



## Bill Of Materials - Top side components 2/2

Designator	Comment	Quantity
Q5, Q10	NCS20032	2
Q14A, Q14B	NTHL160N120SC1	2
R51, R62, R316, R317	46R4	4
R296, R298	100R	2
R208A, R208B, R212A, R212B, R219A, R219B, R223A, R223B	270R	8
R185, R186, R191, R192, R294, R295	4k7	6
R195, R302, R303, R304, R305	10k	5
R38A, R38B, R314A, R314B	2k2	4
R41, R42, R43, R44, R347, R348	121R	6
R45, R196, R197, R297, R301	33R	5
R112, R151, R158, R161	4k02	4
R293	100k	1
R85, R124	3k3	2
R86, R114, R116, R125, R153, R155	10k	6
R109, R117, R148, R156	56R	4
R110, R113, R149, R152	8R2	4
R115, R118	6k49	2
R154, R157	4k42	2
R202, R269	20k	2
R248, R252	91k	2
R336A, R336B, R338A, R338B	6k8	4
R267	7k5	1
R278A, R278B	10M	2
R279A, R279B	6M8	2
R286A, R286B	10k	2
R288A, R288B	1k	2
R291A, R291B, R292A, R292B	0R56	4
R306	390R	1
R307	220R	1
R342A, R342B, R346A, R346B	100R	4
SAPA, SAPB	screw M4x12 DIN7984	2
SL1, SL2, SL3, SL4	screw M5x16 DIN7984	4
SP1HSP, SP1HSS, SP2HSP, SP2HSS, SP3HSP, SP3HSS, SP4HSP, SP4HSS, SP5HSP, SP5HSS, SP6HSP, SP6HSS	SMD spacer Ø3.3 x 12.5	12
SPTB1, SPTB2, SPTB3, SPTB4, SPTB5, SPTB6	Spacer M4 M/F 30mm	6
SPTT1, SPTT2, SPTT3, SPTT4, SPTT5, SPTT6	Spacer M4 F/F 60mm	6
STR1, STR2, STR3, STR4	screw M6x16 DIN7984	4
SW_DIR	452 403 012 014	1
THP_Q14A, THP_Q14B	thermal pad - cut out 16.5x27mm from MPGCSP15USGF-200-1.5	2
TP15, TP20, TP37, TP64	ORANGE	4
TP16, TP33, TP59, TP63	RED	4
TP17, TP25, TP34, TP41, TP67	PURPLE	5
TP21, TP38	BROWN	2
TP29, TP42	YELLOW	2
TP65	WHITE	1
TP68, TP74, TP76, TP77, TP81	BLACK	5
TP73	GREEN	1
TR	PI-102971-00	1
TR1A, TR1B	750 319 105	2
U16, U23	NCID9211	2
U8, U24	NCS213RSQ	2
U14	CAT24C512WI-GT3	1
U15	NCV7342D13R2G	1
U_PIM_PRIA, U_PIM_PRIB, U_PIM_SECA, U_PIM_SECB	NXH010P120MNF1PNG	4
ZF4A	1 kOhm @ 100 MHz	1

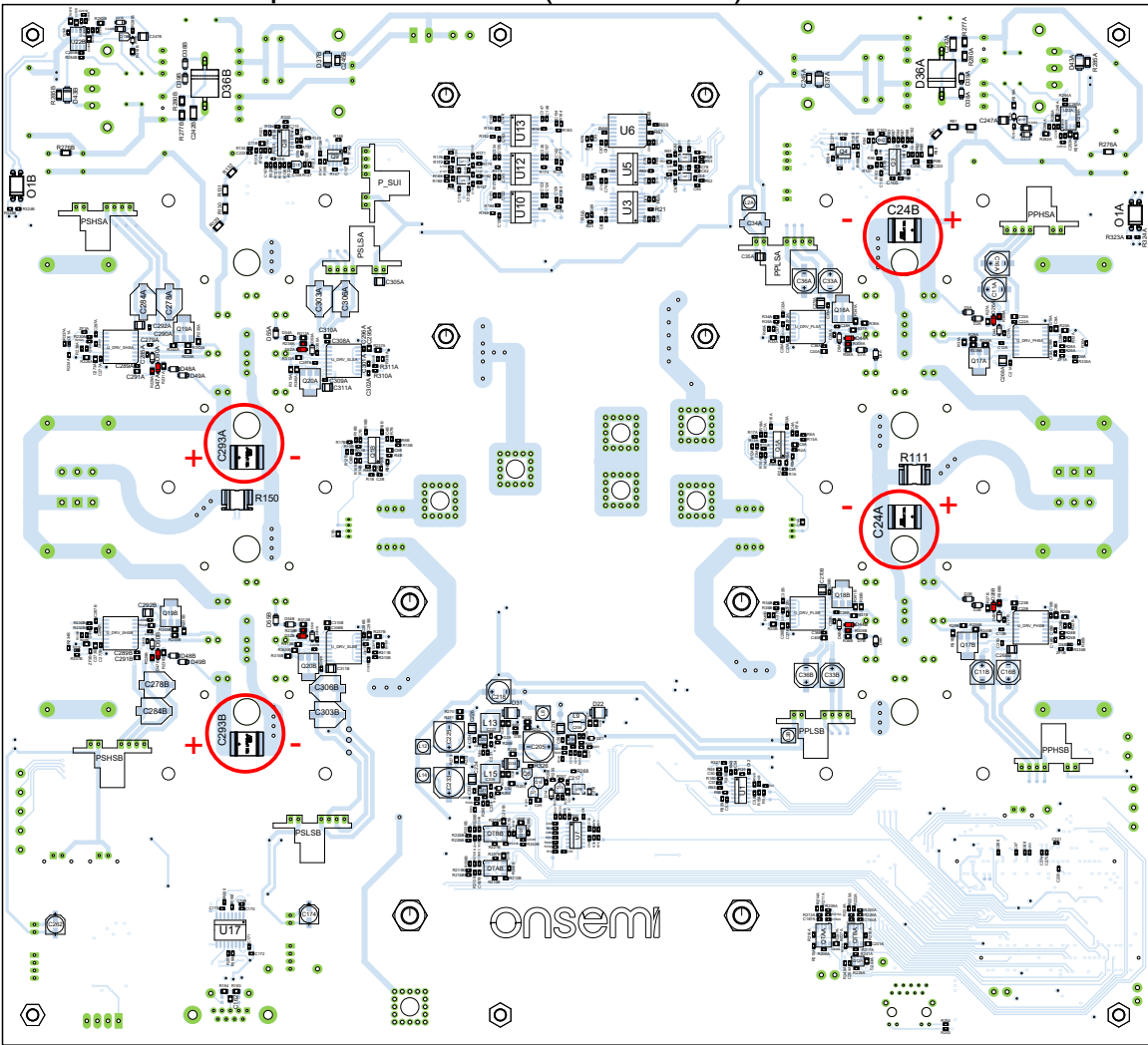
③ Only components present in this assembly variant are listed in BoM table.  
Relevant assembly view on page 1.

