ENH038QD1-450 3.8″ QVGA AMLCD Display

Enhanced Performance for Outdoor Viewability

Overview

The ENH038QD1-450 color TFT LCD provides improved optical performance based on enhancement of a standard Sharp LQ038Q5DR01 color active matrix LCD module. The incorporation of an index matching (IM) film provides for improved contrast in high ambient lighting conditions. The ENH038QD1-450 is available in two surface treatments – IM/Clear (glossy) or IM/110 (a 10% diffusion).

The enhanced module is composed of a color TFT LCD panel, driver ICs, control circuit and power supply circuit and a backlight unit. Graphics and text can be displayed on a 320 x 240 pixel panel with 262,144 colors by supplying 18-bit data signals (6-bits/color), four timing signals, +3.3V DC supply voltage for the TFT panel and supply voltage for the backlight. The TFT LCD panel used for this module is a low-reflection and high color saturation type. Viewing angle is 6 o'clock direction. The module offers a wide viewing angle and high brightness (450 cd/m^2 typical). The backlight-driving DC/AC inverter is not built into this module.

WEDC's ENH038QD1-450 meets the environmental specifications of the stock Sharp LQ038Q5DR01. WEDC provides a full one year warranty to the enhanced performance product.

Performance Features

- QVGA 320(H) x 240(V) Resolution
- 450 nit typical Luminance
- TTL Interface
- High Contrast Ratio/High Aperture Ratio

Applications

- Portable Instrumentation
- GPS Systems
- Navigation Products

Surface Treatments

- 450 nit – Diffuse front surface, IM/110
- 450 nit – Glossy front surface, IM/Clear

Display Characteristics

Display Format:	320 Pixels (H) x 240 Pixels (V)
Active Viewing Area:	78.72mm (H) x 53.64mm (V)
Pixel Configuration:	RGB Vertical Stripe
Pixel Pitch:	0.246mm (H) x 0.224mm (V)
Display Mode:	Normally White

Viewing Angle

Typical:	65/65/40/65	CR > 5

Luminance

Typical:	450 cd/m^2

Response Time

Typical:	Rise 30ms / Fall 50ms

Operating Temperature

T_{OPa}	-30 °C to +60 °C (Ambient))
T_{OPP}	-30 °C to +85 °C (Panel Surface)

Storage Temperature

Tstg	-40°C to +95°C

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Backlight Specification

The backlight system is an edge-lighting type with 1 CCFLs (Cold Cathode Fluorescent Lamp).
The characteristics of the lamp are shown in the following table. The values below are for one CCFL.

Parameter	Symbol	Min.	Typ.	Max	Unit	Remark
Lamp Current	I_L	5.0	5.5	6.0	mArms	
Lamp Power Consumption	P_L	-	3.0	-	W	
Lamp Frequency	F_L	30	-	60	kHz	
Kick-off Voltage	V_S	-	-	1650	Vrms	TA = 25°C
		-	-	1700	Vrms	TA = 0°C
Lamp Life Time	L_L	100,000	-	-	Hour	TA = 25°C

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Remark
Input Voltage	V_I	TA = 25°C	-0.3 ~ V_{CC} + 0.3	V	
+5V Supply Voltage	V_{CC}	TA = 25°C	0 ~ +5.5	V	
Storage Temperature	Tstg	-	-40 ~ +95	°C	Note 1
Operating Temperature (Panel)	Topa	-	-10 ~ +85	°C	
Operating Temperature (Ambient)	Topa	-	-30 ~ +60°C	°C	

Note 1: Humidity 95% RH Max. (TA > 40°C)
Maximum wet-bulb temperature at 39°C or less. (TA > 40°C)
No condensation.

Mechanical Drawing

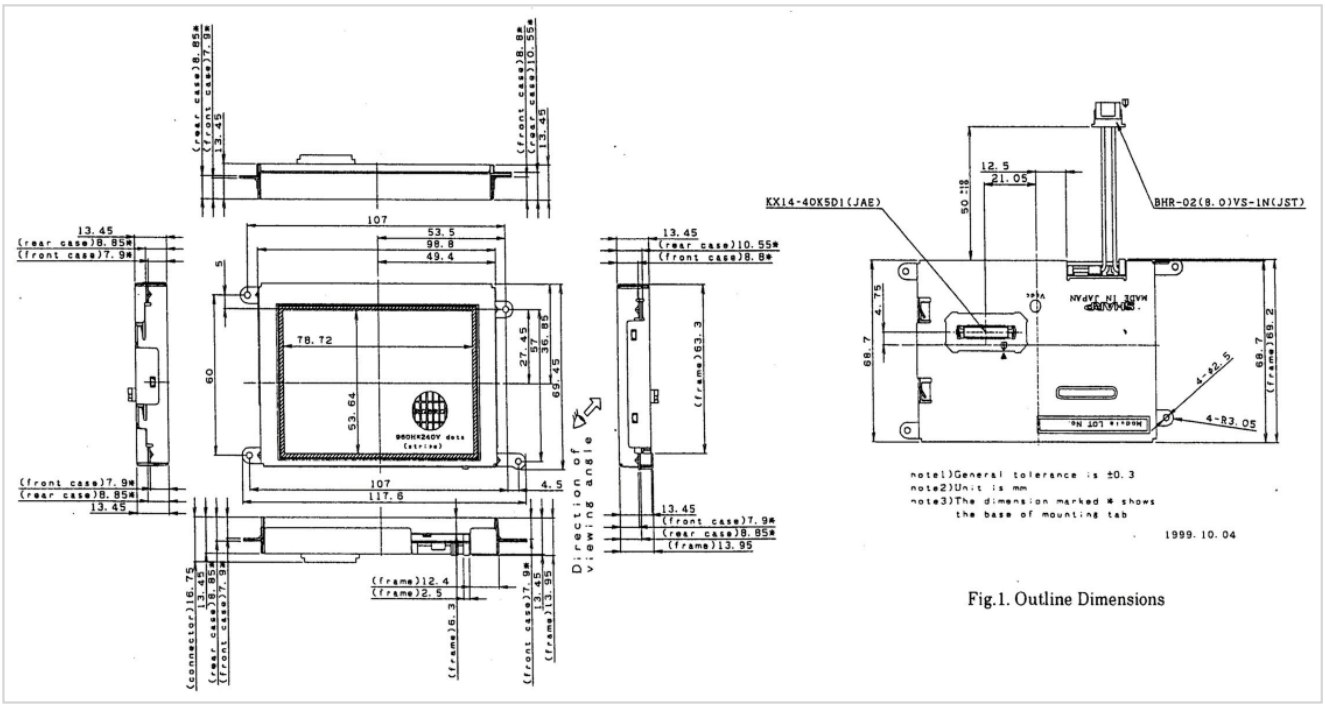

Fig.1. Outline Dimensions

Ordering Information

Part Number	Model	Description
100-0002-00	ENH038QD1-450	450 nit – Glossy front surface, IM/Clear
100-0002-01		450 nit – Diffuse front surface IM/110
100-0002-02		450 nit – No front surface treatment

For ordering or additional information on this or any other display product or service, contact White Electronic Designs at:

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