AND-TFT-5RQ

320 x 234 Pixels
LCD Color Monitor

The AND-TFT-5RQ is a compact full color TFT LCD module, that is suitable for applications such as a portable television (PAL and NTSC) and a display for monitors. The display features 2 analog RBG inputs, allowing the user to switch between video sources. This device con-sists of a twisted nematic (TN) liquid crystal cell, that incor-porates a TFT-array that has 320 x 234 pixels on a 5-inch diagonal screen, X and Y drivers, an LSI controller, and a built-in CCFL backlight and inverter.

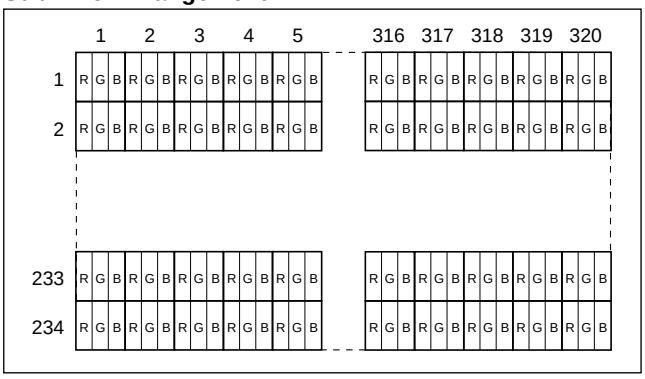
Features

- Analog RGB (0.7Vp-p) Input
- 5 inch (13 cm) diagonal screen
- High brightness CCFL backlight (300 Nits)
- Built-in CCFL inverter
- Allows 2 RGB Inputs
- Operating temperature range –0 to 50° C
- Storage temperature range –40 to 85° C
- 7.5V single power supply
- Low specular reflection.

Mechanical Characteristics

Item	Specification	Unit
Screen Size	5 inch (13 cm) diagonal	
Outline Dimensions	120.5 typ. (W) x 89.6 (H) x 20.0 max. (D)	mm
Active Area	101.6 (W) x 74.7 (H)	mm
Drive System	a-Si TFT Active matrix, A line at a time Non-Interlace Drive	
Pixel Number (RGB trio)	320 (W) x 234 (H)	–
Sub Pixel No.	960 (W) x 234 (H)	–
Sub Pixel Arrangement	RGB stripe	–
Pixel Pitch	0.318 (W) x 0.318 (H)	mm

Sub Pixel Arrangement



Absolute Maximum Rating

Item			Symbol	Conditions	Absolute Maximum Rating		Unit
					Min.	Max.	
Supply Voltage	for Video Circuit		VCC	Ta = 25°C	VSS -0.2	11.0	V
	for Backlight Inverter		VBL	Ta = 25°C	VSS -0.2	9.0	V
Input Signal Voltage	Video	Analog RGB	VR, VG, VB	Ta = 25°C, VCC = 7.5V VBL = 7.5V	–	1.5	Vp-p
	Composite sync.		CSYNC		–	1.5	Vp-p
	Others		BRT, VSW, U/D, L/R OSR, OSG, OSB		VSS -0.2	VDD +0.2	V
Operating Temperature			Top	–	0	50	°C
Storage Temperature			Tstg	–	-40	85	°C
Humidity (No condensation of water)			–	–	10	90	% RH

Note: Operating temperature range of the TFT-LCD module surface is -30 to +85°C. However, heat from the backlight will narrow the range.

