

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 (T_a) | 0 | 40°C |
| Storage temperature (T_{stg}) | -20 | 60°C |

ELECTRICAL CHARACTERISTICS

$T_a = 25^\circ\text{C}$, $V_{DD} = 5.0 \text{ V} \pm 0.25 \text{ V}$, $V_{EE} = -10.5 \text{ V} \pm 0.25 \text{ V}$
 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
 $T_a = 0^\circ\text{C}$ 14.5 V typ.
 $T_a = 25^\circ\text{C}$ 13.7 V typ.
 $T_a = 40^\circ\text{C}$ 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_O | 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 |

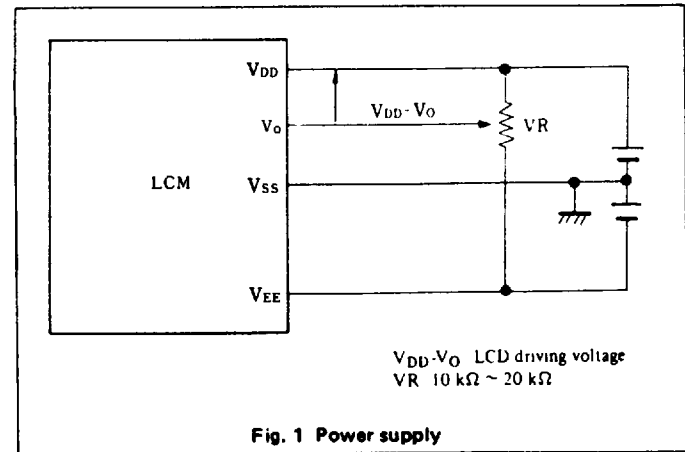


Fig. 1 Power supply

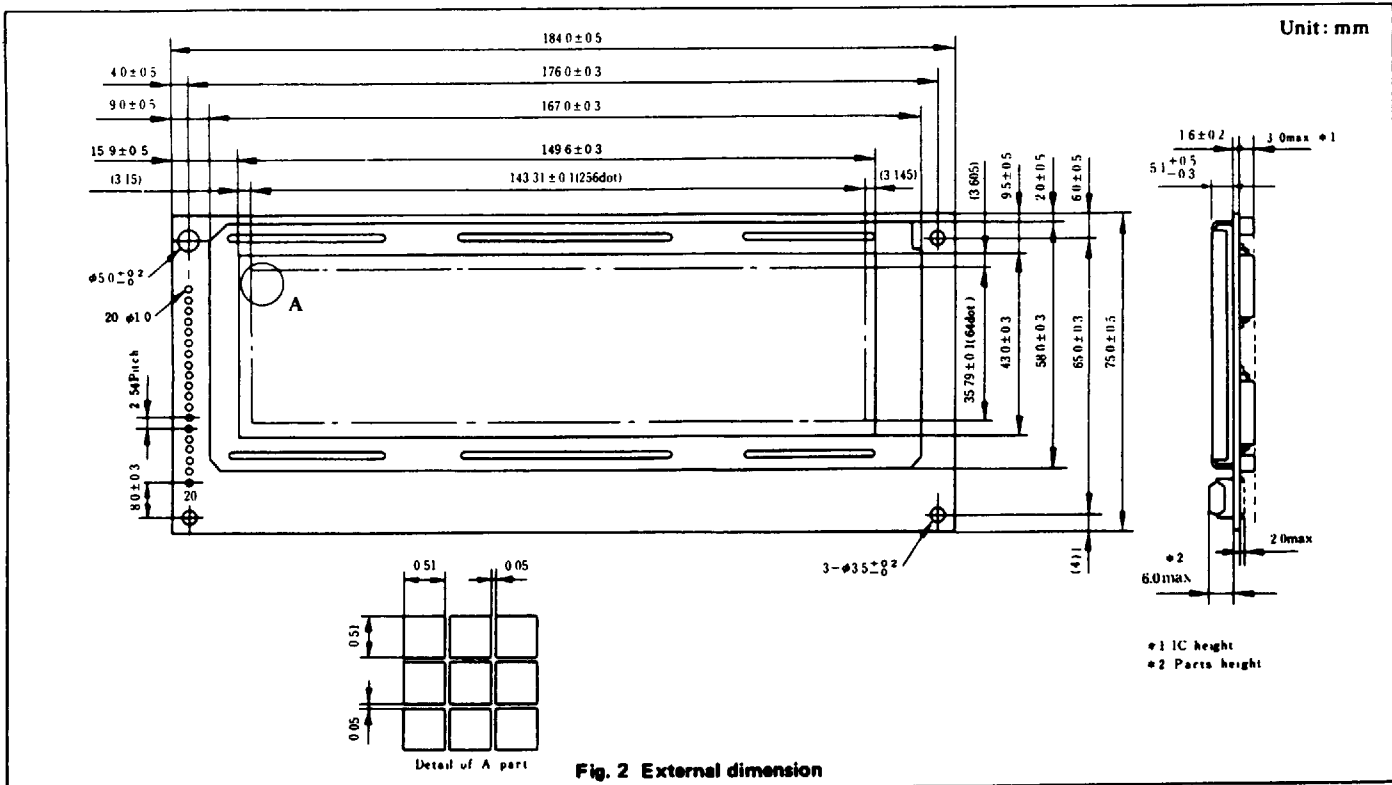


Fig. 2 External dimension

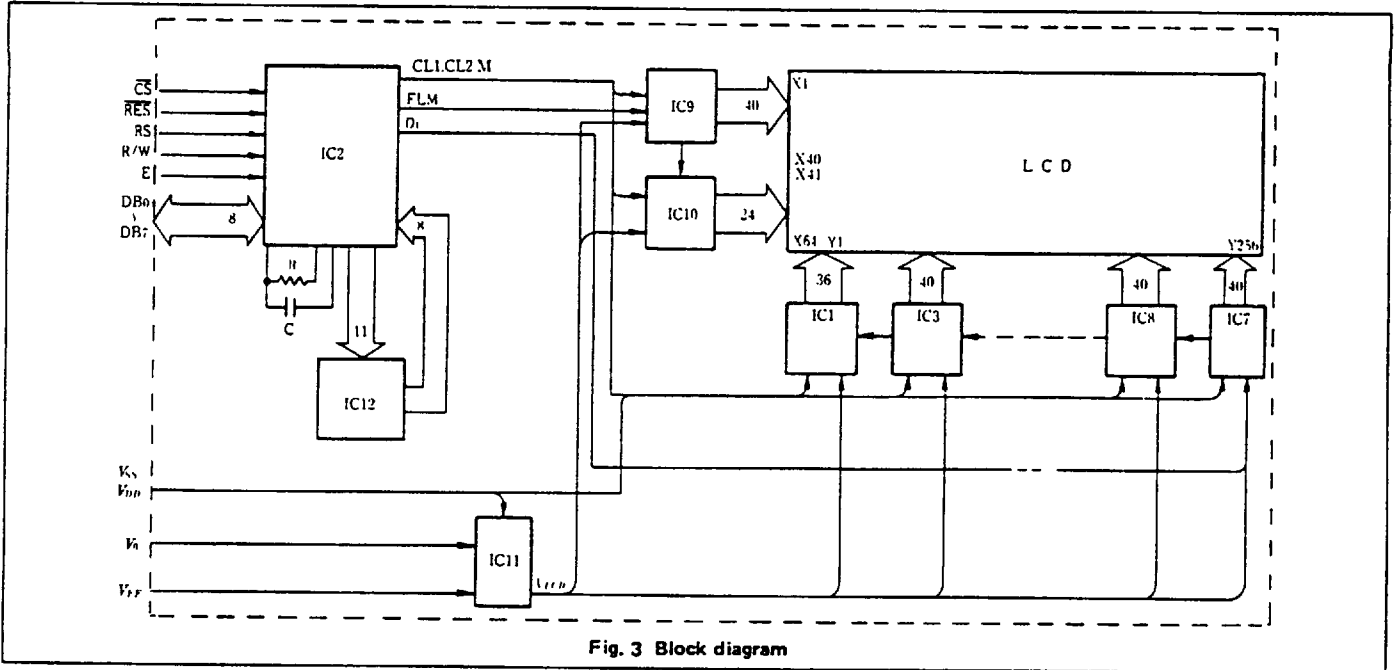


Fig. 3 Block diagram

TIMING CHARACTERISTICS

