T310

On Screen Display Mixer

P R E L I M I N A R Y

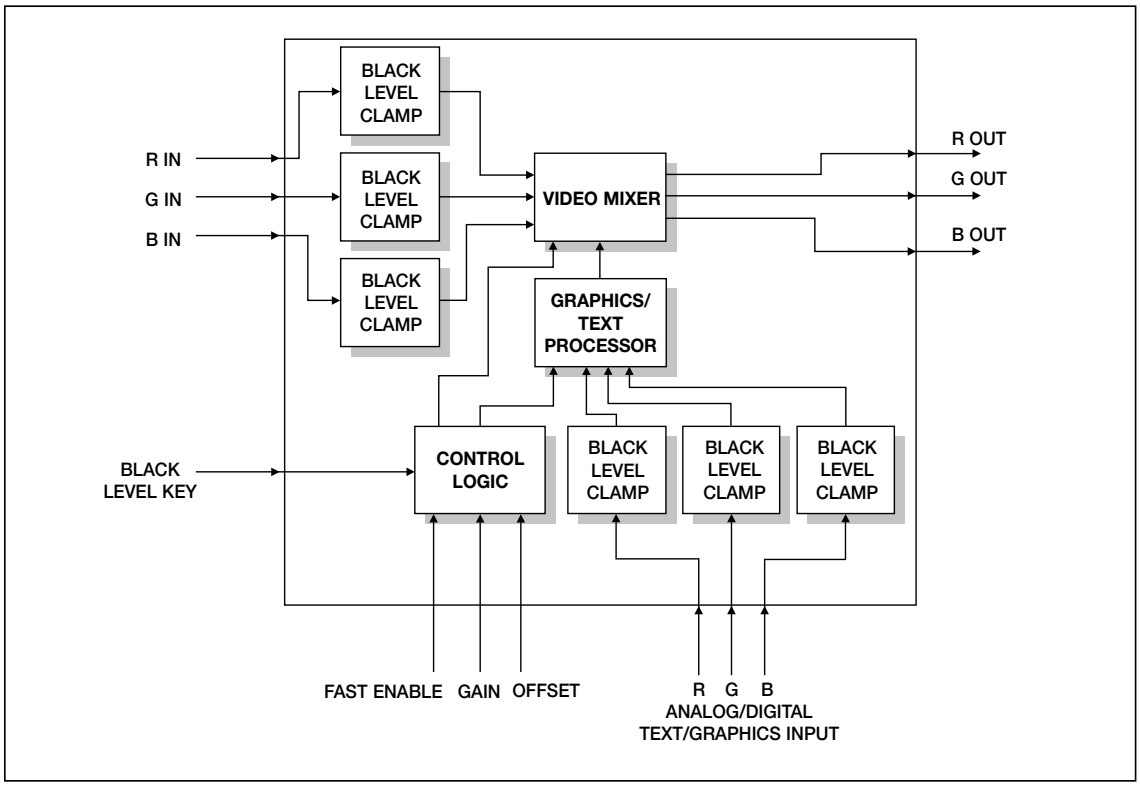
GENERAL DESCRIPTION

TLSI's family of Video Circuits is ideally suited for a wide range of applications in which cost, size, power and the number of discrete components need to be minimized. T310 ICs bring modern functionality to video applications requiring text or graphics insertion. The analog transparent mode modulates the video with the text or graphics input so the video is not totally obscured. The resulting video is adjustable in contrast and level so a flexible range of overlays is possible. YUV inputs are accommodated using an external black level key.

FEATURES

- Transparent Mode
- Programmable Gain and Offset
- RGB/YUV Inputs
- Supply Voltage 3.0V to 5.5V
- Operating Temperature -40°C to +85°C
- Power Less than 250 mW
- Applications: TVs, set-top boxes, VCRs, Personal Video Recording and Internet TV

BLOCK DIAGRAM



ISO9001 A8898

tlsi Silicon Driven™

ABSOLUTE MAXIMUM RATINGS*

* Operation of the device at or beyond these specifications may result in permanent damage or affect operation and reliability of the product.

