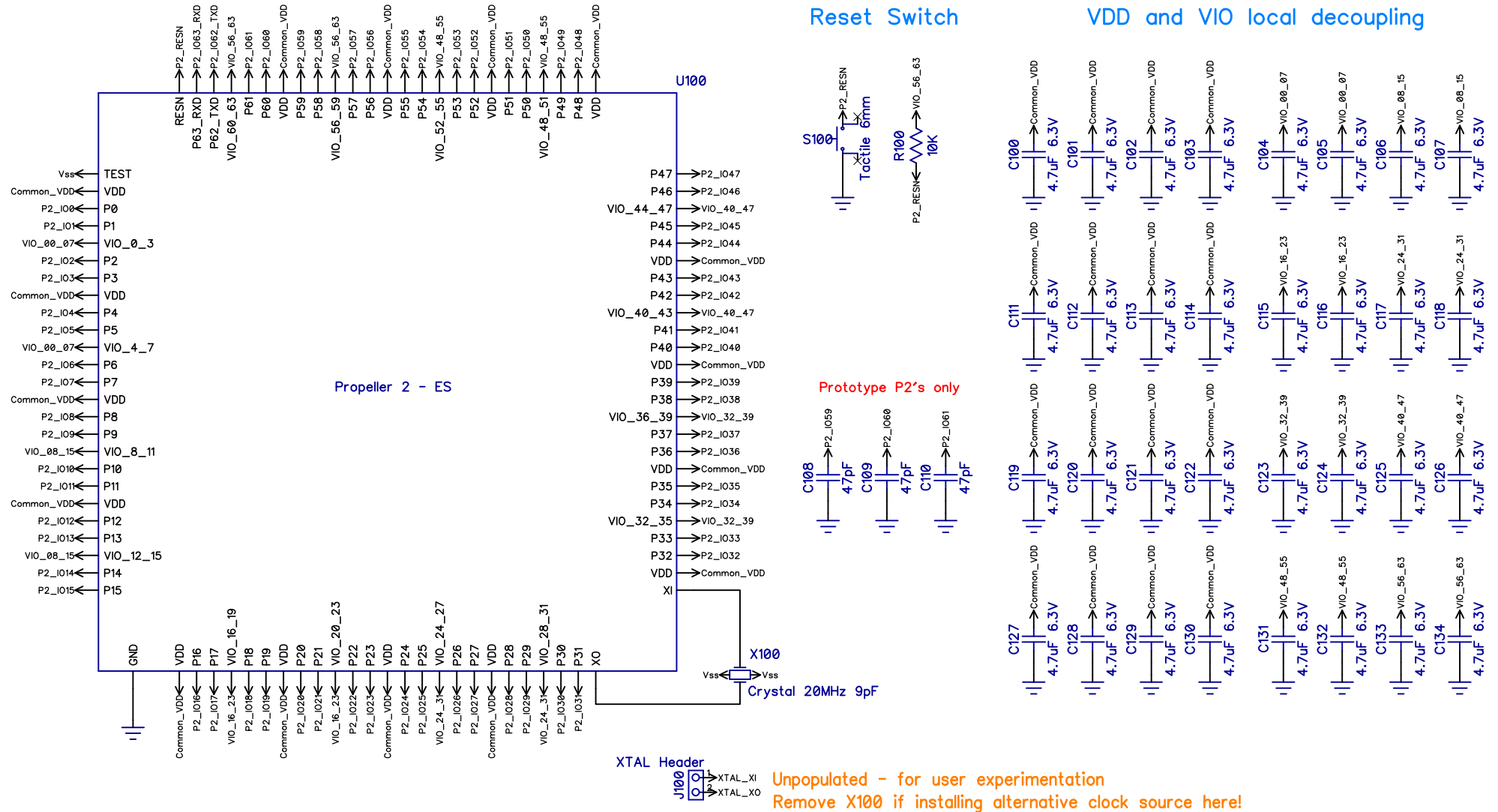


Microcontroller



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 599 Menlo Drive
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 (916) 624-8333
<http://www.parallax.com/>

