SPEC No.	EL071064
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To: _____

SPECIFICATIONS

Product Type : Auto White Balance Control IC for DSP System

Model No. : LR38262

※ This specifications contains 17 pages including the cover and appendix.
If you have any objections, please contact us before issuing purchasing order.

CUSTOMERS ACCEPTANCE

DATE: _____

BY: _____

PRESENTED

BY: _____
Y. KUSANO
Dept. General Manager

REVIEWED BY: S. Yoshizawa

PREPARED BY: T. Masui

Engineering Dept. 3
IC Development Center
Integrated Circuits Group
SHARP CORPORATION

1. GENERAL

This is a CMOS IC that was developed to control Iris, Focus and White Balance by connecting the DSP IC and the control microprocessor.

1-1. FEATURES

- The package material is plastic.
- A p-type silicon circuit board is used.
- The package type is 100-pin flat package.
- The process(structure) is CMOS.
- Not designed or rated as radiation hardened.

1-2. FUNCTIONS

- Designed for CCD area-sensor with 270,000 or 320,000 pixels and 410,000 or 470,000 pixels.
- Compatible with both NTSC and PAL systems by switching.
- AWB control range : 3000°K～7000°K.
- IRIS control by the screen is devided into 6 regions.
- Built in AF function.

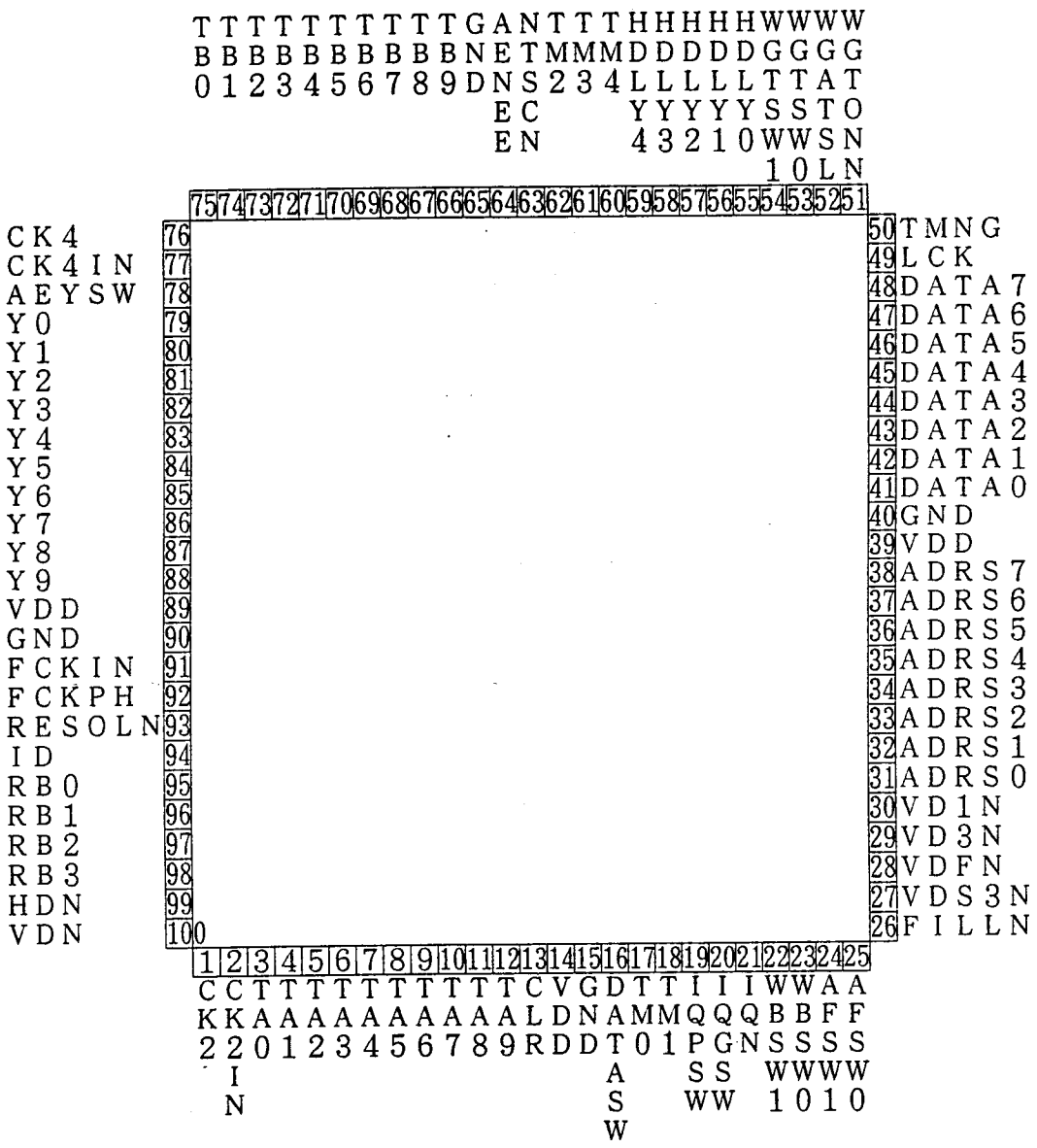
2. PIN ASSIGNMENT

2-1. PIN ASSIGNMENT

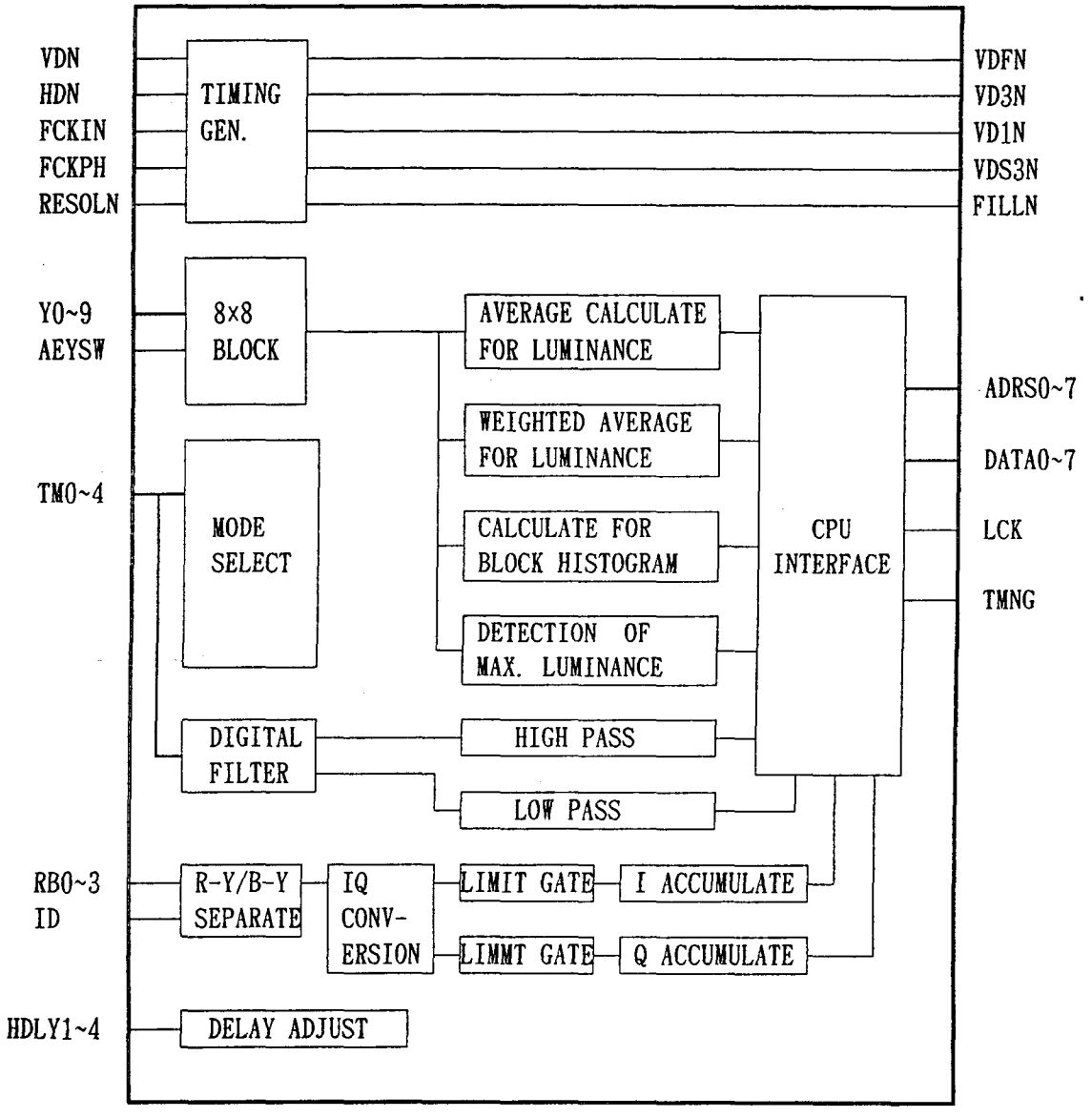
Pin No.	I/O	Signal name	Pin No.	I/O	Signal name
1	O	CK2	51	ICU	WGTONN
2	IC	CK2IN	52	ICU	WGATSL
3	IC	TA0	53	ICU	WGTSW0
4	IC	TA1	54	ICU	WGTSW1
5	IC	TA2	55	ICU	HDLY0
6	IC	TA3	56	ICU	HDLY1
7	IC	TA4	57	ICU	HDLY2
8	IC	TA5	58	ICU	HDLY3
9	IC	TA6	59	ICU	HDLY4
10	IC	TA7	60	IC	TM4
11	IC	TA8	61	IC	TM3
12	IC	TA9	62	IC	TM2
13	IC	CLR	63	ICU	NTSCN
14	–	VDD	64	ICU	AENEE
15	–	GND	65	–	GND
16	ICU	DATASW	66	O	TB9
