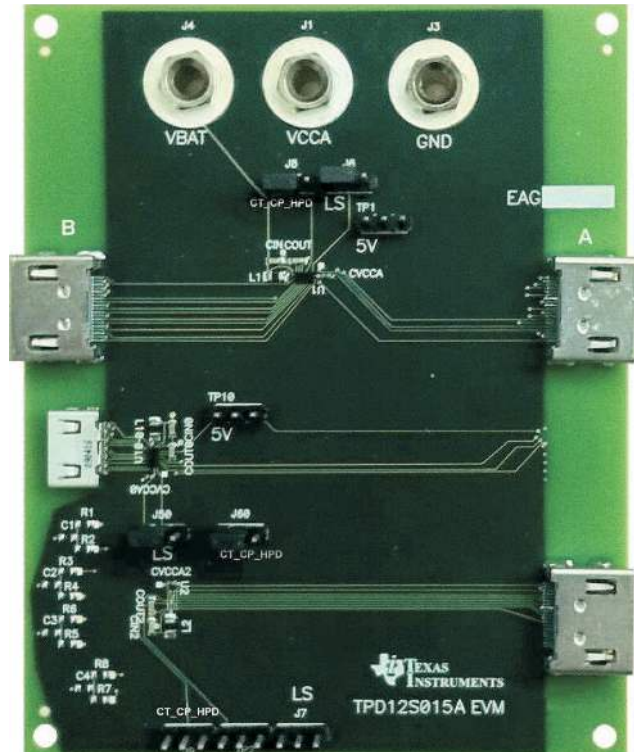


## TPD12S015A EVM

### Introduction

The TPD12S015A is an integrated HDMI companion chip solution. The device pin mapping matches the HDMI Type D or Type C connector with four differential pairs. This device offers 8 low capacitance ESD clamps allowing HDMI 1.4 data rates. The integrated ESD clamps and resistors provide good matching between each differential signal pair. This provides an advantage over discrete ESD clamp solutions where variations between ESD clamps degrade the differential signal quality.

The TPD12S015A provides a regulated 5V output (5VOUT) for sourcing the HDMI power line. The regulated 5V output supplies up to 55mA to the HDMI receiver. The control of 5VOUT and the hot plug detect (HPD) circuitry is independent of the LS\_OE control signal and is controlled by the CT\_CP\_HPD pin. This independent control enables the detection scheme (5VOUT + HPD) to be active before enabling the HDMI link.



### Highlighted Features

- Conforms to HDMI Compliance Tests without any External Components
- Supports HDMI 1.4 Data Rate
- Match Class D and Class C pin mapping
- Excellent Matching Capacitance (0.05pF) in Each Differential Signal Pair
- Internal Boost Converter to Generate 5V from a 2.3-5.5V Battery Voltage
- Auto-direction sensing Level Shifting in the CEC, SDA, and SCL paths
- Industrial Temperature Range: -40°C to 85°C

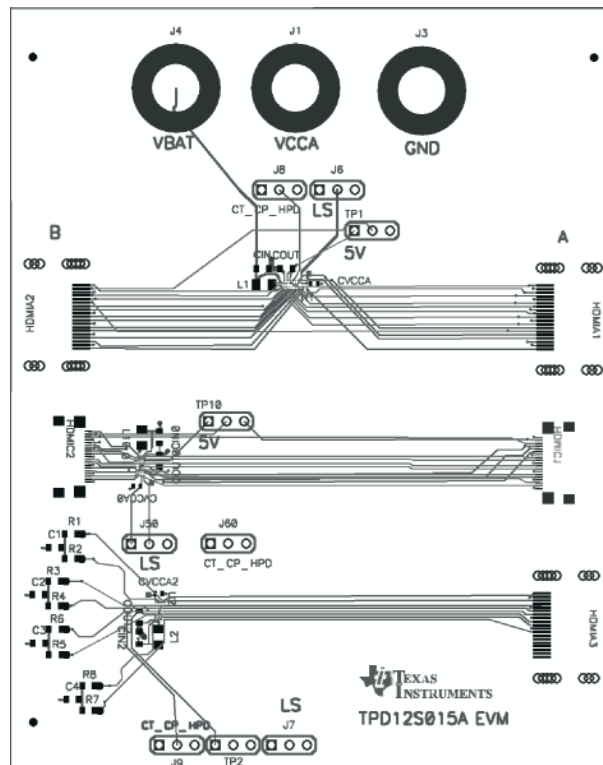
## EVM Description and Configuration



The TPD12S015A EVM has three separate sections, the TOP, MIDDLE, and BOTTOM sections. Each section includes a TPD12S015A, input/output (IO) ports, and jumper switches for enabling or disabling the TPD12S015A's Level Shifter (LS), Hot Plug Detect and 5VOUT.

