

Table 1: STEVAL-LLL009V1 bill of materials

Item	Q.ty	Ref.	Part/Value	Description	Manufacturer	Order code
1	1	STEVAL-LLL009M1		Power board	ST	Not available for separate sale
2	1	STEVAL-LLL009D1		Daughter board	ST	Not available for separate sale
3	1	STEVAL-DPS334M1		Control board	ST	Not available for separate sale
4	1	STEVAL-DPSADP01		Adapter board	ST	Not available for separate sale

Table 2: STEVAL-LLL009M1 bill of materials

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
1	2	U1, U3	5V, 500mA	Low drop voltage regulators, DPAK	ST	KF50BD-TR
2	1	U2	1050V	High voltage converter, SO16N	ST	VIPER267KDTR
3	1	U4	4A	Isolated Half-Bridge gate driver, SO-16	ST	STGAP2DMTR
4	1	U5	-	Operational amplifier, SOT23-5	ST	TSZ121ILT
5	2	U6, U7	4A	High voltage high and low-side gate driver, SO-14	ST	L6491DTR
6	1	U10	-	Transition-mode PFC controller, SO-8	ST	L6562ATDTR
7	1	U11	1A	Low-side gate driver, SOT23-5	ST	PM8841D
8	2	Q1, Q4	950V	N-channel MOSFET, TO-247	ST	STW20N95DK5
9	4	Q2, Q3, Q5, Q6	100V	N-channel MOSFET, TO-220	ST	STP100N10F7
10	1	Q7	950V	N-channel MOSFET, TO-247	ST	STW20N95K5
11	1	Q13	2kV	NPN Darlington transistor, TO-220	ST	STP03D200
12	6	D14, D15, D20, D21, D22, D42	60V, 1A	Schottky rectifier, SMA	ST	STPS1L60A
13	8	D23, D24, D25, D26, D29, D30, D31, D32	40V, 300mA	Schottky diode, SOD323	ST	BAT54JFILM
14	2	D27, D28	100V, 200mA	Schottky diode, SOD-323	ST	BAT41JFILM
15	1	D34	1200V, 5A	Ultrafast recovery diode, DPAK	ST	STTH512B-TR
16	4	D6, D8, D11, D44	200V, 2A	Power Schottky diode, SMB	ST	STPS2200U
17	1	D33	1200V, 2A	High Voltage diode, SMB	ST	STTH212U
18	2	D7, D46	1200V, 1A	Ultrafast rectifier, SMA	ST	STTH112A

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
19	6	D16, D17, D18, D19, D40, D48	600V, 1A	Ultrafast high voltage rectifier, SMA	ST	STTH1L06A
20	1	D45	60V, 3A	Power Schottky rectifier, SMB	ST	STPS3L60U
21	2	Q11, Q14	80V, 500mA	NPN Transistor, SOT-23	ON Semiconductor	SMMBTA06LT1G
22	8	D1, D4, D12, D13, D36, D37, D39, D47	75V, 200mA	Switching Diode, DO - 213AA	Microsemi Corporation	1N4148UR-1
23	1	D2	12V, 500mW, $\pm 5\%$	Zener Diode, SOD123	Any	Any
24	1	D3	3.6V, 500mW, $\pm 5\%$	Zener Diode, SOD123	Any	Any
25	1	D9	RED, 30mA	Indication Red LED, SMD 0805	Any	Any
26	1	D35	1000V	Bridge Rectifier, Through Hole	Comchip Technology	GBU1510-G
27	1	D38	18V, 500mW, $\pm 5\%$	Zener Diode, SOD123	Any	Any
28	1	D43	15V, 500mW, $\pm 5\%$	Zener Diode, SOD123	Any	Any
29	1	D41 (not mounted)	-	SOD123, (not mounted)	-	-
30	2	C1, C2	1nF, 2kV, $\pm 10\%$	High Voltage Ceramic Capacitor, SMD 1210	AVX Corporation	1210GC102KAT1A
31	13	C3, C4, C5, C7, C11, C18, C20, C26, C33, C42, C78, C92, C103	100nF, 50V or above, $\pm 10\%$	Ceramic Capacitor, X7R, SMD 0805	Any	Any
32	3	C8, C10, C21	2.2 μ F, 25V or above, $\pm 10\%$	Ceramic Capacitor, X7R, SMD 0805	Any	Any
33	4	C9, C50, C68, C98	1nF, 25V or above, $\pm 10\%$	Ceramic Capacitor, X7R, SMD 0603	Any	Any
34	1	C90	10nF, 100V or above, $\pm 10\%$	Ceramic Capacitor, X7R, SMD 0805	Any	Any
35	2	C13, C32	10nF, 50V or above, $\pm 10\%$	Ceramic Capacitor, X7R, SMD 0805	Any	Any
36	2	C14, C30	47 μ F, 35V or above, $\pm 20\%$	Electrolytic Capacitor, 105°C, Through Hole 5mm Pitch	Any	Any
37	2	C16, C34	10 μ F, 25V or above, $\pm 10\%$	Ceramic Capacitor, X7R, SMD 0805	Any	Any
38	2	C17, C79	470nF, 25V or above, $\pm 10\%$	Ceramic Capacitor, X7R, SMD 0805	Any	Any
39	3	C19, C57, C96	22 μ F, 35V or above, $\pm 20\%$	Electrolytic Capacitor, SMD, Length: 5.8 mm, Height: 6.1 mm	Panasonic	EEE-FT1V220AR
40	1	C22	1nF, 25V or above, $\pm 10\%$	Ceramic Capacitor, X7R, SMD 0805	Any	Any

