

RJ45 to SMA Adapter Board

USER MANUAL

Part Number: DS91C176EVK NOPB

For the latest documents concerning these products and evaluation kit, visit lvds.national.com.
Schematics and gerber files are also available at lvds.national.com.

Table of Contents

| | |
|----------------------------------|---|
| Table of Contents | 2 |
| Overview | 3 |
| Board Description | 4 |
| Configuration Instructions | 5 |

Overview

The DS91C176EVK consists of two RJ45 to SMA adapter boards developed to complement National Semiconductor's evaluation boards for which evaluation with CAT5e cable assemblies is sometimes desirable (e.g. DriveCable02EVK, LVDS-18B-EVK, DS25BR100EVK, etc.).

In addition, each adapter board features a single DS91C176, an M-LVDS transceiver with Type 2 receiver inputs for optional passing of slow "control" signals over one of the twisted pairs of a twisted pair cable.



Figure 1. Photo of the RJ45 to SMA Adapter Board

Board Description

Figure 2 shows the adapter board drawing with the silkscreen annotations. The 2.5 by 3.0 inch, four-layer PCB is designed to bring RJ45 connector signal pins to SMA connectors. The SMA connector annotations correspond to the RJ45 connector pin numbers. There are only 2 SMA pairs installed (1&2 and 7&8) on the board. The end user may install additional SMA connectors.

One of the RJ45 connector signal pin pairs (3 and 6) are connected to DS91C176 (U1) M-LVDS I/O pins. There is a provision to disconnect the DS91C176 M-LVDS pins and connect the SMA connectors (3 and 6).

The JP2 and JP3 connectors connect to the DS91C176 LVCMOS I/O and control pins.

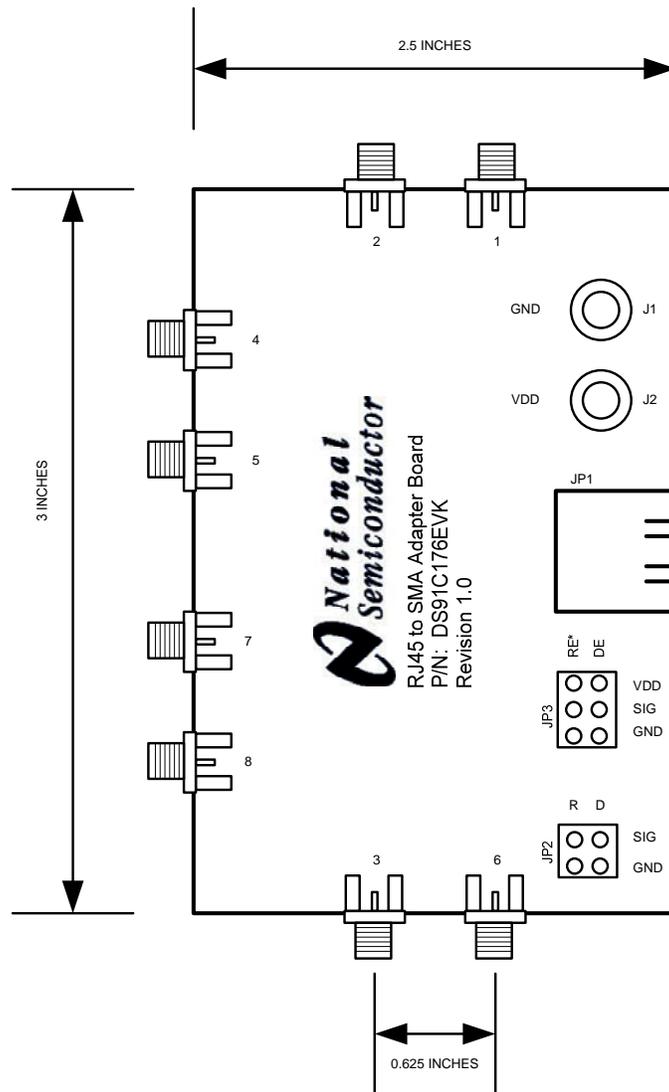


Figure 2. DS91C176EVK Drawing

User Instructions

This section provides adapter board user instructions:

