.

DATA SHEET

(DOC No. HX8288-A02-DS)

HX8288-A02

1026 CH TFT LCD Source Driver
with PBPI Interface

Version 01 October, 2012

Himax Technologies, Inc.
http://www.himax.com.tw

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1. General Description

HX8288-A02 is a 1026 channel outputs source driver with PBPI (Packet Based Point to point Interface) interface. This chip integrates 1026ch single gate source driver for TFT-LCD.

Source driver with 6-bit DAC performs 64 gray scales. The source driver receives 6-bit through PBPI interface, and generates corresponding 64-level gray scale voltage output. Since the output circuit of this source driver incorporates an operational amplifier with low power dissipation, and performs wide voltage supply range and small output deviation. Therefore, a high quality display with less crosstalk can be achieved.

2. Features

- Support PBPI interface with clock pair
- 1026/1020/966/960/768 channel outputs selectable
- 6-bit resolution / 64-gray scale
- V1~V10 for adjusting gamma correction
- 10 or 6 gamma correction reference voltages selectable
- Dynamic output range: 0.1 to VDDA-0.1V
- Applicable dot inversion(normal & Flip-Pixel panel)/ 1+2 line inversion/square inversion driving scheme
- Right and left shift capability
- Support terminal resistor tunable
- Support 1 or 2 data pair
- Support 2 repair buffers
- The PBPI interface maximum operation frequency : 150MHz
- Power of digital circuit(VDDD): 2.3V to 3.6V
- Power of analog circuit(VDDA): 6V to 13.5V
- COG package

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3. Block Diagram

3.1 Function block diagram

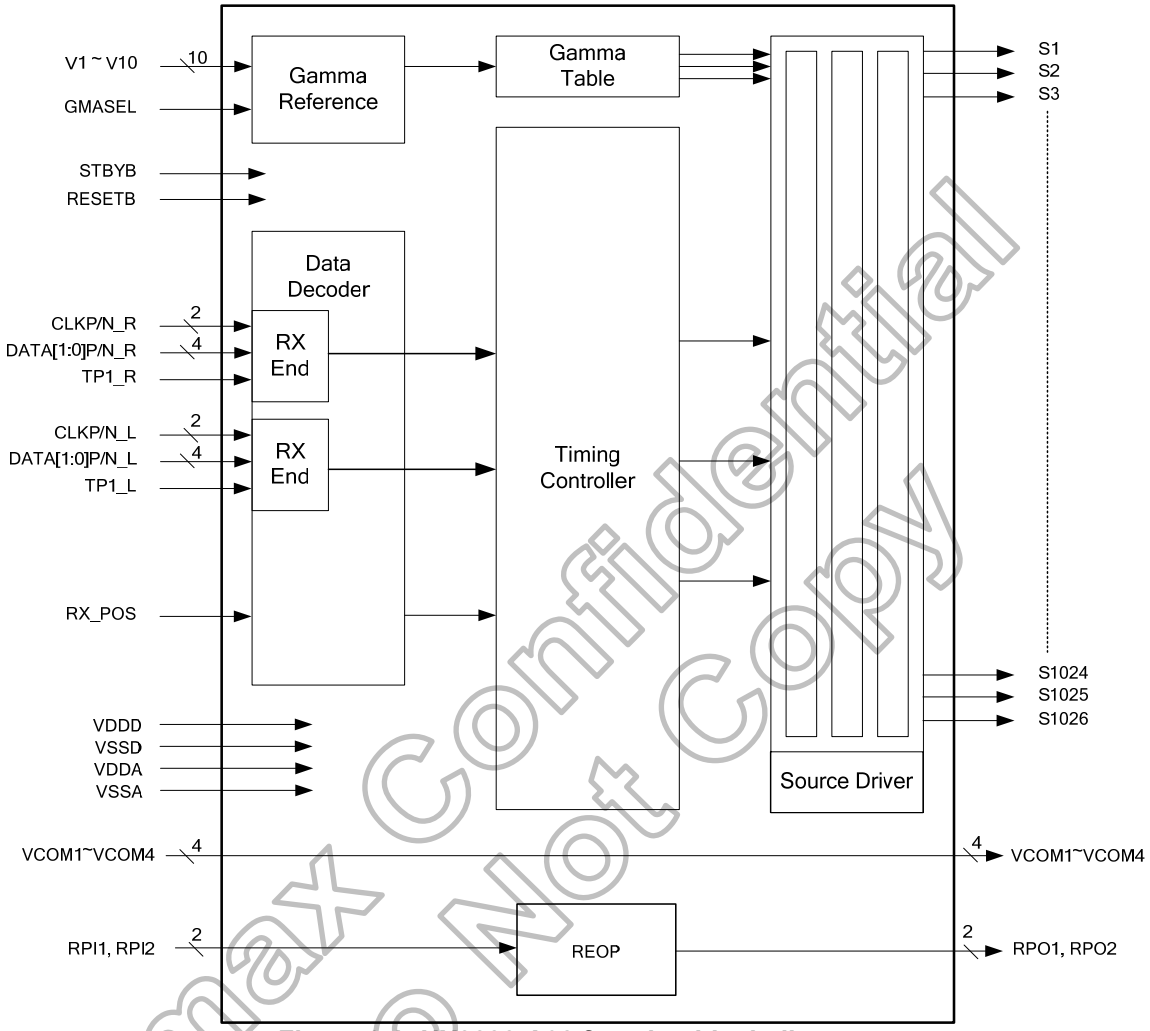

Figure 3.1: HX8288-A02 function block diagram

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4. Pin Description

4.1 Pin description

Name	I/O	Description
DATA[1:0]P/N_R	I	PBPI interface data input pin. This is differential data pair at right side of source driver (See pin assignment).
CLKP/N_R	I	PBPI interface clock input pin. This is differential clock pair at right side of source driver (See pin assignment).
TP1_R	I	PBPI interface pocket start pulse at right side source driver. **This pin default pull low** (See pin assignment).
DATA[1:0]P/N_L	I	PBPI interface data input pin. This is differential data pair at left side of source driver (See pin assignment).
CLKP/N_L	I	PBPI interface clock input pin. This is differential clock pair at left side of source driver (See pin assignment).
TP1_L	I	PBPI interface pocket start pulse at left side of source driver. **This pin default pull low** (See pin assignment).
RX_POS	I	PBPI interface related signals input position announcement **(Default pull high)** : 0 : PBPI interface input signal is near side of S1026. 1 : PBPI interface input signal is near side of S1
STBYB	I	Standby mode control. Normally and **default pull high**. When STBYB=H, Source driver is normal mode. When STBYB=L, Source driver enter standby mode and all output pull ground.
RESETB	I	Global reset. Keep VDDD during operation. Normally pull high. Suggest to connecting with an RC reset circuit for stability.
V1 ~ V10	I	Gamma correction reference voltages. V1 ~ V10 are the external reference gamma control points. The voltage of these pins must be: AGND < V10 < V9 < V8 < V7 < V6, V5 < < V4 < V3 < V2 < V1 < VDDA.
GMASEL	I	Gamma correction reference selection. **(Default pull high)** 1: All gamma correction reference point enables. 0: V2, V4, V7, and V9 disable then keep floating.
RPI 1/2	I	Repair OP input.
RPO 1/2	O	Repair OP output.
VDDD	PI	Digital power.
VSSD	PI	Digital ground.
VDDA	PI	Analog power.
VSSA	PI	Analog ground.
TRIM[15:0]	T	Test pin. Please float it.
TESTD[7:0]	T	Test pin. Please float it.
TESTA[2:0]	T	Test pin. Please float it.
DUMMY	D	Dummy pin.
VCOM1	S	Internal through path. Valid thru range: VSSA ~ VDDA.
VCOM2	S	Internal through path. Valid thru range: VSSA ~ VDDA.
VCOM3	S	Internal through path. Valid thru range: VSSA ~ VDDA.
VCOM4	S	Internal through path. Valid thru range: VSSA ~ VDDA.
S1~S1026	O	Output driver signal. All outputs will be VSSA under stand-by mode.

Note: I: Input, **O**：Output, **I/O**：Input/Output, **PI**：Power input, **T**：Testing, **SH**：Shielding, **D**：Dummy, **S:** Shorted line

Table 4.1: Pad description

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4.2 Value of wiring resistance to each pin

The input wiring resistance values affect power or signal integrity and the display quality. So be sure to design using values that do not exceed those recommendations as below.

Pin name	Wiring resistance value(Ω)
VDDA	<10
VSSA	<10
VDDD	<10
VSSD	<10
V1 ~ V10	<150
CLKP/N_R, CLKP/N_L	<30
DATA[1:0]P/N_R, DATA[1:0]P/N_L	<30
TP1_R, TP1_L	<50

Table 4.2: Wiring resistance values

HX8288-A02 internal link schematic.

Pin name	Internal line resistance (Ω)
VCOM1_Path	<20
VCOM2_Path	<20
VCOM3_Path	<20
VCOM4_Path	<20

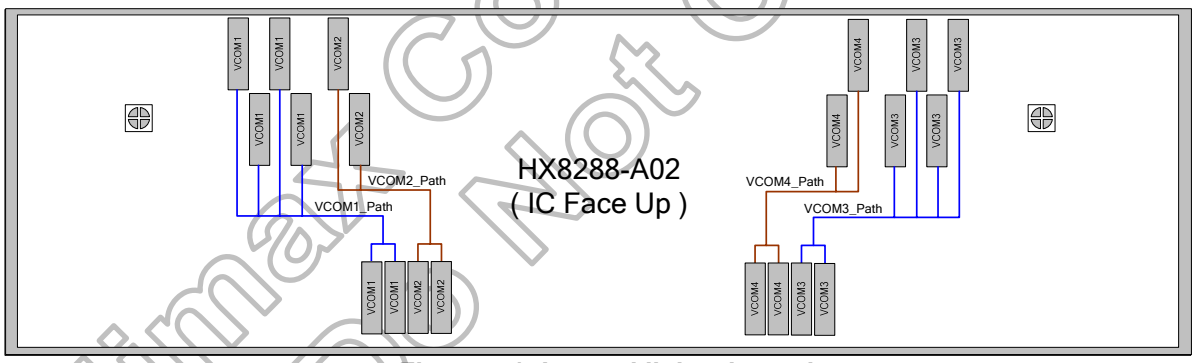

Figure 4.1: Internal link schematic

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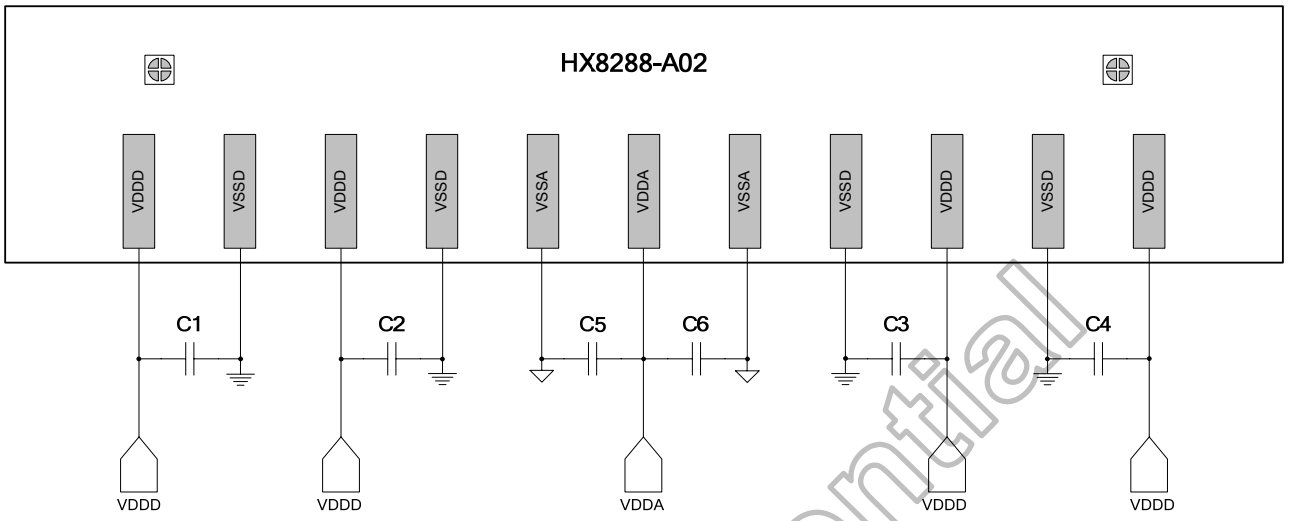
4.3 Application Power Circuit



Note : (1) C1+C2+C3+C4 ≧ 10uF/16V
(2) C5+C6 ≧ 10uF/25V

Figure 4.2: Power circuit application schematic

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5. Register Table

Register group	Class	Name	Description	Default	Settings
Reg1 [5]	SOU	RL	Horizontal scan selection.	0b	1b: S1~S1026 0b: S1026~S1
Reg1 [4:3]	SOU	RES	Input resolution selection.	01b	00b: 1366 RGB 01b: 1280 RGB 10b: 1024 RGB 11b: Reserve
Reg1 [2]	SOU	ZinvP	Z invertion(flip-pixel) panel selection.Only support 1366RGB/1280RGB/1024RGB_3SD.	0b	0b: Normal panel 1b: Z invertion panel (Flip-Pixel M+1 and Flip-pixel M+3)
Reg1 [1:0]	NO	Reserve	These bits are reserve.	-	-
Reg2 [5:4]	NO	Reserve	These bits are reserve.	-	-
Reg2 [3]	SOU	SD_num	For 1024RGB only.	0b	0b: use 4SD architecture 1b: use 3SD architecture
Reg2 [2:0]	NO	Reserve	These bits are reserve.	-	-
Reg3 [5:0]	NO	Reserve	These bits are reserve.	-	-
Reg4 [5:3]	RX	RTERM	Adjsut termination resistor for RX.	010b	Approximation resistance: 000b → 50Ω 001b → 75Ω 010b → 100Ω 011b → off (several megaΩ) 100b → 150Ω 101b ~ 111b → reserve
Reg4 [2]	SOU	R_RPOP1EN	Repair OP1 enable. (Notes1)	0b	0b: Repair OP1 diable 1b: Repair OP1 enable
Reg4 [1]	SOU	R_RPOP2EN	Repair OP2 enable. (Notes1)	0b	0b: Repair OP2 diable 1b: Repair OP2 enable
Reg4 [0]	SOU	SQRINV	Square inversion function enable. (This function is for normal panel use only)	0b	0b: Square inversion enable 1b: Square inversion disable

Note: (1).Power on sequence and Standby mode are disable.

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5.1 Application block diagram

5.1.1 Output channel selection

Frame update packets include the register of output channel selection. The channel selection is decided by resolution, panel type, and source driver number.

- **Normal type panel structure: 1366 RGB with 4 SD.**

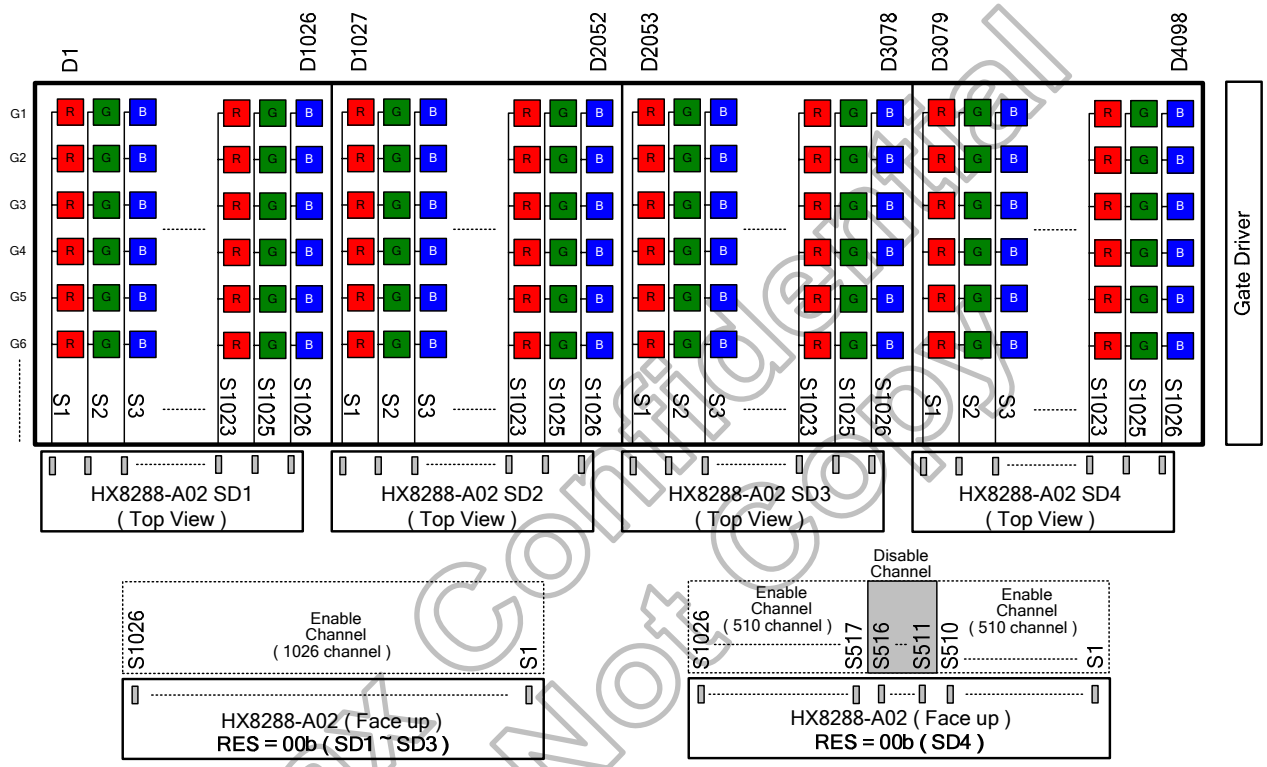

Figure 5.1: Output channel selection for normal type panel structure of 1366 RGB with 4 SD

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- **Flip-Pixel M+1 panel structure: 1366 RGB with 4 SD.**

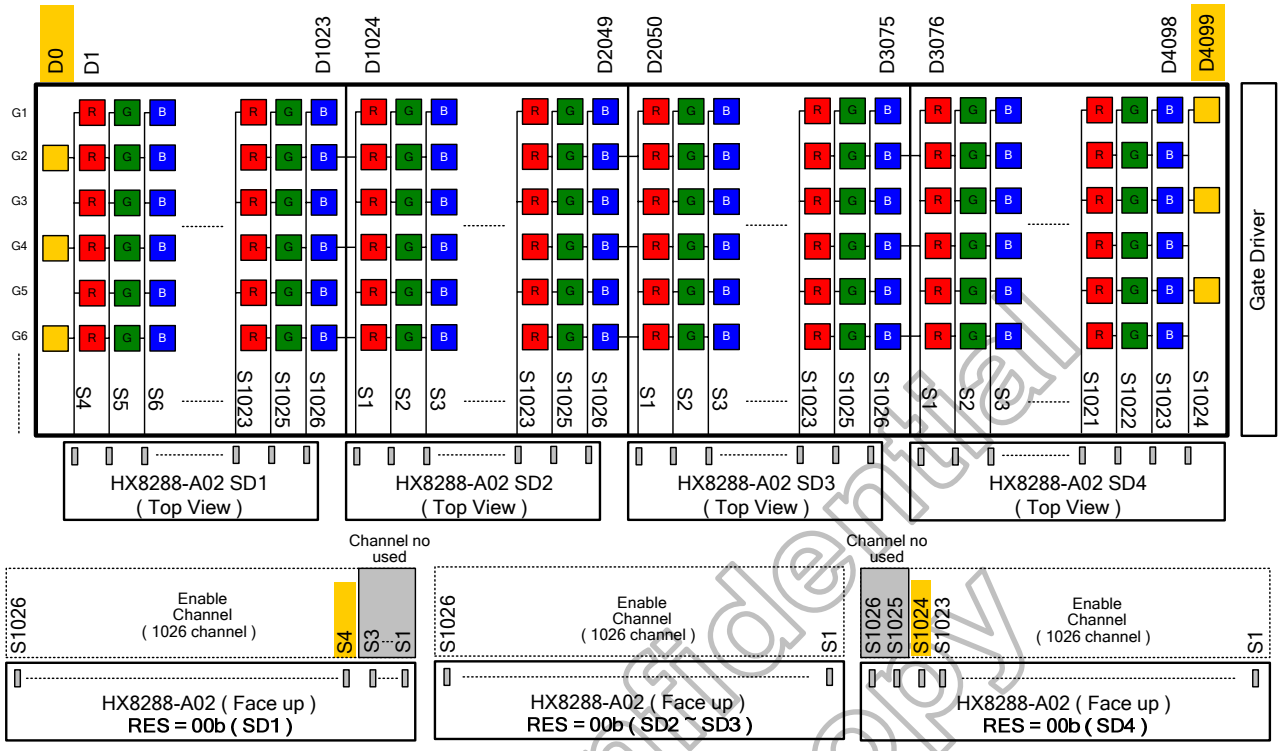

Figure 5.2: Output channel selection for Flip-Pixel M+1 type panel structure of 1366 RGB with 4 SD

