J10
1 mm x 62 mil PCB

PWMH3
PWML3
PWMH2
PWML2
PWMH1
PWML1
RP38_PWMH6_SCL2

RP37_PWML6_SDA2
RP51_RC3
AN10_RP40
AN3
AN11

R10   3V3
0 Ω

3V3

C10
1 µF, 25 V

GND

AN14_OA3IN+   R80   0E
AN13_OA3IN-

AN9_OA1IN+   R81   0E
RA1_OA1IN-   R90   0E

R91   0E

AN1
AN2

AN12

RP33_RB1
RP32_RB0

GND

R80, R81, R90, R91 = 15 k if using OpAmp Inputs
R80, R81, R90, R91 = 0 Ω if using Analog Inputs
Default = Use Analog Inputs

Load interface connector

AN1   AN2   AN3   AN10_RP40   AN11
C70   C71   C72   C73   C74
220 pF, 50 V   220 pF, 50 V   220 pF, 50 V   220 pF, 50 V   220 pF, 50 V
GND   GND   GND   GND   GND

AN9_OA1IN+   AN12   AN13_OA3IN-   AN14_OA3IN+
C75   C76   C77   C78
220 pF, 50 V   220 pF, 50 V   220 pF, 50 V   220 pF, 50 V
GND   GND   GND   GND

Local Decoupling for Analog signals

RA1_OA1IN-   R92   OA1OUT
15 K 1% 0603
EMPTY

AN9_OA1IN+

R93
15 K 1% 0603
EMPTY
GND

AN13_OA3IN-   R82   OA3OUT
15 K 1%0603
EMPTY

AN14_OA3IN+

R83
15 K 1% 0603
EMPTY
GND

Op-Amp Config

Remove R82, R83, R92, R93 if using Analog Inputs
Default = Use Analog Inputs

U1
dsPIC33CK 256MP503-E/M5
dsPIC33CK 64MP103T-I/M5
dsPIC33CK 32MP103T-I/M5

3V3 3A

C1
0.1 µF, 25 V
GND

3V3

C2
0.1 µF, 25 V
GND

PWMH1   1   RP46/PWM1H/RB14
PWML1   2   RP47/PWM1L/RB15
MCLR   3   /MCLR
AN12   4   AN12/ANN0/RP48/RC0
OA1OUT   5   OA1OUT/AN0/CMP1A/IBIAS0/RA0
RA1_OA1IN-   6   OA1IN-/ANA1/RA1
AN9_OA1IN+   7   OA1IN+/AN9/RA2
AN3   8
OA3OUT   9   DACOUT/AN3/CMP1C/RA3
3V3A   10   OA3OUT/AN4/CMP3B/IBIAS3/RA4
11   AVDD
AN13_OA3IN-   12   AVSS
AN14_OA3IN+   13   OA3IN-/AN13/CMP3/ISRC0/RP49/RC1
3V3   14   VDD
RP51_RC3   15   AN15/CMP2A/IBIAS2/RP51/RC3
RP32_RB0   16   OSCI/CLKI/AN5/RP32/RB0
RP33_RB1   17   OSCO/CLKO/AN6/RP33/RB1
18

36   RP45/PWM2L/RB13   PWML2
35   TDI/RP44/PWM2H/RB12   PWMH2
34   TCK/RP43/PWM3L/RB11   PWML3
33   TMS/RP42/PWM3H/RB10   PWMH3
32   VDD   3V3
31   VSS
30   RP53/ASCL2/RC5   ASCL2
29   RP52/ASDA2/RC4   ASDA2
28   PGC1/AN11/RP41/SDA1/RB9   AN11
27   PGD1/AN10/RP40/SCL1/RB8   AN10_RP40
26   TDO/AN2/CMP3A/RP39/RB7   AN2
25   PGC3/RP38/SCL2/RB6   RP38_PWMH6_SCL2
24   PGD3/RP37/SDA2/RB5   RP37_PWML6_SDA2
23   VDD
22   VSS
21   PGC2/OA2IN+/RP36/RB4   PGC_RX_SCL
20   PGD2/OA2IN-/AN8/RP35/RB3   PGD_TX_SDA
19   OA2OUT/AN1/AN7/ANA0/CMP1D/CMP2D/CMP3D/RP34/INT0/RB2   AN1