1. It is always recommended to terminate unused twisted pairs of a twisted pair cable to minimize EMI, crosstalk, etc., thus termination resistors R6, R7 and R8. Remove resistors connected to the RJ45 pins that you plan to use. For example, remove R7 if you plan to use RJ45 pins 1 and 2 (they are connected to SMA1 and SMA2 connectors respectively).
2. If you want to use RJ45 pins 3 and 6 (they are connected to SMA3 and SMA6 connector pads respectively), disconnect the DS91C176 (U1) M-LVDS pins by removing R2 and R3 0-ohm resistors and placing them on the R4 and R5 resistor pads.
3. If you want to use the DS91C176 (U1), apply 3.3 V between the VDD (J2) and GND (J1) power connectors, configure the device as an M-LVDS driver or receiver using the JP3 and use the JP2 to access the DS91C176 LVCMOS I/O pins. For more info on the DS91C176 check its respective datasheet at lvds.national.com.

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|--|--|--|--|-----------------------|--------|---------------------|--------------------|-------------------------|
| ENERCON - BILL OF MATERIALS | | TITLE: NATIONAL SEMICONDUCTOR PCBA, DS91C176EVK, ROHS DS91C176VK | | PL Number: Z3213-01 0 | Rev: 0 | Rev By: | Rev Date: 11/30/07 | PL Status: Released |
| Main Product: PCBA, DS91C176EVK, ROHS | | | | Responsible Eng/Mgr: | | Creator: Arlene Fox | | Creation Date: 11/30/07 |

| Item | Part Type | Part Number/Value | Mfg | NoSub | Description | Qty | SMT | Ref Des | Notes | Rev |
|------|-----------|-------------------|----------|-------|---|-----|-----|------------|---|-----|
| 1 | PCB | P-06384R0 | ENERCON | | DS91C176: 2.50x3.00x.060in, 6 layer | 1 | | | Bd: (63.50x 76.20mm) Panel: (9.20x5.00in) (233.68x 127.00mm) 6 bds/panel | 0 |
| 2 | | | | | | | | | | |
| 3 | IC | DS91C176/NOPB | NAT | | 1.5Gbps Differential Buffer, SOIC8, Pb-Free | 1 | X | U1 | Customer Supplied | 0 |
| 4 | | | | | | | | | | |
| 5 | RES | ERJ-2GE0R00 | PANA | | 0 Ohm 1/16W ±5% 0402, Pb-Free | 2 | X | R2,3 | | 0 |
| | <ALT> | CRCW04020000Z0ED | VISHAY | | 0 Ohm 1/16W ±5% 0402, Pb-Free | | | | | |
| 6 | RES | ERJ-2RKF1000 | PANA | | 100 Ohm 1/16W ±1% 0402 100ppm, Pb-Free | 4 | X | R1,6,7,8 | | 0 |
| | <ALT> | CRCW0402100RFKED | VISHAY | | 100 Ohm 1/16W ±1% 0402 100ppm, Pb-Free | | | | | |
| | <ALT> | RK73H1ETTP1000F | KOA | | 100 Ohm 1/16W ±1% 0402 100ppm, Pb-Free | | | | | |
| 7 | | | | | | | | | | |
| 8 | CAP | 0402YC103KAT | AVX | | .01µF, 16V, ±10%, 0402, Ceramic, X7R, Pb-Free | 1 | X | C4 | | 0 |
| 9 | CAP | 0402YD104KAT | AVX | | .1µF, 16V, ±10%, 0402, Ceramic, X5R, Pb-Free | 2 | X | C2,3 | | 0 |
| 10 | CAP | 1206YD475KAT | AVX | | 4.7µF, 16V, ±10%, 1206, Ceramic, X5R | 1 | X | C1 | | 0 |
| 11 | | | | | | | | | | |
| 12 | CONN | 142-0701-851 | EMERSON | | SMA, Jack Receptacle, 50 OHM, Pb-Free | 4 | | SMA1-2,7-8 | | 0 |
| 13 | CONN | 15-29-1024 | MOLEX | | Jumper Shunt, 2p, Gold, Pb-Free | 2 | | | Use With JP3 Between SIG AND GND | 0 |
| 14 | CONN | 3267 | POMONA | | Banana, 1p, Female, Pb-Free | 2 | | J1-2 | | 0 |
| 15 | CONN | RJHSE-5380 | AMPHENOL | | Telco, 8p, R/A, Shielded, Pb-Free | 1 | | JP1 | | 0 |
| 16 | CONN | TSW-104-07-G-S | SAMTEC | | Header, 4p, Male, .100"sp, Gold, Pb-Free | 1 | | JP2 | | 0 |
| 17 | CONN | TSW-106-07-T-S | SAMTEC | | Header, 6p, Male, .100"sp, Gold, Pb-Free | 1 | | JP3 | | 0 |
| 18 | | | | | | | | | | |
| 19 | STENCL | T-06387R0 | ENERCON | | STENCIL FABRICATION, TOP, DS91C176EVK | 1 | | | | 0 |

