

LMG640X FAMILY

- 240 dot (W) x 128 dot (H) graphic and alphanumeric display
- Controller HD61830B built-in
- Colour Tone:
LMG6400PLGR - blue on grey
LMG6401PLGE - blue on grey with EL Backlight
LMG6402PLFR - reflective film B/W type

MECHANICAL DATA (Nominal Dimensions)

Module size159W x 101H x 9.5D (max) mm
 Effective display area 126W x 71H mm
 Dot size 0.47W x 0.47H mm
 Dot pitch 0.5W x 0.5H mm
 Viewing direction 6 o'clock
 Weight about 160g
 Duty 1 / 128

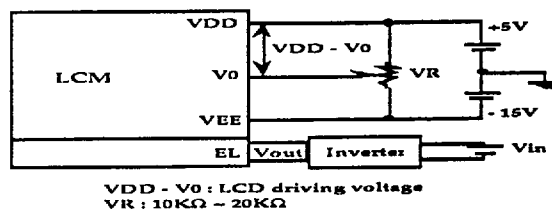
ABSOLUTE MAXIMUM RATINGS

	min	max
Power supply for logic (VDD - VSS)	0	7.0 V
Power supply for LCD drive (VDD - VSS).....	0	22.0 V
Input Voltage (Vi)	VSS	VDD V
Operating temperature (Ta)	0	40°C
Storage temperature (Tstg)	-20	60°C

Pin Assignment

PIN NO.	SYMBOL	FUNCTION
A1	VSS (0V)	Ground
A2	VDD (+5V)	Power supply for logic
A3	V0	Power supply for LCD drive
A4	RS	Register select
A5	R / W	Read / write
A6	E	Enable
A7 - A14	DB0 - DB7	Data bus
A15	$\overline{CS}$	Chip select
A16	$\overline{RES}$	Reset
A17	VEE (-15.0V)	Power supply for LCD drive
A18 - A20	N.C.	No connection
E	VEL	Power supply for EL drive
E	VEL	Power supply for EL drive

Power Supply



Electrical Characteristics

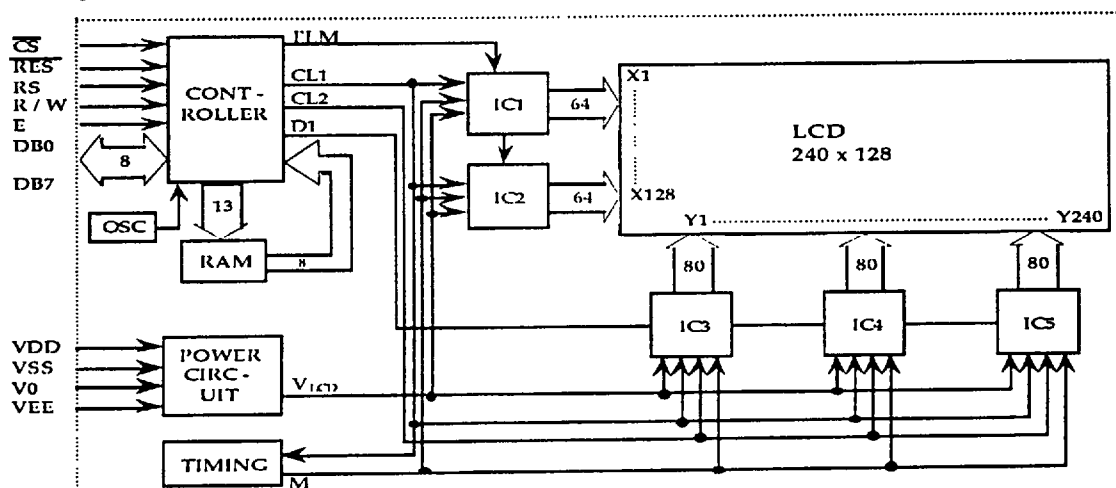
ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
Logic circuit power supply voltage	VDD - VSS	—	4.75	5.0	5.25	V
LC driver circuit power supply voltage	VEE - VSS	—	-14.5	-15.0	-15.5	V
Input voltage	Vi	H Level	0.8VDD	-	VDD	V
		L Level	0	-	0.2VDD	V
Power supply current Note 1	IDD	VDD - VSS = 5.0V VDD - V0 = 15.8V	-	6	-	mA
	IIE	VDD - VSS = 5.0V VDD - V0 = 15.8V	-	4	-	mA
Recommended LC driving voltage Note 2	VDD - V0	1 / 128 Duty	-	16.9	-	V
		Ta = 25°C	-	15.8	-	V
		Ta = 40°C	-	15.4	-	V
Frame frequency	fFLM	—	-	75	-	Hz
EL power supply Note 3	VEL	FEL = 400Hz	-	100	-	Vrms
	IFL	VEL = 100Vrms FEL = 400Hz	-	-	160	mAmps

Note 1: fFLM = 75.0Hz VDD - V0 = 15.8V D = GND (VSS)

