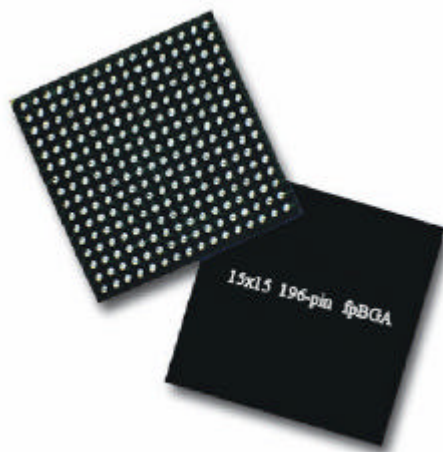


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K-CHIP PACKAGING

196pin (15x15mm) fpBGA



V1.0

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Version: 1.0

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Last Update: July 22, 2003

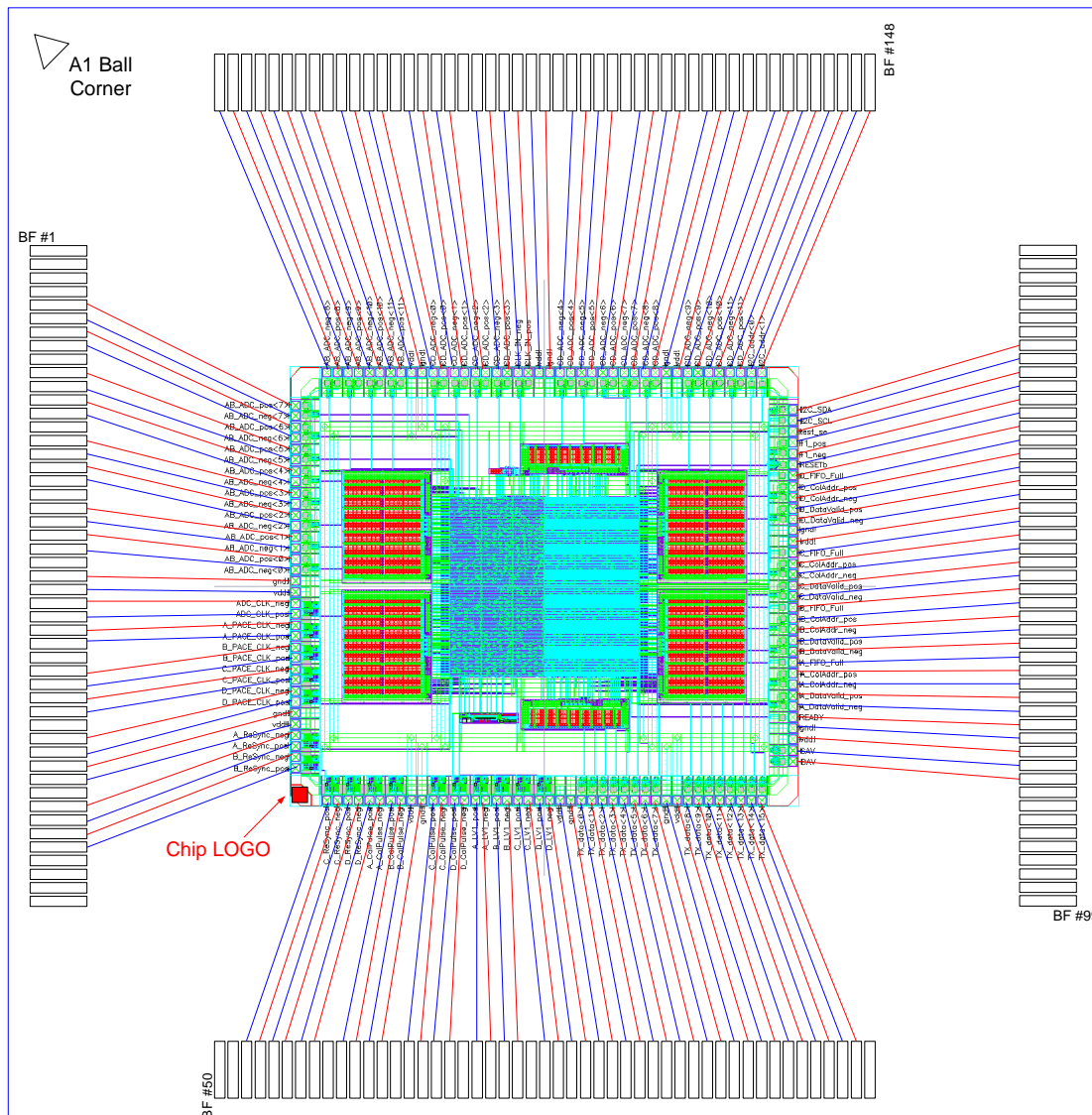
Document History

Version 0.1: this is the first draft of the K-chip V3 fpBGA package.

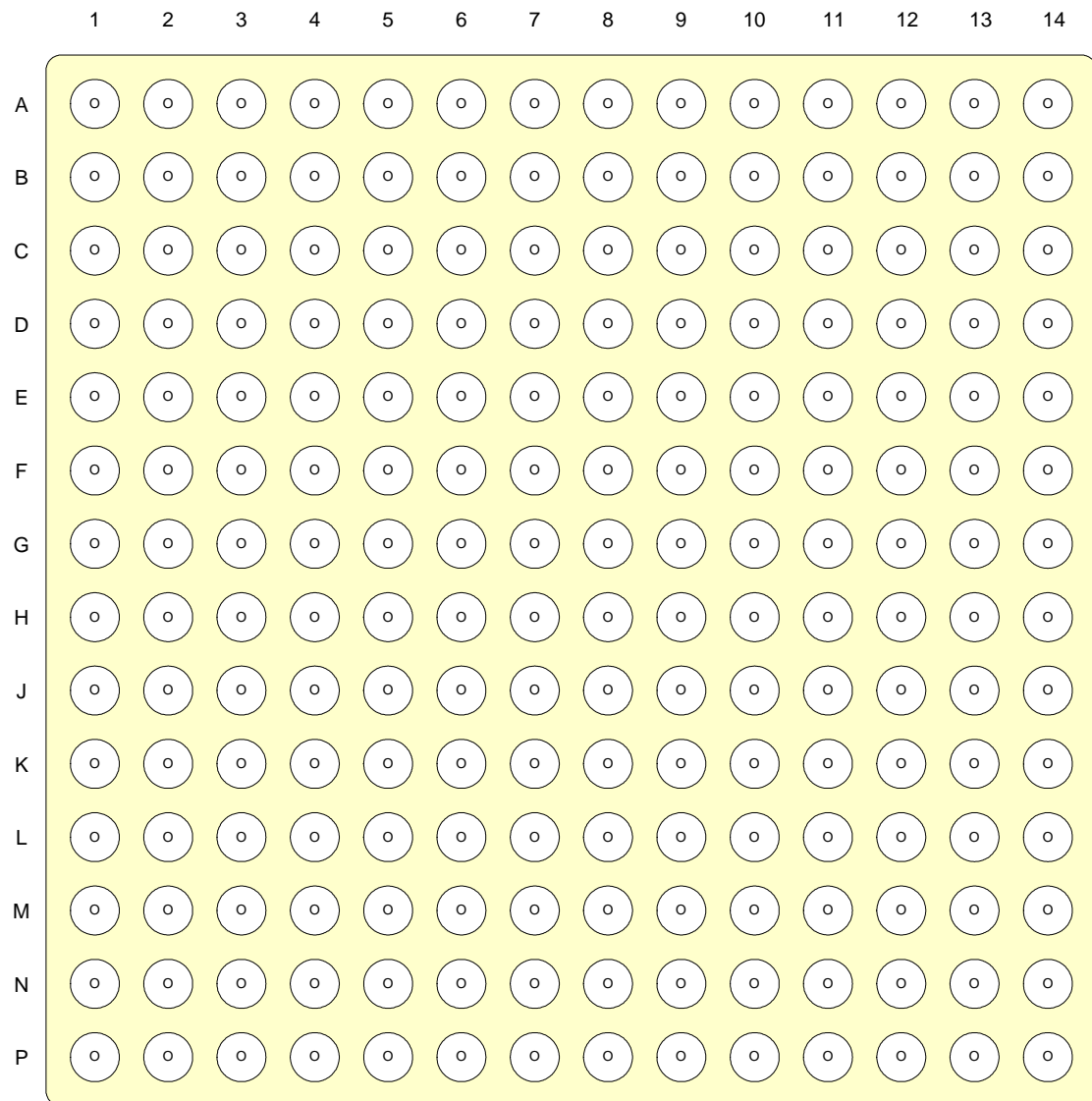
Version 1.0: this is the final packaging scheme for the K-chip V3. This scheme will be forwarded to the packaging company.

