

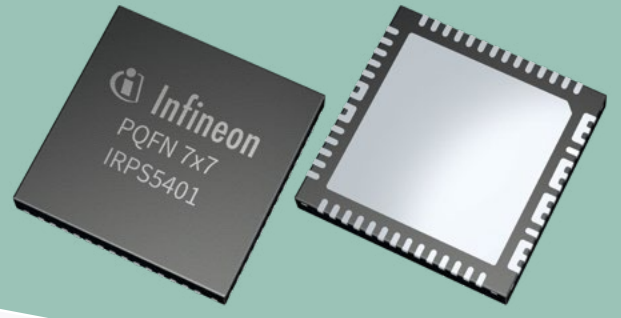


Infineon DC-DC POL power for FPGA/SoC/ASICs and multicore ARM

Enabling the highest density for applications from 5 W to >50 W

www.infineon.com/POL-power-solutions





FPGA/
SoC

ASIC

ARM
CPU

Highest density smart power

- › Single chip for 5 output voltages
- › PMBus for control and configuration
- › Simplicity and flexibility

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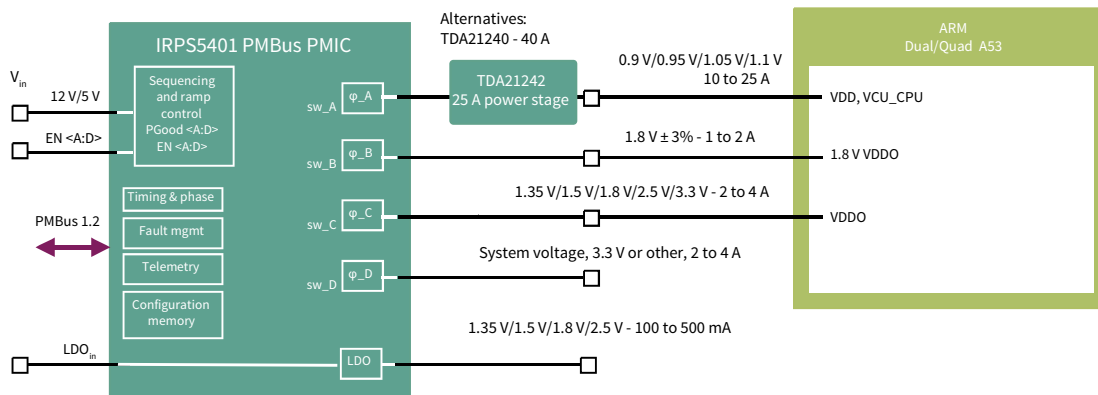
Flexible high density solution

Powering multicore ARM®s in server, communication and storage applications

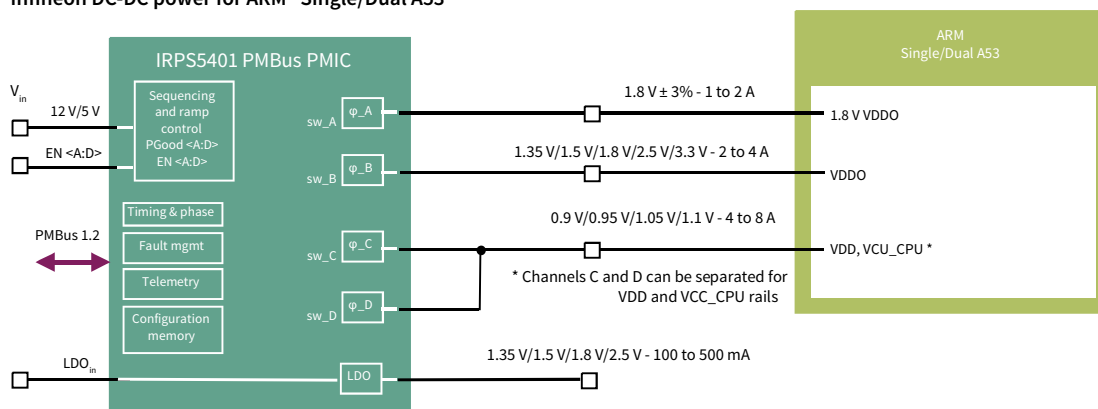
The IRPS5401 PMIC is a flexible high density solution for server, storage and communication applications. It can supply multicore ARM®s as a single chip solution for the highest density and offers PMBus interface for telemetry, fault monitoring and control. High level of flexibility enables the same device to support different configurations for example:

