



UM90042

Rev. 1 — 12 February 2025

user manual

NEX30606 evaluation board: 1.8 V to 5.0 V, 600 mA, 220 nA ultra-low quiescent current, step-down converter



Abstract: This user manual describes the NEX30606 evaluation board. The NEX30606 is designed for MCU, GPS and other chips to provide 0.7 V to 3.3 V adjustable output voltage power supply. This document contains the EVB schematics, EVB configuration, bill of materials (BOM), board layout drawing, and assembly drawings.

Keywords: NEX30606, Step-down converter, Ultra-low operating quiescent current, Evaluation board

1. Introduction

This evaluation board (EVB) is designed for NEX30606. The output can provide 16-step adjustable voltage from 0.7 V to 3.3 V, which can be changed through the resistance on V_{SET} pin.

Features

The following features are available on this EVB:

- Input voltage range: 1.8 V to 5.0 V
- Output voltage range: 0.7 V to 3.3 V (16-step adjustable voltage)
- Output current: up to 600 mA
- Use jumper to enable or disable output

Applications

- Wearable electronics
- Smart meters
- Asset tracking device
- Medical sensor patches and monitors
- Industrial IoT/NB-IoT
- AA battery-powered applications

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2. Schematic

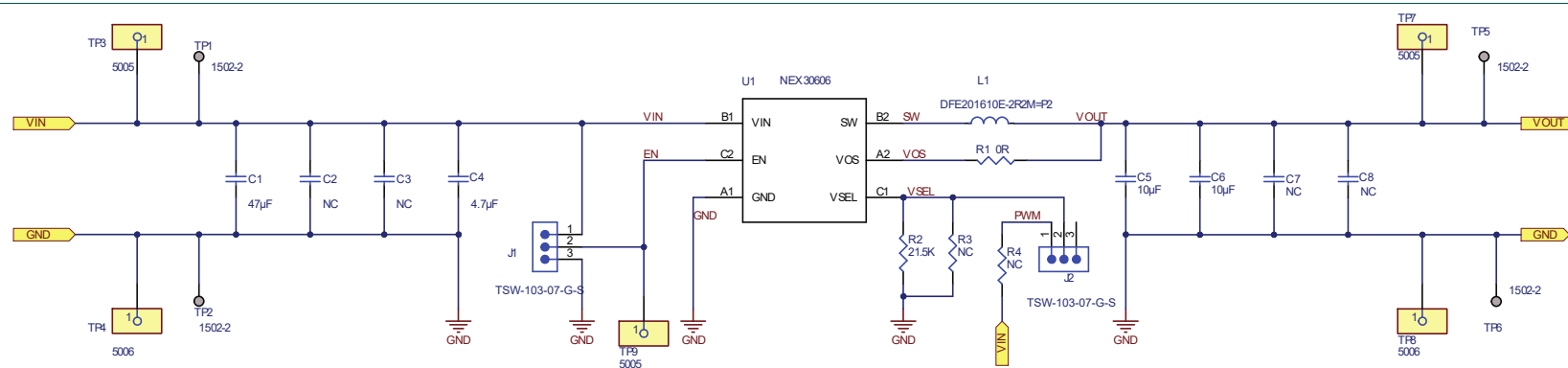


Fig. 1. NEX30606 EVB schematic

3. 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 NEX30606 EVB.

Physical access

Table 1 lists the NEX30606 EVB connector functionality.

Table 1. Bill of material (BOM)

Connector	Label	Description
TP1	V _{IN}	Power input for this board
TP2, TP6	GND	Power ground
J1	EN	Enable connector, including EN, GND and High (V _{IN}) Use jumpers to enable or disable ON and OFF.
J2	-	N/A
TP5	V _{OUT}	V _{OUT} output pin
TP3	+S_V _{IN}	TP1 V _{IN} sense pin and test point
TP4	-S_V _{IN}	TP1 V _{IN_GND} sense pin and test point
TP9	EN	TP3 EN sense pin and test point
TP7	+S_V _{OUT}	TP4 V _{OUT} sense pin and test point
TP8	-S_V _{OUT}	TP5 V _{OUT_GND} sense pin and test point

Test setup

Fig. 2 shows the typical setting of NEX30606 EVB. Apply an input voltage of 1.8 V to 5.0 V to V_{IN}, and then enable the jumper on J1 EN connector ON, the output on V_{OUT} defaults to 1.8 V. Different output voltage can be set by changing the value of R2/R3 on V_{SEL}. Refer to Table 2 for details.