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Bill Of Materials - Bottom side components 1/5

Designator	Comment	Quantity
C1A, C1B, C5A, C5B, C116, C117, C200A, C200B, C201A, C201B, C202, C203A, C203B, C271	100 nF	14
C2A, C2B	47 nF	2
C4A, C4B, C7A, C7B	1 nF	4
C6A, C6B	2μ2	2
C8, C55, C56, C61, C70, C71, C72, C75, C84, C87, C119, C120, C121, C124, C132, C133, C134, C137, C145, C148, C169, C172	1 μF	22
C9A, C9B, C23A, C23B, C26A, C26B, C40A, C40B, C273A, C273B, C291A, C291B, C295A, C295B, C310A, C310B	1 μF	16
C10A, C10B, C12A, C12B, C21A, C21B, C22A, C22B, C27A, C27B, C28A, C28B, C38A, C38B, C39A, C39B, C277A, C277B, C279A, C279B, C289A, C289B, C290A, C290B, C296A, C296B, C297A, C297B, C308A, C308B, C309A, C309B	100 nF	32
C11A, C11B, C16A, C16B, C33A, C33B, C36A, C36B, C218, C278A, C278B, C284A, C284B, C303A, C303B, C306A, C306B	100 μF	17
C34A, C174, C262	68 μF	3
C35A, C206, C226, C234, C305A	4μ7	5
C17A, C17B, C30A, C30B, C231, C239, C285A, C285B, C300A, C300B	22 pF	10
C18A, C18B, C19A, C19B, C20A, C20B, C31A, C31B, C32A, C32B, C37A, C37B, C286A, C286B, C287A, C287B, C288A, C288B, C301A, C301B, C302A, C302B, C307A, C307B	680 pF	24
C24A, C24B, C293A, C293B	250 nF	4
C62, C64, C76, C78, C125, C127, C138, C140	33 nF	8
C47, C92, C93, C153, C154, C266	220 pF	6
C48, C207, C208, C209, C224, C227, C232, C235	100 nF	8
C49	10 μF	1
C50, C51, C53, C54, C57, C58, C94, C95, C97, C98, C99, C100, C220, C221	2n2	14
C52, C59, C60, C73, C74, C85, C86, C96, C122, C123, C135, C136, C146, C147, C170, C171	100 nF	16
C63, C77, C126, C139	15 nF	4
C65, C66, C69, C79, C80, C83, C103, C108, C128, C129, C141, C142, C173, C274, C275	100 pF	15
C67, C68, C81, C82, C130, C131, C143, C144, C254A, C254B, C255A, C255B	33 pF	12
C101, C105, C106, C110, C213	10 nF	5

Bottom side component locations (Scale 1:2.5)



- 4 C24A, C24B & C293A, C293B have to be properly oriented according their polarity !
- 5 Components not present in this assembly variant are crossed out by red line and not listed in table

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## Bill Of Materials - Bottom side components 2/5

Designator	Comment	Quantity
C102, C107	220 nF	2
C104, C109	1 nF	2
C111, C195, C204A, C204B	1 µF	4
C162	4n7	1
C187A, C187B, C192A, C192B	10 µF	4
C189A, C189B, C194A, C194B	47 nF	4
C205, C225, C233	100 µF	3
C210, C211, C215, C216, C229, C230, C237, C238	10 µF	8
C212	270 pF	1
C214	4µ7	1
C217	100 nF	1
C222, C223	1n5	2
C228, C236	2n7	2
C242A, C242B	470pF	2
C245A, C245B	100 nF	2
C246A, C246B	470 nF	2
C247A, C247B	4.7 µF	2
C248A, C248B	100 nF	2
C250A, C250B	150 nF	2
C251A, C251B	3n3	2
C252A, C252B	150 pF	2
C253A, C253B	1n8	2
C265	33 nF	1
C268A, C268B, C270A, C270B, C292A, C292B, C311A, C311B	10 µF	8
D1, D16, D19, D46	BAT54XV2	4
D2A, D2B, D3A, D3B, D7A, D7B, D8A, D8B, D38A, D38B, D39A, D39B, D48A, D48B, D49A, D49B, D54A, D54B, D55A, D55B	US1MFA	20
D4A, D4B, D6A, D6B, D50A, D50B, D53A, D53B	MMSD4148T1G	8
D5A, D5B, D51A, D51B	RED	4
D14	MMSZ4686T1G	1
D30	GREEN	1
D17, D42	BAT54SW	2
D21, D29, D32	NSR0340H	3
D22, D31, D34	MBRS2040L	3
D36A, D36B	5KP160A	2
D37A, D37B	1SMA5931BT3G	2
D40A, D40B	NSD350H	2
D41A, D41B	MMSZ18T1G	2
D43A, D43B	MBRA130LT3G	2
L2A, L2B, L8, L12, L14	22 µH	5
L9	22 µH	1
L13	6µ8	1
L15	4µ7	1
O1A, O1B	SFH615A-3	2

## Bill Of Materials - Bottom side components 3/5

Designator	Comment	Quantity
P_SUI, PPHSA, PPHSB, PPLSA, PPLSB, PSHSA, PSHSB, PSLSA, PSLSB	SECO-LVDCDC3064-SICV2-GEVB	9
Q1A, Q1B, Q3, Q8	NCS20034	4
Q4, Q9, QTAA, QTAB, QTBA, QTBB	NCS20032	6
Q6, Q7	MMBT2222ALT1G	2
Q12A, Q12B	NCS2003SN2T1G	2
Q13A, Q13B	BC817-40W	2
Q15, Q16	MMBT3906LT1G	2
Q17A, Q17B, Q18A, Q18B, Q19A, Q19B, Q20A, Q20B	NSS60600MZ4T1G	8
R1A, R1B, R3A, R3B, R5A, R5B, R16A, R16B, R24, R55, R56, R57, R61, R64, R65, R162, R167, R169, R170, R171, R175, R177, R178	46R4	23
R2A, R2B, R6A, R6B, R15A, R15B, R17A, R17B	1k33	8
R4A, R4B, R9A, R9B, R11A, R11B, R14A, R14B, R99, R105, R144, R210A, R210B, R221A, R221B, R241A, R241B, R264	100R	18
R7A, R7B, R8A, R8B, R13A, R13B, R18A, R18B	8k25	8
R10A, R10B	16k9	2
R12A, R12B	33k2	2
R52, R58, R63, R163, R168, R172, R176	270R	7
R21, R59, R60, R67, R68, R164, R165, R173, R174, R180, R181, R198, R199, R201, R281A, R281B	4k7	16
R23, R66, R71, R78, R79, R159, R160, R166, R179, R184, R245, R257, R265	10k	13
R25A, R25B, R29A, R29B, R33A, R33B, R37A, R37B, R228A, R228B, R233A, R233B, R237A, R237B, R313A, R313B	4R7	16
R26A, R26B, R28A, R28B, R32A, R32B, R34A, R34B, R35A, R35B, R40A, R40B, R230A, R230B, R232A, R232B, R236A, R236B, R310A, R310B, R311A, R311B, R319A, R319B	82R5	24
R27A, R27B, R36A, R36B, R231A, R231B, R312A, R312B	13k7	8
R30A, R30B, R203, R204, R234A, R234B, R255, R326	2k2	8
R31A, R31B, R39A, R39B, R235A, R235B, R315A, R315B	3R3	8
R47, R48, R49, R50, R53, R54, R72, R73, R74, R75, R76, R77	121R	12
R46, R69, R70, R182, R183, R200, R211A, R211B, R214A, R214B, R222A, R222B, R225A, R225B, R320	33R	15
R80	4k02	1

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- ⑥ Only components present in this assembly variant are listed in BoM table.  
Relevant assembly view on page 3.

## Bill Of Materials - Bottom side components 4/5

Designator	Comment	Quantity
R81	71k5	1
R82, R89, R102, R107, R128	7k68	5
R83, R97, R122, R136	15k	4
R84, R123, R268, R300	100k	4
R88, R94, R98, R101, R103, R104, R108, R127, R133, R137, R140, R142, R143, R147, R206A, R206B, R207A, R207B, R209A, R209B, R217A, R217B, R218A, R218B, R220A, R220B, R239A, R239B, R240A, R240B, R321, R322	10k	32
R87, R126	32k4	2
R90, R91, R92, R93, R129, R130, R131, R132	820k	8
R95, R100, R106	3k74	3
R96	8k06	1
R111, R150	500µ	2
R119	3k74	1
R120	76k8	1
R121	8k66	1
R134, R138	2k43	2
R135	6k98	1
R139, R145	5k11	2
R141, R146	6k65	2
R193, R194	60R4	2
R262	20k	1
R213A, R213B, R216A, R216B, R224A, R224B, R227A, R227B	1k	8
R215A, R215B, R226A, R226B	9k1	4
R242, R243, R270, R271, R272, R273, R318A, R318B	1R5	8
R244, R251, R299	1k	3
R246	3k16	1
R247	4k64	1
R249	681R	1
R250	237R	1
R253, R256, R335A, R335B, R337A, R337B	6k8	6
R254	7k5	1
R258, R263	0R	2
R259	487R	1
R260	12k	1
R261	93R1	1
R266	31R6	1
R276A, R276B	68R	2
R277A, R277B, R280A, R280B	100k	4
R282A, R282B	154k	2
R283A, R283B	261k	2
R284A, R284B	34k8	2
R285A, R285B	8R2	2
R287A, R287B	100k	2

