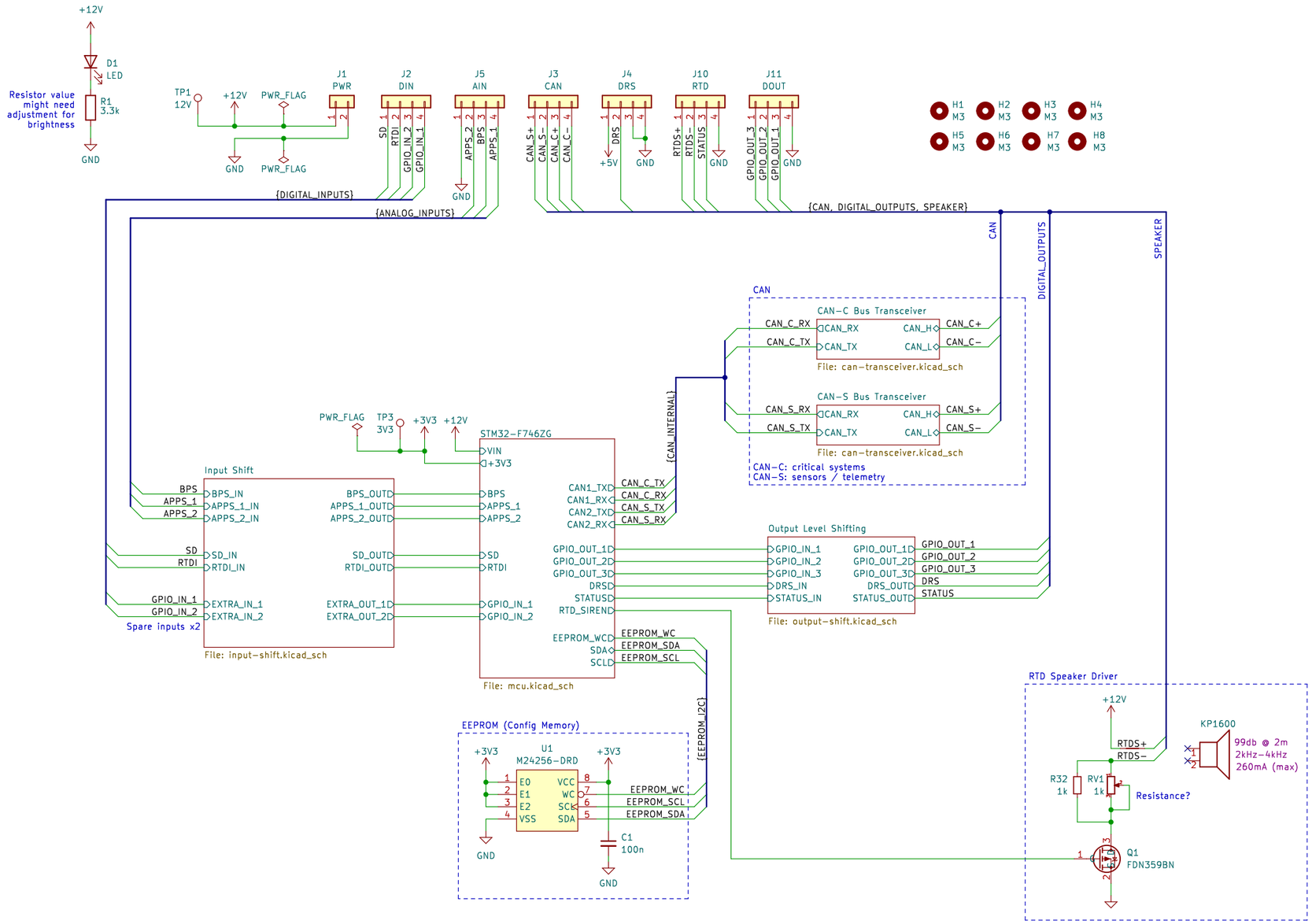
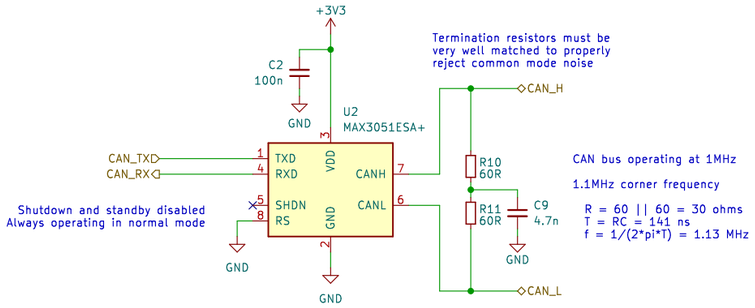
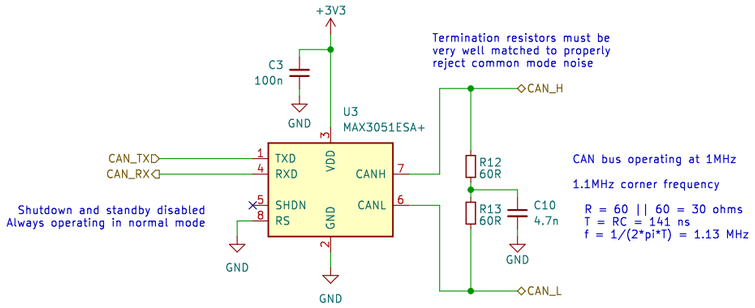


