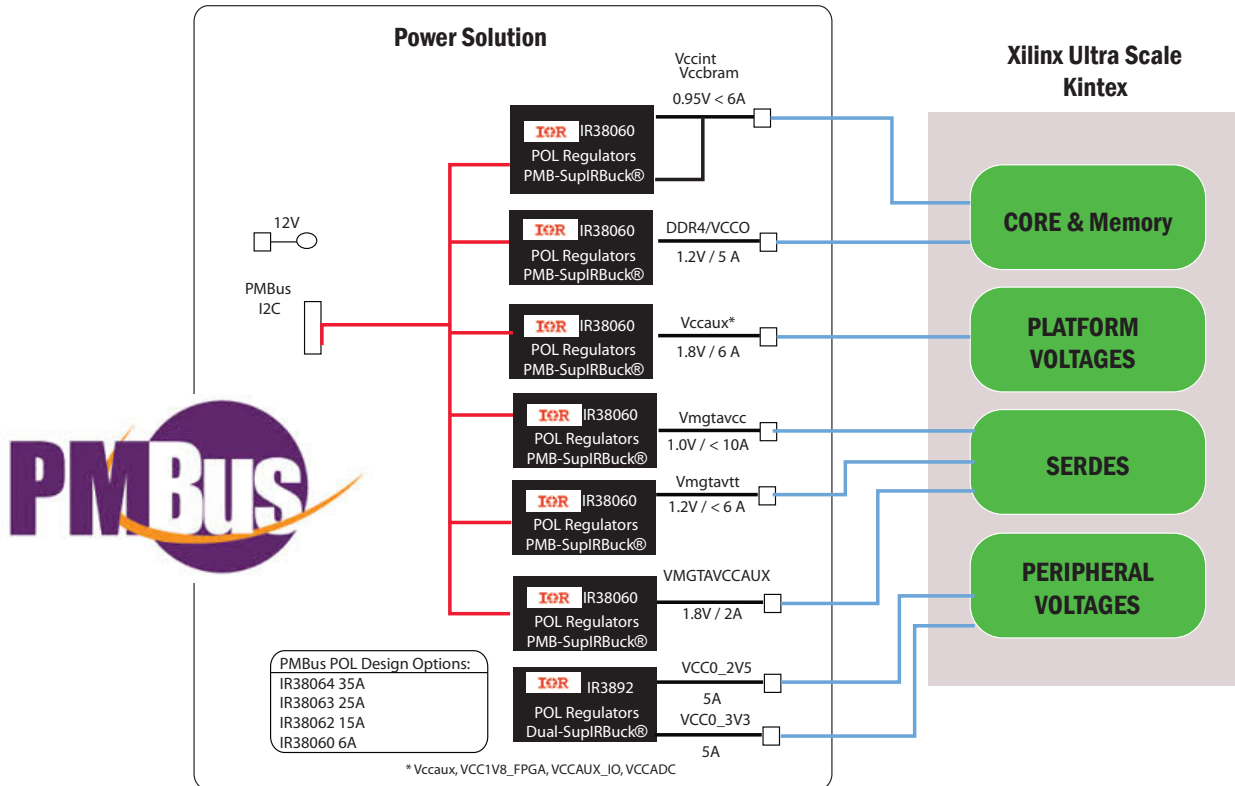


# Power Solutions for Xilinx FPGAs & SoCs

## Infineon DC/DC Power Products Selection Guide

Infineon's DC DC POL Regulator solutions.  
 Example: Xilinx Ultra Scale XCU040 Kintex FPGA.



### Digital Design Flexibility - Design in Minutes!

Full PMBus 1.2 compliant command set for Advanced Digital Power.

SupIRBuck Design On-line Tool generates fast schematics.

[mypower.irf.com/supirbuck](http://mypower.irf.com/supirbuck)

PowIRCenter GUI Design to set your digital design.

Infineon's PMBus SupIRBucks can be pre-programmed by Infineon's Distribution Partners.

