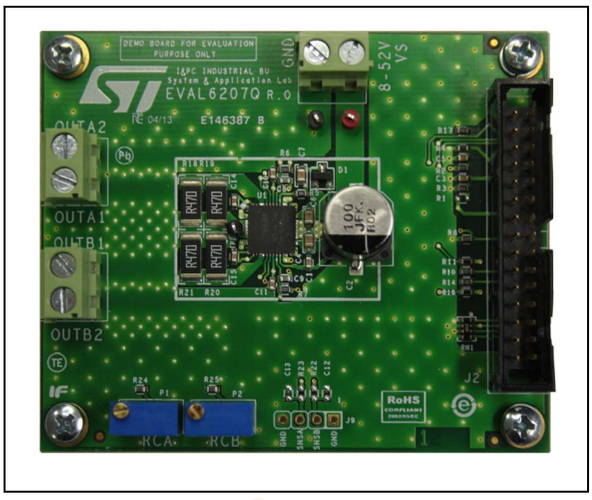
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# EVAL6207Q

## Dual full bridge with integrated PWM current controllers

**Data brief**




## Description

The EVAL6207Q is a dual full bridge driver board allowing the user to test the L6207Q functions.

The dual full bridges integrated into the L6207Q can be used to drive a single two phase stepper motor or up to four DC motors (unidirectional). The device also includes two independent constant OFF time PWM current controllers.

The board can be driven using the STEVAL-PCC009V2 communication board and the PractiSPIN™ 2 evaluation software.

## Features

- Voltage range from 8 V to 52 V
- Phase current up to 2.5 $A_{r.m.s.}$
- Adjustable constant $t_{OFF}$ PWM current control
- Logic inputs 5 V / 3.3 V compliant
- Small application footprint with high thermal performance
- Suitable to be used in combination with PractiSPIN™ 2 software



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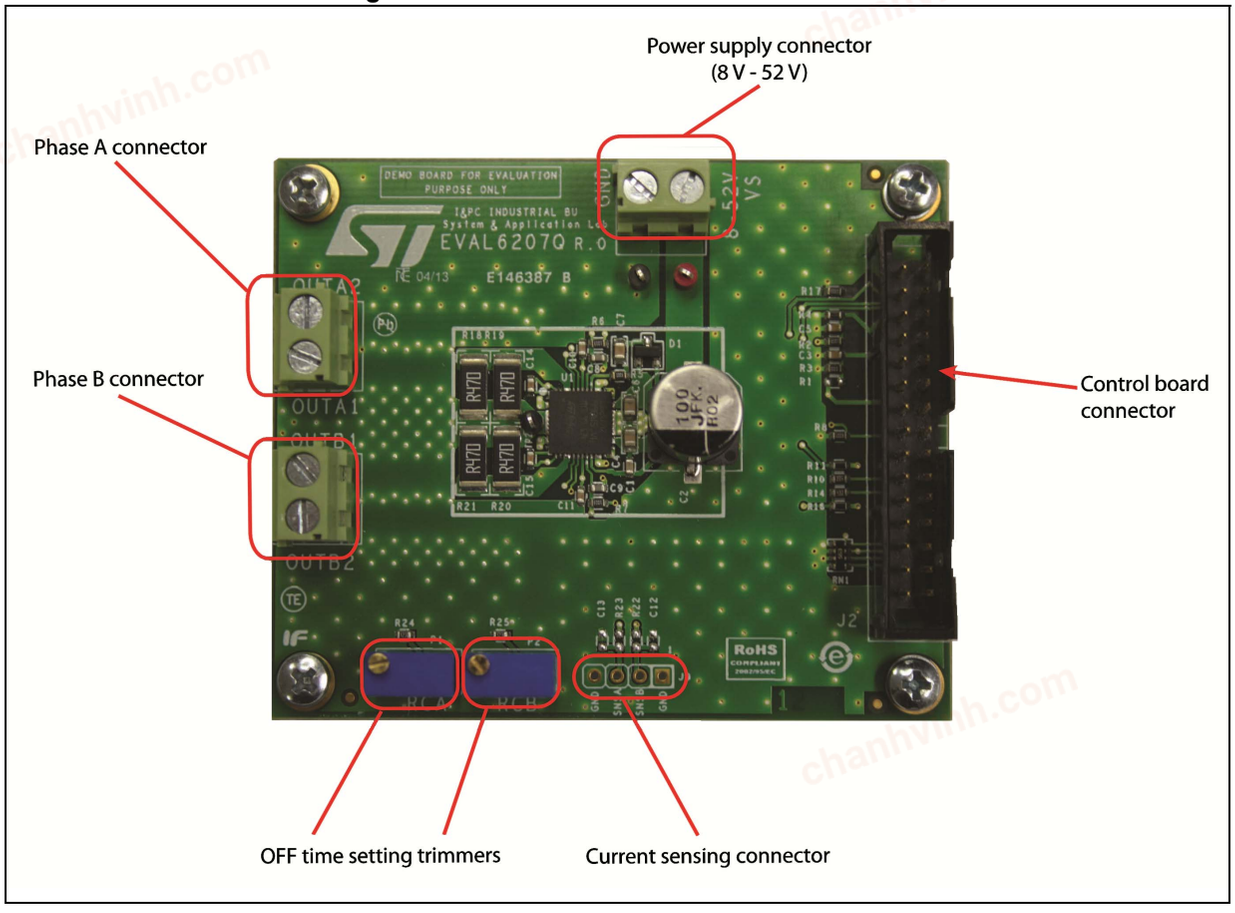
# 1 Board description