Changes with respect to the previous version:

1. the PACE clock LVDS outputs are flipped.
2. LVDS I/O pads are repositioned to facilitate the routing of the LVDS signals on the PCB.

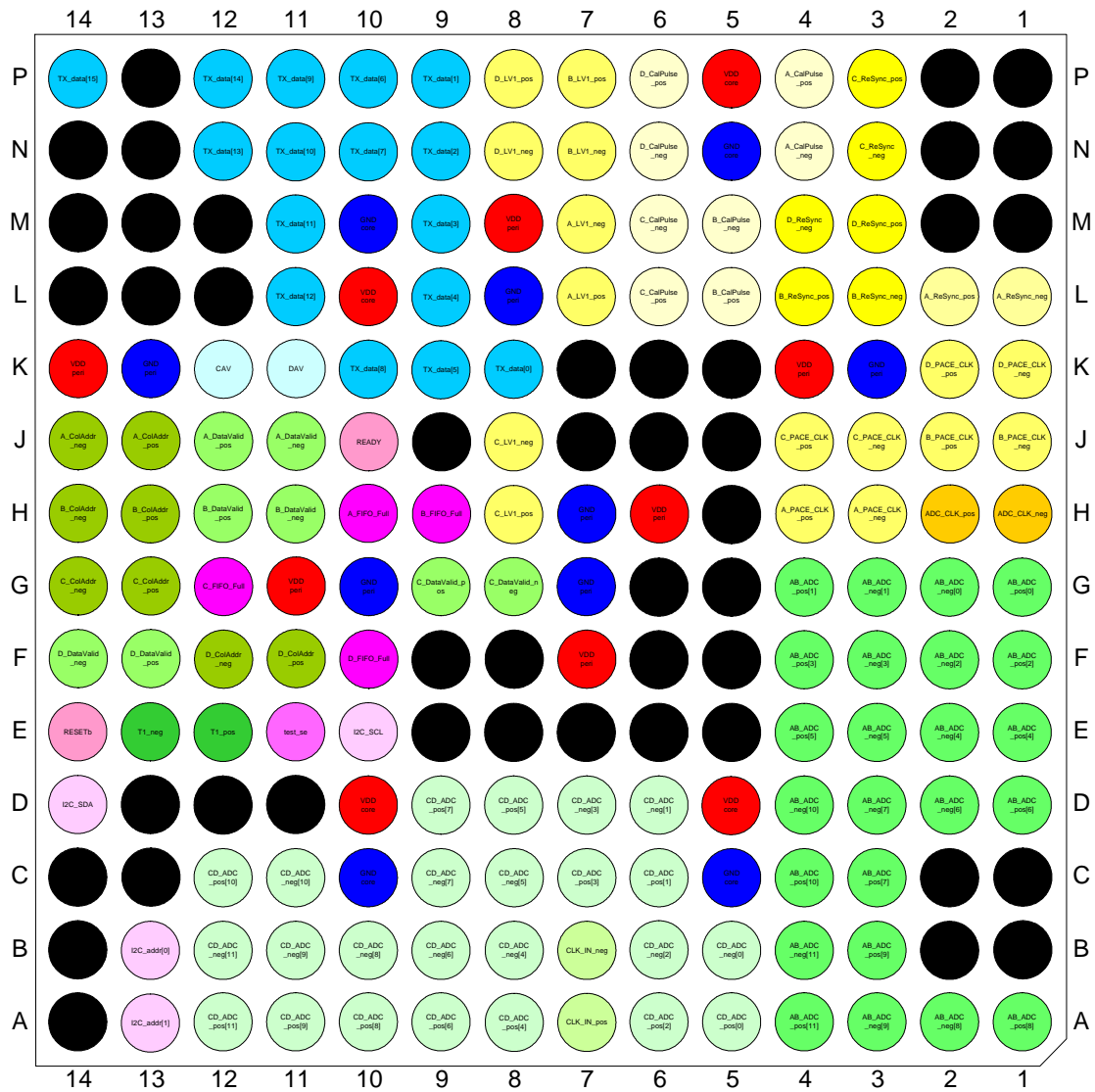


IMPORTANT NOTICE
Please note the orientation of the chip in the package cavity.
The LOGO of the chip is "facing" the bonding pad BF #50.