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
41	2	C24, C25	470µF, 100V or above, ±20%	Electrolytic Capacitor, 105°C, Through Hole 7.5mm Pitch	Any	Any
42	1	C27	68nF, 630V, ±5%	Film Capacitor, Through Hole 15mm Pitch	EPCOS / TDK	B32672L6683J189
43	3	C28, C29, C106	1µF, 100V or above, ±10%	Ceramic Capacitor, X7R, SMD 1206	Any	Any
44	4	C36, C41, C45, C58	1µF, 35V or above, ±10%	Ceramic Capacitor, X7R, SMD 1206	Any	Any
45	1	C31	10nF, 2kV, ±5%	Film Capacitor, Through Hole 22.5mm Pitch	EPCOS / TDK	B32653A8103J
46	2	C37, C54	4.7nF, 25V or above, ±10%	Ceramic Capacitor, X7R, SMD 0603	Any	Any
47	1	C38	1µF, 25V or above, ±10%	Ceramic Capacitor, X7R, SMD 0603	Any	Any
48	1	C93	2.2µF, 25V or above, ±10%	Ceramic Capacitor, X7R, SMD 0603	Any	Any
49	1	C23	470pF, 25V or above, ±5%	Ceramic Capacitor, X7R, SMD 0805	Any	Any
50	1	C39	22nF, 25V or above, ±10%	Ceramic Capacitor, X7R, SMD 0603	Any	Any
51	4	C43, C44, C55, C56	100pF, 50V or above, ±10%	Ceramic Capacitor, X7R, SMD 0603	Any	Any
52	2	C46, C60	220nF, 50V or above, ±10%	Ceramic Capacitor, X7R, SMD 1206	Any	Any
53	6	C35, C40, C47, C48, C63, C64	100nF, 50V or above, ±10%	Ceramic Capacitor, X7R, SMD 1206	Any	Any
54	4	C49, C53, C67, C70	10µF, 50V or above, ±10%	Ceramic Capacitor, X7R, SMD 1206	Any	Any
55	1	C94	220nF, 50V or above, ±10%	Ceramic Capacitor, X7R, SMD 0603	Any	Any
56	8	C52, C69, C71, C72, C80, C82, C95, C104	100nF, 50V or above, ±10%	Ceramic Capacitor, X7R, SMD 0603	Any	Any
57	1	C76	470nF, 50V or above, ±10%	Ceramic Capacitor, X7R, SMD 0603	Any	Any
58	3	C51, C66, C97	10nF, 50V or above, ±10%	Ceramic Capacitor, X7R, SMD 0603	Any	Any
59	1	C75	1.5nF, 50V or above, ±10%	Ceramic Capacitor, X7R, SMD 0603	Any	Any
60	2	C73, C74	2.2nF, 25V or above, ±10%	Ceramic Capacitor, X7R, SMD 0603	Any	Any
61	2	C77, C81	2.2µF, 16V or above, ±20%	Electrolytic Capacitor, SMD, Length: 5.4 mm, Height: 3.3 mm	Nichicon	UWT1V2R2MCL2GB
62	2	C84, C85	100nF-X2, 440 VAC, ±10%	Film Capacitor, Through Hole 22.5mm Pitch	KEMET	PHE844RD6100KR06L2

