ON Semiconductor®

Bill of Materials for the SECO-MDK-4KW-65SPM31-GEVK Evaluation Board

Designator	Quantity	Description	Value	Tolerance	Footprint	Manufacturer	Manufacturer Part Number	Substitution Allowed	Lead Free
3.3V, 5V, 15V	3	PTH testpoint eyelet 3.2mm orange Keystone Electronics	15VDC		testpoint eyelet	Keystone Electronics	5008	Yes	Yes
AUX_SW, DC_LINK, FAULT, TEMP, VCC_IPM	5	PTH testpoint eyelet 3.2mm white Keystone Electronics	SW, GND_IPM		testpoint eyelet	Keystone Electronics	5007	Yes	Yes
C1	1	MLC capacitor 100nF 25V X7R 10% Wurth Electronics	100 nF		SMD 0603	Würth Electronik	885012206071	Yes	Yes
C2	1	ALU electrolyte low impedance 10µF 35V 2.6Ohm 20% Würth Elektronik	10 µF		SMD 2626	Würth Electronik	865080540004	Yes	Yes
C3	1	MLC capacitor 330nF 50V X7R 1% Wurth Electronics	330 nF		SMD 0603	Würth Electronik	885012207101	Yes	Yes
C4	1	Film X2 capacitor 100nF 310V PP ± 10 % Wurth Electronics	100 nF		PTH	Würth Electronik	890334025017CS	Yes	Yes
C5	1	ALU electrolytic capacitor 10µF 450V ± 20% Rubycon	10 µF		PTH	Rubycon	450BXF10M10X16	Yes	Yes
C6	1	MLC capacitor 47nF 50V X7R 10% Wurth Electronics	47 nF		SMD 0603	Würth Electronik	885012206093	Yes	Yes
C7, C8	2	ALU electrolyte capacitor 220µF 25V 20% Würth Elektronik	220 µF		PTH	Würth Electronik	860040474004	Yes	Yes
C9	1	MLC capacitor 150nF 50V X7R 10% Murata	150 nF		SMD 0603	Murata	GRM188R71H154KAC4D	Yes	Yes
C10	1	MLC capacitor 470nF 50V X5R 10% Murata	470 nF		SMD 0603	Murata	GRM188R61H474KA12D	Yes	Yes
C11, C16, C52, C56, C60	5	MLC capacitor 10nF 50V X7R 10% Wurth Electronics	10 nF		SMD 0603	Würth Electronik	885012206089	Yes	Yes
C12, C15, C70, C75	4	MLC capacitor 1 µF 16 V X7R 10 % AVX	1uF		SMD 0603	AVX	0603YC105KAT2A	Yes	Yes
C13, C14	2	WCAP-CSGPCeramicCapacitors	22 µF		SMD 1210	Würth Electronik	885012209006	Yes	Yes
C17, C18	2	SMD Multilayer Ceramic Capacitor, 470 pF, 50 V, 0603 [1608 Metric], ± 5%, C0G / NP0, WCAP-CSGP Series, Wurth Electronics	n.a., 470pF		SMD 0603	Würth Electronik	885012006061	Yes	Yes
C19	1	MLC capacitor 1nF 50V X5R 10% Murata	1 nF		SMD 0603	Murata	GRM188R61H102KA01D	Yes	Yes
C20, C21	2	Multilayer Ceramic Capacitors MLCC - SMD 1812 630 V 100 nF X7R ± 10 %	100 nF		SMD 1812	Würth Electronik	885342211006	Yes	Yes
C22, C23	2	ALU electrolyte capacitor 470µF 450V 20% Würth Elektronik	470 µF		PTH	Würth Electronik	861141486024	Yes	Yes
C25	1	MLC capacitor 100nF 25V X7R 10% Wurth Electronics	100 nF		SMD 0603	Würth Electronik	885012207072	Yes	Yes
C26	1	Polymer ALU elco 330µF 35V 20mOhm 20% Würth Elektronik	330 µF		SMD 4040	Würth Electronik	875075661010	Yes	Yes
C27, C31, C34	3	MLCC capacitor 22µF 25V X7R ± 20% TDK	22 µF		SMD 1812	TDK	C4532X7R1E226M250KC	Yes	Yes
C28, C30, C32, C33, C35, C36, C43, C46, C47, C48, C66, C67, C69, C71, C72	15	MLC capacitor 100nF 25V X7R 10% Wurth Electronics	100 nF		SMD 0603	Würth Electronik	885012206071	Yes	Yes
C29, C45, C49, C50, C51, C68	6	MLC capacitor 1nF 50V X7R 10% Wurth Electronics	1 nF		SMD 0603	Würth Electronik	885012206083	Yes	Yes