3V3   C3   0.1 µF, 25 V   GND
3V3   C4   0.1 µF, 25 V   GND

GND

3V3

R20
10 k

R21   100 Ω 1%   MCLR

J20
.1" Male RA

1   3V3
2   3V3
3   PGD_TX_SDA
4   PGC_RX_SCL
5

C20
56 pF, 50 V
GND

PICKIT PROGRAM HEADER

Programming and Communications

USB
GP0   3V3   3V3
GP1   TX   PGD_TX_SDA
GP2   RX   PGC_RX_SCL
GP3
GNDF   GND   GND

AP1018_Rev1_2_IsoMicroUSBinterface.SCHDOC

Iso Mini USB Interface

J30
50mil straight
1   ASCL2
2   ASDA2   GND
3
4   3V3   GND
5

External Power & I2C Communications

3V3   3V3
C30   C31
22 µF, 25 V X 7R   22 µF, 25 V X 7R
GND   GND

FB 35
180 Ω @ 100 MHz
3V3   1   2   3V3A
C35   C36
10 µF, 25 V X 5R   10 µF, 25 V X 5R
GND   GND

ATTENTION
ELECTROSTATIC
SENSITIVE DEVICE

FD1   FD2   FD3

3V3   3V3
RP32_RB0   RP33_RB1

R1   R2
261 Ω   261 Ω

A   A
D1   D2
K   LED 0603 Green   K   LED 0603 Red
GND   GND

Active   **Error**

Status Indicators

Remove R1, R2 if using Ditial I/O from Load
Default = Use LEDs

Figure 3: EPC9528 main schematic

Data type selector

Default set to UART using 5 V

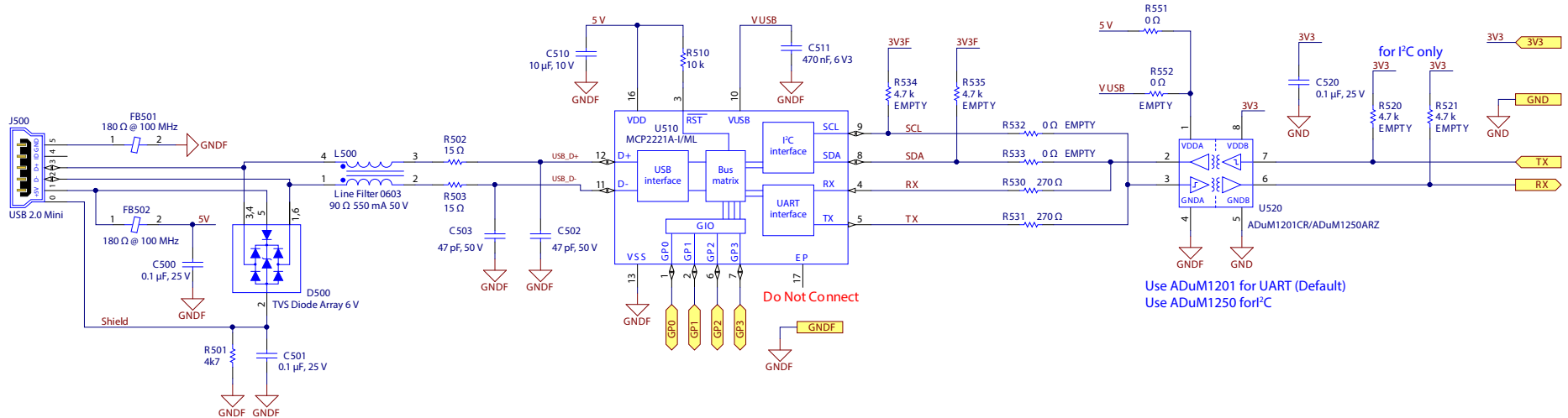| UART		I²C	
5 V		3V3	
Install	DNP	Install	DNP
R530	R532	R532	R530
R531	R533	R533	R531
R551	R534	R534	R551
	R535	R535	
	R520	R520	
	R521	R521	
	R552	R552	

J500 — USB 2.0 Mini

FB501 180 Ω @ 100 MHz

GNDF

FB502 180 Ω @ 100 MHz

5V

C500 0.1 µF, 25 V

GNDF

Shield

R501 4k7

C501 0.1 µF, 25 V

GNDF GNDF

D500 TVS Diode Array 6 V

L500 Line Filter 0603 90 Ω 550 mA 50 V

R502 15 Ω

R503 15 Ω

C503 47 pF, 50 V

C502 47 pF, 50 V

GNDF GNDF

USB_D+

USB_D−

C510 10 µF, 10 V

5 V

R510 10 k

GNDF

VUSB

C511 470 nF, 6 V3

GNDF

U510 MCP2221A-I/ML

VDD RST VUSB

USB interface

Bus matrix

I²C interface

UART interface

GIO

VSS GP0 GP1 GP2 GP3 EP

D+ 12

D− 11

16 3 10

SCL 9

SDA 8

RX 4

TX 5

13 1 2 6 7 17

GNDF

GP0 GP1 GP2 GP3

GNDF

Do Not Connect

SCL

SDA

RX

TX

3V3F

R534 4.7 k EMPTY

3V3F

R535 4.7 k EMPTY

R532 0 Ω EMPTY

R533 0 Ω EMPTY

R530 270 Ω

R531 270 Ω

R551 0 Ω

5 V

R552 0 Ω

VUSB

EMPTY

GNDF

U520 ADuM1201CR/ADuM1250ARZ

VDDA VDDB

GNDA GNDB

2 7

3 6

1 8

4 5

GND

for I²C only

3V3

C520 0.1 µF, 25 V

GND

3V3 3V3

R520 4.7 k EMPTY

R521 4.7 k EMPTY

GND

3V3 3V3

GND

TX

RX

Use ADuM1201 for UART (Default)
Use ADuM1250 for I²C

Figure 4: EPC9528 USB interface schematic