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
63	1	C86	680nF, 530V AC, ±20%	Film Capacitor, Through Hole 27.5mm Pitch	EPCOS / TDK	B32914A5684M
64	1	C88	47nF-X2, 440 VAC, ±10%	Film Capacitor, Through Hole 22.5mm Pitch	KEMET	R474N24705001K
65	2	C89, C91	270µF, 450V, ±20%	Electrolytic Capacitor, Through Hole 10mm Pitch	Nichicon	LGM2W271MELB25
66	4	C100, C101, C110, C111	220pF, 50V or above, ±10%	Ceramic Capacitor, X7R, SMD 0603	Any	Any
67	1	C102	1nF, 2kV, ±20%	Ceramic Capacitor, SMD 1206	Yageo	CC1206MKX7RDBB102
68	1	C108	100nF, 1kV, ±10%	Ceramic Capacitor, Through Hole 5mm Pitch	Murata Electronics	RDER73A104K5B1H03B
69	1	C119	100µF, 35V, ±20%	Electrolytic Capacitor, 105°C, Through Hole 5mm Pitch	Any	Any
70	1	C109	2.2nF, 440V AC, ±20%	Safety Ceramic Disc Capacitor, Through Hole 5mm Pitch	Vishay / BC Components	VY2222M35Y5US6TV5
71	2	C83, C87 (not mounted)	-	Through Hole 10mm Pitch, (not mounted)	-	-
72	2	C99, C107 (not mounted)	-	SMD 0603, (not mounted)	-	-
73	1	R1	680E, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	Any
74	1	R2	24K, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	Any
75	9	R3, R24, R26, R28, R35, R39, R40, R54, R121	10K, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	Any
76	1	R4	18K, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	Any
77	1	R5	510E, 1/10W, ±5%	Metal Film Resistor, SMD 0603	Any	Any
78	1	R13	39K, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	Any
79	1	R14	9.1K, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	Any
80	1	R15	1K, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	Any
81	1	R17	8.2K, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	Any

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
82	5	R18, R171, R181, R182, R184	10E, 1/4W, ±1%	Metal Film Resistor, SMD 1206	Any	Any
83	1	R70	120E, 1/4W, ±1%	Metal Film Resistor, SMD 0805	Any	Any
84	6	R21, R32, R58, R77, R154, R183	10E, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	Any
85	2	R25, R30	51K, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	Any
86	5	R27, R33, R152, R179, 180	22E, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	Any
87	8	R22, R23, R29, R31, R36, R37, R62, R63	4.7E, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	Any
88	1	R34	6.2K, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	Any
89	2	R38, R42	22mΩ, 2W, ±1%	Current Sense Resistor, SMD 2512	TE Connectivity / Holsworthy	RLP73M3AR022FTDF
90	1	R41	0E, 1/4W, ±1%	Metal Film Resistor, SMD 1206	Any	Any
91	2	R43, R44	150E, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	-
92	1	R139	100E, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	-
93	1	R151	6.2K, 1/10W, ±1%	Metal Film Resistor, SMD 0603	Any	-
94	3	R45, R49, R149	4.7K, 1/10W, ±1%	Metal Film Resistor, SMD 0603	Any	-
95	5	R46, R47, R50, R51, R105	47E, 1/10W, ±1%	Metal Film Resistor, SMD 0603	Any	-
96	4	R20, R48, R53, R120	0E, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	-
97	2	R52, R69	47K, 1/4W, ±5%	Metal Film Resistor, SMD 1206	Any	-
98	5	R55, R56, R75, R76, R178	100K, 1/10W, ±1%	Metal Film Resistor, SMD 0603	Any	-
99	6	R59, R60, R61, R81, R83, R84	33E, 1/10W, ±1%	Metal Film Resistor, SMD 0603	Any	-

