

## INDSYS-2081 REV E2 Bill of Materials

Designator	Quantity	Value	PartNumber	Manufacturer	Description	PackageReference
IPCB1	1		INDSYS-2081	Any	Printed Circuit Board	
C1_1, C1_2, C3_1, C3_2, C9_1, C9_2, C11_1, C11_2, C98, C100, C101	11	1uF	GRM21BR71H105KA12L	MuRata	CAP, CERM, 1 uF, 50 V, +/- 10%, X7R, 0805	0805
C2_1, C2_2, C10_1, C10_2, C87, C91	6	0.1uF	GRM188R72A104KA35D	MuRata	CAP, CERM, 0.1 uF, 100 V, +/- 10%, X7R, 0603	0603
C5_1, C5_2, C6_1, C6_2, C13_1, C13_2, C14_1, C14_2	8	150uF	A768MS157M1HLAE024	Panasonic	CAP ALUM POLY 150UF 20% 50V SMD	F12, SMD, 2-Leads, Body 10.5x10.5mm, Height 12.7mm
C7_1, C7_2, C8_1, C8_2	4	470uF	875075361005		CAP ALUM POLY 470UF 20% 16V SMD	F12, SMD, 2-Leads, Body 10.5x10.5mm, Height 12.7mm
C16_1, C16_2, C17_1, C17_2, C19_1, C19_2, C24_1, C24_2, C25_1, C25_2, C26_1, C26_2, C27, C29, C31, C33, C34, C35, C36, C44, C51, C54, C59, C60, C92, C99, C103, C108, C110, C111, C112, C113, C116_1, C116_2	34	0.1uF	GRM155R61C104KA88D	MuRata	CAP, CERM, 0.1 uF, 16 V, +/- 10%, X5R, 0402	0402
C18_1, C18_2, C30, C32	4	4.7uF	GRM21BR61H475KE51L	MuRata	CAP, CERM, 4.7 uF, 50 V, +/- 10%, X5R, 0805	0805
C20_1, C20_2, C42	3	0.22uF	GRM188R71H224KAC4D	MuRata	CAP, CERM, 0.22 uF, 50 V, +/- 10%, X7R, 0603	0603
C21_1, C21_2	2	0.47uF	GRM188R71C474KA88D	MuRata	CAP, CERM, 0.47 uF, 16 V, +/- 10%, X7R, 0603	0603
C22_1, C22_2	2	10pF	GRM1555C1H100JA01D	MuRata	CAP, CERM, 10 pF, 50 V, +/- 5%, C0G/NP0, 0402	0402
C28, C55, C56, C58, C93, C94, C97, C106	8	1uF	CGA3E1X7R1E105K080AC	TDK	CAP, CERM, 1 uF, 25 V, +/- 10%, X7R, AEC-Q200 Grade 1, 0603	0603
C37	1	3300pF	GRM188R72A332KA01D	MuRata	CAP, CERM, 3300 pF, 100 V, +/- 10%, X7R, 0603	0603
C38	1	1500pF	GRM1885C1E152JA01D	MuRata	CAP, CERM, 1500 pF, 25 V, +/- 5%, C0G/NP0, 0603	0603
C39, C40, C41, C43, C107, C114	6	0.015uF	GRM155R71C153KA01D	MuRata	CAP, CERM, 0.015 uF, 16 V, +/- 10%, X7R, 0402	0402
C50, C57, C95, C102, C105	5	10uF	GRM188R61E106MA73D	MuRata	CAP, CERM, 10 uF, 25 V, +/- 20%, X5R, 0603	0603
C88, C89, C90	3		GRM32EC72A106KE05L	Murata	10uF ±10% 100V Ceramic Capacitor X7S 1210 (3225 Metric)	1210
C96	1	2.2uF	F381A225MMA	KYOCERA AVX	CAP TANT POLY 2.2UF 10V 0603	0603
C104	1	1uF	F381A225MMA	KYOCERA AVX	CAP TANT POLY 2.2UF 10V 0603	0603

Designator	Quantity	Value	PartNumber	Manufacturer	Description	PackageReference
D4, D5, D6	3	Green	150060VS75000	Würth Elektronik	LED, Green, SMD	LED_0603
FID4, FID5, FID6	3		N/A	N/A	Fiducial mark. There is nothing to buy or mount.	N/A
H1, H2, H3, H4	4		NY PMS 440 0025 PH	B&F Fastener Supply	Machine Screw, Round, #4-40 x 1/4, Nylon, Philips panhead	Screw
H5, H6, H7, H8	4		1902C	Keystone	Standoff, Hex, 0.5"L #4-40 Nylon	Standoff
