LMG7520RPFC 320*240 Dots

FEATURES

- **Black on White STN Type**
- **Transmissive Mode**
- **High Brightness Long Lifetime CFL Backlight**
- **Improved Contrast through Smaller Dot Gap and New LC Material**

MECHANICAL DATA

Item	Value	Unit
Module Dimensions	129.6*92.6*7.5	mm
Viewing Area	100*75.5	mm
Resolution	320*240	dots
Dot Size	0.285*0.285	mm
Dot Pitch	0.3*0.3	mm
Weight	110	g

OPTICAL DATA

Item	Symbol	Condition	Min	Typ	Max	Unit
Contrast Ratio	K	Ø=10°, Q=0°, Note 1	-	20	-	-
Brightness	-	T=25°C, IL=5mA, Note 7	80.0	100.0	-	cd/m^2
Viewing Direction		-		6		o'clock
Viewing Angle	Ø2 - Ø1	K=2, Note 1	-	40	-	degree
Response Time (Rise)	t_R	Ø=10°, Q=0°, Note 1	-	110	-	ms
Response Time (Fall)	t_F	Ø=10°, Q=0°, Note 1	-	160	-	ms

ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Condition	Min	Max	Unit
Supply Voltage (Logic)	V_{DD} - V_{SS}	-	0	6.5	V
Supply Voltage (LC Drive)	V_{DD} - V_{EE}	-	0	27.5	V
Input Voltage	V_I	Note 2	-0.3	0.3+VDD	V
Operating Temperature	T_{OP}	Note 5,6	0	50	°C
Storage Temperature	T_{ST}	Note 5,6	-20	60	°C

DATA INTERFACE PIN ASSIGNMENT

Pin No	Symbol	Level	Function
1	FRAME	H	First Line Marker
2	LOAD	H->L	Data latch
3	CP	H->L	Data shift
4	VDD	-	Power supply for logic
5	VSS	-	GND
6	VEE	-	Power supply for LC
7-10	D0-D3	H/L	Display data
11	Not DISP OFF	H/L	High for ON / Low for OFF
12	NC	-	No connection

CFL INTERFACE PIN ASSIGNMENT

Pin No	Symbol	Level	Function
1	HV	-	Power supply for CFL
2	NC	-	No connection
3	NC	-	No connection
4	GND	-	CFL Ground

Note1: Definition of optical data, see page 84

Note 2: Applied to NotDISP.OFF, FRAME, LOAD, CP, D0-D3

Note 3: fFRAME=75Hz, D0-D3=0.1.0.1...VDD-VEE=23.0V, T=25°C

Note 4: Recommended LC driving voltage may fluctuate about +-1.0V by each module

ELECTRICAL CHARACTERISTICS

Item	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage (Logic)	V_{DD} - V_{SS}	-	3.0	5.0	5.25	V
Supply Voltage (LC Drive)	V_{EE} - V_{SS}	-	-	-22.0	-	V
Supply Current	I_{DD}	Note 3	-	8.0	-	mA
	I_{EE}	Note 3	-	6.0	-	mA
Input Voltage (High Level)	V_{IH}	High Level, Note 2	0.8* VDD	-	VDD	V
Input Voltage (Low Level)	V_{IL}	Low Level, Note 2	0	-	0.2* VDD	V
Frame Frequency	f_{FLM}	Note 8	70	-	(140)	Hz
Duty Ratio		-		1/240		-
Recommended LC Drive Voltage	V_{DD} -V_O	Duty=1/240 T=10°, Ø=10°, Note 4	-	24.1	-	V
		Duty=1/240 T=25°C, Ø=10°, Note 4	-	23.0	-	V
		Duty=1/240 T=40°C, Ø=10°, Note 4	-	21.6	-	V
Backlight Lamp Voltage	V_{BL}	T=25°C	-	300	-	Vrms
Backlight Lamp Frequency	f_{BL}	T=25°C	-	70	85	kHz
Backlight Lamp Current	I_{BL}	T=25°C	4	5	6	mArms
Lamp Start Voltage	V_S	T=25°C, Note 9	(1000)	-	-	V

TIMING CHARACTERISTICS

Item	Symbol	Min	Typ	Max	Unit
Clock frequency	fCP	-	-	6.5	MHz
Clock pulse width	tW	63	-	-	ns
Rise, Fall time	tr, tf	-	-	20	ns
Data set up time	tDSU	50	-	-	ns
Data hold time	tDHD	50	-	-	ns
LOAD set up time	tLSU	80	-	-	ns
LOAD -> Clock time	tLC	80	-	-	ns
FRAME set up time	tsetup	100	-	-	ns
FRAME hold time	thold	100	-	-	ns
LOAD pulse width	twc	125	-	-	ns

INVERTER AND CONNECTORS

Recommended Inverter	**Starter Kit**
HITACHI INVC304	START7520
Data Connector	**Data Housing Connector**
MOLEX 52103-1217	510-1500
Lamp Connector	**Lamp Housing Connector**
MITSUMI M63M83-04	M61M73-04, M60-04-30-114P or M60-04-30-134P

Note 5: Background colour of the LCD changes depending on temperature. Between 40-50°C optical characteristics of the LCD like contast and viewing angle change but the display remains readable.

