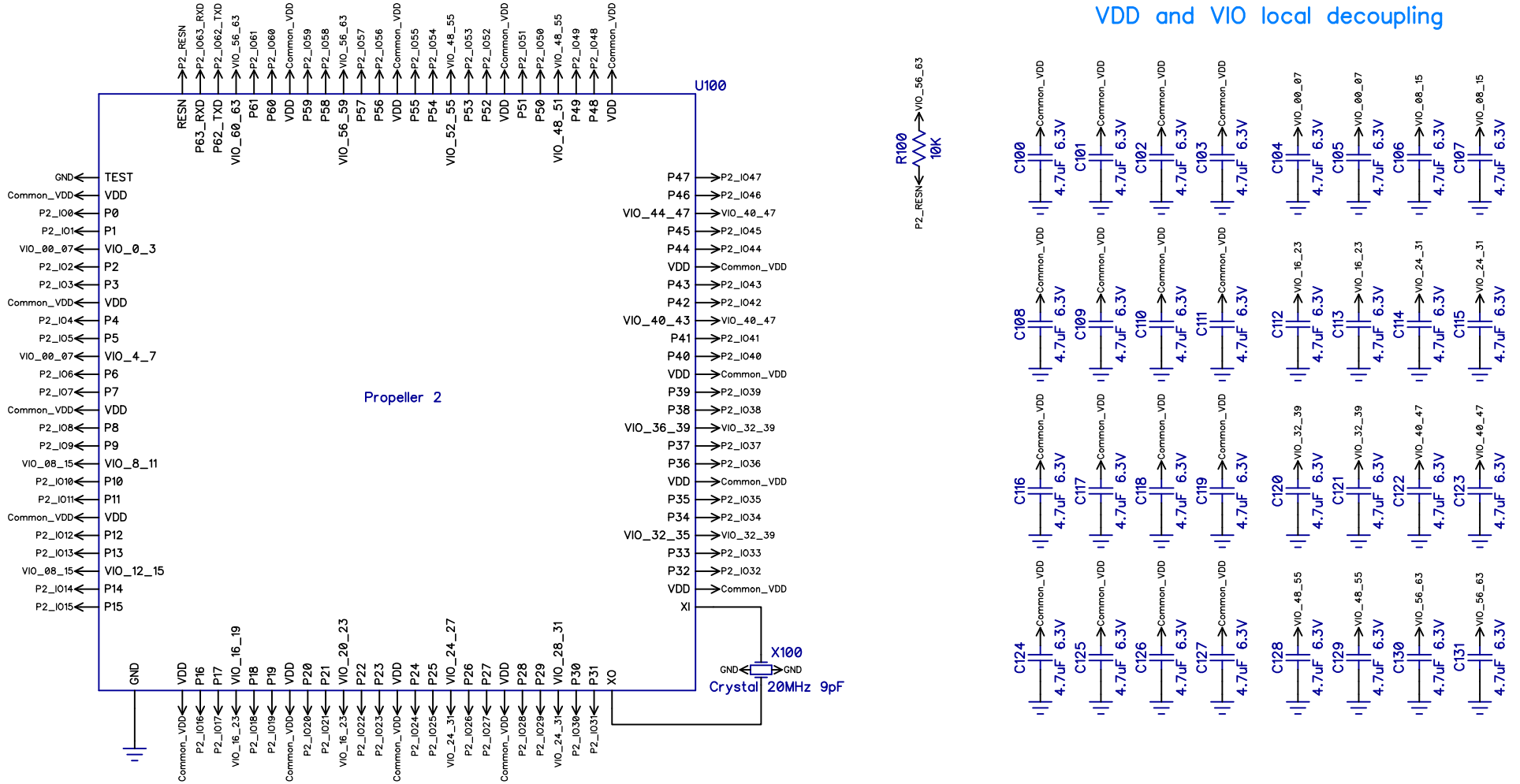


# Microcontroller



## VDD and VIO local decoupling

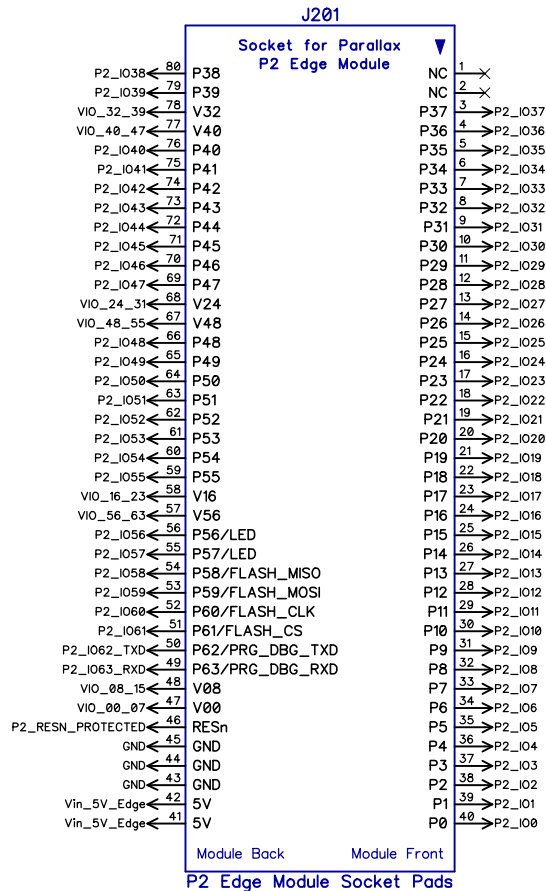
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## P2 Edge - Propeller 2 Module with Edge Connector

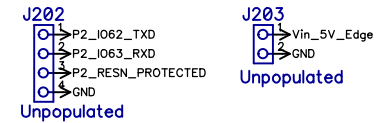
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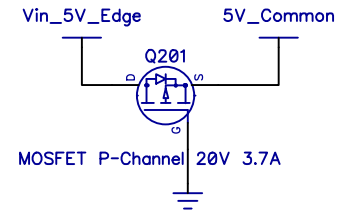
## P2 Edge Module, Card Edge Pads (80 way, 1.27mm pitch)



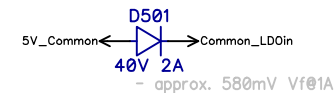
## SMT Optional Headers / Test Points



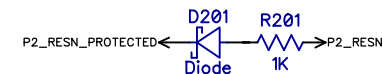
### Reverse polarity protection



### LDO supply and protection



### Reset pin protection



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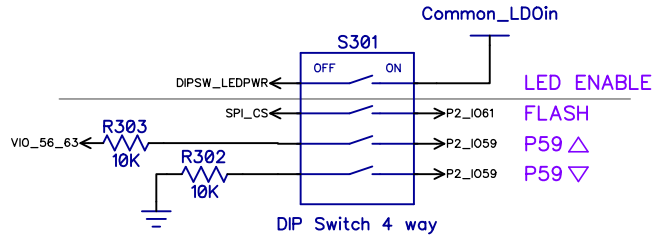