- **Flip-Pixel M+3 panel structure: 1366 RGB with 4 SD.**

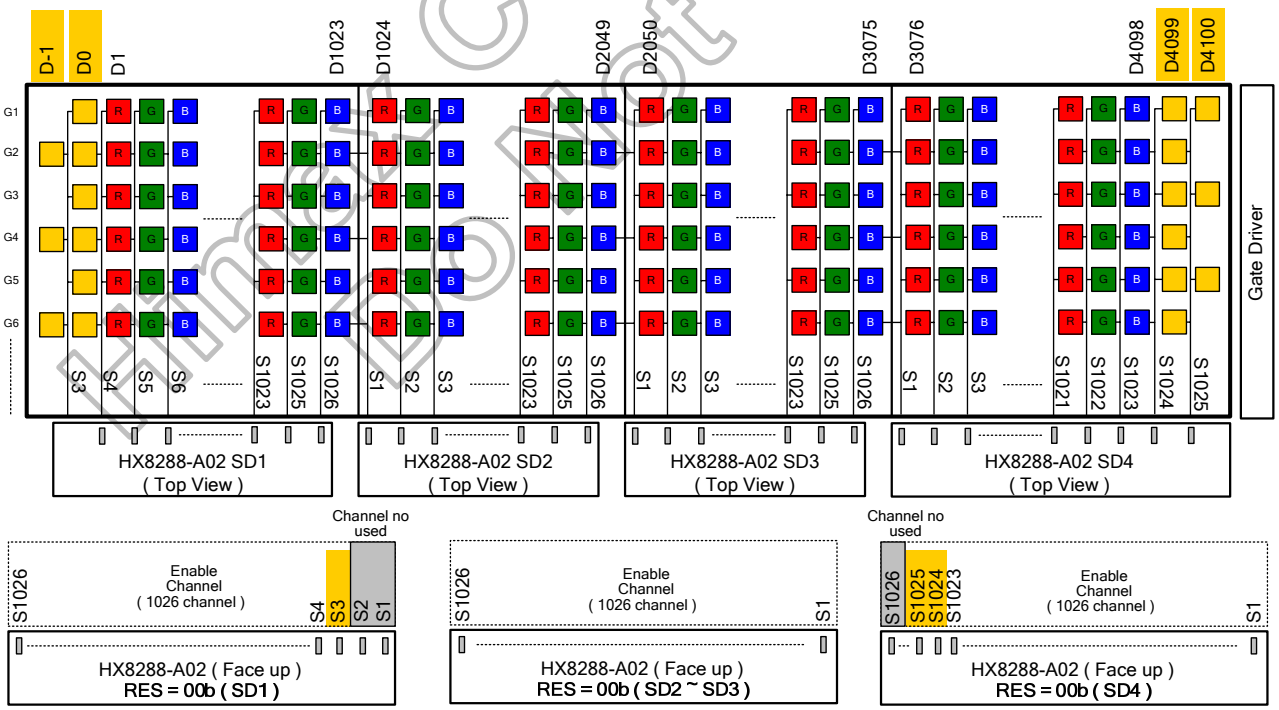

Figure 5.3: Output channel selection for Flip-Pixel M+3 type panel structure of 1366 RGB with 4 SD

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- **Normal type panel structure: 1280 RGB with 4 SD.**

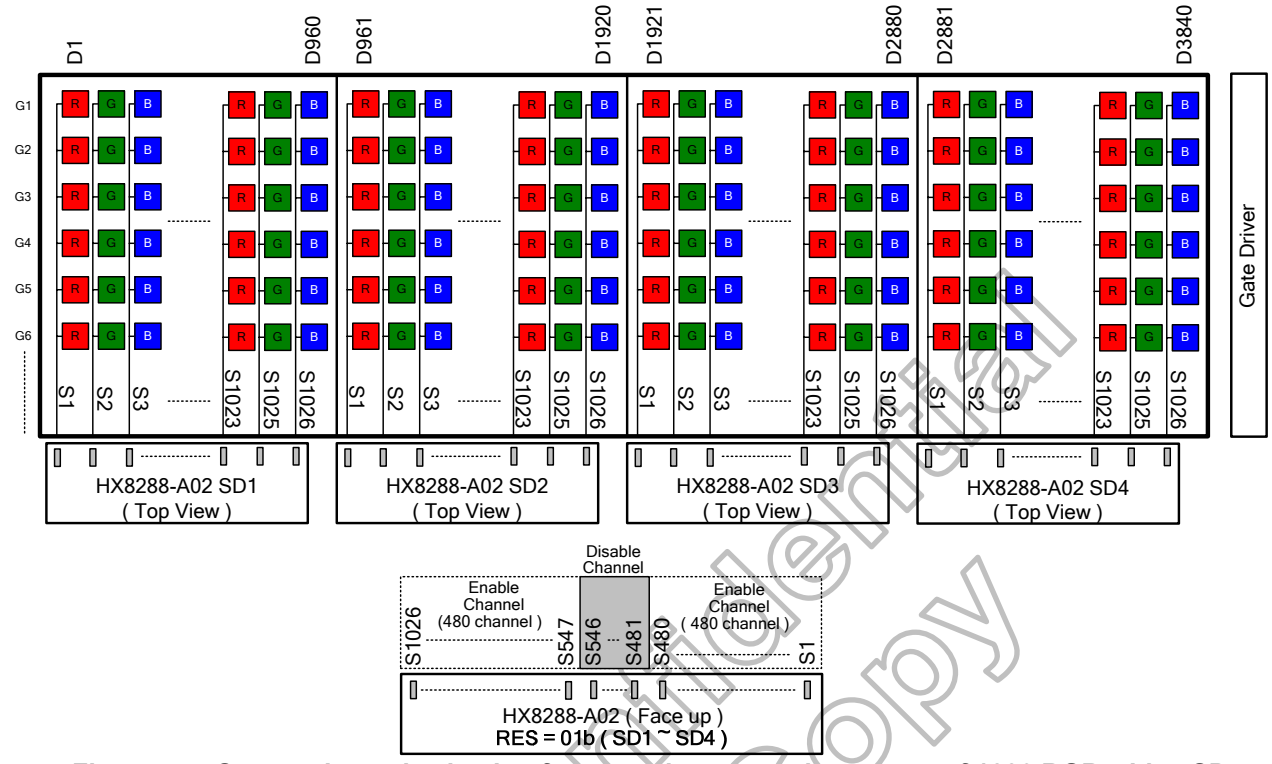

Figure 5.4: Output channel selection for normal type panel structure of 1280 RGB with 4 SD

- **Flip-Pixel M+1 panel structure: 1280 RGB with 4 SD.**

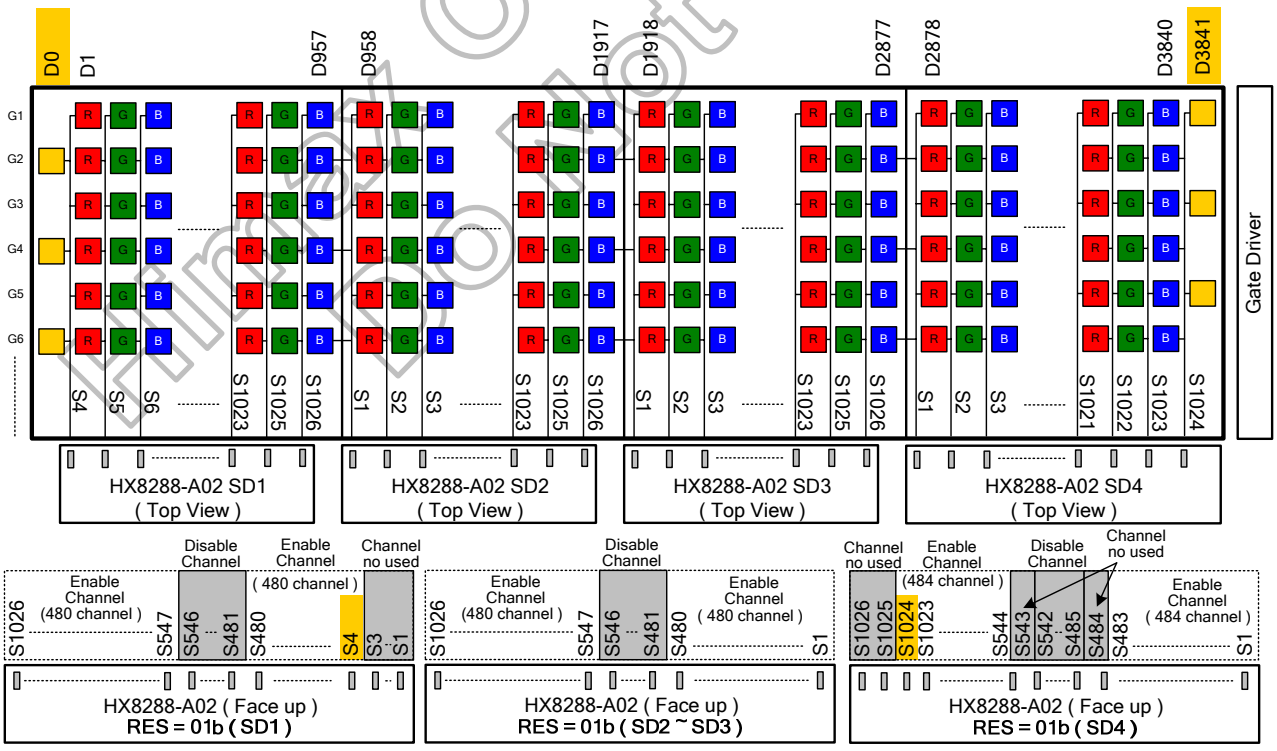

Figure 5.5: Output channel selection for Flip-Pixel M+1 type panel structure of 1280 RGB with 4 SD

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- **Flip-Pixel M+3 panel structure: 1280 RGB with 4 SD.**

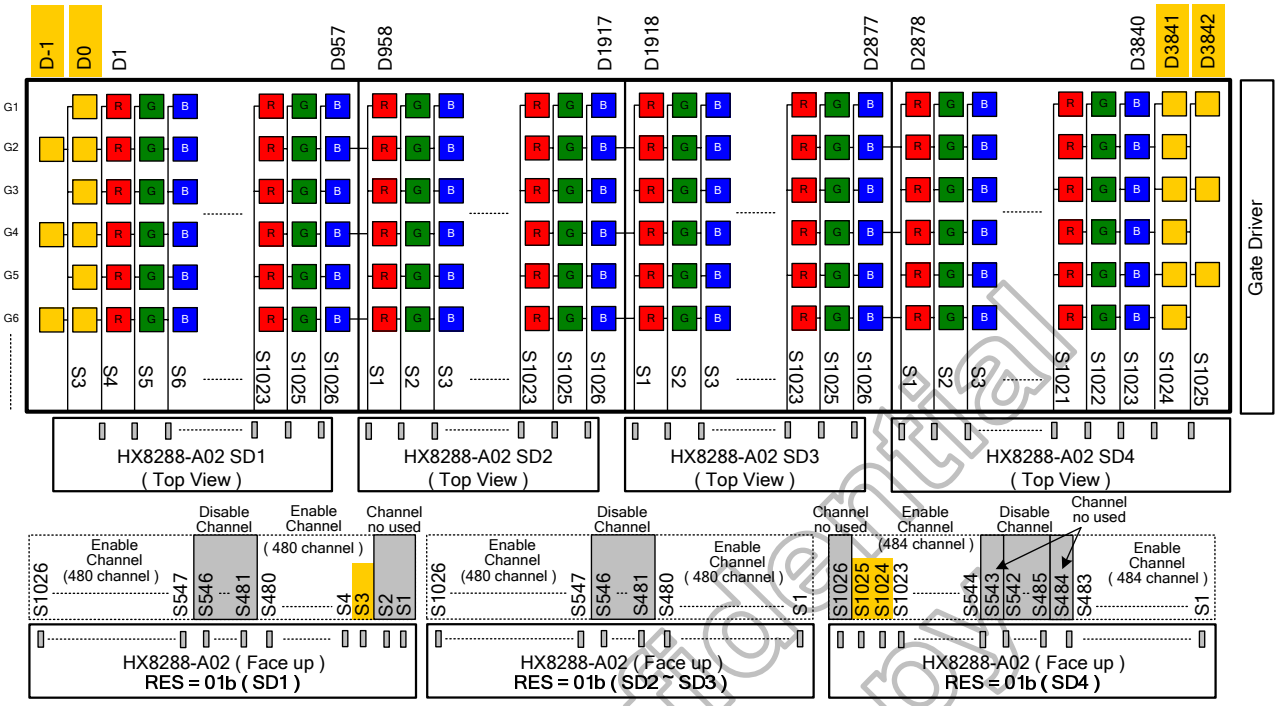

Figure 5.6: Output channel selection for Flip-Pixel M+3 type panel structure of 1280 RGB with 4 SD

- **Normal type panel structure : 1024 RGB with 4 SD.**
  (1024 RGB resolution with 4 SD don't support Flip-Pixel M+1 and Flip-Pixel M+3 panel structure)

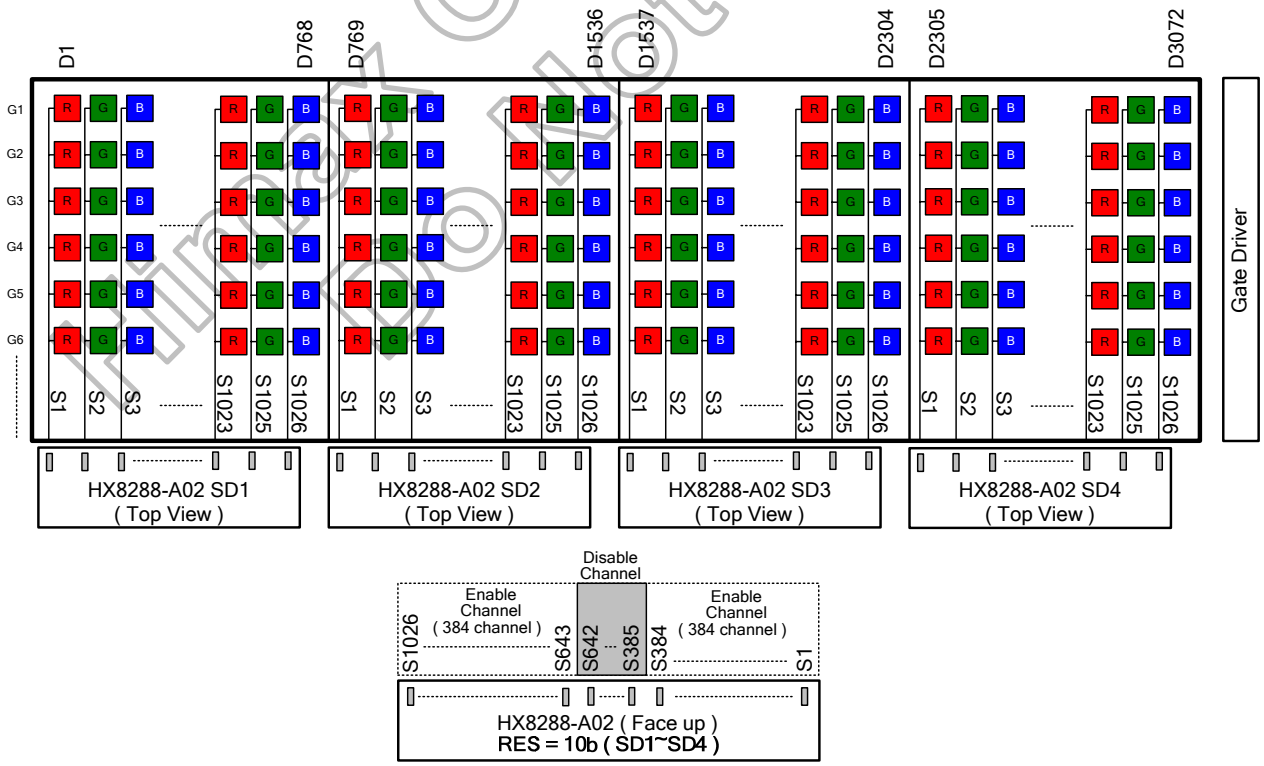

Figure 5.7: Output channel selection for normal type panel structure of 1024 RGB with 4 SD

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- **Normal type panel structure: 1024 RGB with 3 SD.**

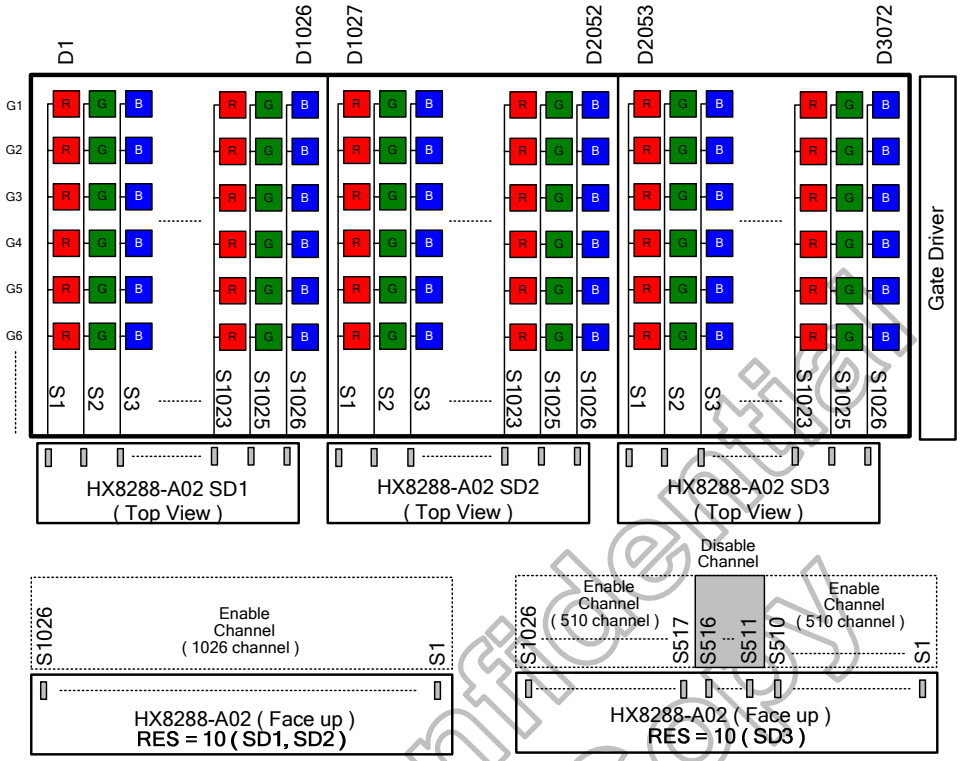

Figure 5.8: Output channel selection for normal type panel structure of 1024 RGB with 3 SD

