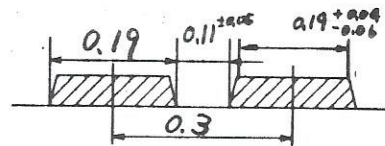




NOTE

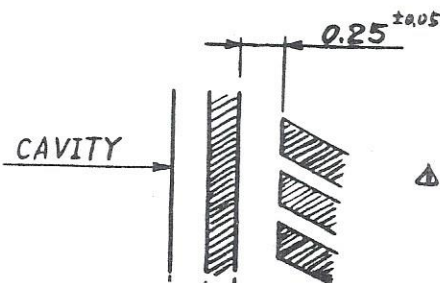
1. BASE MATERIAL : GLASS BT RESIN Δ
~~HIGH TEMP BLACK GLASS EPOXY~~
 THICKNESS : 1.64 ± 0.15
 COPPER FOIL : 18 μm
2. TOTAL THICKNESS : 2.3 ± 0.31 (Including the resin dam.)
3. PLATING
 COPPER : 10 μm MIN.
 NICKEL : 5 μm MIN.
 GOLD : 0.5 μm MIN. (SOFT GOLD) (NON THALLIUM)
 GOLD THICKNESS CHECK POINT : MARKED $\text{\textcircled{1}}$
4. BONDING PADS



5. SIGNAL LEADS : WIDTH 0.15 TYP.
 MIN. SPACING 0.1 TYP.
6. SOLDER MASK IS SHOWN BY RETICALATE PATTERN.
7. CAVITY SIZE : 12.57 mm (495 mil) SQ (METALIZED)
 SPACING BETWEEN BONDING PAD AND CAVITY : 0.2 TYP
 CORNER RADIUS : R1.0
8. TOLERANCE

	POSITION TOL.	TOL. (ITSELF)
PATTERN (CIRCUIT)	± 0.15	± 0.05
SOLDER MASK	± 0.3	
P.W.B. EDGE	± 0.1	± 0.1
ROUTING	± 0.1	± 0.1

9. I/O PIN MATERIAL : KOVAR: ~~PHOSPHOR BRONZE~~
 PLATING : ~~GOLD 0.5 μm MIN.~~
~~NICKEL 2.0 μm MIN.~~
 TIN-LEAD (90/10) 1 μm MIN. (Solder dip) Δ
~~(60/40) μm MIN.~~

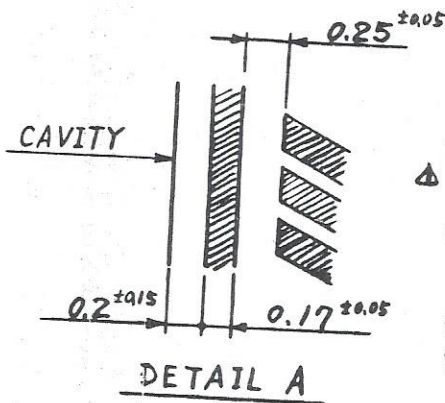


10. PIN PULL STRENGTH : 4Kg MIN. SOLDERED PIN. Δ
11. PIN FINISH : SOLDER DIP AFTER PINING.
12. BT MATERIAL 0.1 mm x 2 PLY
 0.2 mm x 6 PLY
 0.1 mm x 9 PLY

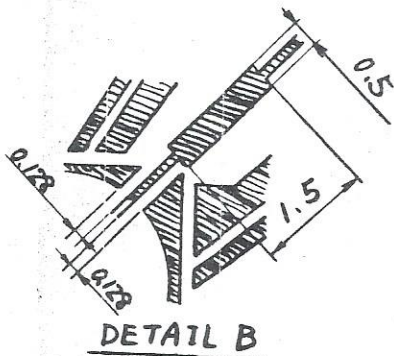
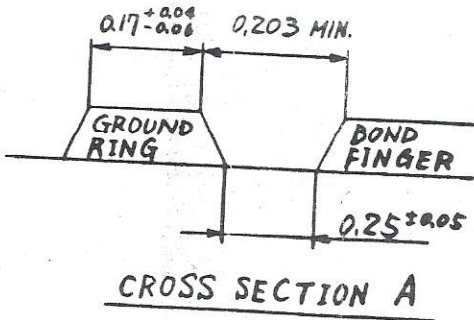
6. SOLDER MASK IS SHOWN BY RETICALATE PATTERN.
7. CAVITY SIZE : 12.57 mm (495 mil) SQ (METALIZED)
 SPACING BETWEEN BONDING PAD AND CAVITY : 0.2 TYP
 CORNER RADIUS : R1.0
8. TOLERANCE

