUT	LVCMOS18	65	12	
AV23		High	Range	IO_L4N_T0U_N7_DBC_AD7N_A25_65	0	User IO		65		
AV24	UART_TXD	High	Range	IO_L1N_T0L_N1_DBC_RS1_65	0	OUTPUT	LVCMOS18	65	12	
AV25		High	Range	VCCO_65		VCCO		65		
AV26		High	Range	IO_L22P_T3U_N6_DBC_AD0P_D04_65	0	User IO		65		
AV27		High	Range	IO_L22N_T3U_N7_DBC_AD0N_D05_65	0	User IO		65		
AV28		High	Range	IO_L19N_T3L_N1_DBC_AD9N_D11_65	0	User IO		65		
AV29		High	Range	IO_L21N_T3L_N5_AD8N_D07_65	0	User IO		65		
AV30				GND		GND				
AV31	DDR4_C2_BG[0]	High	Performance	IO_L1P_T0L_N0_DBC_44	0	OUTPUT	SSTL12_DCI	44		40
AV32	DDR4_C2_BA[0]	High	Performance	IO_L1N_T0L_N1_DBC_44	0	OUTPUT	SSTL12_DCI	44		40
AV33	DDR4_C2_DM_DBI_N[0]	High	Performance	IO_L13P_T2L_N0_GC_QBC_44	0	BIDIR	POD12_DCI	44		40
AV34	DDR4_C2_ADDR[2]	High	Performance	IO_L13N_T2L_N1_GC_QBC_44	0	OUTPUT	SSTL12_DCI	44		40
AV35		High	Performance	VCCO_44		VCCO		44		
AV36	DDR4_C2_DQS_T[0]	High	Performance	IO_L16P_T2U_N6_QBC_AD3P_44	0	BIDIR	DIFF_POD12_DCI	44		40
AV37	DDR4_C2_DQ[5]	High	Performance	IO_L18N_T2U_N11_AD2N_44	0	BIDIR	POD12_DCI	44		40
AV38		High	Performance	IO_T1U_N12_45	0	User IO		45		
AV39		High	Performance	IO_T0U_N12_VRP_45	0	User IO		45		
AV40				GND		GND				
AV41	DDR4_C2_DQ[21]	High	Performance	IO_L5P_T0U_N8_AD14P_45	0	BIDIR	POD12_DCI	45		40
AV42	DDR4_C2_DQ[17]	High	Performance	IO_L5N_T0U_N9_AD14N_45	0	BIDIR	POD12_DCI	45		40
AW1	GTHRX_224_03N			MGTHRXN3_224	0	INPUT				
AW2	GTHRX_224_03P			MGTHRXP3_224	0	INPUT				

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AW3				GND		GND				
AW4				MGTAVTT_RS		Gigabit Power				
AW5	GTHTX_224_03N			MGTHTXN3_224	0	OUTPUT				
AW6	GTHTX_224_03P			MGTHTXP3_224	0	OUTPUT				
AW7				GND		GND				
AW8				MGTAVCC_RS		Gigabit Power				
AW9	GTH_FPGA_224_0N			MGTREFCLK0N_224	0	INPUT				
AW10	GTH_FPGA_224_0P			MGTREFCLK0P_224	0	INPUT				
AW11				GND		GND				
AW12		High	Range	VCCO_84		VCCO		84		
AW13	EXT_I_SCLK_I	High	Range	IO_L13N_T2L_N1_GC_QBC_84	0	INPUT	LVCMOS18	84		
AW14	EXT_I_VCLK_I	High	Range	IO_L13P_T2L_N0_GC_QBC_84	0	INPUT	LVCMOS18	84		
AW15		High	Range	IO_L14P_T2L_N2_GC_84	0	GCLK		84		
AW16		High	Range	IO_L11P_T1U_N8_GC_94	0	GCLK		94		
AW17				GND		GND				
AW18		High	Range	IO_L1N_T0L_N1_DBC_94	0	User IO		94		
AW19	EXT_O_RESET	High	Range	IO_L6N_T0U_N11_AD6N_94	0	OUTPUT	LVCMOS18	94	12	
AW20		High	Range	IO_T0U_N12_94	0	User IO		94		
AW21	FPGAOUT_CLK1_P	High	Range	IO_L8P_T1L_N2_AD5P_A16_65	0	OUTPUT	LVCMOS18	65	12	
AW22		High	Range	VCCO_65		VCCO		65		
AW23		High	Range	IO_L12P_T1U_N10_GC_A08_D24_65	0	GCLK		65		
AW24		High	Range	IO_L11P_T1U_N8_GC_A10_D26_65	0	GCLK		65		
AW25		High	Range	IO_L11N_T1U_N9_GC_A11_D27_65	0	GCLK		65		
AW26		High	Range	IO_L13P_T2L_N0_GC_QBC_A06_D22_65	0	GCLK		65		
AW27				GND		GND				

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AW28		High	Range	IO_L17P_T2U_N8_AD10P_D14_65	0	User IO		65		
AW29		High	Range	IO_L17N_T2U_N9_AD10N_D15_65	0	User IO		65		
AW30	DDR4_C2_ADDR[7]	High	Performance	IO_L6P_T0U_N10_AD6P_44	0	OUTPUT	SSTL12_DCI	44		40
AW31	DDR4_C2_ADDR[9]	High	Performance	IO_L6N_T0U_N11_AD6N_44	0	OUTPUT	SSTL12_DCI	44		40
AW32		High	Performance	VCCO_44		VCCO		44		
AW33	DDR4_C2_DQ[7]	High	Performance	IO_L14P_T2L_N2_GC_44	0	BIDIR	POD12_DCI	44		40
AW34	DDR4_C2_DQ[3]	High	Performance	IO_L14N_T2L_N3_GC_44	0	BIDIR	POD12_DCI	44		40
AW35	DDR4_C2_ADDR[6]	High	Performance	IO_T2U_N12_44	0	OUTPUT	SSTL12_DCI	44		40
AW36	DDR4_C2_DQS_C[0]	High	Performance	IO_L16N_T2U_N7_QBC_AD3N_44	0	BIDIR	DIFF_POD12_DCI	44		40
AW37				GND		GND				
AW38	DDR4_C2_DQ[14]	High	Performance	IO_L23P_T3U_N8_44	0	BIDIR	POD12_DCI	44		40
AW39	DDR4_C2_DM_DBI_N[2]	High	Performance	IO_L1P_T0L_N0_DBC_45	0	BIDIR	POD12_DCI	45		40
AW40	DDR4_C2_DQ[20]	High	Performance	IO_L3P_T0L_N4_AD15P_45	0	BIDIR	POD12_DCI	45		40
AW41	DDR4_C2_DQ[23]	High	Performance	IO_L3N_T0L_N5_AD15N_45	0	BIDIR	POD12_DCI	45		40
AW42		High	Performance	VCCO_45		VCCO		45		
AY1				GND		GND				
AY2				MGTAVTT_RS		Gigabit Power				
AY3	GTHRX_224_02N			MGTHRXN2_224	0	INPUT				
AY4	GTHRX_224_02P			MGTHRXP2_224	0	INPUT				
AY5				GND		GND				
AY6				MGTAVCC_RS		Gigabit Power				
AY7	GTHTX_224_02N			MGTHTXN2_224	0	OUTPUT				
AY8	GTHTX_224_02P			MGTHTXP2_224	0	OUTPUT				
AY9				GND		GND				
AY10				MGTAVCC_RS		Gigabit Power				

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AY11				GND		GND				
AY12	EXT_I_SMISO	High	Range	IO_L15N_T2L_N5_AD11N_84	0	OUTPUT	LVCMOS18	84	12	
AY13	EXT_I_SMOSI_I	High	Range	IO_L15P_T2L_N4_AD11P_84	0	INPUT	LVCMOS18	84		
AY14				GND		GND				
AY15		High	Range	IO_L14N_T2L_N3_GC_84	0	GCLK		84		
AY16		High	Range	IO_L11N_T1U_N9_GC_94	0	GCLK		94		
AY17	EXT_O_SCLK	High	Range	IO_L12N_T1U_N11_GC_94	0	OUTPUT	LVCMOS18	94	12	
AY18	EXT_O_VCLK	High	Range	IO_L12P_T1U_N10_GC_94	0	OUTPUT	LVCMOS18	94	12	
AY19		High	Range	VCCO_94		VCCO		94		
AY20	EXT_O_SMOSI	High	Range	IO_L8P_T1L_N2_AD5P_94	0	OUTPUT	LVCMOS18	94	12	
AY21	FPGAOUT_CLK1_N	High	Range	IO_L8N_T1L_N3_AD5N_A17_65	0	OUTPUT	LVCMOS18	65	12	
AY22	FPGAOUT_CLK0_P	High	Range	IO_L7P_T1L_N0_QBC_AD13P_A18_65	0	OUTPUT	LVCMOS18	65	12	
AY23		High	Range	IO_L12N_T1U_N11_GC_A09_D25_65	0	GCLK		65		
AY24				GND		GND				
AY25		High	Range	IO_L14P_T2L_N2_GC_A04_D20_65	0	GCLK		65		
AY26		High	Range	IO_L14N_T2L_N3_GC_A05_D21_65	0	GCLK		65		
AY27		High	Range	IO_L13N_T2L_N1_GC_QBC_A07_D23_65	0	GCLK		65		
AY28	SI570_INT	High	Range	IO_L15P_T2L_N4_AD11P_A02_D18_65	0	INPUT	LVCMOS18	65		
AY29		High	Performance	VCCO_44		VCCO		44		
AY30	DDR4_C2_CKE[0]	High	Performance	IO_L12P_T1U_N10_GC_44	0	OUTPUT	SSTL12_DCI	44		40
AY31	DDR4_C2_ADDR[14]	High	Performance	IO_L12N_T1U_N11_GC_44	0	OUTPUT	SSTL12_DCI	44		40
AY32	DDR4_C2_SYS_CLK_P	High	Performance	IO_L11P_T1U_N8_GC_44	0	INPUT	DIFF_SSTL12	44		
AY33	DDR4_C2_SYS_CLK_N	High	Performance	IO_L11N_T1U_N9_GC_44	0	INPUT	DIFF_SSTL12	44		
AY34				GND		GND				