C37, C38, C39, C40, C41, C42, C55, C59, C63, C65	10	MLC capacitor 100pF 50V NP0 5% Wurth Electronics	100 pF		SMD 0603	Würth Electronik	885012006057	Yes	Yes
C44	1	SMD Multilayer Ceramic Capacitor, 15000 pF, 50 V, 0603 [1608 Metric], ± 10%, X7R, WCAP-CSGP Series, Wurth Electronics	15 nF		SMD 0603	Würth Electronik	885012206090	Yes	Yes
C53, C57, C61	3	MLC capacitor 0.1µF 16V X7R 10% Wurth Electronics	100 nF		SMD 0603	Wurth Electronics	885012206046	Yes	Yes
C54, C58, C62, C76, C77, C78, C79	7	MLC capacitor 1nF 25V NP0 5% Wurth Electronics	1 nF		SMD 0603	Würth Electronik	885012006044	Yes	Yes
C64	1	MLC capacitor 47µF 6.3V X5R 20% Murata	47 µF		SMD 0603	Murata	GRM188R60J476ME15D	Yes	Yes
C73, C74	2	MLC capacitor 33 pF 16 V X7R 5 % AVX	33pF		SMD 0603	AVX	0603YC330JAT2A	Yes	Yes
CON1	1	Banana Test Connector, 4mm, Receptacle, PCB Mount, 24 A, 1 kV, Gold Plated Contacts, Red	RED		PTH male right angle	CLIFF Electronic Components	FCR7350R	Yes	Yes
CON2	1	Banana Test Connector, 4mm, Receptacle, PCB Mount, 24 A, 1 kV, Gold Plated Contacts, Black	BLACK		PTH male right angle	CLIFF Electronic Components	FCR7350B	Yes	Yes
CON3	1	Pluggable Terminal Blocks WR-TBL Model3137 5mm 3Pin Cls Hztl PCBHdr	OUTPUT		PTH male right angle	Würth Elektronik	691313710003	Yes	Yes
CON5, CON4	2	BergStak+™ 0.80mm Mezzanine Connector, Board To Board Connectors, 120 Positions, Dual Row, BTB Vertical Receptacle, R1., Fisher SK 645 50 SA	10139781-121402LF			Amphenol	10139781-121402LF	Yes	Yes
CON6	1	2.00mm_MALE BOX HEADER	62502021621			Würth Elektronik	62502021621	Yes	Yes
CON7	1	PTH vertical male header 5 pins 2.54 mm pitch Würth Elektronik	61300511121		PTH vertical header	Würth Elektronik	61300511121	Yes	Yes
CON8	1	Banana Test Connector, 4mm, Receptacle, PCB Mount, 24 A, 1 kV, Gold Plated Contacts, Green	Green		PTH male right angle	CLIFF Electronic Components	FCR7350G	Yes	Yes
D1	1	Standard recovery power rectifier 1000V 1A SMA ON Semiconductor	MRA4007T3G		SMA	ON Semiconductor	MRA4007T3G	No	Yes
D2	1	Switching diode 100V 200mA SOD323 ON Semiconductor	MMSD4148T1G		SOD123	ON Semiconductor	MMSD4148T1G	No	Yes
D3, D4	2	Ultra Fast diode 600 V 2 A SMA ON Semiconductor	MURA160T3G		SMA	ON Semiconductor	MURA160T3G	No	Yes
D5	1	Schottky diode 40 V 2 A SMB ON Semiconductor	MBRS2040		SMB	ON Semiconductor	MBRS2040	No	Yes
D6, D8, D9, D10	4	TVS 15V 200W SOD123FL unidirectional Littelfuse	SMF15AT1G		SOD123FL	LITTELFUSE	SMF15A	Yes	Yes
D7, D11, D15, D16, D17	5	Silicon AF Schottky Diode for High-Speed Switching	BAS70LT1G		BAS70LT1G	ON Semiconductor	BAS70LT1G	No	Yes
D18, D19, D20	3	30 V Schottky Diode, dual, series	BAT54SLT1G		SOT23	ON Semiconductor	BAT54SLT1G	No	Yes
DISABLE, INH_U, INH_V, INH_W, INL_U, INL_V, INL_W	7	PTH testpoint eyelet 3.2mm yellow Keystone Electronics	ENABLE		testpoint eyelet	Keystone Electronics	5009	Yes	Yes
