

Stepper motor driver mounting the L6208Q

Data brief



Features

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

Description

The EVAL6208Q device is a stepper motor driver board allowing the user to test the L6208Q functions.

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

Contents

| | | |
|---|-------------------------|----|
| 1 | Board description | 3 |
| 2 | Schematic | 5 |
| 3 | Bill of material | 6 |
| 4 | Layout | 7 |
| 5 | Revision history | 10 |

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 input voltage | 0 V |
| High level logic input voltage | 5 V / 3.3 V ⁽¹⁾ |
| Maximum VREF _A /VREF _B input voltage (J2 connector) | 3.3 V ⁽²⁾ |
| Switching frequency | Up to 100 kHz |
| Operating temperature | - 25 to +125 °C |
| L6208Q 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. Trimmer and connector locations

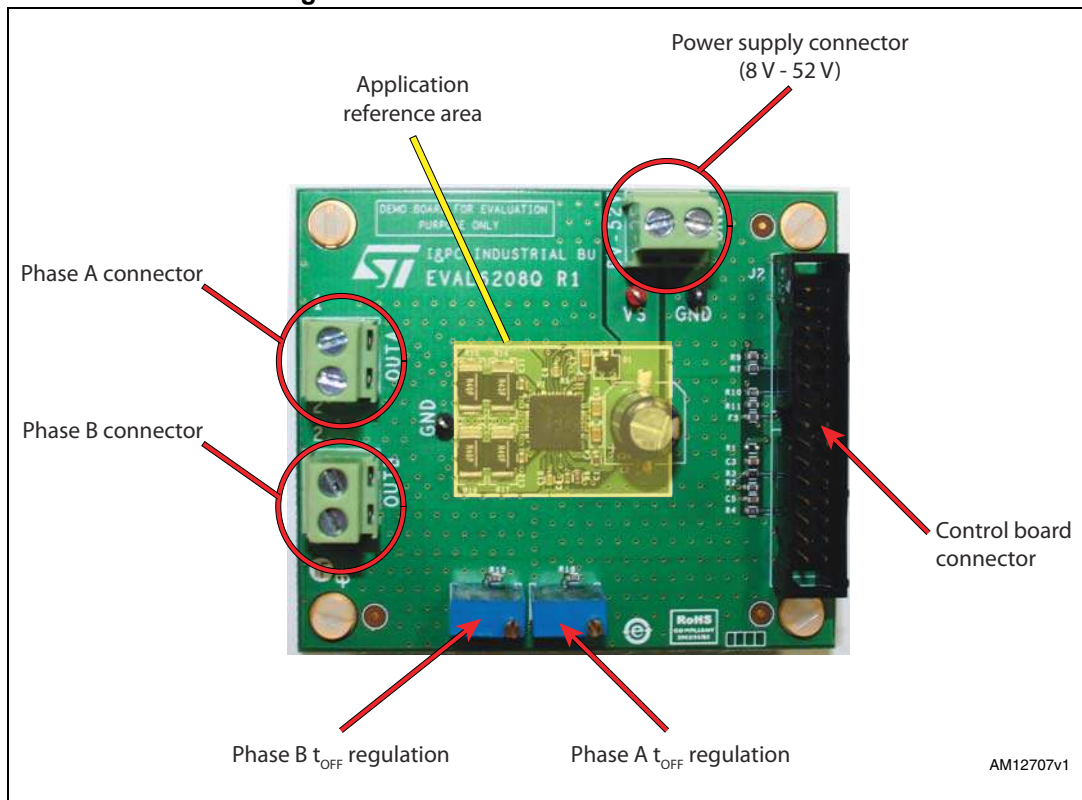


Table 2. Control board connector pinout (J2)

| Pin | Type | Function |
|--------|----------------|---|
| 2 | Ground | Ground |
| 3 | Logic input | Active low reset of L6208Q |
| 4 | Logic input | Direction input (CW/CCW input of L6208Q) |
| 5 | Logic input | Decay mode selection input (CONTROL input of L6208Q) |
| 6 | Logic input | Step clock input (CLOCK input of L6208Q) |
| 11 | Analog input | Reference voltage for phase A current control |
| 12 | Analog input | Reference voltage for phase B current control |
| 13 | Ground | Ground |
| 14 | Supply voltage | 3.3 V supply voltage |
| 16 | Logic input | Device enable input (EN input of L6208Q) |
| 23 | Ground | Ground |
| 24 | Analog output | Board identification system ID0 |
| 25 | Analog output | Board identification system ID1 |
| 28 | Ground | Ground |
| 29 | Logic output | Fault output (EN output of L6208Q) |
| 30 | Logic input | Step mode selection input (HALF/FULL input of L6208Q) |
| Others | Unconnected | |

