DATA SHEET

(DOC No. HX8282-A-DS)

HX8282-A

1536 CH TFT LCD Source Driver
with LVDS TCON

Preliminary version 02 May, 2010

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

List of Contents

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List of Figures

List of Tables

1. General Description

HX8282-A is a 1536 channel outputs source driver with LVDS TCON, and 3-wire Serial Port Interface. This chip integrates 1536ch dual gate mode source driver with LVDS and parallel RGB input interface. The TCON generates the 1024x600, 1024x768, 800x600, 800x480 and 960x540 resolutions and provides horizontal and vertical control timing to source driver and gate driver. The TCON supports

It also supports dithering feature, apply source driver with 6-bit DAC to perform 8-bit resolution 256 gray scales. The source driver receives 6-bit by 3 dots of digital display data per clock from TCON 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

TCON

- Support display resolution 1024 RGB x 600, 1024 RGB x768, 800RGBx600, 800RGBx480 and 960RGBx540.
- Support LVDS/TTL interface
- Support single or dual gate function
- Support cascade function with bidirectional shift control (CMOS signal)
- Internal dithering 8-bit data to 6-bit data for Source Driver Circuit(6 bits DAC + 2 bit FRC or HFRC)
- Built-In CABC function
- Built-In AUTO pattern
- Built-In SDRRS function
- Only support stripe types of panel group
- Operation frequency: 71 MHz max
- Provide source and gate drivers control timing
- Provide flip and mirror scan control
- Operation Voltage Level 2.3V to 3.6V

Source Driver

- 1536 channels output source driver for TFT LCD panel
- Embedded Gamma Table for special custom request
- V1~V14 for adjusting Gamma correction
- Dynamic output range: 0.1 to AVDD-0.1V
- Voltage deviation of outputs: ±20mV
- Dot inversion and 1+2 Dot inversion driving scheme
- Right and left shift capability
- LCD power: 6.5 to 13.5V

Power

- Built-In PWM controller for AVDD , VGH / VGL , and VCOM buffer
- Support Half voltage source driver

Application

- Special designed for low cost UMPC application

Others

- COG package

3. Block Diagram

3.1 Function block diagram

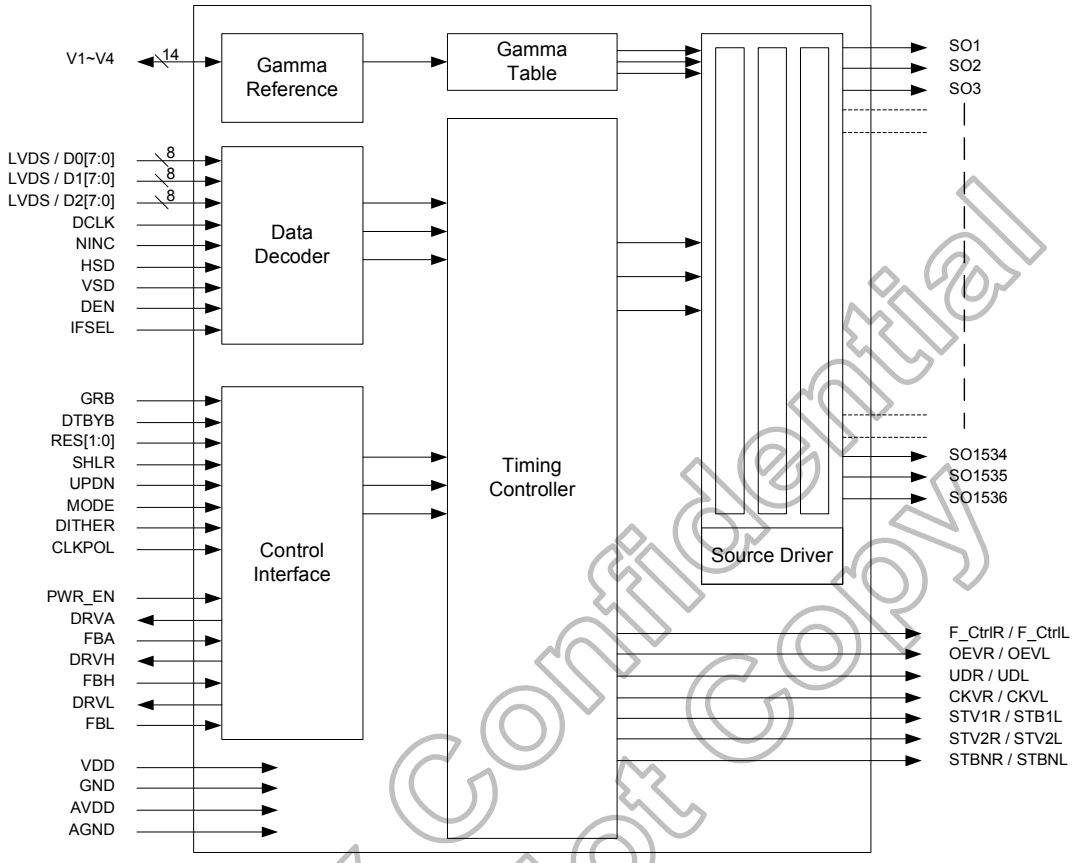


Figure 3.1: HX8282-A Function Block Diagram

3.2 Application block diagram

3.2.1 Dual Gate

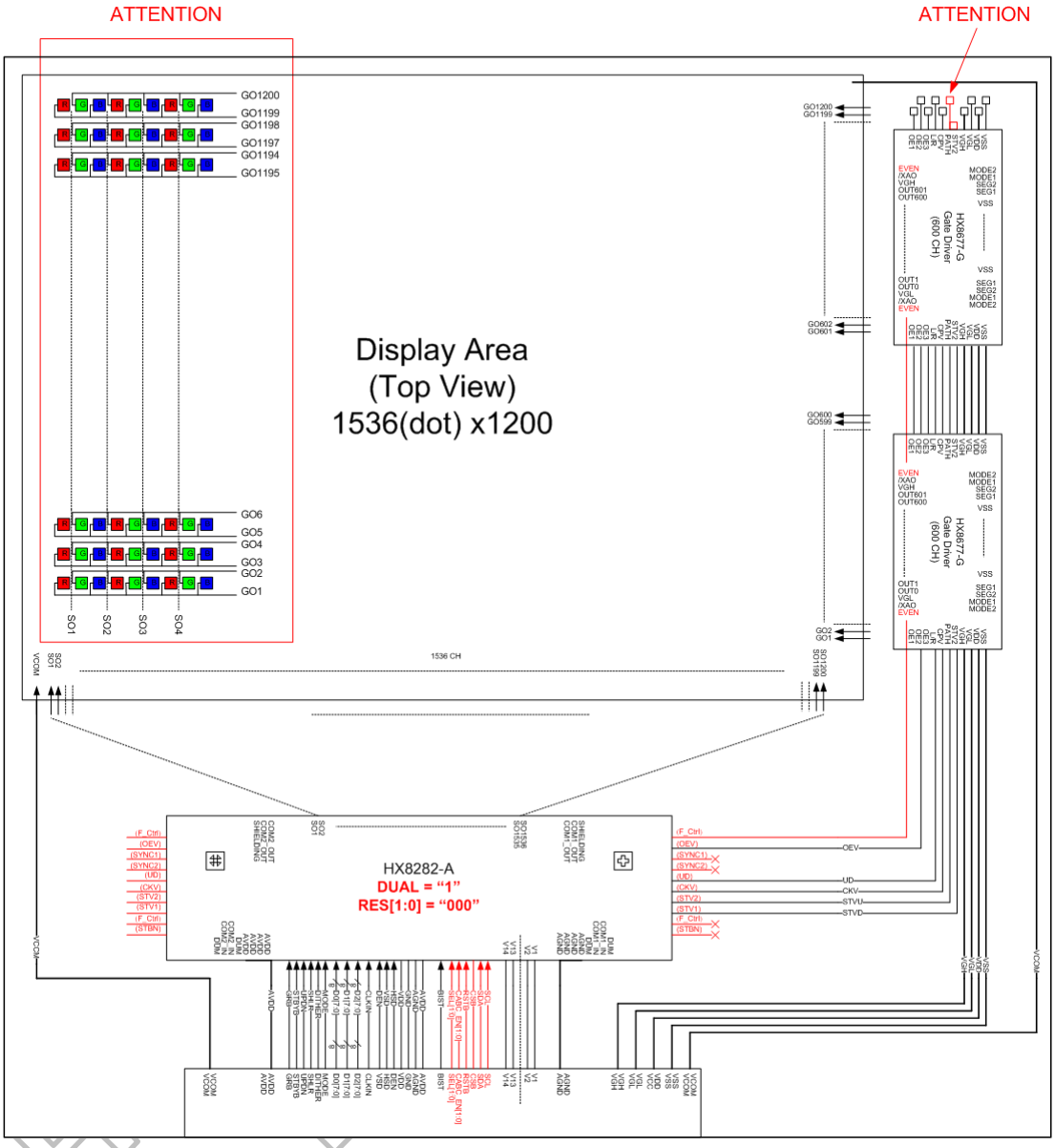


Figure 3.2: Dual Gate

3.2.2 Cascade with Two-FPC

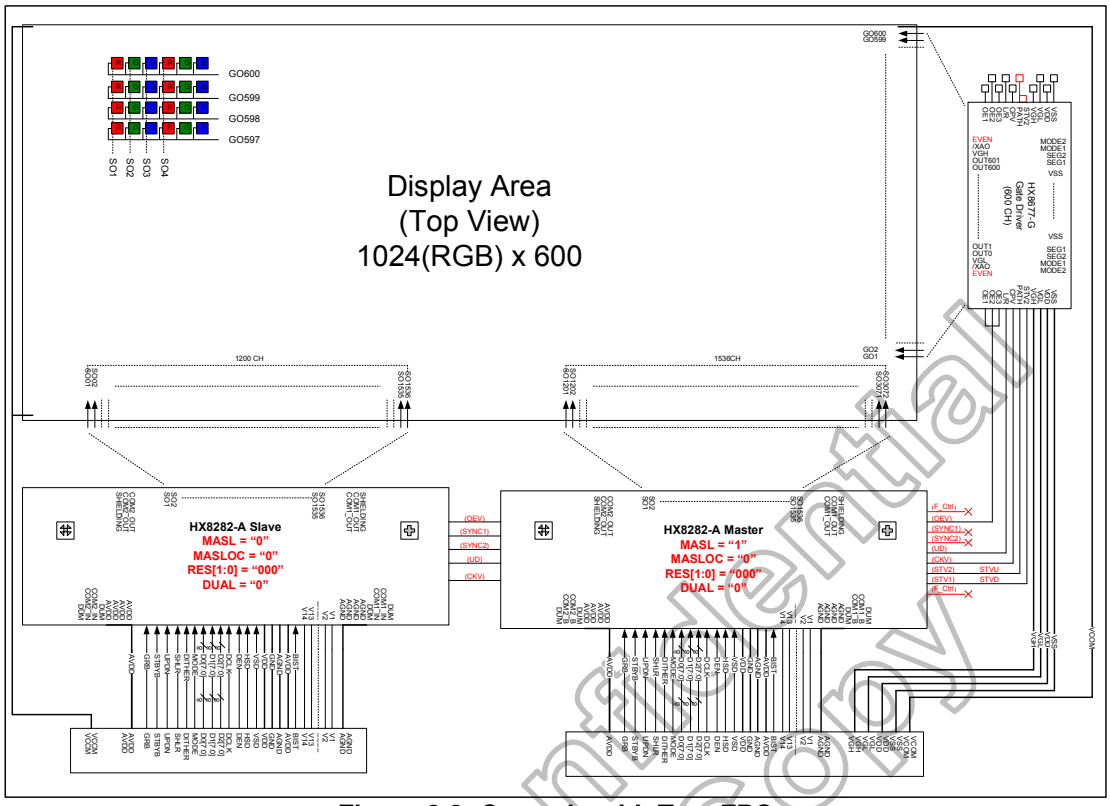


Figure 3.3: Cascade with Two-FPC

3.3 Application Power Circuit

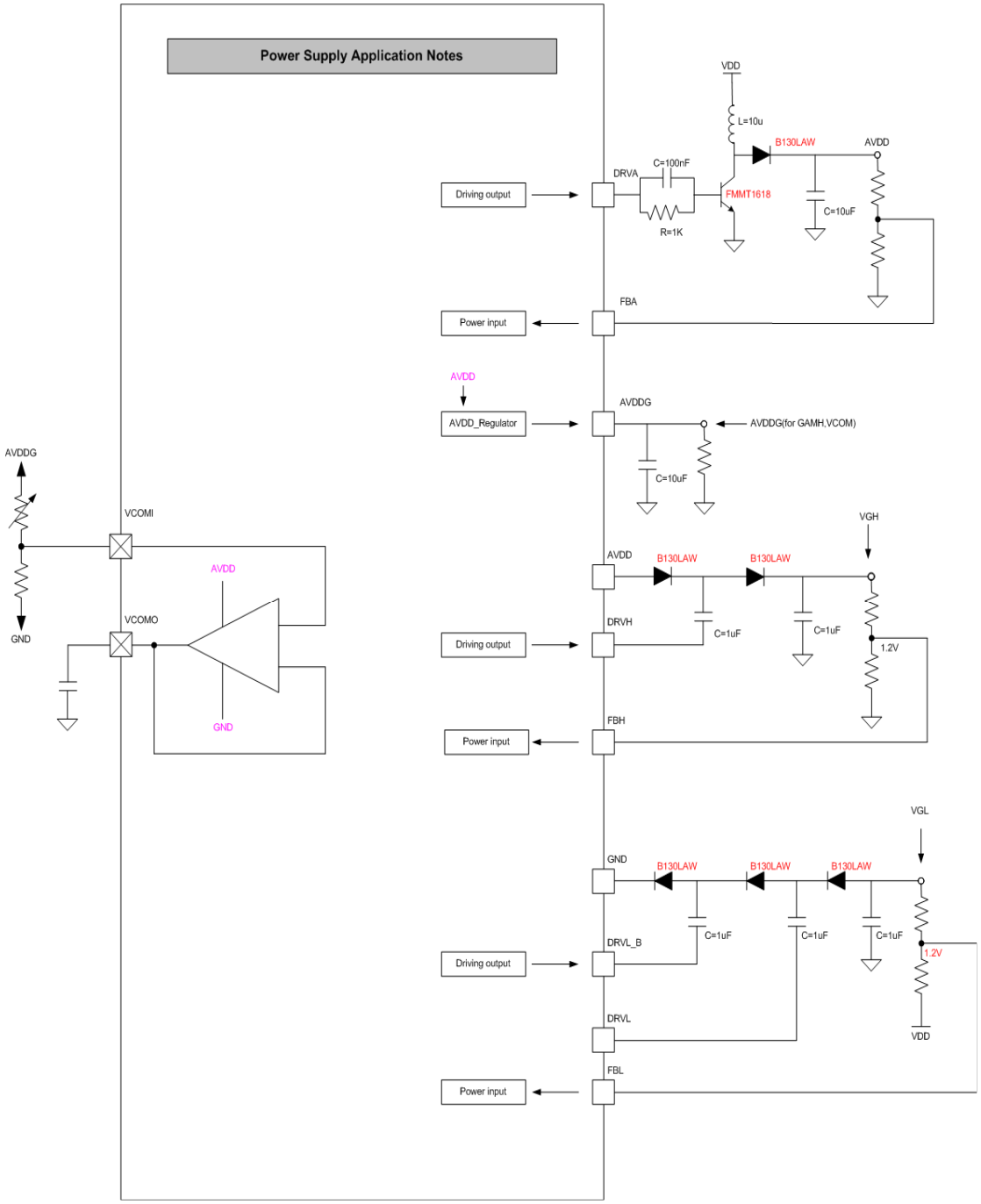


Figure 3.4: Application Power Circuit

4. Pin Description

4.1 Pin Description

<table>
<tr><th>Name</th><th>I/O</th><th>Description</th></tr>
<tr><td>D07~D00
D17~D10
D27~D20</td><td>I</td><td>LVDS or Parallel RGB data Input. Select by “IFSEL” pin.
<table>
<tr><td>Input mode</td><td>TTL</td><td>LVDS</td></tr>
<tr><td>IFSEL</td><td>L</td><td>H</td></tr>
<tr><td>D20,D21</td><td>B0,B1</td><td>D0N,D0P</td></tr>
<tr><td>D22,D23</td><td>B2,B3</td><td>D1N,D1P</td></tr>
<tr><td>D24,D25</td><td>B4,B5</td><td>D2N,D2P</td></tr>
<tr><td>D26,D27</td><td>B6,B7</td><td>D3N,D3P</td></tr>
</table>
LVDS 6 bit data input: PIND[2:0],NIND[2:0]
D07~D00=R7~R0 data; D17~D10=G7~G0 data; D27~20=B7~B0 data.
For 18bit RGB interface, connect two LSB bits of all the R/G/B data buses to GND.
Please note the relation between RGB data and Color Filter sequence.
Note: D07~D00：SO1,SO4…SO1531,SO1534
D17~D10：SO2,SO5…SO1532,SO1535
D27~D20：SO3,SO6…SO1533,SO1536</td></tr>
<tr><td>DCLK</td><td>I</td><td>
<table>
<tr><td>IFSEL</td><td>Input mode</td><td>Description</td></tr>
<tr><td>L</td><td>TTL</td><td>DCLK</td></tr>
<tr><td>H</td><td>LVDS</td><td>PINC</td></tr>
</table>
</td></tr>
<tr><td>NINC</td><td>I</td><td>Negative LVDS differential clock input.</td></tr>
<tr><td>VSYNC</td><td>I</td><td>In TTL mode, for Vertical Sync input. Negative polarity.
In LVDS mode. Connected to FPC and pull low.</td></tr>
<tr><td>HSYNC</td><td>I</td><td>In TTL mode, for Horizontal Sync input. Negative polarity.
In LVDS mode, used as 6-bit/8-bit input select.
<table>
<tr><td>HSD</td><td>bit</td></tr>
<tr><td>L</td><td>8-bit</td></tr>
<tr><td>H</td><td>6-bit</td></tr>
</table>
</td></tr>
<tr><td>DEN</td><td>I</td><td>Data input enable for TTL mode. Active High to enable the data input. Normally pull Low.</td></tr>
<tr><td>MODE</td><td>I</td><td>DE / SYNC mode select under TTL mode. Normally pull high.
When MODE=H, DE mode.
When MODE=L, SYNC mode.</td></tr>
<tr><td>SCL</td><td>I</td><td>Input reference clock for serial interface. Data is fed at the rising edge of the clock. Normally pull Low.</td></tr>
<tr><td>SDA</td><td>I/O</td><td>Input for data of serial interface. Normally pull Low.</td></tr>
<tr><td>CSB</td><td>I</td><td>Input the chip select signal for serial interface. Normally pull Low.
Low: select (Enable)
High: non-select (Disable)</td></tr>
<tr><td>IFSEL</td><td>I</td><td>TTL / LVDS interface selection. Normally pull low.
When IFSEL=L, TTL interface
When IFSEL=H, LVDS interface</td></tr>
<tr><td>DITHER</td><td>I</td><td>Dithering function enable control. Normally pull low.
When DITHER=H, Enable internal dithering function
When DITHER=L, Disable internal dithering function</td></tr>
<tr><td>HFRC</td><td>I</td><td>H-FRC selection. Normally pull low.
When HFRC=H : H-FRC enable
When HFRC=L : FRC enable
If DITHER=L , disable dithering function(H-FRC and FRC disable)</td></tr>
</table>

<table>
<tr><th>Name</th><th>I/O</th><th>Description</th></tr>
<tr><td>RESL[2:0]</td><td>I</td><td>Display resolution selection.
<table>
<tr><th>RESL2</th><th>RESL1</th><th>RESL0</th><th>Resolution</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>1024(RGB)x600 (Default)</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>1024(RGB)x768</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>800(RGB)x600 (601~936 disable)</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td>800(RGB)x480 (601~936 disable)</td></tr>
<tr><td>1</td><td>x</td><td>x</td><td>960(RGB)x540 (721~816 disable)</td></tr>
</table></td></tr>
<tr><td>GRB</td><td>I</td><td>Global reset. Keep VDD during operation. Normally pull High.</td></tr>
<tr><td>DCLKPOL</td><td>I</td><td>Define input clock polarity. Normally pull low.
When DCLKPOL=H, latch data by rising edge of CLK.
When DCLKPOL=L, latch data by falling edge of CLK.</td></tr>
<tr><td>DUAL</td><td>I</td><td>Dual Gate function enables control. Normally pull high.
DUAL = H, Enable Dual Gate Function.
DUAL = L, Disable Dual Gate Function.
Note: Cascade function will be disabled under “dual gate” mode!</td></tr>
<tr><td>V1~V14</td><td>I</td><td>When INTERNAL Gamma Table is used. GAMH tied to AVDDG via resistor for PWR_EN=H enable PWM, or tied to AVDD for PWR_EN=L disable PWM.
When using external gamma voltage, GAMH and GAML are floating, and V1~V14 are the external gamma correction points. The voltage of these pins must be:
AGND<V14<V13<V12<V11<V10<V9<V8;
V7<V6<V5<V4<V3<V2<V1< AVDD.</td></tr>
<tr><td>GAMH</td><td>I</td><td>When using INTERNAL Gamma Table, GAMH tied to AVDDG via resistor for PWR_EN=H enable PWM, or tied to AVDD for PWR_EN=L disable PWM. Otherwise floating.</td></tr>
<tr><td>GAML</td><td>I</td><td>When using INTERNAL Gamma Table, tied to GND. Otherwise floating.</td></tr>
<tr><td>STBYB</td><td>I</td><td>Standby mode control. Normally pull High.
When STB=H, all the functions are on. (Default pulls high).
When STB=L, TCON and source driver are off and all output are High-z.</td></tr>
<tr><td>MASL</td><td>I</td><td>Master and slave mode selection in cascade mode. Normally pull high.
MASL=H, for Master mode.(Default)
MASL=L, for Slave mode.
Only the Master chip will issue the Gate and Cascade control signal.</td></tr>
<tr><td>MASLOC</td><td>I</td><td>Master location definition pin. Normally pull low.
MASLOC=L, Master locate on right side (Panel top view) (Default).
MASLOC=H, Master locate on left side (Panel top view).</td></tr>
<tr><td>SHLR</td><td>I</td><td>Source Driver internal shift register is controlled by this pin as shown below: Normally pull high.
SHLR=H: SO1→ SO2→ SO3→ • • • →SO1536 (Default)
SHLR=L: SO1536→ SO1535→ SO1534→ • • • →SO1</td></tr>
<tr><td>UPDN</td><td>I</td><td>Gate Driver Up/down scan setting. Normally pull low.
When UPDN=H, reverse scan.
STV1 output vertical start pulse and UD pin output “H” to Gate driver
When UPDN=L, normal scan. (Default)
STV2 output vertical start pulse and UD pin output “L” to Gate driver</td></tr>
<tr><td>BIST</td><td>I</td><td>Normal Operation/BIST pattern select. Normally pull low.
When BIST=H, BIST(CLK input is not needed)
When BIST=L, Normal Operation (Default)</td></tr>
</table>

Name	I/O	Description
NBW	I	Normally black or normally white setting. Normally pull low. When NBW=H, Normally black. When NBW=L, Normally white. (Default)
REV	I	Controls whether the data of D00~D27 are inverted or not. Normally pull low. When REV=H, the data will be inverted. EX. “00”→“3F”, “07”→ “38”, “15”→“2A”, and so on.
FRAME	I	Frame inverse or not select. Normally pull low. When FRAME=H, Uniform. When FRAME=L, Frame inverse (Default). When FRAME=H, set SEL[1:0]=00, only for dual gate.
SEL[1:0]	I	Gate on sequence select. Normally pull low. SEL[1] / SEL[0] / Pin control function 0 / 0 / Z 0 / 1 / 弓 1 / 0 / Σ 1 / 1 / Z+弓
OEVR/OEVL	O	Gate driver control signal.
SYNC1R/SYNC1L	O	Gate driver control signal (CABC and BIST sync control).
SYNC2R/SYNC2L	O	Gate driver control signal (CABC and BIST sync control).
UDR/UDL	O	Gate driver control signal.
CKVR/CKVL	O	Gate driver control signal.
STV1R/STV1L	O	Gate driver control signal.
STV2R/STV2L	O	Gate driver control signal.
STBNR/STBNL	O	Gate driver control signal.
F_CtrlR/F_CtrlL	O	Gate driver control signal (For special Gate on sequence). In Cascade, let this pin floating. In Dual Gate, connect the pin to gate driver’s F_Ctrl and setting SEL[1:0]=00.
CABC_EN[1:0]	I	CABC H/W enable pin. Normally pull low. When CABC_EN=”00”, CABC OFF. (Default mode) When CABC_EN=”01”, User interface Image. When CABC_EN=”10”, Still Picture. When CABC_EN=”11”, Moving Image.
DIMI	I	Brightness control signal. Normally pull high.
DIMO	O	Backlight dimmer signal for external controller. DIMO=H, Logical control signal to turn on external backlight controller. DIMO=L, Turn off external backlight controller. **Note:** If CABC OFF, DIMO=DIMI. Else DIMO is controlled by CABC.
PINCTL	I	Enable pin control function. Normally pull high. When PINCTL=L, Disable pin control function. When PINCTL=H, Enable pin control function. **Note**: The related 3-wire control register bit control will be disabled under PINCTL= H.
OPDRV	I	Source OP driving selection. Normally pull low. OPDRV=H:140%. OPDRV=L: Normal.
AVDD	PI	Analog power.
AGND	PI	Analog ground.
VDD	PI	Digital power.
GND	PI	Digital ground.