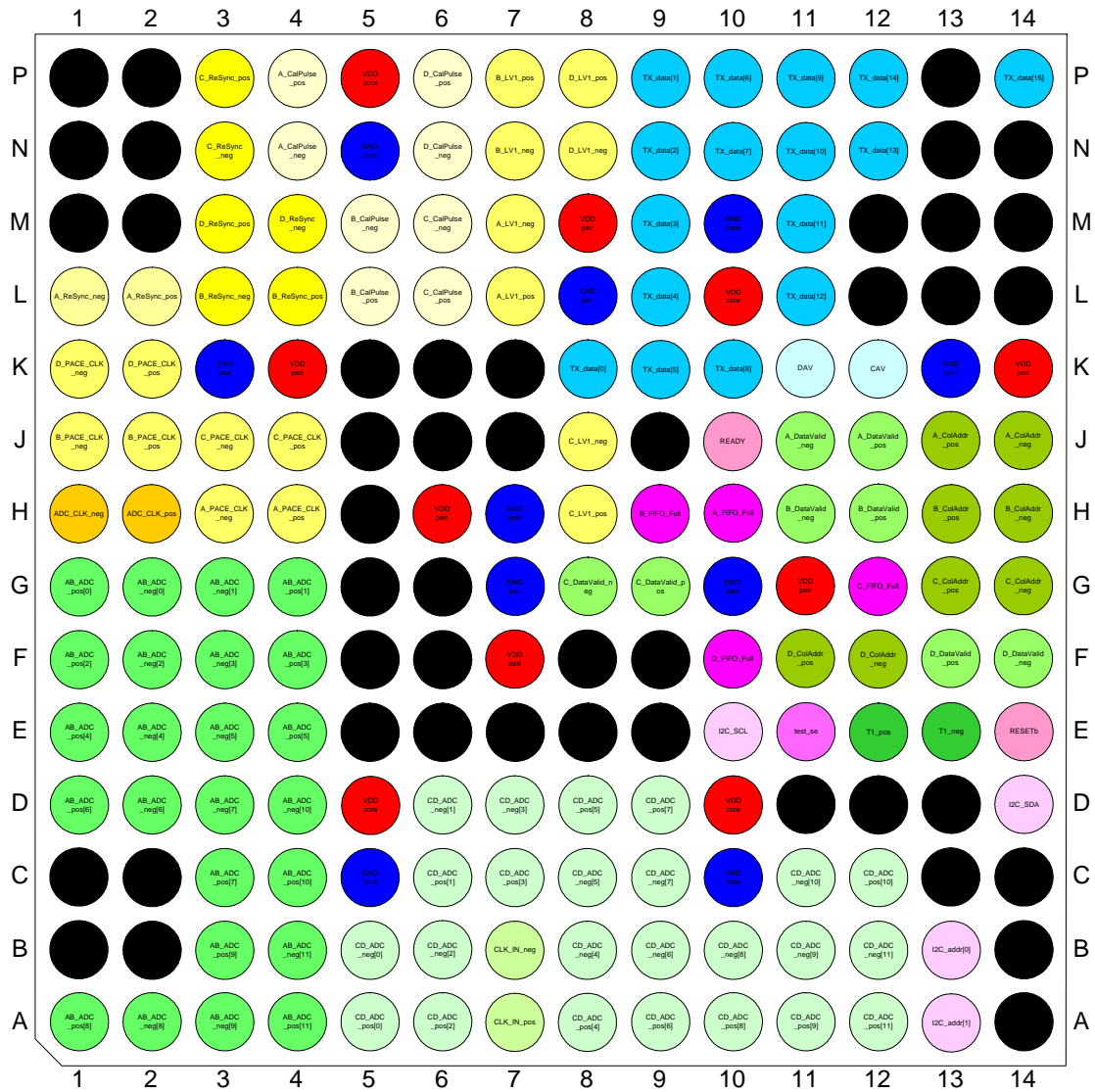


15x15 196-pin fpBGA

TOP VIEW



FPBGA-196
TOP VIEW



FPBGA-196
BOTTOM VIEW

----- On - chip -----

Net Name	Bond Finger	Ball	X coord	Y coord
	1	B1		
	2	B2		
	3	C1		
	4	C2		
AB_ADC_pos<7>	5	C3	69.28	4560.00
AB_ADC_neg<7>	6	D3	69.28	4440.00
AB_ADC_pos<6>	7	D1	69.28	4310.00
AB_ADC_neg<6>	8	D2	69.28	4190.00
	9	F6		
AB_ADC_pos<5>	10	E4	69.28	4060.00
AB_ADC_neg<5>	11	E3	69.28	3940.00
AB_ADC_pos<4>	12	E1	69.28	3810.00
AB_ADC_neg<4>	13	E2	69.28	3690.00
	14	F5		
AB_ADC_pos<3>	15	F4	69.28	3560.00
AB_ADC_neg<3>	16	F3	69.28	3440.00
AB_ADC_pos<2>	17	F1	69.28	3310.00
AB_ADC_neg<2>	18	F2	69.28	3190.00
	19	G5		
AB_ADC_pos<1>	20	G4	69.28	3060.00
AB_ADC_neg<1>	21	G3	69.28	2940.00