3 Bill of material

Table 3. Bill of material

| Index | Quantity | Reference | Value | Package |
|-------|----------|----------------------------|---|----------------------|
| 1 | 1 | C1 | 220 nF /16 V | CAPC-0603 |
| 2 | 1 | C2 | 100 μ F / 63 V | CAPE-R10H10 |
| 3 | 1 | C2A | 100 μ F / 63 V (OPTION) | CAPE-R8H12-P35 |
| 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 | 1 | C8 | 5.6 nF / 6.3 V | CAPC-0603 |
| 8 | 2 | C9, C10 | 68 nF / 6.3 V | CAPC-0603 |
| 9 | 2 | C11, C12 | 820 pF / 6.3 V | CAPC-0603 |
| 10 | 1 | D1 | BAV99 | SOT23 |
| 11 | 3 | J1, J3, J4 | Screw connector 2 poles | MORSV-508-2P |
| 12 | 1 | J2 | Pol. IDC male header vertical 30 poles | CON-FLAT-15X2-180M |
| 13 | 1 | R1 | NM | RESC-0603 |
| 14 | 1 | R2 | 10 k Ω / 1% | RESC-0603 |
| 15 | 1 | R3 | 0 | RESC-0603 |
| 16 | 1 | R4 | 20 k Ω /1% | RESC-0603 |
| 17 | 1 | R5 | 100 Ω | RESC-0603 |
| 18 | 1 | R6 | 100 k Ω | RESC-0603 |
| 19 | 2 | R7, R10 | 4.3 Ω | RESC-0603 |
| 20 | 1 | R8 | 10 k Ω | RESC-0603 |
| 21 | 2 | R9, R11 | 1 k Ω | RESC-0603 |
| 22 | 2 | R12, R13 | 200 k Ω | TRIMM-100x50x110-64W |
| 23 | 4 | R14, R15, R16, R17 | 0.4 Ω / 1 W | RESC-2512 |
| 24 | 2 | R18, R19 | 12 k Ω | RESC-0603 |
| 25 | 5 | R20, R21, R22, R23, R24 | 56 k Ω | RESC-0603 |
| 26 | 1 | TP1 | TPTH-RING-1MM RED | TH |
| 27 | 2 | TP2, TP3 | TPTH-RING-1MM BLACK | TH |
| 28 | 1 | U1 | L6208Q | QFN7x7_48 |

4 Layout

Figure 3. Layout (silk screen)

