NOVATEK
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Data Sheet

for ***NT39406***

TFT LCD Source Driver

V0.10
Preliminary

Revision History

NT39406 Specification Revision History		
Version	**Content**	**Date**
0.1	New Release	Apr. 21, 2005
0.2	Page 12: Update Icc	May. 02, 2005
0.3	Update Page 16: Chip Outline Figure	Jun. 14, 2005
0.4	Page 17: Add Bonding Diagram	Jun 15, 2005
0.5	Page 13: Update frequency and pulse with conditions for CLK	Jun 16, 2005
0.6	Page 5: Pin Assignment Figure Page 7: Update CHNSL [1:0] for 600/642/720/804 Channel Selection Page 16: Update Chip Outline Dimensions Page 17: Update Bonding Diagram	Jun 24, 2005
0.7	Page 7: Add CHNDS to disable additional channels in 642/804 channel selection Page 17: Update Bonding Diagram for naming	Jul 13, 2005
0.8	Page 12: Update Ioc, Isc Page 12: Update Condition for IOH Page 12: Modify Symbol for Impedance for Gamma Correction	Oct 05, 2005
0.9	Page 8: Update clks' number Page 15: Update the conditions of timing Page 16: Update chip size (scribe line has been included)	Jan. 26, 2006
0.10	Page 13~14 : Update pull H/L resistor , deviation , Propagation delay of DIO2/1 and analog operating current. Add a table for Recommended Operating Range .	Jun. 5, 2007

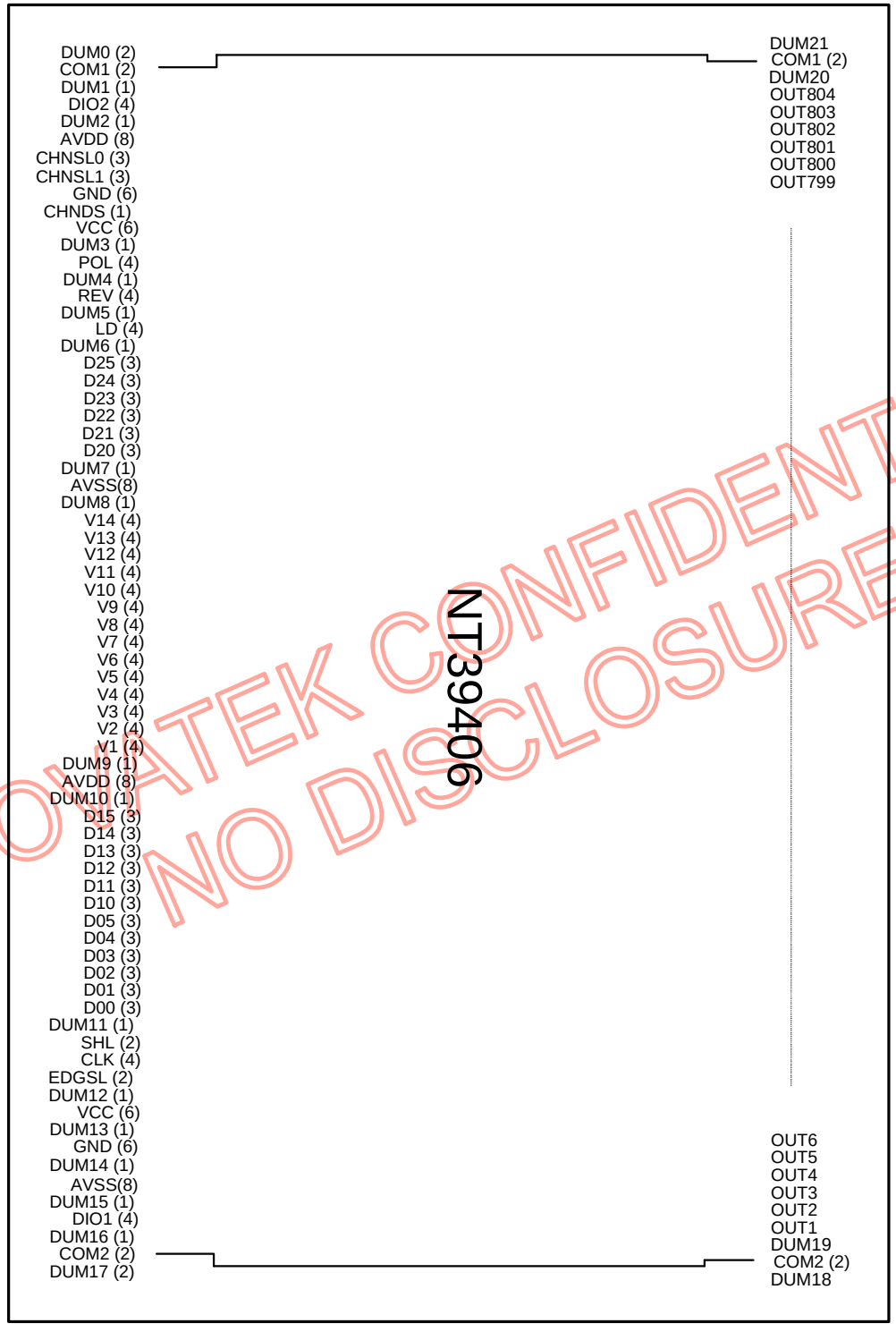
Features

- Output: 600/642/720/804 output channels
- 6-bit resolution / 64 gray scale
- Dot inversion with polarity control
- V1 ~ V14 for adjusting Gamma correction
- Power of LCD driving voltage: 6.5 ~ 13.5V
- Output dynamic range: 0.1 ~ AVDD-0.1V
- Power consumption of analog circuit: 12mA
- Power for interface circuit: 2.7 ~ 3.6V
- Operating frequency: 40 MHz
- Output deviation: ±20mV
- Data inverting for reducing EMI
- Cascade function with bi-direction shift control
- CMOS silicon gate (p-type substrate)
- COG package

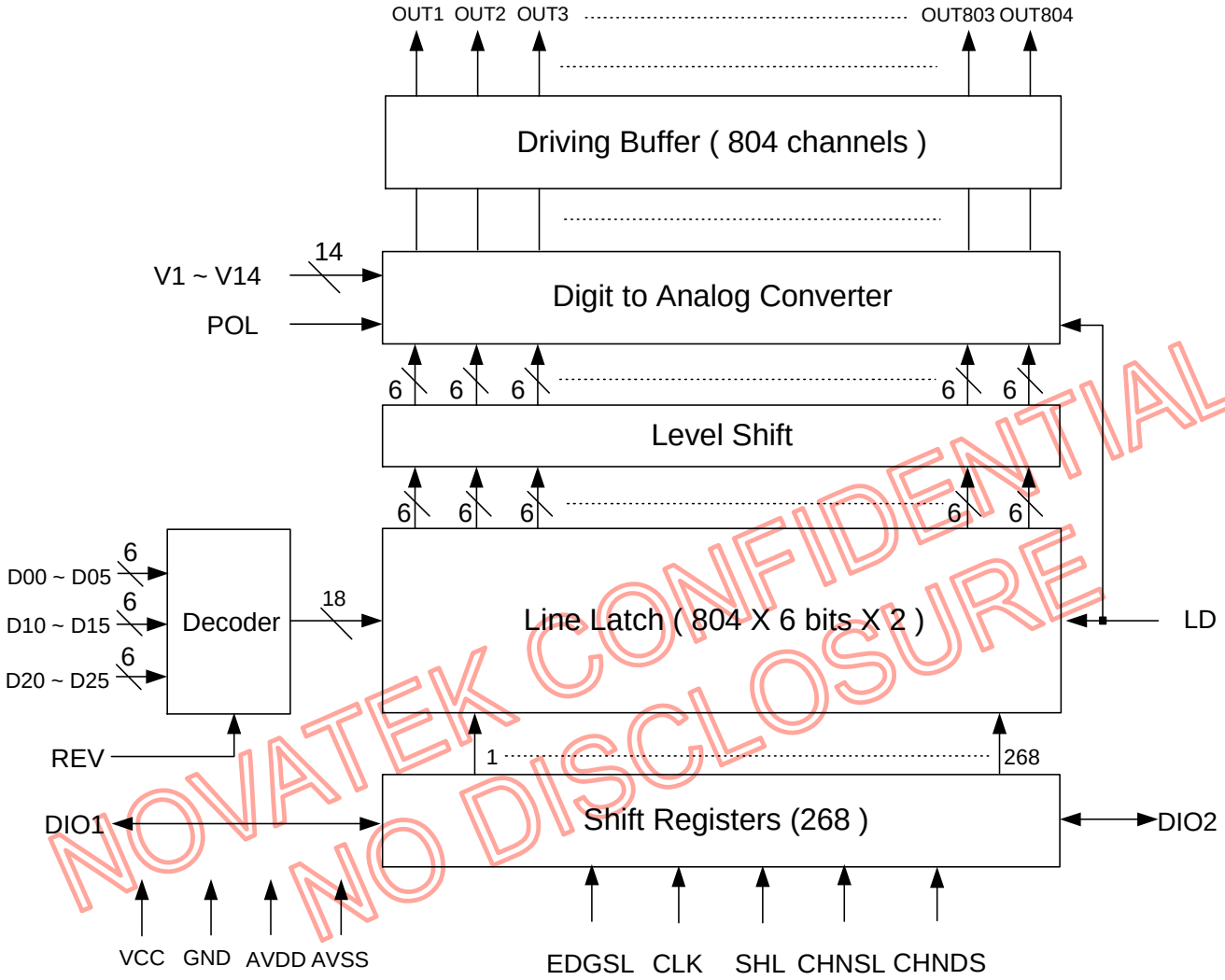
General Description

NT39406 is a 600/642/720/804 channel data driver IC with TTL interface for color TFT LCD panels. For lower power dissipation, the circuit architecture with a special method is designed, and dot inversion is suggested on application. For better performance, a wide range of supply voltages and small output deviations are designed in this chip. This chip also supplies 14 sections of voltage-reference select for gamma correction. And the power dissipation on the gamma correction resistors is also concerned, making this chip more suitable for mid or small sized color TFT panels.

