

Table 1: STEVAL-CTM009V1 evaluation kit bill of materials

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
1	1	-	STEVAL-CTM004V1	Power board	ST	not available separately
2	1	-	STEVAL-CTM005V1	Capacitor board	ST	not available separately
3	1	-	STEVAL-CTM006V1	Driver board	ST	not available separately
4	1	-	STEVAL-CTM008V1	Current sensing board	ST	not available separately

Note: The bill of material documents for the individual boards are supplied as separate documents in attachment and as additional pages included below.

Table 1: STEVAL-CTM004V1 power board bill of materials

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
1	6	C80, C83, C85, C88, C89, C92	0.033 μ F 1206 (3216 Metric) 250V	CAP CER 0.033 μ F 250V X7R 1206	TDK Corporation	CGA5L3X7R2E333M160AA
2	6	C81, C82, C86, C87, C90, C91	1 μ F 2220 (5750 Metric) 250 V	CAP CER 1 μ F 250V X7R 2220	TDK Corporation	CGA9N3X7R2E105K230KA
3	3	CON5, CON6, CON7	CON8 StripMale2X4SM	Double Strip Line Male SMD 2X4 Pitch 2, 54	Molex. LLC	0015912080
4	1	J3	CON4A StripMale2X2SM	double Strip Line male smd 2X2 Pitch 2, 54mm	Molex. LLC	0015912040
5	36	Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q12, Q13, Q14, Q15, Q16, Q17, Q18, Q19, Q20, Q21, Q22, Q23, Q24, Q25, Q26, Q27, Q28, Q29, Q30, Q31, Q32, Q33, Q34, Q35, Q36	100 V 180 A	N-Ch Power MOSFET H ² PAK-6	ST	STH310N15F7-6 STH315N10F7-6
6	36	R71, R72, R73, R74, R75, R76, R84, R85, R87, R88, R89, R90, R107, R108, R109, R110, R111, R112, R120, R121, R122, R123, R124, R125, R133, R134, R135, R136, R137, R138, R146, R147, R148, R149, R150, R151	2.2 1206 (3216 Metric) 1/4	-	-	-
7	36	R77, R78, R79, R80, R81, R82, R92, R93, R94, R95, R96, R97, R113, R114, R115, R116, R117, R118, R126, R127, R128, R129, R130, R131, R139, R140, R141, R142, R143, R144, R152, R153, R154, R155, R156, R157	10 k 0603 (1608 Metric) 1/10 w	RES SMD 10K OHM 1% 1/10W 0603	Yageo	RC0603FR-0710KL
8	6	R83, R98, R119, R132, R145, R158	NM	-	-	-
9	6	R173, R174, R175, R176, R177, R178	0.001 2818 7 W	RES SMD 0.001 OHM 1% 7W 2818	Vishay Dale	WSHM28181L000FEA

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
10	3	RT1, RT2, RT3	4.7k 0805 (2012 Metric)	NTC THERMISTOR 4.7K OHM 5% 0805	Murata Electronics North America	NCP21XM472J03RA
11	9	TW1, TW2, TW3, TW4, TW5, TW6, TW7, TW8, TW9, TW10, TW11	Hexagonal Tower M5x10mm	Male-Femal M5X10	RS PRO	806-6632
12	2	SP1, SP2	M3x10mm	Standoff, Steel, M3, Hex Male- Female, 10 mm, WA-SSTIE Series	Würth Electronic	971 100 351
13	18	conic head screw M3X8mm	M3x8mm	Machine Screw with flat + spring lock washer	Farnell	2494539
14	9+9+9	-	M5	Nut + Washer + shakeproof	RS	483-0546 + 482-7720 + 526-833

Table 1: STEVAL-CTM005V1 capacitor board bill of materials

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
15	22	C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27	270 μ F Radial, Can 100V \pm 20%	CAP ALUM	Rubycon	100ZLJ270M12.5X30