| Item | Symbol | Min. | Typ. | Max. | Unit |
|----------------------------|-----------|------|------|------|---------|
| Cycle time of 'E' | t_{CYC} | 1.0 | — | — | μs |
| Pulse width of 'E' | H level | 0.45 | — | — | μs |
| | L level | 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 |

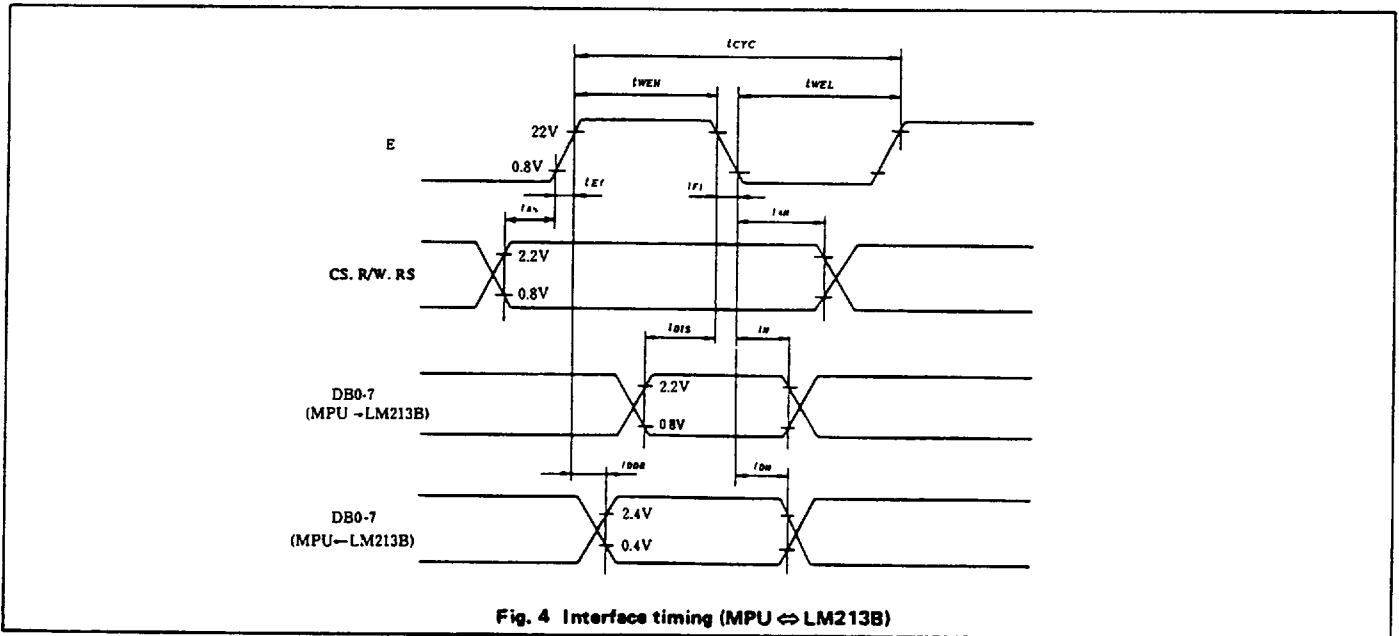


Fig. 4 Interface timing (MPU ↔ LM213B)