



**NOVATEK**  
聯詠科技

# *Data Sheet*

***NT39327***

**240/200 outputs TFT LCD Gate Driver**

***Version 0.3***

***Preliminary***

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**Revision History**

NT39327 Specification Revision History		
Version	Content	Data
0.0	original	2003/11
0.1	Modify pin assignment and chip size form 9792*1170 to 9792*1040 (page 5,15)	2004/3/5
	Modify IXOH,IXOL measurement condition : Driving current : $V_O = V_{GG} - 1\text{ V}$ Sink current : $V_O = V_{EE} + 1\text{ V}$ (page 10)	
	Modify pad description of mode about mode and OE relationship (page 7)	
0.2	Change TXON max value form 10us to 50us. (page 11)	2004/3/26
0.3	Correct mode function. MODE="L":200 channels (X101~X140 are disabled and fixed to VEE) (page 7)	2006/7/14

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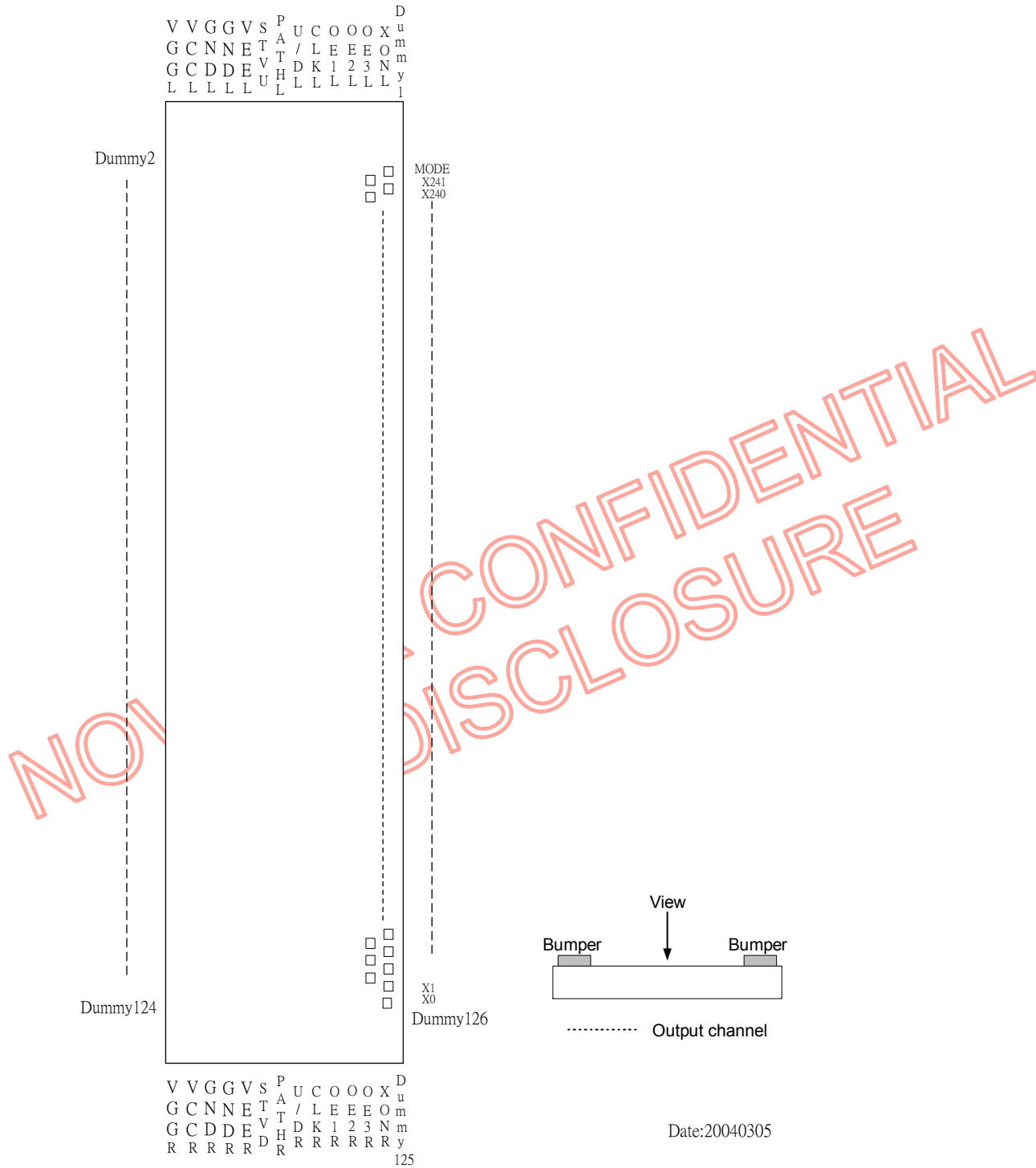
**Features**

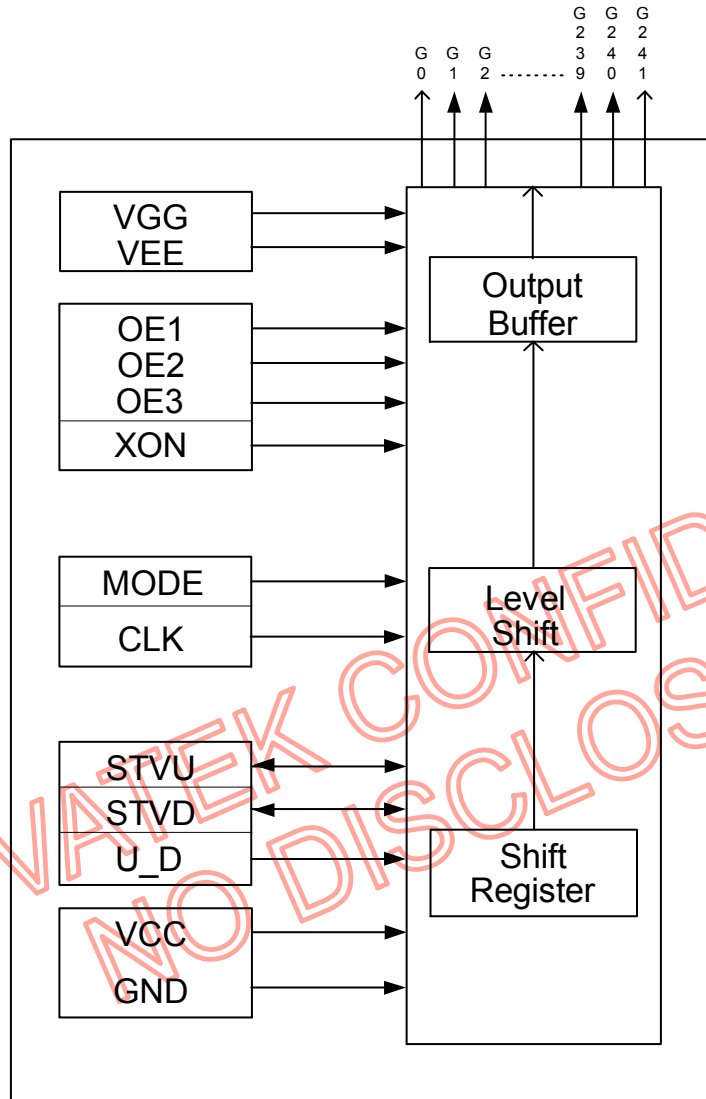
- Gate driver for TFT LCD panel
- 240/200 channel outputs+2pins (Fixed to VEE)
- Bi-directional shift selectable function
- Driving voltage: VEE + 40V
- Double gate scan
- 2.7 ~ 5.5V logical interface
- Cascade function for dot-expansion
- CMOS silicon gate (P-type)
- COG solution

**General Description**

NT39327 is a dedicated gate driver IC for TFT LCD Panel. After a start pulse is triggered, output pins will output high-driving voltage pulses sequentially for the gate signals of the LCD panel. This chip also provides shift up/down selection and cascade functions for dot expansion. The special pin location is designed for COG manufacture.