17	IC	TM0	67	O	TB8
18	IC	TM1	68	O	TB7
19	ICU	IQPSW	69	O	TB6
20	ICU	IQGSW	70	O	TB5
21	ICU	IQN	71	O	TB4
22	ICU	WBSW1	72	O	TB3
23	ICU	WBSW0	73	O	TB2
24	ICU	AFSW1	74	O	TB1
25	ICU	AFSW0	75	O	TB0
26	ICU	FILLN	76	O	CK4
27	ICU	VDS3N	77	IC	CK4IN
28	O	VDFN	78	ICU	AEYSW
29	O	VD3N	79	IC	Y0
30	O	VD1N	80	IC	Y1
31	IC	ADRS0	81	IC	Y2
32	IC	ADRS1	82	IC	Y3
33	IC	ADRS2	83	IC	Y4
34	IC	ADRS3	84	IC	Y5
35	IC	ADRS4	85	IC	Y6
36	IC	ADRS5	86	IC	Y7
37	IC	ADRS6	87	IC	Y8
38	IC	ADRS7	88	IC	Y9
39	–	VDD	89	–	VDD
40	–	GND	90	–	GND
41	IOC	DATA0	91	IC	FCKIN
42	IOC	DATA1	92	ICU	FCKPH
43	IOC	DATA2	93	ICU	RESOLN
44	IOC	DATA3	94	IC	ID
45	IOC	DATA4	95	IC	RB0
46	IOC	DATA5	96	IC	RB1
47	IOC	DATA6	97	IC	RB2
48	IOC	DATA7	98	IC	RB3
49	IC	LCK	99	IC	HDN
50	O	TMNG	100	IC	VDN

IC : Input pin. (CMOS level)
ICU : Input pin. (CMOS level with pull-up resister)
O : Output pin.
IOC : Input or output pin. (CMOS level)