PARAMETER	CONDITIONS	UNITS
Supply Voltage	V_{SS} - 0.5 ≤ V_{DD} ≤ 5.5	V
DC Input Voltage	V_{SS} - 0.5 ≤ V_{IN} ≤ V_{DD} + 0.5	V
DC Output Voltage	V_{SS} - 0.5 ≤ V_{OUT} ≤ V_{DD} + 0.5	V
Storage Temperature	-65 < T_S < +150	°C
Ambient Temperature	-40 < T_A < +85	°C
Junction Temperature	-65 < T_J < +125	°C
Soldering Temperature	T_{SLDR} < 260 for less than 10 seconds	°C

ELECTRICAL CHARACTERISTICS

DC CHARACTERISTICS

V_{DD} = 5.0V, -40°C < T_A < +85°C unless otherwise specified

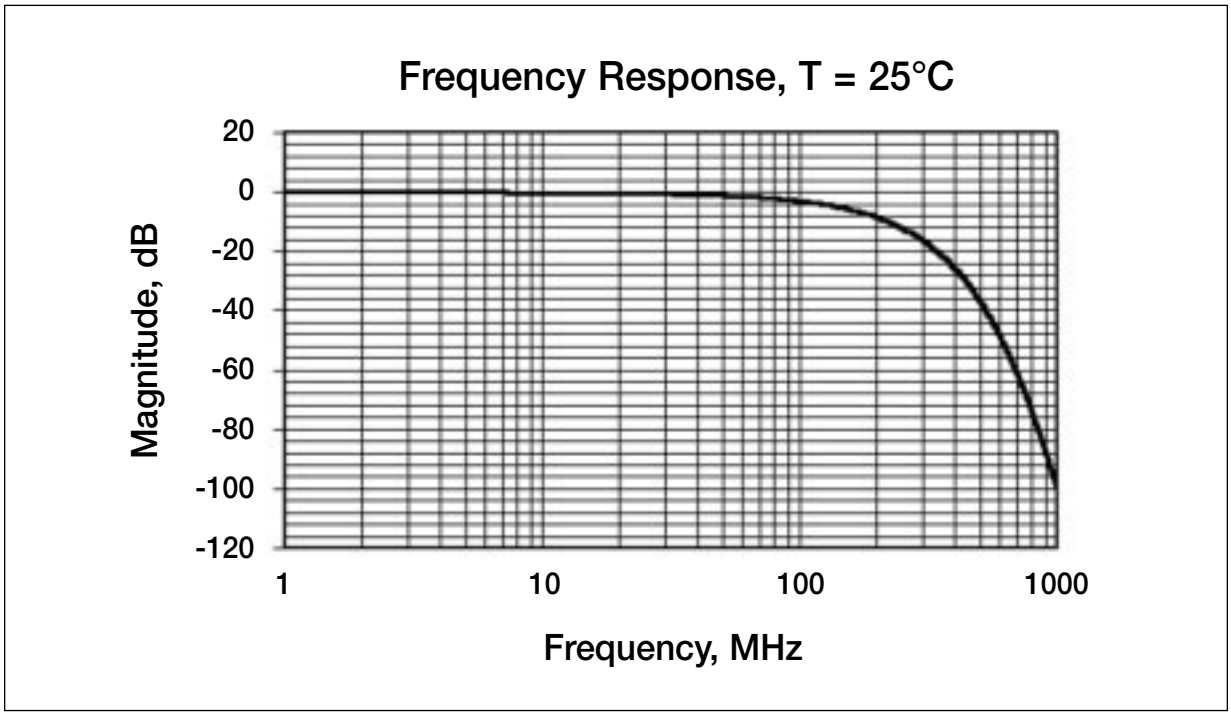
PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
Supply Voltage		V_{DD}	4.5	5.0	5.5	V
High-Level Control Input Voltage		V_{IH}	4.0			V
Low-Level Control Input Voltage		V_{IL}			1.0	V
Fast Enable		I_{IH}			1.0	µA
Fast Enable		I_{IL}		-10.0		µA
Supply Current	C_L=5pF	I_{DD}			25.0	mA
Output Black Level			1.0			V
Input Bias Current			15.0			µA
Short-Circuit Output Source Current	< 20 seconds	I_{OSH}		-20.0		mA
Short-Circuit Sink Current	< 20 seconds	I_{OSL}		20.0		mA