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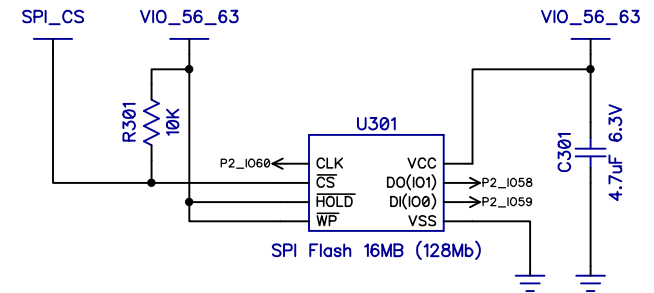
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Boot options and onboard LEDs enable switch



SPI Flash



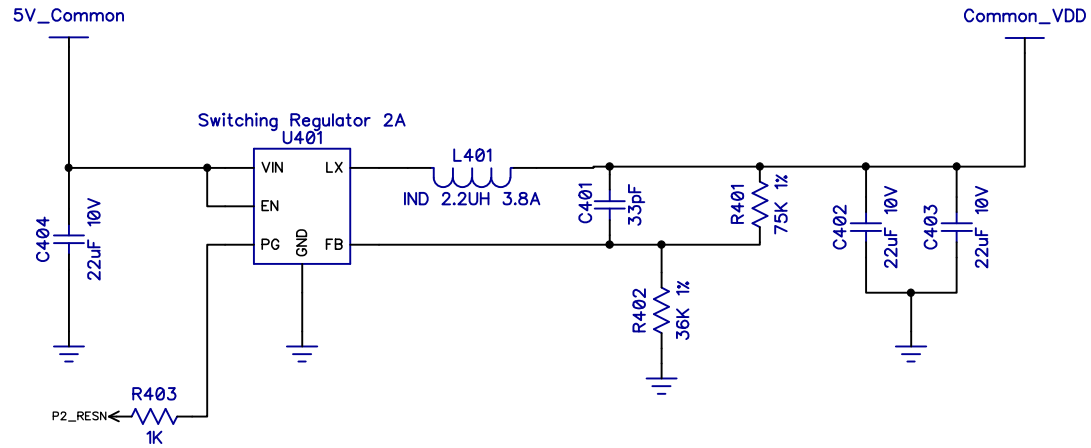
Boot Mode Selection	FLASH	P59 Δ	P59 ∇
Serial window of 60 seconds, default. (When SD card is NOT inserted)	OFF	OFF	OFF
Serial window of 60 seconds, overrides SPI Flash and SD card.	ON or OFF	ON	OFF
Serial window of 100 ms, then SPI flash. If SPI flash fails then serial window of 60 seconds.	ON	OFF	OFF
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

