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ST 48 V power conversion
Turnkey solution for servers

48 V TO POINT-OF-LOAD: ST'S SOLUTION ENABLES FLEXIBLE, EFFICIENT AND DENSE POWER CONVERSIONS

To support the evolution and expansion of Cloud applications including Internet of Things solutions and mobile apps, the next generation of data centers is adopting server processors with higher power and extended memory resources.

The increased demand in power leads to the adoption of a 48 V system for power distribution thus requiring the evolution of the power management solution in order to achieve higher density and a more efficient power conversion from 48 V to the load present on system.

Part of ST's new generation of power management ICs, the STPDDC60, STPRDC02 and STPRDC01 give designers the maximum flexibility in choosing either a direct or an intermediate bus conversion distribution scheme for their server solutions.

ST offers a turnkey solution that enables a power design for achieving flat efficiency curves, minimizing conversion losses both at light loads and for high current demand. Developers will also appreciate how ST's architecture enables designing high power density solutions while maintaining scalability.

To answer the growing need for higher power density, the Power Stamp Alliance (PSA) developed a product standard based on ST's new generation of power management ICs. PSA-approved products are multi-sourced solutions targeting low-voltage high-current applications.

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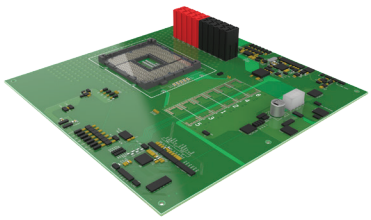
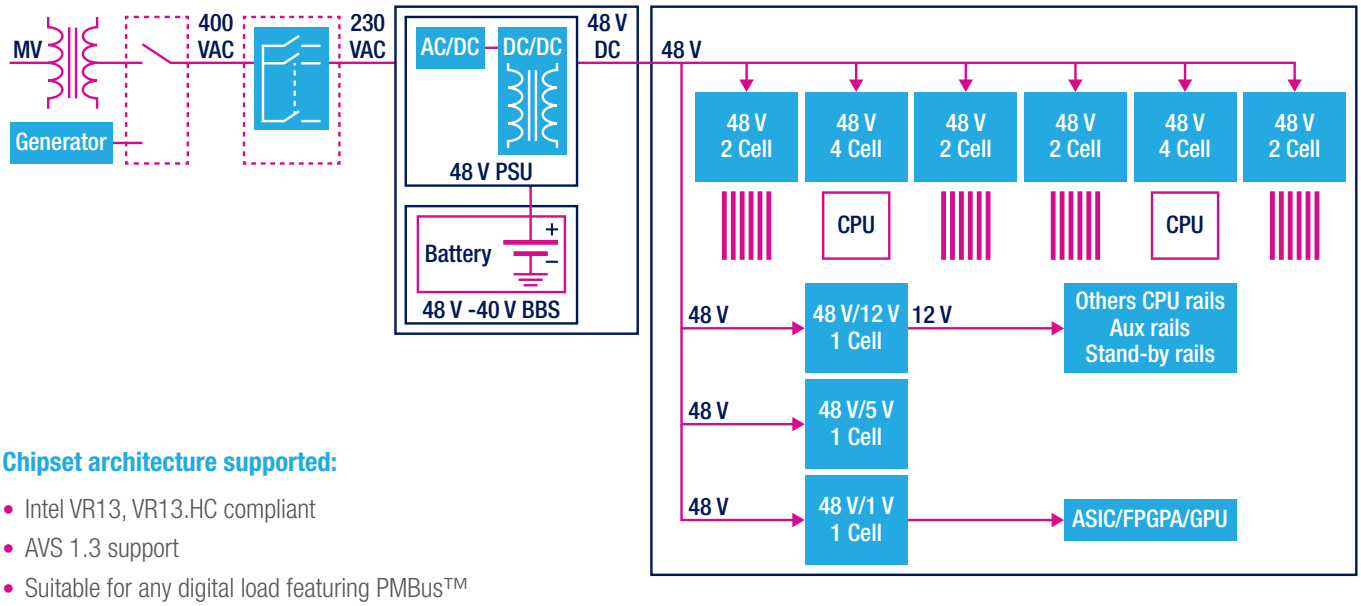


POWER STAMP ALLIANCE

Power Stamp Alliance will ensure our final customers of multiple sourcing of on-board isolated and non-isolated DC-DC power converters

AC - 48 V Direct Power Distribution



Chipset architecture supported:

- Intel VR13, VR13.HC compliant
- AVS 1.3 support
- Suitable for any digital load featuring PMBus™

Power designs supported:

- Resonant and Non-Resonant
- Fully Isolated and Non-Isolated

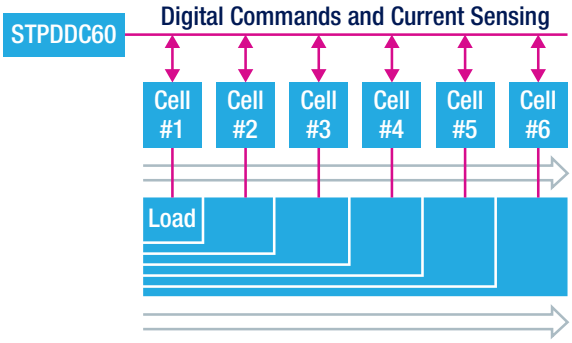
ST'S SOLUTION ENHANCES EFFICIENCY AND POWER DESIGN SCALABILITY IN NEXT GENERATION SERVERS AND DATA CENTERS

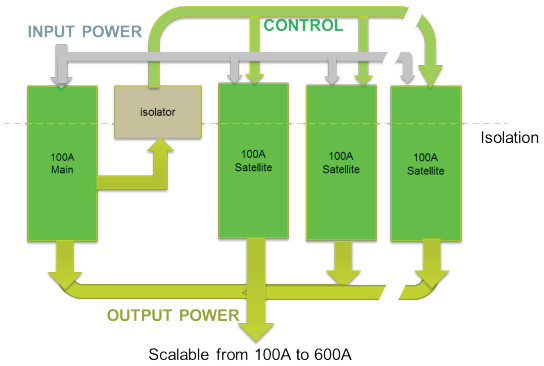
Dynamic cell-management and an innovative pulse-skipping technique maximize efficiency at all load conditions

- Cells are automatically switched on/off according to load conditions
- Cells are switched on simultaneously to react to sudden increases in power demand

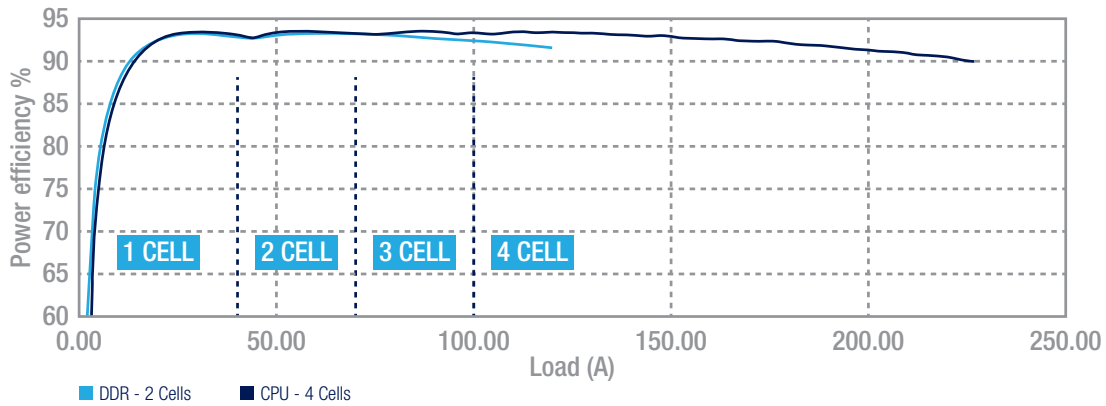
Scalability and flexibility – more cells for more power:

- Single-cell design can be replicated to support systems with higher power by paralleling up to 6 cells
- Automatic interleaving and current balancing for increased reliability





Power Efficiency - 54 V to CPU/DDR



ST's innovative solution supports zero-voltage switching (ZVS) and zero-current switching (ZCS) on both primary and secondary sides of the DC-DC converter for higher efficiency and reduced noise (EMI) generation.
Power and heat come only from conduction losses, and not from the switching activity. By reducing power MOSFET power losses and the need for heat dissipation, the use of expensive and complex heatsinks and cooling system is avoided.

ST'S INNOVATIVE THREE-IC SOLUTION EMBODIES ADVANCED CONCEPTS

ST's new multi-IC turnkey solutions support the next generation of servers and data centers

- The STPRDC01 synchronous rectifier is capable of zero-voltage and zero-current operation.
- The STPRDC02 high-voltage full-bridge MOSFET driver IC is able to drive a wide range of external MOSFETs or GaN-based switches with a programmable deadtime.
- The STPDDC60 multiphase digital controller supports up to 6 interleaved converters to efficiently handle output power levels from 50 to over 300 W. The IC is fully programmable through PMBus™
- PSA60 is a digital Multi satellite controller optimized for PSA design

DFN12
3 x 3 mm

QFN68
8 x 8 mm

QFN68
8 x 8 mm

QFN25
4 x 4 mm