

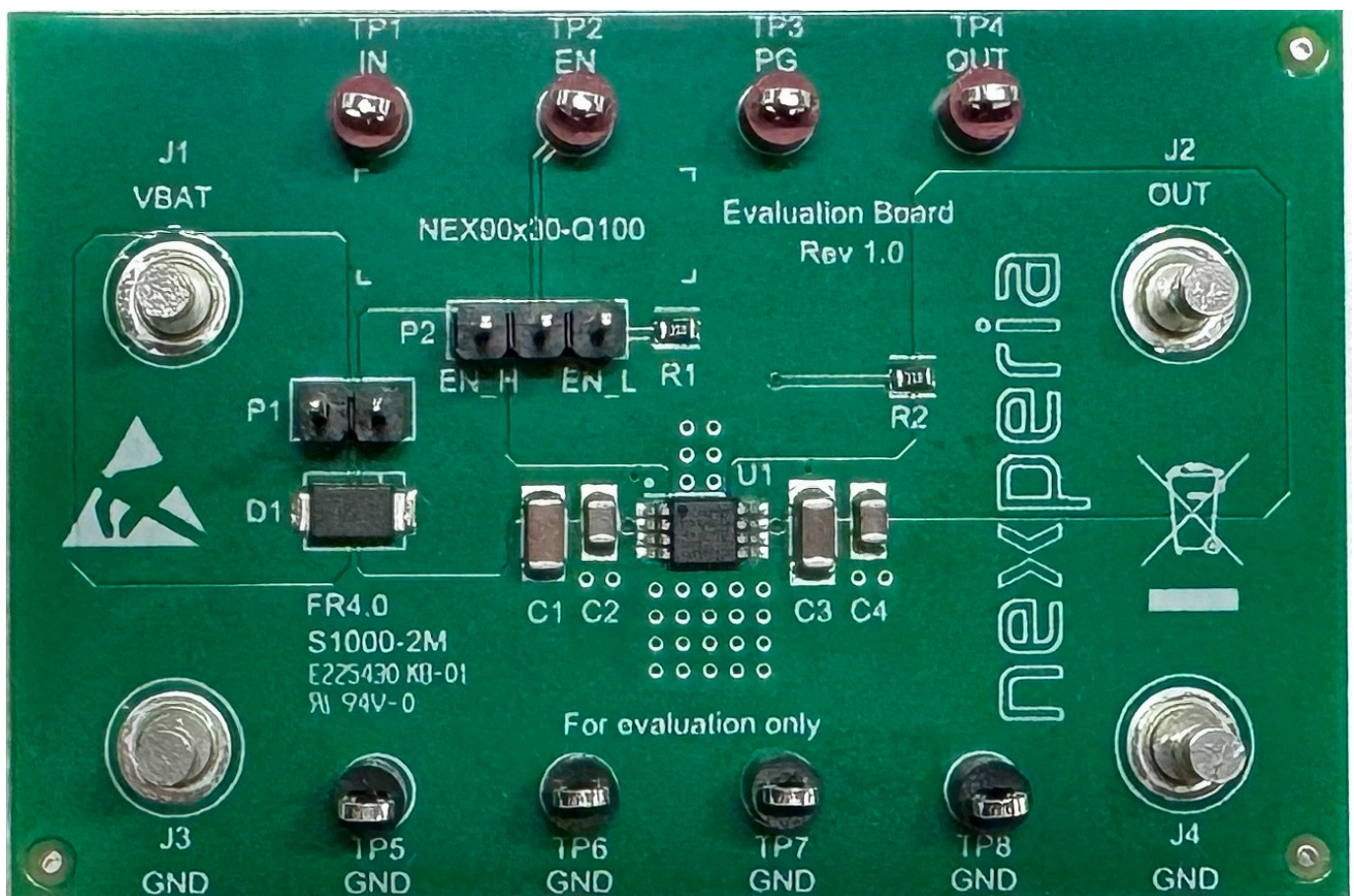


UM90051

Rev. 1 — 19 March 2025

user manual

NEX90530BPA-Q100 automotive 300 mA, 40 V low I_q (5.3 μ A) LDO evaluation board



Abstract: This user manual describes the NEVB-NEX90530BPA evaluation board. The NEX90530BPA-Q100 is a 40 V, 300 mA low-dropout (LDO) linear regulator with 5.3 μ A typical quiescent current at light load and 300 nA typical shut-down current under disabled mode for automotive always on/stand by applications. This document contains EVB schematic and configuration, bill of materials and board layouts.

