Power board for reComputer Robotics

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Revision History

VER	DATE	REVISION	DESCRIPTION
V1.0	05/13/2025	Power board for reComputer Robotics_V1.0_SCH_250513	Initial Version.
V1.0	05/07/2026	Power board for reComputer Robotics_V1.0_SCH_260507	Changed Q9 from MOS 2SK3018 to Transistor MMST3904-7-F

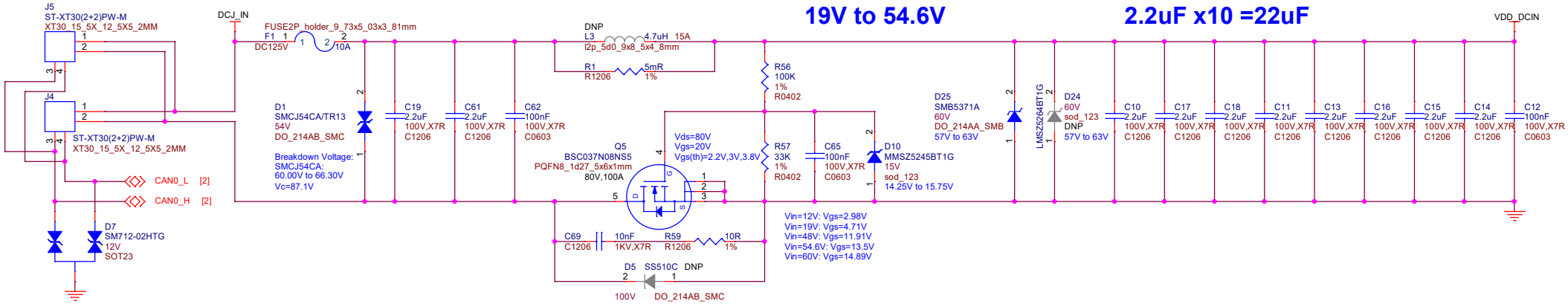
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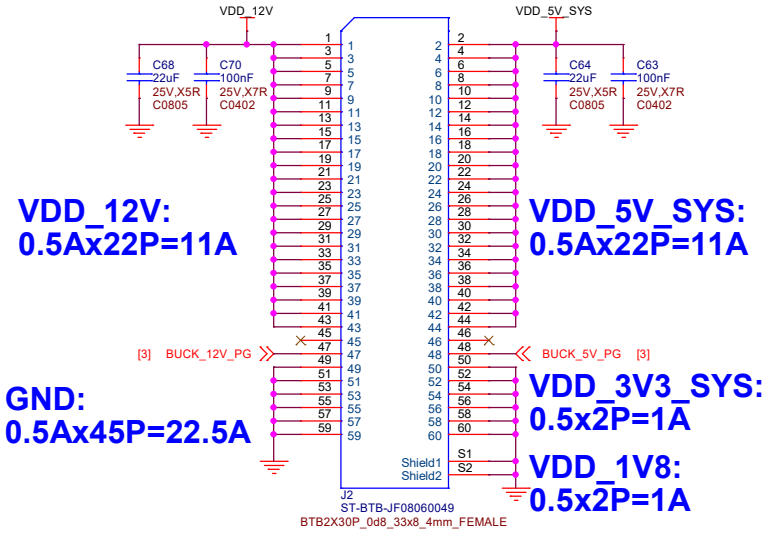
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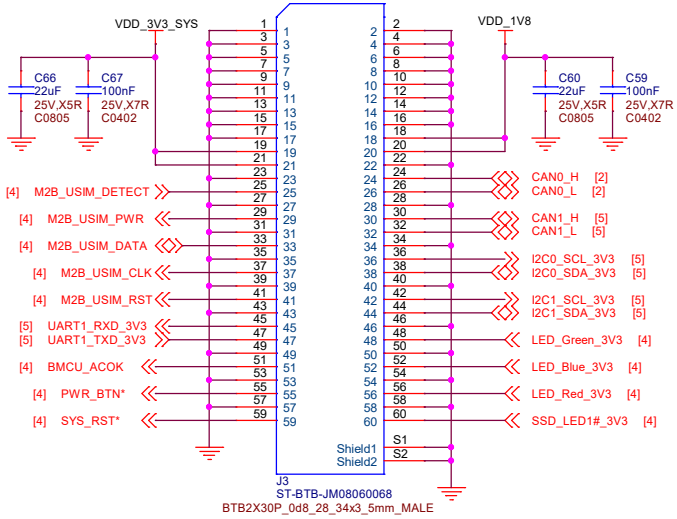
VDD_12V:
0.5Ax22P=11A