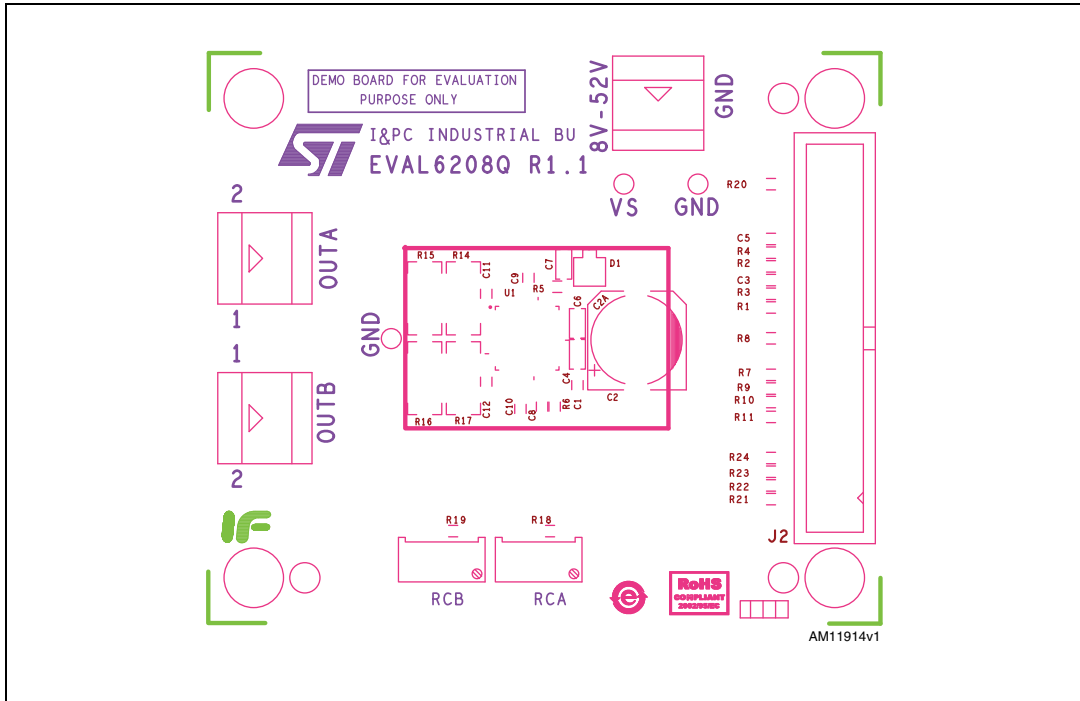


Figure 4. Layout (top layer)

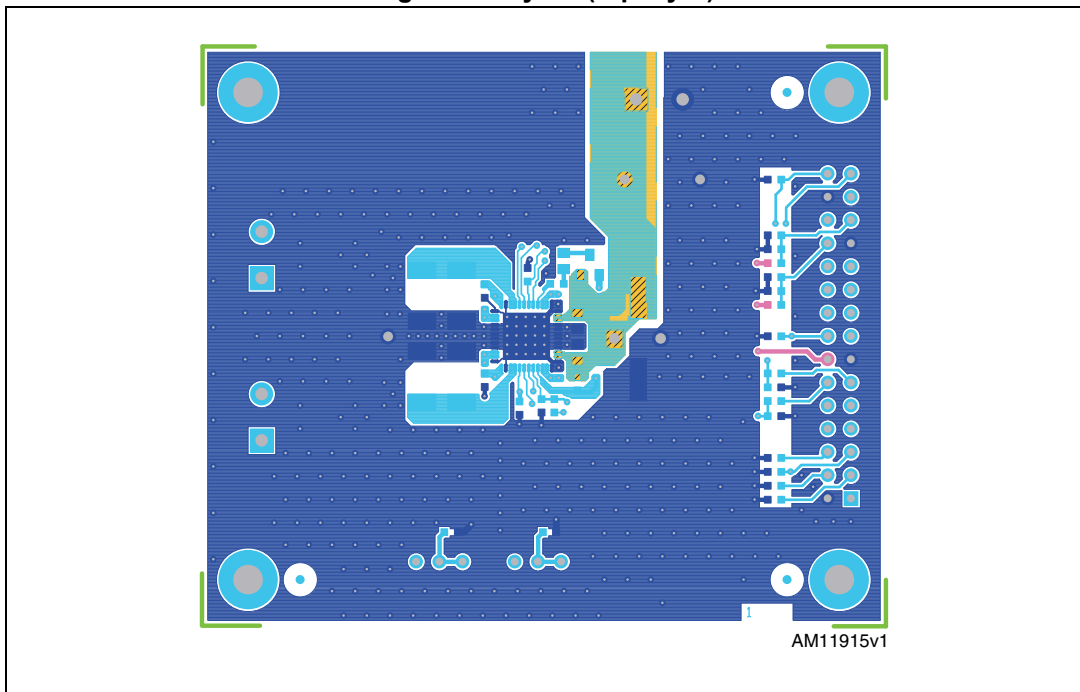


Figure 5. Layout (inner layer 2)

