

RANCHO TECHNOLOGY , INC.

Preliminary Component Specification ULTRA ASIC SCSI EXPANDERS

**ULTRA ASIC144
ULTRA ASIC100
ULTRA ASIC84**

(For Converting and Extending the WIDE Ultra SCSI Bus)

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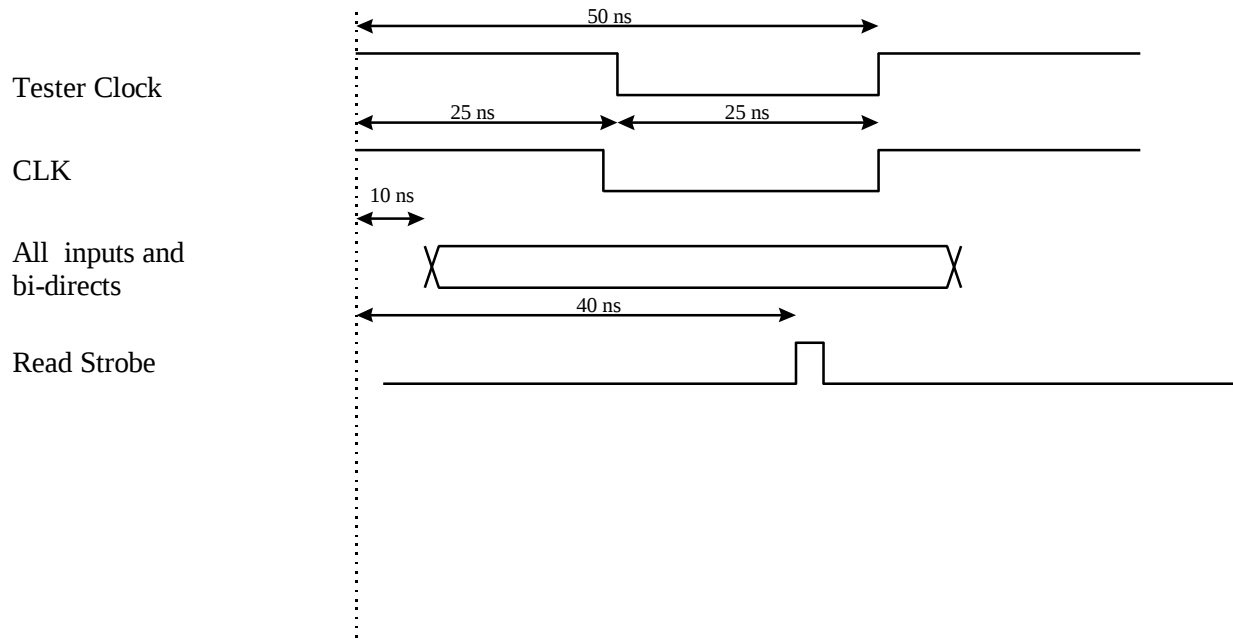
General

The Ultra ASIC SCSI Expander allows you to extend the cable length or convert your single ended SCSI bus to a differential end. The Ultra ASIC also isolates the two SCSI busses. The Ultra ASIC allows hot swapping of SCSI peripherals. The Ultra ASIC does not require any software or a SCSI ID to operate. The Ultra ASIC is the lowest cost solution available today.

Features

- Supports Plug and Play
- Software Independent
- Available in 3 Different Package Types
144 pin PQFP, 100 pin PQFP, and 84 pin PLCC
- Backwards Compatible with SCSI 1/2/3
- Converts Single-Ended to Differential-Ended and Vice-Versa
- Extends Single-Ended to Single-Ended
- Ultra SCSI supports up to 40 Mbytes/second
- Narrow and WIDE SCSI Support
- Asynchronous and Synchronous Support
- No SCSI ID is Required
- SCSI Busses are Electrically Isolated
- Supports Arbitration, Parity and Disconnect/Reconnect
- Drives SCSI BSY LED
- Supports up to 16 Devices
- Diffsens Protection

