GS2201-HybridDriver

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1. Unless Otherwise Specified:

   All resistors are in ohms, 1/10 Watt,0603
   All capacitors are in uF,0603
   All voltages are DC
   All polarized capacitors are aluminum electrolytic

2. Interrupted lines coded with the same letter or letter combinations are electrically connected.

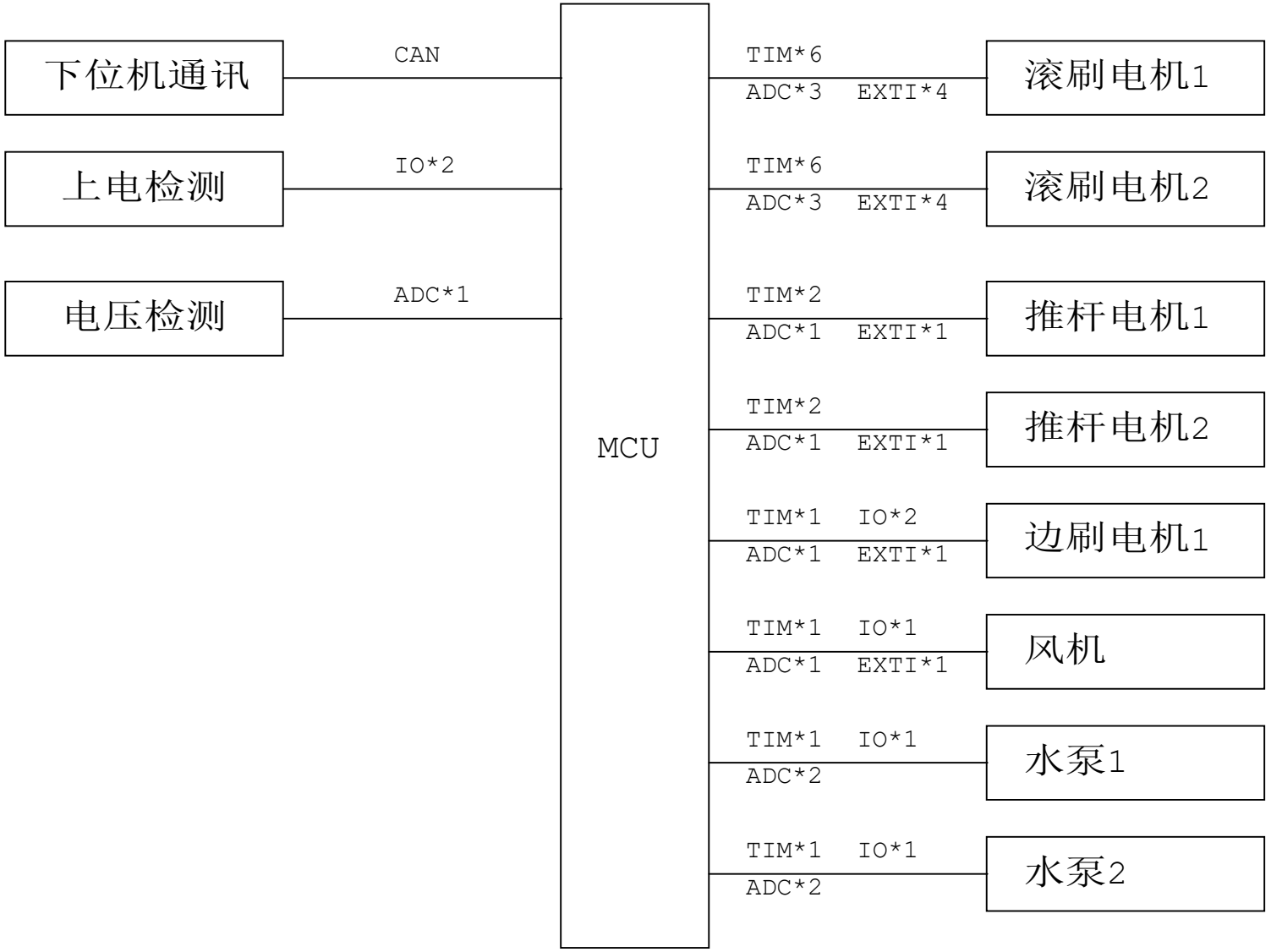
Revision History

Rev. Code	Date	By	Description
V01	2021-12-21	Wien	A1 Version for pilot board production(H44A15)
V02	2022-02-10	Yu_ZhiAn	Correct error
V03	2022-05-05	Yu_ZhiAn	Add R198, R199. Swap LED3
V04	2022-08-03	Yu_ZhiAn	1.Move SidebrushPWM from PD14 to PC9. 2. Add J15 for test. 3. Add HardVersion detect 4. Add charge resistor and capacitor for relay

3. Device type number is for reference only. The number varies with the manufacturer.

4. Special signal usage:
   _B Denotes - Active-Low Signal
   <> or [] Denotes - Vectored Signals

5. Interpret diagram in accordance with American National Standards Institute specifications, current revision, with the exception of logic block symbology.



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Size A	Document Number Block	Rev V04
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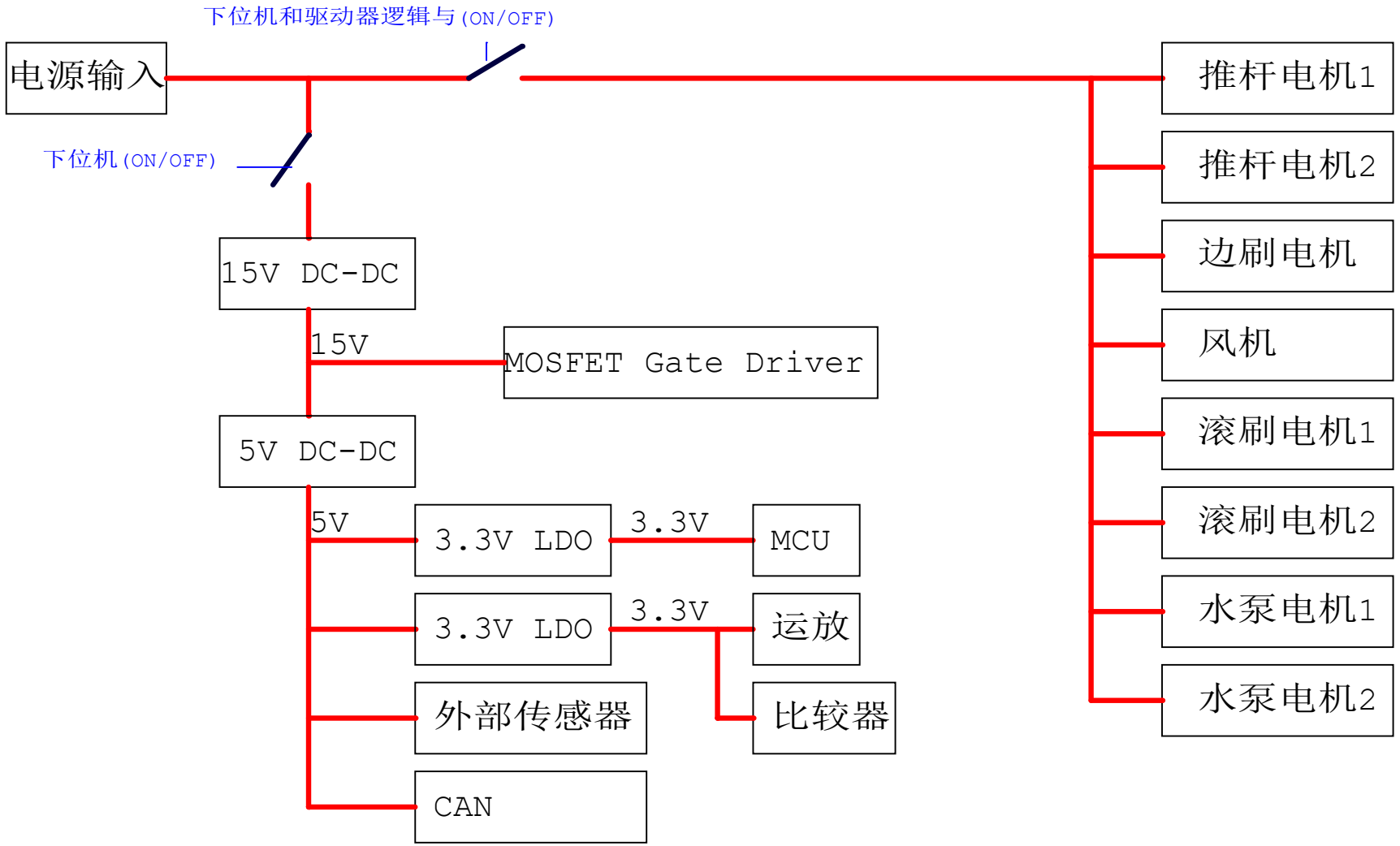

