EVAL6208Q

Stepper motor driver mounting the L6208Q

Data brief



AM11912v1

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.

For further information contact your local STMicroelectronics sales office. www.st.com

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

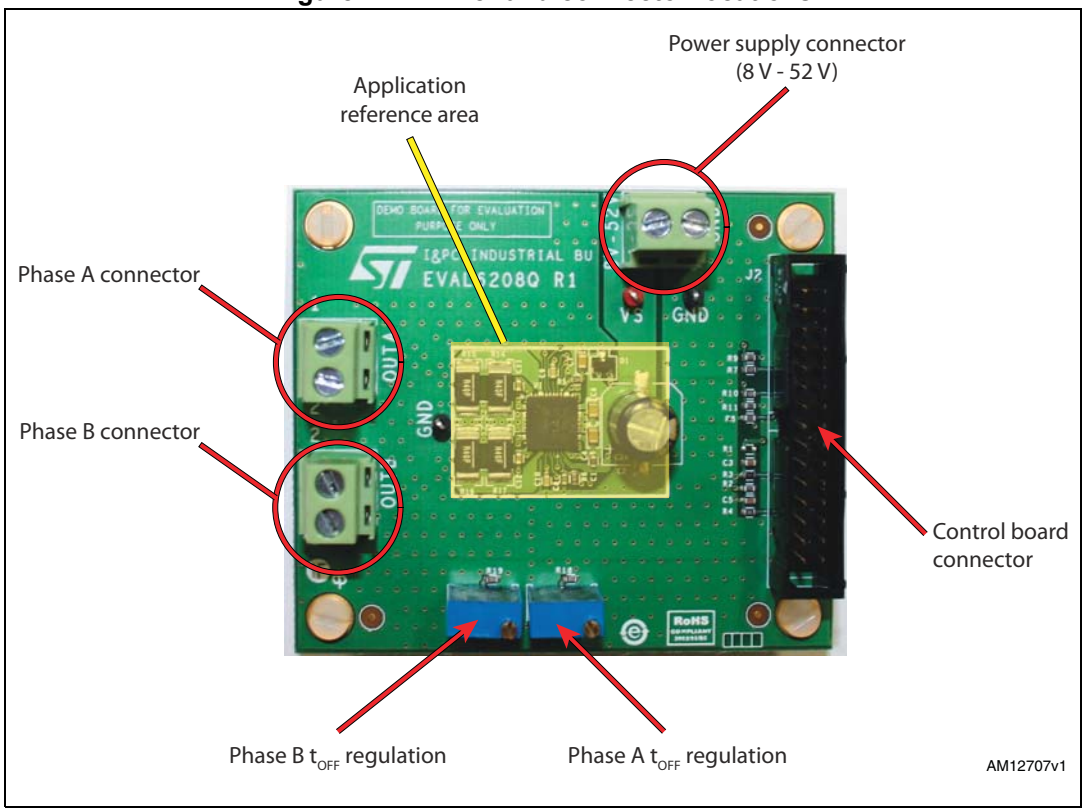
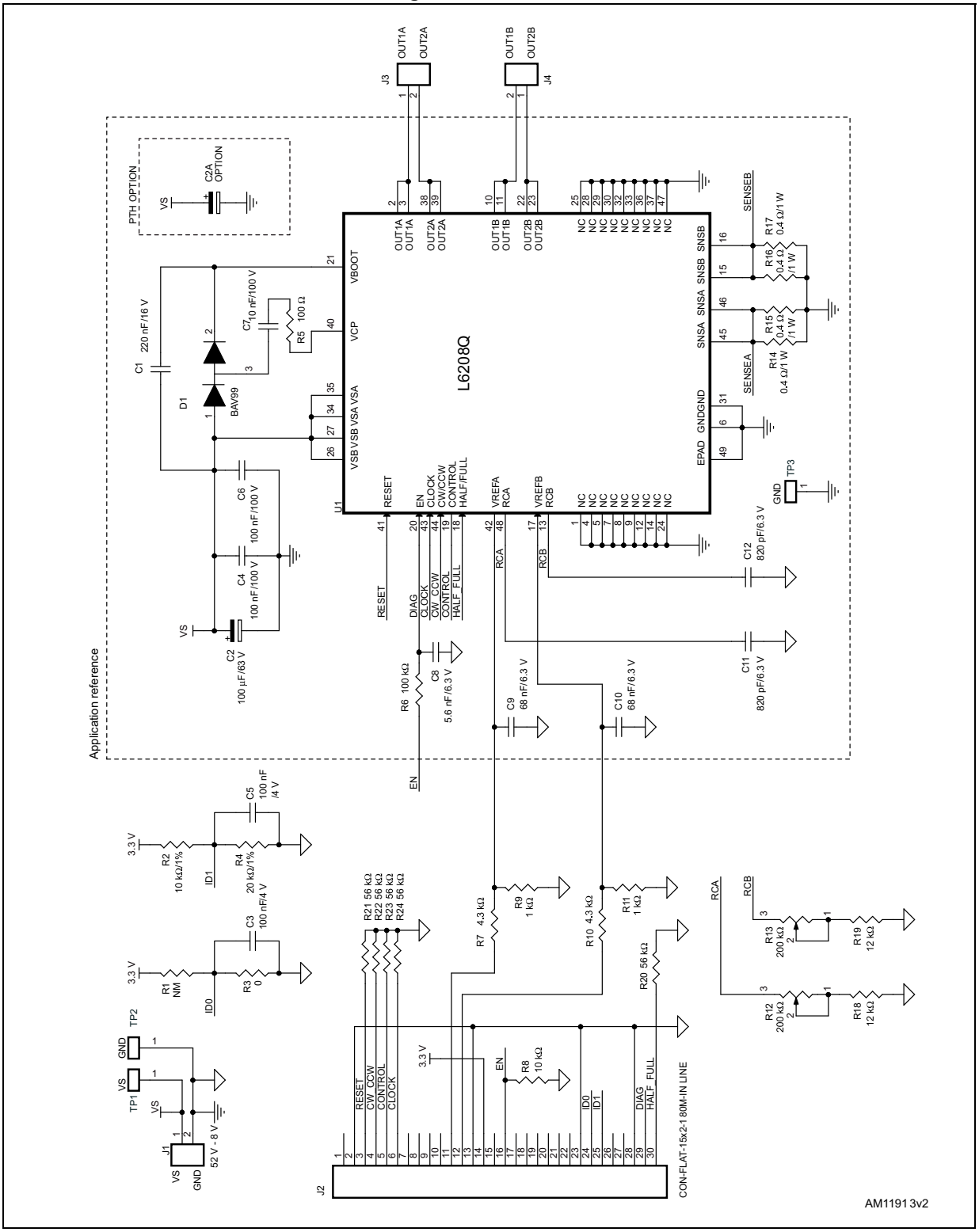