Parallax P2X8C4M64P-ES Evaluation Board

ENGINEERING SAMPLE - NOT FOR RESALE
PRE-PRODUCTION EVALUATION

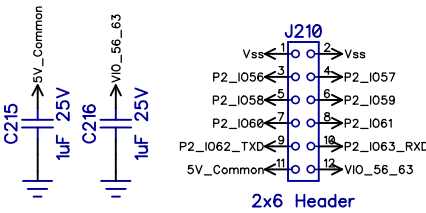
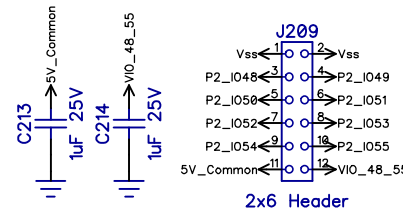
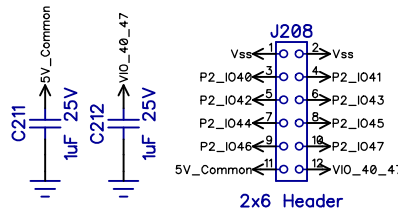
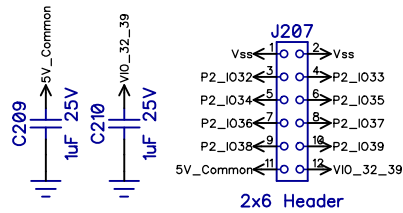
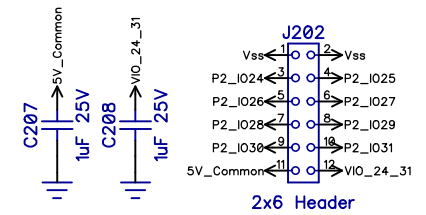
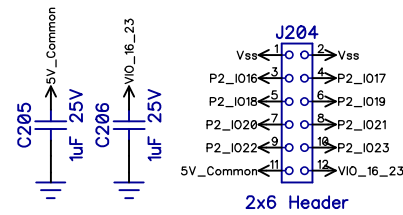
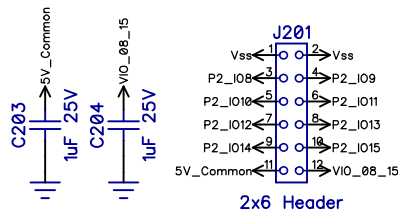
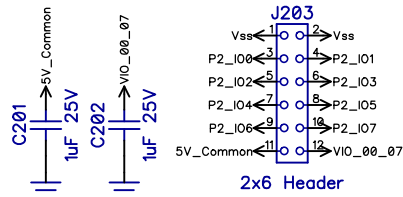
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Part Number: 64000-ES
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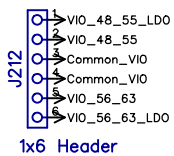
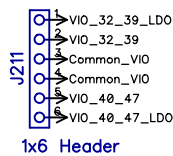
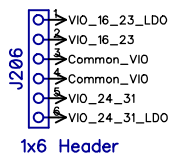
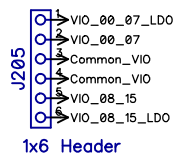
Last Update: 29 Nov 2018 (MM)

I/O Headers

Edge expansion headers



P2 Power supply selection and current monitoring headers



Auxiliary power header pads (unpopulated)



Unpopulated pads - Use with care !
 These pads are unprotected! Proceed at your own risk!

These pads at J213 connect directly to the P2-AUX 5V input power rail.
 Source power here, for example to power a fan, or power your P2-EVAL instead of from USB.

If you use these pads to supply power to the P2-EVAL board,
 you must ensure no other power source is connected to the P2-USB socket!
 Do NOT exceed the maximum input voltage of 5.5V. Minimum input voltage is 4.5V

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 PRE-PRODUCTION EVALUATION

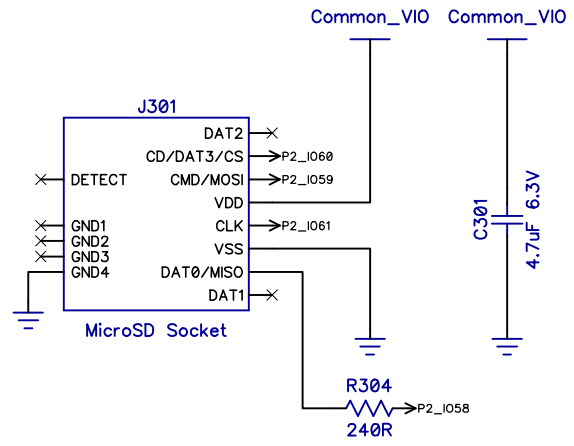
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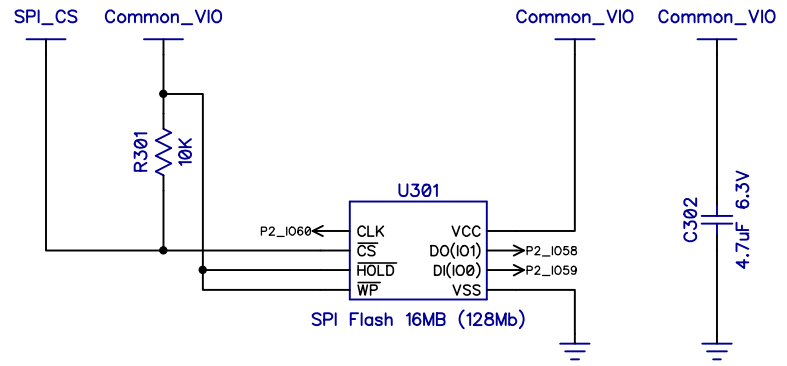
Last Update: 29 Nov 2018 (MM)

Memory

MicroSD

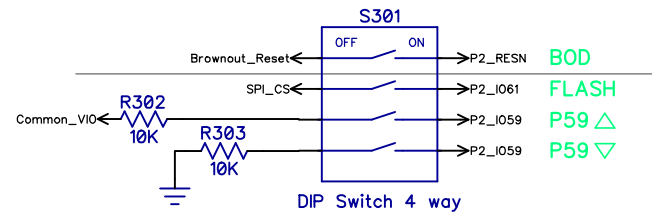


SPI Flash



Boot Mode Selection	FLASH	P59 \triangle	P59 ∇
Serial window of 60 seconds, default. (When SD card is NOT inserted)	OFF	OFF	OFF
Serial window of 60 seconds, overrides SPI Flash and SD card.	ON or OFF	ON	OFF
Serial window of 100 ms, then SPI flash. If SPI flash fails then serial window of 60 seconds.	ON	OFF	OFF
SPI flash only (fast boot), no serial window. If SPI flash fails then shutdown.	ON	OFF	ON
SD card with serial window on failure. If SD card fails then serial window of 60 seconds.	OFF	OFF	OFF
SD card only, no serial window. If SD card fails then shutdown.	OFF	OFF	ON

