

Table 1: STEVAL-GLA001V1 bill of materials

Item	Q.ty	Ref.	Part/Value	Description	Manufacturer	Order code
1	11	C100, C101, C102, C103, C213, C214, C215, C216, C217, C218, C219	10 nF 50 V min $\pm 10\%$ SMD 1206	Ceramic capacitor	Any	Any
2	1	C104	1 nF 50 V min $\pm 10\%$ SMD 1206	Ceramic capacitor	Any	Any
3	2	C106, C107	Not connected	Ceramic capacitor	Any	Any
4	1	C108	68 nF 275 Vac min $\pm 10\%$ 6x10mm pitch 7.5mm X2	Ceramic capacitor	Any	Any
5	1	C109	10 nF 275 Vac min $\pm 20\%$ 4x13mm pitch 10mm X2	Ceramic capacitor	Any	Any
6	1	C200	22 μ F 450 V min $\pm 20\%$ Diam 13mm pitch 5mm	Aluminium capacitor	Any	Any
7	1	C201	10 μ F 450 V min $\pm 20\%$ Diam 13mm pitch 5mm	Aluminium capacitor	Any	Any
8	1	C202	220 μ F 10 V min $\pm 20\%$ Diam 8mm pitch 3.5mm	Aluminium capacitor	Nichicon	RL81C221MDN1KX
9	2	C203, C205	100 nF 10 V min $\pm 5\%$ SMD 1206 C0G	Ceramic capacitor	Kemet	C1206C104J3GACTU
10	2	C204, C206	3.3 μ F 10 V min $\pm 20\%$ Diam 5mm pitch 2mm	Aluminium capacitor	Any	Any
11	1	C207	100 μ F 30 V min $\pm 20\%$ Diam 8mm pitch 3.5mm	Aluminium capacitor	Nichicon	RL81V101MDN1KX
12	1	C208	1 μ F 30 V min $\pm 10\%$ SMD 1206 X7R	Ceramic capacitor	TDK	C3216X7R1H105K160AB
13	1	C209	3.3 nF 16 V min $\pm 10\%$ SMD 0805	Ceramic capacitor	Any	Any
14	1	C210	Not connected	Ceramic capacitor	Any	Any
15	1	C211	150 n 16 V min $\pm 10\%$ SMD 0805	Ceramic capacitor	Any	Any
16	2	D100, D205	BAT48Z 350 mA min 40 V min SOD-123	Diodes	Any	Any

Item	Q.ty	Ref.	Part/Value	Description	Manufacturer	Order code
17	2	D101, D200	1N4007 1 A min 1000 V min DO-41	Diodes	Any	Any
18	2	D102, D210	PLCC2	Red LED	Vishay	VLMT3100-GS08
19	1	D103	BZX79C2V4 2.4 V / 0.5 W DO-35	Diode	Any	Any
20	1	D201	1.5KE220A VBR 220 V DO-201	Transil 1500 W	ST	1.5KE220A
21	1	D202	STTH1R06 1 A min 600 V min DO-41	600 V, 1 A Turbo 2 ultrafast diode	ST	STTH1R06
22	1	D203	STPS2H100 2 A min 100 V min DO-214AC	100 V, 2 A SMA Flat, SMB Flat power Schottky rectifier	ST	STPS2H100
23	1	D204	STPS1L60 1 A min 60 V min DO-214AC	60 V, 1 A low drop power Schottky rectifier	ST	STPS1L60
24	5	D207, D208, D209, D211, D212	PLCC2	Green LED	Vishay	VLMC3100-GS08
25	1	F100	FUSE 5 x 20 mm	Fuse support	Multicomp	MC000830
26	2	J100, J200	3 points pitch 5.08 mm	Connector	Weidmuller	PM 5.08/3/90 3.5 SW -1760520000
27	3	J101, J102, J103	2 points pitch 5.08 mm	Connector	Weidmuller	PM 5.08/2/90 3.5 SW -1760510000
28	1	J202	2x10 points pitch 2.54 mm	Connector	Amphenol	T821120A1S100CEU
29	1	J203	2x17 points pitch 2.54 mm	Connector	Molex	70246-3404
30	1	L200	1 mH diameter 9 mm pitch 5 mm	Inductor	Würth Elektronik	744741102
31	1	Q100	SMBTA42 300 V min / 0.5 A min SOT23-3	NPN	Any	Any
32	4	Q200, Q201, Q202, Q203	2N7002 60 V min / 100 mA min SOT23-3	N-Channel	Any	Any
33	2	R100, R116	4.7 k 1/8 W min ±5% SMD 0805	Resistors	Any	Any
34	2	R101, R102	620 k 1/4 W min ±5% axial / through-hole	Resistors	Any	Any
35	2	R103, R104	560 1/2 W min ±5% SMD 0805	Resistors	Any	Any
36	7	R105, R108, R112, R113, R212, R214, R228	1 k 1/8 W min ±5% SMD 0805	Resistors	Any	Any