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Size A	Document Number PowerTree	Rev V04
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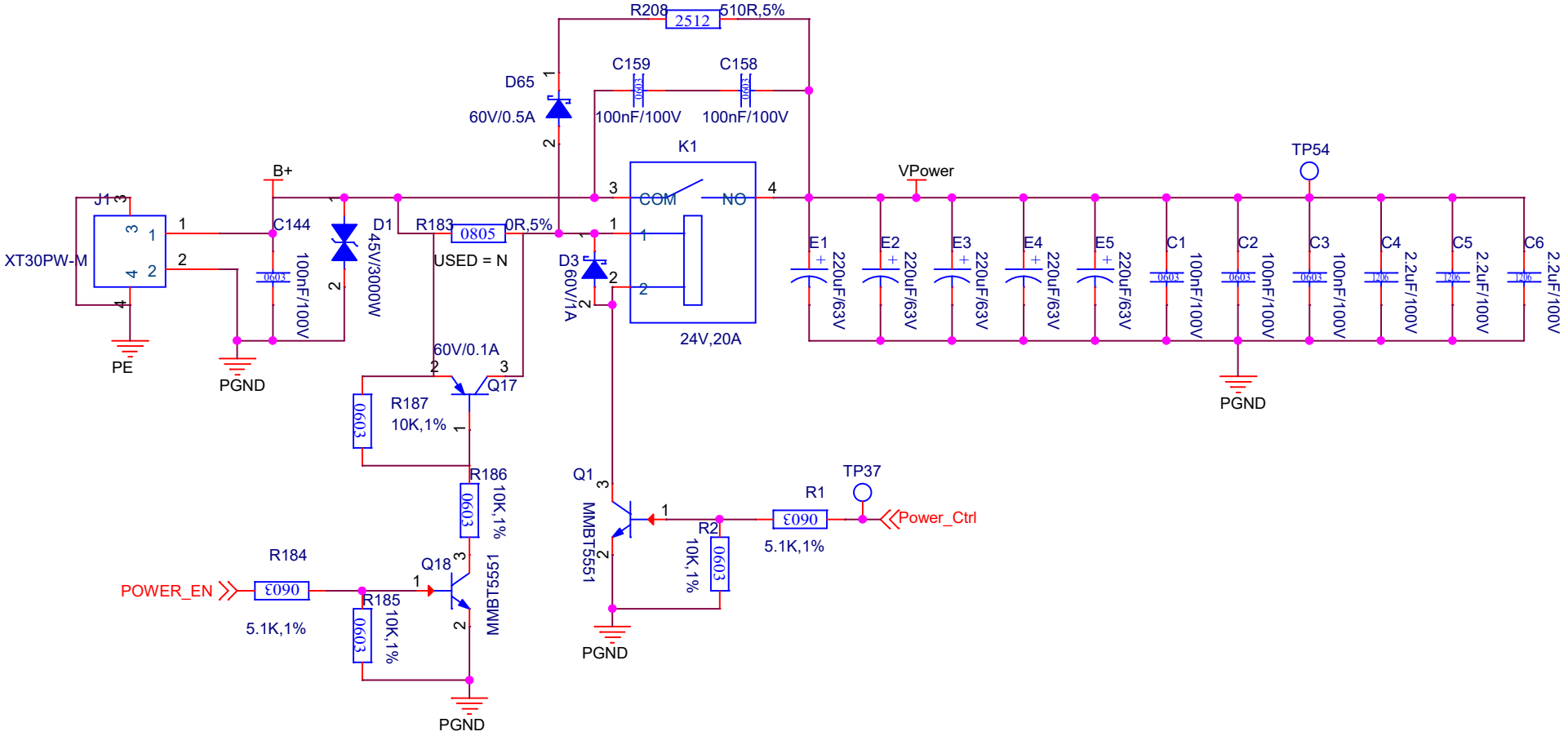
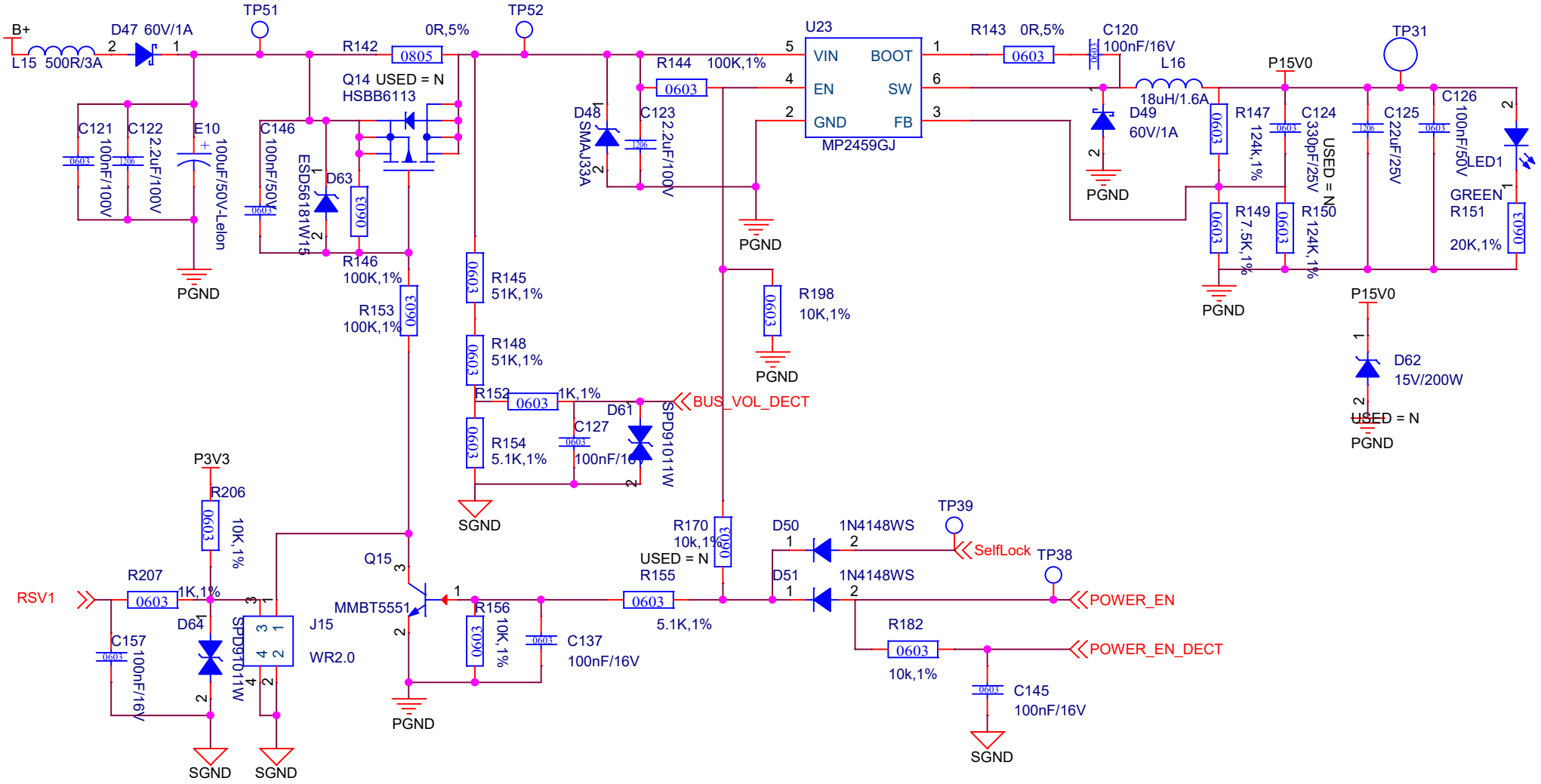


