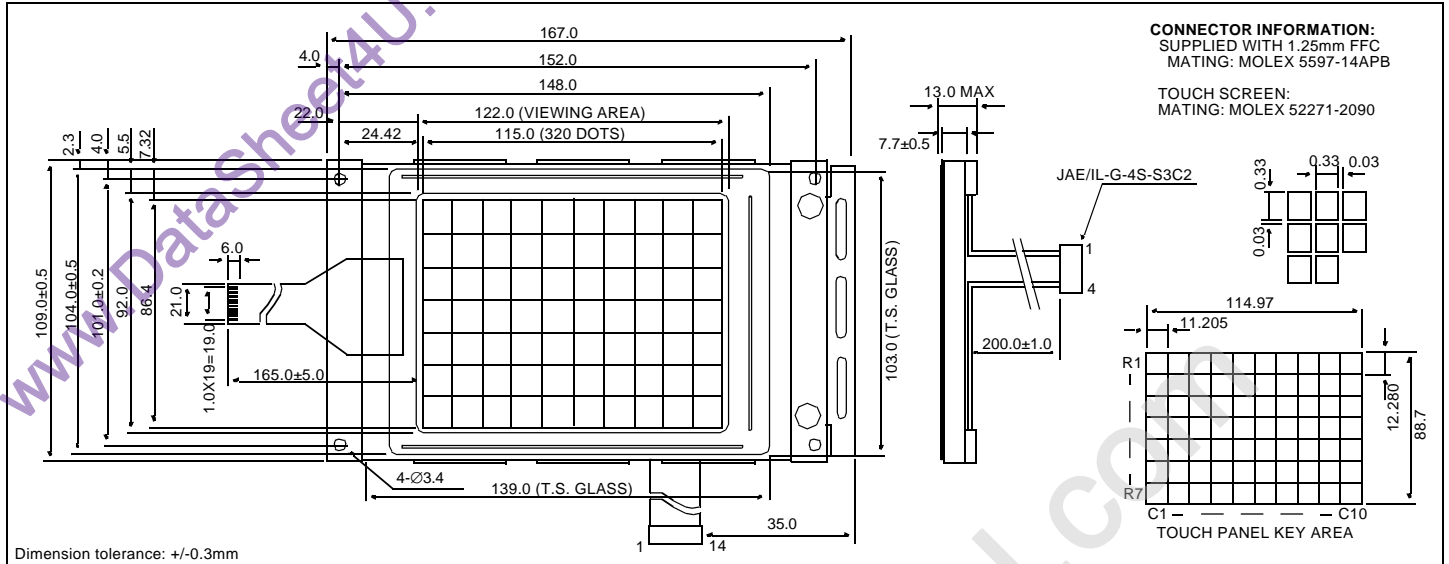


# HDM 3224TS-1

## Dimensional Drawing



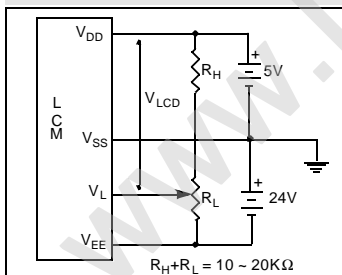
### Features

- 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

### 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					

### 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