

## Anders Product Specification

Manufacturer	Data Images Corporation
Manufacturer Part n°	SCX0507116GGU07
Anders Part n°	SCX0507116GGU07
Customer Part n°	n/a
Specification Revision n°	1.0
Issue Date	07 December 2015

## Specification Approval

Company name	
Product/Project Name	
Printed name	
Job title	
Signature	
Approval Stage:	<p>This product is approved for the following production stage:</p> <p><input type="checkbox"/> Sample / Prototype</p> <p><input type="checkbox"/> Pre-Production</p> <p><input type="checkbox"/> Mass Production</p>
Approval Date	

Supplied by Anders Electronics plc



# DATA IMAGE CORPORATION

## CTP Module Specification Preliminary ITEM NO.: SCX0507116GGU07

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Customer Companies	QA Approval	QA Check	R&D Approval	R&D Check
	<i>pretty</i>	<i>Seven</i>	<i>Gramer</i>	<i>Levi</i>
Approved by	Version:	Issued Date:	Sheet Code:	Total Pages:
	1	07/DEC/15'		28



**2. RECORD OF REVISION**

Rev	Date	Item	Page	Comment	Source
1	07/DEC/15'			Initial preliminary	ESR0411012

### 3. GENERAL SPECIFICATIONS

Composition: 5.7 inches TFT module with Capacitive Touch Panel (CTP).  
CTP Interface: I<sup>2</sup>C.

Parameter	Specifications	Unit
Display resolution	(640X R.G.B) (W) x480(H)	dot
LCD Active area	115.2(W) x 86.4(H)	mm
Sensor Active area	116.05(W) x 87.25(H)	
Screen size	5.7(Diagonal)	inch
Pixel pitch	0.18(W) x 0.18(H)	mm
Color configuration	R.G.B. Stripe	
Overall dimension	142.75 (W) x 113.95(H) x 9 (T)	mm
Weight	TBD	g
Surface treatment	Glare	
View Angle direction	ALL	
LCM model number	FG050728DWSWMG01	
Our components and processes are compliant to RoHS standard		

### 4. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	MIN.	MAX.	Unit	Remark
Power supply voltage	V <sub>CC</sub>	-0.3	5.0	V	
Logic input voltage	V <sub>I</sub>	-0.3	V <sub>CC</sub> +0.3	V	
Operating temperature	T <sub>op</sub>	-20	+70	°C	Ambient temperature
Storage temperature	T <sub>st</sub>	-30	+80	°C	Ambient temperature

### 5. ELECTRICAL CHARACTERISTICS

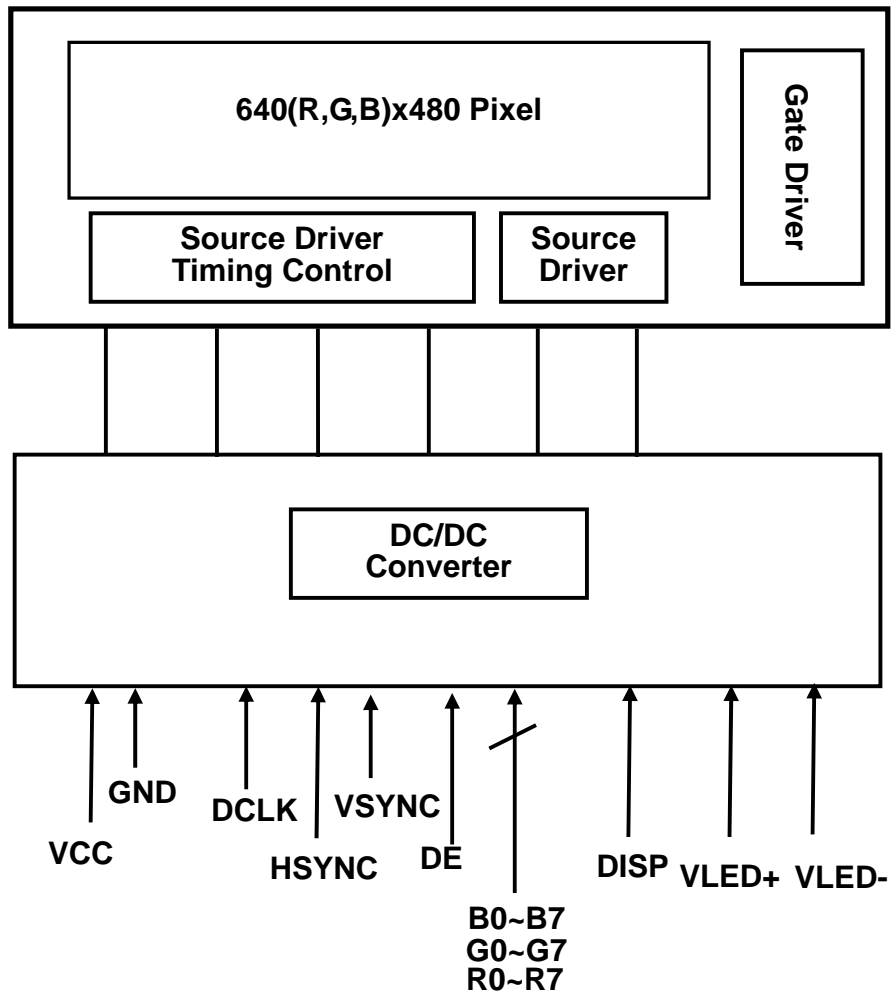
GND=0V, DCLK=25MHz, T<sub>a</sub>=25°C

Parameter	Symbol	MIN.	Typ.	MAX.	Unit	Remark
Power Supply voltage for LCD	V <sub>CC</sub>	+3.0	+3.3	+3.6	V	
Power Supply Current for LCD	I <sub>CC</sub>		111	140	mA	V <sub>CC</sub> =3.3V
Ripple voltage	V <sub>RF</sub>	-	-	100	mV <sub>P-P</sub>	
"H" level logical input voltage	V <sub>IH</sub>	0.7V <sub>CC</sub>	--	V <sub>CC</sub>	V	
"L" level logical input voltage	V <sub>IL</sub>	0	--	0.3V <sub>CC</sub>	V	
LED Voltage	V <sub>L</sub>		9.9		V	Note 1
LED Current	I <sub>L</sub>	-	140	-	mA	
LED Dice life time		--	50000	--	Hrs	Note 2

Note 1: V<sub>L</sub>=(V<sub>LED+</sub>)-(V<sub>LED-</sub>)

Note 2: The "LED dice life time" is defined as the brightness decrease to 50% original brightness that the ambient temperature is 22 °C and LED dice current=20mA.

**6. BLOCK DIAGRAM**



## 7. PIN CONNECTIONS

Pin No	Symbol	Function	Remark
1	VLED-	LED Power Supply Cathode.	
2	VLED+	LED Power Supply Anode.	
3	NC	No Connection	
4	VCC	Power Supply : +3.3V	
5	R0	Digital data input. R0 is LSB and R7 is MSB	
6	R1		
7	R2		
8	R3		
9	R4		
10	R5		
11	R6		
12	R7		
13	G0	Digital data input. G0 is LSB and G7 is MSB	
14	G1		
15	G2		
16	G3		
17	G4		
18	G5		
19	G6		
20	G7		
21	B0	Digital data input. B0 is LSB and B7 is MSB	
22	B1		
23	B2		
24	B3		
25	B4		
26	B5		
27	B6		
28	B7		
29	GND	Ground	
30	DCLK	Clock signal to sample each data	
31	DISP	Display ON/OFF Control ON=H(VDD), OFF=L(GND)	
32	HSYNC	Horizontal synchronous signal	
33	VSYNC	Vertical synchronous signal	
34	DE	Data Enable	
35	NC	No Connection	
36	GND	Ground	
37	NC(XR)	No Connection	
38	NC(YD)	No Connection	
39	NC(XL)	No Connection	
40	NC(YU)	No Connection	

Remarks:

1) If DE signal is fixed low, SYNC mode is used. Otherwise, DE mode is used.

