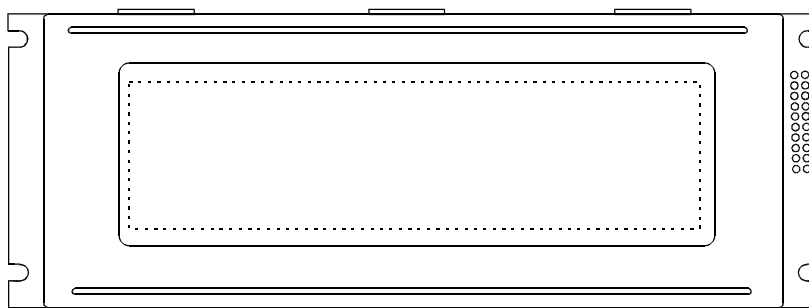


HANTRONIX

PRODUCT SPECIFICATION

HDM64GS24-2

240 x 64 GRAPHICS
LCD DISPLAY MODULE



HANTRONIX, INC. 10080 BUBB RD. CUPERTINO, CA 95014	Q.A.: JB	REV.: 1.0	HDM64GS24-2	SHEET 1 OF 9
				DATE: 12/15/97

2.Features

I t e m	S p e c i f i c a t i o n s
Number of dots	240(W) * 64(H) DOTS
Duty	1 / 64
BIAS	1 / 9
Type	STN-Positive
Display mode	Transflective-Gray
Viewing direction	6H
Input data	Serial
Backlight	EL (WHITE)

3.Mechanical specifications

I t e m	S p e c i f i c a t i o n s	Unit
Outline dimension	180.0(W) * 75.0(H) * 15.0 MAX(T)	mm
Viewing area	134.0(W) * 40.4(H)	mm
Active area	127.16(W) * 33.88(H)	mm
Dot size	0.49(W) * 0.49(H)	mm
Dot pitch	0.53(W) * 0.53(H)	mm

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2.Features

I t e m	S p e c i f i c a t i o n s
Number of dots	240(W) * 64(H) DOTS
Duty	1 / 64
BIAS	1 / 9
Type	STN-Positive
Display mode	Transflective-Grey
Viewing direction	6H
Input data	Parallel
Backlight	LED

3.Mechanical specifications

I t e m	S p e c i f i c a t i o n s	Unit
Outline dimension	180.0(W) * 65.0(H) * 15.0 MAX(T)	mm
Viewing area	134.0(W) * 40.4(H)	mm
Active area	127.16(W) * 33.88(H)	mm
Dot size	0.49(W) * 0.49(H)	mm
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4. Maximum rating

I t e m		Symbol	Min	Max	Unit	Note
Supply voltage	Logic	Vdd-Vss	-0.3	7.0	V	—
	LCD drive	Vdd-Vee	0	20	V	—
Input voltage		Vi	-0.3	Vdd+0.3	V	—
Operating temperature		Topr	-10	70	°C	—
Storage temperature		Tstg	-30	70	°C	—
Humidity		Hd	—	90	%RH	1

Note:1.No dew to be found.

5.Dc Electrical characteristics

(Vdd=+5V±10%,Vss=0V,Ta=25°C)

I t e m		Symbol	Condition	Min.	Typ	Max.	Unit
Supply voltage	Logic	Vdd	—	4.75	—	5.25	V
"H" input voltage		Vih	—	Vdd-2.2	—	Vdd	V
"L" input voltage		Vil	—	0	—	0.8	V
"H" output voltage		Voh	—	Vdd-0.3	—	Vdd	V
"L" output voltage		Vol	—	0	—	0.3	V
Supply current		Iop	Vdd=5v	—	13.8	25.0	mA
LCD driving voltage		Vlcd	Vdd-Vo	13.2	13.6	14.0	V

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6.Ac Electrical characteristics

(Vdd=+5V±10%,Vss=0V,Ta=25℃)