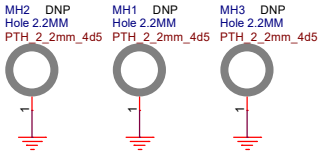
GND:
0.5Ax45P=22.5A

VDD_5V_SYS:
0.5Ax22P=11A

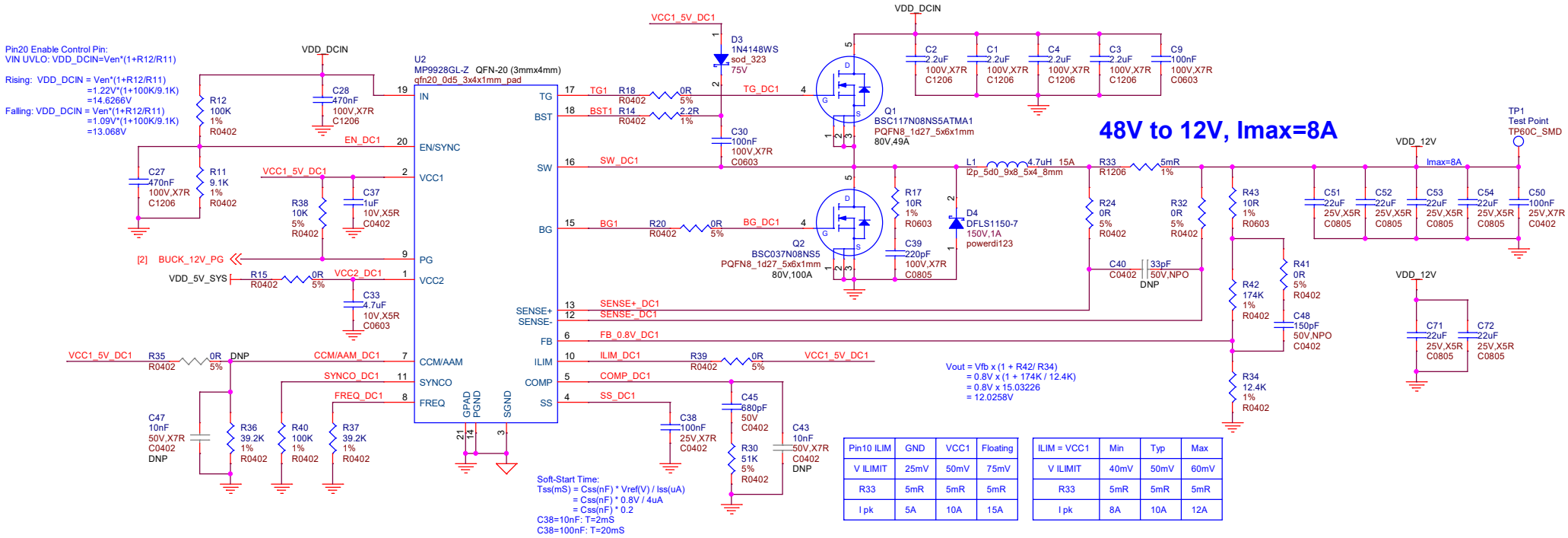
VDD_3V3_SYS:
0.5x2P=1A

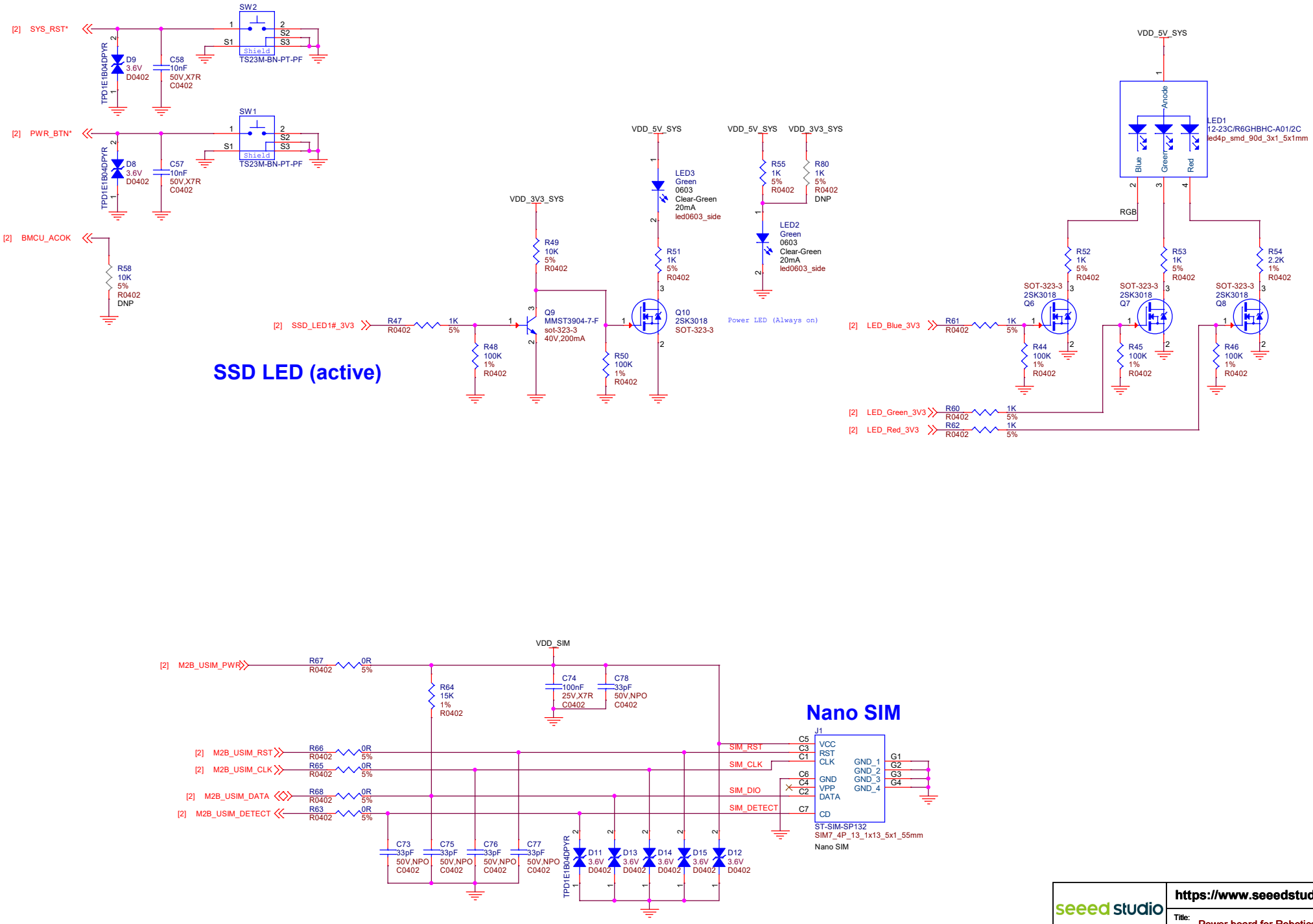
VDD_1V8:
0.5x2P=1A



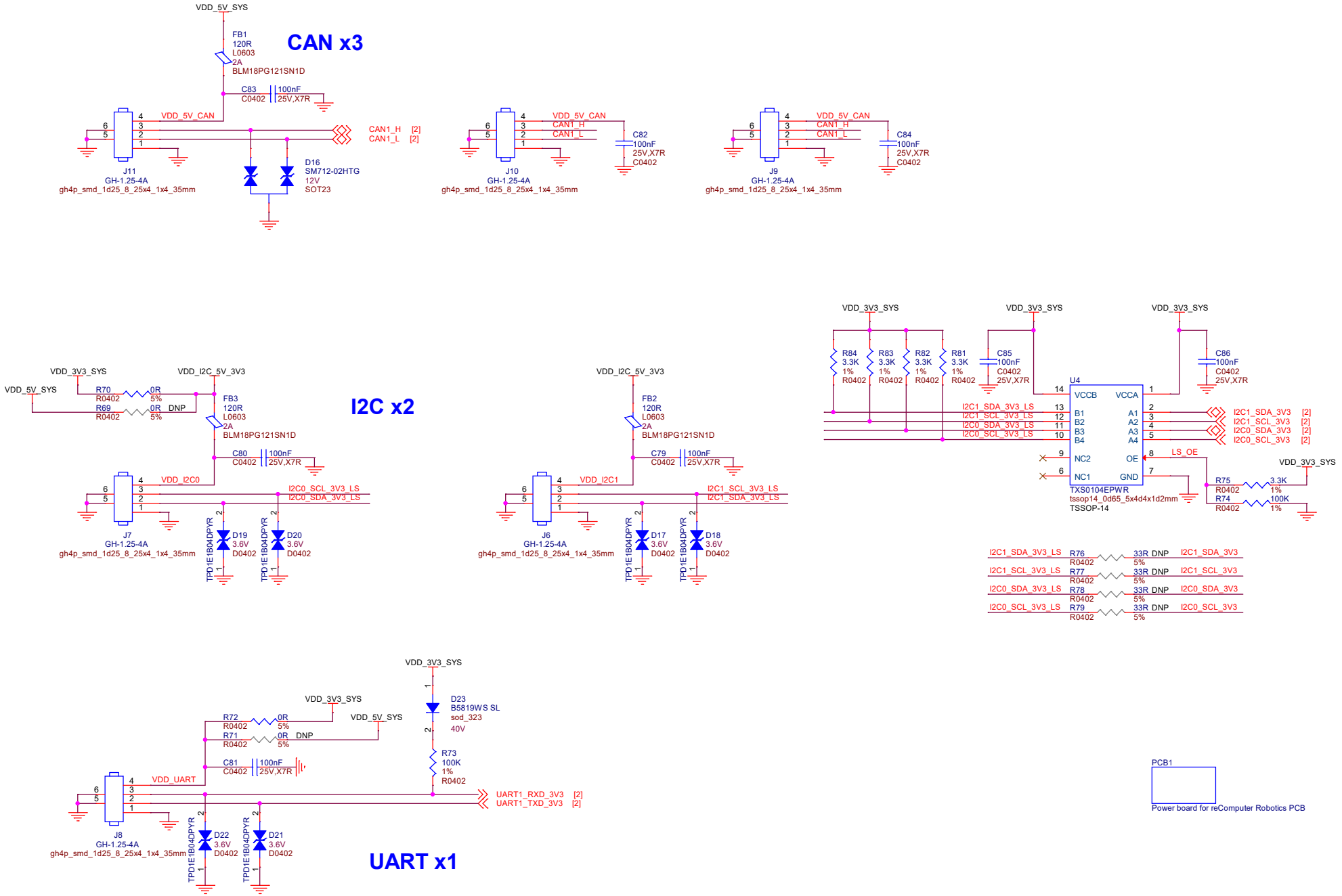


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48V to 12V, Imax=8A
U2
MP9928GL-Z QFN-20 (3mmx4mm)
qfn20_0d5_3x4x1mm_pad
Pin20 Enable Control Pin:
VIN UVLO: VDD_DCIN=Ven*(1+R12/R11)
Rising: VDD_DCIN = Ven*(1+R12/R11)
=1.22V*(1+100K/9.1K)
=14.6266V
Falling: VDD_DCIN = Ven*(1+R12/R11)
=1.09V*(1+100K/9.1K)
=13.068V