## 7.1 Power Signal Sequence

Remarks:

\*1) Power Signal sequence:

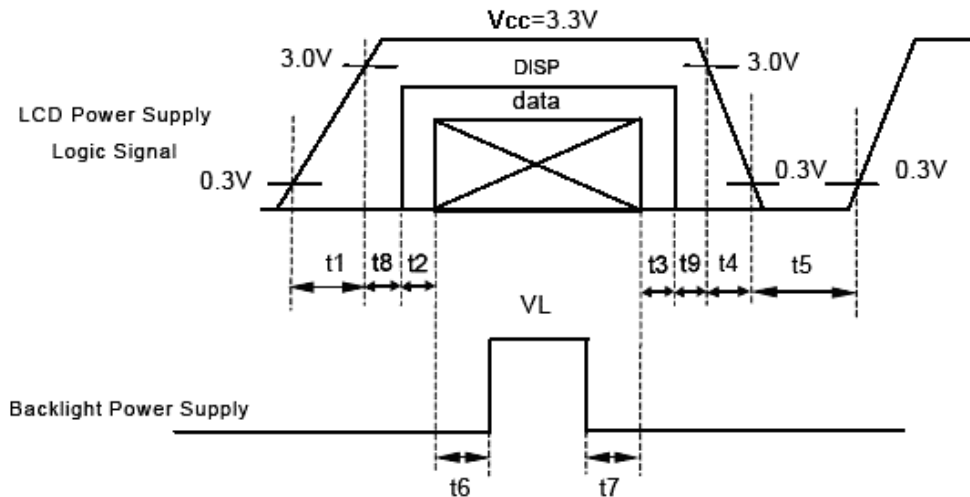
$t1 \leq 10\text{ms}$  ;  $1 \text{ sec} \leq t5$

$50\text{ms} \leq t2$  ;  $200\text{ms} \leq t6$

$0 < t3 \leq 50\text{ms}$ ;  $200\text{ms} \leq t7$

$0 < t4 \leq 10\text{ms}$  ;  $0 < t8$  ;

$0 < t9 \leq 50\text{ms}$

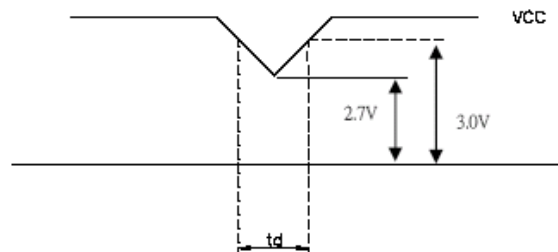


Data : RGB DATA, DCLK, DE, HSYNC, VSYNC

\*2) VCC-dip condition:

(1)  $2.7 \text{ V} \leq \text{VCC} < 3.0\text{V}$ ,  $t_d \leq 10 \text{ ms}$

(2)  $\text{VCC} > 3.0\text{V}$ , VCC-dip condition should be the same with VCC-turn-on condition.



## 8. INTERFACE SPECIFICATIONS

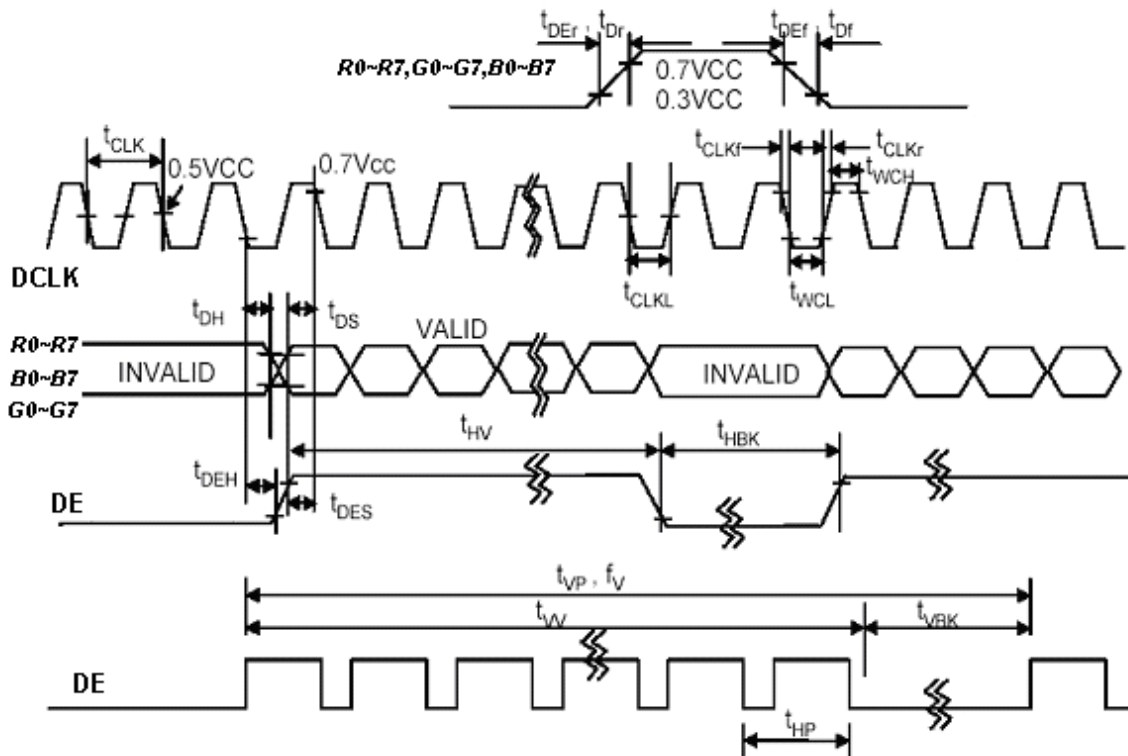
### 8.1 DE mode Input signal characteristics

Signal	Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Remarks
DCLK	Period	$t_{CLK}$	33	40	43	ns	
	Frequency	$f_{CLK}$	23	25	30	MHz	
	Low Level Width	$t_{WCL}$	6	-	-	ns	
	High Level Width	$t_{WCH}$	6	-	-	ns	
	Rise, Fall Time	$t_{CLKr}, t_{CLKf}$	-	-	3	ns	
	Duty <sup>(1)</sup>	-	0.45	0.50	0.55	-	
DE (Data Enable)	Setup Time	$t_{DES}$	5	-	-	ns	
	Hold Time	$t_{DEH}$	10	-	-	ns	
	Rise, Fall Time	$t_{DEr}, t_{DEf}$	-	-	16	ns	
	Horizontal Period	$t_{HP}$	750	800	900	$t_{CLK}$	
	Horizontal Valid	$t_{HV}$	640	640	640	$t_{CLK}$	
	Horizontal Blank	$t_{HBK}$	110	160	260	$t_{CLK}$	
	Vertical Period	$t_{VP}$	515	525	560	$t_{HP}$	
	Vertical Valid	$t_{V}$	480	480	480	$t_{HP}$	
	Vertical Blank	$t_{VBK}$	35	45	80	$t_{HP}$	
	Vertical Frequency	$f_v$	55	60	65	Hz	
Data R,G,B	Setup Time	$t_{DS}$	5	-	-	ns	
	Hold Time	$t_{DH}$	10	-	-	ns	
	Rise, Fall Time	$t_{Dr}, t_{Df}$	-	-	3	ns	

Note: (1)  $t_{CLKL} / t_{CLK}$ .



### 8.1.1 DE mode timing waveform



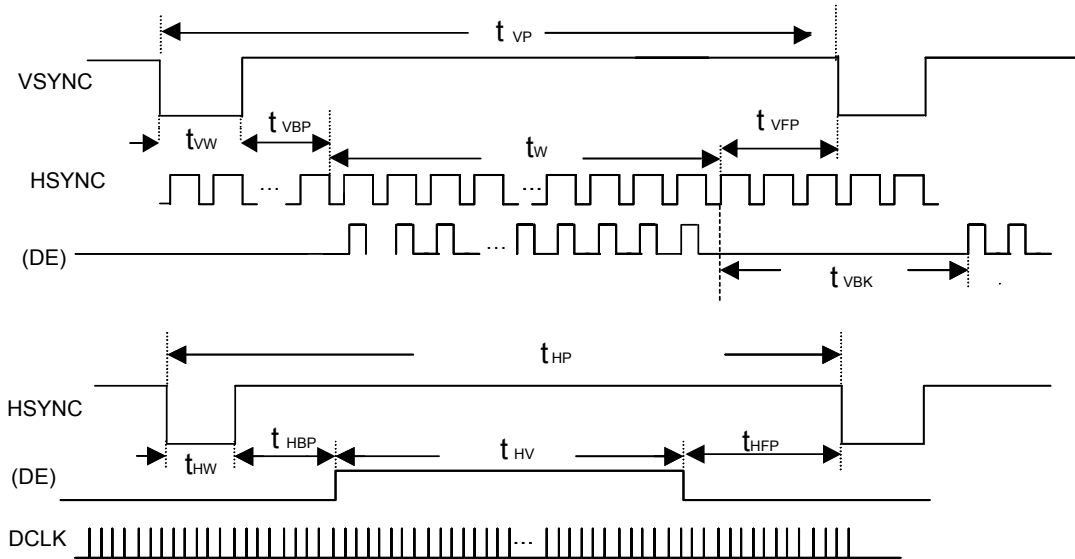
## 8.2 SYNC mode Input signal characteristics