Electrical Specification

Item		Symbol	Conditions	Specifications			Units
				Min.	Typ.	Max.	
Current Consumption	for Video Circuit, Backlight Inverter	ICC, IBL	DIM = Max.	–	0.56	–	A
Output Voltage		VDD	VCC = VBL = 7.5V	–	5.0	–	V
Output Current		IDD	VCC = VBL = 7.5V	–	2.0	20.0	mA
Vertical display start start position		Vpos	NTSC (59.94Hz)	–	22	–	H
			PAL (50.00Hz)	–	27	–	H
Vertical display term		Vdis	NTSC (59.94Hz)	–	234	–	H
			PAL (50.00Hz)	–	281	–	H
Horizontal display start position		Hpos	NTSC (15.73kHz)	–	9.35	–	µs
			PAL (15.63kHz)	–	10.14	–	µs
Horizontal display term		Hdis	NTSC (15.73kHz)	–	50.01	–	µs
			PAL (15.63kHz)	–	50.69	–	µs

(Ta = RT, VSS = 0V)

Recommended Operating Conditions

Item			Symbol	Conditions	Specifications			Unit
					Min.	Typ.	Max.	
Supply Voltage	for Video Circuit		VCC	–	7.0	7.5	8.0	V
	for Backlight Inverter		VBL	–	7.0	7.5	8.0	V
Input Signal Voltage	Video	Analog RGB	VR, VG, VB	75Ω	–	0.7	–	Vp-p
	Composite sync.		CSYNC	75Ω	–	1.0	–	Vp-p
	Others		BRT, VSW, U/D, L/R, OSR, OSG, OSB	Level “H”	4.6	–	VDD	V
				Level “L”	VSS	–	0.4	V
Frame Frequency			fVDN	NTSC	58	59.94	62	Hz
			fHDN		15.2	15.7	16.2	kHz
Color Sub-carrier Frequency			fCOLOR	NTSC	3.579395	3.579545	3.579695	MHz
Color Sub-carrier Amplitude			VCOLOR	NTSC	40	–	–	mV

Optical Specifications

Item	Symbol	Conditions	Specifications			Unit
			Min.	Typ.	Max.	
Contrast Ratio	CR	RGB = 0/0.7V	30	100	–	–
Maximum Luminance	LUM	Dim = 3.90V, RGB = 0.7V	220	300	–	cd/m^2
Viewing Angle	ϕ L/ ϕ R	RGB = 0/0.7V	–	45/45	–	deg
	ϕ U/ ϕ D		–	30/15	–	deg

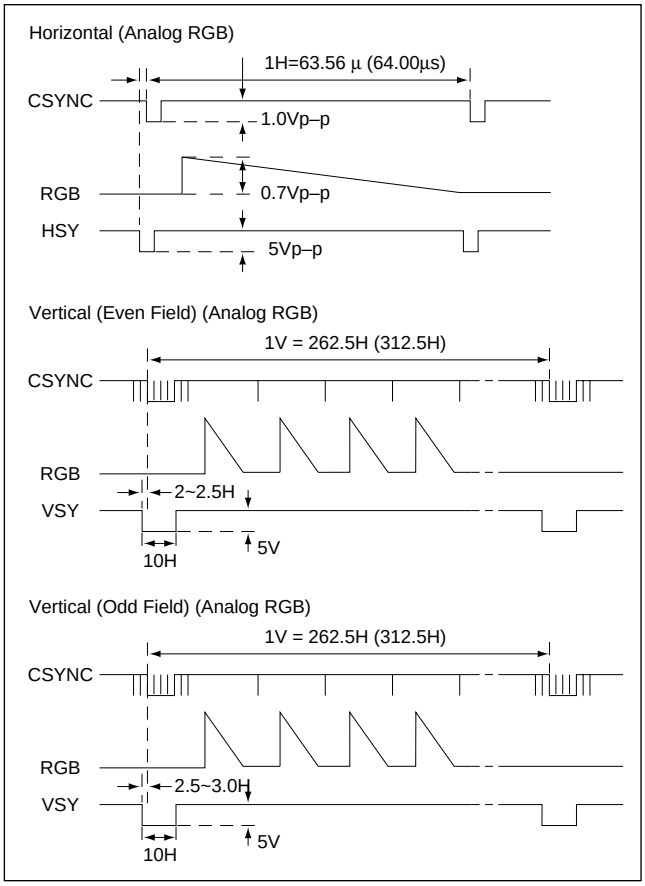
Interface Pin Assignment (Video Signals)
Connector: 52207-1490 (Molex)