- › Standard configuration of 5 outputs (2 A, 2 A, 4 A, 4 A and 0.5 A LDO)
- › Two of the 4 A outputs can be paralleled for 8 A
- › One of the 2 A outputs can support external power stage for current up to 50 Amps

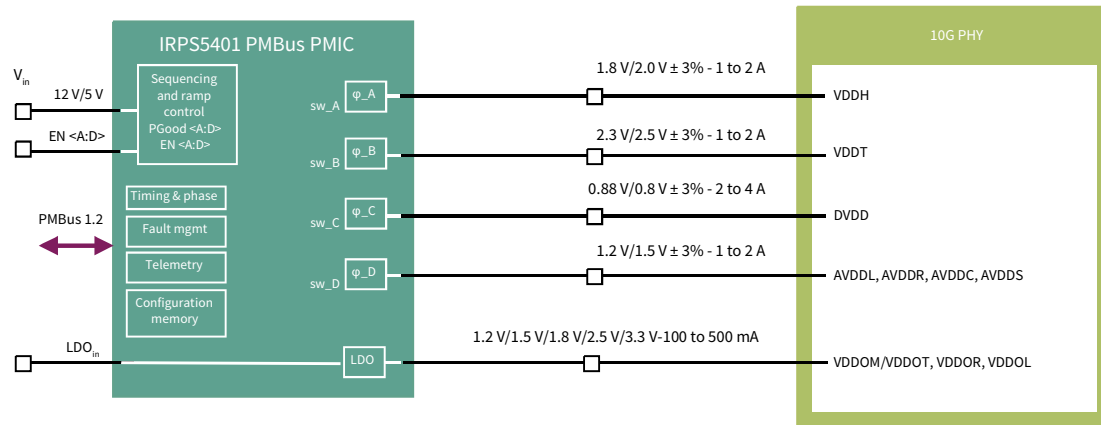
Infineon DC-DC power for ARM® Dual/Quad A53