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Remarks
Clock Period	$t_{CLK}$	33	40	43	ns	
Clock Frequency	$f_{CLK}$	23	25	30	MHz	
Clock Low Level Width	$t_{WCL}$	6	-	-	ns	
Clock High Level Width	$t_{WCH}$	6	-	-	ns	
Clock Rise, Fall Time	$t_{CLKr}, t_{CLKf}$	-	-	3	ns	
HSYNC Period	$t_{HP}$	750	800	900	$t_{CLK}$	
HSYNC Pulse Width	$t_{HW}$	5	30	-	$t_{CLK}$	
HSYNC Front Porch	$t_{HFP}$	1	16	116	$t_{CLK}$	
HSYNC Back Porch	$t_{HBP}$	1	114	139	$t_{CLK}$	
HSYNC Width + Back Porch	$t_{HW} + t_{HBP}$	144	144	144	$t_{CLK}$	
Horizontal Blank	$t_{HBK}$	1	160	260	$t_{CLK}$	
Horizontal Valid	$t_{HV}$	640	640	640	$t_{CLK}$	
VSYNC Period	$t_{VP}$	515	525	560	$t_{HP}$	
VSYNC Pulse Width	$t_{VW}$	1	3	5	$t_{HP}$	
VSYNC Front Porch	$t_{VFP}$	1	10	45	$t_{HP}$	
VSYNC Back Porch	$t_{VBP}$	30	32	34	$t_{HP}$	
VSYNC Width + Back Porch	$t_{VW} + t_{VBP}$	35	35	35	$t_{CLK}$	
Vertical Blank	$t_{VBK}$	35	45	80	$t_{HP}$	
Valid data Width	$t_W$	480	480	480	$t_{HP}$	
Data Setup Time	$t_{DS}$	5	-	-	ns	
Data Hold Time	$t_{DH}$	10	-	-	ns	

Note: (1)  $t_{HBK} = t_{HFP} + t_{HW} + t_{HBP}$

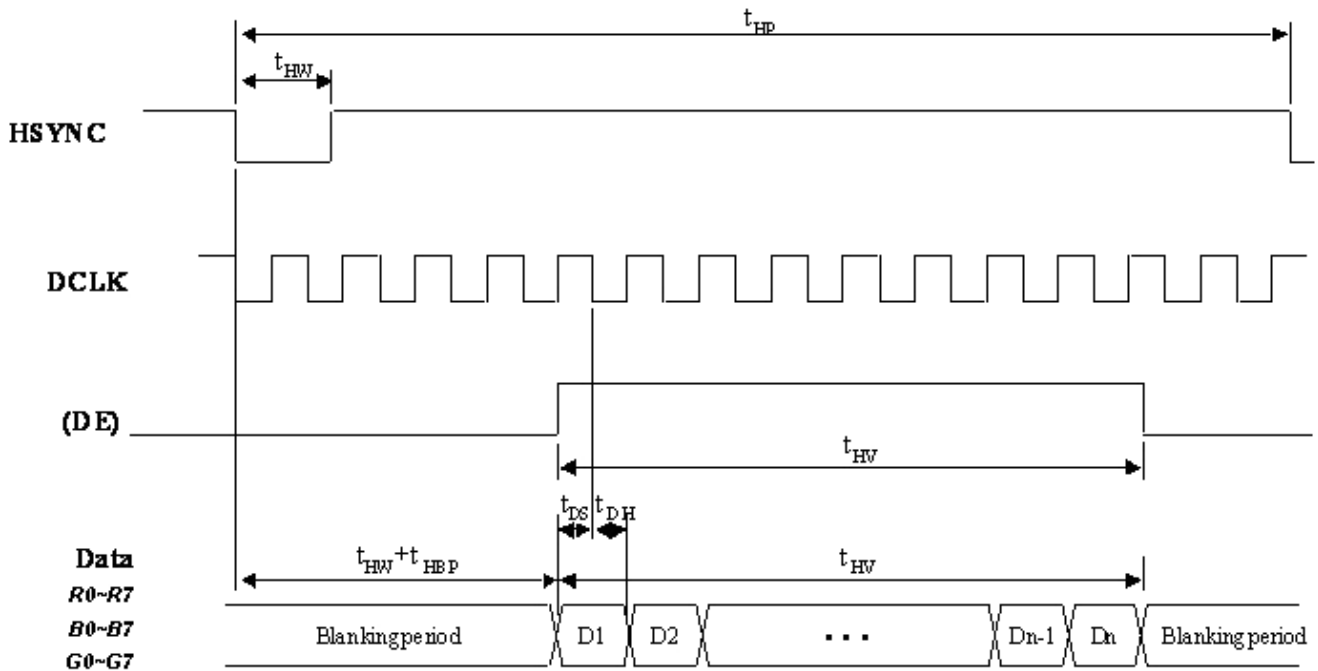
## 8.2.1 SYNC mode timing waveform

### 8.2.1.1 Input vertical timing



Remark : If SYNC mode is used, please fix DE signal to low, DE timing waveform is for reference only.

### 8.2.1.2 Input horizontal timing



Remark : If SYNC mode is used, please fix DE signal to low, DE timing waveform is for reference only.

**8.3 Color Data Assignment**

COLOR	DISPLAY	DATA SIGNAL																												GRAY SCALE LEVEL
		RED							GREEN							BLUE														
		R0	R1	R2	R3	R4	R5	R6	R7	G0	G1	G2	G3	G4	G5	G6	G7	B0	B1	B2	B3	B4	B5	B6	B7					
BASIC COLOR	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	
	BLUE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	-	
	GREEN	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	-	
	CYAN	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	
	RED	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	
	MAGENTA	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	-	
	YELLOW	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	-	
	WHITE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	
GRAY SCALE OF RED	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R0		
	DARK ↑	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R1		
		0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R2		
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	R3~R252		
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:			
	LIGHT ↓	1	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R253		
		0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R254		
	RED	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R255		
GRAY SCALE OF GREEN	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	G0		
	DARK ↑	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	G1		
		0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	G2		
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	G3~G252		
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:			
	LIGHT ↓	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	G253		
		0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	G254		
	GREEN	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	G255		
GRAY SCALE OF BLUE	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	B0		
	DARK ↑	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	B1		
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	B2		
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	B3~B252		
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:			
	LIGHT ↓	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1	1	1	B253		
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	B254		
	BLUE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	B255		

Note) Definition of Gray :

 $R_n$  : Red Gray,  $G_n$  : Green Gray,  $B_n$  : Blue Gray ( $n$  = Gray level)

Input Signal : 0 = Low level voltage, 1 = High level voltage

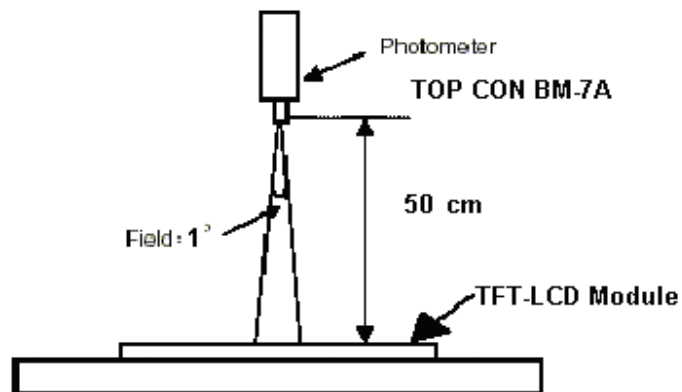
## 9. OPTICAL CHARACTERISTIC

### 9.1 Specification:

Parameter	Symbol	Condition	MIN.	TYP.	MAX.	Unit	Remarks	
Viewing Angle	Horizontal	$\theta_{x+}$	70	80	--	deg	Note 1,4	
		$\theta_{x-}$	70	80	--			
	Vertical	$\theta_{y+}$	CR $\geq$ 10	70	80			--
		$\theta_{y-}$		70	80			--
Contrast Ratio	CR	at optimized viewing angle	200	300			Note 1,3	
Response time	Rise	Tr	-	15	50	ms	Note 1,6	
	Fall	Tf	-	35	50	ms		
Uniformity		B-uni	$\theta_{x=\theta_{y=0^{\circ}}}$	70	80	--	%	Note1,5
Brightness		L	$\theta_{x=\theta_{y=0^{\circ}}}$ ADJ=3.3V	360	450	--	cd/m <sup>2</sup>	Note 1,2
Chromaticity	$x_W$	Center $\theta_{x=\theta_{y=0^{\circ}}}$	0.259	0.309	0.359		Note 1,7	
	$y_W$		0.270	0.320	0.370			
	$x_R$		0.565	0.615	0.665			
	$y_R$		0.310	0.360	0.410			
	$x_G$		0.295	0.345	0.395			
	$y_G$		0.490	0.540	0.590			
	$x_B$		0.098	0.148	0.198			
	$y_B$		0.056	0.106	0.156			
Image sticking	tis	2 hours			2	Sec	Note 8	

The following optical specifications shall be measured in a darkroom or equivalent state (ambient luminance  $\leq 1$  lux, and at room temperature). The operation temperature is  $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The measurement method is shown in Note1.

