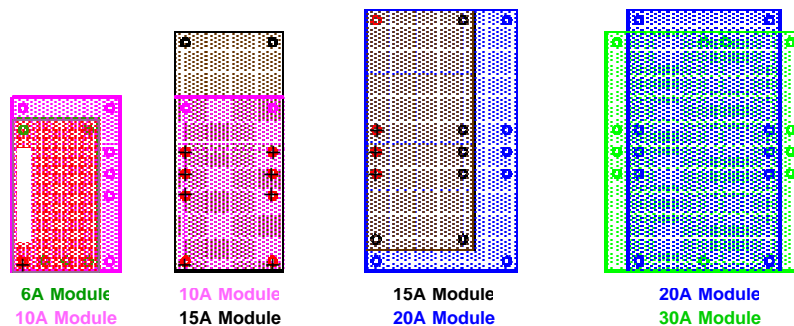


PR218
Virtex-II Pro™ Design 1
Module-based (PTHxxxx series) Power Management Solution Providing $I_{CCINT} = 6\text{ A}$
from $V_{IN} = 3.3\text{ V}$

FEATURES:

- Simple to use plug-in modules enables fast time-to-market
- High efficiency minimizes heat
- Interchange modules to support
 - o 6A to 30A load currents
 - o If current requirements decrease, easy to use dual footprints allow cost reduction without redesign



- o 3.3V, 5V, or 12V input supply
- High UVLO trip point and integrated soft-start (5 ms fixed for the PTH03000) of the PTH series modules eliminates the need for an external Supply Voltage Supervisor (SVS) to monitor the input rail.
- RocketIO™ powered by ultra-low noise, high PSRR (for rejecting noise at the input, preventing it from translating to the output) low dropout linear regulators (LDOs), TPS79xxx and TPS786xx. This series has been qualified by Xilinx to replace LT1963.
- If the Auto-track™ (sequencing) feature of the PTH series modules is desired, please refer to Virtex-II Pro Design 3 (PR222 for Sequential Sequencing or PR252 for Simultaneous Sequencing).
- The design meets Xilinx's V_{CCINT} and V_{CCO} start-up profile requirements, where applicable, including monotonic voltage ramp, in-rush current and power voltage ramp time requirements.

IMPORTANT WEB LINKS:

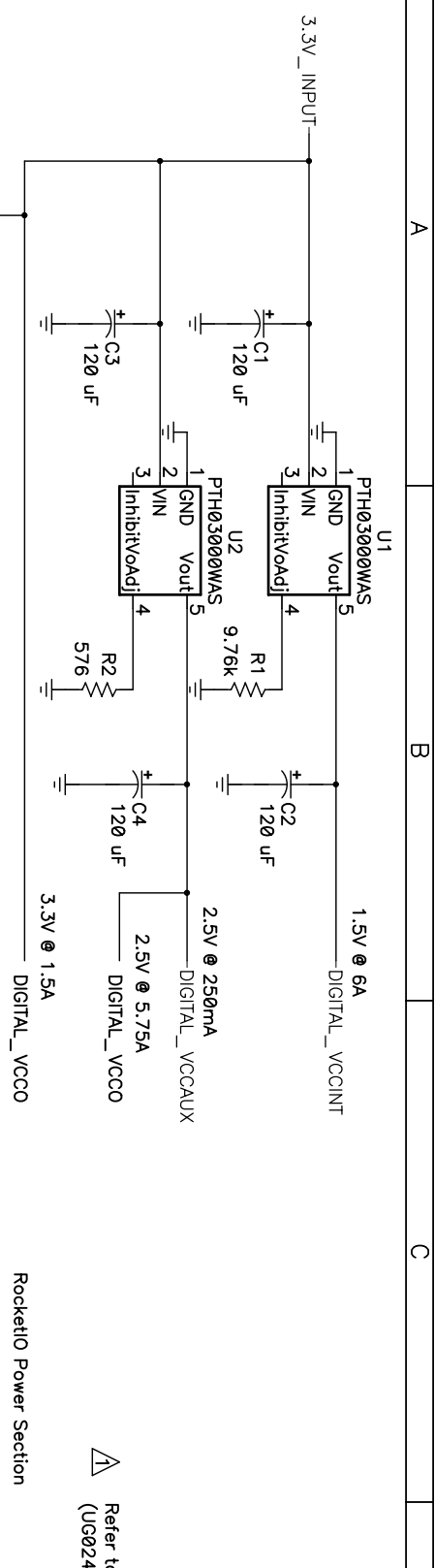
- Link to the TI home page for Xilinx FPGA power management solutions at <http://www.ti.com/xilinuxfpga> for more information and other reference designs.
- Link to datasheets at <http://focus.ti.com/lit/ds/symlink/pth03000w.pdf>, <http://focus.ti.com/lit/ds/symlink/tps79501.pdf>, and <http://focus.ti.com/lit/ds/symlink/tps79401.pdf>.

