Application brief

Infineon's 48 V Ecosystem for data centers

Infineon's two-stage architecture for 48 V (or 54 V) to processor power for high-performance processors (CPU, GPU, SoC, ASIC, etc.) offers flexibility in implementation & scalability for different power levels without compromising on performance. Infineon's proprietary Zero Voltage Switching Switched Capacitor Converter (ZSC) delivers the highest efficiency & power density for 48 V to an intermediate bus voltage through capacitve energy transfer with soft-switching of the power devices. This enables an easy transition path for legacy 12 V systems to 48 V infrastructure with low risk and improve the total cost of ownership (TCO) significantly.

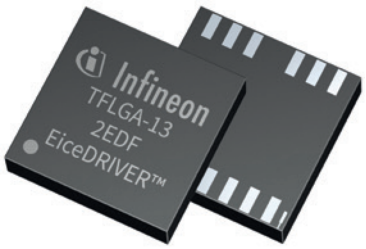
Infineon's ZSC converter can be implemented today with readily available products that have been released to mass production. The key products are:

- 25 V & 40 V OptiMOS™ 5/6
- EiceDRIVER™ gate drivers
- XMC™ family of microcontrollers

Infineon's ZSC is easy to implement as a "down" or "module" designs depending upon system requirements and limitations. The bidirectional power transfer capability of ZSC offers ultimate flexibility for power architects to implement high-efficiency and compact bus converter that can provide 48 V → 12 V or 12 V → 48 V with the same design.

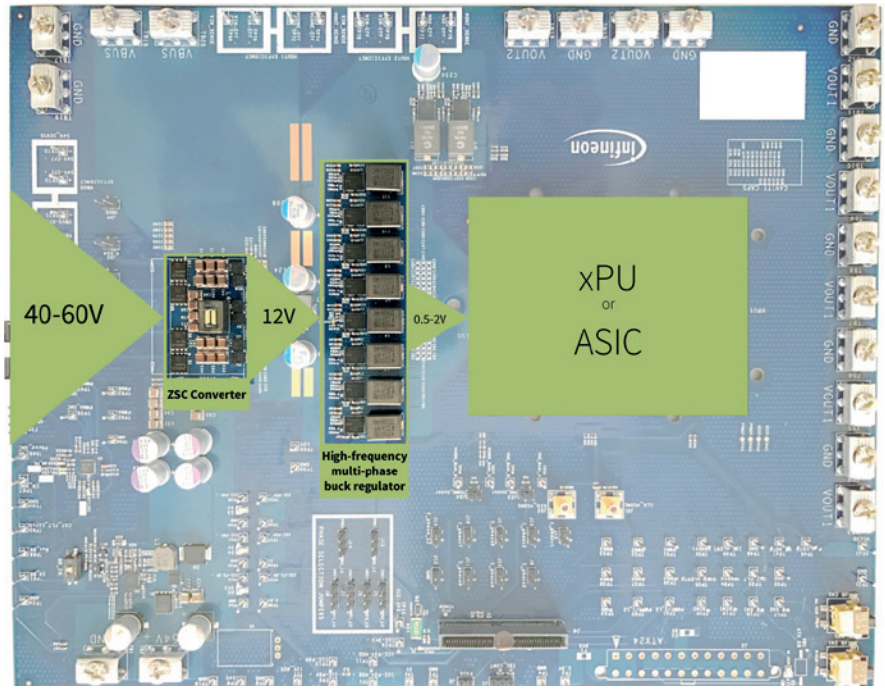
Key features

- High efficiency/power density
  - Soft-switching of Infineon's best-in-class OptiMOS™ 5 MOSFETs
- Simplicity in design
  - Easy to implement with XMC™ microcontrollers
  - Bidirectional power flow
- Flexibility in implementation
  - Module or down design
- Scalable architecture
  - Easy to scale based on power level & bus voltage
- Robust system design
  - Intelligent fault communication between XMC™ microcontroller and multi-phase digital controller



www.infineon.com/ZSC

System solution



Product portfolio

Dual-channel isolated EiceDRIVER™

Part number	Orderable part number (OPN)	Package	PWM input type	Driver source/ sink current	Gate driver UVLO
2EDF7275K	2EDF7275KXUMA1	LGA13 5.0 x 5.0 mm	Dual-mode (IN_A, IN_B)	4 A/8 A	4 V

32-bit Microcontrollers with ARM® Cortex®-M0

Part number	Clock frequency max	SRAM (incl. cache)	Memory type	I/O operation voltages
XMC1302	32 MHz	16 kByte	Flash	1.8 V 5.5 V

OptiMOS™ 5/6 power MOSFET 40 V family

Technology	Part number	VDS [V]	$R_{DS(ON)}$ max. at V_{GS} = 10 V [mΩ]	Package
OptiMOS™ 5	BSC009NE2LS5I	25	0.95	SuperSO8 5x6 mm²
OptiMOS™ 6	BSC010N04LS6	40	1.0	
OptiMOS™ 5	BSZ011NE2LS5I*	25	1.0	PQFN 3.3 x 3.3
OptiMOS™ 6	BSZ021N04LS6*	40	2.1	

*Coming soon

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