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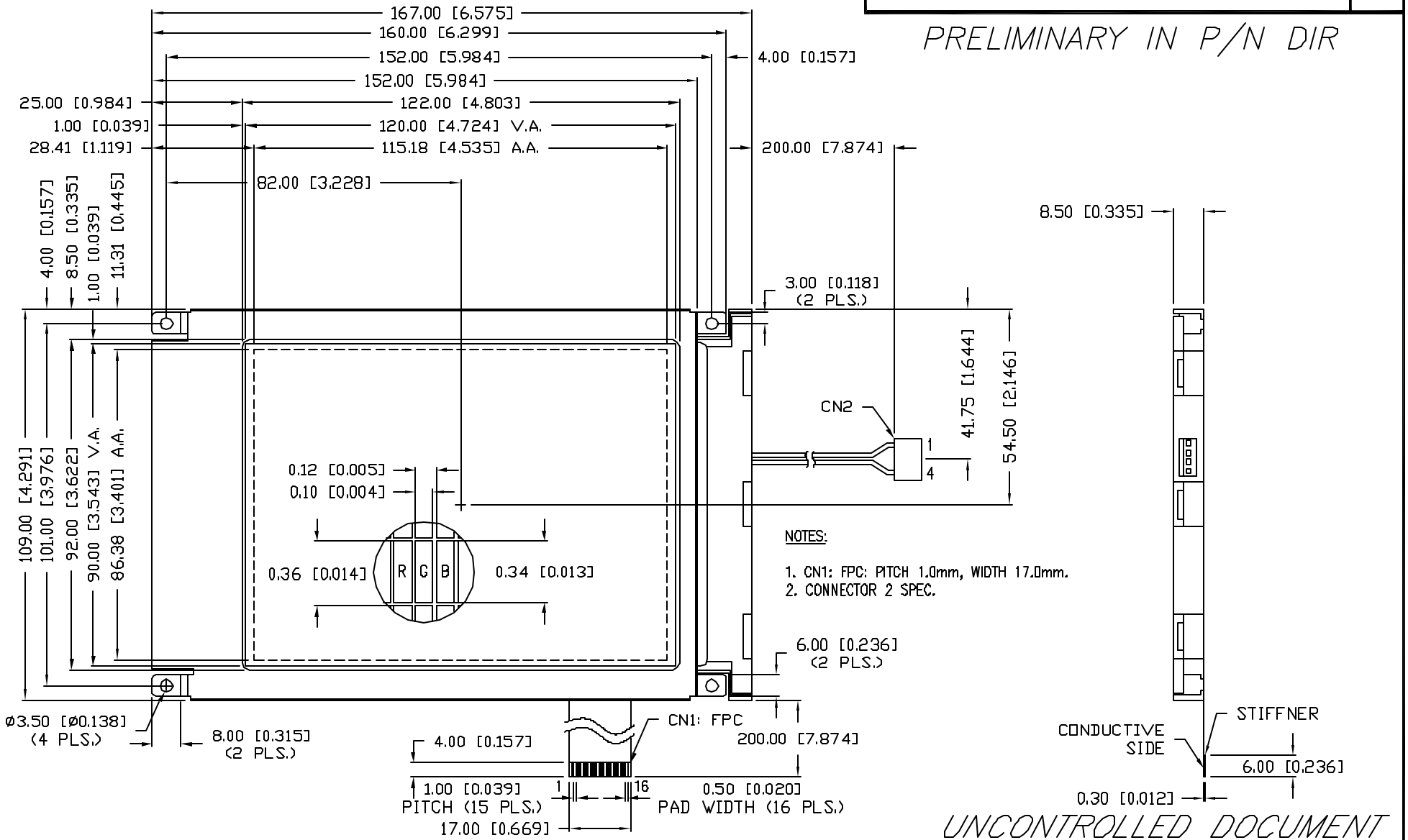
SC:1.5	PART NUMBER	REV.
	LCM-S320240GCN-571	

PRELIMINARY IN P/N DIR



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REV.	PART NUMBER	CONFIDENTIAL INFORMATION	LUMEX	290 E. HELEN ROAD PALATINE, IL 60067-6976 PHONE: +1.847.359.2790 US WEB: www.lumex.com TW WEB: www.lumex.com.tw
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5.7" COLOR STN, 320 x 240 GRAPHIC MODULE, NEGATIVE, TRANSMISSIVE, CCFL BACKLIGHT, 1/242 DUTY, 12:00 VIEW ANGLE, WEIGHT: 200g.		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: 7.10.03 / PAGE: 1 OF 6 / SCALE: N/A

SC:1.5 | PART NUMBER: LCM-S320240GCN-571 | REV.

