EVAL6229QR

Demonstration board mounting the L6229Q dual full-bridge driver

Data brief

Features

- Operating supply voltage from 8 to 52 V
- 2.8 A output peak current (1.4 $A_{r.m.s.}$)
- $R_{DS(on)}$ 0.73 Ω typ. value @ T_J = 25 °C
- Operating frequency up to 100 kHz
- Non-dissipative overcurrent detection and protection
- Diagnostic output
- Constant t_{OFF} PWM current controller
- Slow decay synchronous rectification
- 60° and 120° hall effect decoding logic
- Brake function
- Cross conduction protection
- Thermal shutdown
- Undervoltage lockout
- Integrated fast free wheeling diodest

Description

The L6229Q is a DMOS fully integrated three-phase motor driver with overcurrent protection, realized in BCD multipower technology.

The device includes all the circuitry needed to drive a three-phase BLDC motor including: a three-phase DMOS bridge, a constant off-time PWM current controller and the decoding logic for single ended hall sensors that generates the required sequence for the power stage.

The L6229Q features a non-dissipative overcurrent protection on the high-side power MOSFETs and thermal shutdown.

1 Board description

Table 1. Electrical specifications (recommended values)

Parameter	Value
Supply voltage range (VS)	8 to 52 V
Output current rating (OUTx)	up to 1.4 $A_{r.m.s.}$
Switching frequency	up to 100 kHz
Voltage reference range (VREF)	0 to + 5 V
Input and enable voltage range	0 to + 5 V
L6229Q thermal resistance junction-to-ambient	42 °C/W

Figure 1. EVAL6229QR demonstration board description

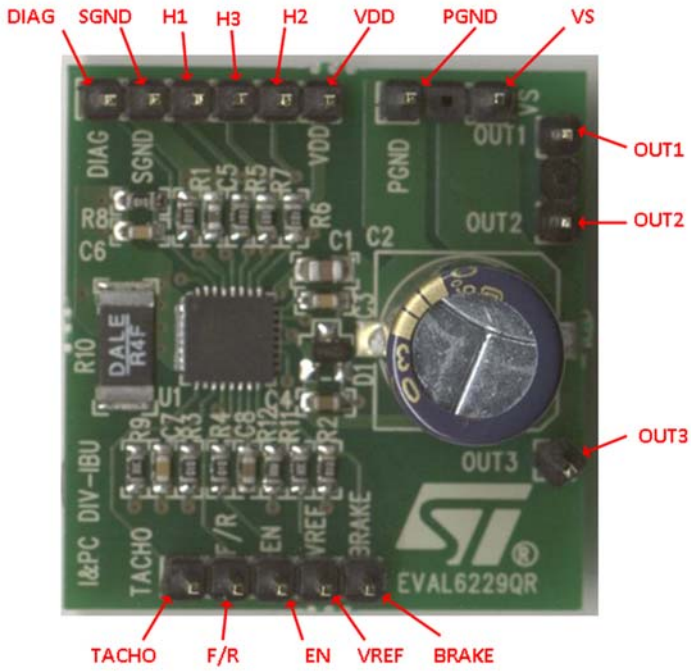


Table 2. EVAL6229QR pin description

Name	Type	Function
VS	Power supply	Half-bridge power supply voltage
PGND	Ground	Power ground terminal
VDD	Power supply	Hall effect sensors pull-up voltage
H1	Sensor input	Single ended hall effect sensor input 1
H2	Sensor input	Single ended hall effect sensor input 2
H3	Sensor input	Single ended hall effect sensor input 3
SGND	Ground	Signal ground terminal
DIAG	Open-drain output	Diagnostic pin. When ‘low’ signals an overcurrent or overtemperature event.
TACHO	Open-drain output	Frequency-to-voltage open drain output. Every pulse from H1 pin is shaped as a fixed and adjustable length pulse.
F/R	Logic input	Selects the direction of the rotation (‘H’ = CW; ‘L’ = CCW).
EN	Logic input/output	Chip enable (active ‘high’). When ‘low’ switches OFF all power MOSFETs of three half-bridges.
VREF	Analog input	Current controller reference voltage
BRAKE	Logic input	Brake input pin. When ‘low’ switches ON all high-side power MOSFETs implementing the brake function.
OUT1	Power output	Output phase 1
OUT2	Power output	Output phase 2
OUT3	Power output	Output phase 3