2-2. PIN DIAGRAM



3. BLOCK DIAGRAM



4. PIN DESCRIPTION

4-1. PIN DESCRIPTION

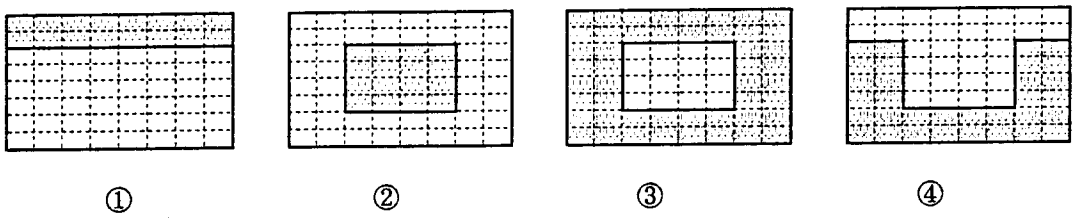
No.	Signal name	I/O	Polarity	Description
1	CK2	O	⎍	A Clock output(2.3MHz). To be connected to the CK2IN.
2	CK2IN	I C	⎍	A Clock input.
3	TA0	I C	–	A test pin. Set to L level.
4	TA1	I C	–	
5	TA2	I C	–	
6	TA3	I C	–	
7	TA4	I C	–	
8	TA5	I C	–	
9	TA6	I C	–	
10	TA7	I C	–	
11	TA8	I C	–	
12	TA9	I C	–	
13	CLR	I C	–	
14	VDD	-	–	Supply +3.3V power.
15	GND	-	–	A grounding pin.
16	DATASW	ICU	–	An input pin to change the setting way of the mode. H:Set by micro computer. L:Set by IC terminal.
17	TM0	I C	–	A test pin. Set to L level.
18	TM1	I C	–	
19	IQPSW	ICU	–	An input pin to control the limit for the WB. For detail, see 4-2.
20	IQGSW	ICU	–	An input pin to control the gate for the WB. For detail, see 4-2.
21	IQN	ICU	–	An input pin to change the data for the white balance. H:R-Y/B-Y L:I/Q
22	WBSW1	ICU	–	An input pin to select the view angle for the white balance. For detail, see 4-2.
23	WBSW0	ICU	–	
24	AFSW1	ICU	–	An input pin to select the view angle for the auto focus. For detail, see 4-2.
25	AFSW0	ICU	–	
26	FILLN	ICU	–	An input pin to change the filter for the auto focus by FCKIN frequency. H : 14.3MHz L : 9.5MHz
27	VDS3N	ICU	–	An input pin to change the field number that accumulate the video signal data to control the auto focus. H : 1 field L : 3 fileds
28	VDFN	O	⎍	An output pulse to accumulate the video signal for the auto focus.
29	VD3N	O	⎍	1/3 dividing signal output of the vertical drive pulse.
30	VD1N	O	⎍	Inverting signal of the Vertival drive pulse (VD).
31	ADRS0	I C	X	Address bus. Connect these pins with same pins of the micro-computer.
32	ADRS1	I C	X	
33	ADRS2	I C	X	

No.	Signal name	I/O	Polarity	Description
34	ADRS3	I C	X	Address bus. To be connected with the same pin of the micro-computer.
35	ADRS4	I C	X	
36	ADRS5	I C	X	
37	ADRS6	I C	X	
38	ADRS7	I C	X	
39	VDD	-	-	Supply +3.3V power.
40	GND	-	-	A Grounding pin.
41	DATA0	IOC	X	Data bus. Connect these pins with same pins of the micro-computer
42	DATA1	IOC	X	
43	DATA2	IOC	X	
44	DATA3	IOC	X	
45	DATA4	IOC	X	
46	DATA5	IOC	X	
47	DATA6	IOC	X	
48	DATA7	IOC	X	
49	LCK	I C	⎍	A clock to latch the data. For detail, see 4-2.
50	TMNG	O	⎍	A timing signal. For detail, see 4-2.
51	WGTONN	ICU	-	An input pin to ON/OFF the AE control.
52	WGATSL	ICU	-	An input pin to change the view angle for the AE control. For detail, see 4-2.
53	WGTSW0	ICU	-	An input pin to change the coefficient for the AE control. For detail, see 4-2.
54	WGTSW1	ICU	-	
55	HDLY0	ICU	-	Adjust the delay time of R-Y/B-Y signal to Y signal. For detail, see 4-2.
56	HDLY1	ICU	-	
57	HDLY2	ICU	-	
58	HDLY3	ICU	-	
59	HDLY4	ICU	-	
60	TM4	I C	-	A test pin. Set to L level.
61	TM3	I C	-	
62	TM2	I C	-	
63	NTSCN	ICU	-	An input pin to select the TV format. H:PAL L:NTSC
64	AENEE	ICU	-	An input pin to control the NEE characteristic of AE signal.
65	GND	-	-	Grounding pin.
66	TB9	O	-	A test pin. Set to L level.
67	TB8	O	-	
68	TB7	O	-	
69	TB6	O	-	
70	TB5	O	-	
71	TB4	O	-	
72	TB3	O	-	
73	TB2	O	-	
74	TB1	O	-	
75	TB0	O	-	