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AY35	DDR4_C2_DQS_T[1]	High	Performance	IO_L22P_T3U_N6_DBC_AD0P_44	0	BIDIR	DIFF_POD12_DCI	44		40
AY36	DDR4_C2_DM_DBI_N[1]	High	Performance	IO_L19P_T3L_N0_DBC_AD9P_44	0	BIDIR	POD12_DCI	44		40
AY37	DDR4_C2_ADDR[8]	High	Performance	IO_L19N_T3L_N1_DBC_AD9N_44	0	OUTPUT	SSTL12_DCI	44		40
AY38	DDR4_C2_DQ[12]	High	Performance	IO_L23N_T3U_N9_44	0	BIDIR	POD12_DCI	44		40
AY39		High	Performance	VCCO_45		VCCO		45		
AY40		High	Performance	IO_L1N_T0L_N1_DBC_45	0	User IO		45		
AY41	DDR4_C2_DQ[16]	High	Performance	IO_L6P_T0U_N10_AD6P_45	0	BIDIR	POD12_DCI	45		40
AY42	DDR4_C2_DQ[19]	High	Performance	IO_L6N_T0U_N11_AD6N_45	0	BIDIR	POD12_DCI	45		40
B1				GND		GND				
B2				GND		GND				
B3	GTHRX_233_02N			MGTHRXN2_233	1	INPUT				
B4	GTHRX_233_02P			MGTHRXP2_233	1	INPUT				
B5				GND		GND				
B6				MGTAVCC_RN		Gigabit Power				
B7	GTHTX_233_02N			MGTHTXN2_233	1	OUTPUT				
B8	GTHTX_233_02P			MGTHTXP2_233	1	OUTPUT				
B9				GND		GND				
B10				MGTAVCC_RN		Gigabit Power				
B11				GND		GND				
B12	EXT_CLK_OUT_N	High	Performance	IO_L22N_T3U_N7_DBC_AD0N_49	1	OUTPUT	LVCMOS18	49	12	
B13		High	Performance	VCCO_49		VCCO		49		
B14	FPGA_TP[12]	High	Performance	IO_L21P_T3L_N4_AD8P_49	1	OUTPUT	LVCMOS18	49	12	
B15		High	Performance	IO_L23P_T3U_N8_49	1	User IO		49		
B16		High	Performance	IO_L22N_T3U_N7_DBC_AD0N_50	1	User IO		50		
B17		High	Performance	IO_L22P_T3U_N6_DBC_AD0P_50	1	User IO		50		

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B18				GND		GND				
B19		High	Performance	IO_L21N_T3L_N5_AD8N_50	1	User IO		50		
B20		High	Performance	IO_T3U_N12_50	1	User IO		50		
B21	DDR4_C0_DQS_C[1]	High	Performance	IO_L22N_T3U_N7_DBC_AD0N_51	1	BIDIR	DIFF_POD12_DCI	51		40
B22	DDR4_C0_DQS_T[1]	High	Performance	IO_L22P_T3U_N6_DBC_AD0P_51	1	BIDIR	DIFF_POD12_DCI	51		40
B23		High	Performance	VCCO_51		VCCO		51		
B24	DDR4_C0_ACT_N	High	Performance	IO_L19N_T3L_N1_DBC_AD9N_51	1	OUTPUT	SSTL12_DCI	51		40
B25	DDR4_C0_RESET_N	High	Performance	IO_T3U_N12_51	1	OUTPUT	LVCMOS12	51	8	
B26	DDR4_C0_DQ[61]	High	Performance	IO_L8N_T1L_N3_AD5N_53	1	BIDIR	POD12_DCI	53		40
B27	DDR4_C0_DQS_C[7]	High	Performance	IO_L10N_T1U_N7_QBC_AD4N_53	1	BIDIR	DIFF_POD12_DCI	53		40
B28				GND		GND				
B29	DDR4_C0_DQ[40]	High	Performance	IO_L21N_T3L_N5_AD8N_52	1	BIDIR	POD12_DCI	52		40
B30	DDR4_C0_DQ[41]	High	Performance	IO_L24P_T3U_N10_52	1	BIDIR	POD12_DCI	52		40
B31	DDR4_C0_DQS_C[5]	High	Performance	IO_L22N_T3U_N7_DBC_AD0N_52	1	BIDIR	DIFF_POD12_DCI	52		40
B32	DDR4_C0_DQ[33]	High	Performance	IO_L15N_T2L_N5_AD11N_52	1	BIDIR	POD12_DCI	52		40
B33		High	Performance	VCCO_52		VCCO		52		
B34	DDR4_C0_DQS_T[4]	High	Performance	IO_L16P_T2U_N6_QBC_AD3P_52	1	BIDIR	DIFF_POD12_DCI	52		40
B35				GND		GND				
B36				MGTAVTT_L		Gigabit Power				
B37				GND		GND				
B38				GND		GND				
B39	GTHRX_133_03P			MGTHRXP3_133	1	INPUT				
B40	GTHRX_133_03N			MGTHRXN3_133	1	INPUT				
B41				MGTAVTT_L		Gigabit Power				

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B42				GND		GND				
BA1	GTHRX_224_01N			MGTHRXN1_224	0	INPUT				
BA2	GTHRX_224_01P			MGTHRXP1_224	0	INPUT				
BA3				GND		GND				
BA4				MGTAVTT_RS		Gigabit Power				
BA5	GTHTX_224_01N			MGTHTXN1_224	0	OUTPUT				
BA6	GTHTX_224_01P			MGTHTXP1_224	0	OUTPUT				
BA7				GND		GND				
BA8				MGTAVCC_RS		Gigabit Power				
BA9				MGTRREF_RS		Gigabit				
BA10				MGTAVTTRCAL_RS		Gigabit				
BA11				GND		GND				
BA12	EXT_I_GPIO0_I	High	Range	IO_L17P_T2U_N8_AD10P_84	0	INPUT	LVCMOS18	84		
BA13	EXT_I_GPIO3	High	Range	IO_L18N_T2U_N11_AD2N_84	0	OUTPUT	LVCMOS18	84	12	
BA14	EXT_I_GPIO2	High	Range	IO_L18P_T2U_N10_AD2P_84	0	OUTPUT	LVCMOS18	84	12	
BA15	EXT_I_SCS_I	High	Range	IO_L16P_T2U_N6_QBC_AD3P_84	0	INPUT	LVCMOS18	84		
BA16		High	Range	VCCO_94		VCCO		94		
BA17	EXT_O_GPIO0	High	Range	IO_L9P_T1L_N4_AD12P_94	0	OUTPUT	LVCMOS18	94	12	
BA18	EXT_O_HSYNC	High	Range	IO_L7N_T1L_N1_QBC_AD13N_94	0	OUTPUT	LVCMOS18	94	12	
BA19	EXT_O_VSYNC	High	Range	IO_L7P_T1L_N0_QBC_AD13P_94	0	OUTPUT	LVCMOS18	94	12	
BA20	EXT_O_SMISO_I	High	Range	IO_L8N_T1L_N3_AD5N_94	0	INPUT	LVCMOS18	94		
BA21				GND		GND				
BA22	FPGAOUT_CLK0_N	High	Range	IO_L7N_T1L_N1_QBC_AD13N_A19_65	0	OUTPUT	LVCMOS18	65	12	
BA23	FIREFLY_SCL	High	Range	IO_L9P_T1L_N4_AD12P_A14_D30_65	0	OUTPUT	LVCMOS18	65	12	
BA24	FIREFLY_SDA	High	Range	IO_L9N_T1L_N5_AD12N_A15_D31_65	0	BIDIR	LVCMOS18	65	12	

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BA25	FPGAOUT_CLK2_P	High	Range	IO_L16P_T2U_N6_QBC_AD3P_A00_D16_65	0	OUTPUT	LVCMOS18	65	12	
BA26		High	Range	VCCO_65		VCCO		65		
BA27		High	Range	IO_T2U_N12_CSI_ADV_B_65	0	User IO		65		
BA28	FIREFLY_INT	High	Range	IO_L15N_T2L_N5_AD11N_A03_D19_65	0	INPUT	LVCMOS18	65		
BA29	DDR4_C2_BA[1]	High	Performance	IO_L8P_T1L_N2_AD5P_44	0	OUTPUT	SSTL12_DCI	44		40
BA30	DDR4_C2_ADDR[3]	High	Performance	IO_L10P_T1U_N6_QBC_AD4P_44	0	OUTPUT	SSTL12_DCI	44		40
BA31				GND		GND				
BA32	DDR4_C2_ODT[0]	High	Performance	IO_L9P_T1L_N4_AD12P_44	0	OUTPUT	SSTL12_DCI	44		40
BA33	DDR4_C2_ADDR[1]	High	Performance	IO_L9N_T1L_N5_AD12N_44	0	OUTPUT	SSTL12_DCI	44		40
BA34	DDR4_C2_ADDR[5]	High	Performance	IO_T1U_N12_44	0	OUTPUT	SSTL12_DCI	44		40
BA35	DDR4_C2_DQS_C[1]	High	Performance	IO_L22N_T3U_N7_DBC_AD0N_44	0	BIDIR	DIFF_POD12_DCI	44		40
BA36		High	Performance	VCCO_44		VCCO		44		
BA37	DDR4_C2_DQ[15]	High	Performance	IO_L21P_T3L_N4_AD8P_44	0	BIDIR	POD12_DCI	44		40
BA38	DDR4_C2_DQ[8]	High	Performance	IO_L21N_T3L_N5_AD8N_44	0	BIDIR	POD12_DCI	44		40
BA39	DDR4_C2_DQS_T[2]	High	Performance	IO_L4P_T0U_N6_DBC_AD7P_45	0	BIDIR	DIFF_POD12_DCI	45		40
BA40	DDR4_C2_DQ[22]	High	Performance	IO_L2P_T0L_N2_45	0	BIDIR	POD12_DCI	45		40
BA41	DDR4_C2_DQ[18]	High	Performance	IO_L2N_T0L_N3_45	0	BIDIR	POD12_DCI	45		40
BA42				GND		GND				
BB2				GND		GND				
BB3	GTHRX_224_00N			MGTHRXN0_224	0	INPUT				
BB4	GTHRX_224_00P			MGTHRXP0_224	0	INPUT				
BB5				GND		GND				
BB6				GND		GND				
BB7	GTHTX_224_00N			MGTHTXN0_224	0	OUTPUT				
BB8	GTHTX_224_00P			MGTHTXP0_224	0	OUTPUT				