Item	Q.ty	Ref.	Part/Value	Description	Manufacturer	Order code
37	2	R106, R107	374 1/2 W min ±5% SMD 0805	Resistors	Any	Any
38	2	R109, R202	Not connected	Resistors	Any	Any
39	2	R110, R111	220 1/8 W min ±5% SMD 0805	Resistors	Any	Any
40	1	R114	2 k 1/8 W min ±5% SMD 0805	Resistors	Any	Any
41	2	R115, R117	150 2 W min ±5% axial/ through-hole pitch 15 mm	Resistors	Any	Any
42	2	R119, R120	Not connected	Resistors	Any	Any
43	1	R121	3.3 k 1/2 W min ±5% SMD 1206	Resistors	Any	Any
44	1	R200	10 2 W min ±5% axial/ through-hole pitch 15 mm	1/ carbon composition or 2/ carbon film	Any	Any
45	1	R201	12 2 W min ±5% Axial / Through-hole Pitch 15 mm	1/ carbon composition or 2/ carbon film	Any	Any
46	1	R203	3.9 k 1/8 W min ±5% SMD 0805	Resistors	Any	Any
47	1	R204	15 k 1/8 W min ±5% SMD 0805	Resistors	Any	Any
48	2	R205, R230	100 k 1/8 W min ±5% SMD 0805	Resistors	Any	Any
49	1	R207	100 k 1/8 W min ±0.05% SMD 0805	Resistors	Any	Any
50	6	R208, R209, R210, R211, R231, R232	1.5 k 1/8 W min ±5% SMD 0805	Resistors	Any	Any
51	1	R213	620 1/8 W min ±5% SMD 0805	Resistors	Any	Any
52	12	R215, R216, R217, R218, R219, R220, R221, R222, R223, R224, R225, R227	10 k 1/8 W min ±5% SMD 0805	Resistors	Any	Any
53	1	R226	26.1 k 1/8 W min ±0.1% SMD 0805	Resistors	Any	Any
54	1	R229	48.7 k 1/8 W min ±5% SMD 0805	Resistors	Any	Any
55	1	SIOV100	S14K300 300 Vac diameter 14 mm pitch 7.62 mm	MVO	Any	Any
56	1	SIOV101	Not connected	MVO	Any	Any

Item	Q.ty	Ref.	Part/Value	Description	Manufacturer	Order code
57	1	SW100	Switch 10 A	SPST	Arcoelectric	H8800VACL13
58	1	SW200	3 points header pitch 2.54 mm	3 contact header	Any	Any
59	1	SW201	Switch 3 positions	DPDT	Multicomp	1MD6T1B5M1QE
60	7	SW202, SW203, SW204, SW205, SW206, SW207, SW208	Micro switch SMD 6 mm x 6 mm	SPST	TE Connectivity	FSM4JSMA
61	37	TP100...102, 104...117, 200...203, 205, 207, 211, 212, 214...217, 219...226		Test points	Vero Technologies	20-2136
62	1	T200		Transformer	Myrra	74015
63	4	U100, U101, U102, U103	TLP187 SO-6	Darlington optocoupler	Toshiba	TLP187
64	1	U200	LF50ABV TO220-AB	5 V very low drop voltage regulator with inhibit	ST	LF50ABV
65	1	U201	LF33ABV TO220-AB	3.3 V very low drop voltage regulator with inhibit	ST	LF33ABV
66	1	U202	VIPER16HD SO-16	VIPerPlus family: energy saving 6 W high voltage converter with direct feedback	ST	VIPER16HD
67	1	U203	PC817X DIP4	Optocoupler	Sharp LiteOn	PC817X LTV817
68	1	U204	TS431AILT 1.24 V SOT23-5	Low voltage adjustable shunt reference	ST	TS431AILT
69	1	U205	TSV631ILT SOT23-5	Rail-to-rail input/output 5 V CMOS Op-Amp	ST	TSV631ILT
70	1	X101	T1635T-8FP 16 A TO-220FP	16 A Snubberless™ Triac	ST	T1635T-8FP
71	1	X102	ACST310-8B 3 A DPAK	Overvoltage protected AC switch	ST	ACST310-8B
72	1	X103	ACS108-8TN 0.8 A SOT-223	Overvoltage protected AC switch (ACS™)	ST	ACS108-8TN
73	3	Screw M3	M3 Lenght 6 mm	Screw	Any	Any
74	2	Nut M3	M3 Lenght 2 mm	Nut	Any	Any
75	4	Board support	M4 Lenght 2 mm	Support stand with lock	Any	Any

