

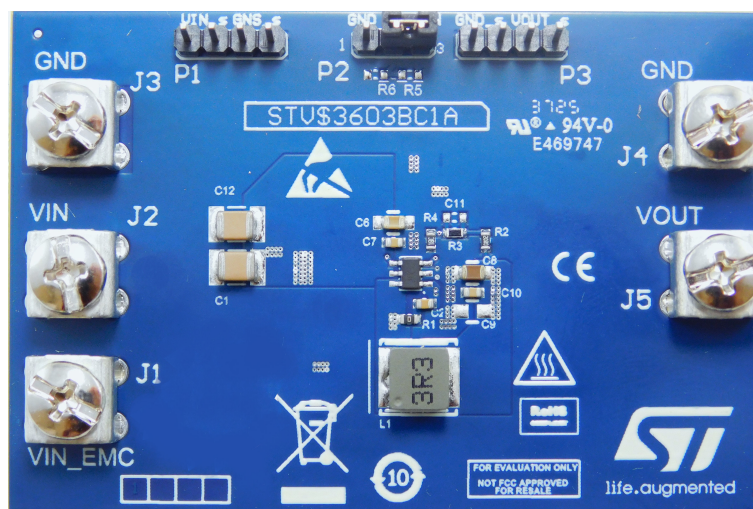
Evaluation board based on DCP3603 - 36 V, 3 A synchronous buck converter in SOT23-6L

Introduction

The **STEVAL-3603BC1** evaluation board demonstrates a smart converter design, able to deliver up to 3 A output current from a 3.3 V to 36 V input, with a 5.0 V output voltage. The board features the **DCP3603** miniaturized synchronous step-down converter, which implements enhanced peak current control and advanced design circuitry to minimize quiescent current.

The board highlights key application benefits made possible by DCP3603, including high efficiency and small PCB size, and is ideal for power conversion solutions in major appliances, smart metering, industrial 24 V bus conversion and general-purpose wide Vin power supplies. The device used on this board is supplied in the thin SOT23-6L package.

Figure 1. STEVAL-3603BC1 top view



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1 Electrical performance specification

Table 1 provides a summary of the electrical performance of STEVAL-3601CV1.

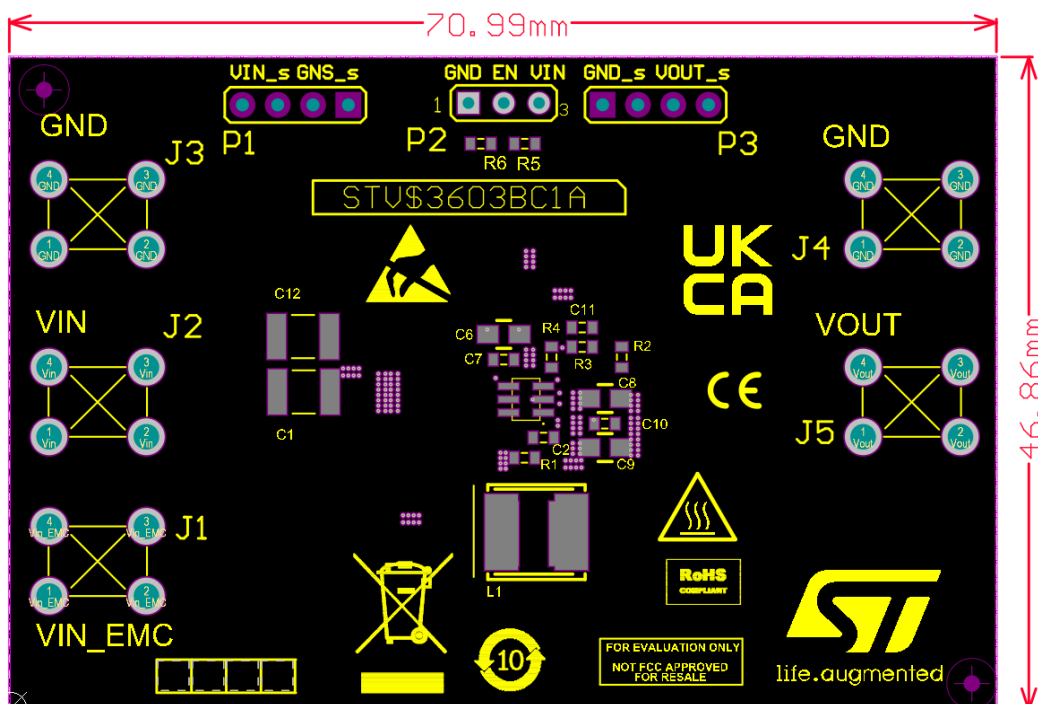
Table 1. Electrical performance specification (Ta = 25°C)

