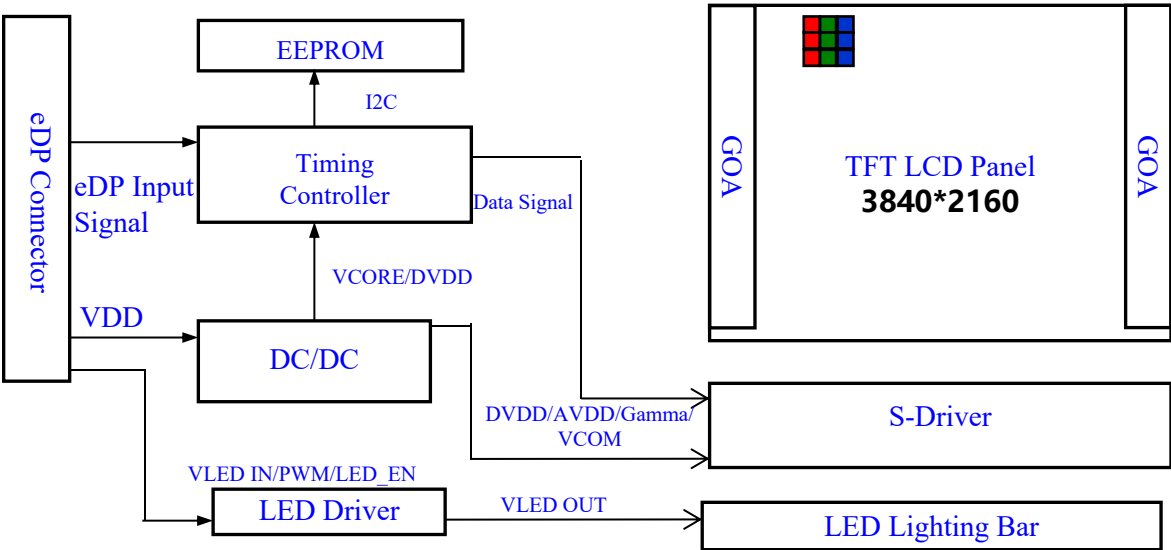


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1.0 GENERAL DESCRIPTION

1.0.1 Introduction

B3 ZV156QUM-N10-is a color active matrix TFT LCD module using amorphous silic on TFT's (Thin Film Transistors) as an active switching devices. This module has a 15.6 inch di agonally measured active area with UHD resolutions (3840 horizontal by 2160 vertical pixel arr ay). Each pixel is divided into RED, GREEN, BLUE dots which are arranged in vertical stripe an d this module can display 16.7 M colors.



1.0.2 Features

- 4 lane eDP interface with 5.4Gbps link rates
- 16.7M(8bit) color depthSingle

1.0.3 Application

- Portable display etc.

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1.0.4 General Specification

< Table 1. General Specifications >

Parameter	Specification	Unit	Remarks
Active area	345.6 (H) × 194.4 (V)	mm	
Number of pixels	3840(H) × 2160(V)	Pixels	
Pixel pitch	0.09(H) × 0.09 (V)	mm	
Pixel arrangement	RGB Vertical stripe		
Display colors	16.7M	Colors	6bit+FRC
Display mode	ADS		
Dimensional outline	352.4 (H) × 206.9(V) × 2.7(D) .	mm	
Typical luminance	600	Cd/m2	
Surface treatment	AG		

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2.0 ABSOLUTE MAXIMUM RATINGS

The followings are maximum values which, if exceed, may cause faulty operation or damage to the unit. The operational and non-operational maximum voltage and current values are listed in Table 2.

< Table 2. Environment Absolute Maximum Ratings> [Ta =25 ± 2 °C]

Parameter	Symbol	Min.	Max.	Unit	Remarks
Power Supply Input Voltage	VCC	0.3	6	V	Environment Temperature
Operating Temperature	T _{OP}	0	50	°C	
Storage Temperature	T _{ST}	-10	60	°C	

Note:
1.When the ambient temperature is T °C, the surface temperature of Panel can not exceed (T+15)°C.

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3.0 ELECTRICAL SPECIFICATIONS

3.0.1 TFT LCD Module

< Table 3. LCD Module Electrical Specifications > [Ta =25 ± 2 °C]

Parameter	Sym bol	Values			Unit	Notes
		Min	Typ	Max		
Power Supply Input Voltage	V _{DD}	3.0	3.3	3.6	V	Note 1
Power Supply Current	I _{DD}	-	TBD	TBD	mA	
Power Supply inrush Current	I _{nrush}	-	-	3	A	
Positive-going Input Threshold Voltage	V _{IT+}	-		+300	mV	V _{com} =0.55V typ.
Negative-going Input Threshold Voltage	V _{IT-}	-300		-	mV	
Differential input common mode voltage	V _{com}	0.45	0.55	0.65	V	V _{IH} =100mV, V _{IL} =-100mV

Notes : 1. The supply voltage is measured and specified at the interface connector of LCM.
The current draw and power consumption specified is for 3.3V at 25 °C
Max value at Black Pattern