No.	Signal name	I/O	Polarity	Description
76	CK4	O	⊓⊔	An output pin to observe the inside clock.
77	CK4IN	I C	⊔⊓	A pin to input the CK4. To be connected the CK4.
78	AEYSW	ICU	–	An input pin to select the effective range of Y0-Y9. H:Select Y0-Y7. If Y8 and Y9 are H level, the data of Y0-Y7 is "FF". L:Select Y1-Y8. If Y9 is H level, the data of Y1-Y8 is "FF".
79	Y0	I C	–	An input pin to control the AE. Connected these pins with same pins of the DSP IC.
80	Y1	I C	–	
81	Y2	I C	–	
82	Y3	I C	–	
83	Y4	I C	–	
84	Y5	I C	–	
85	Y6	I C	–	
86	Y7	I C	–	
87	Y8	I C	–	
88	Y9	I C	–	
89	VDD	-	–	Supply +3.3V power .
90	GND	-	–	Grounding pin.
91	FCKIN	I C	⊓⊓⊓	An input pin for reference clock. FCKIN : 14.3MHz (When the FILLN is H level) FCKIN : 9.5MHz (When the FILLN is L level)
92	FCKPH	ICU	–	An input pin to select the phase of FCKIN pulse. H:Latch the data with the rising-edge of the FCKIN. L:Latch the data with the falling-edge of the FCKIN.
93	RESOLN	ICU	–	An input pin to select the kind of CCD. H:410K/470K pixels CCD. L:270K/320K pixels CCD.
94	ID	I C	⊓_	An input pulse to distinguish R-Y and B-Y. H:Select the B-Y. L:Select the R-Y.
95	RB0	I C	⊓⊔	R-Y/B-Y signal input. Connect these pins with same pins of the DSP IC.
96	RB1	I C	⊓⊔	
97	RB2	I C	⊓⊔	
98	RB3	I C	⊓⊔	
99	HDN	I C	⊤	A pin to input the horizontal pulse.
100	VDN	I C	⊔	A pin to input the vertical pulse.

4-2. EXPLANATION OF FUNCTIONS

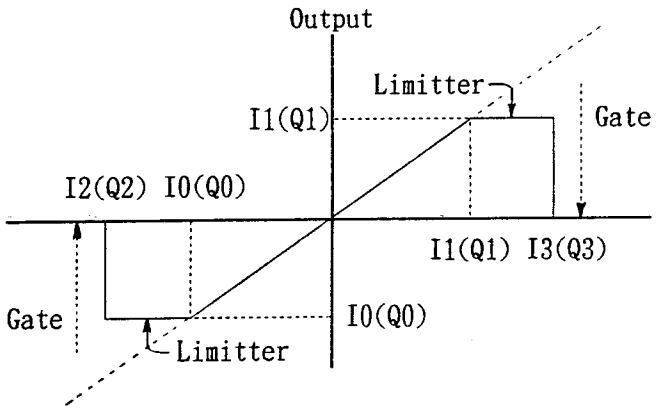
(1) Selection of the view angle for the WB control



Pin No.	Signal	Signal Level			
22	WBSW1	L	L	H	H
23	WBSW0	L	H	L	H
Selection view angle		①	②	③	④

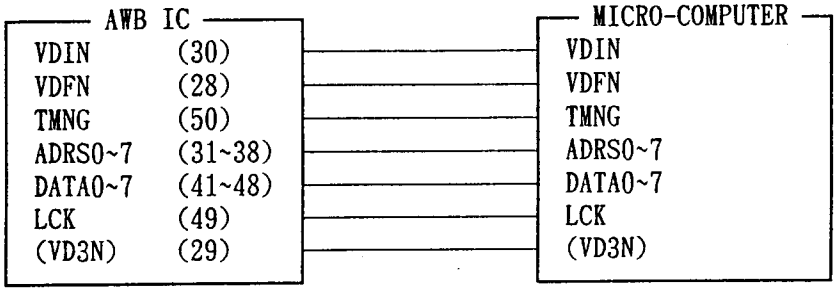
: Effective area

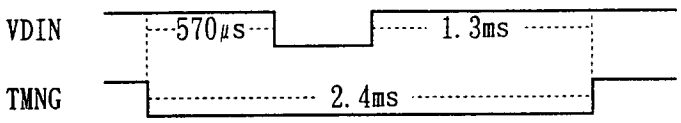
(2) Limitter and Data gate control for the WB.