Symbol	Parameter	Min.	Typ.	Max.	Unit
Vin	Input supply voltage	-	12 or 24	36	V
Vout	Output voltage	-	5	-	V
Iout	Output current	-	-	3	A

2 Input/output connector descriptions

- **J1:** input power supply (Vin_EMC). The input voltage is filtered to decrease the EMC. The supply voltage should be set with a current limitation compatible with the power board request.
- **J2:** main input power supply (Vin). The input voltage is not filtered to decrease the EMC. The supply voltage should be set with a current limitation compatible with the power board request.
- **J3:** ground (GND).
- **J4:** ground (GND).
- **J5:** output voltage connector (Vout).
- **P1:** input voltage sense connector:
 - Vin_S: input voltage sense.
 - Vin_S: input voltage sense.
 - GND_S: ground output sense.
 - GND_S: ground output sense.
- **P3:** output voltage sense connector:
 - Vout_S: output voltage sense.
 - Vout_S: output voltage sense.
 - GND_S: ground output sense.
 - GND_S: ground output sense.
- **P2:** ENABLE pin:
 - Place the jumper across EN and Vin to enable the buck converter.
 - Place the jumper across EN and GND to disable the buck converter.

Figure 2. Connector descriptions

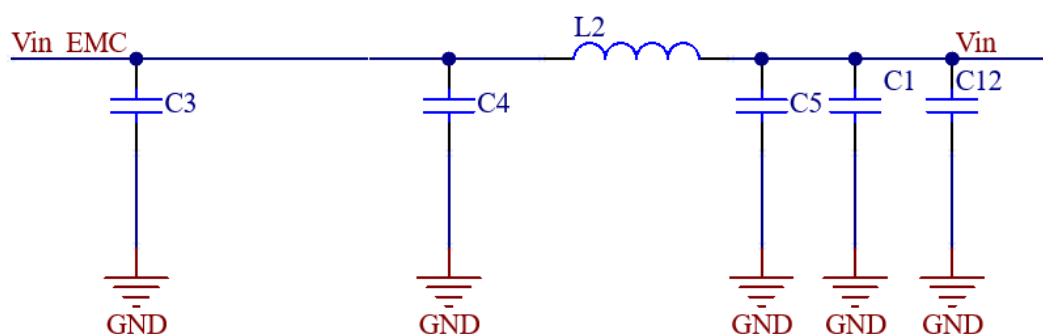


3 Input EMC filter

STEVAL-3603BC1 is compliant with CISPR16-4-2.

An input filter helps to reduce the EMC. The filter consists of an inductor (L2) and four ceramic capacitors (C1, C12, C3, and C5).

Figure 3. Input EMC filter



4 How to use the board

STEVAL-3603BC1 is set to deliver a 5 V output voltage. This board is best suited for applications where high efficiency at low current is preferred to output ripple.