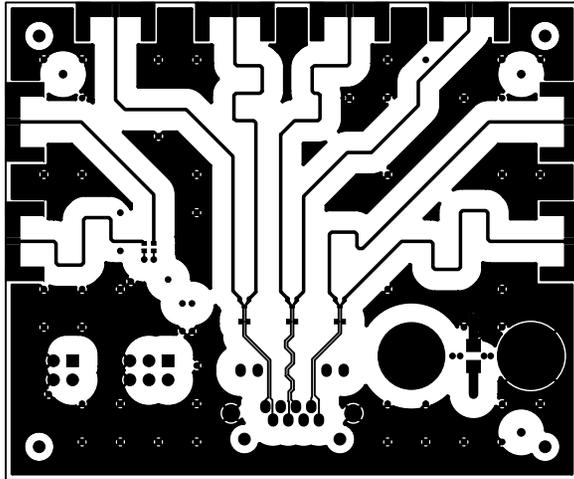
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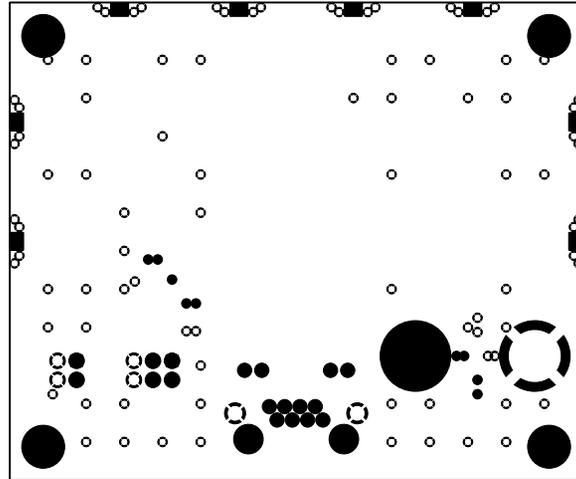
| Item | Part Type | Part Number/Value | Mfg | NoSub | Description | Qty | SMT | Ref Des | Notes | Rev |
|------|-----------|-------------------|---------|-------|--|-----|-----|---------|-------|-----|
| 20 | STENCL | T-06388R0 | ENERCON | | STENCIL FABRICATION, BOTTOM, DS91C176EVK | 1 | | | | 0 |
| 21 | | | | | | | | | | |
| 22 | REF | C-06385R0 | ENERCON | | FABRICATION, DS91C176EVK | | | | | 0 |
| 23 | REF | C-06386R0 | ENERCON | | PALLET DWG, DS91C176EVK | | | | | 0 |
| 24 | REF | S-06383R0 | ENERCON | | SCHEMATIC, DS91C176EVK | | | | | 0 |
| 25 | | | | | | | | | | |

