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REVISION HISTORY

Version	Date	Section	Description
0.0	Jun., 13, 01'	-	M170E4-L01 Specifications was first issued.
0.1	Jul., 10, 01'	7.2	OPTICAL SPECIFICATIONS 1. Viewing Angle Horizontal θ_{x+} & θ_{x-} : 80 (Typ.) -> 85 (Typ.) 2. Viewing Angle Vertical θ_{y+} & θ_{y-} : 80 (Typ.) -> 85 (Typ.) 3. Gray Scale Stability Horizontal θ_{x+} & θ_{x-} : None -> 85 (Typ.) 4. Gray Scale Stability Vertical θ_{y+} & θ_{y-} : None -> 85 (Typ.) 5. Contrast Ratio CR 300 (Min.)/ 400 (Typ.) -> 350 (Min.)/ (500) (Typ.) 6. Response Time Tr: 20 (Typ.) ->15 (Typ.) Update: Gray Scale Stability -> Gray Scale Inversion Angle Update: Gray Scale Inversion Angle Horizontal + Inv (Symbol) Update: Gray Scale Inversion Angle Vertical + Inv (Symbol) Add: Note (8)
1.0	Aug., 1, 01'	3.1	ELECTRICAL CHARACTERISTICS 1. Rush Current I_{RUSH} : TBD -> 1.56A 2. Power Supply Current White Icc: 1170 (Typ.) -> 1250 (Typ.) 3. Power Supply Current Black Icc: 680 (Typ) -> 760 (Typ.) 4. Power Supply Current Vertical Stripe Icc: 960 (Typ.) -> 1070 (Typ.)
		3.2	BACKLIGHT UNIT 1. Lamp wire: Hot 2 (Pink) -> (Blue)
		7.2	OTICAL SPECIFICATIONS 1. Defining Color Chromaticity specifications
		9	MECHANICAL CHARACTERISTICS
1.1	Aug., 10, 01'	9	MECHANICAL CHARACTERISTICS
1.2	Aug., 30, 01'	7.2	OPTICAL SPECIFICATIONS: 1. Revising White Variation: 1.25 (Typ.) & 1.40 (Max) -> 1.18 (Typ.) & 1.25 (Max) & Note (7) 2. Revising Color Chromaticity 3. Adding TCO'99 specifications 4. Revising Note (10)
		8	PACKAGING
		9	DEFINITION OF LABELS
2.0	Nov., 2, 01'		M170E4-L01 Approval Specifications was first issued. Fixed all E/E, M/E, Optics & RA specifications items.
2.1	Nov., 7, 01'	9	Revising LABELS Specification

REVISION HISTORY

Version	Date	Section	Description
2.2	Dec., 4, 01'	2.1 3.2	Add Note (6). BACKLIGHT UNIT 1. Lamp Input Voltage 630(Min.)/710(Typ.)/790(Max.)→605(Min.)/675(Typ.)/745(Max) 2. Lamp Current 2.0(Min.)/6.0(Typ.)/6.5(Max.)→6(Min.)/12(Typ.)/13(Max.) 3. Lamp Turn On Voltage 1050(25 ° C)(Max.)→1000(25 ° C)(Max.) 4. Lamp Turn On Voltage 1350(0 ° C)(Max.)→1300(0 ° C)(Max.) 5. Power Consumption 19.5(Typ.)→16.2(Typ.) 6.1 INPUT SIGNAL TIMING SPECIFICATIONS 1. LVDS Clock Frequency 31(Min.)/79(Max.)→40(Min.)/67.5(Max.) 2. LVDS Clock Period 12.6(Min.)/32.2(Max.)→14.8(Min.)/25(Max.) 3. Vertical Active Display Term Frame Rate 85(Max.)→75(Max.) Add Note (2).
2.3	Dec., 19, 01'	11	Update MECHANICAL CHARACTERISTICS

1. GENERAL DESCRIPTION

1.1 OVERVIEW

M170E4 -L01 is a 17.0" TFT Liquid Crystal Display module with 4 CCFL Backlight unit and 30 pins 2ch-LVDS interface. This module supports 1280 x 1024 SXGA mode and can display 16M colors. The inverter module for Backlight is not built in.