PRELIMINARY IN P/N DIR

PIN CONFIGURATION CN1

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

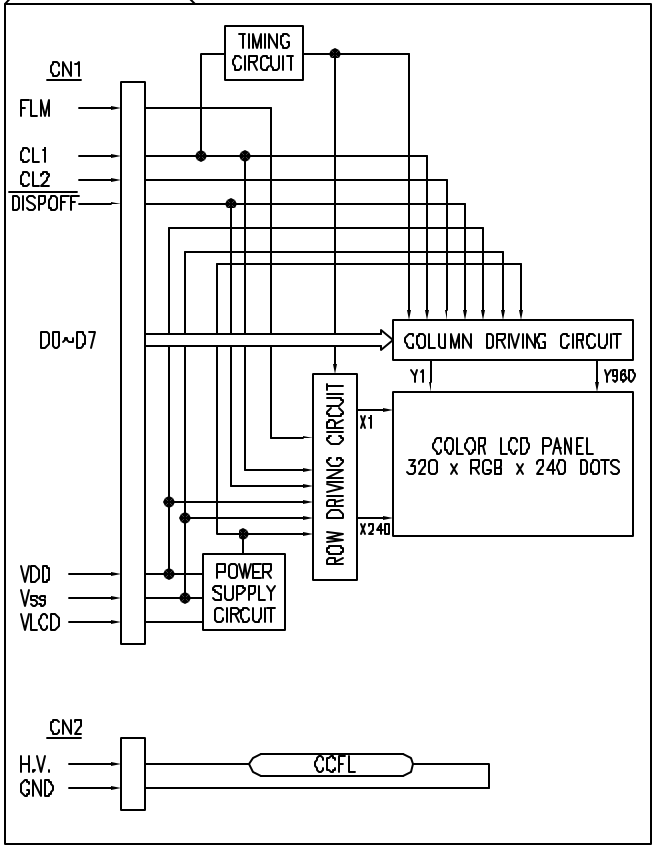
INPUT DATA ALLOCATION TABLE

DATA SIGNAL / Y \ X	D7	D6	D5	D4	D3	D2	D1	D0	D7	D6	D5	D4		D4	D3	D2	D1	D0
	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



PIN CONFIGURATION CN2

PIN NO.	SYMBOL	FUNCTION
1	H.V.	POWER SUPPLY VOLTAGE FOR CCFL
2	–	–
3	–	–
4	GND	CCFL GND

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REV. | PART NUMBER: LCM-S320240GCN-571

5.7" COLOR STN, 320 x 240 GRAPHIC MODULE,
NEGATIVE, TRANSMISSIVE, CCFL BACKLIGHT, 1/242 DUTY,
12:00 VIEW ANGLE, WEIGHT: 200g.

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			SCALE: N/A

ELECTRICAL CHARACTERISTICS

ITEM		SYMBOL	CONDITION	STANDARD VALUE			UNIT
				MIN.	TYP.	MAX.	
SUPPLY VOLTAGE FOR LOGIC		V_{DD}	V_{DD} – Vss	3.15	3.3	3.45	V
POWER SUPPLY FOR LCD DRIVER		VLCD	Ta=25°C	1.5	2.0	2.5	V
INPUT SIGNAL VOLTAGE (NOTE 1)		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}=3.3V	–	45	100	mA
FRAME FREQUENCY (NOTE 2)		fFLM	–	60	70	80	Hz
CCFL BACKLIGHT	STARTING VOLTAGE	VS	Ta=5°C	1000	–	–	Vrms
	LAMP VOLTAGE	VL	Ta=25°C	–	325	–	Vrms
	FREQUENCY	fL	Ta=25°C	40	60	80	KHz
	LAMP CURRENT	IL	Ta=25°C	5.0	5.5	6.0	mArms
	BRIGHTNESS	–	–	–	150	–	cd/m²
	LIFE HOURS	–	–	10000	20000	–	HOURS