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**Pin Assignment**


**Block Diagram**


**Pad Descriptions**

Designation	I/O	Descriptions																																																																																																								
XONR, XONL	I	When XON goes low, all outputs are fixed to VGG. And there is a 200k ohm pull-up resistor with this pin. XON signal has priority over OEx.																																																																																																								
OE1R, OE1L	I	These pads are shorted internally; active high. When this pin is applied to "1", the (3n+1) <sup>th</sup> channel output, n=0, 1, 2, ...79, are disabled (=VEE). This condition will not affect the operation of the internal registers. OE1 control is independent with the CLK.																																																																																																								
OE2R, OE2L	I	These pads are shorted internally; active high. When this pin is applied to "1", the (3n+2) <sup>th</sup> channel output, n=0, 1, 2, ...79, are disabled (=VEE). This condition will not affect the operation of the internal registers. OE2 control is independent with the CLK.																																																																																																								
OE3R, OE3L	I	These pads are shorted internally; active high. When this pin is applied to "1", the (3n+3) <sup>th</sup> channel output, n=0, 1, 2, ...79, are disabled (=VEE). This condition will not affect the operation of the internal registers. OE3 control is independent with the CLK.																																																																																																								
U_DR, U_DL	I	Shift up or down control. U_D = "H", up shift: STVD (Input) → X1 ~ X240 → STVU (Output) U_D = "L", down shift: STVU (Input) → X240 ~ X1 → STVD (Output)																																																																																																								
CLKR, CLKL	I	Shift clock. Clock signal for internal shift register.																																																																																																								
PATHR, PATHL	-	Linked together internal.																																																																																																								
STVD	I/O	It is an input pin to receive a start pulse when U_D = "1" or an output pin to shift a start pulse to the next stage when U_D = "0". The function is the same as STVU but logical inversion. Please refer to the descriptions of "STVU" and "U/D".																																																																																																								
MODE	I	<p>Selecting the output mode: 240/200 channels.            MODE="L": 200 channels (X101~X140 are disabled and fixed to VEE).            MODE="H": 240 channels</p> <table border="1"> <thead> <tr> <th rowspan="2">Output Channel</th> <th>200CH (MODE="L")</th> <th>240CH (MODE="H")</th> <th colspan="2">OE Control</th> </tr> <tr> <th></th> <th></th> <th>200CH</th> <th>240CH</th> </tr> </thead> <tbody> <tr> <td>X1</td> <td>1<sup>st</sup></td> <td>1<sup>st</sup></td> <td>OE1</td> <td>OE1</td> </tr> <tr> <td>X2</td> <td>2<sup>nd</sup></td> <td>2<sup>nd</sup></td> <td>OE2</td> <td>OE2</td> </tr> <tr> <td>X3</td> <td>3<sup>rd</sup></td> <td>3<sup>rd</sup></td> <td>OE3</td> <td>OE3</td> </tr> <tr> <td>:</td> <td>:</td> <td>:</td> <td>:</td> <td>:</td> </tr> <tr> <td>X99</td> <td>99<sup>th</sup></td> <td>99<sup>th</sup></td> <td>OE3</td> <td>OE3</td> </tr> <tr> <td>X100</td> <td>100<sup>th</sup></td> <td>100<sup>th</sup></td> <td>OE1</td> <td>OE1</td> </tr> <tr> <td>X101</td> <td>Fix to VEE</td> <td>101<sup>th</sup></td> <td>-</td> <td>OE2</td> </tr> <tr> <td>X102</td> <td>Fix to VEE</td> <td>102<sup>th</sup></td> <td>-</td> <td>OE3</td> </tr> <tr> <td>X103</td> <td>Fix to VEE</td> <td>103<sup>th</sup></td> <td>-</td> <td>OE1</td> </tr> <tr> <td>:</td> <td>:</td> <td>:</td> <td>:</td> <td>:</td> </tr> <tr> <td>X138</td> <td>Fix to VEE</td> <td>138<sup>th</sup></td> <td>-</td> <td>OE3</td> </tr> <tr> <td>X139</td> <td>Fix to VEE</td> <td>139<sup>th</sup></td> <td>-</td> <td>OE1</td> </tr> <tr> <td>X140</td> <td>Fix to VEE</td> <td>140<sup>th</sup></td> <td>-</td> <td>OE2</td> </tr> <tr> <td>X141</td> <td>101<sup>th</sup></td> <td>141<sup>th</sup></td> <td>OE2</td> <td>OE3</td> </tr> <tr> <td>X142</td> <td>102<sup>th</sup></td> <td>142<sup>th</sup></td> <td>OE3</td> <td>OE1</td> </tr> <tr> <td>:</td> <td>:</td> <td>:</td> <td>:</td> <td>:</td> </tr> <tr> <td>X238</td> <td>198<sup>th</sup></td> <td>238<sup>th</sup></td> <td>OE3</td> <td>OE1</td> </tr> <tr> <td>X239</td> <td>199<sup>th</sup></td> <td>239<sup>th</sup></td> <td>OE1</td> <td>OE2</td> </tr> <tr> <td>X240</td> <td>200<sup>th</sup></td> <td>240<sup>th</sup></td> <td>OE2</td> <td>OE3</td> </tr> </tbody> </table>	Output Channel	200CH (MODE="L")	240CH (MODE="H")	OE Control				200CH	240CH	X1	1 <sup>st</sup>	1 <sup>st</sup>	OE1	OE1	X2	2 <sup>nd</sup>	2 <sup>nd</sup>	OE2	OE2	X3	3 <sup>rd</sup>	3 <sup>rd</sup>	OE3	OE3	:	:	:	:	:	X99	99 <sup>th</sup>	99 <sup>th</sup>	OE3	OE3	X100	100 <sup>th</sup>	100 <sup>th</sup>	OE1	OE1	X101	Fix to VEE	101 <sup>th</sup>	-	OE2	X102	Fix to VEE	102 <sup>th</sup>	-	OE3	X103	Fix to VEE	103 <sup>th</sup>	-	OE1	:	:	:	:	:	X138	Fix to VEE	138 <sup>th</sup>	-	OE3	X139	Fix to VEE	139 <sup>th</sup>	-	OE1	X140	Fix to VEE	140 <sup>th</sup>	-	OE2	X141	101 <sup>th</sup>	141 <sup>th</sup>	OE2	OE3	X142	102 <sup>th</sup>	142 <sup>th</sup>	OE3	OE1	:	:	:	:	:	X238	198 <sup>th</sup>	238 <sup>th</sup>	OE3	OE1	X239	199 <sup>th</sup>	239 <sup>th</sup>	OE1	OE2	X240	200 <sup>th</sup>	240 <sup>th</sup>	OE2	OE3
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X240	200 <sup>th</sup>	240 <sup>th</sup>	OE2	OE3																																																																																																						
VGGR, VGGL	-	Positive power supply for X1 ~ X240 outputs																																																																																																								
VEER, VEEL	-	Negative power supply for X0 ~ X241 outputs																																																																																																								
VCCR, VCCL	-	Power supply for digital circuit.																																																																																																								
GNDR, GNDL	-	Ground pin																																																																																																								

