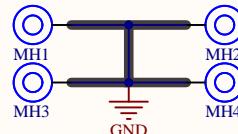
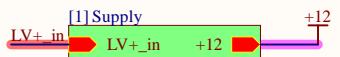
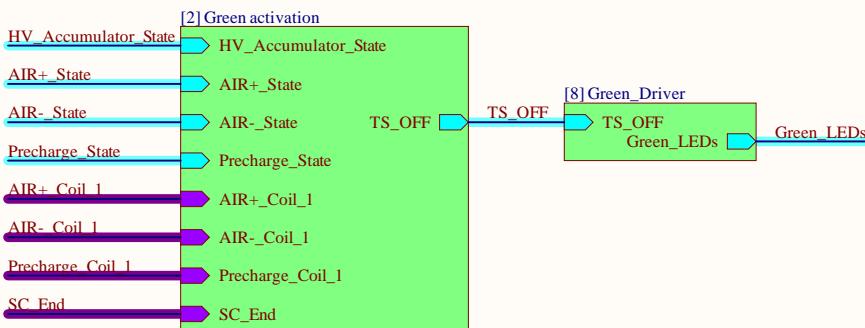


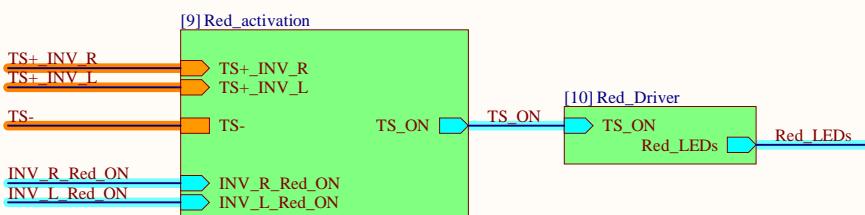
A



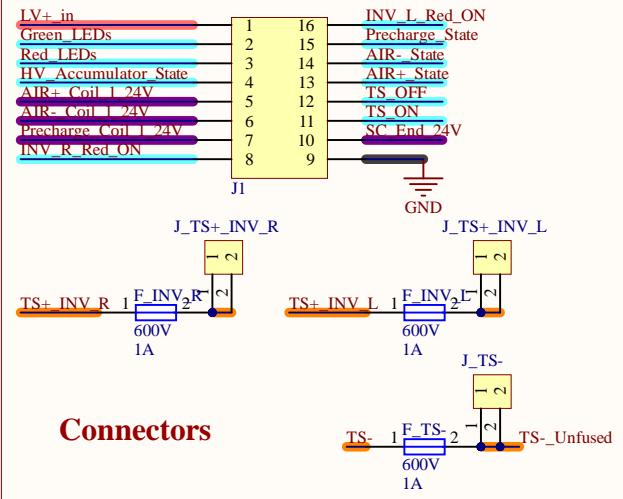
B



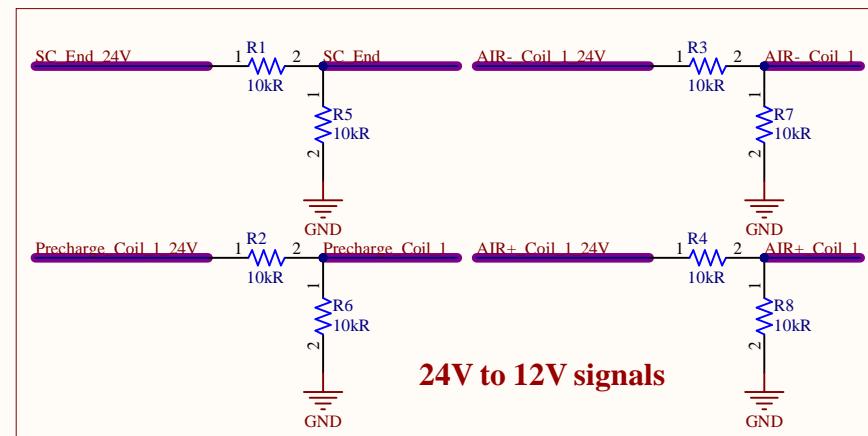
| Signal | 12V | 1V | 0V |
|----------------------|------------------------------|-----------------------------------|-----------------|
| Relay_AUX | relay is open | relay is closed | broken wire |
| HV_Accumulator_State | no voltage in accumulator | more than 60VDC in accumulator | broken wire |
| Relay_Coil_1 | relay is open | N/A | relay is closed |
| INV_X_Red_ON | no voltage in inverters' box | more than 60VDC in inverters' box | broken wire |



Cyan: External signal
Orange: High Voltage
Red: Untreated supply
Pink: Treated supply
Purple: Shutdown chain



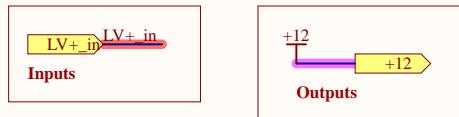
Connectors



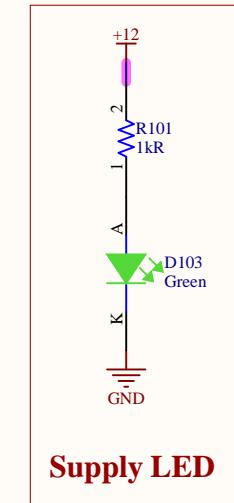
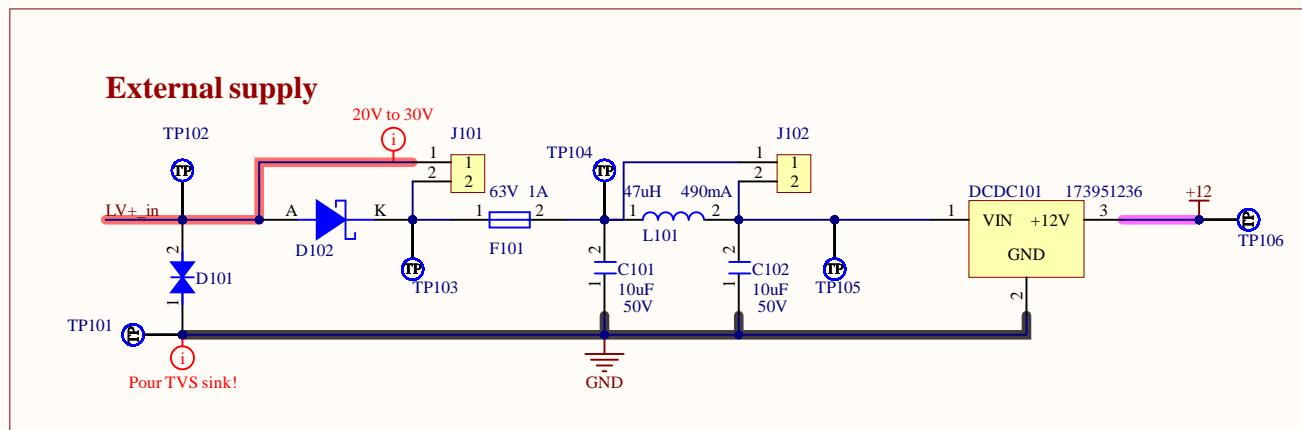
24V to 12V signals

| | | | |
|-------------|---------------------------------------|--------------------------|------------------|
| Company: | e-Tech Racing | e-techracing.es | |
| Project: | TSAL_Control | Variant: [No Variations] | |
| Size: | Page Contents: TSAL_Control.SchDoc | Version: 5.0 | |
| - | | Department: Powertrain | |
| Author: | David Redondo | dredondovinolo@gmail.com | Sheet 1 of 11 |
| Checked by: | David Redondo | | Date: 13/01/2023 |