Tester Timing



Summary:

Part Numbers:	50067.G V1.05, 50068.G V1.05, 50069.G V1.05
Frequency of Operation	20 MHz

Absolute Maximum Ratings:

Parameter	Symbol	Min	Max	Units
Supply Voltage	Vdd	-0.3	7.0	V
Input Voltage	Vi	-0.3	Vdd+0.3	V
Storage Temperature	Tstg	-40	125	deg C
ESD	Vesd		+/- 2000	V
Latch-up	Ilu		+/- 100	mA

Recommended Operating Conditions:

Parameter	Symbol	Min	Typ	Max	Units
Supply Voltage	Vdd	4.5		5.5	V
Supply Current	Idd		10		mA
Ambient Operating Temperature	Ta	-0		70	deg C

DC Electrical Characteristics**Input Buffer: CA_IBUFU (Input, CMOS w/ Pull-up)**

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Input Low Voltage	Vil	Vss-0.5		1.5	V	Vin=Vss to Vdd
Input High Voltage	Vih	3.5		Vdd+0.5	V	
Input Leakage	Iin	-10		+10	uA	

Bi-Directional Buffer: CA_BBUF4 (Bi-direct, CMOS input, 4 mA output)

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Input Low Voltage	Vil	Vss-0.5		1.5	V	Vin=Vss to Vdd Iol=4mA Ioh=-4mA Vout=Vss to Vdd
Input High Voltage	Vih	3.5		Vdd+0.5	V	
Input Leakage	Iin	-10		+10	uA	
Output Low Voltage	Vol			0.4	V	
Output High Voltage	Voh	Vdd-0.4			V	
High Z Output Leakage	Ioz	-10		+10	uA	

Plastic Leaded Chip Carrier Package (PLCC)

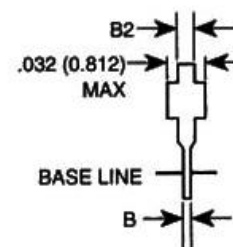
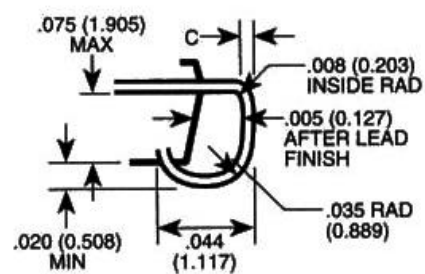
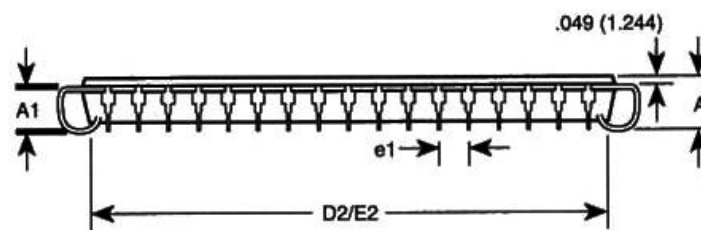
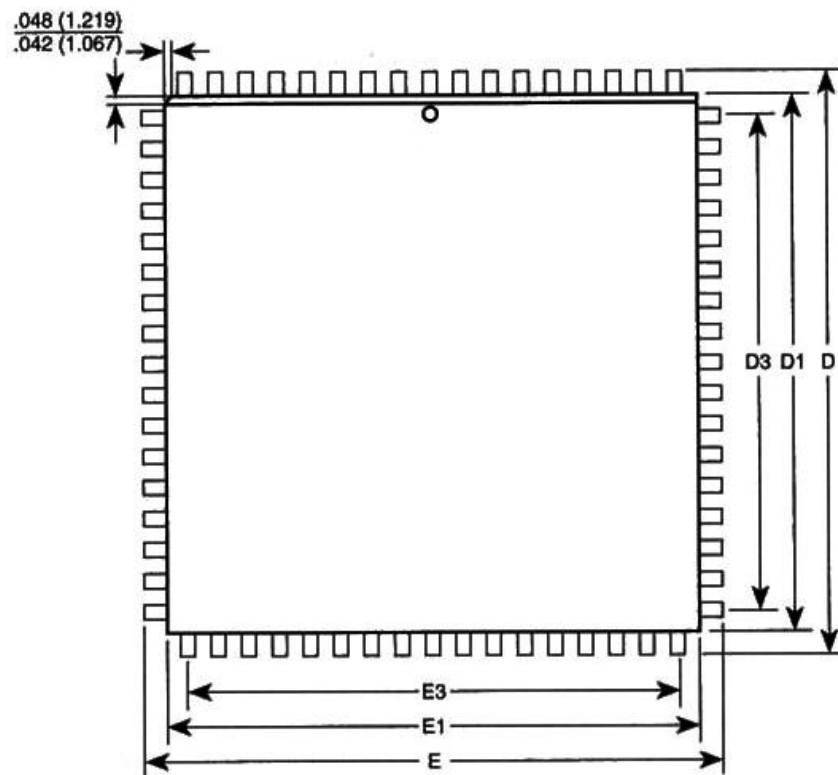
Jedec Equiv	PLCC 84	
	Min	Max
Dimension		
A	0.155	0.175
A1	0.09	0.13
B	0.13	0.27
B2	0.26	0.32
C	0.005	0.011
D	1.17	1.21
D1	1.14	1.16
D2	1.09	1.13
D3	1.00 nom	
E	1.17	1.21
E1	1.14	1.16
e1	0.05 BSC	
E2	1.09	1.13
E3	1.00 nom	