Boot options and "BOD" brownout enable switch



Switch off "BOD" brownout detection when using non-default VDD or VIO voltages

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PRE-PRODUCTION EVALUATION

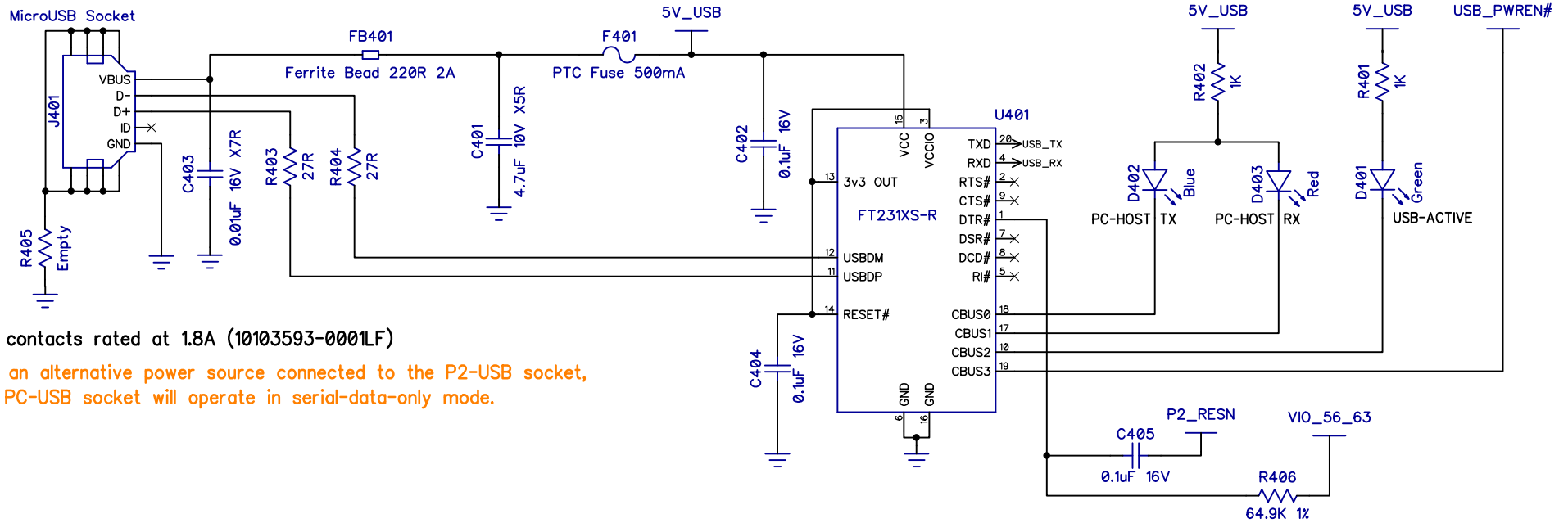
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USB

PC-USB power socket and P2-to-PC serial data



USB contacts rated at 1.8A (10103593-0001LF)

With an alternative power source connected to the P2-USB socket, this PC-USB socket will operate in serial-data-only mode.

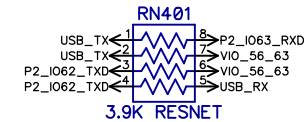
FTDI Configuration

- CBUS0 = RXLED#
- CBUS1 = TXLED#
- CBUS2 = PWREN#
- CBUS3 = PWREN#

USB Config / MaxPower = 500mA

Manufacturer = Parallax Inc

Product Description = Propeller 2 EVAL Rev A



Pull-up serial bus to prevent floating-state terminal chars
Include series to prevent parasitic power in either direction

