

3.125 Gbps LVDS Buffer / Repeater (DS25BR150) Evaluation Kit

USER MANUAL

Part Number: DS25BR150EVK 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 |
| DS25BR150EVK Description..... | 3 |
| DS25BR150 Evaluation | 4 |
| Typical Performance | 5 |

Overview

The DS25BR150EVK is an evaluation kit designed for demonstrating performance of the 3.125 Gbps LVDS Buffer / Repeater (DS25BR150).

The purpose of this document is to: familiarize you with the DS25BR150EVK, suggest the test setup procedures and instrumentation, and guide you through some typical measurements that demonstrate performance of the device in typical applications.

DS25BR150EVK Description

Figure 1 shows the top layer drawing of the PCB with the silkscreen annotations. It is a small six-layer PCB that has a single-device layout capable of demonstrating performance and all features of the DS25BR150.

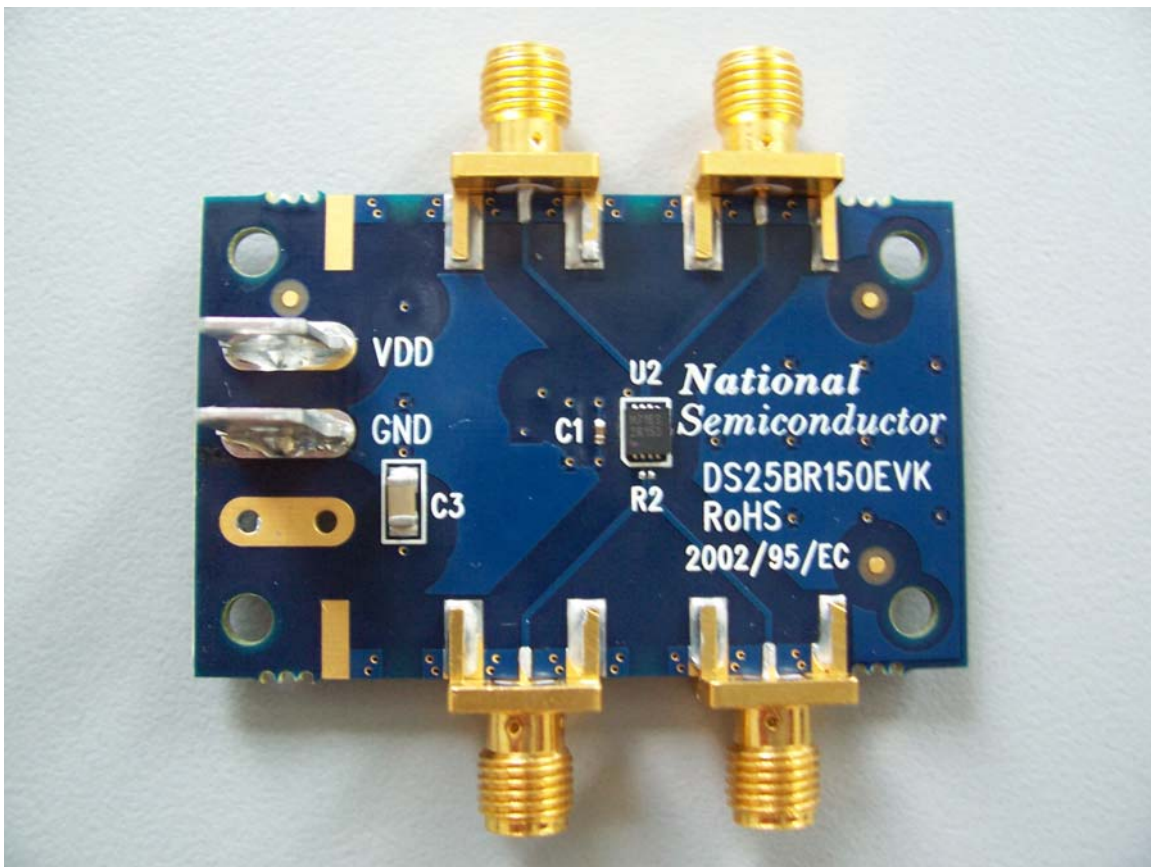


Figure 1. DS25BR150EVK

DS25BR150 Evaluation

This section provides recommended test setup procedure for the device evaluation. Figure 2 depicts a typical setup and instrumentation you may use for the device evaluation.

1. Apply the power to the device (3.3V typical) between VDD and GND connectors.
2. Connect a signal source (i.e. signal generator or an LVDS driver) to the input (R2 label) on the board and adjust the signal parameters (VOH, VOL, VCM) so that they comply with the device input recommendations.
3. Connect the output (U2 label) to an oscilloscope and view the output signals with an oscilloscope that has the bandwidth of at least 5 GHz.