Title	GS2201-HybridDriver	
Size A	Document Number Power Bus	Rev V04
Date: Tuesday, August 09, 2022	Sheet 4 of 14	



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Size A	Document Number 15V Power	Rev V04
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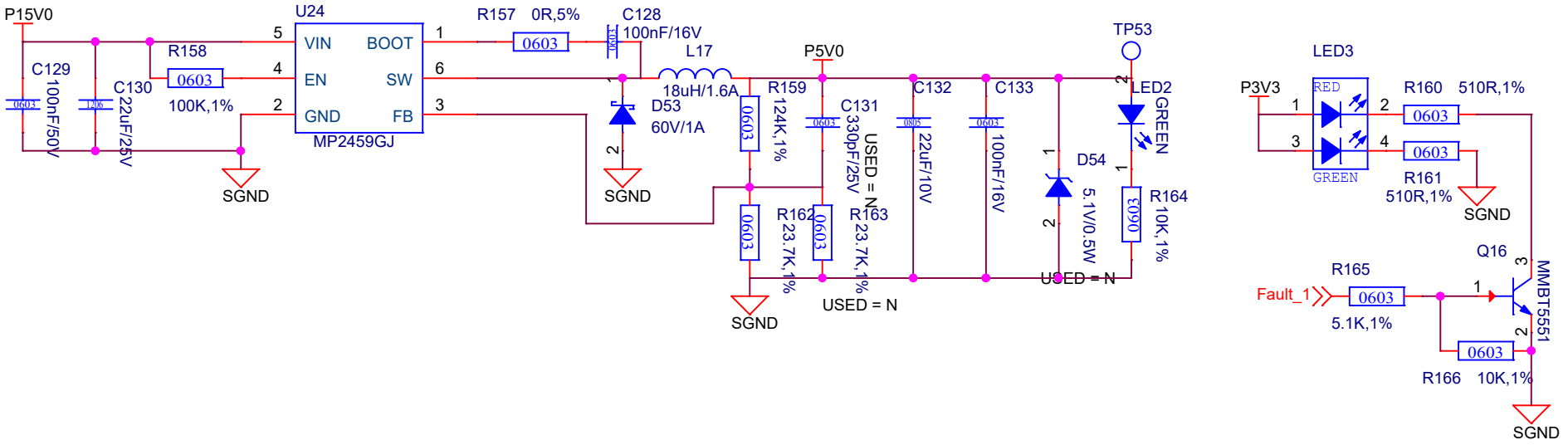