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**ENGINEERING SAMPLE - NOT FOR RESALE
PRE-PRODUCTION EVALUATION**

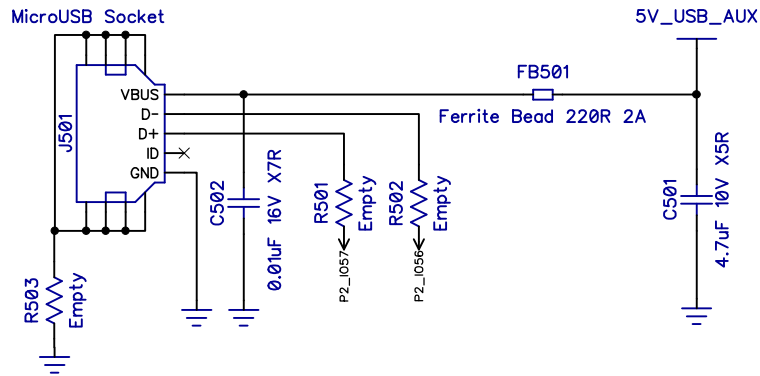
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Part Number: 64000-ES
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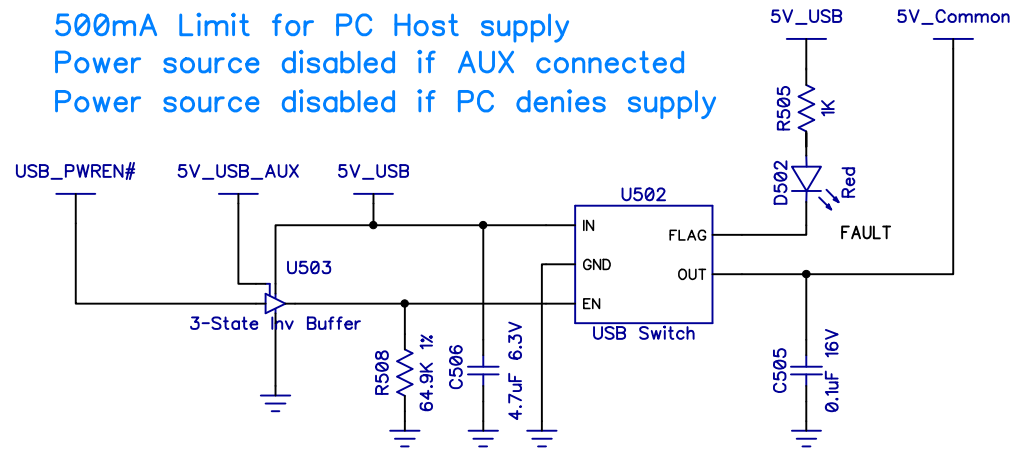
USB Aux, Logic and Limit

P2-USB high current power socket and P2 USB data

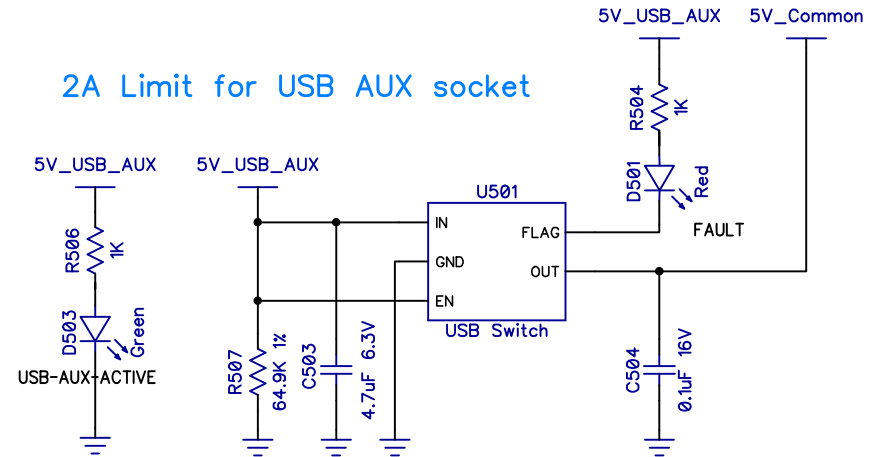


USB contacts rated at 1.8A (10103593-0001LF)

500mA Limit for PC Host supply
 Power source disabled if AUX connected
 Power source disabled if PC denies supply



2A Limit for USB AUX socket



Safe to connect power sources to both USB sockets at the same time.
 USB Switches will source power from only one socket, P2-USB preferred.

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Parallax P2X8C4M64P-ES Evaluation Board

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 PRE-PRODUCTION EVALUATION

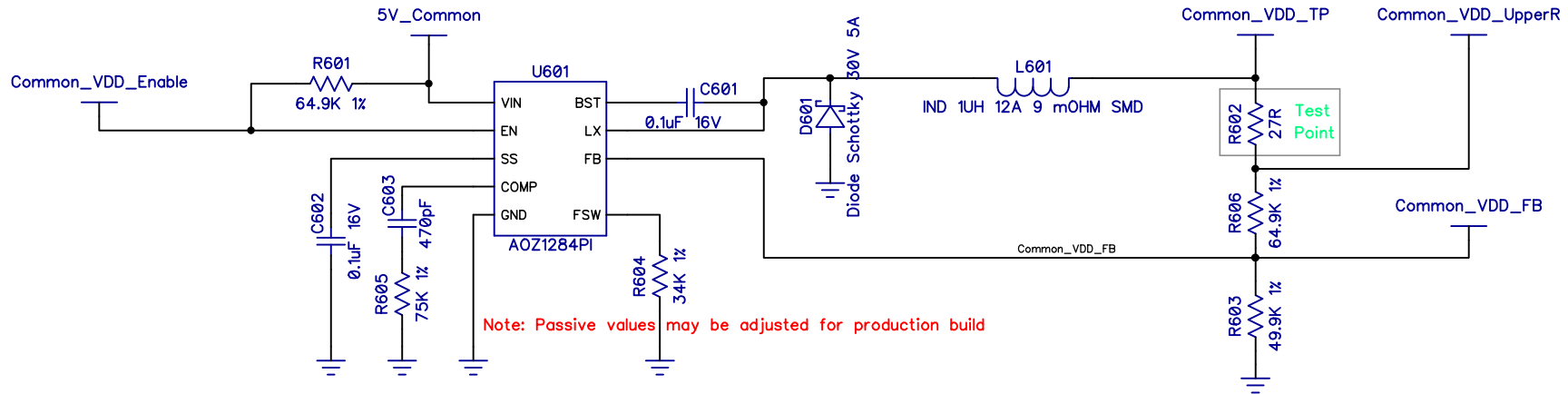
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Part Number: 64000-ES
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Last Update: 29 Nov 2018 (MM)

