

Bill of materials
Table 1. AEK-MCU-C4MINI1 bill of materials

Item	Q.ty	Ref.	Part/value	Description	Manufacturer	Order code
1	20	C1, C4, C7, C9, C11, C13, C15, C17, C19, C20, C24, C26, C28, C30, C33, C36, C39, C191, C193, C195	10nF	0603 - 50V - X7R Class II	WE	885012206089
2	75	C2, C5, C8, C10, C12, C14, C16, C18, C21, C32, C35, C38, C51, C52, C53, C54, C59, C60, C61, C62, C63, C64, C65, C66, C67, C68, C69, C70, C71, C72, C73, C74, C75, C77, C79, C81, C84, C87, C93, C96, C103, C105, C109, C110, C111, C112, C115, C116, C117, C119, C120, C122, C123, C124, C125, C129, C130, C134, C135, C139, C142, C144, C147, C149, C152, C158, C163, C170, C174, C179, C180, C183, C184, C192, C194	100nF	0603 - 50V - X7R Class II	WE	885012206095
3	2	C3, C6	1.5uF	1206 - 25V - X7R Class II	WE	885012208065
4	3	C22, C31, C34	2.2uF	1206 - 25V - X7R Class II	WE	885012208066
5	8	C23, C25, C27, C29, C97, C106, C164, C175	47nF	0603 - 50V - X7R Class II	WE	885012206093

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6	2	C37, C178	4.7uF	1206 - 50V - X7R Class II	WE	885012208094
7	19	C40, C41, C42, C43, C44, C45, C46, C88, C94, C108, C140, C153, C159, C177, C196, C197, C198, C199, C200	N.M.	0603 - 50V - X7R Class II, 0603 - xxV - xxxx, 0603 - 50V - X7R	WE, [NoValue]	N.A.
8	4	C47, C48, C49, C50	22pF	0603 - 50V - NP0 Class I	WE	885012006053
9	7	C55, C76, C78, C85, C143, C145, C150	10uF	1206 - 50V - X5R	WE	885012108022
10	2	C56, C57	4.7uF	0805 - 25V - X5R Class II	WE	885012107018
11	1	C58	3.3uF	0805 - 25V - X5R Class II	WE	885012107017
12	16	C80, C92, C95, C102, C104, C146, C157, C160, C161, C162, C169, C171, C172, C173, C201, C202	22uF	1210 - 25V - X5R Class II	WE	885012109014
13	5	C82, C113, C114, C118, C121	1uF	0603 - 25V - X7R Class II	WE	885012206076
14	4	C83, C148, C181, C182	220uF	Electrolytic Cap - 50V - 10x10.5	WE	865080657018
15	2	C86, C151	3.3uF	1206 - 25V - X7R Class II	WE	885012208067
16	7	C89, C90, C99, C100, C155, C166, C167	6.8nF	0603 - 50V - X7R Class II	WE	885012206088
17	3	C91, C101, C156	68pF	0603 - 50V - NP0 Class I	WE	885012006056
18	4	C98, C107, C165, C176	220pF	0603 - 50V - X7R Class II	WE	885012206079
19	6	C126, C128, C131, C133, C136, C138	47pF	0603 - 50V - NP0 Class I	WE	885012006055
20	3	C127, C132, C137	4.7nF	0603 - 50V - X7R Class II	WE	885012206087
21	1	C141	1nF	0603 - 50V - X7R Class II	WE	885012206083
22	1	C154	8.2nF	0603 - 50V - NP0	TDK	CGA3E2C0G1H822J080AA

Item	Q.ty	Ref.	Part/value	Description	Manufacturer	Order code
23	7	C168, C185, C186, C187, C188, C189, C190	100pF	0603 - 50V - X7R Class II	WE	885012206077
24	13	CN1, CN2, CN3, CN4, CN5, CN6, CN7, CN8, CN9, CN10, CN11, CN12, CN14		2.54mm - 1 row - KK254 - Male	WE	61900811121
25	6	CN13, CN17, CN18, CN19, CN20, CN21		2.54mm - 1 row - KK254 - Male	WE	61900211121
26	2	CN15, CN16	61301411821	WR-PHD Socket Header, THT, Vertical, pitch 2.54mm, 1 Row, 14P	WE	61301411821
27	16	D1, D2, D3, D4, D5, D6, D10, D11, D12, D13, D14, D23, D24, D25, D26, D27	Green	0805 - Led Green - 3.2V	WE	150080GS75000
28	1	D7	SMAJ24A-TR, SMA	SMA TVS - 24VDC - Unidirectional	ST	SMAJ24A-TR
29	1	D8	MMBZ5242BLT1G	12V Zener Voltage Regulators, 225mW	Onsemi	MMBZ5242BLT1G
30	2	D9, D22	MMSZ4684T1G	3.3V Zener Voltage Regulators, 500mW	Onsemi	MMSZ4684T1G
31	3	D15, D34, D37	Red	0805 - Led Red - 2V	WE	150080RS75000
32	5	D16, D17, D18, D19, D20	Amber	0805 - Led Amber - 2V	WE	150080AS75000
33	1	D21	GF1A	Standard Rectifier, 50V, 1A	Onsemi	GF1A
34	1	D28	Green&Red	0603 - Bi-color Chip LED Compact Green&Red - 2V	WE	150060RV75240
35	4	D29, D30, D31, D32	STPS1L60ZFY, SOD123Flat	SOD-123 FLAT Automotive low drop power Schottky rectifier - 60VDC - Unidirectional	ST	STPS1L60ZFY
36	2	D33, D36	Blue	0805 - Led Blue - 3.2V	WE	150080BS75000