Item	Q.ty	Ref.	Part/Value	Description	Manufacturer	Order code
76	1	Fuse	10 A / 250 V 5 x 20 mm	Fuse	Any	Any
77	2	Female connector 2*17 pts	2x17 points pitch 2.54 mm	Connector	Any	Any
78	1	Ribbon 34 pts	34 contacts pitch 1.27 mm 28 AWG	Ribbon cable	Any	Any
79	1	Short circuit jumper	Pitch 2.54 mm	Jumper	Any	Any
80	2	Heatsink 35°C/W	35 °C/W 13.2 * 6.35 * 19 mm	Heatsink	Any	Any
81	1	Heatsink 17°C/W	17 °C/W 16.26 * 16.26 * 25.4 mm	Heatsink	AAVID Thermalloy	581002B02500G

**STMicroelectronics****EVALUATION BOARD LICENSE AGREEMENT**

By using this evaluation board or kit (together with all related software, firmware, components, and documentation provided by ST, "Evaluation Board"), You ("You") are agreeing to be bound by the terms and conditions of this Evaluation Board License Agreement ("Agreement"). Do not use the Evaluation Board until You have read and agreed to this Agreement. Your use of the Evaluation Board constitutes Your acceptance of this Agreement.

LICENSE

STMicroelectronics ("ST") grants You the right to use the enclosed Evaluation Board offering limited features only to evaluate and test ST products solely for Your evaluation and testing purposes in a research and development setting. The Evaluation Board shall not be, in any case, directly or indirectly assembled as a part in any production of Yours as it is solely developed to serve evaluation purposes and has no direct function and is not a finished product. If software and/or firmware is accompanied by a separate end user license agreement ("EULA"), then such software and/or firmware shall be governed by such EULA.

EVALUATION BOARD STATUS

The Evaluation Board offers limited features allowing You only to evaluate and test the ST products. The Evaluation Board is not intended for consumer or household use. You are not authorized to use the Evaluation Board in any production system, and it may not be offered for sale or lease, or sold, leased or otherwise distributed for commercial purposes. If the Evaluation Board is incorporated in an evaluation system, the evaluation system may be used by You solely for Your evaluation and testing purposes. Such evaluation system may not be offered for sale or lease or sold, leased or otherwise distributed for commercial purposes and must be accompanied by a conspicuous notice as follows: "This device is not, and may not be, offered for sale or lease, or sold or leased or otherwise distributed for commercial purposes".

OWNERSHIP AND COPYRIGHT

Title to the Evaluation Board remains with ST and/or its licensors. You may not remove any copyright or other proprietary rights notices without prior written authorization from ST. You may make one copy of the software and/or firmware of the Evaluation Board for back up or archival purposes provided that You reproduce and apply to such copy any copyright or other proprietary rights notices included on or embedded in the software and/or firmware. You agree to prevent any unauthorized copying in whole or in part of the Evaluation Board.