Pin No.	Signal	Signal Level			
19	IQPSW	L	X	H	X
20	IQGSW	X	L	X	H
Limitter		ON	–	OFF	–
Gate transaction		–	Do not	–	Do

(3) Interface Specification





• Read/Write of Data

It is possible to read/write some controls data to AWB IC from microcomputer. For details, show the relation of ADRS0~7 and DATA0H7.

ADRS0~7	R/W	Contents
80~81	R	I data for AWB control
90~91	R	Q data for AWB control
F0	W	I0 data for AWB control
F1	W	I1 data for AWB control
F2	W	I2 data for AWB control
F3	W	I3 data for AWB control
F4	W	Q0 data for AWB control
F5	W	Q1 data for AWB control
F6	W	Q2 data for AWB control
F7	W	Q3 data for AWB control
F8	W	Translation coeffcient of IQ for AWB control
FA	W	Bit7 6 5 4 3 2 1 0 - - - IQN IQGSW IQPSW WBSW1 WBSW0

○ Read timing

It is possible to read the data by output the data on ADRS0~7 lines.

○ Write timing

When the VDIN signal is L level, it is possible to write by output the data on ADRS0~7 and DATA0~7 line. It is written with the rising edge of the LCK pulse.

5. ELECTRICAL CHARACTERISTICS

5-1. ABSOLUTE MAXIMUM RATING

Parameter	Symbol	Rating			Unit
Supply voltage	V_{DD}	−0.3	~	6.0	V
Input voltage	V_I	−0.3	~	V_{DD}+0.3	V
Output voltage	V_O	−0.3	~	V_{DD}+0.3	V
Operation temperature	T_{opr}	−10	~	+70	℃
Storage temperature	T_{stg}	−55	~	+150	℃

5-2. ELECTRICAL CHARACTERISTICS

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Supply voltage	V_{DD}	3.0	3.3	3.6	V
Operation temperature	T_{opr}	−10		+70	℃