A



B

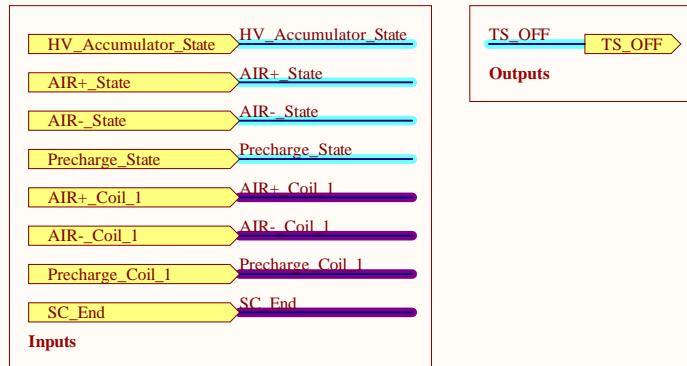


C

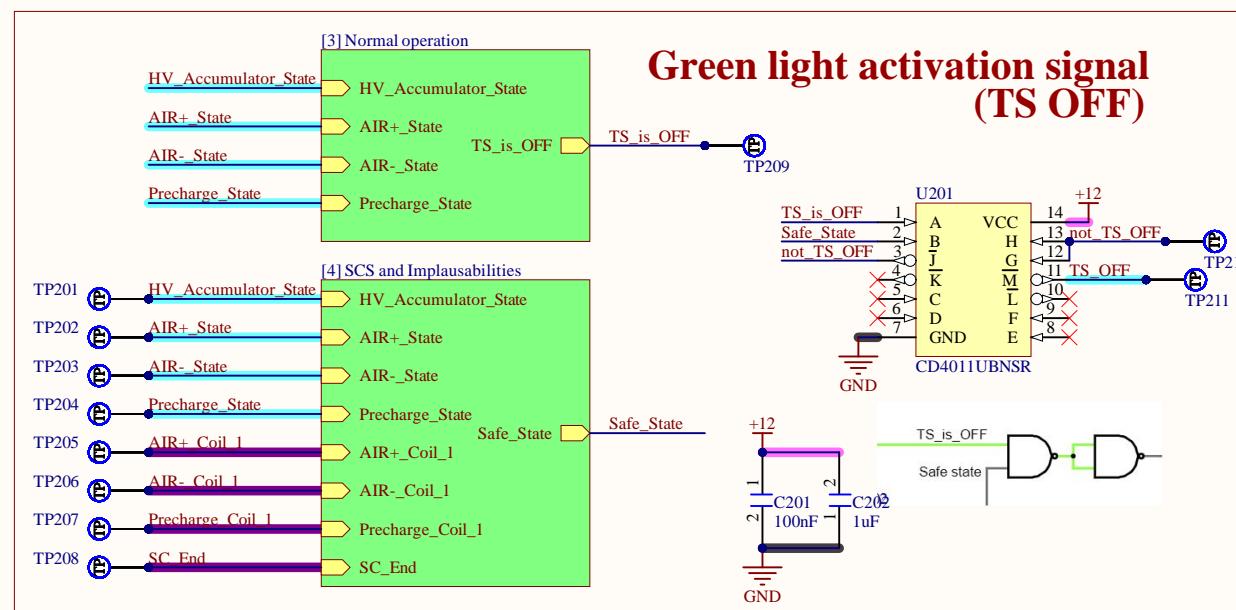
D

| | | | |
|-------------|------------------------------------|--------------------------|---|
| Company: | e-Tech Racing | e-techracing.es |  |
| Project: | TSAL_Control | Variant: [No Variations] | |
| Size: | Page Contents: [1]Supply.SchDoc | Version: 5.0 | |
| - | | Department: Powertrain | |
| Author: | David Redondo | dredondovinolo@gmail.com | Sheet 2 of 11 |
| Checked by: | David Redondo | | Date: 13/01/2023 |

A



B

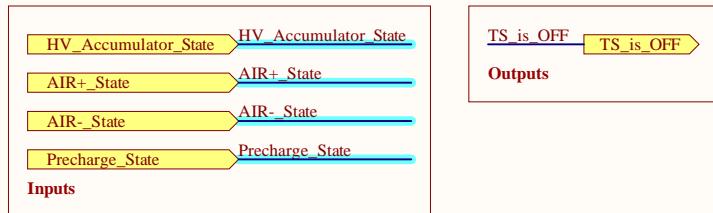


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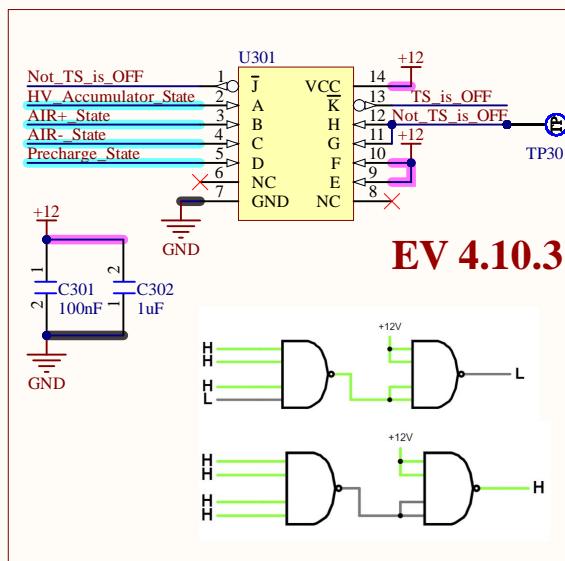
D

| | | | |
|-------------|--|--------------------------|---|
| Company: | e-Tech Racing | e-techracing.es |  |
| Project: | TSAL_Control | Variant: [No Variations] | |
| Size: | Page Contents: [2]Green activation.SchDoc | Version: 5.0 | |
| - | | Department: Powertrain | |
| Author: | David Redondo | dredondovinolo@gmail.com | Sheet 3 of 11 |
| Checked by: | David Redondo | | Date: 13/01/2023 |