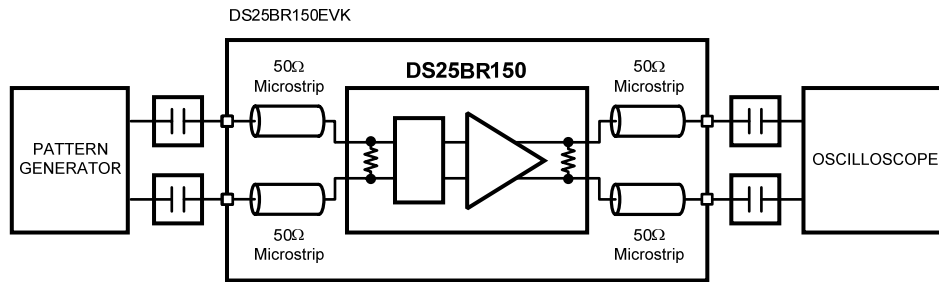


Figure 2. DS25BR150 Test Setup Example

Typical Performance

This section of the User Manual shows a typical eye diagram you can expect to see when evaluating the DS25BR150EVK.

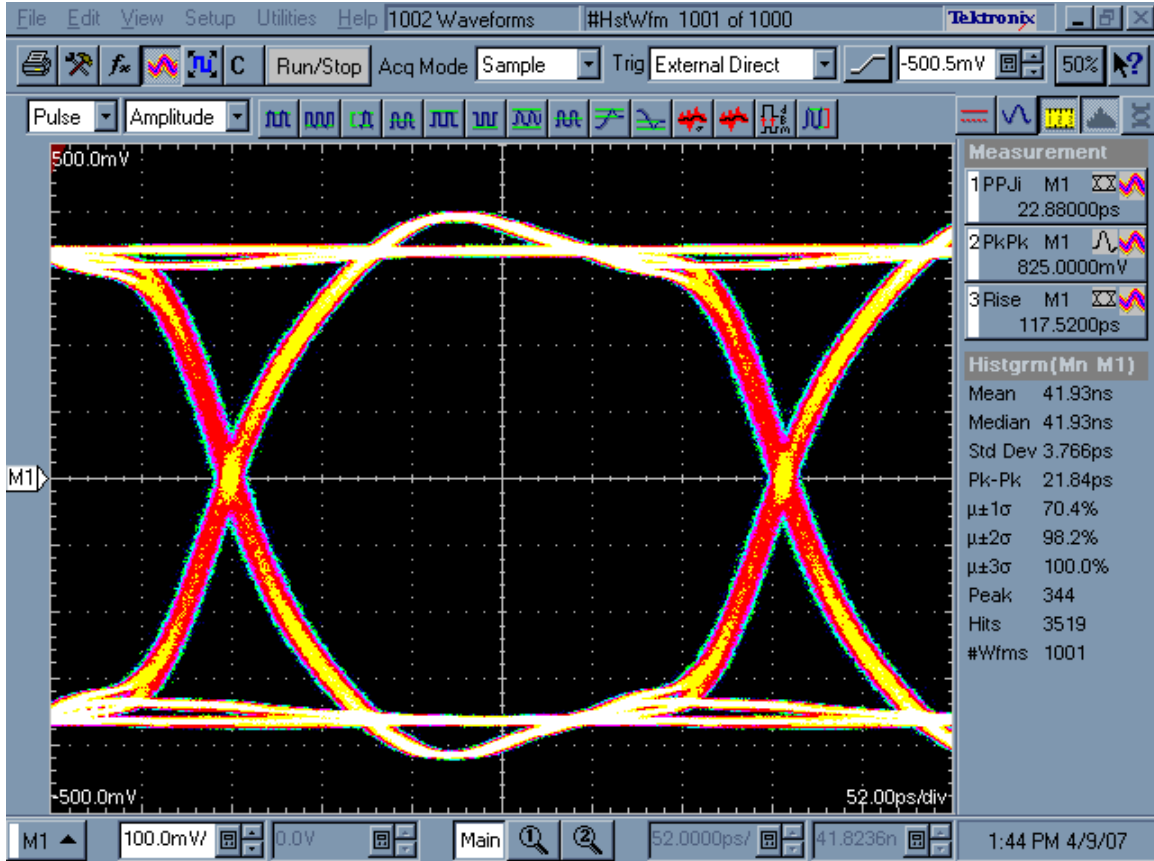