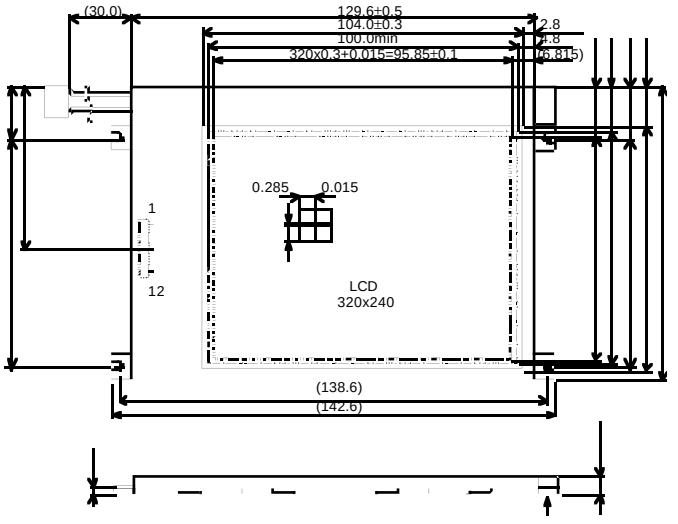
Note 6: Storage at -20°C < 48 hr, at 60°C < 168 hr

Note 7: Measurement after 10 minutes of CFL operating. Brightness control at 100%

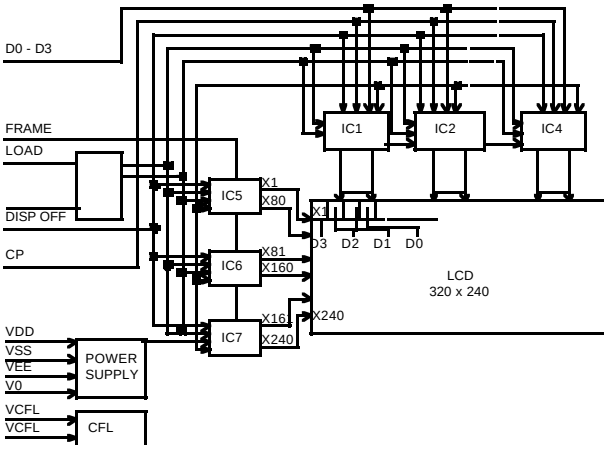
Note 8: Need to make sure of flickering and rippling of display when setting the FRAME Frequency in your set.

Note 9: Starting discharge voltage is increased when LCM is operating at lower temperature. Please check the characteristics of inverter before applying.

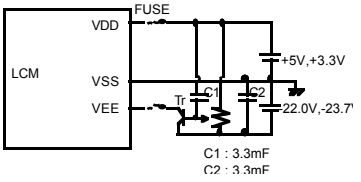
MECHANICAL DIMENSIONS

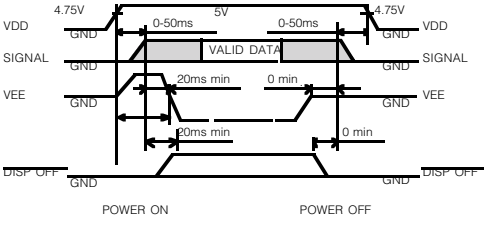


BLOCK DIAGRAM

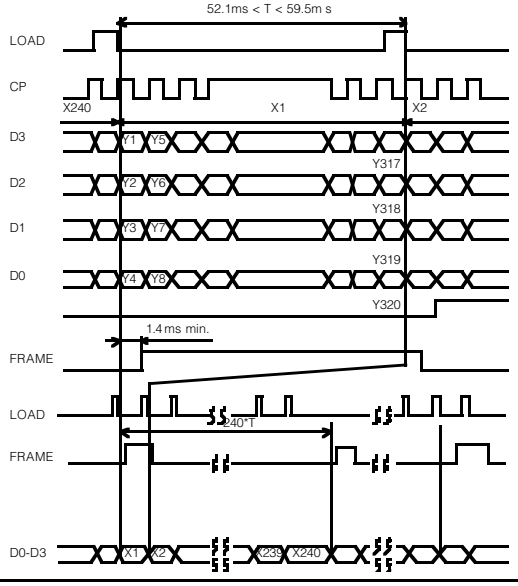


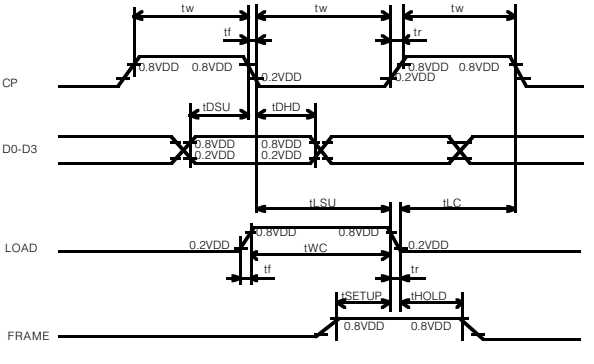
POWER SUPPLY / POWER UP TIMING DIAGRAM





INTERFACE TIMING DIAGRAM





HITACHI