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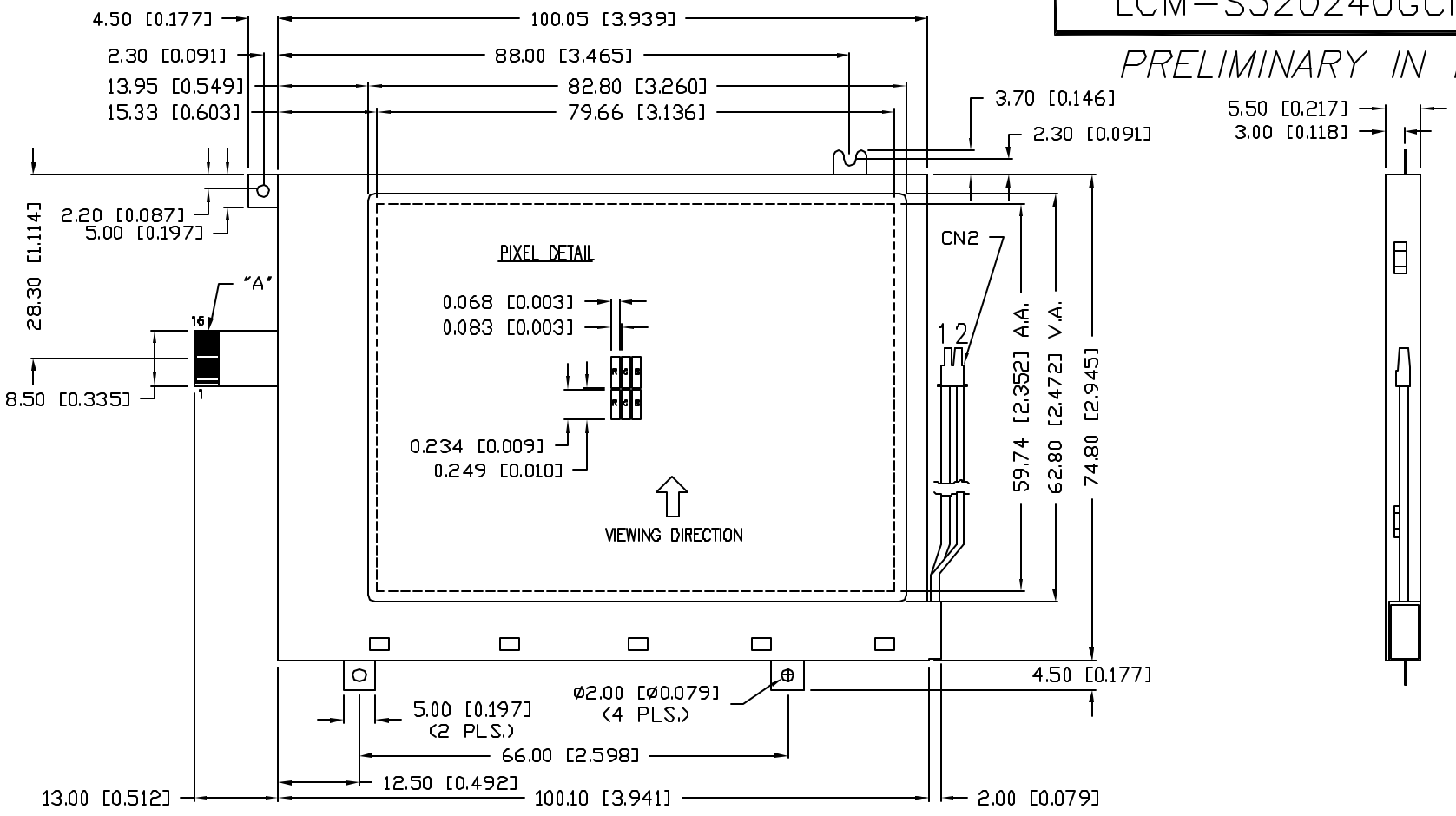
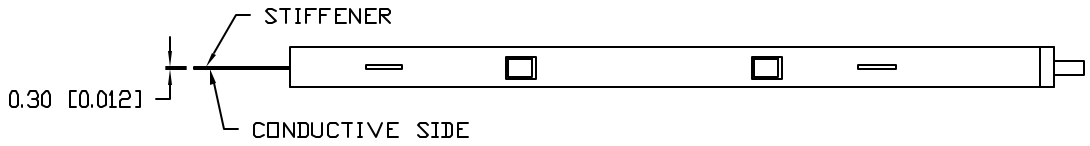
SC:1	PART NUMBER	REV.
	LCM-S320240GCN-39B	