Keywords: NEX90530BPA-Q100, LDO linear regulator, ultra-low quiescent current, evaluation board

1. Introduction

This evaluation board (EVB) is designed for NEX90530BPA-Q100. It helps engineers to evaluate the operation and performance of NEX90530BPA-Q100. The NEX90530BPA-Q100 device is an LDO designed for up to a 40 V input voltage with maximum 300 mA output current.

2. Features

The following features are available on this EVB:

- Input voltage range: 3 V to 40 V
- Output voltage and current: 5 V/300 mA
- Power good features
- Use jumpers to enable or disable device output

3. Application

The NEX90530BPA-Q100 is used in the following applications:

- Body control modules
- Automotive lighting
- Automotive head units and clusters
- Telematics control units
- Powertrain of electric vehicles and hybrid electric vehicles

4. Schematic

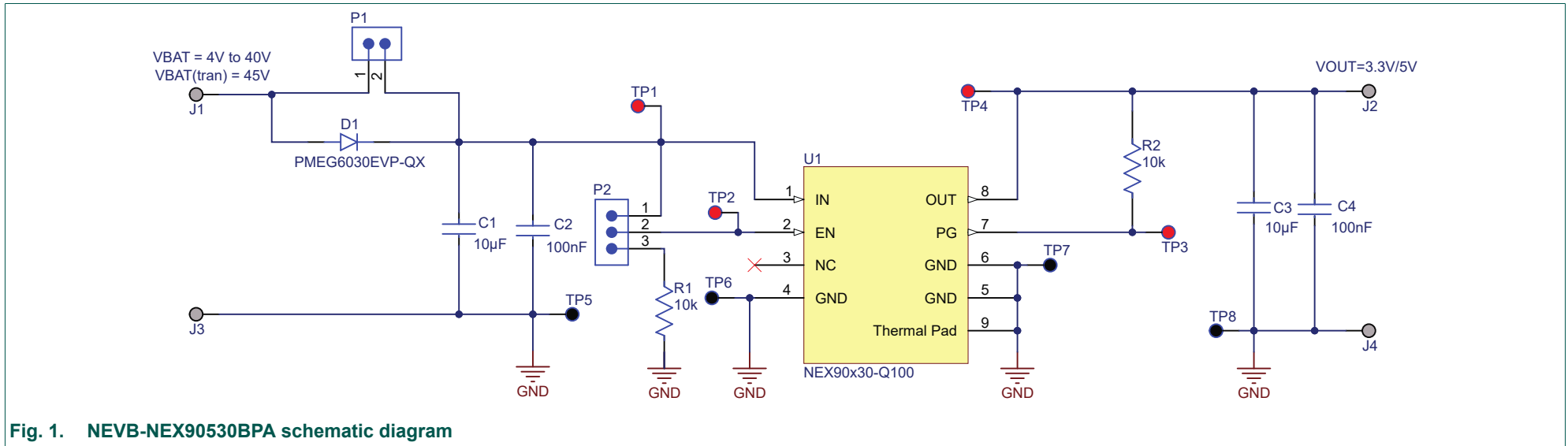


Fig. 1. NEVB-NEX90530BPA schematic diagram

5. General configuration and description

This section describes the connectors, jumpers, and test points on the EVB and how to properly connect, set up and use the NEX90530BPA-Q100 EVB.

5.1. Physical access

[Table 1](#) lists the NEVB-NEX90530BPA EVB connectors, jumpers, and test point functionality.