Pin Assignment (IC face view)



Block Diagram



Pin and Pad Descriptions

<table>
<tr><th>Designation</th><th>I/O</th><th>Description</th></tr>
<tr><td>D05 ~ D00
D15 ~ D10
D25 ~ D20</td><td>I</td><td>Data input. For six 6-bit data,1 pixel, of color data (R, G, B)
DX5 : MSB; DX0 : LSB</td></tr>
<tr><td>REV</td><td>I</td><td>Controls whether the data of D00~D25 are inverted or not.
When “REV”=1 these data will be inverted. EX. “00” → “ 3F”, “07”→ “ 38”, “15”→ “2A”, and so on.</td></tr>
<tr><td>CLK</td><td>I</td><td>Clock input;
Latching source data onto the line latches at the rising or falling edge by EDGSL signal selected.</td></tr>
<tr><td>V1 ~ V14</td><td>I</td><td>Gamma correction reference voltage. The voltage of these pins must be AVSS<V14<V13<V12<V11<V10<V9< V8; V7< V6<V5<V4<V3<V2<V1< AVDD</td></tr>
<tr><td>OUT1 ~
OUT804</td><td>O</td><td>Output driver signals.</td></tr>
<tr><td>SHL</td><td>I</td><td>Selects left or right shift;
SHL=“1” : DIO1→ OUT1,2,3 → OUT4,5,6 --→ OUT802,803,804 = DIO2
SHL=“0” : DIO1=OUT1,2,3 ← OUT4,5,6 ←-- OUT802,803,804 ← DIO2
<table>
<tr><th>SHL</th><th>DIO1</th><th>DIO2</th><th>SHIFT</th></tr>
<tr><td>1</td><td>Input</td><td>Output</td><td>Right</td></tr>
<tr><td>0</td><td>Output</td><td>Input</td><td>Left</td></tr>
</table></td></tr>
<tr><td>DIO1
DIO2</td><td>I/O</td><td>Start pulse signal input/output.
When SHL is applied high (SHL=”1”), a start high-pulse on DIO1 is latched at the rising edge of the CLK. Then the data are latched serially onto internal latches at the rising or falling edge of the CLK. After all line latches are full with data, 200/214/240/268 or 100/107/120/134 clocks, a pulse is shifted out through the DIO2 pin at the rising edge of the CLK. This function can cascade two or more devices for dot-size expansion. In normal applications, the DIO2 signal of the first device is connected to the DIO1 of the second stage, and the DIO2 of the second one is connected to the DIO1 of the third, and so on like a daisy chain.
In contrast, when SHL is applied low, a start pulse inputs on DIO2, and a pulse outputs through DIO1.
*Remark: The input pulse-width of DIO1/2 may be over 1 clock-cycle.</td></tr>
<tr><td>EDGSL</td><td>I</td><td>Clock edge selected, normally pulled low.
When EDGSL= “0”, Latching source data onto the line latches at the rising edge.
When EDGSL= “1”, Latching source data onto the line latches at the rising edge and falling edge.
*Remark: Please reference timing diagram 1.</td></tr>
<tr><td>LD</td><td>I</td><td>Latches the polarity of outputs and switches the new data to outputs.
1. At the rising edge, latches the “POL” signal to control the polarity of the outputs.
2. The pin also controls the switch of the line registers that switches the new incoming data to outputs.
*Remark: The LD may switch the new data to outputs at any time even if the line data are not completely full.</td></tr>
</table>

<table>
<tr><td>POL</td><td>I</td><td>Polarity selector for the dot-inversion control. Available at the rising edge of LD “POL” value is latched at the rising edge of “LD” to control the polarity of the even or odd outputs. “POL=1” represents that even outputs are of positive polarity with a voltage ranging from V1 to V7, and odd outputs are of negative polarity with a voltage ranging from V8 to V14. On the other hand, if LD has low level “POL”, even outputs are of negative polarity and odd outputs are of positive.
POL=1: Even outputs range from V1 ~ V7, and Odd outputs range from V8 ~ V14
POL=0: Even outputs range from V8 ~ V14, and Odd outputs range from V1 ~ V7</td></tr>
<tr><td>CHNSL[1:0]</td><td>I</td><td>Selects the channel numbers of outputs; default normally pulled-high.
<table>
<tr><th>CHNSL 1</th><th>CHNSL 0</th><th>Output Channel No.</th><th>CHNDS = “1”</th></tr>
<tr><td>L</td><td>L</td><td>600 channels; OUT301 ~ OUT504 are unavailable</td><td>No effect</td></tr>
<tr><td>L</td><td>H</td><td>642 channels; OUT322 ~ OUT483 are unavailable</td><td>OUT799~OUT804 is disabled</td></tr>
<tr><td>H</td><td>L</td><td>720 channels; OUT361 ~ OUT444 are unavailable</td><td>No effect</td></tr>
<tr><td>H</td><td>H</td><td>804 channels (Default)</td><td>OUT793~OUT804 is disabled</td></tr>
</table></td></tr>
<tr><td>CHNDS</td><td>I</td><td>Disable additional channels for 642/804 channel outputs. Normally pulled-low.
CHNDS=0: No disable. CHNDS=1: Disable OUT799~OUT804/OUT793~OUT804 when selecting 642/804 Output channel numbers.</td></tr>
<tr><td>COM1, COM2</td><td>I</td><td>Path pads.</td></tr>
<tr><td>AVDD</td><td>I</td><td>Power supply for analog circuit.</td></tr>
<tr><td>AVSS</td><td>I</td><td>Ground pin for analog circuit.</td></tr>
<tr><td>VCC</td><td>I</td><td>Power supply for digital circuit.</td></tr>
<tr><td>GND</td><td>I</td><td>Ground pin for digital circuit.</td></tr>
<tr><td>DUM0~DUM21</td><td>-</td><td>Dummy pads. Not connected.</td></tr>
</table>

Power on/off sequence

This IC is a high-voltage LCD driver, so may be damaged by a large current flow when an incorrect power sequence is used. The recommended sequence should be : digital power (VCC&GND)➔ logic signals➔analog power (AVDD&AVSS) ➔Gamma correction reference voltage(V1~V14). Reverse this sequence to shut down, or turn off all signals and power simultaneously.

Relationship between the order of input data and output channels

(1) SHL=”1” , shift right, a start pulse from DIO1

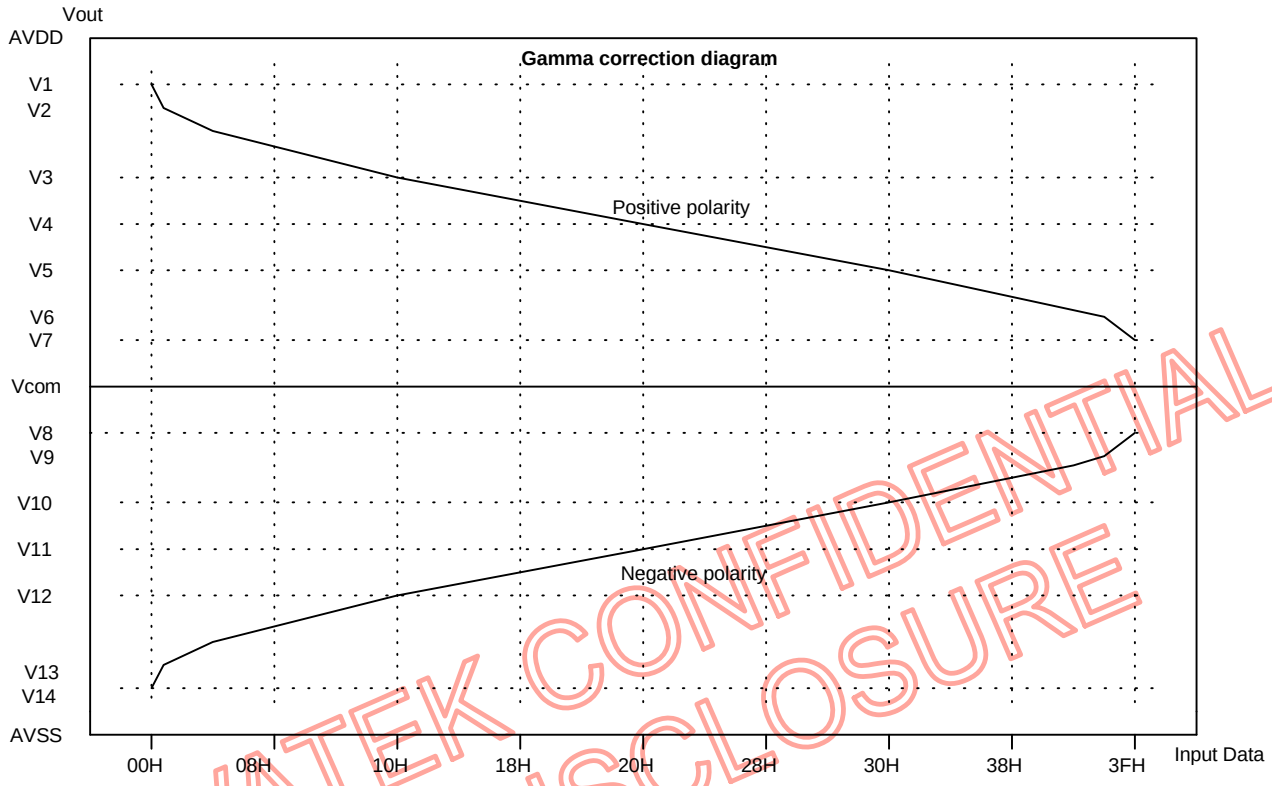
Output	OUT1	OUT2	OUT3	- - -	OUT802	OUT803	OUT804
Order	First data			---→	Last data		
Data	D05~D00	D15~D10	D25~D20	- - -	D05~D00	D15~D10	D25~D20

(2) SHL=”0”, shift left, a start pulse from DIO2

Output	OUT1	OUT2	OUT3	- - -	OUT802	OUT803	OUT804
Order	Last data			←---	First data		
Data	D05~D00	D15~D10	D25~D20	- - -	D05~D00	D15~D10	D25~D20

Relationship between input data and output voltage

The figure below shows the relationship between the input data and the output voltage with the polarity. The range of V1~ V7 is for positive polarity, and V8 ~ V14 for negative polarity. Please refer to the following page to get the relative resister value and voltage calculation method.



Remark:

AVDD-0.1 ≥ V1 ≥ V2≥ V3 ≥ V4 ≥ V5 ≥ V6 ≥ V7;
V8 ≥ V9 ≥ V10 ≥ V11 ≥ V12 ≥ V13 ≥ V14 ≥ AVSS+0.1V

Gamma correction resistor ratio:

V1, V14 →
V2, V13 →

Name	Resistor	Name	Resistor
R0	6.4	R32	0.8
R1	6	R33	0.8
R2	5.6	R34	0.8
R3	5.2	R35	0.8
R4	4.8	R36	0.8
R5	4.4	R37	0.8
R6	4.4	R38	0.8
R7	4	R39	0.8
R8	4	R40	0.8
R9	3.2	R41	0.8
R10	3.2	R42	0.8
R11	2.8	R43	0.8
R12	2.8	R44	0.8
R13	2.8	R45	0.8
R14	2.4	R46	0.8
R15	2.4	R47	0.8
R16	2.4	R48	0.8
R17	2	R49	0.8
R18	2	R50	0.8
R19	2	R51	0.8
R20	1.6	R52	0.8
R21	1.6	R53	1.2
R22	1.6	R54	1.2
R23	1.2	R55	1.2
R24	1.2	R56	1.6
R25	1.2	R57	1.6
R26	1.2	R58	2
R27	0.8	R59	2
R28	0.8	R60	2.4
R29	0.8	R61	4
R30	0.8	R62	6.4
R31	0.8		

