

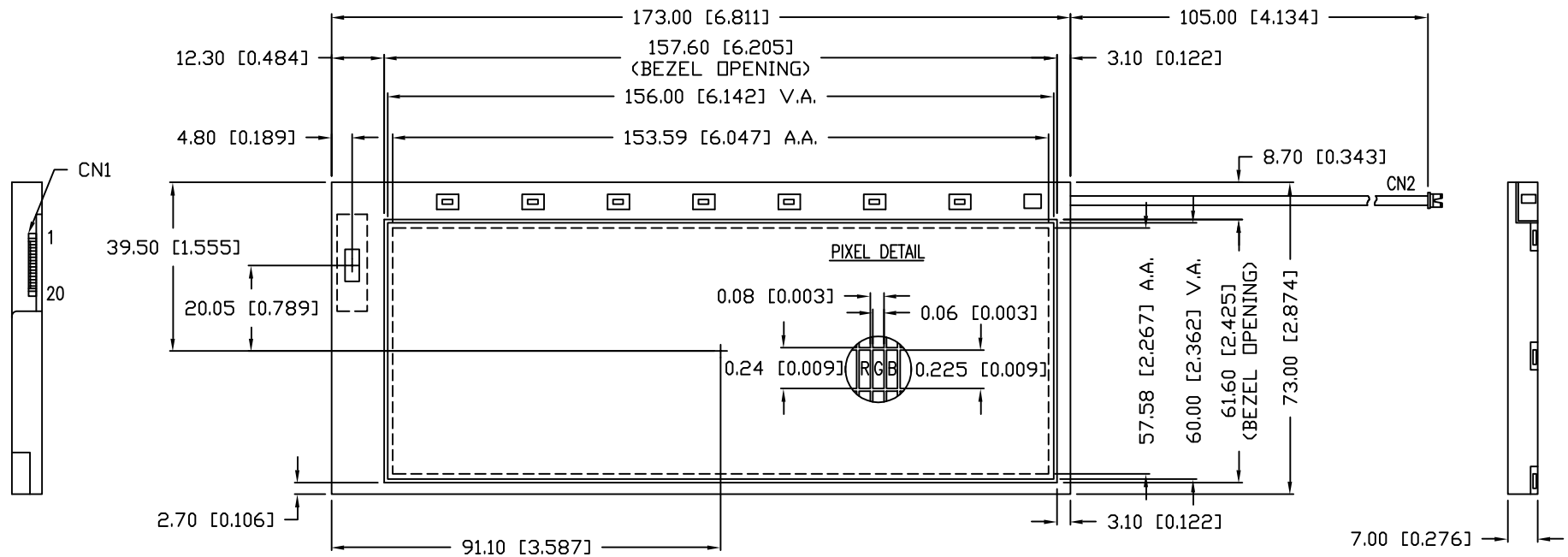
UNCONTROLLED DOCUMENT

PART NUMBER
LCM-S640240GCN-65

REV.

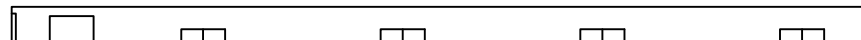
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REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
A	E.C.N. #11045.	10.23.03



NOTES:

1. CN1: MOLEX PN: 52893-2090.
RECOMMENDED FPC: PITCH 0.5mm, WIDTH 10.5mm.
2. CN2: JST: BHSR-02VS-1.
RECOMMENDED CONNECTOR: SM028-BHSS-1-TB.



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UNCONTROLLED DOCUMENT

REV.

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PART NUMBER

LCM-S640240GCN-65

6.5" COLOR STN, 640 x 240 GRAPHIC MODULE,
NEGATIVE, TRANSMISSIVE, 6:00 VIEW,
1/244 DUTY, CCFL BACKLIGHT, WEIGHT: 120g.