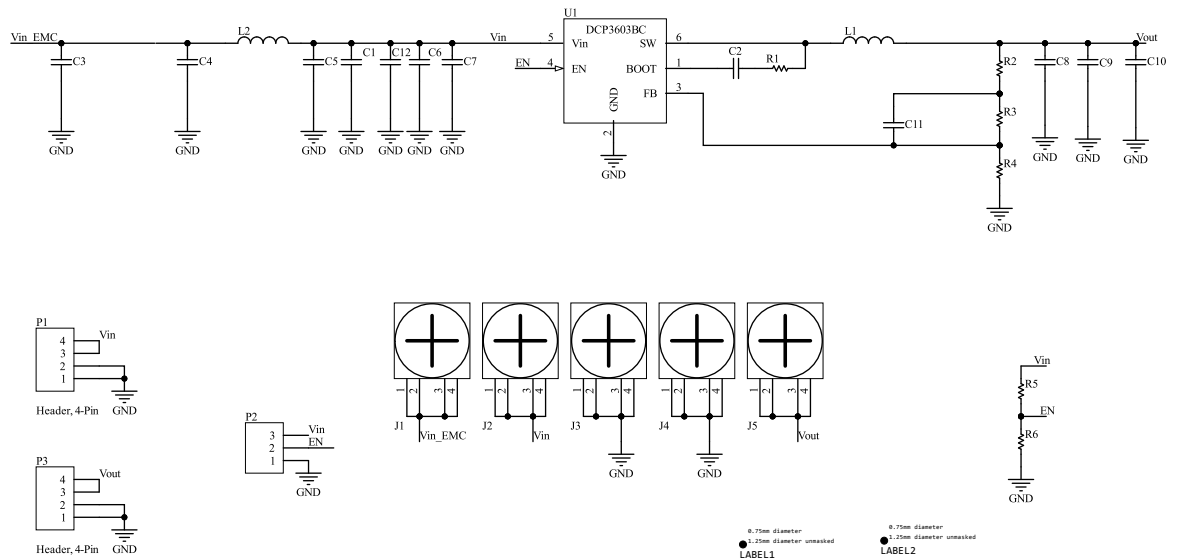
- Connect the voltage supply between Vin and GND connectors or Vin_EMC and GND connectors.
- Connect the load (power resistor or active load) between Vout and GND connectors.
- Set the supply voltage Vin to 12 V or 24 V.
- By default, Vout is set to 5 V. Increase or decrease the output power resistor or active load to reach the suitable output current (max 3 A).

Note: *For Step 1 and Step 2, the wire connection should be as short as possible to avoid, or limit, possible oscillations due to the parasitic inductance of the wire. If the input supply is located more than a few inches from STEVAL-3603BC1, additional bulk capacitance can be required, in addition to the ceramic bypass capacitors. The amount of bulk capacitance is not critical, but a 100 μ F electrolytic capacitor is a typical choice.*

Notice: *Using DCP3603, the board works in PSK mode at light load to guarantee high efficiency performance.*