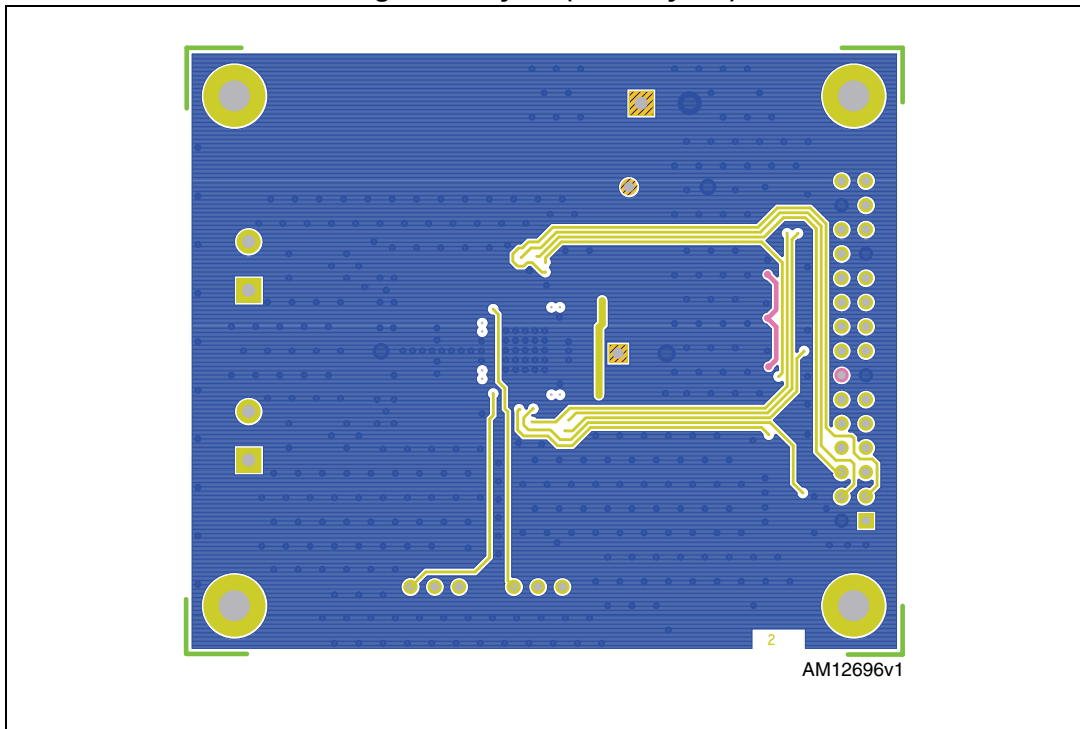


Figure 6. Layout (inner layer 3)