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3.2 Back-light Unit

< Table 4. LED Driving guideline specifications > Ta=25+/-2°C

Parameter		Min.	Typ.	Ma x.	Un it	Remarks	
Power supply voltage for Back light		V _{LED}	-	30	-	V	
Power supply Current for Back light		I _{LED}	-	150	-	mA	
Power supply for Back light		P _{LED}	-	4.5	-	W	Note 1
EN Control L evel	Backlight on	V _{ENH}	1.2	-	-	V	EN logic high volt age
	Backlight off	V _{ENL}	-	-	0.6	V	EN logic low volta ge
PWM Contro l Level	PWM High Lev el	V _{PML}	1.2	-	-	V	
	PWM Low Lev el	V _{PML}	-	-	0.6	V	
PWM Control Frequency		F _{PWM}	0.1	-	1600	KHz	
Duty Ratio		-	5	-	100	%	

Notes : 1. Calculator Value for reference $I_{LED} \times V_{LED} = P_{LED}$

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4.0 INTERFACE CONNECTION.

4.0.1 Electrical Interface Connection

The electronics interface connector is MSAK24025P40G.

The LED connector is MSK24022P10D

The connector interface pin assignments are listed in Table 6 and 7.

<Table 6. Pin Assignments for the Interface Connector>

Terminal	Symbol	Functions
Pin No.	Symbol	Description
1	NC	No Connection
2	H_GND	Ground
3	LANE3_N	eDP RX Channel 3 Negative
4	LANE3_P	eDP RX Channel 3 Positive
5	H_GND	Ground
6	LANE2_N	eDP RX Channel 2 Negative
7	LANE2_P	eDP RX Channel 2 Positive
8	H_GND	Ground
9	LANE1_N	eDP RX Channel 1 Negative
10	LANE1_P	eDP RX Channel 1 Positive
11	H_GND	Ground
12	LANE0_N	eDP RX Channel 0 Negative
13	LANE0_P	eDP RX Channel 0 Positive
14	H_GND	Ground
15	AUX_CH_P	eDP AUX CH Positive
16	AUX_CH_N	eDP AUX CH Negative
17	H_GND	Ground
18	LCD_VCC	LCD logic and driver power(3.3V)
19	LCD_VCC	LCD logic and driver power(3.3V)
20	LCD_VCC	LCD logic and driver power(3.3V)
21	LCD_VCC	LCD logic and driver power(3.3V)
22	BIST	BIST signal pin
23	LCD_GND	LCD logic and driver ground
24	LCD_GND	LCD logic and driver ground
25	LCD_GND	LCD logic and driver ground
26	LCD_GND	LCD logic and driver ground
27	HPD	HPD signal pin
28	BL_GND	Backlight ground

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4.0 INTERFACE CONNECTION.

4.0.1 Electrical Interface Connection

The electronics interface connector is MSAK24025P40G.

The LED connector is MSK24022P10D

The connector interface pin assignments are listed in Table 6 and 7.

<Table 6. Pin Assignments for the Interface Connector>

Terminal	Symbol	Functions
Pin No.	Symbol	Description
29	BL_GND	Backlight ground
30	BL_GND	Backlight ground
31	BL_GND	Backlight ground
32	BL_ENABLE	Backlight ON/OFF
33	BL_PWM_DIM	System PWM Signal Input
34	NC	No Connection
35	NC	No Connection
36	BL_PWR	Backlight power
37	BL_PWR	Backlight power
38	BL_PWR	Backlight power
39	BL_PWR	Backlight power
40	NC	No Connection

<Table 7. Pin Assignments for the LED Connector>

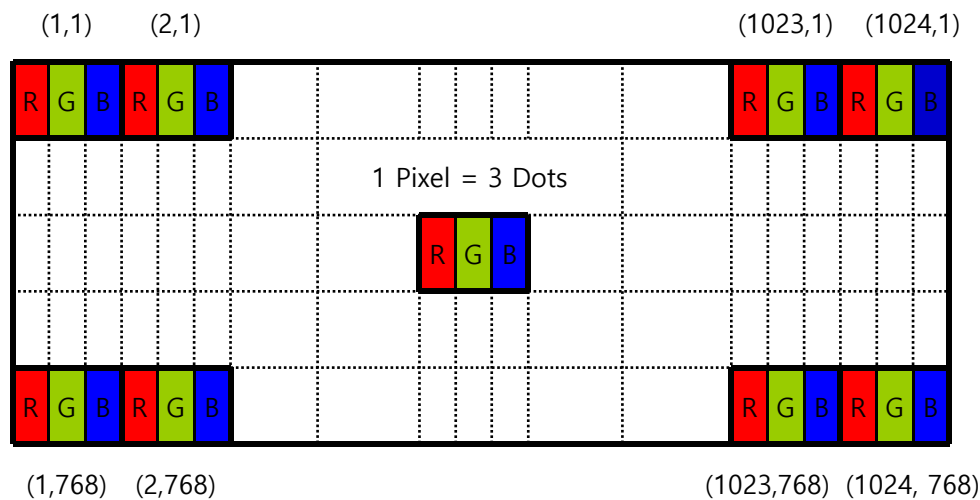
Termin al	Symbol	Functions
Pin No.	Symbol	Description
1	LED	LED Channel Positive
2	LED	LED Channel Positive
3	LED	LED Channel Positive
4	LED	LED Channel Positive
5	LED	LED Channel Positive
6	LED	LED Channel Positive
7	GND	Backlight ground
8	NC	No Connection
9	Vout	LED Out Negative
10	Vout	LED Out Negative