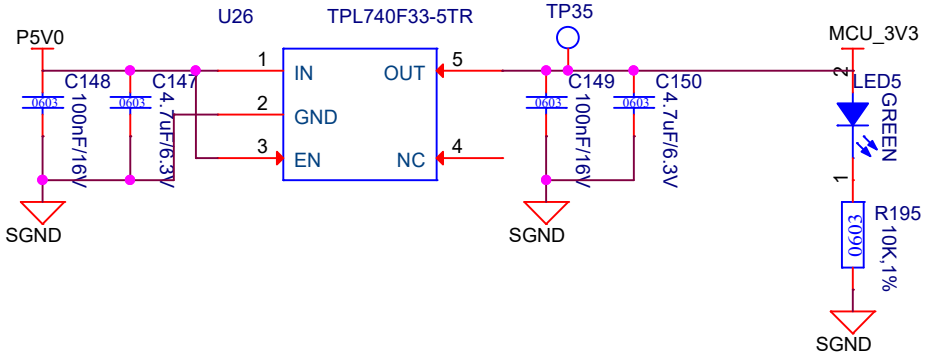

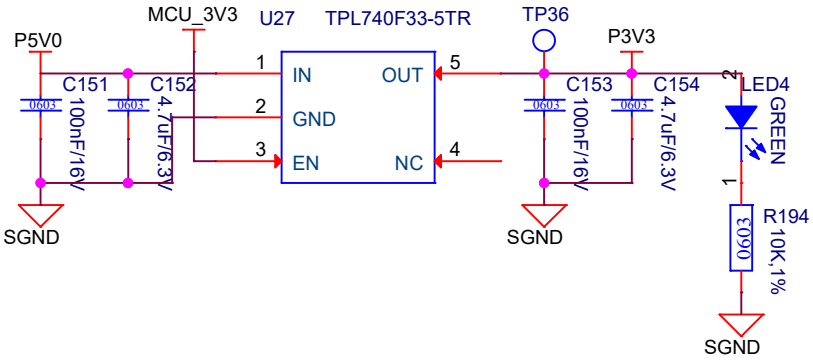

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Size A	Document Number 5V&3.3V Power	Rev V04
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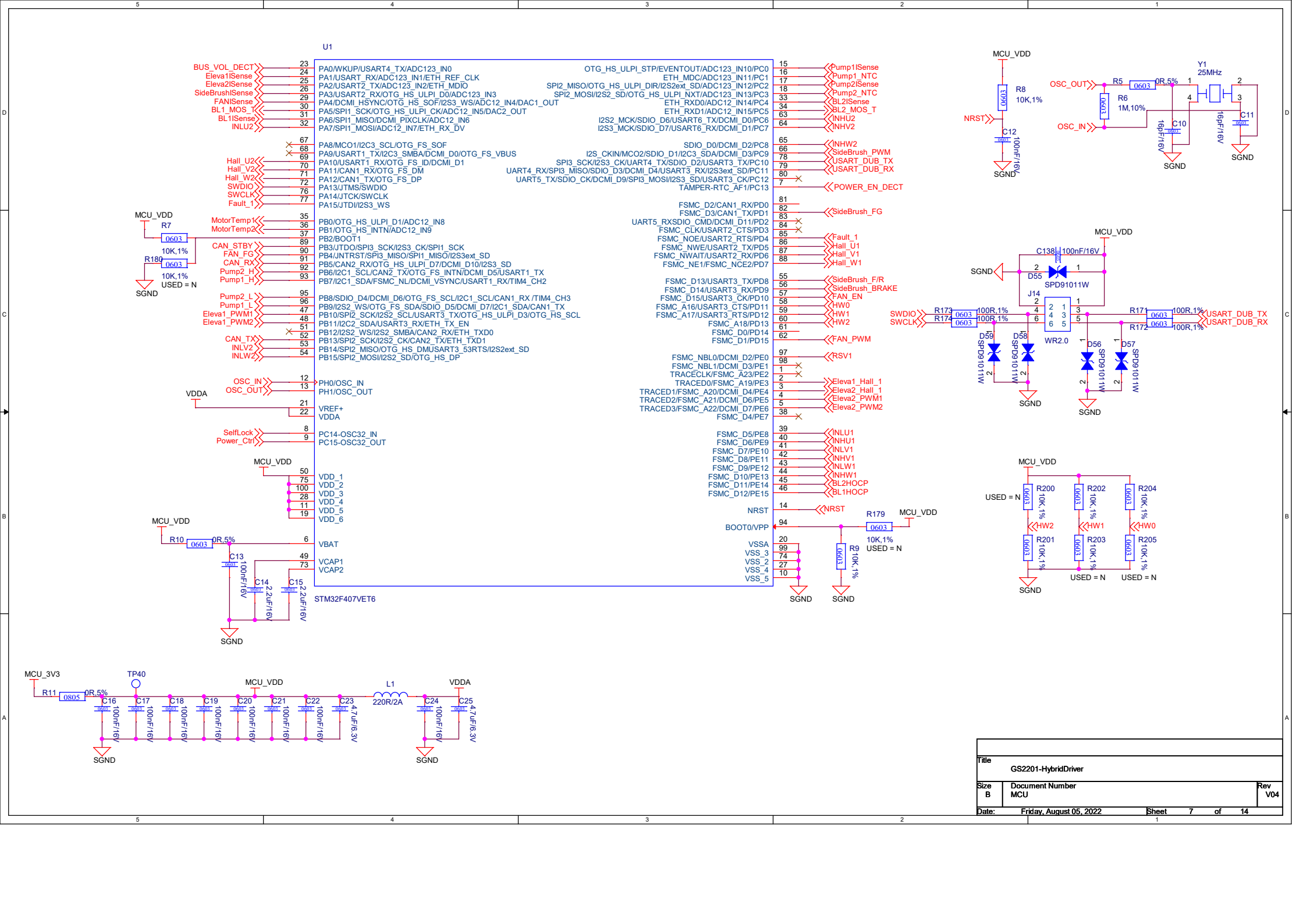
U1
STM32F407VET6
PA0/WKUP/USART4_TX/ADC123_IN0
PA1/USART_RX/ADC123_IN1/ETH_REF_CLK
PA2/USART2_TX/ADC123_IN2/ETH_MDIO
PA3/USART2_RX/OTG_HS_ULPI_D0/ADC123_IN3
PA4/DCMI_HSYNC/OTG_HS_SOF/I2S3_WS/ADC12_IN4/DAC1_OUT
PA5/SPI1_SCK/OTG_HS_ULPI_CK/ADC12_IN5/DAC2_OUT
PA6/SPI1_MISO/DCMI_PIXCLK/ADC12_IN6
PA7/SPI1_MOSI/ADC12_IN7/ETH_RX_DV
PA8/MCO1/I2C3_SCL/OTG_FS_SOF
PA9/USART1_TX/I2C3_SMBA/DCMI_D0/OTG_FS_VBUS
PA10/USART1_RX/OTG_FS_ID/DCMI_D1
PA11/CAN1_RX/OTG_FS_DM
PA12/CAN1_TX/OTG_FS_DP
PA13/JTMS/SWDIO
PA14/JTCK/SWCLK
PA15/JTDI/I2S3_WS
PB0/OTG_HS_ULPI_D1/ADC12_IN8
PB1/OTG_HS_INTN/ADC12_IN9
PB2/BOOT1
PB3/JTDO/SPI3_SCK/I2S3_CK/SPI1_SCK
PB4/JNTRST/SPI3_MISO/SPI1_MISO/I2S3ext_SD
PB5/CAN2_RX/OTG_HS_ULPI_D7/DCMI_D10/I2S3_SD
PB6/I2C1_SCL/CAN2_TX/OTG_FS_INTN/DCMI_D5/USART1_TX
PB7/I2C1_SDA/FSMC_NL/DCMI_VSYNC/USART1_RX/TIM4_CH2
PB8/SDIO_D4/DCMI_D6/OTG_FS_SCL/I2C1_SCL/CAN1_RX /TIM4_CH3
PB9/I2S2_WS/OTG_FS_SDA/SDIO_D5/DCMI_D7/I2C1_SDA/CAN1_TX
PB10/SPI2_SCK/I2S2_SCL/USART3_TX/OTG_HS_ULPI_D3/OTG_HS_SCL
PB11/I2C2_SDA/USART3_RX/ETH_TX_EN
PB12/I2S2_WS/I2S2_SMBA/CAN2_RX/ETH_TXD0
PB13/SPI2_SCK/I2S2_CK/CAN2_TX/ETH_TXD1
PB14/SPI2_MISO/OTG_HS_DMUSART3_53RTS/I2S2ext_SD
PB15/SPI2_MOSI/I2S2_SD/OTG_HS_DP
PH0/OSC_IN
PH1/OSC_OUT
VREF+
VDDA
PC14-OSC32_IN
PC15-OSC32_OUT
VDD_1
VDD_2
VDD_3
VDD_4
VDD_5
VDD_6
VBAT
VCAP1
VCAP2
OTG_HS_ULPI_STP/EVENTOUT/ADC123_IN10/PC0
ETH_MDC/ADC123_IN11/PC1
SPI2_MISO/OTG_HS_ULPI_DIR/I2S2ext_SD/ADC123_IN12/PC2
SPI2_MOSI/I2S2_SD/OTG_HS_ULPI_NXT/ADC123_IN13/PC3
ETH_RXD0/ADC12_IN14/PC4
ETH_RXD1/ADC12_IN15/PC5
I2S2_MCK/SDIO_D6/USART6_TX/DCMI_D0/PC6
I2S3_MCK/SDIO_D7/USART6_RX/DCMI_D1/PC7
SDIO_D0/DCMI_D2/PC8
I2S_CKIN/MCO2/SDIO_D1/I2C3_SDA/DCMI_D3/PC9
SPI3_SCK/I2S3_CK/UART4_TX/SDIO_D2/USART3_TX/PC10
UART4_RX/SPI3_MISO/SDIO_D3/DCMI_D4/USART3_RX/I2S3ext_SD/PC11
UART5_TX/SDIO_CK/DCMI_D9/SPI3_MOSI/I2S3_SD/USART3_CK/PC12
TAMPER-RTC_AF1/PC13
FSMC_D2/CAN1_RX/PD0
FSMC_D3/CAN1_TX/PD1
UART5_RXSDIO_CMD/DCMI_D11/PD2
FSMC_CLK/USART2_CTS/PD3
FSMC_NOE/USART2_RTS/PD4
FSMC_NWE/USART2_TX/PD5
FSMC_NWAIT/USART2_RX/PD6
FSMC_NE1/FSMC_NCE2/PD7
FSMC_D13/USART3_TX/PD8
FSMC_D14/USART3_RX/PD9
FSMC_D15/USART3_CK/PD10
FSMC_A16/USART3_CTS/PD11
FSMC_A17/USART3_RTS/PD12
FSMC_A18/PD13
FSMC_D0/PD14
FSMC_D1/PD15
FSMC_NBL0/DCMI_D2/PE0
FSMC_NBL1/DCMI_D3/PE1
TRACECLK/FSMC_A23/PE2
TRACED0/FSMC_A19/PE3
TRACED1/FSMC_A20/DCMI_D4/PE4
TRACED2/FSMC_A21/DCMI_D6/PE5
TRACED3/FSMC_A22/DCMI_D7/PE6
FSMC_D4/PE7
FSMC_D5/PE8