Vehicle: STAG 9		
Drawn By: Tim Brewis		
Checked By: Max O'Brien		
CAD Part:		
SUFST		
Sheet: /		
File: vcu.kicad_sch		
Title: VCU		
Size: A3	Date: 2022−11−20	**Rev: 1.0**
KiCad E.D.A. kicad (6.0.9−0)		Id: 1/6



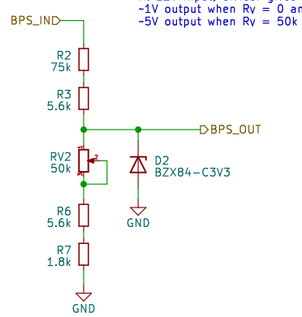
Vehicle: STAG 9		
Drawn By: Tim Brewis		
Checked By: Max O'Brien		
CAD Part:		
SUFST		
Sheet: /CAN-C Bus Transceiver/		
File: can-transceiver.kicad_sch		
Title: VCU		
Size: A3	Date: 2022-11-20	**Rev: 1.0**
KiCad E.D.A. kicad (6.0.9-0)		Id: 2/6

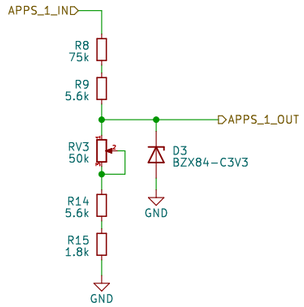


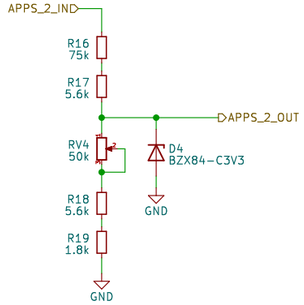
Vehicle: STAG 9		
Drawn By: Tim Brewis		
Checked By: Max O'Brien		
CAD Part:		
SUFST		
Sheet: /CAN-S Bus Transceiver/		
File: can-transceiver.kicad_sch		
Title: VCU		
Size: A3	Date: 2022-11-20	**Rev: 1.0**
KiCad E.D.A. kicad (6.0.9-0)		Id: 3/6

Analogue (12V -> 3.3V)

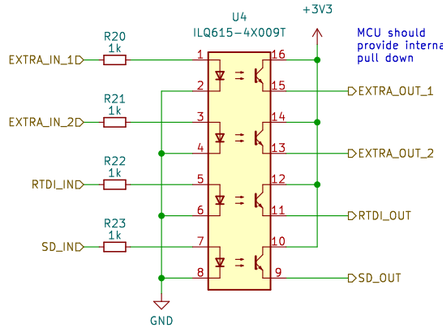
At 12V input, divider gives
~1V output when Rv = 0 and
~5V output when Rv = 50k







Digital (12V -> 3.3V)



Vehicle: STAG 9		
Drawn By: Tim Brewis		
Checked By: Max O'Brien		
CAD Part:		
SUFST		
Sheet: /Input Shift/		
File: input-shift.kicad_sch		
Title: VCU		
Size: A3	Date: 2022-11-20	**Rev: 1.0**
KiCad E.D.A. kicad (6.0.9-0)		Id: 5/6

STM32 F746ZG Nucleo-144 Zio

Nucleo-144 dev board has
built in LD1117 regulator
supplied from VIN which
provides 3.3V power for
rest of circuit, up to 800mA