CAUTION:

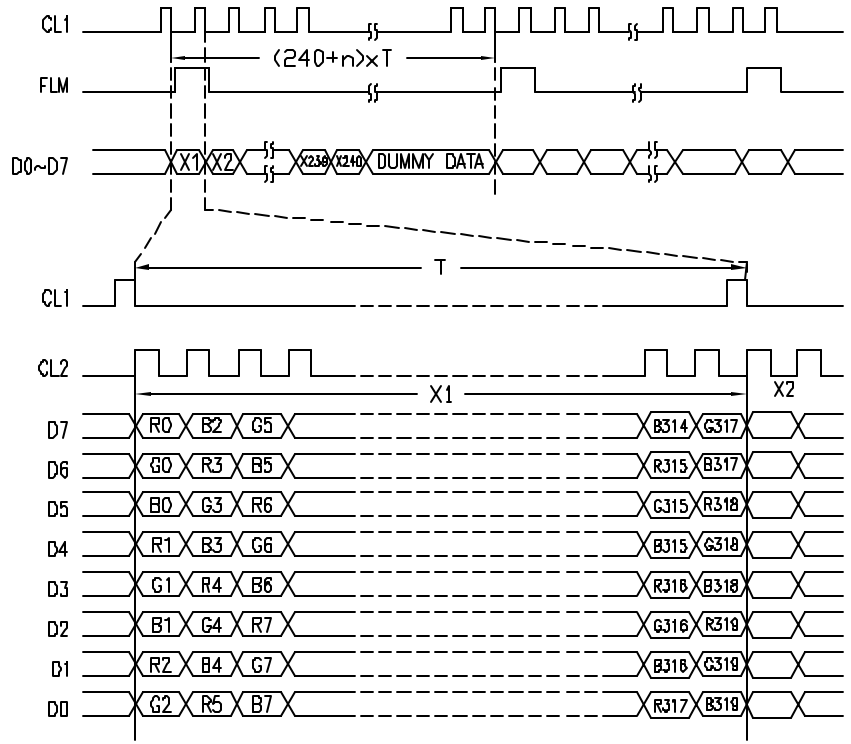
1. FLM, CL1, CL2, DISPOFF, D0~D7.
2. MAKE SURE THAT THERE IS NO FLICKER AND RIPPLE PHENOMENON WHEN SETTING THE FRAME FREQUENCY.

ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	TEST CONDITION	STANDARD VALUE		UNIT
			MIN	MAX	
SUPPLY VOLTAGE FOR LOGIC	V_{DD}–Vss	Ta=25°C	–0.3	7.0	V
POWER SUPPLY FOR LCD DRIVER	V_{LCD}–Vss	Ta=25°C	0	V_{DD}	V
INPUT VOLTAGE	V_I	Ta=25°C	–0.3	V_{DD}+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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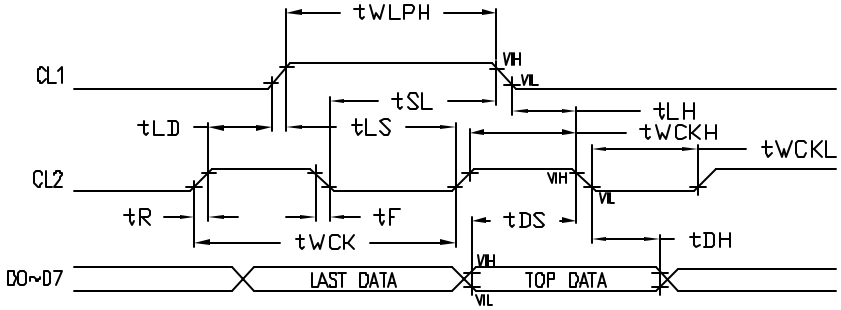
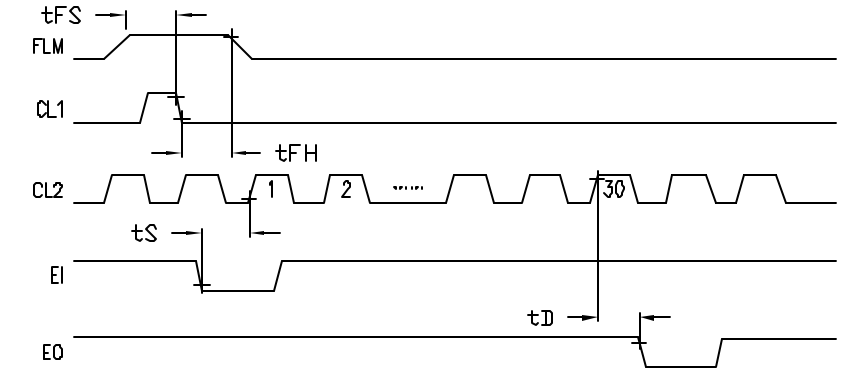
INPUT TIMING CHARACTERISTIC