Plastic Quad Flat Packages (PQFP, RQFP)

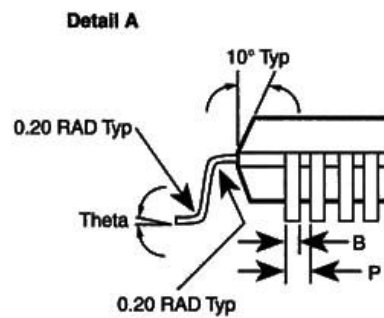
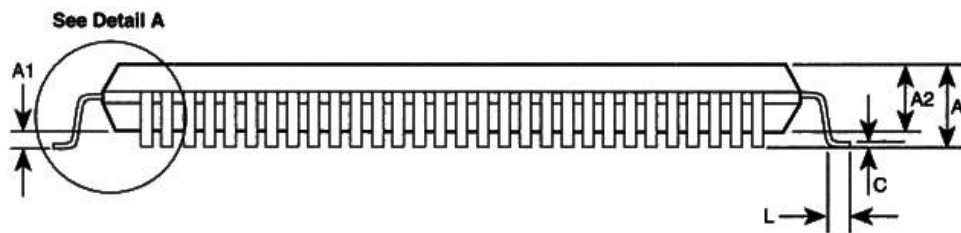
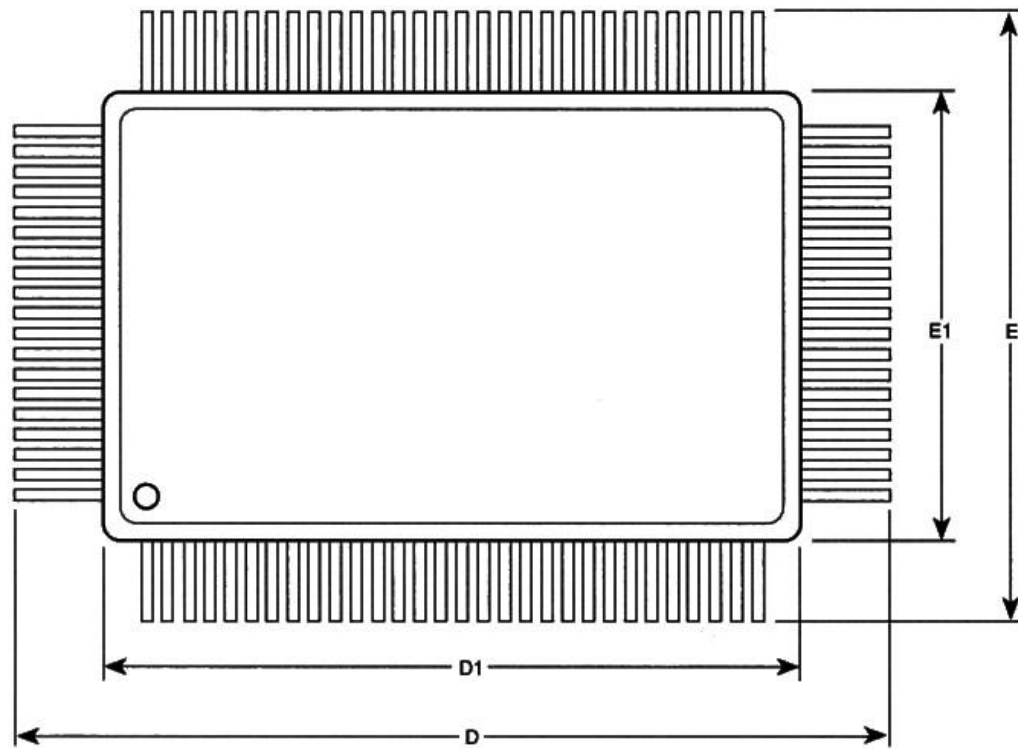
Jedec Equiv	PQFP 100		PQFP 144	
	Min	Max	Min	Max
Dimension				
A	2.8	3.10	3.52	3.84
A1	0.11	0.37	0.25	0.51
A2	2.65	2.77	3.17	3.43
B	0.22	0.38	0.30 TYP	
c	0.13	0.23	0.13	0.23
D	23.1	23.30	30.35	30.85
D1	19.95	20.05	27.90	28.10
E	17.10	17.30	30.35	30.85
E1	13.95	14.05	27.90	28.10
L	0.65	0.95	0.67	0.93
P	0.65 BSC		0.65 BSC	
Theta	0 deg	7 deg	0 deg	7 deg