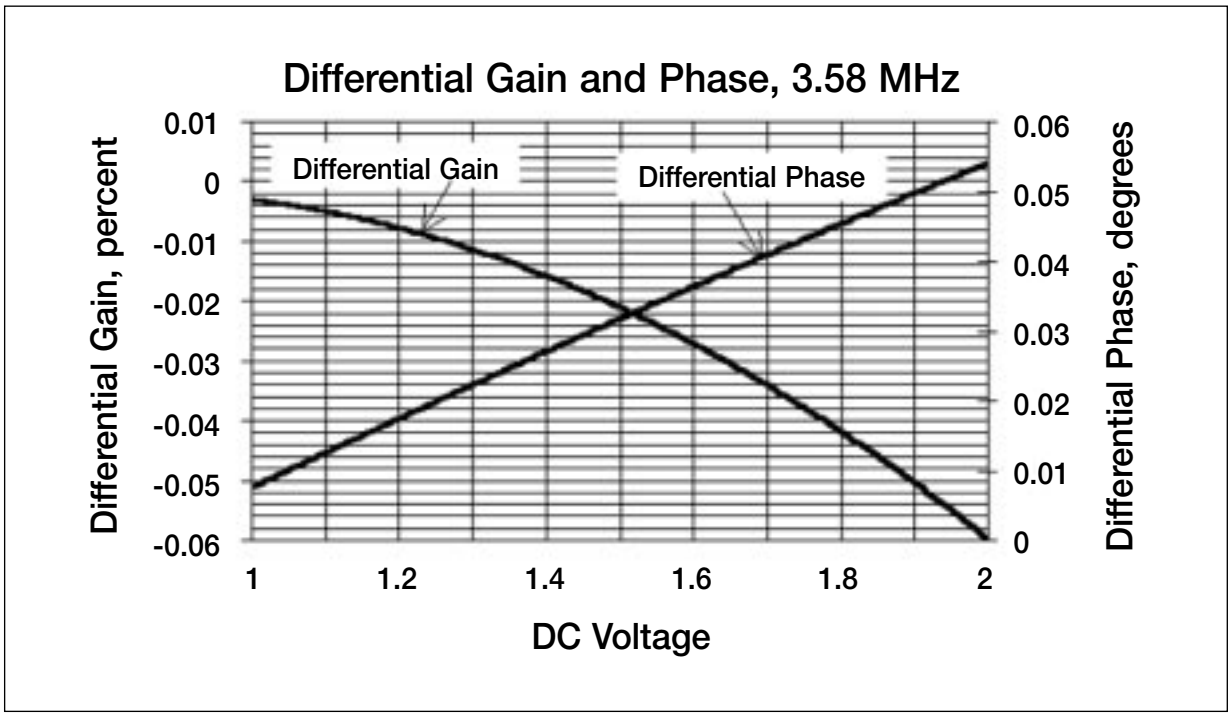
AC CHARACTERISTICS

V_{DD} = 5.0V, -40°C < T_A < +85°C unless otherwise specified

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
RGB/YUV Input Level		V_{IN}		1		V_{PP}
RGB/YUV Output Level	Load=1000 ohms	V_{OUT}		2		V_{PP}
RGB/YUV Output Level	Load=75 ohms (see test circuit)	V_{OUT}		1		V_{PP}
Bandwidth		BW		50		MHz
Fast Enable Switching Time				10		nS
Output Rise and Fall Time	C_L=5pF	t_r,t_f		7		nS
Input Capacitance				1.5		pF