5-3. DC CHARACTERISTICS

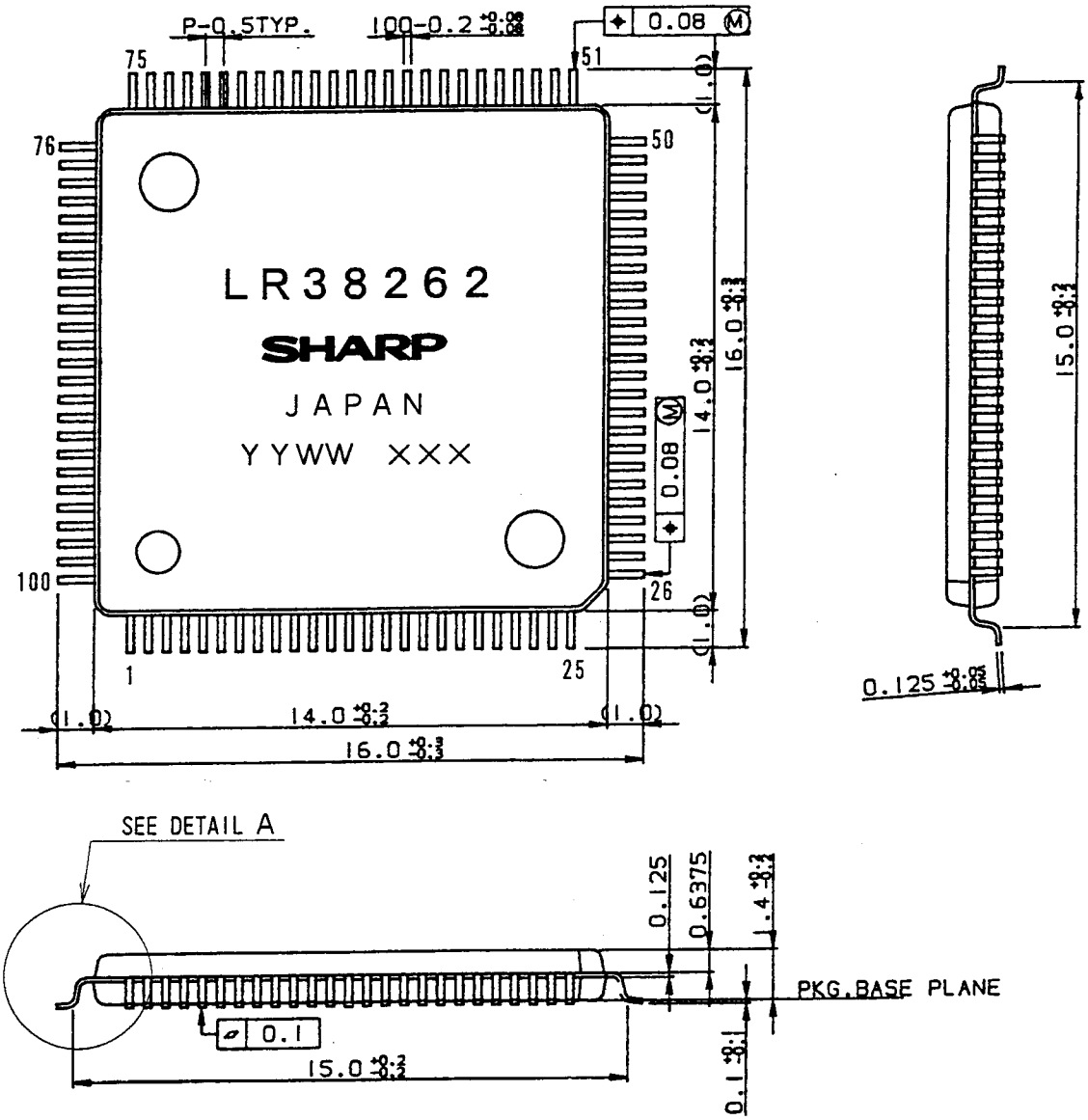
Parameter	Symbol	Condition	MIN.	TYP.	MAX.	Unit	Note
Input "H" voltage	V_{IH}		V_{DD}×0.7			V	
Input "L" voltage	V_{IL}				V_{DD}×0.3	V	
Input "H" current	$\lvert I_{IH} \rvert$	$V_I = V_{DD}$			1.0	μA	1
Input "L" current	$\lvert I_{IL1} \rvert$	V_I = 0V			1.0	μA	2
Input "L" current	$\lvert I_{IL2} \rvert$	V_I = 0V	1.5		30.0	μA	3
Output "H" voltage	V_{OH}	I_{OH}=-0.8mA	2.0			V	
Output "L" voltage	V_{OL}	I_{OL}= 1.6mA			0.4	V	4

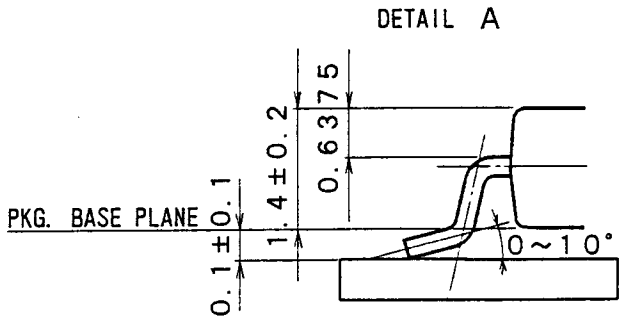
Note 1 : Applied to Input(IC, ICU) and Input/Output(IOC).
(when the mode is input mode)

Note 2 : Applied to Input(IC) and Input/Output(IOC).
(when the mode is input mode)

Note 3 : Applied to Input(ICU).