Note1: The method of optical measurement:

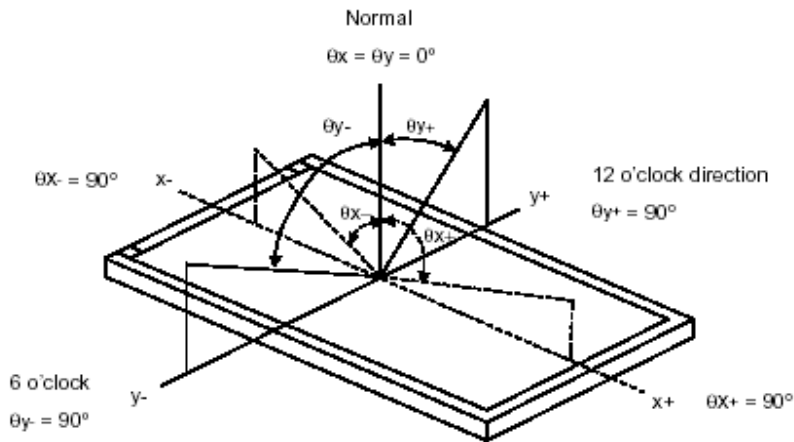


Note2: Measured at the center area of the panel and at the viewing angle of the  $\theta_x = \theta_y = 0^\circ$

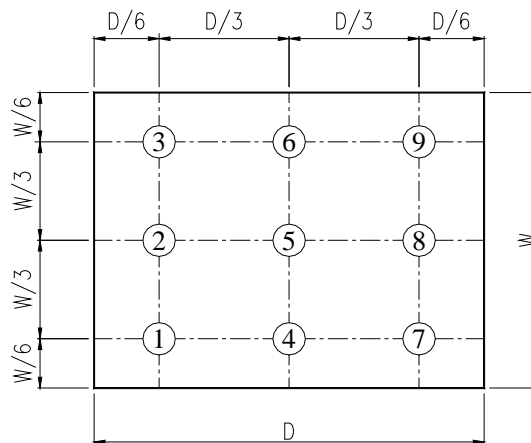
Note3: Definition of Contrast Ratio (CR):

$$CR = \frac{\text{Luminance with all pixels in white state}}{\text{Luminance with all pixels in Black state}}$$

Note4: Definition of Viewing Angle



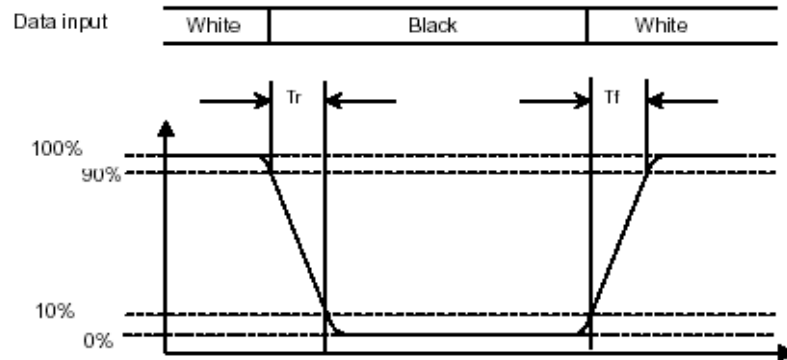
Note 5: Definition of Brightness Uniformity (B-uni):



$$B\text{-uni} = \frac{\text{Minimum luminance of 9 points}}{\text{Maximum luminance of 9 points}} \quad (\text{Note 5}).$$

Note6: Definition of Response Time:

The Response Time is set initially by defining the "Rising Time (Tr)" and the "Falling Time (Tf)" respectively. Tr and Tf are defined as following figure.



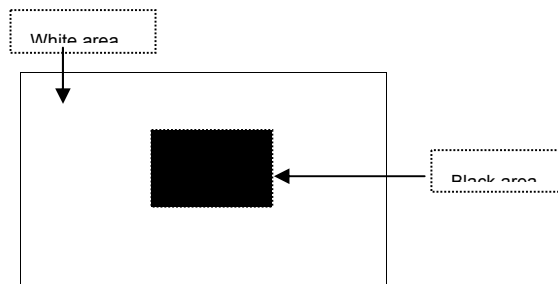
Note 7: Definition of Chromaticity:

The color coordinates  $(x_w, y_w)$ ,  $(x_r, y_r)$ ,  $(x_g, y_g)$ , and  $(x_b, y_b)$  are obtained with all pixels in the viewing field at white, red, green, and blue states, respectively.

Note 8: Definition of Image sticking (tis):

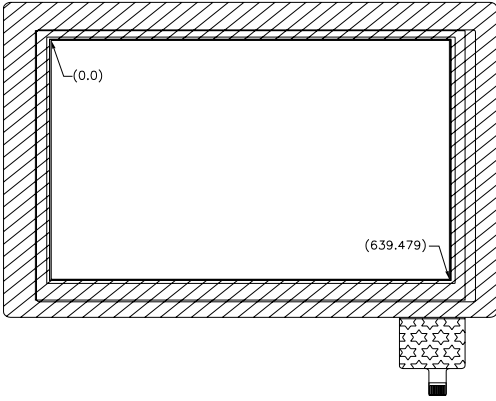
Continuously display the test pattern shown in the figure below for 2 hours. Then display a completely white screen. The previous image shall not persist more than 2 sec at 25 °C

**Image sticking pattern**

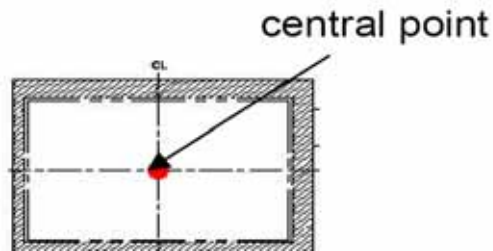


## 10. CTP GENAL SPECIFICATIONS

### 10.1 CTP main feature

Item	Specification	Unit
Type	Transparent type projected capacitive touch panel	
Input mode	Human's finger	
Finger	10	Points
CTP Interface	I <sup>2</sup> C	
Transparency	85%	
Haze	5.0%	
Response time	35(first touched response time)	ms
Report rate	110(Max)	Hz
(X,Y)position		
Point hitting life time	1,000,000 times min.	Note 1
F/W:ILI21160DA057O0002.hex.		

Note 1: Use 8 mm diameter silicon rubber/force 3N to knock on central point twice per second (no-operating), function pass after test.





## 10.2 CTP Absolute Maximum Rating

Symbol	Description	Min	Max	Unit	Notes
VCC	Power Supply voltage	-0.3	3.3	V	
Top	Operating temperature	-20	70	°C	
Tst	Storage temperature	-30	80	°C	

## 10.3 CTP Electrical Characteristic

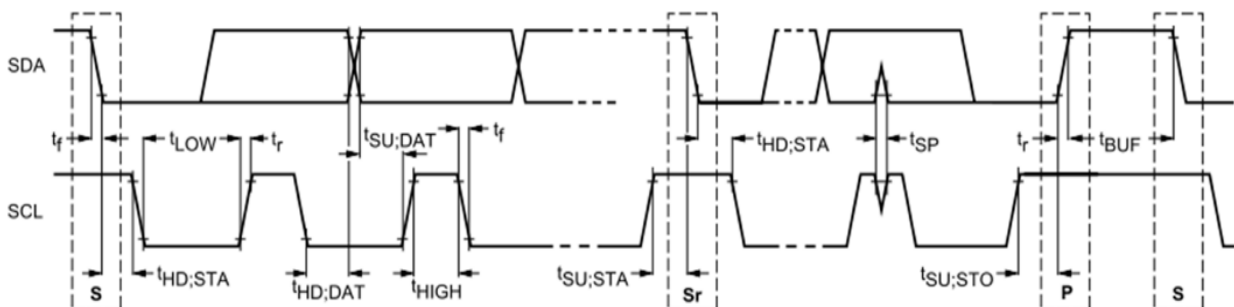
Symbol	Description	Min	Typ.	Max	Unit	Notes
VCC	Power Supply voltage	2.8	3.3	3.6	V	
I <sub>VCC</sub>	Power Supply current		TBD		mA	
I <sub>sleep</sub>	Sleep Mode	-	20	-	uA	
V <sub>IH</sub>	Input H voltage	0.7VCC	-	VCC	V	
V <sub>IL</sub>	Input L voltage	-0.3	-	0.3VCC	V	

