

1.0 General specification

Dot pixels: 240 (W) x 128 (H) dots

View area: 114.0mm x 64.0mm

General dimensions: 144.0mm x 104.0mm

LCD type: FSTN positive / FSTN Blue Negative

Polarizer mode: Transmissive

View angle: 6:00 H Direction

Backlight: LED white

Backlight colour: White

Controller: T6963 (Produced by Toshiba)

Temperature range:	<input type="checkbox"/>	Normal temperature	<input type="checkbox"/>	Wide temperature
		Operating 0 to 50 C		Operating -20 to 70 C
		Storage -20 to 70 C		Storage -30 to 80 C

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2.0 Absolute maximum rating

$V_{SS} = 0V, T_a = 25^{\circ}C$

NO	ITEM	SIMBOL	MIN	MAX	UNIT
1.	Power Supply voltage (Logic)	$V_{DD} - V_{SS}$	0	7	V
2.	Power Supply voltage (LCD Driver)	$V_{DD} - V_0$	-	17.5	V
3.	Operating Temperature	T_{op}	Refer page 3		$^{\circ}C$
4.	Storage Temperature	T_{st}	Refer page 3		$^{\circ}C$

3.0 Electrical characteristics

NO	ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
1.	Power Supply voltage (Logic)	$V_{DD} - V_{SS}$	-	4.5	5.0	5.5	V
2.	Power Supply voltage (V_{LCD})	$V_{DD} - V_0$	$25^{\circ}C$	17.3	17.5	17.7	V
3.	Input Voltage	V_{IH}	-	$V_{DD} - 0.2$	-	V_{DD}	V
		V_{IL}	-	0	-	0.8	V
4.	Current Supply	I_{DD}	$V_{DD} - V_{SS} = 5V$	-	20	-	mA

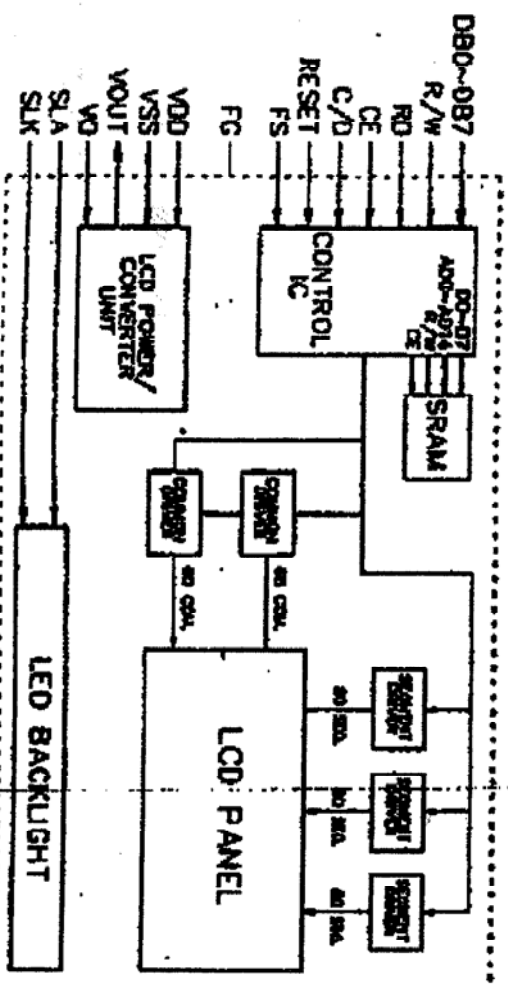
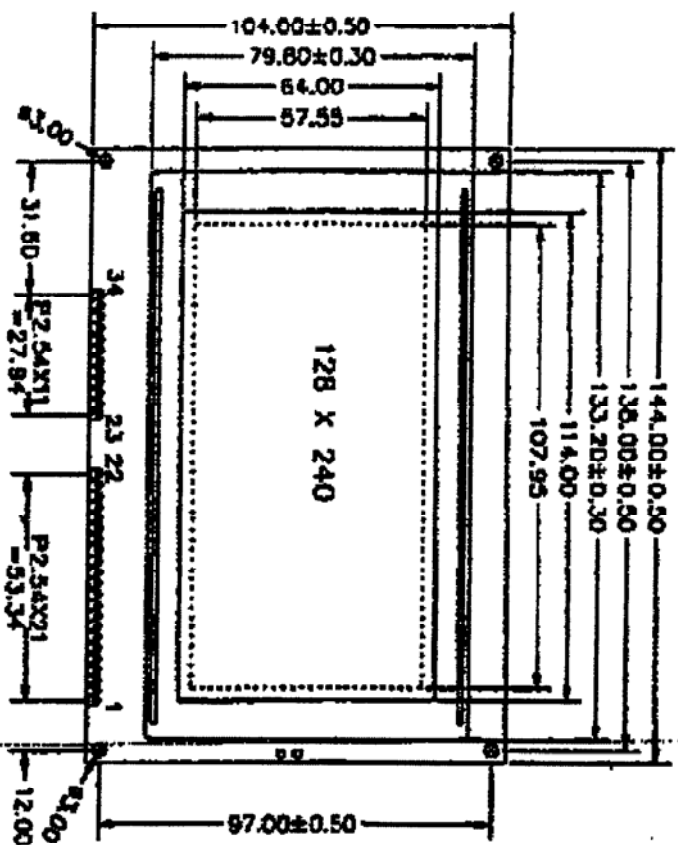
4.0 Environmental requirements

