

## HSMC Adapter for DC718- Compatible Demo Boards

### DESCRIPTION

Demonstration circuit 2512A is a gasket adapter board that allows DC718-compatible data converter eval boards to interface with FPGA boards that have an HSMC connector, such as the SoCkit Cyclone 5 SoC development board from Arrow Electronics.

Design files for this circuit board are available at <http://www.linear.com/demo/DC2512A>

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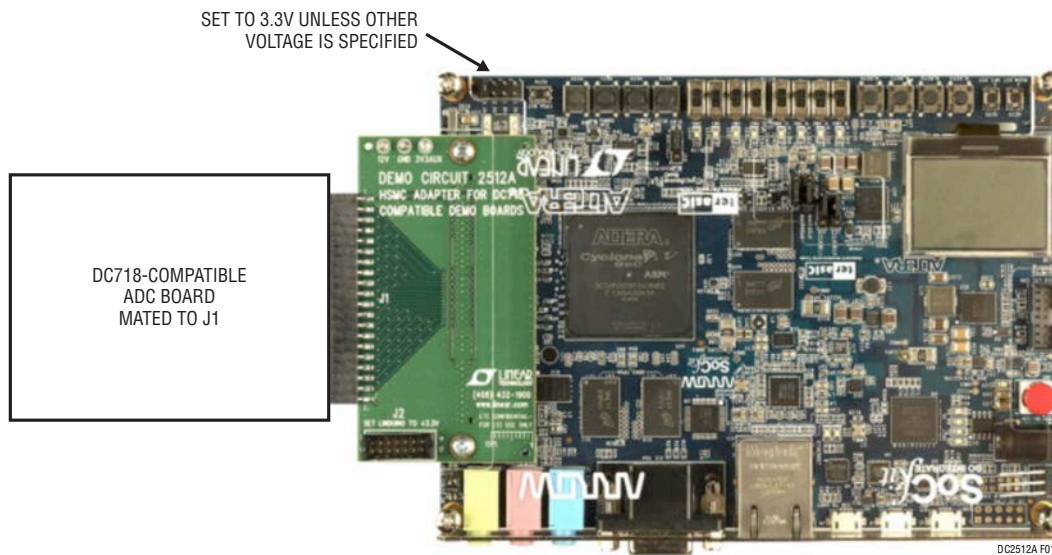


Figure 1. Basic Connections

# DEMO MANUAL DC2512A

## QUICK START PROCEDURE

DC2512A was designed to mate to the Arrow SoCkit board. DC2512A may work with other HSMC-compatible FPGA boards, but the pin connections and voltages should be verified.

Carefully mate the HSMC connector on the reverse side of the DC2512A to the SoCkit board. Use high-quality, 5mm spacers such as Harwin R30-6200514, and M3 × 12 or 4-40 × 1/2" pan-head screws.

Most FPGA loads intended for use with the DC2512A require 3.3V I/O voltage. Unless the test script or other experiment documentation indicates otherwise, set the

SoCkit's I/O voltage to 3.3V by placing the JP2 jumper on the SoCkit board in the 3.3V position (closest to the edge of the board). Mate the ADC demo board to J1 on DC2512A. Observe proper power-sequencing: the best practice is to power up the SoCkit before applying power to the ADC demo board.

A complete example of a typical evaluation setup is covered in the blog, "Data Converter Evaluation with the Arrow / Altera SoCkit FPGA board":

<http://www.linear.com/solutions/7704>

## EXTERNAL CONNECTIONS

Mapping of individual pins is shown in Table 1.

**J1:** 2x40, 0.1" (2.54mm) receptacle, compatible with ADC demo boards that are used with the DC718 capture board. Signals include conversion clock, up to 18 data lines, I<sup>2</sup>C signals for identification, and 3.3V auxiliary power.

**J2:** 2x7 QuikEval™/Linduino® connector. Not used for basic ADC evaluation. Allows the FPGA board to control

QuikEval-compatible demo boards for experiments or application development.

**J3, J4:** Test pads for additional HSMC signals.

**12V, GND, 3.3V Turret Posts:** 12V and 3.3V, supplied through the HSMC connector. May be used to power additional circuitry, refer to SoCkit documentation for maximum current. Do NOT apply power to these points.

