

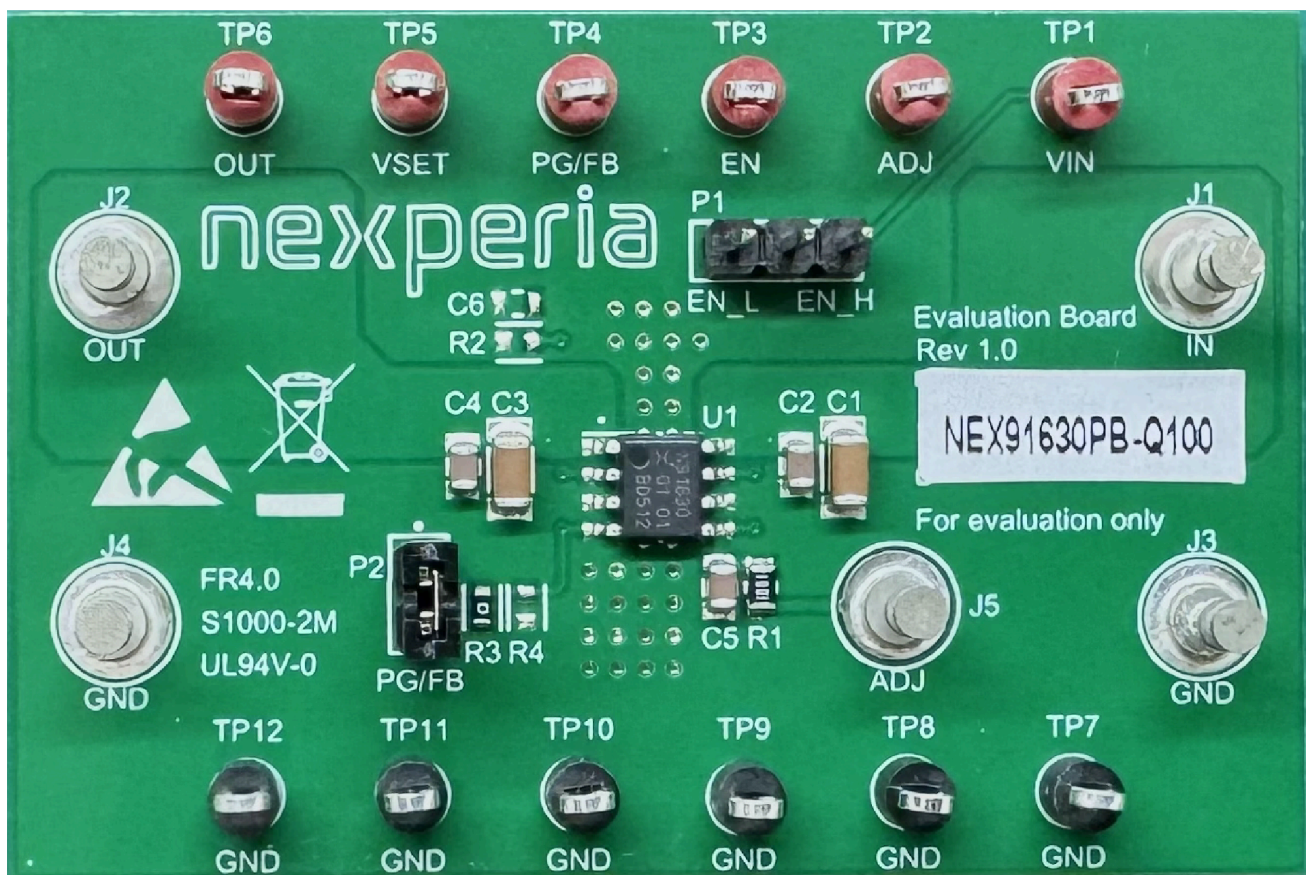


# UM90065

Rev. 1 — 3 July 2025

user manual

## NEX91630PB-Q100 300 mA, 40 V tracking LDO with 5 mV tolerance evaluation board



**Abstract:** This user manual describes the NEX91630PB-Q100 evaluation board. The NEX91630PB-Q100 is a low-dropout (LDO) voltage-tracking regulator with high tracking tolerance and excellent load and line transient. This document contains the EVB schematic and configuration, bill of materials (BOM) and board layouts.

