

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.

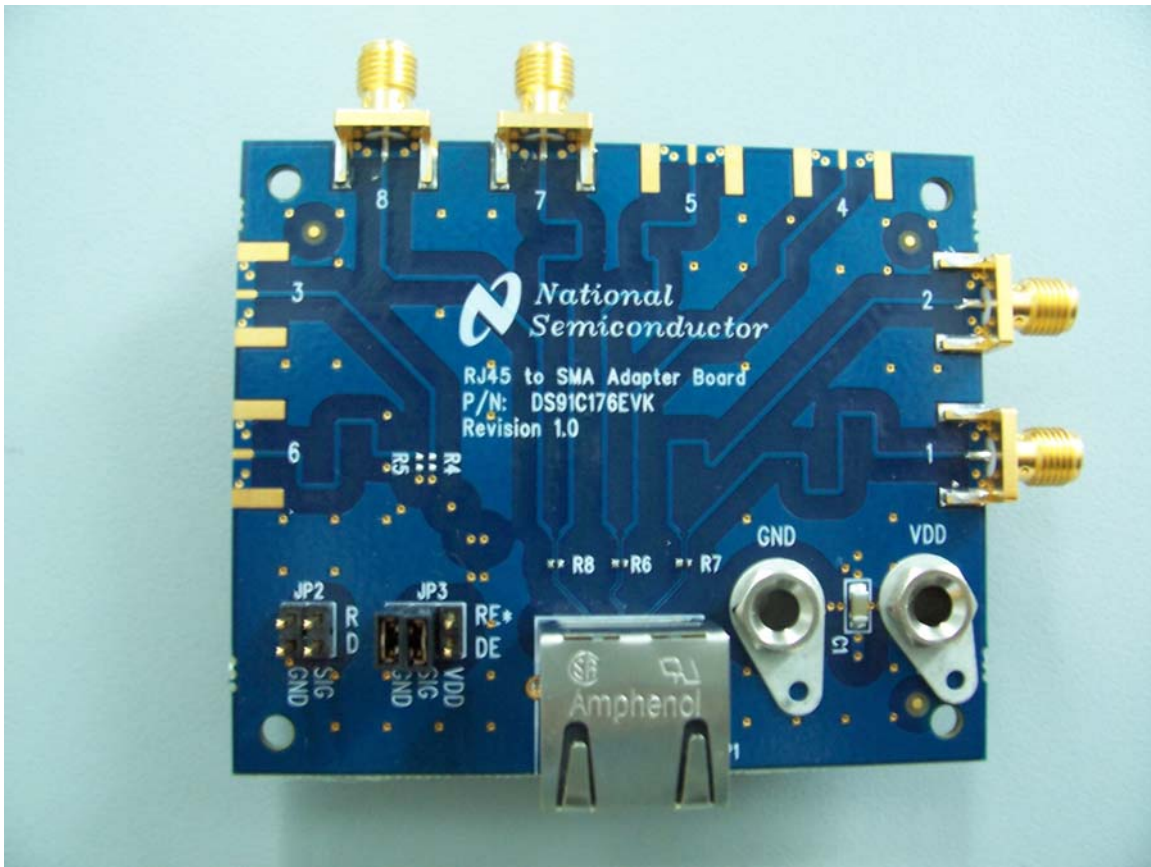


Figure 1. Photo of the RJ45 to SMA Adapter Board

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.