PRELIMINARY IN P/N DIR





NOTES:

1. CN1: FPC: PITCH 0.5mm, WIDTH 10.5mm.
2. CN2: BHSR-02VS-1(JST); (PIN1-HOT, PIN2-GND).

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3.9" COLOR STN, 320 x 240 GRAPHIC MODULE, NEGATIVE, TRANSMISSIVE, CCFL BACKLIGHT, 1/244 DUTY, 6:00 VIEW ANGLE, WEIGHT: 65g.		RELIABILITY NOTE OUR MANY YEARS OF EXPERIENCE DATA ACCUMULATION INDICATE THAT SOLDER HEAT IS A MAJOR CAUSE OF EARLY AND FUTURE FAILURE. PLEASE PAY ATTENTION TO YOUR SOLDERING PROCESS.	DRAWN BY: CT CHECKED BY: APPROVED BY:	DATE: 1.17.03 PAGE: 1 OF 5 SCALE: N/A

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PIN CONFIGURATION CN1

PIN NO.	SYMBOL	LEVEL	FUNCTION
1	D7	H/L	DISPLAY DATA
2	D6	H/L	DISPLAY DATA
3	D5	H/L	DISPLAY DATA
4	D4	H/L	DISPLAY DATA
5	D3	H/L	DISPLAY DATA
6	D2	H/L	DISPLAY DATA
7	D1	H/L	DISPLAY DATA
8	D0	H/L	DISPLAY DATA
9	Vss	-	GND
10	VDD	-	LOGIC SUPPLY VOLTAGE
11	$\overline{\text{DISPOFF}}$	H/L	DISPLAY CONTROL SIGNAL
12	CL2	H/L	DATA SHIFT CLOCK
13	CL1	H/L	INPUT DATA LATCH SIGNAL
14	FLM	H/L	SCAN START-UP SIGNAL
15	Vss	-	GND
16	VLCD	-	POWER SUPPLY FOR LCD