*Only applicable to device A1280 f_p = 3.9 mm.

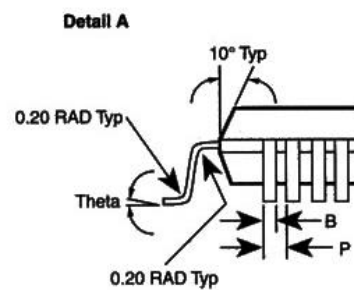
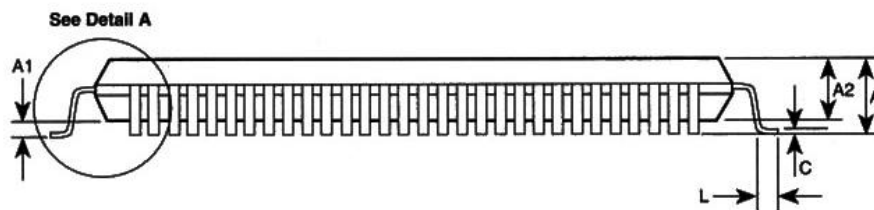
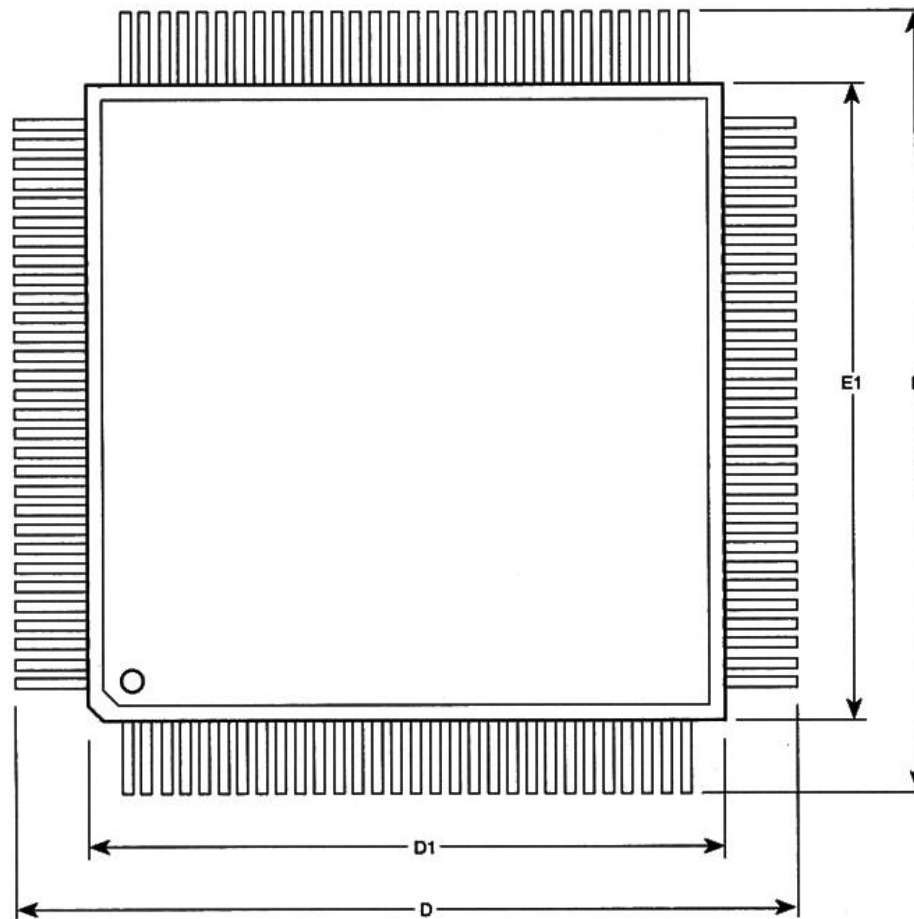
Package (84 pin PLCC)