**Table 1. Electrical specifications**

| Parameter | Value |
|---|---|
| Supply voltage (VS) | 8 to 52 V |
| Maximum output current (each phase) | 2.5 $A_{r.m.s.}$ |
| Low level logic inputs voltage | 0 V |
| High level logic input voltage | 5 V / 3.3 V(1) |
| Maximum $VREF_A$/$VREF_B$ input voltage | 3.3 V(2) |
| Switching frequency | Up to 100 kHz |
| Operating temperature | -25 to +125 °C |
| L6207Q thermal resistance junction-to-ambient | 17° C/W |

1. Logic inputs are 3.3 V and 5 V compliant.
2. Equivalent to about 3.1 A peak current.

**Figure 1. Trimmers and connectors location**



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**Table 2. Control board connector pinout (J2)**

| Pin | Type | Function |
|---|---|---|
| 2 | Ground | Ground |
| 3 | Logic input | Input IN1A of L6207Q |
| 4 | Logic input | Input IN2A of L6207Q |
| 5 | Logic input | Input IN1B of L6207Q |
| 6 | Logic input | Input IN2B of L6207Q |
| 11 | Analog input | Overcurrent threshold regulation for A bridge |
| 12 | Analog input | Overcurrent threshold regulation for B bridge |
| 13 | Ground | Ground |
| 14 | Supply voltage | 3.3 V supply voltage |
| 16 | Logic input | Input ENA of L6207Q |
| 23 | Ground | Ground |
| 24 | Analog output | Board identification system ID0 |
| 25 | Analog output | Board identification system ID1 |
| 27 | Logic output | Fault output for B bridge |
| 28 | Ground | Ground |
| 29 | Logic output | Fault output for A bridge |
| 30 | Logic input | Input ENB of L6207Q |
| Others | Unconnected | |

**Table 3. Current sensing connector (J9)**

| Pin | Type | Function |
|---|---|---|
| 1 | Ground | Ground |
| 2 | Analog output | SENSEA pins of L6207Q(1) |
| 3 | Analog output | SENSEB pins of L6207Q(1) |
| 4 | Ground | Ground |