IMPLEMENTATION NOTES:

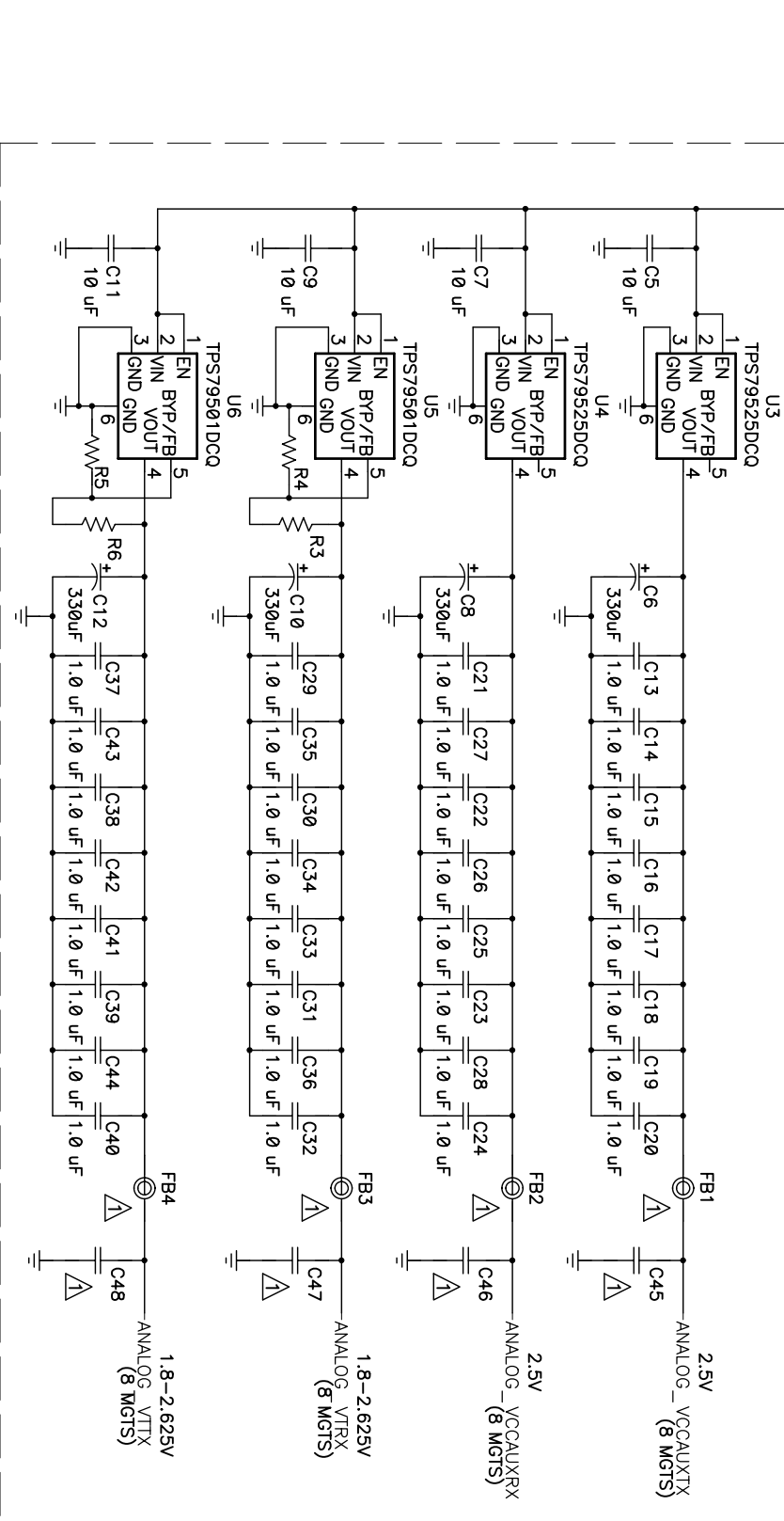
- **Additional Capacitance:**
 - The PTH03000 input capacitance requirement may change depending on the application. See the minimum input capacitance required at the bottom of page 3, the computation for determining input capacitance on page 5 as well as recommended capacitors on page 6 of the datasheet.
 - The PTH03000 device has a limitation to the amount and type of additional capacitance that can be added to its output. See the specifications for external output capacitance and associated ESR at the bottom of page 3 as well as the application note (including recommended output caps) on pages 5-6 of the datasheet.
- **V_{CCAUX}:** V_{CCAUX} powers time-critical resources in the FPGA, including the Digital Clock Managers (DCMs). Therefore, this supply voltage is especially susceptible to power supply noise. V_{CCAUX} can share a power plane with V_{CCO}, but only if V_{CCO} does not have excessive noise. Changes in V_{CCAUX} voltage beyond 200 mV peak-to-peak should take place no faster than 10 mV per millisecond.
- **RocketIO:** When powering the RocketIO:
 - AV_{CCAUXTX}, V_{CCAUXRX}, AV_{TRX}, and AV_{TTX} may each be powered by their own linear regulator or by the same regulator if their voltages are the same. Keep power dissipation capability of the linear regulator package in mind.
 - Select the appropriate TPS79xxx or TPS786xx based on the load current requirement, and the power dissipation capability of the package. In general, the lower the current rating, the lower the price of the linear regulator. Power dissipation of linear regulators is explained in TI Application Note SLVA118.
 - For the TPS79x01 adjustable devices, size the feedback resistors according to the datasheet. These resistors are not populated in the schematic.
 - All unused RocketIO transceivers must be connected to power (2.5V) and ground.