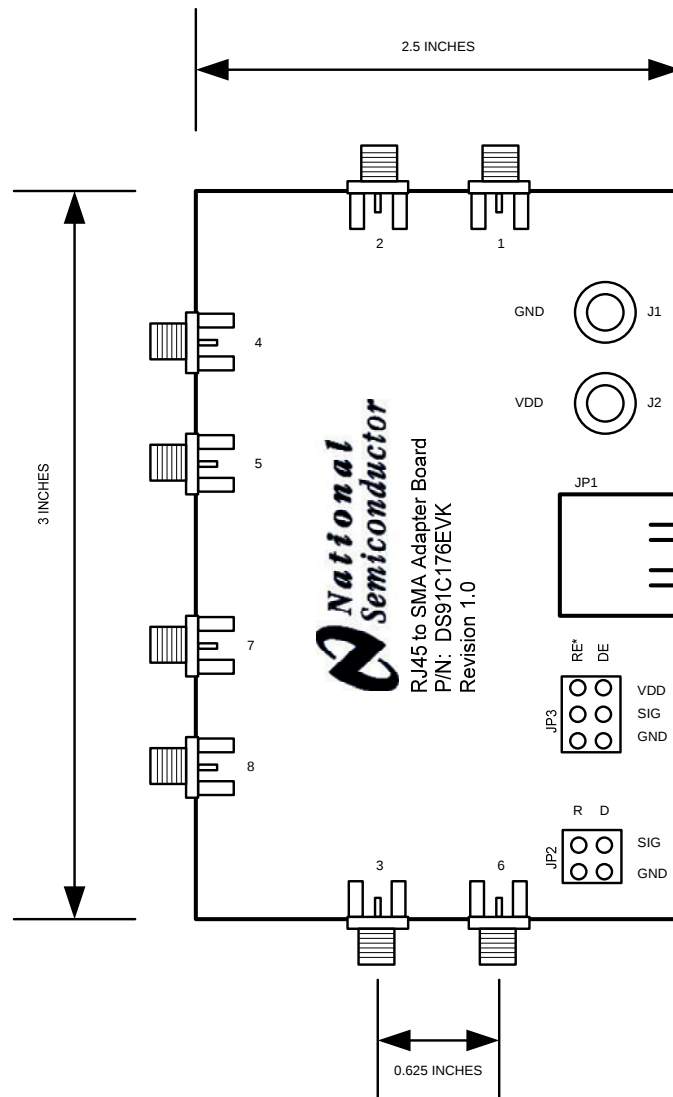


Figure 2. DS91C176EVK Drawing

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.