INPUT/OUTPUT TIMING CHARACTERISTIC



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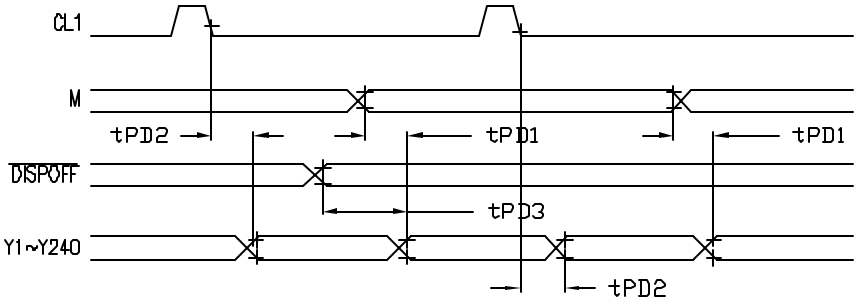

AC CHARACTERISTICS (VDD = 3.0~4.5V, Vss = 0V, Ta = 0°C~+50°C)

ITEM	SYMBOL	CONDITION	STANDARD VALUE MIN.	STANDARD VALUE TYP.	STANDARD VALUE MAX.	UNIT
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_S	–	12	–	–	ns
INPUT SIGNAL RISE TIME	t_R	–	–	–	50	ns
INPUT SIGNAL FALL TIME	t_F	–	–	–	50	ns
OUTPUT DELAY TIME(1)	t_D	–	–	–	44	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}	–	30	–	–	ns
FLM HOLD TIME	t_{FH}	–	50	–	–	ns

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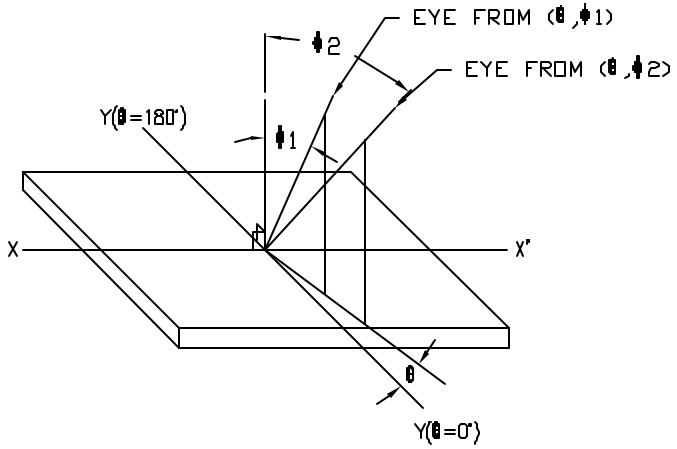
PRELIMINARY IN P/N DIR

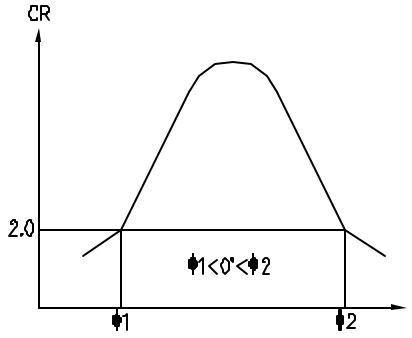
OPTICAL CHARACTERISTICS — Ta=25°C (BACKLIGHT ON)