5 Schematic diagrams

Figure 4. STEVAL-3603BC1 circuit schematic



6 PCB

Figure 5. STEVAL-3603BC1 top layer

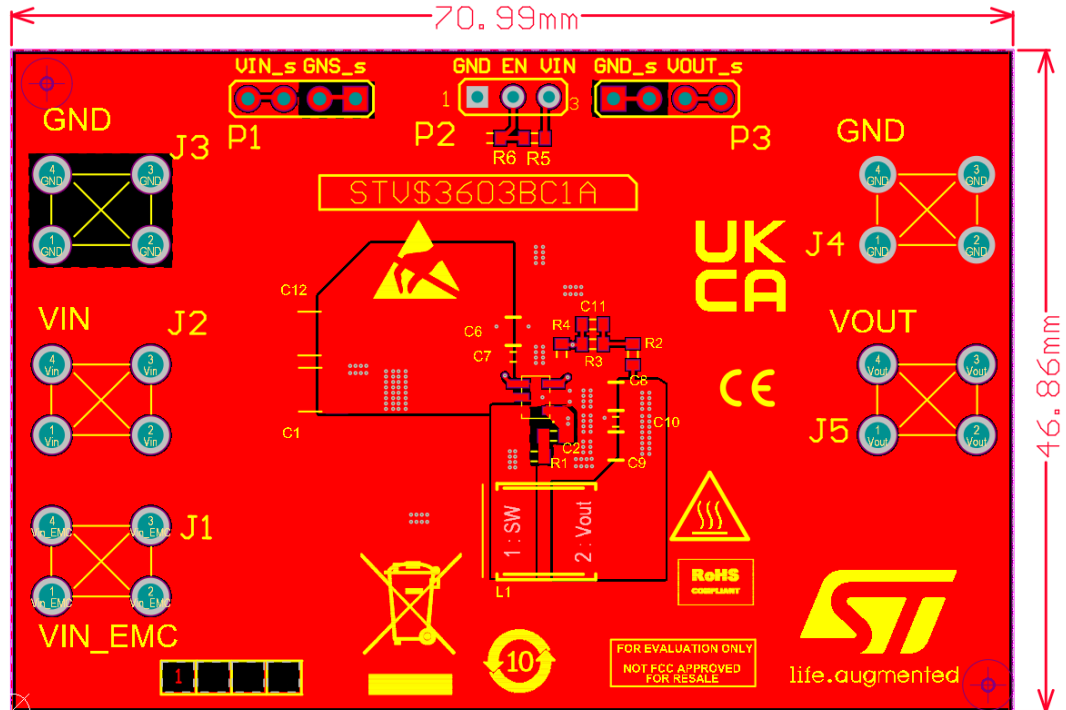