STVU	I/O	It is an input pin when U_D = "0". A "high" pulse is latched at the rising edge of the shift clock, CLK. After a start pulse, serial pulses are shifted from X240 to X1, and STVD for the next stage. It is an output pin when U_D = "1". A start pulse is shifted for the next stage at the falling edge of the 240th clock of the shift clock.
X1 ~ X240	O	For driving LCD's gate signals, the output amplitude of these pins is VGG - VEE. Output timing of these signals is synchronous with the rising edge of shift clock.
X0, X241	O	LCD panel auxiliary pins. Regardless of shift data, these pins output VEE level.

■ I : Input, O : Output, P : Power, D : Dummy, S : Shorted line, M : Mark, PI : Power input, PO : Power output, T : For testing, I / O : Input / Output. PS: Power Setting, C: Capacitor pin.

### Pass line pin name

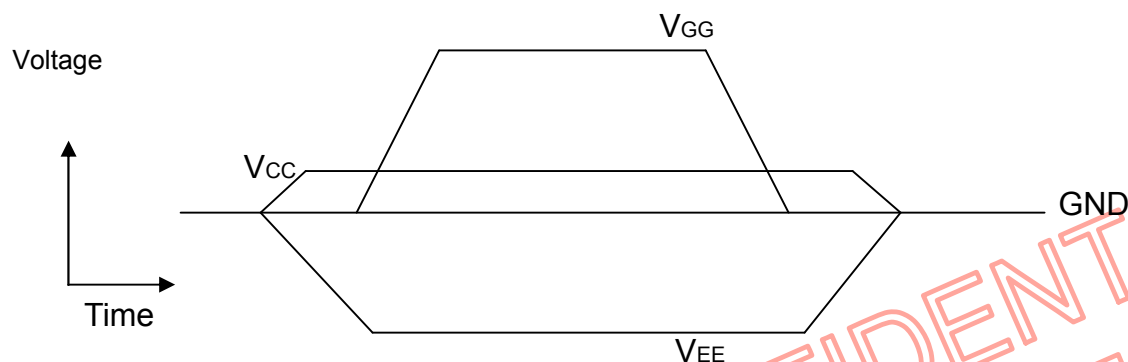
Pass Line No	Pad Name	
1	XONR	XONL
2	OE1R	OE1L
3	OE2R	OE2L
4	OE3R	OE3L
5	U/DR	U/DL
6	CLKR	CLKL
7	PATHR	PATHL
8	VGGR	VGGL
9	VEER	VEEL
10	VCCR	VCCL
11	GNDR	GNDL

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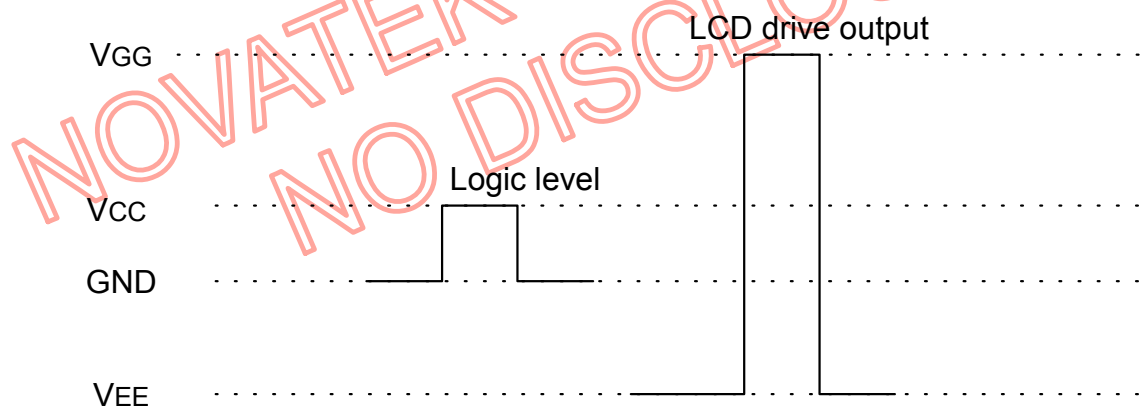
## Functional Description

### 1. Power on/off sequence:

This IC is a high-voltage LCD driver, so it may be damaged by a large current flow if an incorrect power sequence is used. Connecting the drive powers, VEE & VGG, after the logical power, VCC, is the recommended sequence. When shutting off the power, shut off the drive power and then the logic system or turn off all power simultaneously.



### 2. Power level:



Note: For the input signals: CLK, MODE, XON, OEx, U\_D, STVD & STVU, "High" level =VCC, "Low" level =GND.

**Absolute Maximum Rating\***

Logic supply voltage, VCC	-0.3V to 6V
Supply voltage, VGG	-0.3V to +40V
Supply voltage, VEE	-20V to +0.3V
Supply range, VGG-VEE	-0.3V to 40V
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.