	POSITION TOL.	TOL. (ITSELF)
PATTERN (CIRCUIT)	±0.15	±0.05
SOLDER MASK	±0.3	
P.W.B. EDGE	±0.1	±0.1
ROUTING	±0.1	±0.1

9. I/O PIN MATERIAL : KOVAR: ~~PHOSPHOR BRONZE~~
 PLATING : ~~GOLD 0.5 μm MIN.~~
~~NICKEL 2.0 μm MIN.~~ Δ
 TIN-LEAD (90/10) 1 μm MIN. (Solder dip)
~~(60/40) μm MIN.~~



10. PIN PULL STRENGTH : 4Kg MIN. SOLDERED PIN.
11. PIN FINISH : SOLDER DIP AFTER PINING.
12. BT MATERIAL 0.1 mm x 2 PLY
 0.2 mm x 6 PLY
 0.1 mm x 2 PLY
13. SOLDER RESIST COLOR : BLACK
14. PACKAGE FLATNESS : 0.15 (0.006°)



③	Changed Land form and Ground ring	Mar. 31 1989	H. Goto	
②	Changed Pin Material	Oct. 1 1987	ITO	T.H.
①	Changed Base Material and Pin Finish	Sep. 29 1989	ITO	T.H.
SYM	REVISION	DATE	REVD	CHKD
TITLE		SIDE		
PGA-149U-C-VLSI-1		FRONT		
CODE		ID-0553-D		
SCALE	DIM			
5/1	M.M.	(ハンダ, 1ンタリ)		
DSN	T. HAYASHI	Sep. 11, 1987		
CHKD	Nobumichi Goto	Sep. 11, 1987		
APPD				
35-14902				
IBIDEN CO., LTD. JAPAN				