Name	I/O	Description
VDD_LVDS	PI	LVDS power.
GND_LVDS	PI	LVDS ground.
AVDDL	PI	Power supply for Half AVDD application. Connected to AVDD when full range. Connected to Half AVDD when Half AVDD application.
AGNDH	PI	Power supply for Half AVDD application. Connected to AGND when full range. Connected to Half AVDD when Half AVDD application.
PWR_EN	I	POWER enable. Normally pull low. PWR_EN=H, enable PWM, charge pump and VCOM buffer. PWR_EN=L, disable PWM, charge pump and VCOM buffer.
FBA	I	PWM controller feedback input. (for AVDD)
DRVA	O	PWM output driver signal for the boost converter. (for AVDD)
FBH	I	PWM controller feedback input. (for VGH)
DRVH	O	PWM output driver signal for the boost converter. (for VGH)
FBL	I	PWM controller feedback input. (for VGL)
DRVL	O	PWM output driver signal for the boost converter. (for VGL)
DRVL_B	O	Inverse of DRVL. (for VGL)
VCOMI	I	VCOM buffer in.
VCOMO	O	VCOM buffer out.
SO1~SO1536	O	Output driver signal.
COM1_IN COM1_OUT	S	Internal link together between input side and output side.
COM2_IN COM2_OUT	S	Internal link together between input side and output side.
TP	T	Test pins. They must be open.
SHIELDING	SH	IC Shielding pads. Those pins are internally connected to the AGND. DO NOT connect to any WOA on the panel.
DASHD	SH	Data Bus Shielding pad. Those pins are internally connected to the GND. RECOMMAND to add shielding lines on the FPC to reduce EMI.
DUM	D	Dummy pads. Those pins are floating pads.

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

Table 4.1: Pad Description

HX8282-A passes line description

Pass Line No	Pin Name	
1	COM1_IN	COM2_IN
2	COM1_OUT	COM2_OUT

Table 4.2: HX8282-A passes line description

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)
AVDD	<5
AGND	<5
VDD	<5
GND	<5
V1~V14	<5
FBA, FBH, FBL	<5
DRVA, DRVH, DRVL, DRVL_B	<5
Dx7 ~ Dx0, CLK, CLKN	<5
VCOMI, VCOMO	<5
HS	<20
VS	<20
DEN	<20
RESETZ, STB	<100
DITHER, RES, LR, UD, BIST, MODE, EDGSL, DIMO, IFSEL	<100
OEVR, OEVL, UDR, UDL, CKVR, CKVL, STV1R, STV1L, STV2R, STV2L, STBNR, STBNL, F_CtrlR, F_CtrlL	<500

Table 4.3: Wiring Resistance Values

5. The BIST Pattern for Aging Mode Test

5.1 The BIST Pattern for Aging Mode Test

HX8282-A supports BIST pattern for aging mode test automatically. When external BIST pin set to “H” level, then HX8282-A will leave normal operation mode and starts to generate the BIST pattern to LCD panel without external clock signal. The BIST pattern is illustrated as below:

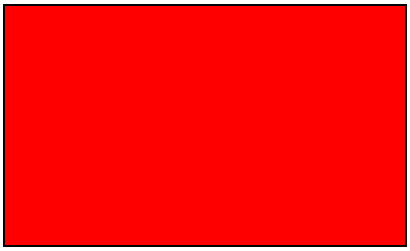
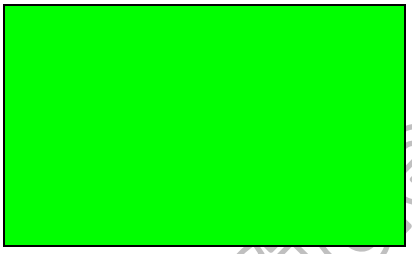
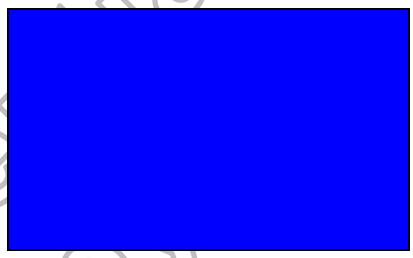
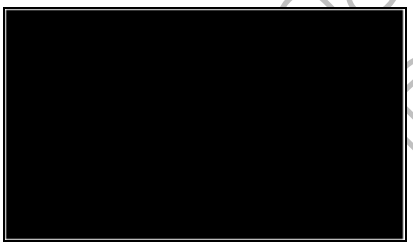
1	2	3
Red	Green	Blue
		
4	5	6
Black	White	Flicker
		
7		
Black with white frame		
		

Table 5.1: BIST mode pattern

6. Gamma Adjustment Function

6.1 Gamma Table

The output voltage is determined by the 6-bit digital input data and the 6 γ correction reference voltage.

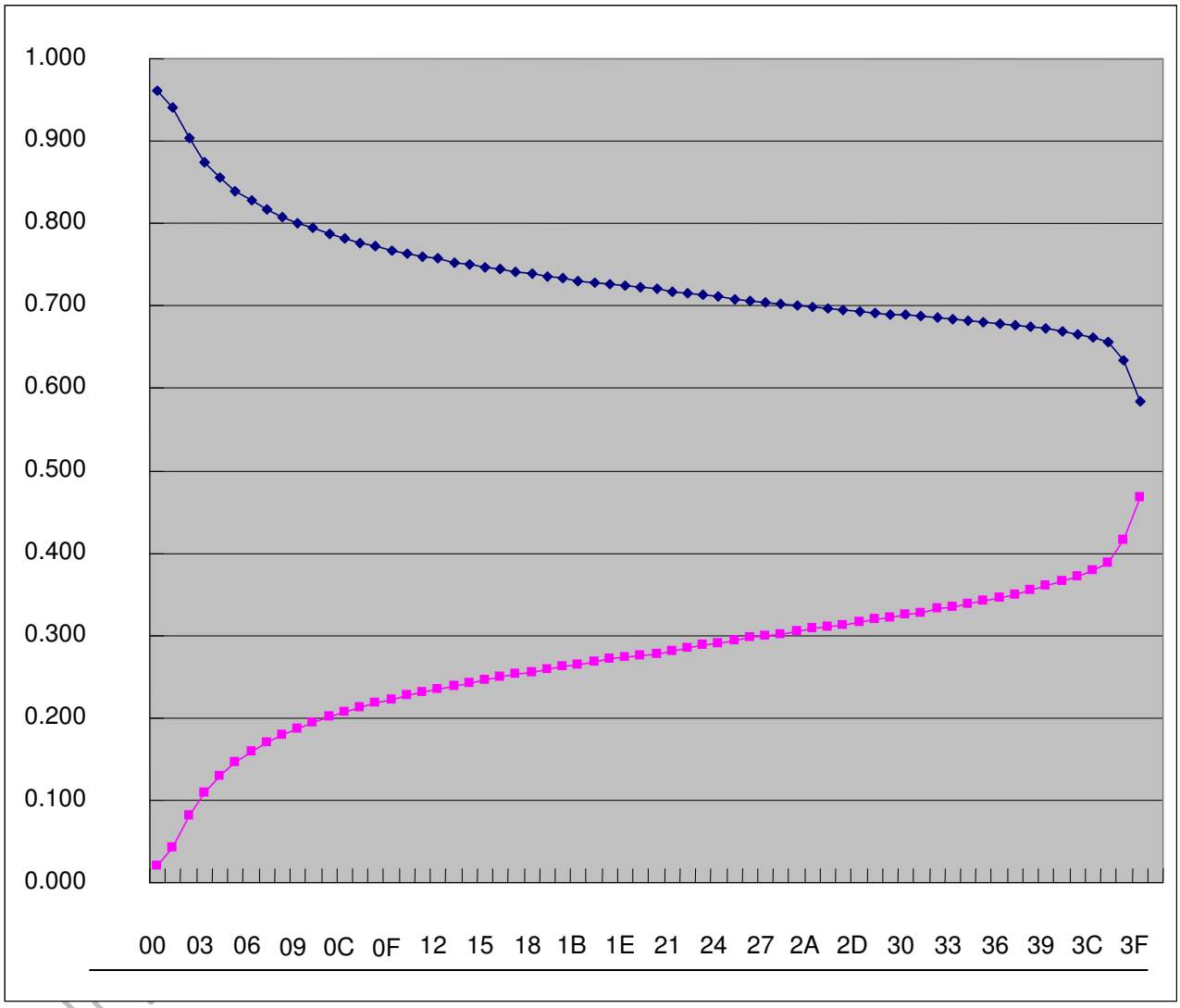


Figure 6.1: Gamma Curve

The actual output voltages for all 64 input data at positive and negative polarity is as shown on the following page.

6.2 Positive Polarity and Negative Polarity

AVDD=11V

V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	Unit
10.72	10.558	8.828	8.231	7.902	7.366	6.42	5.42	4.466	3.602	3.077	2.323	0.3	0.12	V

Note: Gamma Table very for each customer.

Positive Polarity

Gray Level	Positive Polarity			Gray Level	Positive Polarity		
00	AVDD	X	0.975	20	AVDD	X	0.748
01	AVDD	X	0.960	21	AVDD	X	0.746
02	AVDD	X	0.926	22	AVDD	X	0.744
03	AVDD	X	0.900	23	AVDD	X	0.741
04	AVDD	X	0.883	24	AVDD	X	0.739
05	AVDD	X	0.868	25	AVDD	X	0.735
06	AVDD	X	0.858	26	AVDD	X	0.734
07	AVDD	X	0.848	27	AVDD	X	0.733
08	AVDD	X	0.840	28	AVDD	X	0.731
09	AVDD	X	0.834	29	AVDD	X	0.729
0A	AVDD	X	0.828	2A	AVDD	X	0.728
0B	AVDD	X	0.823	2B	AVDD	X	0.725
0C	AVDD	X	0.818	2C	AVDD	X	0.724
0D	AVDD	X	0.813	2D	AVDD	X	0.723
0E	AVDD	X	0.809	2E	AVDD	X	0.721
0F	AVDD	X	0.806	2F	AVDD	X	0.719
10	AVDD	X	0.803	30	AVDD	X	0.718
11	AVDD	X	0.797	31	AVDD	X	0.717
12	AVDD	X	0.794	32	AVDD	X	0.715
13	AVDD	X	0.788	33	AVDD	X	0.713
14	AVDD	X	0.785	34	AVDD	X	0.710
15	AVDD	X	0.781	35	AVDD	X	0.708
16	AVDD	X	0.777	36	AVDD	X	0.706
17	AVDD	X	0.774	37	AVDD	X	0.705
18	AVDD	X	0.771	38	AVDD	X	0.702
19	AVDD	X	0.767	39	AVDD	X	0.699
1A	AVDD	X	0.763	3A	AVDD	X	0.695
1B	AVDD	X	0.761	3B	AVDD	X	0.692
1C	AVDD	X	0.758	3C	AVDD	X	0.689
1D	AVDD	X	0.755	3D	AVDD	X	0.683
1E	AVDD	X	0.753	3E	AVDD	X	0.670
1F	AVDD	X	0.751	3F	AVDD	X	0.584

Table 6.1: Positive Polarity

Negative Polarity

Gray Level	Negative Polarity			Gray Level	Negative Polarity		
00	AVDD	X	0.011	20	AVDD	X	0.280
01	AVDD	X	0.027	21	AVDD	X	0.283
02	AVDD	X	0.067	22	AVDD	X	0.286
03	AVDD	X	0.095	23	AVDD	X	0.290
04	AVDD	X	0.114	24	AVDD	X	0.293
05	AVDD	X	0.131	25	AVDD	X	0.297
06	AVDD	X	0.143	26	AVDD	X	0.300
07	AVDD	X	0.155	27	AVDD	X	0.302
08	AVDD	X	0.164	28	AVDD	X	0.305
09	AVDD	X	0.171	29	AVDD	X	0.308
0A	AVDD	X	0.179	2A	AVDD	X	0.312
0B	AVDD	X	0.185	2B	AVDD	X	0.314
0C	AVDD	X	0.192	2C	AVDD	X	0.318
0D	AVDD	X	0.197	2D	AVDD	X	0.320
0E	AVDD	X	0.203	2E	AVDD	X	0.323
0F	AVDD	X	0.207	2F	AVDD	X	0.326
10	AVDD	X	0.211	30	AVDD	X	0.327
11	AVDD	X	0.217	31	AVDD	X	0.331
12	AVDD	X	0.222	32	AVDD	X	0.334
13	AVDD	X	0.228	33	AVDD	X	0.338
14	AVDD	X	0.233	34	AVDD	X	0.341
15	AVDD	X	0.237	35	AVDD	X	0.345
16	AVDD	X	0.242	36	AVDD	X	0.350
17	AVDD	X	0.246	37	AVDD	X	0.354
18	AVDD	X	0.250	38	AVDD	X	0.358
19	AVDD	X	0.254	39	AVDD	X	0.363
1A	AVDD	X	0.259	3A	AVDD	X	0.368
1B	AVDD	X	0.262	3B	AVDD	X	0.373
1C	AVDD	X	0.267	3C	AVDD	X	0.381
1D	AVDD	X	0.270	3D	AVDD	X	0.389
1E	AVDD	X	0.273	3E	AVDD	X	0.406
1F	AVDD	X	0.276	3F	AVDD	X	0.493

Table 6.2: Negative Polarity

7. 3-wire Serial Peripheral Interface (SPI)

7.1 SPI Format

The HX8282-A supports the 3-pin serial peripheral interface (SPI) to set internal register. The data is written to the register of assigned address when “End of transfer” is detected after the 16th SCL rising cycles.
Data is not accepted if there are less or more than 16 cycles for one transaction. Only when SCL is input 16 times and CSB is in the "Low" period simultaneously, SDA is accepted. It needs DCLK input for SDA setting.

The first 6 bits (A5 ~ A0) specify the address of the register. The 7th bit means Read/Write command. “0” is WRITE. “1” is READ. The 8th bit means “Don’t care or Hi-Z“. It is “Don’t care” in write format, and “Hi-Z” in read format. And the last 8 bits are for Data setting (D7 ~D0). The address and data are transferred from the MSB to LSB sequentially. And next cycle is turn-round cycle.

Setting of all the SPI will take effect at the coming falling edge of VSD except GRB and STB bit.

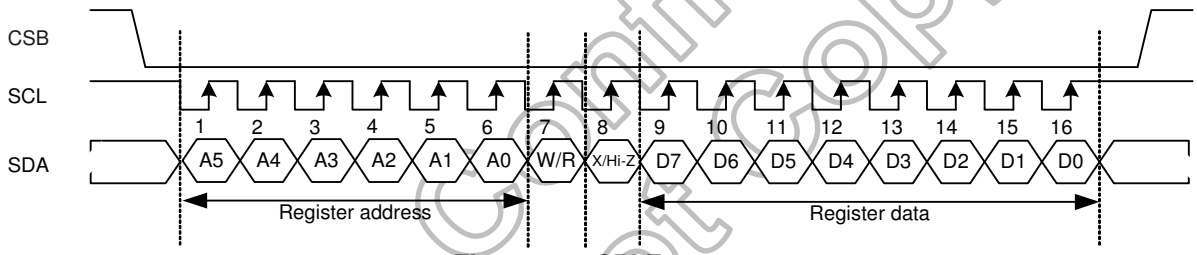


Figure 7.1: SPI Format

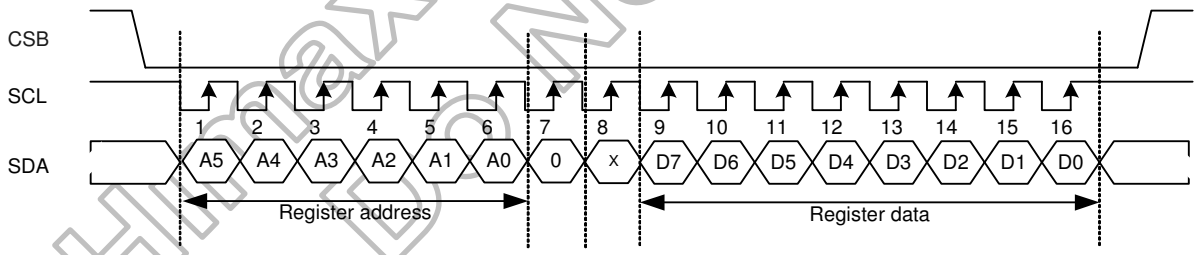


Figure 7.2: Write Format

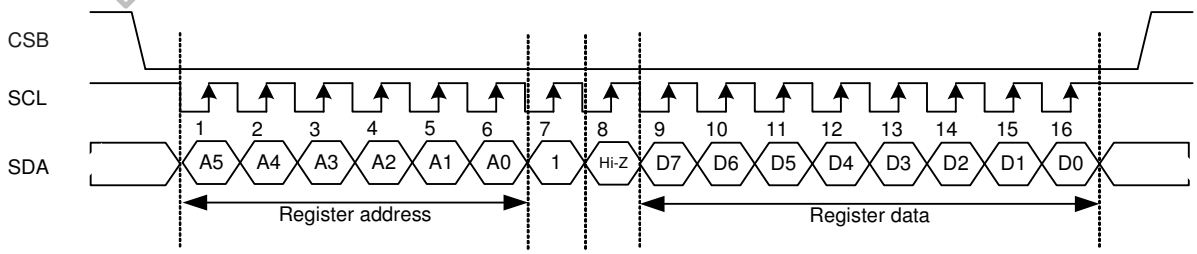


Figure 7.3: Read Format

7.2 SPI Register List

		A5	A4	A3	A2	A1	A0	W/R	X/Hi-z	D7	D6	D5	D4	D3	D2	D1	D0
R00	Function control 1	0	0	0	0	0	0	0	X	PWR_EN	-	LR	UD	STB	GRB	CLKPOL	MODE
										0	-	1	0	1	1	0	1
R01	Function control 2	0	0	0	0	0	1	0	X	CABC1	CABC0	HFRC	DIT	BIST	RESL1	RESL0	RESL2
										0	0	0	0	0	0	0	0

Table 7.1: Register Map

7.3 Function control 1 (R00h)

Bit	Name	Function	Description
D7	PWR_EN	POWER enable	0: Disable PWM, Charge pump and VCOM buffer.(Default) 1: Enable PWM, Charge pump and VCOM buffer.
D6	-	-	-
D5	LR	Right/left shift control	0: Left to Right 1: Right to left. (Default)
D4	UD	Up/down scan control	0: Normal (default) 1: Up/down reverse
D3	STB	Standby mode control	0: Standby mode=Stop all circuits except SPI. 1: Normal mode. (Default)
D2	GRB	Global reset	0: Reset mode, all SPI registers return to default values. 1: Normal mode. (Default)
D1	CLKPOL	DCLK polarity change	0: Rising edge latch data. 1: Falling edge latch data. (Default)
D0	MODE	DE/SYNC mode	0: SYNC mode. 1: DE mode. (Default)

Table 7.2: Function control 1 register

7.4 Function control 2 (R01h)

<table>
<tr><th>Bit</th><th>Name</th><th>Function</th><th>Description</th></tr>
<tr><td>D7
D6</td><td>CABC</td><td>CABC operation mode</td><td>
<table>
<tr><th colspan="2">CABC</th><th rowspan="2">CABC State</th></tr>
<tr><th>D7</th><th>D6</th></tr>
<tr><td>0</td><td>0</td><td>CABC off (default)</td></tr>
<tr><td>0</td><td>1</td><td>UI mode</td></tr>
<tr><td>1</td><td>0</td><td>Still mode</td></tr>
<tr><td>1</td><td>1</td><td>Moving mode</td></tr>
</table>
</td></tr>
<tr><td>D5</td><td>HFRC</td><td>HFRC selection</td><td>0: FRC enable. (Default)
1: HFRC enable.
If DIT=”0”,disable dither(HFRC and FRC disable)</td></tr>
<tr><td>D4</td><td>DIT</td><td>Dithering function on/off</td><td>0: Dithering function disable. (Default)
1: Dithering function enable.</td></tr>
<tr><td>D3</td><td>BIST</td><td>Normal Operation or BIST pattern select</td><td>0: Normal Operation. (Default)
1: BIST pattern.</td></tr>
<tr><td>D2
D1
D0</td><td>RESL</td><td>Display resolution selection</td><td>
<table>
<tr><th colspan="3">RES</th><th rowspan="2">Resolution</th><th rowspan="2">Note</th></tr>
<tr><th>D2</th><th>D1</th><th>D0</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>1024(RGB)x600</td><td>Default</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>1024(RGB)x768</td><td></td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>800 (RGB)x600</td><td>601~936 channel disable</td></tr>
<tr><td>1</td><td>1</td><td>0</td><td>800 (RGB)x480</td><td>601~936 channel disable</td></tr>
<tr><td>x</td><td>x</td><td>1</td><td>960 (RGB)x540</td><td></td></tr>
</table>
</td></tr>
</table>

Table 7.3: Function control 2 register

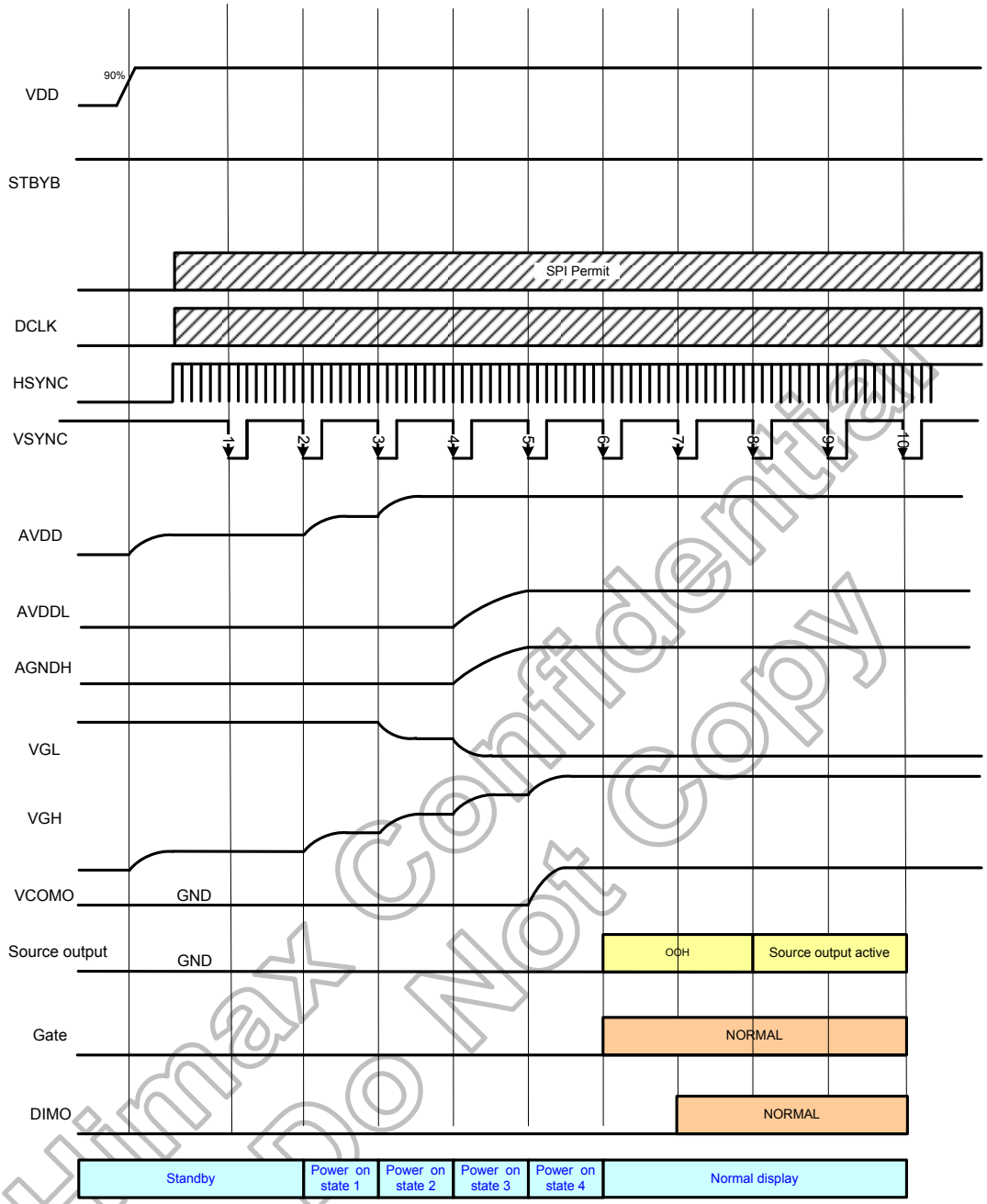
8. Power on/off Sequence

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

Power ON: VDD, GND → AVDD, AGND → V1 to V14
Power OFF: V1 to V14 → AVDD, AGND→ VDD, GND

8.1 Power on/off control

HX8282-A has a power on/off sequence control function. In order to prevent IC from power on reset fail, the rising time (T_{POR}) of the digital power supply VDD should be maintained within the given specifications. Please refer to "AC Characteristics" for more detail on timing.



