



300 kW THREE-PHASE INVERTER REFERENCE DESIGN

CRD300DA12E-XM3

HIGH POWER DENSITY, HIGH EFFICIENCY

The 300 kW three-phase inverter demonstrates system-level power density and efficiency obtained by using Wolfspeed's new XM3 module platform. The XM3 is optimized for Silicon Carbide MOSFETs in a high-density, low-inductance footprint, which can reduce system losses and simplify overall design for low-loss, high-frequency operation. The three-phase inverter has greater than 2X the power density of comparable silicon-based designs and greater than 98% efficiency.

CAB450M12XM3: 1200 V, 450 A Half-Bridge XM3 Modules

CGD12HBXMP: XM3 Evaluation Gate Driver



FEATURES

High performance cold plate
Optimized laminated bussing for reduced power loop inductance
DC-link capacitors
Sensors and control hardware



BENEFITS

Improves system efficiency and power density
Enables high switching frequency operation with low switching losses
Lower system level cooling requirements

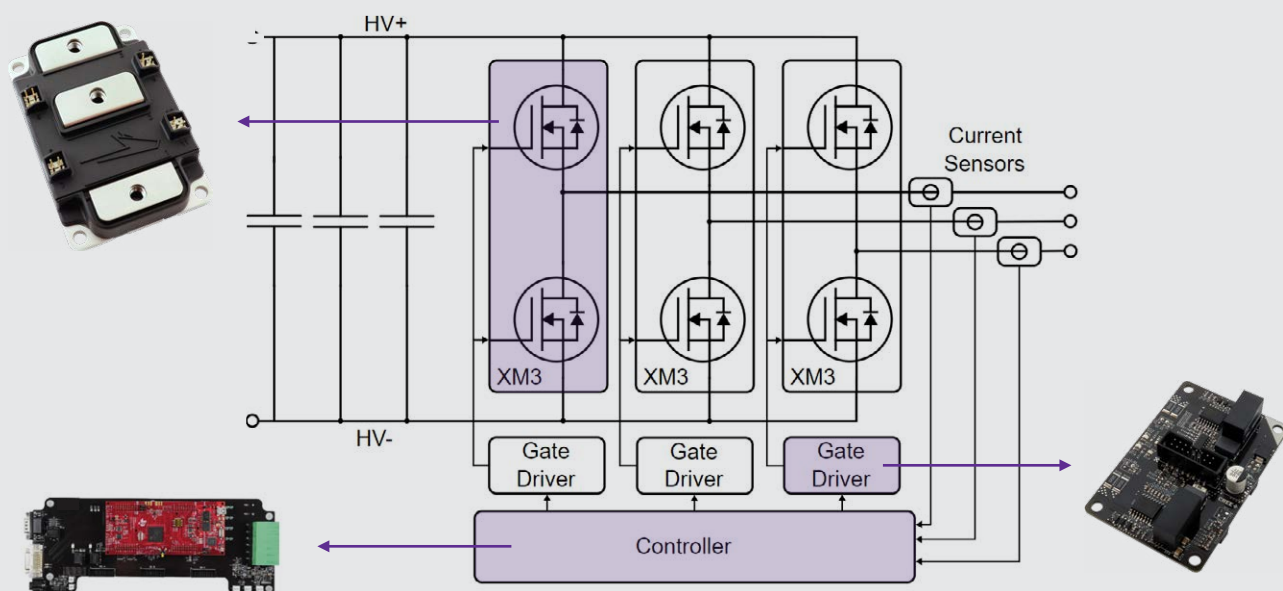


APPLICATIONS

Motor and traction drives
Grid-tied distributed generation
High-efficiency converters

Parameter	Specification [Units]	Notes
P_{OUT}	300kW	$T_L = 25^{\circ}\text{C}$, 480 VAC PF=1, $F = 20$ kHz
V_{DC}	800V _{DC}	900 V Maximum
F_{SW}	>20 kHz	80 kHz Gate Driver Limit
I_L	360 A _{AC, RMS}	$T_L = 25^{\circ}\text{C}$, 480 VAC PF=1, $F_s = 20$ kHz
L_{PL}	5.3 nH	Includes Caps and Bussing
Dimensions	28 cm × 29 cm × 11.5 cm	

300 KW THREE-PHASE INVERTER DIAGRAM AND COMPARISON



Parameter	CRD200DA12E	CRD300DA12E-XM3
Module	HT-3000	XM3
Application	General Purpose Inverter	Motor Drive
P_{OUT}	250 kW	300 kW
V_{DC}	800 V _{DC}	800 V _{DC}
I_L	300 A _{AC,RMS}	360 A _{AC,RMS}
L_{PL}	10.8 nH	5.3 nH
Power Density	9.5 kW/L	32 kW/L
Dimensions	44 cm × 39.8 cm × 15 cm	28 cm × 29 cm × 11.5 cm
Weight	15.9 kg	6.2 kg
Controller	No	Yes