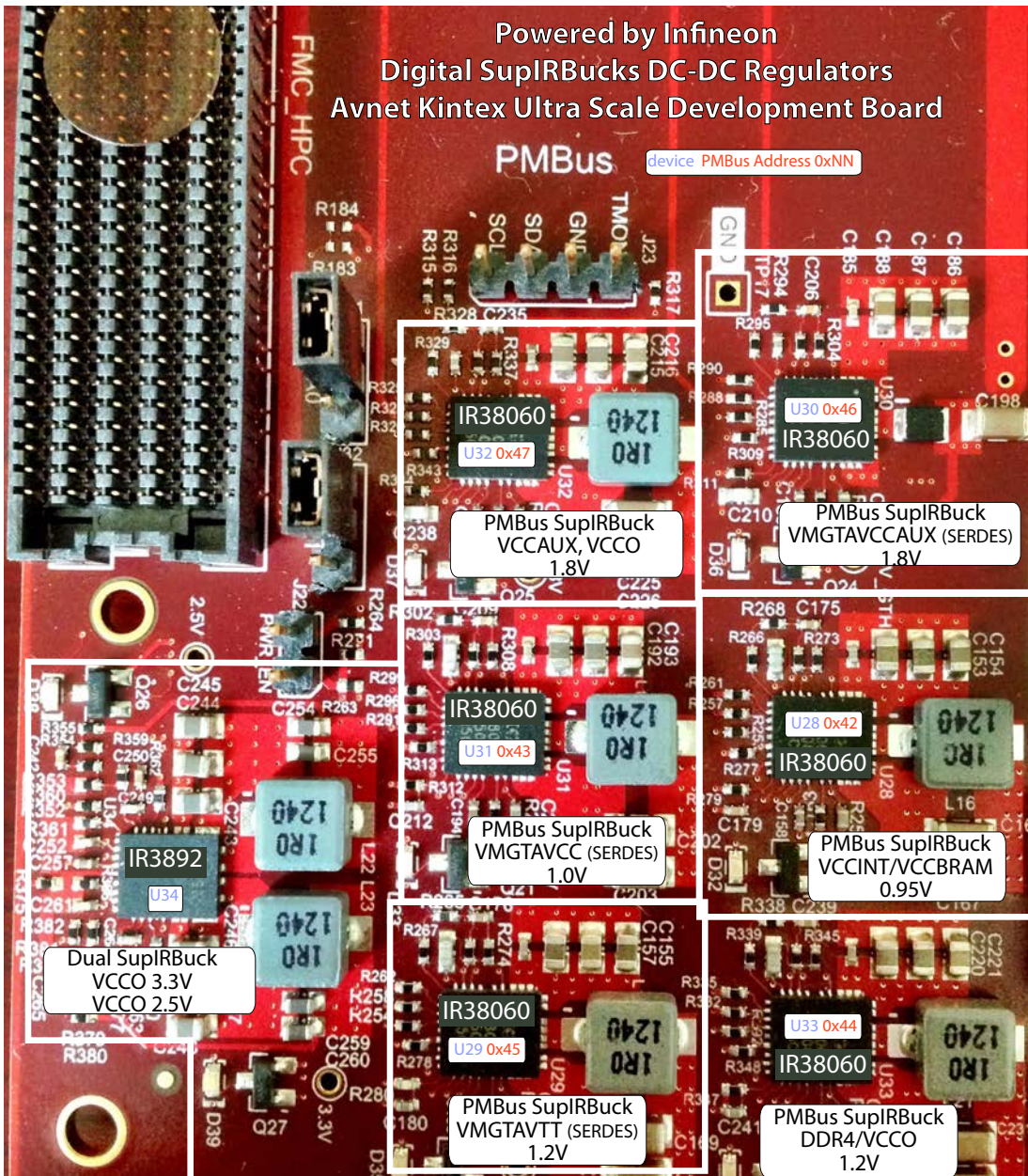
Voltage Rails	Description	Power Rail Name(s)	Current	Sequence	Infineon DC DC POL
0.95V	Core Voltage Kintex FPGA	VCCINT, VCCBRAM, and VCCINT_IO	5A	1	IR38060*
1.2V	Platform Voltage Kintex FPGA	DDR4 and VCCO	4A	3	IR38060*
1.8V	Platform Voltage Kintex FPGA	VCCAUX, VCCAUX_IO, VCCO, and FMC slot	5A	2	IR38060*
2.5V	Platform Voltage Kintex FPGA	VCCO, on-board devices, DDR4 VPP, and FMC slot	5A	3	IR3892 (1 of 2)
3.3V	Platform Voltage Kintex FPGA	VCCO, on-board devices, and FMC slot	5A	4	IR3892 (2 of 2)
1.0V	SERDES Voltage Kintex FPGA	MGTAVCC	5A	5	IR38060*
1.2V	SERDES Voltage Kintex FPGA	MGTAVTT, MGTAVTTRCAL	4A	6	IR38060*
1.8V	SERDES Voltage Kintex FPGA	MGTVCCAUX	1A	6	IR38060*

\* All Digital POL will use Advanced Digital Power for Vout adjust, Sequencing, Telemetry, Margining, Fault Management.