G_IPM	1	PTH testpoint eyelet 3.2mm purple Keystone Electronics	D		testpoint eyelet	Keystone Electronics	5124	Yes	Yes
HSC1	1	Fisher SK 645 50 SA	Heatsink SK64550SA			Fischer Elektronik	SK64550SA	Yes	Yes
J1, R99	2	SMD thick film resistor 0R 500 mW Vishay	0R		SMD 1206	Vishay	RCS12060000Z0EA	Yes	Yes
J4	1	MICRO USB 2.0 SMT TYPE B 5 CONTACTS - WR-C	629 105 136 821		SMD	Würth Elektronik	629 105 136 821	Yes	Yes
L1	1	Fixed Inductors WE-TIS Lead Rad 8075 1000uH .35A 1.85Ohm	1 mH		PTH	Würth Elektronik	744731102	Yes	Yes

L2	1	WE-TI Radial Leaded Wire WoundInductor	560uH		8012	Würth Elektronik	7447452561	Yes	Yes

L3	1	WE-PD Performance SMTShielded Power Inductor	22 µH		SMD 1050	Würth Elektronik	7447714220	Yes	Yes
R1, R7, R63, R65	4	SMD thick film resistor 56k 0603 1% 100 mW Panasonic	56k		SMD 0603	Panasonic	ERJ3EKF5602V	Yes	Yes
R2, R3, R4	3	SMD thick film resistor 15k 0603 1% 100 mW Panasonic	15k		SMD 0603	Panasonic	ERJ3EKF1502V	Yes	Yes
R5	1	SMD thick film resistor 22k 0603 1% 100 mW Panasonic	22k		SMD 0603	Panasonic	ERJ3EKF2202V	Yes	Yes
R6, R68	2	SMD thick film resistor 3k 0603 1% 100 mW Panasonic	3k		SMD 0603	Panasonic	ERJ3EKF3001V	Yes	Yes
R8	1	SMD thick film resistor 56k2 0805 1% 500mW 400V Panasonic	56k2		SMD 0805	Panasonic	ERJP06F5622V	Yes	Yes
R9	1	SMD thick film resistor 1k 0603 1% 100 mW Panasonic	1k		SMD 0603	Panasonic	ERJ3EKF1001V	Yes	Yes
R10, R11, R12, R29, R31, R32, R33, R34, R35, R39, R40, R41	12	SMD Chip Resistor, 330 kohm, CRCW Series, 200 V, Thick Film, 1206 [3216 Metric], 250 mW Vishay	330k		SMD 1206	Vishay	CRCW1206330KFKEA	Yes	Yes
R13	1	SMD thick film resistor 6k8 1206 1% 660 mW Panasonic	6k8		SMD 1206	Panasonic	ERJP08F6801V	Yes	Yes
R14, R15, R16, R17, R18, R19, R20, R22, R23, R27, R60, R64, R66	13	SMD thick film resistor 100R 0603 1% 100 mW Panasonic	100R		SMD 0603	Panasonic	ERJ3EKF1000V	Yes	Yes
R21	1	SMD thick film resistor 10k 0603 1% 100 mW Panasonic	10k		SMD 0603	Panasonic	ERJ3EKF1002V	Yes	Yes
R36, R37, R38	3	Current Sense Resistors - SMD 5W 10 mOhm 1% 75ppm, KOA SPEER ELECTRONICS	0R01		SMD2512	KOA SPEER ELECTRONICS	TLRH3APTTE10L0F	Yes	Yes
R42, R43, R44	3	SMD thick film resistor 13k7 0805 1% 125 mW Panasonic	13k7		SMD 0805	Panasonic	ERJ6ENF1372V	Yes	Yes
R45, R49, R50, R54, R55, R61	6	SMD Chip Resistor, 10 kohm, RC Series, 50 V, Thick Film, 0603 [1608 Metric], 100 mW YAGEO	10k		SMD 0603	YAGEO	RC0603FR-0710KL	Yes	Yes
R46, R48, R51, R53, R56, R59	6	SMD Chip Resistor, 1 kohm, ERJ3R Series, 50 V, Thick Film, 0603 [1608 Metric], 100 mW Panasonic	1k		SMD 0603	Panasonic	ERJ3RBD1001V	Yes	Yes
R47, R52, R57	3	SMD thick film resistor 1k 0603 1% 100 mW Panasonic	1k		SMD 0603	Panasonic	ERJ3EKF1001V	Yes	Yes
R58	1	SMD thick film resistor 680R 0603 1% 100 mW Panasonic	680R		SMD 0603	Panasonic	ERJ3EKF6800V	Yes	Yes
R62	1	SMD thick film resistor 1k 0603 1% 100 mW Panasonic	1k		SMD 0603	Panasonic	ERJ3EKF1001V	Yes	Yes
R67	1	SMD thick film resistor 330R 0603 1% 100 mW Panasonic	330R		SMD 0603	Panasonic	ERJ3EKF3300V	Yes	Yes
