

# TFT

## Ultracompact Liquid crystal modules

September/1998



SEIKO EPSON CORPORATION



# Vivid reproduction of brightness

## EPSON TFT Ultracompact Liquid Crystal Modules

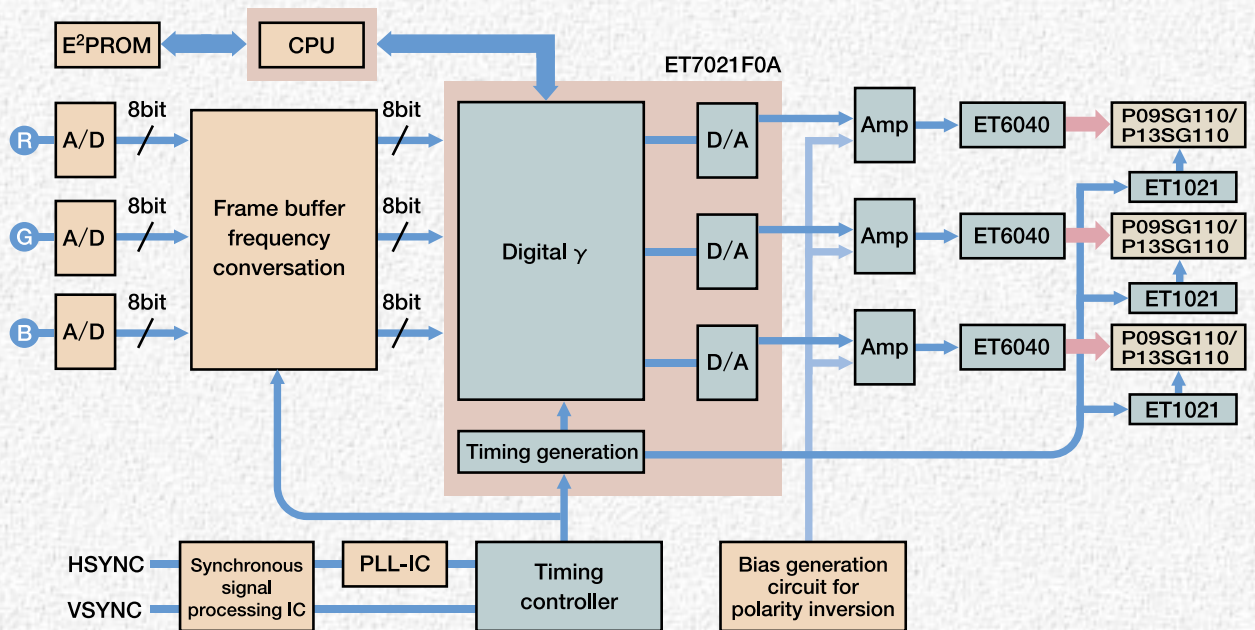
With polysilicon TFT technology, liquid crystal driver can be integrated  
Ultracompact, high pixel density and high quality image  
Natural color reproduction in normally white mode  
High contrast display provided by active matrix technology



# ●Block diagram of the TFT drive circuit

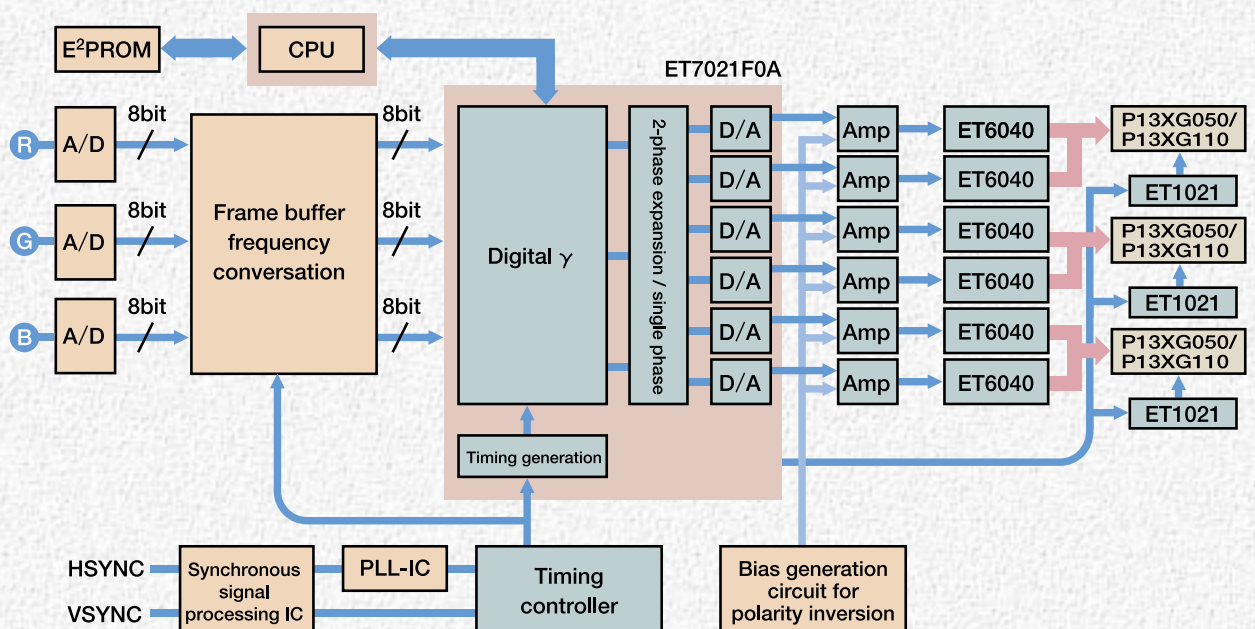
## 1 P09SG110/P13SG110 0.9"/1.3" SVGA panel (Digital $\gamma$ correction)

