



Murata Manufacturing Co., Ltd

Power Supply Reference Guide for XILINX® FPGAs



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- Power Requirements of Xilinx Solutions in Typical Applications
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- Reference Designs and List of Materials

Download data sheets for DC-DC Converters mentioned in this reference guide at <http://www.murata.com/power/fpga/xilinx/index.html>.

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Power Requirements of Xilinx Solutions in Typical Applications

This information is intended to provide the designer with a general understanding of the power requirements of Xilinx FPGA families in typical applications. Simulation examples are shown in Appendix 1. The number of logic gates, operating frequency and other factors affect the value of current consumption. Please refer to the Xilinx Power Consumption Tools, available at www.xilinx.com/power, for closer approximations specific to individual applications.

*** Unless otherwise specified all ICCO estimates represent the total operating current contributions of all I/O banks on the FPGAs measured at 85°C ambient temperature.**

	Spartan™-3/3E/3L	Spartan™-IIE	Spartan™-II	Virtex™-5	Virtex™-4	Virtex-II Pro™	Virtex™-II
V _{CCINT}	1.2V @0.2A-5A	1.8V @0.2A-1.5A	2.5V @0.2A-1A	1.0V @0.2A-15A	1.2V @0.2A-20A	1.5V @0.2A-20A	1.5V @0.2A-20A
V _{CCO}	1.2V-3.3V @50mA-3A	1.5V-3.3V @50mA-0.5A	1.5V-3.3V @50mA-0.5A	1.2V-3.3V @50mA-5A	1.2V-3.3V @50mA-3A	1.5V-3.3V @50mA-3A	1.5V-3.3V @50mA-3A
V _{CCAUX}	2.5V @50mA-0.3A	—	—	2.5V @50mA-0.7A	2.5V @50mA-0.7A	2.5V @50mA-0.3A	3.3V @50mA-0.3A
AV _{CCAUTX}	—	—	—	—	1.2V @150mA	2.5V @60mA/MGT	—
AV _{CCAURX}	—	—	—	—	1.2V @200mA	2.5V @35mA/MGT	—
AV _{TTX}	—	—	—	—	1.2V-1.575V @50mA	1.8V-2.625V @15mA/MGT	—
AV _{TRX}	—	—	—	—	1.0V-2.625V @15mA	1.8V-2.625V @30mA/MGT	—

Cautionary Note:

1. These power requirement numbers are estimated using Xilinx power tools, and, these numbers represent specific applications or implementations of FPGAs. Users' specific applications may run at lower or higher power consumption levels.
2. Murata is happy to provide these estimates for use by customers as a guideline, however no guarantee is offered as to the accuracy of the numbers represented herein.

DC-DC Converter Selection Tables

Selection Table for Spartan™-3E/3/3L

Table1. DC-DC Converter Selection Table for Spartan™-3E Device

Xilinx				muRata Solutions	
Device	Type	Voltage	Current	Vin=3.0-5.5V	Vin=10.8-13.2V
XC3S100E	V _{CCINT}	1.2V	0.2A-2A	MPD4S014S(1.3A/1A)	MPD4S014S(1.3A/1A)
XC3S250E				MPD5S025S(1.6A/1.6A)	
XC3S500E	V _{CCO}	1.2V-3.3V	50mA-2A	MPD6S012S(3A)	
XC3S1200E				MPDTY102S(2A)	
XC3S1600E					

Table2. DC-DC Converter Selection Table for Spartan™-3 Device

Xilinx				muRata Solutions	
Device	Type	Voltage	Current	Vin=3.0-5.5V	Vin=10.8-13.2V
XC3S50	V _{CCINT}	1.2V	0.2A-5A	MPD4S014S(1.3A/1A)	MPD4S014S(1.3A/1A) MPDTY303S(8A) MPDTH12050WAS(6A)
XC3S200				MPD5S025S(1.6A/1.6A)	
XC3S400				MPD6S012S(3A)	
XC3S1000				MPDTY102S(2A)	
XC3S1500	V _{CCO}	1.2V-3.3V	50mA-3A	MPDTY302S(7A)	
XC3S2000				MPDTY411S(7A)	
XC3S4000				MPDTY412S(7A)	
XC3S5000				MPDTH03050WAS(6A)	
				MPDTH05050WAS(6A)	

