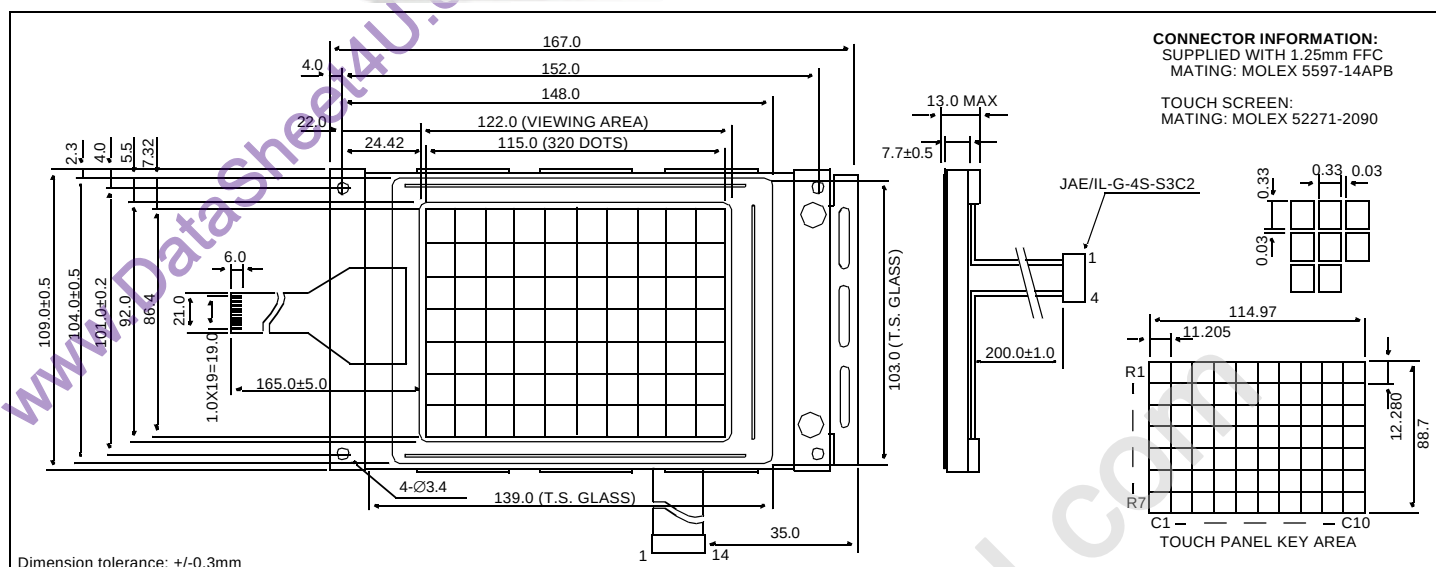


# HDM 3224TS-1

## Dimensional Drawing

320 X 240 Dot Graphic CCFL Backlight w/ Touch Screen



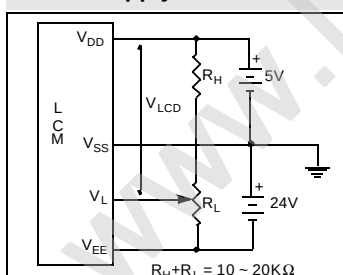
### Features

Backlight.....CCFL  
Options.....STN/Black and White FSTN  
Normal/Extended Temperature  
Bottom / Top Viewing  
Built-in Controller.....None

### Physical Data

Module Size.....167.0W x 109.0H x 13.0T mm  
Viewing Area Size.....122.0W x 92.0H mm  
Dot Pitch.....0.36W x 0.36H mm  
Dot Size.....0.33W x 0.33H mm  
Weight.....205g

### Power Supply



### Absolute Maximum Ratings

| PARAMETER              | SYMBOL          | MIN | MAX  | UNIT |
|------------------------|-----------------|-----|------|------|
| SUPPLY VOLTAGE         | $V_{DD}-V_{SS}$ | 0   | 7.0  | V    |
| SUPPLY VOLTAGE FOR LCD | $V_{DD}-V_{EE}$ | 0   | 30.0 | V    |
| INPUT VOLTAGE          | $V_{IN}$        | -   | 7.0  | V    |
| OPERATING TEMPERATURE  | $T_{OP}$        | 0   | 50   | °C   |
| STORAGE TEMPERATURE    | $T_{STG}$       | -20 | 70   | °C   |

### Pin Connections

| PIN NO.               | SYMBOL    | LEVEL | FUNCTION                 |
|-----------------------|-----------|-------|--------------------------|
| <b>DATA CONNECTOR</b> |           |       |                          |
| 1                     | D0        | H/L   | Display Data             |
| 2                     | D1        |       |                          |
| 3                     | D2        |       |                          |
| 4                     | D3        |       |                          |
| 5                     | DISPOFF   | H/L   | H = On, L = Off          |
| 6                     | FRAME     | H     | First Line Marker        |
| 7                     | NC        | -     | No Connection            |
| 8                     | LOAD      | H/L   | Data Latch               |
| 9                     | CP        | H/L   | Data shift               |
| 10                    | $V_{DD}$  | 5V    | Power supply for logic   |
| 11                    | $V_{SS}$  | 0V    | Ground                   |
| 12                    | $V_{EE}$  | -22V  | Power supply for LCD     |
| 13                    | $V_L$     | -     | Operating voltage for LC |
| 14                    | FGND      | -     | Front panel ground       |
| <b>CCFL CONNECTOR</b> |           |       |                          |
| 1                     | $V_{CFL}$ | -     | Power supply for CCFL    |
| 2                     | NC        | -     | No Connection            |
| 3                     | NC        | -     | No Connection            |
| 4                     | $V_{CFL}$ | -     | CCFL Ground              |

### Touch Panel Connector

| PIN | SYM | PIN | SYM  | PIN | SYM | PIN | SYM  | PIN | SYM |
|-----|-----|-----|------|-----|-----|-----|------|-----|-----|
| 1   | N.C | 5   | C7   | 9   | R2  | 13  | R6   | 17  | C2  |
| 2   | C10 | 6   | C6   | 10  | R3  | 14  | R7   | 18  | C3  |
| 3   | C9  | 7   | N.C. | 11  | R4  | 15  | N.C. | 19  | C4  |
| 4   | C8  | 8   | R1   | 12  | R5  | 16  | C1   | 20  | C5  |

### Electrical Characteristics (VDD=5.0±0.25V 25°C)

| PARAMETER           | SYM        | CONDITION        | MIN            | TYP  | MAX          | UNIT |
|---------------------|------------|------------------|----------------|------|--------------|------|
| INPUT HIGH VOLTAGE  | $V_{IH}$   | -                | 0.8 $V_{DD}$   | -    | -            | V    |
| INPUT LOW VOLTAGE   | $V_{IL}$   | -                | -              | -    | 0.2 $V_{DD}$ | V    |
| OUTPUT HIGH VOLTAGE | $V_{OH}$   | $I_{OH} = 0.4mA$ | $V_{DD} - 0.4$ | -    | -            | V    |
| OUTPUT LOW VOLTAGE  | $V_{OL}$   | $I_{OL} = 0.4mA$ | -              | -    | 0.4          | V    |
| SUPPLY VOLTAGE      | $V_{DD}$   | -                | 4.75           | 5.0  | 5.25         | V    |
|                     | $V_{LCD}$  | -                | 22.1           | 22.5 | 22.9         | V    |
| DRIVE METHOD        | 1/240 DUTY |                  |                |      |              |      |