AB_ADC_pos<0>	22	G1	69.28	2810.00
AB_ADC_neg<0>	23	G2	69.28	2690.00
	24	G6		
GND_PERI	25	H7	69.28	2562.50
VDD_PERI	26	H6	69.28	2437.50
ADC_CLK_neg	27	H1	69.28	2310.00
ADC_CLK_pos	28	H2	69.28	2190.00
A_PACE_CLK_neg	29	H3	69.28	2060.00
A_PACE_CLK_pos	30	H4	69.28	1940.00
	31	H5		
B_PACE_CLK_neg	32	J1	69.28	1810.00
B_PACE_CLK_pos	33	J2	69.28	1690.00
C_PACE_CLK_neg	34	J3	69.28	1560.00
C_PACE_CLK_pos	35	J4	69.28	1440.00
	36	J5		
D_PACE_CLK_neg	37	K1	69.28	1310.00
D_PACE_CLK_pos	38	K2	69.28	1190.00
GND_PERI	39	K3	69.28	1062.50
VDD_PERI	40	K4	69.28	937.50
	41	K5		
A_ReSync_neg	42	L1	69.28	810.00
A_ReSync_pos	43	L2	69.28	690.00
B_ReSync_neg	44	L3	69.28	560.00
B_ReSync_pos	45	L4	69.28	440.00
	46	M2		
	47	M1		
	48	P1		
	49	N1		