# Power Solutions for Xilinx FPGAs & SoCs

## Infineon DC/DC Power Products Selection Guide

- Infineon's DC DC POL Regulator solutions.
- Proven power design for Xilinx Ultra Scale XCU040 Kintex FPGA.
- High Efficiency
- High Density: Integrated POL+FET+PMBus
- Low Noise: <<10mVpp SERDES rails
- PMBus Sequencing, Fault Management, Telemetry



Proven Power Design:  
Critical Voltage rails for core, platform, SERDES and peripherals

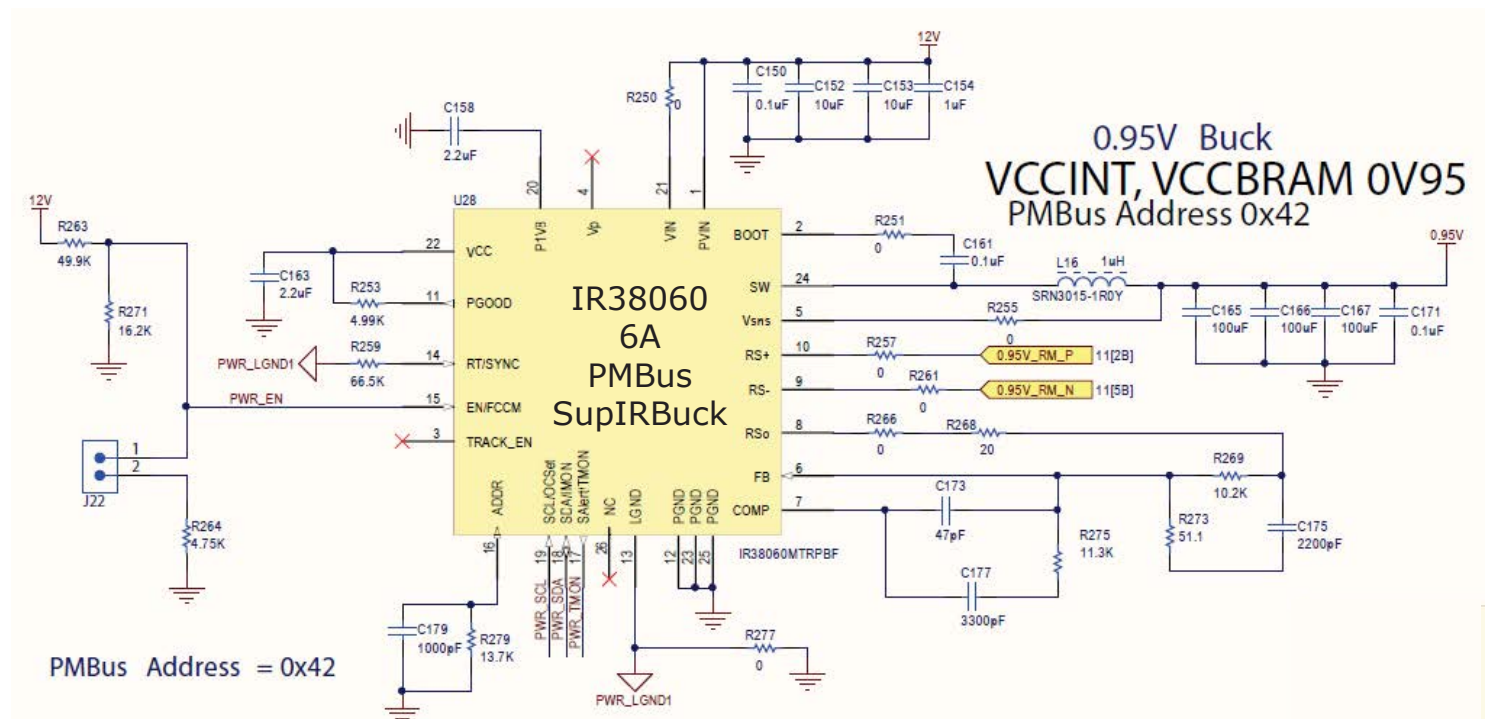
# Power Solutions for Xilinx FPGAs & SoCs

## Infineon DC/DC Power Products Selection Guide

### Power Solution Highlights

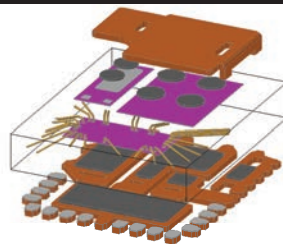
#### High Integration - FPGA Core Voltage

SupIRBuck DC DC POL Regulators offer high integration design that includes the controller, FET and drivers in a Power efficient package.



