CAN CONTROLLER + TRANSCEIVER

ICSP Header

Use with something like a PICkit4.

J101
+5V
1 PIC1_MCLR
2
3
4 PIC1_PGD
5 PIC1_PGC
GND

5V POWER

External Power

This is minimal input voltage protection (reverse polarity). When breadboarding, it's easy to make mistakes, so likely, you'd use more protection — clamp diodes to ground, p-channel mosfet reverse-polarity protection, a fuse, etc.

VPP
SW101
SW_SPDT
D101 D_Schottky
U101 L7805
IN OUT
GND
C103 0.1uF
C104 10uF
+5V
+5V
R101 4.7k
D102 LED
GND

51 ohm resistor in series /w MCLR important! Seen videos where PICKit 4 bricks uCs because of voltage spikes on MCLR.

R102 10K
R103 51
PIC1_MCLR

U104 PIC18F4620-IP

Pin	Signal		Signal	Pin
1	VPP/RE3/MCLR		RB7/KBI3/PGD	40	PIC1_PGD
2	RA0/AN0		RB6/KBI2/PGC	39	PIC1_PGC
3	RA1/AN1		RB5/KBI1/PGM	38
4	RA2/AN2/VREF-/CVREF		RB4/KBI0/AN11	37
5	RA3/AN3/VREF+		RB3/AN9/CCP2	36
6	RA4/T0CKI/C1OUT		RB2/INT2/AN8	35	CAN1_RESET
7	RA5/AN4/HLVDIN/C2OUT/SS		RB1/INT1/AN10	34	CAN1_RX1BF
8	RE0/AN5/RD		RB0/INT0/FLT0/AN12	33	CAN1_RX0BF
9	RE1/AN6/WR		VDD	32
10	RE2/AN7/CS		VSS	31
11	VDD		RD7/PSP7/P1D	30
12	VSS		RD6/PSP6/P1C	29
13	OSC1/CLKI/RA7		RD5/PSP5/P1B	28
14	OSC2/CLKO/RA6		RD4/PSP4	27
15	RC0/T1OSO/T13CKI		RC7/RX/DT	26
16	RC1/T1OSI/CCP2		RC6/TX/CK	25
17	RC2/CCP1/P1A		RC5/SDO	24	PIC1_MOSI
18	RC3/SCK/SCL		RC4/SDI/SDA	23	PIC1_MISO
19	RD0/PSP0		RD3/PSP3	22
20	RD1/PSP1		RD2/PSP2	21	PIC1_SS

R104 10k GND

L101 100nH +5VA
C107 1uF
C108 10nF
GND

C111 1uF
C112 10nF
GND

PIC1_OSC1
PIC2_OSC2
Y102 10MHz
C113 20pF
C114 20pF
GND

SW1
SW2

C109 10nF
C110 1uF
+5V
GND

R106 4.7k
Debug LED
D103 LED
GND

0.1uF C101
GND

U103 MCP2515-xSO
PIC1_MOSI 14 SI
PIC1_MISO 15 SO
PIC1_SS 16 CS
PIC1_SCK 13 SCK
VDD 18
TXCAN 1
RXCAN 2
CAN1_OSC2 7 OSC2
CAN1_OSC1 8 OSC1
3 CLKOUT/SOF
INT 12
RXOBF 11 CAN1_RXOBF
RX1BF 10 CAN1_RX1BF
TXORTS 4
TX1RTS 5
TX2RTS 6
RESET 17
VSS 9
GND

Y101 40MHz
CAN1_OSC1 CAN1_OSC2
C105 20pF
C106 20pF
GND

+5V
R105 10k
CAN1_RESET
SW102 CAN1_RST
GND

0.1uF C102
GND

U102 MCP2562-E-P
1 TXD
4 RXD
VDD 3
5 Vio
8 STBY
CANH 7 CANH
CANL 6 CANL
VSS 2
+5V
GND

Vio is for what voltage level the logic circuitry is at, which is 5V here.

STBY is for putting the transceiver in standby mode or normal mode. 0V for normal.

CAN Bus Format: CAN 2.0B Extended Frame
CAN Bus Baud Rate: 250kbps

Push buttons whose state is read in by RE0 and RE1 and then sent over SPI.

SW103 SW_Push +5V
SW1
R107 10k
GND

SW104 SW_Push +5V
SW2
R108 10k
GND

Sheet: CAN Node 2
File: can_node_2sch.sch

NODE 1
Read button states.
Send state over CAN.
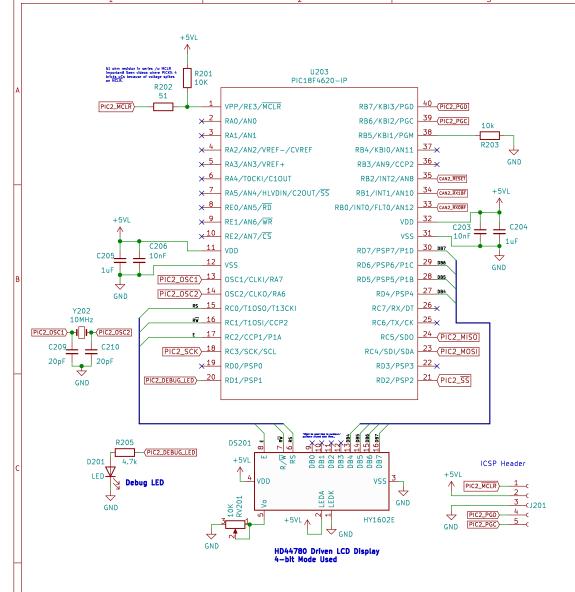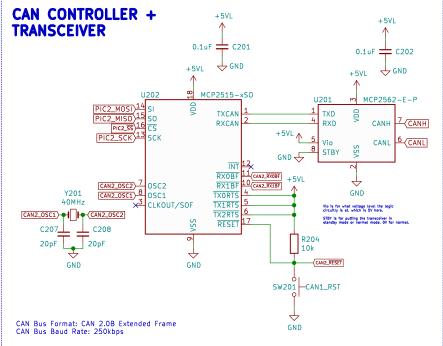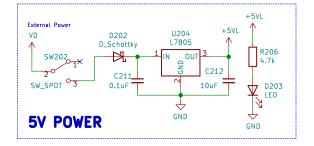**Receive command for Debug LED.**