Table 2. Control board connector pinout (J2)

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	

2 Schematic

Figure 2. Schematic



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 µF / 63 V	CAPES-R10H10
3	1	C2A	100 µF / 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 kΩ / 1%	RESC-0603
15	1	R3	0	RESC-0603
16	1	R4	20 kΩ /1%	RESC-0603
17	1	R5	100 Ω	RESC-0603
18	1	R6	100 kΩ	RESC-0603
19	2	R7, R10	4.3 Ω	RESC-0603
20	1	R8	10 kΩ	RESC-0603
21	2	R9, R11	1 kΩ	RESC-0603
22	2	R12, R13	200 kΩ	TRIMM-100x50x110-64W
23	4	R14, R15, R16, R17	0.4 Ω / 1 W	RESC-2512
24	2	R18, R19	12 kΩ	RESC-0603
25	5	R20, R21, R22, R23, R24	56 kΩ	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)

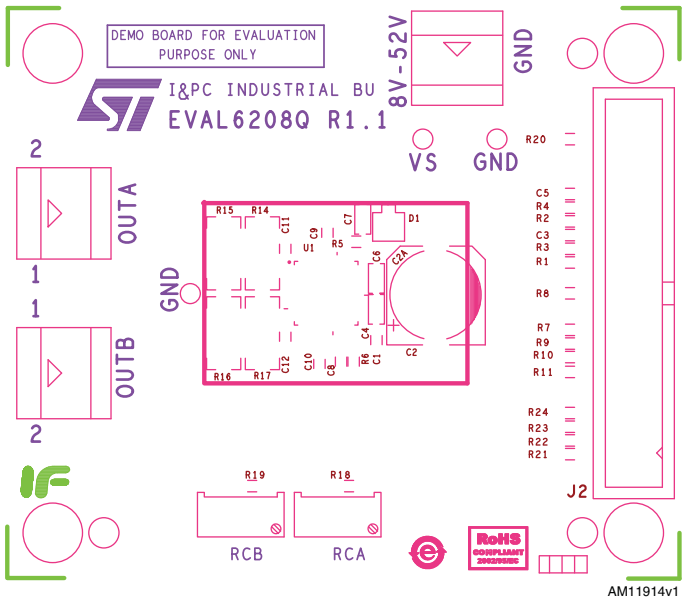


Figure 4. Layout (top layer)

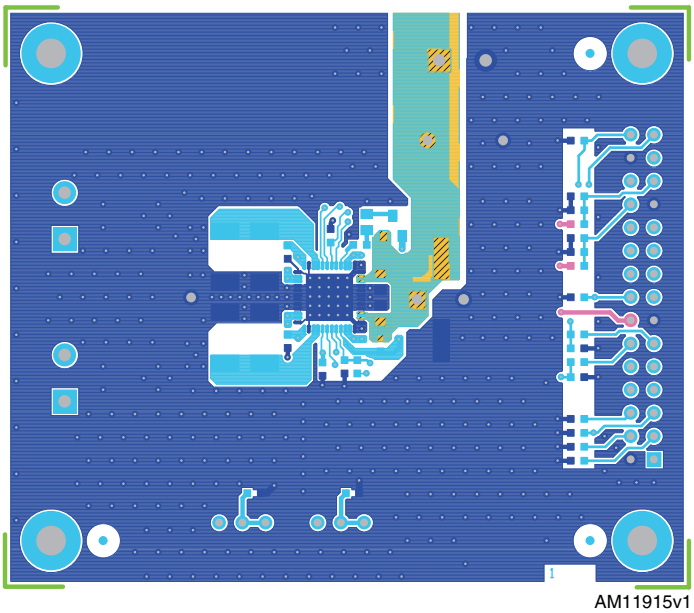


Figure 5. Layout (inner layer 2)

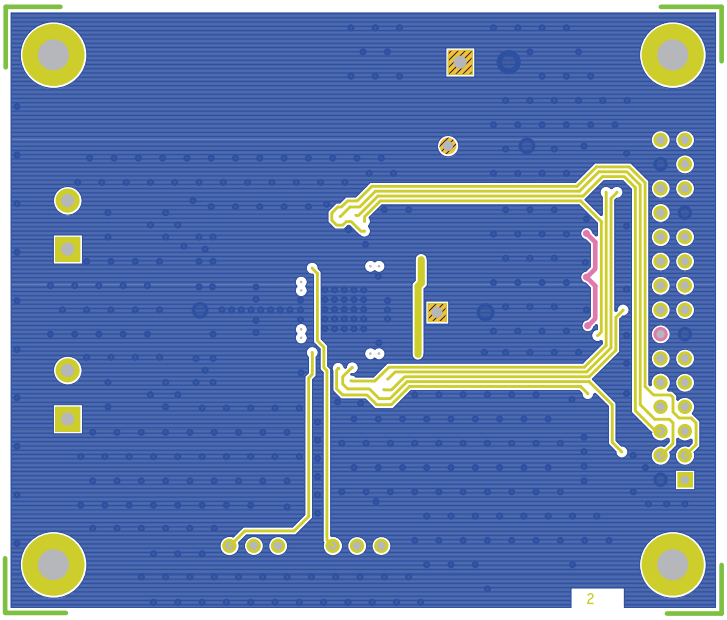


Figure 6. Layout (inner layer 3)