Vout = Vfb x (1 + R42/ R34)
= 0.8V x (1 + 174K / 12.4K)
= 0.8V x 15.03226
= 12.0258V
Soft-Start Time:
Tss(mS) = Css(nF) * Vref(V) / Iss(uA)
= Css(nF) * 0.8V / 4uA
= Css(nF) * 0.2
C38=10nF: T=2mS
C38=100nF: T=20mS
Pin10 ILIM | GND | VCC1 | Floating
V ILIMIT | 25mV | 50mV | 75mV
R33 | 5mR | 5mR | 5mR
I pk | 5A | 10A | 15A
ILIM = VCC1 | Min | Typ | Max
V ILIMIT | 40mV | 50mV | 60mV
R33 | 5mR | 5mR | 5mR
I pk | 8A | 10A | 12A
48V to 5V, Imax=12A
U1
MP9928GL-Z QFN-20 (3mmx4mm)
qfn20_0d5_3x4x1mm_pad
Pin20 Enable Control Pin:
VIN UVLO: VDD_DCIN=Ven*(1+R9/R5)
Rising: VDD_DCIN = Ven*(1+R9/R5)
=1.22V*(1+100K/9.1K)
=14.6266V
Falling: VDD_DCIN = Ven*(1+R9/R5)
=1.09V*(1+100K/9.1K)
=13.068V
Vout = Vfb x (1 + R7/ R8)
= 0.8V x (1 + 66.5K / 12.4K)
= 0.8V x 6.362903
= 5.09V
Soft-Start Time:
Tss(mS) = Css(nF) * Vref(V) / Iss(uA)
= Css(nF) * 0.8V / 4uA
= Css(nF) * 0.2
C25=10nF: T=2mS
C25=100nF: T=20mS
Pin10 ILIM | GND | VCC1 | Floating
V ILIMIT | 25mV | 50mV | 75mV
R21 | 5mR | 5mR | 5mR
I pk | 5A | 10A | 15A
ILIM = FLOAT | Min | Typ | Max
V ILIMIT | 65mV | 75mV | 85mV
R21 | 5mR | 5mR | 5mR
I pk | 13A | 15A | 17A
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