**Table 1. Pin Mapping**

| DC2512A HEADER/PIN | DC2512A SIGNAL NAME | HSMC SIGNAL NAME | SoCkit FPGA PIN NO. |
|--------------------|---------------------|------------------|---------------------|
|                    |                     | HSMC_CLK_IN0     | PIN_J14             |
|                    |                     | HSMC_CLKIN_n1    | PIN_AB27            |
|                    |                     | HSMC_CLKIN_n2    | PIN_G15             |
| J1, Pin 3          | CCLK+               | HSMC_CLKIN_p1    | PIN_AA26            |
|                    |                     | HSMC_CLKIN_p2    | PIN_H15             |
|                    |                     | HSMC_CLK_OUT0    | PIN_AD29            |
| J3, Pin 29         |                     | HSMC_CLKOUT_p1   | PIN_E7              |
| J3, Pin 31         |                     | HSMC_CLKOUT_n1   | PIN_E6              |
|                    |                     | HSMC_CLKOUT_p2   | PIN_A11             |
|                    |                     | HSMC_CLKOUT_n2   | PIN_A10             |
| J2, Pin 4          | SCK/SCL             | HSMC_D[0]        | PIN_C10             |
| J2, Pin 7          | MOSI/SDA            | HSMC_D[1]        | PIN_H13             |
| J2, Pin 6          | CS#                 | HSMC_D[2]        | PIN_C9              |
| J2, Pin 5          | MISO                | HSMC_D[3]        | PIN_H12             |
| J1, Pin 1          | SCL                 | HSMC_SCL         | PIN_AA28            |
| J1, Pin 2          | SDA                 | HSMC_SDA         | PIN_AE29            |
| J1, Pin 37         | D0                  | HSMC_RX_p[0]     | PIN_G12             |