← V4, V11
V3, V12 →
← V5, V10
← V6, V9
← V7, V8
V4, V11 →

Output Voltage VS Input Data

Data	Positive polarity Output Voltage		Negative polarity Output Voltage	
00H	V1		V14	
01H	V2= V3 + (V1 – V3)X	58 / 64.4	V13= V14 + (V12 – V14)X	6.4 / 64.4
02H	V3 + (V1 – V3)X	52 / 64.4	V14 + (V12 – V14)X	12.4 / 64.4
03H	V3 + (V1 – V3)X	46.4 / 64.4	V14 + (V12 – V14)X	18 / 64.4
04H	V3 + (V1 – V3)X	41.2 / 64.4	V14 + (V12 – V14)X	23.2 / 64.4
05H	V3 + (V1 – V3)X	36.4 / 64.4	V14 + (V12 – V14)X	28 / 64.4
06H	V3 + (V1 – V3)X	32 / 64.4	V14 + (V12 – V14)X	32.4 / 64.4
07H	V3 + (V1 – V3)X	27.6 / 64.4	V14 + (V12 – V14)X	36.8 / 64.4
08H	V3 + (V1 – V3)X	23.6 / 64.4	V14 + (V12 – V14)X	40.8 / 64.4
09H	V3 + (V1 – V3)X	19.6 / 64.4	V14 + (V12 – V14)X	44.8 / 64.4
0AH	V3 + (V1 – V3)X	16.4 / 64.4	V14 + (V12 – V14)X	48 / 64.4
0BH	V3 + (V1 – V3)X	13.2 / 64.4	V14 + (V12 – V14)X	51.2 / 64.4
0CH	V3 + (V1 – V3)X	10.4 / 64.4	V14 + (V12 – V14)X	54 / 64.4
0DH	V3 + (V1 – V3)X	7.6 / 64.4	V14 + (V12 – V14)X	56.8 / 64.4
0EH	V3 + (V1 – V3)X	4.8 / 64.4	V14 + (V12 – V14)X	59.6 / 64.4
0FH	V3 + (V1 – V3)X	2.4 / 64.4	V14 + (V12 – V14)X	62 / 64.4
10H	V3		V12	
11H	V4 + (V3 – V4) X	19.6 / 22	V12 + (V11 – V12)X	2.4 / 22
12H	V4 + (V3 – V4) X	17.6 / 22	V12 + (V11 – V12)X	4.4 / 22
13H	V4 + (V3 – V4) X	15.6 / 22	V12 + (V11 – V12)X	6.4 / 22
14H	V4 + (V3 – V4) X	13.6 / 22	V12 + (V11 – V12)X	8.4 / 22
15H	V4 + (V3 – V4) X	12 / 22	V12 + (V11 – V12)X	10 / 22
16H	V4 + (V3 – V4) X	10.4 / 22	V12 + (V11 – V12)X	11.6 / 22
17H	V4 + (V3 – V4) X	8.8 / 22	V12 + (V11 – V12)X	13.2 / 22
18H	V4 + (V3 – V4) X	7.6 / 22	V12 + (V11 – V12)X	14.4 / 22
19H	V4 + (V3 – V4) X	6.4 / 22	V12 + (V11 – V12)X	15.6 / 22
1AH	V4 + (V3 – V4) X	5.2 / 22	V12 + (V11 – V12)X	16.8 / 22
1BH	V4 + (V3 – V4) X	4 / 22	V12 + (V11 – V12)X	18 / 22
1CH	V4 + (V3 – V4) X	3.2 / 22	V12 + (V11 – V12)X	18.8 / 22
1DH	V4 + (V3 – V4) X	2.4 / 22	V12 + (V11 – V12)X	19.6 / 22
1EH	V4 + (V3 – V4) X	1.6 / 22	V12 + (V11 – V12)X	20.4 / 22
1FH	V4 + (V3 – V4) X	0.8 / 22	V12 + (V11 – V12)X	21.2 / 22

Output Voltage VS Input Data (continued)

Data	Positive polarity Output Voltage	Negative polarity Output Voltage
20H	V4	V11
21H	V5 + (V4 – V5) X 12 / 12.8	V11 + (V10 – V11) X 0.8 / 12.8
22H	V5 + (V4 – V5) X 11.2 / 12.8	V11 + (V10 – V11) X 1.6 / 12.8
23H	V5 + (V4 – V5) X 10.4 / 12.8	V11 + (V10 – V11) X 2.4 / 12.8
24H	V5 + (V4 – V5) X 9.6 / 12.8	V11 + (V10 – V11) X 3.2 / 12.8
25H	V5 + (V4 – V5) X 8.8 / 12.8	V11 + (V10 – V11) X 4 / 12.8
26H	V5 + (V4 – V5) X 8 / 12.8	V11 + (V10 – V11) X 4.8 / 12.8
27H	V5 + (V4 – V5) X 7.2 / 12.8	V11 + (V10 – V11) X 5.6 / 12.8
28H	V5 + (V4 – V5) X 6.4 / 12.8	V11 + (V10 – V11) X 6.4 / 12.8
29H	V5 + (V4 – V5) X 5.6 / 12.8	V11 + (V10 – V11) X 7.2 / 12.8
2AH	V5 + (V4 – V5) X 4.8 / 12.8	V11 + (V10 – V11) X 8 / 12.8
2BH	V5 + (V4 – V5) X 4 / 12.8	V11 + (V10 – V11) X 8.8 / 12.8
2CH	V5 + (V4 – V5) X 3.2 / 12.8	V11 + (V10 – V11) X 9.6 / 12.8
2DH	V5 + (V4 – V5) X 2.4 / 12.8	V11 + (V10 – V11) X 10.4 / 12.8
2EH	V5 + (V4 – V5) X 1.6 / 12.8	V11 + (V10 – V11) X 11.2 / 12.8
2FH	V5 + (V4 – V5) X 0.8 / 12.8	V11 + (V10 – V11) X 12 / 12.8
30H	V5	V10
31H	V7 + (V5 – V7) X 26.8 / 27.6	V10 + (V8 – V10) X 0.8 / 27.6
32H	V7 + (V5 – V7) X 26 / 27.6	V10 + (V8 – V10) X 1.6 / 27.6
33H	V7 + (V5 – V7) X 25.2 / 27.6	V10 + (V8 – V10) X 2.4 / 27.6
34H	V7 + (V5 – V7) X 24.4 / 27.6	V10 + (V8 – V10) X 3.2 / 27.6
35H	V7 + (V5 – V7) X 23.6 / 27.6	V10 + (V8 – V10) X 4 / 27.6
36H	V7 + (V5 – V7) X 22.4 / 27.6	V10 + (V8 – V10) X 5.2 / 27.6
37H	V7 + (V5 – V7) X 21.2 / 27.6	V10 + (V8 – V10) X 6.4 / 27.6
38H	V7 + (V5 – V7) X 20 / 27.6	V10 + (V8 – V10) X 7.6 / 27.6
39H	V7 + (V5 – V7) X 18.4 / 27.6	V10 + (V8 – V10) X 9.2 / 27.6
3AH	V7 + (V5 – V7) X 16.8 / 27.6	V10 + (V8 – V10) X 10.8 / 27.6
3BH	V7 + (V5 – V7) X 14.8 / 27.6	V10 + (V8 – V10) X 12.8 / 27.6
3CH	V7 + (V5 – V7) X 12.8 / 27.6	V10 + (V8 – V10) X 14.8 / 27.6
3DH	V7 + (V5 – V7) X 10.4 / 27.6	V10 + (V8 – V10) X 17.2 / 27.6
3EH	V6= V7+(V5 – V7) X 6.4 / 27.6	V9= V10+(V8 – V10) X 21.2 / 27.6
3FH	V7	V8

Absolute Maximum Rating*

Digital supply voltage, VCC	-0.5V to 5V
Analog supply voltage, AVDD	-0.5V to +13.5V
Supply voltage, V1~ V7	0.4AVDD ~ AVDD+0.3
Supply voltage, V8 ~ V14	-0.3 ~ 0.6AVDD
Digital input voltage	-0.5V to Vcc+0.5V
Output voltage, DIO1 & DIO2	-0.5V to Vcc+0.5V
Output voltage,OUT1~OUT804	-0.5V to AVDD+0.5V
Storage temperature	-55 °C to 125 °C
Operating temperature	-30 °C to 85 °C

***Comments**

Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. These are stress ratings only. Functional operation of this device at these or any other conditions above those indicated in the operational sections of this specification is not implied and exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Recommended Operating Range (AVSS=GND=0V, TA=25 °C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Digital supply voltage	VCC	2.7	3.3	3.6	V
Analog supply voltage	AVDD	6.5	10	13.5	V

DC Electrical Characteristics (VCC =2.7~3.6V, AV_{DD}=6.5~13.5V,AVSS=GND=0V, T_A=25 °C)

(For the digital circuit)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Supply Voltage	Vcc	2.7	3.3	3.6	V	Digital power
Low Level Input Voltage	Vil	0	-	0.3xVcc	V	For the digital circuit
High Level Input Voltage	Vih	0.7xVcc	-	Vcc	V	For the digital circuit
High Level Output Voltage	Voh	Vcc-0.4	-	-	V	DIO1, DIO2, Ioh=1mA
Low Level Output Voltage	Vol	GND	-	GND+0.4	V	DIO1, DIO2, Iol=-1mA
Input Leakage Current	Ii	-	-	±1	uA	For the digital circuit
Digital Stand-by Current	Ist	-	10	50	uA	All operating is stopped
Digital Operating Current	Icc	-	2	3	mA	Fclk=40 MHz, FLD=50KHz, VCC=3.3V
Pull low resistor	R_{IL}	150K	300K	550K	ohm	Digital signal
Pull high resistor	R_{IH}	150K	300K	650K	ohm	Digital signal

(For the analog circuit)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Supply Voltage	AVDD	6.5	10	13.5	V	For the analog circuit power
Input level of V1~V7	Vref	0.4AVDD	-	AVDD-0.1	V	Gamma correction voltage
Input level of V8~V14	Vref	0.1	-	0.6AVDD	V	Gamma correction voltage
Output Voltage deviation	Vod	-	±20	±40	mV	AVDD=13.5V, Vo = 0.1 ~ 2 V, Vo=13.4V ~ 11.5 V
			±20	±30	mV	AVDD=13.5V, Vo= 2 V ~ 11.5 V
Voltage Output Offset between Chips	Voc	-	±20	-	mV	
Dynamic Range of Output	Vdr	0.1	-	AVDD-0.1	V	OUT1 ~ OUT804
Sinking Current of Outputs	IOL	| -80 |	-	-	uA	OUT1 ~ OUT804; Vo=0.1V v.s 1.0V AVDD=13.5V
Driving Current of Outputs	IOH	80	-	-	uA	OUT1 ~ OUT804; Vo=13.4V v.s 12.5V AVDD=13.5V
Impedance of Gamma Correction	Rg	0.8*Rn	1.1*Rn	1.4*Rn	ohm	Rn: Internal gamma resistor
Analog Stand-by Current	Isc	-	8 .5	10	mA	No load, AVDD=10V, and all operating is stopped
Analog Operating Current	Ioc	-	10	12	mA	No load, Fclk=40MHz, FLD=50KHz AVDD=10V,V1=8V, V14=0.4V

Note : When Fclk=40MHz, FLD=50KHz ,AVDD=10V,V1=8V, V14=0.4V and loading equals 100pF, Analog operating current should be approximately 23mA.(pattern=00->3F->00->3F.....)