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RELIABILITY NOTE

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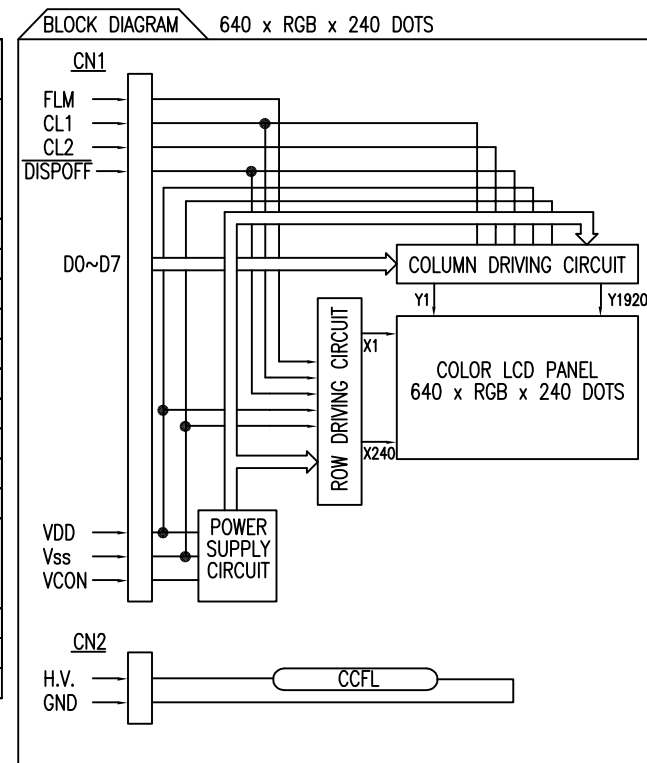
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CT			PAGE: 1 OF 5
			SCALE: N/A

PIN CONFIGURATION CN1			
PIN NO.	SYMBOL	LEVEL	FUNCTION
1	FLM	H/L	SCAN START-UP SIGNAL
2	Vss	—	GND
3	CL1	H/L	INPUT DATA LATCH SIGNAL
4	Vss	—	GND
5	CL2	H/L	DATA SHIFT CLOCK
6	Vss	—	GND
7	<u>DISPOFF</u>	H/L	DISPLAY CONTROL SIGNAL H: ON, L: OFF
8	VDD	—	LOGIC SUPPLY VOLTAGE
9	VCON	—	CONTRAST ADJUST VOLTAGE
10	Vss	—	GND
11	D0	H/L	DISPLAY DATA
12	D1	H/L	DISPLAY DATA
13	D2	H/L	DISPLAY DATA
14	D3	H/L	DISPLAY DATA
15	Vss	—	GND
16	D4	H/L	DISPLAY DATA
17	D5	H/L	DISPLAY DATA
18	D6	H/L	DISPLAY DATA
19	D7	H/L	DISPLAY DATA
20	Vss	—	GND

INPUT DATA ALLOCATION TABLE																		
DATA SIGNAL	D 7	D 6	D 5	D 4	D 3	D 2	D 1	D 0	D 7	D 6	D 5	D 4		D 4	D 3	D 2	D 1	D 0
Y X																		
	1	2	3	4	5	6	7	8	9	10	11	12	-----	1	1	1	1	1
														9	9	9	9	9
														1	1	1	1	2
														6	7	8	9	0
1	R	G	B	R	G	B	R	G	B	R	G	B		G	B	R	G	B
2	R	G	B	R	G	B	R	G	B	R	G	B		G	B	R	G	B
3	R	G	B	R	G	B	R	G	B	R	G	B		G	B	R	G	B
4	R	G	B	R	G	B	R	G	B	R	G	B		G	B	R	G	B
5	R	G	B	R	G	B	R	G	B	R	G	B		G	B	R	G	B
6	R	G	B	R	G	B	R	G	B	R	G	B		G	B	R	G	B
7	R	G	B	R	G	B	R	G	B	R	G	B		G	B	R	G	B
8	R	G	B	R	G	B	R	G	B	R	G	B		G	B	R	G	B
9	R	G	B	R	G	B	R	G	B	R	G	B		G	B	R	G	B
10	R	G	B	R	G	B	R	G	B	R	G	B		G	B	R	G	B
238	R	G	B	R	G	B	R	G	B	R	G	B		G	B	R	G	B
239	R	G	B	R	G	B	R	G	B	R	G	B		G	B	R	G	B
240	R	G	B	R	G	B	R	G	B	R	G	B		G	B	R	G	B

