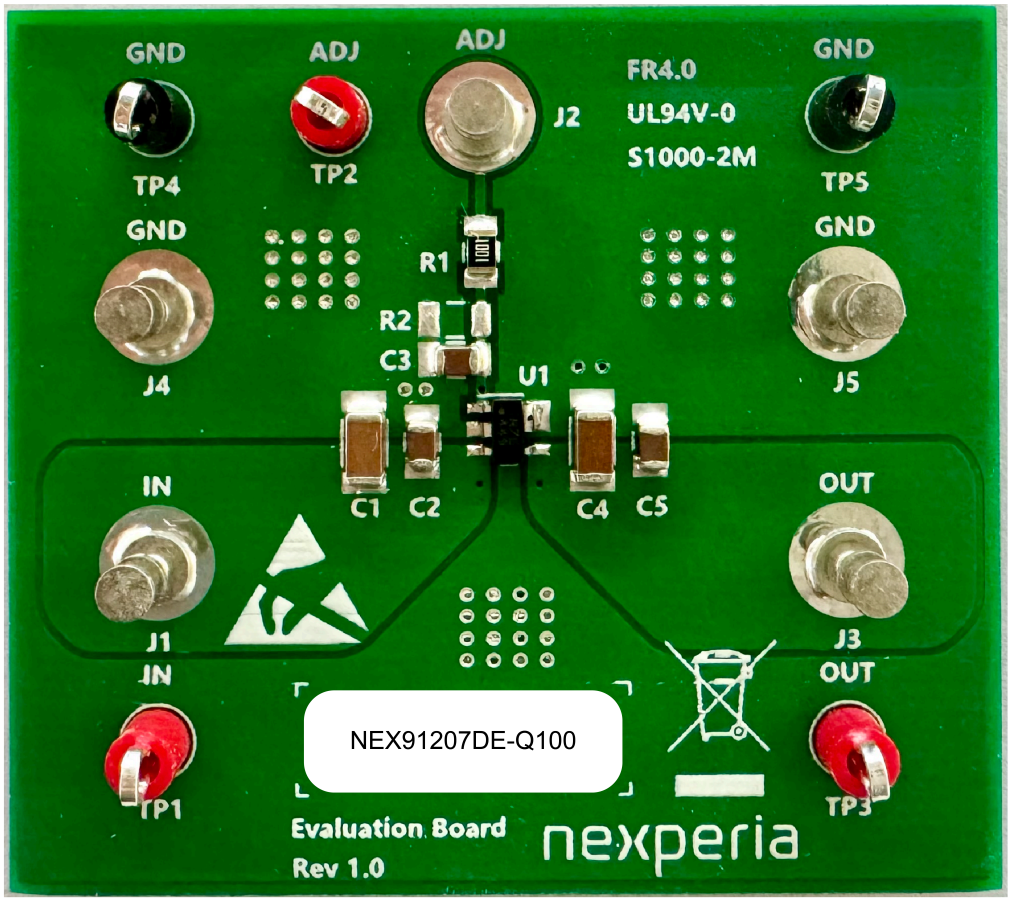
UM90056

Rev. 1.1 — 4 June 2025

user manual

NEX91207DE-Q100 70 mA, 40 V tracking LDO with 5 mV tolerance evaluation board



Abstract: This user manual describes the NEX91207DE-Q100 evaluation board. The NEX91207DE-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: NEX91207DE-Q100, LDO voltage tracking regulator, evaluation board

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1. Introduction

This evaluation board (EVB) is designed for NEX91207DE-Q100. It helps engineers to evaluate the operation and performance of NEX91207DE-Q100. The NEX91207DE-Q100 device is a tracking LDO designed for up to 40 V input voltage with maximum 70 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: -42 V to 45 V (VIN - VOUT = -42 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)
- 70 mA maximum output current
- Low quiescent current (I_Q):
  - 70 µA maximum at light loads
  - 3.5 µA maximum under EN = low (shutdown mode)

1.2. Applications

NEX91207DE-Q100 is used in the following applications:

- Supply for off-board sensors
- High precision voltage tracking
- Body Control Modules (BCMs)
- Power switch for off-board loads