Better Thermal Performance

#### Advanced Packaging Technology



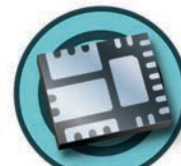
	$\theta_{JA}$
IFX - 25 A POL DC DC	14.7 °C/W
TI - 25A POL DCDC	27.2 °C/W
Infineon has better Thermal dissipation	45.00%



Control IC



Benchmark MOSFETs



SupIRBuck

# Power Solutions for Xilinx FPGAs & SoCs

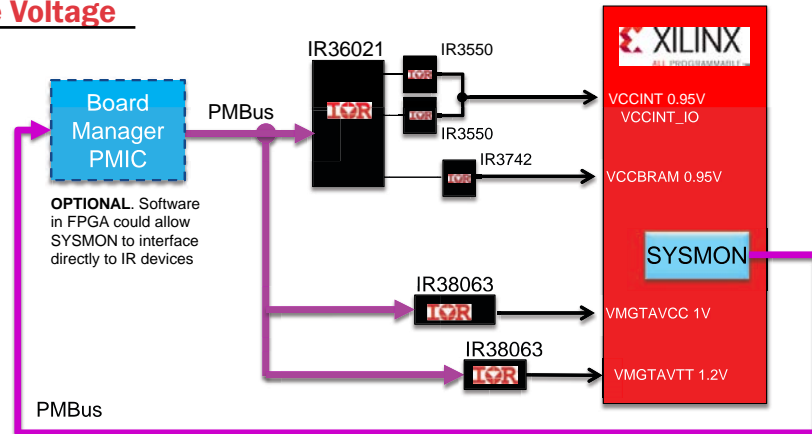
## Infineon DC/DC Power Products Selection Guide

### Power Solution Highlights

#### High Integration - High Current for the FPGA Core Voltage

Scalable power solutions for critical core voltage of the FPGA from 5A to 70A+.

Core Voltage Solutions - 5A to 70A+				
Current Rating	Part Number	Description	0.95V	Design Summary
70A	IR36021 + IR3550 (60A), IR3553 (40A), IR3742 (20A)	Multi-phase Digital Control plus PowIRstage	VCCINT, VCCBRAM	88% efficiency (all losses) < ±3% AC & DC Error 5mV peak-peak ripple 5A load step
				84% efficiency (all losses) < ±3% AC & DC Error 5mV peak-peak ripple 1.5A load step
5A	IR38060	6A Digital SupIRBuck		



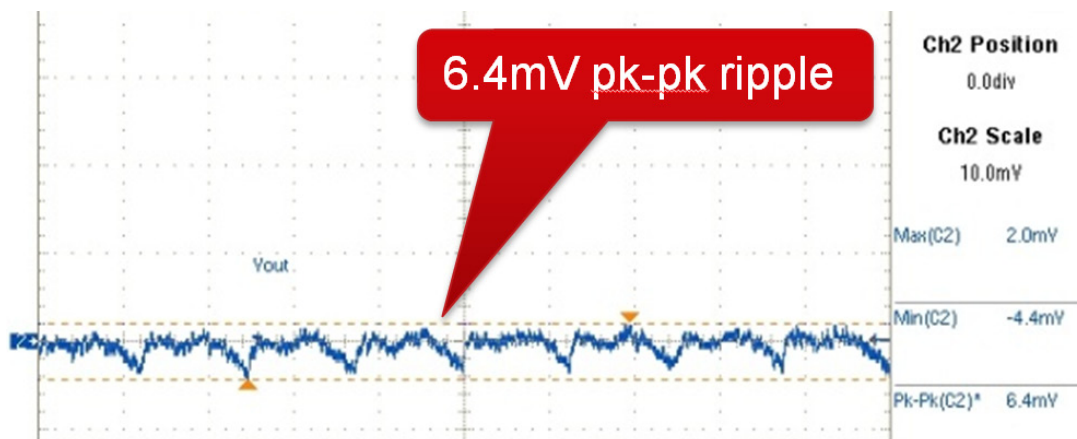
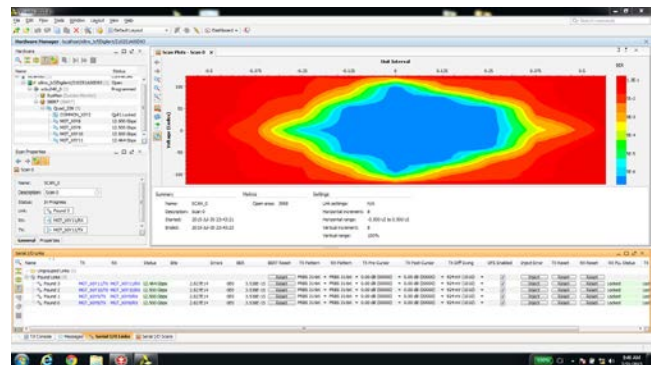
#### Low Noise Power Design