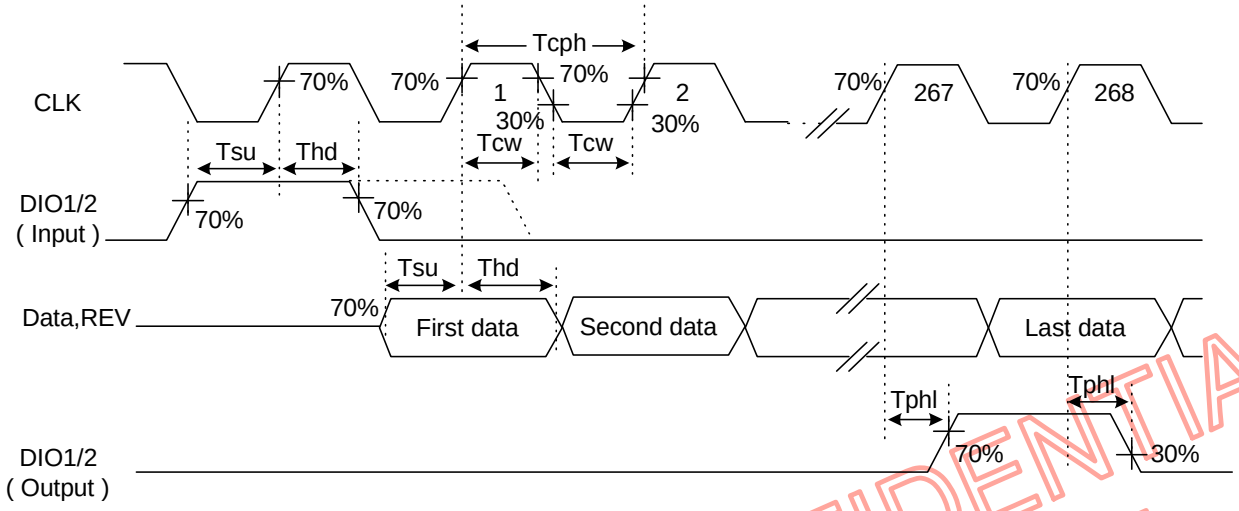
AC Electrical Characteristics (VCC =3.3V, AVDD=10V, AVSS=GND=0V, TA= 25 °C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
CLK frequency	Fclk	-	40	45	MHz	EDGSL = '0'
	Fclk		20	22.5	MHz	EDGSL = '1'
CLK pulse width	Tcw	40%	-	60%	Tcph	
Data set-up time	Tsu	4	-	-	ns	D00 ~ D25, REV and DIO1/2 to CLK
Data hold time	Thd	2	-	-	ns	D00 ~ D25, REV and DIO1/2 to CLK
Propagation delay of DIO2/1	Tphl	5	10	15	ns	CL=25pF (Output)
Time that the last data to LD	Tld	1	-	-	Tcph	
Pulse width of LD	Twld	2	-	-	Tcph	
Time that LD to DIO1/2	Tlds	5	-	-	Tcph	
POL set-up time	Tpsu	6	-	-	ns	POL to LD
POL hold time	Tphd	6	-	-	ns	POL to LD
Output stable time	Tst	-	-	12	us	10% or 90% target voltage. CL=60pF, R=2K ohm

Timing Waveforms

Timing Diagram 1 (CHNSL="11" ,CHDNS="0", Default)

<< EDGSL= "0", Default >>



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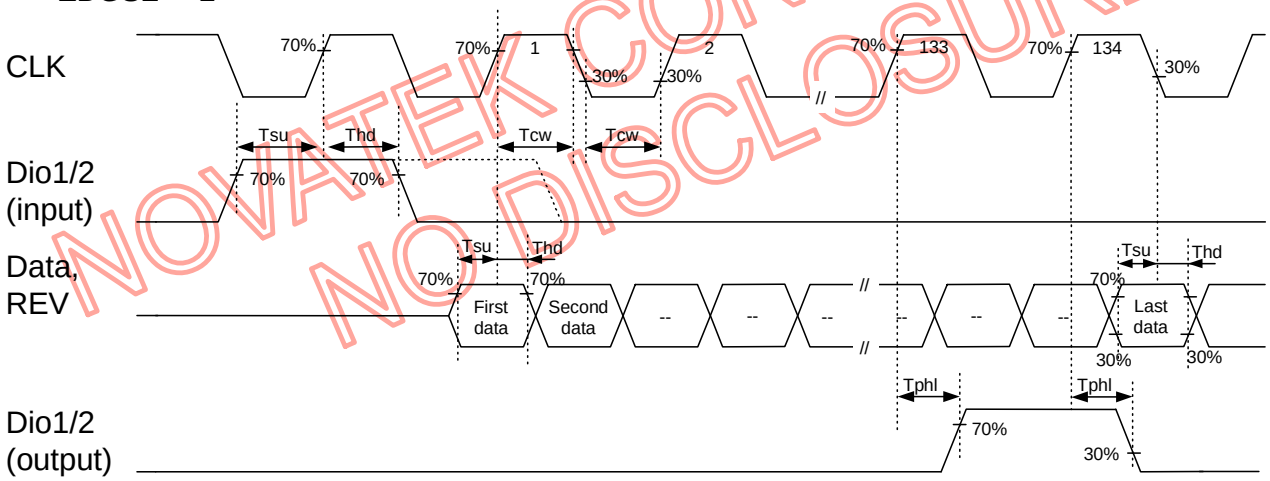
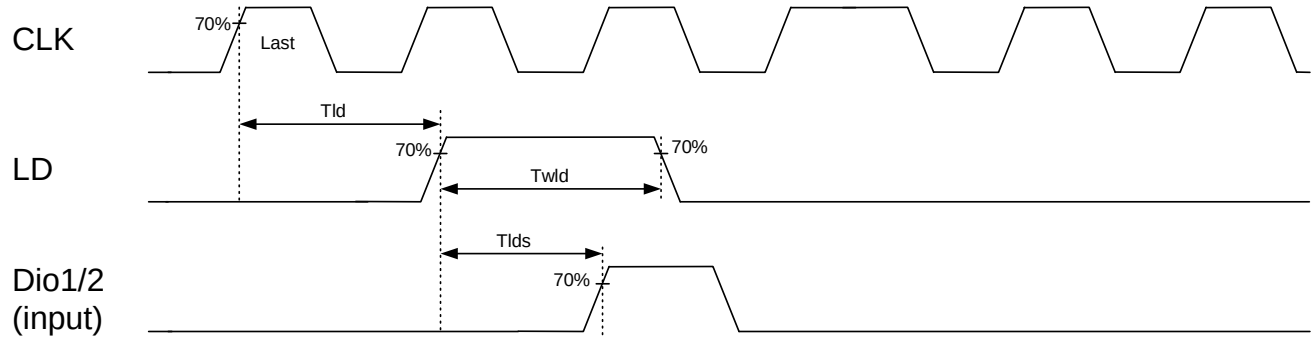
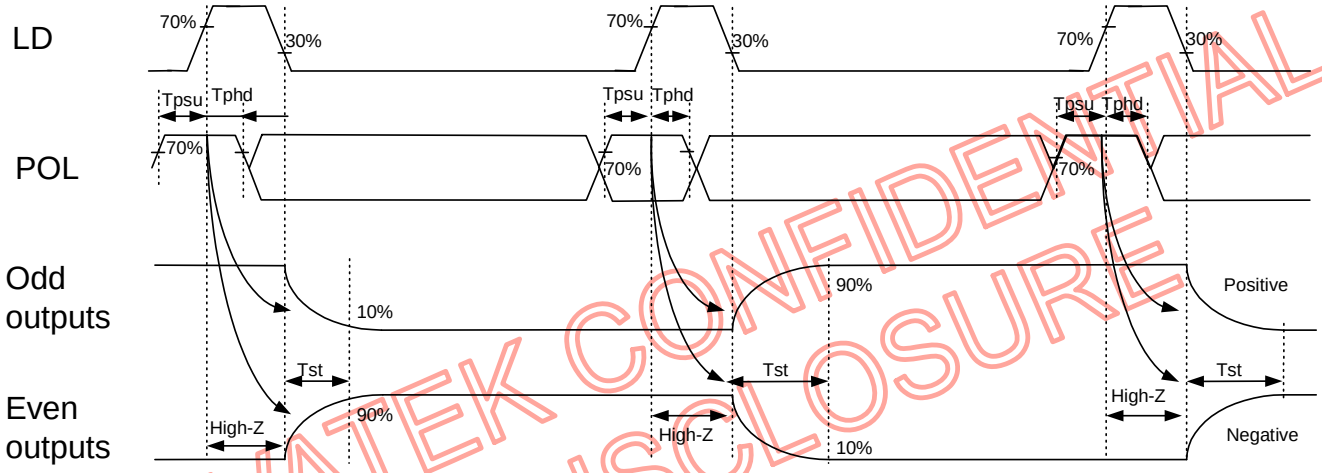
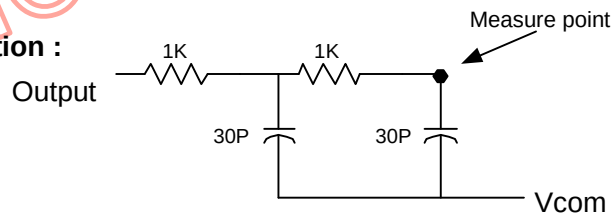


Timing Diagram 2

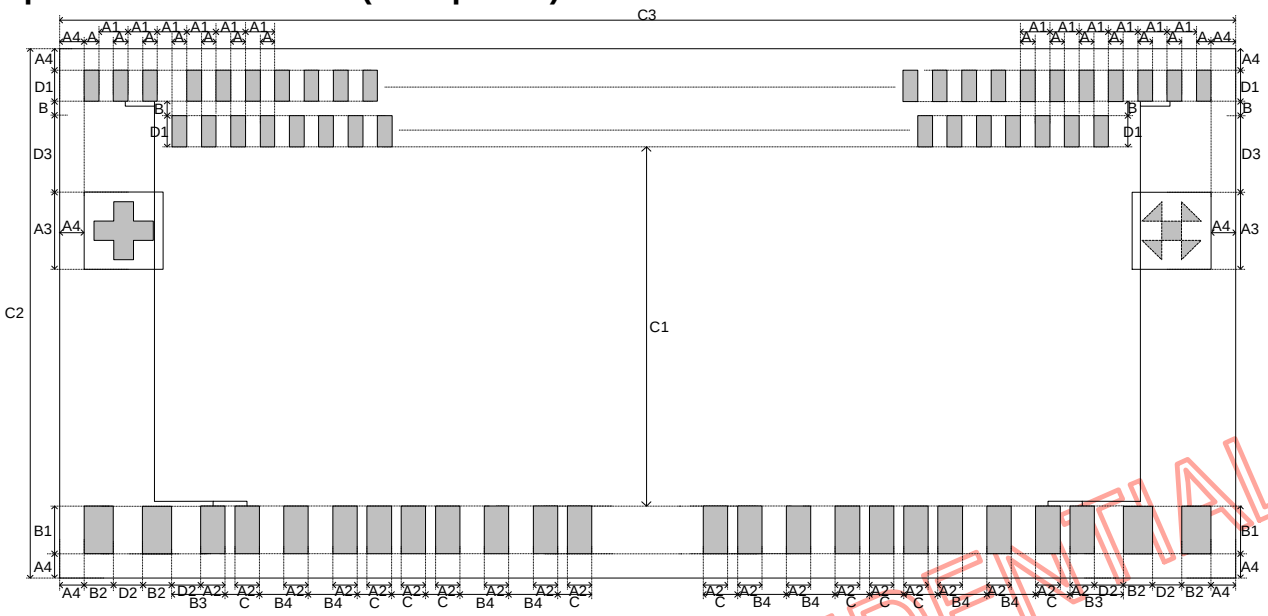


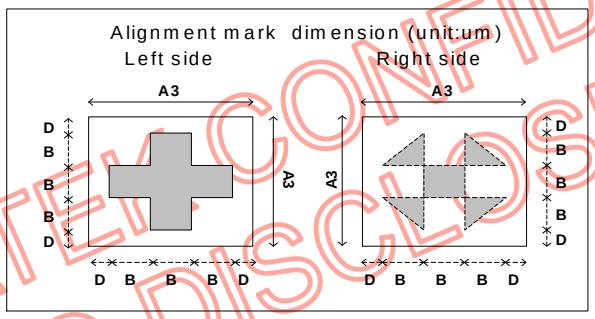


Output load condition :