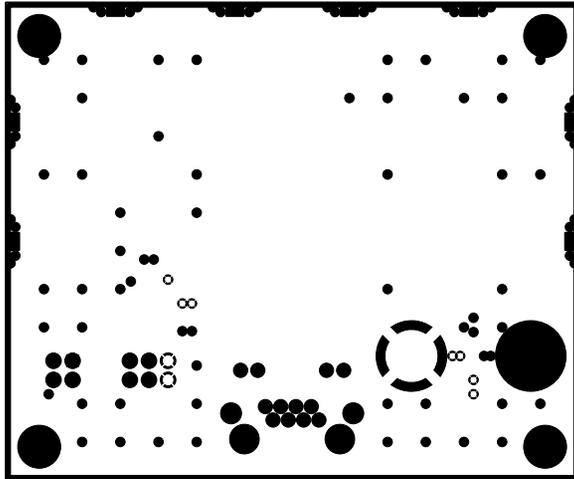
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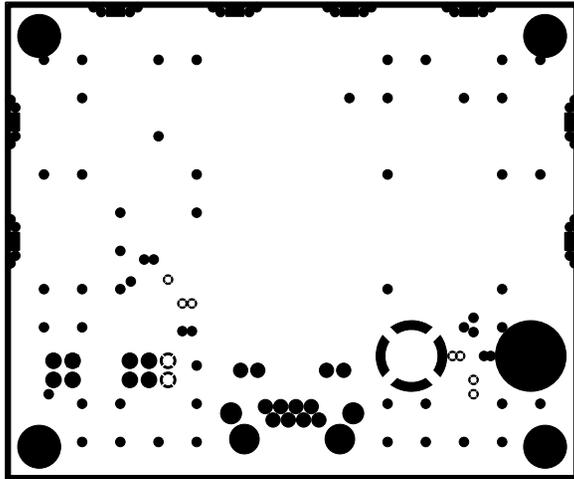
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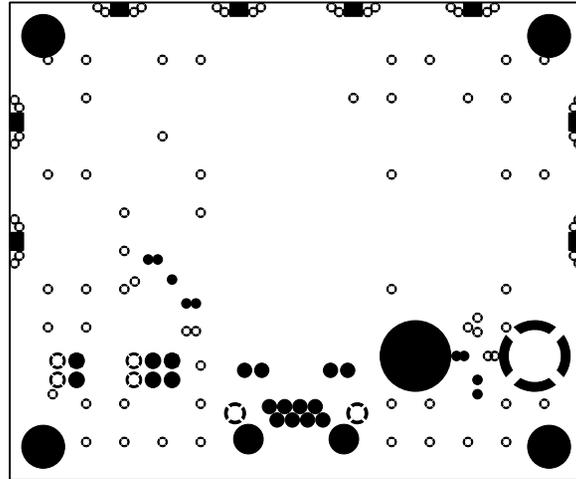
SMA3-4, 5-6
R4, 5