## 10.4 CTP Pin Connections

No.	Name	I/O	Description
1	NC	-	No connection
2	SCL	I	I <sup>2</sup> C Clock
3	SDA	I/O	I <sup>2</sup> C Data
4	NC	-	No connection
5	INT	O	Active low when data output from touch panel
6	GND	P	Ground
7	VCC	P	Power; V <sub>CC</sub> =3.3V(typ.)
8	/RESET	I	CTP reset input pin, active low.
9	NC	-	No connection

## 10.5 TIMING SPECIFICATIONS

### 10.5.1 AC Characteristics of the SDA and SCL on I2C interface



**Table 10-5: Characteristics of the SDA and SCL bus lines**

Parameter	Symbol	100KHz			400KHz		
		Min	Max	Unit	Min	Max	Unit
SCL clock frequency	f <sub>SCL</sub>	0	100	KHz	0	400	KHz
Hold time (repeated) START condition. After this period, the first clock pulse is generated	t <sub>HD;STA</sub>	4.0	-	μs	0.6	-	μs
LOW period of the SCL clock	t <sub>LOW</sub>	4.7	-	μs	1.3	-	μs
HIGH period of the SCL clock	t <sub>HIGH</sub>	4.0	-	μs	0.6	-	μs
Set-up time for a repeated START condition	t <sub>SU;STA</sub>	4.7	-	μs	0.6	-	μs
Data hold time	t <sub>HD;DAT</sub>	5.0	-	μs	-	-	μs
For I <sup>2</sup> C Device		0	3.45	μs	0	0.9	μs
Data set-up time	t <sub>SU;DAT</sub>	250	-	ns	100	-	ns
Rise time of both SDA and SCL signals	t <sub>r</sub>	-	1000	ns	-	300	ns
Fall time of both SDA and SCL signals	t <sub>f</sub>	-	300	ns	-	300	ns
Set-up time for STOP condition	t <sub>SU;STO</sub>	4.0	-	μs	0.6	-	μs
Bus free time between a STOP and START condition	t <sub>BUF</sub>	4.7	-	μs	1.3	-	μs

### 10.5.2 Device Address

The device addresses are 7-binary bits long and are conventionally expressed as 4 bits followed by 3 bits followed by the letter 'b', 1000 001b. These addresses occupy the high seven bits of an eight-bit field on the bus.

MSB							LSB
1	0	0	0	0	0	1	0/1
Device Address							R/W

7-bit Device Address: 0x41

8-bit Device Read Address: 0x83

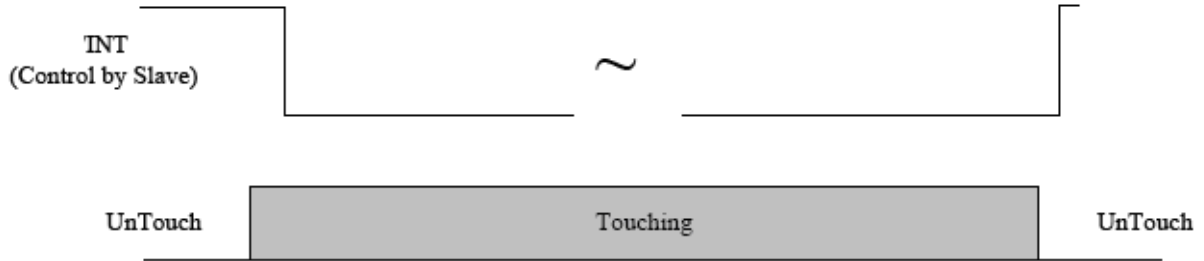
8-bit Device Write Address: 0x82

I<sup>2</sup>C Device Address

### 10.5.3 Interrupt Pin (INT) Control

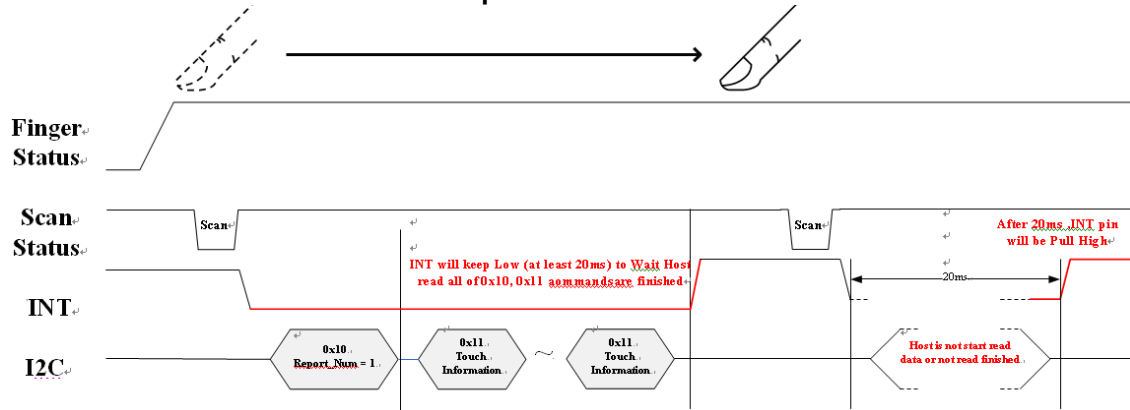
ILI Touch device uses interrupt pin to signal the host when detecting touch events on the sensor. When a finger touches on the sensor surface, the INT pin will be pull low. ILI Touch device supports two different type control method.

**Method 1: The INT will continue to be low until the finger leaves the sensor surface.**

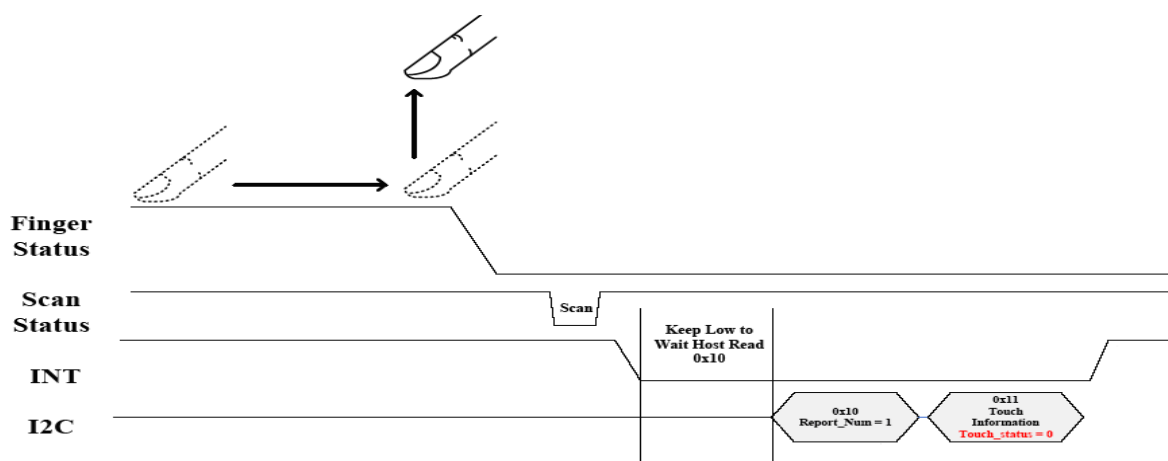


Method 1: INT Pin Control Diagram (Finger Touch)