Fig. 2. NEX30606 evaluation board

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Table 2. NEX30606 output voltage setting

V _{SET}	Output voltage setting V _{OUT} (V)	R _{SET} (kΩ) resistor value, E96 resistor, 1% accuracy
0	1.8 V	Connected to GND (no resistor needed)
1	0.7 V	3.32 kΩ
2	0.8 V	5.11 kΩ
3	0.9 V	7.50 kΩ
4	1.2 V	10.2 kΩ
5	1.3 V	13.3 kΩ
6	1.5 V	16.9 kΩ
7	1.8 V	21.5 kΩ
8	1.85 V	26.7 kΩ
9	1.9 V	52.3 kΩ
10	2.7 V	82.5 kΩ
11	2.8 V	118 kΩ
12	2.95 V	162 kΩ
13	3.0 V	210 kΩ
14	3.3 V	267 kΩ
15	0.7 V	340 kΩ or larger

4. PCB layout

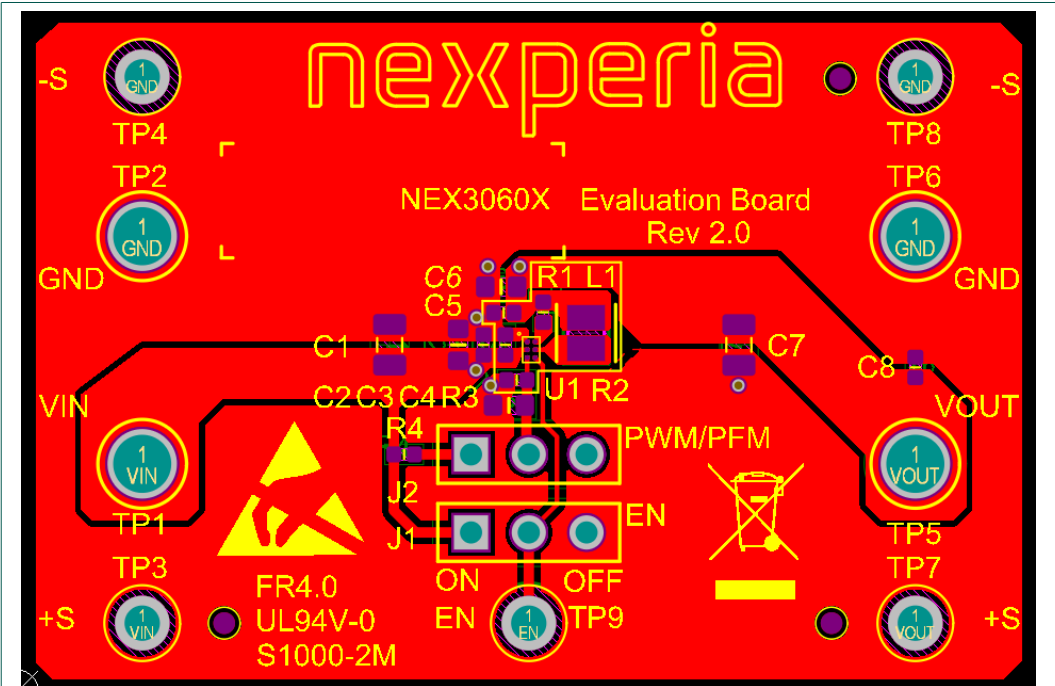


Fig. 3. Top silk screen layer

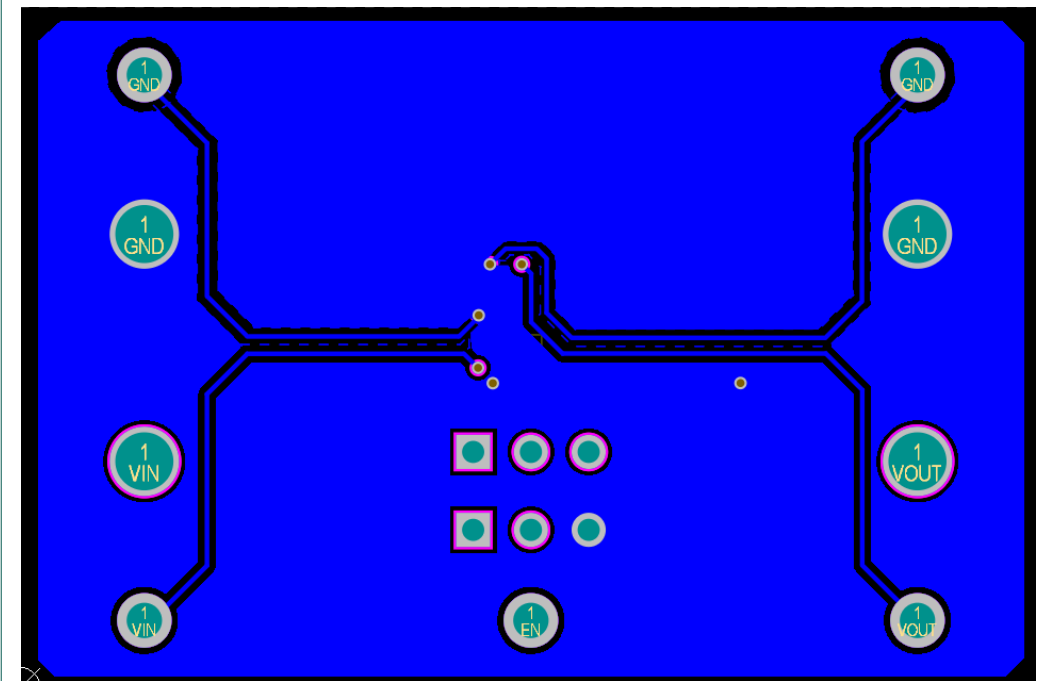


Fig. 4. Bottom silk screen layer

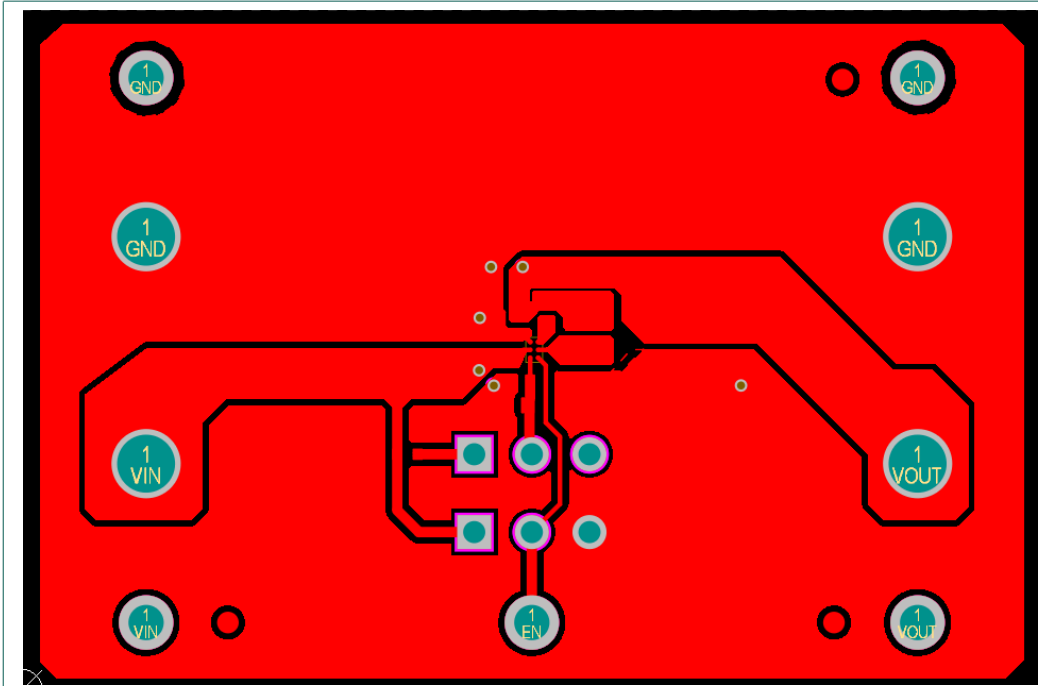


Fig. 5. Top layer

5. Bill of material

Table 3. Bill of material (BOM)

Reference	Quantity	Value	Description/Value/Package	Package	Part Number	Manufacturer
C1	1	47 μ F	CAP, 47 μ F, 6.3 V, \pm 20%, X5R, 0805	0805	GRM21BR60J476ME01	muRata