Model #: ULTRA ASIC84



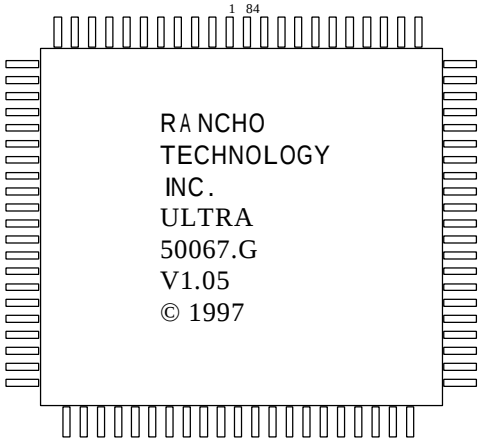
Package (100 pin PQFP)
Model #: ULTRA ASIC100



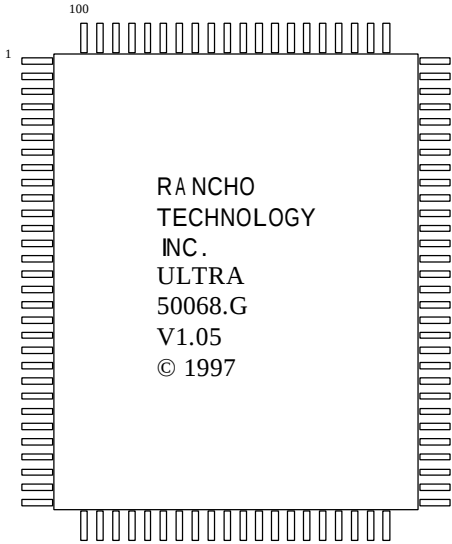
Package (144 pin PQFP)
Model #: ULTRA ASIC144