QUESTIONS?

- Send an email to <mailto:fpgasupport@list.ti.com>



Refer to Xilinx's Rocket IO Transceiver User Guide (UG024) for component values



Title		Virtex-II Pro Module	
Size	Number	PR218	Rev
Date	11/02/04		
Filename	pf218.sch	Drawn by	of

Filename: PR218_bom.xls					
Date: 4/22/2004					
		PR218 BOM			
COUNT	RefDes	DESCRIPTION	SIZE	MFR	PART NUMBER
4	C1, C2, C3, C4	Capacitor, Tantalum, 120-uF, 10-V, 140-milliohm, 20%	7343 (D)	Vishay	593D127X0010D2T35
8	C5 - C12	Capacitor, Ceramic, 2.2-uF, 6.3-V, X5R, 10%	805	muRata	GRM21BR60J225KC01
1	R1	Resistor, Chip, 9.76k-Ohms, 1/16-W, 1%	603	Std	Std
1	R2	Resistor, Chip, 576-Ohms, 1/16-W, 1%	603	Std	Std
0	R3, R4, R5, R6	Resistor, Chip, xx-Ohms, 1/16-W	603		
2	U1, U2	Module Module, Wide Out-Put Adj, 6A, 0.9V to 2.5V, 3.3V Input	0.745 x 0.495	TI	PTH03000WAS
2	U3, U4	IC, LDO Linear Regulator Ultralow-Noise High PSRR Fast RF, 500mA, 2.5V	SOT223-6	TI	TPS79525DCQ
2	U5, U6	IC, Utralow-Noise, High PSRR, Fast RF 250 mA, LDO Linear Regulators, Adj V	SOT223-6	TI	TPS79401DCQ

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