Note: Low level = 3FH, when NBW=L (Normally white)
Low level = 00H, when NBW=H (Normally black)

Figure 8.1: Power on/off Timing Sequence

8.2 Enter and exit standby mode sequence

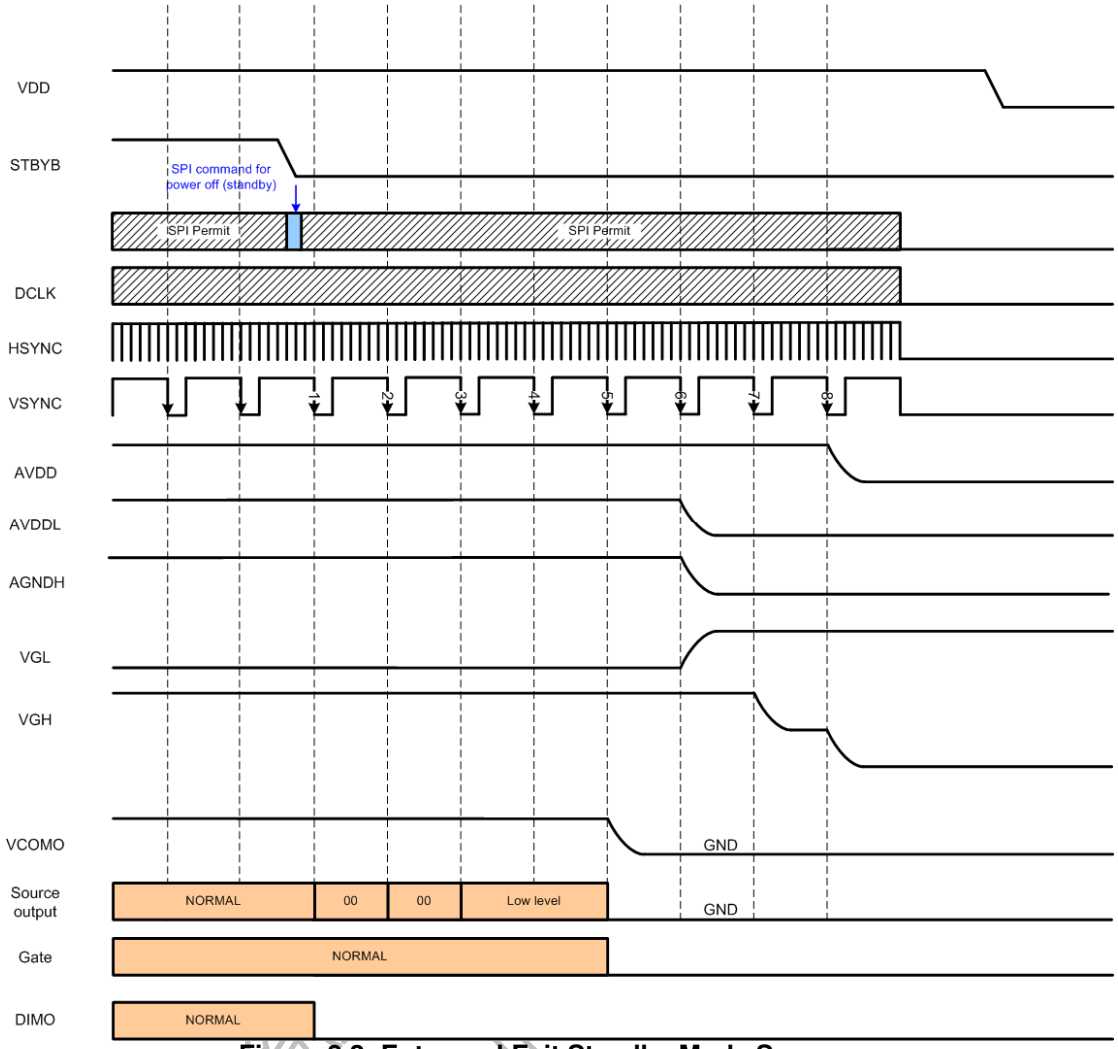


Figure 8.2: Enter and Exit Standby Mode Sequence

9. DC Characteristics

9.1 Absolute Maximum Rating (GND=AGND=0V)

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Power supply voltage 1	VDD	-0.5	-	+5.0	V
Power supply voltage 2	AVDD	-0.5	-	+15	V
Logic Output Voltage	V_{OUT}	-0.5	-	+5.0	V
Input voltage	Vin	-0.5	-	AVDD+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 GND=0V.
(2) Device is subject to be damaged permanently if stresses beyond those absolute maximum ratings listed above.

Table 9.1: Absolute Maximum Rating

9.2 DC Electrical Characteristics

9.2.1 TTL Mode DC Electrical Characteristics

(VDD=2.3~3.6V, AVDD=8~13.5V, GND=AGND=0V, TA=20℃~+85℃)

Parameter	Symbol	Spec.			Unit	Condition
		Min.	Typ.	Max.		
Power supply voltage	VDD	2.3	-	3.6	V	-
Power supply voltage	AVDD	8	-	13.5	V	-
Power supply voltage	AVDDL	8	-	13.5	V	Full range application
		4	-	6.75	V	Half AVDD application
Power supply voltage	AGNDH		0		V	Full range application
		4	-	6.75	V	Half AVDD application
Low level input voltage	V_{IL}	0	-	0.3VDD	V	For digital circuit
High level input voltage	V_{IH}	0.7VDD	-	VDD	V	For digital circuit
Output low voltage	V_{OL}	-	-	GND+0.4	V	I_{OL}=400μA
Output high voltage	V_{OH}	VDD-0.4	-	-	V	I_{OH}=-400μA
Pull low/high resistance	R_i	200	250	300	kΩ	For the digital input pin @VDD=3.3V
Input leakage current	Ii	-	-	±1	uA	For digital circuit
Digital Operation current	Idd	-	(TBD)	(TBD)	mA	Dual gate mode or Cascade mode slave, Fclk=50MHz, LD=48KHz, VDD=3.3V, No load
		-	(TBD)	(TBD)	mA	Cascade mode master, Fclk=50MHz, LD=48KHz,VDD=3.3V, No load
Digital stand-by current	Ist1	-	10	50	μA	Clock & all functions are stopped
Analog Operating current	Idda	-	(TBD)	(TBD)	mA	No load, Fclk=50MHz,FLD=48KHz @ AVDD=10V, V1=8V, V14=0.4V
Analog Stand-by current	Ist2	-	10	50	μA	No load, clock & all functions are stopped
Input level of V1~V7	Vref1	0.4AVDD	-	AVDD-1	V	Gamma correction voltage input
Input level of V8~V14	Vref2	0.1	-	0.6AVDD	V	Gamma correction voltage input
Output Voltage deviation	Vod1	-	±20	±35	mV	Vo=AGND+0.1V~AGND+0.5V & Vo=AVDD-0.5V~AVDD-0.1V
Output Voltage deviation	Vod2	-	±15	±20	mV	Vo=AGND+0.5V~AVDD-0.5V
Output Voltage Offset between Chips	Voc	-	-	±20	mV	Vo=AGND+0.5V~AVDD-0.5V
Dynamic Range of Output	Vdr	0.1	-	AVDD-0.1	V	SO1~SO1200
Sinking Current of Outputs	IOLy	80	-	-	μA	SO1~SO1200; Vo=0.1V vs. 1.0V, AVDD=13.5V
Driving Current of Outputs	IOHy	80	-	-	μA	SO1~SO1200 ;Vo=0.1V vs. 12.5V, AVDD=13.5V
Resistance of Gamma Table	Rg	0.7*Rn	1.0*Rn	1.3*Rn	Ω	Rn: Internal gamma resistor

Table 9.2: DC Electrical Characteristics

9.2.2 LVDS Mode DC Electrical Characteristics

Parameter	Symbol	Spec.			Unit	Condition
		Min.	Typ.	Max.		
Differential input high Threshold voltage	R_{XVTH}	-	-	+0.1	V	R_{XVCM} =1.2V
Differential input low threshold voltage	R_{XVTL}	-0.1	-	-	V	
Input voltage range (singled-end)	R_{XVIN}	0	-	VDD-1.2+ $\|V_{ID}\|/2$	V	-
Differential input common Mode voltage	R_{XVCM}	$\|V_{ID}\|/2$	-	VDD-1.2	V	-
Differential input voltage	$\| V_{ID} \|$	0.2	-	0.6	V	-
Differential input leakage Current	RV_{Xliz}	-10	-	+10	µA	-
LVDS Digital Operating Current	Iddlvds	-	15(TBD)	30(TBD)	mA	Fclk=65MHz, VDD=3.3V
LVDS Digital Stand-by Current	Istlvds	-	10(TBD)	50(TBD)	µA	Clock & all Functions are stopped

Table 9.3: LVDS Mode DC Electrical Characteristics

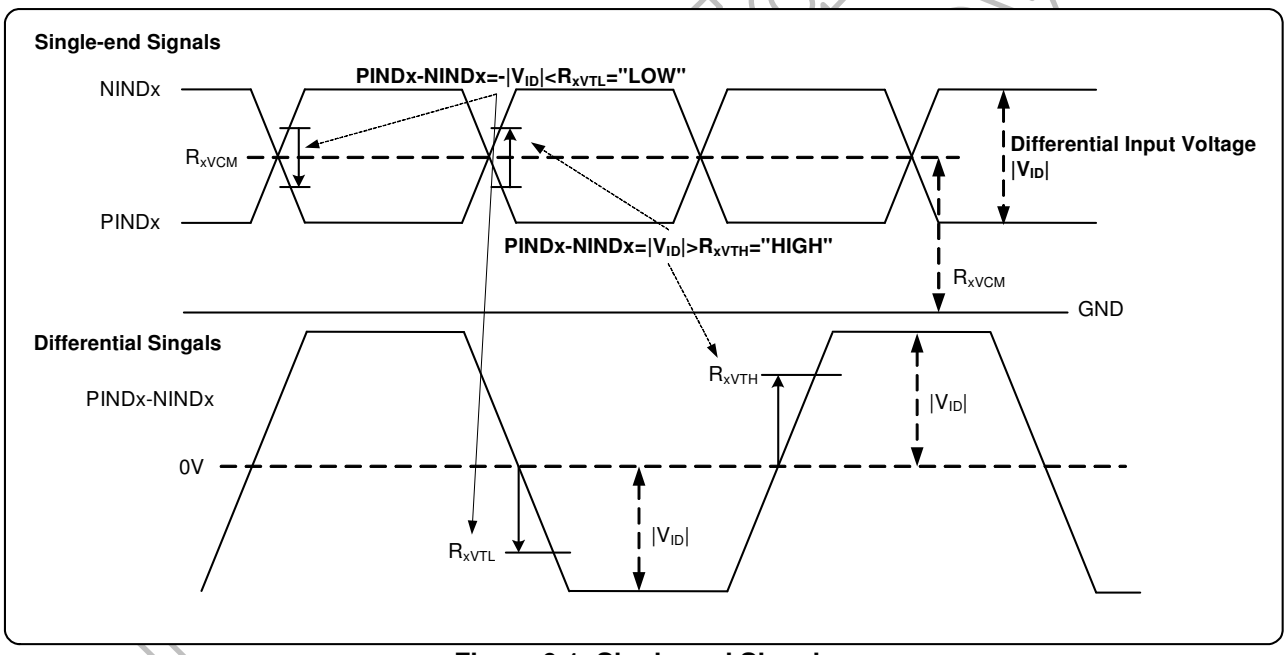


Figure 9.1: Single-end Signals

Parameter	Symbol	Spec.			Unit	Condition
		Min.	Typ.	Max.		
Base drive current for PWM	IDRV	-	-	60	mA	R_{XVCM} =1.2V
DRV output voltage for PWM	VDRV	0	-	VDD	V	
Feed back voltage for PWM	VFB	0.55	0.6	0.65	V	-
Duty cycle maximum	Dmax	-	-	85	%	-
VCOM buffer input voltage	VCOMI	1	-	AVDD	V	-
VCOM buffer output voltage	VCOMO	VCOMI-0.2	VCOMI	VCOMI+0.2	V	-
VCOM buffer output current	IVCOM	-	-	10	mA	Fclk=65MHz, VDD=3.3V

Table 9.4: Power table

9.3 Half Voltage

Half-voltage source driver can save 50% current by reducing DC current path

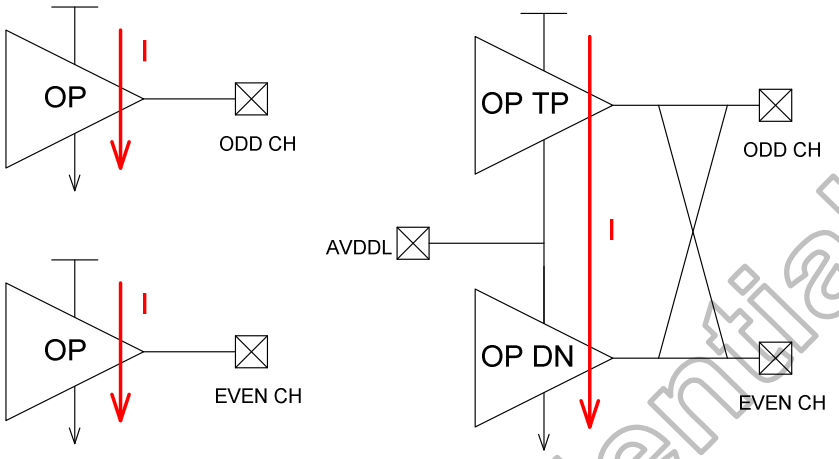
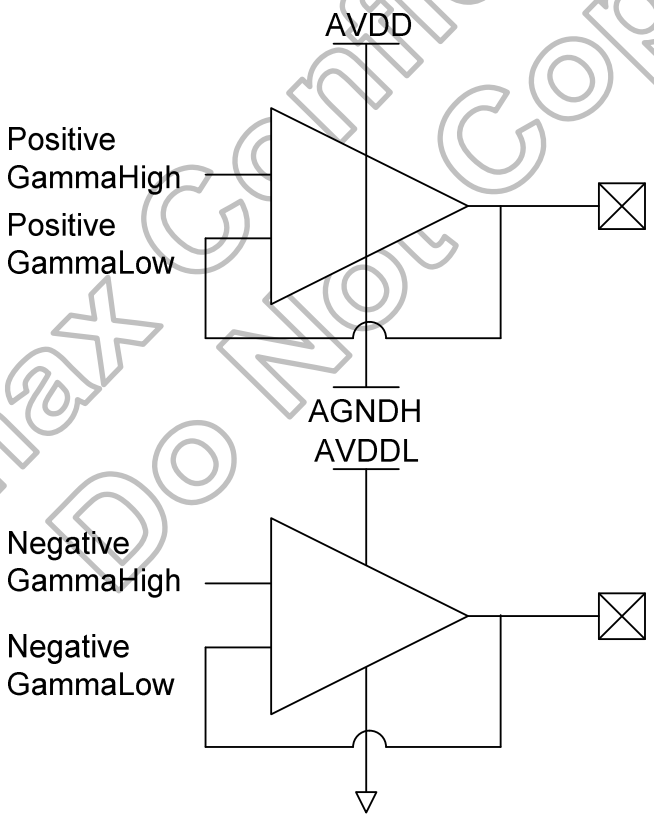


Figure 9.2: Traditional SD and Half-voltage SD



Note: (1) AGNDH: Connected to AGND when Full Range application
Connected to Half AVDD when Half AVDD application
(2) AVDDL: Connected to AVDD when Full Range application
Connected to Half AVDD when Half AVDD application
(3) Positive Gamma High > AGNDH+0.1
(4) Negative Gamma High < AVDDL-0.1

Figure 9.3: Half-voltage SD and Gamma voltage relation

10. AC Characteristics

10.1 AC Electrical Characteristics

10.1.1 TTL Mode AC Electrical Characteristics

Parameter	Symbol	Spec.			Unit	Condition
		Min.	Typ.	Max.		
VDD Power On Slew rate	T_{POR}	-	-	20	ms	From 0V to 90% VDD
RSTB pulse width	T_{Rst}	50	-	-	µs	DCLK=65MHz
DCLK cycle time	T_{cph}	14	-	-	ns	-
DCLK pulse duty	T_{cwh}	40	50	60	%	-
VSD setup time	T_{vst}	5	-	-	ns	-
VSD hold time	T_{vhd}	5	-	-	ns	-
HSD setup time	T_{hst}	5	-	-	ns	-
HSD hold time	T_{hhd}	5	-	-	ns	-
Data set-up time	T_{dsu}	5	-	-	ns	D0[7:0], D1[7:0], D2[7:0] to DCLK
Data hold time	T_{dhd}	5	-	-	ns	D0[7:0], D1[7:0], D2[7:0] to DCLK
DE setup time	T_{esu}	5	-	-	ns	
DE hold time	T_{ehd}	5	-	-	ns	-
Output stable time	T_{sst}	-	-	6	µs	10% to 90% target voltage. CL=90pF, R=10K ohm(Cascade)
				3		Dual gate

Table 10.1: TTL Mode AC Electrical Characteristics

10.1.2 LVDS Mode AC Electrical Characteristics

Parameter	Symbol	Spec.			Unit	Condition
		Min.	Typ.	Max.		
Clock frequency	R_{XFCLK}	20	-	71	MHz	-
Input data skew margin	T_{RSKM}	500	-	-	pS	$\lvert V_{ID} \rvert$=400mV R_{XVCM}=1.2V R_{XFCLK}=71MHz
Clock high time	T_{LVCH}	-	4/(7* R_{XFCLK})	-	ns	-
Clock low time	T_{LVCL}	-	3/(7* R_{XFCLK})	-	ns	-
PLL wake-up time	T_{emPLL}	-	-	150	µs	-

Table 10.2: LVDS Mode AC Electrical Characteristics

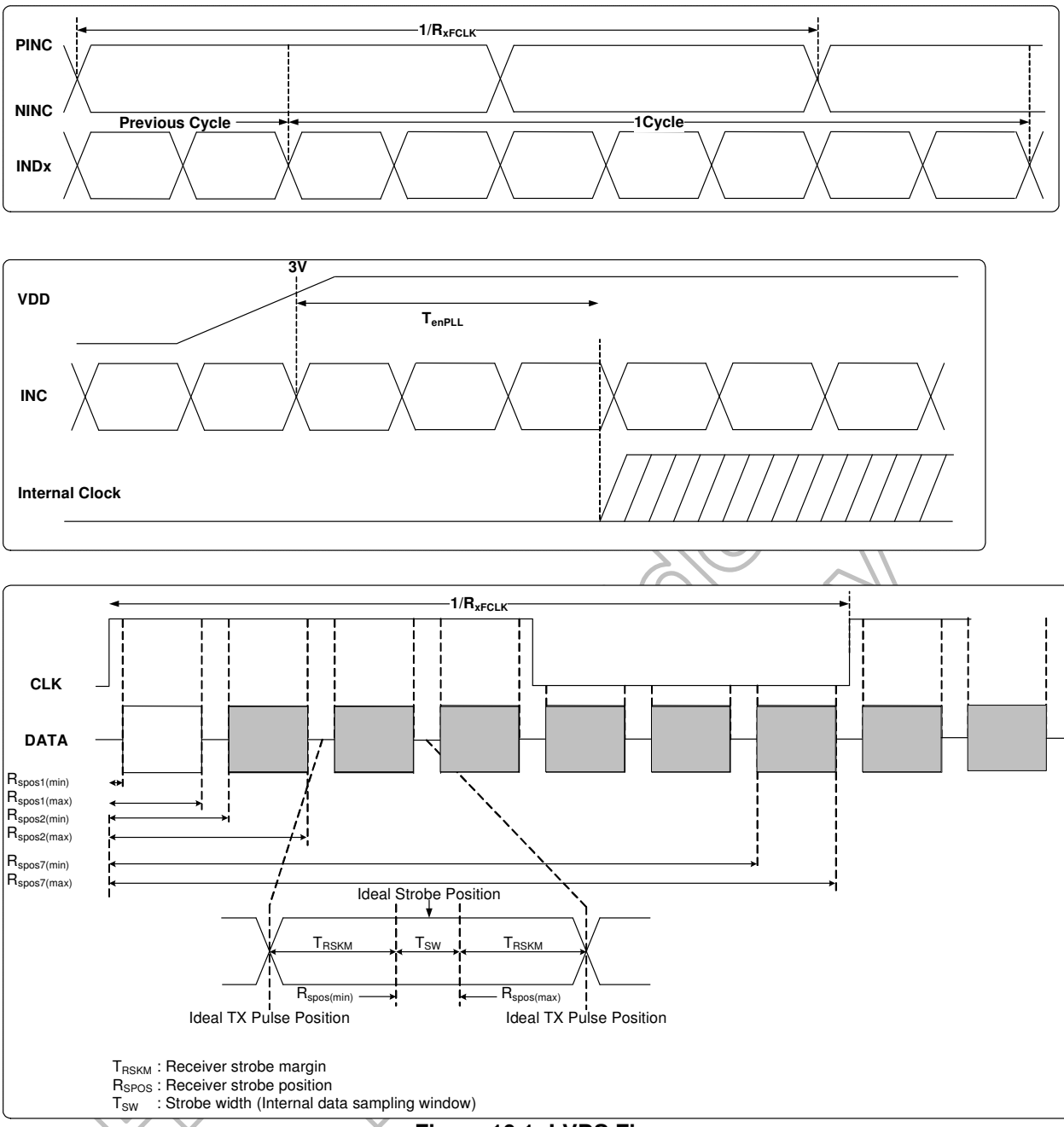


Figure 10.1: LVDS Figure

Parameter	Symbol	Spec.			Unit	Condition
		Min.	Typ.	Max.		
Modulation Frequency	SSC_{MF}	23	-	93	KHz	-
Modulation Rate	SSC_{MR}	-	-	±3	%	LVDS clock =71MHz center spread