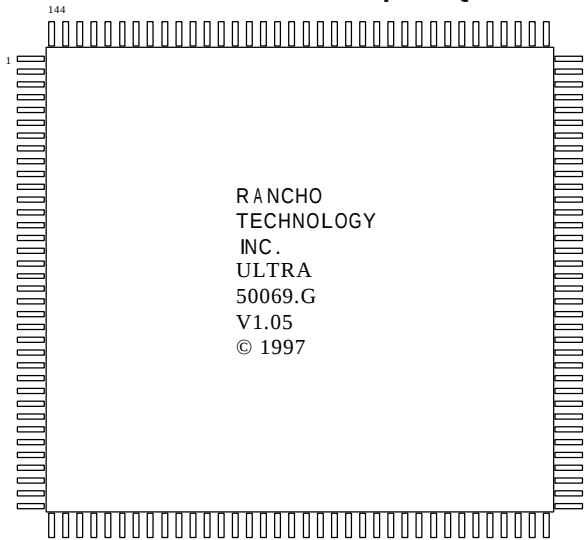
ULTRA ASIC84 - 84 pin PLCC



ULTRA ASIC100 - 100 pin PQFP



ULTRA ASIC144 - 144 pin PQFP



Appendix A: 84 Pin Pinout (ULTRA ASIC84)

Pin	Signal		
75	nc	33	Vdd
76	DDB6DEN	34	SRSEL
77	SDB4DEN	35	DSELDEN
78	DRDB3	36	SRINO
79	SDB6DEN	37	SRATN
80	DRDBP	38	nc
81	DDB4DEN	39	DDB0DEN
82	gnd	40	gnd
83	SDB3DEN	41	SRDB2
84	DDBPDEN	42	SCSIACTV
1	SDB5DEN	43	DRBSY
2	DRDB1	44	SSELDEN
3	DRDB5	45	DBSYENB
4	Vdd	46	Vdd
5	DDB5DEN	47	SACKDEN
6	DINODEN	48	SDB0DEN
7	SDBPDEN	49	DRSTDEN
8	DDB7DEN	50	SRSTDEN
9	DACKDEN	51	nc
10	DRDB7	52	SDB2DEN
11	DDB1DEN	53	SRRST
12	nc	54	DDB2DEN
13	DDB3DEN	55	DRATN
14	SDB1DEN	56	SINODEN
15	SDB7DEN	57	nc
16	SRDB3	58	SBSYENB
17	SRDB1	59	SRDB0
18	gnd	60	nc
19	gnd	61	gnd
20	SRDB5	62	DRDB0
21	DIFFSENSE	63	SRDB6
22	SRDBP	64	CLK
23	SRDB7	65	SRBSY
24	DRDB2	66	mode
25	Vdd	67	Vdd
26	Vdd	68	Vdd
27	RESET	69	SRDB4
28	DRINO	70	DRDB6
29	SRACK	71	DRDB4
30	DRRST	72	TP_SEL_PH
31	DRACK	73	TP_RSL_PH
32	DRSEL	74	TP_ARB_PH

Appendix B: 100 Pin Pinout (ULTRA ASIC100)

Pin	Signal				
1	nc	34	SRDB3	68	DBSYENB
2	nc	35	SRDB1	69	Vdd
3	nc	36	gnd	70	SACKDEN
4	nc	37	gnd	71	SDB0DEN
5	nc	38	SRDB5	72	DRSTDEN
6	TP_SING_SET	39	DIFFSENSE	73	SRSTDEN
7	DDB6DEN	40	SRDBP	74	TP_SDBXSSENS
8	SDB4DEN	41	SRDB7	75	SDB2DEN
9	DRDB3	42	DRDB2	76	SRRST
10	SDB6DEN	43	Vdd	77	nc
11	DRDBP	44	Vdd	78	nc
12	DDB4DEN	45	RESET	79	nc
13	gnd	46	DRINO	80	DDB2DEN
14	SDB3DEN	47	SRACK	81	DRATN
15	DDBPDEN	48	DRRST	82	SINODEN
16	SDB5DEN	49	DRACK	83	TP_SING_RST
17	DRDB1	50	DRSEL	84	SBSYENB
18	DRDB5	51	nc	85	SRDB0
19	Vdd	52	nc	86	gnd
20	DDB5DEN	53	nc	87	gnd
21	DINODEN	54	nc	88	DRDB0
22	SDBPDEN	55	nc	89	SRDB6
23	DDB7DEN	56	Vdd	90	CLK
24	DACKDEN	57	SRSEL	91	SRBSY
25	DRDB7	58	DSELDEN	92	mode
26	DDB1DEN	59	SRINO	93	Vdd
27	nc	60	SRATN	94	Vdd
28	nc	61	TP_FPSENS	95	SRDB4
29	nc	62	DDB0DEN	96	DRDB6
30	nc	63	gnd	97	DRDB4
31	DDB3DEN	64	SRDB2	98	TP_SEL_PH
32	SDB1DEN	65	SCSIACTV	99	TP_RSL_PH
33	SDB7DEN	66	DRBSY	100	TP_ARB_PH
		67	SSELDEN		