Figure 2. DS25BR150 3.125 Gbps PRBS-7 Output Eye Diagram

6

5

4

3

2

1

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

D

D

C

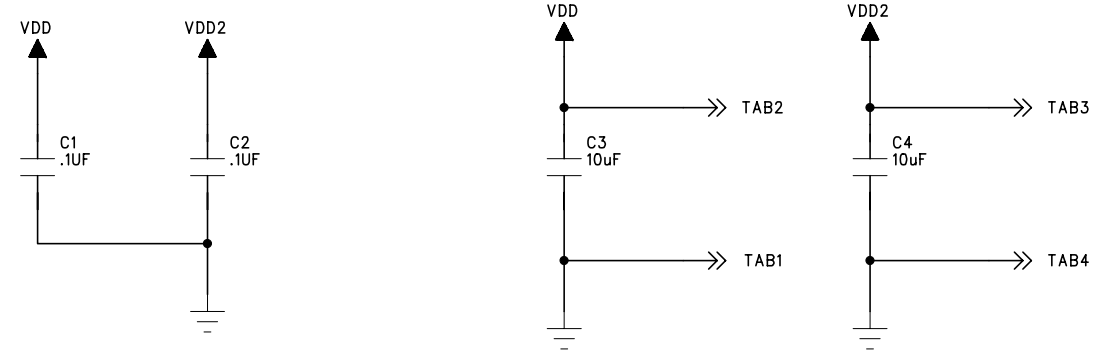
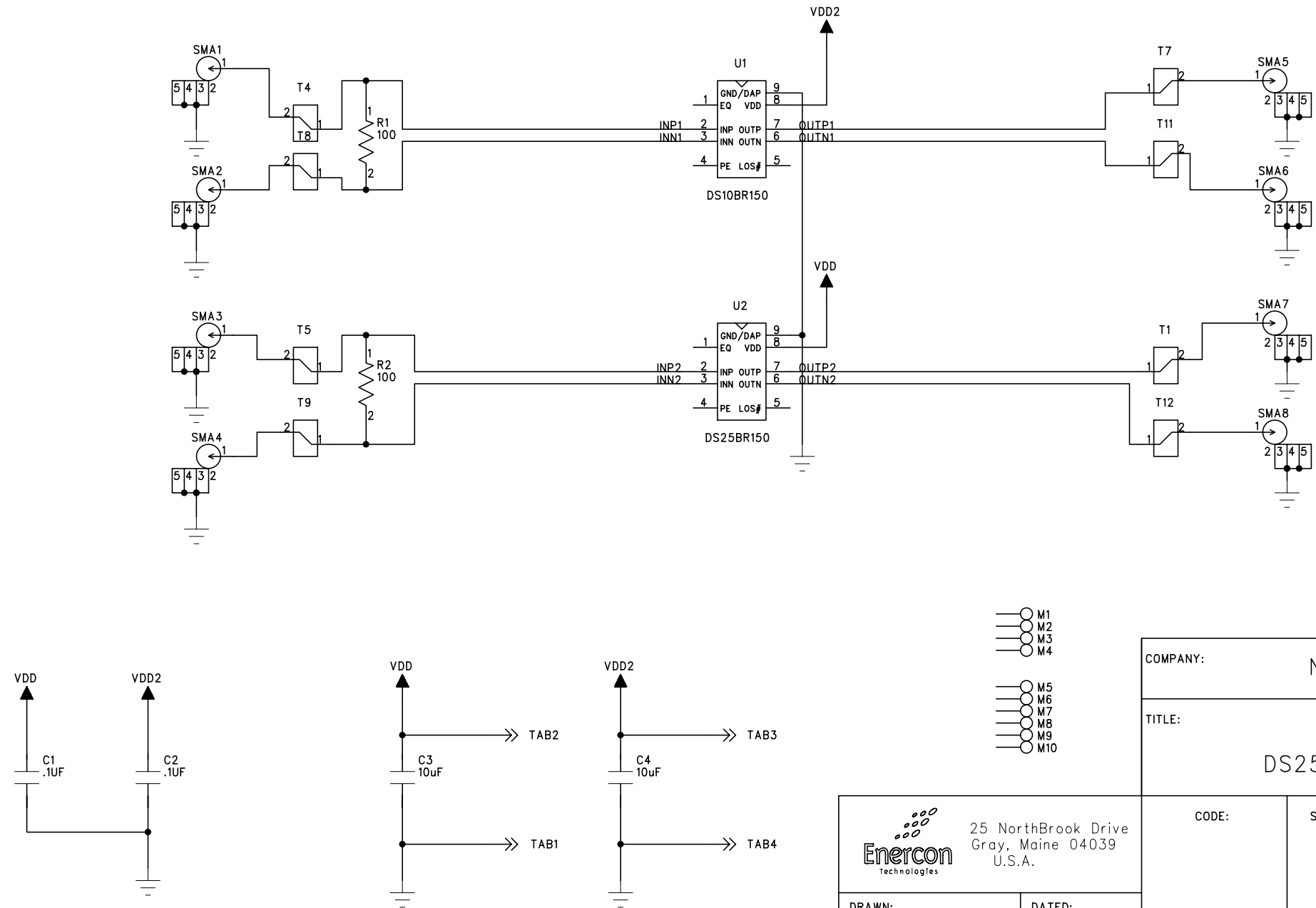
C