Figure 6. STEVAL-3603BC1 L1 layer

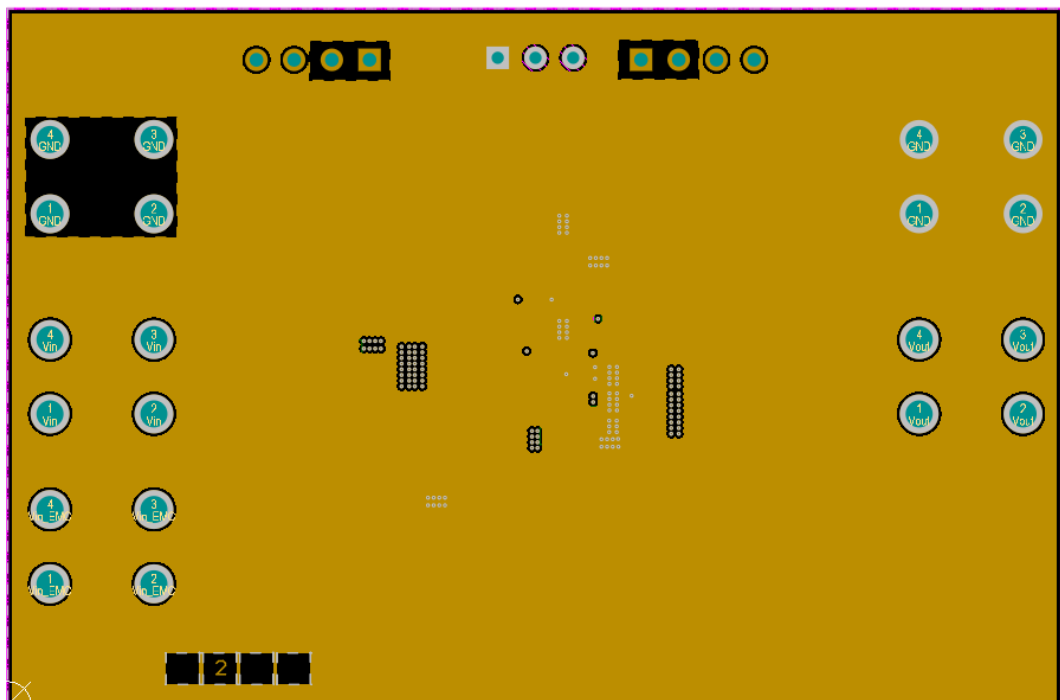


Figure 7. STEVAL-3601BC1 L2 layer

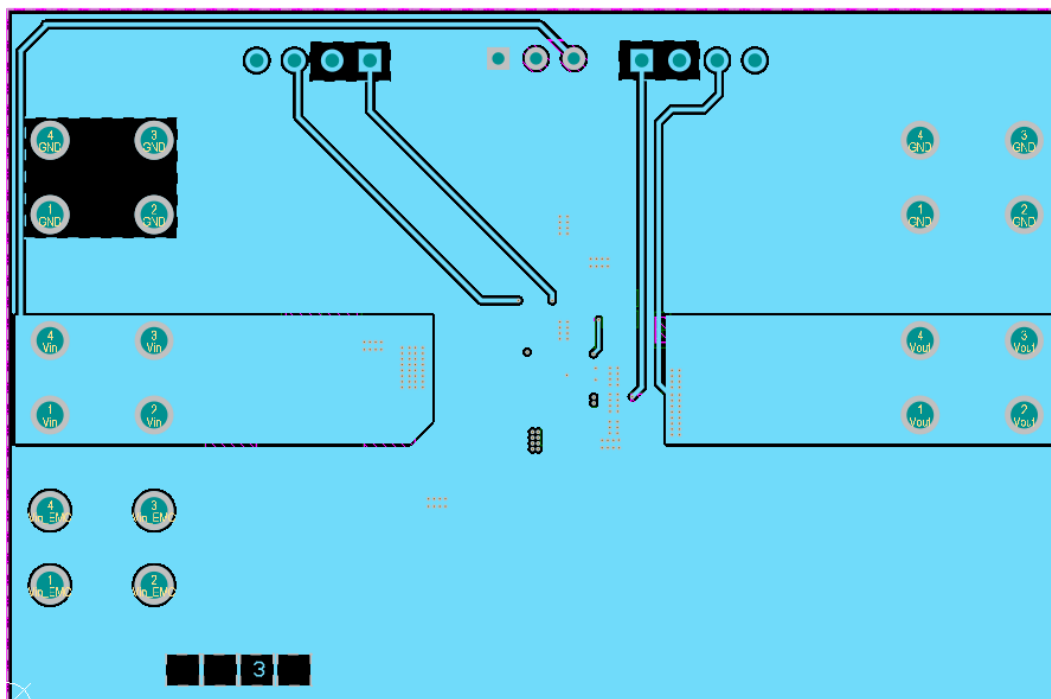


Figure 8. STEVAL-3601BC1 bottom layer