PIN CONFIGURATION CN2

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

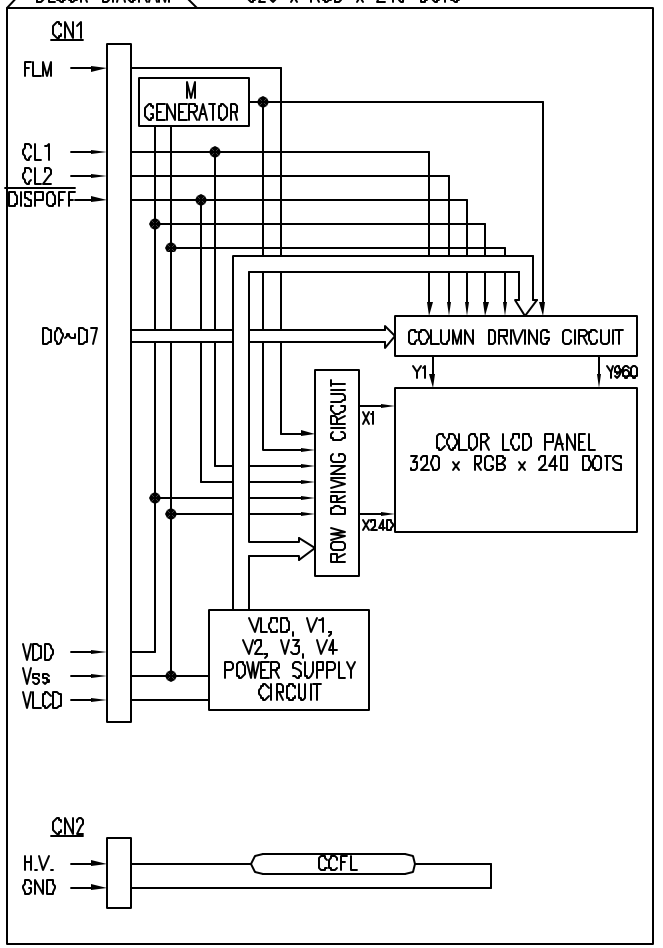
INPUT DATA ALLOCATION TABLE

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	-----	956	957	958	959	960
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

BLOCK DIAGRAM

320 x RGB x 240 DOTS



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3.9" COLOR STN, 320 x 240 GRAPHIC MODULE,
NEGATIVE, TRANSMISSIVE, CCFL BACKLIGHT, 1/244 DUTY,
6:00 VIEW ANGLE, WEIGHT: 65g.

RELIABILITY NOTE
OUR MANY YEARS OF EXPERIENCE DATA ACCUMULATION INDICATE THAT SOLDER HEAT IS A MAJOR CAUSE OF EARLY AND FUTURE FAILURE. PLEASE PAY ATTENTION TO YOUR SOLDERING PROCESS.

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CT			

ELECTRICAL CHARACTERISTICS

ITEM		SYMBOL	CONDITION	STANDARD VALUE MIN.	TYP.	MAX.	UNIT
SUPPLY VOLTAGE FOR LOGIC		V_{DD}	–	3.0	3.3	3.6	V
CONTRAST ADJUST VOLTAGE		V_{LCD} NOTE 1	Ta=0°C	–	26.5	–	V
			Ta=25°C	24.5	25.0	25.5	
			Ta=40°C	–	24.5	–	
INPUT SIGNAL VOLTAGE		V_{IH}	"H" LEVEL	$0.8V_{DD}$	–	V_{DD}	V
		V_{IL}	"L" LEVEL	0	–	$0.2V_{DD}$	
POWER SUPPLY CURRENT		IDD	VDD=3.3V	–	1.0	3.0	mA
		ILCD	VLCD=25.0V	–	8.0	9.0	mA
FRAME FREQUENCY (NOTE 2)		fFLM	–	–	150	–	Hz
CONTRAST RATIO		CR	–	–	30	–	–
CCFL BACKLIGHT	STARTING VOLTAGE	VS	Ta=5°C	360	–	–	Vrms
	LAMP VOLTAGE	VL	Ta=25°C	–	316	–	Vrms
	FREQUENCY	fL	Ta=25°C	40	50	55	KHz
	LAMP CURRENT	IL	Ta=25°C	2.0	3.0	3.5	mArms
	BRIGHTNESS	–	–	–	70	–	cd/m^2

NOTES:

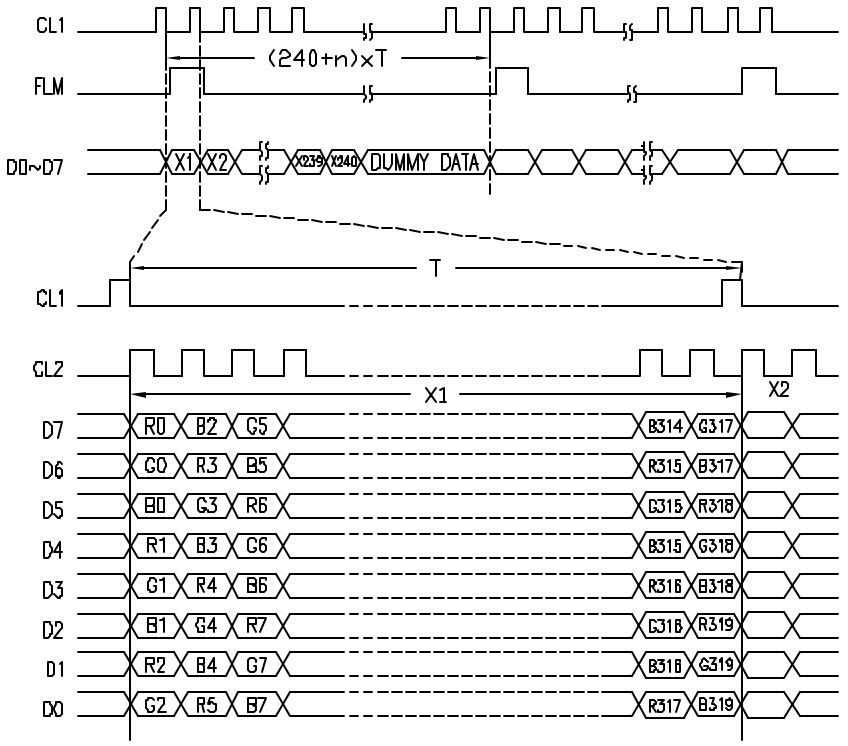
1. IN PROPORTION AS THE VLCD VOLTAGE DECREASES THE BRIGHTNESS WILL INCREASE.
2. MAKE SURE THAT THERE IS NO FLICKER AND RIPPLE PHENOMENON WHEN SETTING THE FRAME FREQUENCY.

ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	TEST CONDITION	STANDARD VALUE MIN	MAX	UNIT
SUPPLY VOLTAGE FOR LOGIC	VDD-Vss	Ta=25°C	-0.3	7.0	V
POWER SUPPLY FOR LCD DRIVER	VLCD-Vss	Ta=25°C	0	30	V
INPUT VOLTAGE	V_I	Ta=25°C	-0.3	VDD+0.3	V
OPERATING TEMPERATURE*	Topr	-	0	+50	°C
STORAGE TEMPERATURE	Tstg	-	-20	+60	°C

*ALSO AVAILABLE IN WIDE OPERATING TEMPERATURE: -20°C TO +70°C

INTERFACE TIMING CHART



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PALATINE, IL 60067-6976
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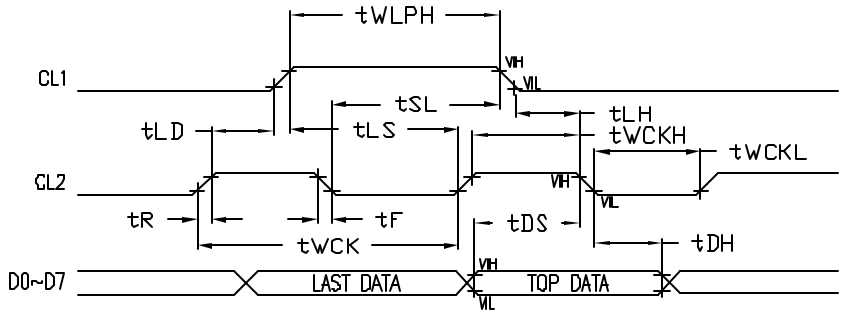
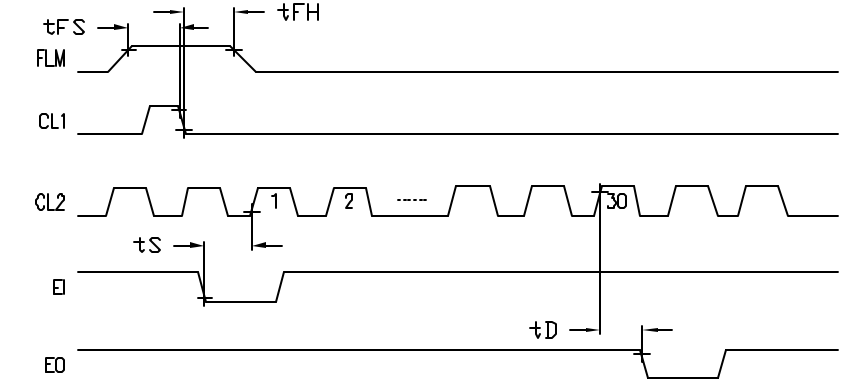
INPUT TIMING CHARACTERISTIC