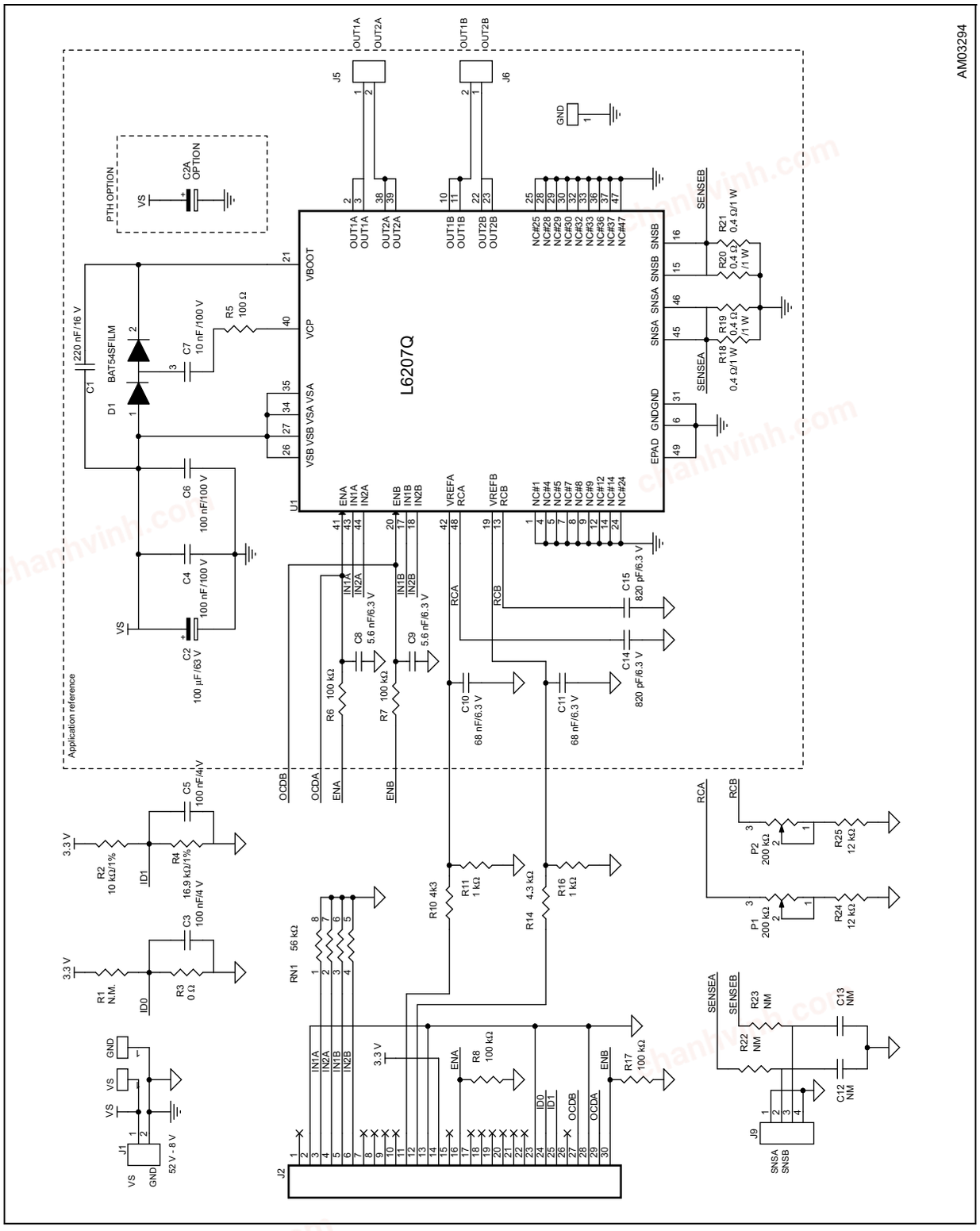
1. R22/23 resistors and C12/13 capacitors must be added when output is used. The value of RC network should be chosen according to the target low pass frequency of the filter.