**Keywords:** NEX91630PB-Q100, LDO voltage tracking regulator, evaluation board

## 1. Introduction

This evaluation board (EVB) is designed for NEX91630PB-Q100. It helps engineers to evaluate the operation and performance of NEX91630PB-Q100. The device is a tracking LDO designed for up to 40 V input voltage with maximum 300 mA output current.

### 1.1. Features

The following features are available on this EVB:

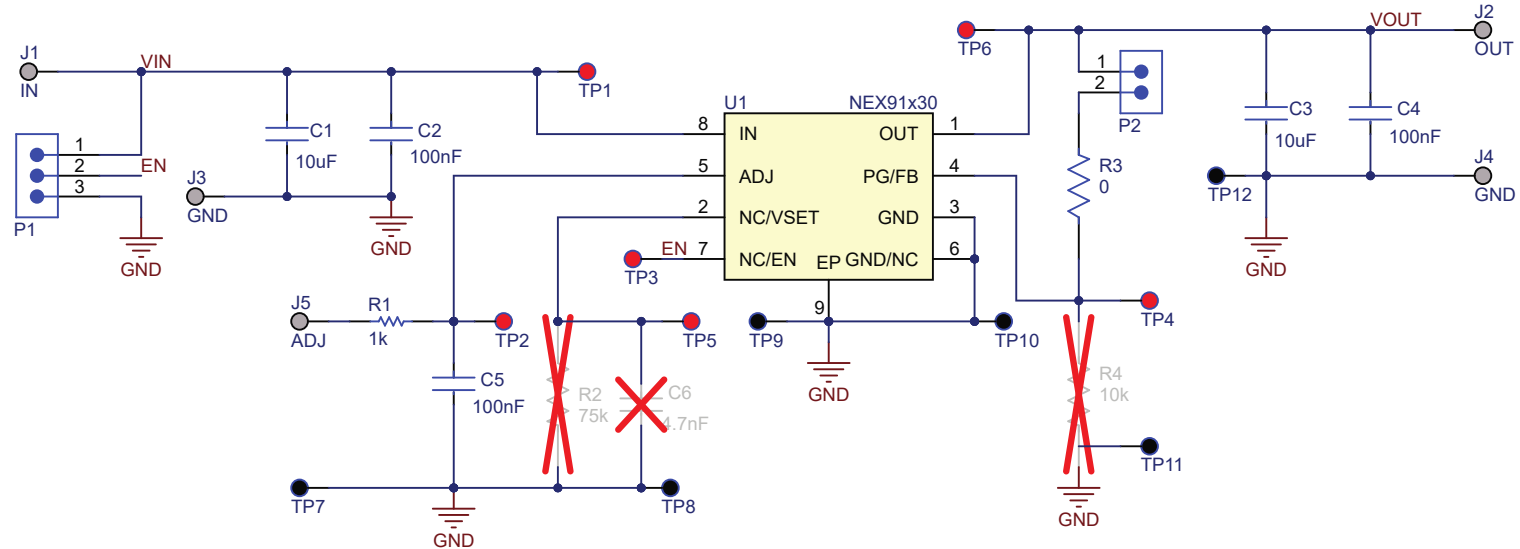
- Input voltage range: 4 V to 40 V
  - Absolute maximum input range: -40 V to 45 V ( $V_{IN} - V_{OUT} = -45\text{ V}$ )
- Wide output voltage range: 2 V to 40 V
  - Absolute maximum input range: -5 V to 45 V
- Very-tight output tracking tolerance: 5 mV (max)
- 300 mA maximum output current
- Low quiescent current ( $I_Q$ ):
  - 45  $\mu\text{A}$  maximum at light loads
  - 0.75  $\mu\text{A}$  maximum under  $EN = \text{low}$  (shut-down mode)

### 1.2. Applications

NEVB-NEX91630PB is used in the following applications:

- Off-board sensors supply
- High precision voltage tracking
- Body control modules (BCM)
- Power switches for off-board load

## 2. Schematic



**Note:** Components R2, C6 and R4 are not mounted on the EVB.

**Fig. 1. NEVB-NEX91630PB schematic diagram**

### 3. General configuration and description

This section describes the connectors and test points on the EVB and how to properly connect, set up and use the NEVB-NEX91630PB.