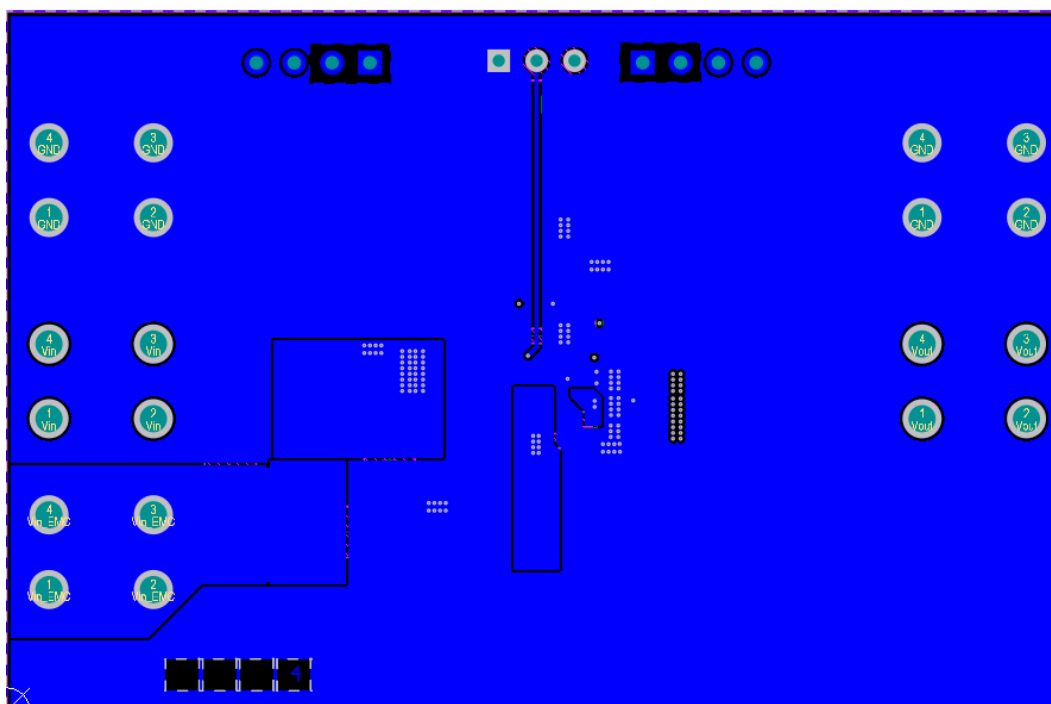


Figure 9. STEVAL-3603BC1 top assay

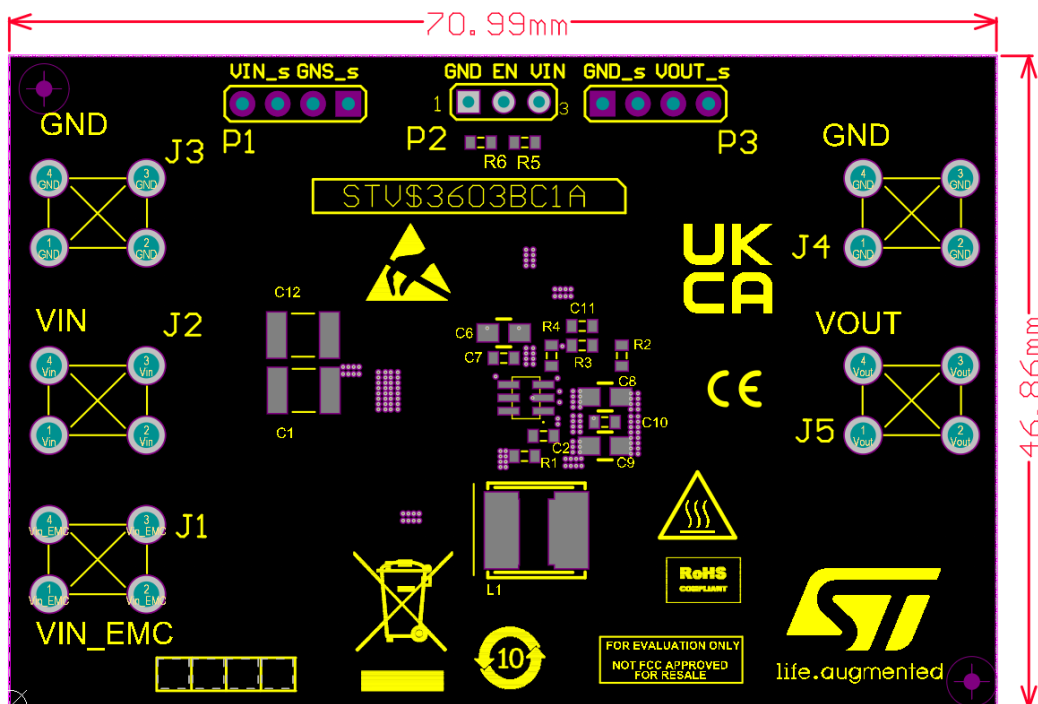
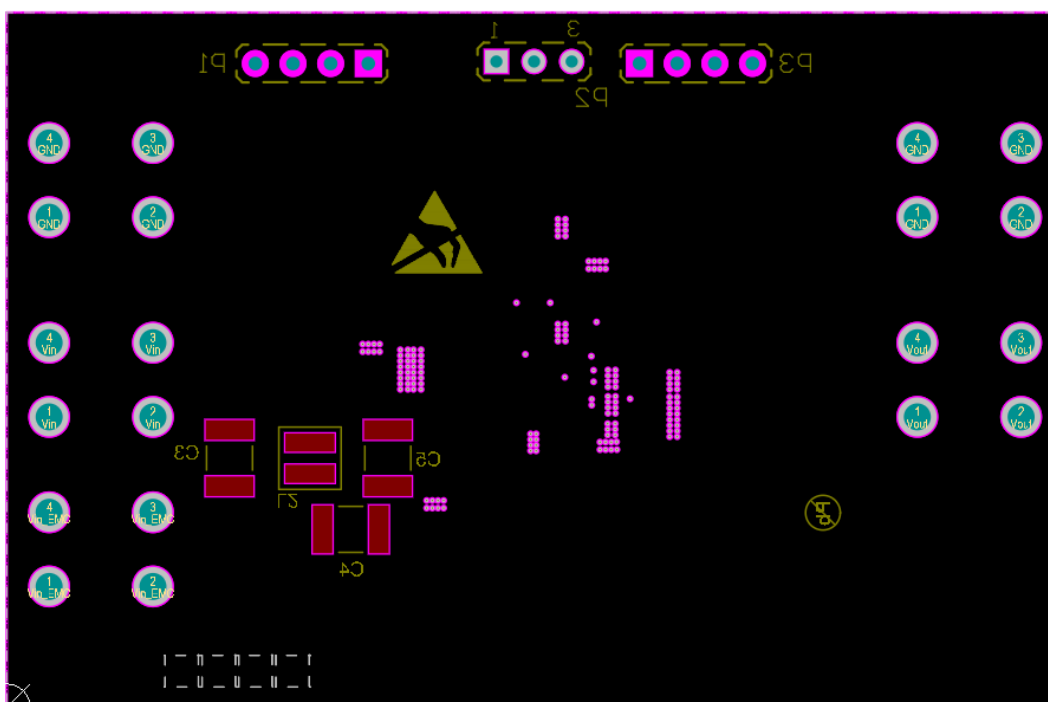