Chip Outline Dimensions (Bump size)





Symbol	Dimension in um	Symbol	Dimension in um
A	22	B4	94
A1	44	C	74
A2	58	C1	717
A3	120	C2	1200 (Max)
A4	80	C3	18156 (Max)
B	30	D	15
B1	103	D1	95
B2	46	D2	28.5
B3	86.5	D3	180

Chip size: 18156(X) x 1200(Y) um^2 = 715 x 47.5 mil^2 (scribe line included)

Bonding Diagram

Pad No.	Designation	X	Y	Pad No.	Designation	X	Y
1	DUMMY0	-8975	-468.5	41	POL	-5788	-468.5
2	DUMMY0	-8900.5	-468.5	42	POL	-5714	-468.5
3	COM1R	-8820	-468.5	43	DUMMY4	-5620	-468.5
4	COM1R	-8746	-468.5	44	REV	-5526	-468.5
5	DUMMY1	-8652	-468.5	45	REV	-5452	-468.5
6	DIO2	-8558	-468.5	46	REV	-5378	-468.5
7	DIO2	-8484	-468.5	47	REV	-5304	-468.5
8	DIO2	-8410	-468.5	48	DUMMY5	-5210	-468.5
9	DIO2	-8336	-468.5	49	LD	-5116	-468.5
10	DUMMY2	-8242	-468.5	50	LD	-5042	-468.5
11	AVDD	-8148	-468.5	51	LD	-4968	-468.5
12	AVDD	-8074	-468.5	52	LD	-4894	-468.5
13	AVDD	-8000	-468.5	53	DUMMY6	-4800	-468.5
14	AVDD	-7926	-468.5	54	D2[5]	-4706	-468.5
15	AVDD	-7852	-468.5	55	D2[5]	-4632	-468.5
16	AVDD	-7778	-468.5	56	D2[5]	-4558	-468.5
17	AVDD	-7704	-468.5	57	D2[4]	-4464	-468.5
18	AVDD	-7630	-468.5	58	D2[4]	-4390	-468.5
19	CHNSL[0]	-7536	-468.5	59	D2[4]	-4316	-468.5
20	CHNSL[0]	-7462	-468.5	60	D2[3]	-4222	-468.5
21	CHNSL[0]	-7388	-468.5	61	D2[3]	-4148	-468.5
22	CHNSL[1]	-7294	-468.5	62	D2[3]	-4074	-468.5
23	CHNSL[1]	-7220	-468.5	63	D2[2]	-3980	-468.5
24	CHNSL[1]	-7146	-468.5	64	D2[2]	-3906	-468.5
25	GND	-7052	-468.5	65	D2[2]	-3832	-468.5
26	GND	-6978	-468.5	66	D2[1]	-3738	-468.5
27	GND	-6904	-468.5	67	D2[1]	-3664	-468.5
28	GND	-6830	-468.5	68	D2[1]	-3590	-468.5
29	GND	-6756	-468.5	69	D2[0]	-3496	-468.5
30	GND	-6682	-468.5	70	D2[0]	-3422	-468.5
31	CHNDS	-6588	-468.5	71	D2[0]	-3348	-468.5
32	VCC	-6494	-468.5	72	DUMMY7	-3254	-468.5
33	VCC	-6420	-468.5	73	AVSS	-3160	-468.5
34	VCC	-6346	-468.5	74	AVSS	-3086	-468.5
35	VCC	-6272	-468.5	75	AVSS	-3012	-468.5
36	VCC	-6198	-468.5	76	AVSS	-2938	-468.5
37	VCC	-6124	-468.5	77	AVSS	-2864	-468.5
38	DUMMY3	-6030	-468.5	78	AVSS	-2790	-468.5
39	POL	-5936	-468.5	79	AVSS	-2716	-468.5
40	POL	-5862	-468.5	80	AVSS	-2642	-468.5

Bonding Diagram (continued)

Pad No.	Designation	X	Y	Pad No.	Designation	X	Y
81	DUMMY8	-2548	-468.5	121	V5	612	-468.5
82	V14	-2454	-468.5	122	V4	706	-468.5
83	V14	-2380	-468.5	123	V4	780	-468.5
84	V14	-2306	-468.5	124	V4	854	-468.5
85	V14	-2232	-468.5	125	V4	928	-468.5
86	V13	-2138	-468.5	126	V3	1022	-468.5
87	V13	-2064	-468.5	127	V3	1096	-468.5
88	V13	-1990	-468.5	128	V3	1170	-468.5
89	V13	-1916	-468.5	129	V3	1244	-468.5
90	V12	-1822	-468.5	130	V2	1338	-468.5
91	V12	-1748	-468.5	131	V2	1412	-468.5
92	V12	-1674	-468.5	132	V2	1486	-468.5
93	V12	-1600	-468.5	133	V2	1560	-468.5
94	V11	-1506	-468.5	134	V1	1654	-468.5
95	V11	-1432	-468.5	135	V1	1728	-468.5
96	V11	-1358	-468.5	136	V1	1802	-468.5
97	V11	-1284	-468.5	137	V1	1876	-468.5
98	V10	-1190	-468.5	138	DUMMY9	1970	-468.5
99	V10	-1116	-468.5	139	AVDD	2064	-468.5
100	V10	-1042	-468.5	140	AVDD	2138	-468.5
101	V10	-968	-468.5	141	AVDD	2212	-468.5
102	V9	-874	-468.5	142	AVDD	2286	-468.5
103	V9	-800	-468.5	143	AVDD	2360	-468.5
104	V9	-726	-468.5	144	AVDD	2434	-468.5
105	V9	-652	-468.5	145	AVDD	2508	-468.5
106	V8	-558	-468.5	146	AVDD	2582	-468.5
107	V8	-484	-468.5	147	DUMMY10	2676	-468.5
108	V8	-410	-468.5	148	D1[5]	2770	-468.5
109	V8	-336	-468.5	149	D1[5]	2844	-468.5
110	V7	-242	-468.5	150	D1[5]	2918	-468.5
111	V7	-168	-468.5	151	D1[4]	3012	-468.5
112	V7	-94	-468.5	152	D1[4]	3086	-468.5
113	V7	-20	-468.5	153	D1[4]	3160	-468.5
114	V6	74	-468.5	154	D1[3]	3254	-468.5
115	V6	148	-468.5	155	D1[3]	3328	-468.5
116	V6	222	-468.5	156	D1[3]	3402	-468.5
117	V6	296	-468.5	157	D1[2]	3496	-468.5
118	V5	390	-468.5	158	D1[2]	3570	-468.5
119	V5	464	-468.5	159	D1[2]	3644	-468.5
120	V5	538	-468.5	160	D1[1]	3738	-468.5

Bonding Diagram (continued)

Pad No.	Designation	X	Y	Pad No.	Designation	X	Y
161	D1[1]	3812	-468.5	201	GND	7072	-468.5
162	D1[1]	3886	-468.5	202	GND	7146	-468.5
163	D1[0]	3980	-468.5	203	GND	7220	-468.5
164	D1[0]	4054	-468.5	204	GND	7294	-468.5
165	D1[0]	4128	-468.5	205	GND	7368	-468.5
166	D0[5]	4222	-468.5	206	GND	7442	-468.5
167	D0[5]	4296	-468.5	207	DUMMY14	7536	-468.5
168	D0[5]	4370	-468.5	208	AVSS	7630	-468.5
169	D0[4]	4464	-468.5	209	AVSS	7704	-468.5
170	D0[4]	4538	-468.5	210	AVSS	7778	-468.5
171	D0[4]	4612	-468.5	211	AVSS	7852	-468.5
172	D0[3]	4706	-468.5	212	AVSS	7926	-468.5
173	D0[3]	4780	-468.5	213	AVSS	8000	-468.5
174	D0[3]	4854	-468.5	214	AVSS	8074	-468.5
175	D0[2]	4948	-468.5	215	AVSS	8148	-468.5
176	D0[2]	5022	-468.5	216	DUMMY15	8242	-468.5
177	D0[2]	5096	-468.5	217	DIO1	8336	-468.5
178	D0[1]	5190	-468.5	218	DIO1	8410	-468.5
179	D0[1]	5264	-468.5	219	DIO1	8484	-468.5
180	D0[1]	5338	-468.5	220	DIO1	8558	-468.5
181	D0[0]	5432	-468.5	221	DUMMY16	8652	-468.5
182	D0[0]	5506	-468.5	222	COM2R	8746	-468.5
183	D0[0]	5580	-468.5	223	COM2R	8820	-468.5
184	DUMMY11	5674	-468.5	224	DUMMY17	8900.5	-468.5
185	SHL	5768	-468.5	225	DUMMY17	8975	-468.5
186	SHL	5842	-468.5	226	DUMMY18	8987	472.5
187	CLK	5936	-468.5	227	COM2L	8943	472.5
188	CLK	6010	-468.5	228	COM2L	8899	472.5
189	CLK	6084	-468.5	229	DUMMY19	8855	472.5
190	CLK	6158	-468.5	230	OUT[1]	8833	347.5
191	EDGSL	6252	-468.5	231	OUT[2]	8811	472.5
192	EDGSL	6326	-468.5	232	OUT[3]	8789	347.5
193	DUMMY12	6420	-468.5	233	OUT[4]	8767	472.5
194	VCC	6514	-468.5	234	OUT[5]	8745	347.5
195	VCC	6588	-468.5	235	OUT[6]	8723	472.5
196	VCC	6662	-468.5	236	OUT[7]	8701	347.5
197	VCC	6736	-468.5	237	OUT[8]	8679	472.5
198	VCC	6810	-468.5	238	OUT[9]	8657	347.5
199	VCC	6884	-468.5	239	OUT[10]	8635	472.5
200	DUMMY13	6978	-468.5	240	OUT[11]	8613	347.5