## Bill Of Materials - Bottom side components 5/5

Designator	Comment	Quantity
R289A, R289B	26k1	2
R290A, R290B	422k	2
R323A, R323B	5k62	2
R324A, R324B	47k	2
R325	56k	1
R327, R328, R329, R330, R331, R332, R333, R334	1k47	8
R339A, R339B, R341A, R341B, R343A, R343B, R345A, R345B	10R	8
R340A, R340B, R344A, R344B	100R	4
SPB1, SPB2, SPB3, SPB4, SPB5, SPB6	Spacer M4 M/F 30mm	6
SPL1, SPL2, SPL3, SPL4	Spacer M5 F/F 30mm	4
SPTR1, SPTR2, SPTR3, SPTR4	Spacer M6 F/F 30mm	4
U1, U7	MC74HC30ADR2G	2
U2, U4, U9, U11	NCD98011XDPT3G	4
U3, U5, U6, U10, U12, U13, U17	NCID9211	7
U18, U20, U21	NCV890100MWTXG	3
U19	NCP380HSN10AAT1G	1
U22A, U22B	NCP1362ABDR2G	2
U_DRV_PHSa, U_DRV_PHSB, U_DRV_PLsA, U_DRV_PLsB, U_DRV_SHsA, U_DRV_SHsB, U_DRV_SLsA, U_DRV_SLsB	NCD57000DWR2G	8
ZF1A, ZF1B, ZF2A, ZF2B, ZF3A, ZF3B, ZF4B	1 kOhm @ 100 MHz	7

⑦ Only components present in this assembly variant are listed in BoM table.  
Relevant assembly view on page 3.

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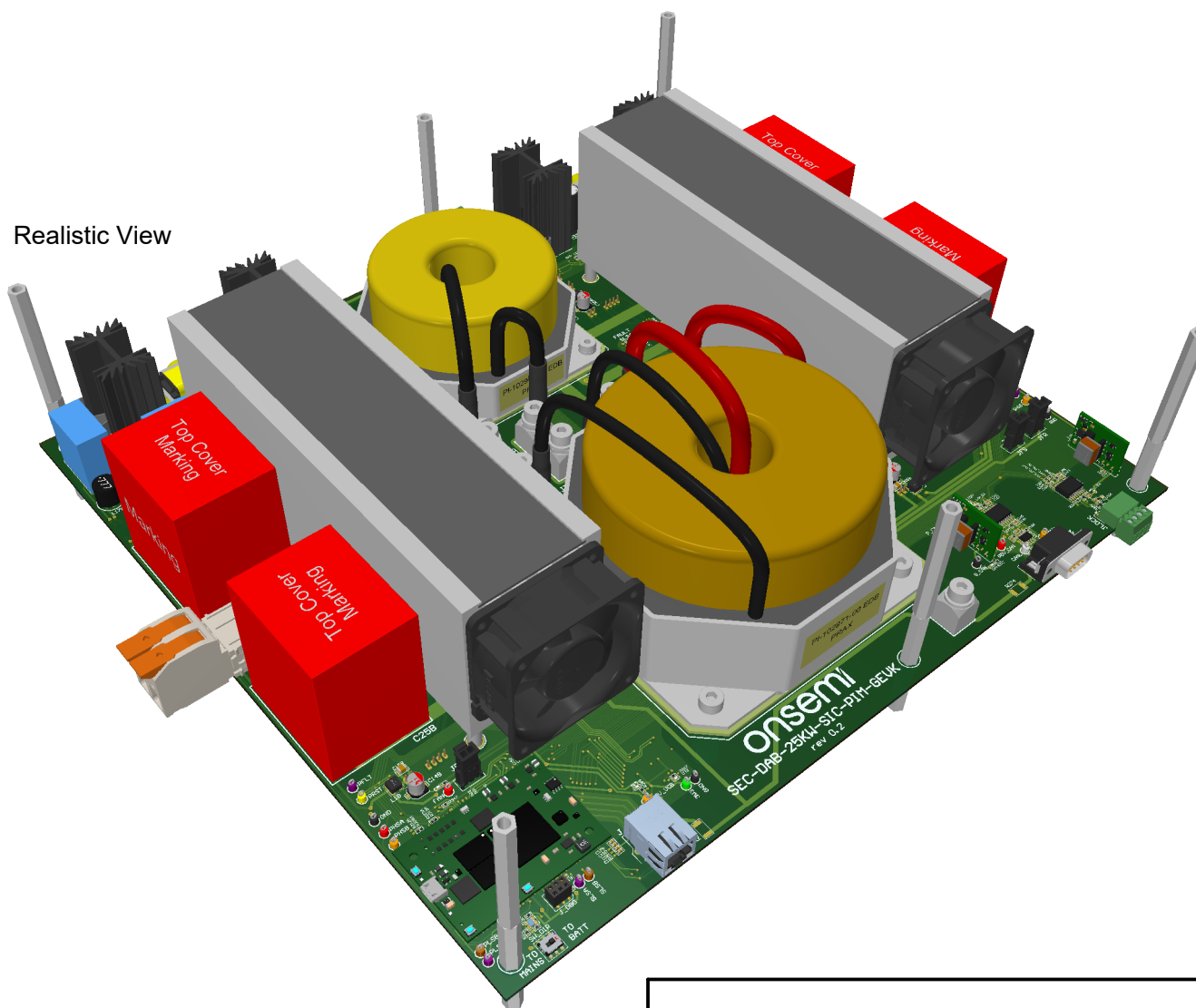
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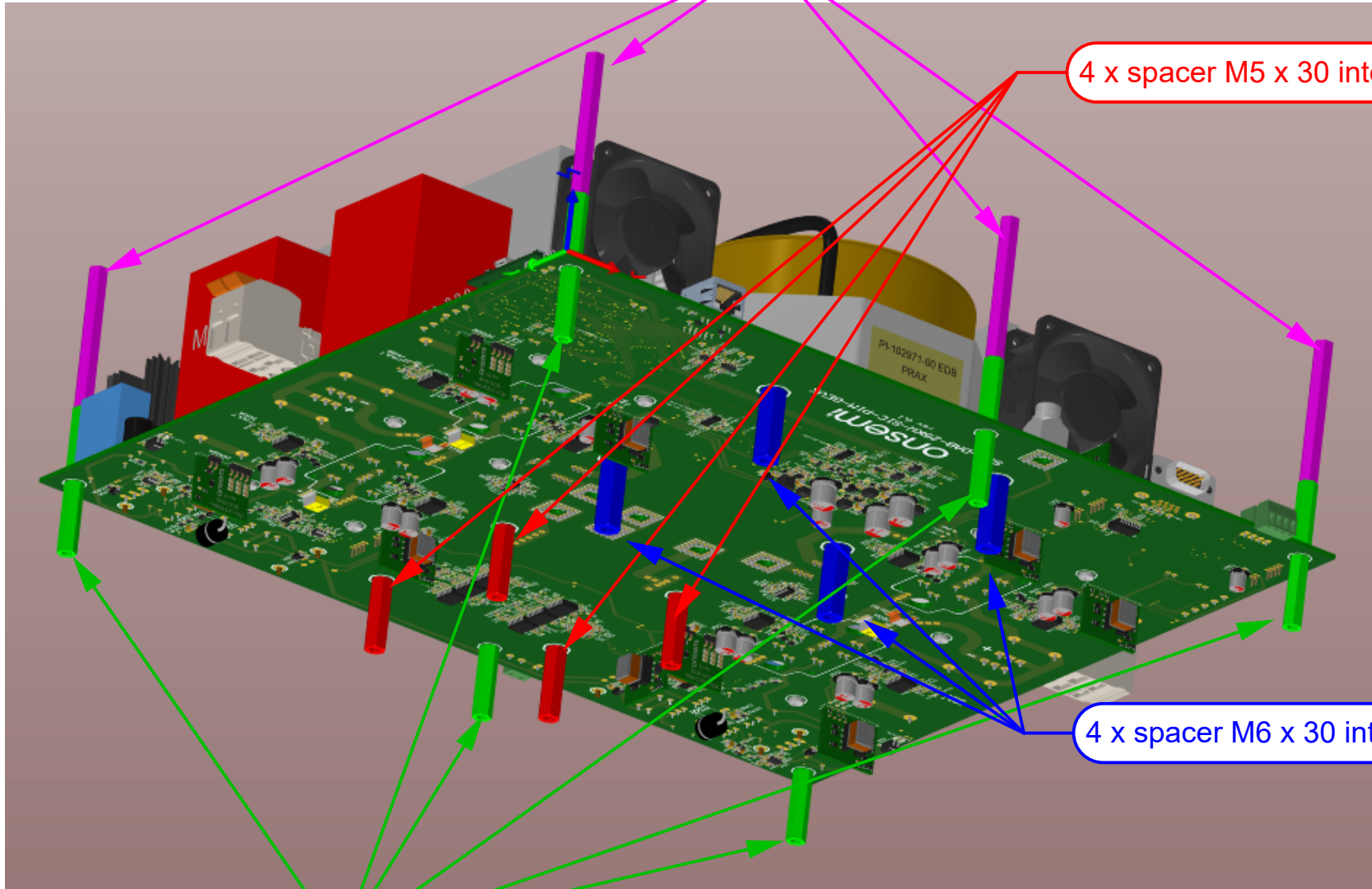
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# PCB mechanical support