IR38060 delivers precision, low noise for SERDES power supply --- zero bit error over PRBS31 test multiple 12.5G lanes.

Eye pattern of FPGA SERDES traffic for best SNR performance.

Infineon's IR38060/2/3/4 family can deliver low noise power from 6A to 35A with voltage adjust capability from 0.85V to 1.8V for your SERDES voltage requirements.

Typical, voltage ripple peak-peak sub-10mV.



## Power Solutions for Xilinx FPGAs & SoCs

### Infineon DC/DC Power Products Selection Guide

#### Xilinx Ultra Scale Kintex - 10W Design

Part Number	Description	Xilinx Family	FPGA Power Section	Volt Rail	Voltage (V)
IR38060	6A Digital SupIRBuck Regulator	Kintex	CORE	VCCINT0V95,VCCINT_IO0V95,VCCBRAM0V95	0.95
IR38060	6A Digital SupIRBuck Regulator	Kintex	PLATFORM	VCCAUX1V8,VCCAUX_IO1V8,VCCO1V8,VCCADC1V8	1.80
IR3892 (1 of 2)	Dual 6A Analog SupIRBuck Regulator	Kintex	PLATFORM	VCCO3V3	3.30
IFX1763 (3.3)	LDO 3.3V	Kintex	PLATFORM	VCCO3V3	3.30
IR3892 (2 of 2)	Dual 6A Analog SupIRBuck Regulator	Kintex	PLATFORM	VCCO2V5	2.50
IFX1763	LDO 2.5V	Kintex	PLATFORM	VCCO2V5	2.50
IR38060	6A Digital SupIRBuck Regulator	Kintex	PLATFORM	VCCO1V2	1.20
TLS208D1LDV (1.2 V)	LDO 1.2V	Kintex	PLATFORM	VCCO1V2	1.20
IR38060	6A Digital SupIRBuck Regulator	Kintex	SERDES	VMGTVCCAUX1V8	1.80
IR38060	6A Digital SupIRBuck Regulator	Kintex	SERDES	VMGTAVCC1V0	1.00
IR38060	6A Digital SupIRBuck Regulator	Kintex	SERDES	VMGTAVTT1V2	1.20
TLS208D1LDV (1.2 V)	LDO 1.2V	Kintex	SERDES	VMGTAVTT1V2	1.20
IFX1763 (1.5 V)	LDO 1.5V	Kintex	PLATFORM	VCCO1V5	1.50
IFX1763 (1.35 V)	LDO 1.35V	Kintex	PLATFORM	VCCO1V35	1.35
TLS208D1LDV	LDO 1.0V	Kintex	PLATFORM	VCCO1V0	1.00
IFX1763	LDO 1.8V	Kintex	PLATFORM	VCCADC1V8	1.80