OUTPUT is side B; INPUT is side A.

TOP, MIDDLE, and BOTTOM sections are all supplied with power using VBAT, VCCA, and GND.

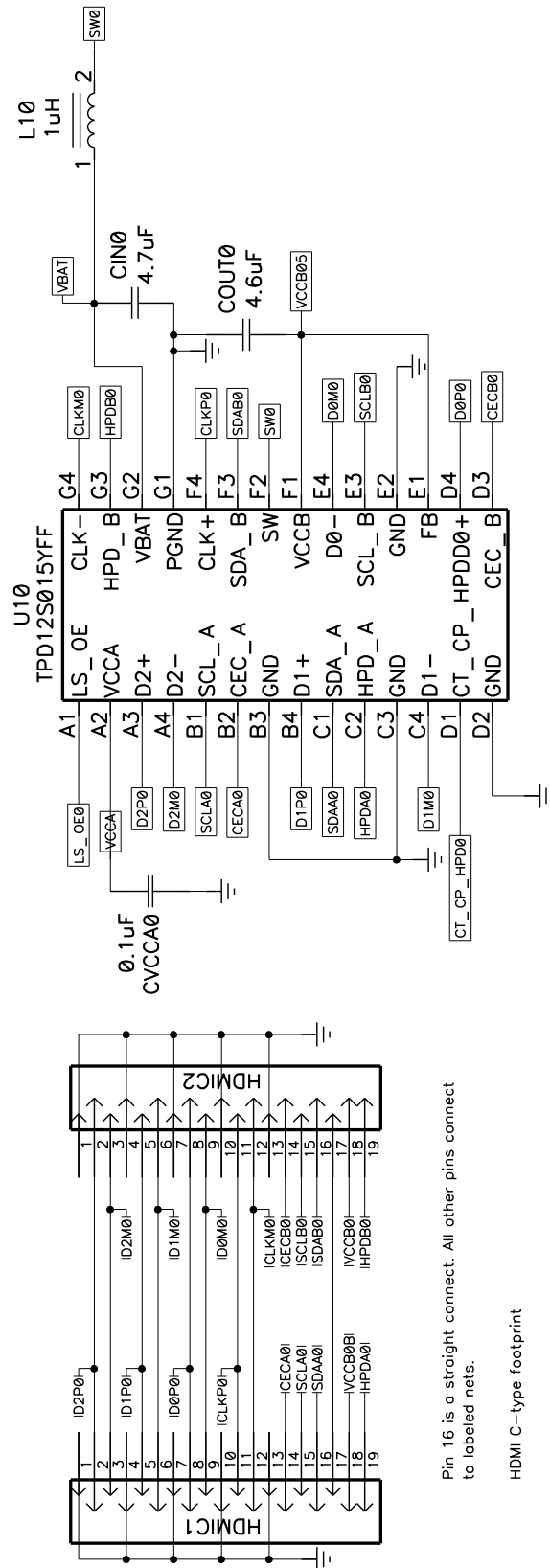
1. The TOP section has Type-A HDMI male connectors for IO.
2. The MIDDLE section has Type-C HDMI male connectors for IO.
3. The BOTTOM section has a Type-A male connector as input for the four differential pair signals only. For probe testing of the high-speed differential signals, test points are provided on the underside of the board. Configurable output loads using R1-R8 & C1-C4 are provided. This configuration provides a means for developing eye diagrams under no load or loaded conditions.



Jumper Switch Configurations		
<b>LS (LS_OE)</b>	enabled	disabled
<b>CT_CP_HPD</b>	enabled	disabled
<b>5V</b> Selects source of output's +5V Power Signal (Pin 18).	Using the +5VOUT of TPD12S015A	Bypass +5VOUT of TPD12S015A

In the BOTTOM section, the leftmost pin of TP2 is connected to 5VOUT of TPD12S015A as a test point. The other two pins are left open.

1 Schematics



Pin 16 is a straight connect. All other pins connect to labeled nets.

HDMI C-type footprint

Figure 1. Schematic Drawing

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