Note 2: Recommended LC driving voltage may fluctuate about ± 0.5V by each module

Note 3: Recommended EL inverter: Pascal type - P4

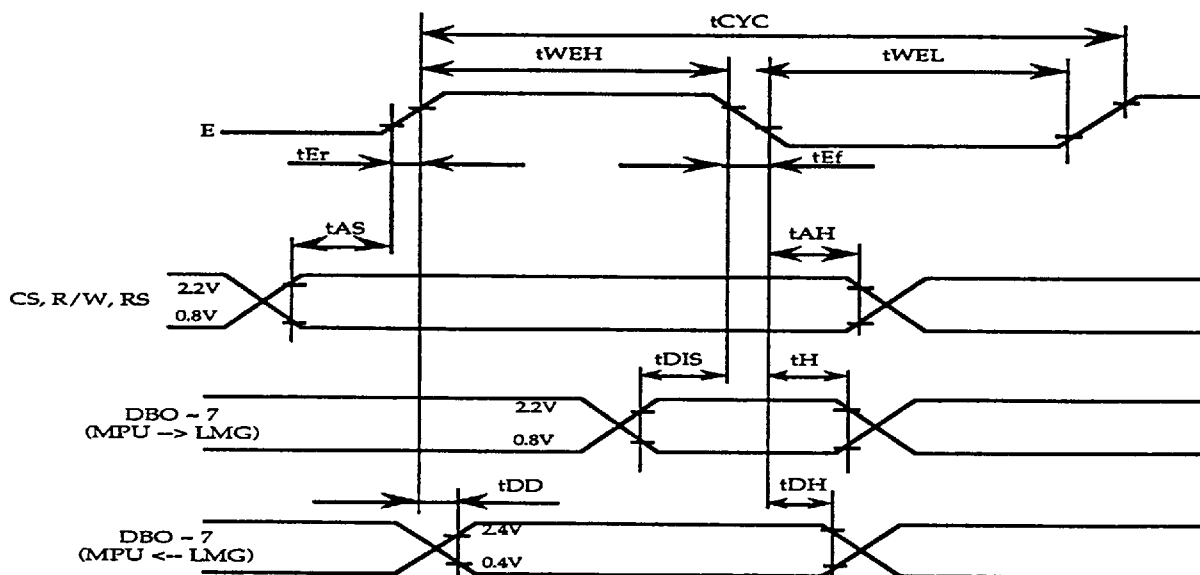
Block Diagram



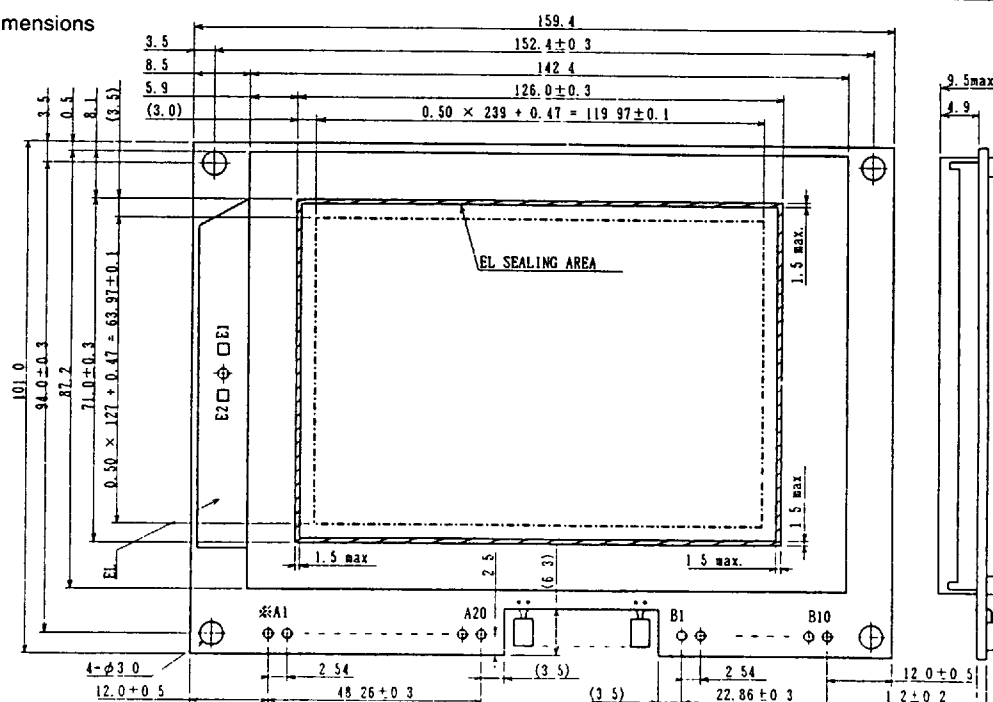
Interface Timing

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
Enable Cycle Time	tCYC	1.0	-	-	μS
Enable Pulse Width	H Level	0.45	-	-	μS
	L Level	0.45	-	-	μS
Enable Rise Time	tEr	-	-	25	nS
Enable Fall Time	tEf	-	-	25	nS
CS, R/W, RS Set Up Time	tAS	140	-	-	nS
Data Set Up Time	tDIS	225	-	-	nS
Data Delay Time	tDD	-	-	225	nS
Data Hold Time	tH	10	-	-	nS
CS, R/W, RS → Hold Time	tAH	10	-	-	nS
Data Hold Time	tDH	20	-	-	nS

Interface Timing (MPU ↔ LMG)



External Dimensions



Unit : mm
 Scale : NTS
 Measurement tolerance : ±0.5



VIEWING DIRECTION

※B1~B10 pads should not be used
 Do not connect any signals to these pads
 Use pin A1~A20 for interface.