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BB9				GND		GND				
BB10				GND		GND				
BB11				GND		GND				
BB12	EXT_I_GPIO1_I	High	Range	IO_L17N_T2U_N9_AD10N_84	0	INPUT	LVCMOS18	84		
BB13		High	Range	VCCO_84		VCCO		84		
BB14	EXT_I_RESET_I	High	Range	IO_L16N_T2U_N7_QBC_AD3N_84	0	INPUT	LVCMOS18	84		
BB15		High	Range	IO_T2U_N12_84	0	User IO		84		
BB16		High	Range	IO_T1U_N12_94	0	User IO		94		
BB17	EXT_O_GPIO1	High	Range	IO_L9N_T1L_N5_AD12N_94	0	OUTPUT	LVCMOS18	94	12	
BB18				GND		GND				
BB19	EXT_O_GPIO3_I	High	Range	IO_L10N_T1U_N7_QBC_AD4N_94	0	INPUT	LVCMOS18	94		
BB20	EXT_O_GPIO2_I	High	Range	IO_L10P_T1U_N6_QBC_AD4P_94	0	INPUT	LVCMOS18	94		
BB21	SI5326_SCL	High	Range	IO_L10P_T1U_N6_QBC_AD4P_A12_D28_65	0	OUTPUT	LVCMOS18	65	12	
BB22	SI5326_SDA	High	Range	IO_L10N_T1U_N7_QBC_AD4N_A13_D29_65	0	BIDIR	LVCMOS18	65	12	
BB23		High	Range	VCCO_65		VCCO		65		
BB24		High	Range	IO_T1U_N12_PERSTN1_65	0	User IO		65		
BB25	FPGAOUT_CLK2_N	High	Range	IO_L16N_T2U_N7_QBC_AD3N_A01_D17_65	0	OUTPUT	LVCMOS18	65	12	
BB26	SI570_SCL	High	Range	IO_L18P_T2U_N10_AD2P_D12_65	0	OUTPUT	LVCMOS18	65	12	
BB27	SI570_SDA	High	Range	IO_L18N_T2U_N11_AD2N_D13_65	0	BIDIR	LVCMOS18	65	12	
BB28				GND		GND				
BB29	DDR4_C2_ADDR[12]	High	Performance	IO_L8N_T1L_N3_AD5N_44	0	OUTPUT	SSTL12_DCI	44		40
BB30	DDR4_C2_CS_N[0]	High	Performance	IO_L10N_T1U_N7_QBC_AD4N_44	0	OUTPUT	SSTL12_DCI	44		40
BB31	DDR4_C2_ADDR[15]	High	Performance	IO_L7P_T1L_N0_QBC_AD13P_44	0	OUTPUT	SSTL12_DCI	44		40
BB32	DDR4_C2_ADDR[16]	High	Performance	IO_L7N_T1L_N1_QBC_AD13N_4	0	OUTPUT	SSTL12_DCI	44		40

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				4						
BB33		High	Performance	VCCO_44		VCCO		44		
BB34	DDR4_C2_DQ[10]	High	Performance	IO_L20P_T3L_N2_AD1P_44	0	BIDIR	POD12_DCI	44		40
BB35	DDR4_C2_DQ[11]	High	Performance	IO_L20N_T3L_N3_AD1N_44	0	BIDIR	POD12_DCI	44		40
BB36	DDR4_C2_DQ[13]	High	Performance	IO_L24P_T3U_N10_44	0	BIDIR	POD12_DCI	44		40
BB37	DDR4_C2_DQ[9]	High	Performance	IO_L24N_T3U_N11_44	0	BIDIR	POD12_DCI	44		40
BB38				GND		GND				
BB39	DDR4_C2_ADDR[11]	High	Performance	IO_T3U_N12_44	0	OUTPUT	SSTL12_DCI	44		40
BB40	DDR4_C2_DQS_C[2]	High	Performance	IO_L4N_T0U_N7_DBC_AD7N_45	0	BIDIR	DIFF_POD12_DCI	45		40
BB41				GND		GND				
C1	GTHRX_233_01N			MGTHRXN1_233	1	INPUT				
C2	GTHRX_233_01P			MGTHRXP1_233	1	INPUT				
C3				GND		GND				
C4				MGTAVTT_RN		Gigabit Power				
C5	GTHTX_233_01N			MGTHTXN1_233	1	OUTPUT				
C6	GTHTX_233_01P			MGTHTXP1_233	1	OUTPUT				
C7				GND		GND				
C8				MGTAVCC_RN		Gigabit Power				
C9	GTH_FPGA_233_1N			MGTREFCLK1N_233	1	INPUT				
C10	GTH_FPGA_233_1P			MGTREFCLK1P_233	1	INPUT				
C11				GND		GND				
C12	EXT_CLK_OUT_P	High	Performance	IO_L22P_T3U_N6_DBC_AD0P_49	1	OUTPUT	LVCMOS18	49	12	
C13	FPGA_TP[11]	High	Performance	IO_L20N_T3L_N3_AD1N_49	1	OUTPUT	LVCMOS18	49	12	
C14	FPGA_TP[9]	High	Performance	IO_L19N_T3L_N1_DBC_AD9N_49	1	OUTPUT	LVCMOS18	49	12	
C15				GND		GND				
C16		High	Performance	IO_L20N_T3L_N3_AD1N_50	1	User IO		50		

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C17		High	Performance	IO_L19N_T3L_N1_DBC_AD9N_50	1	User IO		50		
C18		High	Performance	IO_L19P_T3L_N0_DBC_AD9P_50	1	User IO		50		
C19		High	Performance	IO_L21P_T3L_N4_AD8P_50	1	User IO		50		
C20		High	Performance	VCCO_50		VCCO		50		
C21	DDR4_C0_DQ[13]	High	Performance	IO_L20N_T3L_N3_AD1N_51	1	BIDIR	POD12_DCI	51		40
C22	DDR4_C0_DQ[9]	High	Performance	IO_L24N_T3U_N11_51	1	BIDIR	POD12_DCI	51		40
C23	DDR4_C0_DQ[14]	High	Performance	IO_L24P_T3U_N10_51	1	BIDIR	POD12_DCI	51		40
C24	DDR4_C0_DM_DBI_N[1]	High	Performance	IO_L19P_T3L_N0_DBC_AD9P_51	1	BIDIR	POD12_DCI	51		40
C25				GND		GND				
C26	DDR4_C0_DQ[56]	High	Performance	IO_L8P_T1L_N2_AD5P_53	1	BIDIR	POD12_DCI	53		40
C27	DDR4_C0_DQS_T[7]	High	Performance	IO_L10P_T1U_N6_QBC_AD4P_53	1	BIDIR	DIFF_POD12_DCI	53		40
C28		High	Performance	IO_L19N_T3L_N1_DBC_AD9N_52	1	User IO		52		
C29	DDR4_C0_DQ[42]	High	Performance	IO_L21P_T3L_N4_AD8P_52	1	BIDIR	POD12_DCI	52		40
C30		High	Performance	VCCO_52		VCCO		52		
C31	DDR4_C0_DQS_T[5]	High	Performance	IO_L22P_T3U_N6_DBC_AD0P_52	1	BIDIR	DIFF_POD12_DCI	52		40
C32	DDR4_C0_DQ[39]	High	Performance	IO_L15P_T2L_N4_AD11P_52	1	BIDIR	POD12_DCI	52		40
C33		High	Performance	IO_T2U_N12_52	1	User IO		52		
C34	DDR4_C0_DQ[34]	High	Performance	IO_L18N_T2U_N11_AD2N_52	1	BIDIR	POD12_DCI	52		40
C35				GND		GND				
C36	GTHTX_133_02P			MGTHTXP2_133	1	OUTPUT				
C37	GTHTX_133_02N			MGTHTXN2_133	1	OUTPUT				
C38				GND		GND				
C39				GND		GND				
C40				GND		GND				
C41	GTHRX_133_02P			MGTHRXP2_133	1	INPUT				

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C42	GTHRX_133_02N			MGTHRXN2_133	1	INPUT				
D1				GND		GND				
D2				MGTAVTT_RN		Gigabit Power				
D3	GTHRX_233_00N			MGTHRXN0_233	1	INPUT				
D4	GTHRX_233_00P			MGTHRXP0_233	1	INPUT				
D5				GND		GND				
D6				MGTAVTT_RN		Gigabit Power				
D7	GTHTX_233_00N			MGTHTXN0_233	1	OUTPUT				
D8	GTHTX_233_00P			MGTHTXP0_233	1	OUTPUT				
D9				GND		GND				
D10				MGTAVCC_RN		Gigabit Power				
D11				GND		GND				
D12				GND		GND				
D13	FPGA_TP[10]	High	Performance	IO_L20P_T3L_N2_AD1P_49	1	OUTPUT	LVCMOS18	49	12	
D14	FPGA_TP[8]	High	Performance	IO_L19P_T3L_N0_DBC_AD9P_49	1	OUTPUT	LVCMOS18	49	12	
D15		High	Performance	IO_T3U_N12_49	1	User IO		49		
D16		High	Performance	IO_L20P_T3L_N2_AD1P_50	1	User IO		50		
D17		High	Performance	VCCO_50		VCCO		50		
D18		High	Performance	IO_L18N_T2U_N11_AD2N_50	1	User IO		50		
D19		High	Performance	IO_L17N_T2U_N9_AD10N_50	1	User IO		50		
D20		High	Performance	IO_L17P_T2U_N8_AD10P_50	1	User IO		50		
D21	DDR4_C0_DQ[15]	High	Performance	IO_L20P_T3L_N2_AD1P_51	1	BIDIR	POD12_DCI	51		40
D22				GND		GND				
D23	DDR4_C0_DQ[2]	High	Performance	IO_L15N_T2L_N5_AD11N_51	1	BIDIR	POD12_DCI	51		40
D24	DDR4_C0_DQ[0]	High	Performance	IO_L17N_T2U_N9_AD10N_51	1	BIDIR	POD12_DCI	51		40
D25	DDR4_C0_DQ[6]	High	Performance	IO_L17P_T2U_N8_AD10P_51	1	BIDIR	POD12_DCI	51		40
D26	DDR4_C0_DQ[63]	High	Performance	IO_L11N_T1U_N9_GC_53	1	BIDIR	POD12_DCI	53		40

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D27		High	Performance	VCCO_53		VCCO		53		
D28	DDR4_C0_DM_DBI_N[5]	High	Performance	IO_L19P_T3L_N0_DBC_AD9P_52	1	BIDIR	POD12_DCI	52		40
D29	DDR4_C0_DQ[44]	High	Performance	IO_L20P_T3L_N2_AD1P_52	1	BIDIR	POD12_DCI	52		40
D30	DDR4_C0_DQ[43]	High	Performance	IO_L20N_T3L_N3_AD1N_52	1	BIDIR	POD12_DCI	52		40
D31		High	Performance	IO_L13N_T2L_N1_GC_QBC_52	1	GCLK		52		
D32				GND		GND				
D33	DDR4_C0_DQ[32]	High	Performance	IO_L14N_T2L_N3_GC_52	1	BIDIR	POD12_DCI	52		40
D34	DDR4_C0_DQ[36]	High	Performance	IO_L18P_T2U_N10_AD2P_52	1	BIDIR	POD12_DCI	52		40
D35				GND		GND				
D36				GND		GND				
D37				MGTAVTT_L		Gigabit Power				
D38				GND		GND				
D39	GTHRX_133_01P			MGTHRXP1_133	1	INPUT				
D40	GTHRX_133_01N			MGTHRXN1_133	1	INPUT				
D41				GND		GND				
D42				GND		GND				
E1	GTHRX_232_03N			MGTHRXN3_232	1	INPUT				
E2	GTHRX_232_03P			MGTHRXP3_232	1	INPUT				
E3				GND		GND				
E4				MGTAVTT_RN		Gigabit Power				
E5	GTHTX_232_03N			MGTHTXN3_232	1	OUTPUT				
E6	GTHTX_232_03P			MGTHTXP3_232	1	OUTPUT				
E7				GND		GND				
E8				MGTAVCC_RN		Gigabit Power				
E9	GTH_FPGA_233_0N			MGTREFCLK0N_233	1	INPUT				
E10	GTH_FPGA_233_0P			MGTREFCLK0P_233	1	INPUT				