Figure 10. STEVAL-3603BC1 bottom assay



7 Bill of materials

Table 2. STEVAL-3603BC1 bill of materials

Item	Q.ty	Ref.	Part/value	Description	Manufacturer	Order code
1	1	R1	0	Thick film resistor	RS	732-5646
2	1	R2	20 Ω	Thick film resistor	RS	678-9973
3	1	R3	73.2 k Ω	Thick film resistor	RS	708-8981
4	1	R4	15 k Ω	Thick film resistor	RS	228-4708
5	2	R5, R6	NOT ASSEMBLY			
6	2	C1, C12	10 μ F	10 μ F / 50V / 1210/ X7F / 10%	Würth Electronics Inc	885 012 209 073
7	3	C2, C7, C10	0.1 μ F	0.1 μ F / 50V / 0603 / X7R / 10%	Würth Electronics Inc	885 012 206 095
8	2	C3, C5	4.7 μ F	4.7 μ F / 50V / 1210/ X7F / 10%	Würth Electronics Inc	885 012 209 048
9	1	C6	2.2 μ F	2.2 μ F / 50V / 0805 / X7R / 10%	TDK	C2012X7R1H225K125AC
11	1	C8	22 μ F	22 μ F / 25V / 0805 / X5R / 20%	Würth Electronics Inc	885 012 107 019
12	2	C9,C4	NOT ASSEMBLY			
13	1	L1	3.3 μ H		Würth Electronics Inc	744 393 305 033
15	1	L2	10 μ H		Würth Electronics Inc	74 438 336 100
16	1	U1	DCP3603BC, SOT23 -6L	Synchronous step-down converter	ST	DCP3603BCMR
17	5	J1, J2, J3, J4, J5	-	PC SCREW TERMINAL, 22-14AWG	KEYSTONE	KEYSTONE 7693
18	2	P1, P3	-	Male SIL Vertical Throughboard Conn pitch 2.54mm	Würth Electronics Inc	61300411121
19	1	P2	-	Male SIL Vertical Throughboard Conn pitch 2.54mm	Würth Electronics Inc	61300311121

Item	Q.ty	Ref.	Part/value	Description	Manufacturer	Order code
20	1	JP1	-	Female Straight Black Closed Top 2 Way 1 Row 2.54mm Pitch	RS	251-8503

8 Board versions

Table 3. STEVAL-3603BC1 versions

Finished good	Schematic diagrams	Bill of materials
STV\$3603BC1A ⁽¹⁾	STV\$3603BC1A schematic diagrams	STV\$3603BC1A bill of materials

1. This code identifies the STEVAL-3603BC1 evaluation board first version.

9 Regulatory compliance information

Notice for US Federal Communication Commission (FCC)

For evaluation only; not FCC approved for resale

FCC NOTICE - This kit is designed to allow:

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Notice for the United Kingdom

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Revision history

Table 4. Document revision history

Date	Revision	Changes
13-Oct-2025	1	Initial release.

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