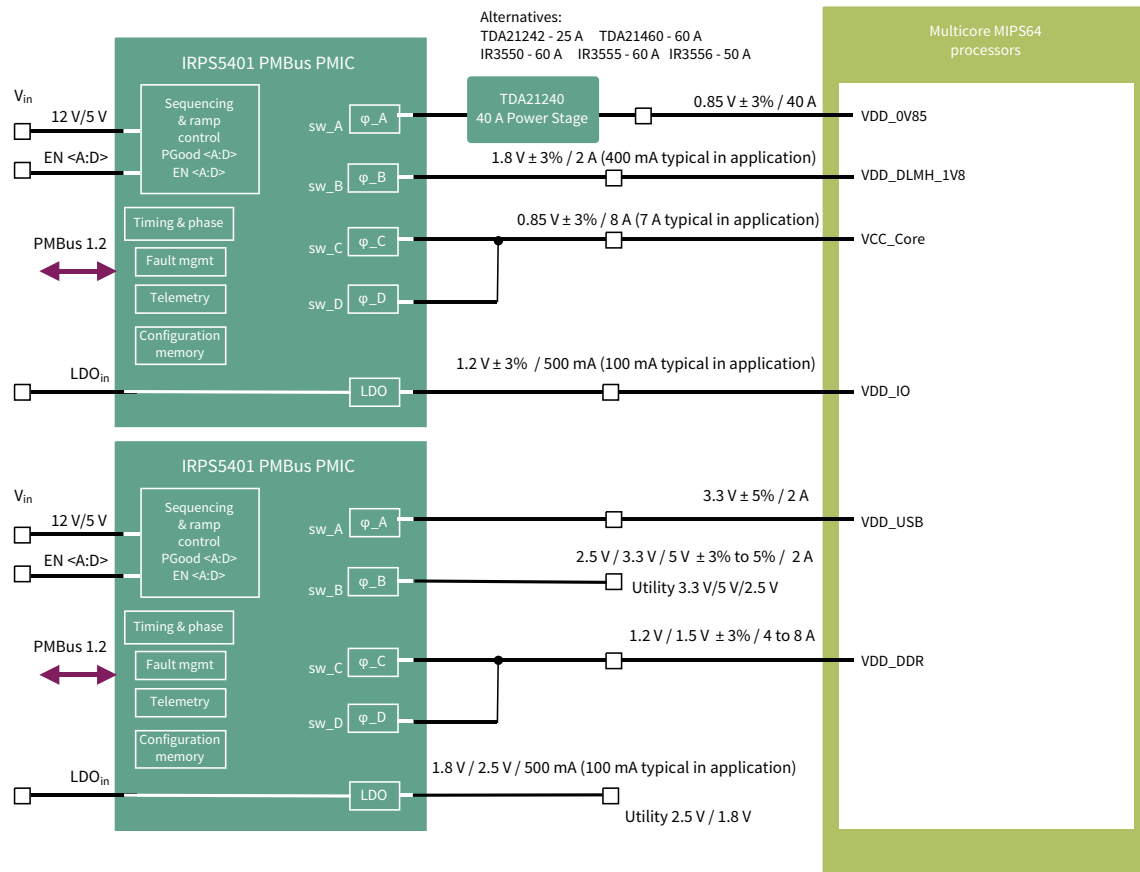
Infineon DC-DC power for ARM® Single/Dual A53



Infineon DC-DC power for 10G Ethernet PHY



Infineon DC-DC power for multicore MIPS64 processors



Featured products

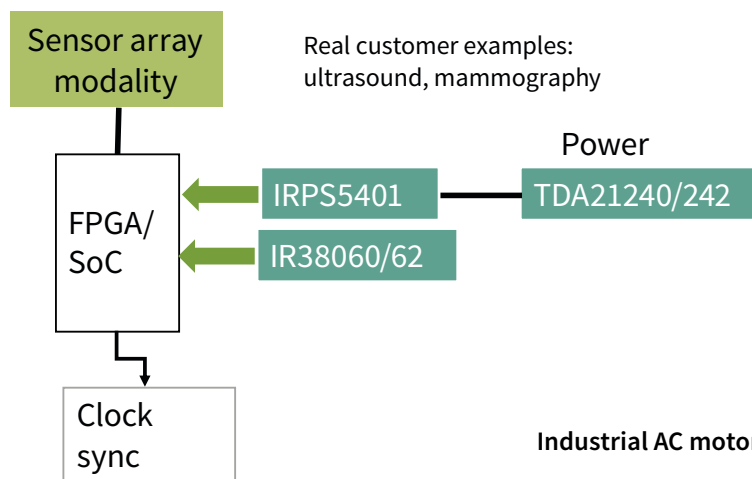
Part number	Highlight features	Application benefits
IRPS5401MTRPBF	5 output PMIC: 4 DC-DC + 1 LDO, 5 W to 50 W, integrated power sequencer, fault management, telemetry, use with external power stage, digital compensation	Proven power solution for leading FPGA/SoC system architectures. High integration power delivery solution for small board space
TDA21240/21242	4 mm x 4 mm 25 A and OptiMOS™ 5 power MOSFET 40 A; high efficiency performance	Proven power solution for FPGA/SoC V _{CORE} voltages to vary from 5 W to >50 W; best solution in the market for efficiency and smallest size