- **Flip-Pixel M+1 panel structure: 1024 RGB with 3 SD.**

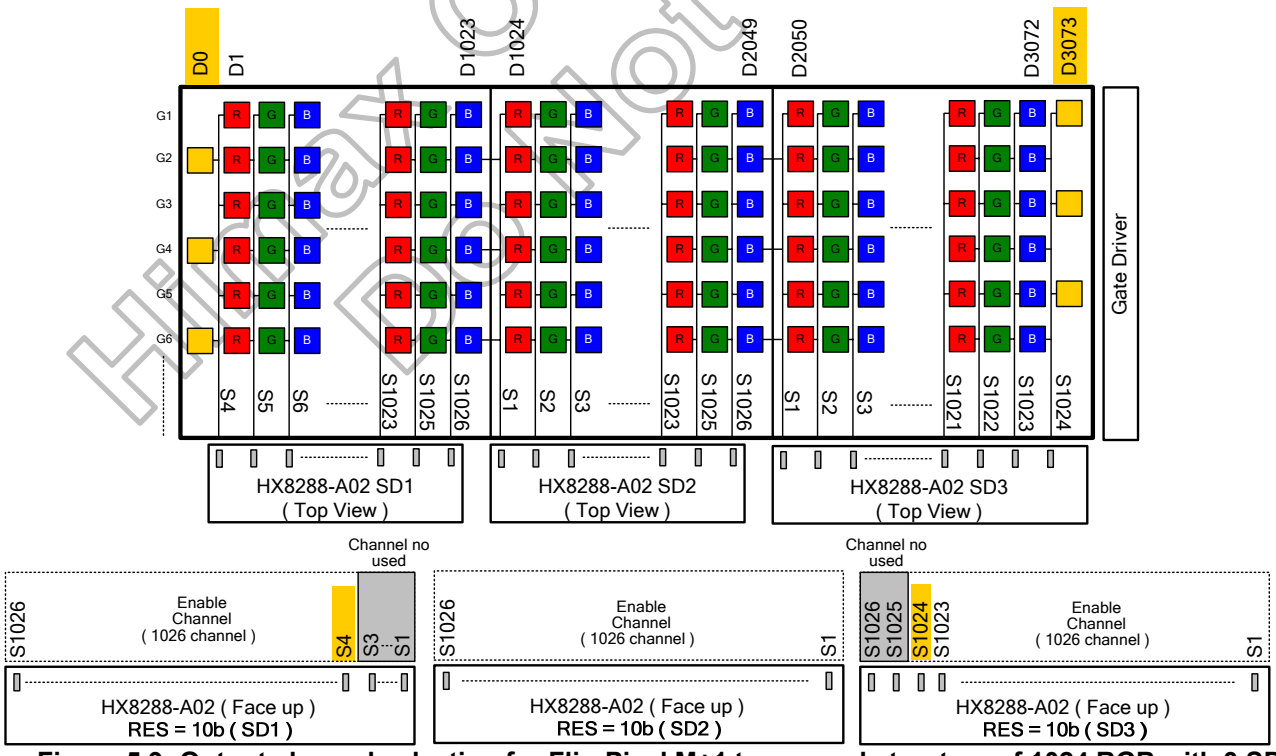

Figure 5.9: Output channel selection for Flip-Pixel M+1 type panel structure of 1024 RGB with 3 SD

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- **Flip-Pixel M+3 panel structure: 1024 RGB with 3 SD.**

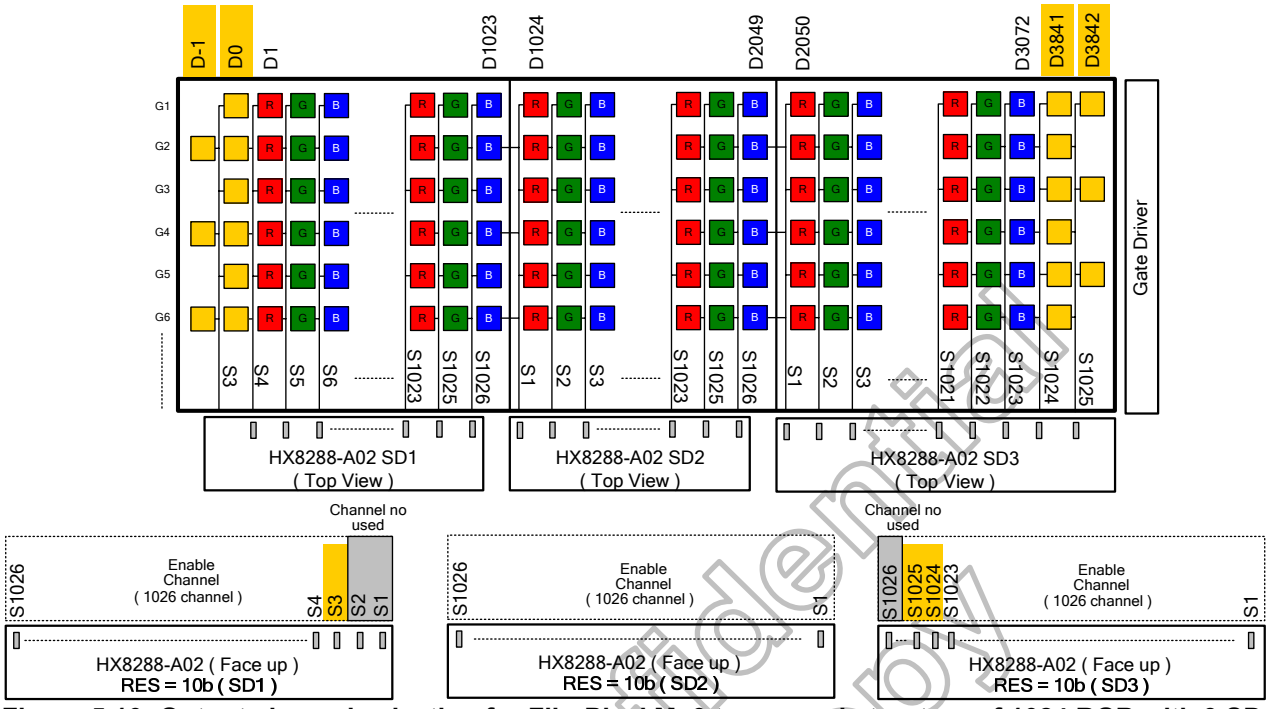

Figure 5.10: Output channel selection for Flip-Pixel M+3 type panel structure of 1024 RGB with 3 SD

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5.1.2 Display configuration of resolution 1366 RGB with 4 SD

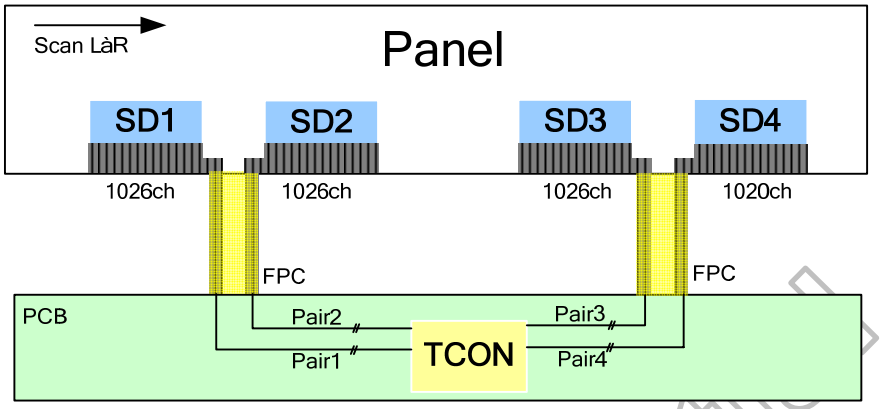
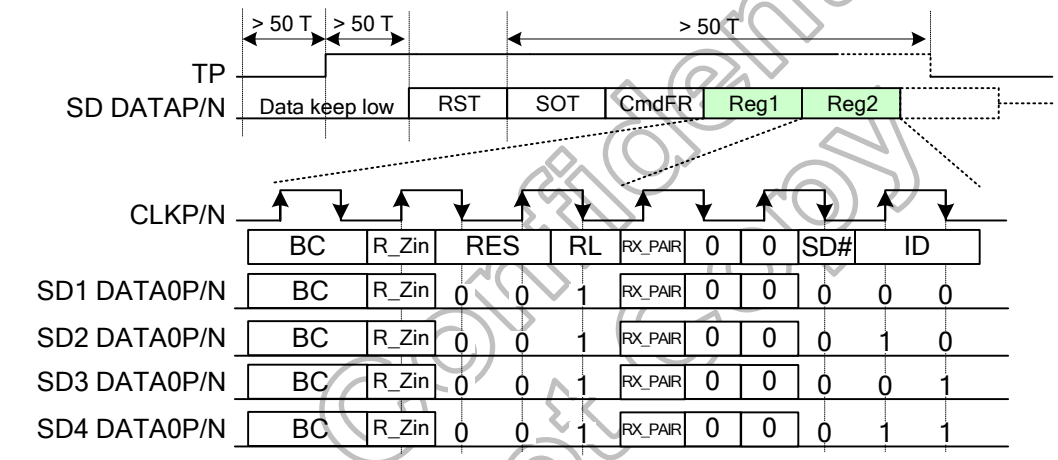


Figure 5.11: Display configuration for resolution 1366 RGB with 4 SD



Note: (1) SD1~SD4 DATA1 P/N is doesn't care.
(2) T is CLKP/N period time.

Figure 5.12: Packet format for resolution 1366 RGB with 4 SD

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5.1.3 Display configuration of resolution 1280 RGB with 4 SD

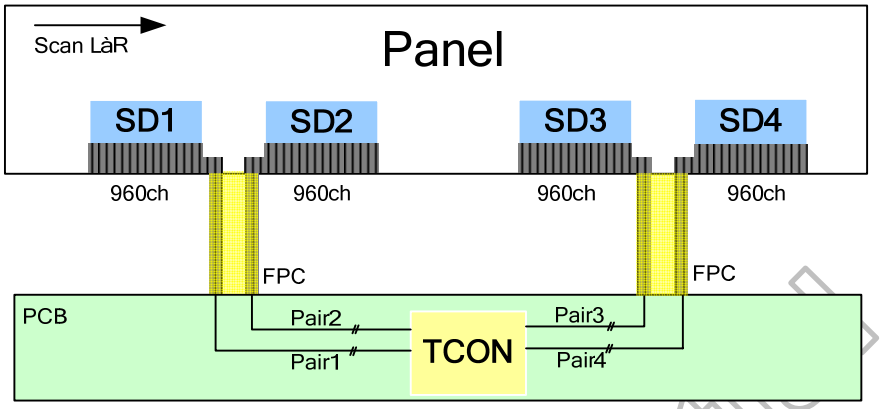
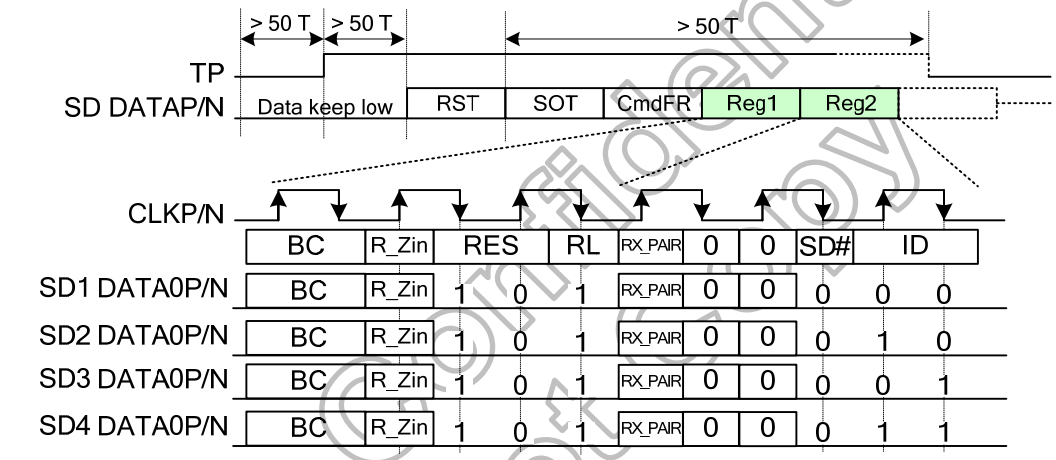


Figure 5.13: Display configuration for resolution 1280 RGB with 4 SD



Note: (1) SD1~SD4 DATA1 P/N is doesn't care.
(2) T is CLKP/N period time.

Figure 5.14: Packet format for resolution 1280 RGB with 4 SD

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5.1.4 Display configuration of resolution 1024 RGB with 4 SD

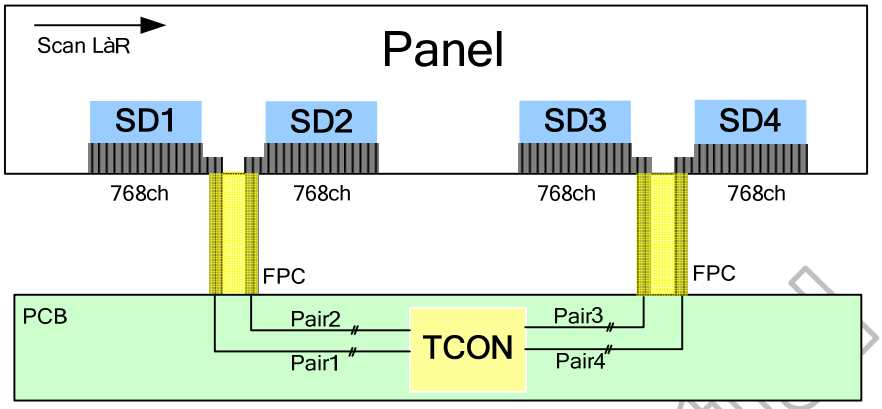
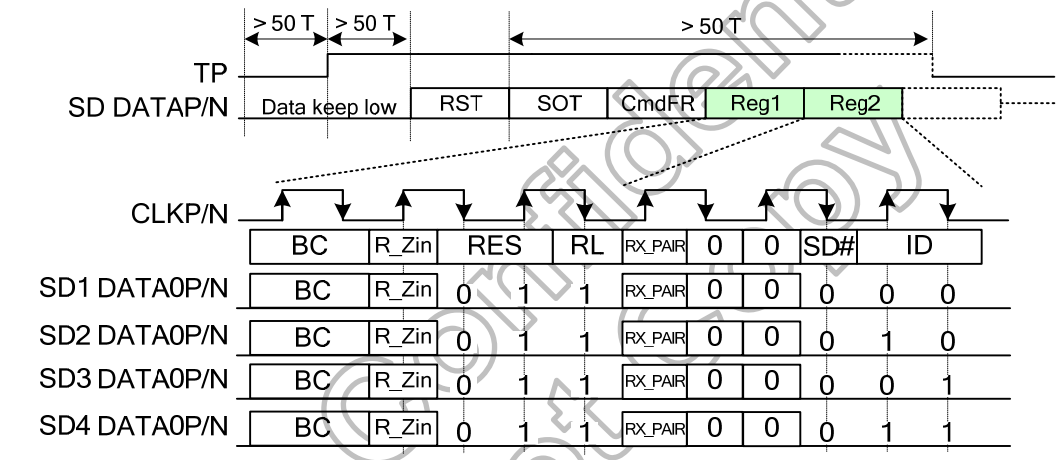


Figure 5.15: Display configuration for resolution 1024 RGB with 4 SD



Note: (1) SD1~SD4 DATA1 P/N is doesn't care.
(2) T is CLKP/N period time.

Figure 5.16: Packet format for resolution 1024 RGB with 4 SD

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5.1.5 Display configuration of resolution 1024 RGB with 3 SD

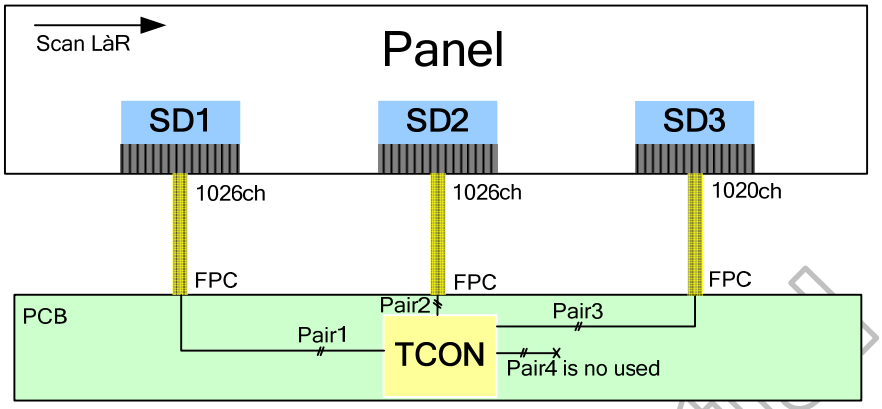
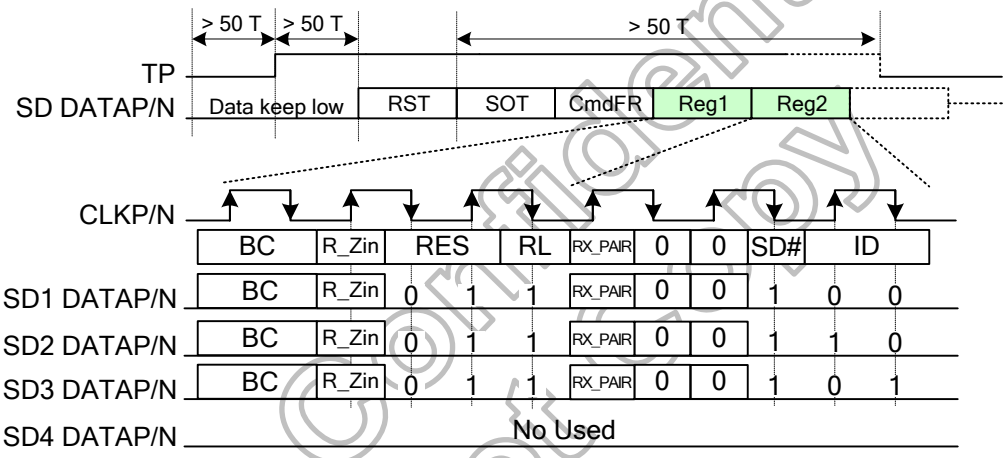


Figure 5.17: Display configuration for resolution 1024 RGB with 3 SD



Note: (1) SD1~SD3 DATA1 P/N is doesn't care.
(2) T is CLKP/N period time.

Figure 5.18: Packet format for resolution 1024 RGB with 3 SD

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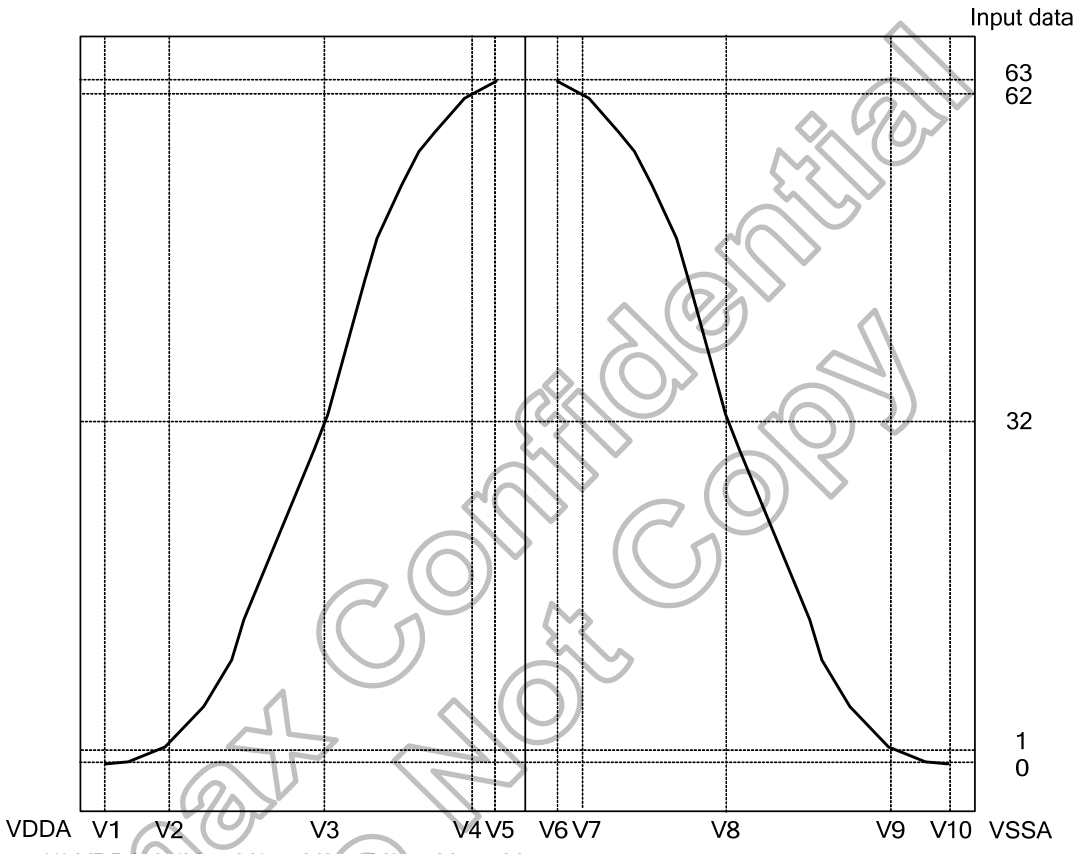
6. Gamma Adjustment Function

6.1 Gamma table

The figure below shows the relationship between the input data and the output voltage. Refer to the following pages for the relative resistor values and voltage calculation method.