J1, J2, J3, J4	4		108-0740-001	Cinch Connectivity	Standard Banana Jack, Uninsulated, 15A	Banana Jack
J5	1		B2B-EH-A(LF)(SN)	JST Manufacturing	Header (Shrouded), 2.5mm, 2x1, Tin, TH	Header (Shrouded), 2.5mm, 2x1, TH
J9, J10, J16	3		HTSW-103-07-G-S	Samtec	Header, 100mil, 3x1, Gold, TH	Header, 100mil, 3x1, TH
J15, J17	2		HTSW-102-07-G-S	Samtec	Header, 100mil, 2x1, Gold, TH	Header, 100mil, 2x1, TH
J18	1		HSEC8-160-01-L-DV-A-BL	Samtec	C2000 controlCARD-120HSEC connector, SMT	C2000 pin numbering
L1_1, L1_2	2	6.8uH	7443763540068	Würth Elektronik	Inductor, Flat Wire, 15 µH, 45.3 A, 0.00216 ohm, SMD	36x41mm
L2	1	22uH	XGL6060-223MEC	Coilcraft	22 µH Shielded Inductor 5.8 A 46.9mOhm Max Nonstandard	SMT2_6MM51_6MM71
L3	1	1000 ohm	BLM41PG102SN1L	MuRata	Ferrite Bead, 1000 ohm @ 100 MHz, 1.5 A, 1806	1806
LBL1	1		THT-14-423-10	Brady	Thermal Transfer Printable Labels, 0.650" W x 0.200" H - 10,000 per roll	PCB Label 0.650 x 0.200 inch
Q1_1, Q1_2, Q2_1, Q2_2, Q3_1, Q3_2, Q4_1, Q4_2	8	30V	CSD17556Q5B	Texas Instruments	MOSFET, N-CH, 30 V, 34 A, DNK0008A (VSON-CLIP-8)	DNK0008A
Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q12	8	25V	CSD16570Q5B	Texas Instruments	MOSFET, N-CH, 25 V, 100 A, DNK0008A (VSON-CLIP-8)	DNK0008A
R1, R2, R9_1, R9_2, R14_1, R14_2, R15_1, R15_2, R17_1, R17_2, R21_1, R21_2, R23_1, R23_2, R27_1, R27_2, R53, R54, R64, R66, R83, R142, R143, R144, R145, R148, R149, R175, R176, R186, R189, R190	32	0	CRCW04020000Z0ED	Vishay-Dale	RES, 0, 5%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R3_1, R3_2	2	400µ	PU3921FKNP90U4L	YAGEO	400 µOhms ±1% 9W Chip Resistor Nonstandard Automotive AEC-Q200, Current Sense, Moisture Resistant Metal Element	3921
R4_1, R4_2	2		RESISTOR - ISA-WELD SHUNT, 0.000	Vishay	RESISTOR - ISA-WELD SHUNT, 0.000	2726
R5_1, R5_2, R10_1, R10_2, R11_1, R11_2, R16_1, R16_2, R39, R40, R45, R49, R50, R51, R52, R58, R68, R75, R76, R139	20	49.9k	CRCW060349K9FKEA	Vishay-Dale	RES, 49.9 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603

Designator	Quantity	Value	PartNumber	Manufacturer	Description	PackageReference
R7_1, R7_2, R8_1, R8_2, R12_1, R12_2, R13_1, R13_2, R29, R30, R31, R32, R33, R34, R183, R184	16	1	CRCW06031R00FKEA	Vishay-Dale	RES, 1.00, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603
R18_1, R18_2, R25_1, R25_2, R26_1, R26_2, R35, R37, R44, R47, R55, R84, R87, R140, R181, R182_1, R182_2	17	10.0k	CRCW060310K0FKEA	Vishay-Dale	RES, 10.0 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603