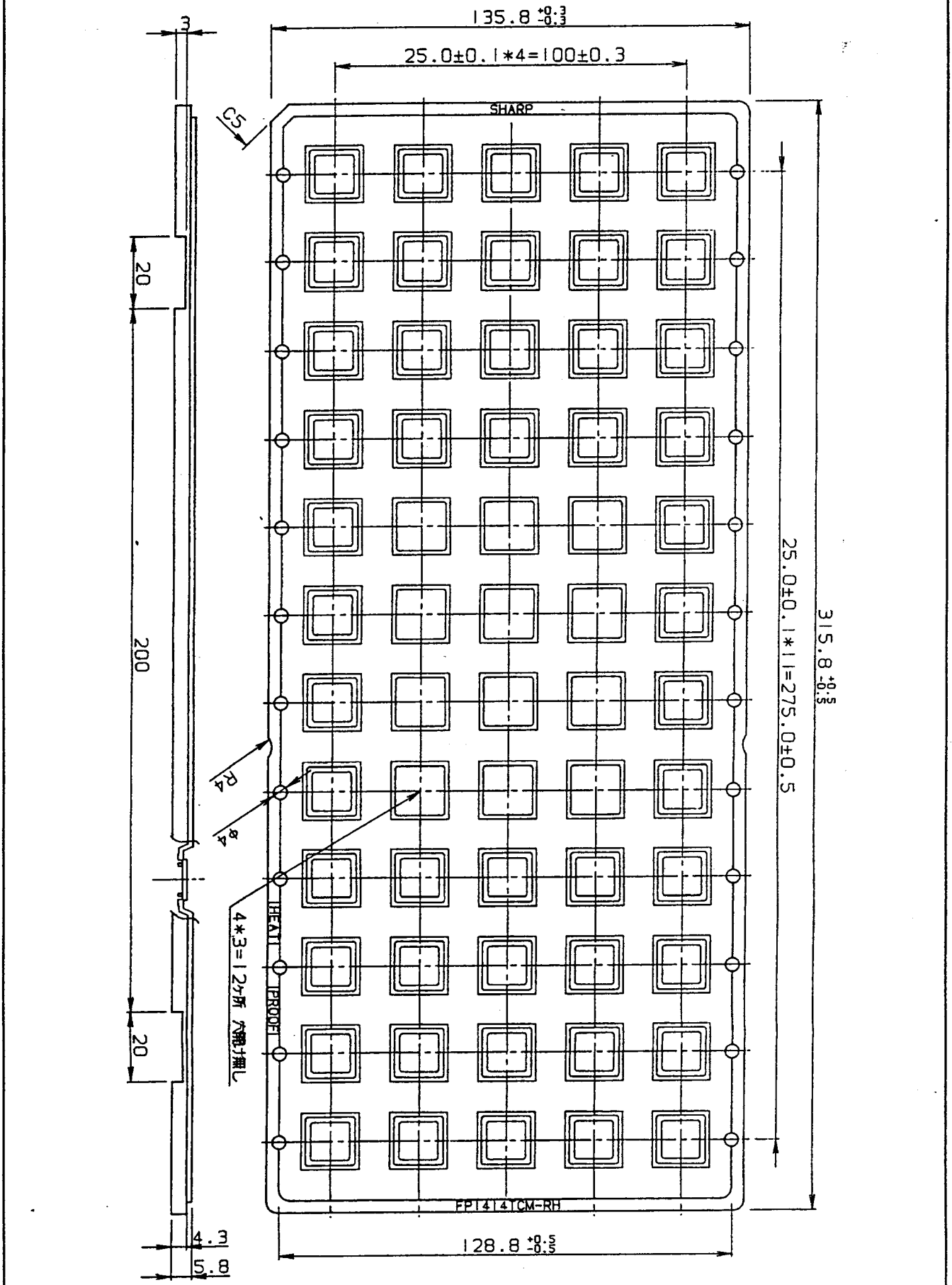
Note 4 : Applied to Output(O) and Input/Output(IOC).
(when the mode is output mode)





名称 NAME	QFP100-P-1414	リード仕上 LEAD FINISH	TIN-LEAD PLATING	単位 UNIT	mm
シャープ株式会社 IC事業本部 SHARP CORP. IC GROUP			DRAWING NO.	AA1058	

備考 プラスチックパッケージ外形寸法は、バリを含まないものとする。
NOTE Plastic body dimensions do not include burr of resin.



名称 NAME	FP1414TCM−RH	単位 UNIT	mm	備考 NOTE
シャープ株式会社 IC事業本部 SHARP CORP. IC GROUP		DRAWING NO.	CV557	

CCD sensor imaging area sensor pattern recognition timing generator vertical driver white balance