- 6-phase expansion using "analog sample and hold IC".
- Digital  $\gamma$  correction (8-bit input to 10-bit processing, lookup table system using E<sup>2</sup>PROM).
- The video line offset need not be adjusted (6-phase expansion).
- To input the video signal that exceeds 40 MHz, use the frame buffer to convert frequencies.



## 3 P13XG050/P13XG110 1.3" XGA panel (Digital $\gamma$ correction)

- 12-phase expansion using "analog sample and hold IC"  $\times$  2.
- Digital  $\gamma$  correction (8-bit input to 10-bit processing, lookup table system using E<sup>2</sup>PROM).
- To input the video signal that exceeds 65 MHz, use the frame buffer to convert frequencies.





# EPSON TFT MODULE

		P09SG110	P13SG110	P13XG110	P13XG050
<b>Features</b>		0.9-inch	1.3-inch	1.3-inch	1.3-inch
		Dustproofed	Dustproofed	Dustproofed	Dustproofed
					Micro lens included
		SVGA display	SVGA display	XGA display	XGA display
<b>Screen size</b>	<b>Diagonal</b>	1.9cm (0.9")	3.3cm (1.3")	3.3cm (1.3")	3.3cm (1.3")
	<b>Width × height</b>	18.5 × 13.9	26.4 × 19.8	26.6 × 20.0	26.6 × 20.0
<b>Number of dots</b>	<b>Horizontal × vertical</b>	804 × 604	800 × 600	1024 × 768	1024 × 768
<b>External dimensions</b>	<b>Width × height × depth (mm)</b>	31.0 × 32.0 × 6.0	38.0 × 42.0 × 6.2	38.0 × 42.0 × 6.2	38.0 × 42.0 × 6.2
<b>Number of display colors</b>		Monochrome analog	Monochrome analog	Monochrome analog	Monochrome analog
<b>Display mode</b>		Normally white	Normally white	Normally white	Normally white
<b>Contrast ratio (room temperature)</b>		Over 200:1	Over 200:1	Over 200:1	Over 200:1
<b>Operating temperature (°C)</b>		0 to 70	0 to 70	0 to 70	0 to 70
<b>Storage temperature (°C)</b>		-30 to 80	-30 to 80	-30 to 80	-30 to 80
<b>Dot layout</b>		Square lattice	Square lattice	Square lattice	Square lattice

※These modules are custom made products, and made changes without notice.

## Peripheral LSI Lineup

### ① Device type IC Lineup

	P09SG110 P13SG010		P13XG110 P13XG050	
	Digital $\gamma$ correction	Analog $\gamma$ correction	Digital $\gamma$ correction	Analog $\gamma$ correction
<b>Video processor IC</b>	ET7021F0A	-	ET7021F0A	-
<b>RGB driver IC</b>	-	ET5020S0A	-	ET5020S0A
<b>Timing control IC</b>	ET7021F0A	ET2081F0A	ET7021F0A	ET2081F0A
<b>Sample/Hold IC</b>	ET6040S0A	ET6050S0A	ET6040S0A	ET6050S0A
<b>Interface IC</b>	ET1021F0A	ET1021F0A	ET1021F0A	ET1021F0A
<b>Block diagram</b>	1	2	3	4

### ② List of IC Specifications

	ET7021F0A	ET5020S0A	ET6040S0A	ET6050S0A	ET1021F0A
<b>Package shape</b>	QFP	QFP	QFP	QFP	QFP
<b>Number of pins</b>	176	52	80	64	80
<b>Spacing (mm)</b>	0.5	0.65	0.65	0.8	0.5
<b>Ext. dimensions (mm)</b>	24 × 24	10 × 10	14 × 14	14 × 14	12 × 12

**TFT**

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