B

B

A

A



- M1
- M2
- M3
- M4
- M5
- M6
- M7
- M8
- M9
- M10

COMPANY: NATIONAL SEMICONDUCTOR

TITLE: SCHEMATIC
DS25BR150/DS10BR150 EVK , ROHS

| | | | |
|-------|------------|------------------------|-----------|
| CODE: | SIZE: B | DRAWING NO: S-05800 | REV: 0 |
|-------|------------|------------------------|-----------|

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

DRAWN: ACF DATED: 2/27/07

| | | | | | | | | |
|---|--|---|--|----------------------------|---------------|----------------------------|----------------------------|---------------------------------|
| ENERCON - BILL OF MATERIALS | | TITLE: NATIONAL SEMICONDUCTOR PCBA, DS25BR150EVK, ROHS | | PL Number: Z3053-01 | Rev: 0 | Rev By: | Rev Date: 2/27/2007 | PL Status: Released |
| Main Product: PCBA, DS25BR150 EVK | | | | Responsible Eng/Mgr: | | Creator: Arlene Fox | | Creation Date: 2/27/2007 |

| Item | Part Type | Part Number/Value | Mfg | NoSub | Description | Qty | SMT | Ref Des | Notes | Rev |
|------|-----------|-------------------|----------|-------|---|-----|-----|------------|-------------------------|-----|
| 1 | PCB | P-05797R0 | | | DS10/25BR150K: 1.25x2.03x.060in, 6 layer | 1 | | | Bd: (31.75x 51.43mm) | 0 |
| 2 | | | | | | | | | | |
| 3 | IC | DS25BR150 | NAT | | | 1 | | U2 | CUSTOMER SUPPLIED | 0 |
| 4 | | | | | | | | | | |
| 5 | CAP | 0402YD104KAT | AVX | | .1µF, 16V, ±10%, 0402, Ceramic, X5R, Pb-Free | 1 | X | C1 | | 0 |
| | <ALT> | ECJ-0EB1C104K | PANA | | .1µF, 16V, ±10%, 0402, Ceramic, X5R, Pb-Free | | | | | |
| 6 | CAP | ECJ-3YB0J106K | PANA | | 10µF, 6.3V, ±10%, 1206, Ceramic, X5R, Pb-Free | 1 | X | C3 | | 0 |
| | <ALT> | 12066D106KAT | AVX | | 10µF, 6.3V, ±10%, 1206, Ceramic, X5R, Pb-Free | | | | | |
| | <ALT> | C1206C106K9PAC | KEMET | | 10µF, 6.3V, ±10%, 1206, Ceramic, X5R, Pb-Free | | | | | |
| 7 | | | | | | | | | | 0 |
| 8 | CONN | 1287-ST | KEYSTONE | | Faston, Male, .250x.032, Pb-Free | 2 | | TAB1,2 | VDD, GND | 0 |
| 9 | CONN | 142-0701-851 | EMERSON | | SMA, Jack Receptacle, 50 OHM, Pb-Free | 4 | | SMA3,4,7,8 | | 0 |
| 10 | | | | | | | | | | |
| 11 | STENCL | T-05801R1 | ENERCON | | STENCIL FABRICATION, TOP, DS25BR150/DS10BR150 EVK | 1 | | | | 0 |
| 12 | STENCL | T-05802R1 | ENERCON | | STENCIL FABRICATION, BOTTOM, DS25BR150/DS10BR15... | 1 | | | | 0 |
| 13 | | | | | | | | | | |
| 14 | REF | C-05798R0 | ENERCON | | FABRICATION DWG, DS25BR150/DS10BR150 EVK, ROHS | | | | | 0 |
| 15 | REF | C-05799R1 | ENERCON | | PALLET DWG, DS25BR150/DS10BR150 EVK | | | | | 0 |
| 16 | REF | S-05800R0 | ENERCON | | SCHEMATIC, DS25BR150/DS10BR150 EVK | | | | | 0 |
| 17 | | | | | | | | | | |

| | | | | | | |
|--------------------------------------|---|----------------------|---------------------|--------------------------|---------------------|---------------------|
| ENERCON - BILL OF MATERIALS | TITLE: NATIONAL SEMICONDUCTOR PCBA, DS25BR150EVK, ROHS | PL Number: Z3053-01 | Rev: 0 | Rev By: | Rev Date: 2/27/2007 | PL Status: Released |
| | | Responsible Eng/Mgr: | Creator: Arlene Fox | Creation Date: 2/27/2007 | | |
| Main Product: PCBA, DS25BR150 EVK | | | | | | |

Notes:

DO NOT STUFF:

R1,2

C2,4

U1

TAB3

SMA1,2,5,6