Author: Abdullah Almosalami

This CAN Node will send the state of the two button switches and update the debug LED state through CAN messages.

Sheet: /
File: can_test.sch

Title: MCP2515 CAN TEST: Node 1
Size: A4
Date: 2021-11-06
Rev: 1.0
KiCad E.D.A. kicad (5.1.7)-1
Id: 1/2

CAN CONTROLLER + TRANSCEIVER

51 ohm resistor in series /w MCLR
Important! Seen videos where PICKit 4
bricks uCs because of voltage spikes
on MCLR.

U203
PIC18F4620-IP

Pin	Left		Right	Pin
1	VPP/RE3/MCLR		RB7/KBI3/PGD	40
2	RA0/AN0		RB6/KBI2/PGC	39
3	RA1/AN1		RB5/KBI1/PGM	38
4	RA2/AN2/VREF-/CVREF		RB4/KBI0/AN11	37
5	RA3/AN3/VREF+		RB3/AN9/CCP2	36
6	RA4/T0CKI/C1OUT		RB2/INT2/AN8	35
7	RA5/AN4/HLVDIN/C2OUT/SS		RB1/INT1/AN10	34
8	RE0/AN5/RD		RB0/INT0/FLT0/AN12	33
9	RE1/AN6/WR		VDD	32
10	RE2/AN7/CS		VSS	31
11	VDD		RD7/PSP7/P1D	30
12	VSS		RD6/PSP6/P1C	29
13	OSC1/CLKI/RA7		RD5/PSP5/P1B	28
14	OSC2/CLKO/RA6		RD4/PSP4	27
15	RC0/T1OSO/T13CKI		RC7/RX/DT	26
16	RC1/T1OSI/CCP2		RC6/TX/CK	25
17	RC2/CCP1/P1A		RC5/SDO	24
18	RC3/SCK/SCL		RC4/SDI/SDA	23
19	RD0/PSP0		RD3/PSP3	22
20	RD1/PSP1		RD2/PSP2	21

R201 10K
R202 51
PIC2_MCLR
R203 10k
PIC2_PGD
PIC2_PGC
CAN2_RESET
CAN2_RX1BF
CAN2_RXOBF
C203 10nF
C204 1uF
C205 1uF
C206 10nF
Y202 10MHz
PIC2_OSC1
PIC2_OSC2
C209 20pF
C210 20pF
PIC2_SCK
PIC2_DEBUG_LED
PIC2_MISO
PIC2_MOSI
PIC2_SS

+5VL
GND

U202 MCP2515-xSO
Pin				Pin
14	SI		TXCAN	1
15	SO		RXCAN	2
16	CS			
13	SCK		INT	12
			RXOBF	11
7	OSC2		RX1BF	10
8	OSC1		TX0RTS	4
3	CLKOUT/SOF		TX1RTS	5
18	VDD		TX2RTS	6
9	VSS		RESET	17

PIC2_MOSI
PIC2_MISO
PIC2_SS
PIC2_SCK
CAN2_OSC2
CAN2_OSC1
CAN2_RXOBF
CAN2_RX1BF
CAN2_RESET

U201 MCP2562-E-P
Pin				Pin
1	TXD		VDD	3
4	RXD		CANH	7
5	Vio		CANL	6
8	STBY		VSS	2

CANH
CANL

0.1uF C201
0.1uF C202
GND
+5VL

Y201 40MHz
C207 20pF
C208 20pF
GND

R204 10k
SW201 CAN1_RST
GND

Vio is for what voltage level the logic
circuitry is at, which is 5V here.

STBY is for putting the transceiver in
standby mode or normal mode. 0V for normal.

CAN Bus Format: CAN 2.0B Extended Frame
CAN Bus Baud Rate: 250kbps

R205 4.7k
PIC2_DEBUG_LED
D201 LED
Debug LED
GND

DS201
+5VL
E
R/W
RS
VDD
DB0 DB1 DB2 DB3 DB4 DB5 DB6 DB7
LEDA LEDK
Vo
10K RV201
GND
HY1602E

High in good line to pulldown/
pullout should data lines.

8 E 7 R/W 6 RS
9 10 11 12 13 14 15 16
DB0 DB1 DB2 DB3 DB4 DB5 DB6 DB7

HD44780 Driven LCD Display
4-bit Mode Used

ICSP Header
+5VL
| PIC2_MCLR | 1 |
| | 2 |
| | 3 | J201
| PIC2_PGD | 4 |
| PIC2_PGC | 5 |
GND

5V POWER

External Power
VD
SW202
SW_SPDT
D202 D_Schottky
C211 0.1uF
U204 L7805
IN OUT
GND
C212 10uF
R206 4.7k
D203 LED
+5VL
GND

NODE 2
Update LCD with Node 1 button states.
Send debug LED command.