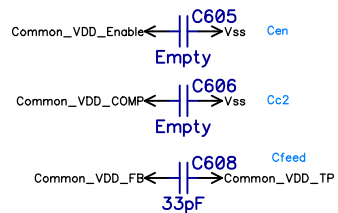
Common VDD 1V8

VDD Power Supply - Nominal 1V8

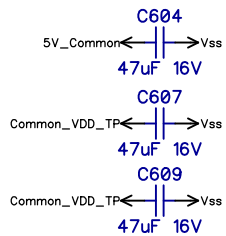


Note: Passive values may be adjusted for production build

Optional / Tuning Caps



Bulk Caps



Common_VDD Override



Voltage Adjustment Header
Use at your own risk !

Insert parallel resistance to adjust the feedback resistors, to increase or decrease voltage.

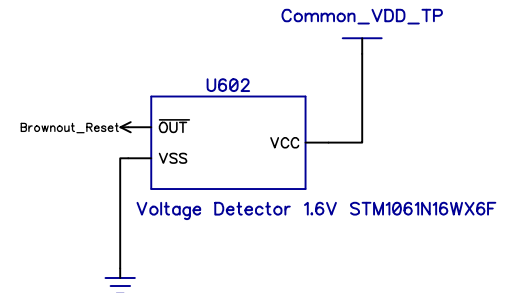
DO NOT EXCEED 2.2V for VDD - OR RISK PERMANENT DAMAGE

Current Test Point



VDD Male Header

Brownout Detector



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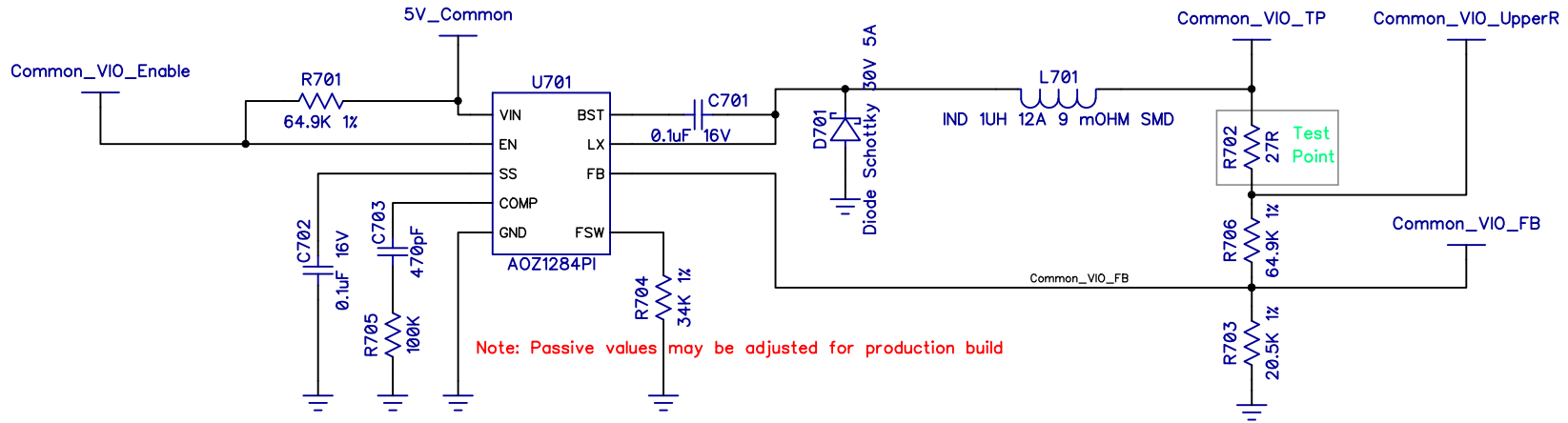
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Part Number: 64000-ES
Revision: A

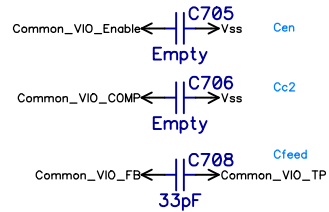
Last Update: 29 Nov 2018 (MM)

Common VIO 3V3

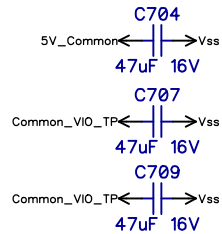
VIO Power Supply - Nominal 3V3



Optional / Tuning Caps



Bulk Caps



Common_VIO Override



Voltage Adjustment Header
Use at your own risk !

Insert parallel resistance to adjust the feedback resistors, to increase or decrease voltage.