A



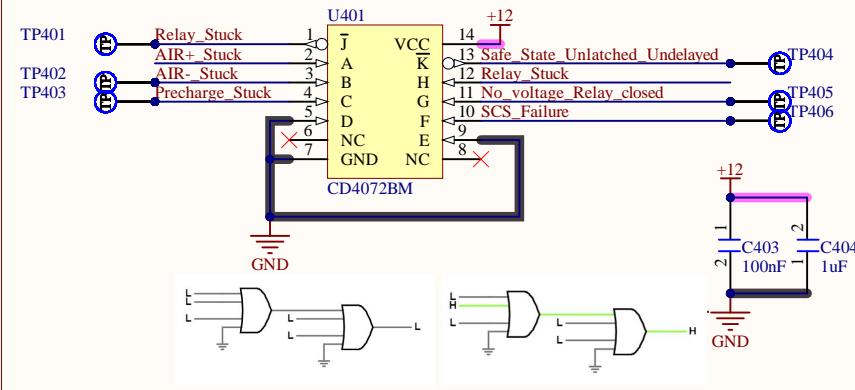
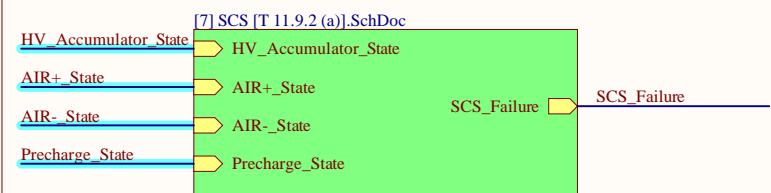
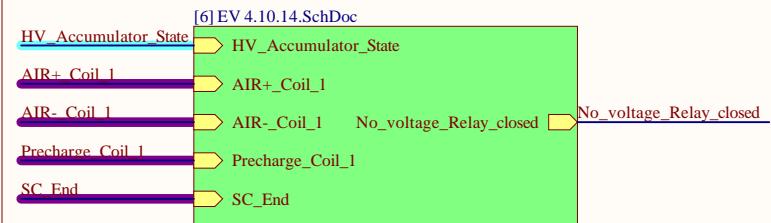
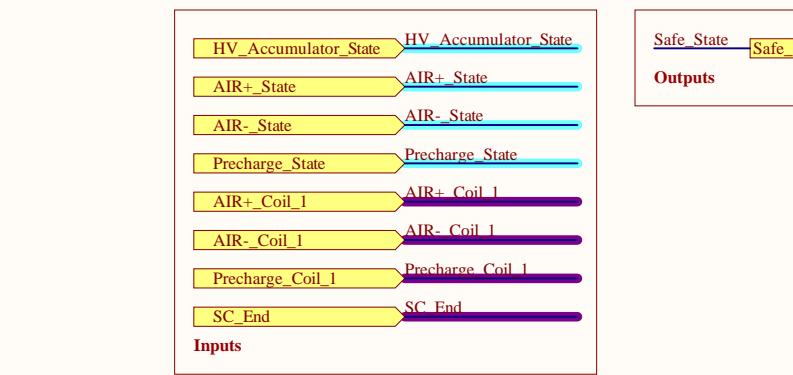
B



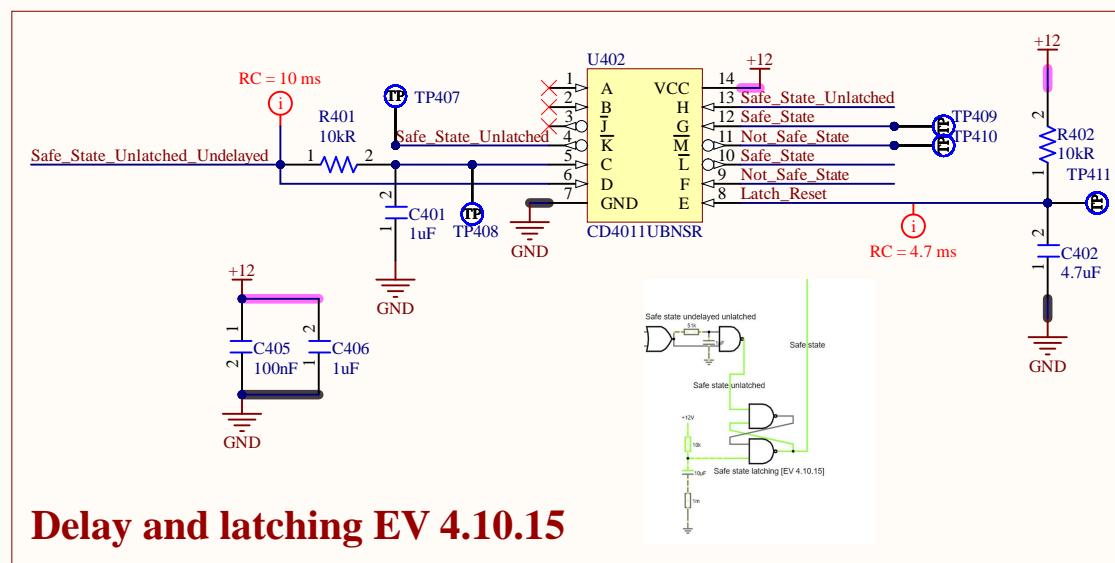
C

D

| | | | |
|-------------|--|--------------------------|---|
| Company: | e-Tech Racing | e-techracing.es |  |
| Project: | TSAL_Control | Variant: [No Variations] | |
| Size: | Page Contents: [3]Normal.operation.SchDoc | Version: 5.0 | |
| - | | Department: Powertrain | |
| Author: | David Redondo | dredondovinolo@gmail.com | Sheet 4 of 11 |
| Checked by: | David Redondo | | Date: 13/01/2023 |