1.2 FEATURES

- Wide viewing angle
- High contrast ratio
- Fast response time
- High color saturation
- SXGA (1280 x 1024 pixels) resolution
- DE (Data Enable) only mode
- LVDS (Low Voltage Differential Signaling) interface

1.3 APPLICATION

- TFT LCD Monitor

1.4 GENERAL SPECIFICATIONS

Item	Specification	Unit	Note
Active Area	337.92 (H) x 270.34 (V) (17.0" diagonal)	mm	(1)
Bezel Opening Area	342 (H) x 274.5 (V)	mm	
Driver Element	a-si TFT active matrix	-	-
Pixel Number	1280 x R.G.B. x 1024	pixel	-
Pixel Pitch	0.264 (H) x 0.264 (V)	mm	-
Pixel Arrangement	RGB vertical stripe	-	-
Display Colors	16M	color	-
Transmissive Mode	Normally black	-	-
Surface Treatment	Hard coating (3H), Anti-glare (Haze 25)	-	-

1.5 MECHANICAL SPECIFICATIONS

Item		Min.	Typ.	Max.	Unit	Note
Module Size	Horizontal(H)	383	383.5	384	mm	(1)
	Vertical(V)	305.5	306	306.5	mm	
	Depth(D)	-	20	20.5	mm	
Weight		-	2200		g	-

Note (1) Please refer to the attached drawings for more information of front and back outline dimensions.

2. ABSOLUTE MAXIMUM RATINGS

2.1 ABSOLUTE RATINGS OF ENVIRONMENT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	T _{ST}	-20	+60	°C	(1)
Operating Ambient Temperature	T _{OP}	0	+50	°C	(1), (2)
Shock (Non-Operating)	S _{NOP}	-	50	G	(3), (5)
Vibration (Non-Operating)	V _{NOP}	-	2.0	G	(4), (5)

Note (1) Temperature and relative humidity range is shown in the figure below.

(a) 90 %RH Max. ($T_a \leq 40^\circ\text{C}$).

(b) Wet-bulb temperature should be 39 °C Max. ($T_a > 40^\circ\text{C}$).

(c) No condensation.

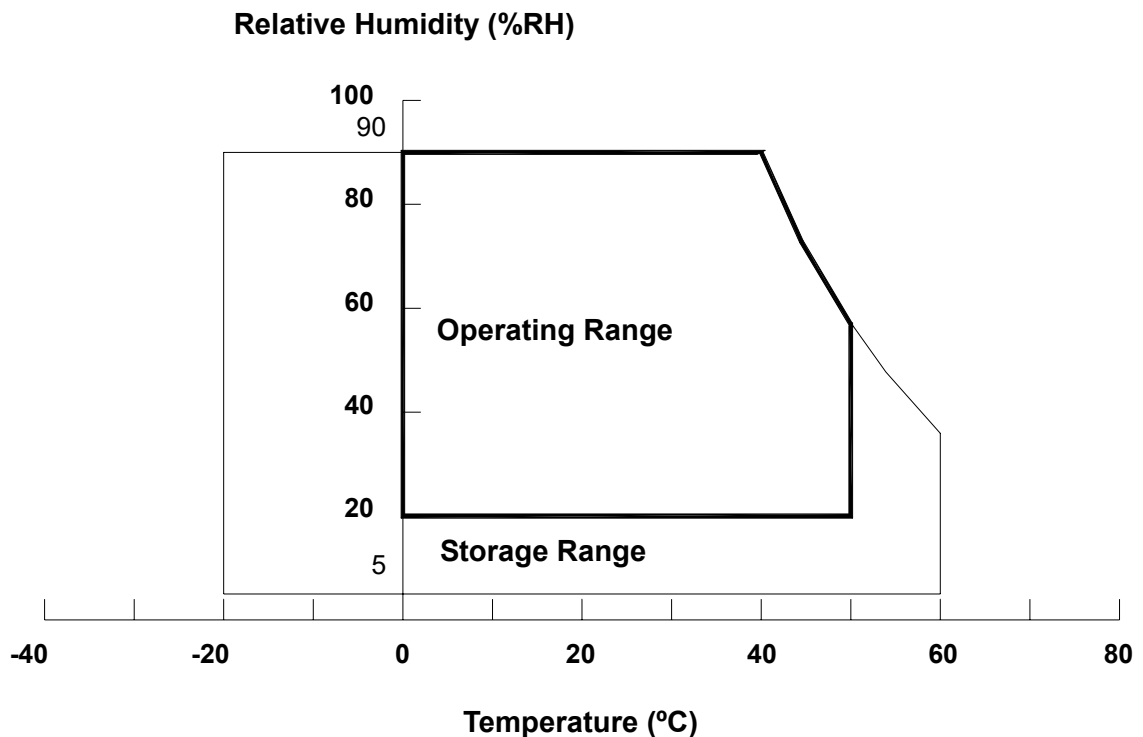
Note (2) The temperature of panel surface should be 0 °C Min. and 60 °C Max.

Note (3) 11ms, half sine wave, 1 time for $\pm X$, $\pm Y$, $\pm Z$.