Table 10.3: SSC Table

10.2 Data Input Format

10.2.1 TTL Mode Data Input Format

Vertical Timing

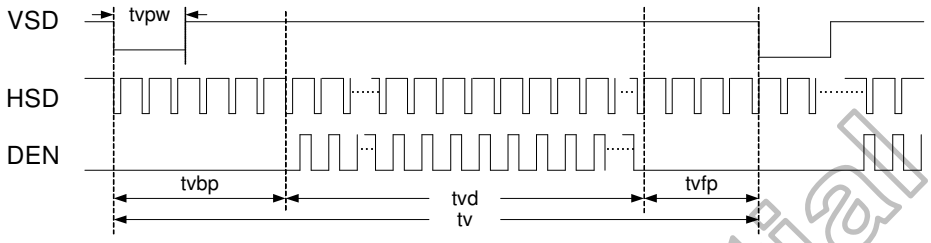


Figure 10.2: Vertical Input Timing Diagram

Horizontal Timing

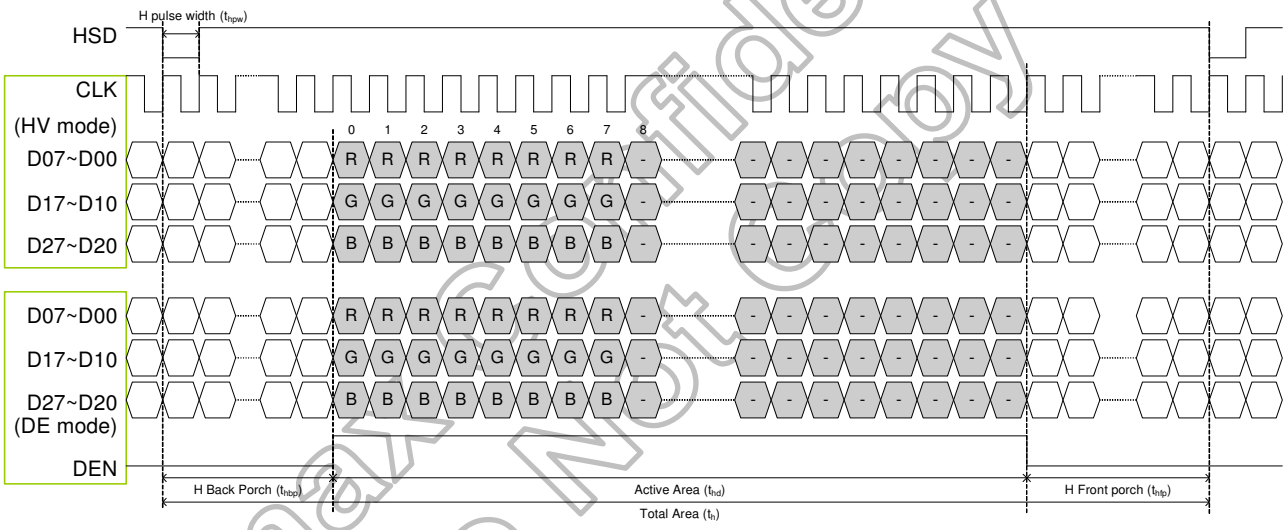


Figure 10.3: Horizontal Input Timing Diagram

10.2.2 LVDS Mode Data Input Format

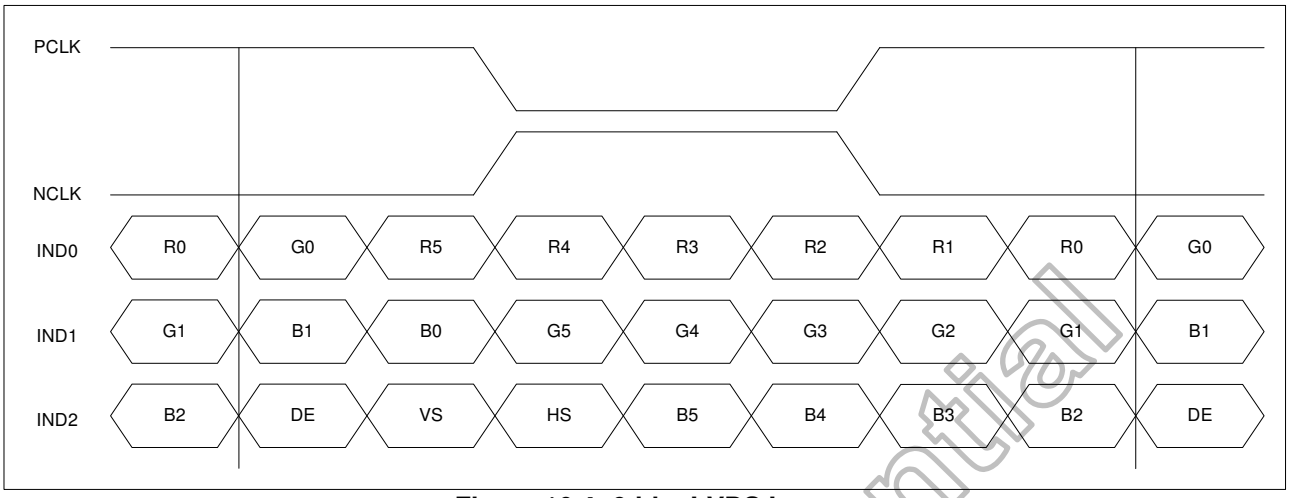


Figure 10.4: 6-bits LVDS Input

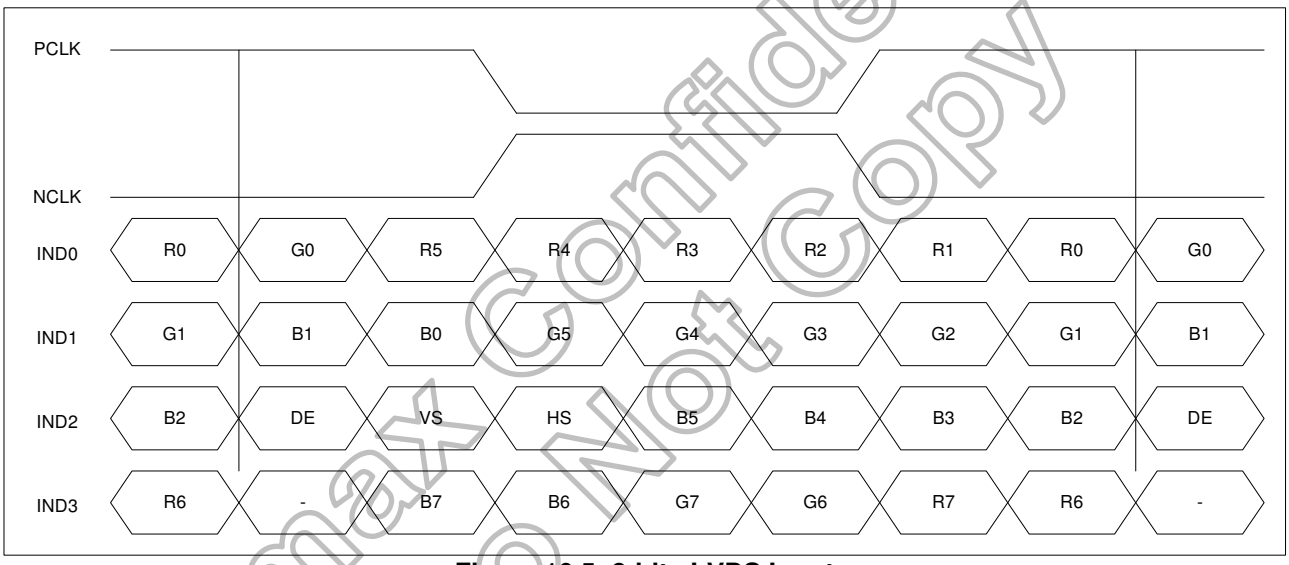


Figure 10.5: 8-bits LVDS Input

10.3 Parallel RGB input timing table

10.3.1 Resolution：1024x600

- **DE mode**

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DCLK Frequency	fclk	40.8	51.2	67.2	MHz
Horizontal Display Area	thd		1024		DCLK
HS Period	th	1114	1344	1400	DCLK
HS Blanking	thb+ thfp	90	320	376	DCLK
Vertical Display Area	tvd		600		T_H
VS Period	tvbp	610	635	800	T_H
VS Blanking	tvbp+ tvfp	10	35	200	T_H

Table 10.4: DE Mode (1024x600)

- **HV mode**

Horizontal Timing

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DCLK Frequency	fclk	44.9	51.2	63	MHz
Horizontal Display Area	thd		1024		DCLK
HS Period	th	1200	1344	1400	DCLK
HS Pulse Width	thpw	1	-	140	DCLK
HS Back Porch	thbp		160		DCLK
HS Front Porch	thfp	16	160	216	DCLK

Table 10.5: HV Mode Horizontal Timing (1024x600)

Vertical Timing

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Vertical Display Area	tvd		600		T_H
VS Period	tv	624	635	750	T_H
VS Pulse Width	tvpw	1	-	20	T_H
VS Back Porch	tvbp		23		T_H
VS Front Porch	tvfp	1	12	127	T_H

Table 10.6: HV Mode Vertical Timing (1024x600)

10.3.2 Resolution：1024x768

- **DE mode**

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DCLK Frequency	fclk	52	65	71	MHz
Horizontal Display Area	thd		1024		DCLK
HS Period	th	1114	1344	1400	DCLK
HS Blanking	thb+ thfp	90	320	376	DCLK
Vertical Display Area	tvd		768		T_H
VS Period	tv	778	806	845	T_H
VS Blanking	tvbp+ tvfp	10	38	77	T_H

Table 10.7: DE Mode (1024x768)

- **HV mode**

Horizontal Timing

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DCLK Frequency	fclk	57	65	70.5	MHz
Horizontal Display Area	thd		1024		DCLK
HS Period	th	1200	1344	1400	DCLK
HS Pulse Width	thpw	1	-	140	DCLK
HS Back Porch	thbp		160		DCLK
HS Front Porch	thfp	16	160	216	DCLK

Table 10.8: HV Mode Horizontal Timing (1024x768)

Vertical Timing

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Vertical Display Area	tvd		768		T_H
VS Period	tv	792	806	840	T_H
VS Pulse Width	tvpw	1	-	20	T_H
VS Back Porch	tvbp		23		T_H
VS Front Porch	tvfp	1	15	49	T_H

Table 10.9: HV Mode Vertical Timing (1024x768)

10.3.3 Resolution：800x600

- **DE mode**

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DCLK Frequency	fclk	32.6	39.6	62.4	MHz
Horizontal Display Area	thd		800		DCLK
HS Period	th	890	1000	1300	DCLK
HS Blanking	thb+ thfp	90	200	500	DCLK
Vertical Display Area	tvd		600		T_H
VS Period	tv	610	660	800	T_H
VS Blanking	tvbp+ tvfp	10	60	200	T_H

Table 10.10: DE Mode (800x600)

- **HV mode**

Horizontal Timing

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DCLK Frequency	fclk	34.5	39.6	50.4	MHz
Horizontal Display Area	thd		800		DCLK
HS Period	th	900	1000	1200	DCLK
HS Pulse Width	thpw	1	-	40	DCLK
HS Back Porch	thbp		88		DCLK
HS Front Porch	thfp	12	112	312	DCLK

Table 10.11: HV Mode Horizontal Timing (800x600)

Vertical Timing

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Vertical Display Area	tvd		600		T_H
VS Period	tv	640	660	700	T_H
VS Pulse Width	tvpw	1	-	20	T_H
VS Back Porch	tvbp		39		T_H
VS Front Porch	tvfp	1	21	61	T_H

Table 10.12: HV Mode Vertical Timing (800x600)

10.3.4 Resolution：800 x480

- **DE mode**

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DCLK Frequency	fclk	26.2	29.2	54.6	MHz
Horizontal Display Area	thd		800		DCLK
HS Period	th	890	928	1300	DCLK
HS Blanking	thb+ thfp	90	128	500	DCLK
Vertical Display Area	tvd		480		T_H
VS Period	tv	490	525	700	T_H
VS Blanking	tvbp+ tvfp	10	45	220	T_H

Table 10.13: DE Mode (800x480)

- **HV mode**

Horizontal timing

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DCLK Frequency	fclk	27.7	29.2	39.6	MHz
Horizontal Display Area	thd		800		DCLK
HS Period	th	900	928	1100	DCLK
HS Pulse Width	thpw	1	-	40	DCLK
HS Back Porch	thbp		88		DCLK
HS Front Porch	thfp	12	40	212	DCLK

Table 10.14: HV Mode Horizontal Timing (800x480)

Vertical timing

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Vertical Display Area	tvd		480		T_H
VS Period	tv	513	525	600	T_H
VS Pulse Width	tvpw	1	-	3	T_H
VS Back Porch	tvbp		32		T_H
VS Front Porch	tvfp	1	13	88	T_H

Table 10.15: HV Mode Vertical Timing (800x480)

10.3.5 Resolution：960 x540

- **DE mode**

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DCLK Frequency	fclk	36.4	38.6	43.2	MHz
Horizontal Display Area	thd		960		DCLK
HS Period	th	1060	1100	1200	DCLK
HS Blanking	thb+ thfp	100	140	240	DCLK
Vertical Display Area	tvd		540		T_H
VS Period	tv	573	585	600	T_H
VS Blanking	tvbp+ tvfp	33	45	60	T_H

Table 10.16: DE Mode (960x540)

- **HV mode**

Horizontal timing

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DCLK Frequency	fclk	36.4	38.6	43.2	MHz
Horizontal Display Area	thd		960		DCLK
HS Period	th	1060	1100	1200	DCLK
HS Pulse Width	thpw	1	-	20	DCLK
HS Back Porch	thbp		88		DCLK
HS Front Porch	thfp	12	52	152	DCLK

Table 10.17: HV Mode Horizontal Timing (960x540)

Vertical timing

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Vertical Display Area	tvd		540		T_H
VS Period	tv	573	585	600	T_H
VS Pulse Width	tvpw	1	-	3	T_H
VS Back Porch	tvbp		32		T_H
VS Front Porch	tvfp	1	13	28	T_H

Table 10.18: HV Mode Vertical Timing (960x540)

11. Timing

11.1 Output Timing Table

Parallel 24-bit RGB mode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
CLKIN Frequency	Fclk	-	65	71	MHz	VDD=3.0V~3.6V
CLKIN Cycle Time	Tclk	14.1	15.4	-	ns	-
CLKIN Pulse Duty	Tcwh	40	50	60	%	Tclk
Time from HSD to Source Output	Thso		64		CLKIN	-
Time from HSD to LD	Thld		64		CLKIN	-
Time from HSD to STV	Thstv		2		CLKIN	-
Time from HSD to CKV	Thckv		20		CLKIN	-
Time from HSD to OEV	Thoev		4		CLKIN	-
LD Pulse Width	Twld		10		CLKIN	-
CKV Pulse Width	Twckv		66		CLKIN	-
OEV Pulse Width	Twoev		74		CLKIN	-

Table 11.1: Parallel 24-bit RGB mode

11.2 Timing Diagram

11.2.1 Input Clock and Data Timing Diagram

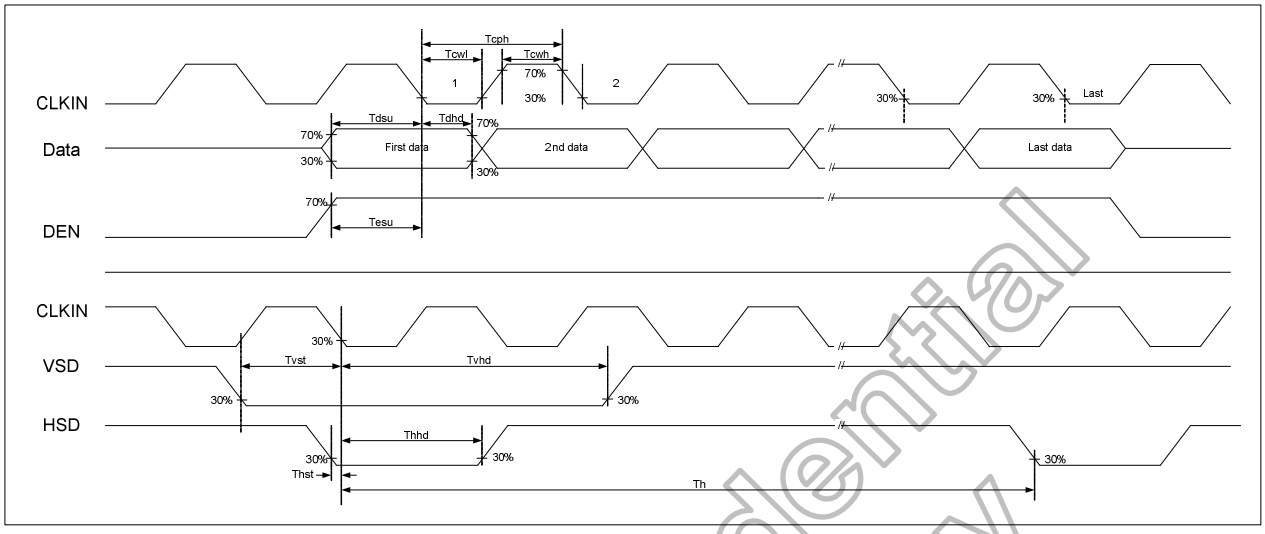


Figure 11.1: Input Clock and Data Timing Diagram

11.2.2 Source Output Timing Diagram (Cascade)

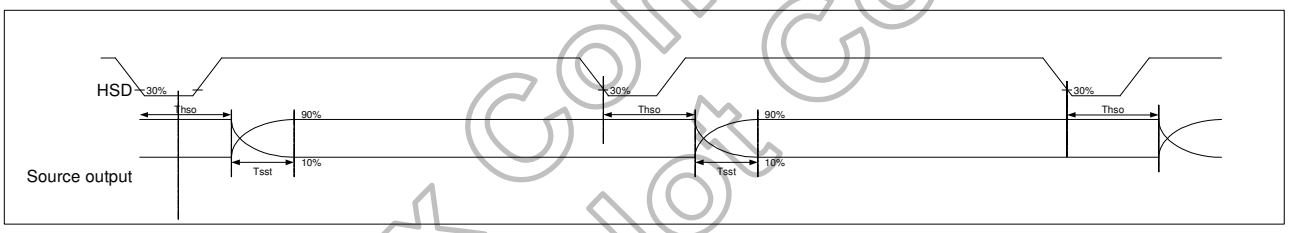


Figure 11.2: Source Output Timing Diagram

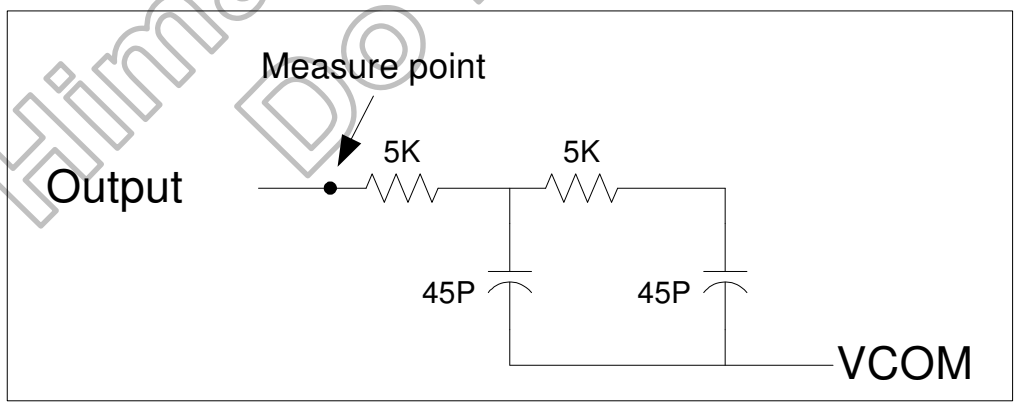


Figure 11.3: Output Load Condition

11.2.3 Vertical Timing Diagram HV (Cascade)

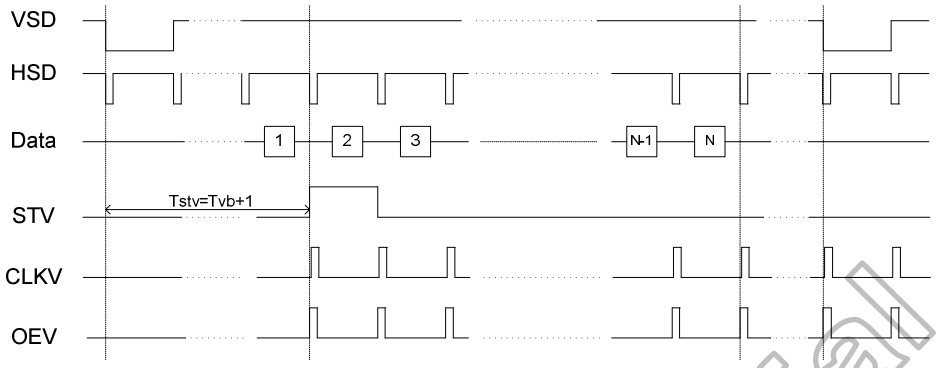


Figure 11.4: Vertical Timing Diagram HV (Cascade)

11.2.4 Vertical Timing Diagram DE (Cascade)

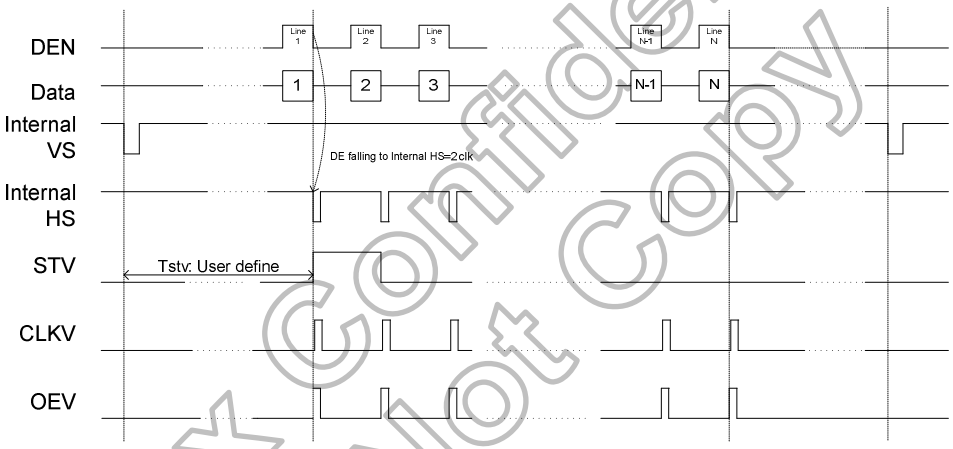


Figure 11.5: Vertical Timing Diagram DE (Cascade)

11.2.5 Gate Output Timing Diagram (Cascade)

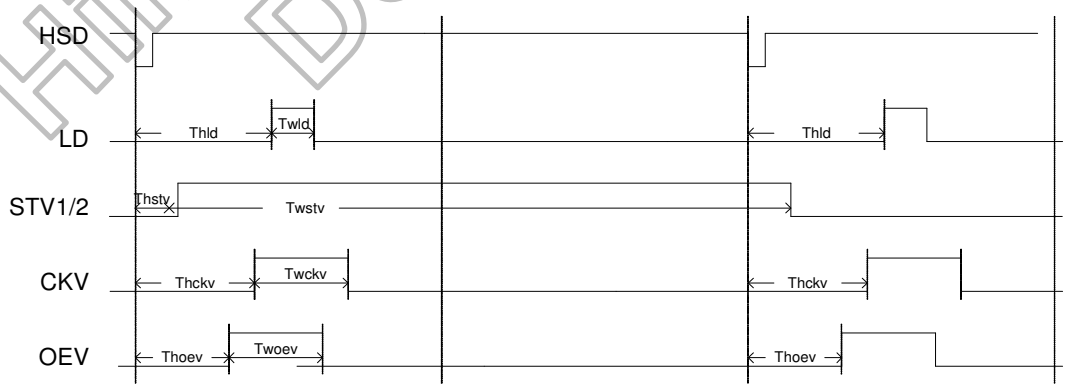


Figure 11.6: Gate Output Timing Diagram (Cascade)

11.2.6 Vertical Timing Diagram HV (Dual gate)

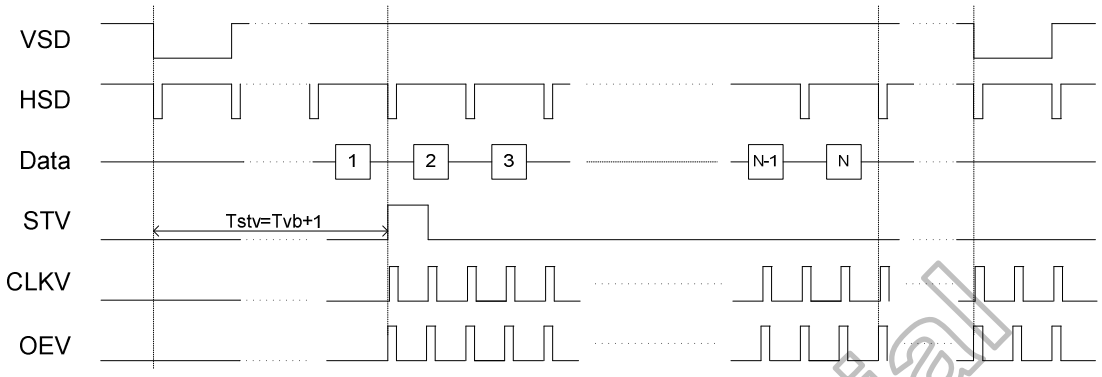


Figure 11.7: Vertical Timing Diagram HV (Dual Gate)

11.2.7 Vertical Timing Diagram DE (Dual gate)

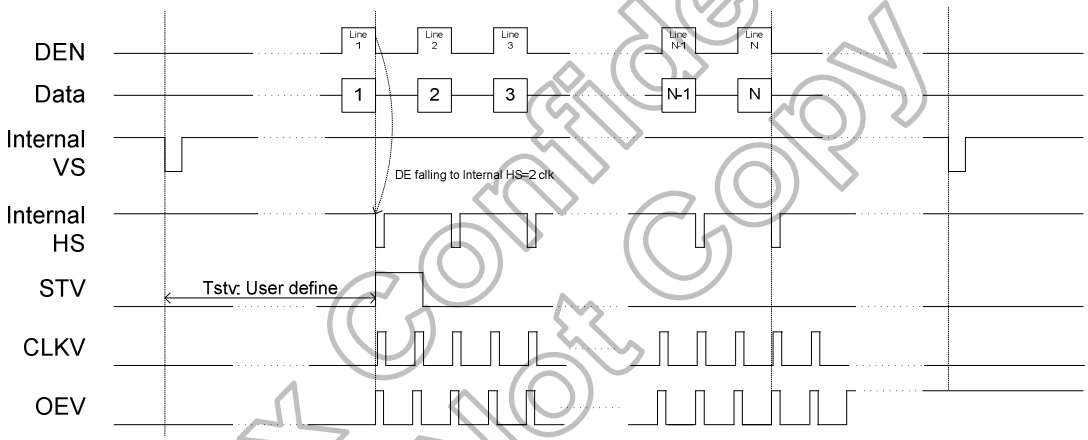


Figure 11.8: Vertical Timing Diagram DE (Dual Gate)

11.2.8 Gate Output Timing Diagram (Dual gate)

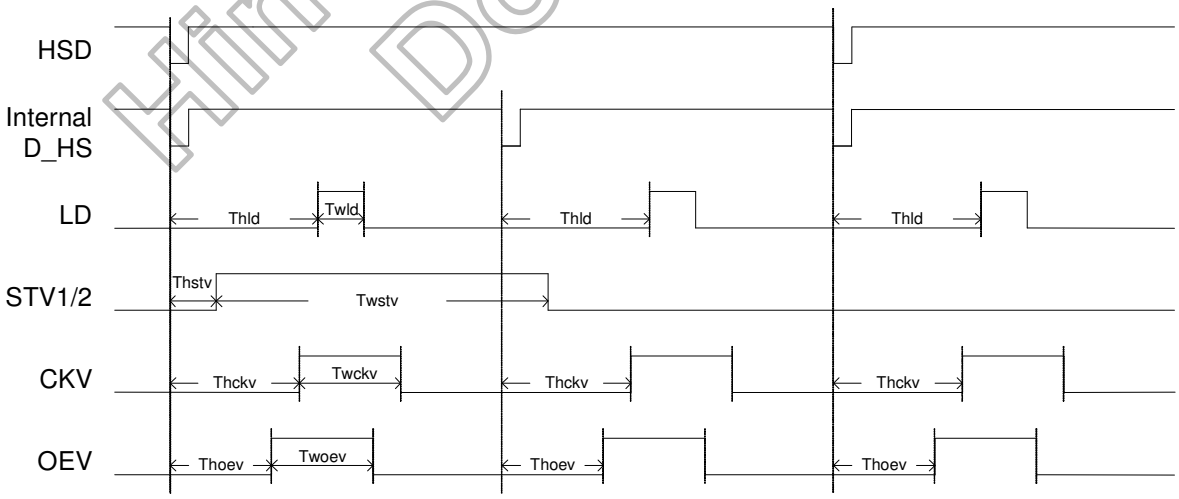


Figure 11.9: Gate Output Timing Diagram (Dual Gate)

11.2.9 SDRRS timing diagram

SDRRS(Seamless Display Refresh Rate Switching)
When showing the still picture, it is accept to reduce the refresh rate from 60Hz to low refresh rate (for example 40Hz). The purpose is mainly for power saving. INTEL defined a timing chart switch between different refresh rates. Following this timing chart, the switch between different refresh rates is seamless for end user.