INPUT/OUTPUT TIMING CHARACTERISTIC



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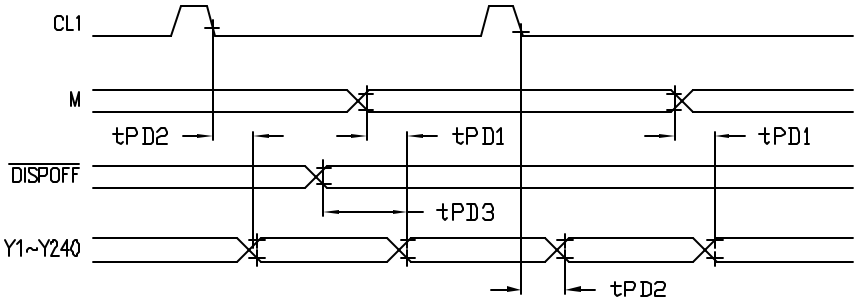

AC CHARACTERISTICS (VDD = 2.5~3.6V, Vss = 0V, Ta = -20°C~+70°C)

ITEM	SYMBOL	CONDITION	STANDARD VALUE MIN.	STANDARD VALUE TYP.	STANDARD VALUE MAX.	UNIT
SHIFT CLOCK PERIOD	t_{WCK}	-	33	-	-	ns
SHIFT CLOCK "H" PULSE WIDTH	t_{WCKH}	-	13	-	-	ns
SHIFT CLOCK "L" PULSE WIDTH	t_{WCKL}	-	14	-	-	ns
DATA SETUP TIME	t_{DS}	-	10	-	-	ns
DATA HOLD TIME	t_{DH}	-	15	-	-	ns
LATCH PULSE "H" PULSE WIDTH	t_{WLPH}	-	15	-	-	ns
SHIFT CLOCK RISE TO LATCH PULSE RISE TIME	t_{LD}	-	5	-	-	ns
SHIFT CLOCK FALL TO LATCH PULSE FALL TIME	t_{SL}	-	15	-	-	ns
LATCH PULSE RISE TO SHIFT CLOCK RISE TIME	t_{LS}	-	15	-	-	ns
LATCH PULSE FALL TO SHIFT CLOCK FALL TIME	t_{LH}	-	15	-	-	ns
ENABLE SETUP TIME	t_S	-	5	-	-	ns
INPUT SIGNAL RISE TIME	t_R	-	-	-	50	ns
INPUT SIGNAL FALL TIME	t_F	-	-	-	50	ns
OUTPUT DELAY TIME(1)	t_D	-	-	-	25	ns
OUTPUT DELAY TIME(2)	t_{PD1}	-	-	-	1.2	ns
OUTPUT DELAY TIME(3)	t_{PD2}	-	-	-	1.2	ns
OUTPUT DELAY TIME(4)	t_{PD3}	-	-	-	1.2	ns
FLM SETUP TIME	t_{FS}	-	100	-	-	ns
FLM HOLD TIME	t_{FH}	-	50	-	-	ns