Smart FPGA solution

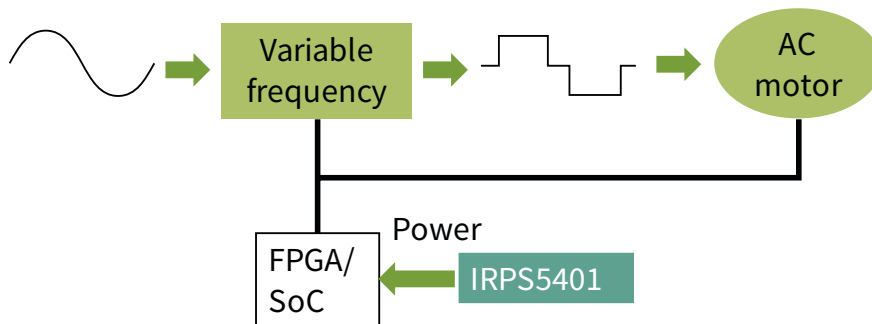
PMBus control for industrial applications

Newest industrial applications requires telemetry and fault monitoring. The IRPS5401 offers extensive PMBus support (72 PMBus commands) for high performance and high reliability industrial systems. Infineon offers the complete end-to-end solution for every FPGA by combining the unique features of the IRPS5401 and other POL, digital controllers and power stage. Some examples of the applications are below:

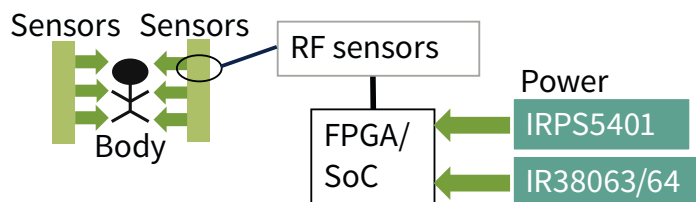
Medical imaging



Industrial AC motor drives



Industrial sensor fusion



Featured products

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IR38060/38062/38063/38064	6 A to 35 A integrated FET PMBus regulator; integrated power sequencer, fault management, telemetry	Proven solution for V_{CORE} voltages of FPGA/SoC; and low noise Xilinx SERDES support up to 4 to 14 lanes for FPGAs

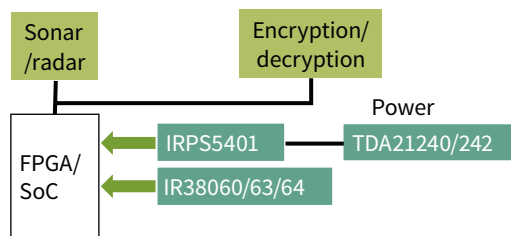
Smart FPGA/SoC power solution

Enabling artificial intelligence

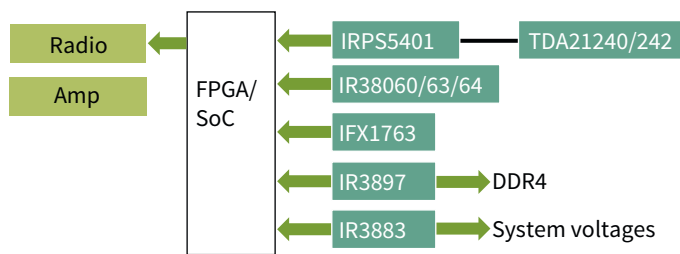
Latest generation of FPGA/SoCs offer enhanced functionality for video processing and machine learning. The IRPS5401 is optimized for the cutting-edge FPGA and SoC solutions and simplifies sequencing, performance improvement, remote fault monitoring by offering an extensive PMBus command set and very accurate telemetry.