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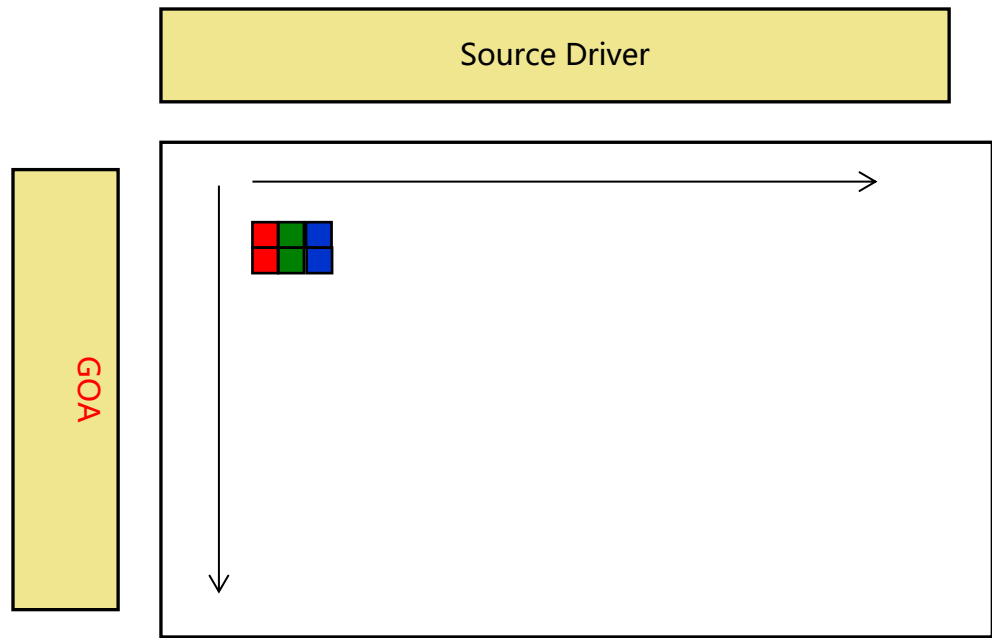
4.1 Data Input Format

Figure 5. Pixel Format



Display Position of Input Data (V-H)

Figure 6. Scan direction



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4.2 eDP Interface

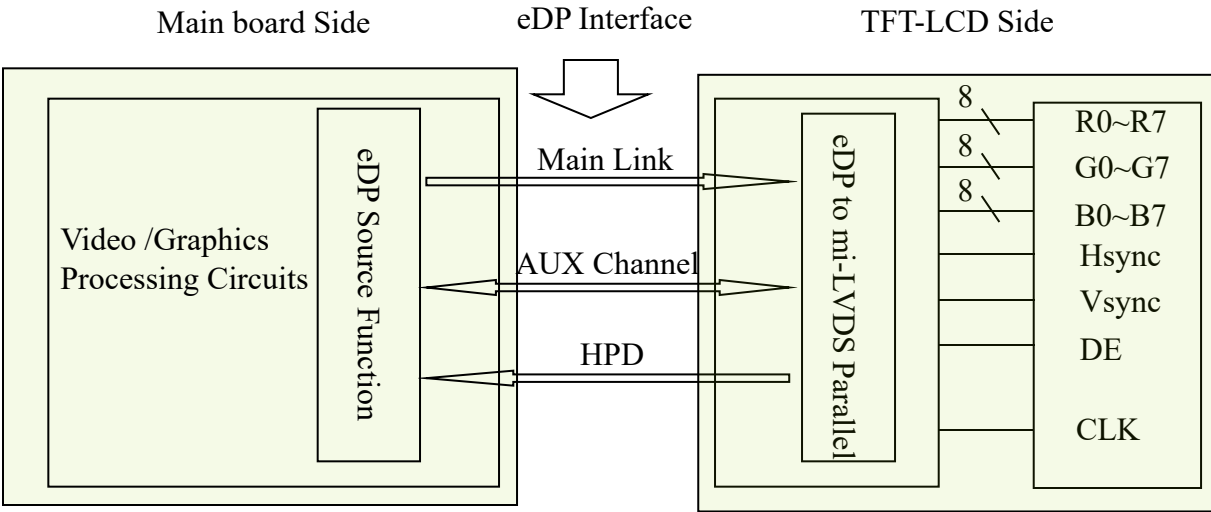


Figure 12. eDP Interface Architecture