2. Schematic

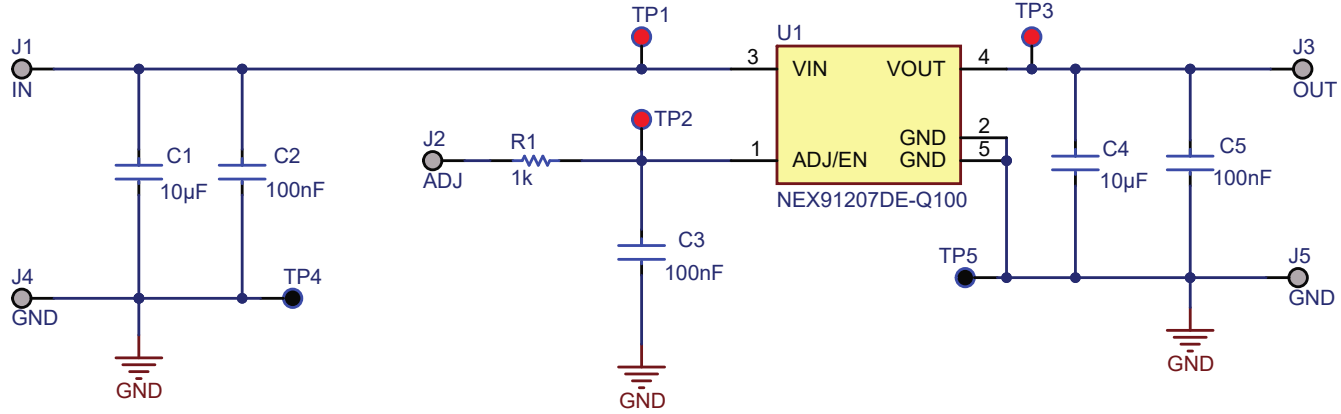

Fig. 1. NEVB-NEX91207DE schematic diagram

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-NEX91207DE.

3.1. Physical access

Table 1 lists the NEVB-NEX91207DE connectors and test point functionality.

Table 1. Connectors and test points

Connector	Label	Descriptions
J1	VIN	This connector is the input of the EVB
J2	EN/ADJ	This connector is the EN/ADJ of the EVB
J3	OUT	This connector is the output of the EVB
J4, J5	GND	These connectors are the ground connectors of the EVB
TP1	IN	Device input test point
TP2	OUT	Output test point
TP3	EN/ADJ	EN/ADJ test point
TP4, TP5	GND	Ground test points

3.2. Test setup

The following steps show how to set up this EVB.

1. Connect positive voltage of power supply between J1 (VBAT) and J4 (GND) connectors, ensure that the input range is 4 V to 40 V.
2. Connect positive voltage of power supply between J3 (EN/ADJ) and J2 (GND) connectors, ensure that the EN/ADJ range is 2 V to 40 V.
3. Connect a load from 0 mA to 70 mA between J3 (OUT) and J4 (GND) connectors.
4. Turn on the input power supply.
5. Turn on the EN/ADJ power supply.
6. Measure the respective parameters by using test points (TP1 to TP5).

4. PCB layout

Figure 2 and Figure 3 show the PCB layouts for the NEVB-NEX91207DE.