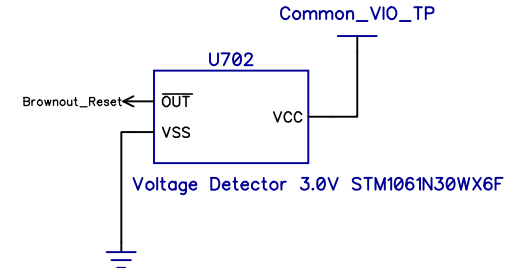
DO NOT EXCEED 4.0V for VIO - OR RISK PERMANENT DAMAGE

Current Test Point



VIO Male Header

Brownout Detector



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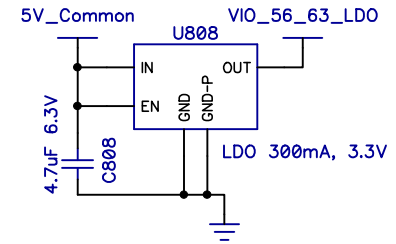
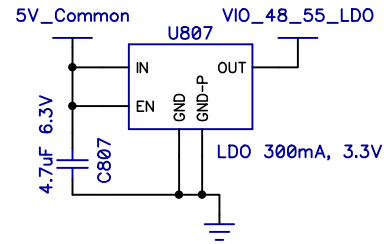
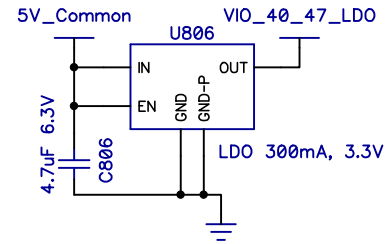
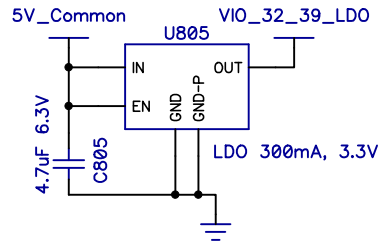
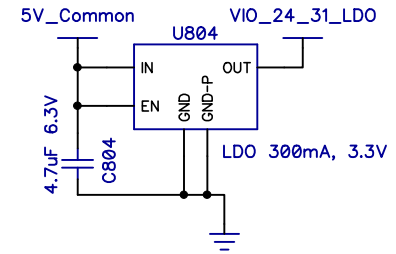
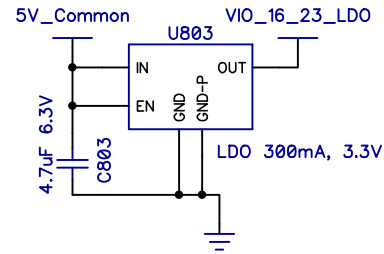
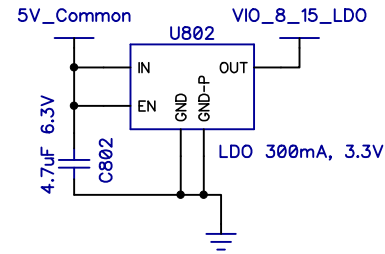
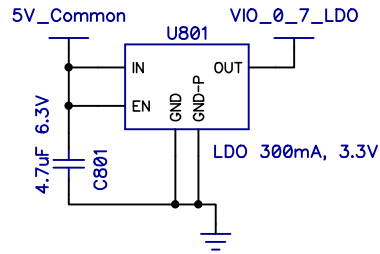
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LDO 3V3

Low noise VIO 3V3 local regulation



Note: LDO output caps located beside P2 microcontroller

Use these power sources when you want a fixed 3V3 low noise supply for the P2 smart pins.
Recommended for analog experiments, such as when using the P2 smart pins in ADC and DAC modes.
Refer to the "I/O Pin Voltage Selection Headers" section in the Propeller 2 ES Eval Board Guide

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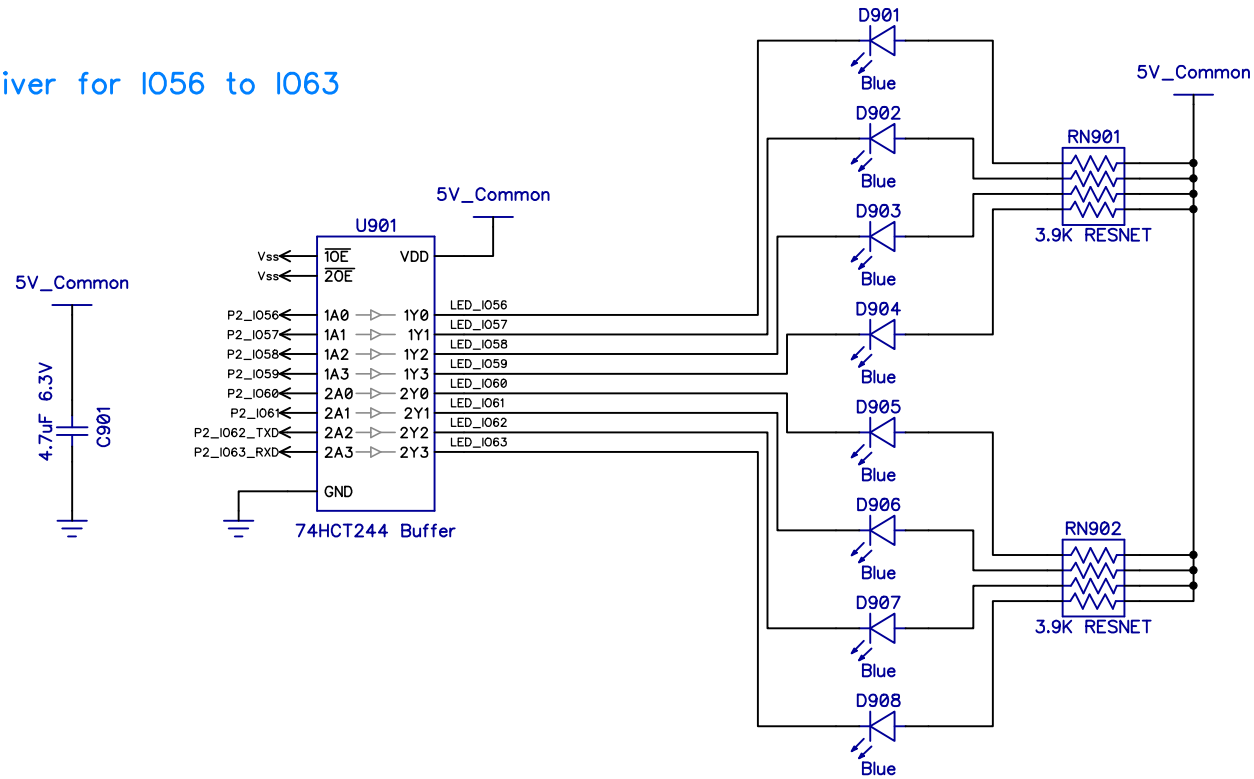
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LEDs

