## GENERAL SPECIFICATION

| Item | Content |
|---|---|
| Number of Character | 320x240 |
| Module Size | 167.1(W)x109.0(H)x11.0(D)mm Max |
| Viewing Area | 122.0(W)x92.0(H)mm |
| Dot Size/Dot Pitch | 0.34(W)x0.34(H)mm/0.36(W)x0.36(H)mm |
| Backlight | CCFL |
| Options | Black & White Positive/Negative/Extended Temperature/Bottom Viewing |
| Built-In Controller | none |

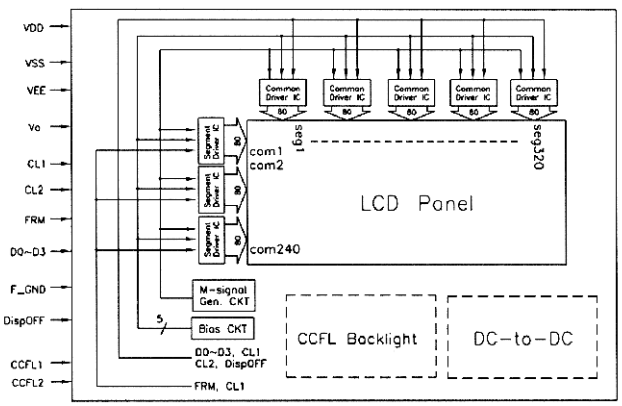
## ELECTRICAL CHARACTERISTICS

| Item | Symbol | Condition | Min. | Typ | Max. | Unit | note |
|---|---|---|---|---|---|---|---|
| Power Supply for Logic | $V_{DD}$-$V_{SS}$ | - | 2.7 | 4.5 | 5.5 | Volt | - |
| Input Voltage | $V_{IL}$ | L level | $V_{SS}$ | $0.2V_{DD}$ | - | Volt | - |
| | $V_{IH}$ | H level | $0.8V_{DD}$ | $V_{DD}$ | - | | |
| LCM Recommend LCD Module Driving Voltage | $V_{DD}$-$V_O$ | Ta=0°C | 21.7 | 22.2 | 22.7 | Volt | - |
| | | Ta=25°C | 20.8 | 21.2 | 21.6 | | |
| | | Ta=50°C | 20.1 | 20.6 | 21.1 | | |
| Power Supply Current for LCM | $I_{DD}$(B/L OFF) | $V_{DD}$=4.5V Ta=25°C | - | 3.4 | - | mA | - |
| | $I_{EE}$ | $V_{EE}$-$V_{SS}$=21.2V FLM=64Hz Ta=25°C | - | 2.9 | - | | |
| CCFL Starting Voltage | $V_{FLS}$ | | - | 750 | - | $V_{RMS}$ | |
| CCFL driving Voltage | $V_{CCFL}$ | $V_{CCFL}$=450$V_{RMS}$ $F_{CCFL}$=30KHz Ta=25°C | - | 360 | - | $V_{RMS}$ | - |
| CCFL driving Current | $I_{CCFL}$ | | - | 5.0 | - | mA | |
| CCFL driving Frequency | $F_{CCFL}$ | | 15 | 30 | 85 | $KH_Z$ | |
| CCFL Saturation Time | $T_{SAT}$ | | - | 1 | - | minut | |

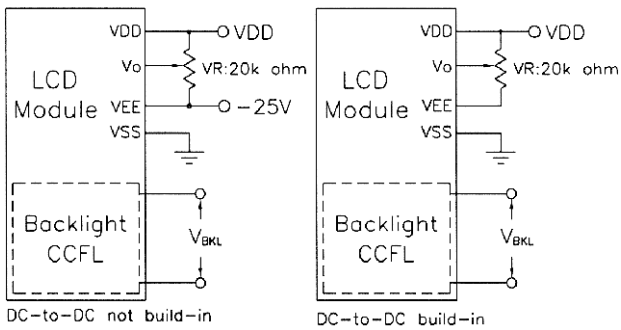
## INTERFACE PIN ASSIGNMENT

| Pin No. | Pin Out | Function Description |
|---|---|---|
| 1~4 | DB0~DB3 | Data input signal |
| 5 | D/OFF | Display off. Active Low |
| 6 | FRM | Frame start signal (Data signal from the common driver shift register) |
| 7 | NC | No connection |
| 8 | CL1 | Common driver data shift signal: also latches the data of the line immediately above. |
| 9 | CL2 | Clock pulse for segment shift register |
| 10 | $V_{DD}$ | Logic supply voltage |
| 11 | $V_{SS}$ | GND |
| 12 | $V_{EE}$ | Negative power supply voltage |
| 13 | $V_O$ | Power supply for LCD panel |
| 14 | FGND | Frame ground |

## BLOCK DIAGRAM




## POWER SUPPLY




$V_{BKL}$: CCFL, 300~450Vrms/30kHz AC

## MECHANICAL