FSMC_D6/PE9
FSMC_D7/PE10
FSMC_D8/PE11
FSMC_D9/PE12
FSMC_D10/PE13
FSMC_D11/PE14
FSMC_D12/PE15
NRST
BOOT0/VPP
VSSA
VSS_3
VSS_2
VSS_4
VSS_5
BUS_VOL_DECT
Eleva1ISense
Eleva2ISense
SideBrushISense
FANISense
BL1_MOS_T
BL1ISense
INLU2
Hall_U2
Hall_V2
Hall_W2
SWDIO
SWCLK
Fault_1
MotorTemp1
MotorTemp2
CAN_STBY
FAN_FG
CAN_RX
Pump2_H
Pump1_H
Pump2_L
Pump1_L
Eleva1_PWM1
Eleva1_PWM2
CAN_TX
INLV2
INLW2
OSC_IN
OSC_OUT
SelfLock
Power_Ctrl
Pump1ISense
Pump1_NTC
Pump2ISense
Pump2_NTC
BL2ISense
BL2_MOS_T
INHU2
INHV2
INHW2
SideBrush_PWM
USART_DUB_TX
USART_DUB_RX
POWER_EN_DECT
SideBrush_FG
Fault_1
Hall_U1
Hall_V1
Hall_W1
SideBrush_F/R
SideBrush_BRAKE
FAN_EN
HW0
HW1
HW2
FAN_PWM
RSV1
Eleva1_Hall_1
Eleva2_Hall_1
Eleva2_PWM1
Eleva2_PWM2
INLU1
INHU1
INLV1
INHV1
INLW1
INHW1
BL2HOCP
BL1HOCP
NRST
MCU_VDD
VDDA
SGND
R7 0603 10K,1% USED = N
R180 0603 10K,1% USED = N
R10 0603 0R,5%
R179 0603 10K,1% USED = N
R9 0603 10K,1%
C13 0603 100nF/16V
C14 0603 2.2uF/16V
C15 0603 2.2uF/16V
R8 0603 10K,1%
C12 0603 100nF/16V
Y1 25MHz
R5 0603 0R,5%
R6 0603 1M,10%
C10 0603 16pF/16V
C11 0603 16pF/16V
C138 0603 100nF/16V
D55 SPD91011W
J14 WR2.0
R173 0603 100R,1%
R174 0603 100R,1%
R171 0603 100R,1%
R172 0603 100R,1%
D59 SPD91011W
D58 SPD91011W
D56 SPD91011W
D57 SPD91011W
R200 0603 10K,1% USED = N
R201 0603 10K,1%
R202 0603 10K,1%
R203 0603 10K,1% USED = N
R204 0603 10K,1% USED = N
R205 0603 10K,1%
MCU_3V3
TP40
R11 0805 0R,5%
C16 0603 100nF/16V
C17 0603 100nF/16V
C18 0603 100nF/16V
C19 0603 100nF/16V
C20 0603 100nF/16V
C21 0603 100nF/16V
C22 0603 100nF/16V
C23 0603 4.7uF/6.3V
L1 220R/2A
C24 0603 100nF/16V
C25 0603 4.7uF/6.3V
Title
GS2201-HybridDriver
Size B
Document Number MCU
Rev V04
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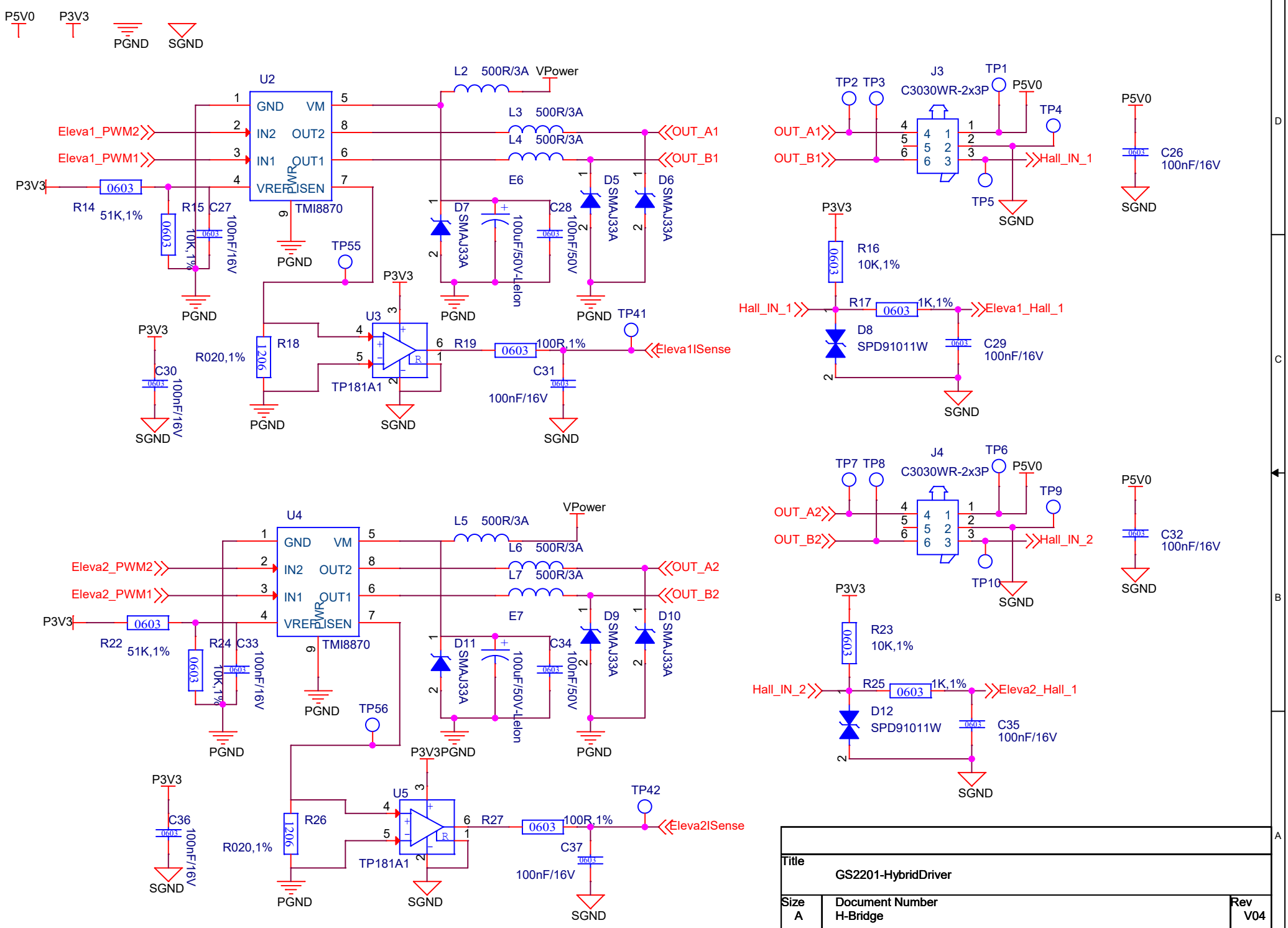
P5V0
P3V3
PGND
SGND
U2
GND
VM
IN2
OUT2
IN1
OUT1
VREF
ISEN
PWR
TMI8870
Eleva1_PWM2
Eleva1_PWM1
R14
51K,1%
R15
10K,1%
C27
100nF/16V
TP55
L2 500R/3A VPower
L3 500R/3A
L4 500R/3A
OUT_A1
OUT_B1
E6
D5 SMAJ33A
D6 SMAJ33A
D7 SMAJ33A
C28
100uF/50V-Lelon
100nF/50V
U3
R18
R020,1%
1206
R19
100R,1%
TP181A1
TP41
Eleva1ISense
C30
C31
100nF/16V
J3
C3030WR-2x3P
TP1
TP2
TP3
TP4
TP5
Hall_IN_1
R16
10K,1%
R17
1K,1%
D8
SPD91011W
C29
C26
Eleva1_Hall_1
U4
Eleva2_PWM2
Eleva2_PWM1
R22
51K,1%
R24
10K,1%
C33
TP56
L5 500R/3A VPower
L6 500R/3A
L7 500R/3A
OUT_A2
OUT_B2
E7
D9 SMAJ33A
D10 SMAJ33A
D11 SMAJ33A
C34
U5
R26
R020,1%
TP181A1
TP42
Eleva2ISense
R27
100R,1%
C36
C37
100nF/16V
J4
TP6
TP7
TP8
TP9
TP10
Hall_IN_2
R23
10K,1%
R25
1K,1%
D12
SPD91011W
C35
C32
Eleva2_Hall_1
Title
GS2201-HybridDriver
Size
A
Document Number
H-Bridge
Rev
V04
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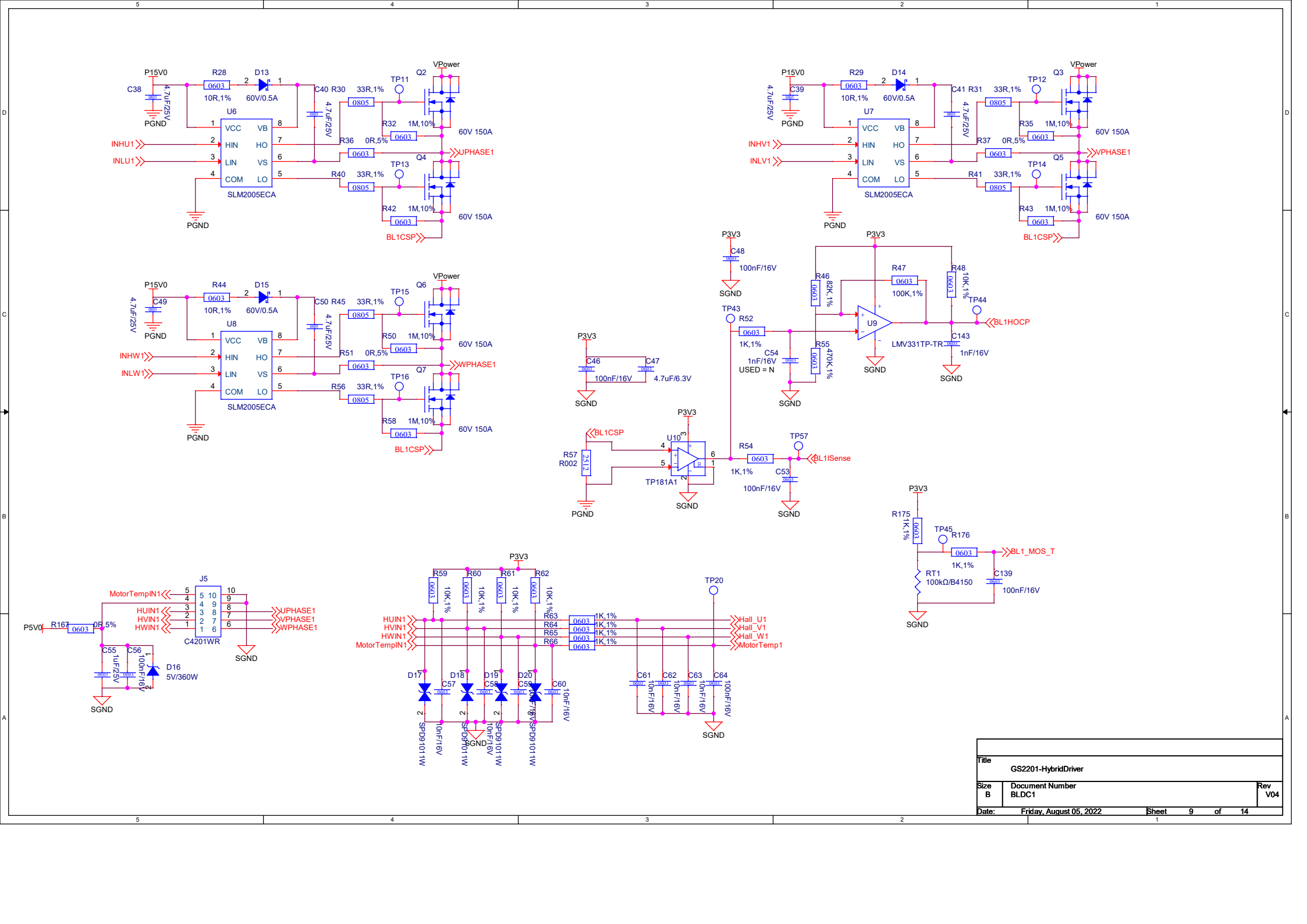