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
100	3	R64, R89, R172	4.2K, 1/10W, ±1%	Metal Film Resistor, SMD 0603	Any	-
101	8	R65, R66, R90, R92, R119, R122, R144, R155	10K, 1/10W, ±1%	Metal Film Resistor, SMD 0603	Any	-
102	1	R67	2.2E, 1/4W, ±1%	Metal Film Resistor, SMD 1206	Any	-
103	7	R94, R95, R98, R99, R104, R114, R115	100E, 1/10W, ±1%	Metal Film Resistor, SMD 0603	Any	-
104	3	R96, R97, R150	1K, 1/10W, ±5%	Metal Film Resistor, SMD 0603	Any	-
105	14	R68, R91, R100, R101, R102, R103, R106, R107, R108, R109, R110, R111, R112, R113	0E, 1/10W, ±1%	Metal Film Resistor, SMD 0603	Any	-
106	4	R116, R123, R131, R136	470K, 1/4W, ±1%	Metal Film Resistor, SMD 1206	Any	-
107	9	R117, R118, R127, R130, R132, R137, R145, R146, R170	220K, 1/4W, ±1%	Metal Film Resistor, SMD 1206	Any	-
108	4	R124, R128, R133, R140	820K, 1/4W, ±1%	Metal Film Resistor, SMD 1206	Any	-
109	4	R129, R134, R141, R147	51K, 1/4W, ±1%	Metal Film Resistor, SMD 1206	Any	-
110	2	R135, R138	0.47E, 1W, ±1%	Current Sense Resistor, SMD 2512	Yageo	-
111	1	R142	100K, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	-
112	1	R143	18K, 1/10W, ±1%	Metal Film Resistor, SMD 0603	Any	-
113	1	R148	47K, 1/10W, ±1%	Metal Film Resistor, SMD 0603	Any	-
114	3	R173, R174, R175	1M, 1/4W, ±1%	Metal Film Resistor, SMD 1206	Any	-
115	1	R176	220K, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	-

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
116	1	R177	2.2K, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	-
117	2	R19, R185 (not mounted)	-	SMD 1206, (not mounted)	-	-
118	3	R57, R78, R153 (not mounted)	-	SMD 0603, (not mounted)	-	-
119	1	L3	470Ω 100MHz, 250mA, ±25%	Ferrite Bead, SMD 0402	Würth Electronics	-
120	1	L4	100μH, ±20%	Common Mode Choke / Filter, Through Hole	Würth Electronics	-
121	1	L5	2.2mH	Common Mode Choke / Filter, Through Hole	Würth Electronics	-
122	1	L6	1μH, ±10%	Fixed Inductor, Through Hole	ABRACON	-
123	1	L7	-	LCC Inductor, Through Hole	AQ Magnetica	-
124	1	T1	-	0-10V Isolation Transformer, Through Hole	Würth Electronics	-
125	1	T2	-	Flyback Transformer, Through Hole	AQ Magnetica	-
126	1	T3	-	Current Sense Transformer, Through Hole	AQ Magnetica	-
127	1	T4	-	LCC Transformer, Through Hole	AQ Magnetica	-
128	1	T5	-	PFC Transformer, Through Hole	AQ Magnetica	-
129	1	F1	2A	Fuse, Through Hole	Bel Fuse	-
130	1	J1	-	Connector 0-10V Input, Fixed Terminal Block - 2 Position, Through Hole 5mm Pitch	Phoenix Contact	-
131	1	J4 (not mounted)	-	PFC Output, Through Hole 10mm Pitch, (not mounted)	-	-
132	1	J5	-	Output Connector, Through Hole 7.5mm Pitch	Phoenix Contact	-
133	1	J8	-	Power Control Card Connector, Through Hole	ERNI	-
134	1	J9	265-525V AC	Input Connector , Through Hole 10mm Pitch	282858-3	-
135	1	J10 (not mounted)	-	Through Hole, (not mounted)	-	-