Bonding Diagram (continued)

Pad No.	Designation	X	Y	Pad No.	Designation	X	Y
241	OUT[12]	8591	472.5	281	OUT[52]	7711	472.5
242	OUT[13]	8569	347.5	282	OUT[53]	7689	347.5
243	OUT[14]	8547	472.5	283	OUT[54]	7667	472.5
244	OUT[15]	8525	347.5	284	OUT[55]	7645	347.5
245	OUT[16]	8503	472.5	285	OUT[56]	7623	472.5
246	OUT[17]	8481	347.5	286	OUT[57]	7601	347.5
247	OUT[18]	8459	472.5	287	OUT[58]	7579	472.5
248	OUT[19]	8437	347.5	288	OUT[59]	7557	347.5
249	OUT[20]	8415	472.5	289	OUT[60]	7535	472.5
250	OUT[21]	8393	347.5	290	OUT[61]	7513	347.5
251	OUT[22]	8371	472.5	291	OUT[62]	7491	472.5
252	OUT[23]	8349	347.5	292	OUT[63]	7469	347.5
253	OUT[24]	8327	472.5	293	OUT[64]	7447	472.5
254	OUT[25]	8305	347.5	294	OUT[65]	7425	347.5
255	OUT[26]	8283	472.5	295	OUT[66]	7403	472.5
256	OUT[27]	8261	347.5	296	OUT[67]	7381	347.5
257	OUT[28]	8239	472.5	297	OUT[68]	7359	472.5
258	OUT[29]	8217	347.5	298	OUT[69]	7337	347.5
259	OUT[30]	8195	472.5	299	OUT[70]	7315	472.5
260	OUT[31]	8173	347.5	300	OUT[71]	7293	347.5
261	OUT[32]	8151	472.5	301	OUT[72]	7271	472.5
262	OUT[33]	8129	347.5	302	OUT[73]	7249	347.5
263	OUT[34]	8107	472.5	303	OUT[74]	7227	472.5
264	OUT[35]	8085	347.5	304	OUT[75]	7205	347.5
265	OUT[36]	8063	472.5	305	OUT[76]	7183	472.5
266	OUT[37]	8041	347.5	306	OUT[77]	7161	347.5
267	OUT[38]	8019	472.5	307	OUT[78]	7139	472.5
268	OUT[39]	7997	347.5	308	OUT[79]	7117	347.5
269	OUT[40]	7975	472.5	309	OUT[80]	7095	472.5
270	OUT[41]	7953	347.5	310	OUT[81]	7073	347.5
271	OUT[42]	7931	472.5	311	OUT[82]	7051	472.5
272	OUT[43]	7909	347.5	312	OUT[83]	7029	347.5
273	OUT[44]	7887	472.5	313	OUT[84]	7007	472.5
274	OUT[45]	7865	347.5	314	OUT[85]	6985	347.5
275	OUT[46]	7843	472.5	315	OUT[86]	6963	472.5
276	OUT[47]	7821	347.5	316	OUT[87]	6941	347.5
277	OUT[48]	7799	472.5	317	OUT[88]	6919	472.5
278	OUT[49]	7777	347.5	318	OUT[89]	6897	347.5
279	OUT[50]	7755	472.5	319	OUT[90]	6875	472.5
280	OUT[51]	7733	347.5	320	OUT[91]	6853	347.5

Bonding Diagram (continued)

Pad No.	Designation	X	Y	Pad No.	Designation	X	Y
321	OUT[92]	6831	472.5	361	OUT[132]	5951	472.5
322	OUT[93]	6809	347.5	362	OUT[133]	5929	347.5
323	OUT[94]	6787	472.5	363	OUT[134]	5907	472.5
324	OUT[95]	6765	347.5	364	OUT[135]	5885	347.5
325	OUT[96]	6743	472.5	365	OUT[136]	5863	472.5
326	OUT[97]	6721	347.5	366	OUT[137]	5841	347.5
327	OUT[98]	6699	472.5	367	OUT[138]	5819	472.5
328	OUT[99]	6677	347.5	368	OUT[139]	5797	347.5
329	OUT[100]	6655	472.5	369	OUT[140]	5775	472.5
330	OUT[101]	6633	347.5	370	OUT[141]	5753	347.5
331	OUT[102]	6611	472.5	371	OUT[142]	5731	472.5
332	OUT[103]	6589	347.5	372	OUT[143]	5709	347.5
333	OUT[104]	6567	472.5	373	OUT[144]	5687	472.5
334	OUT[105]	6545	347.5	374	OUT[145]	5665	347.5
335	OUT[106]	6523	472.5	375	OUT[146]	5643	472.5
336	OUT[107]	6501	347.5	376	OUT[147]	5621	347.5
337	OUT[108]	6479	472.5	377	OUT[148]	5599	472.5
338	OUT[109]	6457	347.5	378	OUT[149]	5577	347.5
339	OUT[110]	6435	472.5	379	OUT[150]	5555	472.5
340	OUT[111]	6413	347.5	380	OUT[151]	5533	347.5
341	OUT[112]	6391	472.5	381	OUT[152]	5511	472.5
342	OUT[113]	6369	347.5	382	OUT[153]	5489	347.5
343	OUT[114]	6347	472.5	383	OUT[154]	5467	472.5
344	OUT[115]	6325	347.5	384	OUT[155]	5445	347.5
345	OUT[116]	6303	472.5	385	OUT[156]	5423	472.5
346	OUT[117]	6281	347.5	386	OUT[157]	5401	347.5
347	OUT[118]	6259	472.5	387	OUT[158]	5379	472.5
348	OUT[119]	6237	347.5	388	OUT[159]	5357	347.5
349	OUT[120]	6215	472.5	389	OUT[160]	5335	472.5
350	OUT[121]	6193	347.5	390	OUT[161]	5313	347.5
351	OUT[122]	6171	472.5	391	OUT[162]	5291	472.5
352	OUT[123]	6149	347.5	392	OUT[163]	5269	347.5
353	OUT[124]	6127	472.5	393	OUT[164]	5247	472.5
354	OUT[125]	6105	347.5	394	OUT[165]	5225	347.5
355	OUT[126]	6083	472.5	395	OUT[166]	5203	472.5
356	OUT[127]	6061	347.5	396	OUT[167]	5181	347.5
357	OUT[128]	6039	472.5	397	OUT[168]	5159	472.5
358	OUT[129]	6017	347.5	398	OUT[169]	5137	347.5
359	OUT[130]	5995	472.5	399	OUT[170]	5115	472.5
360	OUT[131]	5973	347.5	400	OUT[171]	5093	347.5

Bonding Diagram (continued)

Pad No.	Designation	X	Y	Pad No.	Designation	X	Y
401	OUT[172]	5071	472.5	441	OUT[212]	4191	472.5
402	OUT[173]	5049	347.5	442	OUT[213]	4169	347.5
403	OUT[174]	5027	472.5	443	OUT[214]	4147	472.5
404	OUT[175]	5005	347.5	444	OUT[215]	4125	347.5
405	OUT[176]	4983	472.5	445	OUT[216]	4103	472.5
406	OUT[177]	4961	347.5	446	OUT[217]	4081	347.5
407	OUT[178]	4939	472.5	447	OUT[218]	4059	472.5
408	OUT[179]	4917	347.5	448	OUT[219]	4037	347.5
409	OUT[180]	4895	472.5	449	OUT[220]	4015	472.5
410	OUT[181]	4873	347.5	450	OUT[221]	3993	347.5
411	OUT[182]	4851	472.5	451	OUT[222]	3971	472.5
412	OUT[183]	4829	347.5	452	OUT[223]	3949	347.5
413	OUT[184]	4807	472.5	453	OUT[224]	3927	472.5
414	OUT[185]	4785	347.5	454	OUT[225]	3905	347.5
415	OUT[186]	4763	472.5	455	OUT[226]	3883	472.5
416	OUT[187]	4741	347.5	456	OUT[227]	3861	347.5
417	OUT[188]	4719	472.5	457	OUT[228]	3839	472.5
418	OUT[189]	4697	347.5	458	OUT[229]	3817	347.5
419	OUT[190]	4675	472.5	459	OUT[230]	3795	472.5
420	OUT[191]	4653	347.5	460	OUT[231]	3773	347.5
421	OUT[192]	4631	472.5	461	OUT[232]	3751	472.5
422	OUT[193]	4609	347.5	462	OUT[233]	3729	347.5
423	OUT[194]	4587	472.5	463	OUT[234]	3707	472.5
424	OUT[195]	4565	347.5	464	OUT[235]	3685	347.5
425	OUT[196]	4543	472.5	465	OUT[236]	3663	472.5
426	OUT[197]	4521	347.5	466	OUT[237]	3641	347.5
427	OUT[198]	4499	472.5	467	OUT[238]	3619	472.5
428	OUT[199]	4477	347.5	468	OUT[239]	3597	347.5
429	OUT[200]	4455	472.5	469	OUT[240]	3575	472.5
430	OUT[201]	4433	347.5	470	OUT[241]	3553	347.5
431	OUT[202]	4411	472.5	471	OUT[242]	3531	472.5
432	OUT[203]	4389	347.5	472	OUT[243]	3509	347.5
433	OUT[204]	4367	472.5	473	OUT[244]	3487	472.5
434	OUT[205]	4345	347.5	474	OUT[245]	3465	347.5
435	OUT[206]	4323	472.5	475	OUT[246]	3443	472.5
436	OUT[207]	4301	347.5	476	OUT[247]	3421	347.5
437	OUT[208]	4279	472.5	477	OUT[248]	3399	472.5
438	OUT[209]	4257	347.5	478	OUT[249]	3377	347.5
439	OUT[210]	4235	472.5	479	OUT[250]	3355	472.5
440	OUT[211]	4213	347.5	480	OUT[251]	3333	347.5

Bonding Diagram (continued)

