

Specification

For

LCD Module

ADT-2420

ADT-2420 Character Dot Matrix LCD Module

■FEATURES

- Display Mode: TN, Positive (STN also available)
- Display Formate: 24 Characters x 2 Lines
- Input Data: 4-Bits or 8-Bits interface available
- Display Font : 5 x 8 Dots
- Power Supply : Single Power Supply (5V ± 5%)
- Driving Scheme : 1/16Duty,1/5Bias

■ABSOLUTE MAXIMUM

| Item | Symbol | Min. | Max. | Unit |
|----------------------------|---------|------|------|------|
| Power Supply for Logic | Vdd-Vss | 0 | +7.0 | V |
| Power supply for LCD Drive | Vdd-Vo | 0 | 13.5 | V |
| Input Voltage | Vi | Vss | Vdd | V |
| Operating Temperature | Ta | 0 | +50 | °C |
| Storage Temperature | Tstg | -10 | +60 | °C |

■ELECTRICAL CHARACTERISTICS

(Ta=25°C;Vdd=5.0V ± 5%,otherwise specified)

| Item | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|------------------------|--------|----------------|------|------|------|------|
| Power Supply for Logic | Vdd | -- | 4.5 | 5.0 | 5.5 | V |
| Input "high" voltage | Vih | -- | 2.2 | -- | Vdd | V |
| Input "low" voltage | Vil | -- | -0.3 | -- | 0.6 | V |
| Output "high" voltage | Voh | -Ioh=0.2mA | 2.4 | -- | -- | V |
| Output "low" voltage | Vol | Iol=1.2mA | -- | -- | 0.4 | V |
| Power supply current | Idd | Vdd=5.0v | -- | 1.0 | 3.0 | mA |

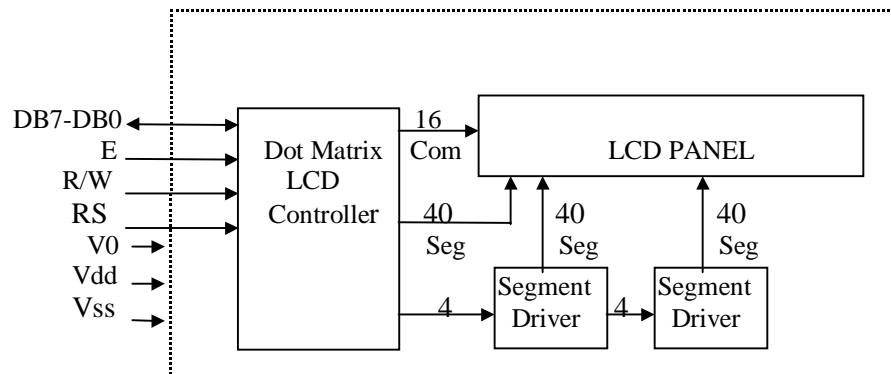
■MECHANICAL PARAMETERS

| Item | Description | Unit |
|-----------------|---------------------|------|
| Frame Dimension | 118.0 x 36.0 x 11.0 | mm |
| View Dimension | 93.5 x 15.8 | mm |

■ PIN ASSIGNMENT

| No. | Symbol | Level | Function | |
|-----|--------|-------|--|-------------------------------------|
| 1 | Vss | -- | 0V | Power Supply |
| 2 | Vdd | -- | +5V | |
| 3 | V0 | -- | for LCD | |
| 4 | RS | H/L | Register Select | H:Data Input L:Instruction Input |
| 5 | R/W | H/L | H--Read | L--Write |
| 6 | E | H,H-L | Enable Signal | |
| 7 | DB0 | H/L | Data bus used in 8 bit transfer | |
| 8 | DB1 | H/L | | |
| 9 | DB2 | H/L | | |
| 10 | DB3 | H/L | | |
| 11 | DB4 | H/L | Data bus for both 4 and 8 bit transfer | |
| 12 | DB5 | H/L | | |
| 13 | DB6 | H/L | | |
| 14 | DB7 | H/L | | |
| 15 | A | | NC | |
| 16 | K | | NC | |