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E11				GND		GND				
E12	FPGA_TP[5]	High	Performance	IO_L17N_T2U_N9_AD10N_49	1	OUTPUT	LVCMOS18	49	12	
E13		High	Performance	IO_T2U_N12_49	1	User IO		49		
E14		High	Performance	VCCO_49		VCCO		49		
E15	FPGA_TP[7]	High	Performance	IO_L18N_T2U_N11_AD2N_49	1	OUTPUT	LVCMOS18	49	12	
E16		High	Performance	IO_L16N_T2U_N7_QBC_AD3N_50	1	User IO		50		
E17		High	Performance	IO_L16P_T2U_N6_QBC_AD3P_50	1	User IO		50		
E18		High	Performance	IO_L18P_T2U_N10_AD2P_50	1	User IO		50		
E19				GND		GND				
E20		High	Performance	IO_L15N_T2L_N5_AD11N_50	1	User IO		50		
E21	DDR4_C0_DQS_C[0]	High	Performance	IO_L16N_T2U_N7_QBC_AD3N_51	1	BIDIR	DIFF_POD12_DCI	51		40
E22	DDR4_C0_DQS_T[0]	High	Performance	IO_L16P_T2U_N6_QBC_AD3P_51	1	BIDIR	DIFF_POD12_DCI	51		40
E23	DDR4_C0_DQ[4]	High	Performance	IO_L15P_T2L_N4_AD11P_51	1	BIDIR	POD12_DCI	51		40
E24		High	Performance	VCCO_51		VCCO		51		
E25	DDR4_C0_DQ[60]	High	Performance	IO_L12N_T1U_N11_GC_53	1	BIDIR	POD12_DCI	53		40
E26	DDR4_C0_DQ[57]	High	Performance	IO_L11P_T1U_N8_GC_53	1	BIDIR	POD12_DCI	53		40
E27	DDR4_C0_DQ[59]	High	Performance	IO_L9N_T1L_N5_AD12N_53	1	BIDIR	POD12_DCI	53		40
E28		High	Performance	IO_T3U_N12_52	1	User IO		52		
E29				GND		GND				
E30	DDR4_C0_DQ[25]	High	Performance	IO_L11N_T1U_N9_GC_52	1	BIDIR	POD12_DCI	52		40
E31	DDR4_C0_DM_DBI_N[4]	High	Performance	IO_L13P_T2L_N0_GC_QBC_52	1	BIDIR	POD12_DCI	52		40
E32	DDR4_C0_DQ[38]	High	Performance	IO_L14P_T2L_N2_GC_52	1	BIDIR	POD12_DCI	52		40
E33	DDR4_C0_DQ[17]	High	Performance	IO_L3N_T0L_N5_AD15N_52	1	BIDIR	POD12_DCI	52		40
E34		High	Performance	VCCO_52		VCCO		52		
E35				GND		GND				

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E36	GTHTX_133_01P			MGTHTXP1_133	1	OUTPUT				
E37	GTHTX_133_01N			MGTHTXN1_133	1	OUTPUT				
E38				GND		GND				
E39				GND		GND				
E40				GND		GND				
E41	GTHRX_133_00P			MGTHRXP0_133	1	INPUT				
E42	GTHRX_133_00N			MGTHRXN0_133	1	INPUT				
F1				GND		GND				
F2				GND		GND				
F3	GTHRX_232_02N			MGTHRXN2_232	1	INPUT				
F4	GTHRX_232_02P			MGTHRXP2_232	1	INPUT				
F5				GND		GND				
F6				MGTAVCC_RN		Gigabit Power				
F7	GTHTX_232_02N			MGTHTXN2_232	1	OUTPUT				
F8	GTHTX_232_02P			MGTHTXP2_232	1	OUTPUT				
F9				GND		GND				
F10				MGTAVCC_RN		Gigabit Power				
F11				GND		GND				
F12	FPGA_TP[4]	High	Performance	IO_L17P_T2U_N8_AD10P_49	1	OUTPUT	LVCMOS18	49	12	
F13	FPGA_TP[3]	High	Performance	IO_L16N_T2U_N7_QBC_AD3N_49	1	OUTPUT	LVCMOS18	49	12	
F14	FPGA_TP[2]	High	Performance	IO_L16P_T2U_N6_QBC_AD3P_49	1	OUTPUT	LVCMOS18	49	12	
F15	FPGA_TP[6]	High	Performance	IO_L18P_T2U_N10_AD2P_49	1	OUTPUT	LVCMOS18	49	12	
F16				GND		GND				
F17		High	Performance	IO_L14N_T2L_N3_GC_50	1	GCLK		50		
F18		High	Performance	IO_L14P_T2L_N2_GC_50	1	GCLK		50		
F19		High	Performance	IO_L13N_T2L_N1_GC_QBC_50	1	GCLK		50		

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F20		High	Performance	IO_L15P_T2L_N4_AD11P_50	1	User IO		50		
F21		High	Performance	VCCO_51		VCCO		51		
F22	DDR4_C0_ODT[0]	High	Performance	IO_T2U_N12_51	1	OUTPUT	SSTL12_DCI	51		40
F23	DDR4_C0_DQ[7]	High	Performance	IO_L18N_T2U_N11_AD2N_51	1	BIDIR	POD12_DCI	51		40
F24	DDR4_C0_DQ[3]	High	Performance	IO_L18P_T2U_N10_AD2P_51	1	BIDIR	POD12_DCI	51		40
F25	DDR4_C0_DQ[62]	High	Performance	IO_L12P_T1U_N10_GC_53	1	BIDIR	POD12_DCI	53		40
F26				GND		GND				
F27	DDR4_C0_DQ[58]	High	Performance	IO_L9P_T1L_N4_AD12P_53	1	BIDIR	POD12_DCI	53		40
F28	DDR4_C0_DQ[31]	High	Performance	IO_L9P_T1L_N4_AD12P_52	1	BIDIR	POD12_DCI	52		40
F29	DDR4_C0_DQ[27]	High	Performance	IO_L9N_T1L_N5_AD12N_52	1	BIDIR	POD12_DCI	52		40
F30	DDR4_C0_DQ[29]	High	Performance	IO_L11P_T1U_N8_GC_52	1	BIDIR	POD12_DCI	52		40
F31		High	Performance	VCCO_52		VCCO		52		
F32	DDR4_C0_DQ[30]	High	Performance	IO_L12N_T1U_N11_GC_52	1	BIDIR	POD12_DCI	52		40
F33	DDR4_C0_DQ[19]	High	Performance	IO_L3P_T0L_N4_AD15P_52	1	BIDIR	POD12_DCI	52		40
F34		High	Performance	IO_L1N_T0L_N1_DBC_52	1	User IO		52		
F35				GND		GND				
F36				MGTAVTT_L		Gigabit Power				
F37				GND		GND				
F38				MGTAVTT_L		Gigabit Power				
F39				GND		GND				
F40				GND		GND				
F41				GND		GND				
F42				GND		GND				
G1	GTHRX_232_01N			MGTHRXN1_232	1	INPUT				
G2	GTHRX_232_01P			MGTHRXP1_232	1	INPUT				
G3				GND		GND				
G4				MGTAVTT_RN		Gigabit Power				

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G5	GTHTX_232_01N			MGTHTXN1_232	1	OUTPUT				
G6	GTHTX_232_01P			MGTHTXP1_232	1	OUTPUT				
G7				GND		GND				
G8				MGTAVCC_RN		Gigabit Power				
G9	GTH_FPGA_232_1N			MGTREFCLK1N_232	1	INPUT				
G10	GTH_FPGA_232_1P			MGTREFCLK1P_232	1	INPUT				
G11				GND		GND				
G12	FPGA_TP[1]	High	Performance	IO_L15N_T2L_N5_AD11N_49	1	OUTPUT	LVCMOS18	49	12	
G13				GND		GND				
G14	FPGA_USR_CLK_N	High	Performance	IO_L14N_T2L_N3_GC_49	1	INPUT	LVCMOS18	49		
G15	FPGA_USR_CLK_P	High	Performance	IO_L14P_T2L_N2_GC_49	1	INPUT	LVCMOS18	49		
G16		High	Performance	IO_L10N_T1U_N7_QBC_AD4N_50	1	User IO		50		
G17		High	Performance	IO_L12N_T1U_N11_GC_50	1	GCLK		50		
G18		High	Performance	VCCO_50		VCCO		50		
G19		High	Performance	IO_L13P_T2L_N0_GC_QBC_50	1	GCLK		50		
G20		High	Performance	IO_T2U_N12_50	1	User IO		50		
G21	DDR4_C0_DQ[5]	High	Performance	IO_L14N_T2L_N3_GC_51	1	BIDIR	POD12_DCI	51		40
G22	DDR4_C0_DQ[1]	High	Performance	IO_L14P_T2L_N2_GC_51	1	BIDIR	POD12_DCI	51		40
G23				GND		GND				
G24	DDR4_C0_CKE[0]	High	Performance	IO_L13N_T2L_N1_GC_QBC_51	1	OUTPUT	SSTL12_DCI	51		40
G25	DDR4_C0_DQ[50]	High	Performance	IO_L6P_T0U_N10_AD6P_53	1	BIDIR	POD12_DCI	53		40
G26	DDR4_C0_DQ[48]	High	Performance	IO_L6N_T0U_N11_AD6N_53	1	BIDIR	POD12_DCI	53		40
G27		High	Performance	IO_L7N_T1L_N1_QBC_AD13N_53	1	User IO		53		
G28		High	Performance	VCCO_52		VCCO		52		
G29	DDR4_C0_DQS_T[3]	High	Performance	IO_L10P_T1U_N6_QBC_AD4P_52	1	BIDIR	DIFF_POD12_DCI	52		40