R: RED
G: GREEN
B: BLUE

PIN CONFIGURATION CN2		
PIN NO.	SYMBOL	FUNCTION
1	H.V.	POWER SUPPLY VOLTAGE FOR CCFL
2	GND	CCFL GND



ELECTRICAL CHARACTERISTICS

ITEM	SYMBOL	CONDITION	STANDARD VALUE			UNIT
			MIN.	TYP.	MAX.	
SUPPLY VOLTAGE FOR LOGIC	V_{DD}	—	2.5	3.3	4.5	V
CONTRAST ADJUST VOLTAGE	V_{CON} NOTE 1	$T_a=5^{\circ}\text{C}$	0.8	—	—	V
		$T_a=25^{\circ}\text{C}$	—	1.8	—	
		$T_a=40^{\circ}\text{C}$	—	—	2.8	
INPUT SIGNAL VOLTAGE	V_{IH}	"H" LEVEL	$0.8V_{DD}$	—	V_{DD}	V
	V_{IL}	"L" LEVEL	0	—	$0.2V_{DD}$	
POWER SUPPLY CURRENT	I_{DD}	$V_{DD}=3.3\text{V}$	—	130	—	mA
FRAME FREQUENCY (NOTE 2)	f_{FLM}	—	60	75	90	Hz
CONTRAST RATIO	CR	—	—	30	—	—
CCFL BACKLIGHT	STARTING VOLTAGE	V_S	$T_a=5^{\circ}\text{C}$	1000	—	V_{rms}
	LAMP VOLTAGE	V_L	$T_a=25^{\circ}\text{C}$	—	490	V_{rms}
	FREQUENCY	f_L	$T_a=25^{\circ}\text{C}$	40	60	KHz
	LAMP CURRENT	I_L	$T_a=25^{\circ}\text{C}$	3.0	3.5	mA_{rms}
	BRIGHTNESS	—	—	150	—	cd/m^2

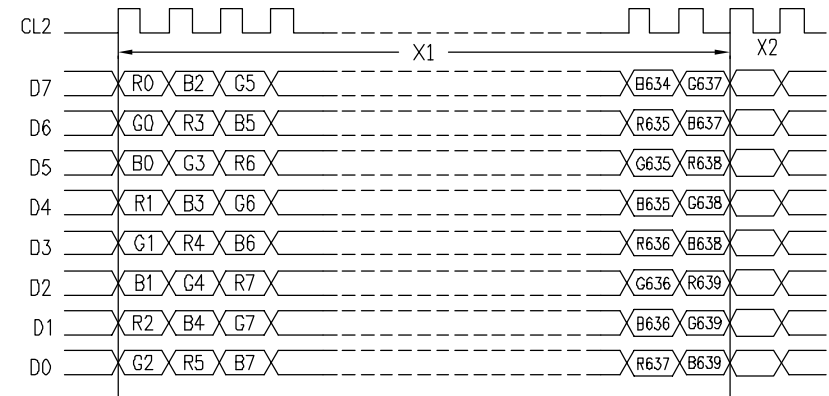
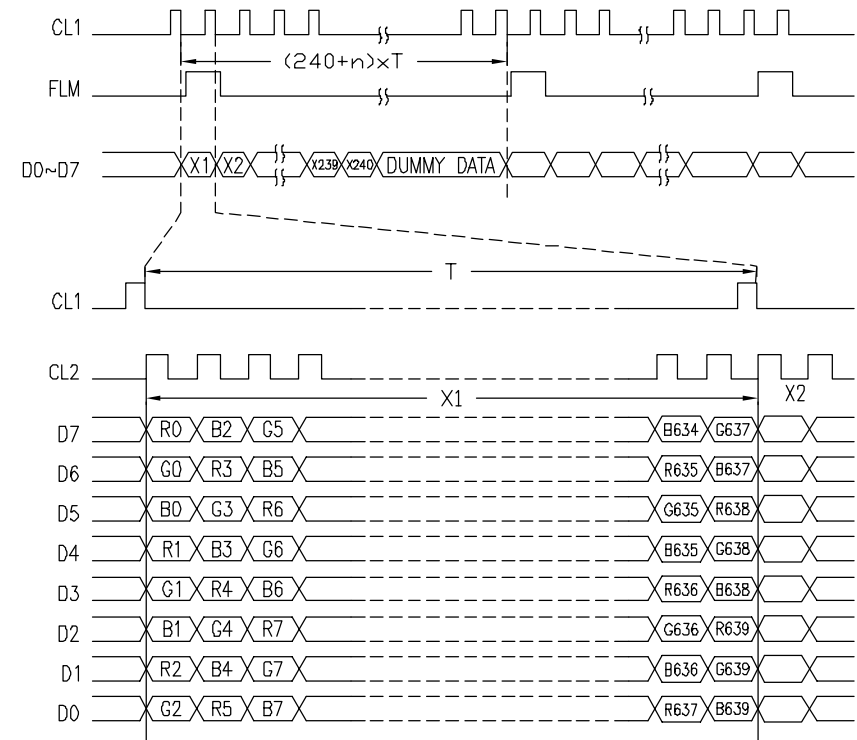
NOTES:

1. IN PROPORTION AS THE V_{CON} VOLTAGE DECREASES THE BRIGHTNESS WILL INCREASE.
2. MAKE SURE THAT THERE IS NO FLICKER AND RIPPLE PHENOMENON WHEN SETTING THE FRAME FREQUENCY.

ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	TEST CONDITION	STANDARD VALUE		UNIT
			MIN	MAX	
SUPPLY VOLTAGE FOR LOGIC	$V_{DD}-V_{SS}$	$T_a=25^{\circ}\text{C}$	-0.3	7.0	V
INPUT VOLTAGE	V_I	$T_a=25^{\circ}\text{C}$	-0.3	$V_{DD}+0.3$	V
OPERATING TEMPERATURE	T_{opr}	—	0	+50	$^{\circ}\text{C}$
STORAGE TEMPERATURE	T_{stg}	—	-20	+70	$^{\circ}\text{C}$

INTERFACE TIMING CHART



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REV.

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PART NUMBER

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6.5" COLOR STN, 640 x 240 GRAPHIC MODULE,
NEGATIVE, TRANSMISSIVE, 6:00 VIEW,
1/244 DUTY, CCFL BACKLIGHT, WEIGHT: 120g.

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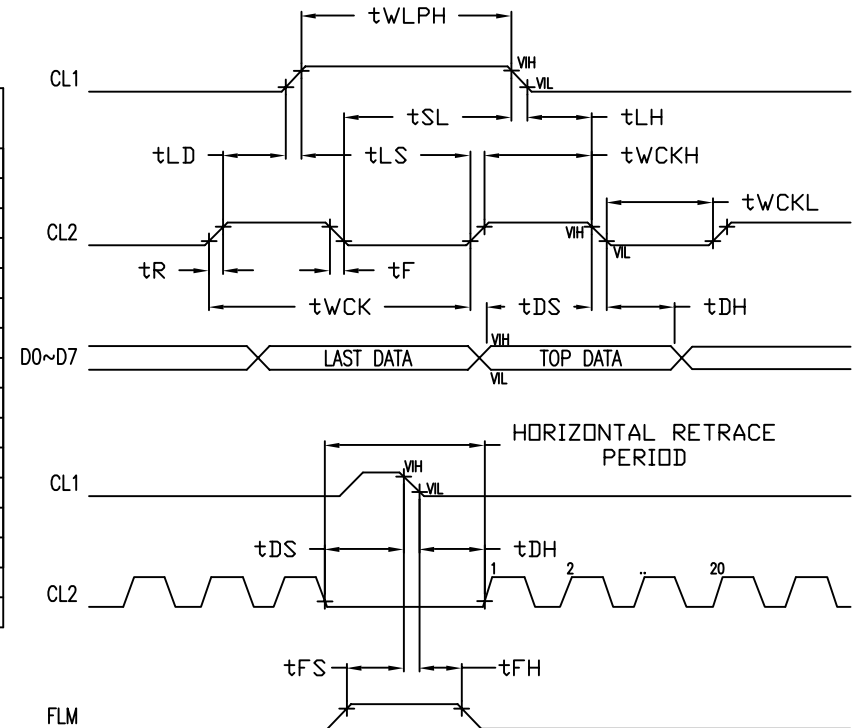
SCALE: N/A