For reference: Boot Memory and Boot Serial (programming) pins

Boot Memory	P61 (output)	P60 (output)	P59 (output)	P58 (input)
SPI flash	CSn	CLK	DI	DO
SD card	CLK	CSn	DI	DO

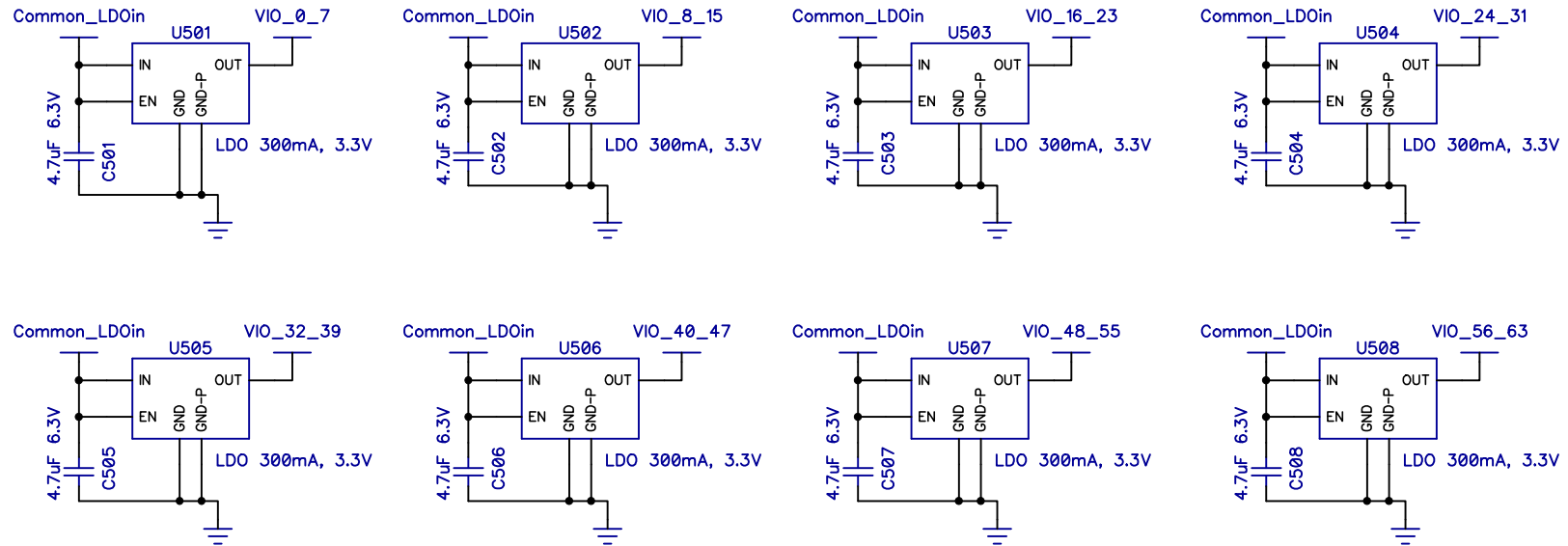
Boot Serial	P63 (input)	P62 (output)
Serial	RX	TX

VDD Power Supply - Nominal 1.8V



PG threshold = 20% of VOUT (1.5V)  
 Open drain output, active low when undervoltage  
 Remove R403 to disable BOD behaviour

## Low noise VIO 3.3V local regulation



Note: LDO output caps located beside P2 microcontroller

These power sources ensure a fixed 3.3V low noise supply for each group of eight P2 smart pins.