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G30	DDR4_C0_DQS_C[3]	High	Performance	IO_L10N_T1U_N7_QBC_AD4N_52	1	BIDIR	DIFF_POD12_DCI	52		40
G31	DDR4_C0_DQ[26]	High	Performance	IO_L12P_T1U_N10_GC_52	1	BIDIR	POD12_DCI	52		40
G32	DDR4_C0_DQ[21]	High	Performance	IO_L2N_T0L_N3_52	1	BIDIR	POD12_DCI	52		40
G33				GND		GND				
G34	DDR4_C0_DM_DBI_N[2]	High	Performance	IO_L1P_T0L_N0_DBC_52	1	BIDIR	POD12_DCI	52		40
G35				GND		GND				
G36	GTHTX_133_00P			MGTHTXP0_133	1	OUTPUT				
G37	GTHTX_133_00N			MGTHTXN0_133	1	OUTPUT				
G38				GND		GND				
G39				MGTAVTT_L		Gigabit Power				
G40				GND		GND				
G41	GTHRX_132_03P			MGTHRXP3_132	1	INPUT				
G42	GTHRX_132_03N			MGTHRXN3_132	1	INPUT				
H1				GND		GND				
H2				MGTAVTT_RN		Gigabit Power				
H3	GTHRX_232_00N			MGTHRXN0_232	1	INPUT				
H4	GTHRX_232_00P			MGTHRXP0_232	1	INPUT				
H5				GND		GND				
H6				MGTAVCC_RN		Gigabit Power				
H7	GTHTX_232_00N			MGTHTXN0_232	1	OUTPUT				
H8	GTHTX_232_00P			MGTHTXP0_232	1	OUTPUT				
H9				GND		GND				
H10				GND		GND				
H11				GND		GND				
H12	FPGA_TP[0]	High	Performance	IO_L15P_T2L_N4_AD11P_49	1	OUTPUT	LVCMOS18	49	12	
H13		High	Performance	IO_L13N_T2L_N1_GC_QBC_49	1	GCLK		49		

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H14		High	Performance	IO_L13P_T2L_N0_GC_QBC_49	1	GCLK		49		
H15		High	Performance	VCCO_49		VCCO		49		
H16		High	Performance	IO_L10P_T1U_N6_QBC_AD4P_50	1	User IO		50		
H17		High	Performance	IO_L12P_T1U_N10_GC_50	1	GCLK		50		
H18		High	Performance	IO_L11N_T1U_N9_GC_50	1	GCLK		50		
H19		High	Performance	IO_L11P_T1U_N8_GC_50	1	GCLK		50		
H20				GND		GND				
H21	DDR4_C0_BG[0]	High	Performance	IO_L12N_T1U_N11_GC_51	1	OUTPUT	SSTL12_DCI	51		40
H22	DDR4_C0_SYS_CLK_N	High	Performance	IO_L11N_T1U_N9_GC_51	1	INPUT	DIFF_SSTL12	51		
H23	DDR4_C0_SYS_CLK_P	High	Performance	IO_L11P_T1U_N8_GC_51	1	INPUT	DIFF_SSTL12	51		
H24	DDR4_C0_DM_DBI_N[0]	High	Performance	IO_L13P_T2L_N0_GC_QBC_51	1	BIDIR	POD12_DCI	51		40
H25		High	Performance	VCCO_53		VCCO		53		
H26	DDR4_C0_DQ[52]	High	Performance	IO_L5N_T0U_N9_AD14N_53	1	BIDIR	POD12_DCI	53		40
H27	DDR4_C0_DM_DBI_N[7]	High	Performance	IO_L7P_T1L_N0_QBC_AD13P_53	1	BIDIR	POD12_DCI	53		40
H28		High	Performance	IO_T1U_N12_52	1	User IO		52		
H29		High	Performance	IO_L7N_T1L_N1_QBC_AD13N_52	1	User IO		52		
H30				GND		GND				
H31	DDR4_C0_DQ[28]	High	Performance	IO_L8N_T1L_N3_AD5N_52	1	BIDIR	POD12_DCI	52		40
H32	DDR4_C0_DQ[23]	High	Performance	IO_L2P_T0L_N2_52	1	BIDIR	POD12_DCI	52		40
H33	DDR4_C0_DQ[22]	High	Performance	IO_L5N_T0U_N9_AD14N_52	1	BIDIR	POD12_DCI	52		40
H34	DDR4_C0_DQ[20]	High	Performance	IO_L6N_T0U_N11_AD6N_52	1	BIDIR	POD12_DCI	52		40
H35				GND		GND				
H36				GND		GND				
H37				MGTAVCC_L		Gigabit Power				
H38	GTHTX_132_03P			MGTHTXP3_132	1	OUTPUT				

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H39	GTHTX_132_03N			MGTHTXN3_132	1	OUTPUT				
H40				GND		GND				
H41				GND		GND				
H42				GND		GND				
J1	GTHRX_231_03N			MGTHRXN3_231	1	INPUT				
J2	GTHRX_231_03P			MGTHRXP3_231	1	INPUT				
J3				GND		GND				
J4				MGTAVTT_RN		Gigabit Power				
J5	GTHTX_231_03N			MGTHTXN3_231	1	OUTPUT				
J6	GTHTX_231_03P			MGTHTXP3_231	1	OUTPUT				
J7				GND		GND				
J8				MGTAVCC_RN		Gigabit Power				
J9				GND		GND				
J10		High	Performance	IO_L10N_T1U_N7_QBC_AD4N_49	1	User IO		49		
J11		High	Performance	IO_L10P_T1U_N6_QBC_AD4P_49	1	User IO		49		
J12		High	Performance	VCCO_49		VCCO		49		
J13		High	Performance	IO_L12N_T1U_N11_GC_49	1	GCLK		49		
J14		High	Performance	IO_L12P_T1U_N10_GC_49	1	GCLK		49		
J15		High	Performance	IO_L11N_T1U_N9_GC_49	1	GCLK		49		
J16		High	Performance	IO_L8N_T1L_N3_AD5N_50	1	User IO		50		
J17				GND		GND				
J18		High	Performance	IO_L9N_T1L_N5_AD12N_50	1	User IO		50		
J19		High	Performance	IO_T1U_N12_50	1	User IO		50		
J20	DDR4_C0_BA[0]	High	Performance	IO_L10N_T1U_N7_QBC_AD4N_51	1	OUTPUT	SSTL12_DCI	51		40
J21	DDR4_C0_BA[1]	High	Performance	IO_L12P_T1U_N10_GC_51	1	OUTPUT	SSTL12_DCI	51		40
J22		High	Performance	VCCO_51		VCCO		51		

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J23	DDR4_C0_ADDR[15]	High	Performance	IO_L9N_T1L_N5_AD12N_51	1	OUTPUT	SSTL12_DCI	51		40
J24	DDR4_C0_CS_N[0]	High	Performance	IO_T1U_N12_51	1	OUTPUT	SSTL12_DCI	51		40
J25	DDR4_C0_DQS_C[6]	High	Performance	IO_L4N_T0U_N7_DBC_AD7N_53	1	BIDIR	DIFF_POD12_DCI	53		40
J26	DDR4_C0_DQ[54]	High	Performance	IO_L5P_T0U_N8_AD14P_53	1	BIDIR	POD12_DCI	53		40
J27				GND		GND				
J28		High	Performance	VREF_52		Voltage		52		
J29	DDR4_C0_DM_DBI_N[3]	High	Performance	IO_L7P_T1L_N0_QBC_AD13P_52	1	BIDIR	POD12_DCI	52		40
J30	DDR4_C0_DQ[24]	High	Performance	IO_L8P_T1L_N2_AD5P_52	1	BIDIR	POD12_DCI	52		40
J31		High	Performance	IO_T0U_N12_VRP_52	1	User IO		52		
J32		High	Performance	VCCO_52		VCCO		52		
J33	DDR4_C0_DQ[18]	High	Performance	IO_L5P_T0U_N8_AD14P_52	1	BIDIR	POD12_DCI	52		40
J34	DDR4_C0_DQ[16]	High	Performance	IO_L6P_T0U_N10_AD6P_52	1	BIDIR	POD12_DCI	52		40
J35				GND		GND				
J36	GTHTX_132_02P			MGTHTXP2_132	1	OUTPUT				
J37	GTHTX_132_02N			MGTHTXN2_132	1	OUTPUT				
J38				MGTAVTT_L		Gigabit Power				
J39				GND		GND				
J40				GND		GND				
J41	GTHRX_132_02P			MGTHRXP2_132	1	INPUT				
J42	GTHRX_132_02N			MGTHRXN2_132	1	INPUT				
K1				GND		GND				
K2				GND		GND				
K3	GTHRX_231_02N			MGTHRXN2_231	1	INPUT				
K4	GTHRX_231_02P			MGTHRXP2_231	1	INPUT				
K5				GND		GND				
K6				MGTAVTT_RN		Gigabit Power				

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K7	GTH_FPGA_232_0N			MGTREFCLK0N_232	1	INPUT				
K8	GTH_FPGA_232_0P			MGTREFCLK0P_232	1	INPUT				
K9				GND		GND				
K10	FPGA_DSW[7]	High	Performance	IO_L8N_T1L_N3_AD5N_49	1	INPUT	LVCMOS18	49		
K11	FPGA_DSW[6]	High	Performance	IO_L8P_T1L_N2_AD5P_49	1	INPUT	LVCMOS18	49		
K12	FPGA_PSW[1]	High	Performance	IO_L9N_T1L_N5_AD12N_49	1	INPUT	LVCMOS18	49		
K13	FPGA_PSW[0]	High	Performance	IO_L9P_T1L_N4_AD12P_49	1	INPUT	LVCMOS18	49		
K14				GND		GND				
K15		High	Performance	IO_L11P_T1U_N8_GC_49	1	GCLK		49		
K16		High	Performance	IO_L8P_T1L_N2_AD5P_50	1	User IO		50		
K17		High	Performance	IO_L7N_T1L_N1_QBC_AD13N_50	1	User IO		50		
K18		High	Performance	IO_L9P_T1L_N4_AD12P_50	1	User IO		50		
K19		High	Performance	VCCO_50		VCCO		50		
K20	DDR4_C0_ADDR[13]	High	Performance	IO_L8N_T1L_N3_AD5N_51	1	OUTPUT	SSTL12_DCI	51		40
K21	DDR4_C0_ADDR[16]	High	Performance	IO_L10P_T1U_N6_QBC_AD4P_51	1	OUTPUT	SSTL12_DCI	51		40
K22	DDR4_C0_ADDR[11]	High	Performance	IO_L7N_T1L_N1_QBC_AD13N_51	1	OUTPUT	SSTL12_DCI	51		40
K23	DDR4_C0_ADDR[14]	High	Performance	IO_L9P_T1L_N4_AD12P_51	1	OUTPUT	SSTL12_DCI	51		40
K24				GND		GND				
K25	DDR4_C0_DQS_T[6]	High	Performance	IO_L4P_T0U_N6_DBC_AD7P_53	1	BIDIR	DIFF_POD12_DCI	53		40
K26	DDR4_C0_DQ[55]	High	Performance	IO_L3P_T0L_N4_AD15P_53	1	BIDIR	POD12_DCI	53		40
K27	DDR4_C0_DQ[51]	High	Performance	IO_L3N_T0L_N5_AD15N_53	1	BIDIR	POD12_DCI	53		40
K28	DDR4_C1_ADDR[11]	High	Performance	IO_L15N_T2L_N5_AD11N_48	0	OUTPUT	SSTL12_DCI	48		40
K29		High	Performance	VCCO_48		VCCO		48		
K30	DDR4_C1_CK_T[0]	High	Performance	IO_L17P_T2U_N8_AD10P_48	0	OUTPUT	DIFF_SSTL12_DCI	48		40
K31	DDR4_C1_CK_C[0]	High	Performance	IO_L17N_T2U_N9_AD10N_48	0	OUTPUT	DIFF_SSTL12_DCI	48		40