DSP Intensive

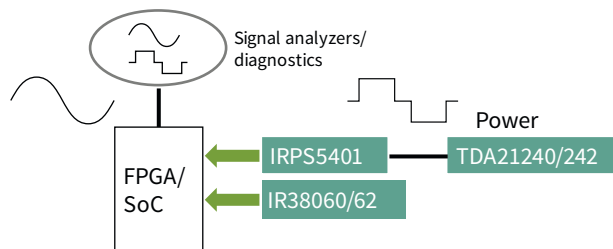
Radar/sonar/imaging



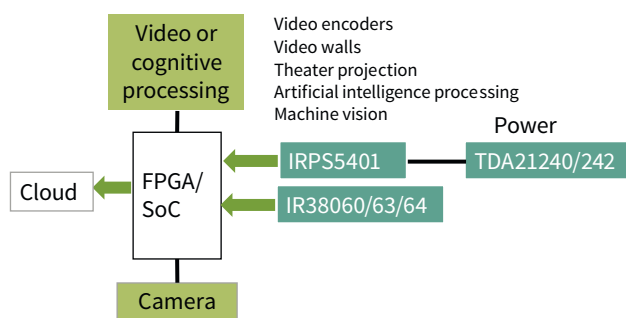
5G RRH / 5G baseband / MIMO / cable headend / radar