Pin No.	Symbol	Function		Input/ Output
1	NC	No Connect		–
2	GND	Ground (0V)		–
3	SYNC1	Composite Sync.Input 1	Negative 1.0Vp-p, 75Ω	Input
4	R1	Video Input R1	(0.7Vp-p, 75Ω)	Input
5	G1	Video Input G1	(0.7Vp-p, 75Ω)	Input
6	B1	Video Input G1	(0.7Vp-p, 75Ω)	Input
7	GND	Ground (0V)		–
8	$\overline{HSY}$	Horizontal Sync. Output	(Negative, C-MOS)	Output
9	$\overline{VSY}$	Vertical Sync. Output	(Negative, C-MOS)	Output
10	SYNC2	Composite Sync.Input 2	Negative 1.0Vp-p, 75Ω	–
11	R2	Video Input R2	(0.7Vp-p, 75Ω)	–
12	G2	Video Input G2	(0.7Vp-p, 75Ω)	–
13	B2	Video Input G2	(0.7Vp-p, 75Ω)	–
14	GND	Ground (0V)		

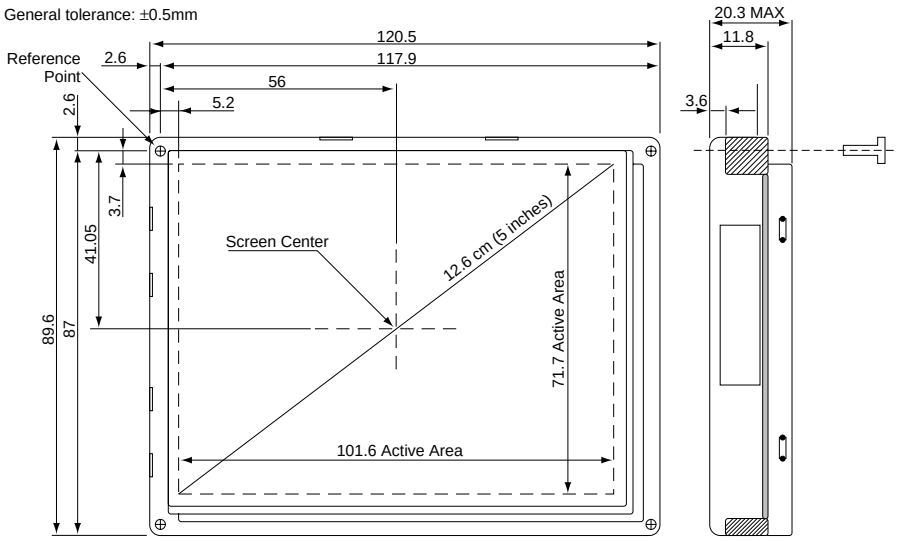
Interface Pin Assignment (Power and Control Signals)
Connector: & 52207-1890 (Molex)

Pin No.	Symbol	Function		Input/ Output
1	VCC1	Power Supply 7.5 for Backlight		Input
2				
3	GND	Ground (0V) for Backlight		–
4				
5	VCC2	Power Supply 7.5V for Video Circuit		Input
6	GND	Ground (0V) for Video Circuit		–
7	NC	No Connect		–
8	SSW	Sync. Signal Selection	(0V: RGB1, 5V: RGB2)	Input
9	GND	Ground (0V)		–
10	VDD	5V Output for Control Terminals		Output
11	$\overline{L}$/R	Scanning Direction Switch	0V: Left to Right 5V: Right to Left	Input
12	$\overline{U}$/D	Scanning Direction Switch	0V: Up to Down 5V: Down to Up	Input
13	GND	Ground (0V)		–
14	BRT	Brightness Control	(0V to 5V)	Input
15	DIM	Dimmer Control		Input
16	NC	No Connect		–
17	NC	No Connect		–
18	NC	No Connect		–
19	VSW	Video Signal Selection	(0V:RGB1, 5V:RGB2)	
20	N/P	NTSC/PAL Selection	(OV:NTSC, 5V:PAL)	

Timing Diagram



Dimensional Outline



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