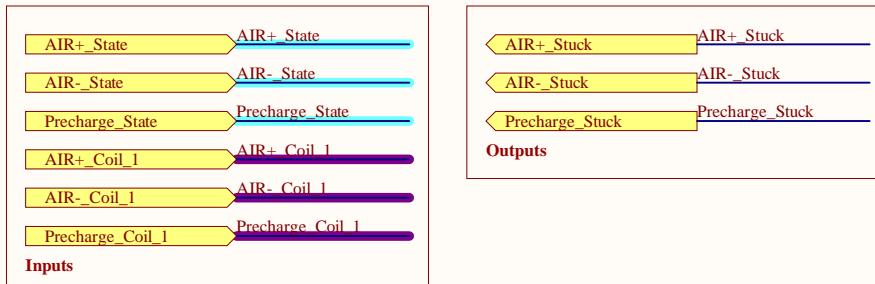
Implausibilities merging



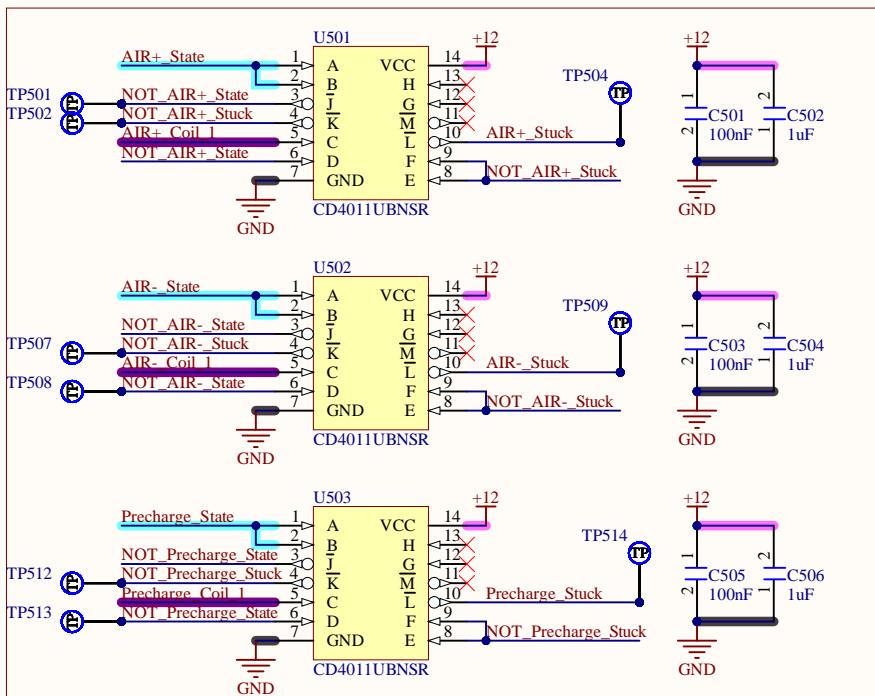
Delay and latching EV 4.10.15

| | | | |
|-------------|--|--------------------------|------------------|
| Company: | e-Tech Racing | e-techracing.es | |
| Project: | TSAL_Control | Variant: [No Variations] | |
| Size: | Page Contents: [4]SCS and Implausibilities.SchDoc | Version: 5.0 | |
| - | | Department: Powertrain | |
| Author: | David Redondo | dredondovinolo@gmail.com | Sheet 5 of 11 |
| Checked by: | David Redondo | | Date: 13/01/2023 |

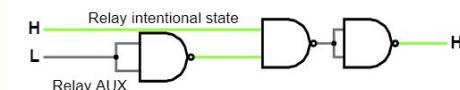
A



B



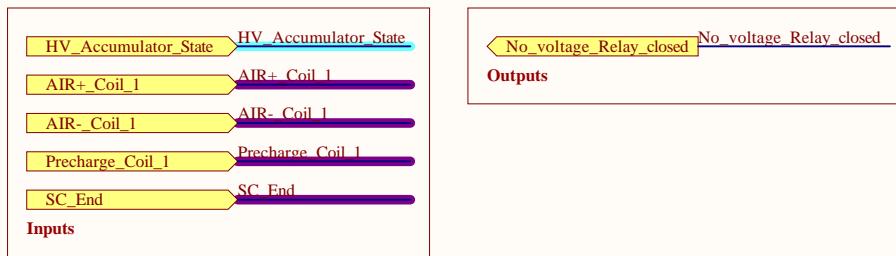
C



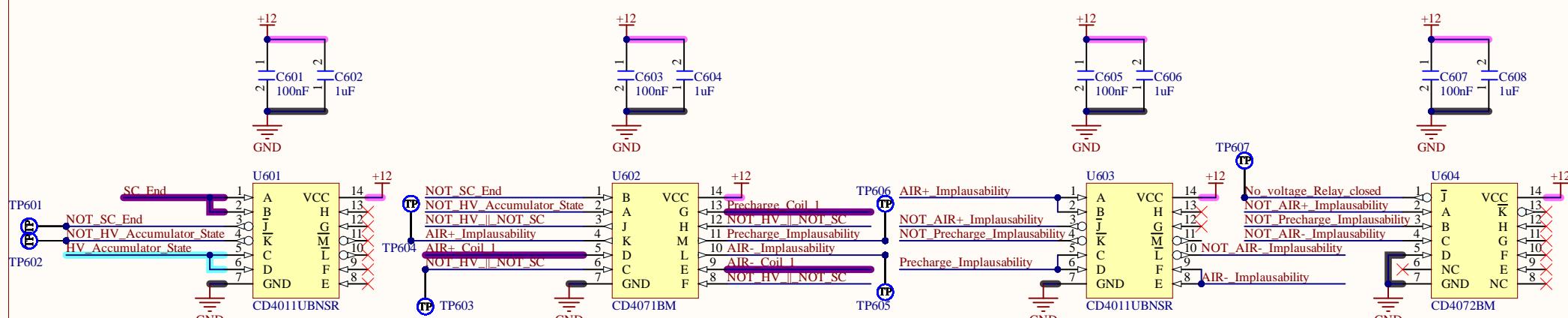
**Relay state is closed but intentional state is open
EV 4.10.13**

| | | | |
|-------------|--|--------------------------|---|
| Company: | e-Tech Racing | e-techracing.es |  |
| Project: | TSAL_Control | Variant: [No Variations] | |
| Size: | Page Contents: [5]EV 4.10.13.SchDoc | Version: 5.0 | |
| - | | Department: Powertrain | |
| Author: | David Redondo | dredondovinolo@gmail.com | Sheet 6 of 11 |
| Checked by: | David Redondo | | Date: 13/01/2023 |

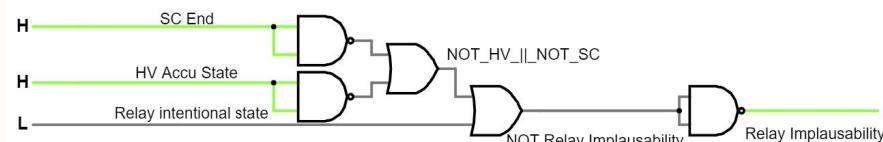
A



B



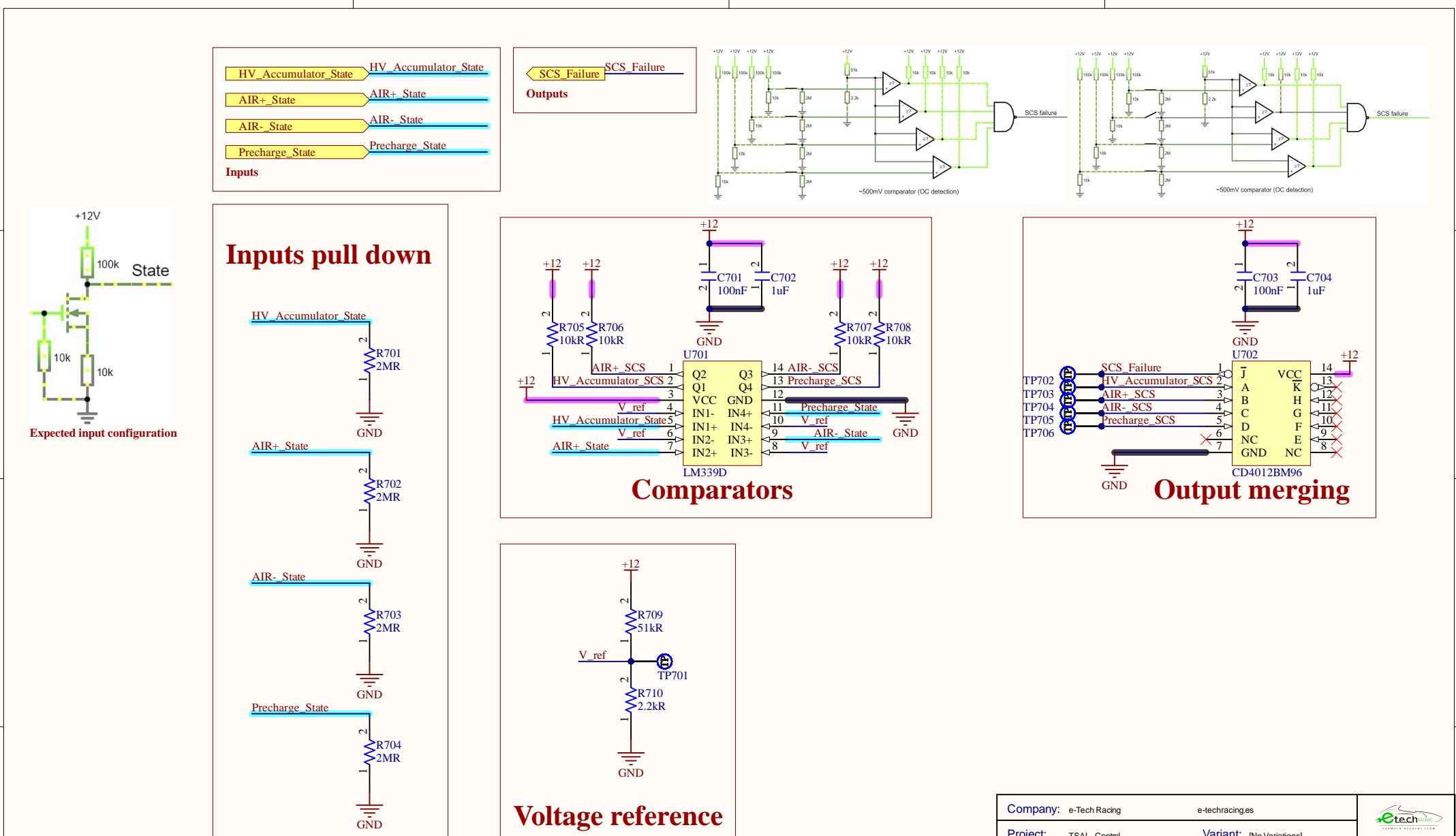
SC is closed, intentional state is closed but no voltage is present [EV 4.10.14]



