FIRSTACK

2025

POWER STACK CATALOGUE

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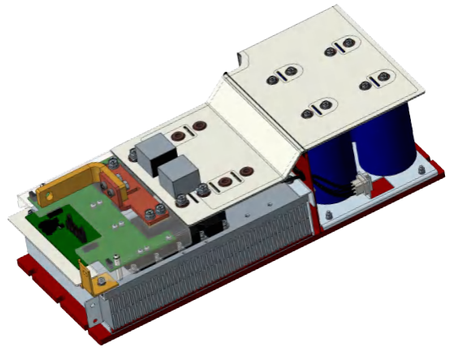
About Us

Firstack delivers market-leading solutions through three core strengths: deep application expertise, advanced manufacturing, and expert technical support. With over a decade of GDU leadership, we provide reliable, high-performance power stacks for renewable energy, rail systems, and industrial automation. Our automated processes and rigorous testing ensure superior quality. The engineering team offers customized solutions for specialized applications, backed by comprehensive system integration expertise. Contact us to discuss tailored power stack solutions for your specific requirements.

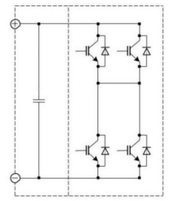
380V_{RMS}/800A_{RMS} Single-Phase Power Stack



FPS080H122XA001

Key Features

- Single-Phase half bridge, 2-in-parallel
- Adopting 900A/1200V IGBT, typical output is 380V_{RMS}/800A_{RMS}
- Forced air cooling

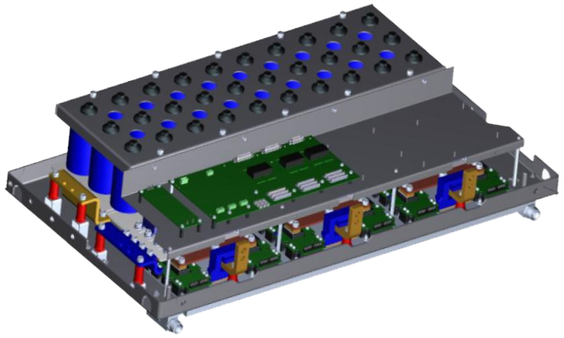


Applications

- Wind power converter
- Central PV inverter
- Energy storage system PCS

General information	
Topology	Single-Phase/2-level (2*FF900R12IE4)
Rated voltage/current	380V_{RMS}/800$_{ARMS}$
Rated DC voltage	800V
DC over-voltage shutdown	1000V_{DC} (within 150 μs)
DC-link capacitor	1.68mF
AC short-time overload current	1200A_{RMS}
AC over-current shutdown	1500A_{peak} (within 15 μs)
Power loss	3000W (typical)
Cooling method	Forced air cooling
Thermal resistance from junction to case - IGBT	0.030 K/W
Thermal resistance from junction to case - Diode	0.054 K/W
Thermal resistance from case to heat sink	0.014 K/W
Heat sink material	Aluminium
Dimensions	610×267.5×177mm^3

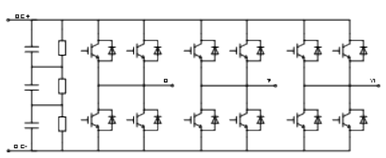
690V_{RMS}/880A_{RMS} Three-Phase Power Stack



FPS088T172W001

Key Features

- Three-Phase half bridge, 2-in-parallel
- Adopting 1000A/1700V IGBT, typical output is 690V_{RMS}/880A_{RMS}
- Liquid cooling

