

The diagram shows a power regulator circuit. The input is labeled '+GLV_PROT' and is connected to the VIN pin (pin 3) of the LMR51430 IC (U3). A 2.2uF capacitor (C13) is connected between VIN and GND. The EN pin (pin 5) is connected to GND. The IC has two ground pins: pin 1 (GND) and pin 4 (GND). The output of the IC is connected to a 2.2uH inductor (L1). A 0.1uF capacitor (C16) is connected between the inductor and the output. The output is also connected to a 100k resistor (R13) and a 22.1k resistor (R14), both connected to GND. The output is labeled '+3V3'. A PWR_FLAG pin is connected to a 10uF capacitor (C21) and a 10uF capacitor (C20), both connected to GND. The PWR_FLAG pin is also connected to a 1k resistor (R6) and a diode (D1 LED) connected to GND. The output is labeled '+GLV_PROT'.

Power filtering

digital filtering - close to VDD pins

light analog filtering

CAN bus operating at 1MHz

1.1MHz corner frequency

$R = 60 \parallel 60 = 30 \text{ ohms}$
 $T = RC = 141 \text{ ns}$
 $f = 1/(2 \cdot \pi \cdot T) = 1.13 \text{ MHz}$

Termination resistors must be very well matched to properly reject common mode noise

MCU_CAN1_TX

MCU_CAN1_RX

C22 100n

GND

GND

GND

+3V3

C7 100n

GND

U5 TCAN3404-Q1

1_CANH

1_CANL

R1 60R

R2 60R

C10 4.7n

GND

Must be rated for at least 12V

Shutdown and standby disabled
Always operating in normal mode

Reverse Polarity Protection

+GLV DMP510DL-7 PWR_FLAG +GLV_PROT

D S D2 BZT52B10

SOT-23 D_Zener, IEEE SOD-123

PWR_FLAG R9 100k

GND

Connectors

Using header pins

J5

USART1

Using header pins

J1

Conn_01x05

Using Harwin M80-5400442

J2

CAN 1

STM32F105RBT

Nreset when pin pulled low

SW1
PTS6475x38

R7
10k

C19
100n

+3V3

+3V3

+3.3VA

boot activated when BOOT0(pin60) = 1 and BOOT1(pin28) = 0

JP2

+3V3

R5
100

GND

Solder/Jumper_3_Bridged12

GND

GND

25 MHz

C14
4.7p

GND

C15
4.7p

GND

CAN and USB OTG FS can only function if an external 8 MHz, 14.7456 MHz or 25 MHz clock(HSE) is present.

STAT1_LED

D3 LED

STAT2_LED

D4 LED

ERROR_LED

D5 LED

R10
120

R11
120

R12
120

GND

GND

GND

MCU LEDs

U1
STM32F105RBTx

PA0
14

PA1
15

PA2
16

PA3
17

PA4
20

PA5
21

PA6
22

PA7
23

PA8
41

PA9
42

PA10
43

PA11
44

PA12
45

PA13
46

PA14
49

PA15
50

PB0
26

PB1
27

PB2
28

PB3
55

PB4
56

PB5
57

PB6
58

PB7
59

PB8
61

PB9
62

PB10
30

PB11
31

PB12
33

PB13
34

PB14
35

PB15
36

STAT1_LED

STAT2_LED

ERROR_LED

USART1_CK

USART1_TX

USART1_RX

SYS_JTMS-SWDIO

SYS_JTCK-SW

SYS_JTDI

SYS_JTDO

SYS_NJTRST

MCU_CAN1_RX

MCU_CAN1_TX

MCU_CAN2_RX

MCU_CAN2_TX

VBAT

VDD

VDD

VDD

VDD

VDDA

VSS

VSSA

GND

JP1

+3V3

GND

Solder/Jumper_3_Bridged12

LV

HV

Vehicle: Drawn B
Checked CAD Part
SUFST
Sheet: R
File: can
Title: (blank)
Size: A4
KiCad E.

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1.1MHz corner frequency

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Termination resistors must be very well matched to properly reject common mode noise

MCU_CAN2_TX
MCU_CAN2_RX

3V3
GND

C11
100n

U2
TCAN3404-Q1

TXD
RXD
SHDN
STB

1
4
5
8

2
3
6
7

GND
GND
GND
GND

R3
60R

R4
60R

C12
4.7n

2_CANH
2_CANL

Shutdown and standby disabled
Always operating in normal mode

SUFST
Sheet: Root
File: can-repeater.kicad_sch
Title: CAN-Repeater

Size: A4	Date: 2025-11-06	Rev: 1.0.1
KiCad E.D.A. 9.0.4		Id: 1/1