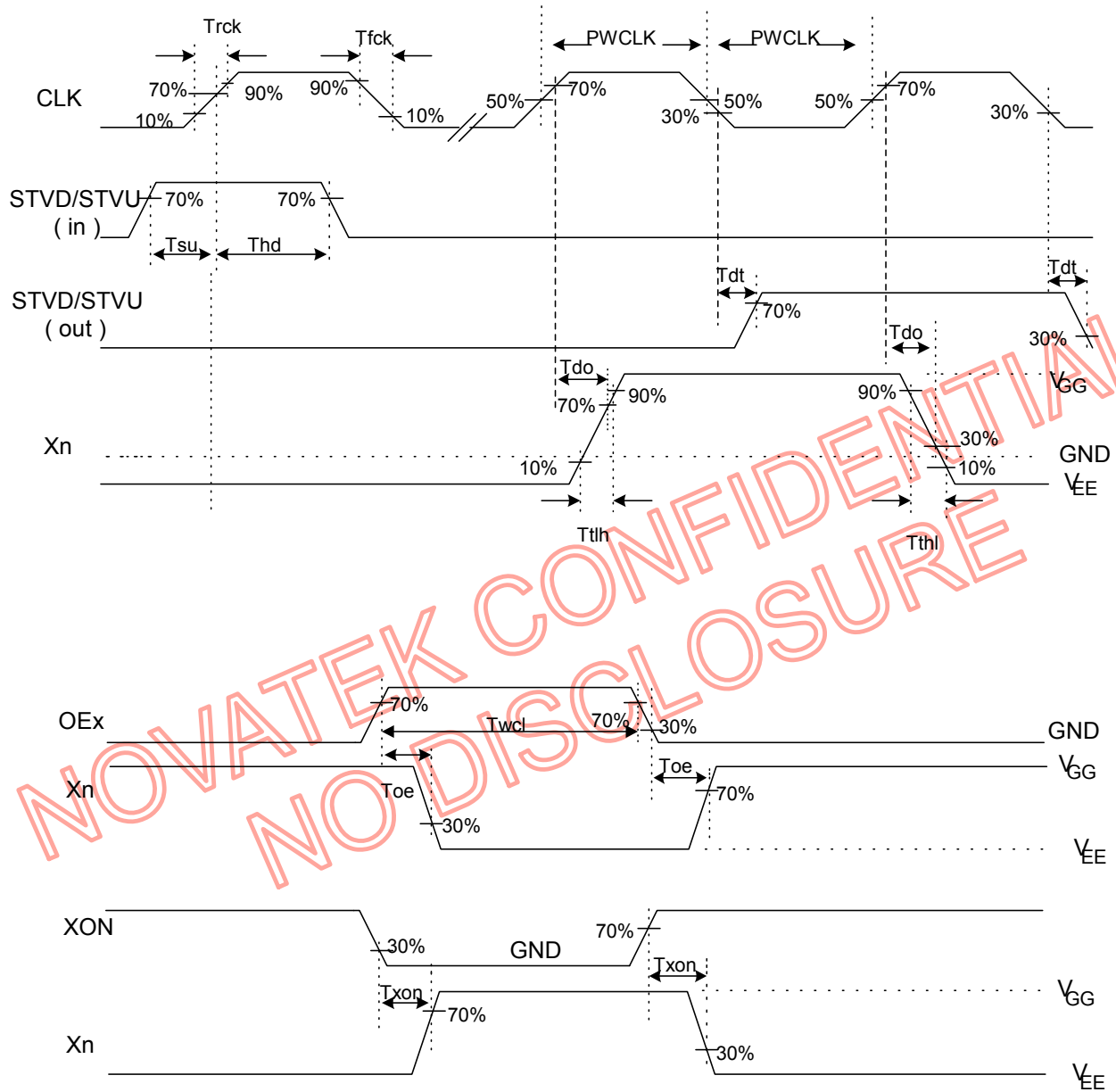
**DC Electrical Characteristics**

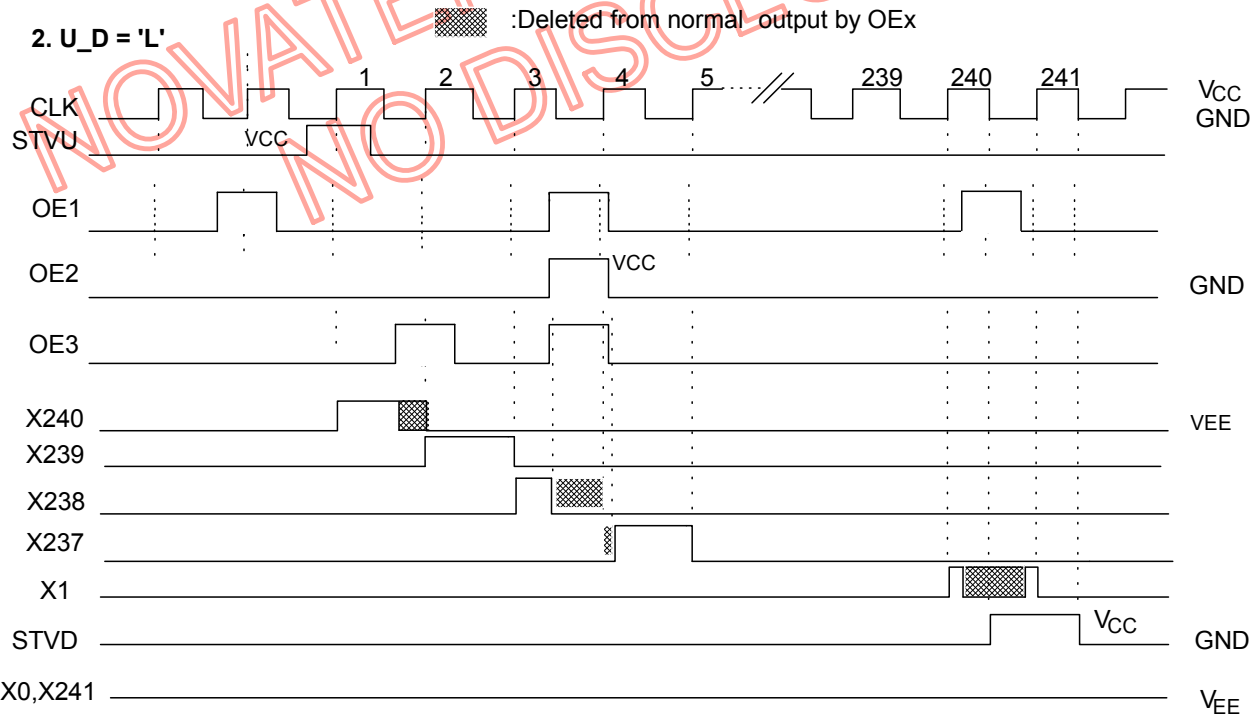
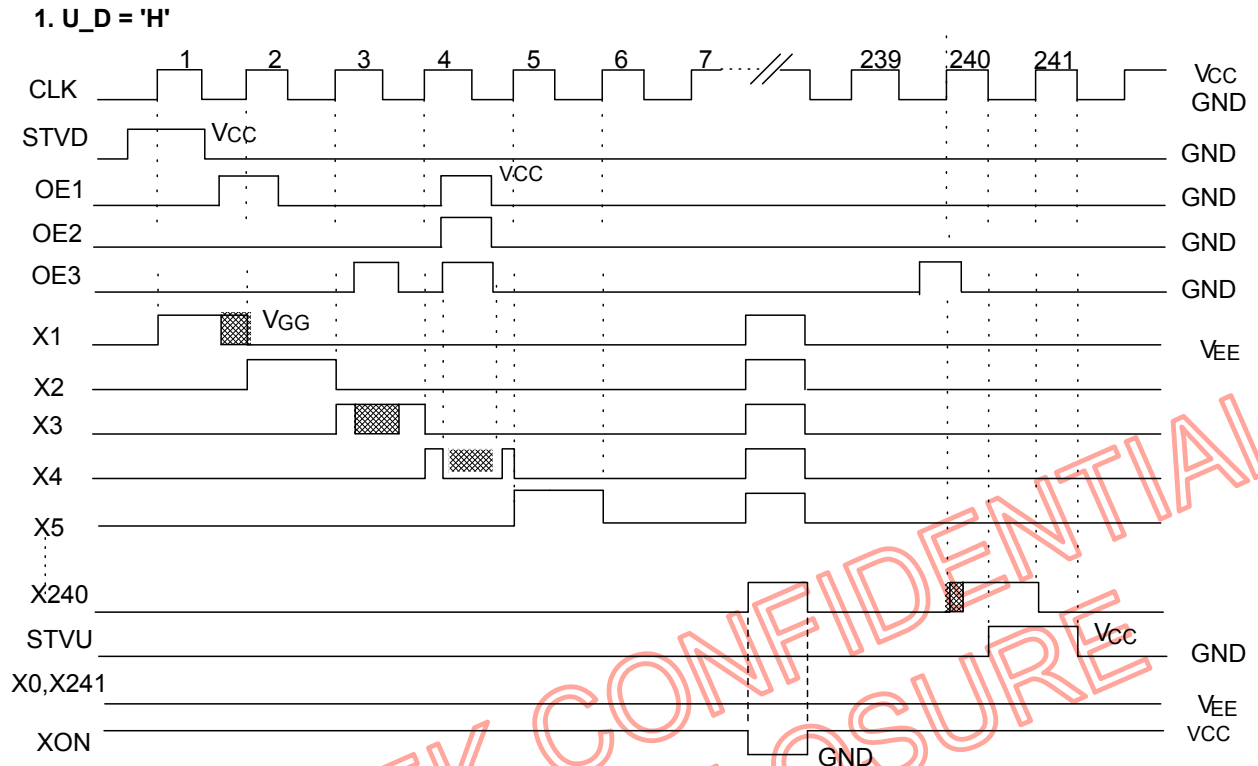
Symbol	Parameters	Min.	Typ.	Max.	Unit	Conditions
VGG	VGG Voltage	7	-	VEE +40	V	
VEE	VEE Voltage	-20	-	-5	V	
Vxo	Voltage Range of VGG - VEE	12	-	40	V	VCC = 3.3V
VCC	VCC Supplied Voltage	2.7	3.3	5.5	V	
VIH	High Level Input Voltage	0.7 X VCC	-	VCC	V	VCC = 3.3V
VIL	Low Level Input Voltage	0	-	0.3 X VCC	V	VCC = 3.3V
IXOH	High Level Output Current	0.5	-	-	mA	Driving current, VO = VGG – 1V
IXOL	Low Level Output Current	-0.5	-	-	mA	Sink current, VO = VEE + 1V
IPOH	High Level Output Current	200	-	-	uA	STVD/STVU, VO = VCC - 0.3V
IPOL	Low Level Output Current	-200	-	-	uA	STVD/STVU, VO = 0.3V
Rin	Pull-up Impedance	70K	200K	-	ohm	XON pin
IIL	Input Leakage Current	-	-	± 1	uA	Except XON pin
ICC	Operating Current Consumption	-	-	50	uA	VCC=3.3V, Fclk=20KHz, No load
IGG	Operating Current Consumption	-	-	100	uA	VGG=25V, Fclk=20KHz, No load
IEE	Operating Current Consumption	-	-	-100	uA	VEE=-15V, Fclk=20KHz, No load

