



CERT. No. 946535

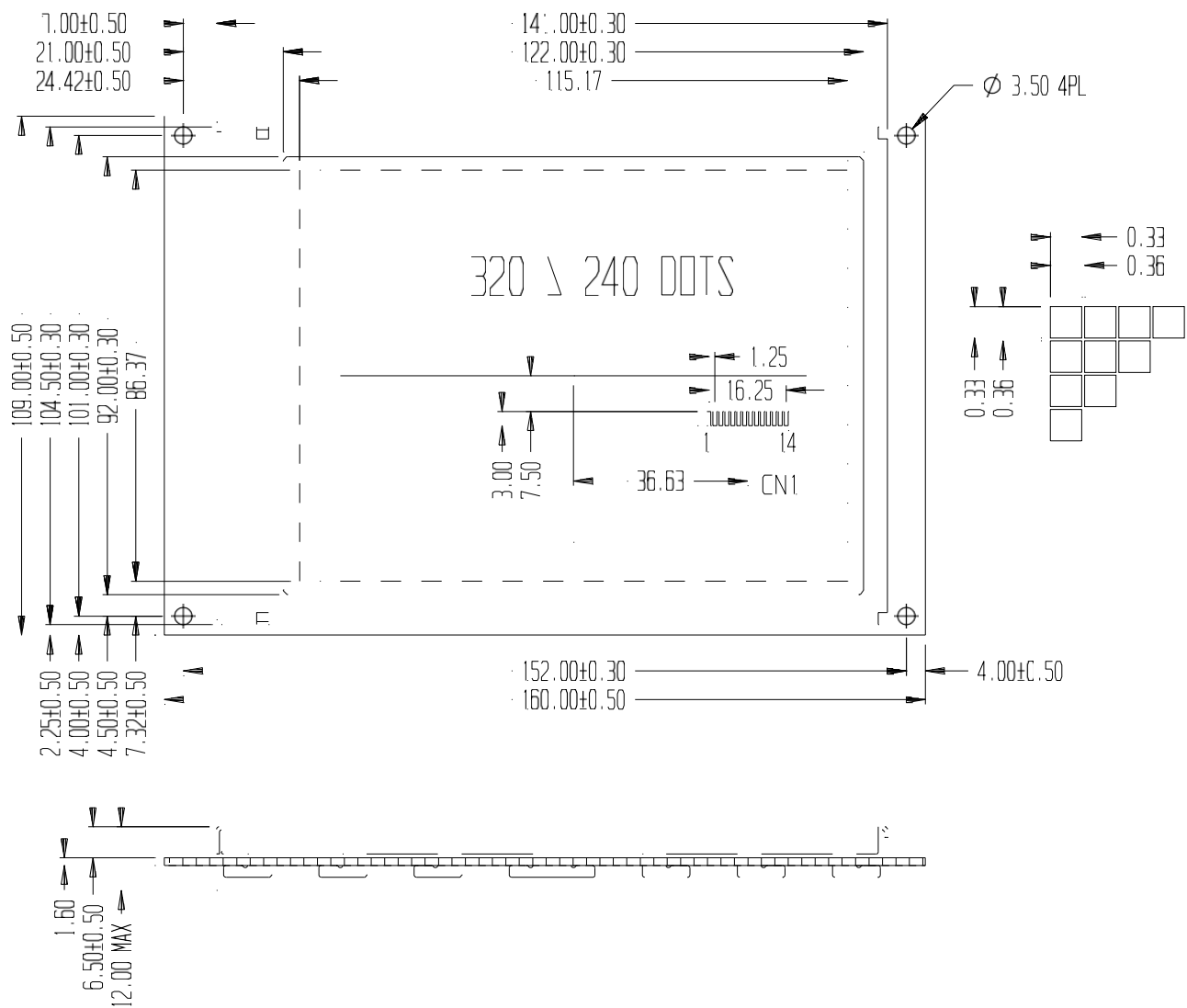
PRODUCT SPECIFICATIONS

- PHYSICAL DATA
- EXTERNAL DIMENSIONS
- BLOCK DIAGRAM
- ABSOLUTE MAXIMUM RATINGS
- ELECTRICAL CHARACTERISTICS
- TIMING CHART OF INPUT SIGNALS
- DISPLAY DATA PATTERN
- TIMING OF POWER SUPPLY
- EXAMPLE OF POWER CONNECTION
- ELECTRO-OPTICAL CHARACTERISTICS
- INTERFACE PIN CONNECTIONS
- PART LIST
- CIRCUIT DIAGRAM
- MODULE PACKAGE
- RELIABILITY
- QUALITY GUARANTEE
- INSPECTION CRITERIA
- PRECAUTIONS FOR USING LCD MODULES
- USING LCD MODULES