R69	1	SMD thick film resistor 3k9 0603 1% 100 mW Panasonic	3K9		SMD 0603	Panasonic	ERJ3EKF3901V	Yes	Yes
R80, R81, R82, R83, R84	6	SMD thick film resistor 0R 0603 100 mW, AEC-Q200, Panasonic	0R		SMD 0603	Panasonic	ERJ-3GEY0R00V	Yes	Yes
R71	1	SMD thick film resistor 10R 0603 1% 100 mW Panasonic	0R		SMD 0603	Panasonic	ERJ3EKF10R0V	Yes	Yes
R72, R73, R76, R77	4	SMD thick film resistor 2k7 0603 1% 100 mW Panasonic	2K7		SMD 0603	Panasonic	ERJ3EKF2701V	Yes	Yes
R74, R75	2	SMD thick film resistor 27R 0603 1% 100 mW Panasonic	27R		SMD 0603	Panasonic	ERJ3EKF27R0V	Yes	Yes
R78, R79	2	SMD thick film resistor 4k7 0603 1% 100 mW Panasonic	4k7		SMD 0603	Panasonic	ERJ3EKF4701V	Yes	Yes
R91	1	SMD thick film resistor 2k7 0603 1% 100 mW Panasonic	2k7		SMD 0603	Panasonic	ERJ3EKF2701V	Yes	Yes
R92	1	SMD thick film resistor 4k7 0603 1% 100 mW Panasonic	4k7		SMD 0603	Panasonic	ERJ3EKF4701V	Yes	Yes
SB1, SB2, SB3, SB4	4	Steel spacer internal/internal M3x6 thread 50mm Würth Elektronik	Spacer M3 F/F 50 HEX7		spacer			Yes	Yes
SHC1, SHC2, SHC3, SHC4	4	Pan head cross screw M3x16 DIN7985	M3x16 DIN7985		screw			Yes	Yes
SHC7, SHC8	2	Pan head PH2 cross recessed screw M4 according ISO7045 length 16 mm	M4x16 ISO7045		screw			Yes	Yes
TP1	1	Stannol T12 Wärmeleitpaste 1 St.	thermal paste		use 2g	Stannol		Yes	Yes
U1	1	High-Voltage Switcher forLow Power Offline SMPS	NCP1063AD 100R2G		SOIC8	ON Semiconductor	NCP1063AD100R2G	No	Yes
U2	1	Low Dropout Regulator, WideInput Voltage, Low Iq,300 mA	NCP718BSN 330T1G		TSOT23	ON Semiconductor	NCP718BSN330T1G	No	Yes
U3	1	2A23V Non-Synchronous Step-Down DC/DC Regulator	FAN8303MX		SOIC8	ON Semiconductor	FAN8303MX	No	Yes
U4	1	Power Switch ICs - Power Distribution SSOT-6 LOAD SW 20V	FDC6326L		SuperSOT-6	ON Semiconductor	FDC6326L	No	Yes
U5	1	Intelligent Power Module(IPM), 650 V, 50 A	Comment		MODGX	ON Semiconductor	NFAM5065L4B	No	Yes
U6, U7, U8	3	Amplifier, Low Offset,10□MHz, Rail-to-RailInput/Output	NCS20166		SC-74A	ON Semiconductor	NCS20166SN2T1G	No	Yes
U9	1	Low Voltage Precision Adjustable Shunt Regulator 1.24 -16 V output, 20mA ±0.2%	TLV431		SOT23	ON Semiconductor	TLV431CSN1T1G	No	Yes
U10	1	Low voltage high speed complementary push−pull output comparator	NCS2250SN 2T3G		TSOP-5	ON Semiconductor	NCS2250SN2T3G	No	Yes
U11	1	USB to BASICUART IC	FT230X		SSOP-16	FTDI	FT230XS-R	Yes	Yes
U12, U13	2	FOD817C SMD Optocoupler	FOD817C		PDIP-4	ON Semiconductor	FOD817C	No	Yes
U14	1	EEPROM Serial 512-Kb I2C	CAT24C512		SOIC8	ON Semiconductor	CAT24C512WI-GT3	No	Yes
U_OUT, V_OUT, VB_U, W_OUT	4	PTH testpoint eyelet 3.2mm red Keystone Electronics	DC_LINK		testpoint eyelet	Keystone Electronics	5005	Yes	Yes
W1, W2	2	Plain washer zinc plated steel HV140 ISO7089 for M4	Plain washer HV140 ISO7089 M4		plain washer			Yes	Yes
W3, W4	2	Spring washer zinc plated steel HV430 DIN7980 for M4	spring washer M4 DIN7980		spring washer			Yes	Yes
N1	1	Washer under NFAM5065L4B	IC_Extender project		washer			Yes	Yes