IEW

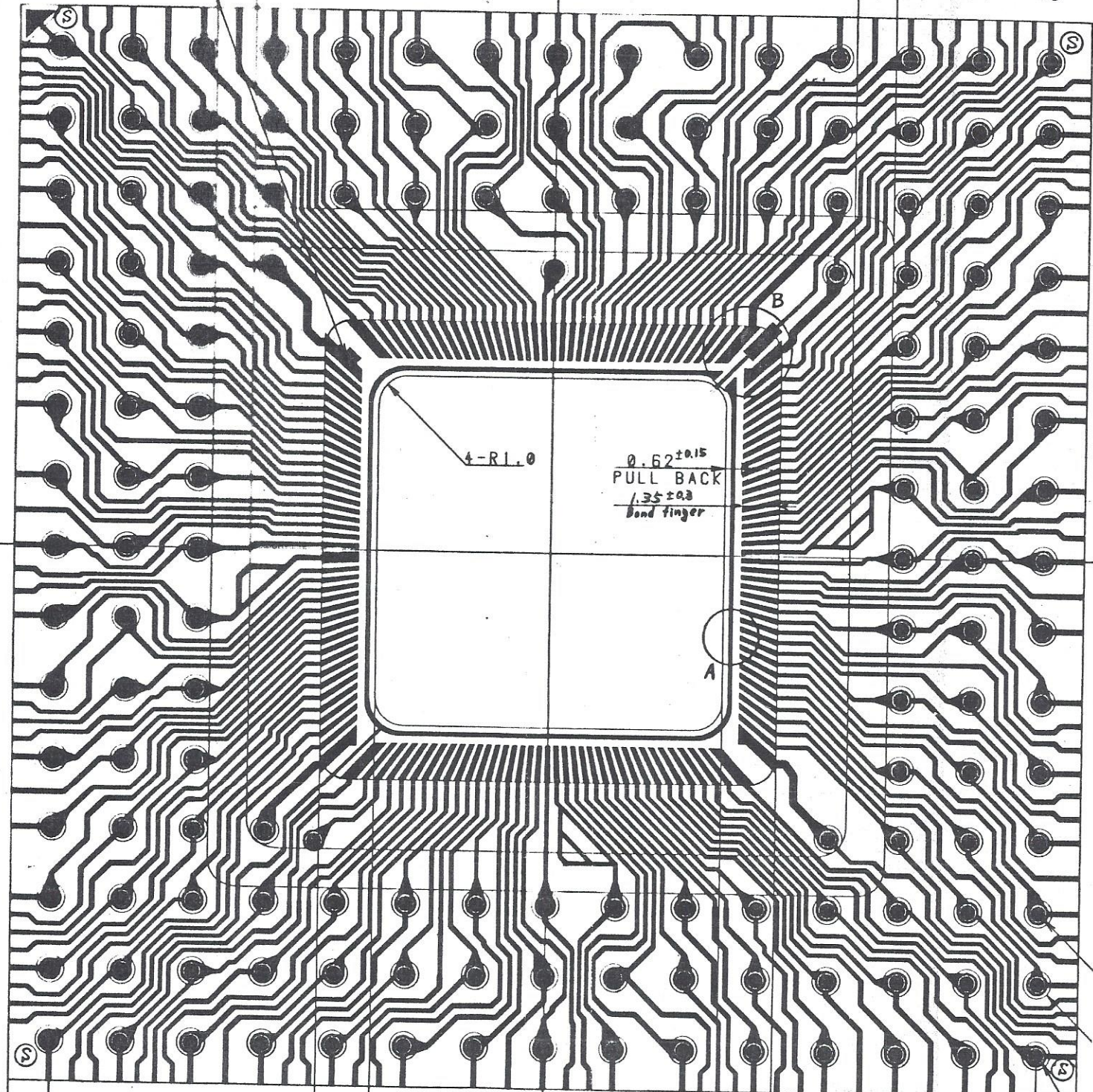
24.4(DAM OUTSIDE)±0.1

21.59(DAM INSIDE)±0.15

10.795±0.3

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A
B
C
+
D
E
F
G
H
J
K
L
M
N
P
Q



12.57±0.18Q(CAVITY)

16.58Q(SOLDER MASK OPENING)

PITCH 2.54X14=35.56

38.48±0.18Q(PWB EDGE)

4-RL.0

0.62±0.15
PULL BACK
1.35±0.3
bond finger

A

B

S

S

S

S

BONDING PAD NO	PIN NO	BONDING PAD NO	PIN NO	BONDING PAD NO	PIN NO
1	D 4	50	P 7	100	E 15
2	D 3	51	N 7	101	E 14
3	C 2	52	Q 6	102	D 15
4	B 1	53	Q 7	103	C 15
5	D 2	54	P 8	104	D 14
6	E 3	55	Q 8	105	E 13
7	C 1	56	N 8	106	C 14
8	E 2	57	N 9	107	B 15
9	D 1	58	Q 9	108	D 13
10	F 3	59	Q 10	109	C 13
11	F 2	60	P 9	110	B 14
12	E 1	61	P 10	111	A 15
13	G 2	62	N 10	112	D 12
14	G 3	63	Q 11	113	C 12
15	F 1	64	P 11	114	B 13
16	G 1	65	N 11	115	A 14
17	H 2	66	Q 12	116	B 12
18	H 1	67	P 12	117	C 11
19	H 3	68	Q 13	118	A 13
20	J 3	69	P 13	119	B 11
21	J 1	70	Q 14	120	A 12
22	K 1	71	N 12	121	A 11
23	J 2	72	P 14	122	B 10
24	K 2	73	Q 15	123	C 10
25	K 3	74	N 13	124	B 9
26	L 1	75	M 12	125	A 9
27	L 2	76	M 13	126	A 10
28	M 1	77	N 14	127	C 9
29	N 1	78	P 15	128	B 8
30	M 2	79	M 14	129	A 8
31	L 3	80	L 13	130	C 8
32	N 2	81	N 15	131	C 7
33	P 1	82	L 14	132	D 8
34	M 3	83	M 15	133	A 7
35	N 3	84	K 13	134	A 6
36	P 2	85	K 14	135	B 7
37	Q 1	86	L 15	136	B 6
38	M 4	87	J 14	137	C 6
39	N 4	88	J 13	138	A 5
40	Q 2	89	K 15	139	B 5
40 A	N 6	90	J 15	140	C 5
41	P 3	91	H 14	141	A 4
42	P 4	92	H 15	142	B 4
43	N 5	93	H 13	143	A 3
44	Q 3	94	G 13	144	B 3
45	P 5	95	G 15	145	A 2
46	Q 4	96	F 15	146	C 4
47	N 6	97	G 14	147	B 2
48	P 6	98	F 14	148	A 1
49	Q 5	99	F 13	149	C 3