■ SYSTEM BLOCK DIAGRAM

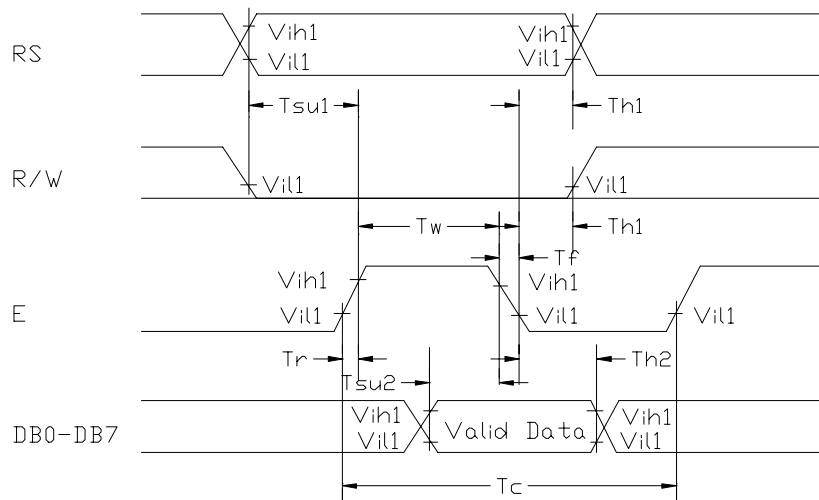


■ AC characteristics ($V_{dd}=5V \pm 10\%$, $V_{ss}=0V$ $T_a=25^\circ C$)

Write mode(writing data from Micom to KS0066)

| Characteristic | Symbol | Min. | Typ. | Max. | Unit | Test pin |
|--------------------------|-----------|------|------|------|------|----------|
| E cycle time | T_c | 500 | -- | -- | ns | E |
| E rise time | T_r | -- | -- | 25 | ns | E |
| E fall time | T_f | -- | -- | 25 | ns | E |
| E pulse width (High,Low) | T_w | 220 | -- | -- | ns | E |
| R/W and RS set-up time | T_{su1} | 40 | -- | -- | ns | R/W,RS |
| R/W and RS hold time | T_{h1} | 10 | -- | -- | ns | R/W,RS |
| Data set-up time | T_{su2} | 60 | -- | -- | ns | DB0~DB7 |
| Data hold time | T_{h2} | 10 | -- | -- | ns | DB0~DB7 |

■ Timing Chart



■ CONTROL and DISPLAY COMMAND

| Command | RS | R/W | DB7 | DB6 | DB5 | DB4 | DB3 | DB2 | DB1 | DB0 | Remark |
|--------------------------|----|-----|------------|---|---|-----|-----|------------------------------|--|---|---|
| Display Clear | L | L | L | L | L | L | L | L | L | H | |
| Return Home | L | L | L | L | L | L | L | L | H | X | cursor move to first digit |
| Entry Mode Set | L | L | L | L | L | L | L | H | I/D | SH | I/D:set cursor move direction H-Increase L-Decrease SH:Specifies shift of display H-display is shifted L-Display is not shifted |
| Display On/Off | L | L | L | L | L | L | H | D | C | B | D:Display(H-on,L-off) C:Cursor(H-on,L-off) B:Blinking(H-on,L-off) |
| Shift | L | L | L | L | L | H | S/C | R/L | X | X | SC:(H-Display shift,L-Cursir move) R/L:(H-Right shift,L-Left shift) |
| Set Function | L | L | L | L | H | DL | N | F | X | X | DL:(H-8 bits interface,L-4 bits interface) N:(H-2 line display,L-1 line display) F:(H-5 x 10 dots,L-5 x 7 dots) |
| Set CG RAM Address | L | L | L | H | CG RAM address (corresponds to address) | | | | | CG RAM Data is sent and received after this setting | |
| Set DD RAM Address | L | L | H | DD RAM address | | | | | DD RAM Data is sent and received after this setting | | |
| Read Busy Flag & Address | L | H | BF | Address Counter used for Both DD & CG RAM address | | | | | BF:(H-Busy ,L-Ready) --Reads BF indication internal operating is being performed --reads address counter contents | | |
| Write Data | H | L | Write Data | | | | | Write data into DD or CG RAM | | | |
| Read Data | H | H | Read Data | | | | | Read data from DD or CGRAM | | | |