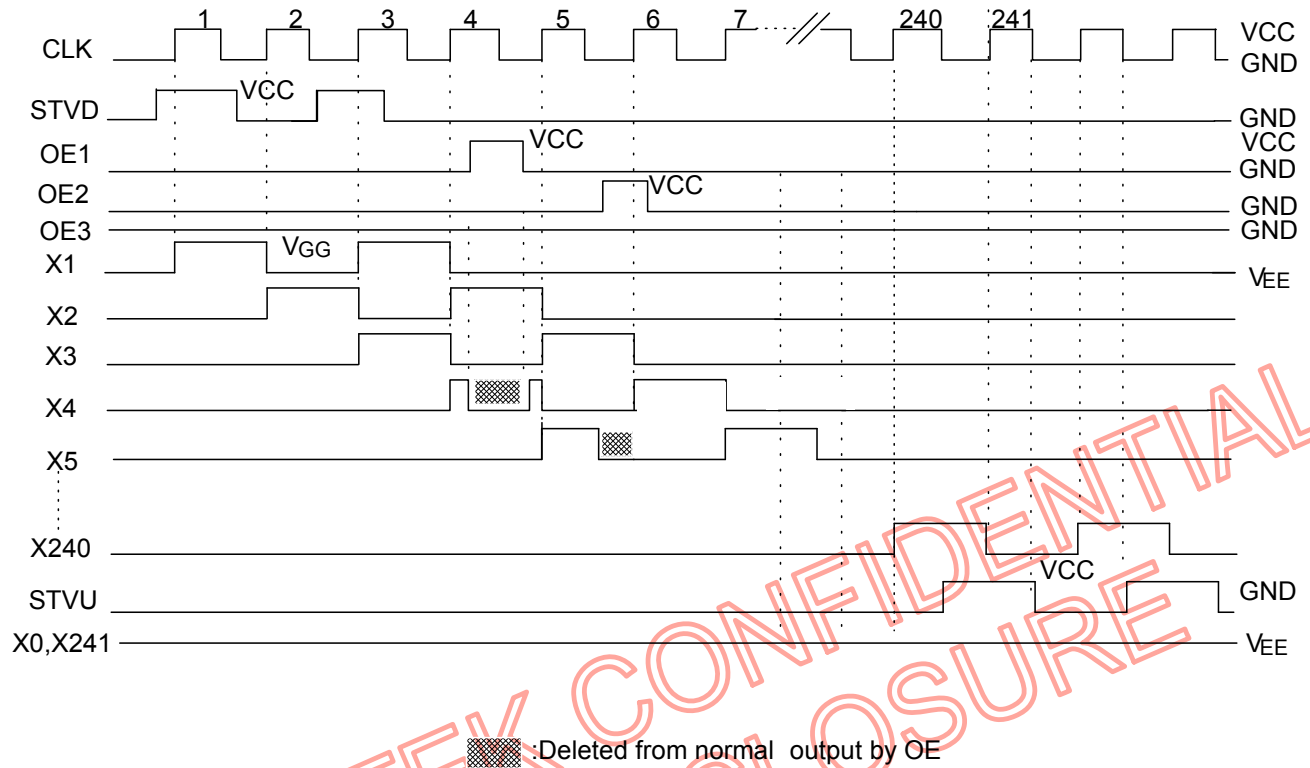
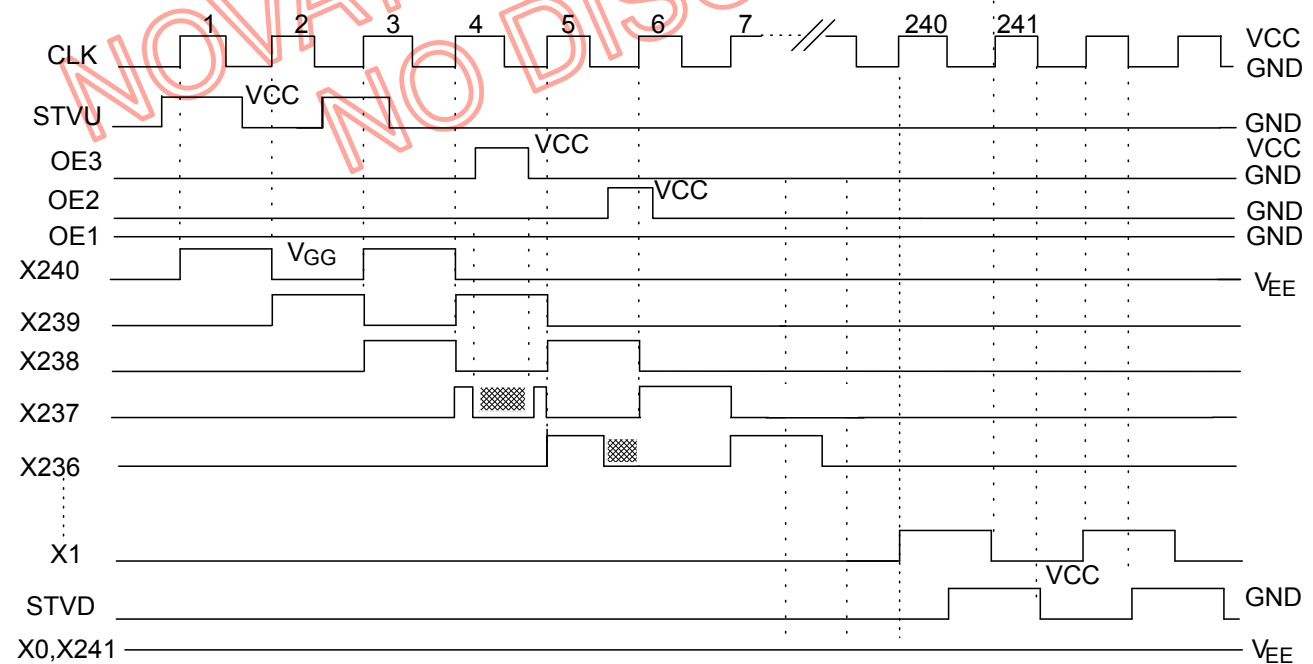
**AC Characteristics (VGG=25V, VEE=-15V, VCC=3.3V, GND=0V, TA= 25 °C)**