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37	2	D35, D38	ES1D-L	1A, Super Fast Recovery Rectifier 50 to 600 Volts	MCC	ES1D-L
38	2	F1, F2	0437003.WRA	437 Series – 1206 Fast-Acting Fuse	LittleFuse	0437003.WRA
39	1	J1	694106301002	DC - Power Jack 12V 5A 2.1mm	WE	694106301002
40	1	J2		5.08mm - WR-TBL Series 2135 - Horizontal Entry Modular	WE	691213510002
41	1	J3	61201421621	2.54mm - IDC, Male Box Header WR-BHD, THT, Vertical	WE	61201421621
42	1	J4	691241710004	5.00mm - WR-TBL Series 2417 Horizontal Entry Modular, Rising Cage Clamp, THT, pitch 5mm, 4p	WE	691241710004
43	2	J5, J6	691103110002	3.50mm - WR-TBL Series 1031 Horizontal Entry Modular, THT, pitch 3.5mm, 2p	WE	691103110002
44	1	J7	691502710002	5.00mm - WR-TBL Serie 5027 Horizontal Entry Modular	WE	691502710002
45	2	J8, J9	691502710003	5.00mm - WR-TBL Series 5027 - Horizontal Entry Modular, Pressure Clamp, THT, pitch 5mm, 3p	WE	691502710003
46	3	JP1, JP2, JP3		THT Vertical 3 pins Header, Pitch 2.54 mm, Single Row	WE	61300311121
47	16	JP4, JP5, JP6, JP7, JP8, JP9, JP10, JP11, JP12, JP13, P3, P4, P5, P6, P7, P8	Closed, 61300211121	2.54mm - Pin Header, THT, pitch 2.54mm, Single Row, Vertical, 2p, Closed, 2.54mm - WR-PHD Pin Header, THT, pitch 2.54mm,	WE	61300211121

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				Single Row, Vertical, 2p		
48	11	L1, L2, L3, L4, L5, L8, L9, L11, L12, L14, L15	60	WE-CBF SMT EMI Suppression Ferrite Bead. 60 Ohm, 500mA	WE	74279267
49	3	L6, L7, L17	22uH	WE-LHMI SMT Power Inductor – 6.6 x 6.6 x 4.8 - 2.75A	WE	74437349220
50	3	L10, L13, L16	51uH	Common mode filters Automotive signal line 51uH	TDK	ACT45B-510-2P
51	1	L18	15uH	WE-LHMI SMT Power Inductor – 6.6 x 6.6 x 4.8 - 3.5A	WE	74437349150
52	1	L19	18uH	Semi-shielded Power Inductor - 9.8x10 - 3.8A	Bourns	SRN1060-180M
53	1	P1	N.M.	2.54mm - WR- PHD Pin Header, THT, pitch 2.54mm, Single Row, Vertical, 4p	WE	N.A.
54	1	P2	65100516121 / 54819-0589	Mini USB 2.0 Type B, Receptable, Horizontal, SMT&THT, 5 Contacts	WE / MOLEX	65100516121 / 54819-0589
55	1	Q1	BC848BLT3G	NPN Bipolar Transistor 30V 100mA	Onsemi	BC848BLT3G
56	1	Q2	BCP68	NPN Bipolar Transistor 20V 2A	Nexperia	BCP68
57	1	Q3	STL42P4LLF6, PowerFLAT 5x6	P-channel -40 V, 0.0155 Ohm, -42 A, Power MOSFET in a PowerFLAT 5x6 package	ST	STL42P4LLF6
58	1	Q4	BC807	PNP Bipolar Transistor 45V 500mA	Nexperia	BC807
59	3	Q5, Q9, Q11	BSS84Q	P-Channel Enhancement Mosfet	DIODES	BSS84Q-7-F
60	3	Q6, Q10, Q12	BSS138Q	N-Channel Enhancement Mosfet	NEXPERIA	BSS138Q-7-F
61	2	Q7, Q8	BC847	NPN Bipolar Transistor 45V 100mA	Nexperia	BC847