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Size B	Document Number BLDC1	Rev V04
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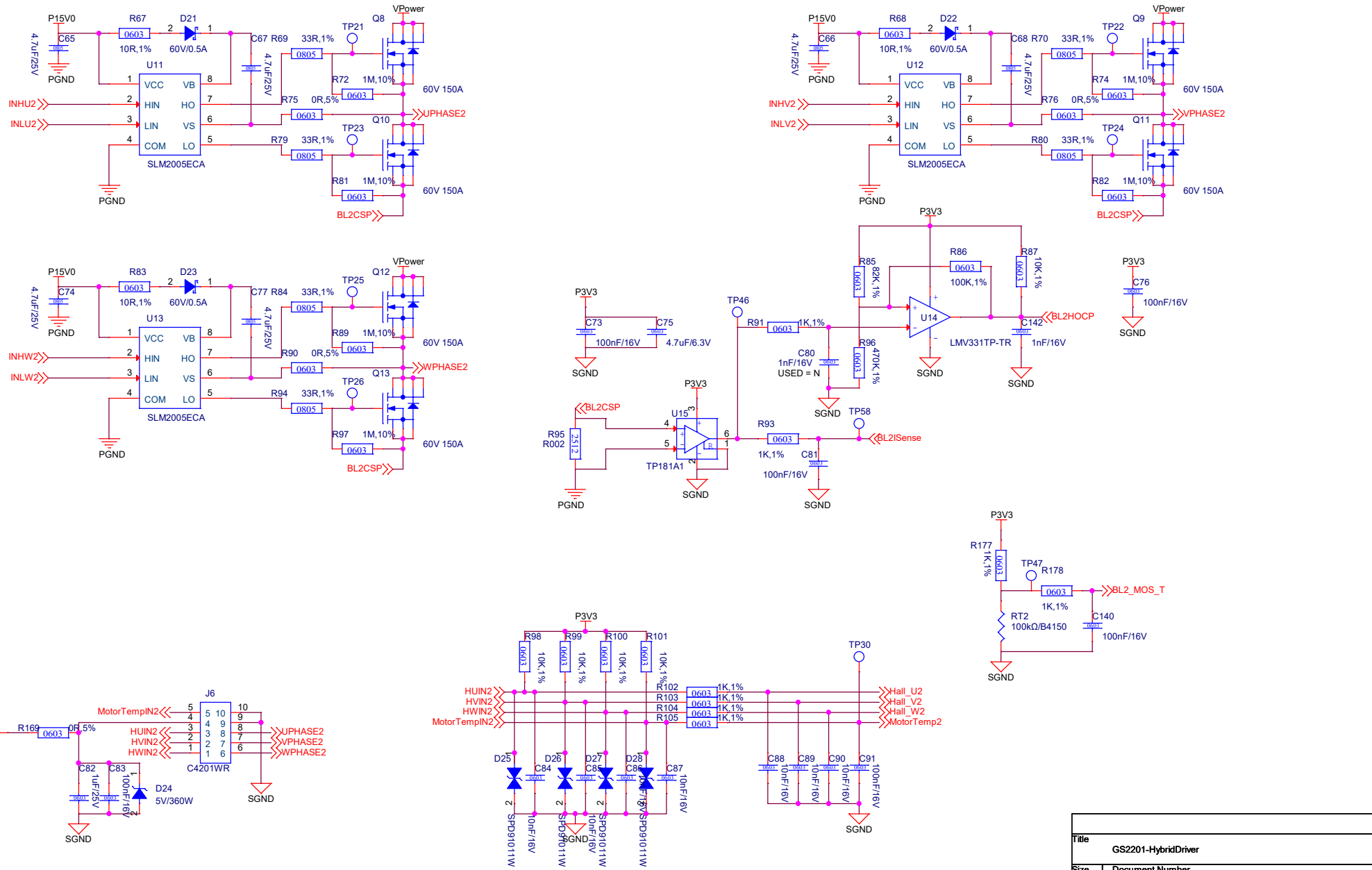