Figure 2. EVAL6229QR schematic

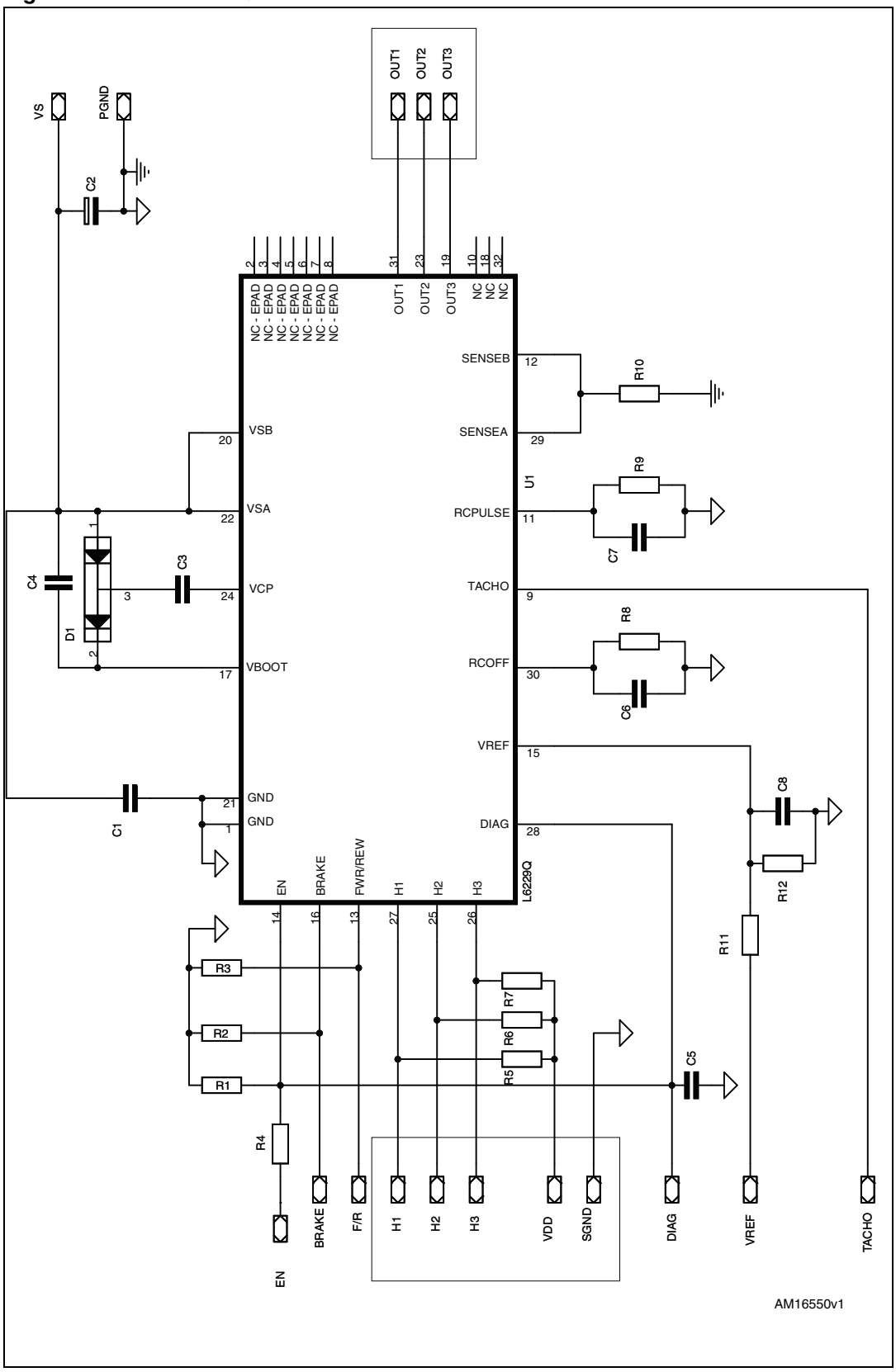


Table 3. EVAL6229QR component list

Part reference	Part value	Part description
C1	220nF/100V	Capacitor
C2	100µF/63V	Capacitor
C3	10nF/25V	Capacitor
C4, C8	220nF/25V	Capacitor
C5	5.6nF	Capacitor
C6	820pF	Capacitor
C7	10nF	Resistor
D1	BAT46SW	Diodes
R1, R2, R3, R4	100kΩ 5% 0.25W	Resistor
R5, R6, R7	10kΩ 5% 0.25W	Resistor
R8	100kΩ 1% 0.25W	Resistor
R9	20kΩ 1% 0.25W	Resistor
R10	0.4Ω 1W	Resistor
R11	20kΩ 5% 0.25W	Resistor
R12	2kΩ 5% 0.25W	Resistor
U1	L6229Q	3-phase BLDC motor driver in VFQFPN5x5