12 x spacer M4 x 30  
external / internal thread

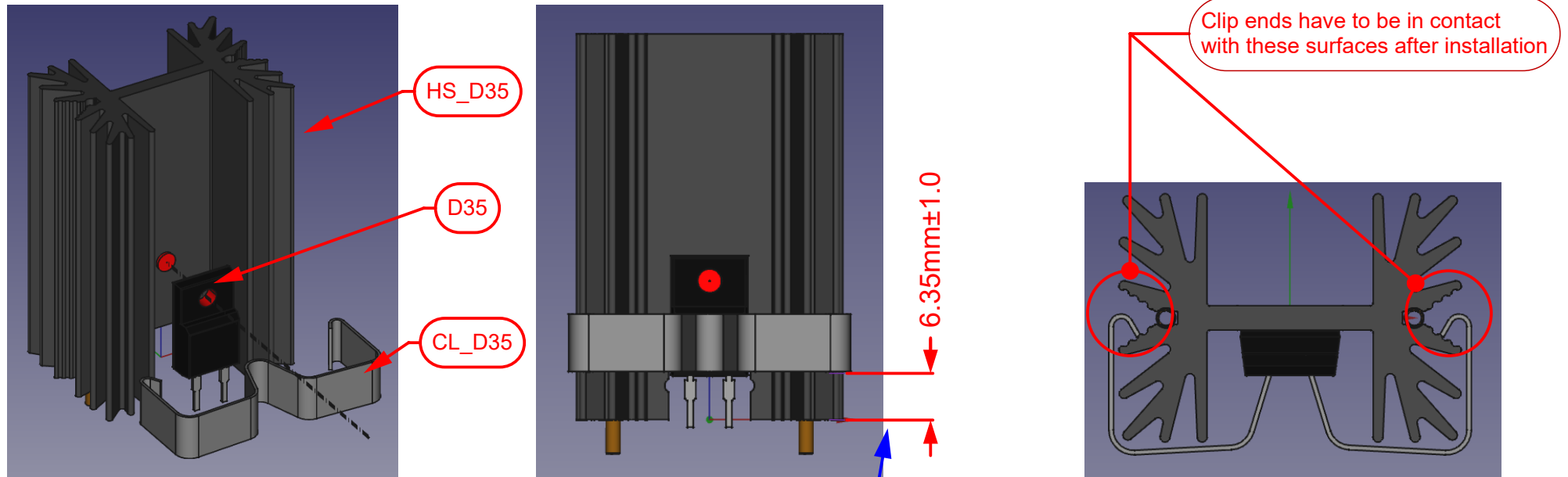
6 x spacer M4 x 60 internal / internal thread

4 x spacer M5 x 30 internal / internal thread

4 x spacer M6 x 30 internal / internal thread

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# D35 assembly



Installation sequence:

1. Apply thin layer of thermal paste on D35.
2. Put D35 onto HS\_D35, while hole in D35 is aligned with notch on HS\_D35 heatsink !  
The notch is ONLY on one side of the heatsink !
3. Instal CL\_D35 clip to fix D35 on heatsink. Clip has to be vertically located as in middle picture, its ends need to be in contact with surface shown in right picture.
4. Solder HS\_D35 with D35 into the PCB.

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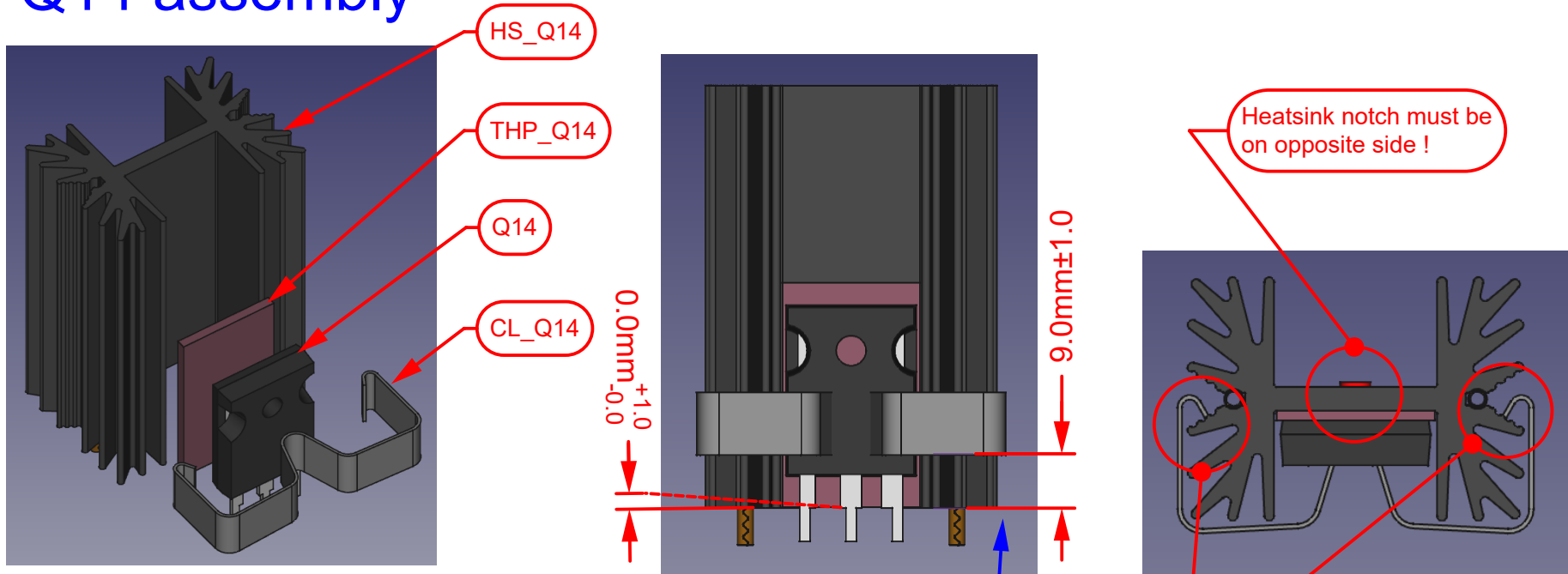
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# Q14 assembly



## Installation sequence:

1. Put thermal pad THP\_Q14 (cut out 16.5 x 27mm) on the heatsink. Its bottom end shall be aligned to heatsink bottom edge.
2. Put Q14 onto HS\_Q14 so that PINS SEATING FACE IS VERTICALLY ALIGNED with heatsink BOTTOM surface ! Q14 has to be installed on heatsink SIDE WITHOUT notch !
3. Instal CL\_Q14 clip to fix Q14 on heatsink. Clip has to be vertically located as in middle picture, its ends need to be in contact with surface shown in right picture.
4. Solder HS14 with Q14 into the PCB.