NOT_HV || NOT_SC is common for the three relays

D

| | | | |
|-------------|--|--------------------------|------------------|
| Company: | e-Tech Racing | e-techracing.es | |
| Project: | TSAL_Control | Variant: [No Variations] | |
| Size: | Page Contents: [6]EV 4.10.14.SchDoc | Version: 5.0 | |
| | | Department: Powertrain | |
| Author: | David Redondo | dredondovinolo@gmail.com | Sheet 7 of 11 |
| Checked by: | David Redondo | | Date: 13/01/2023 |



| | | | |
|-------------|---|--------------------------|---|
| Company: | e-Tech Racing | e-techracing.es |  |
| Project: | TSAL_Control | Variant: [No Variations] | |
| Size: | Page Contents: [?]SCS[T 11.9.2 (a)].SchDoc | Version: 5.0 | |
| - | | Department: Powertrain | |
| Author: | David Redondo | dredondovinolo@gmail.com | Sheet 8 of 11 |
| Checked by: | David Redondo | | Date: 13/01/2023 |

A

A

B

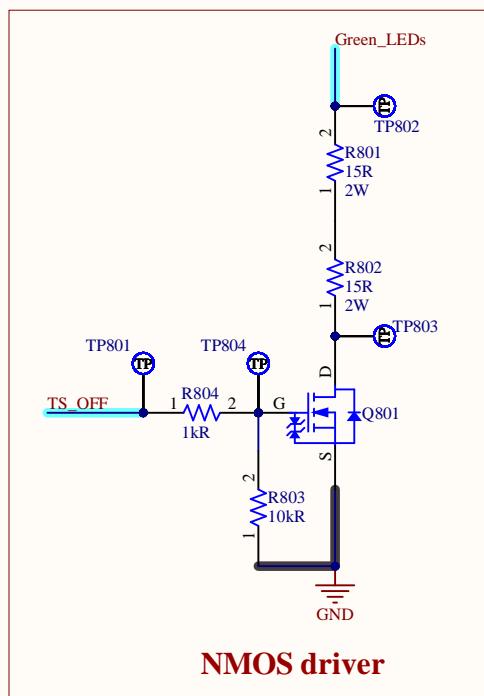
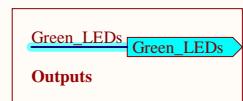
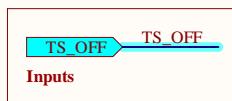
B

C

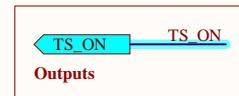
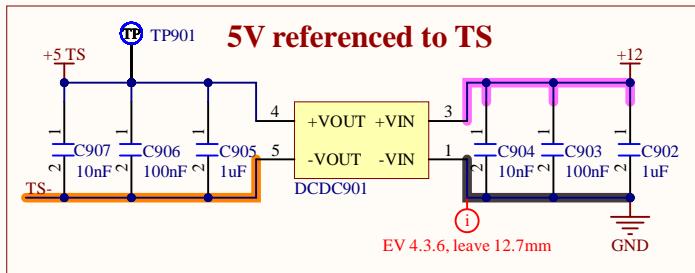
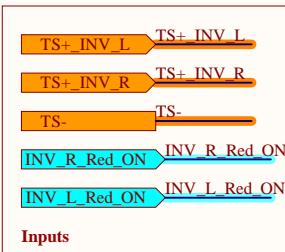
C