Pad No.	Designation	X	Y	Pad No.	Designation	X	Y
481	OUT[252]	3311	472.5	521	OUT[292]	2431	472.5
482	OUT[253]	3289	347.5	522	OUT[293]	2409	347.5
483	OUT[254]	3267	472.5	523	OUT[294]	2387	472.5
484	OUT[255]	3245	347.5	524	OUT[295]	2365	347.5
485	OUT[256]	3223	472.5	525	OUT[296]	2343	472.5
486	OUT[257]	3201	347.5	526	OUT[297]	2321	347.5
487	OUT[258]	3179	472.5	527	OUT[298]	2299	472.5
488	OUT[259]	3157	347.5	528	OUT[299]	2277	347.5
489	OUT[260]	3135	472.5	529	OUT[300]	2255	472.5
490	OUT[261]	3113	347.5	530	OUT[301]	2233	347.5
491	OUT[262]	3091	472.5	531	OUT[302]	2211	472.5
492	OUT[263]	3069	347.5	532	OUT[303]	2189	347.5
493	OUT[264]	3047	472.5	533	OUT[304]	2167	472.5
494	OUT[265]	3025	347.5	534	OUT[305]	2145	347.5
495	OUT[266]	3003	472.5	535	OUT[306]	2123	472.5
496	OUT[267]	2981	347.5	536	OUT[307]	2101	347.5
497	OUT[268]	2959	472.5	537	OUT[308]	2079	472.5
498	OUT[269]	2937	347.5	538	OUT[309]	2057	347.5
499	OUT[270]	2915	472.5	539	OUT[310]	2035	472.5
500	OUT[271]	2893	347.5	540	OUT[311]	2013	347.5
501	OUT[272]	2871	472.5	541	OUT[312]	1991	472.5
502	OUT[273]	2849	347.5	542	OUT[313]	1969	347.5
503	OUT[274]	2827	472.5	543	OUT[314]	1947	472.5
504	OUT[275]	2805	347.5	544	OUT[315]	1925	347.5
505	OUT[276]	2783	472.5	545	OUT[316]	1903	472.5
506	OUT[277]	2761	347.5	546	OUT[317]	1881	347.5
507	OUT[278]	2739	472.5	547	OUT[318]	1859	472.5
508	OUT[279]	2717	347.5	548	OUT[319]	1837	347.5
509	OUT[280]	2695	472.5	549	OUT[320]	1815	472.5
510	OUT[281]	2673	347.5	550	OUT[321]	1793	347.5
511	OUT[282]	2651	472.5	551	OUT[322]	1771	472.5
512	OUT[283]	2629	347.5	552	OUT[323]	1749	347.5
513	OUT[284]	2607	472.5	553	OUT[324]	1727	472.5
514	OUT[285]	2585	347.5	554	OUT[325]	1705	347.5
515	OUT[286]	2563	472.5	555	OUT[326]	1683	472.5
516	OUT[287]	2541	347.5	556	OUT[327]	1661	347.5
517	OUT[288]	2519	472.5	557	OUT[328]	1639	472.5
518	OUT[289]	2497	347.5	558	OUT[329]	1617	347.5
519	OUT[290]	2475	472.5	559	OUT[330]	1595	472.5
520	OUT[291]	2453	347.5	560	OUT[331]	1573	347.5

Bonding Diagram (continued)

Pad No.	Designation	X	Y	Pad No.	Designation	X	Y
561	OUT[332]	1551	472.5	601	OUT[372]	671	472.5
562	OUT[333]	1529	347.5	602	OUT[373]	649	347.5
563	OUT[334]	1507	472.5	603	OUT[374]	627	472.5
564	OUT[335]	1485	347.5	604	OUT[375]	605	347.5
565	OUT[336]	1463	472.5	605	OUT[376]	583	472.5
566	OUT[337]	1441	347.5	606	OUT[377]	561	347.5
567	OUT[338]	1419	472.5	607	OUT[378]	539	472.5
568	OUT[339]	1397	347.5	608	OUT[379]	517	347.5
569	OUT[340]	1375	472.5	609	OUT[380]	495	472.5
570	OUT[341]	1353	347.5	610	OUT[381]	473	347.5
571	OUT[342]	1331	472.5	611	OUT[382]	451	472.5
572	OUT[343]	1309	347.5	612	OUT[383]	429	347.5
573	OUT[344]	1287	472.5	613	OUT[384]	407	472.5
574	OUT[345]	1265	347.5	614	OUT[385]	385	347.5
575	OUT[346]	1243	472.5	615	OUT[386]	363	472.5
576	OUT[347]	1221	347.5	616	OUT[387]	341	347.5
577	OUT[348]	1199	472.5	617	OUT[388]	319	472.5
578	OUT[349]	1177	347.5	618	OUT[389]	297	347.5
579	OUT[350]	1155	472.5	619	OUT[390]	275	472.5
580	OUT[351]	1133	347.5	620	OUT[391]	253	347.5
581	OUT[352]	1111	472.5	621	OUT[392]	231	472.5
582	OUT[353]	1089	347.5	622	OUT[393]	209	347.5
583	OUT[354]	1067	472.5	623	OUT[394]	187	472.5
584	OUT[355]	1045	347.5	624	OUT[395]	165	347.5
585	OUT[356]	1023	472.5	625	OUT[396]	143	472.5
586	OUT[357]	1001	347.5	626	OUT[397]	121	347.5
587	OUT[358]	979	472.5	627	OUT[398]	99	472.5
588	OUT[359]	957	347.5	628	OUT[399]	77	347.5
589	OUT[360]	935	472.5	629	OUT[400]	55	472.5
590	OUT[361]	913	347.5	630	OUT[401]	33	347.5
591	OUT[362]	891	472.5	631	OUT[402]	11	472.5
592	OUT[363]	869	347.5	632	OUT[403]	-11	347.5
593	OUT[364]	847	472.5	633	OUT[404]	-33	472.5
594	OUT[365]	825	347.5	634	OUT[405]	-55	347.5
595	OUT[366]	803	472.5	635	OUT[406]	-77	472.5
596	OUT[367]	781	347.5	636	OUT[407]	-99	347.5
597	OUT[368]	759	472.5	637	OUT[408]	-121	472.5
598	OUT[369]	737	347.5	638	OUT[409]	-143	347.5
599	OUT[370]	715	472.5	639	OUT[410]	-165	472.5
600	OUT[371]	693	347.5	640	OUT[411]	-187	347.5

Bonding Diagram (continued)

Pad No.	Designation	X	Y	Pad No.	Designation	X	Y
641	OUT[412]	-209	472.5	681	OUT[452]	-1089	472.5
642	OUT[413]	-231	347.5	682	OUT[453]	-1111	347.5
643	OUT[414]	-253	472.5	683	OUT[454]	-1133	472.5
644	OUT[415]	-275	347.5	684	OUT[455]	-1155	347.5
645	OUT[416]	-297	472.5	685	OUT[456]	-1177	472.5
646	OUT[417]	-319	347.5	686	OUT[457]	-1199	347.5
647	OUT[418]	-341	472.5	687	OUT[458]	-1221	472.5
648	OUT[419]	-363	347.5	688	OUT[459]	-1243	347.5
649	OUT[420]	-385	472.5	689	OUT[460]	-1265	472.5
650	OUT[421]	-407	347.5	690	OUT[461]	-1287	347.5
651	OUT[422]	-429	472.5	691	OUT[462]	-1309	472.5
652	OUT[423]	-451	347.5	692	OUT[463]	-1331	347.5
653	OUT[424]	-473	472.5	693	OUT[464]	-1353	472.5
654	OUT[425]	-495	347.5	694	OUT[465]	-1375	347.5
655	OUT[426]	-517	472.5	695	OUT[466]	-1397	472.5
656	OUT[427]	-539	347.5	696	OUT[467]	-1419	347.5
657	OUT[428]	-561	472.5	697	OUT[468]	-1441	472.5
658	OUT[429]	-583	347.5	698	OUT[469]	-1463	347.5
659	OUT[430]	-605	472.5	699	OUT[470]	-1485	472.5
660	OUT[431]	-627	347.5	700	OUT[471]	-1507	347.5
661	OUT[432]	-649	472.5	701	OUT[472]	-1529	472.5
662	OUT[433]	-671	347.5	702	OUT[473]	-1551	347.5
663	OUT[434]	-693	472.5	703	OUT[474]	-1573	472.5
664	OUT[435]	-715	347.5	704	OUT[475]	-1595	347.5
665	OUT[436]	-737	472.5	705	OUT[476]	-1617	472.5
666	OUT[437]	-759	347.5	706	OUT[477]	-1639	347.5
667	OUT[438]	-781	472.5	707	OUT[478]	-1661	472.5
668	OUT[439]	-803	347.5	708	OUT[479]	-1683	347.5
669	OUT[440]	-825	472.5	709	OUT[480]	-1705	472.5
670	OUT[441]	-847	347.5	710	OUT[481]	-1727	347.5
671	OUT[442]	-869	472.5	711	OUT[482]	-1749	472.5
672	OUT[443]	-891	347.5	712	OUT[483]	-1771	347.5
673	OUT[444]	-913	472.5	713	OUT[484]	-1793	472.5
674	OUT[445]	-935	347.5	714	OUT[485]	-1815	347.5
675	OUT[446]	-957	472.5	715	OUT[486]	-1837	472.5
676	OUT[447]	-979	347.5	716	OUT[487]	-1859	347.5
677	OUT[448]	-1001	472.5	717	OUT[488]	-1881	472.5
678	OUT[449]	-1023	347.5	718	OUT[489]	-1903	347.5
679	OUT[450]	-1045	472.5	719	OUT[490]	-1925	472.5
680	OUT[451]	-1067	347.5	720	OUT[491]	-1947	347.5

Bonding Diagram (continued)

Pad No.	Designation	X	Y	Pad No.	Designation	X	Y
721	OUT[492]	-1969	472.5	761	OUT[532]	-2849	472.5
722	OUT[493]	-1991	347.5	762	OUT[533]	-2871	347.5
723	OUT[494]	-2013	472.5	763	OUT[534]	-2893	472.5
724	OUT[495]	-2035	347.5	764	OUT[535]	-2915	347.5
725	OUT[496]	-2057	472.5	765	OUT[536]	-2937	472.5
726	OUT[497]	-2079	347.5	766	OUT[537]	-2959	347.5
727	OUT[498]	-2101	472.5	767	OUT[538]	-2981	472.5
728	OUT[499]	-2123	347.5	768	OUT[539]	-3003	347.5
729	OUT[500]	-2145	472.5	769	OUT[540]	-3025	472.5
730	OUT[501]	-2167	347.5	770	OUT[541]	-3047	347.5
731	OUT[502]	-2189	472.5	771	OUT[542]	-3069	472.5
732	OUT[503]	-2211	347.5	772	OUT[543]	-3091	347.5
733	OUT[504]	-2233	472.5	773	OUT[544]	-3113	472.5
734	OUT[505]	-2255	347.5	774	OUT[545]	-3135	347.5
735	OUT[506]	-2277	472.5	775	OUT[546]	-3157	472.5
736	OUT[507]	-2299	347.5	776	OUT[547]	-3179	347.5
737	OUT[508]	-2321	472.5	777	OUT[548]	-3201	472.5
738	OUT[509]	-2343	347.5	778	OUT[549]	-3223	347.5
739	OUT[510]	-2365	472.5	779	OUT[550]	-3245	472.5
740	OUT[511]	-2387	347.5	780	OUT[551]	-3267	347.5
741	OUT[512]	-2409	472.5	781	OUT[552]	-3289	472.5
742	OUT[513]	-2431	347.5	782	OUT[553]	-3311	347.5
743	OUT[514]	-2453	472.5	783	OUT[554]	-3333	472.5
744	OUT[515]	-2475	347.5	784	OUT[555]	-3355	347.5
745	OUT[516]	-2497	472.5	785	OUT[556]	-3377	472.5
746	OUT[517]	-2519	347.5	786	OUT[557]	-3399	347.5
747	OUT[518]	-2541	472.5	787	OUT[558]	-3421	472.5
748	OUT[519]	-2563	347.5	788	OUT[559]	-3443	347.5
749	OUT[520]	-2585	472.5	789	OUT[560]	-3465	472.5
750	OUT[521]	-2607	347.5	790	OUT[561]	-3487	347.5
751	OUT[522]	-2629	472.5	791	OUT[562]	-3509	472.5
752	OUT[523]	-2651	347.5	792	OUT[563]	-3531	347.5
753	OUT[524]	-2673	472.5	793	OUT[564]	-3553	472.5
754	OUT[525]	-2695	347.5	794	OUT[565]	-3575	347.5
755	OUT[526]	-2717	472.5	795	OUT[566]	-3597	472.5
756	OUT[527]	-2739	347.5	796	OUT[567]	-3619	347.5
757	OUT[528]	-2761	472.5	797	OUT[568]	-3641	472.5
758	OUT[529]	-2783	347.5	798	OUT[569]	-3663	347.5
759	OUT[530]	-2805	472.5	799	OUT[570]	-3685	472.5
760	OUT[531]	-2827	347.5	800	OUT[571]	-3707	347.5