Note (4) 10 ~ 500 Hz, 0.5 Hr, 4 times each X, Y, Z.

Note (5) At testing Vibration and Shock, the fixture in holding the module has to be hard and rigid enough so that the module would not be twisted or bent by the fixture.

Note (6) Operating or test must be done below the absolute maximum ratings. Over stress may cause panel permanent damage or performance degradation, even the over stress situation released.



2.2 ELECTRICAL ABSOLUTE RATINGS

2.2.1 TFT LCD MODULE

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Power Supply Voltage	V _{CC}	-0.3	+6.0	V	(1)
Logic Input Voltage	V _{IN}	-0.3	4.3	V	

2.2.2 BACKLIGHT UNIT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Lamp Voltage	V _L	-	2.5K	V _{RMS}	(1), (2), I _L = 6.0 mA
Lamp Current	I _L	-	6.5	mA _{RMS}	
Lamp Frequency	F _L	-	80	KHz	(1), (2)

Note (1) Permanent damage to the device may occur if maximum values are exceeded. Function operation should be restricted to the conditions described under Normal Operating Conditions.

Note (2) Specified values are for lamp (Refer to 3.2 for further information).

3. ELECTRICAL CHARACTERISTICS

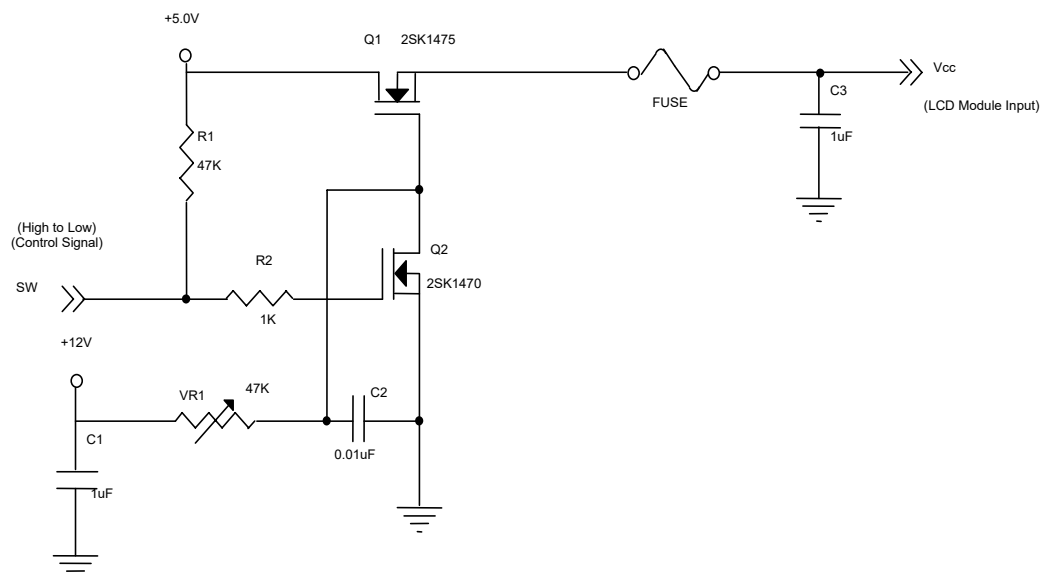
3.1 TFT LCD MODULE

$T_a = 25 \pm 2 \text{ }^{\circ}\text{C}$

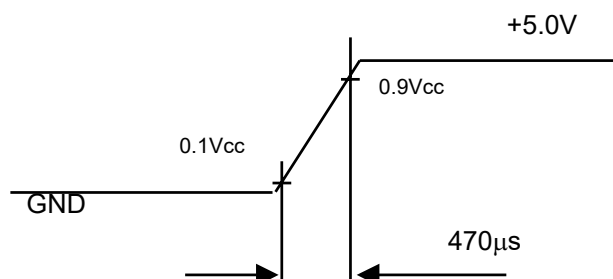
Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Power Supply Voltage	Vcc	4.5	5.0	5.5	V	-
Rush Current	I _{RUSH}	-	-	1.8	A	(2)
Power Supply Current	White	-	950	1050	mA	(3)a
	Black	-	480	530	mA	(3)b
	Vertical Stripe	-	820	900	mA	(3)c
LVDS differential input voltage	V _{id}	100	-	600	mV	
LVDS common input voltage	V _{ic}	-	1.2	-	V	
Logic "L" input voltage (SELLVDS)	V _{il}	V _{ss}	-	0.8	V	

Note (1) The module should be always operated within above ranges.

Note (2) Measurement Conditions:



Vcc rising time is 470μs



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