Title : PGA-149U-C-VLSI-1
Cavity size : 12.57 mm
Width of Bg'pad : 0.19 mm
Space of Bg'pad : 0.11 mm
Focus of Bg'pad : 6.905 mm

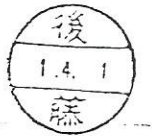
Pad	Position	Angle	Pad	Position	Angle
1-1	6.515	43° 20.0'	20-1	0.055	0° 27.5'
1-2	6.011	41° 2.5'	20-2	0.435	3° 36.5'
2-1	5.867	40° 21.0'	21-1	0.545	4° 31.0'
2-2	5.622	39° 9.0'	21-2	0.736	6° 5.0'
3-1	5.481	38° 26.5'	22-1	0.846	6° 59.5'
3-2	5.243	37° 12.5'	22-2	1.038	8° 33.0'
4-1	5.106	36° 29.0'	23-1	1.149	9° 27.0'
4-2	4.873	35° 12.5'	23-2	1.342	11° 0.0'
5-1	4.740	34° 28.0'	24-1	1.454	11° 53.5'
5-2	4.513	33° 10.0'	24-2	1.648	13° 25.5'
6-1	4.382	32° 24.0'	25-1	1.761	14° 18.5'
6-2	4.161	31° 4.5'	25-2	1.957	15° 49.5'
7-1	4.033	30° 17.5'	26-1	2.071	16° 42.0'
7-2	3.816	28° 55.5'	26-2	2.270	18° 12.0'
8-1	3.691	28° 7.5'	27-1	2.386	19° 3.5'
8-2	3.479	26° 44.5'	27-2	2.587	20° 32.0'
9-1	3.356	25° 55.5'	28-1	2.704	21° 23.0'
9-2	3.148	24° 30.5'	28-2	2.908	22° 50.5'
10-1	3.027	23° 40.5'	29-1	3.027	23° 40.5'
10-2	2.822	22° 14.0'	29-2	3.235	25° 6.0'
11-1	2.704	21° 23.0'	30-1	3.356	25° 55.5'
11-2	2.502	19° 55.0'	30-2	3.568	27° 19.5'
12-1	2.386	19° 3.5'	31-1	3.692	28° 8.0'
12-2	2.186	17° 34.0'	31-2	3.907	29° 30.0'
13-1	2.071	16° 42.0'	32-1	4.033	30° 17.5'
13-2	1.875	15° 11.5'	32-2	4.253	31° 38.0'
14-1	1.761	14° 18.5'	33-1	4.383	32° 24.0'
14-2	1.566	12° 47.0'	33-2	4.608	33° 43.0'
15-1	1.454	11° 53.5'	34-1	4.740	34° 28.0'
15-2	1.261	10° 21.0'	34-2	4.970	35° 45.0'
16-1	1.149	9° 27.0'	35-1	5.106	36° 29.0'
16-2	0.957	7° 53.5'	35-2	5.342	37° 43.5'
17-1	0.847	6° 59.5'	36-1	5.481	38° 26.5'
17-2	0.656	5° 25.5'	36-2	5.724	39° 39.5'
18-1	0.545	4° 31.0'	37-1	5.867	40° 21.0'
18-2	0.355	2° 56.5'	37-2	6.116	41° 32.0'
19-1	0.245	2° 2.0'	38-1	6.263	42° 12.5'
19-2	0.055	0° 27.5'	38-2	6.776	44° 27.5'

Title : PGA-149U-C-VLSI-1
 Cavity size : 12.57 mm
 Width of Bg'pad : 0.19 mm
 Space of Bg'pad : 0.11 mm
 Focus of Bg'pad : 6.905 mm