Table 1. Connectors and jumpers

Connector	Label	Descriptions
J1	VBAT	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 connectors of the EVB
P1	Not applicable	This jumper is for bypass of reverse diode D1
P2	Not applicable	This jumper is used to enable or disable configuration
TP1	IN	Device input test point
TP2	EN	Enable test point
TP3	PG	Power good test point
TP4	OUT	Output test point
TP5, TP6, TP7, TP8	GND	Ground test points

5.2. Test setup

The following steps show how to set up this EVB.

1. EN ties to IN (PIN2 of P2 connected to PIN1) to switch to Enabled status or ties to GND (PIN2 of P2 connected to PIN3) to switch to Disabled status.
2. P1 is floating to connect reverse diode or short together to bypass reverse diode.
3. Connect a power supply of positive voltage between J1 (VBAT) and J3 (GND) connectors, ensure the input range is 3 V to 40 V.
4. Connect a load from 0 mA to 300 mA between the J2 (OUT) and J4 (GND) connectors.
5. Turn on the input power supply.
6. Measure the respective parameters by using test points (TP1 to TP8).

6. PCB layout

Figure 2 and Figure 3 show the PCB layouts for the NEVB-NEX90530BPA EVB.

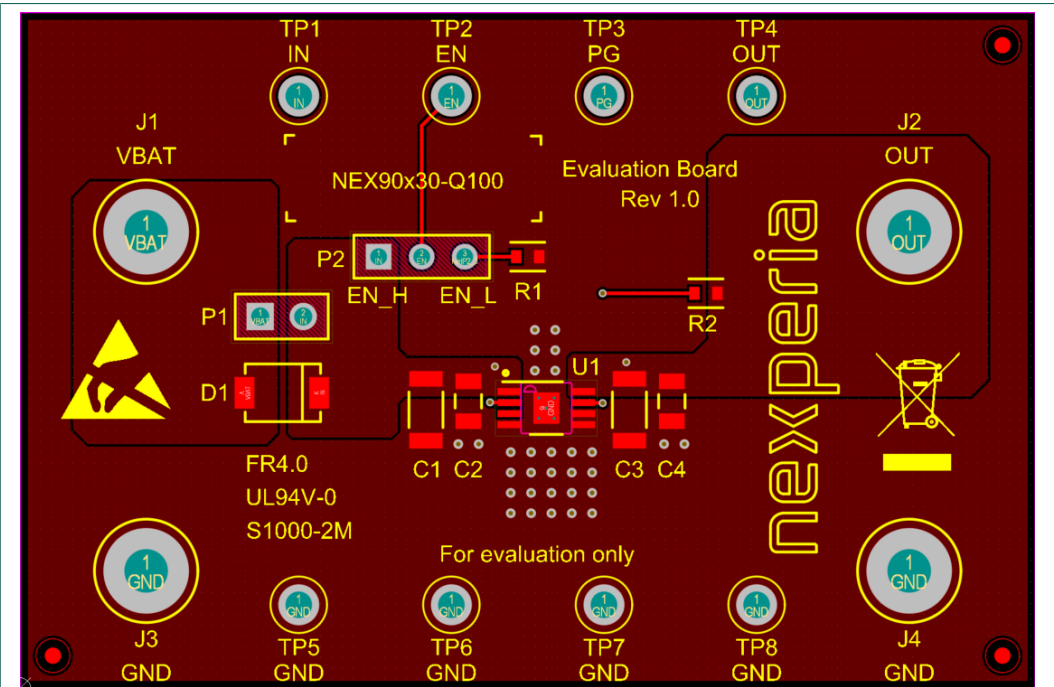


Fig. 2. NEVB-NEX90530BPA top layer routing

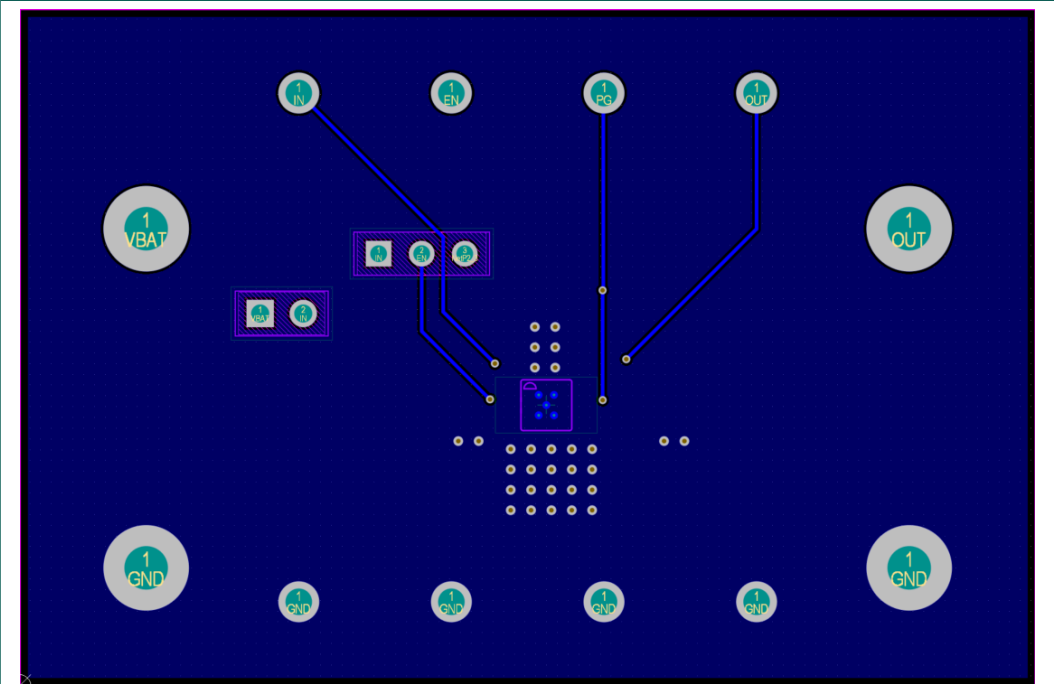


Fig. 3. NEVB-NEX90530BPA bottom layer routing

