T-41-39

LM213XB

- 256 dot(W) x 64 dot(H) graphic and alpha-numeric display
- Controller LSI HD61830 is built-in
- Color tone: Yellowgreen

MECHANICAL DATA (Nominal dimensions)

Module size	184W x 75H x 12T (max.) mm
Effective display area	149.6W x 43H mm
Number of dots	256W x 64H mm
Dot size	0.51W x 0.51H mm
Dot pitch	0.56W x 0.56H mm
Weight	about 150 g

ABSOLUTE MAXIMUM RATINGS

	min.	max.
Power supply for logic ($V_{DD}-V_{SS}$)	0	6.5 V
Power supply for LCD drive ($V_{DD}-V_{EE}$)	0	16.0 V
Input voltage (V_I)	V_{SS}	V_{DD} V
Operating temperature (Ta)	0	40°C
Storage temperature (Tstg)	−20	60°C

ELECTRICAL CHARACTERISTICS

Ta = 25°C, V_{DD} = 5.0 V ± 0.25 V, V_{EE} = −10.5V ± 0.25V

Operating internal frequency F_{CP1}	500 kHz
F_{CP2}	1.2 MHz
Power consumption	250 mW
Power supply current (I_{DD})	35 mA typ.
(I_{EE})	2 mA typ.
Power supply for LCD drive (Recommended) ($V_{DD}-V_O$) Duty = 1/64	
Ta = 0°C	14.5 V typ.
Ta = 25°C	13.7 V typ.
Ta = 40°C	13.2 V typ.

OPTICAL DATA ..... See page 5

INTERFACE TABLE

Pin No.	Symbol	Pin No.	Symbol
1	V_{SS} (GND)	11	DB4
2	V_{DD}	12	DB5
3	V_0	13	DB6
4	RS	14	DB7
5	R/W	15	$\overline{CS}$
6	E	16	$\overline{RES}$
7	DB0	17	V_{EE}
8	DB1	18	N.C
9	DB2	19	N.C
10	DB3	20	N.C