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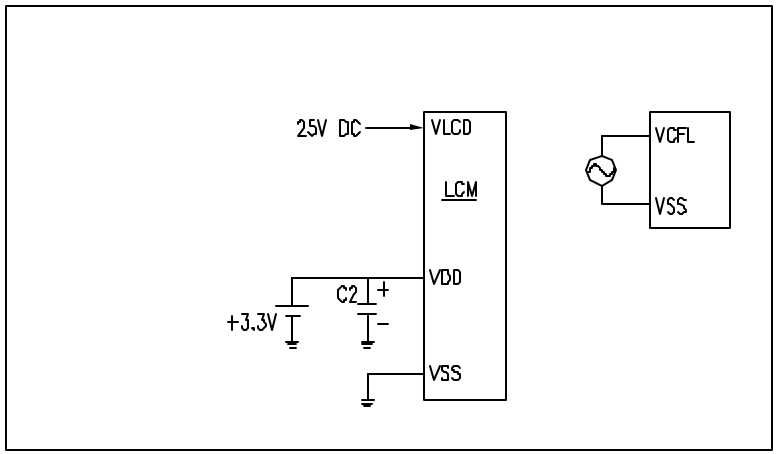
POWER SUPPLY FOR LCM

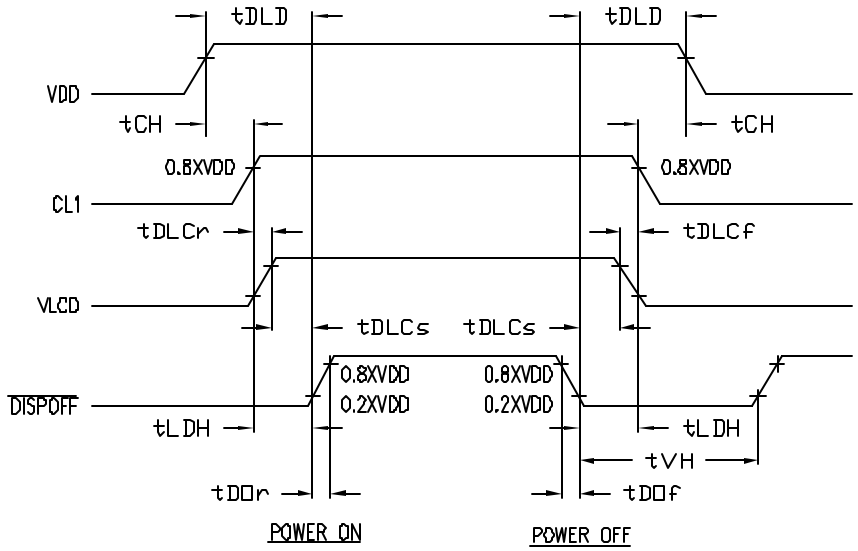


OPTICAL CHARACTERISTICS

ITEM		SYMBOL	CONDITION	STANDARD VALUE MIN.	STANDARD VALUE TYP.	STANDARD VALUE MAX.	UNIT
CONTRAST RATIO		CR	Φ=0°	-	30	-	-
CHROMATICITY COORDINATES	R	X	θ=0°, Φ=0°	-	0.50		-
		Y		-	0.33	-	-
	G	X		-	0.28	-	-
		Y		-	0.50	-	-
	B	X		-	0.15	-	-
		Y		-	0.16	-	-
	W	X		-	0.27	-	-
		Y		-	0.33	-	-
RESPONSE TIME	RISE: NOTE 1	T_r		-	190	-	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 SUPPLY SEQUENCE

SYMBOL	MIN.	MAX.	UNIT
t_{DLD}	200	-	ms
t_{CH}	0	-	ms
t_{LDH}	20	-	ms
t_{DOr}	-	100	ns
t_{DOf}	-	100	ns
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 $\overline{\text{DISPOFF}}$ FUNCTION.
2. INCORRECT POWER SUPPLY SIGNAL SEQUENCE MAY CAUSE PERMANENT DAMAGE TO THE LCD.

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