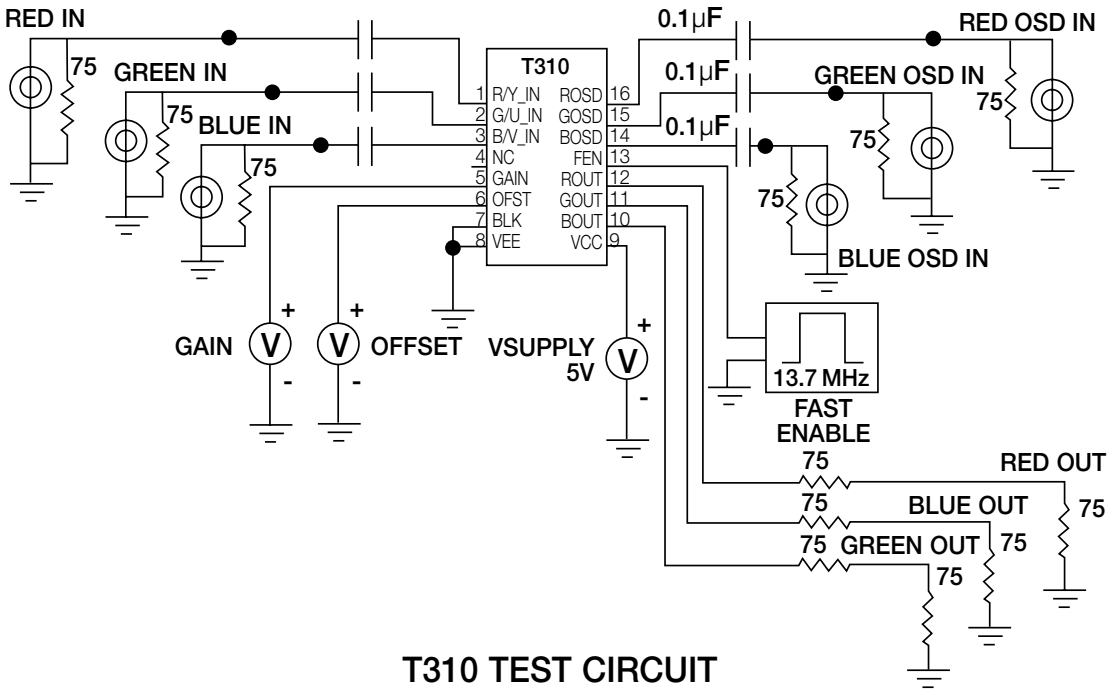
GRAPHS OF TYPICAL OPERATING CONDITIONS





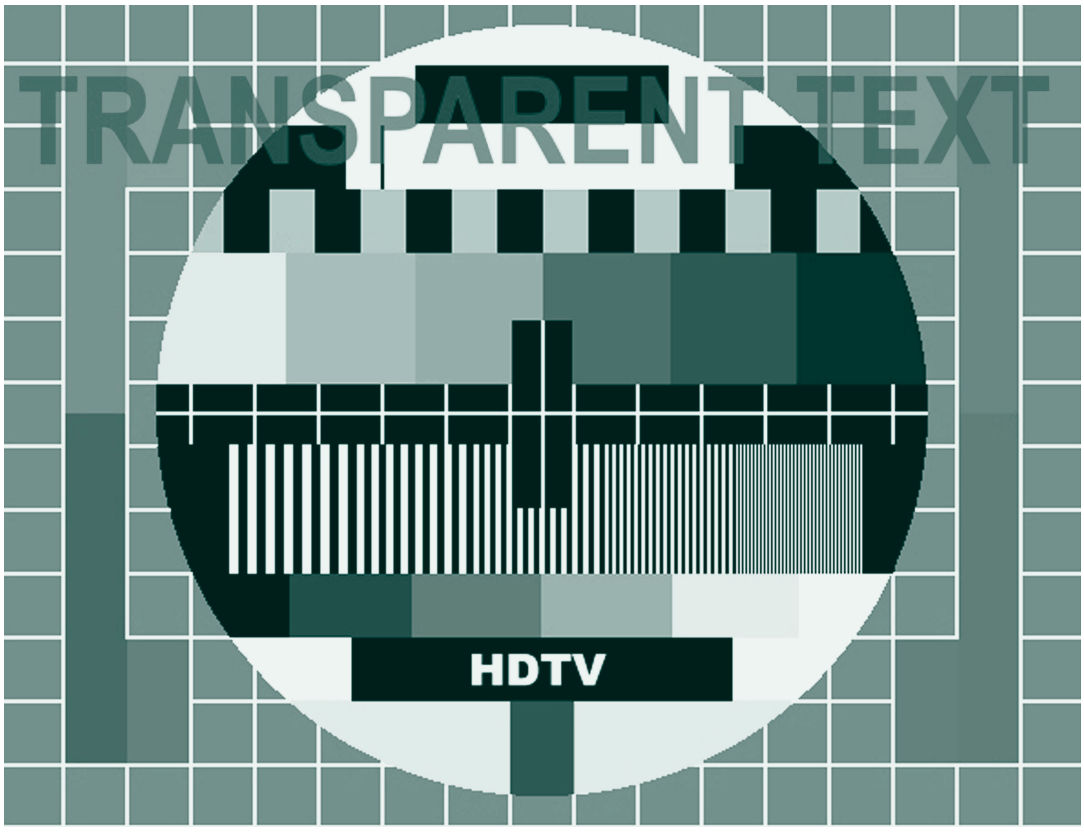
TEST CIRCUIT SCHEMATIC

Pin number assignments are subject to change.