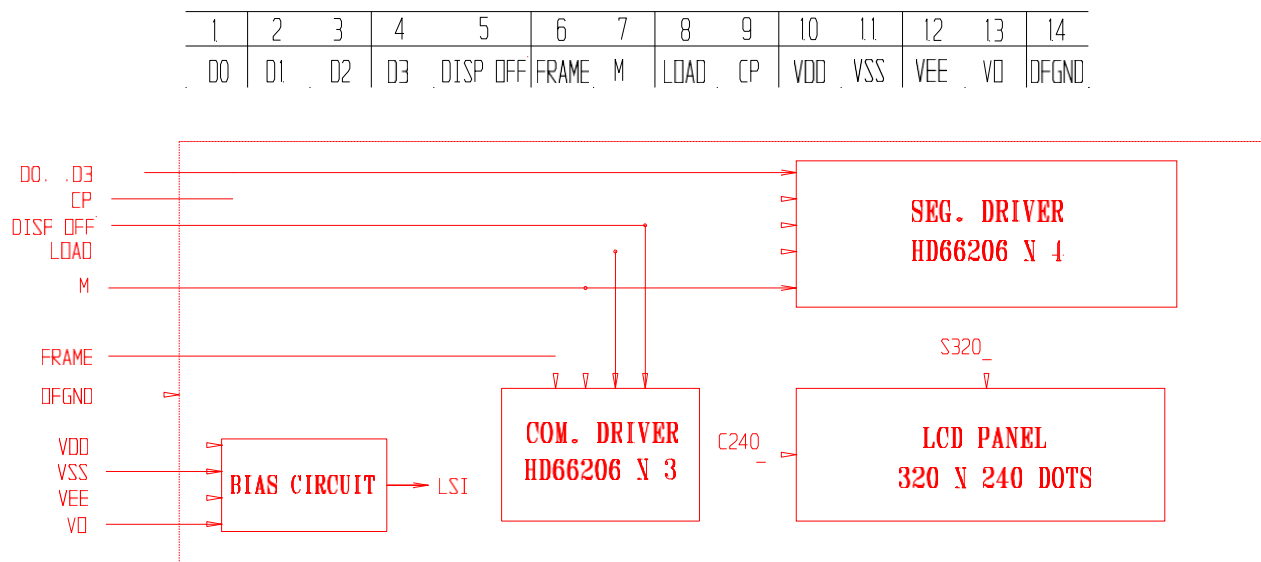
■ PHYSICAL DATA

Item	Contents	Unit
LCD type	STN	---
LCD duty	1/240	---
LCD bias	1/17	---
Viewing direction	6	o'clock
Module size (W×H×T)	167 × 109 × 12MAX (6.57" × 4.29" × 0.47"MAX)	mm
Viewing area (W×H)	122 × 92 (4.80" × 3.62")	mm
Number of dots	320 × 240	dots
Dot size (W×H)	0.33 × 0.33 (0.013" × 0.013")	mm
Dot pitch (W×H)	0.36 × 0.36 (0.014" × 0.014")	mm

■ EXTERNAL DIMENSIONS



■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Min	Max	Unit
Supply voltage for logic	VDD	-0.3	7.0	V
Supply voltage for LCD	VDD - VO	-0.3	30.0	V
Input voltage	VI	-0.3	VDD+0.3	V
Operating temperature	TOP	0	50	°C
Storage temperature	TST	-10	60	°C