Note : (1) VDDA-0.1V ≧ V1 ≧ V2 ≧ V3 ≧ V4 ≧ V5
(2) V6 ≧ V7 ≧ V8 ≧ V9 ≧ V10 ≧ VSSA+0.1V.

Figure 6.1: Gamma curve

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6.2 Gamma correction resistor with GAMSEL=1

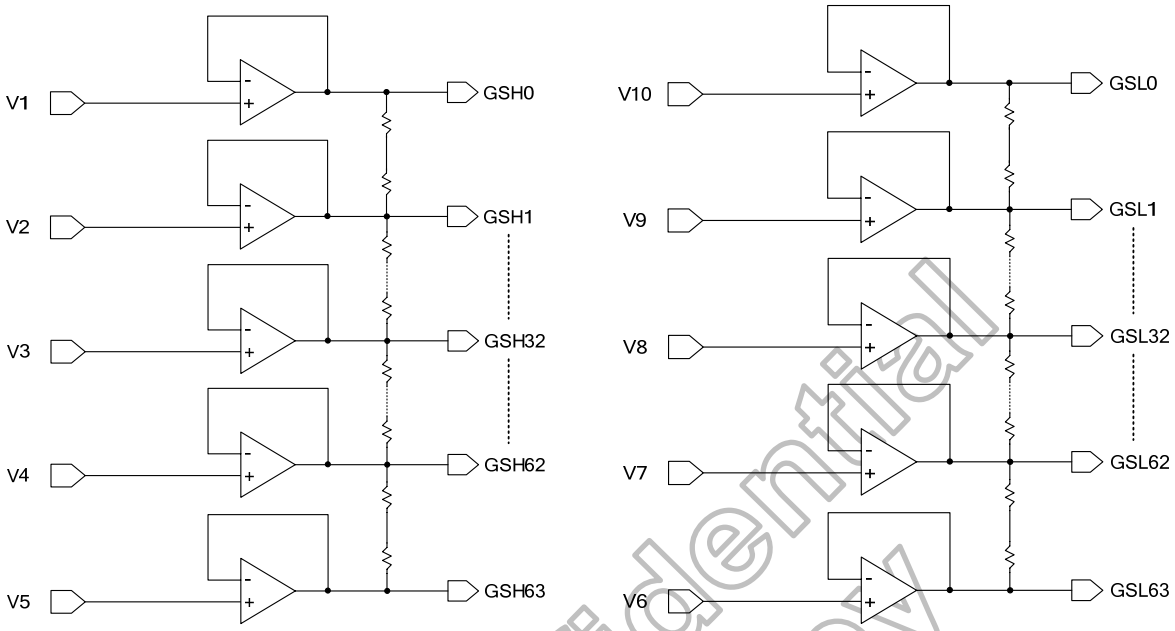

Figure 6.2: Gamma correction resistor with GAMSEL=1

6.3 Gamma correction resistor with GAMSEL=0

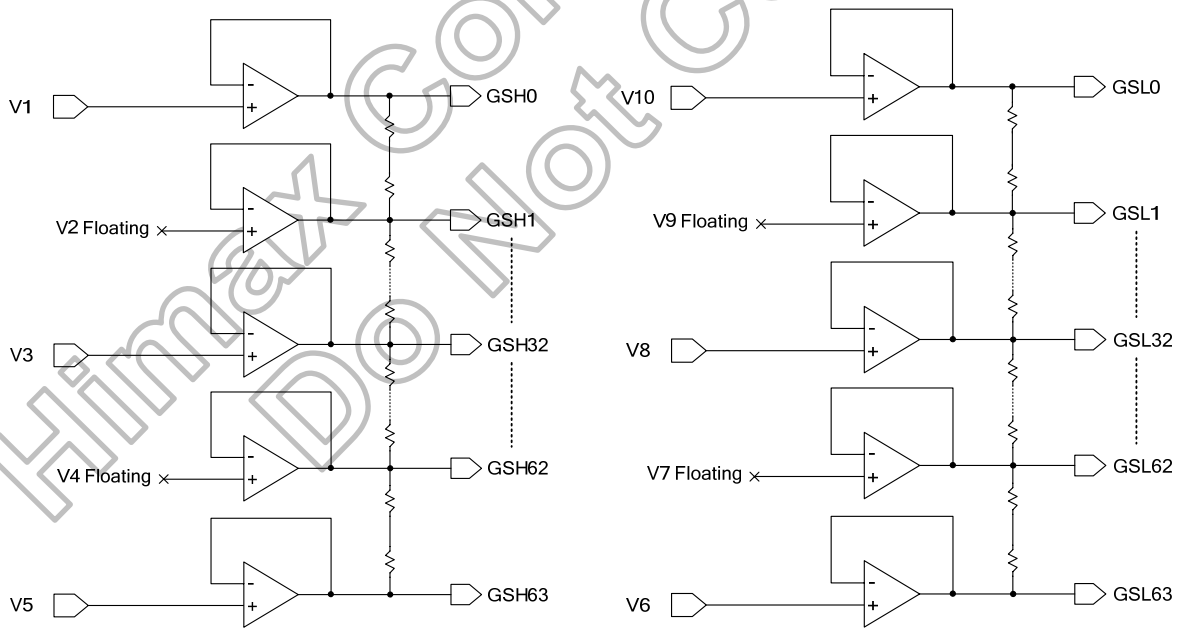

Figure 6.3: Gamma correction resistor with GAMSEL=0

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6.4 Resistor table

Positive polarity

	Name	Resistor Value (ohm)		Name	Resistor Value (ohm)	
V1	R0	1233		R32	144	V3
V2	R1	891		R33	144	
	R2	702		R34	153	
	R3	612		R35	153	
	R4	540		R36	153	
	R5	468		R37	162	
	R6	414		R38	162	
	R7	387		R39	162	
	R8	360		R40	171	
	R9	342		R41	180	
	R10	324		R42	198	
	R11	297		R43	180	
	R12	279		R44	180	
	R13	261		R45	180	
	R14	252		R46	189	
	R15	234		R47	198	
	R16	234		R48	198	
	R17	225		R49	216	
	R18	216		R50	243	
	R19	207		R51	270	
	R20	207		R52	288	
	R21	216		R53	324	
	R22	198		R54	360	
	R23	180		R55	387	
	R24	171		R56	414	
	R25	162		R57	468	
	R26	153		R58	558	
	R27	153		R59	666	
	R28	153		R60	900	
	R29	144		R61	1413	V4
	R30	144		R62	1404	V5
	R31	144				

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Negative polarity

	Name	Resistor Value (ohm)
V10 →	R0	1233
V9 →	R1	891
	R2	702
	R3	612
	R4	540
	R5	468
	R6	414
	R7	387
	R8	360
	R9	342
	R10	324
	R11	297
	R12	279
	R13	261
	R14	252
	R15	234
	R16	234
	R17	225
	R18	216
	R19	207
	R20	207
	R21	216
	R22	198
	R23	180
	R24	171
	R25	162
	R26	153
	R27	153
	R28	153
	R29	144
	R30	144
	R31	144

Name	Resistor Value (ohm)	
R32	144	← V8
R33	144	
R34	153	
R35	153	
R36	153	
R37	162	
R38	162	
R39	162	
R40	171	
R41	180	
R42	198	
R43	180	
R44	180	
R45	180	
R46	189	
R47	198	
R48	198	
R49	216	
R50	243	
R51	270	
R52	288	
R53	324	
R54	360	
R55	387	
R56	414	
R57	468	
R58	558	
R59	666	
R60	900	
R61	1413	← V7
R62	1404	← V6

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7. Power Function and Power On/Off Sequence

To prevent the device damage from latch up, the power on/off sequence shown below must be followed.

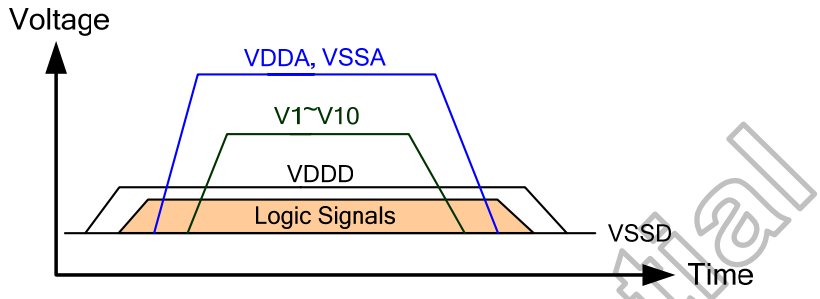
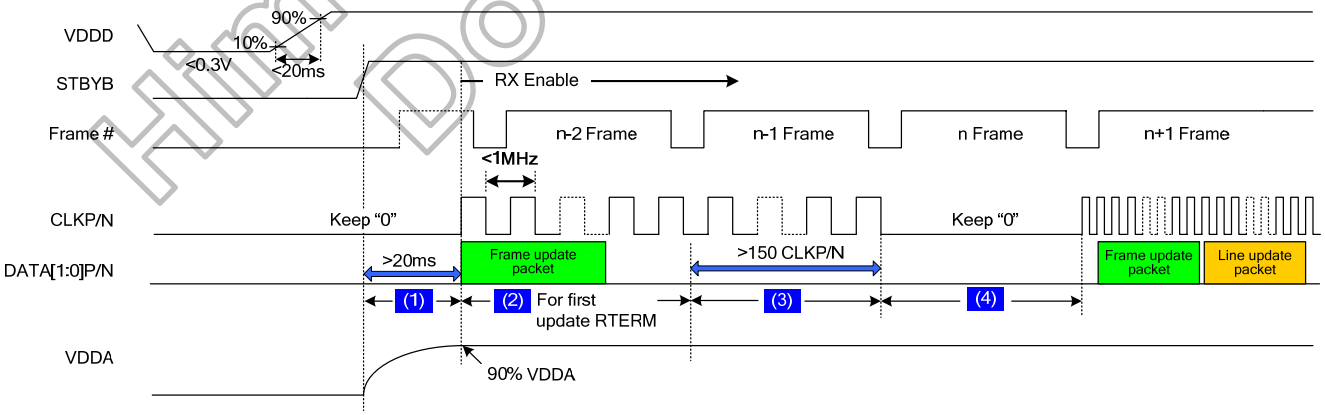


Figure 7.1: Power on/off sequence

7.1 Power on/off control

HX8288-A02 has a power on/off sequence control function. In order to prevent IC from power on reset fail, the rising time of the digital power supply VDDD should be maintained within the given specifications.

(1). Settling time must be great than 20ms for RX bias settling down consideration. The CLKP/N can't send any clock signal within the duration.
(2). First frame update packet decides the termination resistor. For make sure RTERM register update, the frequency CLKP/N should be much less than normal operation one **(recommend < 1MHz).**
(3). This is waiting for load 8bit fuse after load first frame update packet.
(4). Before valid data update, the CLKP/N will transit from slow-clock to fast-clock, so CLKP/N should keep low within the duration.



Note: (1) "frame n" is based on power on sequence of TCON.

Figure 7.2: Power on/off timing sequence

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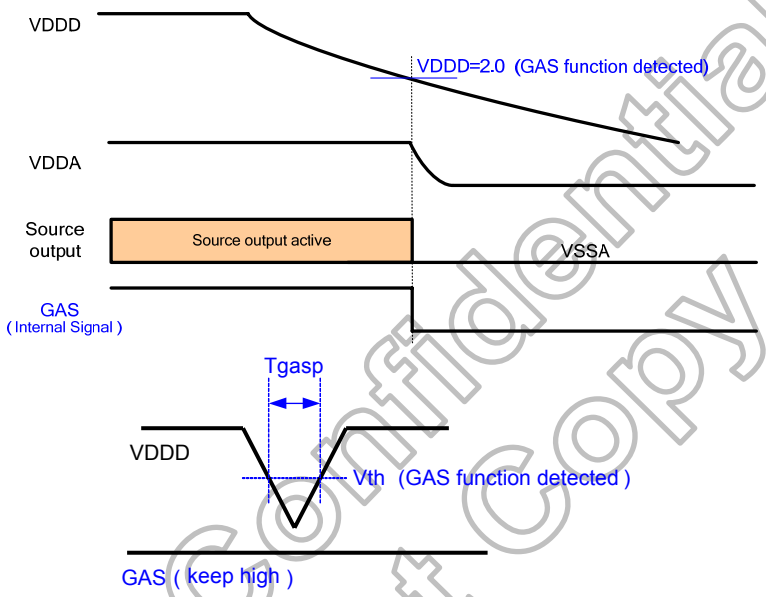
7.2 Power supply drop detection (GAS function)

- When user doesn't follow power off sequence and power down directly, HX8288-A02 built in GAS function can be used to improve panel discharge and prevent the image sticking issue.
- When VDDD is lower than 2.0V, HX8288-A02 will activate GAS function.
- If the period (Tgasp), which is pulse during VDDD < 2.0V, is smaller than 100ns, HX8288-A02 will ignore it and GAS function would not be executed.



Symbol	Parameter	Test condition	Min.	Typ.	Max.	Unit	Note
T_{gasp}	VDDD power drop noise filter period.	-	100	-		ns	-
V_{th}	GAS function detection threshold voltage. If VDDD lower than Vth, IC will execute GAS function.	-	1.8	-	2.2	V	-

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8. DC Characteristics

8.1 Absolute maximum rating (VSSD=VSSA=0V)

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Power supply voltage 1	VDDD	-0.5	-	+3.96	V
Power supply voltage 2	VDDA	-0.5	-	+14.85	V
Logic Output Voltage	V_{OUT}	-0.5	-	+5.0	V
Input voltage	V_{IN}	-0.5	-	VDDA+0.5	V
Operation temperature	T_{OPR}	-20	-	+85	℃
Storage temperature	T_{STG}	-55	-	+125	℃

Note: (1) All of the voltages listed above are with respective to VSSD=0V.
(2) Device is subject to be damaged permanently if stresses beyond those absolute maximum ratings listed above.

Table 8.1: Absolute maximum rating

8.2 Recommended operating range

(VSSD=VSSA=0V, TA=-20℃ to 85℃)

Parameter	Symbol				Unit
		Min.	Typ.	Max.	
Digital supply voltage	VDDD	2.3	-	3.6	V
Analog supply voltage	VDDA	6	-	13.5	V
Digital input voltage	V_{IN}	0	-	VDDD	V

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8.3 PBPI DC electrical characteristics

(VDDD=2.3 to 3.6V, VDDA=6 to 13.5V, VSSD=VSSA=0V, TA= -20℃~+85℃)

Parameter	Symbol	Spec.			Unit	Condition
		Min.	Typ.	Max.		
Power supply voltage	VDDD	2.3	-	3.6	V	-
Power supply voltage	VDDA	6	-	13.5	V	-
Low level input voltage	V_{IL}	0	-	0.3VDDD	V	For digital circuit
High level input voltage	V_{IH}	0.7VDDD	-	VDDD	V	For digital circuit
Output low voltage	V_{OL}	-	-	GND+0.4	V	I_{OL}=400μA
Output high voltage	V_{OH}	VDDD-0.4	-	-	V	I_{OH}=-400μA
Pull low/high resistance	R_i	200	300	500	kΩ	For the digital input pin
Input leakage current	Ii	-	-	±1	uA	For digital circuit
Digital Operation current	Idd	-	6.7		mA	CLKP/N=150MHz, VDDD=3.3V
Digital stand-by current	Ist1	-	30		μA	Clock & all functions are stopped
Analog Operating current	Idda	-	5	-	mA	CLKP/N=150MHz, VDDD=3.3V, VDDA=10V, V1=8V, V10=0.4V, No load.
Analog Stand-by current	Ist2	-	30	-	μA	clock & all functions are stopped, No load.
Input level of V1 and V5	Vref1	0.4VDDA	-	VDDA-0.1	V	Gamma correction voltage input
Input level of V6 and V10	Vref2	0.1	-	0.6VDDA	V	Gamma correction voltage input
Output Voltage deviation	Vod1	-	-	±30	mV	Vo=VSSA+0.1V~VSSA+0.5V & Vo=VDDA-0.5V~VDDA-0.1V
Output Voltage deviation	Vod2	-	-	±20	mV	Vo=VSSA+0.5V~VDDA-0.5V
Output Voltage Offset between Chips	Voc	-	-	±35	mV	Vo=VSSA+0.5V~VDDA-0.5V
Dynamic Range of Output	Vdr	0.1	-	VDDA-0.1	V	S1~S1026
Sinking Current of Outputs	IOLy	|-80|	-	-	μA	S1~S1026; Vo=0.1V vs. 1.0V, VDDA=13.5V
Driving Current of Outputs	IOHy	|80|	-	-	μA	S1~S1026 ;Vo=12.5V vs. 13.4V, VDDA=13.5V
Resistance of Gamma Table	Rg	0.7*Rn	1.0*Rn	1.3*Rn	Ω	Rn: Internal gamma resistor

Table 8.2: DC electrical characteristics

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8.4 PBPI characteristics

(VDDD=2.3 to 3.6V, VDDA=8 to 13.5V, VSSD=VSSA=0V, TA=-20℃~+85℃)

Parameter	Symbol	Spec.			Unit	Condition
		Min.	Typ.	Max.		
PBPI interface differential voltage (amplitude: peak to peak)	V_{ID}	100	-	400	mV	Clock and data input pair pin.
PBPI interface common mode input voltage range (center)	V_I	0.7V	-	VDDD-1.3	V	Clock and data input pair pins.
Input voltage range (singled-end)	V_{in}	0.3V	-	VDDD-1.3+ $\|V_{ID}\|/2$	V	-
Differential input leakage Current	RV_{Xliz}	-10	-	+10	μA	-