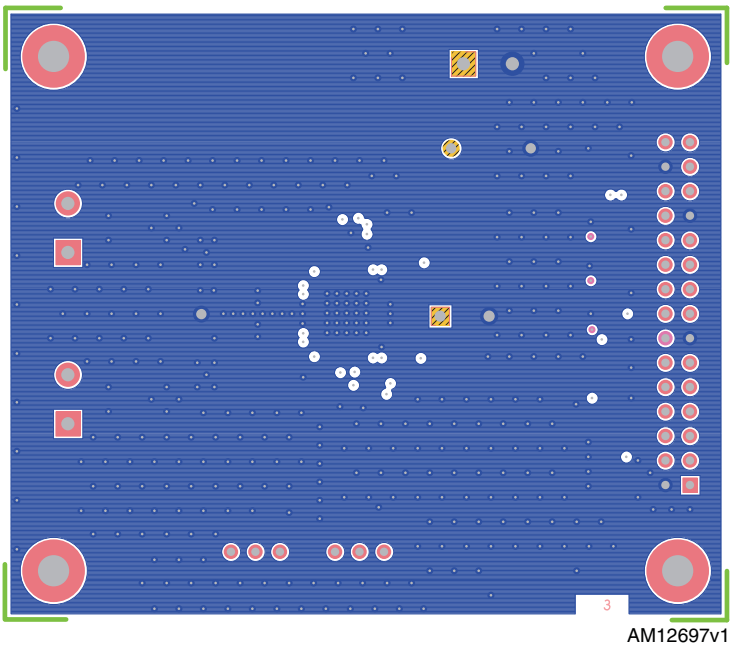
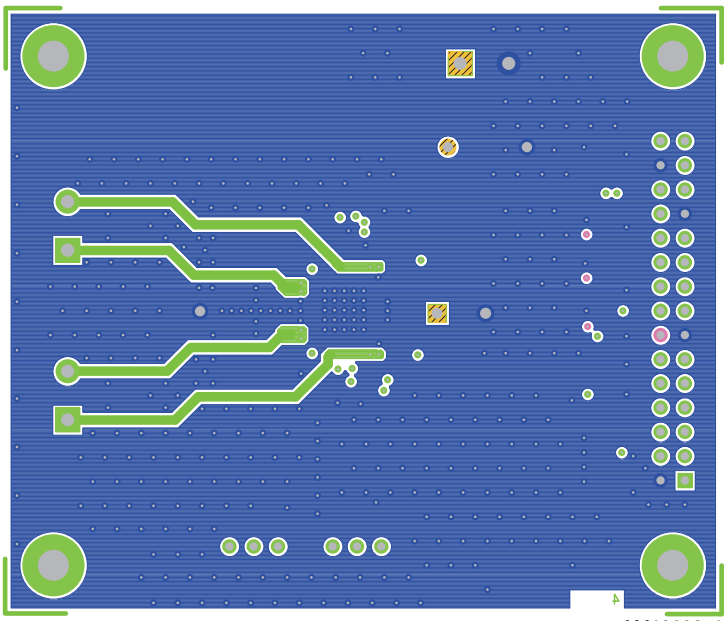


Figure 7. Layout (bottom layer)



5 Revision history

Table 4. Document revision history

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

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries (“ST”) reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST’s terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST’S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

ST PRODUCTS ARE NOT AUTHORIZED FOR USE IN WEAPONS. NOR ARE ST PRODUCTS DESIGNED OR AUTHORIZED FOR USE IN: (A) SAFETY CRITICAL APPLICATIONS SUCH AS LIFE SUPPORTING, ACTIVE IMPLANTED DEVICES OR SYSTEMS WITH PRODUCT FUNCTIONAL SAFETY REQUIREMENTS; (B) AERONAUTIC APPLICATIONS; (C) AUTOMOTIVE APPLICATIONS OR ENVIRONMENTS, AND/OR (D) AEROSPACE APPLICATIONS OR ENVIRONMENTS. WHERE ST PRODUCTS ARE NOT DESIGNED FOR SUCH USE, THE PURCHASER SHALL USE PRODUCTS AT PURCHASER’S SOLE RISK, EVEN IF ST HAS BEEN INFORMED IN WRITING OF SUCH USAGE, UNLESS A PRODUCT IS EXPRESSLY DESIGNATED BY ST AS BEING INTENDED FOR “AUTOMOTIVE, AUTOMOTIVE SAFETY OR MEDICAL” INDUSTRY DOMAINS ACCORDING TO ST PRODUCT DESIGN SPECIFICATIONS. PRODUCTS FORMALLY ESCC, QML OR JAN QUALIFIED ARE DEEMED SUITABLE FOR USE IN AEROSPACE BY THE CORRESPONDING GOVERNMENTAL AGENCY.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.
Information in this document supersedes and replaces all information previously supplied.
The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2013 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com