RESTRICTIONS AND WARNINGS

Before You handle or use the Evaluation Board, You must carefully review any related documentation provided by ST. Such documentation may contain important warnings. You shall comply with all such warnings and other instructions and employ reasonable safety precautions in using the Evaluation Board. Failure to do so may result in death, personal injury, or property damage. If You have any questions regarding the safe usage of the Evaluation Board, You should contact ST for guidance. You may not sell, assign, sublicense, lease, rent or otherwise distribute the Evaluation Board for commercial purposes, in whole or in part, or use Evaluation Board in a production system, with the exception that if You are an authorized ST distributor, You may resell the Evaluation Board in compliance with the applicable terms and conditions. Except as provided in this Agreement or as explicitly permitted in the documentation of the Evaluation Board, You may not reproduce the Evaluation Board or modify, reverse engineer, de-compile or disassemble its software and/or firmware, in whole or in part. You shall not use the Evaluation Board in any safety critical or functional safety testing, including but not limited to testing of life supporting, military or nuclear applications. ST expressly disclaims any responsibility for such usage which shall be made at Your sole risk, even if ST has been informed in writing of such usage. Unless expressly designated in writing by ST as suitable for use in testing automotive or aerospace applications, You shall not use the Evaluation Board in such testing.

Notice applicable to Evaluation Boards according to European Regulation

For the European Regulation of the Evaluation Board, the applicable EU directives are considered, with a particular attention to the Low Voltage Directive (LVD) 2014/35/EU, the Electromagnetic Compatibility (EMC) Directive 2014/30/EU, and the Radio Equipment Directive (RED) 2014/53/EU. If the Evaluation Board is outside the scope of the foregoing Directives, then the General Product Safety Directive (GPSD) 2001/95/EC and Council Directive 93/68/EEC, amending Directive 73/23/EEC on electrical equipment designed for use within certain voltage limits, are applicable.

The Evaluation Board meets the requirements of the Restriction of Hazardous Substances (RoHS 2 or RoHS recast) Directive 2011/65/EU, Annex II, as amended by Directive 2015/863/EU.

Notice applicable to Evaluation Boards not FCC-Approved

This kit is designed to allow:

- (1) Product developers to evaluate electronic components, circuitry, or software associated with the kit to determine whether to incorporate such items in a finished product and
- (2) Software developers to write software applications for use with the end product.

This kit is not a finished product and when assembled may not be resold or otherwise marketed unless all required FCC equipment authorizations are first obtained. Operation is subject to the condition that this product not cause harmful interference to licensed radio stations and that this product accept harmful interference. Unless the assembled kit is designed to operate under part 15, part 18 or part 95 of 47 CFR, Chapter I ("FCC Rules"), the operator of the kit must operate under the authority of an FCC license holder or must secure an experimental authorization under part 5 of this chapter.

For Evaluation Boards annotated as FEDERAL COMMUNICATIONS COMMISSION (FCC) Part 15 Compliant

- **FCC Interference Statement for Class A Evaluation Boards:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
- **FCC Interference Statement for Class B Evaluation Boards:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
 - Reorient or relocate the receiving antenna.
 - Increase the separation between the equipment and receiver.
 - Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
 - Consult the dealer or an experienced radio/TV technician for help.
- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

WARRANTY

ST WARRANTS THAT IT HAS THE RIGHT TO PROVIDE THE EVALUATION BOARD TO YOU. THIS WARRANTY IS PROVIDED BY ST IN LIEU OF ALL OTHER WARRANTIES, WRITTEN OR ORAL, STATUTORY, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY AS TO MERCHANTABILITY, NON-INFRINGEMENT, FITNESS FOR ANY PARTICULAR PURPOSE, OR UNINTERRUPTED OR ERROR-FREE OPERATION, ALL OF WHICH ARE EXPRESSLY DISCLAIMED. THE EVALUATION BOARD IS PROVIDED "AS IS".

YOU WARRANT TO ST THAT YOU WILL ENSURE THE EVALUATION BOARD IS USED ONLY BY ELECTRONICS EXPERTS WHO UNDERSTAND THE DANGERS OF HANDLING AND USING SUCH ITEMS, YOU ASSUME ALL RESPONSIBILITY AND LIABILITY FOR ANY IMPROPER OR UNSAFE HANDLING OR USE OF THE EVALUATION BOARD BY YOU, YOUR EMPLOYEES, AFFILIATES, CONTRACTORS, AND DESIGNEES.

LIMITATION OF LIABILITIES

IN NO EVENT SHALL ST BE LIABLE TO YOU, WHETHER IN CONTRACT, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY, OR ANY OTHER LEGAL THEORY, FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, INCIDENTAL, PUNITIVE, OR EXEMPLARY DAMAGES WITH RESPECT TO ANY MATTERS RELATING TO THIS AGREEMENT, REGARDLESS OF WHETHER ST HAS BEEN ADVISED OF THE POSSIBILITY OF THE SAME. IN NO EVENT SHALL ST'S LIABILITY ARISING OUT OF THIS AGREEMENT IN THE AGGREGATE EXCEED THE AMOUNT PAID BY YOU UNDER THIS AGREEMENT FOR THE PURCHASE OF THE EVALUATION BOARD, OR TEN UNITED STATES DOLLARS (\$10.00) IF NO PURCHASE PRICE WAS PAID.