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## EXTERNAL CONNECTIONS

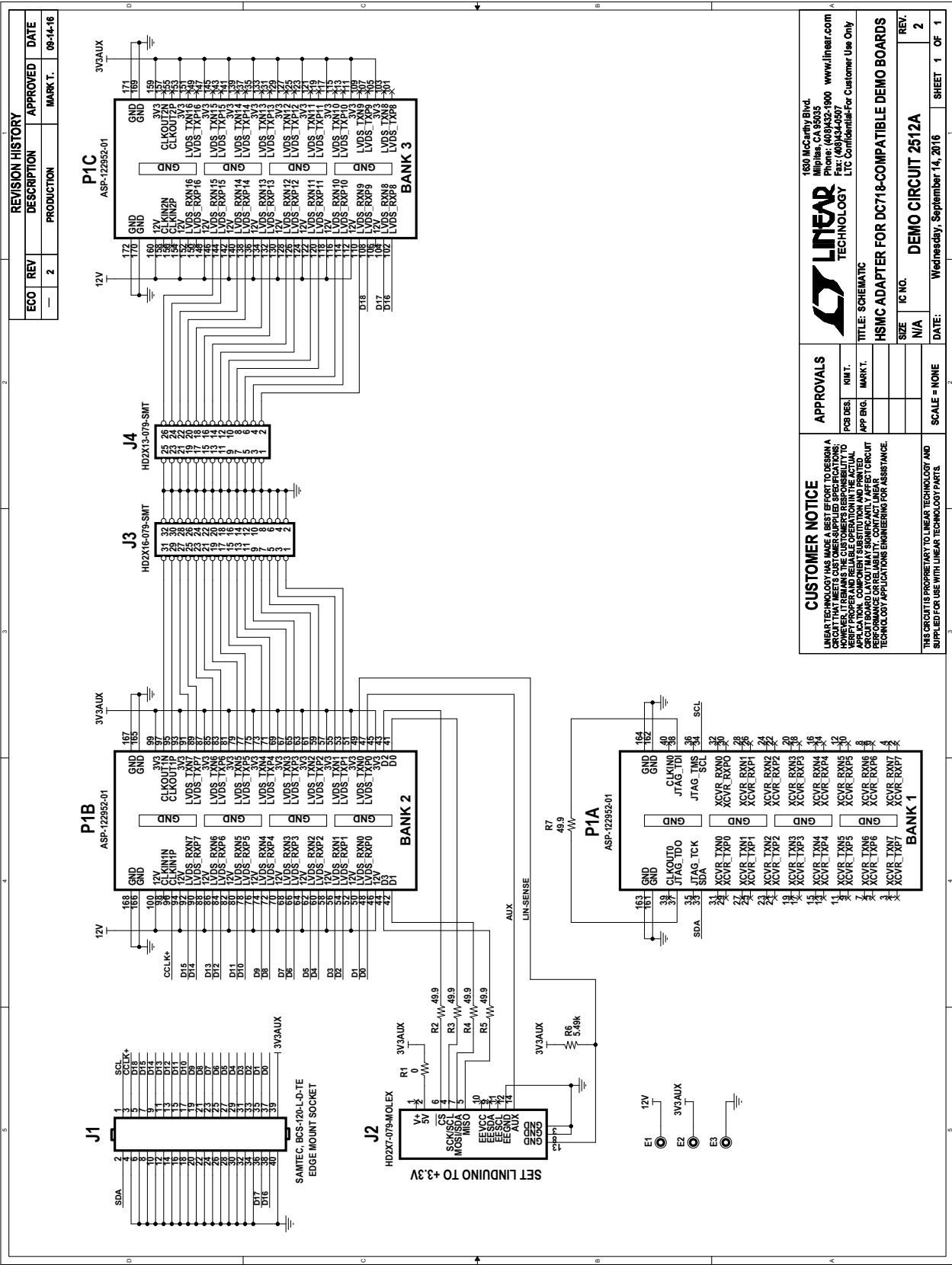
| DC2512A HEADER/PIN | DC2512A SIGNAL NAME | HSMC SIGNAL NAME | SoCkit FPGA PIN NO. |
|--------------------|---------------------|------------------|---------------------|
| J1, Pin 35         | D1                  | HSMC_RX_n[0]     | PIN_G11             |
| J1, Pin 33         | D2                  | HSMC_RX_p[1]     | PIN_K12             |
| J1, Pin 31         | D3                  | HSMC_RX_n[1]     | PIN_J12             |
| J1, Pin 29         | D4                  | HSMC_RX_p[2]     | PIN_G10             |
| J1, Pin 27         | D5                  | HSMC_RX_n[2]     | PIN_F10             |
| J1, Pin 25         | D6                  | HSMC_RX_p[3]     | PIN_J10             |
| J1, Pin 23         | D7                  | HSMC_RX_n[3]     | PIN_J9              |
| J1, Pin 21         | D8                  | HSMC_RX_p[4]     | PIN_K7              |
| J1, Pin 19         | D9                  | HSMC_RX_n[4]     | PIN_K8              |
| J1, Pin 17         | D10                 | HSMC_RX_p[5]     | PIN_J7              |
| J1, Pin 15         | D11                 | HSMC_RX_n[5]     | PIN_H7              |
| J1, Pin 13         | D12                 | HSMC_RX_p[6]     | PIN_H8              |
| J1, Pin 11         | D13                 | HSMC_RX_n[6]     | PIN_G8              |
| J1, Pin 9          | D14                 | HSMC_RX_p[7]     | PIN_F9              |
| J1, Pin 7          | D15                 | HSMC_RX_n[7]     | PIN_F8              |
| J1, Pin 38         | D16                 | HSMC_RX_p[8]     | PIN_F11             |
| J1, Pin 36         | D17                 | HSMC_RX_n[8]     | PIN_E11             |
| J1, Pin 5          | D18                 | HSMC_RX_p[9]     | PIN_B6              |
| J4, Pin 2          |                     | HSMC_RX_n[9]     | PIN_B5              |
| J4, Pin 4          |                     | HSMC_RX_p[10]    | PIN_E9              |
| J4, Pin 6          |                     | HSMC_RX_n[10]    | PIN_D9              |
| J4, Pin 8          |                     | HSMC_RX_p[11]    | PIN_E12             |
| J4, Pin 10         |                     | HSMC_RX_n[11]    | PIN_D12             |
| J4, Pin 12         |                     | HSMC_RX_p[12]    | PIN_D11             |
| J4, Pin 14         |                     | HSMC_RX_n[12]    | PIN_D10             |
| J4, Pin 16         |                     | HSMC_RX_p[13]    | PIN_C13             |
| J4, Pin 18         |                     | HSMC_RX_n[13]    | PIN_B12             |
| J4, Pin 20         |                     | HSMC_RX_p[14]    | PIN_F13             |
| J4, Pin 22         |                     | HSMC_RX_n[14]    | PIN_E13             |
| J4, Pin 24         |                     | HSMC_RX_p[15]    | PIN_H14             |
| J4, Pin 26         |                     | HSMC_RX_n[15]    | PIN_G13             |
|                    |                     | HSMC_RX_p[16]    | PIN_F15             |
|                    |                     | HSMC_RX_n[16]    | PIN_F14             |
|                    |                     | HSMC_TX_p[0]     | PIN_A9              |
|                    |                     | HSMC_TX_n[0]     | PIN_A8              |
| J3, Pin 1          |                     | HSMC_TX_p[1]     | PIN_E8              |
| J3, Pin 3          |                     | HSMC_TX_n[1]     | PIN_D7              |
| J3, Pin 5          |                     | HSMC_TX_p[2]     | PIN_G7              |
| J3, Pin 7          |                     | HSMC_TX_n[2]     | PIN_F6              |
| J3, Pin 9          |                     | HSMC_TX_p[3]     | PIN_D6              |
| J3, Pin 11         |                     | HSMC_TX_n[3]     | PIN_C5              |
| J3, Pin 13         |                     | HSMC_TX_p[4]     | PIN_D5              |