R19_1, R19_2	2	2.2	CRCW04022R20JNED	Vishay-Dale	RES, 2.2, 5%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R20_1, R20_2, R24_1, R24_2, R59, R60, R61, R62, R63, R65	10	499	CRCW0402499RFKED	Vishay-Dale	RES, 499, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R22_1, R22_2	2	1.15k	CRCW06031K15FKEA	Vishay-Dale	RES, 1.15 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603
R36, R41, R43, R46, R57, R185	6	4.99k	CRCW06034K99FKEAC	Vishay-Dale	RES, 4.99 k, 1%, 0.1 W, 0603	0603
R38	1	10	CRCW080510R0JNEA	Vishay-Dale	RES, 10, 5%, 0.125 W, AEC-Q200 Grade 0, 0805	0805
R42, R48, R56	3	20.0k	CRCW060320K0FKEA	Vishay-Dale	RES, 20.0 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603
R133	1	255k	CRCW0402255KFKED	Vishay-Dale	RES, 255 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R134	1	22.1k	CRCW040222K1FKED	Vishay-Dale	RES, 22.1 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R135, R136	2	0	CRCW12060000Z0EAC	Vishay	Jumper 0.25W, 1/4W Chip Resistor 1206 (3216 Metric) - Thick Film	1206
R137, R138, R141, R171	4	1.0k	CRCW06031K00JNEA	Vishay-Dale	RES, 1.0 k, 5%, 0.1 W, AEC-Q200 Grade 0, 0603	0603
R150, R151, R152, R153, R154, R155, R156, R157, R159, R160, R161, R162, R163, R164, R165, R166, R167, R168, R169, R170, R172, R173, R174, R177, R178, R179, R180	27	22	CRCW040222R0JNED	Vishay-Dale	RES, 22, 5%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R188_1, R188_2	2	1.00k	CRCW08051K00FKEA	Vishay-Dale	RES, 1.00 k, 1%, 0.125 W, AEC-Q200 Grade 0, 0805	0805
SH-J2, SH-J3, SH- J4	3		60900213421	Wurth Elektronik	Shunt, 2.54mm, Gold, Black	Shunt, 2.54mm, Black
T1, T2, T3, T4	4		CXS70-14-C	Panduit	Terminal 70A Lug	LUG, 32.3x14.5x11.7
TP7, TP8, TP9, TP10, TP11, TP14, TP15, TP17, TP19_1, TP19_2, TP21	11		5001	Keystone Electronics	Test Point, Miniature, Black, TH	Black Miniature Testpoint
TP12, TP13, TP16, TP18_1, TP18_2, TP20	6		5000	Keystone Electronics	Test Point, Miniature, Red, TH	Red Miniature Testpoint

Designator	Quantity	Value	PartNumber	Manufacturer	Description	PackageReference
U2_1, U2_2	2		UCC27211DDA	Texas Instruments	120-V Boot, 4-A Peak, High-Frequency High-Side and Low-Side Driver, DDA0008E (SOIC-8)	DDA0008E
U3_1, U3_2	2		INA188IDR	Texas Instruments	36-V, Zero-Drift, Rail-to-Rail-Out Instrumentation Amplifier, D0008A (SOIC-8)	D0008A
U5	1		TPSI3050DWZR	Texas Instruments	Isolated Switch Driver With Integrated 10-V Gate Supply SOIC8	SOIC8
U6	1		LM393BIDR	Texas Instruments	Comparator General Purpose Open-Collector 8-SOIC	SOIC8
U7	1		OPA2182AID	Texas Instruments		D0008A
U8	1		TLV9102IDR	Texas Instruments	General Purpose Amplifier 2 Circuit Rail-to-Rail 8-SOIC	SOIC8
U9	1		ADS131M08IPBSR	Texas Instruments	8-Channel, 24-Bit, Simultaneously-Sampling, Delta-Sigma ADC, PBS0032A (TQFP-32)	PBS0032A
U10	1		REF35125QDBVR	Texas Instruments	Ultra Low-Power, High-Precision Voltage Reference, SOT23-6	SOT23-6