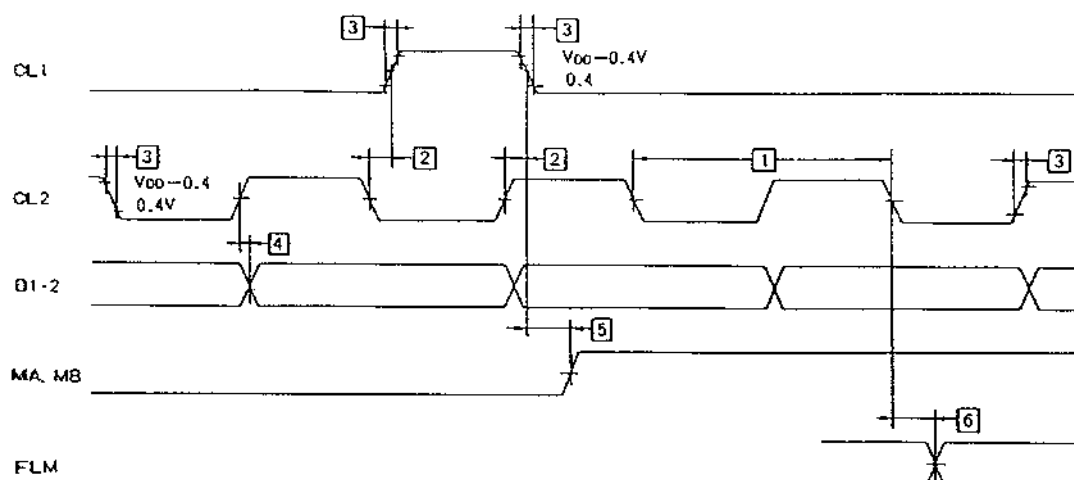
Read cycle

I t e m	Symbol	Conditions	Min.	Max.	Unit
C/D Set up time	tCDS	—	100	—	ns
C/d Hold time	tCDH	—	10	—	ns
$\overline{CE}$, $\overline{RD}$, $\overline{WR}$ Pulse width	tCE,tRD,tWR	—	80	—	ns
Access time	tACC	—	—	150	ns
Output hold time	tOH	—	10	50	ns

Write cycle

I t e m	Symbol	Conditions	Min.	Max.	Unit
C/D Set up time	tCDS	—	100	—	ns
C/D Hold time	tCDH	—	10	—	ns
$\overline{CE}$, $\overline{RD}$, $\overline{WR}$ Pulse width	tCE,tRD,tWR	—	80	—	ns
Data set up time	tDS	—	80	—	ns
Data hold time	tDH	—	40	—	ns

7. Timing characteristics

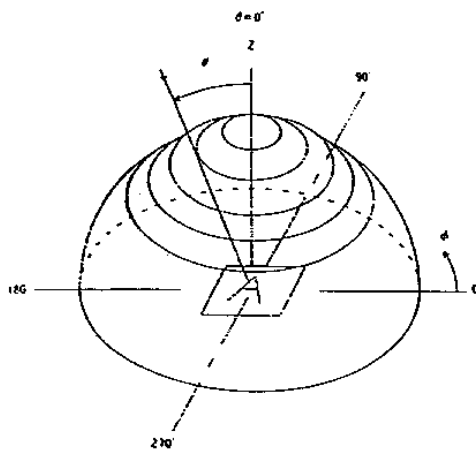


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9. Optical characteristics

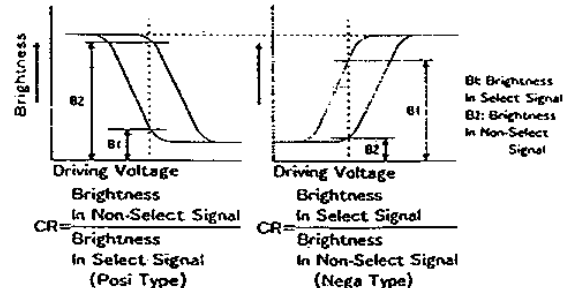
Parameter	Symbol	Temperature (°C)	Standard			Unit
			Min	Typ	Max	
Driving Voltage	V _{op}	0	9.5	10.0	10.5	V
Voltage		25	8.8	9.3	9.8	
V _{dd} -V _{lcd}		40	8.5	9.0	9.5	
Response time	T _r	0	-	450	650	ms
		25	-	150	250	
	T _f	0	-	1200	200	
		25	-	250	400	
Frame frequency	F _f			64		Hz
Viewing angle range	θ y1	25	-40			Degree
	θ y2		40			
	θ x1		40			
	θ x2		-30			
Contrast	K	25		5		

Ⓐ Definition of Viewing Angle θ and φ

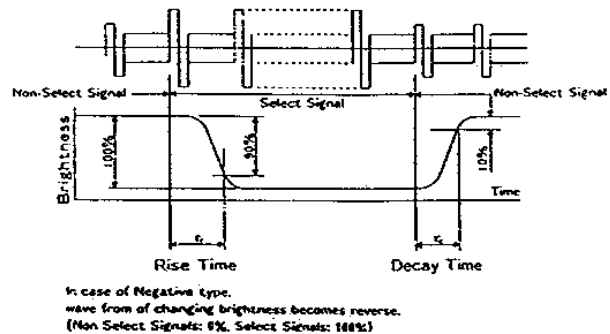


Definition of the viewing direction by the inclination THETA and the azimuth PHA (For reference axis see sub-clause 4.3 of Essential Ratings and characteristics.)