D

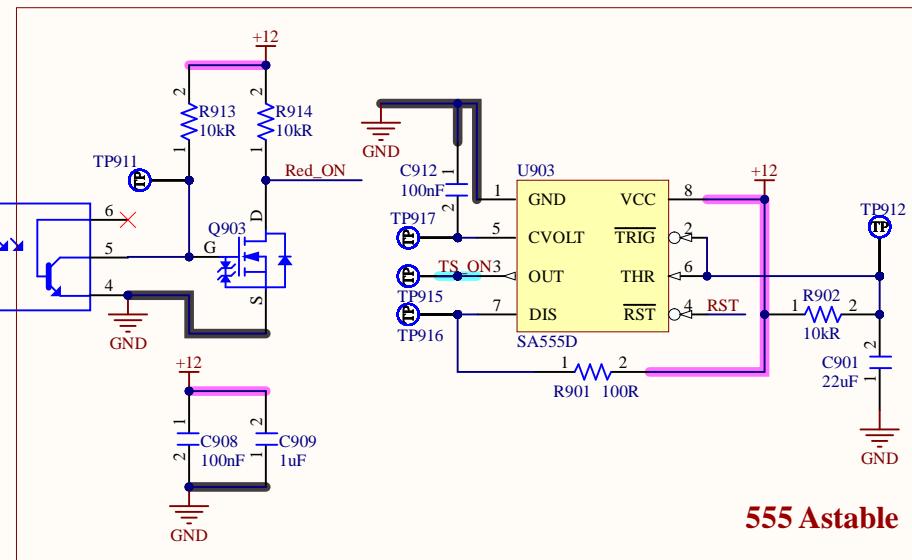
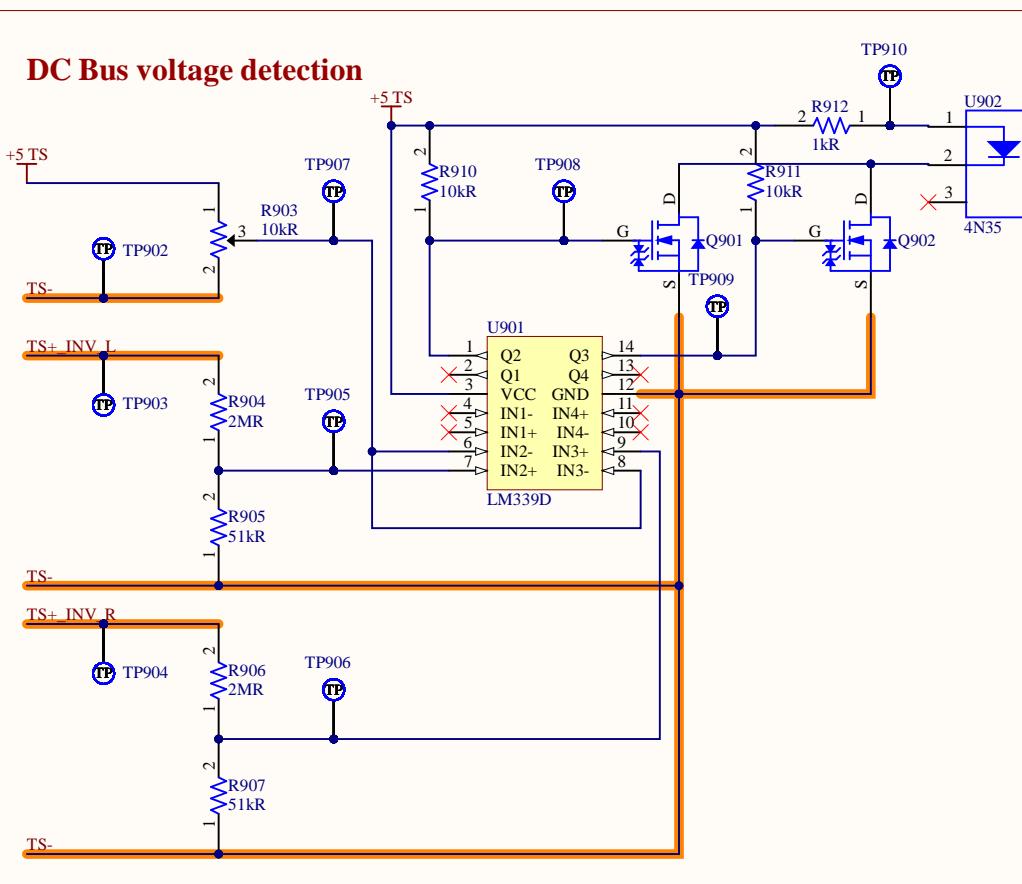
D



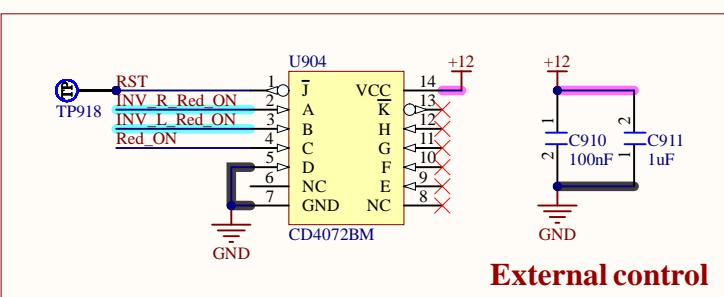
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|-------------|---|--------------------------|---|
| Company: | e-Tech Racing | e-techracing.es |  |
| Project: | TSAL_Control | Variant: [No Variations] | |
| Size: | Page Contents: [8] Green_Driver.SchDoc | Version: 5.0 | |
| - | | Department: Powertrain | |
| Author: | David Redondo | dredondovinolo@gmail.com | Sheet 9 of 11 |
| Checked by: | David Redondo | | Date: 13/01/2023 |



DC Bus voltage detection



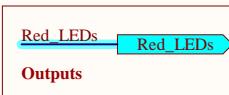
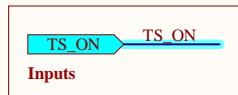
555 Astable



External control

| | | | |
|--------------------|--|---------------------------------|---|
| Company: | e-Tech Racing | e-techracing.es |  |
| Project: | TSAL_Control | Variant: [No Variations] | |
| Size: - | Page Contents: [9] Red_activation.SchDoc | Version: 5.0 | |
| | | Department: | Powertrain |
| Author: | David Redondo | dredondovinolo@gmail.com | Sheet 10 of 11 |
| Checked by: | David Redondo | Date: | 13/01/2023 |