Table 1: STEVAL-CTM006V1 driver board bill of materials

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
1	2	C1, C96	47µF 25V ±10%	CAP TANT 2917	AVX Corporation	TAJD476K025RNJ
2	2	C2, C4	0.1µF 25V ±10%	CAP, Ceramic, SMD, 0603	Kemet	C0603C104K3RAC
3	19	C3, C5, C28, C44, C57, C70, C75, C76, C77, C78, C79, C93, C97, C103, C104, C112, C116, C119, C122	0.1µF 50V ±10%	CAP CER X7R 0603	KEMET	C0603C104K5RACTU
4	1	C33	10pF 50V ±10%	CAP CER X7R 0603	Murata Electronics North America	GRM188R71H103KA01D
5	2	C34, C35	10pF 50V ±0.5pF	CAP CER 10PF 50V C0G 0603	TDK Corporation	CGA3E2C0G1H100D080AD
6	3	C37, C50, C63	1 µF 50V ±10%	CAP CER JB 1206	TDK Corporation	C3216JB1H105K160AA
7	9	C38, C48, C51, C61, C64, C74, C109, C110, C111	0.22µF 50V ±10%	CAP CER X7R 0603	TDK Corporation	CGA3E3X7R1H224K080AD
8	6	C39, C46, C52, C59, C65, C72	1000pF 50V ±10%	CAP CER X7R 0603	AVX Corporation	06035C102KAT2A
9	5	C41, C54, C67, C99, C105	15nF 50V ±10%	CAP CER X7R 0603	Murata Electronics North America	GRM188R71H153KA01D
10	4	C43, C56, C69, C95	10µF 50V ±20%	CAP CER X5R 1206	TDK Corporation	CGA5L3X5R1H106M160AB
11	1	C94	2200pF 50V ±10%	CAP CER X7R 0603	TDK Corporation	CGA3E2X7R1H222K080AD
12	1	C98	470pF 50V ±5%	CAP CER C0G 0603	TDK Corporation	CGA3E2C0G1H471J080AD
13	2	C100, C108	47µF 10V ±10%	CAP TANT 2917	AVX Corporation	TAJD476K010RNJ
14	2	C101, C106	3.3µF 50V ±10%	CAP CER X5R 0805	TDK Corporation	C2012X5R1H335K125AB
15	1	C102	150pF 100V ±5%	CAP CER C0G 0603	TDK Corporation	CGA3E2C0G2A151J080AD
16	1	C107	120pF 50V ±5%	CAP CER C0G 0603	TDK Corporation	CGA3E2C0G1H121J080AD
17	1	C113	10nF 50V ±10%	CAP CER X7R 0603	Murata Electronics North America	GRM188R71H103KA01D
18	6	C114, C115, C117, C118, C120, C121	100pF 50V ±5%	CAP CER C0G/ NP0 0603	Murata Electronics North America	GRM1885C1H101JA01D

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
19	3	CON1, CON3, CON4	CON8	Double Strip Line Female 2X4 Pitch 2,54	Sullins Connector Solution	PPTC042LFBN-RC
20	1	CON2	ICS CONNECTOR	-	HARTING	09185106324
21	1	CON8	Enc/Hall Connector Male	Double Strip Line Female 2X4 Pitch 2,54	Sullins Connector Solution	PPTC042LFBN-RC
22	4	D1, D2, D3, D53	1.6mmX0.8mm,3 1.8V	DIO, Rectangle, Flat Top Red,	KINGBRIGHT	KP-1608SRC-PRV
23	3	D4, D5, D6	30V 300mA	DIODE SCHOTTKY SOD523	ST	BAT30KFILM
24	7	D10, D16, D22, D28, D34, D40, D46	60V 5A	DIODE SCHOTTKY SMC	ST	STPS5L60SY
25	6	D12, D18, D24, D30, D36, D42	10.2VWM 21.7VC	TVS DIODE SMC	ST	SM15T12CAY
26	4	D47, D48, D50, D51	40V 3A	DIODE SCHOTTKY SMC	ST	STPS3L40SY
27	1	D49	400 W	Automotive Transil	ST	SM4T28AY
28	1	D52	2.7V 500mW	DIODE ZENER SOD80	Vishay Semiconducto Diodes Division	TZMB2V7-GS08
29	1	D54	3.3V 500mW	DIODE ZENER SOD123	ON Semiconducto	MMSZ4684T1G
30	6	D57, D58, D59, D60, D61, D62	200V 1A	DIODE GEN PURP SMA	ST	STTH102AY
31	1	IC4	3A	IC REG BUCK ADJ 8HSOP	ST	A7986ATR
32	2	IC5, IC6	1A	IC REG BUCK ADJ 8SOIC	ST	A6902D13TR
33	3	IC7, IC8, IC9	4A	IC GATE DVR HIGH/LOW 14SOIC	ST	L6491DTR
34	1	J1	34POS	CONN HEADER T/H	HARTING	09185346324
35	1	J2	CON4A 2X2 Pitch 2.54mm	double Strip Line female	Sullins Connector Solution	PPTC022LFBN-RC
36	1	J4	Multipole Male	Connector	Sullins Connector Solution	SFH11-PBPC-D07-ST-BK
37	1	JP1	2-position vert 3.81mm	TERM BLOCK HDR	Phoenix Contact	1803426
38	4	L1, L2, L3, L4	120Ω @ 100MHz	FERRITE BEAD 0603 1LN	Würth Electronics Inc.	742792625
39	1	L5	15μH 1.45A 125 MΩ ±20%	FIXED IND	Würth Electronics Inc.	74404063150