D

C

B

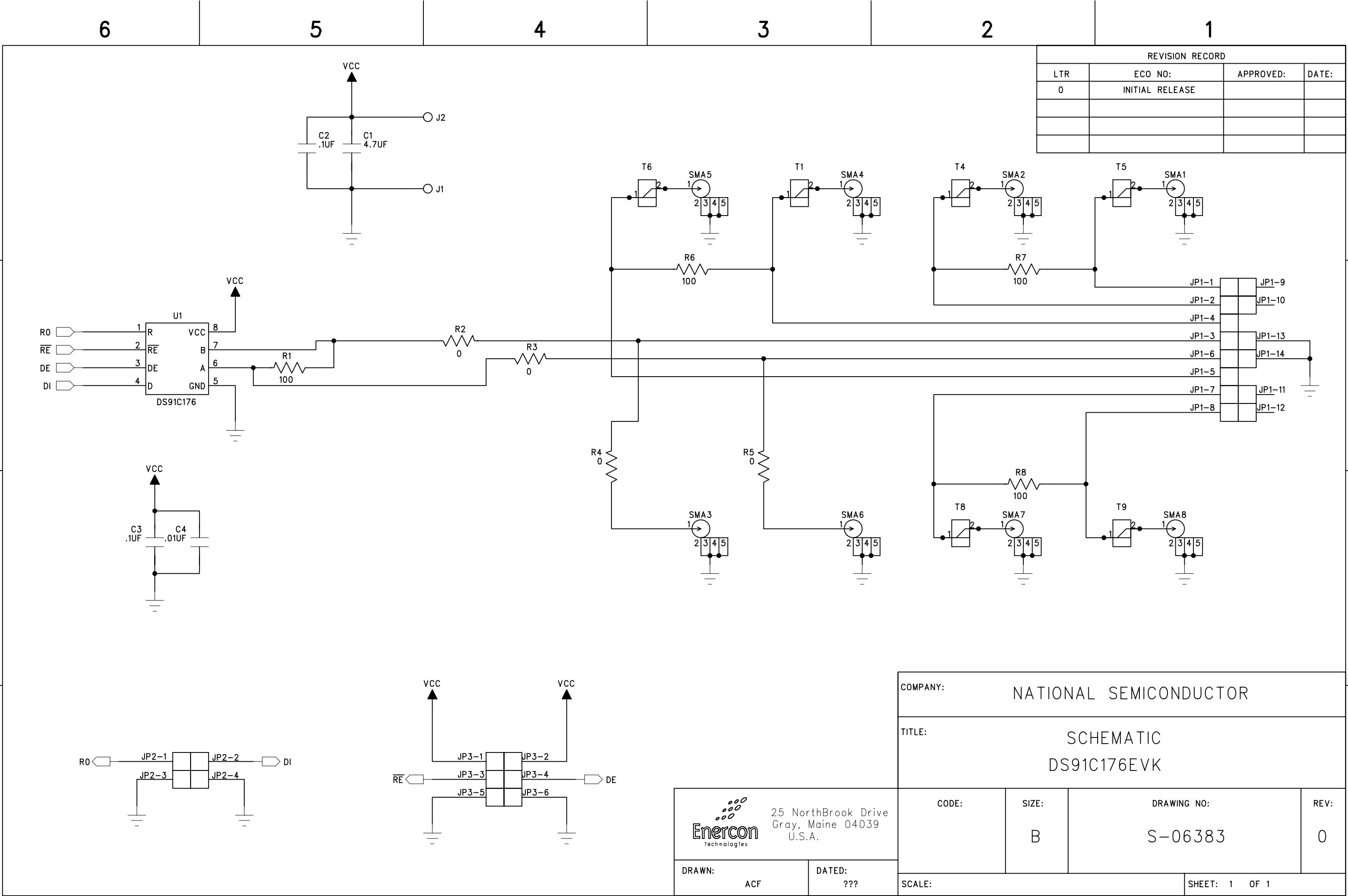
A

D

C

B

A



REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:
0	INITIAL RELEASE		

COMPANY: NATIONAL SEMICONDUCTOR			
TITLE: SCHEMATIC DS91C176EVK			
CODE:	SIZE: B	DRAWING NO: S-06383	REV: 0
SCALE:		SHEET: 1 OF 1	



25 NorthBrook Drive
Gray, Maine 04039
U.S.A.

DRAWN: ACF

DATED: ???

ENERCON - BILL OF MATERIALS		TITLE: NATIONAL SEMICONDUCTOR PCBA, DS91C176EVK, ROHS DS91C176VK	PL Number: Z3213-01		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: (63.50x76.20mm) Panel: (9.20x5.00in) (233.68x127.00mm) 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

ENERCON - BILL OF MATERIALS

TITLE:

**NATIONAL SEMICONDUCTOR
PCBA, DS91C176EVK, ROHS
DS91C176VK**PL Number: Rev: Rev By:
Z3213-01 0Rev Date:
11/30/07PL Status:
ReleasedMain Product:
PCBA, DS91C176EVK, ROHS

Responsible Eng/Mgr:

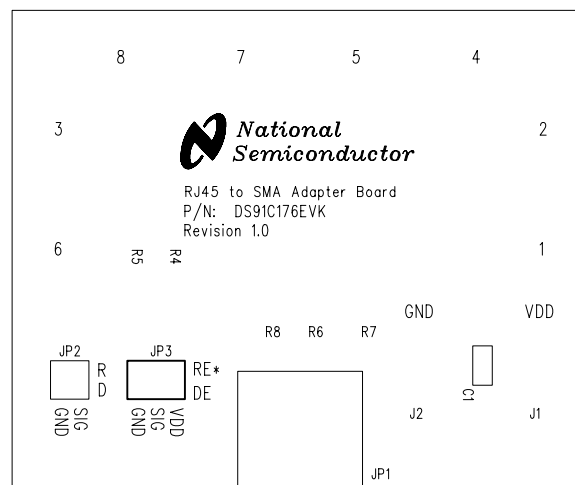
Creator:
Arlene FoxCreation Date:
11/30/07