#### 3.1. Physical access

[Table 1](#) lists the NEVB-NEX91630PB connectors and test point functionality.

Table 1. Connectors and test points

Connector	Label	Descriptions
J1	IN	This connector is the input of the EVB
J2	OUT	This connector is the output of the EVB
J3, J4	GND	These connectors are the ground connector of the EVB
J5	ADJ	This connector is the ADJ of the EVB
TP1	VIN	Input test point
TP2	ADJ	ADJ test point
TP4	PG/FB	FB test point
TP6	VOUT	Output test point
TP7 to TP12	GND	Ground test points
P2	N/A	This jumper is used to pull-up FB to VOUT through a divider resistor

#### 3.2. Test setup

The following steps show how to set up this EVB.

1. FB ties to VOUT (P2: pin 1 connected to pin 2) to set feedback voltage.
2. Connect a power supply with positive voltage between J1 (VIN) and J3 (GND) connectors, ensure that the input range is 4 V to 40 V.
3. Connect a power supply with positive voltage between J5 (ADJ) and J4 (GND) connectors, ensure that the ADJ range is 2 V to 40 V.
4. Connect a load from 0 mA to 300 mA between J2 (OUT) and J4 (GND) connectors.
5. Turn on the input power supply to adjust the input voltage.
6. Turn on the ADJ power supply to adjust the ADJ voltage.
7. Turn on the load to adjust the output current.
8. Measure the respective parameters by using test points (TP1 to TP12).

4. PCB layout

Figure 2 and Figure 3 show the PCB layouts for the NEVB-NEX91630PB.