Bonding Diagram (continued)

Pad No.	Designation	X	Y	Pad No.	Designation	X	Y
801	OUT[572]	-3729	472.5	841	OUT[612]	-4609	472.5
802	OUT[573]	-3751	347.5	842	OUT[613]	-4631	347.5
803	OUT[574]	-3773	472.5	843	OUT[614]	-4653	472.5
804	OUT[575]	-3795	347.5	844	OUT[615]	-4675	347.5
805	OUT[576]	-3817	472.5	845	OUT[616]	-4697	472.5
806	OUT[577]	-3839	347.5	846	OUT[617]	-4719	347.5
807	OUT[578]	-3861	472.5	847	OUT[618]	-4741	472.5
808	OUT[579]	-3883	347.5	848	OUT[619]	-4763	347.5
809	OUT[580]	-3905	472.5	849	OUT[620]	-4785	472.5
810	OUT[581]	-3927	347.5	850	OUT[621]	-4807	347.5
811	OUT[582]	-3949	472.5	851	OUT[622]	-4829	472.5
812	OUT[583]	-3971	347.5	852	OUT[623]	-4851	347.5
813	OUT[584]	-3993	472.5	853	OUT[624]	-4873	472.5
814	OUT[585]	-4015	347.5	854	OUT[625]	-4895	347.5
815	OUT[586]	-4037	472.5	855	OUT[626]	-4917	472.5
816	OUT[587]	-4059	347.5	856	OUT[627]	-4939	347.5
817	OUT[588]	-4081	472.5	857	OUT[628]	-4961	472.5
818	OUT[589]	-4103	347.5	858	OUT[629]	-4983	347.5
819	OUT[590]	-4125	472.5	859	OUT[630]	-5005	472.5
820	OUT[591]	-4147	347.5	860	OUT[631]	-5027	347.5
821	OUT[592]	-4169	472.5	861	OUT[632]	-5049	472.5
822	OUT[593]	-4191	347.5	862	OUT[633]	-5071	347.5
823	OUT[594]	-4213	472.5	863	OUT[634]	-5093	472.5
824	OUT[595]	-4235	347.5	864	OUT[635]	-5115	347.5
825	OUT[596]	-4257	472.5	865	OUT[636]	-5137	472.5
826	OUT[597]	-4279	347.5	866	OUT[637]	-5159	347.5
827	OUT[598]	-4301	472.5	867	OUT[638]	-5181	472.5
828	OUT[599]	-4323	347.5	868	OUT[639]	-5203	347.5
829	OUT[600]	-4345	472.5	869	OUT[640]	-5225	472.5
830	OUT[601]	-4367	347.5	870	OUT[641]	-5247	347.5
831	OUT[602]	-4389	472.5	871	OUT[642]	-5269	472.5
832	OUT[603]	-4411	347.5	872	OUT[643]	-5291	347.5
833	OUT[604]	-4433	472.5	873	OUT[644]	-5313	472.5
834	OUT[605]	-4455	347.5	874	OUT[645]	-5335	347.5
835	OUT[606]	-4477	472.5	875	OUT[646]	-5357	472.5
836	OUT[607]	-4499	347.5	876	OUT[647]	-5379	347.5
837	OUT[608]	-4521	472.5	877	OUT[648]	-5401	472.5
838	OUT[609]	-4543	347.5	878	OUT[649]	-5423	347.5
839	OUT[610]	-4565	472.5	879	OUT[650]	-5445	472.5
840	OUT[611]	-4587	347.5	880	OUT[651]	-5467	347.5

Bonding Diagram (continued)

Pad No.	Designation	X	Y	Pad No.	Designation	X	Y
881	OUT[652]	-5489	472.5	921	OUT[692]	-6369	472.5
882	OUT[653]	-5511	347.5	922	OUT[693]	-6391	347.5
883	OUT[654]	-5533	472.5	923	OUT[694]	-6413	472.5
884	OUT[655]	-5555	347.5	924	OUT[695]	-6435	347.5
885	OUT[656]	-5577	472.5	925	OUT[696]	-6457	472.5
886	OUT[657]	-5599	347.5	926	OUT[697]	-6479	347.5
887	OUT[658]	-5621	472.5	927	OUT[698]	-6501	472.5
888	OUT[659]	-5643	347.5	928	OUT[699]	-6523	347.5
889	OUT[660]	-5665	472.5	929	OUT[700]	-6545	472.5
890	OUT[661]	-5687	347.5	930	OUT[701]	-6567	347.5
891	OUT[662]	-5709	472.5	931	OUT[702]	-6589	472.5
892	OUT[663]	-5731	347.5	932	OUT[703]	-6611	347.5
893	OUT[664]	-5753	472.5	933	OUT[704]	-6633	472.5
894	OUT[665]	-5775	347.5	934	OUT[705]	-6655	347.5
895	OUT[666]	-5797	472.5	935	OUT[706]	-6677	472.5
896	OUT[667]	-5819	347.5	936	OUT[707]	-6699	347.5
897	OUT[668]	-5841	472.5	937	OUT[708]	-6721	472.5
898	OUT[669]	-5863	347.5	938	OUT[709]	-6743	347.5
899	OUT[670]	-5885	472.5	939	OUT[710]	-6765	472.5
900	OUT[671]	-5907	347.5	940	OUT[711]	-6787	347.5
901	OUT[672]	-5929	472.5	941	OUT[712]	-6809	472.5
902	OUT[673]	-5951	347.5	942	OUT[713]	-6831	347.5
903	OUT[674]	-5973	472.5	943	OUT[714]	-6853	472.5
904	OUT[675]	-5995	347.5	944	OUT[715]	-6875	347.5
905	OUT[676]	-6017	472.5	945	OUT[716]	-6897	472.5
906	OUT[677]	-6039	347.5	946	OUT[717]	-6919	347.5
907	OUT[678]	-6061	472.5	947	OUT[718]	-6941	472.5
908	OUT[679]	-6083	347.5	948	OUT[719]	-6963	347.5
909	OUT[680]	-6105	472.5	949	OUT[720]	-6985	472.5
910	OUT[681]	-6127	347.5	950	OUT[721]	-7007	347.5
911	OUT[682]	-6149	472.5	951	OUT[722]	-7029	472.5
912	OUT[683]	-6171	347.5	952	OUT[723]	-7051	347.5
913	OUT[684]	-6193	472.5	953	OUT[724]	-7073	472.5
914	OUT[685]	-6215	347.5	954	OUT[725]	-7095	347.5
915	OUT[686]	-6237	472.5	955	OUT[726]	-7117	472.5
916	OUT[687]	-6259	347.5	956	OUT[727]	-7139	347.5
917	OUT[688]	-6281	472.5	957	OUT[728]	-7161	472.5
918	OUT[689]	-6303	347.5	958	OUT[729]	-7183	347.5
919	OUT[690]	-6325	472.5	959	OUT[730]	-7205	472.5
920	OUT[691]	-6347	347.5	960	OUT[731]	-7227	347.5

Bonding Diagram (continued)

Pad No.	Designation	X	Y	Pad No.	Designation	X	Y
961	OUT[732]	-7249	472.5	1001	OUT[772]	-8129	472.5
962	OUT[733]	-7271	347.5	1002	OUT[773]	-8151	347.5
963	OUT[734]	-7293	472.5	1003	OUT[774]	-8173	472.5
964	OUT[735]	-7315	347.5	1004	OUT[775]	-8195	347.5
965	OUT[736]	-7337	472.5	1005	OUT[776]	-8217	472.5
966	OUT[737]	-7359	347.5	1006	OUT[777]	-8239	347.5
967	OUT[738]	-7381	472.5	1007	OUT[778]	-8261	472.5
968	OUT[739]	-7403	347.5	1008	OUT[779]	-8283	347.5
969	OUT[740]	-7425	472.5	1009	OUT[780]	-8305	472.5
970	OUT[741]	-7447	347.5	1010	OUT[781]	-8327	347.5
971	OUT[742]	-7469	472.5	1011	OUT[782]	-8349	472.5
972	OUT[743]	-7491	347.5	1012	OUT[783]	-8371	347.5
973	OUT[744]	-7513	472.5	1013	OUT[784]	-8393	472.5
974	OUT[745]	-7535	347.5	1014	OUT[785]	-8415	347.5
975	OUT[746]	-7557	472.5	1015	OUT[786]	-8437	472.5
976	OUT[747]	-7579	347.5	1016	OUT[787]	-8459	347.5
977	OUT[748]	-7601	472.5	1017	OUT[788]	-8481	472.5
978	OUT[749]	-7623	347.5	1018	OUT[789]	-8503	347.5
979	OUT[750]	-7645	472.5	1019	OUT[790]	-8525	472.5
980	OUT[751]	-7667	347.5	1020	OUT[791]	-8547	347.5
981	OUT[752]	-7689	472.5	1021	OUT[792]	-8569	472.5
982	OUT[753]	-7711	347.5	1022	OUT[793]	-8591	347.5
983	OUT[754]	-7733	472.5	1023	OUT[794]	-8613	472.5
984	OUT[755]	-7755	347.5	1024	OUT[795]	-8635	347.5
985	OUT[756]	-7777	472.5	1025	OUT[796]	-8657	472.5
986	OUT[757]	-7799	347.5	1026	OUT[797]	-8679	347.5
987	OUT[758]	-7821	472.5	1027	OUT[798]	-8701	472.5
988	OUT[759]	-7843	347.5	1028	OUT[799]	-8723	347.5
989	OUT[760]	-7865	472.5	1029	OUT[800]	-8745	472.5
990	OUT[761]	-7887	347.5	1030	OUT[801]	-8767	347.5
991	OUT[762]	-7909	472.5	1031	OUT[802]	-8789	472.5
992	OUT[763]	-7931	347.5	1032	OUT[803]	-8811	347.5
993	OUT[764]	-7953	472.5	1033	OUT[804]	-8833	472.5
994	OUT[765]	-7975	347.5	1034	COM1L	-8899	472.5
995	OUT[766]	-7997	472.5	1035	COM1L	-8943	472.5
996	OUT[767]	-8019	347.5	1036	DUMMY20	-8855	347.5
997	OUT[768]	-8041	472.5	1037	DUMMY21	-8987	472.5
998	OUT[769]	-8063	347.5		Alignment Mark R	8938	155
999	OUT[770]	-8085	472.5		Alignment Mark L	-8938	155
1000	OUT[771]	-8107	347.5				