



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

Designator(Main Board)	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			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			Keystone Electronics	5007	Yes	Yes
B1	1	TEC0177-01	TEC0177-01					Yes	Yes
C1	1	MLC capacitor 100nF 25V X7R 10% Wurth Electronics	100 nF			Würth Elektronik	8.85012E+11	Yes	Yes
C2	1	ALU electrolyte low impedance 10µF 35V 2.6Ohm 20% Würth Elektronik	10 µF			Würth Elektronik	8.65081E+11	Yes	Yes
C3	1	MLC capacitor 330nF 50V X7R 1% Wurth Electronics	330 nF			Würth Elektronik	8.85012E+11	Yes	Yes
C4	1	Film X2 capacitor 100nF 310V PP ± 10 % Wurth Electronics	100 nF			Würth Elektronik	890334025017CS	Yes	Yes
C5	1	ALU electrolytic capacitor 10µF 450V ± 20% Rubycon	10 µF			Rubycon	450BXF10M10X16	Yes	Yes
C6	1	MLC capacitor 47nF 50V X7R 10% Wurth Electronics	47 nF			Würth Elektronik	8.85012E+11	Yes	Yes
C7, C8	2	ALU electrolyte capacitor 220µF 25V 20% Würth Elektronik	220 µF			Würth Elektronik	8.6004E+11	Yes	Yes
C9	1	MLC capacitor 150nF 50V X7R 10% Murata	150 nF			Murata	GRM188R71H154KAC4D	Yes	Yes
C10	1	ALU electrolyte long life 100µF 35V 20% Würth Elektronik	100 µF			Würth Elektronik	8.65231E+11	Yes	Yes
C11	1	MLC capacitor 4µ7 100V X7S 10% soft termination Murata	4µ7			Murata	GRJ32DC72A475KE11L	Yes	Yes
C12, C15, C75	3	MLC capacitor 1 µF 16 V X7R 10 % AVX	1µF			AVX	0603YC105KAT2A	Yes	Yes
C13, C14	2	MLC capacitor 10µF 25V X7S 10% Murata	10 µF			Murata	GRM21BC71E106KE11L	Yes	Yes
C16	1	MLC capacitor 100nF 16V X7R 5% Murata	100 nF			Murata	GRM188R71C104JA01D	Yes	Yes
C17	1	MLC capacitor 1n8 50V C0G 5% Murata	1n8			Murata	GRM1885C1H182JA01D	Yes	Yes
C18	1	MLC capacitor 10pF 50V C0G 5% Murata	10 pF			Murata	GRM1885C1H100JA01D	Yes	Yes
C19	1	MLC capacitor 1nF 50V X5R 10% Murata	1 nF			Murata	GRM188R61H102KA01D	Yes	Yes
C20, C21	2	Multilayer Ceramic Capacitors MLCC - SMD 1812 630 V 100 nF X7R ± 10 %	100 nF			Würth Elektronik	8.85342E+11	Yes	Yes
C22, C23	2	ALU electrolyte capacitor 470µF 450V 20% Würth Elektronik	470 µF			Würth Elektronik	8.61141E+11	Yes	Yes
C25	1	MLC capacitor 100nF 25V X7R 10% Wurth Electronics	100 nF			Würth Elektronik	8.85012E+11	Yes	Yes
C26	1	Polymer ALU elco 330µF 35V 20mOhm 20% Würth Elektronik	330 µF			Würth Elektronik	8.75076E+11	Yes	Yes
C27, C31, C34	3	MLCC capacitor 22µF 25V X7R ± 20% TDK	22 µF			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			Würth Elektronik	8.85012E+11	Yes	Yes
C29, C45, C49, C50, C51, C68	6	MLC capacitor 1nF 50V X7R 10% Wurth Electronics	1 nF			Würth Elektronik	8.85012E+11	Yes	Yes
C37, C38, C39, C40, C41, C42, C55, C59, C63, C65	10	MLC capacitor 100pF 50V NP0 5% Wurth Electronics	100 pF			Würth Elektronik	8.85012E+11	Yes	Yes
C44	1	SMD Multilayer Ceramic Capacitor, 15000 pF, 50 V, 0603 [1608 Metric], ± 10%, X7R, WCAP-CSGP Series, Wurth Electronics	15 nF			Würth Elektronik	8.85012E+11	Yes	Yes
C52, C56, C60	3	MLC capacitor 10nF 50V X7R 10% Wurth Electronics	10 nF			Würth Elektronik	8.85012E+11	Yes	Yes
C53, C57, C61	3	MLC capacitor 0.1µF 16V X7R 10% Wurth Electronics	100 nF			Würth Elektronik	8.85012E+11	Yes	Yes
C54, C58, C62, C76, C77, C78, C79	7	MLC capacitor 1nF 25V NP0 5% Wurth Electronics	1 nF			Würth Elektronik	8.85012E+11	Yes	Yes