Table 8.3: PBPI interface DC electrical characteristics

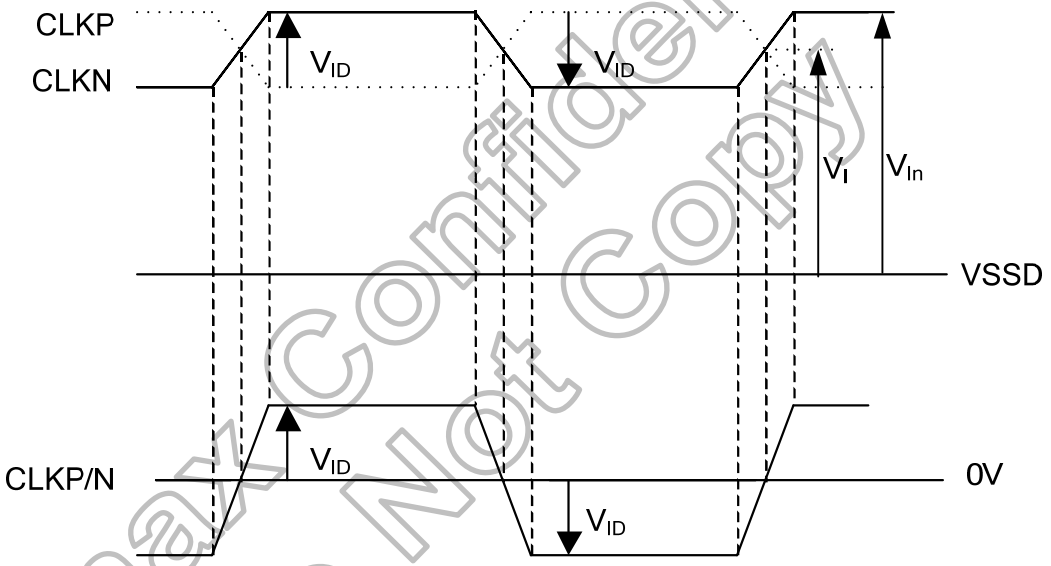

Figure 8.1: PBPI interface differential AC electrical characteristics

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9. AC Characteristics

9.1 PBPI AC electrical characteristics

Parameter	Symbol	Spec.			Unit	Condition
		Min.	Typ.	Max.		
VDDD Power On Slew rate	T_{POR}	-	-	5	ms	From 0V to 90% VDDD
RESETB pulse width	T_{Rst}	10	-	-	us	-
CLKP/N cycle time	T_{cph}	6.67	-	-	ns	150MHz
CLKP/N pulse duty	T_{cwh}	42	50	58	%	-
Data set-up time	T_{dsu}	2.65	-	-	ns	DATAP/N to CLKP/N
Data hold time	T_{dhd}	-	-	0.85	ns	DATAP/N to CLKP/N
Output stable time	T_{sst}	-	-	10	µs	10% to 90% target voltage CL=125pF, R=10K ohm

Table 9.1: PBPI interface AC electrical characteristics

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10. Timing Waveform

10.1 Input clock and data timing diagram

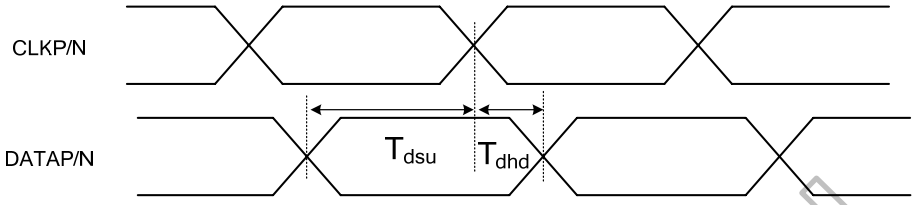

Figure 10.1: Input clock and data timing diagram

10.2 Timing Requirements for RESETB

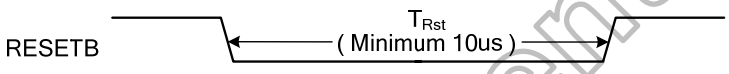

Figure 10.2: RESETB timing diagram

10.3 Source output timing diagram

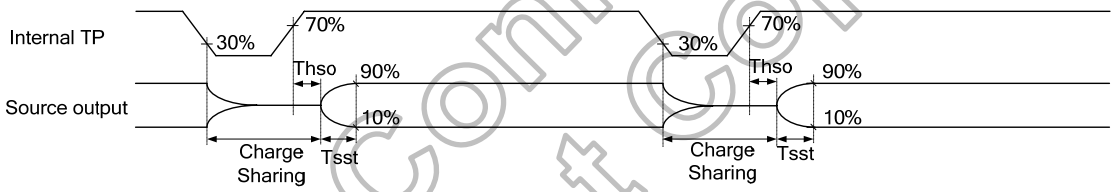

Figure 10.3: Source output timing diagram

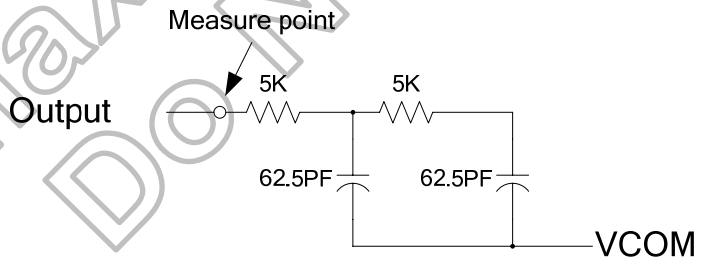

Figure 10.4: Output load condition

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11. Pin Assignment (IC Face View)

11.1 PAD sequence

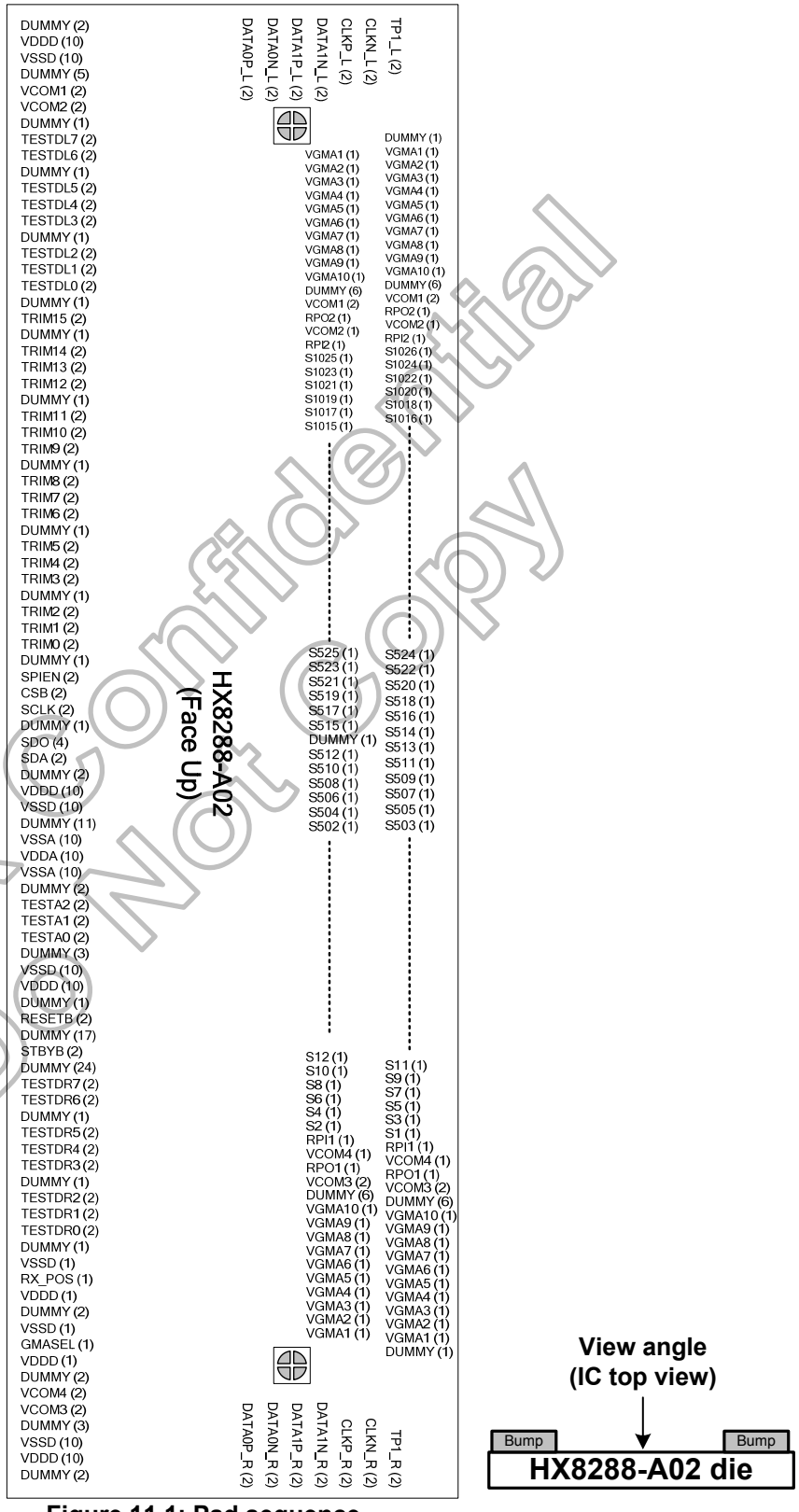

Figure 11.1: Pad sequence

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11.2 Bump information

11.2.1 Chip outline dimensions

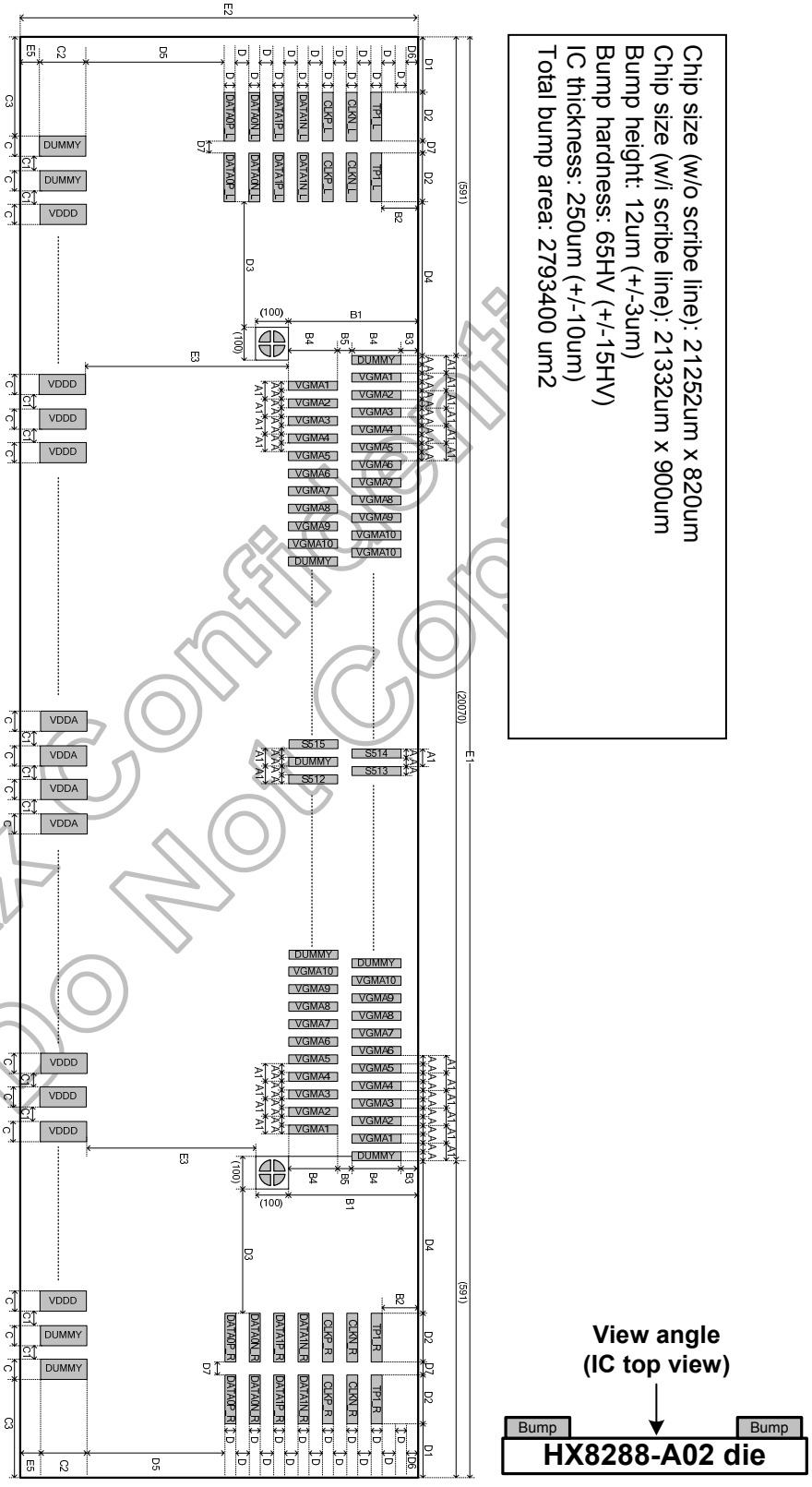

Figure 11.2: Chip outline dimensions

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11.2.2 Alignment mark

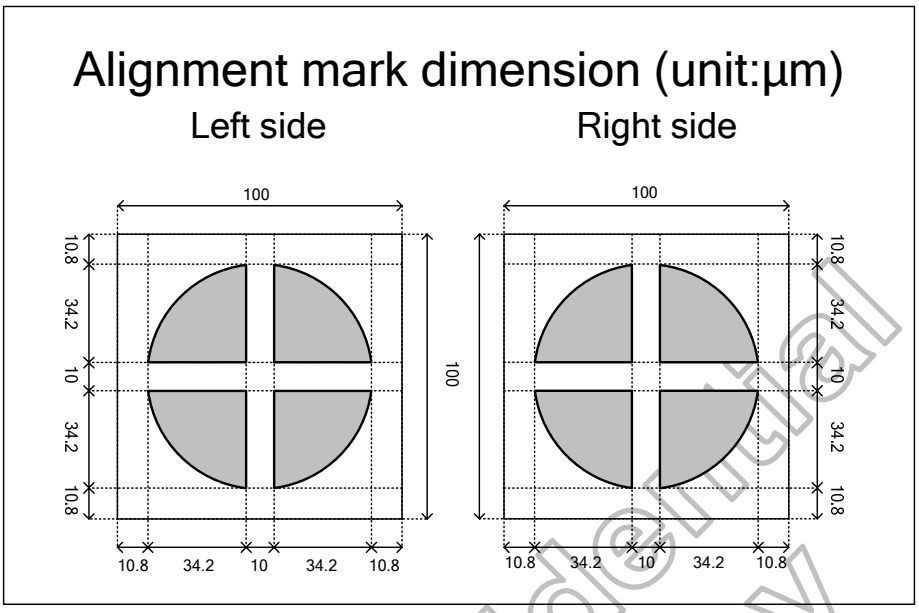

Figure 11.3: Alignment mark

11.2.3 Pad information

Symbol	Dimension (um)
A	18
A1	36
C	40
C1	30
C2	60
C3	141
B1	265
B2	72.5
B3	35
B4	100
B5	30

Symbol	Dimension (um)
D	25
D1	50
D2	100
D3	225
D4	316
D5	317.5
D6	22.5
D7	25
E1	21252
E2	820
E3	450
E5	45

Table 11.1: Pad information

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11.3 Pad coordinates

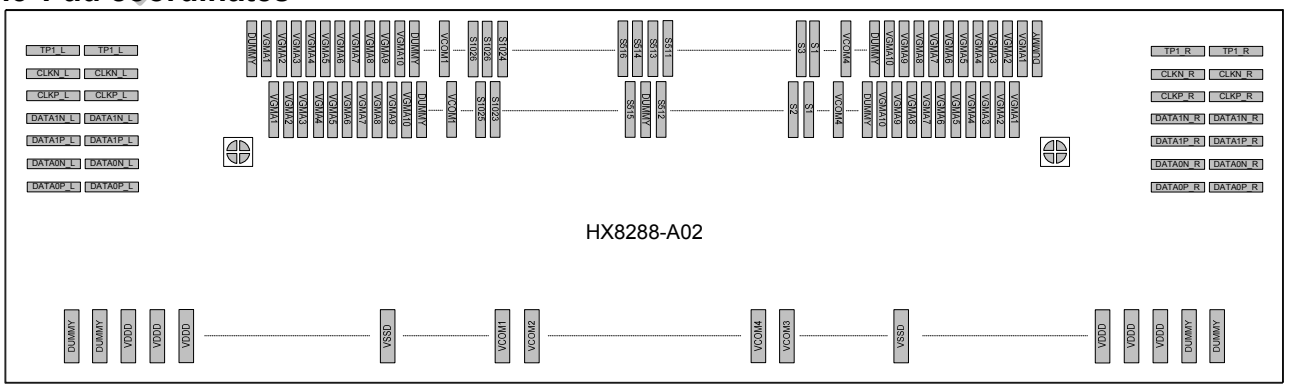

Figure 11.4: Pad coordinate

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No.	Name	X	Y	Bump size(μm)	No.	Name	X	Y	Bump size(μm)
1	DUMMY	-10465	-335	40 x 60	51	DUMMY	-6965	-335	40 x 60
2	DUMMY	-10395	-335	40 x 60	52	TRIM15	-6895	-335	40 x 60
3	VDDD	-10325	-335	40 x 60	53	TRIM15	-6825	-335	40 x 60
4	VDDD	-10255	-335	40 x 60	54	DUMMY	-6755	-335	40 x 60
5	VDDD	-10185	-335	40 x 60	55	TRIM14	-6685	-335	40 x 60
6	VDDD	-10115	-335	40 x 60	56	TRIM14	-6615	-335	40 x 60
7	VDDD	-10045	-335	40 x 60	57	TRIM13	-6545	-335	40 x 60
8	VDDD	-9975	-335	40 x 60	58	TRIM13	-6475	-335	40 x 60
9	VDDD	-9905	-335	40 x 60	59	TRIM12	-6405	-335	40 x 60
10	VDDD	-9835	-335	40 x 60	60	TRIM12	-6335	-335	40 x 60
11	VDDD	-9765	-335	40 x 60	61	DUMMY	-6265	-335	40 x 60
12	VDDD	-9695	-335	40 x 60	62	TRIM11	-6195	-335	40 x 60
13	VSSD	-9625	-335	40 x 60	63	TRIM11	-6125	-335	40 x 60
14	VSSD	-9555	-335	40 x 60	64	TRIM10	-6055	-335	40 x 60
15	VSSD	-9485	-335	40 x 60	65	TRIM10	-5985	-335	40 x 60
16	VSSD	-9415	-335	40 x 60	66	TRIM9	-5915	-335	40 x 60
17	VSSD	-9345	-335	40 x 60	67	TRIM9	-5845	-335	40 x 60
18	VSSD	-9275	-335	40 x 60	68	DUMMY	-5775	-335	40 x 60
19	VSSD	-9205	-335	40 x 60	69	TRIM8	-5705	-335	40 x 60
20	VSSD	-9135	-335	40 x 60	70	TRIM8	-5635	-335	40 x 60
21	VSSD	-9065	-335	40 x 60	71	TRIM7	-5565	-335	40 x 60
22	VSSD	-8995	-335	40 x 60	72	TRIM7	-5495	-335	40 x 60
23	DUMMY	-8925	-335	40 x 60	73	TRIM6	-5425	-335	40 x 60
24	DUMMY	-8855	-335	40 x 60	74	TRIM6	-5355	-335	40 x 60
25	DUMMY	-8785	-335	40 x 60	75	DUMMY	-5285	-335	40 x 60
26	DUMMY	-8715	-335	40 x 60	76	TRIM5	-5215	-335	40 x 60
27	DUMMY	-8645	-335	40 x 60	77	TRIM5	-5145	-335	40 x 60
28	VCOM1	-8575	-335	40 x 60	78	TRIM4	-5075	-335	40 x 60
29	VCOM1	-8505	-335	40 x 60	79	TRIM4	-5005	-335	40 x 60
30	VCOM2	-8435	-335	40 x 60	80	TRIM3	-4935	-335	40 x 60
31	VCOM2	-8365	-335	40 x 60	81	TRIM3	-4865	-335	40 x 60
32	DUMMY	-8295	-335	40 x 60	82	DUMMY	-4795	-335	40 x 60
33	TESTDL7	-8225	-335	40 x 60	83	TRIM2	-4725	-335	40 x 60
34	TESTDL7	-8155	-335	40 x 60	84	TRIM2	-4655	-335	40 x 60
35	TESTDL6	-8085	-335	40 x 60	85	TRIM1	-4585	-335	40 x 60
36	TESTDL6	-8015	-335	40 x 60	86	TRIM1	-4515	-335	40 x 60
37	DUMMY	-7945	-335	40 x 60	87	TRIM0	-4445	-335	40 x 60
38	TESTDL5	-7875	-335	40 x 60	88	TRIM0	-4375	-335	40 x 60
39	TESTDL5	-7805	-335	40 x 60	89	DUMMY	-4305	-335	40 x 60
40	TESTDL4	-7735	-335	40 x 60	90	DUMMY	-4235	-335	40 x 60
41	TESTDL4	-7665	-335	40 x 60	91	DUMMY	-4165	-335	40 x 60
42	TESTDL3	-7595	-335	40 x 60	92	DUMMY	-4095	-335	40 x 60
43	TESTDL3	-7525	-335	40 x 60	93	DUMMY	-4025	-335	40 x 60
44	DUMMY	-7455	-335	40 x 60	94	DUMMY	-3955	-335	40 x 60
45	TESTDL2	-7385	-335	40 x 60	95	DUMMY	-3885	-335	40 x 60
46	TESTDL2	-7315	-335	40 x 60	96	DUMMY	-3815	-335	40 x 60
47	TESTDL1	-7245	-335	40 x 60	97	DUMMY	-3745	-335	40 x 60
48	TESTDL1	-7175	-335	40 x 60	98	DUMMY	-3675	-335	40 x 60
49	TESTDL0	-7105	-335	40 x 60	99	DUMMY	-3605	-335	40 x 60
50	TESTDL0	-7035	-335	40 x 60	100	DUMMY	-3535	-335	40 x 60