NO	ITEM	CONDITION
1.	Operating Temperature	$-0^{\circ}C$ to $50^{\circ}C$
2.	Storage Temperature	$-20^{\circ}C$ to $70^{\circ}C$
3.	Operating Humidity	5% to 95%RH
4.	Cycle Test	0 C @ 30 min to 50 C @ 30min for 1 cycle run for 10 cycles

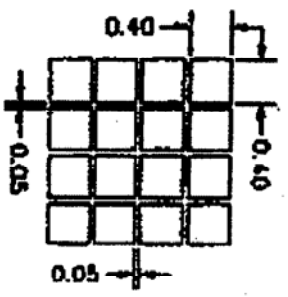
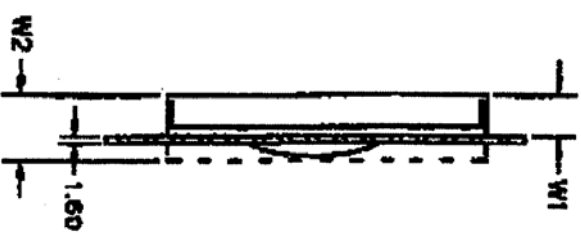
Note: The background on LCD has the possibility to be changed in different temperature range.

5.0 Interface

8.1	<i>Controller</i>	T6963C	
8.2	<i>Display Driver</i>	T6A39 and T6A40 or KS0086 or SPLC086A	
8.3	<i>Duty Cycle</i>	1/128	
8.4	<i>Pin-out Assignments</i>		
	Pin No	Symbol	Description
	1	FG	Frame ground
	2	V _{SS}	Ground terminal of module
	3	V _{DD}	Supply terminal of module
	4	V _O	Power supply for Liquid Crystal Drive
	5	R/W	Write select (active low)
	6	RD	Read select (active low)
	7	CE	Chip enable (active low)
	8	C/D	Command/Data High = Command register Low = Data register
	9	NC	Non connected
	10	RST	Open
	11 to 18	D0 to D7	Bi-directional Data Bus. Data Transfer is performed once, thru D0 to D7, in the case of interface data length is 8-bits.
	19	FS	Font selection
	20	V _{OUT}	Negative voltage from the LCD module
	21	SLK	Backlight voltage (+) 3.2V/200mA
	22	SLA	Backlight voltage (-)



The tolerance unless classified ± 0.3 mm



VERSION	W1	W2
EL BACKLIGHT	6.00 MAX	11.50 MAX
LED BACKLIGHT	10.00 MAX	15.00 MAX