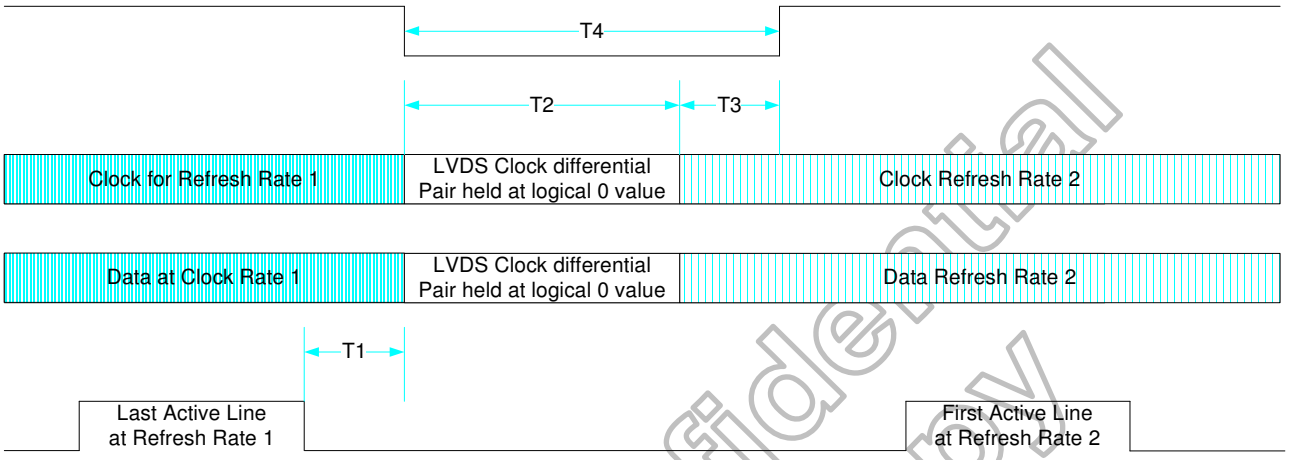


Figure 11.10: SDRRS timing diagram

T1-Min delay from start of vert blank to start of timing change: 2 lines
T2-Max delay for clock to transition to new frequency: 40μs~100μs
T3-Max receiver lock delay from stable clock: 100μs
T4-Max period during which panel maintains display: T2+T3

12. Pin Assignment (IC Face View)

12.1 PAD Sequence

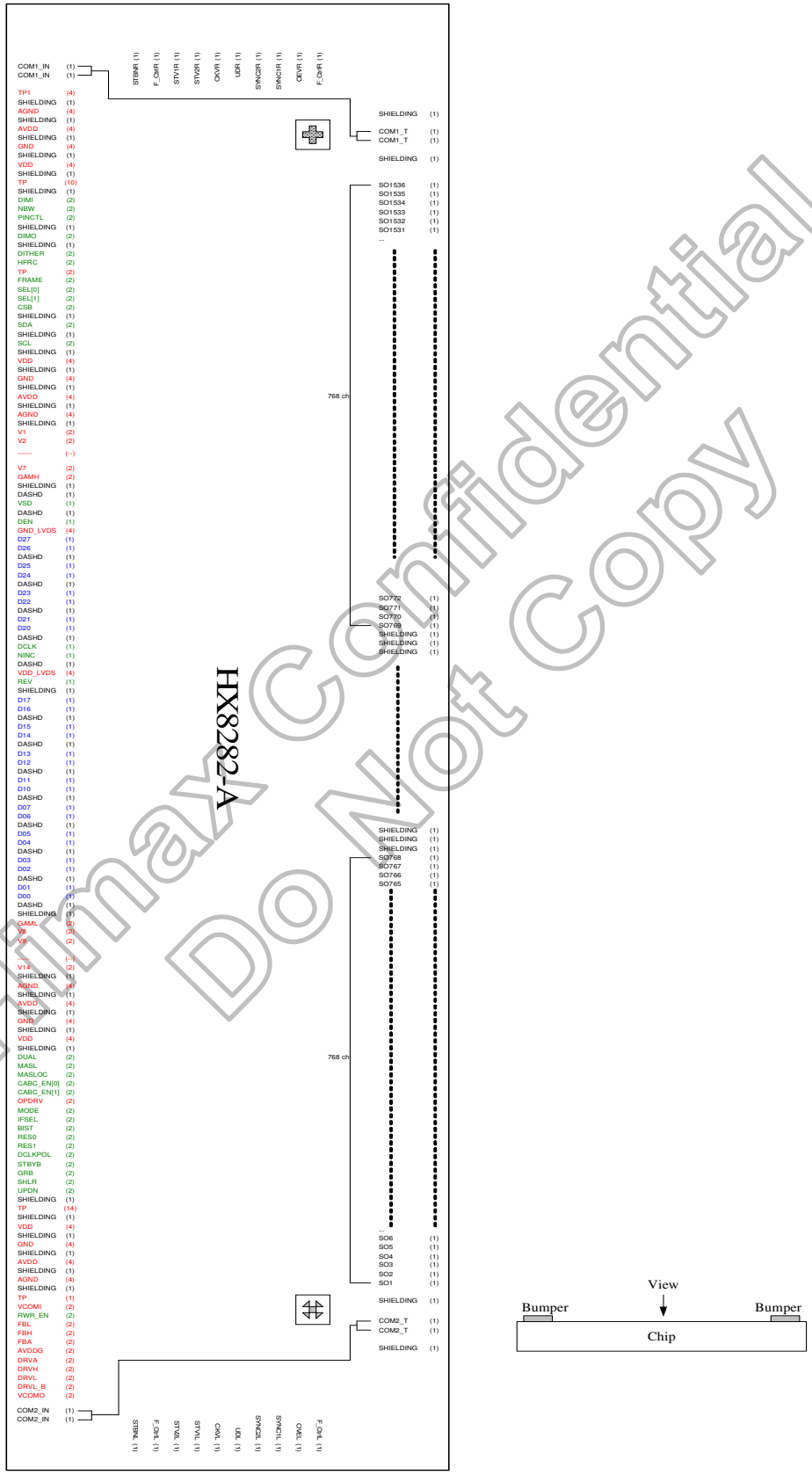


Figure 12.1: Pad Sequence

12.2 Bump Information

12.2.1 Chip Outline Dimensions

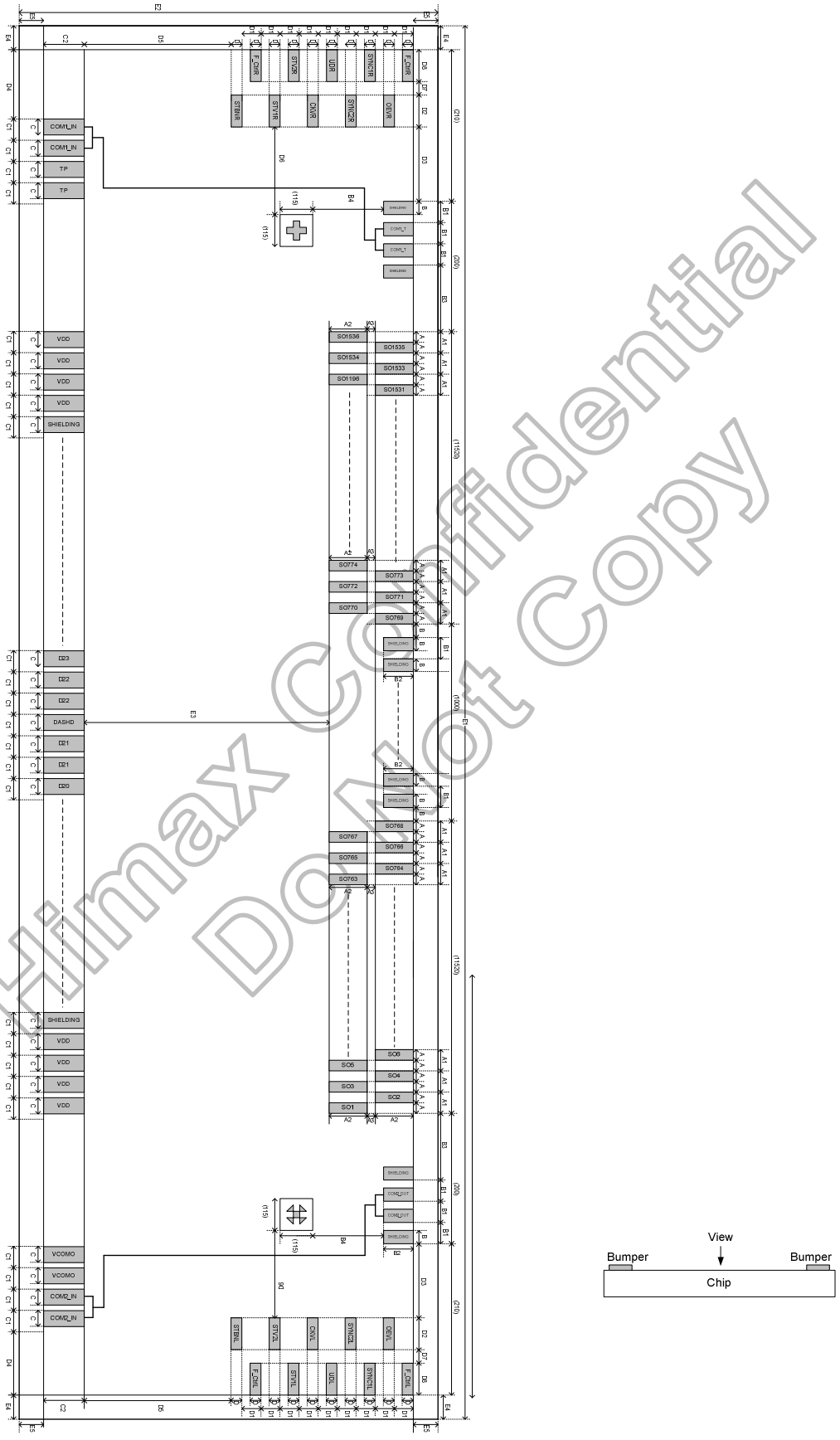


Figure 12.2: Chip Outline Dimensions

12.2.2 Alignment mark

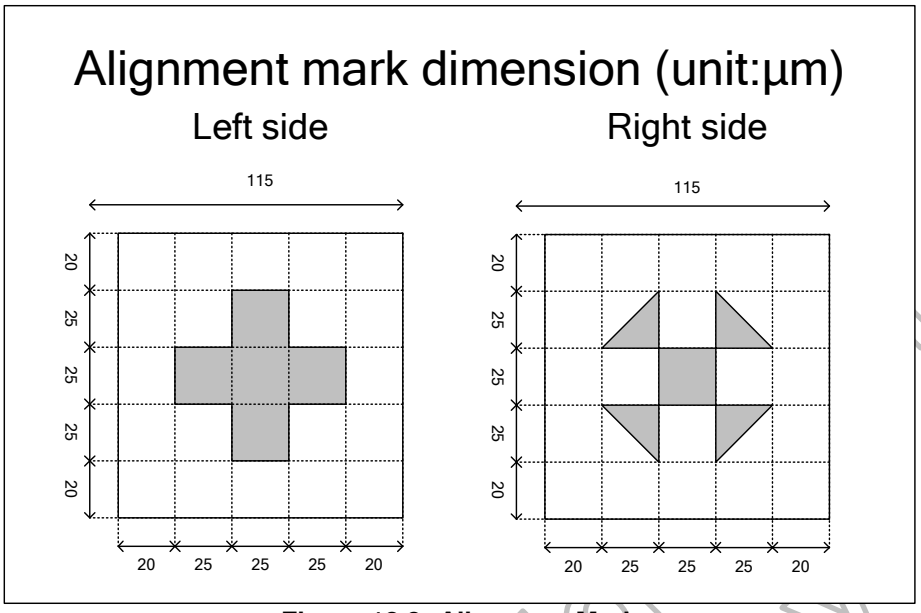


Figure 12.3: Alignment Mark

12.2.3 Pad information

Symbol	Dimension (um)
A	15
A1	30
A2	100
A3	30
B	30
B1	50
B2	70
B3	50
B4	50
C	65
C1	85
C2	100

Symbol	Dimension (um)
D	30
D1	40
D2	80
D3	43
D4	20
D5	96
D6	74
D7	20
D8	67
E1	24876
E2	620
E3	256
E4	8
E5	17

Table 12.1: Pad Information

12.3 Pad coordinates

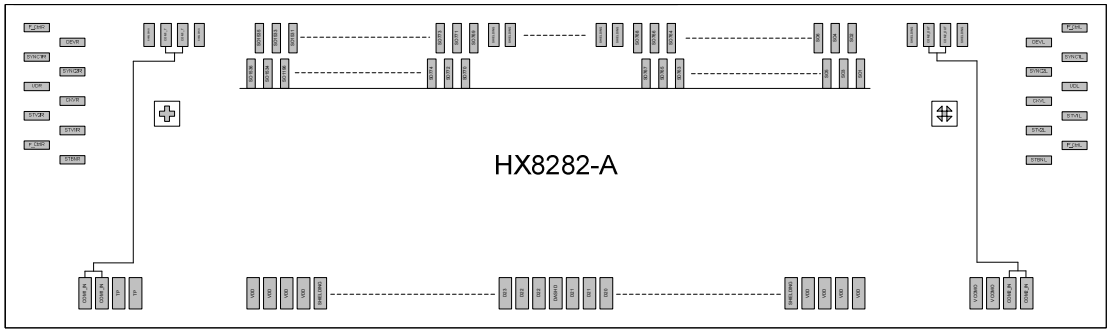


Figure 12.4: Pad Coordinate

No.	Name	X	Y	Bump size(μm)
1	COM1_IN	-12377.5	-243	100x65
2	COM1_IN	-12292.5	-243	100x65
3	TP	-12207.5	-243	100x65
4	TP	-12122.5	-243	100x65
5	TP	-12037.5	-243	100x65
6	TP	-11952.5	-243	100x65
7	SHIELDING	-11867.5	-243	100x65
8	AGND	-11782.5	-243	100x65
9	AGND	-11697.5	-243	100x65
10	AGND	-11612.5	-243	100x65
11	AGND	-11527.5	-243	100x65
12	SHIELDING	-11442.5	-243	100x65
13	AVDD	-11357.5	-243	100x65
14	AVDD	-11272.5	-243	100x65
15	AVDD	-11187.5	-243	100x65
16	AVDD	-11102.5	-243	100x65
17	SHIELDING	-11017.5	-243	100x65
18	GND	-10932.5	-243	100x65
19	GND	-10847.5	-243	100x65
20	GND	-10762.5	-243	100x65
21	GND	-10677.5	-243	100x65
22	SHIELDING	-10592.5	-243	100x65
23	VDD	-10507.5	-243	100x65
24	VDD	-10422.5	-243	100x65
25	VDD	-10337.5	-243	100x65
26	VDD	-10252.5	-243	100x65
27	SHIELDING	-10167.5	-243	100x65
28	TP	-10082.5	-243	100x65
29	TP	-9997.5	-243	100x65
30	TP	-9912.5	-243	100x65
31	TP	-9827.5	-243	100x65
32	TP	-9742.5	-243	100x65
33	TP	-9657.5	-243	100x65
34	TP	-9572.5	-243	100x65
35	TP	-9487.5	-243	100x65
36	TP	-9402.5	-243	100x65
37	TP	-9317.5	-243	100x65
38	SHIELDING	-9232.5	-243	100x65
39	DIMI	-9147.5	-243	100x65
40	DIMI	-9062.5	-243	100x65
41	NBW	-8977.5	-243	100x65
42	NBW	-8892.5	-243	100x65
43	PINCTL	-8807.5	-243	100x65
44	PINCTL	-8722.5	-243	100x65
45	SHIELDING	-8637.5	-243	100x65
46	DIMO	-8552.5	-243	100x65
47	DIMO	-8467.5	-243	100x65
48	SHIELDING	-8382.5	-243	100x65
49	DITHER	-8297.5	-243	100x65
50	DITHER	-8212.5	-243	100x65

No.	Name	X	Y	Bump size(μm)
51	HFRC	-8127.5	-243	100x65
52	HFRC	-8042.5	-243	100x65
53	TP	-7957.5	-243	100x65
54	TP	-7872.5	-243	100x65
55	FRAME	-7787.5	-243	100x65
56	FRAME	-7702.5	-243	100x65
57	SEL[0]	-7617.5	-243	100x65
58	SEL[0]	-7532.5	-243	100x65
59	SEL[1]	-7447.5	-243	100x65
60	SEL[1]	-7362.5	-243	100x65
61	CSB	-7277.5	-243	100x65
62	CSB	-7192.5	-243	100x65
63	SHIELDING	-7107.5	-243	100x65
64	SDA	-7022.5	-243	100x65
65	SDA	-6937.5	-243	100x65
66	SHIELDING	-6852.5	-243	100x65
67	SCL	-6767.5	-243	100x65
68	SCL	-6682.5	-243	100x65
69	SHIELDING	-6597.5	-243	100x65
70	VDD	-6512.5	-243	100x65
71	VDD	-6427.5	-243	100x65
72	VDD	-6342.5	-243	100x65
73	VDD	-6257.5	-243	100x65
74	SHIELDING	-6172.5	-243	100x65
75	GND	-6087.5	-243	100x65
76	GND	-6002.5	-243	100x65
77	GND	-5917.5	-243	100x65
78	GND	-5832.5	-243	100x65
79	SHIELDING	-5747.5	-243	100x65
80	AVDDL	-5662.5	-243	100x65
81	AVDDL	-5577.5	-243	100x65
82	AVDDL	-5492.5	-243	100x65
83	AVDDL	-5407.5	-243	100x65
84	SHIELDING	-5322.5	-243	100x65
85	AGNDH	-5237.5	-243	100x65
86	AGNDH	-5152.5	-243	100x65
87	AGNDH	-5067.5	-243	100x65
88	AGNDH	-4982.5	-243	100x65
89	SHIELDING	-4897.5	-243	100x65
90	V1	-4812.5	-243	100x65
91	V1	-4727.5	-243	100x65
92	V2	-4642.5	-243	100x65
93	V2	-4557.5	-243	100x65
94	V3	-4472.5	-243	100x65
95	V3	-4387.5	-243	100x65
96	V4	-4302.5	-243	100x65
97	V4	-4217.5	-243	100x65
98	V5	-4132.5	-243	100x65
99	V5	-4047.5	-243	100x65
100	V6	-3962.5	-243	100x65

No.	Name	X	Y	Bump size(μm)
101	V6	-3877.5	-243	100x65
102	V7	-3792.5	-243	100x65
103	V7	-3707.5	-243	100x65
104	GAMH	-3622.5	-243	100x65
105	GAMH	-3537.5	-243	100x65
106	SHIELDING	-3452.5	-243	100x65
107	DASHD	-3367.5	-243	100x65
108	VSD	-3282.5	-243	100x65
109	DASHD	-3197.5	-243	100x65
110	HSD	-3112.5	-243	100x65
111	DASHD	-3027.5	-243	100x65
112	DEN	-2942.5	-243	100x65
113	GND_LVDS	-2857.5	-243	100x65
114	GND_LVDS	-2772.5	-243	100x65
115	GND_LVDS	-2687.5	-243	100x65
116	GND_LVDS	-2602.5	-243	100x65
117	D27	-2517.5	-243	100x65
118	D26	-2432.5	-243	100x65
119	DASHD	-2347.5	-243	100x65
120	D25	-2262.5	-243	100x65
121	D24	-2177.5	-243	100x65
122	DASHD	-2092.5	-243	100x65
123	D23	-2007.5	-243	100x65
124	D22	-1922.5	-243	100x65
125	DASHD	-1837.5	-243	100x65
126	D21	-1752.5	-243	100x65
127	D20	-1667.5	-243	100x65
128	DASHD	-1582.5	-243	100x65
129	DCLK	-1497.5	-243	100x65
130	NINC	-1412.5	-243	100x65
131	DASHD	-1327.5	-243	100x65
132	VDD_LVDS	-1242.5	-243	100x65
133	VDD_LVDS	-1157.5	-243	100x65
134	VDD_LVDS	-1072.5	-243	100x65
135	VDD_LVDS	-987.5	-243	100x65
136	REV	-902.5	-243	100x65
137	DASHD	-817.5	-243	100x65
138	D17	-732.5	-243	100x65
139	D16	-647.5	-243	100x65
140	DASHD	-562.5	-243	100x65
141	D15	-477.5	-243	100x65
142	D14	-392.5	-243	100x65
143	DASHD	-307.5	-243	100x65
144	D13	-222.5	-243	100x65
145	D12	-137.5	-243	100x65
146	DASHD	-52.5	-243	100x65
147	D11	32.5	-243	100x65
148	D10	117.5	-243	100x65
149	DASHD	202.5	-243	100x65
150	D07	287.5	-243	100x65

No.	Name	X	Y	Bump size(μm)
151	D06	372.5	-243	100x65
152	DASHD	457.5	-243	100x65
153	D05	542.5	-243	100x65
154	D04	627.5	-243	100x65
155	DASHD	712.5	-243	100x65
156	D03	797.5	-243	100x65
157	D02	882.5	-243	100x65
158	DASHD	967.5	-243	100x65
159	D01	1052.5	-243	100x65
160	D00	1137.5	-243	100x65
161	DASHD	1222.5	-243	100x65
162	SHIELDING	1307.5	-243	100x65
163	GAML	1392.5	-243	100x65
164	GAML	1477.5	-243	100x65
165	V8	1562.5	-243	100x65
166	V8	1647.5	-243	100x65
167	V9	1732.5	-243	100x65
168	V9	1817.5	-243	100x65
169	V10	1902.5	-243	100x65
170	V10	1987.5	-243	100x65
171	V11	2072.5	-243	100x65
172	V11	2157.5	-243	100x65
173	V12	2242.5	-243	100x65
174	V12	2327.5	-243	100x65
175	V13	2412.5	-243	100x65
176	V13	2497.5	-243	100x65
177	V14	2582.5	-243	100x65
178	V14	2667.5	-243	100x65
179	SHIELDING	2752.5	-243	100x65
180	AGND	2837.5	-243	100x65
181	AGND	2922.5	-243	100x65
182	AGND	3007.5	-243	100x65
183	AGND	3092.5	-243	100x65
184	SHIELDING	3177.5	-243	100x65
185	AVDD	3262.5	-243	100x65
186	AVDD	3347.5	-243	100x65
187	AVDD	3432.5	-243	100x65
188	AVDD	3517.5	-243	100x65
189	SHIELDING	3602.5	-243	100x65
190	GND	3687.5	-243	100x65
191	GND	3772.5	-243	100x65
192	GND	3857.5	-243	100x65
193	GND	3942.5	-243	100x65
194	SHIELDING	4027.5	-243	100x65
195	VDD	4112.5	-243	100x65
196	VDD	4197.5	-243	100x65
197	VDD	4282.5	-243	100x65
198	VDD	4367.5	-243	100x65
199	SHIELDING	4452.5	-243	100x65
200	DUAL	4537.5	-243	100x65

No.	Name	X	Y	Bump size(μm)
201	DUAL	4622.5	-243	100x65
202	MASL	4707.5	-243	100x65
203	MASL	4792.5	-243	100x65
204	MASLOC	4877.5	-243	100x65
205	MASLOC	4962.5	-243	100x65
206	CABC_EN[0]	5047.5	-243	100x65
207	CABC_EN[0]	5132.5	-243	100x65
208	CABC_EN[1]	5217.5	-243	100x65
209	CABC_EN[1]	5302.5	-243	100x65
210	OPDRV	5387.5	-243	100x65
211	OPDRV	5472.5	-243	100x65
212	MODE	5557.5	-243	100x65
213	MODE	5642.5	-243	100x65
214	IFSEL	5727.5	-243	100x65
215	IFSEL	5812.5	-243	100x65
216	BIST	5897.5	-243	100x65
217	BIST	5982.5	-243	100x65
218	RES[0]	6067.5	-243	100x65
219	RES[0]	6152.5	-243	100x65
220	RES[1]	6237.5	-243	100x65
221	RES[1]	6322.5	-243	100x65
222	DCLKPOL	6407.5	-243	100x65
223	DCLKPOL	6492.5	-243	100x65
224	STBYB	6577.5	-243	100x65
225	STBYB	6662.5	-243	100x65
226	GRB	6747.5	-243	100x65
227	GRB	6832.5	-243	100x65
228	SHLR	6917.5	-243	100x65
229	SHLR	7002.5	-243	100x65
230	UPDN	7087.5	-243	100x65
231	UPDN	7172.5	-243	100x65
232	RES[2]	7257.5	-243	100x65
233	TP	7342.5	-243	100x65
234	TP	7427.5	-243	100x65
235	TP	7512.5	-243	100x65
236	TP	7597.5	-243	100x65
237	TP	7682.5	-243	100x65
238	TP	7767.5	-243	100x65
239	TP	7852.5	-243	100x65
240	TP	7937.5	-243	100x65
241	TP	8022.5	-243	100x65
242	TP	8107.5	-243	100x65
243	TP	8192.5	-243	100x65
244	TP	8277.5	-243	100x65
245	TP	8362.5	-243	100x65
246	TP	8447.5	-243	100x65
247	SHIELDING	8532.5	-243	100x65
248	VDD	8617.5	-243	100x65
249	VDD	8702.5	-243	100x65
250	VDD	8787.5	-243	100x65