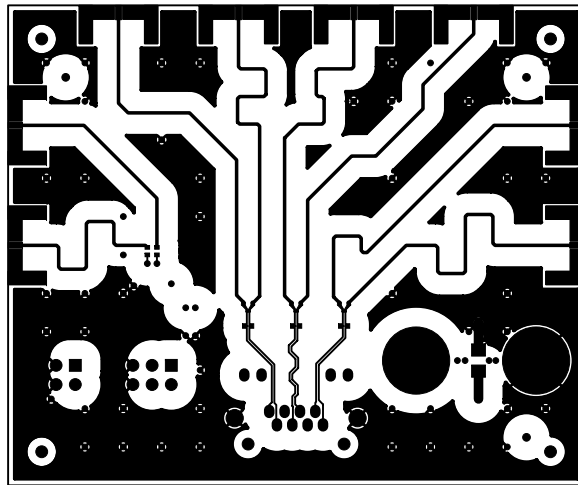
Item	Part Type	Part Number/Value	Mfg	NoSub	Description	Qty	SMT	Ref Des	Notes	Rev
20	STENCL	T-06388R0	ENERCON		STENCIL FABRICATION, BOTTOM, DS91C176EVK	1				0
21										
22	REF	C-06385R0	ENERCON		FABRICATION, DS91C176EVK					0
23	REF	C-06386R0	ENERCON		PALLET DWG, DS91C176EVK					0
24	REF	S-06383R0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

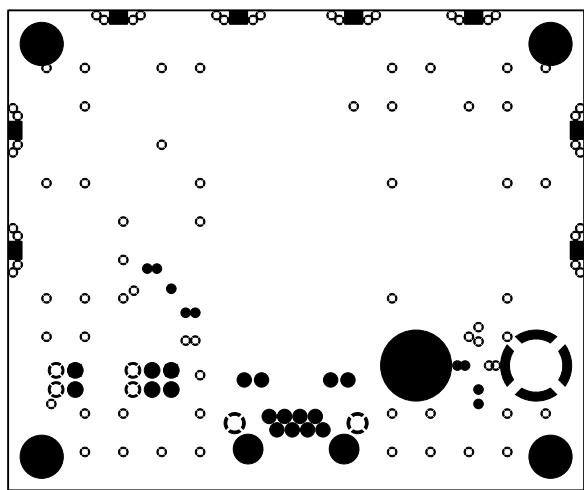
Notes:

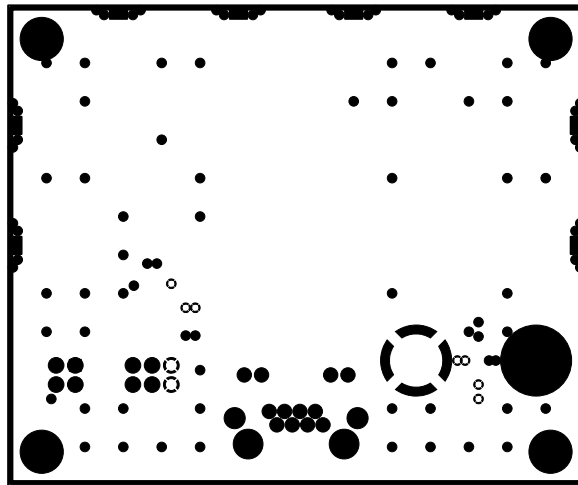
DO NOT STUFF:

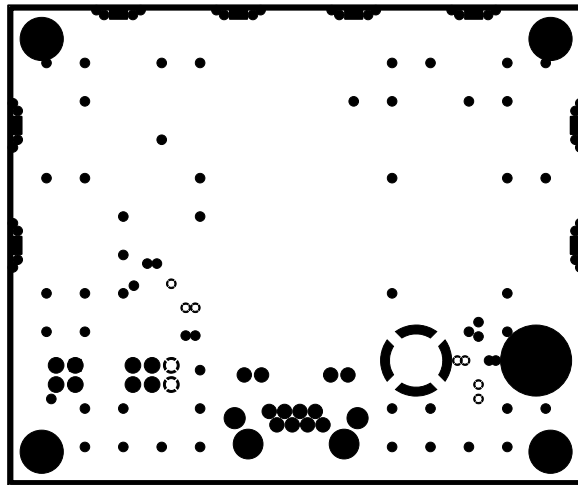
SMA3-4,5-6
R4,5

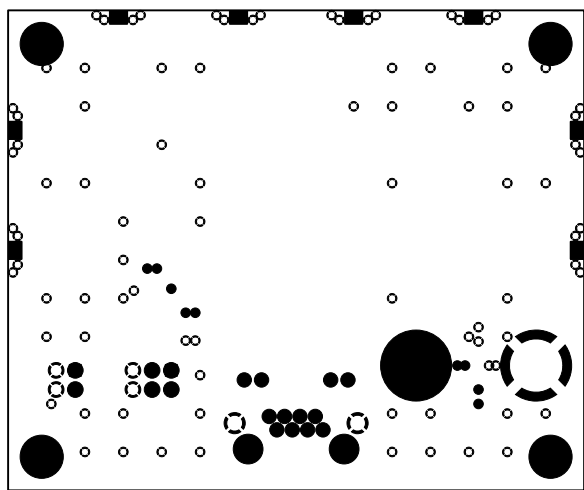


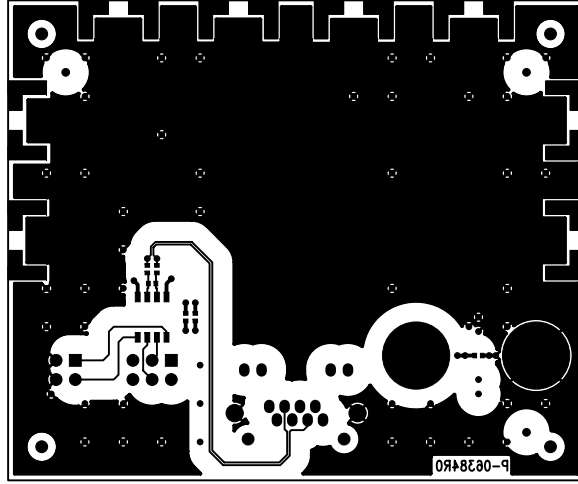












C3

MADE IN USA
3008\92\EC
COMPLIANT
RoHS

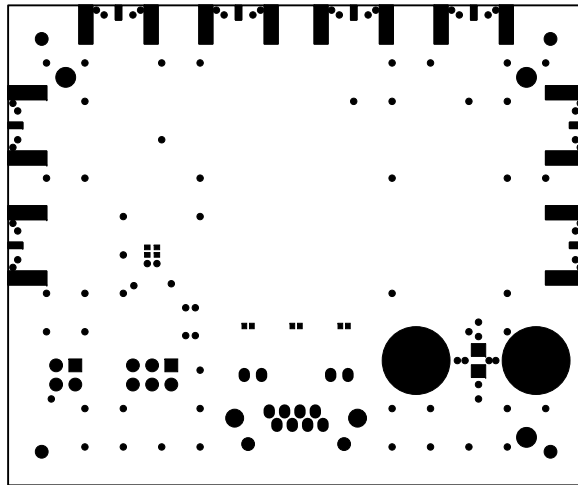
C2

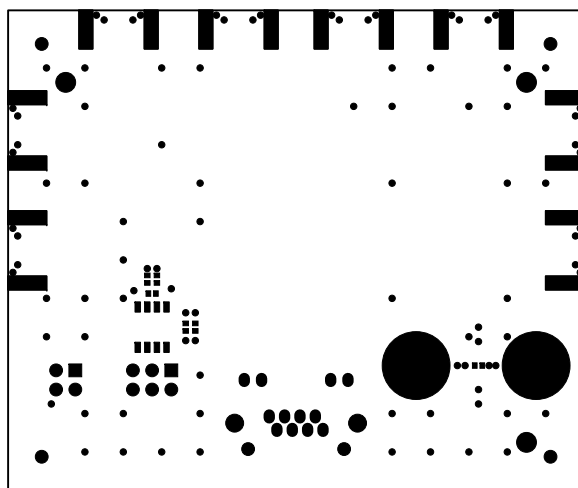
SPZ

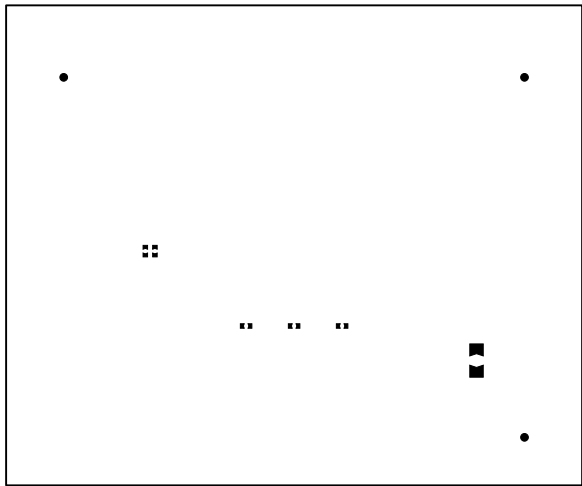
E3

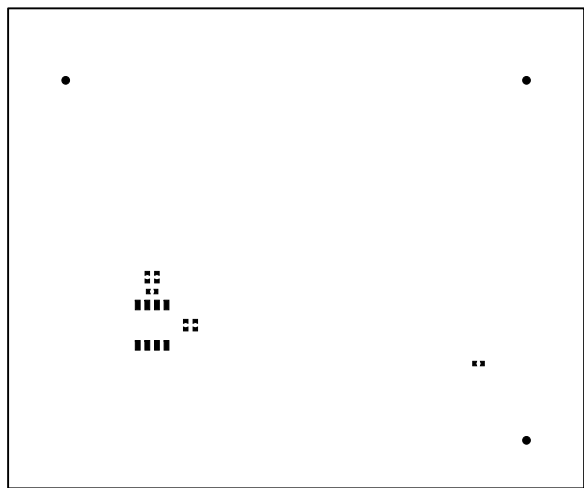


C1









IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products

Audio	www.ti.com/audio
Amplifiers	amplifier.ti.com
Data Converters	dataconverter.ti.com
DLP® Products	www.dlp.com
DSP	dsp.ti.com
Clocks and Timers	www.ti.com/clocks
Interface	interface.ti.com
Logic	logic.ti.com
Power Mgmt	power.ti.com
Microcontrollers	microcontroller.ti.com
RFID	www.ti-rfid.com
OMAP Mobile Processors	www.ti.com/omap
Wireless Connectivity	www.ti.com/wirelessconnectivity

Applications

Automotive and Transportation	www.ti.com/automotive
Communications and Telecom	www.ti.com/communications
Computers and Peripherals	www.ti.com/computers
Consumer Electronics	www.ti.com/consumer-apps
Energy and Lighting	www.ti.com/energy
Industrial	www.ti.com/industrial
Medical	www.ti.com/medical
Security	www.ti.com/security
Space, Avionics and Defense	www.ti.com/space-avionics-defense
Video and Imaging	www.ti.com/video

TI E2E Community Home Page

e2e.ti.com

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2012, Texas Instruments Incorporated