T310 TEST CIRCUIT

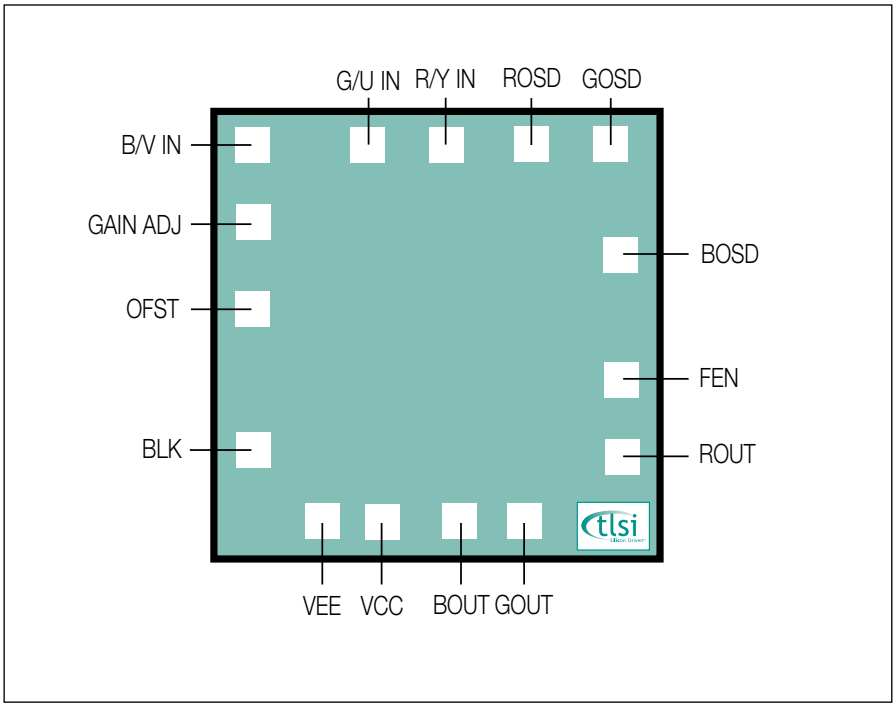
TRANSPARENT VIDEO



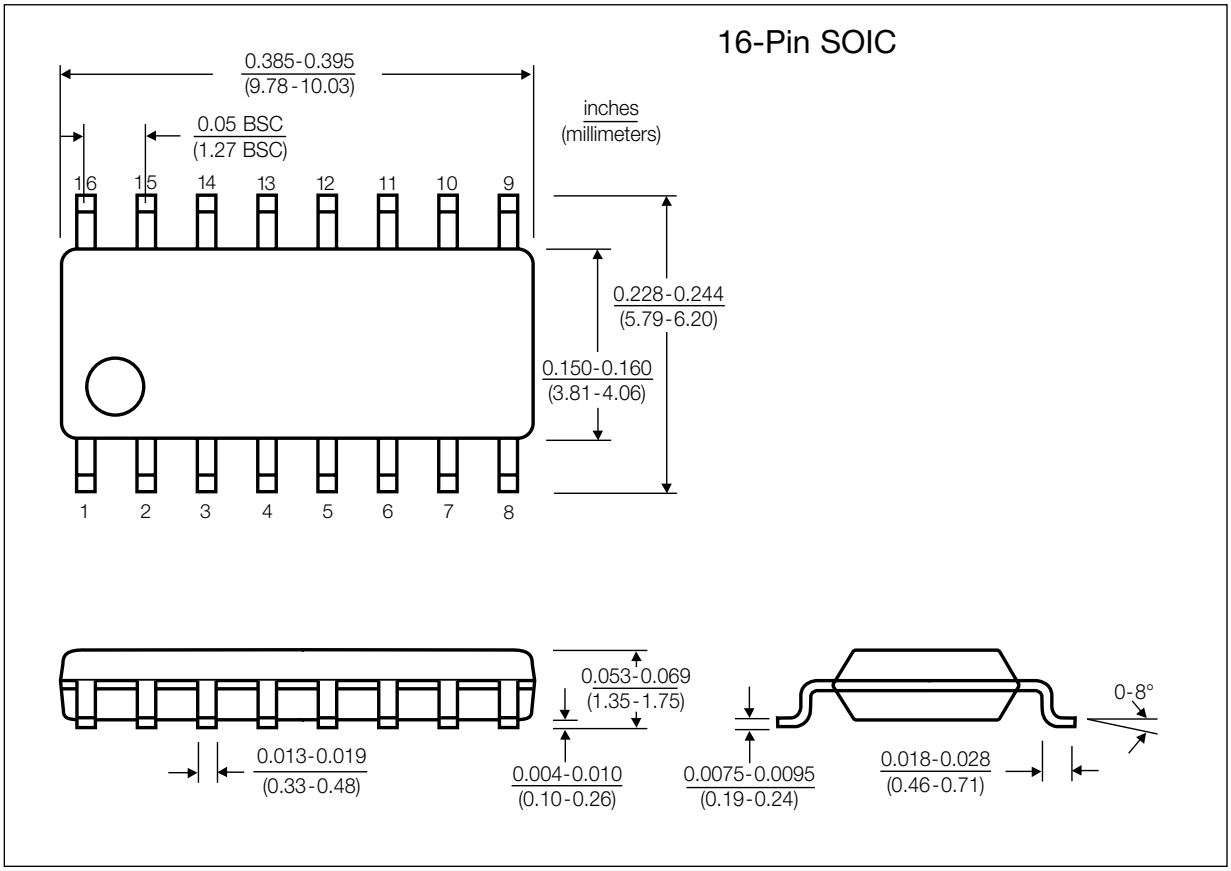
Text transparency can be varied to suit the application.

DIE CONFIGURATION

Pin number assignments are subject to change.



PACKAGE INFORMATION



PIN FUNCTIONS

Pin functions subject to change.

NUMBER	NAME	FUNCTION
1	R/Y IN	Video Input, Line 1
2	G/U IN	Video Input, Line 2
3	B/V IN	Video Input, Line 3
4	NC	No Connection
5	GAIN ADJ	OSD Gain Adjustment
6	OFST	OSD Offset Adjustment
7	BLK	Black Level Key Input
8	VEE	Power Supply Reference (normally ground)
9	VCC	Power Supply (nominally 5V)
10	BOUT	Video Output, Line 3
11	GOUT	Video Output, Line 2
12	ROUT	Video Output, Line 1
13	FEN	Fast Enable Input
14	BOSD	OSD Input, Line 3
15	GOSD	OSD Input, Line 2
16	ROSD	OSD Input, Line 1

ORDERING INFORMATION

PART NUMBER	ORDERING CODE	PACKAGE	SHIPPING FORM
T310	T310-T	16-Pin SOIC	Tube
T310	T310-TR	16-Pin SOIC	Tape and Reel
T310	T310-DP	Die	Probed Wafer
T310	T310-DW	Die	Waffle Pack

TLSI Incorporated, 770 Park Avenue, Huntington, NY 11743 • 631-755-7005 • Fax 631-755-7626 • www.tlsi.com