#### Xilinx Ultra Scale Kintex - 20W Design

Part Number	Description	Xilinx Family	FPGA Power Section	Volt Rail	Voltage (V)
IR38062	15A Digital SupIRBuck Regulator	Kintex	CORE	VCCINT0V95,VCCINT_IO0V95,VCCBRAM0V95	0.95
IR38063	25A Digital SupIRBuck Regulator	Kintex	CORE	VCCINT0V95,VCCINT_IO0V95,VCCBRAM0V95	0.95
IR38060	6A Digital SupIRBuck Regulator	Kintex	PLATFORM	VCCAUX1V8,VCCAUX_IO1V8,VCCO1V8,VCCADC1V8	1.80
IR38062	15A Digital SupIRBuck Regulator	Kintex	PLATFORM	VCCAUX1V8,VCCAUX_IO1V8,VCCO1V8,VCCADC1V8	1.80
IR3892 (1 of 2)	Dual 6A Analog SupIRBuck Regulator	Kintex	PLATFORM	VCCO3V3	3.30
IFX1763 (3.3)	LDO 3.3V	Kintex	PLATFORM	VCCO3V3	3.30
IR3892 (2 of 2)	Dual 6A Analog SupIRBuck Regulator	Kintex	PLATFORM	VCCO2V5	2.50
IFX1763	LDO 2.3V	Kintex	PLATFORM	VCCO2V5	2.50
IR38060	6A Digital SupIRBuck Regulator	Kintex	PLATFORM	VCCO1V2	1.20
TLS208D1LDV (1.2 V)	LDO 1.2V	Kintex	PLATFORM	VCCO1V2	1.20
IR38062	15A Digital SupIRBuck Regulator	Kintex	SERDES	VMGTVCCAUX1V8	1.80
IR38062	15A Digital SupIRBuck Regulator	Kintex	SERDES	VMGTAVCC1V0	1.00
IR38060	6A Digital SupIRBuck Regulator	Kintex	SERDES	VMGTAVTT1V2	1.20
TLS208D1LDV (1.2 V)	LDO 1.2V	Kintex	SERDES	VMGTAVTT1V2	1.20
IFX1763 (1.5 V)	LDO 1.5V	Kintex	PLATFORM	VCCO1V5	1.50
IFX1763 (1.35 V)	LDO 1.35V	Kintex	PLATFORM	VCCO1V35	1.35
TLS208D1LDV	LDO 1.0V	Kintex	PLATFORM	VCCO1V0	1.00
IFX1763	LDO 1.8V	Kintex	PLATFORM	VCCADC1V8	1.80

#### Xilinx Ultra Scale Kintex - 45W Design

Part Number	Description	Xilinx Family	FPGA Power Section	Volt Rail	Voltage (V)
IR36021 + IR3553	Digital Multi-phase Controller and Power Stage	Kintex	CORE	VCCINT0V95,VCCINT_IO0V95,VCCBRAM0V95	0.95
IR3899	9A Analog SupIRBuck Regulator	Kintex	PLATFORM	VCCAUX1V8,VCCAUX_IO1V8,VCCO1V8,VCCADC1V8	1.80
IR38060	6A Digital SupIRBuck Regulator	Kintex	PLATFORM	VCCAUX1V8,VCCAUX_IO1V8,VCCO1V8,VCCADC1V8	1.80
IR38062	15A Digital SupIRBuck Regulator	Kintex	PLATFORM	VCCAUX1V8,VCCAUX_IO1V8,VCCO1V8,VCCADC1V8	1.80
IR3892 (1 of 2)	Dual 6A Analog SupIRBuck Regulator	Kintex	PLATFORM	VCCO3V3	3.30
IFX1763 (3.3)	LDO 3.3V	Kintex	PLATFORM	VCCO3V3	3.30
IR3892 (2 of 2)	Dual 6A Analog SupIRBuck Regulator	Kintex	PLATFORM	VCCO2V5	2.50
IFX1763	LDO 2.5V	Kintex	PLATFORM	VCCO2V5	2.50
IR38060	15A Digital SupIRBuck Regulator	Kintex	PLATFORM	VCCO1V2	1.20
TLS208D1LDV (1.2 V)	LDO 1.2V	Kintex	PLATFORM	VCCO1V2	1.20
IR38062	15A Digital SupIRBuck Regulator	Kintex	SERDES	VMGTVCCAUX1V8	1.80
IR38063	25A Digital SupIRBuck Regulator	Kintex	SERDES	VMGTVCCAUX1V8	1.80
IR38060	6A Digital SupIRBuck Regulator	Kintex	SERDES	VMGTAVCC1V0	1.00
IR38062	15A Digital SupIRBuck Regulator	Kintex	SERDES	VMGTAVCC1V0	1.00
IR38060	6A Digital SupIRBuck Regulator	Kintex	SERDES	VMGTAVTT1V2	1.20
TLS208D1LDV (1.2 V)	LDO 1.2V	Kintex	SERDES	VMGTAVTT1V2	1.20
IFX1763 (1.5 V)	LDO 1.5V	Kintex	PLATFORM	VCCO1V5	1.50
IFX1763 (1.35 V)	LDO 1.35V	Kintex	PLATFORM	VCCO1V35	1.35
TLS208D1LDV	LDO 1.0V	Kintex	PLATFORM	VCCO1V0	1.00
IFX1763	LDO 1.8V	Kintex	PLATFORM	VCCADC1V8	1.80