J6
ZIO_CN8

	NC	2	1	PC8	
	IOREF	4	3	PC9	
	RESET	6	5	PC10	
+3V3	+3V3	8	7	PC11	
	+5V	10	9	PC12	
GND	GND	12	11	PD2	
GND	GND	14	13	PG2	
VIN	VIN	16	15	PG3	
APPS_1	PA3	2	1	PD7	
BPS	PC0	4	3	PD6	
APPS_2	PC3	6	5	PD5	
GPIO_IN_1	PF3	8	7	PD4	
GPIO_IN_2	PF5	10	9	PD3	
RTDI	PF10	12	11	GND	GND
	NC	14	13	PE2	
	PA7	16	15	PE4	
	PF2	18	17	PE5	
SDD	PF1	20	19	PE6	
	PF0	22	21	PE3	
GND	GND	24	23	PF8	
CAN1_RX	PD0	26	25	PF7	
CAN1_TX	PD1	28	27	PF9	
	PG0	30	29	PG1	

ZIO_CN9
J7

+3V3

R4 10k

R5 10k

To set bus
time constant
(RC < 400ns)

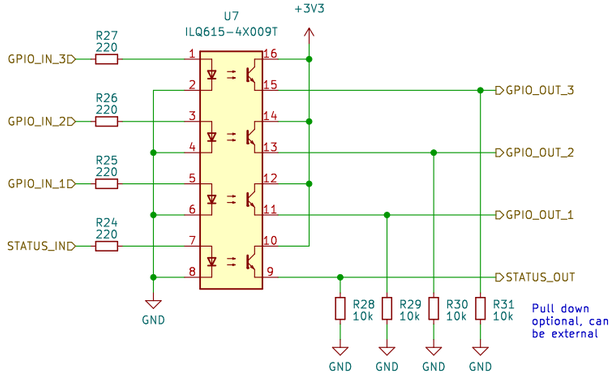
J8
ZIO_CN7

EEPROM_WC	PC6	2	1	PB8	SCL
	PB15	4	3	PB9	SDA
	PB13	6	5	AVDD	
CAN2_RX	PB12	8	7	GND	GND
	PA15	10	9	PA5	
	PC7	12	11	PA6	
	PB5	14	13	PA7	
	PB3	16	15	PD14	
	PA4	18	17	PD15	
	PB4	20	19	PF12	
	AVDD	2	1	PF13	
	AGND	4	3	PE9	STATUS
GND	GND	6	5	PE11	GPIO_OUT_1
	PB1	8	7	PF14	GPIO_OUT_2
	PC2	10	9	PE13	GPIO_OUT_3
	PF4	12	11	PF15	RTD_SIREN
CAN2_TX	PB6	14	13	PG14	
	PB2	16	15	PG9	
	GND	18	17	PE8	
	PD13	20	19	PE7	
	PD12	22	21	GND	GND
	PD11	24	23	PE10	
	PE2	26	25	PE13	
	GND	28	27	PE14	
DRS	PA0	30	29	PE15	
	PB0	32	31	PB10	
	PE0	34	33	PB11	

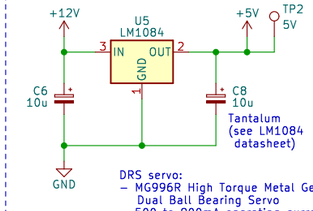
ZIO_CN10
J9

Vehicle:	STAG 9
Drawn By:	Tim Brewis
Checked By:	Max O'Brien
CAD Part:	
SUFST	
Sheet:	/STM32-F746ZG/
File:	mcu.kicad_sch
Title: VCU	
Size: A3	Date: 2022-11-20
KiCad E.D.A.	kicad (6.0.9-0)
Rev: 1.0	
Id: 6/6	

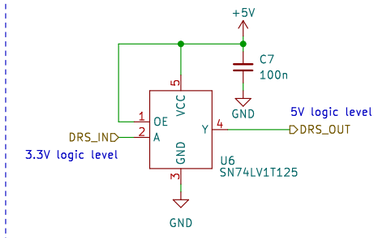
Digital (3.3V -> 12V)



5V Regulation (DRS Servo)



DRS (3.3V -> 5V)



Vehicle: STAG 9		
Drawn By: Tim Brewis		
Checked By: Max O'Brien		
CAD Part:		
SUFST		
Sheet: /Output Level Shifting/		
File: output-shift.kicad_sch		
Title: VCU		
Size: A3	Date: 2022-11-20	**Rev: 1.0**
KiCad E.D.A. kicad (6.0.9-0)		Id: 6/6