**Method 2: The INT will continue to be pull low until host read 0x10 command**

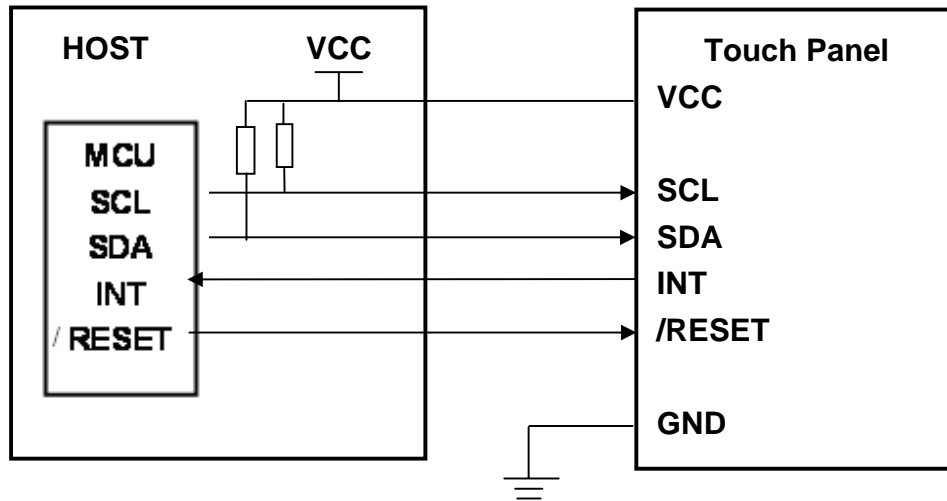


Method 2: INT Pin Control Diagram (Finger Touch)



Method 2: INT Pin Control Diagram (Finger Release)

## 11. BLOCK DIAGRAM



## 12. QUALITY ASSURANCE

### 12.1 Test Condition

#### 12.1.1 Temperature and Humidity(Ambient Temperature)

Temperature :  $25 \pm 5^{\circ}\text{C}$

Humidity :  $65 \pm 5\%$

#### 12.1.2 Operation

Unless specified otherwise, test will be conducted under function state.

#### 12.1.3 Container

Unless specified otherwise, vibration test will be conducted to the product itself without putting it in a container.

#### 12.1.4 Test Frequency

In case of related to deterioration such as shock test. It will be conducted only once.

#### 12.1.5 Test Method

No.	Reliability Test Item & Level	Test Level	Remark
1	High Temperature Storage Test	T=80°C,240hrs	IEC68-2-2
2	Low Temperature Storage Test	T=-30°C,240hrs	IEC68-2-1
3	High Temperature Operation Test	T=70°C,240hrs	IEC68-2-2
4	Low Temperature Operation Test	T=-20°C,240hrs	IEC68-2-1
5	High Temperature and High Humidity Operation Test	T=60°C,90% RH,240hrs	IEC68-2-3
6	Thermal Cycling Test (No operation)	-30°C → +25°C → +80°C,200 Cycles 30 min 5min 30 min	IEC68-2-14
7	Vibration Test	Frequency:10 ~ 55 Hz Amplitude:1.5 mm Sweep Time:11min Test Period:6 Cycles for each Direction of X,Y,Z	IEC68-2-6
8	Drop Test	Height :60cm 1 conner,3edges,6surfaces	IEC68-2-32
9	Shock Test	100G,6ms,Direction:±X±Y±Z Cycle:3times	IEC68-2-27
10	ESD Test	State: operating Location: LCM/TP surface Condition:150pf 330Ω Contact +/- 4kV Air +/-8kV Criteria: Class C	IEC61000-4-2

## 12.2 Inspection condition

### 12.2.1 Inspection condition

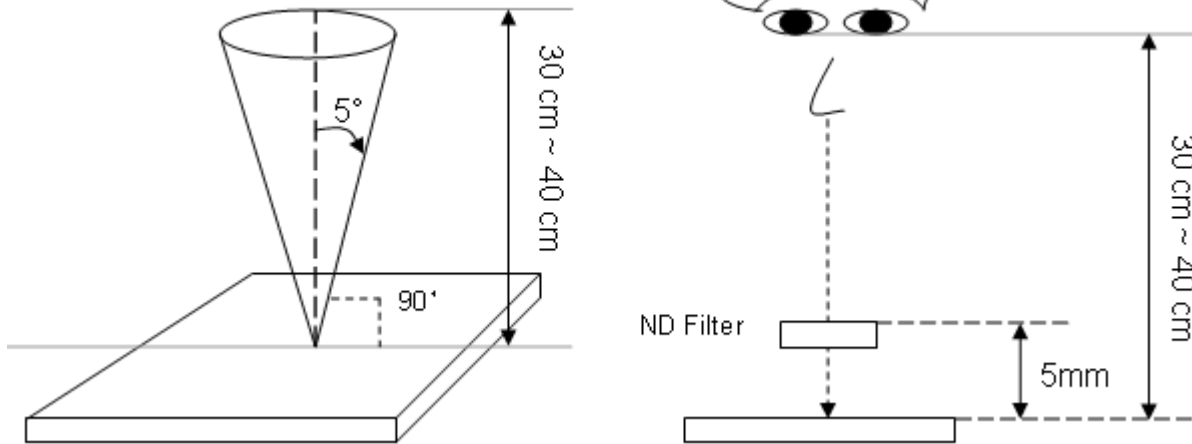
#### 12.2.1.1 Inspection conditions

12.2.1.2 Inspection Distance :  $30 \pm 5$  cm

12.2.1.3 View Angle :

(1) Inspection that light pervious to the product:  $90 \pm 15^\circ$

(2) Inspection that light reflects on the product:  $90 \pm 15^\circ$





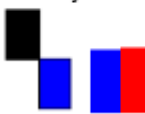
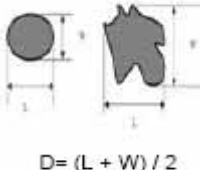
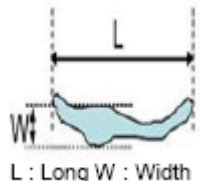
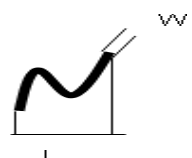
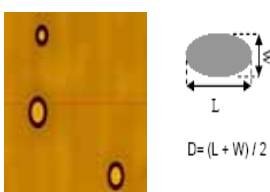
#### 12.2.1.4 Environment conditions :

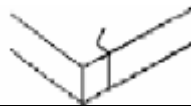
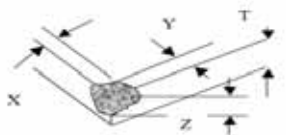
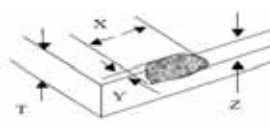
Ambient Temperature :	25±5
Ambient Humidity :	30~75%RH
Ambient Illumination	600~800 lux

## 12.3 Inspection Parameters

Appearance inspection standard (D: diameter, L: length; W: width, Z: height, T: glass thickness ,n :number)

Inspection item	Inspection standard	Description
No image	Prohibited	
Image abnormal	Prohibited	
Bright line	Prohibited	
Mura	It is acceptable that the defect can not be seen with 2% ND filter.	

Dot	Item	Acceptable Visible area	Total	One Dot  Two adjacent dot 
	Bright dot	2	5	
	Dark dot	4		
	Bright adjacent dots	1	1	
	Dark adjacent dots	2	2	
	Adjacent dots with a bright dot and a dark dot	1	1	
Foreign material in dot shape	SPEC (unit: mm)		Acceptable	 $D = (L + W) / 2$
	D ≤ 0.3		Ignored	
	0.3 < D ≤ 0.5, distance > 5		n 5	
	D > 0.5		0	
Inspection item	Inspection standard		Description	
Foreign material in line shape	SPEC (unit: mm)		Acceptable	 L : Long W : Width
	W ≤ 0.05 and L ≤ 7		Ignored	
	0.05 < W ≤ 0.1, L ≤ 7, distance > 5		n 5	
	W > 0.1 or L > 7		0	
Contamination	It is acceptable if the dirt can be wiped.			
Inspection item	Inspection standard		Description	
Scratch	SPEC (unit: mm)		Acceptable	
	W ≤ 0.05 and L ≤ 7		Ignored	
	0.05 < W ≤ 0.08, L ≤ 7, distance > 5		n 5	
	0.08 < W ≤ 0.1, L ≤ 7, distance > 5		n 3	
	W > 0.1 or L > 7		0	
Bubble	SPEC (unit: mm)		Acceptable	 $D = (L + W) / 2$
	D ≤ 0.2		Ignored	
	Non visible area		Ignored	
	0.2 < D ≤ 0.3, distance > 5		n 5	
	D > 0.3		0	
Insufficient glue	SPEC (unit: mm)		Acceptable	
	Non visible area		Ignored	
	Visible area		0	

Cover & Sensor Crack	Prohibited		
Sensor angle missing & edge break	SPEC (unit: mm)	Acceptable	
	Damage circuit or effect function	0	
Cover/Sensor angle missing	SPEC (unit: mm)	Acceptable	
	X 3.0, Y 3.0, Z T	Ignored	
	X>3.0, Y>3.0, Z > T	0	
Cover/Sensor edge break	SPEC (unit: mm)	Acceptable	
	X 3.0, Y 3.0, Z T	Ignored	
	X>3.0, Y>3.0, Z > T	0	
Inspection item	SPEC		Description
Ink	SPEC (unit: mm)	Acceptable	
	word unclear, inverted, mistake, break line	0	
Bubble under protection film	SPEC (unit: mm)	Acceptable	
	NA		
Function	Prohibited		

## 12.4 Sampling Condition

Unless otherwise agree in written, the sampling inspection shall be applied to the incoming inspection of customer.