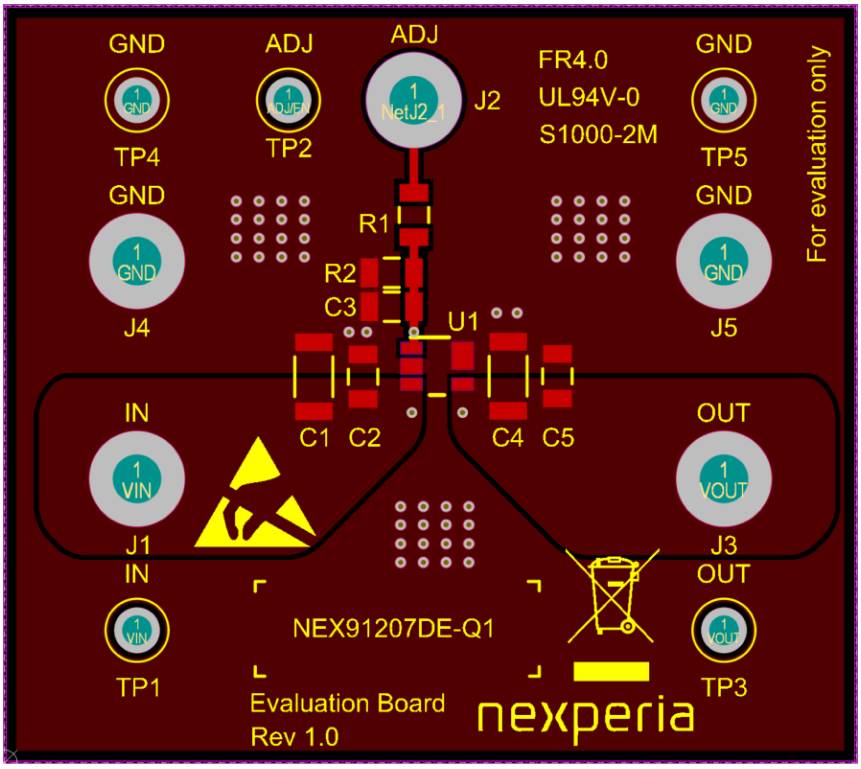

Fig. 2. NEVB-NEX91207DE top layer routing

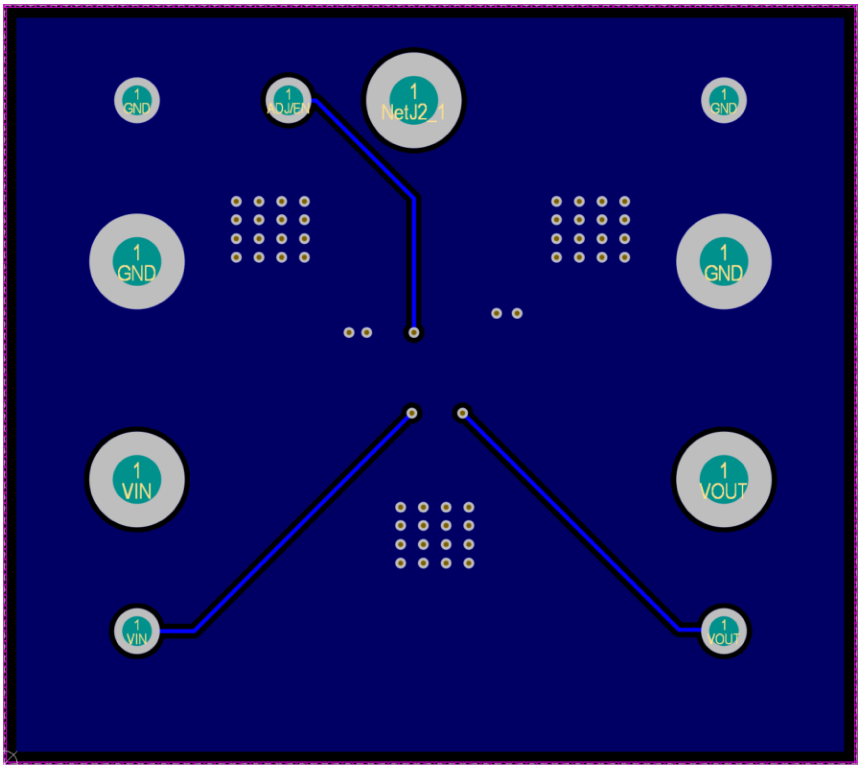

Fig. 3. NEVB-NEX91207DE bottom layer routing

5. Bill of materials

Table 2 details the bill of materials of NEVB-NEX91207DE.

Table 2. Bill of materials (BOM)

Designator	Value	Description	Quantity	Part number	Manufacturer
C1, C4	10 µF	Cap Ceramic 10 µF 50 V X7R 10% Pad SMD 1206 125 °C Automotive T/R	2	CGA5L1X7R1H106K160AC	TDK
C2, C3, 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%, 0.25 W, 100 ppm/°C, 0803	1	AC0805FR-7W1KL	YAGEO
TP1, TP3, TP5	TH	PC test point compact red	3	5005	Keystone Electronics
TP2, TP4	TH	PC test point compact black	2	5006	Keystone Electronics
U1	-	Automotive 70 mA, 40 V tracking LDO regulator	1	NEX91207DE-Q100	Nexperia

6. Revision history

Table 3. Revision history

Revision number	Date	Description
UM90056 v. 1.1	20250604	Table 2 updated.
UM90056 v. 1	20250429	Initial version

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