## SEC-DAB-25KW-SIC-PIM-GEVK

Variant name: standard\_board

Engineer: Stefan Kosterec

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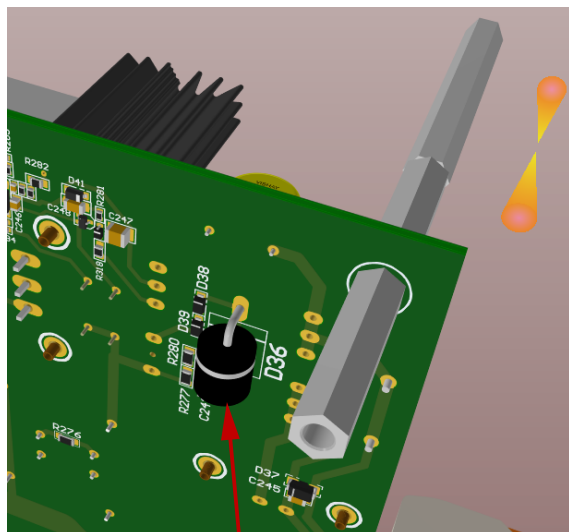
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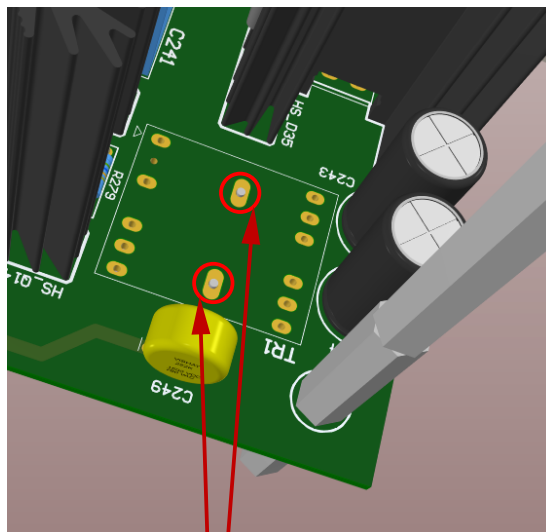
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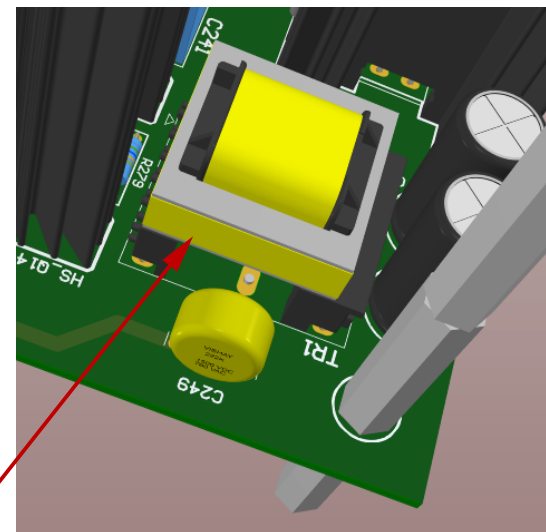
# D36 and TR1 assembly sequence



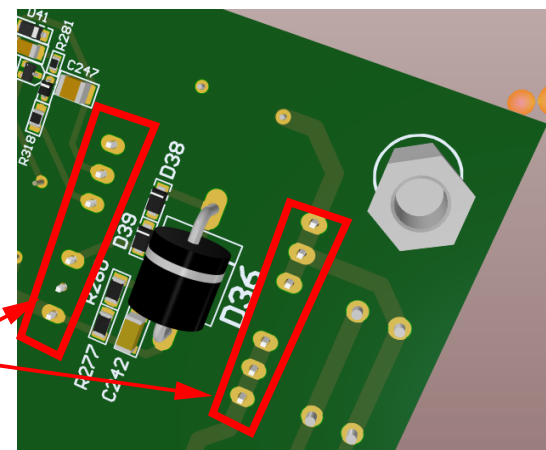
Step 1. Insert D36 from BOTTOM side



Step 2. Solder D36 from TOP side



Step 3. Insert TR1 from TOP side



Step 4. Solder TR1 from BOTTOM side

**SEC-DAB-25KW-SIC-PIM-GEVK**

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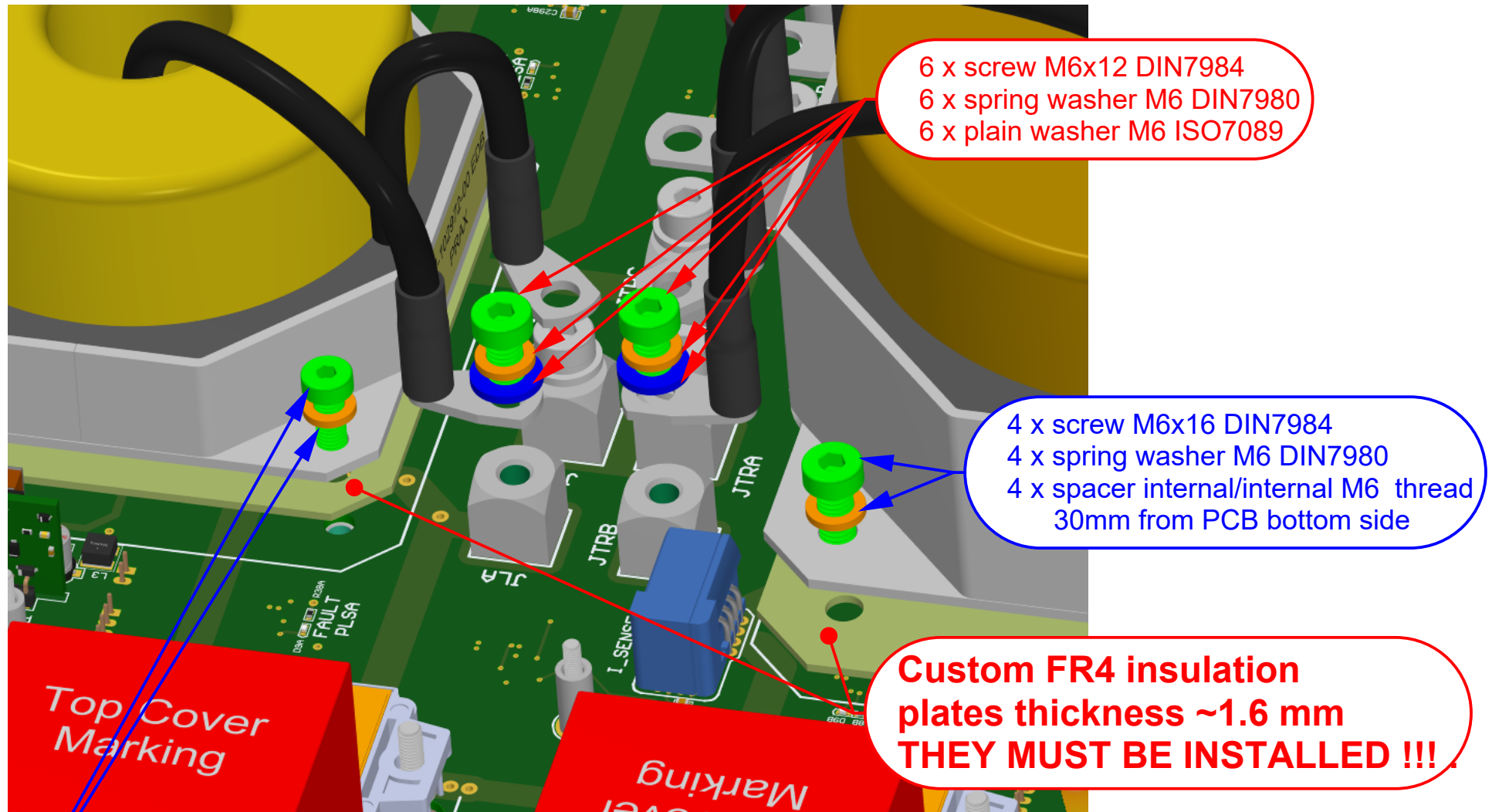
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# Transformer and inductor fixing, Red cube terminals