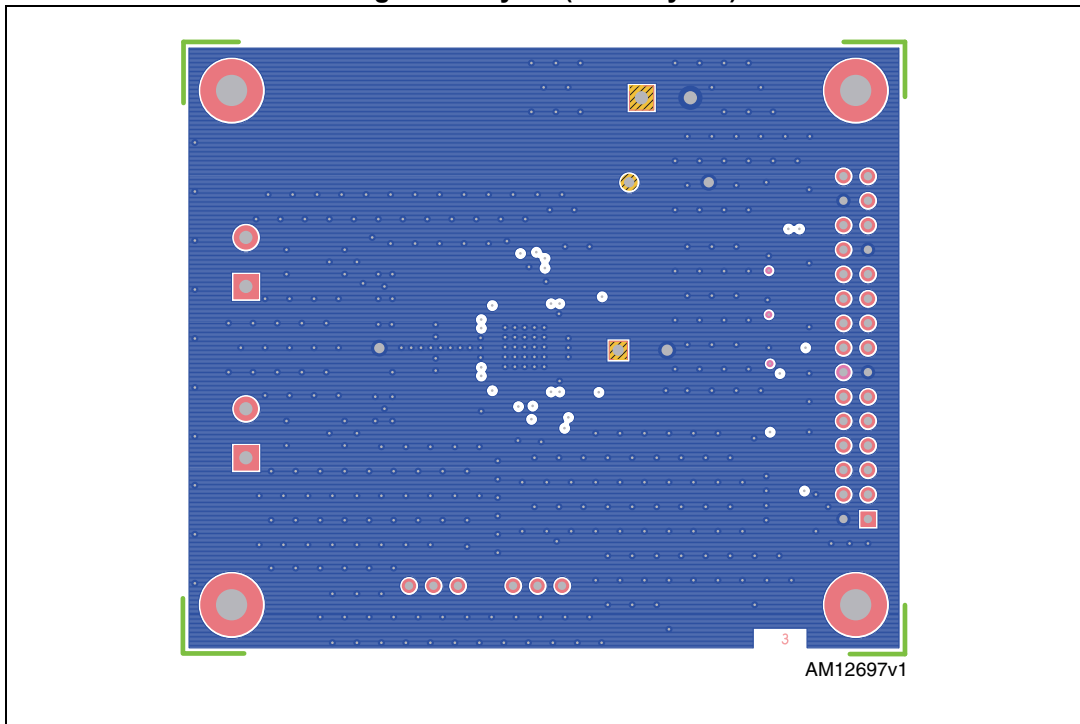
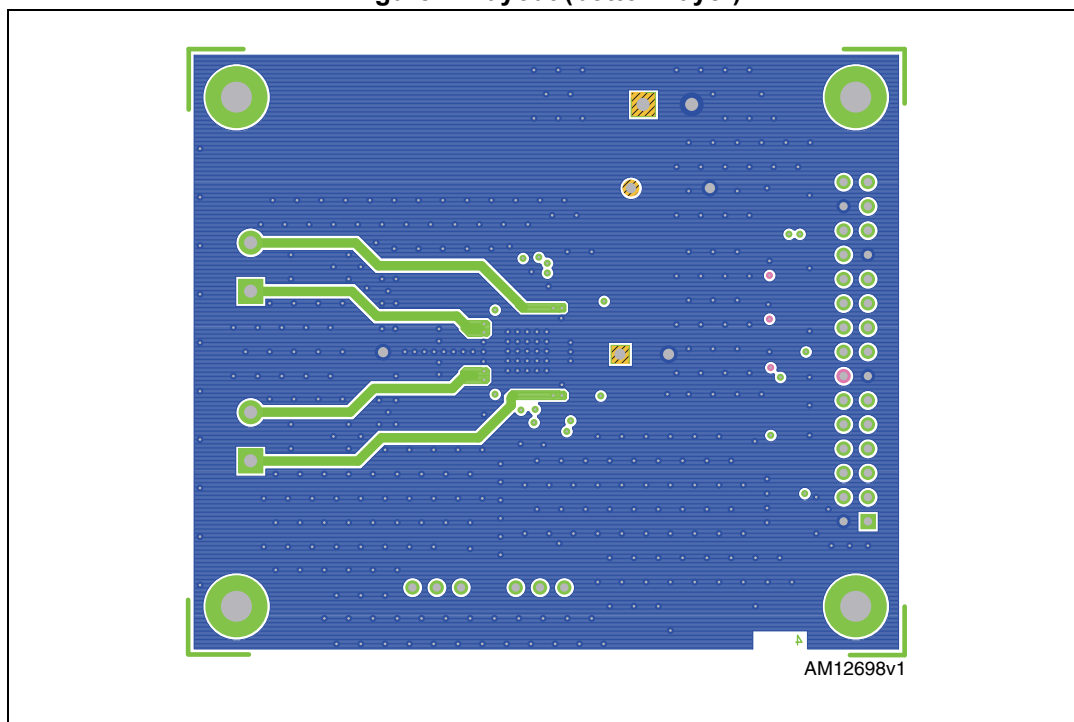


Figure 7. Layout (bottom layer)



5 Revision history

Table 4. Document revision history

| Date | Revision | Changes |
|-------------|----------|--|
| 03-Apr-2012 | 1 | Initial release. |
| 07-Jun-2013 | 2 | <p>Updated Description on page 1 (replaced “communication board” by “demonstration board”).</p> <p>Added Contents on page 2.</p> <p>Added headings to Section 2: Schematic to Section 4: Layout.</p> <p>Updated Table 1 (removed superfluous “EVAL6208Q” from title, added value and unit for “thermal resistance junction-to-ambient”).</p> <p>Updated Figure 2 (removed “EVAL6208Q” from title, completed units, minor modifications).</p> <p>Updated Table 3 (removed “EVAL6208Q” from title, corrected unit in row 23).</p> <p>Updated Figure 3 to Figure 7 (removed “EVAL6208Q” from titles).</p> <p>Minor corrections throughout document.</p> |

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