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DS16EV5110-EVKD
DVI Extender Demo Kit for DVI Cables

General Description

The DS16EV5110-EVKD DVI Cable Extender Demo Kit provides a complete DVI system extension solution using National's DS16EV5110 - a Video Equalizer.

Two Molex DVI connectors are used as the input and the output connections for a single or dual link DVI system. This version of the kit demonstrates a single link DVI system.

The Analog Pins of a typical DVI link (R, G, B, Hsync, and Vsync) are not connected. The DDC signals, Hot Plug, 5V Power and 5V Ground are directly connected between the DVI connectors, making this demo kit HDCP compliant.

A 3.3V VCC 1-pin header (J4) and a GND 1-pin header (J5) are used for the power supply.

Alternately, an AC/DC power adapter (>800mA) is required for the evaluation kit to provide 5V DC voltage for easy portability. A 1.8mm DC Power Jack is used to connect the AC/DC Power Adapter. National's LP3964, a 3.3V, 800mA, Fast, Ultra Low Dropout Linear Regulator, converts the 5V power supply voltage to a 3.3V power supply voltage that powers the DS16EV5110.

Features

- **Compatible with DTV Resolutions 480i, 480p, 720i, 720p, 1080i, 1080p (8 bit, 10 bit, 12 bit color depth)**
- **Compatible with Computer Resolutions of VGA, SVGA, XGA, SXGA, UXGA**
- **Supports TMDS DVI or HDMI Single Link**
- **Adjustable rotary switch for easy custom EQ boost level setting to reach maximum length of TMDS Interface with Twisted Pair , HDMI, or DVI Cables**
- **Single 3.3V Supply**
- **Ultra Portable with AC/DC Power Adapter (not included in the kit)**
- **500 mW Typical Power Consumption**
- **8kV ESD Rating**
- **-40 to 85C Industrial Temperature Range**
- **The DS16EV5110 demo kit extends TMDS with the 28 AWG STP DVI cable as follows**:

	Resolution	Pixel bandwidth (MPixel/s) 60Hz LCD with 5% blanking	Per channel bandwidth (Gb/s) 60Hz LCD with 5% blanking	DVI Cable Length
VGA	640X480	19.35	0.1935	> 45m
SVGA	800X600	30.24	0.3024	> 40m
XGA	1024X768	49.5	0.495	> 35m
SXGA	1280X1024	82.5	0.825	> 30m
UXGA	1600X1200	121	1.21	> 25m
HDTV	1920X1080	130.6	1.3	> 25m

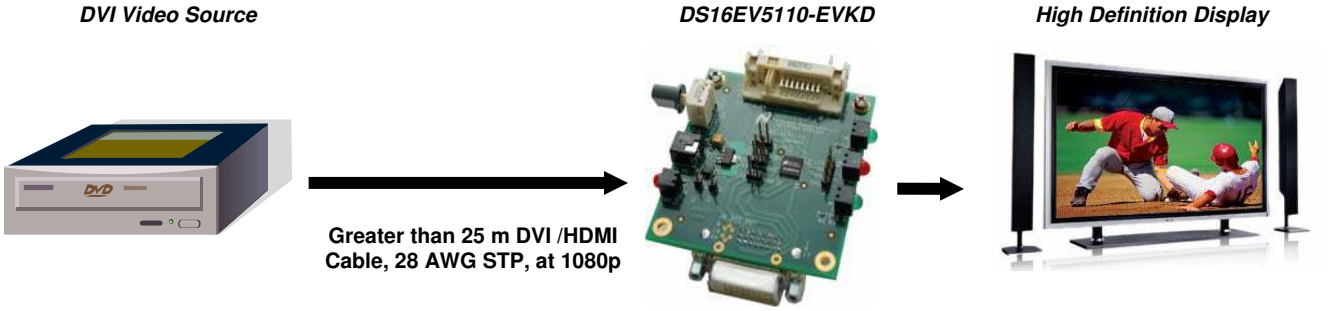
Applications

High Definition Displays and Televisions
High Definition Front- Projectors
LCD Computer Monitors
DVI-D/HDMI Cable Extender

Ordering Information

PART: DS16EV5110SQ
DVI Demo Board for DVI Cables: DS16EV5110-EVKD

Typical Applications



Bill of Materials

DESIGNATION	QTY	DESCRIPTION
C2, C4, C8, C10	4	0.01uF ±10% Ceramic Capacitor 0402
C1, C3, C7, C9, C11	5	0.1uF ±10% Ceramic Capacitor 0402
C5	1	33uF ±10% Ceramic Capacitor 3528
C6	1	68uF ±10% Ceramic Capacitor 3528
D1	1	LED Green
D2	1	LED Red
R1, R2	2	453 ohm ±5% Resistor 0402
R3	1	1.1K ohm ±5% Resistor 0402
R7	1	10K ohm ±5% Resistor 0402
J1, J2	2	DVI-I Receptacle Female
J3	1	DC Power Jack 1.8 mm
J4, J5	2	1 pin header (J4: VDD=3.3V, J5:GND)
J7, J8, J10, J11	4	1X2 pin header
J9	1	1X4 pin header
U1	1	National DS16EV5110
U2	1	National LP3964 – 3.3V -800mA
U3	1	94HBB08RAT Rotary Dip Switch