## SEC-DAB-25KW-SIC-PIM-GEVK

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Engineer: Stefan Kostrec

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State:  
released

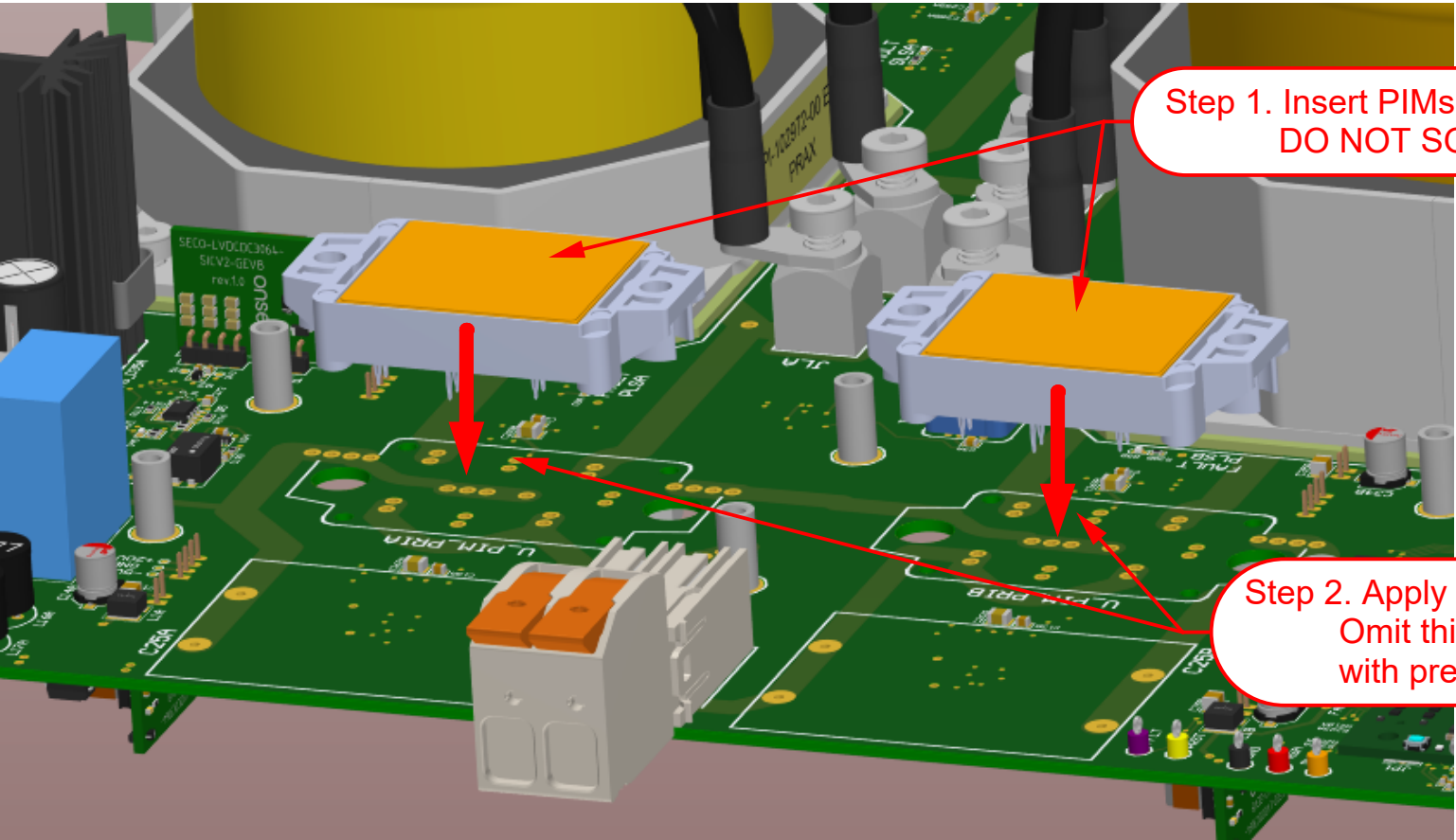
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# PIM installation: Steps 1 & 2 / 8

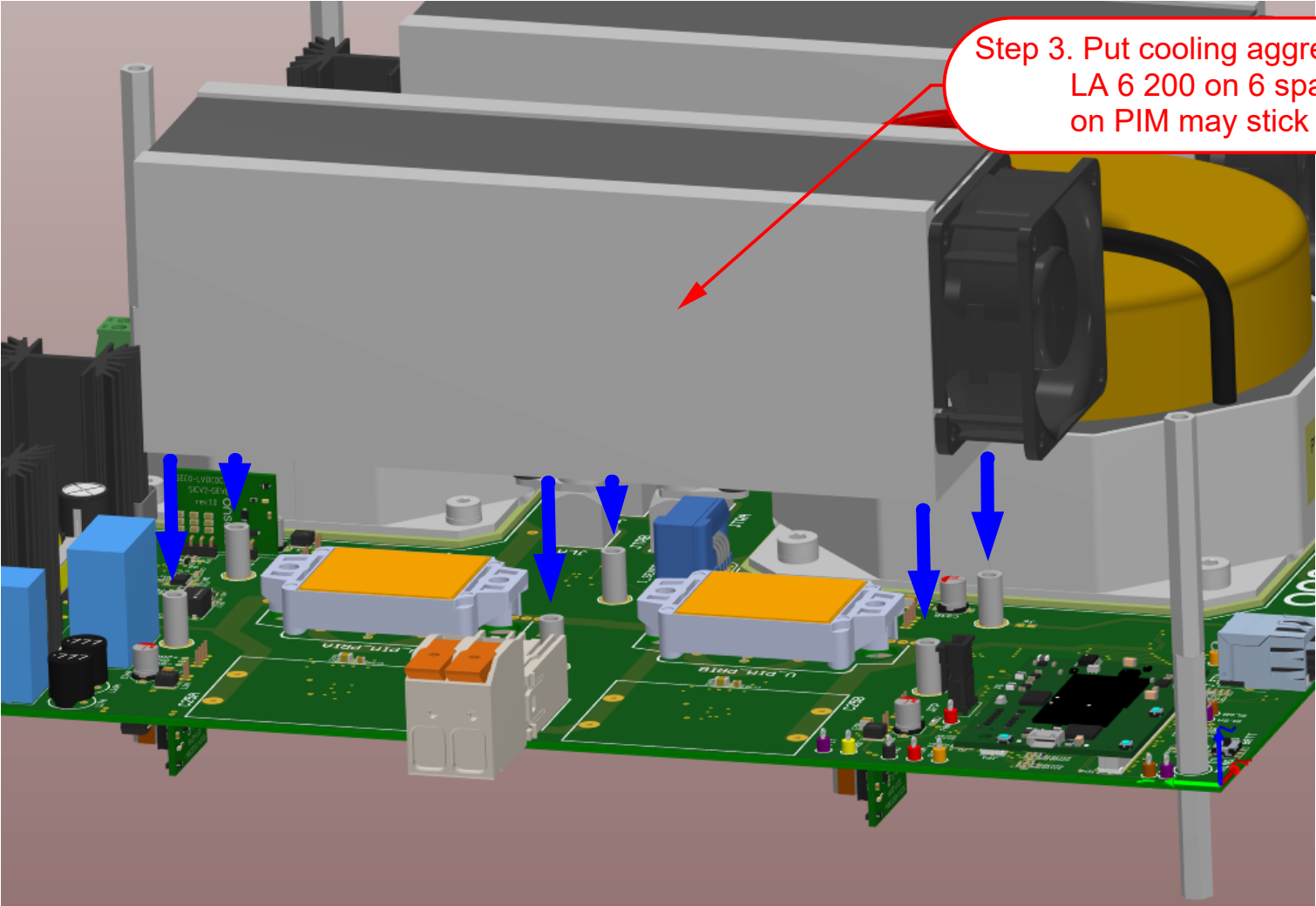


Step 1. Insert PIMs into the PCB from TOP side.  
DO NOT SOLDER THEM YET !