DSP intensive signal analyzers/generators



Video / AI / vision processing

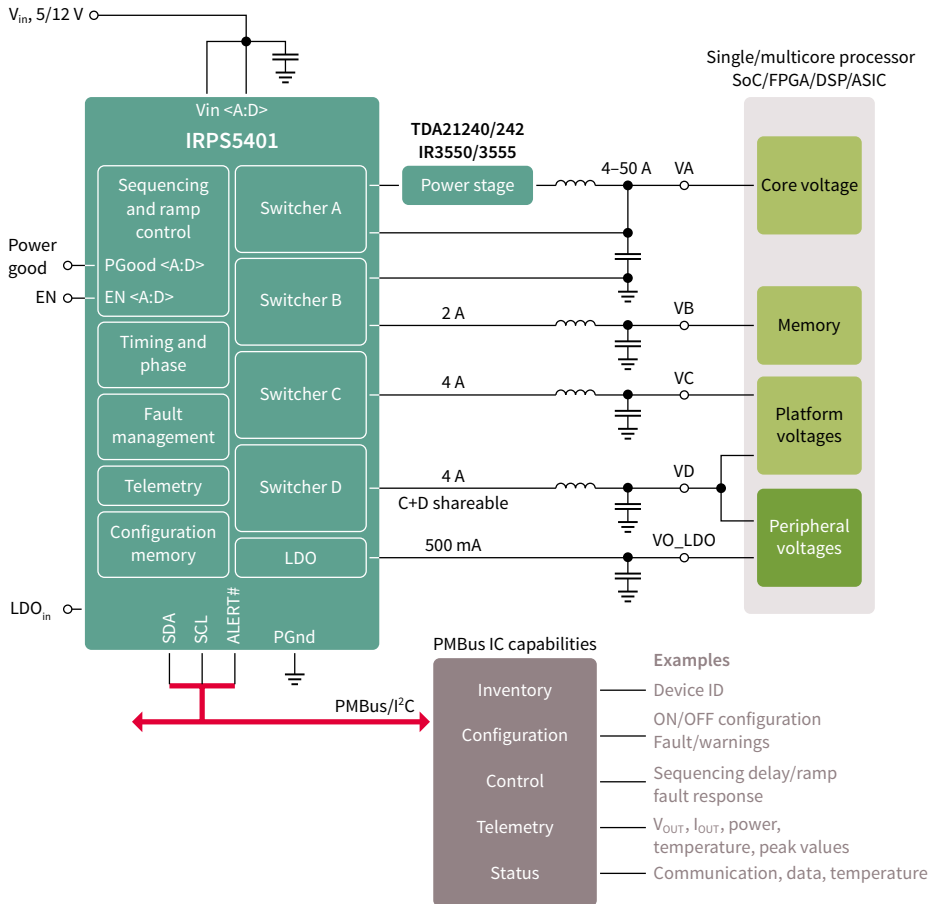


Featured products

Part number	Highlight features	Application benefits
IRPS5401MTRPBF	5 output PMIC: 4 DC-DC + 1 LDO, 5 W to 50 W, integrated power sequencer, fault management, telemetry, use with external power stage, digital compensation	Proven power solution for leading FPGA/SoC system architectures. High integration power delivery solution for small board space
TDA21240/21242	4 mm x 4 mm 25 A and OptiMOS™ 5 power MOSFET 40 A; high efficiency performance	Proven power solution for FPGA/SoC V _{CORE} voltages to vary from 5 W to >50 W; best solution in the market for efficiency and smallest size
IR38060/38062/38063/38064	6 A to 35 A integrated FET PMBus regulator; integrated power sequencer, fault management, telemetry	Proven solution for V _{CORE} voltages of FPGA/SoC; and low noise Xilinx SERDES support up to 4 to 14 lanes for FPGAs
IFX1763	Low noise LDO	Proven 2.5 V low noise for Xilinx Zynq® UltraScale+™ RFSoc
IR3897	4 A analog DC-DC regulators	Proven DDR3/DDR4 tracking solution up to 4 A
IR3883	Low cost 1 A to 3 A analog regulator	Proven low cost I/O voltages for FPGA/SoC

Featured products and highlights

The IRPS5401 is an integrated power management IC ideal for tight board space requirements; for example, FPGAs, system-on-chip (SoC) ASICs and multicore processors containing several voltages that require precision accuracy and voltage sequencing.



Key features

- › Multioutput DC-DC with integrated MOSFETs and sequencer
- › 4 switchers and 1 LDO in one package
 - Output A: 2 A (without power stage), 50 A (with power stage)
 - Output B: 2 A
 - Outputs C, D: 4 A
 - Linear regulator: ± 0.5 A
- › Full PMBus: margining, fault management, telemetry

Key benefits

- › Simplified BOM: replace many regulators with one PMIC
- › Scalable solutions: reusable designs covers wide range of FPGAs and ASICs
- › Lower cost: eliminates external sequencer
- › Integrated design: decreased number of components resulting in 35 percent board area reduction

Typical power solution for SoC/FPGA

Featured products

Part number	Highlight features	Application benefits
IRPS5401MTRPBF	5 output PMIC: 4 DC-DC + 1 LDO, 5 W to 50 W, integrated power sequencer, fault management, telemetry, use with external power stage, digital compensation	Proven power solution for leading FPGA/SoC system architectures. High integration power delivery solution for small board space
TDA21240/21242	4 mm x 4 mm 25 A and OptiMOS™ 5 power MOSFET 40 A; high efficiency performance	Proven power solution for FPGA/SoC V_{CORE} voltages to vary from 5 W to >50 W; best solution in the market for efficiency and smallest size
Other companion products		
IR38060/38062/38063/38064	6 A to 35 A integrated FET PMBus regulator; integrated power sequencer, fault management, telemetry	Proven solution for V_{CORE} voltages of FPGA/SoC; and low noise Xilinx SERDES support up to 4 to 14 lanes for FPGAs
IR3897	4 A analog DC-DC regulators	Proven DDR3/DDR4 tracking solution up to 4 A
IFX1763	Low noise LDO	Proven 2.5 V low noise for Xilinx Zynq® UltraScale+™ RFSoc
IFX54441	Low noise LDO	Proven 1.8 V low noise SERDES voltage for Xilinx Zynq® UltraScale+™ MPSoC
IR3823	Low noise 3 A analog DC-DC regulator	Proven 1.2 V low noise SERDES voltage for Xilinx Zynq® UltraScale+™ FPGAs
IR3883	Low cost 1 A to 3 A analog regulator	Proven low cost I/O voltages for FPGA/SoC

Design environment

A variety of evaluation boards are available to help designers get started with their designs

EVAL_PS5401-INT

- › Evaluation kit for 5 output digital PMBus PMIC (4 A+4 A+2 A+2 A+0.5 A)



EVAL_PS5401-25A

- › Evaluation kit for 5 output digital PMBus PMIC with 25 A power stage (4 A+4 A+2 A+0.5 A + 25 A)