Pad	Position	Angle	Pad	Position	Angle
39-1	6.312	42° 26.0'	56-2	0.095	0° 47.5'
39-2	5.815	40° 6.0'	57-1	0.205	1° 42.0'
40-1	5.672	39° 24.0'	57-2	0.395	3° 16.5'
40-2	5.431	38° 11.0'	58-1	0.505	4° 11.0'
40A-1	5.292	37° 28.0'	58-2	0.696	5° 45.0'
40A-2	5.057	35° 13.0'	59-1	0.806	6° 39.5'
41-1	4.922	35° 29.0'	59-2	0.998	8° 13.5'
41-2	4.692	34° 11.5'	60-1	1.109	9° 7.5'
42-1	4.560	33° 26.5'	60-2	1.301	10° 40.5'
42-2	4.336	32° 7.5'	61-1	1.413	11° 34.0'
43-1	4.207	31° 21.0'	61-2	1.607	13° 6.0'
43-2	3.987	30° 0.5'	62-1	1.720	13° 59.5'
44-1	3.861	29° 13.0'	62-2	1.916	15° 30.5'
44-2	3.647	27° 50.5'	63-1	2.030	16° 23.0'
45-1	3.523	27° 2.0'	63-2	2.228	17° 53.0'
45-2	3.312	25° 37.5'	64-1	2.344	18° 45.0'
46-1	3.191	24° 48.5'	64-2	2.544	20° 13.5'
46-2	2.984	23° 22.5'	65-1	2.661	21° 4.5'
47-1	2.865	22° 32.0'	65-2	2.865	22° 32.0'
47-2	2.661	21° 4.5'	66-1	2.984	23° 22.5'
48-1	2.544	20° 13.5'	66-2	3.191	24° 48.5'
48-2	2.344	18° 45.0'	67-1	3.312	25° 37.5'
49-1	2.228	17° 53.0'	67-2	3.523	27° 2.0'
49-2	2.030	16° 23.0'	68-1	3.647	27° 50.5'
50-1	1.916	15° 30.5'	68-2	3.861	29° 13.0'
50-2	1.720	13° 59.5'	69-1	3.987	30° 0.5'
51-1	1.607	13° 6.0'	69-2	4.207	31° 21.0'
51-2	1.413	11° 34.0'	70-1	4.336	32° 7.5'
52-1	1.301	10° 40.5'	70-2	4.560	33° 26.5'
52-2	1.109	9° 7.5'	71-1	4.692	34° 11.5'
53-1	0.998	8° 13.5'	71-2	4.922	35° 29.0'
53-2	0.806	6° 39.5'	72-1	5.057	36° 13.0'
54-1	0.696	5° 45.0'	72-2	5.292	37° 28.0'
54-2	0.505	4° 11.0'	73-1	5.431	38° 11.0'
55-1	0.395	3° 16.5'	73-2	5.672	39° 24.0'
55-2	0.205	1° 42.0'	74-1	5.815	40° 6.0'
56-1	0.095	0° 47.5'	74-2	6.312	42° 26.0'

Title : PGA-149U-C-VLSI-1
 Cavity size : 12.57 mm
 Width of Bg'pad : 0.19 mm
 Space of Bg'pad : -0.11 mm
 Focus of Bg'pad : 6.905 mm

Pad	Position	Angle	Pad	Position	Angle
75-1	6.515	43° 20.0'	94-1	0.055	0° 27.5'
75-2	6.011	41° 2.5'	94-2	0.245	2° 2.0'
76-1	5.867	40° 21.0'	95-1	0.355	2° 56.5'
76-2	5.622	39° 9.0'	95-2	0.545	4° 31.0'
77-1	5.481	38° 26.5'	96-1	0.656	5° 25.5'
77-2	5.243	37° 12.5'	96-2	0.847	6° 59.5'
78-1	5.106	36° 29.0'	97-1	0.957	7° 53.5'
78-2	4.873	35° 12.5'	97-2	1.149	9° 27.0'
79-1	4.740	34° 28.0'	98-1	1.261	10° 21.0'
79-2	4.513	33° 10.0'	98-2	1.454	11° 53.5'
80-1	4.382	32° 24.0'	99-1	1.566	12° 47.0'
80-2	4.161	31° 4.5'	99-2	1.761	14° 18.5'
81-1	4.033	30° 17.5'	100-1	1.875	15° 11.5'
81-2	3.816	28° 55.5'	100-2	2.071	16° 42.0'
82-1	3.691	28° 7.5'	101-1	2.186	17° 34.0'
82-2	3.479	26° 44.5'	101-2	2.386	18° 3.5'
83-1	3.356	25° 55.5'	102-1	2.502	19° 55.0'
83-2	3.148	24° 30.5'	102-2	2.704	21° 23.0'
84-1	3.027	23° 40.5'	103-1	2.822	22° 14.0'
84-2	2.822	22° 14.0'	103-2	3.027	23° 40.5'
85-1	2.704	21° 23.0'	104-1	3.148	24° 30.5'
85-2	2.502	19° 55.0'	104-2	3.356	25° 55.5'
86-1	2.386	19° 3.5'	105-1	3.479	26° 44.5'
86-2	2.186	17° 34.0'	105-2	3.691	28° 7.5'
87-1	2.071	16° 42.0'	106-1	3.816	28° 55.5'
87-2	1.875	15° 11.5'	106-2	4.033	30° 17.5'
88-1	1.761	14° 18.5'	107-1	4.161	31° 4.5'
88-2	1.566	12° 47.0'	107-2	4.382	32° 24.0'
89-1	1.454	11° 53.5'	108-1	4.513	33° 10.0'
89-2	1.261	10° 21.0'	108-2	4.740	34° 28.0'
90-1	1.149	9° 27.0'	109-1	4.873	35° 12.5'
90-2	0.957	7° 53.5'	109-2	5.106	36° 29.0'
91-1	0.847	6° 59.5'	110-1	5.243	37° 12.5'
91-2	0.656	5° 25.5'	110-2	5.481	38° 26.5'
92-1	0.545	4° 31.0'	111-1	5.622	39° 9.0'
92-2	0.355	2° 56.5'	111-2	5.867	40° 21.0'
93-1	0.245	2° 2.0'	112-1	6.011	41° 2.5'
93-2	0.055	0° 27.5'	112-2	6.515	43° 20.0'