Step 2. Apply thermal grease  $80 \div 100 \mu\text{m}$ .  
Omit this step in case of PIMs with pre-applied thermal interface.

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PCB File: E066_DAB.PcbDoc		<div>onsemi</div> <div>PSG Systems Applications Solutions Engineering</div>	
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# PIM installation: Step 3 / 8

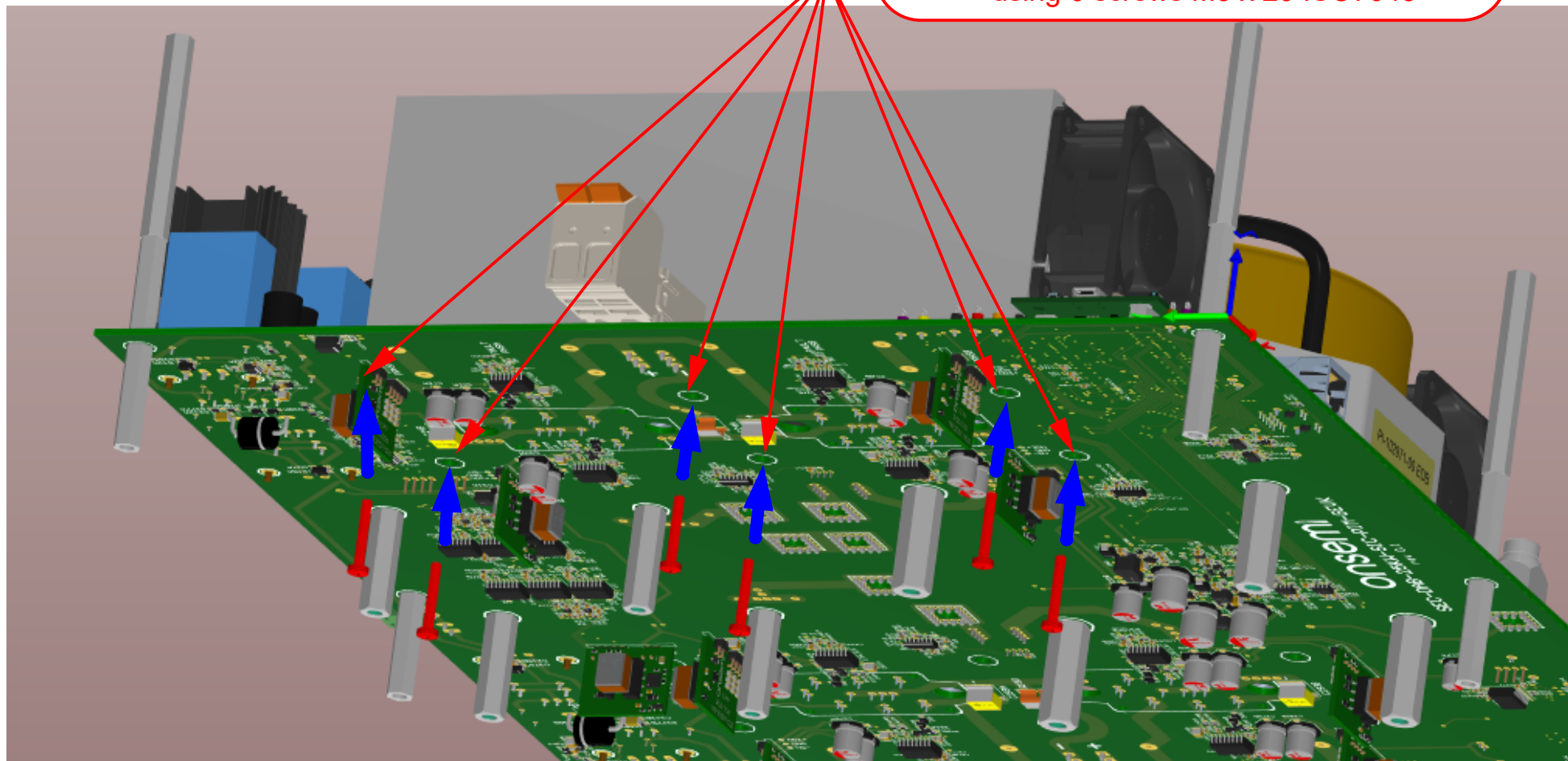


SEC-DAB-25KW-SIC-PIM-GEVK		Revision: 0.2	State: released
Variant name: standard_board		Assembly document	Sheet 13 / 17
Engineer: Stefan Kosterec	Date: 19.Sep 2022 18:42		
PCB File: E066_DAB.PcbDoc		<div>onsemi</div> <div>PSG Systems Applications Solutions Engineering</div>	
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## PIM installation: Step 4 / 8

Step 4. Fix cooling aggregate to PCB assembly  
using 6 screws M3 x 20 ISO7045



Torque 0.5 ÷ 0.7 Nm

**SEC-DAB-25KW-SIC-PIM-GEVK**

Revision:  
**0.2**

State:  
**released**

Variant name: standard\_board

Assembly  
document

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Engineer: Stefan Kosterec

Date: 19.Sep 2022 18:42

PCB File: E066\_DAB.PcbDoc

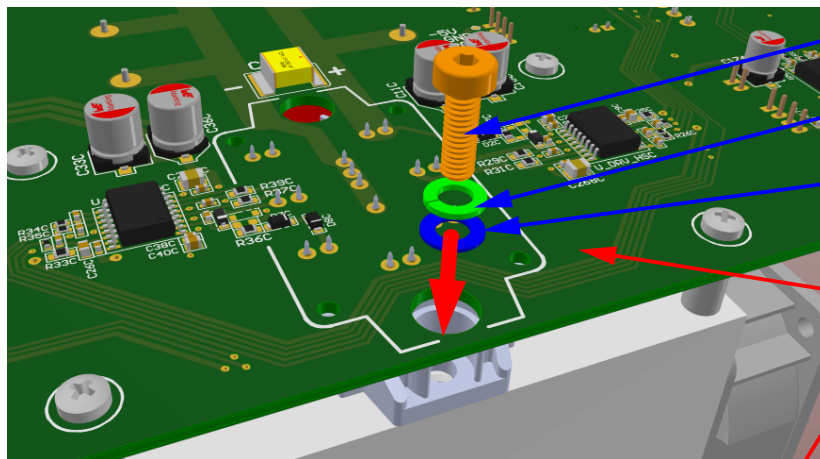
Repository revision: 2915

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# PIM installation: Step 5 / 8

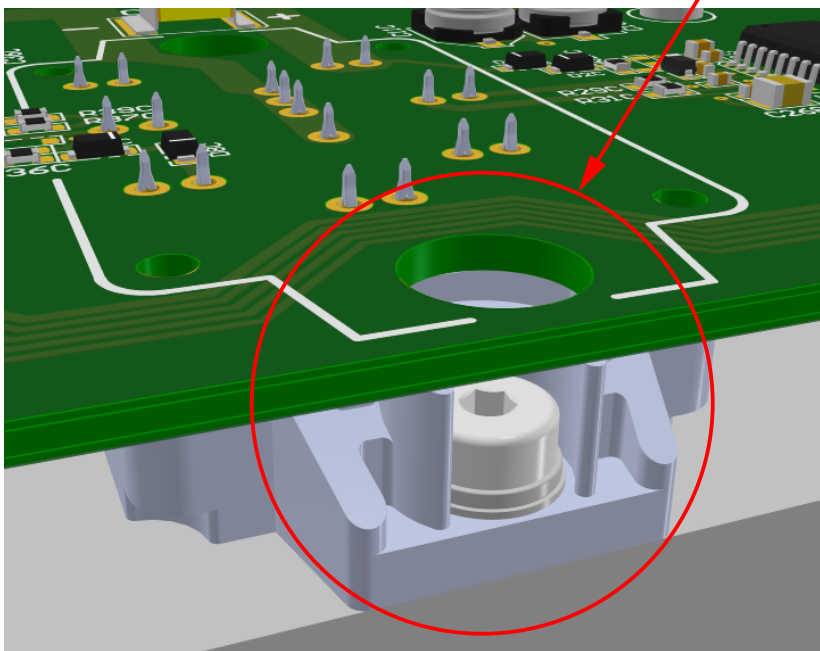


Screw M4 x 12 inhex low head DIN7984

Spring washer M4 DIN127B

Plain washer M4 DIN433

Step 5. Install one screw with relevant washers  
DO NOT TIGHTEN IT YET !  
Screw it in just up to the light contact with PIM.