A single high-current regulator could be used, but this design has some advantages, including:

- Less boardspace and lower part cost
- Thermal footprint spread over significantly larger area of copper
- Regulates directly to the power pins, removing power-path losses
- No requirement for local beads/caps for analog experiments, eliminates filtering losses
- Groups of IO's isolated from power supply cross-interference
- Limits power pin issues in each group from impacting others, including undervoltage, overvoltage and short-circuit protection

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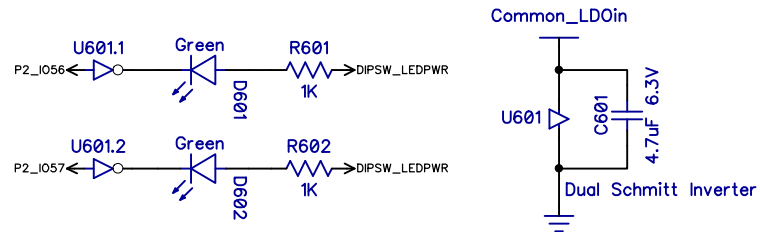
## P2 Edge - Propeller 2 Module with Edge Connector

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# LEDs



The LED's are wired such that they turn ON when the corresponding P2\_IO pin asserts high.

LED's and buffer powered from LDO VIN rail (approx. 4.5V) :

- keeps switching current off the VIO rail
- positive going threshold : 1.9V to 3.1V range, typical 2.47V
- negative going threshold : 1V to 2V range, typical 1.55V

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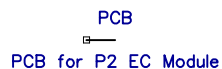
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Mounting holes



Mounting hole diameter 3.2mm  
Orientation hole diameter 2.6mm

BOM only - mfg



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## BOM

RefDes	Quantity	Name	Manufacturer
C100, C101, C102, C103, C104, C105, C106, C107, C108, C109, C110, C111, C112, C113, C114, C115, C116, C117, C118, C119, C120, C121, C122, C123, C124, C125, C126, C127, C128, C129, C130, C131, C301, C501, C502, C503, C504, C505, C506, C507, C508, C601	42	200-01049 : CAP-CER,4.7uF,X5R,6.3V,0402	TDK : C1005X5R0J475M050BC
C401	1	200-10510 : CAP-CER,33pF,5%,50V,0402	Yageo : CC0402JRNPO9BN330
C402, C403, C404	3	200-11529 : CAP-CER,22uF,10V,X7R,1206	Taiyo : LMK316AB7226ML-T
D201	1	501-10008 : Diode,Schottky,40V,30mA	OnSemi : RB751S40T1G
D501	1	501-10037 : Diode,Schottky,Low Ir,40V,2A,SOD-123F	Rohm : RB068MM-40TR
D601, D602	2	350-10029 : LED GREEN CLEAR 0603 R/A	Lite-On : LTST-S270KGKT
L401	1	275-10009 : IND,2.2UH,3.8A,19m0hm,Shielded	Laird : TYS50402R2N-10
PCB	1	300-64001 : Raw PCB P2-EC Module	
Q201	1	500-10011 : MOSFET P-CH 20V 3.7A SOT-23	DMG2305UX-13
R100, R301, R302, R303	4	150-11022 : RES,10K,5%,0402	Panasonic : ERJ-2GEJ103X
R201, R403, R601, R602	4	173-10002 : RES,1K,5%,0402	Stackpole : RMCF0402JT1K00
R401	1	172-16014 : RES,75K,1%,0402	Stackpole : RC0402FR-0775KL
R402	1	150-14705 : RES,36K,1%,0402	Stackpole : RMCF0402FT36K0
S301	1	400-10100 : Slide Switch SPST DIP 4-way 1.27mm SMT	CTS Electro : 218-4LPSTJR
U100	1	P2X8C4M64P : PP2X8C4M64P P2 multicore uC	Parallax : P2X8C4M64P
U301	1	604-10047 : IC FLASH 128M SPI 133MHZ 8SOIC	Winbond : W25Q128JVSIM TR
U401	1	601-10352 : DCDC CONV 2A BUCK SOT26	Diodes Inc : AP3445LW6-7
U501, U502, U503, U504, U505, U506, U507, U508	8	601-10339 : IC REG LDO CMOS 3.3V UDFN4	OnSemi : NCP114AMX330TCG
U601	1	603-10029 : IC,Inv,Dual,6-TSSOP,74LVC2G14GW	
X100	1	251-15002 : CRYSTAL 20.0000MHZ 9PF SMD	Epson : TSX-3225 20.0000MF20G-AC3

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