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
40	1	L6	70Ω	FERRITE BEAD 0603 1LN	Murata Electronics North America	BLM18SG700TN1D
41	1	L7	68μH 1.9A 132 MΩ ±20%	FIXED IND SMD	Würth Electronics Inc.	7447714680
42	4	L8, L9, L10, L12	330 Ω	FERRITE BEAD 0603 1LN	Murata Electronics North America	BLM18SG331TN1D
43	1	L11	47μH 1.8A 190 MΩ ±10%	FIXED IND SMD	Würth Electronics Inc.	74456147
44	1	Q37	60V 4A	MOSFET N-CH SOT-223	ST	STN4NF06L
45	1	R1	820Ω 1/10W ±1%	RES SMD 0603	Yageo	RC0603FR-07820RL
46	1	R2	1.33k 1/10W ±1%	RES SMD 0603	Yageo	RC0603FR-071K33L
47	1	R3	3.57k 1/10W ±1%	RES SMD 0603	Yageo	RC0603FR-073K57L
48	16	R4, R6, R8, R9, R10, R11, R12, R13, R26, R42, R58, R179, R188, R224, R225, R251	0.0Ω 1/10W	RES SMD JUMPER 0603	Yageo	RC0603JR-070RL
49	2	R7, R163	1.5kΩ 1/10W ±1%	RES SMD 0603	Yageo	RC0603FR-071K5L
50	3	R14, R15, R16	NM	-	Any	-
51	6	R19, R35, R51, R99, R100, R101	4.7kΩ 1/10W ±1%	RES SMD 0603	Yageo	RC0603FR-074K7L
52	6	R21, R22, R37, R38, R53, R54	100Ω 1/10W ±1%	RES SMD 0603	Yageo	RC0603FR-07100RP
53	3	R24, R40, R56	6.98kΩ 1/10W ±1%	RES SMD 0603	Yageo	RC0603FR-076K98L
54	3	R25, R41, R57	1.87kΩ 1/10W ±1%	RES SMD 0603	Yageo	RC0603FR-071K87L
55	3	R27, R43, R59	100kΩ 1/10W ±5%	RES SMD 0603	Yageo	RC0603JR-07100KL
56	3	R30, R46, R62	2.87kΩ 1/10W ±1%	RES SMD 0603	Yageo	RC0603FR-072K87L
57	1	R159	1kΩ 1/10W ±1%	RES SMD 0603	Yageo	RC0603FR-071KL
58	1	R160	110kΩ 1/10W ±5%	RES SMD 0603	Yageo	RC0603JR-07110KL
59	1	R161	47kΩ 1/10W ±1%	RES SMD 0603	Yageo	RC0603FR-0747KL
60	1	R162	220Ω 1/10W ±1%	RES SMD0603	Yageo	RC0603FR-07220RL