PART NUMBER		REV.
LCM-S640240GCN-65		A
REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
	SEE PAGE 1.	

AC CHARACTERISTICS

(VDD = 3.0~4.5V, VLCD = +10.0~42.0V, Ta = 0°C~40°C)

ITEM	SYMBOL	CONDITION	STANDARD VALUE			UNIT
			MIN.	TYP.	MAX.	
SHIFT CLOCK PERIOD	t_{WCK}	-	66	-	-	ns
SHIFT CLOCK "H" PULSE WIDTH	t_{WCKH}	-	23	-	-	ns
SHIFT CLOCK "L" PULSE WIDTH	t_{WCKL}	-	23	-	-	ns
DATA SETUP TIME	t_{DS}	-	10	-	-	ns
DATA HOLD TIME	t_{DH}	-	25	-	-	ns
LATCH PULSE "H" PULSE WIDTH	t_{WLPH}	-	30	-	-	ns
SHIFT CLOCK RISE TO LATCH PULSE RISE TIME	t_{LD}	-	10	-	-	ns
SHIFT CLOCK FALL TO LATCH PULSE FALL TIME	t_{SL}	-	30	-	-	ns
LATCH PULSE RISE TO SHIFT CLOCK RISE TIME	t_{LS}	-	30	-	-	ns
LATCH PULSE FALL TO SHIFT CLOCK FALL TIME	t_{LH}	-	30	-	-	ns
ENABLE SETUP TIME	t_{TS}	-	12	-	-	ns
INPUT SIGNAL RISE TIME	t_R	-	-	-	50	ns
INPUT SIGNAL FALL TIME	t_F	-	-	-	50	ns
OUTPUT DELAY	t_D	-	-	-	44	ns
FLM SETUP TIME	t_{FS}	-	30	-	-	ns
FLM HOLD TIME	t_{FH}	-	50	-	-	ns



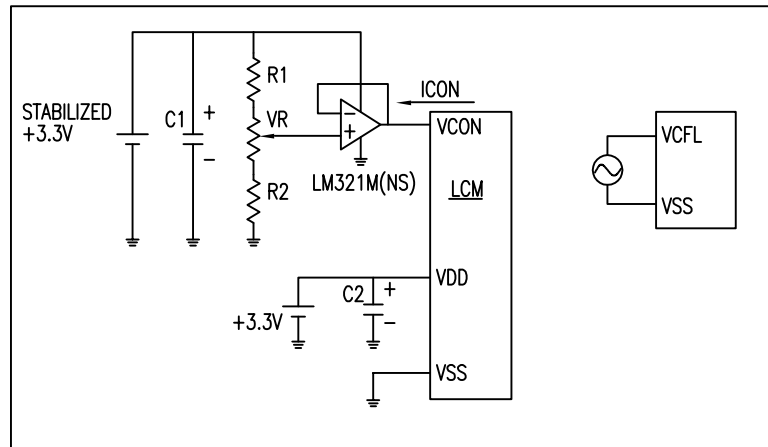
NOTE:

1. VIH: 0.8xVDD.
2. VIL: 0.2xVDD.

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A	LCM-S640240GCN-65					
6.5" COLOR STN, 640 x 240 GRAPHIC MODULE, NEGATIVE, TRANSMISSIVE, 6:00 VIEW, 1/244 DUTY, CCFL BACKLIGHT, WEIGHT: 120g.		DRAWN BY: CT		CHECKED BY:	APPROVED BY:	DATE: 1.17.03 PAGE: 4 OF 5 SCALE: N/A

POWER SUPPLY FOR LCM

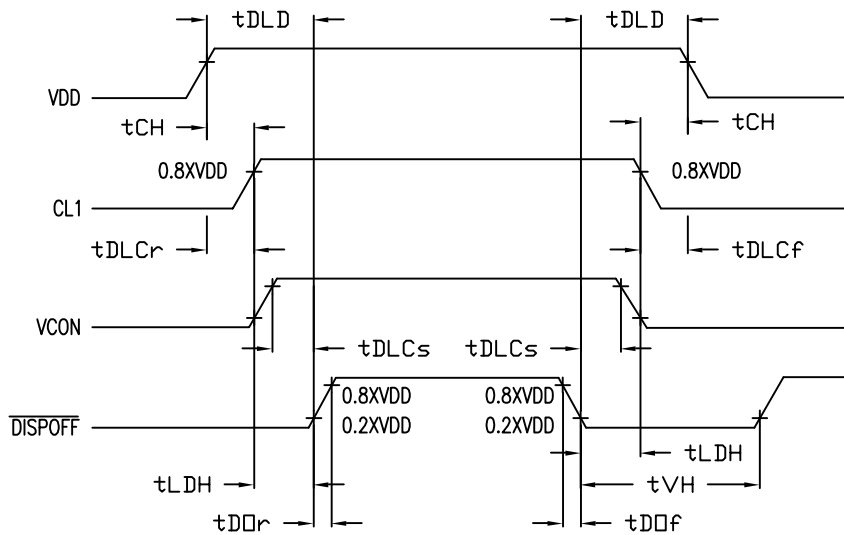


OPTICAL CHARACTERISTICS

ITEM	SYMBOL	CONDITION	STANDARD VALUE			UNIT
			MIN.	TYP.	MAX.	
CONTRAST RATIO	CR	$\Phi = 0^\circ$	-	30	-	-
CHROMATICITY COORDINATES	R	X	-	0.49	-	-
		Y	-	0.35	-	-
	G	X	-	0.33	-	-
		Y	-	0.49	-	-
	B	X	-	0.20	-	-
		Y	-	0.21	-	-
	W	X	-	0.32	-	-
		Y	-	0.35	-	-
RESPONSE TIME	RISE: NOTE 1	T_r	-	340	-	ms
	FALL: NOTE 2	T_f	-	110	-	

NOTES:

1. THE TIME THAT THE LUMINANCE LEVEL REACHES 90% OF FULL BRIGHTNESS LEVEL FROM 0% WHEN "ON" SIGNAL IS APPLIED.
2. THE TIME THAT THE LUMINANCE LEVEL REACHES 10% OF FULL BRIGHTNESS LEVEL FROM 100% WHEN "OFF" SIGNAL IS APPLIED.



POWER ON

POWER OFF

POWER SUPPLY SEQUENCE

SYMBOL	MIN.	MAX.	UNIT
t_{DLD}	200	-	ms
t_{CH}	0	-	ms
t_{LDH}	20	-	ms
t_{DOr}	-	100	ms
t_{DOf}	-	100	ms
t_{DLCr}	0	-	ms
t_{DLCf}	0	-	ms
t_{DLCs}	20	-	ms
t_{VH}	200	-	ms

WARNING:

1. POWER ON/OFF SHOULD BE PERFORMED USING DISPOFF FUNCTION.
2. INCORRECT POWER SUPPLY SIGNAL SEQUENCE MAY CAUSE PERMANENT DAMAGE TO THE LCD.

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