Appendix C: 144 Pin Pinout (ULTRA ASIC144)

Pin	Signal				
1	DRRST	49	DBSYENB	98	SRDB3
2	mode	50	SRBSY	99	SDB9DEN
3	DDB6DEN	51	SRSEL	100	gnd
4	TP_INF_PH	52	DRBSY	101	gnd
5	SRSTDEN	53	SBYENB	102	gnd
6	DRSTDEN	54	vcc	103	DDB8DEN
7	SDB10DEN	55	vcc	104	DINODEN
8	DDB10DEN	56	vcc	105	SDB8DEN
9	gnd	57	SSELDEN	106	DDB89DEN
10	gnd	58	DRSEL	107	DACKDEN
11	gnd	59	DRDB11	108	SACKDEN
12	SRRST	60	SDB11DEN	109	DRDB9
13	RESET	61	DDB11DEN	110	SRDB9
14	TP_BFR_PH	62	SRDB11	111	SRDB8
15	SDB12DEN	63	SRDB7	112	DRDB8
16	TP_ARB_PH	64	gnd	113	DRDB3
17	TP_RSL_PH	65	gnd	114	SINODEN
18	vcc	66	SRDB1	115	DRINO
19	vcc	67	DDB1DEN	116	gnd
20	vcc	68	DRDB1	117	gnd
21	vcc	69	DRDB14	118	gnd
22	SCSIACTV	70	SRDB14	119	SRINO
23	DIFFSENSE	71	SRDB4	120	DRATN
24	DDB5DEN	72	DRDB0	121	SRATN
25	SDBPDEN	73	DDB14DEN	122	DDB13DEN
26	DSELDEN	74	SDB1DEN	123	SRDB13
27	spare	75	SDB14DEN	124	DRDB13
28	gnd	76	DDB4DEN	125	CLK
29	gnd	77	SDB4DEN	126	vcc
30	gnd	78	DRDB4	127	vcc
31	DDBPDEN	79	gnd	128	vcc
32	DRDB5	80	gnd	129	SDB13DEN
33	SDBP1DEN	81	gnd	130	SDB15DEN
34	DRACK	82	DRDB7	131	DRDB15
35	SDB5DEN	83	DDB7DEN	132	DRDB6
36	DDBP1DEN	84	SDB0DEN	133	SRDB15
37	DRDBP	85	DDB0DEN	134	SRDB6
38	SRDBP	86	TP_SEL_PH	135	DDB15DEN
39	SRDBP1	87	SDB7DEN	136	gnd
40	SRDB5	88	gnd	137	gnd
41	DRDBP1	89	vcc	138	gnd
42	SDB2DEN	90	vcc	139	SDB6DEN
43	SRDB2	91	vcc	140	SRDB12
44	gnd	92	vcc	141	DRDB12
45	gnd	93	vcc	142	DDB12DEN
46	gnd	94	DDB3DEN	143	DRDB10
47	DRDB2	95	SRDB0	144	SRDB10
48	DDB2DEN	96	SDB3DEN		
		97	SRACK		