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K32	DDR4_C0_DQS_T[2]	High	Performance	IO_L4P_T0U_N6_DBC_AD7P_52	1	BIDIR	DIFF_POD12_DCI	52		40
K33	DDR4_C0_DQS_C[2]	High	Performance	IO_L4N_T0U_N7_DBC_AD7N_52	1	BIDIR	DIFF_POD12_DCI	52		40
K34				GND		GND				
K35				GND		GND				
K36				MGTAVCC_L		Gigabit Power				
K37				GND		GND				
K38	GTHTX_132_01P			MGTHTXP1_132	1	OUTPUT				
K39	GTHTX_132_01N			MGTHTXN1_132	1	OUTPUT				
K40				GND		GND				
K41				GND		GND				
K42				GND		GND				
L1	GTHRX_231_01N			MGTHRXN1_231	1	INPUT				
L2	GTHRX_231_01P			MGTHRXP1_231	1	INPUT				
L3				GND		GND				
L4				MGTAVTT_RN		Gigabit Power				
L5	GTHTX_231_02N			MGTHTXN2_231	1	OUTPUT				
L6	GTHTX_231_02P			MGTHTXP2_231	1	OUTPUT				
L7				GND		GND				
L8				MGTAVCC_RN		Gigabit Power				
L9				GND		GND				
L10	FPGA_DSW[3]	High	Performance	IO_L6N_T0U_N11_AD6N_49	1	INPUT	LVCMOS18	49		
L11				GND		GND				
L12	FPGA_DSW[1]	High	Performance	IO_L5N_T0U_N9_AD14N_49	1	INPUT	LVCMOS18	49		
L13	FPGA_DSW[5]	High	Performance	IO_L7N_T1L_N1_QBC_AD13N_49	1	INPUT	LVCMOS18	49		
L14	FPGA_DSW[4]	High	Performance	IO_L7P_T1L_N0_QBC_AD13P_49	1	INPUT	LVCMOS18	49		

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L15		High	Performance	IO_T1U_N12_49	1	User IO		49		
L16		High	Performance	VCCO_50		VCCO		50		
L17		High	Performance	IO_L7P_T1L_N0_QBC_AD13P_50	1	User IO		50		
L18		High	Performance	IO_L6N_T0U_N11_AD6N_50	1	User IO		50		
L19		High	Performance	IO_L6P_T0U_N10_AD6P_50	1	User IO		50		
L20	DDR4_C0_ADDR[12]	High	Performance	IO_L8P_T1L_N2_AD5P_51	1	OUTPUT	SSTL12_DCI	51		40
L21				GND		GND				
L22	DDR4_C0_ADDR[10]	High	Performance	IO_L7P_T1L_N0_QBC_AD13P_51	1	OUTPUT	SSTL12_DCI	51		40
L23	DDR4_C0_ADDR[9]	High	Performance	IO_L6N_T0U_N11_AD6N_51	1	OUTPUT	SSTL12_DCI	51		40
L24	DDR4_C0_ADDR[8]	High	Performance	IO_L6P_T0U_N10_AD6P_51	1	OUTPUT	SSTL12_DCI	51		40
L25	DDR4_C0_DQ[49]	High	Performance	IO_L2N_T0L_N3_53	1	BIDIR	POD12_DCI	53		40
L26		High	Performance	VCCO_53		VCCO		53		
L27		High	Performance	IO_L1N_T0L_N1_DBC_53	1	User IO		53		
L28	DDR4_C1_ADDR[13]	High	Performance	IO_L15P_T2L_N4_AD11P_48	0	OUTPUT	SSTL12_DCI	48		40
L29	DDR4_C1_ADDR[9]	High	Performance	IO_L16N_T2U_N7_QBC_AD3N_48	0	OUTPUT	SSTL12_DCI	48		40
L30	DDR4_C1_SYS_CLK_N	High	Performance	IO_L13N_T2L_N1_GC_QBC_48	0	INPUT	DIFF_SSTL12	48		
L31				GND		GND				
L32	DDR4_C1_DQS_T[0]	High	Performance	IO_L10P_T1U_N6_QBC_AD4P_48	0	BIDIR	DIFF_POD12_DCI	48		40
L33	DDR4_C1_DQS_C[0]	High	Performance	IO_L10N_T1U_N7_QBC_AD4N_48	0	BIDIR	DIFF_POD12_DCI	48		40
L34	DDR4_C1_DQ[1]	High	Performance	IO_L9N_T1L_N5_AD12N_48	0	BIDIR	POD12_DCI	48		40
L35				GND		GND				
L36	GTH_FPGA_133_1P			MGTREFCLK1P_133	1	INPUT				
L37	GTH_FPGA_133_1N			MGTREFCLK1N_133	1	INPUT				
L38				GND		GND				
L39				MGTAVTT_L		Gigabit Power				

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L40				GND		GND				
L41	GTHRX_132_01P			MGTHRXP1_132	1	INPUT				
L42	GTHRX_132_01N			MGTHRXN1_132	1	INPUT				
M1				GND		GND				
M2				MGTAVTT_RN		Gigabit Power				
M3	GTHTX_231_01N			MGTHTXN1_231	1	OUTPUT				
M4	GTHTX_231_01P			MGTHTXP1_231	1	OUTPUT				
M5				GND		GND				
M6				MGTAVCC_RN		Gigabit Power				
M7	GTH_FPGA_231_1N			MGTREFCLK1N_231	1	INPUT				
M8	GTH_FPGA_231_1P			MGTREFCLK1P_231	1	INPUT				
M9				GND		GND				
M10	FPGA_DSW[2]	High	Performance	IO_L6P_T0U_N10_AD6P_49	1	INPUT	LVCMOS18	49		
M11	FPGA_LED[7]	High	Performance	IO_L4N_T0U_N7_DBC_AD7N_49	1	OUTPUT	LVCMOS18	49	12	
M12	FPGA_DSW[0]	High	Performance	IO_L5P_T0U_N8_AD14P_49	1	INPUT	LVCMOS18	49		
M13		High	Performance	VCCO_49		VCCO		49		
M14	FPGA_LED[1]	High	Performance	IO_L1N_T0L_N1_DBC_49	1	OUTPUT	LVCMOS18	49	12	
M15		High	Performance	IO_L3N_T0L_N5_AD15N_50	1	User IO		50		
M16		High	Performance	IO_L3P_T0L_N4_AD15P_50	1	User IO		50		
M17		High	Performance	IO_L5N_T0U_N9_AD14N_50	1	User IO		50		
M18				GND		GND				
M19		High	Performance	IO_L4N_T0U_N7_DBC_AD7N_50	1	User IO		50		
M20	DDR4_C0_ADDR[7]	High	Performance	IO_L5N_T0U_N9_AD14N_51	1	OUTPUT	SSTL12_DCI	51		40
M21	DDR4_C0_ADDR[6]	High	Performance	IO_L5P_T0U_N8_AD14P_51	1	OUTPUT	SSTL12_DCI	51		40
M22	DDR4_C0_ADDR[5]	High	Performance	IO_L3N_T0L_N5_AD15N_51	1	OUTPUT	SSTL12_DCI	51		40
M23		High	Performance	VCCO_51		VCCO		51		
M24	DDR4_C0_CK_C[0]	High	Performance	IO_L4N_T0U_N7_DBC_AD7N_51	1	OUTPUT	DIFF_SSTL12_	51		40

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							DCI			
M25	DDR4_C0_DQ[53]	High	Performance	IO_L2P_T0L_N2_53	1	BIDIR	POD12_DCI	53		40
M26		High	Performance	IO_T0U_N12_VRP_53	1	User IO		53		
M27	DDR4_C0_DM_DBI_N[6]	High	Performance	IO_L1P_T0L_N0_DBC_53	1	BIDIR	POD12_DCI	53		40
M28				GND		GND				
M29	DDR4_C1_ADDR[1]	High	Performance	IO_L16P_T2U_N6_QBC_AD3P_48	0	OUTPUT	SSTL12_DCI	48		40
M30	DDR4_C1_SYS_CLK_P	High	Performance	IO_L13P_T2L_N0_GC_QBC_48	0	INPUT	DIFF_SSTL12	48		
M31	DDR4_C1_DQ[5]	High	Performance	IO_L11N_T1U_N9_GC_48	0	BIDIR	POD12_DCI	48		40
M32	DDR4_C1_DQ[3]	High	Performance	IO_L12N_T1U_N11_GC_48	0	BIDIR	POD12_DCI	48		40
M33		High	Performance	VCCO_48		VCCO		48		
M34	DDR4_C1_DQ[7]	High	Performance	IO_L9P_T1L_N4_AD12P_48	0	BIDIR	POD12_DCI	48		40
M35				GND		GND				
M36				GND		GND				
M37				MGTAVCC_L		Gigabit Power				
M38	GTHTX_132_00P			MGTHTXP0_132	1	OUTPUT				
M39	GTHTX_132_00N			MGTHTXN0_132	1	OUTPUT				
M40				GND		GND				
M41				GND		GND				
M42				GND		GND				
N1	GTHRX_231_00N			MGTHRXN0_231	1	INPUT				
N2	GTHRX_231_00P			MGTHRXP0_231	1	INPUT				
N3				GND		GND				
N4				MGTAVTT_RN		Gigabit Power				
N5	GTHTX_231_00N			MGTHTXN0_231	1	OUTPUT				
N6	GTHTX_231_00P			MGTHTXP0_231	1	OUTPUT				
N7				GND		GND				