# DEMO MANUAL DC2512A

## PARTS LIST

| DC2512A HEADER/PIN | DC2512A SIGNAL NAME | HSMC SIGNAL NAME | SoCkit FPGA PIN NO. |
|--------------------|---------------------|------------------|---------------------|
| J3, Pin 15         |                     | HSMC_TX _n[4]    | PIN_C4              |
| J3, Pin 17         |                     | HSMC_TX _p[5]    | PIN_E3              |
| J3, Pin 19         |                     | HSMC_TX _n[5]    | PIN_E2              |
| J3, Pin 21         |                     | HSMC_TX _p[6]    | PIN_E4              |
| J3, Pin 23         |                     | HSMC_TX _n[6]    | PIN_D4              |
| J3, Pin 25         |                     | HSMC_TX _p[7]    | PIN_C3              |
| J3, Pin 27         |                     | HSMC_TX _n[7]    | PIN_B3              |
|                    |                     | HSMC_TX _p[8]    | PIN_E1              |
|                    |                     | HSMC_TX _n[8]    | PIN_D1              |
|                    |                     | HSMC_TX _p[9]    | PIN_D2              |
|                    |                     | HSMC_TX _n[9]    | PIN_C2              |
|                    |                     | HSMC_TX _p[10]   | PIN_B2              |
|                    |                     | HSMC_TX _n[10]   | PIN_B1              |
|                    |                     | HSMC_TX _p[11]   | PIN_A4              |
|                    |                     | HSMC_TX _n[11]   | PIN_A3              |
|                    |                     | HSMC_TX _p[12]   | PIN_A6              |
|                    |                     | HSMC_TX _n[12]   | PIN_A5              |
|                    |                     | HSMC_TX _p[13]   | PIN_C7              |
|                    |                     | HSMC_TX _n[13]   | PIN_B7              |
|                    |                     | HSMC_TX _p[14]   | PIN_C8              |
|                    |                     | HSMC_TX _n[14]   | PIN_B8              |
|                    |                     | HSMC_TX _p[15]   | PIN_C12             |
|                    |                     | HSMC_TX _n[15]   | PIN_B11             |
|                    |                     | HSMC_TX _p[16]   | PIN_B13             |
|                    |                     | HSMC_TX _n[16]   | PIN_A13             |

## SCHEMATIC DIAGRAM



# DEMO MANUAL DC2512A

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