A



B

C

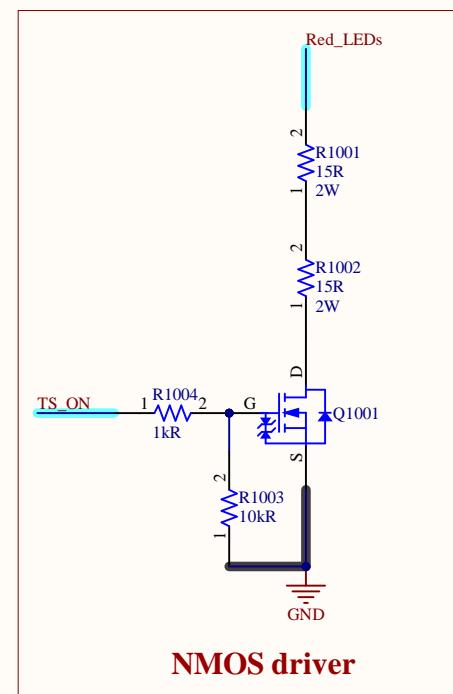
D

A

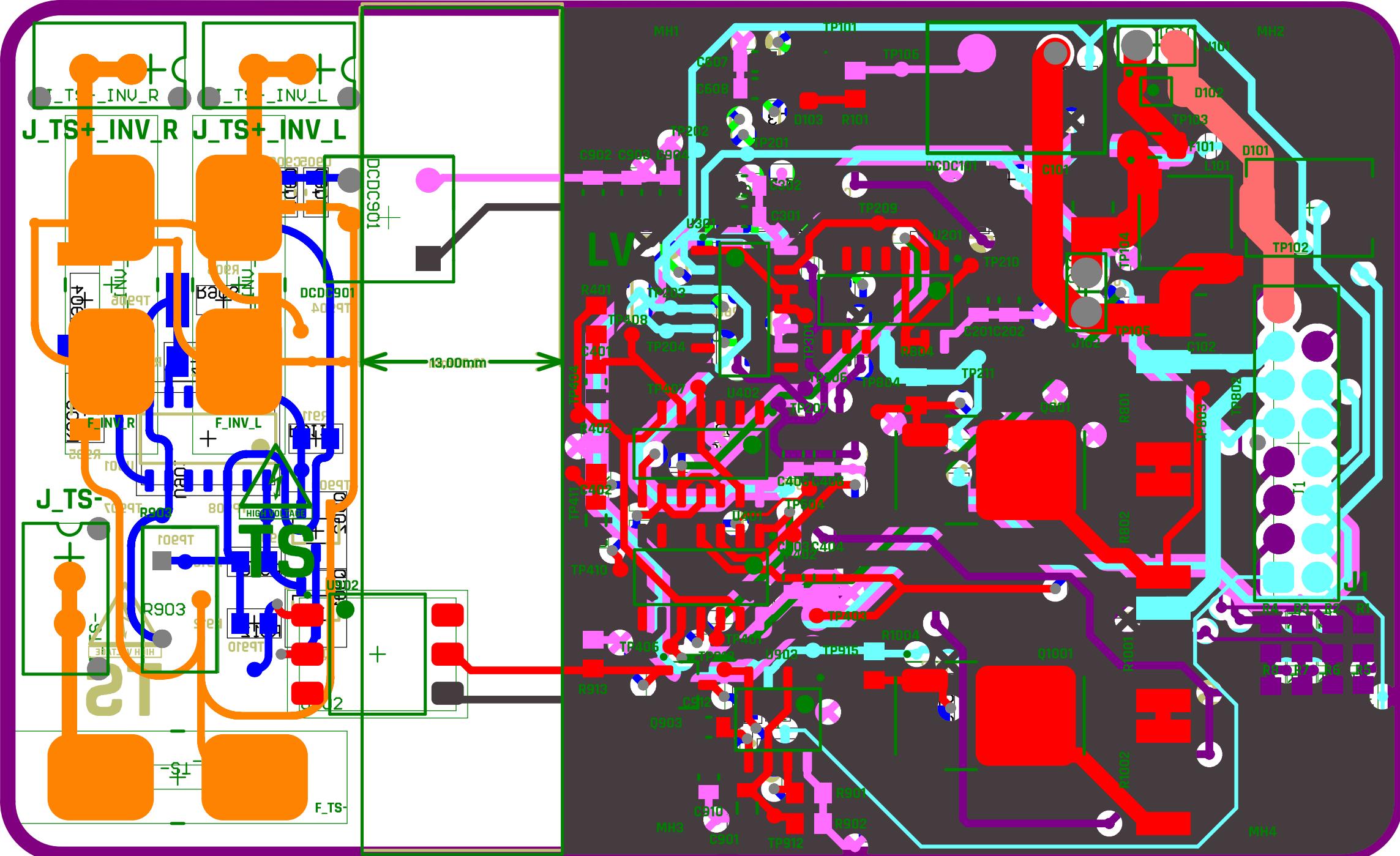
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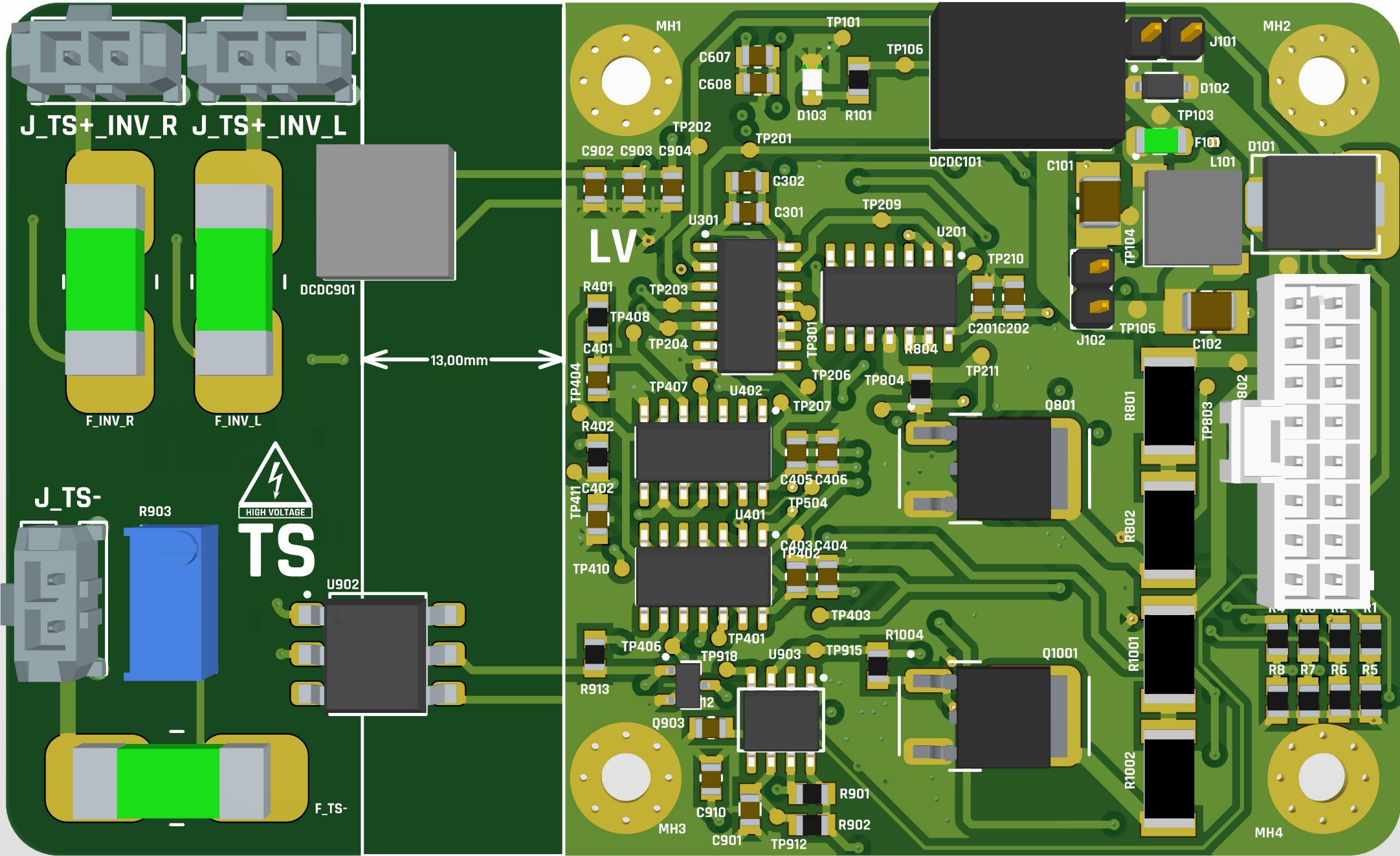
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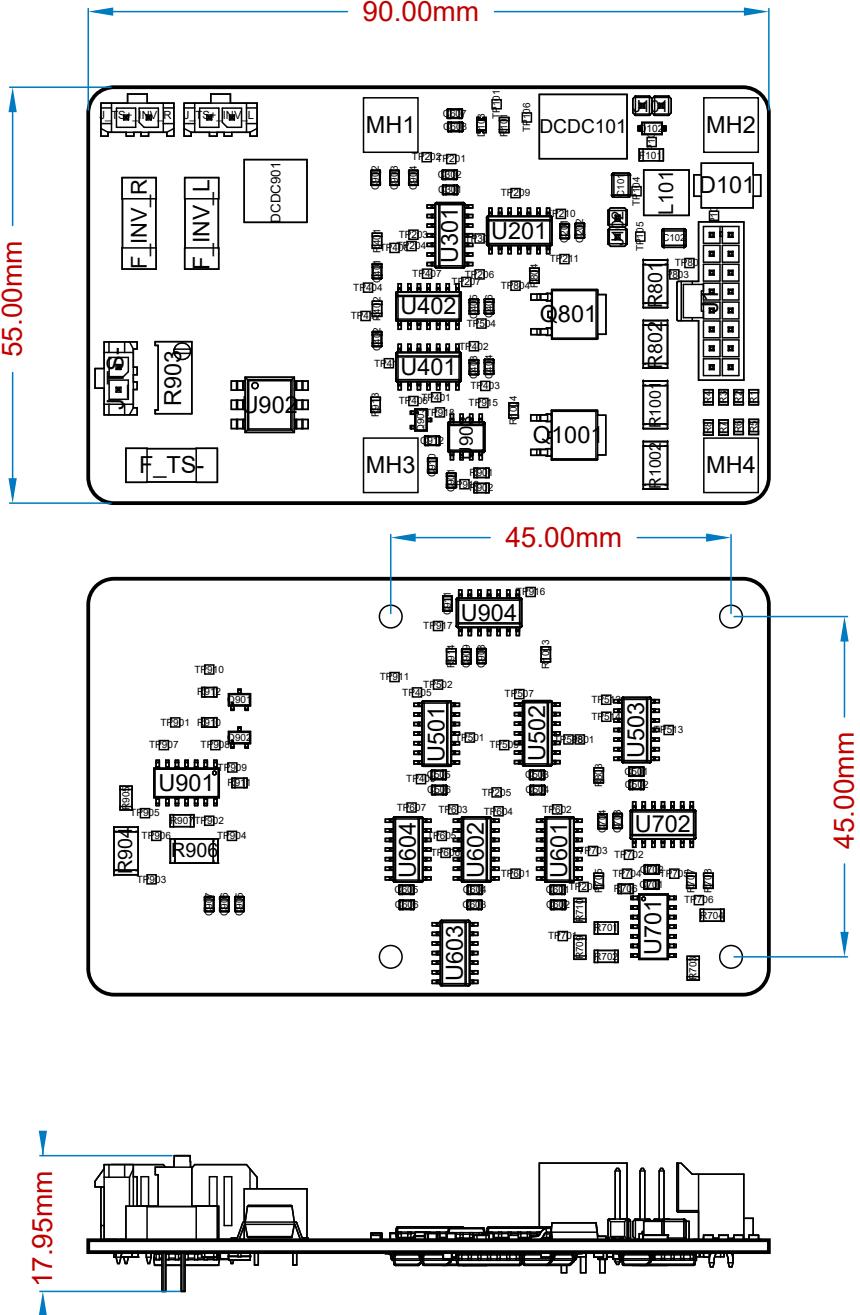
D