ITEM			SYMBOL	CONDITION	STANDARD VALUE MIN.	TYP.	MAX.	UNIT
VIEWING ANGLE RANGE			φ1,φ2	θ=0° CR≥2	–	40	–	DEG.
CONTRAST RATIO			CR	θ=0°,φ=0°	–	40	–	–
CHROMATICITY COORDINATES	R	X		θ=0°, Φ=0°	0.44	0.49	0.54	–
		Y			0.30	0.35	0.40	–
	G	X			0.28	0.33	0.38	–
		Y			0.44	0.49	0.54	–
	B	X			0.15	0.20	0.25	–
		Y			0.16	0.21	0.26	–
	W	X			0.27	0.32	0.37	–
		Y			0.30	0.35	0.40	–
RESPONSE TIME	RISE: NOTE 1		T_r		–	250	–	ms
	FALL: NOTE 2		T_f		–	200	–	

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.





CR vs VIEWING AND φ

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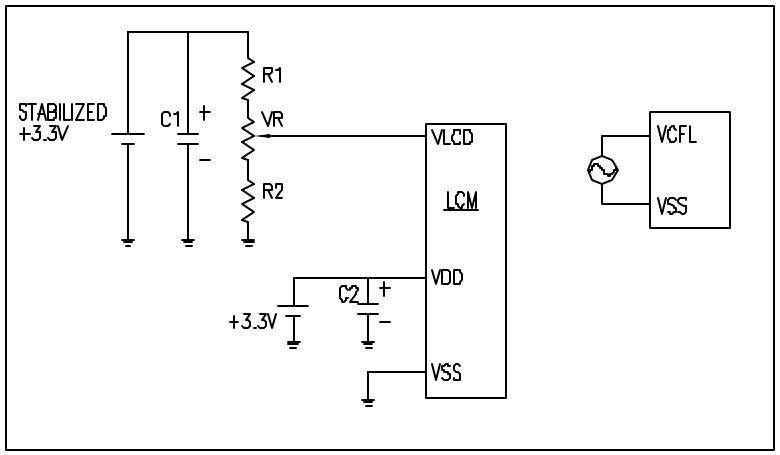
PRELIMINARY IN P/N DIR

POWER SUPPLY FOR LCM

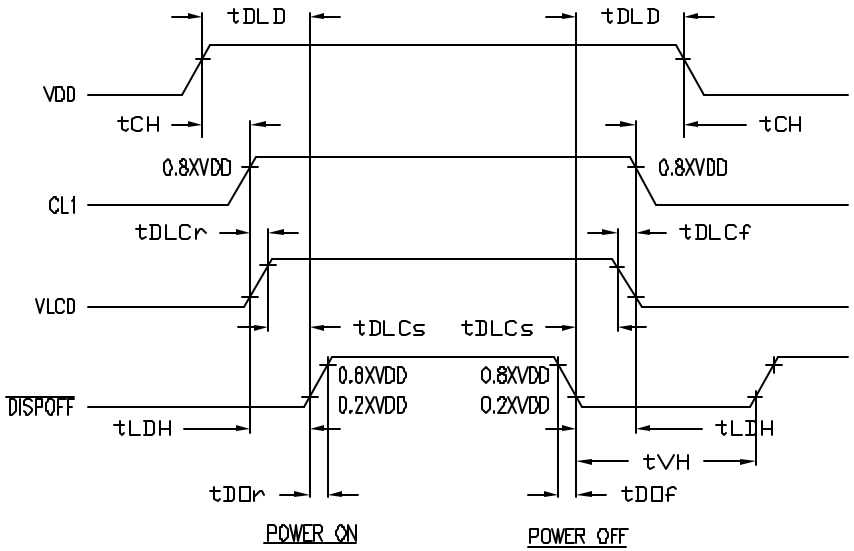


POWER SUPPLY SEQUENCE

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 DISPOFF FUNCTION.
2. INCORRECT POWER SUPPLY SIGNAL SEQUENCE MAY CAUSE PERMANENT DAMAGE TO THE LCD.



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