## Power Solutions for Xilinx FPGAs & SoCs

### Infineon DC/DC Power Products Selection Guide

#### Xilinx Zynq - 5W Design - 28nm

Part Number	Description	Xilinx Family	FPGA Power Section	Volt Rail	Voltage (V)
IR38060	6A Digital SupIRBuck Regulator	Zynq	CORE	VCCINT1V0,VCCBRAM1V0	1.00
IR38060	6A Digital SupIRBuck Regulator	Zynq	PLATFORM	VCCAUX1V8	1.80
IR38060	6A Digital SupIRBuck Regulator	Zynq	SERDES	VMGTAVCC1V0	1.00
IR38060	6A Digital SupIRBuck Regulator	Zynq	SERDES	VMGTAVTT1V2	1.20
IR3891 (2 output)	6A Digital SupIRBuck Regulator	Zynq	PLATFORM	VCC01V5,VCCPINT(1.0V)	1.50
IFX1763	LDO 1.8V	Zynq	PLATFORM	VCC01V8	1.80
IFX1763 (1.35V)	LDO 1.35V	Zynq	PLATFORM	VCC01V35	1.35
TLS208D1LDV (1.2V)	LDO 1.2V	Zynq	PLATFORM	VCC01V2	1.20
IFX1763 (3.3)	LDO 3.3V	Zynq	PLATFORM	VCC03V3	3.30
IFX1763	LDO 1.8V	Zynq	PLATFORM	VCC02V5,VCCADC1V8	2.50

#### Xilinx Zynq - 10W Design - 28nm

Part Number	Description	Xilinx Family	FPGA Power Section	Volt Rail	Voltage (V)
IR38060	6A Digital SupIRBuck Regulator	Zynq	PLATFORM	VCCAUX1V8	1.80
IR38060	6A Digital SupIRBuck Regulator	Zynq	SERDES	VMGTAVCC1V0	1.00
IR38060	6A Digital SupIRBuck Regulator	Zynq	SERDES	VMGTAVTT1V2	1.20
IR3891 (2 output)	Dual 4A Analog SupIRBuck Regulator	Zynq	PLATFORM	VCC01V5,VCCPINT(1.0V)	1.50
IFX1763	LDO 1.8V	Zynq	PLATFORM	VCC01V8	1.80
IFX1763 (1.35V)	LDO 1.35V	Zynq	PLATFORM	VCC01V35	1.35
TLS208D1LDV (1.2V)	LDO 1.2V	Zynq	PLATFORM	VCC01V2	1.20
IFX176334	LDO 3.3V	Zynq	PLATFORM	VCC03V3	3.30
IFX1763	LDO 2.5V	Zynq	PLATFORM	VCC02V5,VCCADC1V8	2.50

#### Xilinx Zynq - 16nm - SoC

Part Number	Description	Xilinx Family	FPGA Power Section	Volt Rail	Voltage (V)
IR38064	35A Digital SupIRBuck Regulator	Zynq	CORE	Vcore	0.85V
IR38060	6A Digital SupIRBuck Regulator	Zynq	PLATFORM	Vaux	1.8V
IR38060	6A Digital SupIRBuck Regulator	Zynq	SERDES	VMGTAVCC	0.9V
IR38060	6A Digital SupIRBuck Regulator	Zynq	SERDES	VMGTAVCCAUX	1.8V
IR38060	6A Digital SupIRBuck Regulator	Zynq	SERDES	VMGTAVTT, VCCPLL	1.2V
IR38060	6A Digital SupIRBuck Regulator	Zynq	PLATFORM	VCCOPIO	3.3V
IR38060	6A Digital SupIRBuck Regulator	Zynq	PLATFORM	VCCODDR (VDDQ)	1.2V