Lot size: Quantity of shipment lot per model.

Sampling type: normal inspection, single sampling

Sampling table: ISO2859

Inspection level: Level II

Class of defects	Definition		
	<b>Major</b>	AQL 0.65	It is a defect that is likely to result in failure or to reduce materially the usability of the product for the intended function.
	<b>Minor</b>	AQL 1.5	It is a defect that will not result in functioning problem with deviation classified.



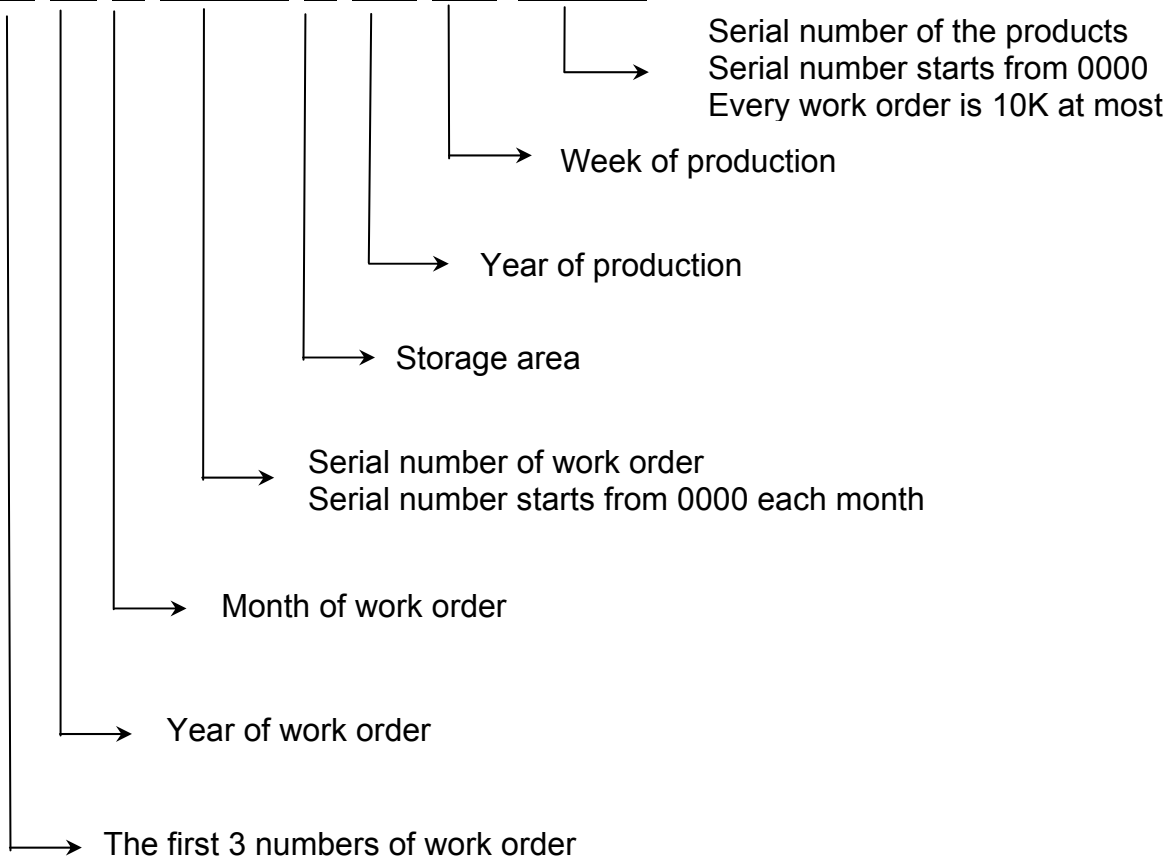
### 13. CTP PRODUCT LABEL DEFINE

**Product Label style:**

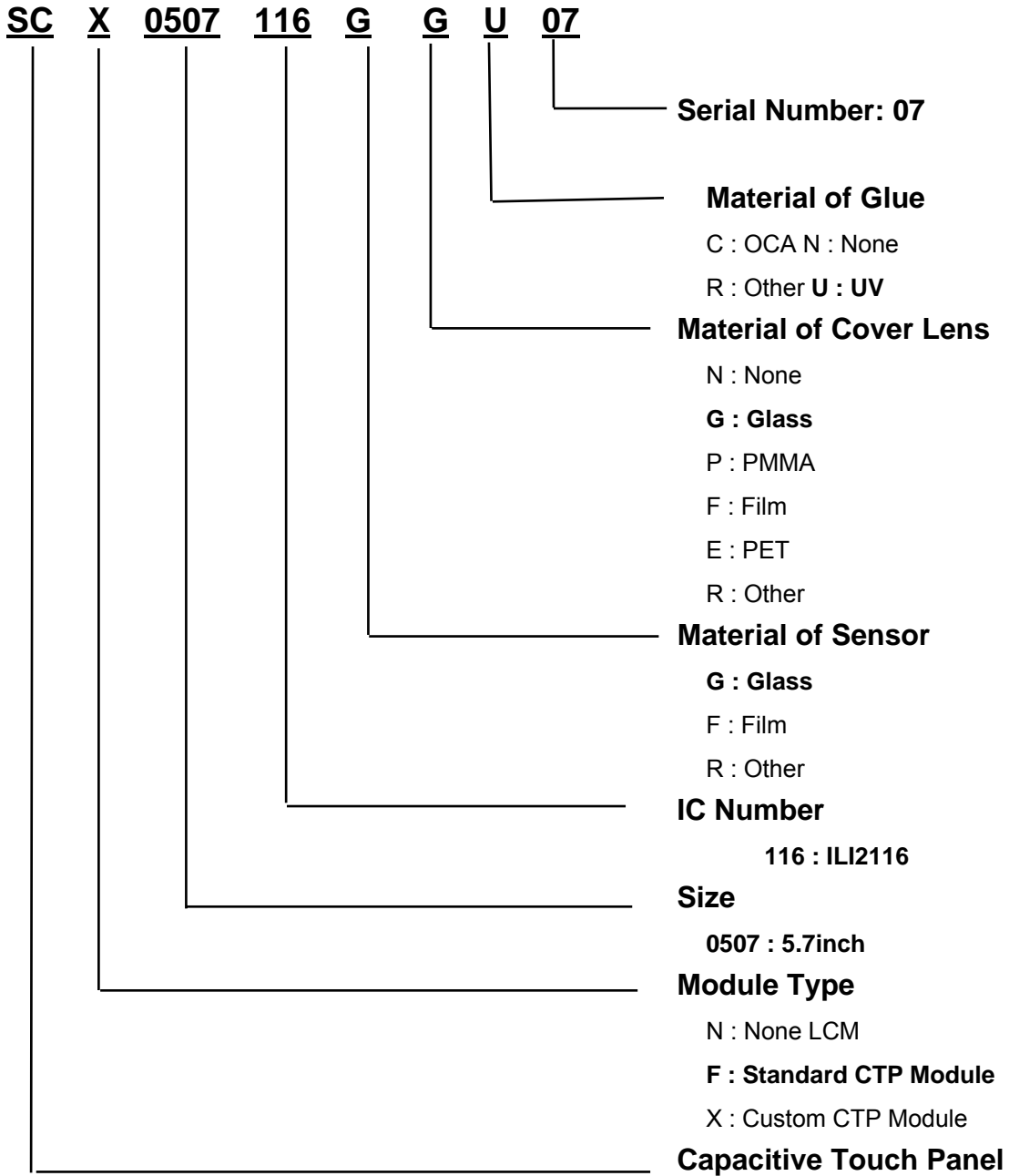


**BarCode Define:**

**A A 6 0014 2 10 26-0013**



**Product Name Define:**



## 14. PRECAUTION FOR USING LCM

### 1. ASSEMBLY PRECAUTIONS

- (1) You must mount a module using holes arranged in four corners or four sides.
- (2) You should consider the mounting structure so that uneven force (ex. Twisted stress) is not applied to the module. And the case on which a module is mounted should have sufficient strength so that external force is not transmitted directly to the module.
- (3) Do not touch, push or rub the exposed polarizers with glass, tweezers or anything harder than HB pencil lead. And please do not rub with dust clothes with chemical treatment.
- (4) Wipe off saliva or water drops as soon as possible. Their long time contact with polarizer causes deformations and color fading.
- (5) Do not open the case because inside circuits do not have sufficient strength.
- (6) Please do not take a LCD module to pieces and reconstruct it. Resolving and reconstructing modules may cause them not to work well.
- (7) Please do not touch metal frames with bare hands and soiled gloves. A color change of the metal frames can happen during a long preservation of soiled LCD modules.
- (8) Please pay attention to handling lead wire of backlight so that it is not tugged in connecting with inverter.