EVAL_PS5401-40A

- › Evaluation kit for 5 output digital PMBus PMIC with 40 A power stage (4 A+4 A+2 A+0.5 A + 40 A)



Design Software

Infineon also offers the PowIRCenter GUI design software to assist in programming the digital IC's. Key features include:

- › Easily installed on a PC
- › Control and monitor multiple digitally enabled Voltage Regulators ICs
- › Simple graphical user interface (GUI)

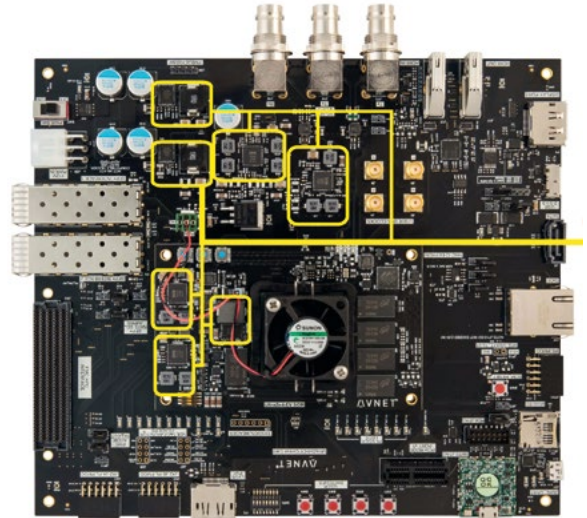
[Download PowIRCenter Software](#)

Design environment

Additional reference designs

Avnet's UltraZED-EV

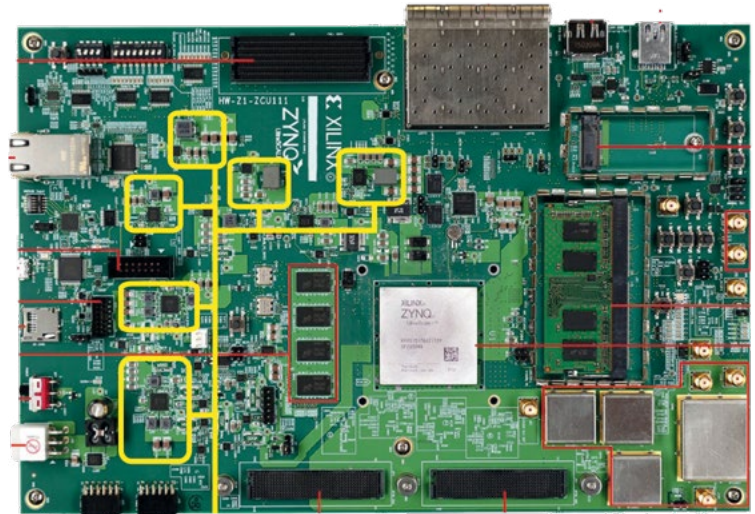
- › Embedded Vision reference design
- › [Infineon power for FPGA of Xilinx/Zynq®](#)
[Ultrascale+™ MPSoC for Embedded Vision](#)



Infineon power solutions highlighted

Xilinx RFSoc, ZCU111

- › RF/5G/Mimo high speed reference design
- › [Infineon power for FPGA of Xilinx/Zynq®](#)
[Ultrascale+™ RFSoc](#)



Infineon power solutions highlighted

Reference designs	Partner	Highlights
ZCU104	Xilinx	Proven reference design. Embedded Vision development platform featuring: Zynq® UltraScale+™ MPSoC, Zu07EV; Infineon's IRPS5401, TDA21240
ZCU111	Xilinx	Proven reference design. RF/5G/MIMO and Hi-speed development platform featuring: Zynq® UltraScale+™ RFSoc, Zu28DR; Infineon's IRPS5401, TDA21240, IR38064, IR38060
UltraZED-EG	Avnet / Xilinx	Proven reference design. Featuring: Zynq® UltraScale+™ MPSoC, Zu03EG; Infineon's IRPS5401
UltraZED-EV	Avnet / Xilinx	Proven reference design. Embedded Vision development platform featuring: Zynq® UltraScale+™ MPSoC, Zu07EV; Infineon's IRPS5401, IR38063
UltraScale+	Avnet / Xilinx	Proven reference design. Kintex® UltraScale™, KCU040; Infineon's: IR38060
Ultra96	Xilinx	Coming soon. Featuring Zu03EG; Infineon's: IRPS5401
Power macro	Partner	Highlights
Zynq® UltraScale™ power macros	Avnet / Xilinx	Proven power macros for Zynq® UltraScale+™ MPSoC. 12 scalable power designs for Zu02 to Zu19