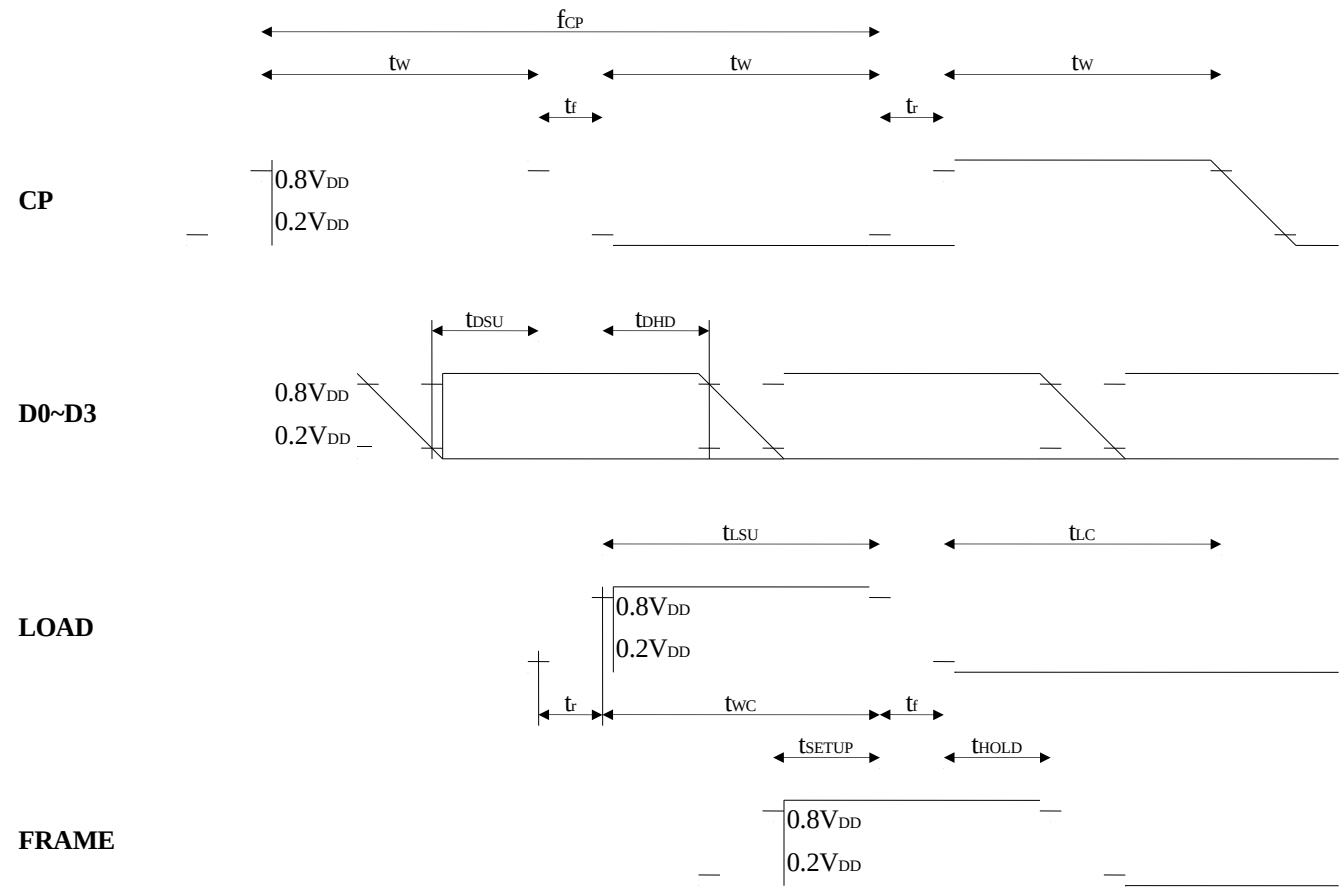
■ ELECTRICAL CHARACTERISTICS (VDD = +5V±10%, VSS = 0V, Ta = 25°C)