INDEMNIFICATION

You shall, at Your expense, defend ST and its Affiliates against a claim or action brought by a third party for infringement or misappropriation of any patent, copyright, trade secret or other intellectual property right of a third party to the extent resulting from (1) Your combination of the Evaluation Board with any other component, system, software, or firmware, (2) Your modification of the Evaluation Board, or (3) Your use of the Evaluation Board in a manner not permitted under this Agreement. You shall indemnify ST and its Affiliates against and pay any resulting costs and damages finally awarded against ST or its Affiliates or agreed to in any settlement, provided that You have sole control of the defense and settlement of the claim or action, and ST cooperates in the defense and furnishes all related evidence under its control at Your expense. ST will be entitled to participate in the defense of such claim or action and to employ counsel at its own expense.

"Affiliates" means any corporation or other entity directly or indirectly controlled by, controlling or under common control with the entity in question, for so long as such ownership exists. "Control" means the direct or indirect beneficial ownership of more than fifty (50%) percent of the stock or other equity interests entitled to vote for the election of directors or an equivalent governing body. Any such corporation or other legal entity shall be deemed to be an Affiliate of such Party only as long as such Control exists.

TERMINATION

ST may terminate this Agreement without notice if You breach this Agreement. Upon termination, You shall immediately destroy or return all copies of the software, firmware, and documentation of the Evaluation Board to ST and certify in writing to ST that You have done so.

APPLICABLE LAW AND JURISDICTION

This Agreement shall be governed, construed and enforced in accordance with the laws of Switzerland, without regard to its conflict of laws rules. The UN Convention on Contracts for the International Sale of Goods shall not apply to this Agreement. In case of dispute and in the absence of an amicable settlement, the only competent jurisdiction shall be the Courts of Geneva, Switzerland. Any breach of this Agreement by You may result in irreparable damage to ST for which ST will not have an

adequate remedy at law. Accordingly, in addition to any other remedies and damages available, You acknowledge and agree that ST may immediately seek enforcement of this Agreement in any jurisdiction by means of specific performance or injunction, without any requirement to post a bond or other security.

SEVERABILITY

If any provision of this agreement is or becomes, at any time or for any reason, unenforceable or invalid, no other provision of this agreement shall be affected thereby, and the remaining provisions of this agreement shall continue with the same force and effect as if such unenforceable or invalid provisions had not been inserted in this Agreement. In addition, any unenforceable or invalid provision shall be deemed replaced by a provision that is valid and enforceable and that comes closest to expressing the intention of the unenforceable or invalid provision.

WAIVER

The waiver by either party of any breach of any provision of this Agreement shall not operate or be construed as a waiver of any other or a subsequent breach of the same or a different provision.

RELATIONSHIP OF THE PARTIES

Nothing in this Agreement shall create, or be deemed to create, any joint venture, partnership, principal-agent, employer-employee or other relationship between the Parties, except that of independent contractors. Neither Party has the authority or power to bind, to contract in the name of, or to create a liability for the other in any way or for any purpose.

SURVIVAL

Any provision of this Agreement which imposes an obligation after termination of this Agreement shall survive the termination of this Agreement.

SECTION HEADINGS

Section headings are inserted for convenience only and shall not be used to interpret this Agreement.

WASTE AND RECYCLING

The Evaluation Board is not to be disposed of as urban waste. At the end of its life cycle, differentiated waste collection must be followed. Consult the local authorities for more information on the proper disposal channels. It is mandatory to separately collect the Evaluation Board and make sure it is delivered to the appropriate waste management and recycling centers.

As of 15 August 2018, in all the countries belonging to the European Union, the Evaluation Board is subject to the WEEE Directive 2012/19/EU requirement; therefore, it is forbidden to dispose of the Evaluation Board as undifferentiated waste or with other domestic wastes. Consult the local authorities for more information on the proper recycling centers.

Disposing of the Evaluation Board incorrectly may cause damage to the environment and may be subject to fines based on specific countries' rules.