Infineon DC-DC IPOL portfolio

Digital interface IPOL

I2C, PMBus, telemetry, margin, faults, SVID, PVID Digital control/configuration, telemetry & diagnostic					
Part number	Max current [A]	Package	Max V_{in} [V]	Max f_{sw} [kHz]	Distinctive features
IR38064	35	PQFN 5 x 7	21	1500	PMBus
IR38063	25	PQFN 5 x 7	21	1500	
IR38062	15	PQFN 5 x 7	21	1500	
IR38060	6	PQFN 5 x 6	16	1500	
IR38163	30	PQFN 5 x 7	16	1500	OptiMOS™ 5, SVID + PMBus
IR38165	30	PQFN 5 x 7	16	1500	OptiMOS™ 5, SVID
IR38363	15	PQFN 5 x 7	16	1500	OptiMOS™ 5, SVID + PMBus
IR38365	15	PQFN 5 x 7	16	1500	OptiMOS™ 5, SVID
IR38263	30	PQFN 5 x 7	16	1500	OptiMOS™ 5, PVID + PMBus
IR38265	30	PQFN 5 x 7	16	1500	OptiMOS™ 5, PVID
IR38164	30	PQFN 5 x 7	16	1500	OptiMOS™ 5, SVID + PMBus, enhanced I_{mon}
IRPS5401	4+4+2+2+0.5	PQFN 7 x 7	14t	1500	5 output PMIC, PMBus

Analog interface IPOL

“Performance” Voltage Mode PWM Ultra-low jitter and noise, high accuracy & low ripple					
Part number	Max current [A]	Package	Max V_{in} [V]	Max f_{sw} [kHz]	Distinctive features
IR3883	3	PQFN 3 x 3	14	800	Constant on time
IR3823	3	PQFN 3.5 x 3.5	21	1500	3 soft start
IR3897	4	PQFN 4 x 5	21	1500	DDR tracking and analog voltage margin/AVSO
IR3898	6	PQFN 4 x 5	21	1500	
IR3899	9	PQFN 4 x 5	21	1500	
IR3894	12	PQFN 5 x 6	21	1500	
IR3895	16	PQFN 5 x 6	21	1500	
IR3826	23	PQFN 5 x 6	17	1500	OptiMOS™ 5, 3-level OCP
IR3448	16	PQFN 5 x 6	21	1500	True differential remote sensing for accuracy & thermally enhanced Cu clip package
IR3847	25	PQFN 5 x 6	21	1500	
IR3846	35	PQFN 5 x 7	21	1500	
IR3891	4+4	PQFN 5 x 6	21	1500	Dual output for density & out-of-phase for less input cap
IR3892	6+6	PQFN 5 x 6	21	1500	



www.infineon.com/irps5401

www.infineon.com/ipol

Where to buy

Infineon distribution partners and sales offices:

www.infineon.com/WhereToBuy

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Infineon offers its toll-free 0800/4001 service hotline as one central number, available 24/7 in English, Mandarin and German.

- › Germany 0800 951 951 951 (German/English)
- › China, mainland 4001 200 951 (Mandarin/English)
- › India 000 800 4402 951 (English)
- › USA 1-866 951 9519 (English/German)
- › Other countries 00* 800 951 951 951 (English/German)
- › Direct access +49 89 234-0 (interconnection fee, German/English)

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Mobile product catalog

Mobile app for iOS and Android.

www.infineon.com

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