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# 2 Schematic

**Figure 2. Schematic**



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# 3 Bill of material

**Table 4. Bill of material**

| Index | Quantity | Reference | Value | Package |
|---|---|---|---|---|
| 1 | 1 | C2 | 100 µF/63 V | CAPES-R10H10 |
| 2 | 1 | C2A | 100 µF/63 V (option) | CAPE-R8H12-P35 |
| 3 | 1 | C1 | 220 nF/16 V | CAPC-0603 |
| 4 | 2 | C3, C5 | 100 nF/4 V | CAPC-0603 |
| 5 | 2 | C4, C6 | 100 nF/100 V | CAPC-0805 |
| 6 | 1 | C7 | 10 nF/100 V | CAPC-0805 |
| 7 | 2 | C8, C9 | 5.6 nF/6.3 V | CAPC-0603 |
| 8 | 2 | C10, C11 | 68 nF/6.3 V | CAPC-0603 |
| 9 | 2 | C14, C15 | 820 pF/6.3 V | CAPC-0603 |
| 10 | 2 | C12, C13 | NM | CAPC-0603 |
| 11 | 1 | D1 | BAT54SFILM | SOT-23 |
| 12 | 3 | J1, J5, J6 | Screw connector 2 poles | MORSV-508-2P |
| 13 | 1 | J2 | Pol. IDC male header vertical 30 poles | CON-FLAT-15X2-180M |
| 14 | 1 | J9 | N.M. | STRIP254P-M-4 |
| 15 | 1 | RN1 | 56 kΩ | RESN-CAY16 |
| 16 | 1 | R1 | N.M. | RESC-0603 |
| 17 | 1 | R2 | 10 kΩ/1% | RESC-0603 |
| 18 | 1 | R3 | 0 | RESC-0603 |
| 19 | 1 | R4 | 16.9 kΩ/1% | RESC-0603 |
| 20 | 1 | R5 | 100 | RESC-0603 |
| 21 | 4 | R6, R7, R8, R17 | 100 kΩ | RESC-0603 |
| 22 | 2 | R10, R14 | 4.3 kΩ | RESC-0603 |
| 23 | 2 | R11, R16 | 1 kΩ | RESC-0603 |
| 24 | 4 | R18, R19, R20, R21 | 0.4 Ω/1 W | RESC-2512 |
| 25 | 2 | R22, R23 | N.M. | RESC-0603 |
| 26 | 2 | P1, P2 | 200 kΩ | TRIMM-100X50X110-64W |
| 27 | 2 | R24, R25 | 12 kΩ | RESC-0603 |
| 28 | 1 | TP1 | TPTH-RING-1MM RED | TPTH-RING-1MM |
| 29 | 2 | TP2, TP3 | TPTH-RING-1MM BLACK | TPTH-RING-1MM |
| 30 | 1 | U1 | L6207Q | QFN7X7_48L |

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# 4 Layout

Figure 3. Layout (silk screen)