No.	Name	X	Y	Bump size(μm)
251	VDD	8872.5	-243	100x65
252	SHIELDING	8957.5	-243	100x65
253	GND	9042.5	-243	100x65
254	GND	9127.5	-243	100x65
255	GND	9212.5	-243	100x65
256	GND	9297.5	-243	100x65
257	SHIELDING	9382.5	-243	100x65
258	AVDDL	9467.5	-243	100x65
259	AVDDL	9552.5	-243	100x65
260	AVDDL	9637.5	-243	100x65
261	AVDDL	9722.5	-243	100x65
262	SHIELDING	9807.5	-243	100x65
263	AGNDH	9892.5	-243	100x65
264	AGNDH	9977.5	-243	100x65
265	AGNDH	10062.5	-243	100x65
266	AGNDH	10147.5	-243	100x65
267	SHIELDING	10232.5	-243	100x65
268	TP	10317.5	-243	100x65
269	VCOMI	10402.5	-243	100x65
270	VCOMI	10487.5	-243	100x65
271	PWR_EN	10572.5	-243	100x65
272	PWR_EN	10657.5	-243	100x65
273	FBL	10742.5	-243	100x65
274	FBL	10827.5	-243	100x65
275	FBH	10912.5	-243	100x65
276	FBH	10997.5	-243	100x65
277	FBA	11082.5	-243	100x65
278	FBA	11167.5	-243	100x65
279	AVDDG	11252.5	-243	100x65
280	AVDDG	11337.5	-243	100x65
281	DRVA	11422.5	-243	100x65
282	DRVA	11507.5	-243	100x65
283	DRVH	11592.5	-243	100x65
284	DRVH	11677.5	-243	100x65
285	DRVL	11762.5	-243	100x65
286	DRVL	11847.5	-243	100x65
287	DRVL_B	11932.5	-243	100x65
288	DRVL_B	12017.5	-243	100x65
289	VCOMO	12102.5	-243	100x65
290	VCOMO	12187.5	-243	100x65
291	COM2_IN	12272.5	-243	100x65
292	COM2_IN	12357.5	-243	100x65
293	STBNL	12303	-82	80x30
294	F_CtrlL	12403	-42	67x30
295	STV2L	12303	-2	80x30
296	STV1L	12403	38	67x30
297	CKVL	12303	78	80x30
298	UDL	12403	118	67x30
299	SYNC2L	12303	158	80x30
300	SYNC1L	12403	198	67x30

No.	Name	X	Y	Bump size(μm)
301	OEVL	12303	238	80x30
302	F_CtrlL	12403	278	67x30
303	SHIELDING	12205	258	70x30
304	COM2_OUT	12155	258	70x30
305	COM2_OUT	12105	258	70x30
306	SHIELDING	12055	258	70x30
307	SO1	12012.5	113	100x15
308	SO2	11997.5	243	100x15
309	SO3	11982.5	113	100x15
310	SO4	11967.5	243	100x15
311	SO5	11952.5	113	100x15
312	SO6	11937.5	243	100x15
313	SO7	11922.5	113	100x15
314	SO8	11907.5	243	100x15
315	SO9	11892.5	113	100x15
316	SO10	11877.5	243	100x15
317	SO11	11862.5	113	100x15
318	SO12	11847.5	243	100x15
319	SO13	11832.5	113	100x15
320	SO14	11817.5	243	100x15
321	SO15	11802.5	113	100x15
322	SO16	11787.5	243	100x15
323	SO17	11772.5	113	100x15
324	SO18	11757.5	243	100x15
325	SO19	11742.5	113	100x15
326	SO20	11727.5	243	100x15
327	SO21	11712.5	113	100x15
328	SO22	11697.5	243	100x15
329	SO23	11682.5	113	100x15
330	SO24	11667.5	243	100x15
331	SO25	11652.5	113	100x15
332	SO26	11637.5	243	100x15
333	SO27	11622.5	113	100x15
334	SO28	11607.5	243	100x15
335	SO29	11592.5	113	100x15
336	SO30	11577.5	243	100x15
337	SO31	11562.5	113	100x15
338	SO32	11547.5	243	100x15
339	SO33	11532.5	113	100x15
340	SO34	11517.5	243	100x15
341	SO35	11502.5	113	100x15
342	SO36	11487.5	243	100x15
343	SO37	11472.5	113	100x15
344	SO38	11457.5	243	100x15
345	SO39	11442.5	113	100x15
346	SO40	11427.5	243	100x15
347	SO41	11412.5	113	100x15
348	SO42	11397.5	243	100x15
349	SO43	11382.5	113	100x15
350	SO44	11367.5	243	100x15
351	SO45	11352.5	113	100x15
352	SO46	11337.5	243	100x15
353	SO47	11322.5	113	100x15
354	SO48	11307.5	243	100x15
355	SO49	11292.5	113	100x15
356	SO50	11277.5	243	100x15
357	SO51	11262.5	113	100x15
358	SO52	11247.5	243	100x15
359	SO53	11232.5	113	100x15
360	SO54	11217.5	243	100x15
361	SO55	11202.5	113	100x15
362	SO56	11187.5	243	100x15
363	SO57	11172.5	113	100x15
364	SO58	11157.5	243	100x15
365	SO59	11142.5	113	100x15
366	SO60	11127.5	243	100x15
367	SO61	11112.5	113	100x15
368	SO62	11097.5	243	100x15
369	SO63	11082.5	113	100x15
370	SO64	11067.5	243	100x15
371	SO65	11052.5	113	100x15
372	SO66	11037.5	243	100x15
373	SO67	11022.5	113	100x15
374	SO68	11007.5	243	100x15
375	SO69	10992.5	113	100x15
376	SO70	10977.5	243	100x15
377	SO71	10962.5	113	100x15
378	SO72	10947.5	243	100x15
379	SO73	10932.5	113	100x15
380	SO74	10917.5	243	100x15
381	SO75	10902.5	113	100x15
382	SO76	10887.5	243	100x15
383	SO77	10872.5	113	100x15
384	SO78	10857.5	243	100x15
385	SO79	10842.5	113	100x15
386	SO80	10827.5	243	100x15
387	SO81	10812.5	113	100x15
388	SO82	10797.5	243	100x15
389	SO83	10782.5	113	100x15
390	SO84	10767.5	243	100x15
391	SO85	10752.5	113	100x15
392	SO86	10737.5	243	100x15
393	SO87	10722.5	113	100x15
394	SO88	10707.5	243	100x15
395	SO89	10692.5	113	100x15
396	SO90	10677.5	243	100x15
397	SO91	10662.5	113	100x15
398	SO92	10647.5	243	100x15
399	SO93	10632.5	113	100x15
400	SO94	10617.5	243	100x15

No.	Name	X	Y	Bump size(μm)
401	SO95	10602.5	113	100x15
402	SO96	10587.5	243	100x15
403	SO97	10572.5	113	100x15
404	SO98	10557.5	243	100x15
405	SO99	10542.5	113	100x15
406	SO100	10527.5	243	100x15
407	SO101	10512.5	113	100x15
408	SO102	10497.5	243	100x15
409	SO103	10482.5	113	100x15
410	SO104	10467.5	243	100x15
411	SO105	10452.5	113	100x15
412	SO106	10437.5	243	100x15
413	SO107	10422.5	113	100x15
414	SO108	10407.5	243	100x15
415	SO109	10392.5	113	100x15
416	SO110	10377.5	243	100x15
417	SO111	10362.5	113	100x15
418	SO112	10347.5	243	100x15
419	SO113	10332.5	113	100x15
420	SO114	10317.5	243	100x15
421	SO115	10302.5	113	100x15
422	SO116	10287.5	243	100x15
423	SO117	10272.5	113	100x15
424	SO118	10257.5	243	100x15
425	SO119	10242.5	113	100x15
426	SO120	10227.5	243	100x15
427	SO121	10212.5	113	100x15
428	SO122	10197.5	243	100x15
429	SO123	10182.5	113	100x15
430	SO124	10167.5	243	100x15
431	SO125	10152.5	113	100x15
432	SO126	10137.5	243	100x15
433	SO127	10122.5	113	100x15
434	SO128	10107.5	243	100x15
435	SO129	10092.5	113	100x15
436	SO130	10077.5	243	100x15
437	SO131	10062.5	113	100x15
438	SO132	10047.5	243	100x15
439	SO133	10032.5	113	100x15
440	SO134	10017.5	243	100x15
441	SO135	10002.5	113	100x15
442	SO136	9987.5	243	100x15
443	SO137	9972.5	113	100x15
444	SO138	9957.5	243	100x15
445	SO139	9942.5	113	100x15
446	SO140	9927.5	243	100x15
447	SO141	9912.5	113	100x15
448	SO142	9897.5	243	100x15
449	SO143	9882.5	113	100x15
450	SO144	9867.5	243	100x15

No.	Name	X	Y	Bump size(μm)
451	SO145	9852.5	113	100x15
452	SO146	9837.5	243	100x15
453	SO147	9822.5	113	100x15
454	SO148	9807.5	243	100x15
455	SO149	9792.5	113	100x15
456	SO150	9777.5	243	100x15
457	SO151	9762.5	113	100x15
458	SO152	9747.5	243	100x15
459	SO153	9732.5	113	100x15
460	SO154	9717.5	243	100x15
461	SO155	9702.5	113	100x15
462	SO156	9687.5	243	100x15
463	SO157	9672.5	113	100x15
464	SO158	9657.5	243	100x15
465	SO159	9642.5	113	100x15
466	SO160	9627.5	243	100x15
467	SO161	9612.5	113	100x15
468	SO162	9597.5	243	100x15
469	SO163	9582.5	113	100x15
470	SO164	9567.5	243	100x15
471	SO165	9552.5	113	100x15
472	SO166	9537.5	243	100x15
473	SO167	9522.5	113	100x15
474	SO168	9507.5	243	100x15
475	SO169	9492.5	113	100x15
476	SO170	9477.5	243	100x15
477	SO171	9462.5	113	100x15
478	SO172	9447.5	243	100x15
479	SO173	9432.5	113	100x15
480	SO174	9417.5	243	100x15
481	SO175	9402.5	113	100x15
482	SO176	9387.5	243	100x15
483	SO177	9372.5	113	100x15
484	SO178	9357.5	243	100x15
485	SO179	9342.5	113	100x15
486	SO180	9327.5	243	100x15
487	SO181	9312.5	113	100x15
488	SO182	9297.5	243	100x15
489	SO183	9282.5	113	100x15
490	SO184	9267.5	243	100x15
491	SO185	9252.5	113	100x15
492	SO186	9237.5	243	100x15
493	SO187	9222.5	113	100x15
494	SO188	9207.5	243	100x15
495	SO189	9192.5	113	100x15
496	SO190	9177.5	243	100x15
497	SO191	9162.5	113	100x15
498	SO192	9147.5	243	100x15
499	SO193	9132.5	113	100x15
500	SO194	9117.5	243	100x15

No.	Name	X	Y	Bump size(μm)
501	SO195	9102.5	113	100x15
502	SO196	9087.5	243	100x15
503	SO197	9072.5	113	100x15
504	SO198	9057.5	243	100x15
505	SO199	9042.5	113	100x15
506	SO200	9027.5	243	100x15
507	SO201	9012.5	113	100x15
508	SO202	8997.5	243	100x15
509	SO203	8982.5	113	100x15
510	SO204	8967.5	243	100x15
511	SO205	8952.5	113	100x15
512	SO206	8937.5	243	100x15
513	SO207	8922.5	113	100x15
514	SO208	8907.5	243	100x15
515	SO209	8892.5	113	100x15
516	SO210	8877.5	243	100x15
517	SO211	8862.5	113	100x15
518	SO212	8847.5	243	100x15
519	SO213	8832.5	113	100x15
520	SO214	8817.5	243	100x15
521	SO215	8802.5	113	100x15
522	SO216	8787.5	243	100x15
523	SO217	8772.5	113	100x15
524	SO218	8757.5	243	100x15
525	SO219	8742.5	113	100x15
526	SO220	8727.5	243	100x15
527	SO221	8712.5	113	100x15
528	SO222	8697.5	243	100x15
529	SO223	8682.5	113	100x15
530	SO224	8667.5	243	100x15
531	SO225	8652.5	113	100x15
532	SO226	8637.5	243	100x15
533	SO227	8622.5	113	100x15
534	SO228	8607.5	243	100x15
535	SO229	8592.5	113	100x15
536	SO230	8577.5	243	100x15
537	SO231	8562.5	113	100x15
538	SO232	8547.5	243	100x15
539	SO233	8532.5	113	100x15
540	SO234	8517.5	243	100x15
541	SO235	8502.5	113	100x15
542	SO236	8487.5	243	100x15
543	SO237	8472.5	113	100x15
544	SO238	8457.5	243	100x15
545	SO239	8442.5	113	100x15
546	SO240	8427.5	243	100x15
547	SO241	8412.5	113	100x15
548	SO242	8397.5	243	100x15
549	SO243	8382.5	113	100x15
550	SO244	8367.5	243	100x15

No.	Name	X	Y	Bump size(μm)
551	SO245	8352.5	113	100x15
552	SO246	8337.5	243	100x15
553	SO247	8322.5	113	100x15
554	SO248	8307.5	243	100x15
555	SO249	8292.5	113	100x15
556	SO250	8277.5	243	100x15
557	SO251	8262.5	113	100x15
558	SO252	8247.5	243	100x15
559	SO253	8232.5	113	100x15
560	SO254	8217.5	243	100x15
561	SO255	8202.5	113	100x15
562	SO256	8187.5	243	100x15
563	SO257	8172.5	113	100x15
564	SO258	8157.5	243	100x15
565	SO259	8142.5	113	100x15
566	SO260	8127.5	243	100x15
567	SO261	8112.5	113	100x15
568	SO262	8097.5	243	100x15
569	SO263	8082.5	113	100x15
570	SO264	8067.5	243	100x15
571	SO265	8052.5	113	100x15
572	SO266	8037.5	243	100x15
573	SO267	8022.5	113	100x15
574	SO268	8007.5	243	100x15
575	SO269	7992.5	113	100x15
576	SO270	7977.5	243	100x15
577	SO271	7962.5	113	100x15
578	SO272	7947.5	243	100x15
579	SO273	7932.5	113	100x15
580	SO274	7917.5	243	100x15
581	SO275	7902.5	113	100x15
582	SO276	7887.5	243	100x15
583	SO277	7872.5	113	100x15
584	SO278	7857.5	243	100x15
585	SO279	7842.5	113	100x15
586	SO280	7827.5	243	100x15
587	SO281	7812.5	113	100x15
588	SO282	7797.5	243	100x15
589	SO283	7782.5	113	100x15
590	SO284	7767.5	243	100x15
591	SO285	7752.5	113	100x15
592	SO286	7737.5	243	100x15
593	SO287	7722.5	113	100x15
594	SO288	7707.5	243	100x15
595	SO289	7692.5	113	100x15
596	SO290	7677.5	243	100x15
597	SO291	7662.5	113	100x15
598	SO292	7647.5	243	100x15
599	SO293	7632.5	113	100x15
600	SO294	7617.5	243	100x15

No.	Name	X	Y	Bump size(μm)
601	SO295	7602.5	113	100x15
602	SO296	7587.5	243	100x15
603	SO297	7572.5	113	100x15
604	SO298	7557.5	243	100x15
605	SO299	7542.5	113	100x15
606	SO300	7527.5	243	100x15
607	SO301	7512.5	113	100x15
608	SO302	7497.5	243	100x15
609	SO303	7482.5	113	100x15
610	SO304	7467.5	243	100x15
611	SO305	7452.5	113	100x15
612	SO306	7437.5	243	100x15
613	SO307	7422.5	113	100x15
614	SO308	7407.5	243	100x15
615	SO309	7392.5	113	100x15
616	SO310	7377.5	243	100x15
617	SO311	7362.5	113	100x15
618	SO312	7347.5	243	100x15
619	SO313	7332.5	113	100x15
620	SO314	7317.5	243	100x15
621	SO315	7302.5	113	100x15
622	SO316	7287.5	243	100x15
623	SO317	7272.5	113	100x15
624	SO318	7257.5	243	100x15
625	SO319	7242.5	113	100x15
626	SO320	7227.5	243	100x15
627	SO321	7212.5	113	100x15
628	SO322	7197.5	243	100x15
629	SO323	7182.5	113	100x15
630	SO324	7167.5	243	100x15
631	SO325	7152.5	113	100x15
632	SO326	7137.5	243	100x15
633	SO327	7122.5	113	100x15
634	SO328	7107.5	243	100x15
635	SO329	7092.5	113	100x15
636	SO330	7077.5	243	100x15
637	SO331	7062.5	113	100x15
638	SO332	7047.5	243	100x15
639	SO333	7032.5	113	100x15
640	SO334	7017.5	243	100x15
641	SO335	7002.5	113	100x15
642	SO336	6987.5	243	100x15
643	SO337	6972.5	113	100x15
644	SO338	6957.5	243	100x15
645	SO339	6942.5	113	100x15
646	SO340	6927.5	243	100x15
647	SO341	6912.5	113	100x15
648	SO342	6897.5	243	100x15
649	SO343	6882.5	113	100x15
650	SO344	6867.5	243	100x15

No.	Name	X	Y	Bump size(μm)
651	SO345	6852.5	113	100x15
652	SO346	6837.5	243	100x15
653	SO347	6822.5	113	100x15
654	SO348	6807.5	243	100x15
655	SO349	6792.5	113	100x15
656	SO350	6777.5	243	100x15
657	SO351	6762.5	113	100x15
658	SO352	6747.5	243	100x15
659	SO353	6732.5	113	100x15
660	SO354	6717.5	243	100x15
661	SO355	6702.5	113	100x15
662	SO356	6687.5	243	100x15
663	SO357	6672.5	113	100x15
664	SO358	6657.5	243	100x15
665	SO359	6642.5	113	100x15
666	SO360	6627.5	243	100x15
667	SO361	6612.5	113	100x15
668	SO362	6597.5	243	100x15
669	SO363	6582.5	113	100x15
670	SO364	6567.5	243	100x15
671	SO365	6552.5	113	100x15
672	SO366	6537.5	243	100x15
673	SO367	6522.5	113	100x15
674	SO368	6507.5	243	100x15
675	SO369	6492.5	113	100x15
676	SO370	6477.5	243	100x15
677	SO371	6462.5	113	100x15
678	SO372	6447.5	243	100x15
679	SO373	6432.5	113	100x15
680	SO374	6417.5	243	100x15
681	SO375	6402.5	113	100x15
682	SO376	6387.5	243	100x15
683	SO377	6372.5	113	100x15
684	SO378	6357.5	243	100x15
685	SO379	6342.5	113	100x15
686	SO380	6327.5	243	100x15
687	SO381	6312.5	113	100x15
688	SO382	6297.5	243	100x15
689	SO383	6282.5	113	100x15
690	SO384	6267.5	243	100x15
691	SO385	6252.5	113	100x15
692	SO386	6237.5	243	100x15
693	SO387	6222.5	113	100x15
694	SO388	6207.5	243	100x15
695	SO389	6192.5	113	100x15
696	SO390	6177.5	243	100x15
697	SO391	6162.5	113	100x15
698	SO392	6147.5	243	100x15
699	SO393	6132.5	113	100x15
700	SO394	6117.5	243	100x15

No.	Name	X	Y	Bump size(μm)
701	SO395	6102.5	113	100x15
702	SO396	6087.5	243	100x15
703	SO397	6072.5	113	100x15
704	SO398	6057.5	243	100x15
705	SO399	6042.5	113	100x15
706	SO400	6027.5	243	100x15
707	SO401	6012.5	113	100x15
708	SO402	5997.5	243	100x15
709	SO403	5982.5	113	100x15
710	SO404	5967.5	243	100x15
711	SO405	5952.5	113	100x15
712	SO406	5937.5	243	100x15
713	SO407	5922.5	113	100x15
714	SO408	5907.5	243	100x15
715	SO409	5892.5	113	100x15
716	SO410	5877.5	243	100x15
717	SO411	5862.5	113	100x15
718	SO412	5847.5	243	100x15
719	SO413	5832.5	113	100x15
720	SO414	5817.5	243	100x15
721	SO415	5802.5	113	100x15
722	SO416	5787.5	243	100x15
723	SO417	5772.5	113	100x15
724	SO418	5757.5	243	100x15
725	SO419	5742.5	113	100x15
726	SO420	5727.5	243	100x15
727	SO421	5712.5	113	100x15
728	SO422	5697.5	243	100x15
729	SO423	5682.5	113	100x15
730	SO424	5667.5	243	100x15
731	SO425	5652.5	113	100x15
732	SO426	5637.5	243	100x15
733	SO427	5622.5	113	100x15
734	SO428	5607.5	243	100x15
735	SO429	5592.5	113	100x15
736	SO430	5577.5	243	100x15
737	SO431	5562.5	113	100x15
738	SO432	5547.5	243	100x15
739	SO433	5532.5	113	100x15
740	SO434	5517.5	243	100x15
741	SO435	5502.5	113	100x15
742	SO436	5487.5	243	100x15
743	SO437	5472.5	113	100x15
744	SO438	5457.5	243	100x15
745	SO439	5442.5	113	100x15
746	SO440	5427.5	243	100x15
747	SO441	5412.5	113	100x15
748	SO442	5397.5	243	100x15
749	SO443	5382.5	113	100x15
750	SO444	5367.5	243	100x15

No.	Name	X	Y	Bump size(μm)
751	SO445	5352.5	113	100x15
752	SO446	5337.5	243	100x15
753	SO447	5322.5	113	100x15
754	SO448	5307.5	243	100x15
755	SO449	5292.5	113	100x15
756	SO450	5277.5	243	100x15
757	SO451	5262.5	113	100x15
758	SO452	5247.5	243	100x15
759	SO453	5232.5	113	100x15
760	SO454	5217.5	243	100x15
761	SO455	5202.5	113	100x15
762	SO456	5187.5	243	100x15
763	SO457	5172.5	113	100x15
764	SO458	5157.5	243	100x15
765	SO459	5142.5	113	100x15
766	SO460	5127.5	243	100x15
767	SO461	5112.5	113	100x15
768	SO462	5097.5	243	100x15
769	SO463	5082.5	113	100x15
770	SO464	5067.5	243	100x15
771	SO465	5052.5	113	100x15
772	SO466	5037.5	243	100x15
773	SO467	5022.5	113	100x15
774	SO468	5007.5	243	100x15
775	SO469	4992.5	113	100x15
776	SO470	4977.5	243	100x15
777	SO471	4962.5	113	100x15
778	SO472	4947.5	243	100x15
779	SO473	4932.5	113	100x15
780	SO474	4917.5	243	100x15
781	SO475	4902.5	113	100x15
782	SO476	4887.5	243	100x15
783	SO477	4872.5	113	100x15
784	SO478	4857.5	243	100x15
785	SO479	4842.5	113	100x15
786	SO480	4827.5	243	100x15
787	SO481	4812.5	113	100x15
788	SO482	4797.5	243	100x15
789	SO483	4782.5	113	100x15
790	SO484	4767.5	243	100x15
791	SO485	4752.5	113	100x15
792	SO486	4737.5	243	100x15
793	SO487	4722.5	113	100x15
794	SO488	4707.5	243	100x15
795	SO489	4692.5	113	100x15
796	SO490	4677.5	243	100x15
797	SO491	4662.5	113	100x15
798	SO492	4647.5	243	100x15
799	SO493	4632.5	113	100x15
800	SO494	4617.5	243	100x15