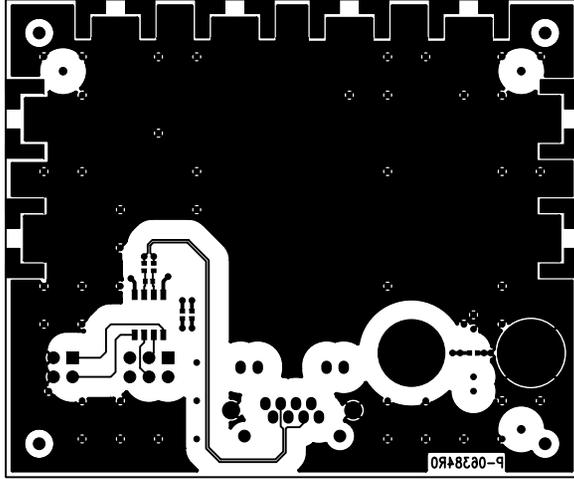


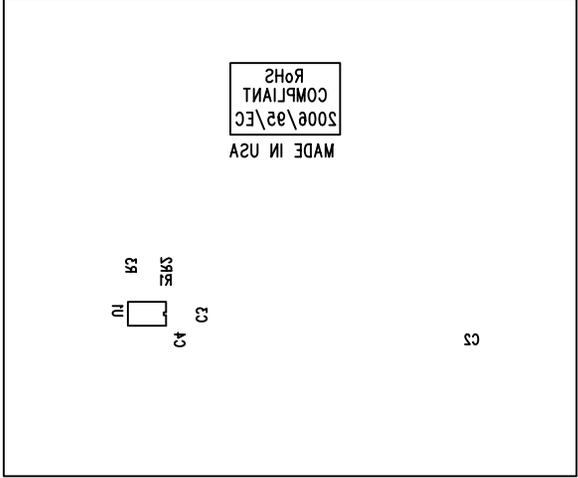


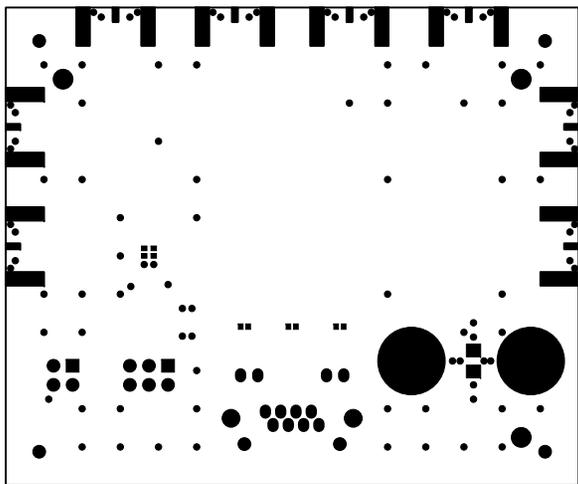


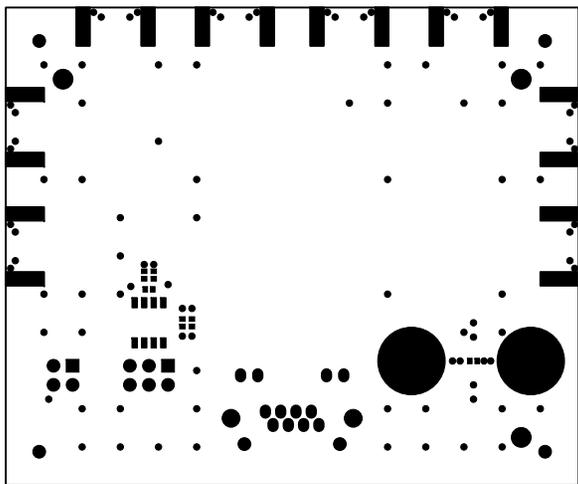


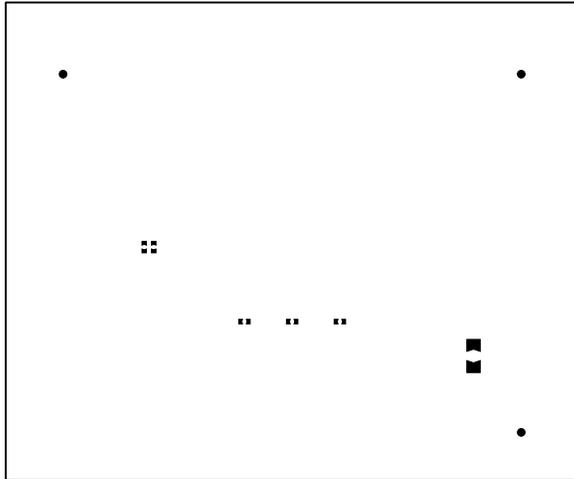


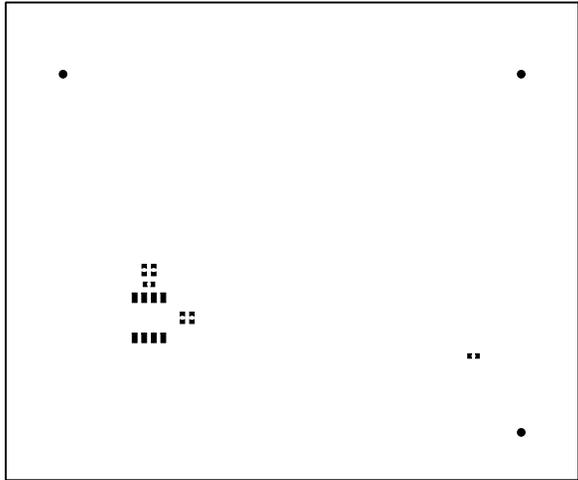












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