U11, U12	2		LM321LVIDBVR	Texas Instruments	1-Channel Industry Standard Low Voltage Operational Amplifier, DBV0005A (SOT-23-5)	DBV0005A
U17	1		LMR54410DBVR	Texas Instruments	Buck Converter, Adjustable, 4V-36V Input, 1-28V 1A Output, SOT23-6	SOT23-6
U18	1		TPS7A2033PDBVR	Texas Instruments	300-mA, Ultra-Low-Noise, Low-IQ, High PSRR LDO	SOT23-5
U19, U22	2		TLV1117-50IDCY	Texas Instruments	Single Output LDO, 1 A, Fixed 5 V Output, 2 to 5.5 V Input, 4-pin SOT-223 (DCY), -40 to 125 degC, Green (RoHS & no Sb/Br)	DCY0004A
U20	1		LM2664M6X/NOPB	Texas Instruments	Switched Capacitor Voltage Converter, 6-pin SOT-23	DBV0006A
U21	1		TPS73633DBVR	Texas Instruments	Single Output Low Noise LDO, 400 mA, Fixed 3.3 V Output, 1.7 to 5.5 V Input, with Reverse Current Protection, 5-pin SOT-23 (DBV), -40 to 85 degC, Green (RoHS & no Sb/Br)	DBV0005A
U24	1		TMP235DCK	Texas Instruments	TMP235DCK, DCK0005A (SOT-5)	DCK0005A
U25	1		TVS0500DRVR	Texas Instruments	5-V Precision Surge Protection Clamp, DRV0006A (WSON-6)	DRV0006A
Y1	1		SIT8924BA-22-33E-8.192000G	SiTime	Oscillator, 8.192 MHz, 15 pF, AEC-Q200 Grade 1, SMD	3.2x2.5mm
C4_1, C4_2, C12_1, C12_2	0	47uF	GRM32EC81C476ME15L	MuRata	CAP, CERM, 47 uF, 16 V, +/- 20%, X6S, 1210	1210
C15_1, C15_2	0	100pF	GRM2165C2A101JA01D	MuRata	CAP, CERM, 100 pF, 100 V, +/- 5%, C0G/NP0, 0805	0805
C23_1, C23_2, C45, C46, C47, C48, C49, C53, C69, C70, C71, C73	0	0.015uF	GRM155R71C153KA01D	MuRata	CAP, CERM, 0.015 uF, 16 V, +/- 10%, X7R, 0402	0402
C52	0	10pF	GRM1555C1H100JA01D	MuRata	CAP, CERM, 10 pF, 50 V, +/- 5%, C0G/NP0, 0402	0402
C61, C64, C65, C66, C67, C68, C72, C75, C79, C81, C85, C109	0	0.1uF	GRM155R61C104KA88D	MuRata	CAP, CERM, 0.1 uF, 16 V, +/- 10%, X5R, 0402	0402
C62, C63, C74, C76, C80, C82, C83, C84, C115	0	10uF	GRM188R61E106MA73D	MuRata	CAP, CERM, 10 uF, 25 V, +/- 20%, X5R, 0603	0603
C77, C78, C86	0	1uF	CGA3E1X7R1E105K080AC	TDK	CAP, CERM, 1 uF, 25 V, +/- 10%, X7R, AEC-Q200 Grade 1, 0603	0603
D1_1, D1_2, D2_1, D2_2	0	45V	PMEG045V150EPDAZ	Nexperia	Diode, Schottky, 45 V, 15 A, AEC-Q101, CFP15	CFP15
D3_1, D3_2	0	60V	PMEG6010CEH,115	Nexperia	Diode, Schottky, 60 V, 1 A, SOD-123F	SOD-123F
FID1, FID2, FID3	0		N/A	N/A	Fiducial mark. There is nothing to buy or mount.	N/A
J6, J7, J8, J12, J14	0		B2B-EH-A(LF)(SN)	JST Manufacturing	Header (Shrouded), 2.5mm, 2x1, Tin, TH	Header (Shrouded), 2.5mm, 2x1, TH
J11	0		HTSW-102-07-G-S	Samtec	Header, 100mil, 2x1, Gold, TH	Header, 100mil, 2x1, TH
J13	0		HTSW-103-07-G-S	Samtec	Header, 100mil, 3x1, Gold, TH	Header, 100mil, 3x1, TH
MP1_1, MP1_2	0		3-101004U	CoolInnovations	HEATSINKS FOR MULTIPLE PURPOSE - ALUMINUM MATERIAL	HEATSINK_25MM4_25MM4
