

750 kVA IGBT5 .XT Power Stack Reference Designs

SOLUTIONS FOR POWER MANAGEMENT

STACK REFERENCE CUT SHEET

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Mersen IGBT Power Stack reference designs help inverter designers save time and confusion in selecting individual components and can greatly benefit from a solution that is optimally pre-designed for their specific application.

FEATURES

- 25 kW/L power density
- Up to 135°C T_j
- Peak efficiency 98%
- 3x Infineon® PrimePACK™ IGBT5 .XT FF1200R12IE5
- AgileSwitch PPEM series drivers
- 700 V_{DC} / 850 A_{RMS}
- Compact water cooled
- 8 kHz switching Frequency

BENEFITS

- Power modules, Bus bar, Cooling, Gate drivers and Capacitors can now be optimally designed together in one step to answer electrical, mechanical and thermal challenges of the system.

APPLICATIONS

- Electrical Energy Storage,
- DC to AC Inverters
- Smart-Grid / Off-grid

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TECHNICAL SPECIFICATIONS

Electrical		Min	Typ.	Max	Unit
Modules	Infineon® PrimePACK™ IGBT5 .XT FF1200R12IE5				
Io	Vdc = 700V, Vac = 480Vrms, PF < 1, fac = 60 Hz fpwm = 5 kHz, Tcool = 55 °C, Tj = 135 °C		850	1000	A _{RMS}
Vo	Three Phase Output Voltage		480		V _{RMS}
Vdc	DC Bus Voltage/ DC Supply Voltage		700	800	V
fsw	Switching frequency, PWM type			8	kHz
Cdc	DC Link Capacitor, 1100V		3500		µF
Iripple	Capacitor Ripple Current		320	512	A _{RMS}

Cooling and Environment		Min	Typ.	Max	Unit
Tsto	Storage Temperature	-40		70	°C
Tair	Ambient air temperature	-20		55	°C
T coolant	Coolant inlet temperature, derate > 70 °C	-40		55	°C
IP	Inclosure Ingress Protection		IP00		
dp	Pressure Drop, nominal flow 12 ltr/min		0.2		bar
Ploss	Power dissipated to liquid coolant		10		kW
Humidity	No condensation, Pollution Degree 2	5		85	%

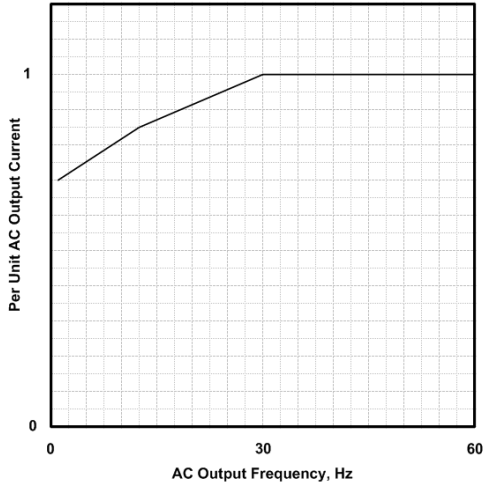
Control Interface	
Gate Driver	AgileSwitch PPEM series Gate Driver as part of the AAS2X3 Stack Electronics

Mechanical		Min	Typ.	Max	Unit
Height			325		mm
Length			288		mm
Width			302		mm
Weight	Average value		27		kg
Tt	Fastener torque for power terminals		TBD		Nm
T1	Torque for TBD		TBD		Nm
Vibration	Compliant with IEC60721			5	m/s ²
Shock	Compliant with IEC60721			40	m/s ²

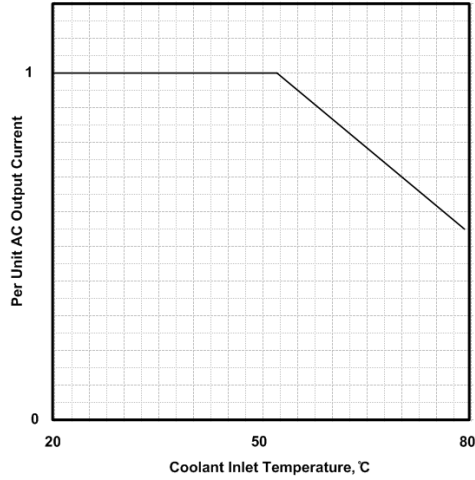
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COOLING PERFORMANCE

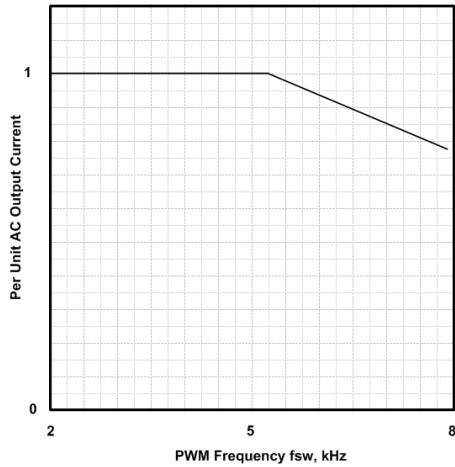
Output AC Current Derating v Output Frequency



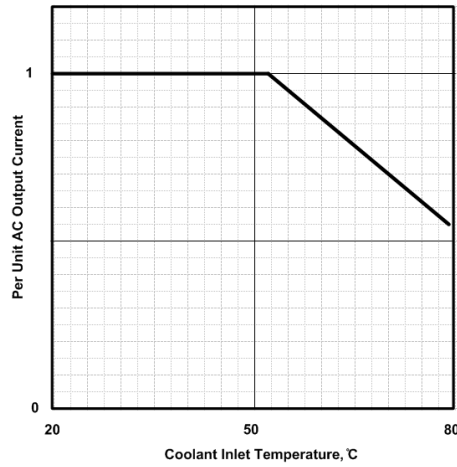
Output AC Current Derating vs Inlet Temperature