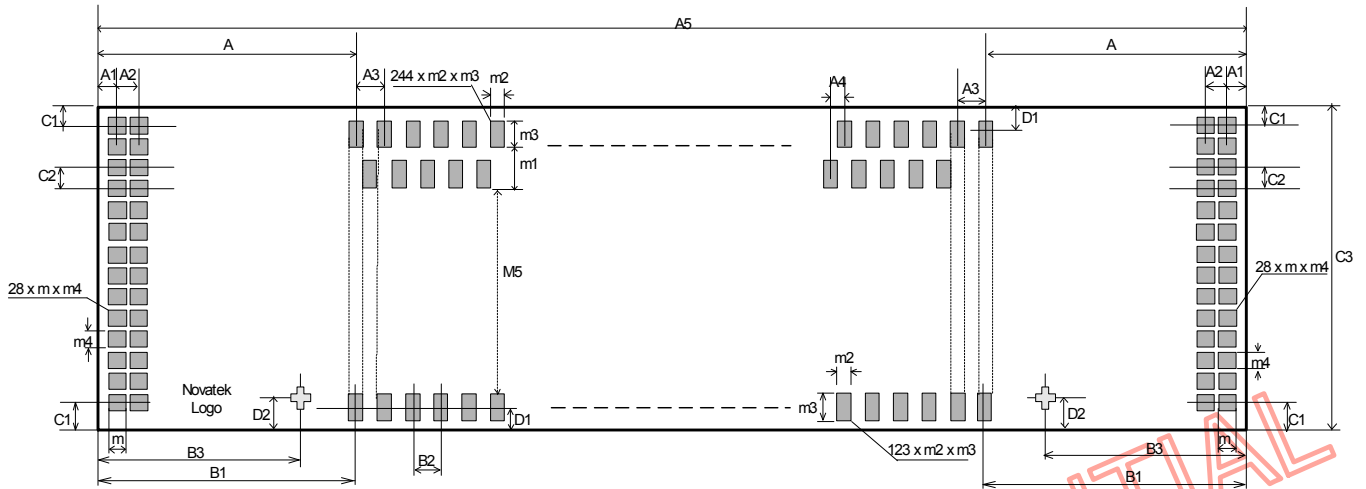
Symbol	Parameters	Min.	Typ.	Max.	Unit	Conditions
Tdt	STVD/STVU Delay Time	-	-	500	ns	CL = 20pF
Tdo	Driver Output Delay Time	-	-	900	ns	CL = 200pF
Tthl	Output Falling Time	-	400	800	ns	CL = 200pF, 90% to 10%
Tthh	Output Rise Time	-	500	1000	ns	CL = 200pF, 10% to 90%
TXON	XON to Driver Output Delay Time	-	-	50	us	CL = 200pF
Toe	OEx to Driver Output Delay Time	-	-	900	ns	CL = 200pF
Fclk	Clock Frequency	-	-	200	KHz	In cascade connection
Trck	Clock Rise Time	-	-	100	ns	CL = 20pF
Tfck	Clock Falling Time	-	-	100	ns	CL = 20pF
PWCLK	Clock Pulse Width ( High & Low )	500	-	-	ns	
Tsu	STVD/STVU Set-up Time	200	-	-	ns	
Thd	STVD/STVU Hold Time	300	-	-	ns	
Twcl	Output Enabled pulse width	1	-	-	us	

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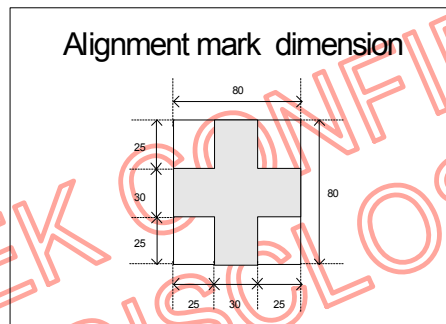
**Timing Waveforms**


**Operation(Single-pulse, 240 outputs)**


**Operation(Double-pulse, 240 outputs)**
**1. U\_D = 'H'**

**2. U\_D = 'L'**


**Chip Outline Dimensions**


Date:20040305



Symbol	Dimensions in um	Symbol	Dimensions in um
A	626	C2	65
A1	101	C3	1040
A2	72	D1	112.5
A3	70	D2	129
A4	35	m	52
A5	9792	m1	100
B1	626	m2	35
B2	70	m3	75
B3	526	m4	45
C1	97.5	M5	640

(scribe-line included)