u DC Characteristics

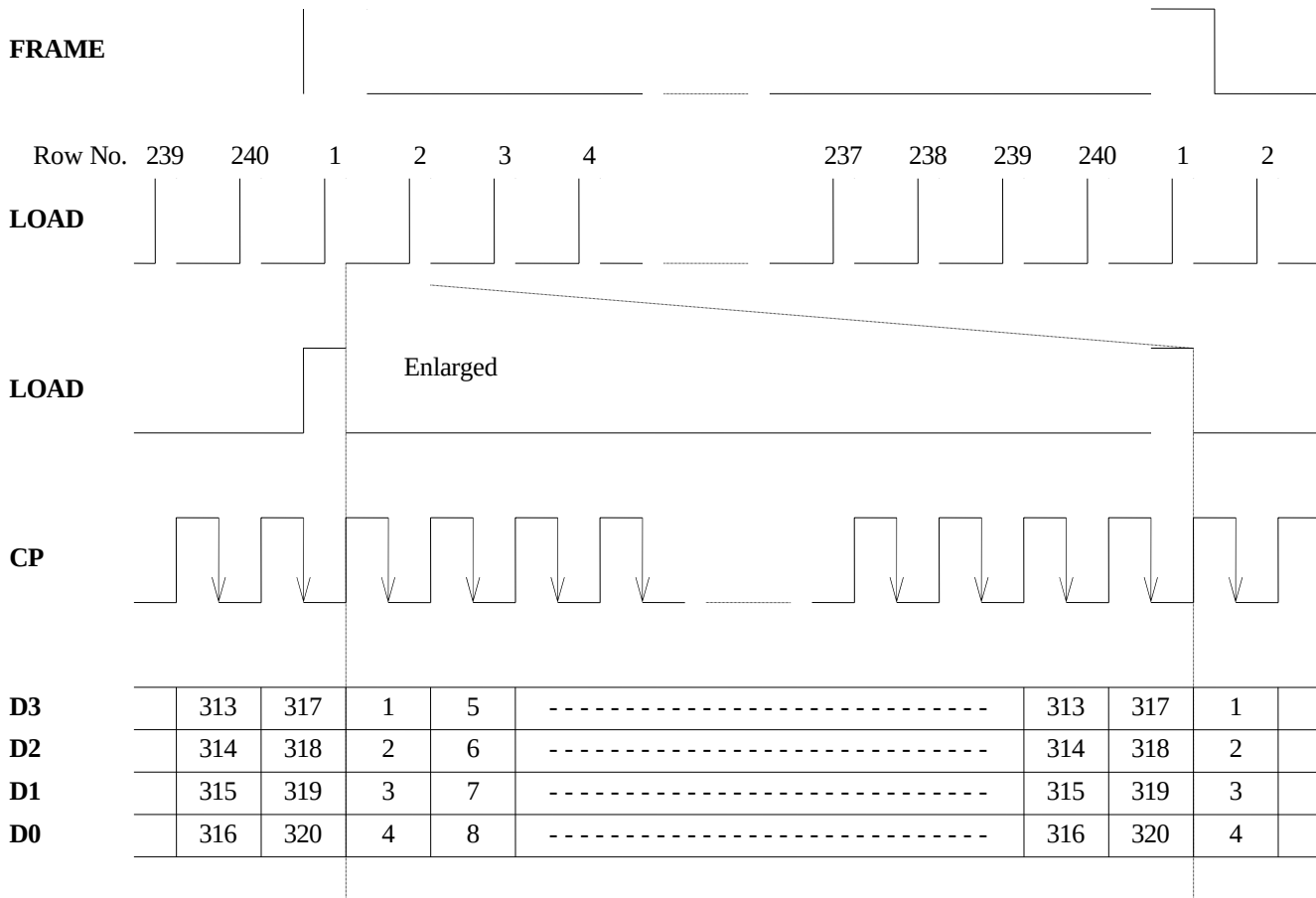
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Supply voltage for logic	VDD	---	4.5	5.0	5.5	V
Supply current for logic	IDD	---	---	10	16	mA
Operating voltage for LCD	VDD - VO	0°C	22.1	23.3	24.5	V
		25°C	21.2	22.4	23.6	V
		50°C	20.2	21.4	22.6	V
Input voltage 'H' level	VIH	---	0.7VDD	---	VDD	V
Input voltage 'L' level	VIL	---	0	---	0.3VDD	V

u AC Characteristics

Item	Symbol	Min	Typ	Max	Unit
Clock frequency	f _{CP}	---	---	8	MHz
Clock pulse width	t _w	40	---	---	ns
Clock rise/fall time	t _r , t _f	---	---	1	ns
Data set up time	t _{DSU}	20	---	---	ns
Data hold time	t _{DHD}	20	---	---	ns
Load set up time	t _{LSU}	100	---	---	ns
Load  Clock time	t _{LC}	80	---	---	ns
' FRAME ' set up time	t _{SETUP}	100	---	---	ns
' FRAME ' hold time	t _{HOLD}	100	---	---	ns
' LOAD ' pulse width	t _{WC}	80	---	---	ns



■ TIMING CHART OF INPUT SIGNALS



■ DISPLAY DATA PATTERN

	S1	S2	S3	S4	S5	• • • • •	S316	S317	S318	S319	S320	SEG																																																																	
C1	D3	D2	D1	D0	D3	• • • • •	D0	D3	D2	D1	D0																																																																		
C2	D3	D2	D1	D0	D3	• • • • •	D0	D3	D2	D1	D0																																																																		
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