Title : PGA-149U-C-VLSI-1
Cavity size : 12.57 mm
Width of Bg'pad : 0.19 mm
Space of Bg'pad : 0.11 mm
Focus of Bg'pad : 6.905 mm

Pad	Position	Angle	Pad	Position	Angle
113-1	6.312	42° 26.0'	131-2	0.095	0° 47.5'
113-2	5.815	40° 6.0'	132-1	0.205	1° 42.0'
114-1	5.672	39° 24.0'	132-2	0.395	3° 16.5'
114-2	5.431	38° 11.0'	133-1	0.505	4° 11.0'
115-1	5.292	37° 28.0'	133-2	0.696	5° 45.0'
115-2	5.057	36° 13.0'	134-1	0.806	6° 39.5'
116-1	4.922	35° 29.0'	134-2	0.998	8° 13.5'
116-2	4.692	34° 11.5'	135-1	1.109	9° 7.5'
117-1	4.560	33° 26.5'	135-2	1.301	10° 40.5'
117-2	4.336	32° 7.5'	136-1	1.413	11° 34.0'
118-1	4.207	31° 21.0'	136-2	1.607	13° 6.0'
118-2	3.987	30° 0.5'	137-1	1.720	13° 59.5'
119-1	3.861	29° 13.0'	137-2	1.916	15° 30.5'
119-2	3.647	27° 50.5'	138-1	2.030	16° 23.0'
120-1	3.523	27° 2.0'	138-2	2.228	17° 53.0'
120-2	3.312	25° 37.5'	139-1	2.344	18° 45.0'
121-1	3.191	24° 48.5'	139-2	2.544	20° 13.5'
121-2	2.984	23° 22.5'	140-1	2.661	21° 4.5'
122-1	2.865	22° 32.0'	140-2	2.865	22° 32.0'
122-2	2.661	21° 4.5'	141-1	2.984	23° 22.5'
123-1	2.544	20° 13.5'	141-2	3.191	24° 48.5'
123-2	2.344	18° 45.0'	142-1	3.312	25° 37.5'
124-1	2.228	17° 53.0'	142-2	3.523	27° 2.0'
124-2	2.030	16° 23.0'	143-1	3.647	27° 50.5'
125-1	1.916	15° 30.5'	143-2	3.861	29° 13.0'
125-2	1.720	13° 59.5'	144-1	3.987	30° 0.5'
126-1	1.607	13° 6.0'	144-2	4.207	31° 21.0'
126-2	1.413	11° 34.0'	145-1	4.336	32° 7.5'
127-1	1.301	10° 40.5'	145-2	4.560	33° 26.5'
127-2	1.109	9° 7.5'	146-1	4.692	34° 11.5'
128-1	0.998	8° 13.5'	146-2	4.922	35° 29.0'
128-2	0.806	6° 39.5'	147-1	5.057	36° 13.0'
129-1	0.696	5° 45.0'	147-2	5.292	37° 28.0'
129-2	0.505	4° 11.0'	148-1	5.431	38° 11.0'
130-1	0.395	3° 16.5'	148-2	5.672	39° 24.0'
130-2	0.205	1° 42.0'	149-1	5.815	40° 6.0'
131-1	0.095	0° 47.5'	149-2	6.312	42° 26.0'