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N8				MGTAVCC_RN		Gigabit Power				
N9				GND		GND				
N10		High	Performance	VCCO_49		VCCO		49		
N11	FPGA_LED[6]	High	Performance	IO_L4P_T0U_N6_DBC_AD7P_49	1	OUTPUT	LVCMOS18	49	12	
N12	FPGA_LED[5]	High	Performance	IO_L3N_T0L_N5_AD15N_49	1	OUTPUT	LVCMOS18	49	12	
N13	FPGA_LED[4]	High	Performance	IO_L3P_T0L_N4_AD15P_49	1	OUTPUT	LVCMOS18	49	12	
N14	FPGA_LED[0]	High	Performance	IO_L1P_T0L_N0_DBC_49	1	OUTPUT	LVCMOS18	49	12	
N15				GND		GND				
N16		High	Performance	IO_L1N_T0L_N1_DBC_50	1	User IO		50		
N17		High	Performance	IO_L5P_T0U_N8_AD14P_50	1	User IO		50		
N18		High	Performance	IO_L2N_T0L_N3_50	1	User IO		50		
N19		High	Performance	IO_L4P_T0U_N6_DBC_AD7P_50	1	User IO		50		
N20		High	Performance	VCCO_51		VCCO		51		
N21	DDR4_C0_ADDR[1]	High	Performance	IO_L1N_T0L_N1_DBC_51	1	OUTPUT	SSTL12_DCI	51		40
N22	DDR4_C0_ADDR[4]	High	Performance	IO_L3P_T0L_N4_AD15P_51	1	OUTPUT	SSTL12_DCI	51		40
N23	DDR4_C0_ADDR[3]	High	Performance	IO_L2N_T0L_N3_51	1	OUTPUT	SSTL12_DCI	51		40
N24	DDR4_C0_CK_T[0]	High	Performance	IO_L4P_T0U_N6_DBC_AD7P_51	1	OUTPUT	DIFF_SSTL12_DCI	51		40
N25				GND		GND				
N26	DDR4_C1_BA[0]	High	Performance	IO_L18P_T2U_N10_AD2P_48	0	OUTPUT	SSTL12_DCI	48		40
N27	DDR4_C1_RESET_N	High	Performance	IO_L18N_T2U_N11_AD2N_48	0	OUTPUT	LVCMOS12	48	8	
N28	DDR4_C1_ADDR[6]	High	Performance	IO_L14P_T2L_N2_GC_48	0	OUTPUT	SSTL12_DCI	48		40
N29	DDR4_C1_ADDR[8]	High	Performance	IO_L14N_T2L_N3_GC_48	0	OUTPUT	SSTL12_DCI	48		40
N30		High	Performance	VCCO_48		VCCO		48		
N31	DDR4_C1_DQ[0]	High	Performance	IO_L11P_T1U_N8_GC_48	0	BIDIR	POD12_DCI	48		40
N32	DDR4_C1_DQ[4]	High	Performance	IO_L12P_T1U_N10_GC_48	0	BIDIR	POD12_DCI	48		40
N33	DDR4_C1_DQ[6]	High	Performance	IO_L8N_T1L_N3_AD5N_48	0	BIDIR	POD12_DCI	48		40

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N34	DDR4_C1_ADDR[2]	High	Performance	IO_L7N_T1L_N1_QBC_AD13N_48	0	OUTPUT	SSTL12_DCI	48		40
N35				GND		GND				
N36	GTH_FPGA_133_0P			MGTREFCLK0P_133	1	INPUT				
N37	GTH_FPGA_133_0N			MGTREFCLK0N_133	1	INPUT				
N38				MGTAVTT_L		Gigabit Power				
N39				GND		GND				
N40				GND		GND				
N41	GTHRX_132_00P			MGTHRXP0_132	1	INPUT				
N42	GTHRX_132_00N			MGTHRXN0_132	1	INPUT				
P1				GND		GND				
P2				GND		GND				
P3	GTHRX_230_03N			MGTHRXN3_230	1	INPUT				
P4	GTHRX_230_03P			MGTHRXP3_230	1	INPUT				
P5				GND		GND				
P6				MGTAVTT_RN		Gigabit Power				
P7	GTH_FPGA_231_0N			MGTREFCLK0N_231	1	INPUT				
P8	GTH_FPGA_231_0P			MGTREFCLK0P_231	1	INPUT				
P9				GND		GND				
P10	FPGA_LED[3]	High	Performance	IO_L2N_T0L_N3_49	1	OUTPUT	LVCMOS18	49	12	
P11	FPGA_LED[2]	High	Performance	IO_L2P_T0L_N2_49	1	OUTPUT	LVCMOS18	49	12	
P12				GND		GND				
P13		High	Performance	IO_T0U_N12_VRP_49	1	User IO		49		
P14		High	Performance	VREF_49		Voltage		49		
P15		High	Performance	IO_T0U_N12_VRP_50	1	User IO		50		
P16		High	Performance	IO_L1P_T0L_N0_DBC_50	1	User IO		50		
P17		High	Performance	VCCO_50		VCCO		50		

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P18		High	Performance	IO_L2P_T0L_N2_50	1	User IO		50		
P19		High	Performance	VREF_50		Voltage		50		
P20		High	Performance	IO_T0U_N12_VRP_51	1	User IO		51		
P21	DDR4_C0_ADDR[0]	High	Performance	IO_L1P_T0L_N0_DBC_51	1	OUTPUT	SSTL12_DCI	51		40
P22				GND		GND				
P23	DDR4_C0_ADDR[2]	High	Performance	IO_L2P_T0L_N2_51	1	OUTPUT	SSTL12_DCI	51		40
P24		High	Performance	VREF_51		Voltage		51		
P25		High	Performance	VREF_53		Voltage		53		
P26	DDR4_C1_BG[0]	High	Performance	IO_T2U_N12_48	0	OUTPUT	SSTL12_DCI	48		40
P27		High	Performance	VCCO_48		VCCO		48		
P28	DDR4_C1_ADDR[3]	High	Performance	IO_L23P_T3U_N8_48	0	OUTPUT	SSTL12_DCI	48		40
P29	DDR4_C1_ADDR[0]	High	Performance	IO_L23N_T3U_N9_48	0	OUTPUT	SSTL12_DCI	48		40
P30	DDR4_C1_ADDR[4]	High	Performance	IO_L19N_T3L_N1_DBC_AD9N_48	0	OUTPUT	SSTL12_DCI	48		40
P31	DDR4_C1_ADDR[10]	High	Performance	IO_T1U_N12_48	0	OUTPUT	SSTL12_DCI	48		40
P32				GND		GND				
P33	DDR4_C1_DQ[2]	High	Performance	IO_L8P_T1L_N2_AD5P_48	0	BIDIR	POD12_DCI	48		40
P34	DDR4_C1_DM_DBI_N[0]	High	Performance	IO_L7P_T1L_N0_QBC_AD13P_48	0	BIDIR	POD12_DCI	48		40
P35				GND		GND				
P36				MGTVCCAUX_L		Gigabit Power				
P37				GND		GND				
P38	GTHTX_131_03P			MGTHTXP3_131	1	OUTPUT				
P39	GTHTX_131_03N			MGTHTXN3_131	1	OUTPUT				
P40				GND		GND				
P41				GND		GND				
P42				GND		GND				
R1	GTHRX_230_02N			MGTHRXN2_230	1	INPUT				

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R2	GTHRX_230_02P			MGTHRXP2_230	1	INPUT				
R3				GND		GND				
R4				MGTAVTT_RN		Gigabit Power				
R5	GTHTX_230_03N			MGTHTXN3_230	1	OUTPUT				
R6	GTHTX_230_03P			MGTHTXP3_230	1	OUTPUT				
R7				GND		GND				
R8				MGTVCCAUX_RN		Gigabit Power				
R9		Dedi	cated	DONE_0		Config		0		
R10				VCCBRAM		VCCBRAM				
R11				GND		GND				
R12				VCCINT		VCCINT				
R13				GND		GND				
R14				VCCINT		VCCINT				
R15				GND		GND				
R16				VCCINT		VCCINT				
R17				GND		GND				
R18				VCCINT		VCCINT				
R19				GND		GND				
R20				VCCINT		VCCINT				
R21				GND		GND				
R22				VCCINT_IO		VCCINT				
R23				GND		GND				
R24				VCCAUX_IO		VCCAUX				
R25				GND		GND				
R26				VCCAUX		VCCAUX				
R27	DDR4_C1_ACT_N	High	Performance	IO_T3U_N12_48	0	OUTPUT	SSTL12_DCI	48		40
R28	DDR4_C1_ODT[0]	High	Performance	IO_L21N_T3L_N5_AD8N_48	0	OUTPUT	SSTL12_DCI	48		40

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R29				GND		GND				
R30	DDR4_C1_ADDR[14]	High	Performance	IO_L19P_T3L_N0_DBC_AD9P_48	0	OUTPUT	SSTL12_DCI	48		40
R31	DDR4_C1_DQ[9]	High	Performance	IO_L6P_T0U_N10_AD6P_48	0	BIDIR	POD12_DCI	48		40
R32	DDR4_C1_DQ[13]	High	Performance	IO_L6N_T0U_N11_AD6N_48	0	BIDIR	POD12_DCI	48		40
R33		High	Performance	IO_T0U_N12_VRP_48	0	User IO		48		
R34		High	Performance	VCCO_48		VCCO		48		
R35				GND		GND				
R36				MGTREFCLK1P_132	1	Gigabit				
R37				MGTREFCLK1N_132	1	Gigabit				
R38				GND		GND				
R39				MGTAVTT_L		Gigabit Power				
R40				GND		GND				
R41	GTHRX_131_03P			MGTHRXP3_131	1	INPUT				
R42	GTHRX_131_03N			MGTHRXN3_131	1	INPUT				
T1				GND		GND				
T2				MGTAVTT_RN		Gigabit Power				
T3	GTHTX_230_02N			MGTHTXN2_230	1	OUTPUT				
T4	GTHTX_230_02P			MGTHTXP2_230	1	OUTPUT				
T5				GND		GND				
T6				MGTAVCC_RN		Gigabit Power				
T7				MGTREFCLK1N_230	1	Gigabit				
T8				MGTREFCLK1P_230	1	Gigabit				
T9		Dedi	cated	PUDC_B_0		Config		0		
T10				GND		GND				
T11				VCCINT		VCCINT				
T12				GND		GND				
T13				VCCINT		VCCINT				

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T14				GND		GND				
T15				VCCINT		VCCINT				
T16				GND		GND				
T17				VCCINT		VCCINT				
T18				GND		GND				
T19				VCCINT		VCCINT				
T20				GND		GND				
T21				VCCINT		VCCINT				
T22				GND		GND				
T23				VCCAUX_IO		VCCAUX				
T24				GND		GND				
T25				VCCAUX_IO		VCCAUX				
T26				GND		GND				
T27				VCCAUX		VCCAUX				
T28	DDR4_C1_CKE[0]	High	Performance	IO_L21P_T3L_N4_AD8P_48	0	OUTPUT	SSTL12_DCI	48		40
T29	DDR4_C1_ADDR[7]	High	Performance	IO_L24N_T3U_N11_48	0	OUTPUT	SSTL12_DCI	48		40
T30	DDR4_C1_ADDR[5]	High	Performance	IO_L20N_T3L_N3_AD1N_48	0	OUTPUT	SSTL12_DCI	48		40
T31		High	Performance	VCCO_48		VCCO		48		
T32	DDR4_C1_DQ[10]	High	Performance	IO_L3N_T0L_N5_AD15N_48	0	BIDIR	POD12_DCI	48		40
T33	DDR4_C1_DQ[15]	High	Performance	IO_L5P_T0U_N8_AD14P_48	0	BIDIR	POD12_DCI	48		40
T34	DDR4_C1_DQ[11]	High	Performance	IO_L5N_T0U_N9_AD14N_48	0	BIDIR	POD12_DCI	48		40
T35				GND		GND				
T36				GND		GND				
T37				MGTAVCC_L		Gigabit Power				
T38	GTHTX_131_02P			MGTHTXP2_131	1	OUTPUT				
T39	GTHTX_131_02N			MGTHTXN2_131	1	OUTPUT				
T40				GND		GND				