**Bonding Diagram (TBD)**

Pad No.	Designation	X	Y	Pad No.	Designation	X	Y
1	Dummy1	-4795	422.5	51	Dummy24	-2730	-407.5
2	Dummy1	-4723	422.5	52	Dummy25	-2660	-407.5
3	XONL	-4795	357.5	53	Dummy26	-2590	-407.5
4	XONL	-4723	357.5	54	Dummy27	-2520	-407.5
5	OE3L	-4795	292.5	55	Dummy28	-2450	-407.5
6	OE3L	-4723	292.5	56	Dummy29	-2380	-407.5
7	OE2L	-4795	227.5	57	Dummy30	-2310	-407.5
8	OE2L	-4723	227.5	58	Dummy31	-2240	-407.5
9	OE1L	-4795	162.5	59	Dummy32	-2170	-407.5
10	OE1L	-4723	162.5	60	Dummy33	-2100	-407.5
11	CLKL	-4795	97.5	61	Dummy34	-2030	-407.5
12	CLKL	-4723	97.5	62	Dummy35	-1960	-407.5
13	U DL	-4795	32.5	63	Dummy36	-1890	-407.5
14	U DL	-4723	32.5	64	Dummy37	-1820	-407.5
15	PATHL	-4795	-32.5	65	Dummy38	-1750	-407.5
16	PATHL	-4723	-32.5	66	Dummy39	-1680	-407.5
17	STVU	-4795	-97.5	67	Dummy40	-1610	-407.5
18	STVU	-4723	-97.5	68	Dummy41	-1540	-407.5
19	VEEL	-4795	-162.5	69	Dummy42	-1470	-407.5
20	VEEL	-4723	-162.5	70	Dummy43	-1400	-407.5
21	GNDL	-4795	-227.5	71	Dummy44	-1330	-407.5
22	GNDL	-4723	-227.5	72	Dummy45	-1260	-407.5
23	GNDL	-4795	-292.5	73	Dummy46	-1190	-407.5
24	GNDL	-4723	-292.5	74	Dummy47	-1120	-407.5
25	VCCL	-4795	-357.5	75	Dummy48	-1050	-407.5
26	VCCL	-4723	-357.5	76	Dummy49	-980	-407.5
27	VGGL	-4795	-422.5	77	Dummy50	-910	-407.5
28	VGGL	-4723	-422.5	78	Dummy51	-840	-407.5
29	Dummy2	-4270	-407.5	79	Dummy52	-770	-407.5
30	Dummy3	-4200	-407.5	80	Dummy53	-700	-407.5
31	Dummy4	-4130	-407.5	81	Dummy54	-630	-407.5
32	Dummy5	-4060	-407.5	82	Dummy55	-560	-407.5
33	Dummy6	-3990	-407.5	83	Dummy56	-490	-407.5
34	Dummy7	-3920	-407.5	84	Dummy57	-420	-407.5
35	Dummy8	-3850	-407.5	85	Dummy58	-350	-407.5
36	Dummy9	-3780	-407.5	86	Dummy59	-280	-407.5
37	Dummy10	-3710	-407.5	87	Dummy60	-210	-407.5
38	Dummy11	-3640	-407.5	88	Dummy61	-140	-407.5
39	Dummy12	-3570	-407.5	89	Dummy62	-70	-407.5
40	Dummy13	-3500	-407.5	90	Dummy63	0	-407.5
41	Dummy14	-3430	-407.5	91	Dummy64	70	-407.5
42	Dummy15	-3360	-407.5	92	Dummy65	140	-407.5
43	Dummy16	-3290	-407.5	93	Dummy66	210	-407.5
44	Dummy17	-3220	-407.5	94	Dummy67	280	-407.5
45	Dummy18	-3150	-407.5	95	Dummy68	350	-407.5
46	Dummy19	-3080	-407.5	96	Dummy69	420	-407.5
47	Dummy20	-3010	-407.5	97	Dummy70	490	-407.5
48	Dummy21	-2940	-407.5	98	Dummy71	560	-407.5
49	Dummy22	-2870	-407.5	99	Dummy72	630	-407.5
50	Dummy23	-2800	-407.5	100	Dummy73	700	-407.5

Pad No.	Designation	X	Y	Pad No.	Designation	X	Y
101	Dummy74	770	-407.5	151	Dummy124	4270	-407.5
102	Dummy75	840	-407.5	152	VGGR	4723	-422.5
103	Dummy76	910	-407.5	153	VGGR	4795	-422.5
104	Dummy77	980	-407.5	154	VCCR	4723	-357.5
105	Dummy78	1050	-407.5	155	VCCR	4795	-357.5
106	Dummy79	1120	-407.5	156	GNDR	4723	-292.5
107	Dummy80	1190	-407.5	157	GNDR	4795	-292.5
108	Dummy81	1260	-407.5	158	GNDR	4723	-227.5
109	Dummy82	1330	-407.5	159	GNDR	4795	-227.5
110	Dummy83	1400	-407.5	160	VEER	4723	-162.5
111	Dummy84	1470	-407.5	161	VEER	4795	-162.5
112	Dummy85	1540	-407.5	162	STVD	4723	-97.5
113	Dummy86	1610	-407.5	163	STVD	4795	-97.5
114	Dummy87	1680	-407.5	164	PATHR	4723	-32.5
115	Dummy88	1750	-407.5	165	PATHR	4795	-32.5
116	Dummy89	1820	-407.5	166	U_DR	4723	32.5
117	Dummy90	1890	-407.5	167	U_DR	4795	32.5
118	Dummy91	1960	-407.5	168	CLKR	4723	-97.5
119	Dummy92	2030	-407.5	169	CLKR	4795	97.5
120	Dummy93	2100	-407.5	170	OE1R	4723	162.5
121	Dummy94	2170	-407.5	171	OE1R	4795	162.5
122	Dummy95	2240	-407.5	172	OE2R	4723	227.5
123	Dummy96	2310	-407.5	173	OE2R	4795	227.5
124	Dummy97	2380	-407.5	174	OE3R	4723	292.5
125	Dummy98	2450	-407.5	175	OE3R	4795	292.5
126	Dummy99	2520	-407.5	176	XONR	4723	357.5
127	Dummy100	2590	-407.5	177	XONR	4795	357.5
128	Dummy101	2660	-407.5	178	Dummy125	4723	422.5
129	Dummy102	2730	-407.5	179	Dummy125	4795	422.5
130	Dummy103	2800	-407.5	180	Dummy126	4270	407.5
131	Dummy104	2870	-407.5	181	X[0]	4200	407.5
132	Dummy105	2940	-407.5	182	X[1]	4165	307.5
133	Dummy106	3010	-407.5	183	X[2]	4130	407.5
134	Dummy107	3080	-407.5	184	X[3]	4095	307.5
135	Dummy108	3150	-407.5	185	X[4]	4060	407.5
136	Dummy109	3220	-407.5	186	X[5]	4025	307.5
137	Dummy110	3290	-407.5	187	X[6]	3990	407.5
138	Dummy111	3360	-407.5	188	X[7]	3955	307.5
139	Dummy112	3430	-407.5	189	X[8]	3920	407.5
140	Dummy113	3500	-407.5	190	X[9]	3885	307.5
141	Dummy114	3570	-407.5	191	X[10]	3850	407.5
142	Dummy115	3640	-407.5	192	X[11]	3815	307.5
143	Dummy116	3710	-407.5	193	X[12]	3780	407.5
144	Dummy117	3780	-407.5	194	X[13]	3745	307.5
145	Dummy118	3850	-407.5	195	X[14]	3710	407.5
146	Dummy119	3920	-407.5	196	X[15]	3675	307.5
147	Dummy120	3990	-407.5	197	X[16]	3640	407.5
148	Dummy121	4060	-407.5	198	X[17]	3605	307.5
149	Dummy122	4130	-407.5	199	X[18]	3570	407.5
150	Dummy123	4200	-407.5	200	X[19]	3535	307.5