C4	1	4.7 μ F	CAP, 4.7 μ F, 6.3 V, \pm 20%, X5R, 0402	0402	GRM155R60J475ME87	muRata
C5, C6	2	10 μ F	CAP, 10 μ F, 6.3 V, \pm 20%, X5R, 0402	0402	GRM155R60J106ME15	muRata
TP1, TP2, TP5, TP6	4	-	Terminal, Turret, TH, Double	Keystone 1502-2	1502-2	Keystone
J1, J2	2	-	Header, 100mil, 3x1, Gold, TH	3x1 Header	PBC03SAAN	Sullins Connector Solutions
L1	1	2.2 μ H	Inductor, 2.2 μ H, 2.1 A, 0.090 Ω , SMD	0806 (2016)	HTQH20120H-2R2MSR	Cyntec
R1	1	0 Ω	RES, 0 Ω , 1%, 0.05 W, 0201	0201	Std	Std
R2	1	21.5 k Ω	RES, 21.5K, 1%, 0.05 W, 0201	0201	Std	Std
TP3,TP7, TP9	3	-	Test Point, Compact, Red, TH	-	5005	Keystone
TP4,TP8	2	-	Test Point, Compact, Black, TH	-	5006	Keystone
U1	1	-	NEX30606UA	CSP-6	NEX30606	Nexperia
C2, C3, C7, C8, R3, R4	0	DNP	DNP	-	-	-

6. Revision history

Table 4. Revision history

Revision number	Date	Description
UM90042 v.1	20250212	Initial version

7. Legal information

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