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
136	1	J12	Connector 2x1	2.54mm Pitch Berg Stick Male, Through Hole 2.54mm Pitch	Any	-
137	1	J13	Connector 4x1	2.54mm Pitch Berg Stick Female, Through Hole 2.54mm Pitch	Any	-
138	1	J14	Connector 3x1	2.54mm Pitch Berg Stick Female, Through Hole 2.54mm Pitch	Any	-
139	1	RT1	0.05A 30V, 30V DC	PTC Resettable Fuse, SMD	Bourns	-
140	1	RT3	10E	Inrush Current Limiter, Through Hole 7.5mm Pitch	EPCOS / TDK	-
141	1	SW1	12 VDC	Slide Switches, Through Hole	EAO	-
142	1	RV1	440V AC	Varistor, Through Hole	EPCOS / TDK	-
143	8	MH1, MH2, MH3, MH4, MH5MH6, MH7, MH8	Mounting Holes, Spacer and Screw	Spacers (M3x12), Screw (M3x6) , Through Hole	-	-
144	1	TP1	Vcc Secondary	Test Point, Through Hole	Any	-
145	1	TP2	Vcc Primary	Test Point, Through Hole	Any	-
146	1	TP3	SEC.-GND	Test Point, Through Hole	Any	-
147	1	TP4	DC-BUS V- OUTPUT PFC	Test Point, Through Hole	Any	-
148	1	TP30	PFC MOSFET DRAIN	Test Point, Through Hole	Any	-
149	1	TP31	PFC MOSFET GATE DRIVE	Test Point, Through Hole	Any	-
150	1	TP35	PFC Controller Vcc	Test Point, Through Hole	Any	-
151	1	TP5	V-OUTPUT	Test Point, Through Hole	Any	-
152	1	TP6	VDD- VIPER26K	Test Point, Through Hole	Any	-
153	1	TP7	HB-LCC Node	Test Point, Through Hole	Any	-
154	1	TP10	NODE VDS- SR1	Test Point, Through Hole	Any	-
155	1	TP11	NODE VDS- SR2	Test Point, Through Hole	Any	-
156	1	TP17 (not mounted)	-	Test Point, Through Hole, (not mounted)	-	-
157	1	TP36	PRI.-GND	Test Point, Through Hole	Any	-

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
158	1	Heat-Sink (Q1, Q7, Q4)	3mm Thickness, 54mm x 25mm	Aluminium Heat Sink (Anodized), 3-Holes	-	-
159	1	Heat-Sink (Q5, Q2, Q6, Q3)	3mm Thickness, 60mm x 25mm	Aluminium Heat Sink (Anodized), 4-Holes	-	-
160	3	Isolation Pad (Q1, Q7, Q4)	Heat-Sink (Q1, Q7, Q4), TO-247	Thermal Pad	Wakefield-Vette	-
161	4	Isolation Pad (Q5, Q2, Q6, Q3)	Heat-Sink (Q5, Q2, Q6, Q3), TO-220	Thermal Pad	Wakefield-Vette	-
162	3	Screw and Nut (Q1, Q7, Q4)	Heat-Sink (Q1, Q7, Q4), TO-247	Screw (M3x12), Nut (M3)	Any	-
163	4	Screw and Nut (Q5, Q2, Q6, Q3)	Heat-Sink (Q5, Q2, Q6, Q3), TO-220	Screw (M3x10), Nut (M3)	Any	-
164	4	Bush (Q5, Q2, Q6, Q3)	Heat-Sink (Q5, Q2, Q6, Q3), TO-220	Bush TO-220	MULTICOMP	-