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No.	Name	X	Y	Bump size(μm)
101	DUMMY	-3465	-335	40 x 60
102	DUMMY	-3395	-335	40 x 60
103	DUMMY	-3325	-335	40 x 60
104	DUMMY	-3255	-335	40 x 60
105	VDDD	-3185	-335	40 x 60
106	VDDD	-3115	-335	40 x 60
107	VDDD	-3045	-335	40 x 60
108	VDDD	-2975	-335	40 x 60
109	VDDD	-2905	-335	40 x 60
110	VDDD	-2835	-335	40 x 60
111	VDDD	-2765	-335	40 x 60
112	VDDD	-2695	-335	40 x 60
113	VDDD	-2625	-335	40 x 60
114	VDDD	-2555	-335	40 x 60
115	VSSD	-2485	-335	40 x 60
116	VSSD	-2415	-335	40 x 60
117	VSSD	-2345	-335	40 x 60
118	VSSD	-2275	-335	40 x 60
119	VSSD	-2205	-335	40 x 60
120	VSSD	-2135	-335	40 x 60
121	VSSD	-2065	-335	40 x 60
122	VSSD	-1995	-335	40 x 60
123	VSSD	-1925	-335	40 x 60
124	VSSD	-1855	-335	40 x 60
125	DUMMY	-1785	-335	40 x 60
126	DUMMY	-1715	-335	40 x 60
127	DUMMY	-1645	-335	40 x 60
128	DUMMY	-1575	-335	40 x 60
129	DUMMY	-1505	-335	40 x 60
130	DUMMY	-1435	-335	40 x 60
131	DUMMY	-1365	-335	40 x 60
132	DUMMY	-1295	-335	40 x 60
133	DUMMY	-1225	-335	40 x 60
134	DUMMY	-1155	-335	40 x 60
135	DUMMY	-1085	-335	40 x 60
136	VSSA	-1015	-335	40 x 60
137	VSSA	-945	-335	40 x 60
138	VSSA	-875	-335	40 x 60
139	VSSA	-805	-335	40 x 60
140	VSSA	-735	-335	40 x 60
141	VSSA	-665	-335	40 x 60
142	VSSA	-595	-335	40 x 60
143	VSSA	-525	-335	40 x 60
144	VSSA	-455	-335	40 x 60
145	VSSA	-385	-335	40 x 60
146	VDDA	-315	-335	40 x 60
147	VDDA	-245	-335	40 x 60
148	VDDA	-175	-335	40 x 60
149	VDDA	-105	-335	40 x 60
150	VDDA	-35	-335	40 x 60

No.	Name	X	Y	Bump size(μm)
151	VDDA	35	-335	40 x 60
152	VDDA	105	-335	40 x 60
153	VDDA	175	-335	40 x 60
154	VDDA	245	-335	40 x 60
155	VDDA	315	-335	40 x 60
156	VSSA	385	-335	40 x 60
157	VSSA	455	-335	40 x 60
158	VSSA	525	-335	40 x 60
159	VSSA	595	-335	40 x 60
160	VSSA	665	-335	40 x 60
161	VSSA	735	-335	40 x 60
162	VSSA	805	-335	40 x 60
163	VSSA	875	-335	40 x 60
164	VSSA	945	-335	40 x 60
165	VSSA	1015	-335	40 x 60
166	DUMMY	1085	-335	40 x 60
167	DUMMY	1155	-335	40 x 60
168	TESTA2	1225	-335	40 x 60
169	TESTA2	1295	-335	40 x 60
170	TESTA1	1365	-335	40 x 60
171	TESTA1	1435	-335	40 x 60
172	TESTA0	1505	-335	40 x 60
173	TESTA0	1575	-335	40 x 60
174	DUMMY	1645	-335	40 x 60
175	DUMMY	1715	-335	40 x 60
176	DUMMY	1785	-335	40 x 60
177	VSSD	1855	-335	40 x 60
178	VSSD	1925	-335	40 x 60
179	VSSD	1995	-335	40 x 60
180	VSSD	2065	-335	40 x 60
181	VSSD	2135	-335	40 x 60
182	VSSD	2205	-335	40 x 60
183	VSSD	2275	-335	40 x 60
184	VSSD	2345	-335	40 x 60
185	VSSD	2415	-335	40 x 60
186	VSSD	2485	-335	40 x 60
187	VDDD	2555	-335	40 x 60
188	VDDD	2625	-335	40 x 60
189	VDDD	2695	-335	40 x 60
190	VDDD	2765	-335	40 x 60
191	VDDD	2835	-335	40 x 60
192	VDDD	2905	-335	40 x 60
193	VDDD	2975	-335	40 x 60
194	VDDD	3045	-335	40 x 60
195	VDDD	3115	-335	40 x 60
196	VDDD	3185	-335	40 x 60
197	DUMMY	3255	-335	40 x 60
198	RESETB	3325	-335	40 x 60
199	RESETB	3395	-335	40 x 60
200	DUMMY	3465	-335	40 x 60

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No.	Name	X	Y	Bump size(μm)
201	DUMMY	3535	-335	40 x 60
202	DUMMY	3605	-335	40 x 60
203	DUMMY	3675	-335	40 x 60
204	DUMMY	3745	-335	40 x 60
205	DUMMY	3815	-335	40 x 60
206	DUMMY	3885	-335	40 x 60
207	DUMMY	3955	-335	40 x 60
208	DUMMY	4025	-335	40 x 60
209	DUMMY	4095	-335	40 x 60
210	DUMMY	4165	-335	40 x 60
211	DUMMY	4235	-335	40 x 60
212	DUMMY	4305	-335	40 x 60
213	DUMMY	4375	-335	40 x 60
214	DUMMY	4445	-335	40 x 60
215	DUMMY	4515	-335	40 x 60
216	DUMMY	4585	-335	40 x 60
217	STBYB	4655	-335	40 x 60
218	STBYB	4725	-335	40 x 60
219	DUMMY	4795	-335	40 x 60
220	DUMMY	4865	-335	40 x 60
221	DUMMY	4935	-335	40 x 60
222	DUMMY	5005	-335	40 x 60
223	DUMMY	5075	-335	40 x 60
224	DUMMY	5145	-335	40 x 60
225	DUMMY	5215	-335	40 x 60
226	DUMMY	5285	-335	40 x 60
227	DUMMY	5355	-335	40 x 60
228	DUMMY	5425	-335	40 x 60
229	DUMMY	5495	-335	40 x 60
230	DUMMY	5565	-335	40 x 60
231	DUMMY	5635	-335	40 x 60
232	DUMMY	5705	-335	40 x 60
233	DUMMY	5775	-335	40 x 60
234	DUMMY	5845	-335	40 x 60
235	DUMMY	5915	-335	40 x 60
236	DUMMY	5985	-335	40 x 60
237	DUMMY	6055	-335	40 x 60
238	DUMMY	6125	-335	40 x 60
239	DUMMY	6195	-335	40 x 60
240	DUMMY	6265	-335	40 x 60
241	DUMMY	6335	-335	40 x 60
242	DUMMY	6405	-335	40 x 60
243	TESTDR7	6475	-335	40 x 60
244	TESTDR7	6545	-335	40 x 60
245	TESTDR6	6615	-335	40 x 60
246	TESTDR6	6685	-335	40 x 60
247	DUMMY	6755	-335	40 x 60
248	TESTDR5	6825	-335	40 x 60
249	TESTDR5	6895	-335	40 x 60
250	TESTDR4	6965	-335	40 x 60

No.	Name	X	Y	Bump size(μm)
251	TESTDR4	7035	-335	40 x 60
252	TESTDR3	7105	-335	40 x 60
253	TESTDR3	7175	-335	40 x 60
254	DUMMY	7245	-335	40 x 60
255	TESTDR2	7315	-335	40 x 60
256	TESTDR2	7385	-335	40 x 60
257	TESTDR1	7455	-335	40 x 60
258	TESTDR1	7525	-335	40 x 60
259	TESTDR0	7595	-335	40 x 60
260	TESTDR0	7665	-335	40 x 60
261	DUMMY	7735	-335	40 x 60
262	VSSD	7805	-335	40 x 60
263	RX_POS	7875	-335	40 x 60
264	VDDD	7945	-335	40 x 60
265	DUMMY	8015	-335	40 x 60
266	DUMMY	8085	-335	40 x 60
267	VSSD	8155	-335	40 x 60
268	GMASEL	8225	-335	40 x 60
269	VDDD	8295	-335	40 x 60
270	DUMMY	8365	-335	40 x 60
271	DUMMY	8435	-335	40 x 60
272	VCOM4	8505	-335	40 x 60
273	VCOM4	8575	-335	40 x 60
274	VCOM3	8645	-335	40 x 60
275	VCOM3	8715	-335	40 x 60
276	DUMMY	8785	-335	40 x 60
277	DUMMY	8855	-335	40 x 60
278	DUMMY	8925	-335	40 x 60
279	VSSD	8995	-335	40 x 60
280	VSSD	9065	-335	40 x 60
281	VSSD	9135	-335	40 x 60
282	VSSD	9205	-335	40 x 60
283	VSSD	9275	-335	40 x 60
284	VSSD	9345	-335	40 x 60
285	VSSD	9415	-335	40 x 60
286	VSSD	9485	-335	40 x 60
287	VSSD	9555	-335	40 x 60
288	VSSD	9625	-335	40 x 60
289	VDDD	9695	-335	40 x 60
290	VDDD	9765	-335	40 x 60
291	VDDD	9835	-335	40 x 60
292	VDDD	9905	-335	40 x 60
293	VDDD	9975	-335	40 x 60
294	VDDD	10045	-335	40 x 60
295	VDDD	10115	-335	40 x 60
296	VDDD	10185	-335	40 x 60
297	VDDD	10255	-335	40 x 60
298	VDDD	10325	-335	40 x 60
299	DUMMY	10395	-335	40 x 60
300	DUMMY	10465	-335	40 x 60

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No.	Name	X	Y	Bump size(μm)
301	DATA0P_R	10401	25	100 x 25
302	DATA0P_R	10526	25	100 x 25
303	DATA0N_R	10401	75	100 x 25
304	DATA0N_R	10526	75	100 x 25
305	DATA1P_R	10401	125	100 x 25
306	DATA1P_R	10526	125	100 x 25
307	DATA1N_R	10401	175	100 x 25
308	DATA1N_R	10526	175	100 x 25
309	CLKP_R	10526	225	100 x 25
310	CLKN_R	10526	275	100 x 25
311	TP1_R	10526	325	100 x 25
312	CLKP_R	10401	225	100 x 25
313	CLKN_R	10401	275	100 x 25
314	TP1_R	10401	325	100 x 25
315	DUMMY	10026	325	18 x 100
316	VGMA1	9990	325	18 x 100
317	VGMA1	9972	195	18 x 100
318	VGMA2	9954	325	18 x 100
319	VGMA2	9936	195	18 x 100
320	VGMA3	9918	325	18 x 100
321	VGMA3	9900	195	18 x 100
322	VGMA4	9882	325	18 x 100
323	VGMA4	9864	195	18 x 100
324	VGMA5	9846	325	18 x 100
325	VGMA5	9828	195	18 x 100
326	VGMA6	9810	325	18 x 100
327	VGMA6	9792	195	18 x 100
328	VGMA7	9774	325	18 x 100
329	VGMA7	9756	195	18 x 100
330	VGMA8	9738	325	18 x 100
331	VGMA8	9720	195	18 x 100
332	VGMA9	9702	325	18 x 100
333	VGMA9	9684	195	18 x 100
334	VGMA10	9666	325	18 x 100
335	VGMA10	9648	195	18 x 100
336	DUMMY	9630	325	18 x 100
337	DUMMY	9612	195	18 x 100
338	DUMMY	9594	325	18 x 100
339	DUMMY	9576	195	18 x 100
340	DUMMY	9558	325	18 x 100
341	DUMMY	9540	195	18 x 100
342	DUMMY	9522	325	18 x 100
343	DUMMY	9504	195	18 x 100
344	DUMMY	9486	325	18 x 100
345	DUMMY	9468	195	18 x 100
346	DUMMY	9450	325	18 x 100
347	DUMMY	9432	195	18 x 100
348	VCOM3	9414	325	18 x 100
349	VCOM3	9396	195	18 x 100
350	VCOM3	9378	325	18 x 100

No.	Name	X	Y	Bump size(μm)
351	VCOM3	9360	195	18 x 100
352	RPO1	9342	325	18 x 100
353	RPO1	9324	195	18 x 100
354	VCOM4	9306	325	18 x 100
355	VCOM4	9288	195	18 x 100
356	RPI1	9270	325	18 x 100
357	RPI1	9252	195	18 x 100
358	S1	9234	325	18 x 100
359	S2	9216	195	18 x 100
360	S3	9198	325	18 x 100
361	S4	9180	195	18 x 100
362	S5	9162	325	18 x 100
363	S6	9144	195	18 x 100
364	S7	9126	325	18 x 100
365	S8	9108	195	18 x 100
366	S9	9090	325	18 x 100
367	S10	9072	195	18 x 100
368	S11	9054	325	18 x 100
369	S12	9036	195	18 x 100
370	S13	9018	325	18 x 100
371	S14	9000	195	18 x 100
372	S15	8982	325	18 x 100
373	S16	8964	195	18 x 100
374	S17	8946	325	18 x 100
375	S18	8928	195	18 x 100
376	S19	8910	325	18 x 100
377	S20	8892	195	18 x 100
378	S21	8874	325	18 x 100
379	S22	8856	195	18 x 100
380	S23	8838	325	18 x 100
381	S24	8820	195	18 x 100
382	S25	8802	325	18 x 100
383	S26	8784	195	18 x 100
384	S27	8766	325	18 x 100
385	S28	8748	195	18 x 100
386	S29	8730	325	18 x 100
387	S30	8712	195	18 x 100
388	S31	8694	325	18 x 100
389	S32	8676	195	18 x 100
390	S33	8658	325	18 x 100
391	S34	8640	195	18 x 100
392	S35	8622	325	18 x 100
393	S36	8604	195	18 x 100
394	S37	8586	325	18 x 100
395	S38	8568	195	18 x 100
396	S39	8550	325	18 x 100
397	S40	8532	195	18 x 100
398	S41	8514	325	18 x 100
399	S42	8496	195	18 x 100
400	S43	8478	325	18 x 100

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No.	Name	X	Y	Bump size(μm)	No.	Name	X	Y	Bump size(μm)
401	S44	8460	195	18 x 100	451	S94	7560	195	18 x 100
402	S45	8442	325	18 x 100	452	S95	7542	325	18 x 100
403	S46	8424	195	18 x 100	453	S96	7524	195	18 x 100
404	S47	8406	325	18 x 100	454	S97	7506	325	18 x 100
405	S48	8388	195	18 x 100	455	S98	7488	195	18 x 100
406	S49	8370	325	18 x 100	456	S99	7470	325	18 x 100
407	S50	8352	195	18 x 100	457	S100	7452	195	18 x 100
408	S51	8334	325	18 x 100	458	S101	7434	325	18 x 100
409	S52	8316	195	18 x 100	459	S102	7416	195	18 x 100
410	S53	8298	325	18 x 100	460	S103	7398	325	18 x 100
411	S54	8280	195	18 x 100	461	S104	7380	195	18 x 100
412	S55	8262	325	18 x 100	462	S105	7362	325	18 x 100
413	S56	8244	195	18 x 100	463	S106	7344	195	18 x 100
414	S57	8226	325	18 x 100	464	S107	7326	325	18 x 100
415	S58	8208	195	18 x 100	465	S108	7308	195	18 x 100
416	S59	8190	325	18 x 100	466	S109	7290	325	18 x 100
417	S60	8172	195	18 x 100	467	S110	7272	195	18 x 100
418	S61	8154	325	18 x 100	468	S111	7254	325	18 x 100
419	S62	8136	195	18 x 100	469	S112	7236	195	18 x 100
420	S63	8118	325	18 x 100	470	S113	7218	325	18 x 100
421	S64	8100	195	18 x 100	471	S114	7200	195	18 x 100
422	S65	8082	325	18 x 100	472	S115	7182	325	18 x 100
423	S66	8064	195	18 x 100	473	S116	7164	195	18 x 100
424	S67	8046	325	18 x 100	474	S117	7146	325	18 x 100
425	S68	8028	195	18 x 100	475	S118	7128	195	18 x 100
426	S69	8010	325	18 x 100	476	S119	7110	325	18 x 100
427	S70	7992	195	18 x 100	477	S120	7092	195	18 x 100
428	S71	7974	325	18 x 100	478	S121	7074	325	18 x 100
429	S72	7956	195	18 x 100	479	S122	7056	195	18 x 100
430	S73	7938	325	18 x 100	480	S123	7038	325	18 x 100
431	S74	7920	195	18 x 100	481	S124	7020	195	18 x 100
432	S75	7902	325	18 x 100	482	S125	7002	325	18 x 100
433	S76	7884	195	18 x 100	483	S126	6984	195	18 x 100
434	S77	7866	325	18 x 100	484	S127	6966	325	18 x 100
435	S78	7848	195	18 x 100	485	S128	6948	195	18 x 100
436	S79	7830	325	18 x 100	486	S129	6930	325	18 x 100
437	S80	7812	195	18 x 100	487	S130	6912	195	18 x 100
438	S81	7794	325	18 x 100	488	S131	6894	325	18 x 100
439	S82	7776	195	18 x 100	489	S132	6876	195	18 x 100
440	S83	7758	325	18 x 100	490	S133	6858	325	18 x 100
441	S84	7740	195	18 x 100	491	S134	6840	195	18 x 100
442	S85	7722	325	18 x 100	492	S135	6822	325	18 x 100
443	S86	7704	195	18 x 100	493	S136	6804	195	18 x 100
444	S87	7686	325	18 x 100	494	S137	6786	325	18 x 100
445	S88	7668	195	18 x 100	495	S138	6768	195	18 x 100
446	S89	7650	325	18 x 100	496	S139	6750	325	18 x 100
447	S90	7632	195	18 x 100	497	S140	6732	195	18 x 100
448	S91	7614	325	18 x 100	498	S141	6714	325	18 x 100
449	S92	7596	195	18 x 100	499	S142	6696	195	18 x 100
450	S93	7578	325	18 x 100	500	S143	6678	325	18 x 100