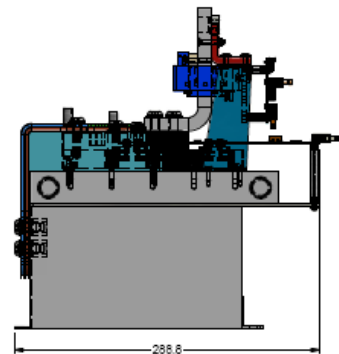
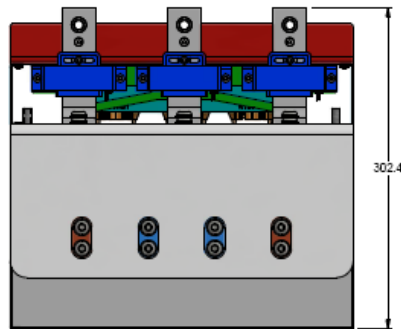
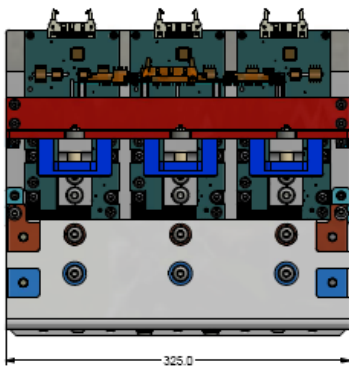
Output AC Current Derating vs PWM Frequency



Output AC Current Derating vs Inlet Temperature

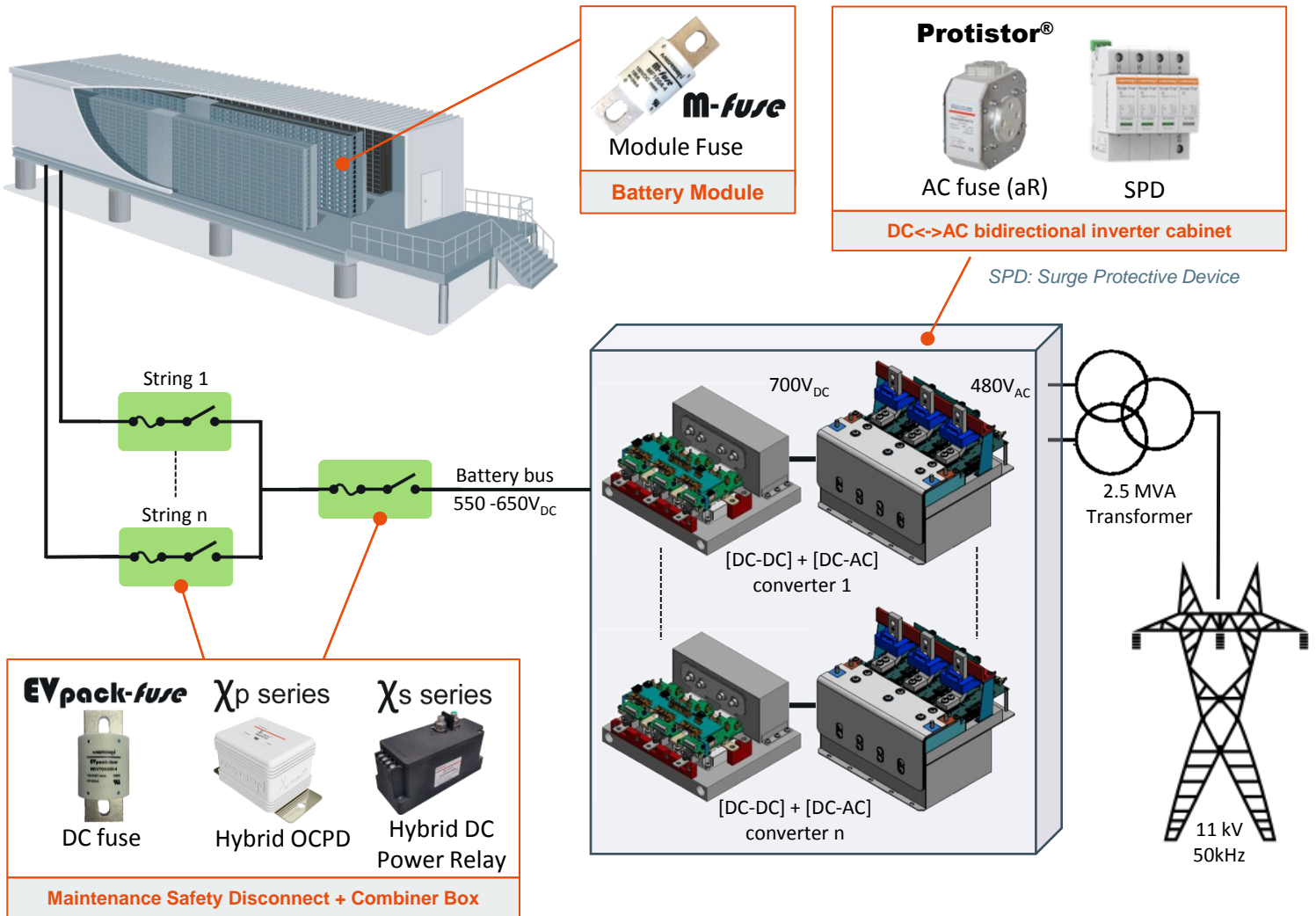


DIMENSIONS



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TYPICAL PROTECTION SCHEME



OCPD: Over Current Protection Device

More information at: <http://ep-us.mersen.com/markets/energy-battery-storage/>

Reference designs can be supported by purchasing individual components and additionally Mersen provides assembly services.

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