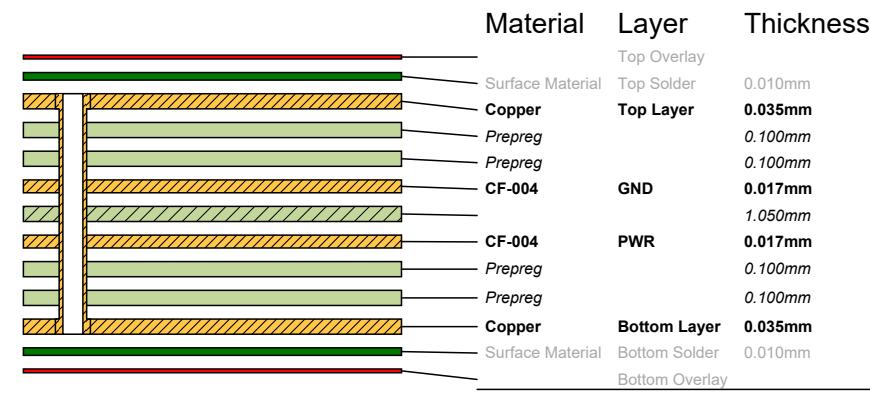
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| Project: | TSAL_Control | Variant: [No Variations] | |
| Size: | Page Contents: [10] Red_Driver.SchDoc | Version: 5.0 | |
| - | | Department: Powertrain | |
| Author: | David Redondo | dredondovinolo@gmail.com | Sheet 11 of 11 |
| Checked by: | David Redondo | | Date: 13/01/2023 |







| Designator | Name | Quantity |
|---|--------------------|----------|
| C101, C102 | GRJ32ER71H106KE11L | 2 |
| C201, C301, C403, C405, C501, C503, C505, C601, C603, C605, C607, C701, C703, C903, C906, C908, C910, C912 | 885012207098 | 18 |
| C202, C302, C401, C404, C406, C502, C504, C506, C602, C604, C606, C608, C702, C704, C902, C905, C909, C911 | 885012207103 | 18 |
| C402 | GRM219R61A475KE34D | 1 |
| C901 | 885012107011 | 1 |
| C904, C907 | 885012207092 | 2 |
| D101 | 824551301 | 1 |
| D102 | MBR0530 | 1 |
| D103 | 150080VS75000 | 1 |
| DCDC101 | 173951236 | 1 |
| DCDC901 | RNM-1205S/P | 1 |
| F101 | 0437001.WRA | 1 |
| F_INV_R, F_INV_L, F_TS- | 485001 | 3 |
| J1 | 1053101116 | 1 |
| J101, J102 | 61300211121 | 2 |
| J_TS-, J_TS+ INV_L, J_TS+ INV_R | 436500215 | 3 |
| L101 | CDC5D23BNP-470KC | 1 |
| MH1, MH2, MH3, MH4 | Mounting_Hole_M3 | 4 |
| Q801, Q1001 | SQ2318BES-T1_GE3 | 2 |
| Q901, Q902, Q903 | SQ2318BES-T1_GE3 | 3 |
| R1, R2, R3, R4, R5, R6, R7, R8, R401, R402, R705, R706, R707, R708, R803, R902, R910, R911, R913, R914, R1003 | CR0805-JW-103ELF | 21 |
| R101, R804, R912, R1004 | CR0805-JW-102ELF | 4 |
| R701, R702, R703, R704 | HVC1206-2M0FT3 | 4 |
| R709, R905, R907 | CRCW120610K0FKEA | 3 |
| R710 | CR1206-FX-2201ELF | 1 |
| R801, R802, R1001, R1002 | 352115RFT | 4 |
| R901 | CR0805-FX-1000ELF | 1 |
| R903 | 3296W-1-103LF | 1 |
| R904, R906 | R2M-2512FTK | 2 |
| U201, U402, U501, U502, U503, U601, U603 | CD4011UBSNR | 7 |
| U301, U702 | CD4012BM96 | 2 |
| U401, U604, U904 | CD4072BM | 3 |
| U602 | CD4071BM | 1 |
| U701 | LM339D | 1 |
| U901 | LM339D | 1 |
| U902 | 4N35 | 1 |
| U903 | SA555 | 1 |



TSAL Control