WT9101

Video Amplifier System with OSD & DACs

Data Sheet
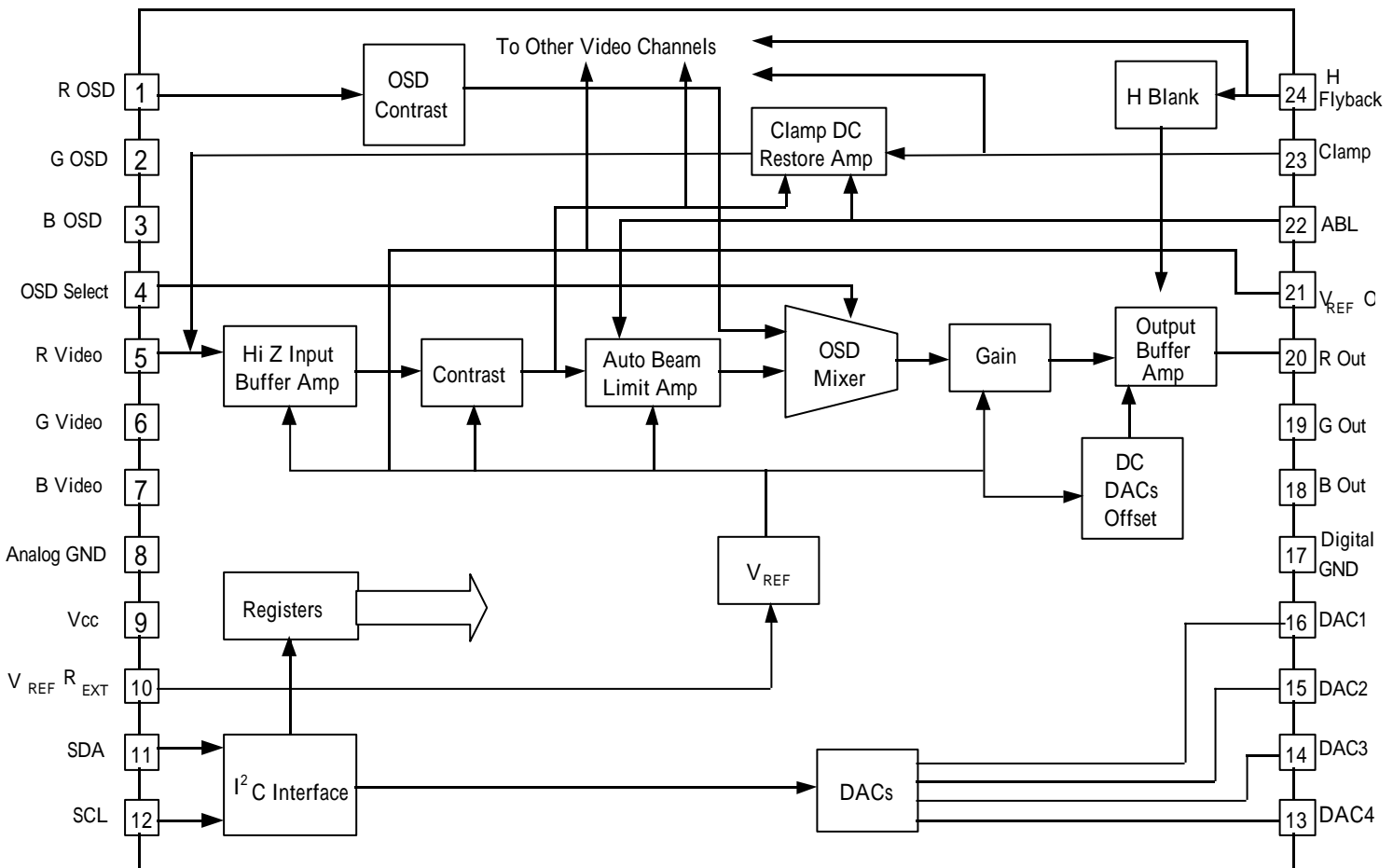
Preliminary

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GENERAL DESCRIPTION

The WT9101 pre-amp is an integrated CMOS CRT pre-amp. The IC is I²C compatible, and allows control of all the parameters necessary to directly setup and adjust the gain and contrast in the CRT display. Brightness and bias can be controlled through the DAC outputs. Black level clamping of the signal is carried out directly on the AC coupled input signal into the high impedance preamplifier input, thus eliminating the need for the additional black level clamp capacitors. The IC is packaged in an industry standard 24-lead DIP molded plastic package.

FEATURES

- 110 MHz bandwidth preamplifier with full video signal parametric control.
- I²C compatible interface to micro-controller.
- 4 external 8-bit DACs for bus controlled Bias and brightness.
- On Screen Display(OSD) mixing.
- Auto Beam current limiting.
- Suitable for use with discrete or integrated clamp, with software configurable brightness mixer.
- Power Save (Green) Mode, 80% power reduction.

BLOCK DIAGRAM and CONNECTION DIAGRAM

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PIN DESCRIPTION

Pin No.	Pin Name	Description
1 2 3	Red OSD Input Green OSD Input Blue OSD Input	These inputs accept standard TTL or CMOS inputs. Each color is either fully on (logic high) or fully off (logic low). Unused pins should be connected to ground with a 47k resistor.
4	OSD Select	This input accepts a standard TTL or CMOS input. H = OSD L = Video Connect to ground with a 47k resistor if not using OSD.
5 6 7	Red Video In Green Video In Blue Video In	Video inputs. These inputs must be AC coupled with a 0.047µF cap. DC restoration is done at these inputs. A series resistor of about 33 and external ESD protection diodes should also be used for ESD protection.
8	Analog Ground	Ground Pin for the analog circuits of the WT9101
9	Vcc	Power supply pin for WT9101
10	$V_{REF}R_{EXT}$	Sets the internal current sources through a 10 k 1% external resistor. Resistor value and accuracy is critical for optimum operation of the WT9101
11	SDA	The I^2C data line. A pull-up resistor of about 2 should be connected between this pin and +5V. A 300 resistor should be connected in series with the data line for protection against arcing.
12	SCL	The I^2C Clock line. A pull-up resistor of about 2k should be connected between this pin and +5V. A 300 resistor should be connected in series with the clock line for protection against arcing.
13 14 15 16	DAC4 DAC3 DAC2 DAC1	DAC outputs for cathode cut-off adjustments and brightness control. DAC 4 can be set to change the outputs of the other three DACs, acting as the brightness control. The DACS are set through the I^2C bus.
17	Digital Ground	Ground Pin for the digital circuits of the WT9101
18 19 20	Blue Video Out Green Video Out Red Video Out	Video outputs of the WT9101. The ideal driver for this part is CRT driver, which has the necessary gain of 26 dB or 20 V/V.
21	$V_{REF}Out$	A 0.1µF capacitor must be placed close to this pin for decoupling the internal Vref. This pin may be used for an external voltage reference with proper buffering
22	ABL	The Auto Beam Limit control reduces the gain of the video amplifier in response to a control voltage proportional to the CRT beam current. The ABL acts identically on all three channels. ABL is required for CRT life and X-ray protection

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Pin No.	Pin Name	Description
23	Clamp Pulse	This input accepts a standard TTL or CMOS input. A positive signal activates the clamp pulse for DC restoration of the video input. The AC coupling capacitors at the video inputs are used for holding the DC correction voltage, eliminating the need for additional capacitors
24	H Flyback	H flyback is an analog signal input from the monitor horizontal scan. The WT9101 is able to generate an accurate blanking pulse in the video outputs from this input. The horizontal flyback from the monitor must be a clean signal, with no ringing or other noise on the signal