Table3. DC-DC Converter Selection Table for Spartan™-3L Device

Xilinx				muRata Solutions	
Device	Type	Voltage	Current	Vin=3.0-5.5V	Vin=10.8-13.2V
XC3S1000L	V _{CCINT}	1.2V	0.2A-4A	MPD4S014S(1.3A/1A)	MPD4S014S(1.3A/1A) MPDTH12050WAS(6A)
XC3S1500L				MPD5S025S(1.6A/1.6A)	
XC3S4000L	V _{CCO}	1.2V-3.3V	50mA-3A	MPD6S012S(3A)	
				MPDTY102S(2A)	
				MPDTH03050WAS(6A)	
				MPDTH05050WAS(6A)	

Note : The Xilinx devices' current requirements in these tables were calculated based on intensive design. Please refer to Appendix 1 for details.

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DC-DC Converter Selection Tables

Selection Table for Spartan™-II/IE

Table4. DC-DC Converter Selection Table for Spartan™-IE Device

Xilinx				muRata Solutions	
Device	Type	Voltage	Current	Vin=3.0-5.5V	Vin=10.8-13.2V
XC2S50E	V _{CCINT}	1.8V	0.2A-1.5A	MPD4S014S(1.3A/1A) MPD5S025S(1.6A/1.6A) MPDTY102S(2A)	MPD4S014S(1.3A/1A)
XC2S100E					
XC2S150E					
XC2S200E	V _{CCO}	1.5V-3.3V	50mA-0.5A		
XC2S300E					
XC2S400E					
XC2S600E					

Table5. DC-DC Converter Selection Table for Spartan™-II Device

Xilinx				muRata Solutions	
Device	Type	Voltage	Current	Vin=3.0-5.5V	Vin=10.8-13.2V
XC2S15	V _{CCINT}	2.5V	0.2A-1A	MPD4S014S(1.3A/1A) MPD5S025S(1.6A/1.6A) MPDTY102S(2A)	MPD4S014S(1.3A/1A)
XC2S30					
XC2S50					
XC2S100	V _{CCO}	1.5V-3.3V	50mA-0.5A		
XC2S150					
XC2S200					

Note : The Xilinx devices' current requirements in these tables were calculated based on intensive design. Please refer to Appendix 1 for details.

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DC-DC Converter Selection Tables

Selection Table for Virtex™-5

Table6. DC-DC Converter Selection Table for Virtex™-5 Device

Xilinx				muRata Solutions	
Device	Type	Voltage	Current	Vin=3.0-5.5V	Vin=10.8-13.2V
XC5VLX30 XC5VLX50 XC5VLX85 XC5VLX110 XC5VLX220 XC5VLX330	V _{CCINT}	1.0V	0.2A-15A	MPDTY301S(7A) MPDTY302S(7A) MPDTY311S(16A) MPDTY312S(16A) MPDTY411S(7A) MPDTY412S(7A) MPDTH03050WAS(6A) MPDTH05050WAS(6A) MPDTH03060WAS(10A) MPDTH05060WAS(10A) MPDTH03010WAS(15A) MPDTH05010WAS(15A)	MPDTY303S(8A) MPDTH12050WAS(6A) MPDTH12060WAS(10A) MPDTH12010WAS(12A)
	V _{CCO}	1.2V-3.3V	50mA-5A	MPD6S012S(3A) MPDTY102S(2A) MPDTY301S(7A) MPDTY302S(7A) MPDTY411S(7A) MPDTY412S(7A) MPDTH03050WAS(6A) MPDTH05050WAS(6A)	MPDTY303S(8A) MPDTH12050WAS(6A)
	V _{CCINT} /V _{CCO} with Large Load Transient	1.0V-3.3V	0.2A-15A	MPDRX002S(16A)	MPDRX004S(12A) MPDRX103S(12A) MPDRX104S(16A)

Note : The Xilinx devices' current requirements in these tables were calculated based on intensive design. Please refer to Appendix 1 for details.

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