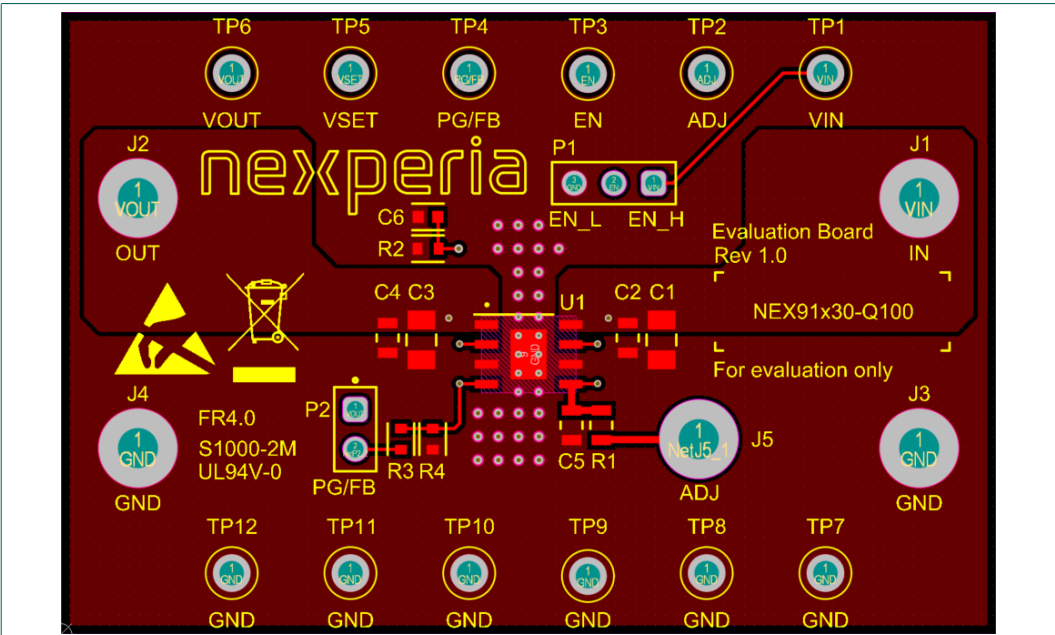


Fig. 2. NEVB-NEX91630PB top layer routing

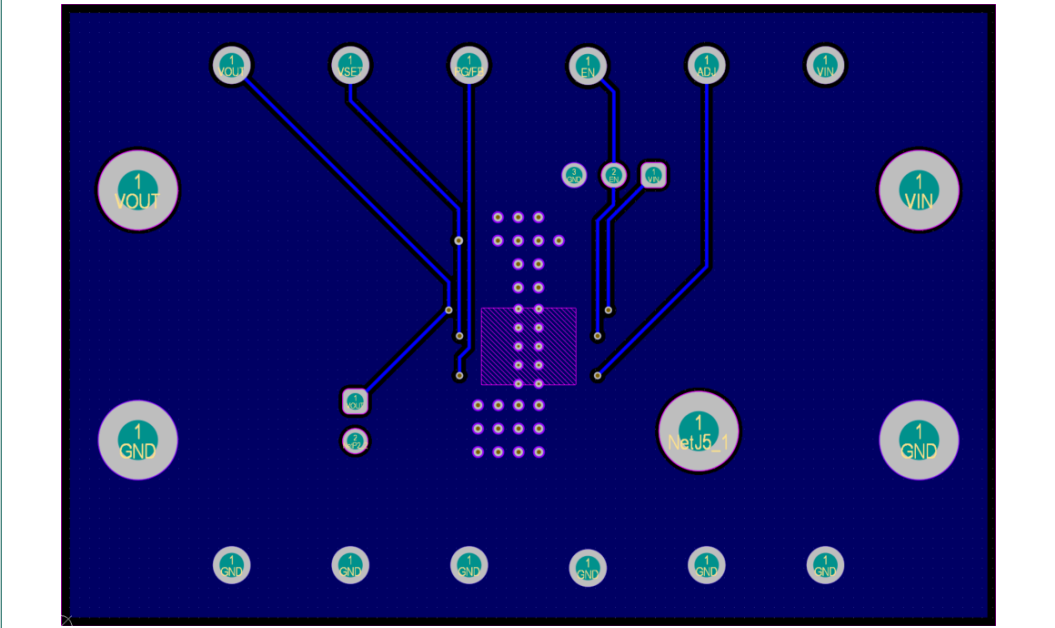


Fig. 3. NEVB-NEX91630PB bottom layer routing

5. Bill of materials

Table 2 details the bill of materials of NEVB-NEX91630PB.

Table 2. Bill of materials (BOM)

Designator	Value	Description	Quantity	Part number	Manufacturer
C1, C3	10 µF	Cap Ceramic 10 uF 50 V X7R 10% Pad SMD 1206 125 °C Automotive T/R	2	CGA5L1X7R1H106KT0Y0N	TDK
C2, C4, C5	100 nF	Cap Ceramic 100 nF 100 V X7R 10% Pad SMD 0805 125 °C Automotive T/R	3	CGA4J2X7R2A104K125AA	TDK
J1, J2, J3, J4, J5	TH	Terminal DBL Turret, Through Hole, RoHS	5	1502-2	Keystone Electronics
R1	1 kΩ	RES Thick Film, 1 kΩ, 1%, 0.125 W, 100 ppm/°C, 0805	1	RC0805FR-071KL	YAGEO
R3	0	RES Thick Film, 0 Ω, 1%, 0.125 W, 100 ppm/°C, 0603	1	RC0603FR-070RL	YAGEO
TP1, TP2, TP3, TP4, TP5, TP6	TH	PC test point compact red	6	5005	Keystone Electronics
TP7, TP8, TP9, TP10, TP11, TP12	TH	PC test point compact black	6	5006	Keystone Electronics
P1	TH	CONN HEADER VERT 3 POS 2.54 mm	1	PZ254V-11-03P	XFCN
P2	TH	CONN HEADER VERT 2 POS 2.54 mm	1	PZ254V-11-02P	XFCN
U1	IC	Automotive 300 mA, 40 V tracking LDO regulator	1	NEX91630PB-Q100	Nexperia

6. Revision history

Table 3. Revision history

Revision number	Date	Description
UM90065 v. 1	20250703	Initial version

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