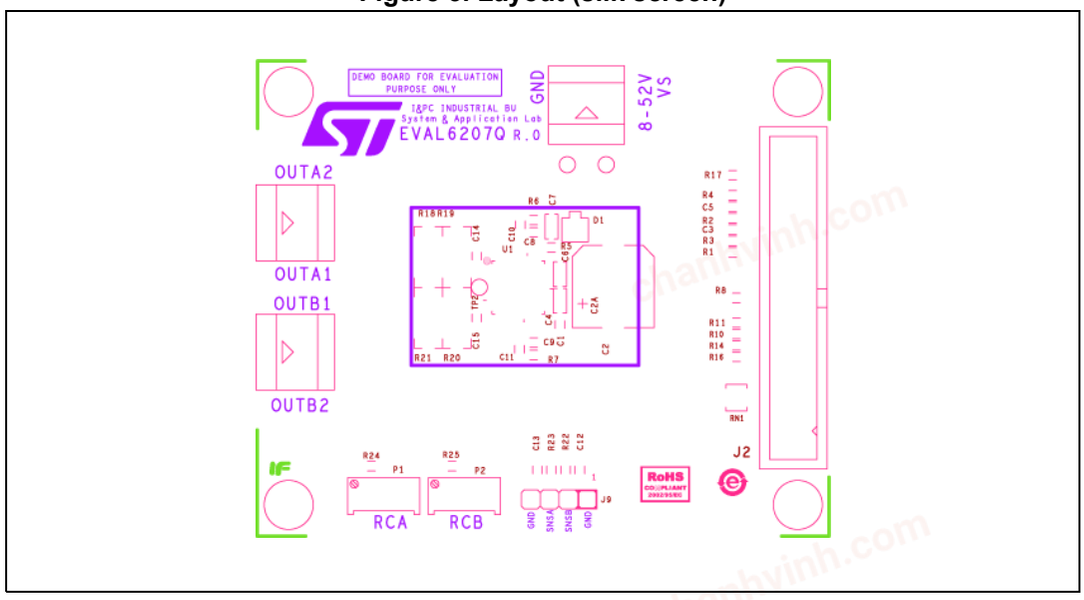
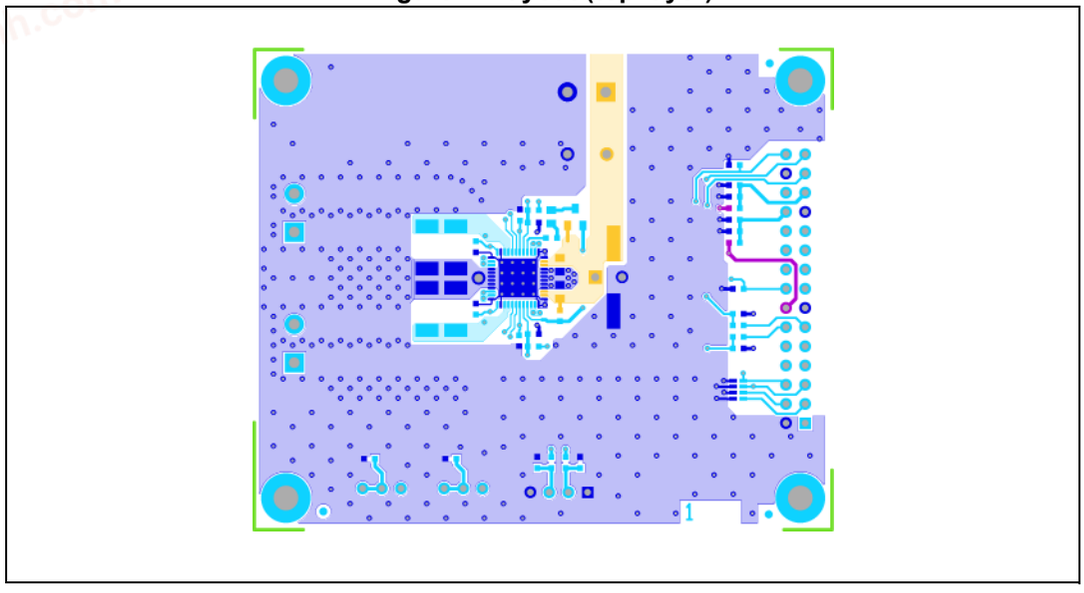



Figure 4. Layout (top layer)



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Figure 5. Layout (inner layer 2)