LED driver for IO56 to IO63



P2_IO56 to P2_IO63 are typically idle high and active low.

The LED's are wired such that they turn ON when the corresponding P2_IO pin asserts low.

Buffer input capacitance typically 3.5pF.

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Mounting holes



Mounting hole diameter 3.2mm
4.0mm hole spacing (56.56mm diagonal), suitable for 50mm fan

Gnd test points



BOM only - mfg

PCB
PCB for P2 Eval Board

BOM only - kitted parts

HW201 CONN SHUNT	HW202 CONN SHUNT	HW203 CONN SHUNT	HW204 CONN SHUNT	HW205 CONN SHUNT
HW206 CONN SHUNT	HW207 CONN SHUNT	HW208 CONN SHUNT	HW209 CONN SHUNT	HW210 CONN SHUNT
HW211 Self adhesive foot	HW212 Self adhesive foot	HW213 Self adhesive foot	HW214 Self adhesive foot	

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RefDes	Quantity	Value	Name	Manufacturer
C100, C101, C102, C103, C104, C105, C106, C107, C111, C112, C113, C114, C115, C116, C117, C118, C119, C120, C121, C122, C123, C124, C125, C126, C127, C128, C129, C130, C131, C132, C133, C134, C301, C302, C503, C506, C801, C802, C803, C804, C805, C806, C807, C808, C901	45	4.7uF 6.3V	200-01049 : CAP-CER,4.7uF,6.3V,X5R,0402	TDK : C1005X5R0J475M050BC
C108, C109, C110	3	47pF	213-04741 : Cap-Cer,47pF,10V,X5R,0402	Yageo : CC0402JRNPO9BN470
C201, C202, C203, C204, C205, C206, C207, C208, C209, C210, C211, C212, C213, C214, C215, C216	16	1uF 25V	213-01011 : Cap-Cer,1uF,25V,X5R,0402	
C401, C501	2	4.7uF 10V X5R	200-11202 : CAP-CER,4.7uF,10V,X5R,0603	Samsung : CL10A475MP5LNNC
C402, C404, C405, C504, C505, C601, C602, C701, C702	9	0.1uF 16V	200-11203 : CAP-CER,0.1uF,X7R,16V,0402	Murata : GRM155R71C104KA88J
C403, C502	2	0.01uF 16V X7R	200-10504 : CAP-CER,0.01uF,10%,16V,0402	AVX : 0402YC103KAT2A
C603, C703	2	470pF	200-10502 : CAP-CER,470pF,10%,50V,0402	Yageo : CC0402KRX7R9BB471
C604, C607, C609, C704, C707, C709	6	47uF 16V	213-01015 : CAP CER 47UF 16V X5R 1210	Samsung : CL32A476KOJNNNE
C605, C606, C705, C706, J100, J213, J1001, J1002, J1003, J1004, R405, R501, R502, R503	14	Empty	Empty	Empty
C608, C708	2	33pF	200-10510 : CAP-CER,33pF,5%,50V,0402	Yageo : CC0402JRNPO9BN330
D401, D503	2	Green	350-10003 : LED 0603, Green Clear	Lite-On : LTST-C191KGKT
D402, D901, D902, D903, D904, D905, D906, D907, D908	9	Blue	350-10004 : LED 0603, Blue Clear	Lite-On : LTST-C190TBKT
D403, D501, D502	3	Red	350-10001 : LED 0603, Super Red Clear	Lite-On : LTST-C191KRKT
D601, D701	2	Diode Schottky 30V 5A	501-10028 : Diode,Schottky,30V,5A,TMINIP2	Panasonic : DB2431200L
F401	1	PTC Fuse 500mA	502-14013 : PTC RESET FUSE 6V 500MA 0603	Bourns : MF-FSMF050X-2
FB401, FB501	2	Ferrite Bead 220R 2A	275-10004 : FerriteBead,2A,220OHM,0603,SMT	TDK : MPZ1608S221ATA00
HW201, HW202, HW203, HW204, HW205, HW206, HW207, HW208, HW209, HW210	10	CONN SHUNT	452-00009 : Jumper, 2-Pin - LF	TE : 382811-6
HW211, HW212, HW213, HW214	4	Self adhesive foot	700-00037 : PCB Feet, Rubber	3M : SJ-5003 (BLACK)