Item	Q.ty	Ref.	Part/value	Description	Manufacturer	Order code
62	6	R1, R31, R61, R63, R134, R136	3.9K	0603 - $\pm 1\%$ - 0.1W	Panasonic	ERJ3EKF3901V
63	13	R2, R22, R69, R108, R143, R149, R150, R151, R152, R153, R154, R165, R180	1K	0603 - $\pm 1\%$ - 0.25W	Panasonic	ERJPA3F1001V
64	2	R3, R68	100K	0603 - $\pm 1\%$ - 0.25W	Panasonic	ERJP03F1003V
65	62	R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R17, R18, R29, R37, R43, R75, R76, R77, R78, R79, R80, R106, R116, R147, R148, R193, R194, R195, SB1, SB2, SB3, SB4, SB5, SB6, SB7, SB8, SB9, SB10, SB11, SB12, SB13, SB14, SB15, SB16, SB17, SB18, SB19, SB20, SB21, SB22, SB23, SB24, SB25, SB26, SB27, SB28, SB29, SB30, SB31, SB32, SB33, SB34	0, Closed	0603 - $\pm 1\%$ - 0.1W, Circuit Breaker - 0603 - $\pm 1\%$ - 0.1W	Panasonic	ERJ3GEY0R00V
66	12	R14, R25, R27, R32, R35, R36, R48, R56, R121, R129, R174, R189	4.7K	0603 - $\pm 1\%$ - 0.25W	Panasonic	ERJPA3F4701V
67	11	R15, R23, R65, R91, R95, R96, R100, R101, R105, R196, R197	N.M.	0603 - xx% - xxxx, 0603 - $\pm 1\%$ - 0.2W	N.A.	N.A.
68	33	R16, R24, R39, R44, R50, R52, R59, R66, R67, R71, R72, R73, R74, R86, R87, R88, R89, R90,	10K	0603 - $\pm 1\%$ - 0.2W, 0603 - $\pm 1\%$ - 0.2W	Panasonic	ERJP03F1002V

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		R117, R118, R123, R125, R132, R140, R141, R144, R155, R163, R164, R166, R178, R179, R181				
69	1	R19	12K	0603 - ±1% - 0.1W	Panasonic	ERJ-3EKF1202V
70	6	R20, R21, R51, R58, R124, R131	10	0603 - ±1% - 0.25W	Panasonic	ERJPA3F10R0V
71	11	R26, R30, R33, R34, R62, R64, R135, R137, R162, R175, R190	1.5K	0603 - ±1% - 0.25W	Panasonic	ERJ-PA3F1501V
72	3	R28, R57, R130	2.2K	0603 - ±1% - 0.1W	Panasonic	ERJ-3EKF2201V
73	1	R38	20K	0603 - ±1% - 0.1W	Panasonic	ERJ-3EKF2002V
74	2	R40, R113	464K	0603 - ±1% - 0.1W	Panasonic	ERJ-3EKF4643V
75	2	R41, R114	200K	0603 - ±1% - 0.1W	Panasonic	ERJ-3EKF2003V
76	2	R42, R115	180K	0603 - ±1% - 0.25W	Panasonic	ERJ-UP3F1803V
77	3	R45, R53, R126	8.2K	0603 - ±1% - 0.1W	Panasonic	ERJ-3EKF8201V
78	3	R46, R54, R127	220	0603 - ±1% - 0.25W	Panasonic	ERJPA3F2200V
79	6	R47, R55, R120, R128, R168, R182	5.1K	0603 - ±1% - 0.1W	Panasonic	ERJ-3EKF5101V
80	2	R49, R122	1.24K	0603 - ±1% - 0.1W	Panasonic	ERJ-3EKF1241V
81	16	R60, R133, R145, R146, R167, R169, R170, R171, R172, R173, R183, R184, R185, R186, R187, R188	15K	0603 - ±1% - 0.25W	Panasonic	ERJ-PA3F1502V
82	6	R70, R81, R82, R83, R84, R85	680	0603 - ±1% - 0.25W	Panasonic	ERJPA3F6800V
83	6	R92, R93, R97, R98, R102, R103	60.4	0603 - ±1% - 0.1W	Panasonic	ERJ3EKF60R4V
84	3	R94, R99, R104	47K	0603 - ±1% - 0.25W	Panasonic	ERJPA3F4702V
85	5	R107, R109, R110, R111, R112	100	0603 - ±1% - 0.25W	Panasonic	ERJPA3F1000V