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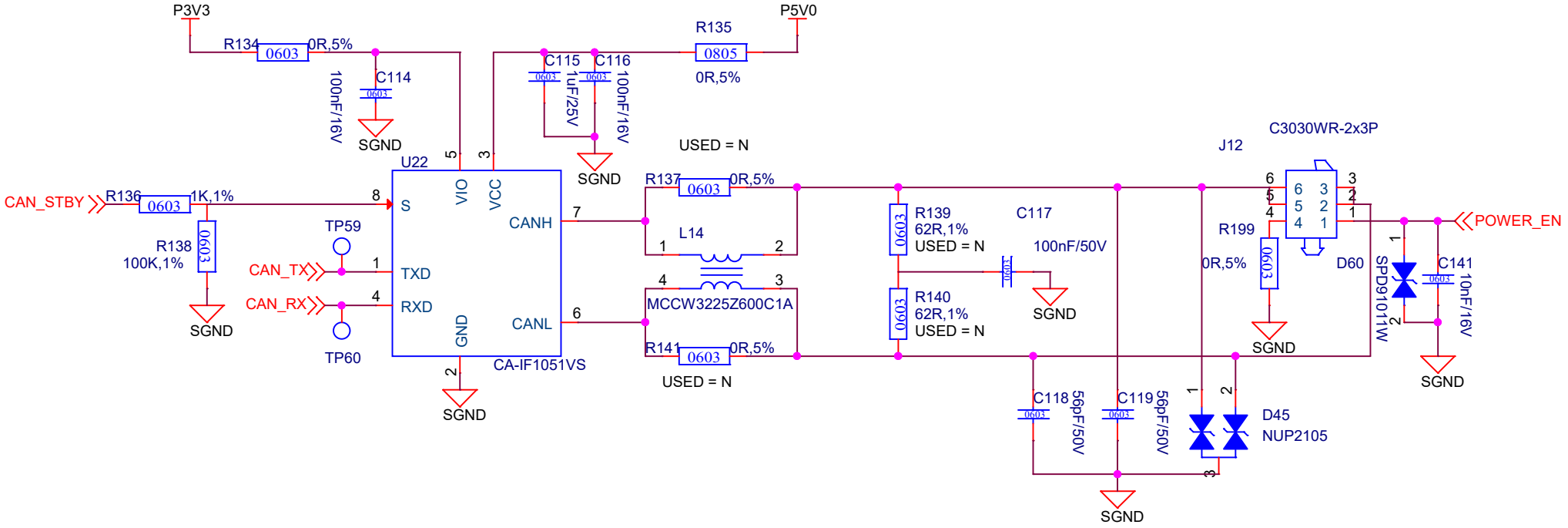