R6_1, R6_2	0	10	CRCW080510R0JNEA	Vishay-Dale	RES, 10, 5%, 0.125 W, AEC-Q200 Grade 0, 0805	0805

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R28_1, R28_2, R97, R98, R99, R101, R105, R108, R109, R110, R111, R112, R113, R115, R118, R120, R122, R131, R146, R147	0	0	CRCW04020000Z0ED	Vishay-Dale	RES, 0, 5%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R67, R90, R92, R93, R94, R102, R103, R104, R106, R119, R121, R123, R124, R125, R126, R127, R128, R129	0	49.9k	CRCW060349K9FKEA	Vishay-Dale	RES, 49.9 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603
R69, R70, R71, R72, R73, R74, R77, R78, R81, R82, R91, R95, R96, R100, R107, R114, R116, R117	0	499	CRCW0402499RFKED	Vishay-Dale	RES, 499, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R79, R80, R85, R86, R89, R130	0	10.0k	CRCW060310K0FKEA	Vishay-Dale	RES, 10.0 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603
R88	0	10k	TMP6131DYAT	Texas Instruments	±1% tolerance 10kΩ linear thermistor available in 0402 and 0603 package options 2-SOT-5X3 -40 to 125	SOD-523
R132	0	0.22	ERJ-3RQFR22V	Panasonic	RES, 0.22, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603
R158	0	49.9	CRCW060349R9FKEA	Vishay-Dale	RES, 49.9, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603
R187_1, R187_2	0	1.00k	CRCW08051K00FKEA	Vishay-Dale	RES, 1.00 k, 1%, 0.125 W, AEC-Q200 Grade 0, 0805	0805
SH-J1	0		60900213421	Würth Elektronik	Shunt, 2.54mm, Gold, Black	Shunt, 2.54mm, Black
TP1, TP2, TP3, TP4, TP5, TP6	0		TP105-01-09	Components Corporation	Test Point, Miniature, White, TH	Test-Point, Dia 100mil, TH
U1_1, U1_2	0		INA241B3IDDF	Texas Instruments	-4-V to 110-V, Bidirectional, Ultra-Precise Current Sense Amplifier With Enhanced PWM Rejection	SOT23-8
U4_1, U4_2	0		INA181A2IDBV	Texas Instruments	Bidirectional, Low- and High-Side Measurement, Multichannel, Voltage Output, Current-Sense Amplifier, DBV0006A (SOT-6)	DBV0006A
U13	0		ADS8686SIPZA	Texas Instruments	16-Channel, 16-Bit, 1-MSPS, Dual, Simultaneous Sampling ADC With Integrated Analog Front End, PZA0080A (LQFP-80)	PZA0080A
U14	0		TMUX4052PWR	Texas Instruments	CMOS Differential 4-Channel Analog Multiplexer/Demultiplexer with Logic-Level Conversion, PW0016A (TSSOP-16)	PW0016A
U15	0		REF5025AIDGKT	Texas Instruments	3 µVpp/V Noise, 3 ppm/°C Drift Precision Series Voltage Reference, DGK0008A (VSSOP-8)	DGK0008A
U16	0		TPS7A4700RGWR	Texas Instruments	36-V, 1-A, 4.17-µVRMS, RF low-dropout (LDO) voltage regulator 20-VQFN 40 to 125	VQFN20
U23	0		THVD1426D	Texas Instruments	3.3-V to 5-V RS-485 Transceivers with Auto-direction Control and ±12-kV IEC ESD Protection	D0008A

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