----- On - chip -----

Net Name	Bond Finger	Ball	X coord	Y coord
	50	P2		
	51	N2		
C_ReSync_pos	52	P3	440.00	69.28
C_ReSync_neg	53	N3	560.00	69.28
D_ReSync_pos	54	M3	690.00	69.28
D_ReSync_neg	55	M4	810.00	69.28
A_CalPulse_pos	56	P4	940.00	69.28
A_CalPulse_neg	57	N4	1060.00	69.28
	58	J6		
B_CalPulse_pos	59	L5	1190.00	69.28
B_CalPulse_neg	60	M5	1310.00	69.28
VDD_CORE	61	P5	1437.50	69.28
GND_CORE	62	N5	1562.50	69.28
	63	K6		
C_CalPulse_pos	64	L6	1690.00	69.28
C_CalPulse_neg	65	M6	1810.00	69.28
D_CalPulse_pos	66	P6	1940.00	69.28
D_CalPulse_neg	67	N6	2060.00	69.28
	68	K7		
A_LV1_pos	69	L7	2190.00	69.28
A_LV1_neg	70	M7	2310.00	69.28
B_LV1_pos	71	P7	2440.00	69.28
B_LV1_neg	72	N7	2560.00	69.28
	73	J7		
C_LV1_pos	74	H8	2690.00	69.28
C_LV1_neg	75	J8	2810.00	69.28
D_LV1_pos	76	P8	2940.00	69.28
D_LV1_neg	77	N8	3060.00	69.28
VDD_PERI	78	M8	3187.50	69.28
GND_PERI	79	L8	3312.50	69.28
TX_data<0>	80	K8	3437.50	69.28
TX_data<1>	81	P9	3562.50	69.28
TX_data<2>	82	N9	3687.50	69.28
TX_data<3>	83	M9	3812.50	69.28
TX_data<4>	84	L9	3937.50	69.28
TX_data<5>	85	K9	4062.50	69.28
TX_data<6>	86	P10	4187.50	69.28
TX_data<7>	87	N10	4312.50	69.28
GND_CORE	88	M10	4437.50	69.28
VDD_CORE	89	L10	4562.50	69.28
TX_data<8>	90	K10	4687.50	69.28
TX_data<9>	91	P11	4812.50	69.28
TX_data<10>	92	N11	4937.50	69.28
TX_data<11>	93	M11	5062.50	69.28
TX_data<12>	94	L11	5187.50	69.28
TX_data<13>	95	N12	5312.50	69.28
TX_data<14>	96	P12	5437.50	69.28
TX_data<15>	97	P14	5562.50	69.28
	98	P13		

----- On - chip -----

Net Name	Bond Finger	Ball	X coord	Y coord
	99	N14		
	100	N13		
	101	M14		
	102	M13		
	103	M12		
	104	L12		
	105	L14		
	106	L13		
	107	J9		
DAV	108	K11	5930.72	512.50
CAV	109	K12	5930.72	637.50
VDD_PERI	110	K14	5930.72	762.50
GND_PERI	111	K13	5930.72	887.50
READY	112	J10	5930.72	1012.50
A_DataValid_neg	113	J11	5930.72	1140.00
A_DataValid_pos	114	J12	5930.72	1260.00
A_ColAddr_neg	115	J14	5930.72	1390.00
A_ColAddr_pos	116	J13	5930.72	1510.00
A_FIFO_Full	117	H10	5930.72	1637.50
B_DataValid_neg	118	H11	5930.72	1765.00
B_DataValid_pos	119	H12	5930.72	1885.00
B_ColAddr_neg	120	H14	5930.72	2015.00
B_ColAddr_pos	121	H13	5930.72	2135.00
B_FIFO_Full	122	H9	5930.72	2262.50
C_DataValid_neg	123	G8	5930.72	2390.00
C_DataValid_pos	124	G9	5930.72	2510.00
C_ColAddr_neg	125	G14	5930.72	2640.00
C_ColAddr_pos	126	G13	5930.72	2760.00
C_FIFO_Full	127	G12	5930.72	2887.50
VDD_PERI	128	G11	5930.72	3012.50
GND_PERI	129	G10	5930.72	3137.50
D_DataValid_neg	130	F14	5930.72	3265.00
D_DataValid_pos	131	F13	5930.72	3385.00
D_ColAddr_neg	132	F12	5930.72	3515.00
D_ColAddr_pos	133	F11	5930.72	3635.00
D_FIFO_Full	134	F10	5930.72	3762.50
RESETb	135	E14	5930.72	3887.50
T1_neg	136	E13	5930.72	4015.00
T1_pos	137	E12	5930.72	4135.00
test_se	138	E11	5930.72	4262.50
I2C_SCL	139	E10	5930.72	4387.50
I2C_SDA	140	D14	5930.72	4512.50
	141	D13		
	142	D12		
	143	D11		
	144	C13		
	145	C14		
	146	A14		
	147	B14		