Title	GS2201-HybridDriver	
Size A	Document Number CAN	Rev V04
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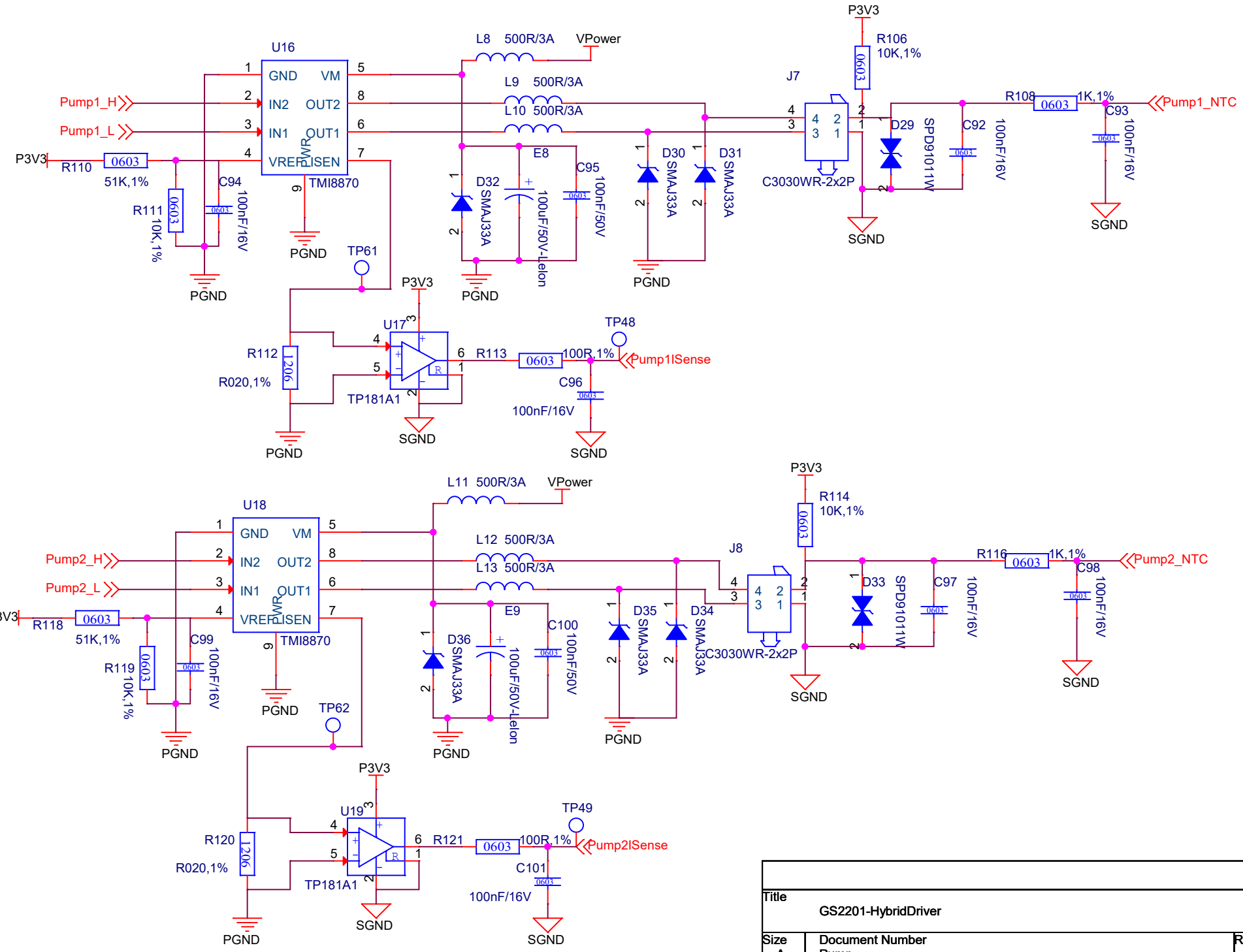
U16
GND
VM
IN2
OUT2
IN1
OUT1
VREF
ISEN
PWR
TMI8870
Pump1_H
Pump1_L
P3V3
R110
0603
51K,1%
R111
10K,1%
C94
100nF/16V
PGND
TP61
L8 500R/3A
VPower
L9 500R/3A
L10 500R/3A
D32
SMAJ33A
E8
100uF/50V-Lelon
C95
100nF/50V
D30
D31
J7
C3030WR-2x2P
R106
10K,1%
D29
SPD9101W
C92
R108
1K,1%
Pump1_NTC
C93
SGND
U17
R112
1206
R020,1%
TP181A1
R113
100R,1%
TP48
Pump1ISense
C96
U18
Pump2_H
Pump2_L
R118
R119
C99
L11 500R/3A
L12 500R/3A
L13 500R/3A
D36
E9
C100
D35
D34
J8
R114
10K,1%
D33
C97
R116
C98
Pump2_NTC
U19
R120
R121
TP49
Pump2ISense
C101
Title
GS2201-HybridDriver
Size
A
Document Number
Pump
Rev
V04
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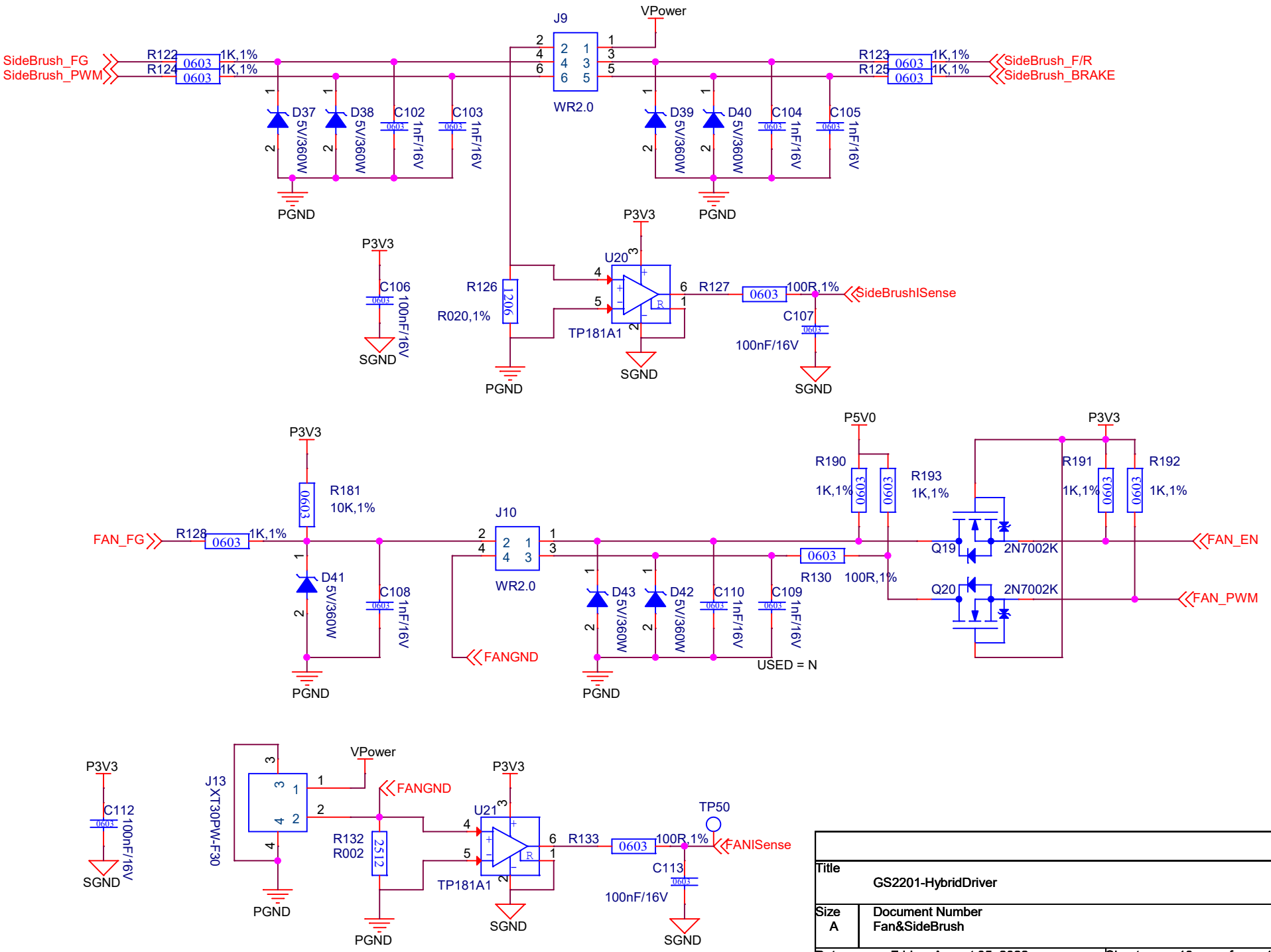

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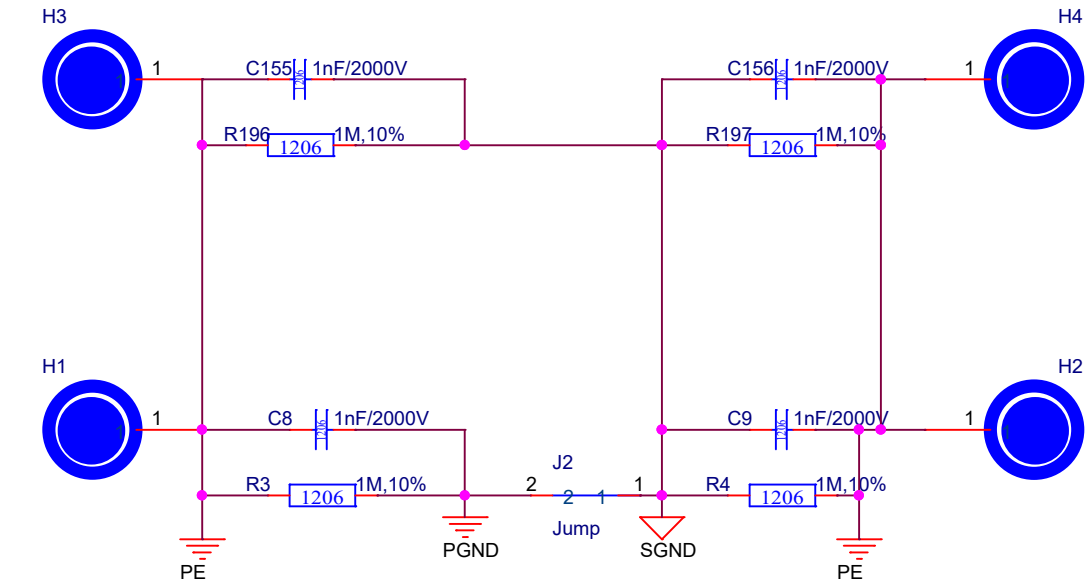

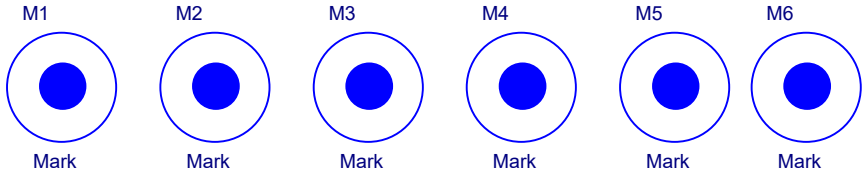

Title	GS2201-HybridDriver	
Size A	Document Number Other	Rev V04
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