

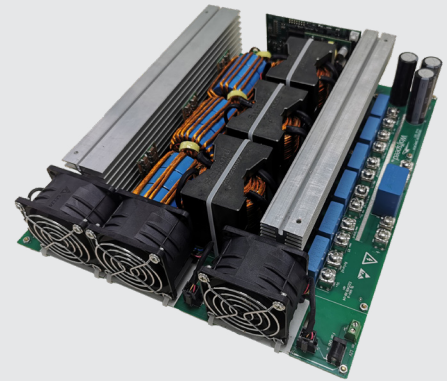


30kW Discrete Interleaved LLC DC-DC Converter CRD30DD12N-K

HIGH POWER DENSITY, HIGH EFFICIENCY

The 30kW 3 phase interleaved LLC DCDC converter (CRD30DD12N-K) targets high-power-density, high-efficiency fast charger applications and features Wolfspeed's discrete 1200V C3M Silicon Carbide MOSFETs(C3M0040120K) and 650V C6D Silicon Carbide Schottky Diodes (C6D20065D and C6D10065A).

A 3-phase interleaved LLC topology is implemented to provide low input current ripple and high efficiency for EV high power fast charger. Discrete power devices offer cost effective and common package solutions. The reference design accommodates all different levels of EV charging with a wide output voltage range of 200V-1000V while maintaining a high power density of 6.5kW/L and higher than 98% peak efficiency. The adaptive control operates over a 130kHz-250kHz switching frequency range to maintain optimal control over all operating conditions.



FEATURES

- Low RDS(ON) over temperature
- Low device capacitances
- Kelvin source pin
- High temperature operation (T_J = 175°C)
- Fast diode with ultra low reverse recovery
- Cost effective



BENEFITS

- Improves system efficiency with lower conduction losses
- Enables high switching frequency operation
- Improves system level power density
- Reduces system size, weight, and cooling requirement
- Low input / output ripple
- Enables high power rating for single converter



APPLICATIONS

- EV - fast charging systems
- HVDC
- Enterprise server / telecom
- High current industrial power systems

Parameter

Value

DC INPUT VOLTAGE	650Vdc - 850Vdc
DC OUTPUT	200V-1000V; CP 30kW when V _o >= 300V
SWITCHING FREQUENCY	fr=180kHz, range 135kHz ~250kHz
PCBA SIZE	270mm*260mm*65mm
EFFICIENCY LLC	>98%(peak), >97%(full load)
HEATSINK TEMPERATURE	Max 85°C
THERMAL INTERFACE	Al2O3 or AlN 1mm

SYSTEM SPECS

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EFFICIENCY UNDER DIFFERENT OUTPUT VOLTAGE