No.	Name	X	Y	Bump size(μm)
801	SO495	4602.5	113	100x15
802	SO496	4587.5	243	100x15
803	SO497	4572.5	113	100x15
804	SO498	4557.5	243	100x15
805	SO499	4542.5	113	100x15
806	SO500	4527.5	243	100x15
807	SO501	4512.5	113	100x15
808	SO502	4497.5	243	100x15
809	SO503	4482.5	113	100x15
810	SO504	4467.5	243	100x15
811	SO505	4452.5	113	100x15
812	SO506	4437.5	243	100x15
813	SO507	4422.5	113	100x15
814	SO508	4407.5	243	100x15
815	SO509	4392.5	113	100x15
816	SO510	4377.5	243	100x15
817	SO511	4362.5	113	100x15
818	SO512	4347.5	243	100x15
819	SO513	4332.5	113	100x15
820	SO514	4317.5	243	100x15
821	SO515	4302.5	113	100x15
822	SO516	4287.5	243	100x15
823	SO517	4272.5	113	100x15
824	SO518	4257.5	243	100x15
825	SO519	4242.5	113	100x15
826	SO520	4227.5	243	100x15
827	SO521	4212.5	113	100x15
828	SO522	4197.5	243	100x15
829	SO523	4182.5	113	100x15
830	SO524	4167.5	243	100x15
831	SO525	4152.5	113	100x15
832	SO526	4137.5	243	100x15
833	SO527	4122.5	113	100x15
834	SO528	4107.5	243	100x15
835	SO529	4092.5	113	100x15
836	SO530	4077.5	243	100x15
837	SO531	4062.5	113	100x15
838	SO532	4047.5	243	100x15
839	SO533	4032.5	113	100x15
840	SO534	4017.5	243	100x15
841	SO535	4002.5	113	100x15
842	SO536	3987.5	243	100x15
843	SO537	3972.5	113	100x15
844	SO538	3957.5	243	100x15
845	SO539	3942.5	113	100x15
846	SO540	3927.5	243	100x15
847	SO541	3912.5	113	100x15
848	SO542	3897.5	243	100x15
849	SO543	3882.5	113	100x15
850	SO544	3867.5	243	100x15

No.	Name	X	Y	Bump size(μm)
851	SO545	3852.5	113	100x15
852	SO546	3837.5	243	100x15
853	SO547	3822.5	113	100x15
854	SO548	3807.5	243	100x15
855	SO549	3792.5	113	100x15
856	SO550	3777.5	243	100x15
857	SO551	3762.5	113	100x15
858	SO552	3747.5	243	100x15
859	SO553	3732.5	113	100x15
860	SO554	3717.5	243	100x15
861	SO555	3702.5	113	100x15
862	SO556	3687.5	243	100x15
863	SO557	3672.5	113	100x15
864	SO558	3657.5	243	100x15
865	SO559	3642.5	113	100x15
866	SO560	3627.5	243	100x15
867	SO561	3612.5	113	100x15
868	SO562	3597.5	243	100x15
869	SO563	3582.5	113	100x15
870	SO564	3567.5	243	100x15
871	SO565	3552.5	113	100x15
872	SO566	3537.5	243	100x15
873	SO567	3522.5	113	100x15
874	SO568	3507.5	243	100x15
875	SO569	3492.5	113	100x15
876	SO570	3477.5	243	100x15
877	SO571	3462.5	113	100x15
878	SO572	3447.5	243	100x15
879	SO573	3432.5	113	100x15
880	SO574	3417.5	243	100x15
881	SO575	3402.5	113	100x15
882	SO576	3387.5	243	100x15
883	SO577	3372.5	113	100x15
884	SO578	3357.5	243	100x15
885	SO579	3342.5	113	100x15
886	SO580	3327.5	243	100x15
887	SO581	3312.5	113	100x15
888	SO582	3297.5	243	100x15
889	SO583	3282.5	113	100x15
890	SO584	3267.5	243	100x15
891	SO585	3252.5	113	100x15
892	SO586	3237.5	243	100x15
893	SO587	3222.5	113	100x15
894	SO588	3207.5	243	100x15
895	SO589	3192.5	113	100x15
896	SO590	3177.5	243	100x15
897	SO591	3162.5	113	100x15
898	SO592	3147.5	243	100x15
899	SO593	3132.5	113	100x15
900	SO594	3117.5	243	100x15

No.	Name	X	Y	Bump size(μm)
901	SO595	3102.5	113	100x15
902	SO596	3087.5	243	100x15
903	SO597	3072.5	113	100x15
904	SO598	3057.5	243	100x15
905	SO599	3042.5	113	100x15
906	SO600	3027.5	243	100x15
907	SO601	3012.5	113	100x15
908	SO602	2997.5	243	100x15
909	SO603	2982.5	113	100x15
910	SO604	2967.5	243	100x15
911	SO605	2952.5	113	100x15
912	SO606	2937.5	243	100x15
913	SO607	2922.5	113	100x15
914	SO608	2907.5	243	100x15
915	SO609	2892.5	113	100x15
916	SO610	2877.5	243	100x15
917	SO611	2862.5	113	100x15
918	SO612	2847.5	243	100x15
919	SO613	2832.5	113	100x15
920	SO614	2817.5	243	100x15
921	SO615	2802.5	113	100x15
922	SO616	2787.5	243	100x15
923	SO617	2772.5	113	100x15
924	SO618	2757.5	243	100x15
925	SO619	2742.5	113	100x15
926	SO620	2727.5	243	100x15
927	SO621	2712.5	113	100x15
928	SO622	2697.5	243	100x15
929	SO623	2682.5	113	100x15
930	SO624	2667.5	243	100x15
931	SO625	2652.5	113	100x15
932	SO626	2637.5	243	100x15
933	SO627	2622.5	113	100x15
934	SO628	2607.5	243	100x15
935	SO629	2592.5	113	100x15
936	SO630	2577.5	243	100x15
937	SO631	2562.5	113	100x15
938	SO632	2547.5	243	100x15
939	SO633	2532.5	113	100x15
940	SO634	2517.5	243	100x15
941	SO635	2502.5	113	100x15
942	SO636	2487.5	243	100x15
943	SO637	2472.5	113	100x15
944	SO638	2457.5	243	100x15
945	SO639	2442.5	113	100x15
946	SO640	2427.5	243	100x15
947	SO641	2412.5	113	100x15
948	SO642	2397.5	243	100x15
949	SO643	2382.5	113	100x15
950	SO644	2367.5	243	100x15
951	SO645	2352.5	113	100x15
952	SO646	2337.5	243	100x15
953	SO647	2322.5	113	100x15
954	SO648	2307.5	243	100x15
955	SO649	2292.5	113	100x15
956	SO650	2277.5	243	100x15
957	SO651	2262.5	113	100x15
958	SO652	2247.5	243	100x15
959	SO653	2232.5	113	100x15
960	SO654	2217.5	243	100x15
961	SO655	2202.5	113	100x15
962	SO656	2187.5	243	100x15
963	SO657	2172.5	113	100x15
964	SO658	2157.5	243	100x15
965	SO659	2142.5	113	100x15
966	SO660	2127.5	243	100x15
967	SO661	2112.5	113	100x15
968	SO662	2097.5	243	100x15
969	SO663	2082.5	113	100x15
970	SO664	2067.5	243	100x15
971	SO665	2052.5	113	100x15
972	SO666	2037.5	243	100x15
973	SO667	2022.5	113	100x15
974	SO668	2007.5	243	100x15
975	SO669	1992.5	113	100x15
976	SO670	1977.5	243	100x15
977	SO671	1962.5	113	100x15
978	SO672	1947.5	243	100x15
979	SO673	1932.5	113	100x15
980	SO674	1917.5	243	100x15
981	SO675	1902.5	113	100x15
982	SO676	1887.5	243	100x15
983	SO677	1872.5	113	100x15
984	SO678	1857.5	243	100x15
985	SO679	1842.5	113	100x15
986	SO680	1827.5	243	100x15
987	SO681	1812.5	113	100x15
988	SO682	1797.5	243	100x15
989	SO683	1782.5	113	100x15
990	SO684	1767.5	243	100x15
991	SO685	1752.5	113	100x15
992	SO686	1737.5	243	100x15
993	SO687	1722.5	113	100x15
994	SO688	1707.5	243	100x15
995	SO689	1692.5	113	100x15
996	SO690	1677.5	243	100x15
997	SO691	1662.5	113	100x15
998	SO692	1647.5	243	100x15
999	SO693	1632.5	113	100x15
1000	SO694	1617.5	243	100x15

No.	Name	X	Y	Bump size(μm)
1001	SO695	1602.5	113	100x15
1002	SO696	1587.5	243	100x15
1003	SO697	1572.5	113	100x15
1004	SO698	1557.5	243	100x15
1005	SO699	1542.5	113	100x15
1006	SO700	1527.5	243	100x15
1007	SO701	1512.5	113	100x15
1008	SO702	1497.5	243	100x15
1009	SO703	1482.5	113	100x15
1010	SO704	1467.5	243	100x15
1011	SO705	1452.5	113	100x15
1012	SO706	1437.5	243	100x15
1013	SO707	1422.5	113	100x15
1014	SO708	1407.5	243	100x15
1015	SO709	1392.5	113	100x15
1016	SO710	1377.5	243	100x15
1017	SO711	1362.5	113	100x15
1018	SO712	1347.5	243	100x15
1019	SO713	1332.5	113	100x15
1020	SO714	1317.5	243	100x15
1021	SO715	1302.5	113	100x15
1022	SO716	1287.5	243	100x15
1023	SO717	1272.5	113	100x15
1024	SO718	1257.5	243	100x15
1025	SO719	1242.5	113	100x15
1026	SO720	1227.5	243	100x15
1027	SO721	1212.5	113	100x15
1028	SO722	1197.5	243	100x15
1029	SO723	1182.5	113	100x15
1030	SO724	1167.5	243	100x15
1031	SO725	1152.5	113	100x15
1032	SO726	1137.5	243	100x15
1033	SO727	1122.5	113	100x15
1034	SO728	1107.5	243	100x15
1035	SO729	1092.5	113	100x15
1036	SO730	1077.5	243	100x15
1037	SO731	1062.5	113	100x15
1038	SO732	1047.5	243	100x15
1039	SO733	1032.5	113	100x15
1040	SO734	1017.5	243	100x15
1041	SO735	1002.5	113	100x15
1042	SO736	987.5	243	100x15
1043	SO737	972.5	113	100x15
1044	SO738	957.5	243	100x15
1045	SO739	942.5	113	100x15
1046	SO740	927.5	243	100x15
1047	SO741	912.5	113	100x15
1048	SO742	897.5	243	100x15
1049	SO743	882.5	113	100x15
1050	SO744	867.5	243	100x15

No.	Name	X	Y	Bump size(μm)
1051	SO745	852.5	113	100x15
1052	SO746	837.5	243	100x15
1053	SO747	822.5	113	100x15
1054	SO748	807.5	243	100x15
1055	SO749	792.5	113	100x15
1056	SO750	777.5	243	100x15
1057	SO751	762.5	113	100x15
1058	SO752	747.5	243	100x15
1059	SO753	732.5	113	100x15
1060	SO754	717.5	243	100x15
1061	SO755	702.5	113	100x15
1062	SO756	687.5	243	100x15
1063	SO757	672.5	113	100x15
1064	SO758	657.5	243	100x15
1065	SO759	642.5	113	100x15
1066	SO760	627.5	243	100x15
1067	SO761	612.5	113	100x15
1068	SO762	597.5	243	100x15
1069	SO763	582.5	113	100x15
1070	SO764	567.5	243	100x15
1071	SO765	552.5	113	100x15
1072	SO766	537.5	243	100x15
1073	SO767	522.5	113	100x15
1074	SO768	507.5	243	100x15
1075	SHIELDING	455	258	70x30
1076	SHIELDING	405	258	70x30
1077	SHIELDING	355	258	70x30
1078	SHIELDING	50	258	70x30
1079	SHIELDING	0	258	70x30
1080	SHIELDING	-50	258	70x30
1081	SHIELDING	-355	258	70x30
1082	SHIELDING	-405	258	70x30
1083	SHIELDING	-455	258	70x30
1084	SO769	-507.5	243	100x15
1085	SO770	-522.5	113	100x15
1086	SO771	-537.5	243	100x15
1087	SO772	-552.5	113	100x15
1088	SO773	-567.5	243	100x15
1089	SO774	-582.5	113	100x15
1090	SO775	-597.5	243	100x15
1091	SO776	-612.5	113	100x15
1092	SO777	-627.5	243	100x15
1093	SO778	-642.5	113	100x15
1094	SO779	-657.5	243	100x15
1095	SO780	-672.5	113	100x15
1096	SO781	-687.5	243	100x15
1097	SO782	-702.5	113	100x15
1098	SO783	-717.5	243	100x15
1099	SO784	-732.5	113	100x15
1100	SO785	-747.5	243	100x15

No.	Name	X	Y	Bump size(µm)
1101	SO786	-762.5	113	100x15
1102	SO787	-777.5	243	100x15
1103	SO788	-792.5	113	100x15
1104	SO789	-807.5	243	100x15
1105	SO790	-822.5	113	100x15
1106	SO791	-837.5	243	100x15
1107	SO792	-852.5	113	100x15
1108	SO793	-867.5	243	100x15
1109	SO794	-882.5	113	100x15
1110	SO795	-897.5	243	100x15
1111	SO796	-912.5	113	100x15
1112	SO797	-927.5	243	100x15
1113	SO798	-942.5	113	100x15
1114	SO799	-957.5	243	100x15
1115	SO800	-972.5	113	100x15
1116	SO801	-987.5	243	100x15
1117	SO802	-1002.5	113	100x15
1118	SO803	-1017.5	243	100x15
1119	SO804	-1032.5	113	100x15
1120	SO805	-1047.5	243	100x15
1121	SO806	-1062.5	113	100x15
1122	SO807	-1077.5	243	100x15
1123	SO808	-1092.5	113	100x15
1124	SO809	-1107.5	243	100x15
1125	SO810	-1122.5	113	100x15
1126	SO811	-1137.5	243	100x15
1127	SO812	-1152.5	113	100x15
1128	SO813	-1167.5	243	100x15
1129	SO814	-1182.5	113	100x15
1130	SO815	-1197.5	243	100x15
1131	SO816	-1212.5	113	100x15
1132	SO817	-1227.5	243	100x15
1133	SO818	-1242.5	113	100x15
1134	SO819	-1257.5	243	100x15
1135	SO820	-1272.5	113	100x15
1136	SO821	-1287.5	243	100x15
1137	SO822	-1302.5	113	100x15
1138	SO823	-1317.5	243	100x15
1139	SO824	-1332.5	113	100x15
1140	SO825	-1347.5	243	100x15
1141	SO826	-1362.5	113	100x15
1142	SO827	-1377.5	243	100x15
1143	SO828	-1392.5	113	100x15
1144	SO829	-1407.5	243	100x15
1145	SO830	-1422.5	113	100x15
1146	SO831	-1437.5	243	100x15
1147	SO832	-1452.5	113	100x15
1148	SO833	-1467.5	243	100x15
1149	SO834	-1482.5	113	100x15
1150	SO835	-1497.5	243	100x15

No.	Name	X	Y	Bump size(µm)
1151	SO836	-1512.5	113	100x15
1152	SO837	-1527.5	243	100x15
1153	SO838	-1542.5	113	100x15
1154	SO839	-1557.5	243	100x15
1155	SO840	-1572.5	113	100x15
1156	SO841	-1587.5	243	100x15
1157	SO842	-1602.5	113	100x15
1158	SO843	-1617.5	243	100x15
1159	SO844	-1632.5	113	100x15
1160	SO845	-1647.5	243	100x15
1161	SO846	-1662.5	113	100x15
1162	SO847	-1677.5	243	100x15
1163	SO848	-1692.5	113	100x15
1164	SO849	-1707.5	243	100x15
1165	SO850	-1722.5	113	100x15
1166	SO851	-1737.5	243	100x15
1167	SO852	-1752.5	113	100x15
1168	SO853	-1767.5	243	100x15
1169	SO854	-1782.5	113	100x15
1170	SO855	-1797.5	243	100x15
1171	SO856	-1812.5	113	100x15
1172	SO857	-1827.5	243	100x15
1173	SO858	-1842.5	113	100x15
1174	SO859	-1857.5	243	100x15
1175	SO860	-1872.5	113	100x15
1176	SO861	-1887.5	243	100x15
1177	SO862	-1902.5	113	100x15
1178	SO863	-1917.5	243	100x15
1179	SO864	-1932.5	113	100x15
1180	SO865	-1947.5	243	100x15
1181	SO866	-1962.5	113	100x15
1182	SO867	-1977.5	243	100x15
1183	SO868	-1992.5	113	100x15
1184	SO869	-2007.5	243	100x15
1185	SO870	-2022.5	113	100x15
1186	SO871	-2037.5	243	100x15
1187	SO872	-2052.5	113	100x15
1188	SO873	-2067.5	243	100x15
1189	SO874	-2082.5	113	100x15
1190	SO875	-2097.5	243	100x15
1191	SO876	-2112.5	113	100x15
1192	SO877	-2127.5	243	100x15
1193	SO878	-2142.5	113	100x15
1194	SO879	-2157.5	243	100x15
1195	SO880	-2172.5	113	100x15
1196	SO881	-2187.5	243	100x15
1197	SO882	-2202.5	113	100x15
1198	SO883	-2217.5	243	100x15
1199	SO884	-2232.5	113	100x15
1200	SO885	-2247.5	243	100x15

No.	Name	X	Y	Bump size(μm)
1201	SO886	-2262.5	113	100x15
1202	SO887	-2277.5	243	100x15
1203	SO888	-2292.5	113	100x15
1204	SO889	-2307.5	243	100x15
1205	SO890	-2322.5	113	100x15
1206	SO891	-2337.5	243	100x15
1207	SO892	-2352.5	113	100x15
1208	SO893	-2367.5	243	100x15
1209	SO894	-2382.5	113	100x15
1210	SO895	-2397.5	243	100x15
1211	SO896	-2412.5	113	100x15
1212	SO897	-2427.5	243	100x15
1213	SO898	-2442.5	113	100x15
1214	SO899	-2457.5	243	100x15
1215	SO900	-2472.5	113	100x15
1216	SO901	-2487.5	243	100x15
1217	SO902	-2502.5	113	100x15
1218	SO903	-2517.5	243	100x15
1219	SO904	-2532.5	113	100x15
1220	SO905	-2547.5	243	100x15
1221	SO906	-2562.5	113	100x15
1222	SO907	-2577.5	243	100x15
1223	SO908	-2592.5	113	100x15
1224	SO909	-2607.5	243	100x15
1225	SO910	-2622.5	113	100x15
1226	SO911	-2637.5	243	100x15
1227	SO912	-2652.5	113	100x15
1228	SO913	-2667.5	243	100x15
1229	SO914	-2682.5	113	100x15
1230	SO915	-2697.5	243	100x15
1231	SO916	-2712.5	113	100x15
1232	SO917	-2727.5	243	100x15
1233	SO918	-2742.5	113	100x15
1234	SO919	-2757.5	243	100x15
1235	SO920	-2772.5	113	100x15
1236	SO921	-2787.5	243	100x15
1237	SO922	-2802.5	113	100x15
1238	SO923	-2817.5	243	100x15
1239	SO924	-2832.5	113	100x15
1240	SO925	-2847.5	243	100x15
1241	SO926	-2862.5	113	100x15
1242	SO927	-2877.5	243	100x15
1243	SO928	-2892.5	113	100x15
1244	SO929	-2907.5	243	100x15
1245	SO930	-2922.5	113	100x15
1246	SO931	-2937.5	243	100x15
1247	SO932	-2952.5	113	100x15
1248	SO933	-2967.5	243	100x15
1249	SO934	-2982.5	113	100x15
1250	SO935	-2997.5	243	100x15

No.	Name	X	Y	Bump size(μm)
1251	SO936	-3012.5	113	100x15
1252	SO937	-3027.5	243	100x15
1253	SO938	-3042.5	113	100x15
1254	SO939	-3057.5	243	100x15
1255	SO940	-3072.5	113	100x15
1256	SO941	-3087.5	243	100x15
1257	SO942	-3102.5	113	100x15
1258	SO943	-3117.5	243	100x15
1259	SO944	-3132.5	113	100x15
1260	SO945	-3147.5	243	100x15
1261	SO946	-3162.5	113	100x15
1262	SO947	-3177.5	243	100x15
1263	SO948	-3192.5	113	100x15
1264	SO949	-3207.5	243	100x15
1265	SO950	-3222.5	113	100x15
1266	SO951	-3237.5	243	100x15
1267	SO952	-3252.5	113	100x15
1268	SO953	-3267.5	243	100x15
1269	SO954	-3282.5	113	100x15
1270	SO955	-3297.5	243	100x15
1271	SO956	-3312.5	113	100x15
1272	SO957	-3327.5	243	100x15
1273	SO958	-3342.5	113	100x15
1274	SO959	-3357.5	243	100x15
1275	SO960	-3372.5	113	100x15
1276	SO961	-3387.5	243	100x15
1277	SO962	-3402.5	113	100x15
1278	SO963	-3417.5	243	100x15
1279	SO964	-3432.5	113	100x15
1280	SO965	-3447.5	243	100x15
1281	SO966	-3462.5	113	100x15
1282	SO967	-3477.5	243	100x15
1283	SO968	-3492.5	113	100x15
1284	SO969	-3507.5	243	100x15
1285	SO970	-3522.5	113	100x15
1286	SO971	-3537.5	243	100x15
1287	SO972	-3552.5	113	100x15
1288	SO973	-3567.5	243	100x15
1289	SO974	-3582.5	113	100x15
1290	SO975	-3597.5	243	100x15
1291	SO976	-3612.5	113	100x15
1292	SO977	-3627.5	243	100x15
1293	SO978	-3642.5	113	100x15
1294	SO979	-3657.5	243	100x15
1295	SO980	-3672.5	113	100x15
1296	SO981	-3687.5	243	100x15
1297	SO982	-3702.5	113	100x15
1298	SO983	-3717.5	243	100x15
1299	SO984	-3732.5	113	100x15
1300	SO985	-3747.5	243	100x15

No.	Name	X	Y	Bump size(μm)
1301	SO986	-3762.5	113	100x15
1302	SO987	-3777.5	243	100x15
1303	SO988	-3792.5	113	100x15
1304	SO989	-3807.5	243	100x15
1305	SO990	-3822.5	113	100x15
1306	SO991	-3837.5	243	100x15
1307	SO992	-3852.5	113	100x15
1308	SO993	-3867.5	243	100x15
1309	SO994	-3882.5	113	100x15
1310	SO995	-3897.5	243	100x15
1311	SO996	-3912.5	113	100x15
1312	SO997	-3927.5	243	100x15
1313	SO998	-3942.5	113	100x15
1314	SO999	-3957.5	243	100x15
1315	SO1000	-3972.5	113	100x15
1316	SO1001	-3987.5	243	100x15
1317	SO1002	-4002.5	113	100x15
1318	SO1003	-4017.5	243	100x15
1319	SO1004	-4032.5	113	100x15
1320	SO1005	-4047.5	243	100x15
1321	SO1006	-4062.5	113	100x15
1322	SO1007	-4077.5	243	100x15
1323	SO1008	-4092.5	113	100x15
1324	SO1009	-4107.5	243	100x15
1325	SO1010	-4122.5	113	100x15
1326	SO1011	-4137.5	243	100x15
1327	SO1012	-4152.5	113	100x15
1328	SO1013	-4167.5	243	100x15
1329	SO1014	-4182.5	113	100x15
1330	SO1015	-4197.5	243	100x15
1331	SO1016	-4212.5	113	100x15
1332	SO1017	-4227.5	243	100x15
1333	SO1018	-4242.5	113	100x15
1334	SO1019	-4257.5	243	100x15
1335	SO1020	-4272.5	113	100x15
1336	SO1021	-4287.5	243	100x15
1337	SO1022	-4302.5	113	100x15
1338	SO1023	-4317.5	243	100x15
1339	SO1024	-4332.5	113	100x15
1340	SO1025	-4347.5	243	100x15
1341	SO1026	-4362.5	113	100x15
1342	SO1027	-4377.5	243	100x15
1343	SO1028	-4392.5	113	100x15
1344	SO1029	-4407.5	243	100x15
1345	SO1030	-4422.5	113	100x15
1346	SO1031	-4437.5	243	100x15
1347	SO1032	-4452.5	113	100x15
1348	SO1033	-4467.5	243	100x15
1349	SO1034	-4482.5	113	100x15
1350	SO1035	-4497.5	243	100x15

No.	Name	X	Y	Bump size(μm)
1351	SO1036	-4512.5	113	100x15
1352	SO1037	-4527.5	243	100x15
1353	SO1038	-4542.5	113	100x15
1354	SO1039	-4557.5	243	100x15
1355	SO1040	-4572.5	113	100x15
1356	SO1041	-4587.5	243	100x15
1357	SO1042	-4602.5	113	100x15
1358	SO1043	-4617.5	243	100x15
1359	SO1044	-4632.5	113	100x15
1360	SO1045	-4647.5	243	100x15
1361	SO1046	-4662.5	113	100x15
1362	SO1047	-4677.5	243	100x15
1363	SO1048	-4692.5	113	100x15
1364	SO1049	-4707.5	243	100x15
1365	SO1050	-4722.5	113	100x15
1366	SO1051	-4737.5	243	100x15
1367	SO1052	-4752.5	113	100x15
1368	SO1053	-4767.5	243	100x15
1369	SO1054	-4782.5	113	100x15
1370	SO1055	-4797.5	243	100x15
1371	SO1056	-4812.5	113	100x15
1372	SO1057	-4827.5	243	100x15
1373	SO1058	-4842.5	113	100x15
1374	SO1059	-4857.5	243	100x15
1375	SO1060	-4872.5	113	100x15
1376	SO1061	-4887.5	243	100x15
1377	SO1062	-4902.5	113	100x15
1378	SO1063	-4917.5	243	100x15
1379	SO1064	-4932.5	113	100x15
1380	SO1065	-4947.5	243	100x15
1381	SO1066	-4962.5	113	100x15
1382	SO1067	-4977.5	243	100x15
1383	SO1068	-4992.5	113	100x15
1384	SO1069	-5007.5	243	100x15
1385	SO1070	-5022.5	113	100x15
1386	SO1071	-5037.5	243	100x15
1387	SO1072	-5052.5	113	100x15
1388	SO1073	-5067.5	243	100x15
1389	SO1074	-5082.5	113	100x15
1390	SO1075	-5097.5	243	100x15
1391	SO1076	-5112.5	113	100x15
1392	SO1077	-5127.5	243	100x15
1393	SO1078	-5142.5	113	100x15
1394	SO1079	-5157.5	243	100x15
1395	SO1080	-5172.5	113	100x15
1396	SO1081	-5187.5	243	100x15
1397	SO1082	-5202.5	113	100x15
1398	SO1083	-5217.5	243	100x15
1399	SO1084	-5232.5	113	100x15
1400	SO1085	-5247.5	243	100x15