C64	1	MLC capacitor 47µF 6.3V X5R 20% Murata	47 µF			Murata	GRM188R60J476ME15D	Yes	Yes
CABLE	1	USB A Male to Micro-B Male cable length 50cm CNC Tech	Micro-B Male cable length 50cm					Yes	Yes
CON0	1	Cable connector series 351 3pins 5.08 mm Würth Elektronik	691 351 500 003			Würth Elektronik	6.91352E+11	Yes	Yes
CON1	1	Banana Test Connector, 4mm, Receptacle, PCB Mount, 24 A, 1 kV, Gold Plated Contacts, Red	RED			CLIFF Electronic Components	FCR7350R	Yes	Yes
CON2	1	Banana Test Connector, 4mm, Receptacle, PCB Mount, 24 A, 1 kV, Gold Plated Contacts, Black	BLACK			CLIFF Electronic Components	FCR7350B	Yes	Yes
CON3	1	Pluggable Terminal Blocks WR-TBL Model3137 5mm 3Pin Cls HztI PCBHdr	OUTPUT			Würth Elektronik	6.91314E+11	Yes	Yes
CON5, CON4	1	MDK Controller	MDK Controller			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			Würth Elektronik	61300511121	Yes	Yes
CON8	1	Banana Test Connector, 4mm, Receptacle, PCB Mount, 24 A, 1 kV, Gold Plated Contacts, Green	Green			CLIFF Electronic Components	FCR7350G	Yes	Yes
D1	1	Standard recovery power rectifier 1000V 1A SMA ON Semiconductor	MRA4007T3G			onsemi	MRA4007T3G	Yes	Yes
D2	1	Switching diode 100V 200mA SOD323 ON Semiconductor	MMSD4148T1G			onsemi	MMSD4148T1G	Yes	Yes
D3, D4	2	Ultra Fast diode 600 V 2 A SMA ON Semiconductor	MURA160T3G			onsemi	MURA160T3G	Yes	Yes
D5X	1	Schottky diode 40V 250mA low Vf SOD323 ON Semiconductor	NSR0340H			onsemi	NSR0340HT1G	Yes	Yes
D5Y	1	Schottky diode 40 V 2 A SMB ON Semiconductor	MBRS2040L			onsemi	MBRS2040LT3G	Yes	Yes
D6, D8, D9, D10	4	TVS DIODE 15V 24.4V SOD123F	SMF15A			Littelfuse	SMF15A	Yes	Yes
D7, D11, D15, D16, D17	5	Schottky diode 70 V 100mA SOT23 ON Semiconductor	BAS70LT1G			onsemi	BAS70LT1G	Yes	Yes
D18, D19, D20	3	30 V Schottky Diode, dual, series	BAT54SLT1G			onsemi	BAT54SLT1G	Yes	Yes

DISABLE, INH_U, INH_V, INH_W, INL_U, INL_V, INL_W	7	PTH testpoint eyelet 3.2mm yellow Keystone Electronics	ENABLE		Keystone Electronics	5009	Yes	Yes
G_IPM	1	PTH testpoint eyelet 3.2mm purple Keystone Electronics	D		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		Vishay	RCS12060000Z0EA	Yes	Yes
L1	1	Fixed Inductors WE-TIS Lead Rad 8075 1000uH .35A 1.85Ohm	1 mH		Würth Elektronik	744731102	Yes	Yes
L2	1	WE-TI Radial Leaded Wire Wound Inductor	560uH		Würth Elektronik	7447452561	Yes	Yes
L3Y	1	WE TPC power inductor SMD 6µ8 1.3 A Würth Elektronik	6µ8		Würth Elektronik	744043006	Yes	Yes
N1	1	washer under NFAM5065L4B	IC_PAD_SPM3 2				Yes	Yes
R1, R63, R65	3	SMD thick film resistor 56k 0603 1% 100 mW Panasonic	56k		Panasonic	ERJ3EKF5602V	Yes	Yes
R2, R3, R4	3	SMD thick film resistor 15k 0603 1% 100 mW Panasonic	15k		Panasonic	ERJ3EKF1502V	Yes	Yes
R5	1	SMD thick film resistor 487R 0603 1% 100 mW Panasonic	487R		Panasonic	ERJ3EKF4870V	Yes	Yes
R6	1	SMD thick film resistor 93R1 0603 1% 100 mW Panasonic	93R1		Panasonic	ERJ3EKF93R1V	Yes	Yes
R7	1	SMD thick film resistor 12k 0603 1% 100 mW Panasonic	12k		Panasonic	ERJ3EKF1202V	Yes	Yes
R8	1	SMD thick film resistor 56k2 0805 1% 500mW 400V Panasonic	56k2		Panasonic	ERJP06F5622V	Yes	Yes
R9	1	SMD thick film resistor 1k 0603 1% 100 mW Panasonic	1k		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		Vishay	CRCW1206330KFKEA	Yes	Yes