Pad No.	Designation	X	Y	Pad No.	Designation	X	Y
201	X[20]	3500	407.5	251	X[70]	1750	407.5
202	X[21]	3465	307.5	252	X[71]	1715	307.5
203	X[22]	3430	407.5	253	X[72]	1680	407.5
204	X[23]	3395	307.5	254	X[73]	1645	307.5
205	X[24]	3360	407.5	255	X[74]	1610	407.5
206	X[25]	3325	307.5	256	X[75]	1575	307.5
207	X[26]	3290	407.5	257	X[76]	1540	407.5
208	X[27]	3255	307.5	258	X[77]	1505	307.5
209	X[28]	3220	407.5	259	X[78]	1470	407.5
210	X[29]	3185	307.5	260	X[79]	1435	307.5
211	X[30]	3150	407.5	261	X[80]	1400	407.5
212	X[31]	3115	307.5	262	X[81]	1365	307.5
213	X[32]	3080	407.5	263	X[82]	1330	407.5
214	X[33]	3045	307.5	264	X[83]	1295	307.5
215	X[34]	3010	407.5	265	X[84]	1260	407.5
216	X[35]	2975	307.5	266	X[85]	1225	307.5
217	X[36]	2940	407.5	267	X[86]	1190	407.5
218	X[37]	2905	307.5	268	X[87]	1155	307.5
219	X[38]	2870	407.5	269	X[88]	1120	407.5
220	X[39]	2835	307.5	270	X[89]	1085	307.5
221	X[40]	2800	407.5	271	X[90]	1050	407.5
222	X[41]	2765	307.5	272	X[91]	1015	307.5
223	X[42]	2730	407.5	273	X[92]	980	407.5
224	X[43]	2695	307.5	274	X[93]	945	307.5
225	X[44]	2660	407.5	275	X[94]	910	407.5
226	X[45]	2625	307.5	276	X[95]	875	307.5
227	X[46]	2590	407.5	277	X[96]	840	407.5
228	X[47]	2555	307.5	278	X[97]	805	307.5
229	X[48]	2520	407.5	279	X[98]	770	407.5
230	X[49]	2485	307.5	280	X[99]	735	307.5
231	X[50]	2450	407.5	281	X[100]	700	407.5
232	X[51]	2415	307.5	282	X[101]	665	307.5
233	X[52]	2380	407.5	283	X[102]	630	407.5
234	X[53]	2345	307.5	284	X[103]	595	307.5
235	X[54]	2310	407.5	285	X[104]	560	407.5
236	X[55]	2275	307.5	286	X[105]	525	307.5
237	X[56]	2240	407.5	287	X[106]	490	407.5
238	X[57]	2205	307.5	288	X[107]	455	307.5
239	X[58]	2170	407.5	289	X[108]	420	407.5
240	X[59]	2135	307.5	290	X[109]	385	307.5
241	X[60]	2100	407.5	291	X[110]	350	407.5
242	X[61]	2065	307.5	292	X[111]	315	307.5
243	X[62]	2030	407.5	293	X[112]	280	407.5
244	X[63]	1995	307.5	294	X[113]	245	307.5
245	X[64]	1960	407.5	295	X[114]	210	407.5
246	X[65]	1925	307.5	296	X[115]	175	307.5
247	X[66]	1890	407.5	297	X[116]	140	407.5
248	X[67]	1855	307.5	298	X[117]	105	307.5
249	X[68]	1820	407.5	299	X[118]	70	407.5
250	X[69]	1785	307.5	300	X[119]	35	307.5

Pad No.	Designation	X	Y	Pad No.	Designation	X	Y
301	X[120]	0	407.5	351	X[170]	-1750	407.5
302	X[121]	-35	307.5	352	X[171]	-1785	307.5
303	X[122]	-70	407.5	353	X[172]	-1820	407.5
304	X[123]	-105	307.5	354	X[173]	-1855	307.5
305	X[124]	-140	407.5	355	X[174]	-1890	407.5
306	X[125]	-175	307.5	356	X[175]	-1925	307.5
307	X[126]	-210	407.5	357	X[176]	-1960	407.5
308	X[127]	-245	307.5	358	X[177]	-1995	307.5
309	X[128]	-280	407.5	359	X[178]	-2030	407.5
310	X[129]	-315	307.5	360	X[179]	-2065	307.5
311	X[130]	-350	407.5	361	X[180]	-2100	407.5
312	X[131]	-385	307.5	362	X[181]	-2135	307.5
313	X[132]	-420	407.5	363	X[182]	-2170	407.5
314	X[133]	-455	307.5	364	X[183]	-2205	307.5
315	X[134]	-490	407.5	365	X[184]	-2240	407.5
316	X[135]	-525	307.5	366	X[185]	-2275	307.5
317	X[136]	-560	407.5	367	X[186]	-2310	407.5
318	X[137]	-595	307.5	368	X[187]	-2345	307.5
319	X[138]	-630	407.5	369	X[188]	-2380	407.5
320	X[139]	-665	307.5	370	X[189]	-2415	307.5
321	X[140]	-700	407.5	371	X[190]	-2450	407.5
322	X[141]	-735	307.5	372	X[191]	-2485	307.5
323	X[142]	-770	407.5	373	X[192]	-2520	407.5
324	X[143]	-805	307.5	374	X[193]	-2555	307.5
325	X[144]	-840	407.5	375	X[194]	-2590	407.5
326	X[145]	-875	307.5	376	X[195]	-2625	307.5
327	X[146]	-910	407.5	377	X[196]	-2660	407.5
328	X[147]	-945	307.5	378	X[197]	-2695	307.5
329	X[148]	-980	407.5	379	X[198]	-2730	407.5
330	X[149]	-1015	307.5	380	X[199]	-2765	307.5
331	X[150]	-1050	407.5	381	X[200]	-2800	407.5
332	X[151]	-1085	307.5	382	X[201]	-2835	307.5
333	X[152]	-1120	407.5	383	X[202]	-2870	407.5
334	X[153]	-1155	307.5	384	X[203]	-2905	307.5
335	X[154]	-1190	407.5	385	X[204]	-2940	407.5
336	X[155]	-1225	307.5	386	X[205]	-2975	307.5
337	X[156]	-1260	407.5	387	X[206]	-3010	407.5
338	X[157]	-1295	307.5	388	X[207]	-3045	307.5
339	X[158]	-1330	407.5	389	X[208]	-3080	407.5
340	X[159]	-1365	307.5	390	X[209]	-3115	307.5
341	X[160]	-1400	407.5	391	X[210]	-3150	407.5
342	X[161]	-1435	307.5	392	X[211]	-3185	307.5
343	X[162]	-1470	407.5	393	X[212]	-3220	407.5
344	X[163]	-1505	307.5	394	X[213]	-3255	307.5
345	X[164]	-1540	407.5	395	X[214]	-3290	407.5
346	X[165]	-1575	307.5	396	X[215]	-3325	307.5
347	X[166]	-1610	407.5	397	X[216]	-3360	407.5
348	X[167]	-1645	307.5	398	X[217]	-3395	307.5
349	X[168]	-1680	407.5	399	X[218]	-3430	407.5
350	X[169]	-1715	307.5	400	X[219]	-3465	307.5