No.	Name	X	Y	Bump size(μm)
1401	SO1086	-5262.5	113	100x15
1402	SO1087	-5277.5	243	100x15
1403	SO1088	-5292.5	113	100x15
1404	SO1089	-5307.5	243	100x15
1405	SO1090	-5322.5	113	100x15
1406	SO1091	-5337.5	243	100x15
1407	SO1092	-5352.5	113	100x15
1408	SO1093	-5367.5	243	100x15
1409	SO1094	-5382.5	113	100x15
1410	SO1095	-5397.5	243	100x15
1411	SO1096	-5412.5	113	100x15
1412	SO1097	-5427.5	243	100x15
1413	SO1098	-5442.5	113	100x15
1414	SO1099	-5457.5	243	100x15
1415	SO1100	-5472.5	113	100x15
1416	SO1101	-5487.5	243	100x15
1417	SO1102	-5502.5	113	100x15
1418	SO1103	-5517.5	243	100x15
1419	SO1104	-5532.5	113	100x15
1420	SO1105	-5547.5	243	100x15
1421	SO1106	-5562.5	113	100x15
1422	SO1107	-5577.5	243	100x15
1423	SO1108	-5592.5	113	100x15
1424	SO1109	-5607.5	243	100x15
1425	SO1110	-5622.5	113	100x15
1426	SO1111	-5637.5	243	100x15
1427	SO1112	-5652.5	113	100x15
1428	SO1113	-5667.5	243	100x15
1429	SO1114	-5682.5	113	100x15
1430	SO1115	-5697.5	243	100x15
1431	SO1116	-5712.5	113	100x15
1432	SO1117	-5727.5	243	100x15
1433	SO1118	-5742.5	113	100x15
1434	SO1119	-5757.5	243	100x15
1435	SO1120	-5772.5	113	100x15
1436	SO1121	-5787.5	243	100x15
1437	SO1122	-5802.5	113	100x15
1438	SO1123	-5817.5	243	100x15
1439	SO1124	-5832.5	113	100x15
1440	SO1125	-5847.5	243	100x15
1441	SO1126	-5862.5	113	100x15
1442	SO1127	-5877.5	243	100x15
1443	SO1128	-5892.5	113	100x15
1444	SO1129	-5907.5	243	100x15
1445	SO1130	-5922.5	113	100x15
1446	SO1131	-5937.5	243	100x15
1447	SO1132	-5952.5	113	100x15
1448	SO1133	-5967.5	243	100x15
1449	SO1134	-5982.5	113	100x15
1450	SO1135	-5997.5	243	100x15

No.	Name	X	Y	Bump size(μm)
1451	SO1136	-6012.5	113	100x15
1452	SO1137	-6027.5	243	100x15
1453	SO1138	-6042.5	113	100x15
1454	SO1139	-6057.5	243	100x15
1455	SO1140	-6072.5	113	100x15
1456	SO1141	-6087.5	243	100x15
1457	SO1142	-6102.5	113	100x15
1458	SO1143	-6117.5	243	100x15
1459	SO1144	-6132.5	113	100x15
1460	SO1145	-6147.5	243	100x15
1461	SO1146	-6162.5	113	100x15
1462	SO1147	-6177.5	243	100x15
1463	SO1148	-6192.5	113	100x15
1464	SO1149	-6207.5	243	100x15
1465	SO1150	-6222.5	113	100x15
1466	SO1151	-6237.5	243	100x15
1467	SO1152	-6252.5	113	100x15
1468	SO1153	-6267.5	243	100x15
1469	SO1154	-6282.5	113	100x15
1470	SO1155	-6297.5	243	100x15
1471	SO1156	-6312.5	113	100x15
1472	SO1157	-6327.5	243	100x15
1473	SO1158	-6342.5	113	100x15
1474	SO1159	-6357.5	243	100x15
1475	SO1160	-6372.5	113	100x15
1476	SO1161	-6387.5	243	100x15
1477	SO1162	-6402.5	113	100x15
1478	SO1163	-6417.5	243	100x15
1479	SO1164	-6432.5	113	100x15
1480	SO1165	-6447.5	243	100x15
1481	SO1166	-6462.5	113	100x15
1482	SO1167	-6477.5	243	100x15
1483	SO1168	-6492.5	113	100x15
1484	SO1169	-6507.5	243	100x15
1485	SO1170	-6522.5	113	100x15
1486	SO1171	-6537.5	243	100x15
1487	SO1172	-6552.5	113	100x15
1488	SO1173	-6567.5	243	100x15
1489	SO1174	-6582.5	113	100x15
1490	SO1175	-6597.5	243	100x15
1491	SO1176	-6612.5	113	100x15
1492	SO1177	-6627.5	243	100x15
1493	SO1178	-6642.5	113	100x15
1494	SO1179	-6657.5	243	100x15
1495	SO1180	-6672.5	113	100x15
1496	SO1181	-6687.5	243	100x15
1497	SO1182	-6702.5	113	100x15
1498	SO1183	-6717.5	243	100x15
1499	SO1184	-6732.5	113	100x15
1500	SO1185	-6747.5	243	100x15

No.	Name	X	Y	Bump size(µm)
1501	SO1186	-6762.5	113	100x15
1502	SO1187	-6777.5	243	100x15
1503	SO1188	-6792.5	113	100x15
1504	SO1189	-6807.5	243	100x15
1505	SO1190	-6822.5	113	100x15
1506	SO1191	-6837.5	243	100x15
1507	SO1192	-6852.5	113	100x15
1508	SO1193	-6867.5	243	100x15
1509	SO1194	-6882.5	113	100x15
1510	SO1195	-6897.5	243	100x15
1511	SO1196	-6912.5	113	100x15
1512	SO1197	-6927.5	243	100x15
1513	SO1198	-6942.5	113	100x15
1514	SO1199	-6957.5	243	100x15
1515	SO1200	-6972.5	113	100x15
1516	SO1201	-6987.5	243	100x15
1517	SO1202	-7002.5	113	100x15
1518	SO1203	-7017.5	243	100x15
1519	SO1204	-7032.5	113	100x15
1520	SO1205	-7047.5	243	100x15
1521	SO1206	-7062.5	113	100x15
1522	SO1207	-7077.5	243	100x15
1523	SO1208	-7092.5	113	100x15
1524	SO1209	-7107.5	243	100x15
1525	SO1210	-7122.5	113	100x15
1526	SO1211	-7137.5	243	100x15
1527	SO1212	-7152.5	113	100x15
1528	SO1213	-7167.5	243	100x15
1529	SO1214	-7182.5	113	100x15
1530	SO1215	-7197.5	243	100x15
1531	SO1216	-7212.5	113	100x15
1532	SO1217	-7227.5	243	100x15
1533	SO1218	-7242.5	113	100x15
1534	SO1219	-7257.5	243	100x15
1535	SO1220	-7272.5	113	100x15
1536	SO1221	-7287.5	243	100x15
1537	SO1222	-7302.5	113	100x15
1538	SO1223	-7317.5	243	100x15
1539	SO1224	-7332.5	113	100x15
1540	SO1225	-7347.5	243	100x15
1541	SO1226	-7362.5	113	100x15
1542	SO1227	-7377.5	243	100x15
1543	SO1228	-7392.5	113	100x15
1544	SO1229	-7407.5	243	100x15
1545	SO1230	-7422.5	113	100x15
1546	SO1231	-7437.5	243	100x15
1547	SO1232	-7452.5	113	100x15
1548	SO1233	-7467.5	243	100x15
1549	SO1234	-7482.5	113	100x15
1550	SO1235	-7497.5	243	100x15

No.	Name	X	Y	Bump size(µm)
1551	SO1236	-7512.5	113	100x15
1552	SO1237	-7527.5	243	100x15
1553	SO1238	-7542.5	113	100x15
1554	SO1239	-7557.5	243	100x15
1555	SO1240	-7572.5	113	100x15
1556	SO1241	-7587.5	243	100x15
1557	SO1242	-7602.5	113	100x15
1558	SO1243	-7617.5	243	100x15
1559	SO1244	-7632.5	113	100x15
1560	SO1245	-7647.5	243	100x15
1561	SO1246	-7662.5	113	100x15
1562	SO1247	-7677.5	243	100x15
1563	SO1248	-7692.5	113	100x15
1564	SO1249	-7707.5	243	100x15
1565	SO1250	-7722.5	113	100x15
1566	SO1251	-7737.5	243	100x15
1567	SO1252	-7752.5	113	100x15
1568	SO1253	-7767.5	243	100x15
1569	SO1254	-7782.5	113	100x15
1570	SO1255	-7797.5	243	100x15
1571	SO1256	-7812.5	113	100x15
1572	SO1257	-7827.5	243	100x15
1573	SO1258	-7842.5	113	100x15
1574	SO1259	-7857.5	243	100x15
1575	SO1260	-7872.5	113	100x15
1576	SO1261	-7887.5	243	100x15
1577	SO1262	-7902.5	113	100x15
1578	SO1263	-7917.5	243	100x15
1579	SO1264	-7932.5	113	100x15
1580	SO1265	-7947.5	243	100x15
1581	SO1266	-7962.5	113	100x15
1582	SO1267	-7977.5	243	100x15
1583	SO1268	-7992.5	113	100x15
1584	SO1269	-8007.5	243	100x15
1585	SO1270	-8022.5	113	100x15
1586	SO1271	-8037.5	243	100x15
1587	SO1272	-8052.5	113	100x15
1588	SO1273	-8067.5	243	100x15
1589	SO1274	-8082.5	113	100x15
1590	SO1275	-8097.5	243	100x15
1591	SO1276	-8112.5	113	100x15
1592	SO1277	-8127.5	243	100x15
1593	SO1278	-8142.5	113	100x15
1594	SO1279	-8157.5	243	100x15
1595	SO1280	-8172.5	113	100x15
1596	SO1281	-8187.5	243	100x15
1597	SO1282	-8202.5	113	100x15
1598	SO1283	-8217.5	243	100x15
1599	SO1284	-8232.5	113	100x15
1600	SO1285	-8247.5	243	100x15

No.	Name	X	Y	Bump size(μm)
1601	SO1286	-8262.5	113	100x15
1602	SO1287	-8277.5	243	100x15
1603	SO1288	-8292.5	113	100x15
1604	SO1289	-8307.5	243	100x15
1605	SO1290	-8322.5	113	100x15
1606	SO1291	-8337.5	243	100x15
1607	SO1292	-8352.5	113	100x15
1608	SO1293	-8367.5	243	100x15
1609	SO1294	-8382.5	113	100x15
1610	SO1295	-8397.5	243	100x15
1611	SO1296	-8412.5	113	100x15
1612	SO1297	-8427.5	243	100x15
1613	SO1298	-8442.5	113	100x15
1614	SO1299	-8457.5	243	100x15
1615	SO1300	-8472.5	113	100x15
1616	SO1301	-8487.5	243	100x15
1617	SO1302	-8502.5	113	100x15
1618	SO1303	-8517.5	243	100x15
1619	SO1304	-8532.5	113	100x15
1620	SO1305	-8547.5	243	100x15
1621	SO1306	-8562.5	113	100x15
1622	SO1307	-8577.5	243	100x15
1623	SO1308	-8592.5	113	100x15
1624	SO1309	-8607.5	243	100x15
1625	SO1310	-8622.5	113	100x15
1626	SO1311	-8637.5	243	100x15
1627	SO1312	-8652.5	113	100x15
1628	SO1313	-8667.5	243	100x15
1629	SO1314	-8682.5	113	100x15
1630	SO1315	-8697.5	243	100x15
1631	SO1316	-8712.5	113	100x15
1632	SO1317	-8727.5	243	100x15
1633	SO1318	-8742.5	113	100x15
1634	SO1319	-8757.5	243	100x15
1635	SO1320	-8772.5	113	100x15
1636	SO1321	-8787.5	243	100x15
1637	SO1322	-8802.5	113	100x15
1638	SO1323	-8817.5	243	100x15
1639	SO1324	-8832.5	113	100x15
1640	SO1325	-8847.5	243	100x15
1641	SO1326	-8862.5	113	100x15
1642	SO1327	-8877.5	243	100x15
1643	SO1328	-8892.5	113	100x15
1644	SO1329	-8907.5	243	100x15
1645	SO1330	-8922.5	113	100x15
1646	SO1331	-8937.5	243	100x15
1647	SO1332	-8952.5	113	100x15
1648	SO1333	-8967.5	243	100x15
1649	SO1334	-8982.5	113	100x15
1650	SO1335	-8997.5	243	100x15

No.	Name	X	Y	Bump size(μm)
1651	SO1336	-9012.5	113	100x15
1652	SO1337	-9027.5	243	100x15
1653	SO1338	-9042.5	113	100x15
1654	SO1339	-9057.5	243	100x15
1655	SO1340	-9072.5	113	100x15
1656	SO1341	-9087.5	243	100x15
1657	SO1342	-9102.5	113	100x15
1658	SO1343	-9117.5	243	100x15
1659	SO1344	-9132.5	113	100x15
1660	SO1345	-9147.5	243	100x15
1661	SO1346	-9162.5	113	100x15
1662	SO1347	-9177.5	243	100x15
1663	SO1348	-9192.5	113	100x15
1664	SO1349	-9207.5	243	100x15
1665	SO1350	-9222.5	113	100x15
1666	SO1351	-9237.5	243	100x15
1667	SO1352	-9252.5	113	100x15
1668	SO1353	-9267.5	243	100x15
1669	SO1354	-9282.5	113	100x15
1670	SO1355	-9297.5	243	100x15
1671	SO1356	-9312.5	113	100x15
1672	SO1357	-9327.5	243	100x15
1673	SO1358	-9342.5	113	100x15
1674	SO1359	-9357.5	243	100x15
1675	SO1360	-9372.5	113	100x15
1676	SO1361	-9387.5	243	100x15
1677	SO1362	-9402.5	113	100x15
1678	SO1363	-9417.5	243	100x15
1679	SO1364	-9432.5	113	100x15
1680	SO1365	-9447.5	243	100x15
1681	SO1366	-9462.5	113	100x15
1682	SO1367	-9477.5	243	100x15
1683	SO1368	-9492.5	113	100x15
1684	SO1369	-9507.5	243	100x15
1685	SO1370	-9522.5	113	100x15
1686	SO1371	-9537.5	243	100x15
1687	SO1372	-9552.5	113	100x15
1688	SO1373	-9567.5	243	100x15
1689	SO1374	-9582.5	113	100x15
1690	SO1375	-9597.5	243	100x15
1691	SO1376	-9612.5	113	100x15
1692	SO1377	-9627.5	243	100x15
1693	SO1378	-9642.5	113	100x15
1694	SO1379	-9657.5	243	100x15
1695	SO1380	-9672.5	113	100x15
1696	SO1381	-9687.5	243	100x15
1697	SO1382	-9702.5	113	100x15
1698	SO1383	-9717.5	243	100x15
1699	SO1384	-9732.5	113	100x15
1700	SO1385	-9747.5	243	100x15

No.	Name	X	Y	Bump size(µm)
1701	SO1386	-9762.5	113	100x15
1702	SO1387	-9777.5	243	100x15
1703	SO1388	-9792.5	113	100x15
1704	SO1389	-9807.5	243	100x15
1705	SO1390	-9822.5	113	100x15
1706	SO1391	-9837.5	243	100x15
1707	SO1392	-9852.5	113	100x15
1708	SO1393	-9867.5	243	100x15
1709	SO1394	-9882.5	113	100x15
1710	SO1395	-9897.5	243	100x15
1711	SO1396	-9912.5	113	100x15
1712	SO1397	-9927.5	243	100x15
1713	SO1398	-9942.5	113	100x15
1714	SO1399	-9957.5	243	100x15
1715	SO1400	-9972.5	113	100x15
1716	SO1401	-9987.5	243	100x15
1717	SO1402	-10002.5	113	100x15
1718	SO1403	-10017.5	243	100x15
1719	SO1404	-10032.5	113	100x15
1720	SO1405	-10047.5	243	100x15
1721	SO1406	-10062.5	113	100x15
1722	SO1407	-10077.5	243	100x15
1723	SO1408	-10092.5	113	100x15
1724	SO1409	-10107.5	243	100x15
1725	SO1410	-10122.5	113	100x15
1726	SO1411	-10137.5	243	100x15
1727	SO1412	-10152.5	113	100x15
1728	SO1413	-10167.5	243	100x15
1729	SO1414	-10182.5	113	100x15
1730	SO1415	-10197.5	243	100x15
1731	SO1416	-10212.5	113	100x15
1732	SO1417	-10227.5	243	100x15
1733	SO1418	-10242.5	113	100x15
1734	SO1419	-10257.5	243	100x15
1735	SO1420	-10272.5	113	100x15
1736	SO1421	-10287.5	243	100x15
1737	SO1422	-10302.5	113	100x15
1738	SO1423	-10317.5	243	100x15
1739	SO1424	-10332.5	113	100x15
1740	SO1425	-10347.5	243	100x15
1741	SO1426	-10362.5	113	100x15
1742	SO1427	-10377.5	243	100x15
1743	SO1428	-10392.5	113	100x15
1744	SO1429	-10407.5	243	100x15
1745	SO1430	-10422.5	113	100x15
1746	SO1431	-10437.5	243	100x15
1747	SO1432	-10452.5	113	100x15
1748	SO1433	-10467.5	243	100x15
1749	SO1434	-10482.5	113	100x15
1750	SO1435	-10497.5	243	100x15

No.	Name	X	Y	Bump size(µm)
1751	SO1436	-10512.5	113	100x15
1752	SO1437	-10527.5	243	100x15
1753	SO1438	-10542.5	113	100x15
1754	SO1439	-10557.5	243	100x15
1755	SO1440	-10572.5	113	100x15
1756	SO1441	-10587.5	243	100x15
1757	SO1442	-10602.5	113	100x15
1758	SO1443	-10617.5	243	100x15
1759	SO1444	-10632.5	113	100x15
1760	SO1445	-10647.5	243	100x15
1761	SO1446	-10662.5	113	100x15
1762	SO1447	-10677.5	243	100x15
1763	SO1448	-10692.5	113	100x15
1764	SO1449	-10707.5	243	100x15
1765	SO1450	-10722.5	113	100x15
1766	SO1451	-10737.5	243	100x15
1767	SO1452	-10752.5	113	100x15
1768	SO1453	-10767.5	243	100x15
1769	SO1454	-10782.5	113	100x15
1770	SO1455	-10797.5	243	100x15
1771	SO1456	-10812.5	113	100x15
1772	SO1457	-10827.5	243	100x15
1773	SO1458	-10842.5	113	100x15
1774	SO1459	-10857.5	243	100x15
1775	SO1460	-10872.5	113	100x15
1776	SO1461	-10887.5	243	100x15
1777	SO1462	-10902.5	113	100x15
1778	SO1463	-10917.5	243	100x15
1779	SO1464	-10932.5	113	100x15
1780	SO1465	-10947.5	243	100x15
1781	SO1466	-10962.5	113	100x15
1782	SO1467	-10977.5	243	100x15
1783	SO1468	-10992.5	113	100x15
1784	SO1469	-11007.5	243	100x15
1785	SO1470	-11022.5	113	100x15
1786	SO1471	-11037.5	243	100x15
1787	SO1472	-11052.5	113	100x15
1788	SO1473	-11067.5	243	100x15
1789	SO1474	-11082.5	113	100x15
1790	SO1475	-11097.5	243	100x15
1791	SO1476	-11112.5	113	100x15
1792	SO1477	-11127.5	243	100x15
1793	SO1478	-11142.5	113	100x15
1794	SO1479	-11157.5	243	100x15
1795	SO1480	-11172.5	113	100x15
1796	SO1481	-11187.5	243	100x15
1797	SO1482	-11202.5	113	100x15
1798	SO1483	-11217.5	243	100x15
1799	SO1484	-11232.5	113	100x15
1800	SO1485	-11247.5	243	100x15

No.	Name	X	Y	Bump size(μm)
1801	SO1486	-11262.5	113	100x15
1802	SO1487	-11277.5	243	100x15
1803	SO1488	-11292.5	113	100x15
1804	SO1489	-11307.5	243	100x15
1805	SO1490	-11322.5	113	100x15
1806	SO1491	-11337.5	243	100x15
1807	SO1492	-11352.5	113	100x15
1808	SO1493	-11367.5	243	100x15
1809	SO1494	-11382.5	113	100x15
1810	SO1495	-11397.5	243	100x15
1811	SO1496	-11412.5	113	100x15
1812	SO1497	-11427.5	243	100x15
1813	SO1498	-11442.5	113	100x15
1814	SO1499	-11457.5	243	100x15
1815	SO1500	-11472.5	113	100x15
1816	SO1501	-11487.5	243	100x15
1817	SO1502	-11502.5	113	100x15
1818	SO1503	-11517.5	243	100x15
1819	SO1504	-11532.5	113	100x15
1820	SO1505	-11547.5	243	100x15
1821	SO1506	-11562.5	113	100x15
1822	SO1507	-11577.5	243	100x15
1823	SO1508	-11592.5	113	100x15
1824	SO1509	-11607.5	243	100x15
1825	SO1510	-11622.5	113	100x15
1826	SO1511	-11637.5	243	100x15
1827	SO1512	-11652.5	113	100x15
1828	SO1513	-11667.5	243	100x15
1829	SO1514	-11682.5	113	100x15
1830	SO1515	-11697.5	243	100x15
1831	SO1516	-11712.5	113	100x15
1832	SO1517	-11727.5	243	100x15
1833	SO1518	-11742.5	113	100x15
1834	SO1519	-11757.5	243	100x15
1835	SO1520	-11772.5	113	100x15
1836	SO1521	-11787.5	243	100x15
1837	SO1522	-11802.5	113	100x15
1838	SO1523	-11817.5	243	100x15
1839	SO1524	-11832.5	113	100x15
1840	SO1525	-11847.5	243	100x15
1841	SO1526	-11862.5	113	100x15
1842	SO1527	-11877.5	243	100x15
1843	SO1528	-11892.5	113	100x15
1844	SO1529	-11907.5	243	100x15
1845	SO1530	-11922.5	113	100x15
1846	SO1531	-11937.5	243	100x15
1847	SO1532	-11952.5	113	100x15
1848	SO1533	-11967.5	243	100x15
1849	SO1534	-11982.5	113	100x15
1850	SO1535	-11997.5	243	100x15
1851	SO1536	-12012.5	113	100x15
1852	SHIELDING	-12055	258	70x30
1853	COM1_OUT	-12105	258	70x30
1854	COM1_OUT	-12155	258	70x30
1855	SHIELDING	-12205	258	70x30
1856	F_CtrlR	-12403	278	67x30
1857	OEVR	-12303	238	80x30
1858	SYNC1R	-12403	198	67x30
1859	SYNC2R	-12303	158	80x30
1860	UDR	-12403	118	67x30
1861	CKVR	-12303	78	80x30
1862	STV2R	-12403	38	67x30
1863	STV1R	-12303	-2	80x30
1864	F_CtrlR	-12403	-42	67x30
1865	STBNR	-12303	-82	80x30
Alignment mark				
	L_AMK	-12131.5	115.5	115x115
	R_AMK	12131.5	115.5	115x115

Table 12.2: Pad Coordinate

13. Ordering Information

Part No.	Package Type
HX8282-D000PDxxx	PD : mean COG xxx : mean chip thickness (μm)

14. Revision History

Version	Date	Description of changes
01	2010/03/30	New setup
	2010/04/12	Modify Figure3.2, Figure3.3 Modify IFSEL, DCLKPOL, UPDN and SEL of description.
	2010/04/22	P45 Modify Figure 12.2 P46 Add D8
02	2010/05/01	P12,P13 Modify RES, SEL, V1~V14 and GAMH of description. P19,P20 Modify Gamma table
	2010/05/18	P24,P25 Remove VDDIO P27 Modify R_{XVIN} Max :2.4 -> VDD-1.2+$\|V_{ID}\|$/2
	2010/05/25	P8 Add Figure3.1 Function Block Diagram P48~P66 Add Bump size
	2010/05/27	P11 Modify Figure 3.4 Application Power Circuit P25 Modify Figure 8.2 Enter and Exit Standby Mode Sequence
	2010/05/28	P22 Modify STB Default P9~10 Modify Dual Gate and Cascade application