Table 3: STEVAL-LLL009D1 bill of materials

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
1	1	U9	-	Operational amplifier, SOT23-5	ST	TSZ121ILT
2	1	U8	-	Optically Isolated Amplifier, SMD	Broadcom / Avago	ACPL-782T-500E
3	3	C54, C59, C61	100nF, 50V or above, $\pm 10\%$	Ceramic Capacitor, X7R, SMD 0805	Any	Any
4	2	C57, C65	150pF, 50V or above, $\pm 10\%$	Ceramic Capacitor, X7R, SMD 0805	Any	Any
5	1	C62	10nF, 50V or above, $\pm 10\%$	Ceramic Capacitor, X7R, SMD 0805	Any	Any
6	1	D20	9.1V, 500mW, $\pm 5\%$	Zener Diode, SOD123	Any	Any
7	1	D22	RED, 30mA	Indication Red LED, SMD 0805	Any	Any
8	1	J14	Connector 3x1	2.54mm Pitch Berg Stick Right Angle Male, Through Hole	Any	Any
9	1	J13	Connector 4x1	2.54mm Pitch Berg Stick Right Angle Male, Through Hole	Any	Any
10	1	L2	470 Ω 100 MHz, 250mA, $\pm 25\%$	Ferrite Bead, SMD 0402	Würth Electronics	7427927141
11	9	R62, R63, R67, R69, R70, R71, R72, R73, R74	750K, 1/4W, $\pm 1\%$	Metal Film Resistor, SMD 1206	Any	Any
12	1	R82	560E, 1/8W, $\pm 1\%$	Metal Film Resistor, SMD 0805	Any	Any

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
13	2	R79, R93	3.9K, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	Any
14	1	R80	6.8K, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	Any
15	1	R85	39E, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	Any
16	2	R86, R87	2.2K, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	Any
17	1	R88	160E, 1/8W, ±1%	Metal Film Resistor, SMD 0805	Any	Any

Table 4: STEVAL-DPS334M1 bill of materials

Item	Q.ty	Ref.	Part/Value	Description	Manufacturer	Order code
1	2	C1, C4	15pF 25V ±10%	Capacitor Ceramic XR7	Any	-
2	11	C2, C3, C7, C8, C10, C12, C13, C14, C15, C18, C33	100nF 25V ±10%	Capacitor Ceramic XR7	Any	-
3	2	C5, C6	22pF 25V ±10%	Capacitor Ceramic XR7	Any	-
4	2	C9, C11	100µF 16V ±20%	ELEC CAP	PANASONIC	EEEFT1C101AR
5	1	C16	10µF 16V ±10%	Tantalium Capacitor	KEMET	T491B106K010AT
6	1	C17	10nF 25V ±10%	Capacitor Ceramic XR7	Any	-
7	1	C19	470nF 25V ±10%	Capacitor Ceramic XR7	Any	-
8	13	C20, C21, C22, C23, C24, C25, C26, C27, C28, C29, C30, C31, C32	100pF 25V ±10%	Capacitor Ceramic XR7	Any	-
9	3	DA1, DA2, DA3	-	Diode array	ST	DA108S1
10	1	D1	-	LED diode	Kingbright	KP-1608CGCK
11	1	D2	-	LED diode	Kingbright	KP-1608QBC-D
12	1	D3	-	LED diode	Kingbright	KP-1608 SRC-PRV
13	2	J1, J2	-	Through Hole Vertical 1.27mm	TE Connectivity	7-215079-4
14	1	J3	-	-	Phoenix Contact	1725656
15	3	J4, J5, J6	-	Strip Line Male 2X1 pitch 2, 54mm	Any	-
16	1	J7	-	-	HARTING	9185106324
17	1	L1	470 Ω 100MHz 250 mA	-	WURTH ELEKTRONIK	7427927141