**SEC-DAB-25KW-SIC-PIM-GEVK**

Revision:  
**0.2**

State:  
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Variant name: standard\_board

Assembly  
document

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Engineer: Stefan Kosterec

Date: 19.Sep 2022 18:42

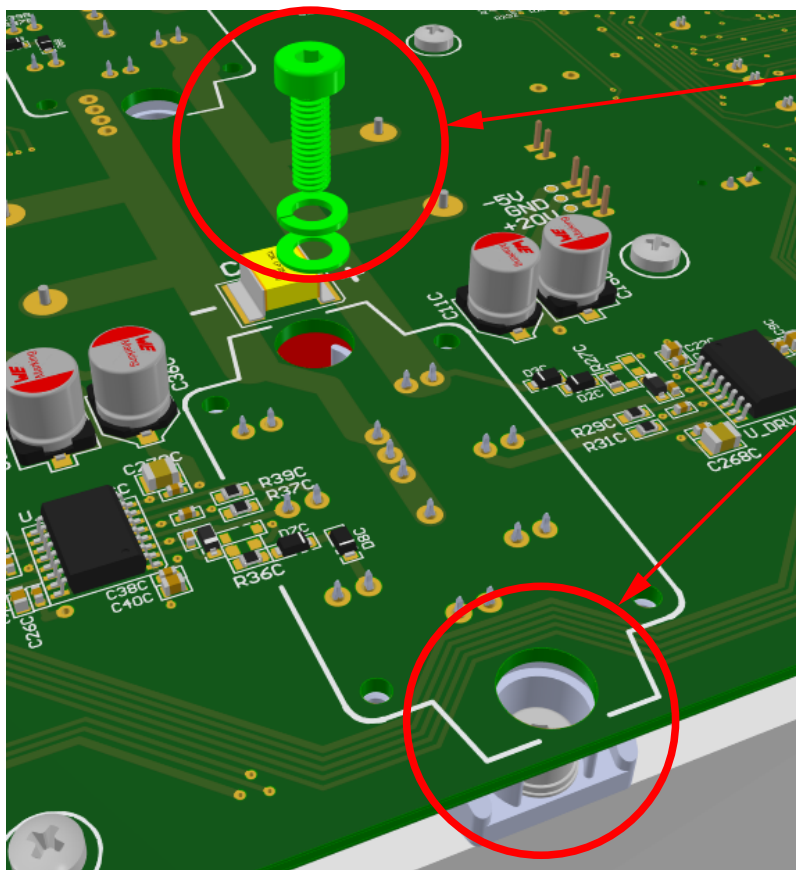
PCB File: E066\_DAB.PcbDoc

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## PIM installation: Steps 6 & 7 / 8



Step 6. Install next screw with relevant washers  
Tighten it to the final torque  $2.0 \div 2.4$  Nm.

Step 7. Tighten also first screw to the final torque  $2.0 \div 2.4$  Nm.

### SEC-DAB-25KW-SIC-PIM-GEVK

Revision:  
**0.2**

State:  
**released**

Variant name: standard\_board

Assembly  
document

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Engineer: Stefan Kosterec

Date: 19.Sep 2022 18:42

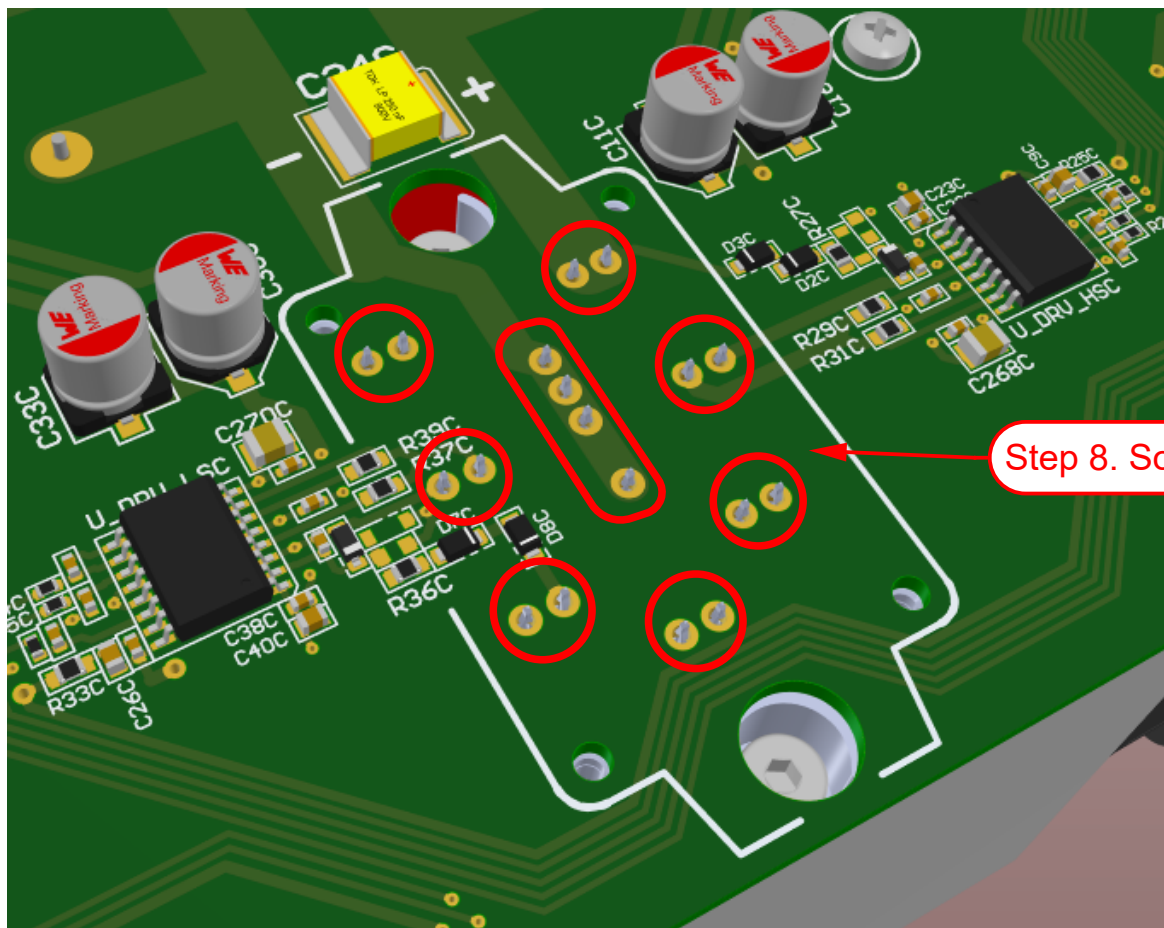
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# PIM installation: Step 8 / 8



Step 8. Solder PIM into the PCB from BOTTOM side

## SEC-DAB-25KW-SIC-PIM-GEVK

Revision:  
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Variant name: standard\_board

Assembly  
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Engineer: Stefan Kosterec

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