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T41				GND		GND				
T42				GND		GND				
U1	GTHRX_230_01N			MGTHRXN1_230	1	INPUT				
U2	GTHRX_230_01P			MGTHRXP1_230	1	INPUT				
U3				GND		GND				
U4				MGTAVTT_RN		Gigabit Power				
U5	GTHTX_230_01N			MGTHTXN1_230	1	OUTPUT				
U6	GTHTX_230_01P			MGTHTXP1_230	1	OUTPUT				
U7				GND		GND				
U8				MGTAVCC_RN		Gigabit Power				
U9		Dedi	cated	CFGBVS_0		Config		0		
U10				VCCBRAM		VCCBRAM				
U11		Dedi	cated	TDO_0		Config		0		
U12				VCCINT		VCCINT				
U13				GND		GND				
U14				VCCINT		VCCINT				
U15				GND		GND				
U16				VCCINT		VCCINT				
U17				GND		GND				
U18				VCCINT		VCCINT				
U19				GND		GND				
U20				VCCINT		VCCINT				
U21				GND		GND				
U22				VCCINT_IO		VCCINT				
U23				GND		GND				
U24				VCCAUX_IO		VCCAUX				
U25				GND		GND				

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U26				VCCAUX		VCCAUX				
U27				GND		GND				
U28		High	Performance	VCCO_48		VCCO		48		
U29	DDR4_C1_BA[1]	High	Performance	IO_L24P_T3U_N10_48	0	OUTPUT	SSTL12_DCI	48		40
U30	DDR4_C1_ADDR[15]	High	Performance	IO_L20P_T3L_N2_AD1P_48	0	OUTPUT	SSTL12_DCI	48		40
U31	DDR4_C1_DQ[8]	High	Performance	IO_L2N_T0L_N3_48	0	BIDIR	POD12_DCI	48		40
U32	DDR4_C1_DQ[14]	High	Performance	IO_L3P_T0L_N4_AD15P_48	0	BIDIR	POD12_DCI	48		40
U33				GND		GND				
U34	DDR4_C1_CS_N[0]	High	Performance	IO_L1N_T0L_N1_DBC_48	0	OUTPUT	SSTL12_DCI	48		40
U35				GND		GND				
U36				MGTREFCLK0P_132	1	Gigabit				
U37				MGTREFCLK0N_132	1	Gigabit				
U38				MGTAVTT_L		Gigabit Power				
U39				GND		GND				
U40				GND		GND				
U41	GTHRX_131_02P			MGTHRXP2_131	1	INPUT				
U42	GTHRX_131_02N			MGTHRXN2_131	1	INPUT				
V1				GND		GND				
V2				GND		GND				
V3	GTHTX_230_00N			MGTHTXN0_230	1	OUTPUT				
V4	GTHTX_230_00P			MGTHTXP0_230	1	OUTPUT				
V5				GND		GND				
V6				MGTAVTT_RN		Gigabit Power				
V7				MGTREFCLK0N_230	1	Gigabit				
V8				MGTREFCLK0P_230	1	Gigabit				
V9		Dedi	cated	INIT_B_0		Config		0		
V10				GND		GND				

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V11				VCCINT		VCCINT				
V12				GND		GND				
V13				VCCINT		VCCINT				
V14				GND		GND				
V15				VCCINT		VCCINT				
V16				GND		GND				
V17				VCCINT		VCCINT				
V18				GND		GND				
V19				VCCINT		VCCINT				
V20				GND		GND				
V21				VCCINT		VCCINT				
V22				GND		GND				
V23				VCCAUX_IO		VCCAUX				
V24				GND		GND				
V25				VCCAUX_IO		VCCAUX				
V26				GND		GND				
V27		High	Performance	VREF_48		Voltage		48		
V28	DDR4_C1_ADDR[12]	High	Performance	IO_L22P_T3U_N6_DBC_AD0P_48	0	OUTPUT	SSTL12_DCI	48		40
V29	DDR4_C1_ADDR[16]	High	Performance	IO_L22N_T3U_N7_DBC_AD0N_48	0	OUTPUT	SSTL12_DCI	48		40
V30				GND		GND				
V31	DDR4_C1_DQ[12]	High	Performance	IO_L2P_T0L_N2_48	0	BIDIR	POD12_DCI	48		40
V32	DDR4_C1_DQS_T[1]	High	Performance	IO_L4P_T0U_N6_DBC_AD7P_48	0	BIDIR	DIFF_POD12_DCI	48		40
V33	DDR4_C1_DQS_C[1]	High	Performance	IO_L4N_T0U_N7_DBC_AD7N_48	0	BIDIR	DIFF_POD12_DCI	48		40
V34	DDR4_C1_DM_DBI_N[1]	High	Performance	IO_L1P_T0L_N0_DBC_48	0	BIDIR	POD12_DCI	48		40
V35				GND		GND				

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V36				MGTVCCAUX_L		Gigabit Power				
V37				GND		GND				
V38	GTHTX_131_01P			MGTHTXP1_131	1	OUTPUT				
V39	GTHTX_131_01N			MGTHTXN1_131	1	OUTPUT				
V40				GND		GND				
V41				GND		GND				
V42				GND		GND				
W1	GTHRX_230_00N			MGTHRXN0_230	1	INPUT				
W2	GTHRX_230_00P			MGTHRXP0_230	1	INPUT				
W3				GND		GND				
W4				MGTAVTT_RN		Gigabit Power				
W5	GTHTX_228_03N			MGTHTXN3_228	0	OUTPUT				
W6	GTHTX_228_03P			MGTHTXP3_228	0	OUTPUT				
W7				GND		GND				
W8				MGTVCCAUX_RN		Gigabit Power				
W9		Dedi	cated	M0_0		Config		0		
W10				VCCBRAM		VCCBRAM				
W11		Dedi	cated	TDI_0		Config		0		
W12				VCCINT		VCCINT				
W13				GND		GND				
W14				VCCINT		VCCINT				
W15				GND		GND				
W16				VCCINT		VCCINT				
W17				GND		GND				
W18				VCCINT		VCCINT				
W19				GND		GND				
W20				VCCINT		VCCINT				

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W21				GND		GND				
W22				VCCINT		VCCINT				
W23				GND		GND				
W24				VCCAUX_IO		VCCAUX				
W25				GND		GND				
W26				VCCAUX		VCCAUX				
W27				GND		GND				
W28	DDR4_C1_DQ[23]	High	Performance	IO_L24P_T3U_N10_47	0	BIDIR	POD12_DCI	47		40
W29	DDR4_C1_DM_DBI_N[2]	High	Performance	IO_L19P_T3L_N0_DBC_AD9P_47	0	BIDIR	POD12_DCI	47		40
W30		High	Performance	IO_L19N_T3L_N1_DBC_AD9N_47	0	User IO		47		
W31	DDR4_C1_DQ[31]	High	Performance	IO_L18P_T2U_N10_AD2P_47	0	BIDIR	POD12_DCI	47		40
W32		High	Performance	VCCO_47		VCCO		47		
W33	DDR4_C1_DQS_T[3]	High	Performance	IO_L16P_T2U_N6_QBC_AD3P_47	0	BIDIR	DIFF_POD12_DCI	47		40
W34	DDR4_C1_DQS_C[3]	High	Performance	IO_L16N_T2U_N7_QBC_AD3N_47	0	BIDIR	DIFF_POD12_DCI	47		40
W35				GND		GND				
W36	GTH_FPGA_131_1P			MGTREFCLK1P_131	1	INPUT				
W37	GTH_FPGA_131_1N			MGTREFCLK1N_131	1	INPUT				
W38				GND		GND				
W39				MGTAVTT_L		Gigabit Power				
W40				GND		GND				
W41	GTHRX_131_01P			MGTHRXP1_131	1	INPUT				
W42	GTHRX_131_01N			MGTHRXN1_131	1	INPUT				
Y1				GND		GND				
Y2				MGTAVTT_RN		Gigabit Power				
Y3	GTHRX_228_03N			MGTHRXN3_228	0	INPUT				

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Y4	GTHRX_228_03P			MGTHRXP3_228	0	INPUT				
Y5				GND		GND				
Y6				GND		GND				
Y7				MGTREFCLK1N_228	0	Gigabit				
Y8				MGTREFCLK1P_228	0	Gigabit				
Y9		Dedi	cated	M1_0		Config		0		
Y10				GND		GND				
Y11				VCCINT		VCCINT				
Y12				GND		GND				
Y13				VCCINT		VCCINT				
Y14				GND		GND				
Y15				VCCINT		VCCINT				
Y16		Dedi	cated	GNDADC		XADC		0		
Y17		Dedi	cated	VCCADC		XADC		0		
Y18				GND		GND				
Y19				VCCINT		VCCINT				
Y20				GND		GND				
Y21				VCCINT		VCCINT				
Y22				GND		GND				
Y23				VCCINT_IO		VCCINT				
Y24				GND		GND				
Y25				VCCAUX_IO		VCCAUX				
Y26				GND		GND				
Y27	DDR4_C1_DQS_T[2]	High	Performance	IO_L22P_T3U_N6_DBC_AD0P_47	0	BIDIR	DIFF_POD12_DCI	47		40
Y28	DDR4_C1_DQ[21]	High	Performance	IO_L24N_T3U_N11_47	0	BIDIR	POD12_DCI	47		40
Y29		High	Performance	VCCO_47		VCCO		47		

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Y30	DDR4_C1_DQ[19]	High	Performance	IO_L21P_T3L_N4_AD8P_47	0	BIDIR	POD12_DCI	47		40
Y31	DDR4_C1_DQ[29]	High	Performance	IO_L18N_T2U_N11_AD2N_47	0	BIDIR	POD12_DCI	47		40
Y32	DDR4_C1_DQ[27]	High	Performance	IO_L15P_T2L_N4_AD11P_47	0	BIDIR	POD12_DCI	47		40
Y33	DDR4_C1_DQ[25]	High	Performance	IO_L15N_T2L_N5_AD11N_47	0	BIDIR	POD12_DCI	47		40
Y34				GND		GND				
Y35				GND		GND				
Y36				GND		GND				
Y37				MGTAVCC_L		Gigabit Power				
Y38	GTHTX_131_00P			MGTHTXP0_131	1	OUTPUT				
Y39	GTHTX_131_00N			MGTHTXN0_131	1	OUTPUT				
Y40				GND		GND				
Y41				GND		GND				
Y42				GND		GND				

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