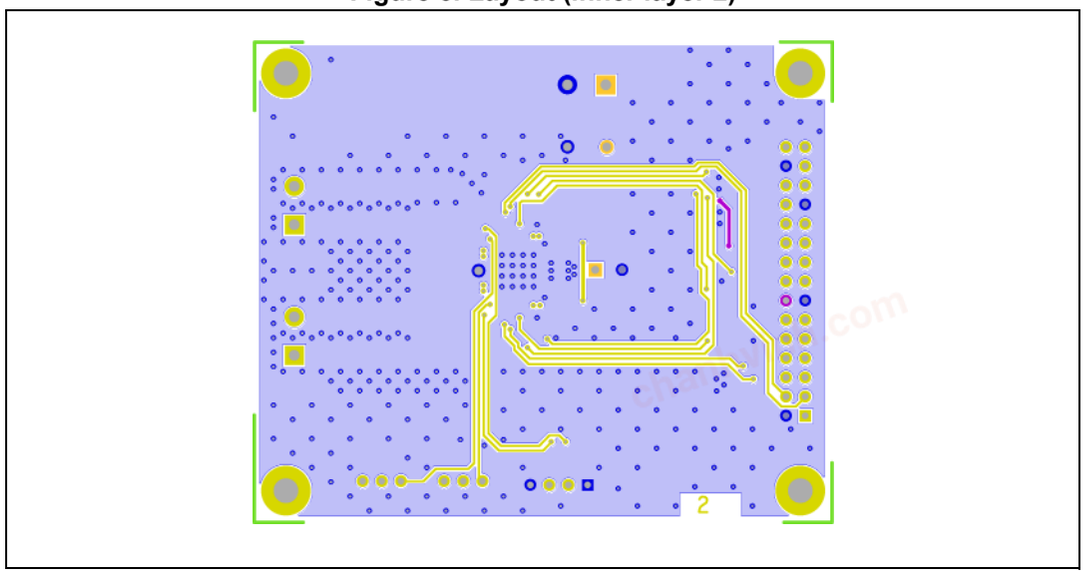
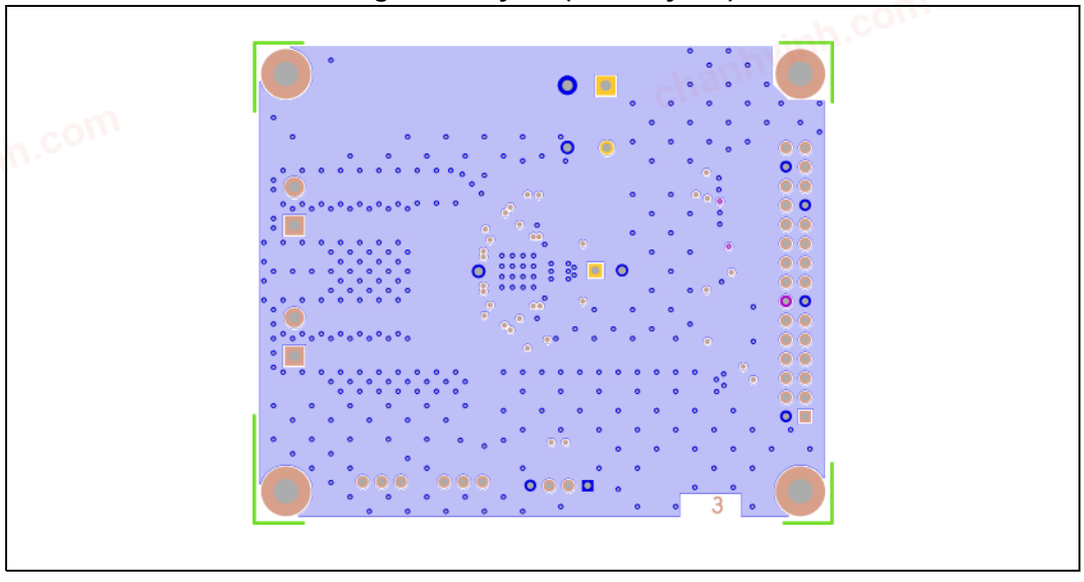