Figure 3. EVAL6229QR component placement

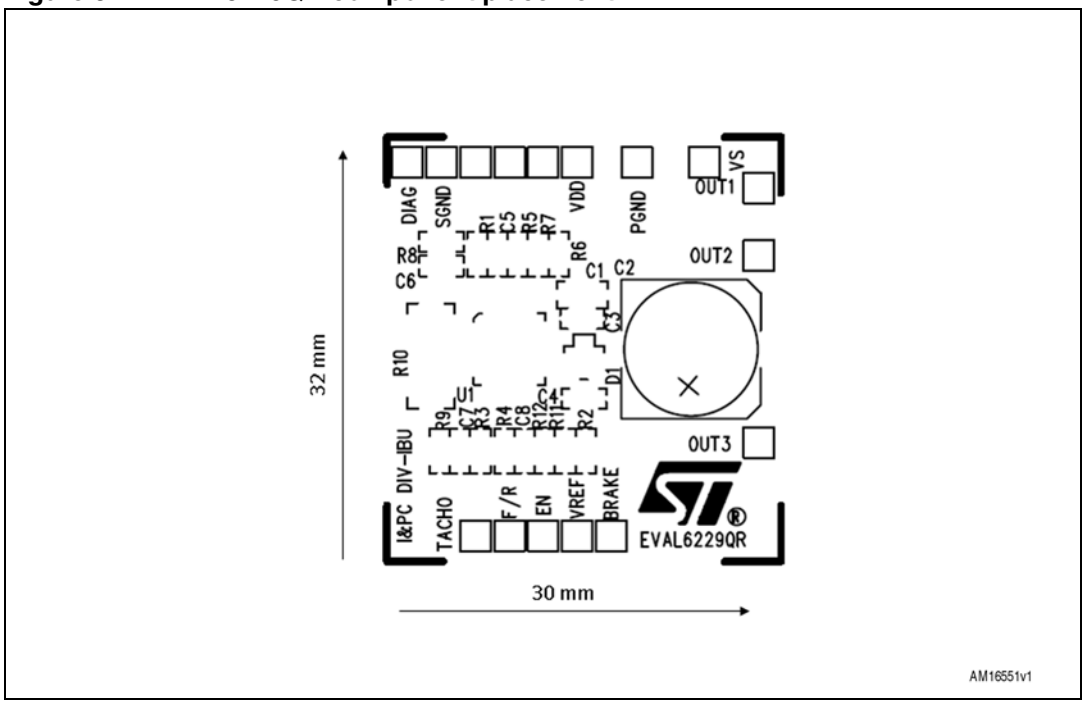


Figure 4. EVAL6229QR top layer layout

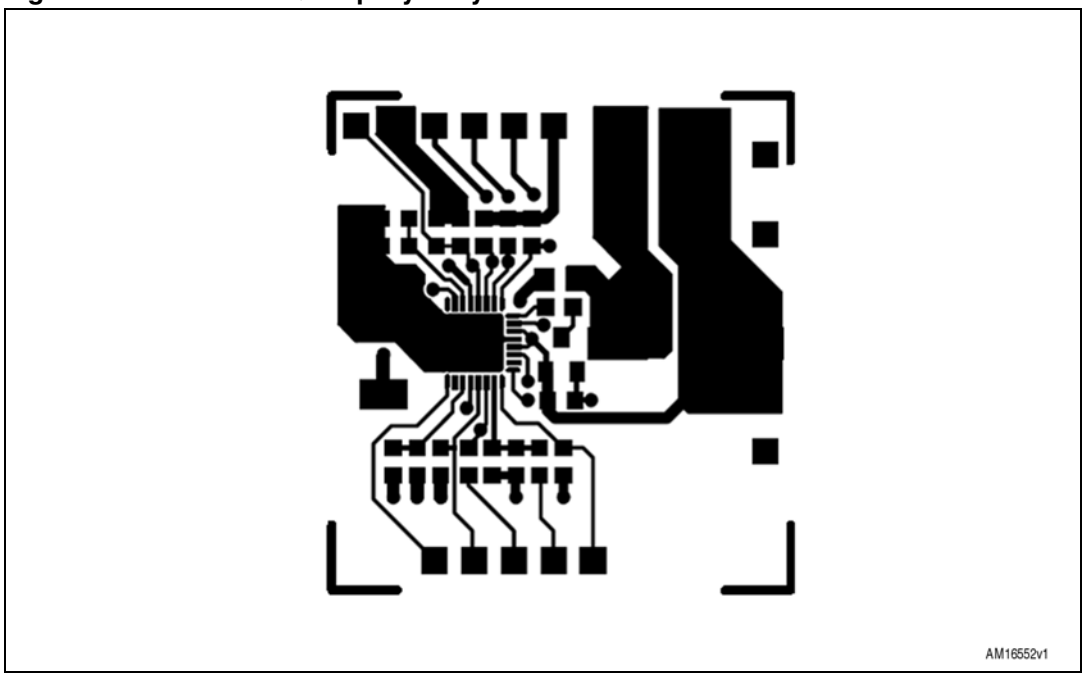
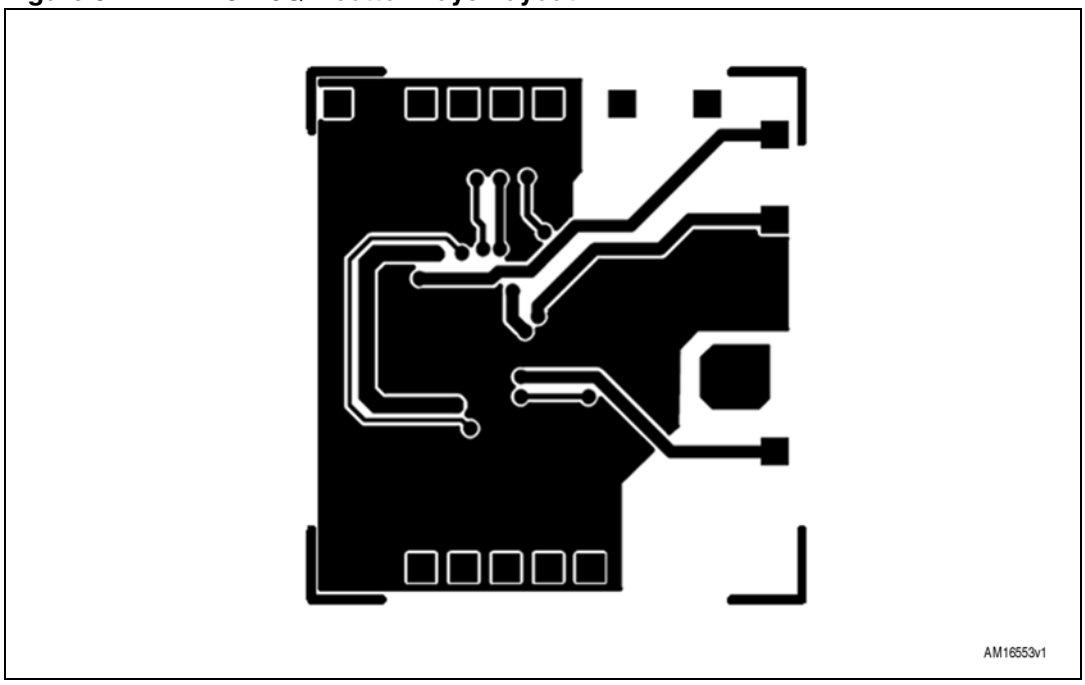


Figure 5. EVAL6229QR bottom layer layout



2 Revision history

Table 4. Document revision history

Date	Revision	Changes
10-Jan-2013	1	Initial release.

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