UG - 32F01

■Features

Display Mode : Transmissive and Positive Type
Yellow-Green Mode LCD
Display Color : Display dots : Dark Blue
Background : Yellow-Green
Display Format : 320(W)×240(H) Full Dots
Input Data : 4-Bits Parallel Data
Input From a LCD Controller
Multiplexing Ratio : 1/240
Backlight : E/L(White)
Controller : *HD64646F(Hitachi)
*MSM6255(OKI)

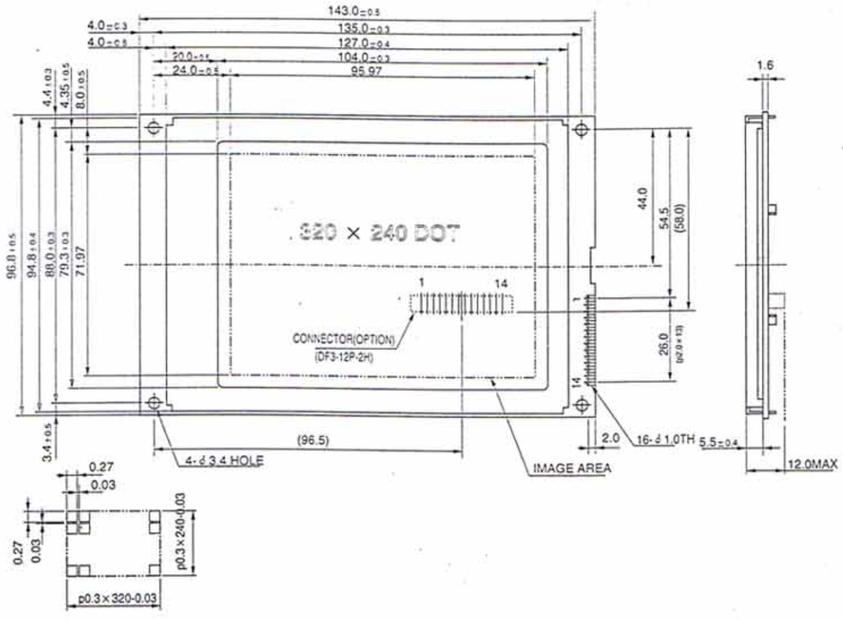
■Maximum Ratings

(Vss=0V)

Item		Symbol	Min.	Max.	Unit	Note
Supply Voltage	Logic	Vdd	0	6.5	V	
	LCD Drive	Vdd-Vee	0	26	V	
Input Voltage		Vi	0	Vdd	V	
Operating Temperature		Top	0	40	℃	
Storage Temperature		Tstg	-20	60	℃	
Humidity		-	-	90	%RH	1)

Note 1) Wet bulb temperature should be 28℃ max, and no condensation of water.

■Dimensional Drawing



■Electro-Optical Characteristics

(Vss=0V)

Item		Symbol	Condition	Min	Typ.	Max.	Unit
Supply Voltage	Logic	Vdd	-	4.75	5.0	5.25	V
	LCD Drive	Vdd-Vee		-	-	26.0	
Input Voltage	"H" Level	ViH	Vdd=5.0V±5%	0.8Vdd	-	Vdd	V
	"L" Level	ViL		0	-	0.2Vdd	
Frame Frequency		f-FLM	Vdd=5V	70	75	80	Hz
Current Consumption	Logic	Idd	Vdd=5V Vee-Vo=21.6V f-FLM=75Hz	-	4.6	6.2	mA
	LCD Drive	Iee		-	3.7	4.2	
LCD Drive Voltage (Recommend Voltage)		Vdd-Vee	Ta=0℃ Φ=0°, θ=0°	-	(23.4)	(23.6)	V
			Ta=25℃ Φ=0°, θ=0°	-	(21.6)	-	
			Ta=40℃ Φ=0°, θ=0°	(18.9)	(19.0)	-	
Response Time	Rise Time	Tr	Ta=25℃ Φ=0°, θ=0°	-	230	350	ms
	Decay Time	Td		-	300	450	
Viewing Angle		△Φ	θ=0°	40	-	-	deg
			θ=90°	40	-	-	
Contrast Ratio		K	Φ=0°, θ=0°	2.0	4.0	-	-

Note 1) Duty = 1/240
Note 2) All Dots on State

■I/O Connection

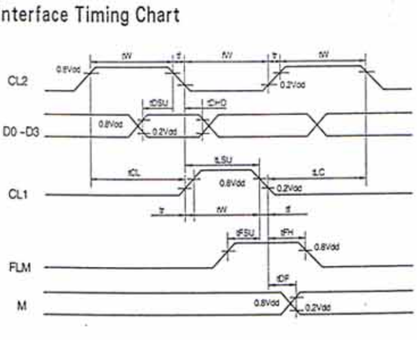
Pin No.	Symbol	Function
1	FLM	The Signal Indicate the Beginning of Each Frame
2	M	Alternate Signal for LCD Driving Waveform
3	CL1	Data Latch Pulse
4	CL2	Data Shift Clock Pulse
5	D. OFF	Display Off("H" = on, "L" = off)
6	D0	Diaplay Data Signal
∫	∫	
9	D3	
10	Vdd	Power Supply for Logic(+5V)
11	Vss	Signal Ground(GND)
12	Vee	Power Supply for LCD Drive(-V)
13	Vo	Operating Voltage for LCD Drive(Variable)
14	FG	Frame Ground

■Spec for E/L Back-Light

Item	Unit	Standard Value			Condition
		Min.	Typ.	Max.	
Supply Voltage	V	-	100	125	
Supply Frequency	Hz	-	400	400	
Initial Brightness	cd/㎡(NIT)	40	-	-	AC100Vrms, 400Hz, Dark Room
Current	mA	9.0±30%			AC100Vrms, 400Hz, Dark Room
Life Time	Hrs	3000			Note 1
Luminous Color	-	White			AC100Vrms, 400Hz, Dark Room
Operating Temp.	℃	-20~50			-
Storage Temp.	℃	-20~60			

Note 1) Half Value of Initial Brightness at 20℃ 60%RH

■Signal Timing Diagram

Item	Symbol	Condition	Min.	Max.	Unit
Max. Clock Frequency	f CL2	Vdd=5V±5% Vss=0V Ta=25℃	3.5	-	MHz
CL1/CL2 Pulse Width	tW		125	-	ns
Rise/Fall Time	tr, tf		-	30	
Data Set-Up Time	t DSU		80	-	
Data Hold Time	t DHD		80	-	
CL2 → CL1 Time	t CL		80	-	
CL1 Set-Up Time	t LSU		80	-	
CL1 → CL2 Time	t LC		80	-	
FLM Set-Up Time	t FSU		100	-	
FLM Hold Time	t FH		100	-	
M Signal Delay Time	t DF		-	200	

■Interface Timing Chart