J201, J202, J203, J204, J207, J208, J209, J210	8	2x6 Header	450-00112 : CON-HDR,2X6,0.1",Straight,TH	Amphenol FCI : 77313-101-12LF
J205, J206, J211, J212	4	1x6 Header	450-00113 : CON-HDR,1x6,0.1",SMT	Harwin : M20-8770642R
J301	1	MicroSD Socket	452-10029 : CON-MICRO SD,RA,SMT	Molex : 105162-0001
J401, J501	2	MicroUSB Socket	452-10028 : MicroUSB SMT, RA Connector	Amphenol FCI : 10118194-0001LF
J601, J701	2	1x3 Socket	450-00114 : CON-SCKT 3way 1.27mm SMT	Harwin : M50-3140345R
J602, J702	2	1x2 Header	450-00115 : CON-HDR,1x2,0.1",Straight,TH	Amphenol FCI : 68000-102HLF
L601, L701	2	IND 1uH 12A 9 mOHM SMD	275-10021 : IND,1uH,12A,Shielded	Abracon : ASPI-0630LR-1R0M-T15
PCB	1	PCB for P2 Eval Board	300-64000 : PCB for P2-EvalBoard	
R100, R301, R302, R303	4	10K	150-11022 : RES,10K,5%,0402	Panasonic : ERJ-2GEJ103X
R304	1	240R	150-12023 : RES,240,5%,0402	Yageo : RC0402JR-07240RL
R401, R402, R504, R505, R506	5	1K	173-10002 : RES,1K,5%,0402	Stackpole : RMCF0402JT1K00
R403, R404, R602, R702	4	27R	150-11050 : Res,27,0402	Rohm : MCR01MRTJ270
R406, R507, R508, R601, R606, R701, R706	7	64.9K 1%	172-10226 : RES,64.9K,1%,0402	Yageo : RC0402FR-0764
R603	1	49.9K 1%	172-10235 : RES,49.9K,1%,0402	Samsung : RC1005F4992CS
R604, R704	2	34K 1%	172-10229 : RES,34K,1%,0402	Vishay : CRCW040234K0FKED
R605	1	75K 1%	172-16014 : DISCON RES,75K,1%,0402	Yageo : RC0402FR-0775KL
R703	1	20.5K 1%	172-16015 : RES,20.5K,1%,0402	Yageo : RC0402FR-0720K5L
R705	1	100K	150-11052 : Res,100k,0402	Yageo : RC0402JR-07100KL
RN401, RN901, RN902	3	3.9K RESNET	179-10009 : RES-NTWK,3.9K,5%,0804	Vishay : CRA04S0833K90J
S100	1	Tactile 6mm	400-10002 : SW-PB,Tactile,Blue,SMD	C&K : PTS645SM43SMTR
S301	1	DIP Switch 4 way	400-10017 : SWITCH SLIDE SPST DIP 4WAY SMT	CTS Electro : 219-4MSTR
TP1001, TP1002, TP1003, TP1004	4	Test Point Turret	452-00039 : TEST POINT TURRET SINGL 4.75MM	Mill Max : 2505-2-00-44-00-00-07-0
U100	1	Propeller 2 - ES	P2X8C4M64P-ES : P2X8C4M64P-ES	Parallax : P2X8C4M64P-ES
U301	1	SPI Flash 16MB (128Mb)	604-10047 : IC FLASH 128M SPI 133MHZ 8SOIC	Winbond : W25Q128JVSIM TR
U401	1	FT231XS-R	604-00065 : IC-FTDI, FT231X	FTDI : FT231XS-R
U501, U502	2	USB Switch	501-10029 : IC LOAD SW PROGR SOT-25	Diodes Inc : AP22802AW5-7
U503	1	3-State Inv Buffer	603-10037 : IC,1xBuffer w/En,Inv	Texas : SN74LVC1G240DCKR
U601, U701	2	AOZ1284PI	601-10343 : Buck Regulator 4A	Alpha & Omega : AOZ1284PI
U602	1	Voltage Detector 1.6V	601-10292 : IC VOLT DETECTOR 1.6V LP SOT-23	STMicro : STM106IN16WX6F
U702	1	Voltage Detector 3.0V	601-10291 : IC VOLT DETECTOR 3.0V LP SOT-23	STMicro : STM106IN30WX6F
U801, U802, U803, U804, U805, U806, U807, U808	8	LDO 300mA, 3.3V	601-10339 : IC REG LDO CMOS 3.3V UDFN4	OnSemi : NCP114AMX330TCG
U901	1	74HCT244 Buffer	603-10036 : Octal Buffer NonInv 20TSSOP	Nexperia : 74HCT244PW,118
X100	1	Crystal 20MHz 9pF	251-15002 : CRYSTAL 20.000MHZ 9PF SMD	Epson : TSX-322520.000MF20G-AC3
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