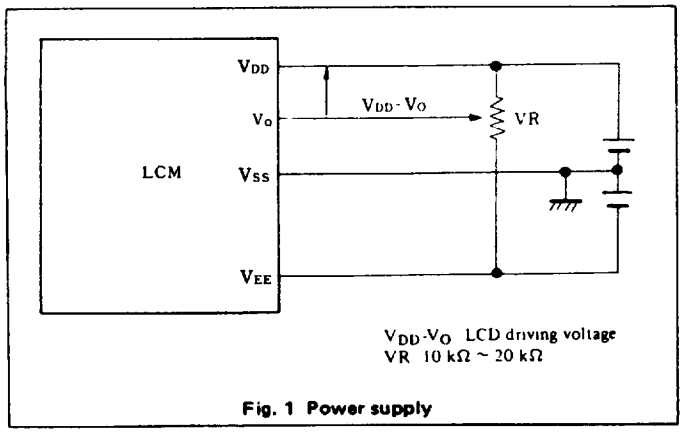

Fig. 1 Power supply

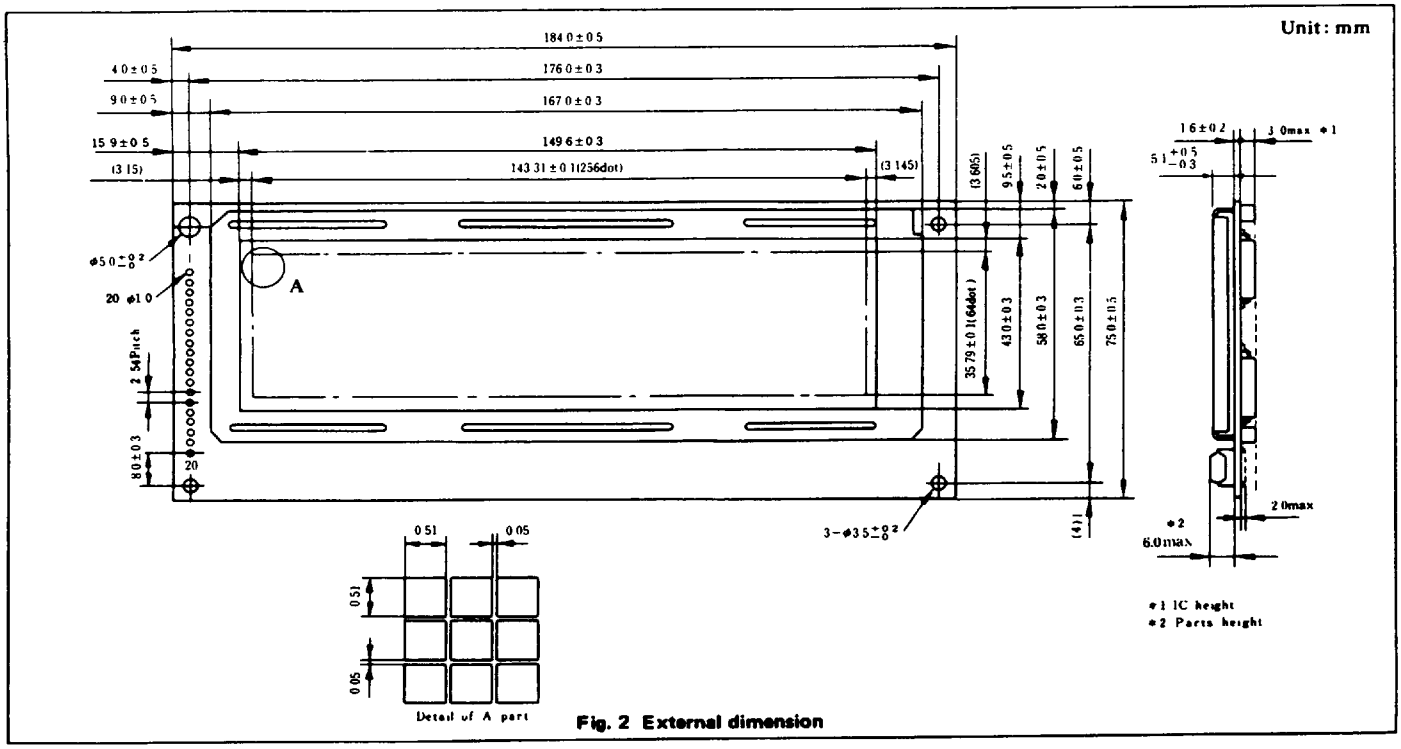

Fig. 2 External dimension

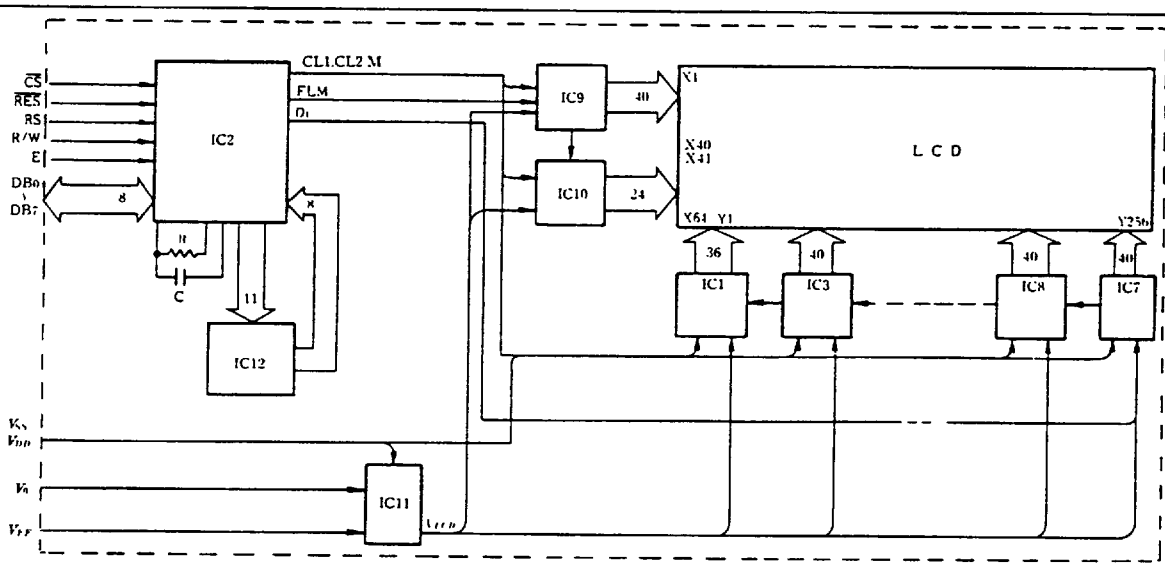

Fig. 3 Block diagram

TIMING CHARACTERISTICS

Item		Symbol	Min.	Typ.	Max.	Unit
Cycle time of 'E'		t_{CYC}	1.0	–	–	μs
Pulse width of 'E'	H level	t_{WEH}	0.45	–	–	μs
	L level	t_{WEL}	0.45	–	–	μs
Pulse raise time of 'E'		t_{Er}	–	–	25	ns
Pulse fall time of 'E'		t_{Ef}	–	–	25	ns
Set up time of CS, R/W, RS		t_{AS}	140	–	–	ns
Set up time of Input Data		t_{DIS}	225	–	–	ns
Data delay time		t_{DD}	–	–	225	ns
Hold time of Data		t_H	10	–	–	ns
Hold time of CS, R/W, RS		t_{AS}	10	–	–	ns

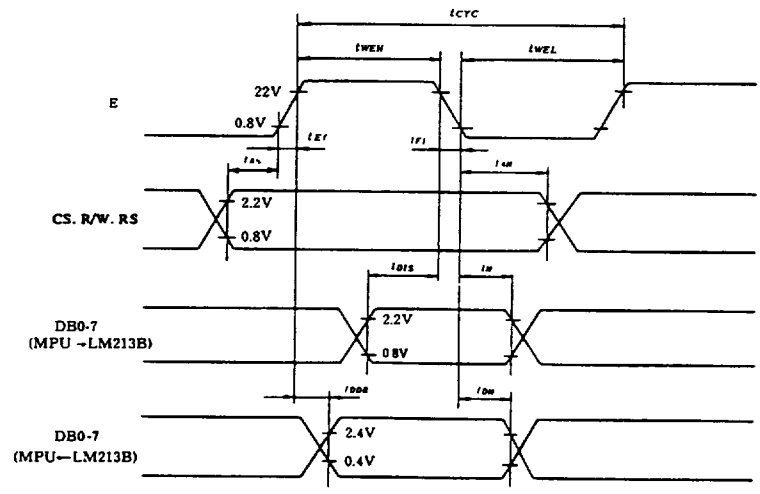

Fig. 4 Interface timing (MPU ⇔ LM213B)