Item	Q.ty	Ref.	Part/value	Description	Manufacturer	Order code
86	1	R119	180	0603 - ±1% - 0.1W	Panasonic	ERJ-3EKF1800V
87	6	R138, R139, R176, R177, R191, R192	2K	0603 - ±1% - 0.2W	Panasonic	ERJP03F2001V
88	7	R142, R156, R157, R158, R159, R160, R161	33K	0603 - ±1% - 0.25W	Panasonic	ERJ-PA3F3302V
89	2	S1, S8	CS12ANW03	Slide Switch 2 positions ON-NONE-ON - Set OPEN	NKK Switches	CS12ANW03
90	6	S2, S3, S4, S5, S6, S7	430152043826	Switch	WE	430152043826
91	1	TP6	N.M.	2.54mm - WR-PHD Pin Header, THT, pitch 2.54mm, Single Row, Vertical, 1p, Test Point	WE	N.A.
92	1	U1	SPC58EC80E5QMC1X, TQFP 144 20x20x1.0		ST	SPC58EC80E5QMC1X
93	1	U2	FT2232HL	USB Hi-Speed to Dual Channel Serial UART/ FIFO/ JTAG/SPI/I2C	FTDI Chip	FT2232HL
94	8	U3, U4, U6, U7, U10, U11, U12, U13	SN74LVC1T45DCK	Single-Bit Dual-Supply Bus Transceiver With Configurable Voltage Translation and 3-State Outputs	Texas Instruments	SN74LVC1T45DCK
95	1	U5	USBLC6-2SC6Y, SOT23-6L	Automotive ESD protection for high speed interfaces.	ST	USBLC6-2SC6Y
96	1	U8	LD1117S33TR, SOT-223	The LD1117330TR is a low drop voltage regulator able to provide up to 800 mA of output current. Vout is 3.3V.	ST	LD1117S33TR
97	1	U9	M93S46-WMN6TP, SO8	1Kbit (64x16) Serial Microwire Bus EEPROM With Block Protection	ST	M93S46-WMN6TP
98	2	U14, U23	LD1117S50TR, SOT-223	The LD1117S50TR is a low drop voltage	ST	LD1117S50TR

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				regulator able to provide up to 800 mA of output current. Vout is 5V.		
99	2	U15, U24	L5963DN-EHT, PowerSSO 36	Automotive dual monolithic switching regulator with LDO and HSD	ST	L5963DN-EHT
100	1	U16	STM6315SDW13F, SOT-1434	STMICROELECTRONICS - STM6315SDW13F - Reset Circuit, Active-Low, Open-Drain, 1V to 5.5V, 2.93V Threshold, 1 Monitor	ST	STM6315SDW13F
101	1	U17	SN74LXC8T245	SN74LXC8T245 8-bit Dual-Supply Bus Transceiver with Configurable Level Shifting and 3-State Outputs	Texas Instruments	SN74LXC8T245
102	1	U18	SN74LXC2T45	SN74LXC2T45 Dual-Bit Dual-Supply Bus Transceiver with Configurable Level Shifting	Texas Instruments	SN74LXC2T45
103	3	U19, U20, U21	MCP2542WFD	CAN FD Transceiver with Wake-up Pattern (WUP) Option	Microchip	MCP2542WFD
104	1	U22	TJA1022T	SMD Dual LIN 2.2A/SAE J2602 transceiver	NXP Semiconductors	TJA1022T
105	1	U25	VNH7040AYTR, PSSO 36	Automotive fully integrated H-bridge motor driver	ST	VNH7040AYTR
106	2	U26, U27	VND7E040AJTR, PowerSSO 16	Double channel high-side driver with CurrentSense analog feedback for automotive applications	ST	VND7E040AJTR
107	1	X1	830059537	WE-XTAL Quartz Crystal, SMT, CFPX-104, 40MHz, +/-20ppm	WE	830059537

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108	1	X2	830055999	WE-XTAL Quartz Crystal, SMT, CFPX-104, 12MHz, +/-30ppm	WE	830055999
109	5	for blister	971150365	WA-SPAIE Plastic Spacer Stud, metric, internal/ external	WE	971150365
110	5	for blister	970150365	WA-SPAIL Plastic Spacer Stud, metric, internal/ internal	WE	970150365
111	13	for blister	61900811621	WR-WTB 2.54 mm Female Terminal Housing	WE	61900811621
112	6	for blister	61900211621	WR-WTB 2.54 mm Female Terminal Housing	WE	61900211621
113	116	for blister	61900113722	WR-WTB 2.54 mm Female Crimp Contact	WE	61900113722
114	14	for blister	609002115121	WR-PHD 2.54 mm Jumper with Test Point & Pullback	WE	609002115121
115	3	for blister	custom cables	cable from 8pin KK254 Female to 8pin Female Jumper wire Breadboard	by supplier	-
116	2	for blister	custom cables	cable from 2pin KK254 Female to 2pin Female Jumper wire Breadboard	by supplier	-

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