Ⓑ Definition of Contrast Ratio (CR)



Ⓒ Definition of Optical Response Time



1 O.EL Backlight characteristics

10-1.Maximum ratings

I t e m	Symbol	Maximum	Unit
Supply voltage	Vmax	150	Vrms
Supply frequency	Fmax	1000	Hz
Operating temperature	Topr	-20~+50	℃
Operating humidity	Hopr	90	%RH.
Storage temperature	Tstg	-40~+60	℃
Storage humidity	Hstg	70	%RH.

10-2.Using specification

I t e m	Specification	Unit
Operating voltag	100	Vrms
Frequency	400	Hz

10-3.Electrical characteristics

I t e m		Condition	Unit	Min	Typ	Max
Initiate intensity		(sinewave) VAC 100	cd/m ²	71	72.9	—
CIE color coordinate	X	Vrms		0.31 0.43		
	Y					
Current density		Freq 400	mA/cm ²	0.174		
Power density		Hz	mW/cm ²	—		
Color				WHITE		

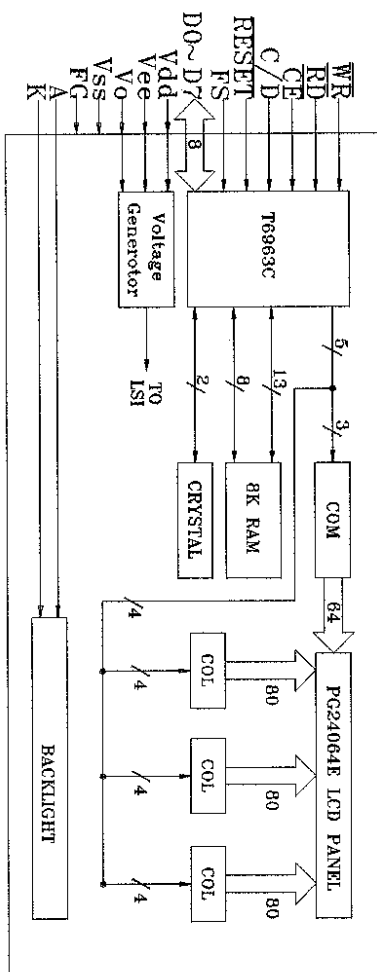
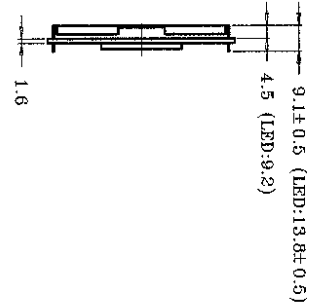
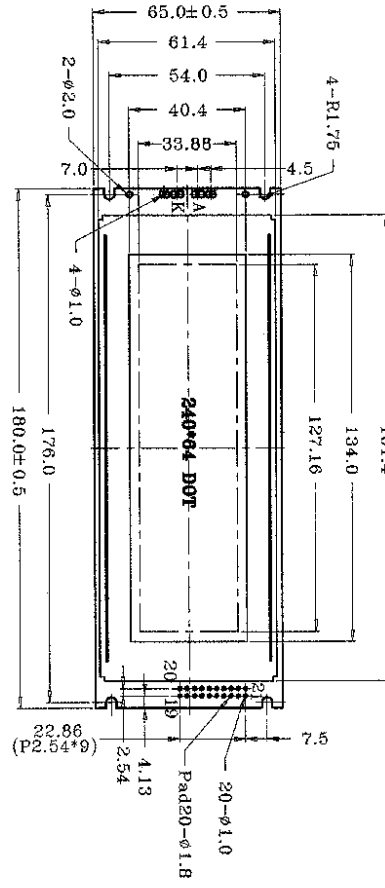
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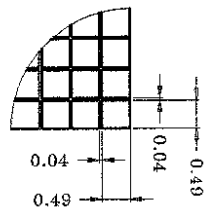
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The tolerance unless classified $\pm 0.3\text{mm}$

SCALE:10/1



PIN NO.	SIGNAL
1	FG
2	VSS
3	Vdd
4	Vo
5	WR
6	RD
7	CE
8	C/D
9	Vee
10	RESET
11	DB0
12	DB1
13	DB2
14	DB3
15	DB4
16	DB5
17	DB6
18	DB7
19	FS
20	N.C