Item	Q.ty	Ref.	Part/Value	Description	Manufacturer	Order code
18	1	P1	-	Male DIN 41612 Through Hole 90 degree	Erni	533406
19	5	R1, R12, R20, R21, R37	0 1/16W ±1%	SMD Thick Film Resistor	Any	-
20	2	R2, R10	820 1/16W ±1%	SMD Thick Film Resistor	Any	-
21	2	R3, R9	39 1/16W ±1%	SMD Thick Film Resistor	Any	-
22	2	R4, R11	47 1/16W ±1%	SMD Thick Film Resistor	Any	-
23	2	R5, R7	0 750mW ±5%	SMD Thick Film Resistor	Vishay	CRCW20100000Z0EF
24	2	R6, R8	0Ω 750mW ±5%	SMD Thick Film Resistor	Any	-
25	2	R13, R14	0Ω 750mW ±5%	SMD Thick Film Resistor	Any	-
26	1	R15	100 1/16W ±1%	SMD Thick Film Resistor	Any	-
27	14	R16, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34	10 1/16W ±1%	SMD Thick Film Resistor	Any	-
28	1	R17	86.6 1/16W ±1%	SMD Thick Film Resistor	Any	-
29	1	R18	0 1/4W ±1%	SMD Thick Film Resistor	Any	-
30	1	R19	10K 1/16W ±1%	SMD Thick Film Resistor	Any	-
31	2	R35, R36	4.7k 1/16W ±1%	SMD Thick Film Resistor	Any	-
32	37	TP1, TP2, TP3, TP4, TP5, TP6, TP7, TP8, TP9, TP10, TP11, TP12, TP13, TP14, TP15, TP16, TP17, TP18, TP19, TP20, TP21, TP22, TP23, TP24, TP25, TP26, TP27, TP28, TP29, TP30, TP31, TP32, TP33, TP34, TP35, TP36, TP37	-	Test Point	Any	-
33	2	U1, U2	-	Optocoupler 1 chanel	NEC	PS9821-1-F3-AX
34	1	U3	-	LDO 5V/3.3V	ST	LD1117DT33TR
35	1	U4	-	32 bit microcontroller	ST	STM32F334R8T6
36	1	U5	-	Small Signal Schottky Diode	ST	BAR43ASFILM

Item	Q.ty	Ref.	Part/Value	Description	Manufacturer	Order code
37	1	X1	-	8MHz Cristal Oscillator	EUROQUARTZ	8.000MHZ 49USMX/30/50/40/18PF/ ATF
37	1	10 position cable assembly rectangular socket to socket female	-	Flat cable 10 pin female-female 2.54mm	Samtec Inc.	HCSD-05-D-11.40-01-N-G-R
38	1	Micro-Match 4 ways, 9.9", 250mm, 1.27mm	-	AMP Micro-MaTch	TE Connectivity	1483350-3

Table 5: STEVAL-DPSADP01 bill of materials

Item	Q.ty	Ref.	Part/Value	Description	Manuf.	Order code
1	8	C1, C2, C3, C4, C5, C6, C7, C8	100nF 25V ±10%	Capacitor Ceramic XR7	Any	-
2	1	J2	-	Stripline male 3x2 2.54mm	Any	-
3	1	J3	-	JTAG connector	TE-Connectivity	5103308-5
4	2	J6, J7	-	Jumper pitch 2, 54 mm	Any	-
5	1	J8	-	Stripline Male 2X1 pitch 2, 54 mm	Any	-
6	2	J9, J11	-	Stripline Male 3X1 pitch 2, 54 mm	Any	-
7	1	J10	-	Prog Connector	HARTING	9185106324
8	1	P1	-	90° Through Hole	TE-Connectivity	1-1634584-2
9	1	P2	-	90° Through Hole	RS-Pro	-
10	2	R1, R2	4.7k 1/16W ±1%	SMD Thick Film Resistor	Any	-
11	1	R3	10k 1/16W ±1%	SMD Thick Film Resistor	Any	-
12	1	R4	120 1/16W ±1%	SMD Thick Film Resistor	Any	-
13	1	R5	0 1/16W ±1%	SMD Thick Film Resistor	Any	-
14	1	R6	1/16W ±1% (not mounted)	SMD Thick Film Resistor	Any	-
15	1	S1	-	Surface Mount Tactile Switch	TE-Connectivity	FSM4J (L=5.0MM)
16	1	U1	-	RS-232 transceiver	ST	ST3232CTR
17	1	U2	-	CAN transceiver	TI	SN65HVD232D

**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.