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
61	1	R164	2.49kΩ 1/10W ±1%	RES SMD 0603	Stackpole Electronics Inc.	RMCF0603FT2K49
62	2	R165, R169	0.1Ω 1/3W ±1%	RES SMD 0603	Panasonic Electronic Components	ERJ-3BWFR100V
63	1	R166	13kΩ 1/10W ±1%	RES SMD 0603	Yageo	RC0603FR-0713KL
64	3	R167, R170, R171	9.1kΩ 1/10W ±1%	RES SMD 0603	Yageo	RC0603FR-079K1L
65	1	R168	4.3kΩ 1/10W ±1%	RES SMD 0603	Yageo	RC0603FR-074K3L
66	1	R172	5.49Ω 1/10W ±1%	RES SMD 0603	Yageo	RC0603FR-075K49L
67	3	R180, R181, R183	20kΩ 1/8W ±1%	RES SMD0805	Yageo	RC0805FR-0720KL
68	2	R182, R184	10kΩ 1/4W ±1%	RES SMD 1206	Yageo	RC1206FR-0710KL
69	1	R185	3.9kΩ 1/10W ±1%	RES SMD 0603	Yageo	RC0603FR-073K9L
70	1	R186	39Ω 1/10W ±1%	RES SMD 0603	Panasonic Electronic Components	ERJ-3EKF39R0V
71	1	R187	2.7kΩ 1/10W ±1%	RES SMD 0603	Yageo	RC0603FR-072K7L
72	1	R189	N.M. ±1%	-	Any	-
73	3	R222, R223, R231	100k ±1%	-	Any	-
74	6	R226, R233, R235, R241, R243, R249	8.2 ±1%	-	Any	-
75	3	R227, R236, R244	10Ω 1/2W ±1%	RES SMD 1210	Stackpole Electronics Inc.	RMCF1210FT10R0
76	3	R228, R237, R245	18k ±1%	-	Any	-
77	6	R229, R234, R238, R242, R246, R250	1.5 ±1%	-	Any	-
78	3	R230, R239, R247	0.1 ±1%	-	Any	-
79	3	R232, R240, R248	62k ±1%	-	Any	-
80	3	S1, S2, S3	Con2	CONN HEADER 2POS VERT T/H	Amphenol FCI	77311-118-02LF
81	1	SW2	Con3	SIL VERTICAL PC TAIL PIN HEADER	Harwin Inc.	M20-9990345
82	6	TP15, TP19, TP21, TP25, TP27, TP31	5000	TEST POINT PC MINI .040"D RED	Keystone Electronics	5000

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
83	12	TP16, TP17, TP18, TP20, TP22, TP23, TP24, TP26, TP28, TP29, TP30, TP32	5001	TEST POINT PC MINI .040"D BLACK	Keystone Electronics	5001
84	1	U1	400KHZ	IC OPAMP ZRO- DRFT SOT23-5	ST	TSZ121IYLT
85	1	U2		IC GATE AND 4CH 2-INP 14- TSSOP	Fairchild/ON Semiconducto	MM74HC08MTCX
86	1	U3	12VWM 21VC	TVS DIODE SOT23-3L	ST	ESDA14V2LY
87	1	U4	5.2VWM 16VC	TVS DIODE SOT23-3L	ST	ESDA6V1LY
88	1	U5	3VWM 19VC	TVS DIODE SOT23-3L	ST	ESDA5V3LY

Table 1: STEVAL-CTM008V1 sensing board bill of materials

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
1	4	C1,C4,C7,C9 ANY	4.7nF , smc0603, 25 V, 10 %	CAP CER X7R 0603	any	-
2	8	C2,C3,C5,C6,C8, ANY	47nF, 25 V, 10 %	CAP CER X7R 0603	any	-
3	2	ICS1,ICS2	CURRENT SENSOR HALL 200A V	trasdulemHTFS400P	LEM	HTFS 200-P
4	1	ICS3 (NM)	CURRENT SENSOR HALL 200A V	trasdulemHTFS400P	LEM	HTFS 200-P
5	1	ICS4 (NM)	CURRENT SENSOR HALL 200A V	trasdulemHTFS400P	LEM	HTFS 200-P
6	4	TP1,TP2,TP3,TP4	M3X20mm Male_Femal, mthole3	hex spacer	richco	htsb-m3-20-5-2
7	1	J1	10X2 pitch 2,54mm, ampmode10	Connector male	Wurth_Elektron	61201021621
8	4	R1,R3,R5,R7 ANY	3.6kΩ 1/10W 1 %	RES SMD 0603	any	-
9	4	R2,R4,R6,R8 ANY	1.8kΩ, 1/10W 1 %	RES SMD 0603	any	-
10	1	Flat cable	150mm	10 Position Cable Assembly Rectangular Socket to Socket	Harwin Inc.	M50-9100542
11	4	S1,S2,S3,S4 ANY	2X2,54 mm + Jumper, siptm2002	Strip line male	any	-

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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.

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"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 it 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.