R13	1	SMD thick film resistor 6k8 1206 1% 660 mW Panasonic	6k8		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		Panasonic	ERJ3EKF1000V	Yes	Yes
R21	1	SMD thick film resistor 10k 0603 1% 100 mW Panasonic	10k		Panasonic	ERJ3EKF1002V	Yes	Yes
R36, R37, R38	3	Current Sense Resistors - SMD 5W 10 mOhm 1% 75ppm, KOA SPEER ELECTRONICS	0R01		KOA SPEER ELECTRONICS	TLRH3APTTE10L0F	Yes	Yes
R42, R43, R44	3	SMD thick film resistor 13k7 0805 1% 125 mW Panasonic	13k7		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		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		Panasonic	ERJ3RBD1001V	Yes	Yes
R47, R52, R57	3	SMD thick film resistor 1k 0603 1% 100 mW Panasonic	1k		Panasonic	ERJ3EKF1001V	Yes	Yes
R58	1	SMD thick film resistor 680R 0603 1% 100 mW Panasonic	680R		Panasonic	ERJ3EKF6800V	Yes	Yes
R62	1	SMD thick film resistor 1k 0603 1% 100 mW Panasonic	1k		Panasonic	ERJ3EKF1001V	Yes	Yes
R67	1	SMD thick film resistor 330R 0603 1% 100 mW Panasonic	330R		Panasonic	ERJ3EKF3300V	Yes	Yes
R68	1	SMD thick film resistor 3k 0603 1% 100 mW Panasonic	3k		Panasonic	ERJ3EKF3001V	Yes	Yes

R69	1	SMD thick film resistor 3k9 0603 1% 100 mW Panasonic	3K9			Panasonic	ERJ3EKF3901V	Yes	Yes
R78, R79	2	SMD thick film resistor 4k7 0603 1% 100 mW Panasonic	4k7			Panasonic	ERJ3EKF4701V	Yes	Yes
R80, R81, R82, R83, R84	5	SMD thick film resistor 0R 0603 100 mW, AEC-Q200, Panasonic	0R			Panasonic	ERJ-3GEY0R00V	Yes	Yes
R91	1	SMD thick film resistor 2k7 0603 1% 100 mW Panasonic	2k7			Panasonic	ERJ3EKF2701V	Yes	Yes
R92	1	SMD thick film resistor 4k7 0603 1% 100 mW Panasonic	4k7			Panasonic	ERJ3EKF4701V	Yes	Yes
SB1, SB2, SB3, SB4	4	Steel spacer internal/internal M3x6 thread 50mm Würth Elektronik	Spacer M3 F/F 50 HEX7					Yes	Yes
SHC1, SHC2, SHC3, SHC4	4	Pan head cross screw M3x16 DIN7985	M3x16 DIN7985					Yes	Yes
SHC7, SHC8	2	Pan head PH2 cross recessed screw M4 according ISO7045 length 16 mm	screw M4x16 ISO7045					Yes	Yes
TP1	1	Thermal paste	Stannol T12 Wärmeleitpaste 1 St.					Yes	Yes
U1	1	High-Voltage Switcher for low Power offline SMPS 100kHz	NCP1063AD10 0R2G			onsemi	NCP1063AD100R2G	Yes	Yes
U2	1	Low Dropout Regulator, WideInput Voltage, Low Iq,300 mA	NCP718BSN33 0T1G			onsemi	NCP718BSN330T1G	Yes	Yes
U3	1	1.2 A 2 MHz Automotive Buck Switching Regulator ON Semiconductor	NCV890100M WTXG			onsemi	NCV890100MWTXG	Yes	Yes
U4	1	Power Switch ICs - Power Distribution SSOT-6 LOAD SW 20V	FDC6326L			onsemi	FDC6326L	Yes	Yes
U5	1	Intelligent Power Module(IPM), 650 V, 50 A	NFAM5065L4 B			onsemi	NFAM5065L4B	Yes	Yes
U6, U7, U8	3	Amplifier, Low Offset,10 MHz, Rail-to- RailInput/Output	NCS20166			onsemi	NCS20166SN2T1G	Yes	Yes
U9	1	Low Voltage Precision Adjustable Shunt Regulator 1.24 -16 V output, 20mA ±0.2%	TLV431			onsemi	TLV431CSN1T1G	Yes	Yes
U10	1	Low voltage high speed complementary push-pull output comparator	NCS2250SN2T 3G			onsemi	NCS2250SN2T3G	Yes	Yes
U14	1	EEPROM Serial 512-Kb I2C	CAT24C512			onsemi	CAT24C512WI-GT3	Yes	Yes
U_OUT, V_OUT, VB_U, W_OUT	4	PTH testpoint eyelet 3.2mm red Keystone Electronics	DC LINK			Keystone Electronics	5005	Yes	Yes
W1, W2	2	Plain washer zinc plated steel HV140 ISO7089 for M4	plain washer M4 ISO7089					Yes	Yes
W3, W4	2	Spring washer zinc plated steel HV430 DIN7980 for M4	spring washer M4 DIN7980					Yes	Yes