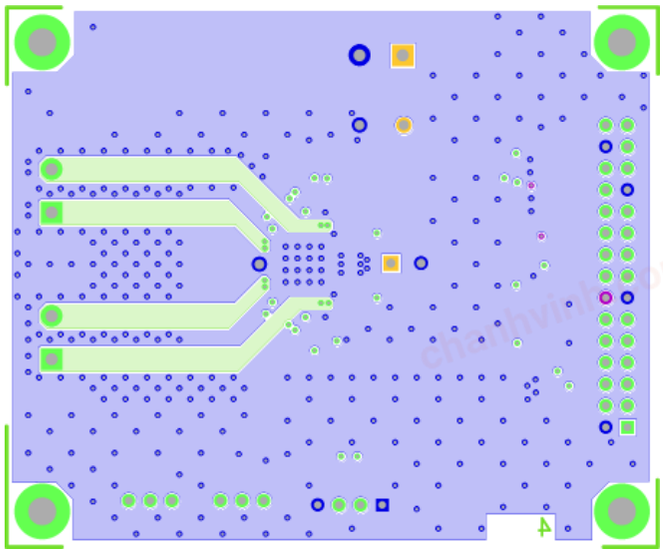

Figure 6. Layout (inner layer 3)



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Figure 7. Layout (bottom layer)

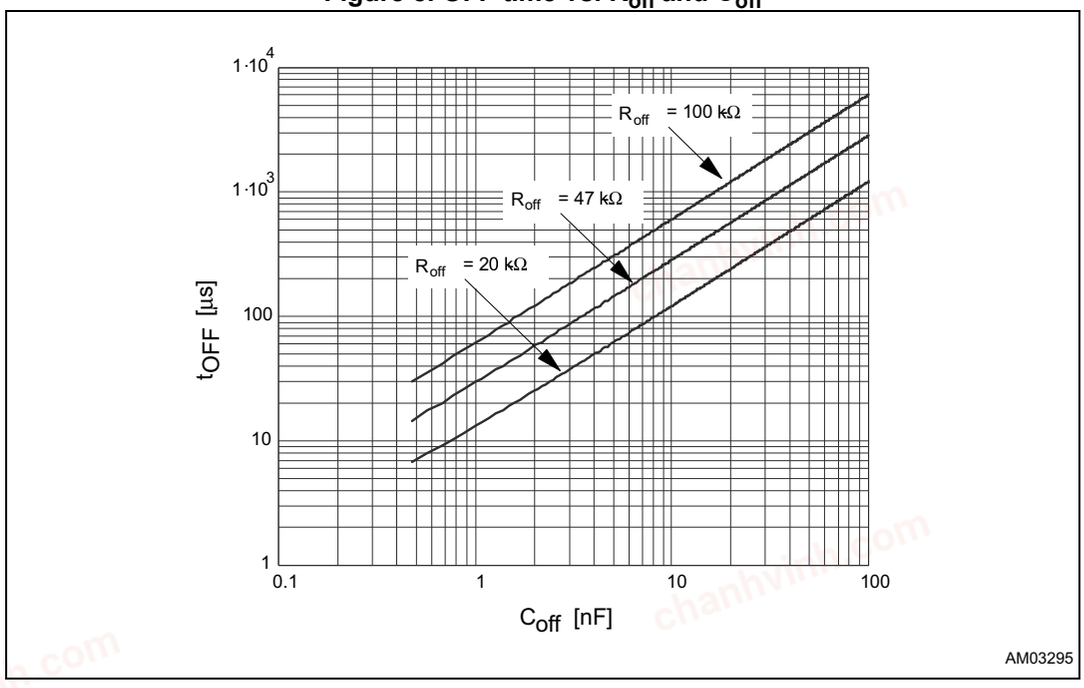


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# 5 OFF time setting

Figure 8. OFF time vs. $R_{off}$ and $C_{off}$




# 6 Revision history

Table 5. Document revision history

| Date | Revision | Changes |
|---|---|---|
| 07-Aug-2013 | 1 | Initial release. |

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