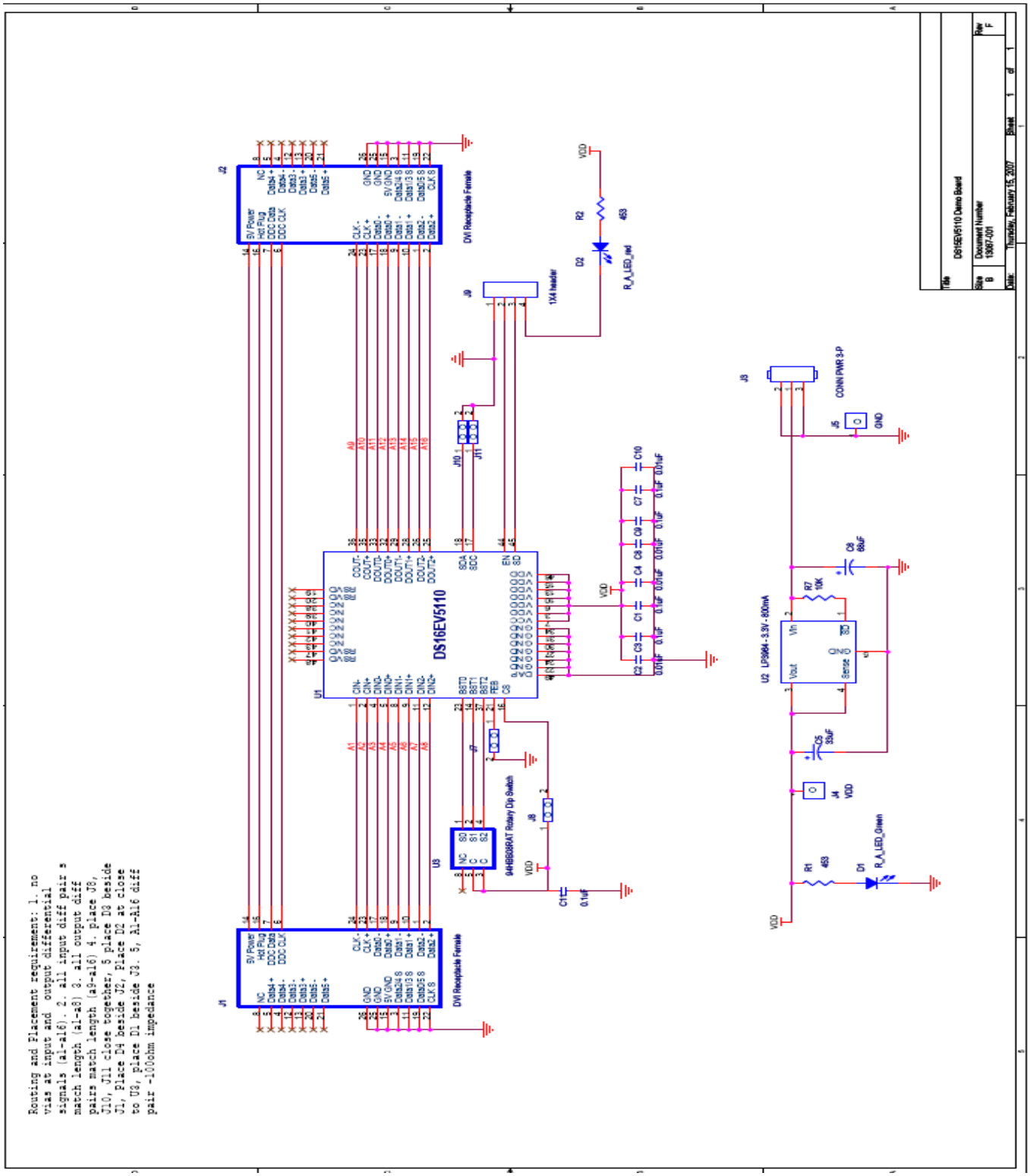
Quick Start Guide:

1. Connect 3.3V DC power to J4 and ground to J5 from the power supply.
   Or, plug the AC/DC power adapter to the DC power Jack
   AC/DC power adapter requirement: Output DC 4V~6V, Output current > 800mA
2. Attach two HDMI cables to the HDMI Input and Output Connectors
3. Turn on the DVD/Computer and the Monitor/HDTV.

Adjustment and Control Description

Component	Name	Function
D1	PWR	The LED turns on when 5V DC applies
D2	SD	The LED turns on when the DS16EV5110 does not detect clock signal
J3	5V DC	Optional DC Power Jack for 1.5 mm Adaptor Plug
J4	3.3V	3.3V VCC power supply
J5	GND	GND
J7	FEB	Optional SMBus Control. See Datasheet.
J8	CS	Optional SMBus Control. See Datasheet
J10, J11	SDA, SDC	Optional SMBus access. See Datasheet
J9	Loop Back Control	Connect “LED” and “SD” to enable D2 function. Connect “SD” and “EN” to enable look back control function. When the clock signal is not detected, the DS16EV5110 sets to power down mode.
U3	Rotary Switch	Turn the switch to control the EQ boost setting. “0” on the switch refers to the boost setting of “0X00”, “7” on the switch refers to the boost setting of “0X07”. See datasheet for detail Boost setting information.

Schematics



Layout Considerations

- Keep the clock and data transmission lines as short as possible with controlled 50 ohm single-ended impedance. Or, use differentially coupled traces with 100 ohm impedance.
- Avoid using vias on the clock and data transmission lines on the input side of the DS16EV5110.
- Place power supply decoupling capacitors close to the VCC pins.