7. Bill of materials

Table 2 details the bill of materials of NEX90530BPA-Q100 EVB.

Table 2. Bill of materials (BOM)

Reference	Value	Description	Quantity	Part Number	Manufacturer
C1	10 µF	Cap Ceramic 10 µF 50 V X7R 10% Pad SMD 1206 125 °C Automotive T/R	1	CGA5L1X7R1H106KT0Y0N	TDK
C2, C4	100 nF	Cap Ceramic 100 nF 100 V X7R 10% Pad SMD 0805 125 °C Automotive T/R	2	CGA4J2X7R2A104K125AA	TDK
C3	10 µF	Cap Ceramic 10 µF 16 V X7R 10% Pad SMD 1206 125 °C Automotive T/R	1	CGA5L1X7R1C106K160AC	TDK
D1	SMA	PMEG6030EVP-Q - High-temperature 60 V, 3 A Schottky barrier rectifier	1	PMEG6030EVP-QX	Nexperia
J1, J2, J3, J4	TH	Terminal DBL Turret, Through Hole, RoHS	4	1502-2	Keystone Electronics
P1	TH	Conn header vert 2 POS 2.54 mm	1	61300211121	We-online
P2	TH	Conn header vert 3 POS 2.54 mm	1	61300311121	We-online
R1, R2	10 kΩ	RES Thick Film, 10 kΩ, 5%, 0.1 W, 200 ppm/°C, 0603	2	RC0603FR-0710KL	YAGEO
TP1, TP2, TP3, TP4	TH	Test point compact red	4	5005	Keystone Electronics
TP5, TP6, TP7, TP8	TH	Test point compact black	4	5006	Keystone Electronics
U1	-	300 mA High Voltage Ultra-Low Iq Low Dropout Regulator	1	NEX90530BPA-Q100	Nexperia

8. Revision history

Table 3. Revision history

Revision number	Date	Description
UM90051 v.1	20250319	Initial version

9. Legal information

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