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No.	Name	X	Y	Bump size(μm)	No.	Name	X	Y	Bump size(μm)
501	S144	6660	195	18 x 100	551	S194	5760	195	18 x 100
502	S145	6642	325	18 x 100	552	S195	5742	325	18 x 100
503	S146	6624	195	18 x 100	553	S196	5724	195	18 x 100
504	S147	6606	325	18 x 100	554	S197	5706	325	18 x 100
505	S148	6588	195	18 x 100	555	S198	5688	195	18 x 100
506	S149	6570	325	18 x 100	556	S199	5670	325	18 x 100
507	S150	6552	195	18 x 100	557	S200	5652	195	18 x 100
508	S151	6534	325	18 x 100	558	S201	5634	325	18 x 100
509	S152	6516	195	18 x 100	559	S202	5616	195	18 x 100
510	S153	6498	325	18 x 100	560	S203	5598	325	18 x 100
511	S154	6480	195	18 x 100	561	S204	5580	195	18 x 100
512	S155	6462	325	18 x 100	562	S205	5562	325	18 x 100
513	S156	6444	195	18 x 100	563	S206	5544	195	18 x 100
514	S157	6426	325	18 x 100	564	S207	5526	325	18 x 100
515	S158	6408	195	18 x 100	565	S208	5508	195	18 x 100
516	S159	6390	325	18 x 100	566	S209	5490	325	18 x 100
517	S160	6372	195	18 x 100	567	S210	5472	195	18 x 100
518	S161	6354	325	18 x 100	568	S211	5454	325	18 x 100
519	S162	6336	195	18 x 100	569	S212	5436	195	18 x 100
520	S163	6318	325	18 x 100	570	S213	5418	325	18 x 100
521	S164	6300	195	18 x 100	571	S214	5400	195	18 x 100
522	S165	6282	325	18 x 100	572	S215	5382	325	18 x 100
523	S166	6264	195	18 x 100	573	S216	5364	195	18 x 100
524	S167	6246	325	18 x 100	574	S217	5346	325	18 x 100
525	S168	6228	195	18 x 100	575	S218	5328	195	18 x 100
526	S169	6210	325	18 x 100	576	S219	5310	325	18 x 100
527	S170	6192	195	18 x 100	577	S220	5292	195	18 x 100
528	S171	6174	325	18 x 100	578	S221	5274	325	18 x 100
529	S172	6156	195	18 x 100	579	S222	5256	195	18 x 100
530	S173	6138	325	18 x 100	580	S223	5238	325	18 x 100
531	S174	6120	195	18 x 100	581	S224	5220	195	18 x 100
532	S175	6102	325	18 x 100	582	S225	5202	325	18 x 100
533	S176	6084	195	18 x 100	583	S226	5184	195	18 x 100
534	S177	6066	325	18 x 100	584	S227	5166	325	18 x 100
535	S178	6048	195	18 x 100	585	S228	5148	195	18 x 100
536	S179	6030	325	18 x 100	586	S229	5130	325	18 x 100
537	S180	6012	195	18 x 100	587	S230	5112	195	18 x 100
538	S181	5994	325	18 x 100	588	S231	5094	325	18 x 100
539	S182	5976	195	18 x 100	589	S232	5076	195	18 x 100
540	S183	5958	325	18 x 100	590	S233	5058	325	18 x 100
541	S184	5940	195	18 x 100	591	S234	5040	195	18 x 100
542	S185	5922	325	18 x 100	592	S235	5022	325	18 x 100
543	S186	5904	195	18 x 100	593	S236	5004	195	18 x 100
544	S187	5886	325	18 x 100	594	S237	4986	325	18 x 100
545	S188	5868	195	18 x 100	595	S238	4968	195	18 x 100
546	S189	5850	325	18 x 100	596	S239	4950	325	18 x 100
547	S190	5832	195	18 x 100	597	S240	4932	195	18 x 100
548	S191	5814	325	18 x 100	598	S241	4914	325	18 x 100
549	S192	5796	195	18 x 100	599	S242	4896	195	18 x 100
550	S193	5778	325	18 x 100	600	S243	4878	325	18 x 100

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No.	Name	X	Y	Bump size(μm)
601	S244	4860	195	18 x 100
602	S245	4842	325	18 x 100
603	S246	4824	195	18 x 100
604	S247	4806	325	18 x 100
605	S248	4788	195	18 x 100
606	S249	4770	325	18 x 100
607	S250	4752	195	18 x 100
608	S251	4734	325	18 x 100
609	S252	4716	195	18 x 100
610	S253	4698	325	18 x 100
611	S254	4680	195	18 x 100
612	S255	4662	325	18 x 100
613	S256	4644	195	18 x 100
614	S257	4626	325	18 x 100
615	S258	4608	195	18 x 100
616	S259	4590	325	18 x 100
617	S260	4572	195	18 x 100
618	S261	4554	325	18 x 100
619	S262	4536	195	18 x 100
620	S263	4518	325	18 x 100
621	S264	4500	195	18 x 100
622	S265	4482	325	18 x 100
623	S266	4464	195	18 x 100
624	S267	4446	325	18 x 100
625	S268	4428	195	18 x 100
626	S269	4410	325	18 x 100
627	S270	4392	195	18 x 100
628	S271	4374	325	18 x 100
629	S272	4356	195	18 x 100
630	S273	4338	325	18 x 100
631	S274	4320	195	18 x 100
632	S275	4302	325	18 x 100
633	S276	4284	195	18 x 100
634	S277	4266	325	18 x 100
635	S278	4248	195	18 x 100
636	S279	4230	325	18 x 100
637	S280	4212	195	18 x 100
638	S281	4194	325	18 x 100
639	S282	4176	195	18 x 100
640	S283	4158	325	18 x 100
641	S284	4140	195	18 x 100
642	S285	4122	325	18 x 100
643	S286	4104	195	18 x 100
644	S287	4086	325	18 x 100
645	S288	4068	195	18 x 100
646	S289	4050	325	18 x 100
647	S290	4032	195	18 x 100
648	S291	4014	325	18 x 100
649	S292	3996	195	18 x 100
650	S293	3978	325	18 x 100

No.	Name	X	Y	Bump size(μm)
651	S294	3960	195	18 x 100
652	S295	3942	325	18 x 100
653	S296	3924	195	18 x 100
654	S297	3906	325	18 x 100
655	S298	3888	195	18 x 100
656	S299	3870	325	18 x 100
657	S300	3852	195	18 x 100
658	S301	3834	325	18 x 100
659	S302	3816	195	18 x 100
660	S303	3798	325	18 x 100
661	S304	3780	195	18 x 100
662	S305	3762	325	18 x 100
663	S306	3744	195	18 x 100
664	S307	3726	325	18 x 100
665	S308	3708	195	18 x 100
666	S309	3690	325	18 x 100
667	S310	3672	195	18 x 100
668	S311	3654	325	18 x 100
669	S312	3636	195	18 x 100
670	S313	3618	325	18 x 100
671	S314	3600	195	18 x 100
672	S315	3582	325	18 x 100
673	S316	3564	195	18 x 100
674	S317	3546	325	18 x 100
675	S318	3528	195	18 x 100
676	S319	3510	325	18 x 100
677	S320	3492	195	18 x 100
678	S321	3474	325	18 x 100
679	S322	3456	195	18 x 100
680	S323	3438	325	18 x 100
681	S324	3420	195	18 x 100
682	S325	3402	325	18 x 100
683	S326	3384	195	18 x 100
684	S327	3366	325	18 x 100
685	S328	3348	195	18 x 100
686	S329	3330	325	18 x 100
687	S330	3312	195	18 x 100
688	S331	3294	325	18 x 100
689	S332	3276	195	18 x 100
690	S333	3258	325	18 x 100
691	S334	3240	195	18 x 100
692	S335	3222	325	18 x 100
693	S336	3204	195	18 x 100
694	S337	3186	325	18 x 100
695	S338	3168	195	18 x 100
696	S339	3150	325	18 x 100
697	S340	3132	195	18 x 100
698	S341	3114	325	18 x 100
699	S342	3096	195	18 x 100
700	S343	3078	325	18 x 100

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No.	Name	X	Y	Bump size(μm)	No.	Name	X	Y	Bump size(μm)
701	S344	3060	195	18 x 100	751	S394	2160	195	18 x 100
702	S345	3042	325	18 x 100	752	S395	2142	325	18 x 100
703	S346	3024	195	18 x 100	753	S396	2124	195	18 x 100
704	S347	3006	325	18 x 100	754	S397	2106	325	18 x 100
705	S348	2988	195	18 x 100	755	S398	2088	195	18 x 100
706	S349	2970	325	18 x 100	756	S399	2070	325	18 x 100
707	S350	2952	195	18 x 100	757	S400	2052	195	18 x 100
708	S351	2934	325	18 x 100	758	S401	2034	325	18 x 100
709	S352	2916	195	18 x 100	759	S402	2016	195	18 x 100
710	S353	2898	325	18 x 100	760	S403	1998	325	18 x 100
711	S354	2880	195	18 x 100	761	S404	1980	195	18 x 100
712	S355	2862	325	18 x 100	762	S405	1962	325	18 x 100
713	S356	2844	195	18 x 100	763	S406	1944	195	18 x 100
714	S357	2826	325	18 x 100	764	S407	1926	325	18 x 100
715	S358	2808	195	18 x 100	765	S408	1908	195	18 x 100
716	S359	2790	325	18 x 100	766	S409	1890	325	18 x 100
717	S360	2772	195	18 x 100	767	S410	1872	195	18 x 100
718	S361	2754	325	18 x 100	768	S411	1854	325	18 x 100
719	S362	2736	195	18 x 100	769	S412	1836	195	18 x 100
720	S363	2718	325	18 x 100	770	S413	1818	325	18 x 100
721	S364	2700	195	18 x 100	771	S414	1800	195	18 x 100
722	S365	2682	325	18 x 100	772	S415	1782	325	18 x 100
723	S366	2664	195	18 x 100	773	S416	1764	195	18 x 100
724	S367	2646	325	18 x 100	774	S417	1746	325	18 x 100
725	S368	2628	195	18 x 100	775	S418	1728	195	18 x 100
726	S369	2610	325	18 x 100	776	S419	1710	325	18 x 100
727	S370	2592	195	18 x 100	777	S420	1692	195	18 x 100
728	S371	2574	325	18 x 100	778	S421	1674	325	18 x 100
729	S372	2556	195	18 x 100	779	S422	1656	195	18 x 100
730	S373	2538	325	18 x 100	780	S423	1638	325	18 x 100
731	S374	2520	195	18 x 100	781	S424	1620	195	18 x 100
732	S375	2502	325	18 x 100	782	S425	1602	325	18 x 100
733	S376	2484	195	18 x 100	783	S426	1584	195	18 x 100
734	S377	2466	325	18 x 100	784	S427	1566	325	18 x 100
735	S378	2448	195	18 x 100	785	S428	1548	195	18 x 100
736	S379	2430	325	18 x 100	786	S429	1530	325	18 x 100
737	S380	2412	195	18 x 100	787	S430	1512	195	18 x 100
738	S381	2394	325	18 x 100	788	S431	1494	325	18 x 100
739	S382	2376	195	18 x 100	789	S432	1476	195	18 x 100
740	S383	2358	325	18 x 100	790	S433	1458	325	18 x 100
741	S384	2340	195	18 x 100	791	S434	1440	195	18 x 100
742	S385	2322	325	18 x 100	792	S435	1422	325	18 x 100
743	S386	2304	195	18 x 100	793	S436	1404	195	18 x 100
744	S387	2286	325	18 x 100	794	S437	1386	325	18 x 100
745	S388	2268	195	18 x 100	795	S438	1368	195	18 x 100
746	S389	2250	325	18 x 100	796	S439	1350	325	18 x 100
747	S390	2232	195	18 x 100	797	S440	1332	195	18 x 100
748	S391	2214	325	18 x 100	798	S441	1314	325	18 x 100
749	S392	2196	195	18 x 100	799	S442	1296	195	18 x 100
750	S393	2178	325	18 x 100	800	S443	1278	325	18 x 100

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No.	Name	X	Y	Bump size(μm)
801	S444	1260	195	18 x 100
802	S445	1242	325	18 x 100
803	S446	1224	195	18 x 100
804	S447	1206	325	18 x 100
805	S448	1188	195	18 x 100
806	S449	1170	325	18 x 100
807	S450	1152	195	18 x 100
808	S451	1134	325	18 x 100
809	S452	1116	195	18 x 100
810	S453	1098	325	18 x 100
811	S454	1080	195	18 x 100
812	S455	1062	325	18 x 100
813	S456	1044	195	18 x 100
814	S457	1026	325	18 x 100
815	S458	1008	195	18 x 100
816	S459	990	325	18 x 100
817	S460	972	195	18 x 100
818	S461	954	325	18 x 100
819	S462	936	195	18 x 100
820	S463	918	325	18 x 100
821	S464	900	195	18 x 100
822	S465	882	325	18 x 100
823	S466	864	195	18 x 100
824	S467	846	325	18 x 100
825	S468	828	195	18 x 100
826	S469	810	325	18 x 100
827	S470	792	195	18 x 100
828	S471	774	325	18 x 100
829	S472	756	195	18 x 100
830	S473	738	325	18 x 100
831	S474	720	195	18 x 100
832	S475	702	325	18 x 100
833	S476	684	195	18 x 100
834	S477	666	325	18 x 100
835	S478	648	195	18 x 100
836	S479	630	325	18 x 100
837	S480	612	195	18 x 100
838	S481	594	325	18 x 100
839	S482	576	195	18 x 100
840	S483	558	325	18 x 100
841	S484	540	195	18 x 100
842	S485	522	325	18 x 100
843	S486	504	195	18 x 100
844	S487	486	325	18 x 100
845	S488	468	195	18 x 100
846	S489	450	325	18 x 100
847	S490	432	195	18 x 100
848	S491	414	325	18 x 100
849	S492	396	195	18 x 100
850	S493	378	325	18 x 100

No.	Name	X	Y	Bump size(μm)
851	S494	360	195	18 x 100
852	S495	342	325	18 x 100
853	S496	324	195	18 x 100
854	S497	306	325	18 x 100
855	S498	288	195	18 x 100
856	S499	270	325	18 x 100
857	S500	252	195	18 x 100
858	S501	234	325	18 x 100
859	S502	216	195	18 x 100
860	S503	198	325	18 x 100
861	S504	180	195	18 x 100
862	S505	162	325	18 x 100
863	S506	144	195	18 x 100
864	S507	126	325	18 x 100
865	S508	108	195	18 x 100
866	S509	90	325	18 x 100
867	S510	72	195	18 x 100
868	S511	54	325	18 x 100
869	S512	36	195	18 x 100
870	S513	18	325	18 x 100
871	DUMMY	0	195	18 x 100
872	S514	-18	325	18 x 100
873	S515	-36	195	18 x 100
874	S516	-54	325	18 x 100
875	S517	-72	195	18 x 100
876	S518	-90	325	18 x 100
877	S519	-108	195	18 x 100
878	S520	-126	325	18 x 100
879	S521	-144	195	18 x 100
880	S522	-162	325	18 x 100
881	S523	-180	195	18 x 100
882	S524	-198	325	18 x 100
883	S525	-216	195	18 x 100
884	S526	-234	325	18 x 100
885	S527	-252	195	18 x 100
886	S528	-270	325	18 x 100
887	S529	-288	195	18 x 100
888	S530	-306	325	18 x 100
889	S531	-324	195	18 x 100
890	S532	-342	325	18 x 100
891	S533	-360	195	18 x 100
892	S534	-378	325	18 x 100
893	S535	-396	195	18 x 100
894	S536	-414	325	18 x 100
895	S537	-432	195	18 x 100
896	S538	-450	325	18 x 100
897	S539	-468	195	18 x 100
898	S540	-486	325	18 x 100
899	S541	-504	195	18 x 100
900	S542	-522	325	18 x 100

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No.	Name	X	Y	Bump size(μm)
901	S543	-540	195	18 x 100
902	S544	-558	325	18 x 100
903	S545	-576	195	18 x 100
904	S546	-594	325	18 x 100
905	S547	-612	195	18 x 100
906	S548	-630	325	18 x 100
907	S549	-648	195	18 x 100
908	S550	-666	325	18 x 100
909	S551	-684	195	18 x 100
910	S552	-702	325	18 x 100
911	S553	-720	195	18 x 100
912	S554	-738	325	18 x 100
913	S555	-756	195	18 x 100
914	S556	-774	325	18 x 100
915	S557	-792	195	18 x 100
916	S558	-810	325	18 x 100
917	S559	-828	195	18 x 100
918	S560	-846	325	18 x 100
919	S561	-864	195	18 x 100
920	S562	-882	325	18 x 100
921	S563	-900	195	18 x 100
922	S564	-918	325	18 x 100
923	S565	-936	195	18 x 100
924	S566	-954	325	18 x 100
925	S567	-972	195	18 x 100
926	S568	-990	325	18 x 100
927	S569	-1008	195	18 x 100
928	S570	-1026	325	18 x 100
929	S571	-1044	195	18 x 100
930	S572	-1062	325	18 x 100
931	S573	-1080	195	18 x 100
932	S574	-1098	325	18 x 100
933	S575	-1116	195	18 x 100
934	S576	-1134	325	18 x 100
935	S577	-1152	195	18 x 100
936	S578	-1170	325	18 x 100
937	S579	-1188	195	18 x 100
938	S580	-1206	325	18 x 100
939	S581	-1224	195	18 x 100
940	S582	-1242	325	18 x 100
941	S583	-1260	195	18 x 100
942	S584	-1278	325	18 x 100
943	S585	-1296	195	18 x 100
944	S586	-1314	325	18 x 100
945	S587	-1332	195	18 x 100
946	S588	-1350	325	18 x 100
947	S589	-1368	195	18 x 100
948	S590	-1386	325	18 x 100
949	S591	-1404	195	18 x 100
950	S592	-1422	325	18 x 100

No.	Name	X	Y	Bump size(μm)
951	S593	-1440	195	18 x 100
952	S594	-1458	325	18 x 100
953	S595	-1476	195	18 x 100
954	S596	-1494	325	18 x 100
955	S597	-1512	195	18 x 100
956	S598	-1530	325	18 x 100
957	S599	-1548	195	18 x 100
958	S600	-1566	325	18 x 100
959	S601	-1584	195	18 x 100
960	S602	-1602	325	18 x 100
961	S603	-1620	195	18 x 100
962	S604	-1638	325	18 x 100
963	S605	-1656	195	18 x 100
964	S606	-1674	325	18 x 100
965	S607	-1692	195	18 x 100
966	S608	-1710	325	18 x 100
967	S609	-1728	195	18 x 100
968	S610	-1746	325	18 x 100
969	S611	-1764	195	18 x 100
970	S612	-1782	325	18 x 100
971	S613	-1800	195	18 x 100
972	S614	-1818	325	18 x 100
973	S615	-1836	195	18 x 100
974	S616	-1854	325	18 x 100
975	S617	-1872	195	18 x 100
976	S618	-1890	325	18 x 100
977	S619	-1908	195	18 x 100
978	S620	-1926	325	18 x 100
979	S621	-1944	195	18 x 100
980	S622	-1962	325	18 x 100
981	S623	-1980	195	18 x 100
982	S624	-1998	325	18 x 100
983	S625	-2016	195	18 x 100
984	S626	-2034	325	18 x 100
985	S627	-2052	195	18 x 100
986	S628	-2070	325	18 x 100
987	S629	-2088	195	18 x 100
988	S630	-2106	325	18 x 100
989	S631	-2124	195	18 x 100
990	S632	-2142	325	18 x 100
991	S633	-2160	195	18 x 100
992	S634	-2178	325	18 x 100
993	S635	-2196	195	18 x 100
994	S636	-2214	325	18 x 100
995	S637	-2232	195	18 x 100
996	S638	-2250	325	18 x 100
997	S639	-2268	195	18 x 100
998	S640	-2286	325	18 x 100
999	S641	-2304	195	18 x 100
1000	S642	-2322	325	18 x 100

