

DESCRIPTION OF BLOCK DIAGRAM (LB680A)

1. Video Amp & PLL & A/D Converter Circuit

AD9884 (U5) is one chip IC which it supports three function block of Video Amp, PLL and A/D converter. Video signal (0.7Vp.p) clamped through C63, 64, 65 inputs to U5's R, G, and B pins. This signal is processed as a proper 8 bit digital signals for input of MX88L282 (U1) by U5's amplifying, phase locking, and A/D converting operation.

U5 generates clock and horizontal sync for MX88L282 (U1) with D-sub (J1)'s input horizontal sync signal. MX88L282 (U1) 's clamp output makes U1 keep video signal's black level constantly regardless of various input video signals.

2. Macronix Circuit (Scaler chip)

The MX88L284 (U1) gets the video signal converted analog to digital from U5, and carries out four function of image processing that interpolates input signal less than 1280*1024 resolution to that of 1280*1024 resolution, displays one to one image without interpolation, mixes OSD(On Screen Display) signal by interfacing with internal OSD IC, and controls two memories(U6, 7, 8) as frame converter.

U1 outputs signals of HSYNC-OUT, VSYNC-OUT, DEN, CLKA, CLKB and each 8 bit R, G, B to transmitter ICs (U2, 11).

3. Memory Circuit

2M byte SDRAM(U6, 7, 8) is used as a frame converter for supporting up to 85 Hz frame rate and controlled by MX88L282(U1).

The control signals are CKA, CLK, UDOM, LDOM, /WE, /CAS, /RAS, /CS, /BA.

4. LVDS(Low Voltage Differential Signal) Circuit

LVDS transmitters (U2, 11) deliver digital signal to the receiver inside LCD module by method of abstraction. The abstracted signals are pairs of Y0+-, Y1+-, Y2+-, Y3+- and CLK +- of which voltage swing is 0.5V each. Its swing is similar to TMDS (Transition Minimized Differential Signal).

Transmitter (U2, 11) gets signals of HSYNC-OUT, VSYNC-OUT, DEN, CLKA, CLKB from U1, and outputs LVDS through YX pins.

When Shuton pin's input is low, transmitter goes to power down mode.

5. System Controller (Microprocessor) Circuit

1) Microprocessor (U4) distinguishes polarity and frequency by calculating horizontal and vertical sync input from signal source.

2) Microprocessor (U4) carries out power control by sending power-down trigger signal to each IC.

U1, U2, U5, U11 and U15 has PD(Power-down) pin which operates at active-low or high.

It also outputs signal to turn inverter on and off for lamp control.

3) Microprocessor (U4) communicates with EEPROM (U3), AD9884 (U5), and MX88L282 (U1) through IIC(2 lines) or 8 bit bus line. It makes all devices operated properly with communication channel.

4) Microprocessor (U4) let User adjust screen by each OSD function.

6. DC/ DC Converter

This circuit supplies DC power for each device needing DC voltage of 3.3VA, 3.3VD, 3.3VD1, 3.3VD2, PVD_ADC, 5VA, and 5VST.

L2596(U15), the DC/DC controller IC converts input 24Vdc into 5VAdc with peripheral circuit composed of Inductor (L9), Condensing components (ZD6, C127, C190) and Regulators (U16, U19, U20, U23, U24).

5VST is supplied for Microprocessor through regulators (U12, U14) and makes Microprocessor alive.

MODPWR 3.3V for LCD module power is switched by Q6, switching FET, controlled by Microprocessor.

LB680A Block Diagram