----- On - chip -----

Net Name	Bond Finger	Ball	X coord	Y coord
I2C_addr<1>	148	A13	5562.50	4930.72
I2C_addr<0>	149	B13	5437.50	4930.72
CD_ADC_pos<11>	150	A12	5310.00	4930.72
CD_ADC_neg<11>	151	B12	5190.00	4930.72
CD_ADC_pos<10>	152	C12	5060.00	4930.72
CD_ADC_neg<10>	153	C11	4940.00	4930.72
CD_ADC_pos<9>	154	A11	4810.00	4930.72
CD_ADC_neg<9>	155	B11	4690.00	4930.72
	156	F9		
VDD_CORE	157	D10	4562.50	4930.72
GND_CORE	158	C10	4437.50	4930.72
CD_ADC_pos<8>	159	A10	4310.00	4930.72
CD_ADC_neg<8>	160	B10	4190.00	4930.72
	161	E9		
CD_ADC_pos<7>	162	D9	4060.00	4930.72
CD_ADC_neg<7>	163	C9	3940.00	4930.72
CD_ADC_pos<6>	164	A9	3810.00	4930.72
CD_ADC_neg<6>	165	B9	3690.00	4930.72
	166	E8		
CD_ADC_pos<5>	167	D8	3560.00	4930.72
CD_ADC_neg<5>	168	C8	3440.00	4930.72
CD_ADC_pos<4>	169	A8	3310.00	4930.72
CD_ADC_neg<4>	170	B8	3190.00	4930.72
	171	F8		
GND_PERI	172	G7	3062.50	4930.72
VDD_PERI	173	F7	2937.50	4930.72
CLK_IN_pos	174	A7	2810.00	4930.72
CLK_IN_neg	175	B7	2690.00	4930.72
CD_ADC_pos<3>	176	C7	2560.00	4930.72
CD_ADC_neg<3>	177	D7	2440.00	4930.72
	178	E7		
CD_ADC_pos<2>	179	A6	2310.00	4930.72
CD_ADC_neg<2>	180	B6	2190.00	4930.72
CD_ADC_pos<1>	181	C6	2060.00	4930.72
CD_ADC_neg<1>	182	D6	1940.00	4930.72
	183	E6		
CD_ADC_pos<0>	184	A5	1810.00	4930.72
CD_ADC_neg<0>	185	B5	1690.00	4930.72
GND_CORE	186	C5	1562.50	4930.72
VDD_CORE	187	D5	1437.50	4930.72
	188	E5		
AB_ADC_pos<11>	189	A4	1310.00	4930.72
AB_ADC_neg<11>	190	B4	1190.00	4930.72
AB_ADC_pos<10>	191	C4	1060.00	4930.72
AB_ADC_neg<10>	192	D4	940.00	4930.72
AB_ADC_pos<9>	193	B3	810.00	4930.72
AB_ADC_neg<9>	194	A3	690.00	4930.72
AB_ADC_pos<8>	195	A1	560.00	4930.72
AB_ADC_neg<8>	196	A2	440.00	4930.72