

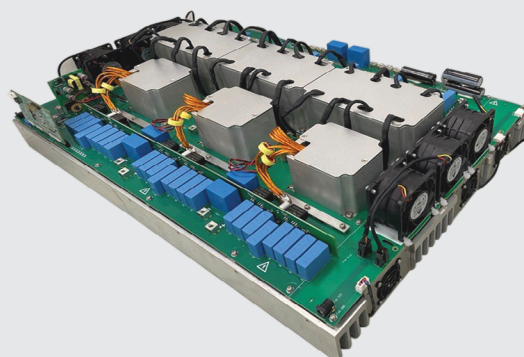


60 kW DISCRETE INTERLEAVED LLC DC-DC CONVERTER CRD-60DD12N-K

HIGH POWER DENSITY, HIGH EFFICIENCY

The 60 kW 3-phase interleaved LLC DC-DC converter doubles the power level of the previous 30 kW design and targets high power density, high efficiency fast charger applications and features Wolfspeed's discrete 1200 V C3M™ Silicon Carbide MOSFETs (C3M0040120K or C3M0032120K) and 650 V C6D Silicon Carbide Schottky diodes (C6D20065D).

A 3-phase interleaved LLC topology is implemented to provide low input current ripple and high efficiency for EV high power fast chargers. Paralleling two discrete power devices offers an effective solution at a power level historically accomplished with power modules. The reference design accommodates all levels of EV charging with a wide output voltage range of 200 V - 1000 V while maintaining a high power density of 4.83 kW/L and higher than 98.5% peak efficiency. The adaptive control operates over a 120 kHz - 250 kHz switching frequency range to maintain optimal control over all operating conditions. The secondary side of the converter is manually configurable for series or parallel operation depending on the output voltage range required.



SYSTEM SPECS

Parameter	Value
DC Output	200 - 1000 VDC; 60 kW when $V_o > 250$ V
DC Input Voltage	650 - 870 VDC – Must be controlled based on desired output voltage
Switching Frequency	120 - 250 kHz
Power Density	4.83 kW/L
Peak Efficiency	> 98.5%
Heatsink Temperature	85°C Max



FEATURES

Low $R_{DS(ON)}$ Over Temperature

Low Device Capacitances

Kelvin Source Pin

High Temperature Operation ($T_J = 175^\circ\text{C}$)

Fast Diode with Ultra Low Reverse Recovery



BENEFITS

High Power Density

Low Input / Output Ripple

Wide Output Voltage Range

High Power Level Reduces the Number of Parallel Converters Needed



APPLICATIONS

EV – Fast Charging Systems

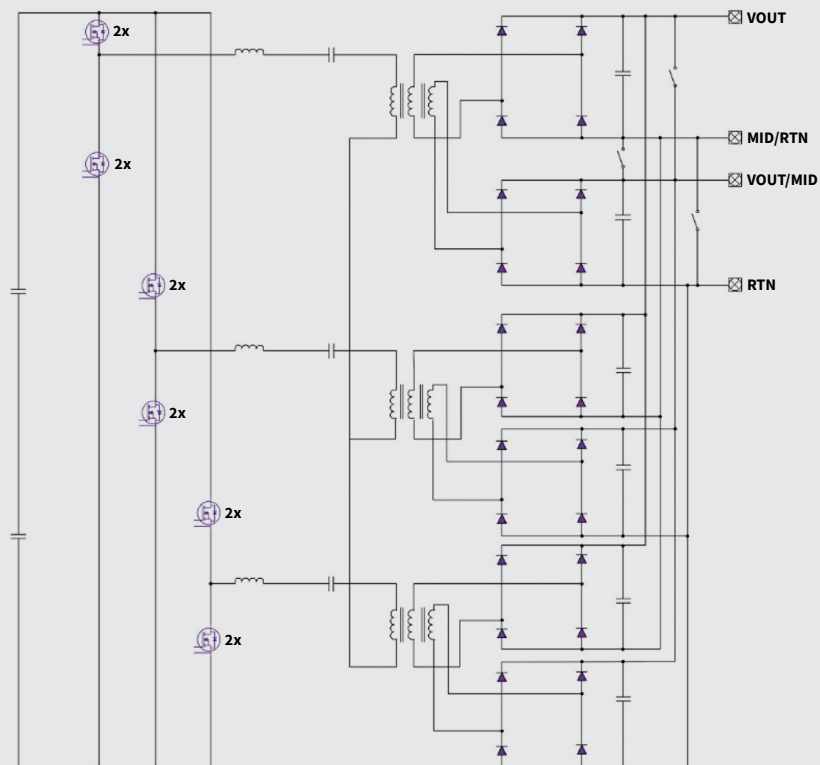
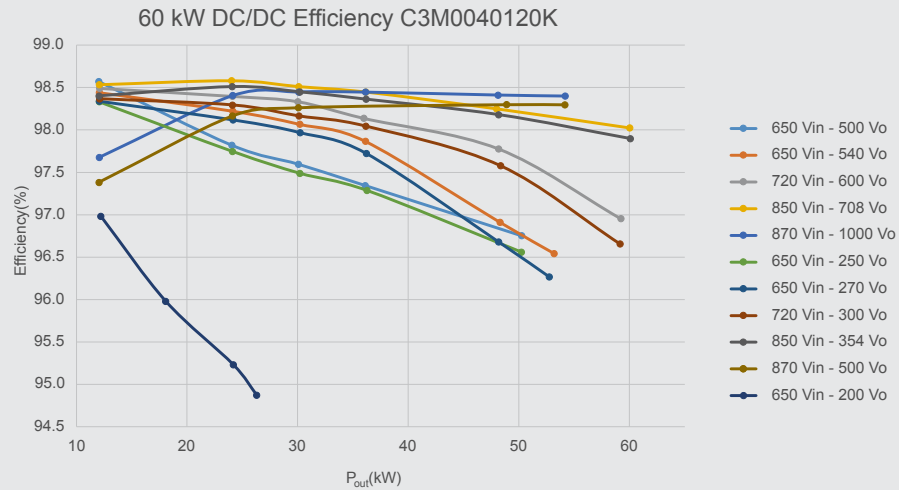
HVDC

Enterprise Server / Telecom

High Current Industrial Power Systems

60 kW Discrete Interleaved LLC DC-DC Converter CRD-60DD12N-K

EFFICIENCY UNDER DIFFERENT OUTPUT VOLTAGE



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