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No.	Name	X	Y	Bump size(μm)	No.	Name	X	Y	Bump size(μm)
1001	S643	-2340	195	18 x 100	1051	S693	-3240	195	18 x 100
1002	S644	-2358	325	18 x 100	1052	S694	-3258	325	18 x 100
1003	S645	-2376	195	18 x 100	1053	S695	-3276	195	18 x 100
1004	S646	-2394	325	18 x 100	1054	S696	-3294	325	18 x 100
1005	S647	-2412	195	18 x 100	1055	S697	-3312	195	18 x 100
1006	S648	-2430	325	18 x 100	1056	S698	-3330	325	18 x 100
1007	S649	-2448	195	18 x 100	1057	S699	-3348	195	18 x 100
1008	S650	-2466	325	18 x 100	1058	S700	-3366	325	18 x 100
1009	S651	-2484	195	18 x 100	1059	S701	-3384	195	18 x 100
1010	S652	-2502	325	18 x 100	1060	S702	-3402	325	18 x 100
1011	S653	-2520	195	18 x 100	1061	S703	-3420	195	18 x 100
1012	S654	-2538	325	18 x 100	1062	S704	-3438	325	18 x 100
1013	S655	-2556	195	18 x 100	1063	S705	-3456	195	18 x 100
1014	S656	-2574	325	18 x 100	1064	S706	-3474	325	18 x 100
1015	S657	-2592	195	18 x 100	1065	S707	-3492	195	18 x 100
1016	S658	-2610	325	18 x 100	1066	S708	-3510	325	18 x 100
1017	S659	-2628	195	18 x 100	1067	S709	-3528	195	18 x 100
1018	S660	-2646	325	18 x 100	1068	S710	-3546	325	18 x 100
1019	S661	-2664	195	18 x 100	1069	S711	-3564	195	18 x 100
1020	S662	-2682	325	18 x 100	1070	S712	-3582	325	18 x 100
1021	S663	-2700	195	18 x 100	1071	S713	-3600	195	18 x 100
1022	S664	-2718	325	18 x 100	1072	S714	-3618	325	18 x 100
1023	S665	-2736	195	18 x 100	1073	S715	-3636	195	18 x 100
1024	S666	-2754	325	18 x 100	1074	S716	-3654	325	18 x 100
1025	S667	-2772	195	18 x 100	1075	S717	-3672	195	18 x 100
1026	S668	-2790	325	18 x 100	1076	S718	-3690	325	18 x 100
1027	S669	-2808	195	18 x 100	1077	S719	-3708	195	18 x 100
1028	S670	-2826	325	18 x 100	1078	S720	-3726	325	18 x 100
1029	S671	-2844	195	18 x 100	1079	S721	-3744	195	18 x 100
1030	S672	-2862	325	18 x 100	1080	S722	-3762	325	18 x 100
1031	S673	-2880	195	18 x 100	1081	S723	-3780	195	18 x 100
1032	S674	-2898	325	18 x 100	1082	S724	-3798	325	18 x 100
1033	S675	-2916	195	18 x 100	1083	S725	-3816	195	18 x 100
1034	S676	-2934	325	18 x 100	1084	S726	-3834	325	18 x 100
1035	S677	-2952	195	18 x 100	1085	S727	-3852	195	18 x 100
1036	S678	-2970	325	18 x 100	1086	S728	-3870	325	18 x 100
1037	S679	-2988	195	18 x 100	1087	S729	-3888	195	18 x 100
1038	S680	-3006	325	18 x 100	1088	S730	-3906	325	18 x 100
1039	S681	-3024	195	18 x 100	1089	S731	-3924	195	18 x 100
1040	S682	-3042	325	18 x 100	1090	S732	-3942	325	18 x 100
1041	S683	-3060	195	18 x 100	1091	S733	-3960	195	18 x 100
1042	S684	-3078	325	18 x 100	1092	S734	-3978	325	18 x 100
1043	S685	-3096	195	18 x 100	1093	S735	-3996	195	18 x 100
1044	S686	-3114	325	18 x 100	1094	S736	-4014	325	18 x 100
1045	S687	-3132	195	18 x 100	1095	S737	-4032	195	18 x 100
1046	S688	-3150	325	18 x 100	1096	S738	-4050	325	18 x 100
1047	S689	-3168	195	18 x 100	1097	S739	-4068	195	18 x 100
1048	S690	-3186	325	18 x 100	1098	S740	-4086	325	18 x 100
1049	S691	-3204	195	18 x 100	1099	S741	-4104	195	18 x 100
1050	S692	-3222	325	18 x 100	1100	S742	-4122	325	18 x 100

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No.	Name	X	Y	Bump size(μm)
1101	S743	-4140	195	18 x 100
1102	S744	-4158	325	18 x 100
1103	S745	-4176	195	18 x 100
1104	S746	-4194	325	18 x 100
1105	S747	-4212	195	18 x 100
1106	S748	-4230	325	18 x 100
1107	S749	-4248	195	18 x 100
1108	S750	-4266	325	18 x 100
1109	S751	-4284	195	18 x 100
1110	S752	-4302	325	18 x 100
1111	S753	-4320	195	18 x 100
1112	S754	-4338	325	18 x 100
1113	S755	-4356	195	18 x 100
1114	S756	-4374	325	18 x 100
1115	S757	-4392	195	18 x 100
1116	S758	-4410	325	18 x 100
1117	S759	-4428	195	18 x 100
1118	S760	-4446	325	18 x 100
1119	S761	-4464	195	18 x 100
1120	S762	-4482	325	18 x 100
1121	S763	-4500	195	18 x 100
1122	S764	-4518	325	18 x 100
1123	S765	-4536	195	18 x 100
1124	S766	-4554	325	18 x 100
1125	S767	-4572	195	18 x 100
1126	S768	-4590	325	18 x 100
1127	S769	-4608	195	18 x 100
1128	S770	-4626	325	18 x 100
1129	S771	-4644	195	18 x 100
1130	S772	-4662	325	18 x 100
1131	S773	-4680	195	18 x 100
1132	S774	-4698	325	18 x 100
1133	S775	-4716	195	18 x 100
1134	S776	-4734	325	18 x 100
1135	S777	-4752	195	18 x 100
1136	S778	-4770	325	18 x 100
1137	S779	-4788	195	18 x 100
1138	S780	-4806	325	18 x 100
1139	S781	-4824	195	18 x 100
1140	S782	-4842	325	18 x 100
1141	S783	-4860	195	18 x 100
1142	S784	-4878	325	18 x 100
1143	S785	-4896	195	18 x 100
1144	S786	-4914	325	18 x 100
1145	S787	-4932	195	18 x 100
1146	S788	-4950	325	18 x 100
1147	S789	-4968	195	18 x 100
1148	S790	-4986	325	18 x 100
1149	S791	-5004	195	18 x 100
1150	S792	-5022	325	18 x 100

No.	Name	X	Y	Bump size(μm)
1151	S793	-5040	195	18 x 100
1152	S794	-5058	325	18 x 100
1153	S795	-5076	195	18 x 100
1154	S796	-5094	325	18 x 100
1155	S797	-5112	195	18 x 100
1156	S798	-5130	325	18 x 100
1157	S799	-5148	195	18 x 100
1158	S800	-5166	325	18 x 100
1159	S801	-5184	195	18 x 100
1160	S802	-5202	325	18 x 100
1161	S803	-5220	195	18 x 100
1162	S804	-5238	325	18 x 100
1163	S805	-5256	195	18 x 100
1164	S806	-5274	325	18 x 100
1165	S807	-5292	195	18 x 100
1166	S808	-5310	325	18 x 100
1167	S809	-5328	195	18 x 100
1168	S810	-5346	325	18 x 100
1169	S811	-5364	195	18 x 100
1170	S812	-5382	325	18 x 100
1171	S813	-5400	195	18 x 100
1172	S814	-5418	325	18 x 100
1173	S815	-5436	195	18 x 100
1174	S816	-5454	325	18 x 100
1175	S817	-5472	195	18 x 100
1176	S818	-5490	325	18 x 100
1177	S819	-5508	195	18 x 100
1178	S820	-5526	325	18 x 100
1179	S821	-5544	195	18 x 100
1180	S822	-5562	325	18 x 100
1181	S823	-5580	195	18 x 100
1182	S824	-5598	325	18 x 100
1183	S825	-5616	195	18 x 100
1184	S826	-5634	325	18 x 100
1185	S827	-5652	195	18 x 100
1186	S828	-5670	325	18 x 100
1187	S829	-5688	195	18 x 100
1188	S830	-5706	325	18 x 100
1189	S831	-5724	195	18 x 100
1190	S832	-5742	325	18 x 100
1191	S833	-5760	195	18 x 100
1192	S834	-5778	325	18 x 100
1193	S835	-5796	195	18 x 100
1194	S836	-5814	325	18 x 100
1195	S837	-5832	195	18 x 100
1196	S838	-5850	325	18 x 100
1197	S839	-5868	195	18 x 100
1198	S840	-5886	325	18 x 100
1199	S841	-5904	195	18 x 100
1200	S842	-5922	325	18 x 100

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No.	Name	X	Y	Bump size(μm)
1201	S843	-5940	195	18 x 100
1202	S844	-5958	325	18 x 100
1203	S845	-5976	195	18 x 100
1204	S846	-5994	325	18 x 100
1205	S847	-6012	195	18 x 100
1206	S848	-6030	325	18 x 100
1207	S849	-6048	195	18 x 100
1208	S850	-6066	325	18 x 100
1209	S851	-6084	195	18 x 100
1210	S852	-6102	325	18 x 100
1211	S853	-6120	195	18 x 100
1212	S854	-6138	325	18 x 100
1213	S855	-6156	195	18 x 100
1214	S856	-6174	325	18 x 100
1215	S857	-6192	195	18 x 100
1216	S858	-6210	325	18 x 100
1217	S859	-6228	195	18 x 100
1218	S860	-6246	325	18 x 100
1219	S861	-6264	195	18 x 100
1220	S862	-6282	325	18 x 100
1221	S863	-6300	195	18 x 100
1222	S864	-6318	325	18 x 100
1223	S865	-6336	195	18 x 100
1224	S866	-6354	325	18 x 100
1225	S867	-6372	195	18 x 100
1226	S868	-6390	325	18 x 100
1227	S869	-6408	195	18 x 100
1228	S870	-6426	325	18 x 100
1229	S871	-6444	195	18 x 100
1230	S872	-6462	325	18 x 100
1231	S873	-6480	195	18 x 100
1232	S874	-6498	325	18 x 100
1233	S875	-6516	195	18 x 100
1234	S876	-6534	325	18 x 100
1235	S877	-6552	195	18 x 100
1236	S878	-6570	325	18 x 100
1237	S879	-6588	195	18 x 100
1238	S880	-6606	325	18 x 100
1239	S881	-6624	195	18 x 100
1240	S882	-6642	325	18 x 100
1241	S883	-6660	195	18 x 100
1242	S884	-6678	325	18 x 100
1243	S885	-6696	195	18 x 100
1244	S886	-6714	325	18 x 100
1245	S887	-6732	195	18 x 100
1246	S888	-6750	325	18 x 100
1247	S889	-6768	195	18 x 100
1248	S890	-6786	325	18 x 100
1249	S891	-6804	195	18 x 100
1250	S892	-6822	325	18 x 100

No.	Name	X	Y	Bump size(μm)
1251	S893	-6840	195	18 x 100
1252	S894	-6858	325	18 x 100
1253	S895	-6876	195	18 x 100
1254	S896	-6894	325	18 x 100
1255	S897	-6912	195	18 x 100
1256	S898	-6930	325	18 x 100
1257	S899	-6948	195	18 x 100
1258	S900	-6966	325	18 x 100
1259	S901	-6984	195	18 x 100
1260	S902	-7002	325	18 x 100
1261	S903	-7020	195	18 x 100
1262	S904	-7038	325	18 x 100
1263	S905	-7056	195	18 x 100
1264	S906	-7074	325	18 x 100
1265	S907	-7092	195	18 x 100
1266	S908	-7110	325	18 x 100
1267	S909	-7128	195	18 x 100
1268	S910	-7146	325	18 x 100
1269	S911	-7164	195	18 x 100
1270	S912	-7182	325	18 x 100
1271	S913	-7200	195	18 x 100
1272	S914	-7218	325	18 x 100
1273	S915	-7236	195	18 x 100
1274	S916	-7254	325	18 x 100
1275	S917	-7272	195	18 x 100
1276	S918	-7290	325	18 x 100
1277	S919	-7308	195	18 x 100
1278	S920	-7326	325	18 x 100
1279	S921	-7344	195	18 x 100
1280	S922	-7362	325	18 x 100
1281	S923	-7380	195	18 x 100
1282	S924	-7398	325	18 x 100
1283	S925	-7416	195	18 x 100
1284	S926	-7434	325	18 x 100
1285	S927	-7452	195	18 x 100
1286	S928	-7470	325	18 x 100
1287	S929	-7488	195	18 x 100
1288	S930	-7506	325	18 x 100
1289	S931	-7524	195	18 x 100
1290	S932	-7542	325	18 x 100
1291	S933	-7560	195	18 x 100
1292	S934	-7578	325	18 x 100
1293	S935	-7596	195	18 x 100
1294	S936	-7614	325	18 x 100
1295	S937	-7632	195	18 x 100
1296	S938	-7650	325	18 x 100
1297	S939	-7668	195	18 x 100
1298	S940	-7686	325	18 x 100
1299	S941	-7704	195	18 x 100
1300	S942	-7722	325	18 x 100

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No.	Name	X	Y	Bump size(μm)
1301	S943	-7740	195	18 x 100
1302	S944	-7758	325	18 x 100
1303	S945	-7776	195	18 x 100
1304	S946	-7794	325	18 x 100
1305	S947	-7812	195	18 x 100
1306	S948	-7830	325	18 x 100
1307	S949	-7848	195	18 x 100
1308	S950	-7866	325	18 x 100
1309	S951	-7884	195	18 x 100
1310	S952	-7902	325	18 x 100
1311	S953	-7920	195	18 x 100
1312	S954	-7938	325	18 x 100
1313	S955	-7956	195	18 x 100
1314	S956	-7974	325	18 x 100
1315	S957	-7992	195	18 x 100
1316	S958	-8010	325	18 x 100
1317	S959	-8028	195	18 x 100
1318	S960	-8046	325	18 x 100
1319	S961	-8064	195	18 x 100
1320	S962	-8082	325	18 x 100
1321	S963	-8100	195	18 x 100
1322	S964	-8118	325	18 x 100
1323	S965	-8136	195	18 x 100
1324	S966	-8154	325	18 x 100
1325	S967	-8172	195	18 x 100
1326	S968	-8190	325	18 x 100
1327	S969	-8208	195	18 x 100
1328	S970	-8226	325	18 x 100
1329	S971	-8244	195	18 x 100
1330	S972	-8262	325	18 x 100
1331	S973	-8280	195	18 x 100
1332	S974	-8298	325	18 x 100
1333	S975	-8316	195	18 x 100
1334	S976	-8334	325	18 x 100
1335	S977	-8352	195	18 x 100
1336	S978	-8370	325	18 x 100
1337	S979	-8388	195	18 x 100
1338	S980	-8406	325	18 x 100
1339	S981	-8424	195	18 x 100
1340	S982	-8442	325	18 x 100
1341	S983	-8460	195	18 x 100
1342	S984	-8478	325	18 x 100
1343	S985	-8496	195	18 x 100
1344	S986	-8514	325	18 x 100
1345	S987	-8532	195	18 x 100
1346	S988	-8550	325	18 x 100
1347	S989	-8568	195	18 x 100
1348	S990	-8586	325	18 x 100
1349	S991	-8604	195	18 x 100
1350	S992	-8622	325	18 x 100

No.	Name	X	Y	Bump size(μm)
1351	S993	-8640	195	18 x 100
1352	S994	-8658	325	18 x 100
1353	S995	-8676	195	18 x 100
1354	S996	-8694	325	18 x 100
1355	S997	-8712	195	18 x 100
1356	S998	-8730	325	18 x 100
1357	S999	-8748	195	18 x 100
1358	S1000	-8766	325	18 x 100
1359	S1001	-8784	195	18 x 100
1360	S1002	-8802	325	18 x 100
1361	S1003	-8820	195	18 x 100
1362	S1004	-8838	325	18 x 100
1363	S1005	-8856	195	18 x 100
1364	S1006	-8874	325	18 x 100
1365	S1007	-8892	195	18 x 100
1366	S1008	-8910	325	18 x 100
1367	S1009	-8928	195	18 x 100
1368	S1010	-8946	325	18 x 100
1369	S1011	-8964	195	18 x 100
1370	S1012	-8982	325	18 x 100
1371	S1013	-9000	195	18 x 100
1372	S1014	-9018	325	18 x 100
1373	S1015	-9036	195	18 x 100
1374	S1016	-9054	325	18 x 100
1375	S1017	-9072	195	18 x 100
1376	S1018	-9090	325	18 x 100
1377	S1019	-9108	195	18 x 100
1378	S1020	-9126	325	18 x 100
1379	S1021	-9144	195	18 x 100
1380	S1022	-9162	325	18 x 100
1381	S1023	-9180	195	18 x 100
1382	S1024	-9198	325	18 x 100
1383	S1025	-9216	195	18 x 100
1384	S1026	-9234	325	18 x 100
1385	RPI2	-9252	195	18 x 100
1386	RPI2	-9270	325	18 x 100
1387	VCOM2	-9288	195	18 x 100
1388	VCOM2	-9306	325	18 x 100
1389	RPO2	-9324	195	18 x 100
1390	RPO2	-9342	325	18 x 100
1391	VCOM1	-9360	195	18 x 100
1392	VCOM1	-9378	325	18 x 100
1393	VCOM1	-9396	195	18 x 100
1394	VCOM1	-9414	325	18 x 100
1395	DUMMY	-9432	195	18 x 100
1396	DUMMY	-9450	325	18 x 100
1397	DUMMY	-9468	195	18 x 100
1398	DUMMY	-9486	325	18 x 100
1399	DUMMY	-9504	195	18 x 100
1400	DUMMY	-9522	325	18 x 100

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No.	Name	X	Y	Bump size(μm)
1401	DUMMY	-9540	195	18 x 100
1402	DUMMY	-9558	325	18 x 100
1403	DUMMY	-9576	195	18 x 100
1404	DUMMY	-9594	325	18 x 100
1405	DUMMY	-9612	195	18 x 100
1406	DUMMY	-9630	325	18 x 100
1407	VGMA10	-9648	195	18 x 100
1408	VGMA10	-9666	325	18 x 100
1409	VGMA9	-9684	195	18 x 100
1410	VGMA9	-9702	325	18 x 100
1411	VGMA8	-9720	195	18 x 100
1412	VGMA8	-9738	325	18 x 100
1413	VGMA7	-9756	195	18 x 100
1414	VGMA7	-9774	325	18 x 100
1415	VGMA6	-9792	195	18 x 100
1416	VGMA6	-9810	325	18 x 100
1417	VGMA5	-9828	195	18 x 100
1418	VGMA5	-9846	325	18 x 100
1419	VGMA4	-9864	195	18 x 100
1420	VGMA4	-9882	325	18 x 100
1421	VGMA3	-9900	195	18 x 100
1422	VGMA3	-9918	325	18 x 100
1423	VGMA2	-9936	195	18 x 100
1424	VGMA2	-9954	325	18 x 100
1425	VGMA1	-9972	195	18 x 100
1426	VGMA1	-9990	325	18 x 100
1427	DUMMY	-10026	325	18 x 100
1428	CLKP_L	-10401	225	100 x 25
1429	CLKN_L	-10401	275	100 x 25
1430	TP1_L	-10401	325	100 x 25
1431	TP1_L	-10526	325	100 x 25
1432	CLKN_L	-10526	275	100 x 25
1433	CLKP_L	-10526	225	100 x 25
1434	DATA1N_L	-10526	175	100 x 25
1435	DATA1N_L	-10401	175	100 x 25
1436	DATA1P_L	-10526	125	100 x 25
1437	DATA1P_L	-10401	125	100 x 25
1438	DATA0N_L	-10526	75	100 x 25
1439	DATA0N_L	-10401	75	100 x 25
1440	DATA0P_L	-10526	25	100 x 25
1441	DATA0P_L	-10401	25	100 x 25

Alignment mark			
L_AMK	-10076	95	100 x 100
R_AMK	10076	95	100 x 100

Table 11.2: Pad coordinate

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12. Ordering Information

Part No.	Package Type
HX8288-A02XPDxxx	X : meab fab code PD : mean COG xxx : mean chip thickness (μm)

13. Revision History

Version	Date	Description of changes
01	2012/10/29	New setup

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