**National Semiconductor**
*The Sight & Sound of Information*

# DS22EV5110-EVKH
# HDMI Extender Demo Kit for HDMI Cables

## General Description

## Features

- 480i, 480p, 720i, 720p, 1080i, 1080p
- 3.3 V
- 0 to 70°C

## Applications

## Ordering Information
**PART:** DS22EV5110Q
**HDMI Demo board:** DS22EV5110-EK

**DS22EV5110-EVKH Demo Board ID: 551600199-042**

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## Repeater Applications



HDMI Video Source          DS22EV5110-EVKH          High Definition Display
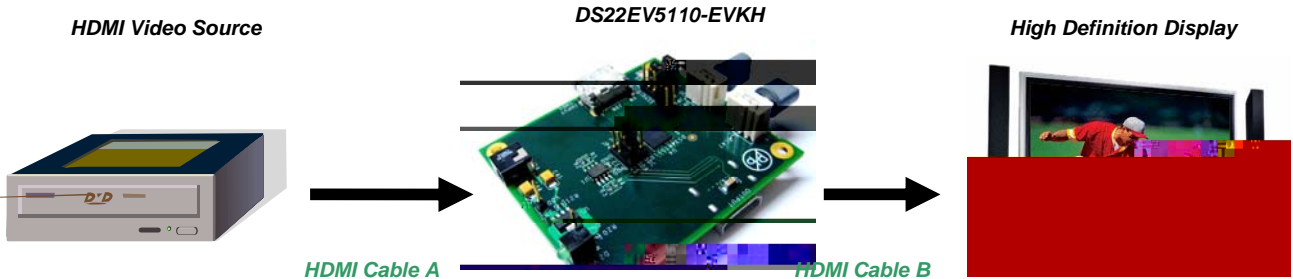
HDMI Cable A                          HDMI Cable B

The **DS22EV5110-EVKH** demo kit extends TMDS with the 28 AWG STP HDMI cables as follows:

| | Resolution | Pixel bandwidth (MPixel/s) 60Hz LCD with 20% blanking | Per channel bandwidth (Gb/s) 60Hz LCD with 20% blanking | HDMI Cable A (28 AWG) | HDMI Cable B (28 AWG) |
|---|---|---|---|---|---|
| **HDTV (1080i)** | 1920 x1080 | 75 | 0.75 | ≥50m | ≥20m |
| **HDTV (1080p) 8 bit Color Depth** | 1920 x1080 | 150 | 1.5 | ≥35m | ≥10m |
| **HDTV (1080p) 12 bit Color Depth** | 1920 x1080 | 225 | 2.25 | ≥25m | ≥7.5m |

## Quick Start Guide:
1. 3.3V to J22 and J23 top
   *AC/DC power adapter requirement: Output DC 4V~6V, Output current > 800mA*
2. 
3. 

## Adjustment and Control Description

| Component | Name | Function |
|---|---|---|
| J2 | PW | |
| J3 | J3 | |
| J24 | 5V | 1.5 m |
| J22 | 3.3V | 3.3V |
| J23 | N | N |
| J4 | S | |
| J42, J43 | RS | |
| J78, J79 | R | J78, Gb 24 kΩ 1000 Ω; J79, Gb 12 kΩ 2000 Ω |
| J24, J25, J26 | RCS | J24 and J26 to 3; J25 deep; |
| J21 | R | J21 top |
| SJ | SW2 | "0" display; "7" display; |
| U1 | SW1 | "0"=0 "1"=3 "2"=6 "3"=9; "4","5","6","7"=A; "8" |

## Bill of Materials

| DESIGNATION | | QTY | DESCRIPTION |
|---|---|---|---|
| C36, C38, C40, C42, C47, C65 | 6 | 0.1µF _5% 0402 |
| C37, C39, C41, C43 | 4 | 0.01µF _5% 0402 |
| C | 1 | 0.1µF _5% 0603 |
| C46 | 1 | 2.2µF _5% 0603 |
| C48, C49, C57 | 3 | 1.5µF _5% 1206 |
| C44 | 1 | 33µF _5% B3528 |
| C45 | 1 | 68µF _5% B3528 |
| D | 1 | |
| D | 1 | LM55... |
| R20 | 1 | 453 ohm _5% 0402 |
| R21 | 1 | 10K ohm _5% 0402 |
| R24, R25 | 2 | 220 ohm _5% 0402 |
| R07, R08 | 2 | 4.7K ohm _5% 0603 |
| R, R, R, R | 4 | 10K ohm _5% 0603 |
| R7 | 1 | 24K ohm _5% 0603 |
| R8 | 1 | 12K ohm _5% 0603 |
| R22 | 1 | 3.3K ohm _5% 0603 |
| 20, 21 | 2 | 10008715-040 |
| 24 | 1 | 1.8 m |
| 22, 23 | 2 | 1 pin |
| P8, P9, P24, P25, P26 | 5 | 1X pin |
| P1, P2, P3, P4 | 4 | 1X pin |
| U | 1 | 9517 |
| U | 1 | 927110 |
| U | 1 | LP2965 -3.3V 1500mA |
| U, U1 | 2 | 9448 |

**Layout Considerations**

- High speed data trace 100 ohm
- trace input output DS25 110.
- Bypass Cap

**Layout (Top Layer)**

**Layout (Bottom Layer)**