### 2. OPERATING PRECAUTIONS

- (1) Please be sure to turn off the power supply before connecting and disconnecting signal input cable.
- (2) Please do not change variable resistance settings in LCD module. They are adjusted to the most suitable value. If they are changed, it might happen LCD does not satisfy the characteristics specification
- (3) Be careful for condensation at sudden temperature change. Condensation makes damage to polarizer or electrical contacted parts. And after fading condensation, smear or spot will occur.
- (4) When fixed patterns are displayed for a long time, remnant image is likely to occur.
- (5) Module has high frequency circuits. Sufficient suppression to the electromagnetic interference shall be done by system manufacturers. Grounding and shielding methods may be important to minimize the interference.
- (6) Please consider that LCD backlight takes longer time to become stable of radiation characteristics in low temperature than in room temperature.

### 3. ELECTROSTATIC DISCHARGE CONTROL

- (1) The operator should be grounded whenever he/she comes into contact with the module. Never touch any of the conductive parts such the copper leads on the PCB and the interface terminals with any

parts of the human body.

- (2) The modules should be kept in antistatic bags or other containers resistant to static for storage.
- (3) Only properly grounded soldering irons should be used.
- (4) If an electric screwdriver is used, it should be well grounded and shielded from commutator sparks.
- (5) The normal static prevention measures should be observed for work clothes and working benches; for the latter conductive (rubber) mat is recommended
- (6) Since dry air is inductive to statics, a relative humidity of 50-60% is recommended.

### 4. STORAGE PRECAUTIONS

- (1) When you store LCDs for a long time, it is recommended to keep the temperature between 0°C-40°C without the exposure of sunlight and to keep the humidity less than 90%RH.
- (2) Please do not leave the LCDs in the environment of high humidity and high temperature such as 60°C 90%RH
- (3) Please do not leave the LCDs in the environment of low temperature; below -20°C.

### 5. OTHERS

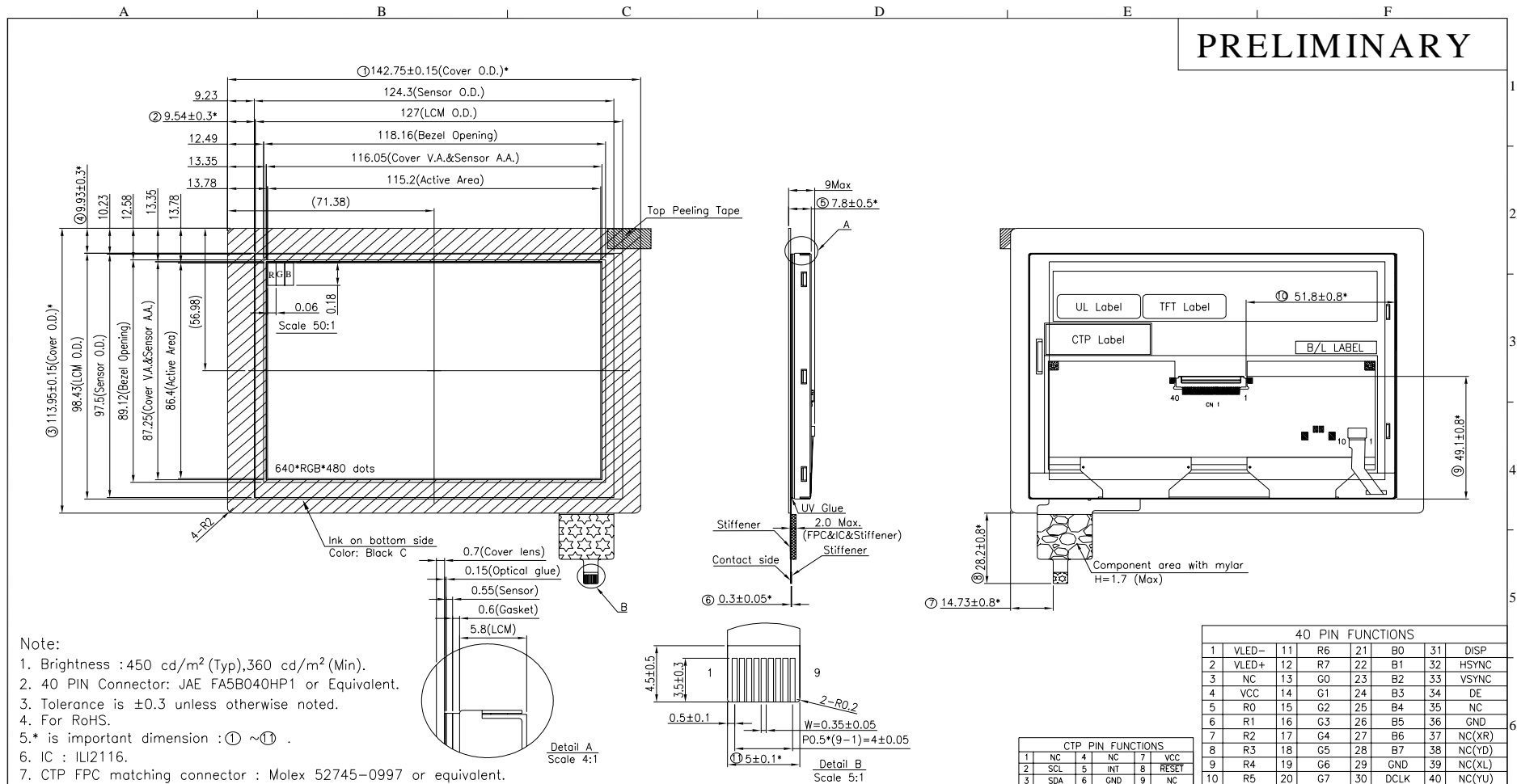
- (1) A strong incident light into LCD panel might cause display characteristics' changing inferior because of polarizer film, color filter, and other materials becoming inferior. Please do not expose LCD module direct sunlight and strong UV rays
- (2) Please pay attention to a panel side of LCD module not to contact with other materials in preserving it alone.
- (3) For the packaging box, please pay attention to the followings:
  - (1) Please do not pile them up more than 5 boxes. (They are not designed so.) And please do not turn over.
  - (2) Please handle packaging box with care not to give them sudden shock and vibrations. And also please do not throw them up.
  - (3) Packing box and inner case for LCDs are made of cardboard. So please pay attention not to get them wet. (Such like keeping them in high humidity or wet place can occur getting them wet.)

### 6. LIMITED WARRANTY

Unless otherwise agreed between DATA IMAGE and customer, DATA IMAGE will replace or repair any of its LCD and LCM which is found to be defective electrically and visually when inspected in accordance with DATA IMAGE acceptance standards, for a period on one year from date of shipment. Confirmation of such date shall be based on freight documents. The warranty liability of DATA IMAGE is limited to repair and/or replacement on the terms set forth above. DATA IMAGE will not responsible for any subsequent or consequential events.

### 15. OUTLINE DRAWING

**PRELIMINARY**



- Note:
- Brightness : 450 cd/m<sup>2</sup> (Typ), 360 cd/m<sup>2</sup> (Min).
  - 40 PIN Connector: JAE FA5B040HP1 or Equivalent.
  - Tolerance is ±0.3 unless otherwise noted.
  - For RoHS.
  - \* is important dimension : ① ~ ⑩ .
  - IC : ILI2116.
  - CTP FPC matching connector : Molex 52745-0997 or equivalent.

				DATE:	2015/11/30	TITLE:		5.7" CTP OUTLINE DIMENSION	
				DRAWN:		DWG. NO.		SCX0507116GGU07	
ESR 0411012				CHECK:		UNITS		MM	
AUTH	DESCRIPTION			DATE	APPROVED	SCALE		1 / 1	
REVISIONS				APPROVE:		REV.		1	
						SHEET 1 OF 1			

## **16. PACKAGE INFORMATION**

**TBD**