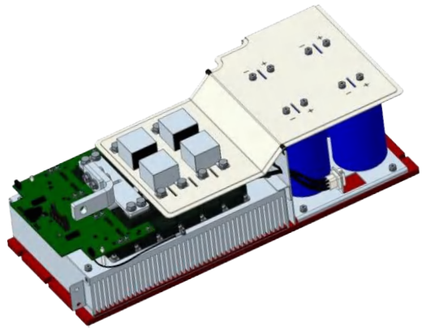


Applications

- Wind power converter

General information	
Topology	Three-Phase/2-level (6*FF1000R17IE4)
Rated voltage/current	690V_{RMS}/880$_{ARMS}$
Rated DC voltage	1150V_{DC}
DC over-voltage shutdown	1300V_{DC} (within 150 μs)
DC-link capacitor	18.8mF (3 in series and 10 in parallel)
Rated AC continuous current	880A_{RMS}
AC over-current shutdown	2500A_{peak} (within 15 μs)
Power loss	2500A_{peak} (within 15 μs)
Cooling method	Liquid cooling
Cooling air flow rate	2m/s
Coolant flow rate	15L/min
Coolant pressure	6 Bar
Coolant pressure difference	0.61 Bar
Dimensions	1090×596×272mm^3

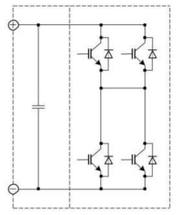
690V_{RMS}/900A_{RMS} Single-Phase Power Stack



FPS090H172XA001

Key Features

- Single-Phase half bridge, 2-in-parallel
- Adopting 1000A/1700V IGBT, typical output is 690V_{RMS}/900A_{RMS}
- Forced air cooling
- OTP consisting of NTCs located inside the IGBT and on the surface of the heat sink
- Current imbalance degree < 3%



Applications

- Wind power converter
- Central PV inverter
- Energy storage system PCS

General information	
Topology	Single-Phase/2-level
Rated voltage/current	690V_{RMS}/900$_{ARMS}$
Rated DC voltage	1050V_{DC}
DC over-voltage shutdown	1300V_{DC} (within 150 μs)
DC-link capacitor	1.68mF
AC short-time overload current	1350A_{RMS}
AC over-current shutdown	1700A_{peak} (within 15 μs)
Power loss	5260W (typical)
Cooling method	Forced air cooling
Thermal resistance from junction to case - IGBT	0.020 K/W
Thermal resistance from junction to case - Diode	0.036 K/W
Thermal resistance from case to heat sink	0.012 K/W
Thermal resistance from heat sink to air	0.027 K/W (Flow rate=504m^3/h, Ta=55℃, 500m altitude)
Heat sink material	Aluminium
Dimensions	611.5×266×177mm^3

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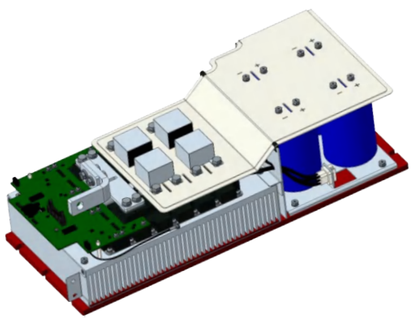
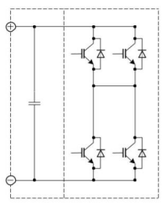
380V_{RMS}/1200A_{RMS} Single-Phase Power Stack



FPS120H122TA001

Key Features

- Single-Phase half bridge, 2-in-parallel
- Adopting 1400A/1200V IGBT, typical output is 380V_{RMS}/1200A_{RMS}
- Forced air cooling

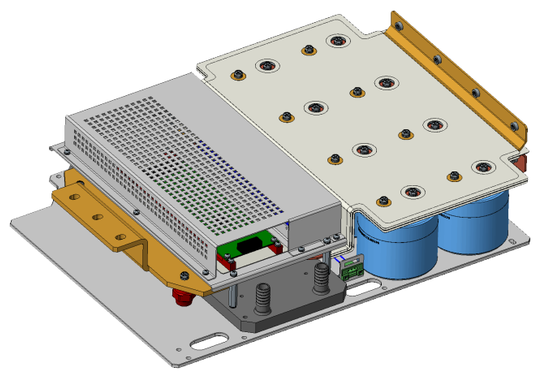


Applications

- Wind power converter
- Central PV inverter
- Energy storage system PCS

General information	
Topology	Single-Phase/2-level (2*TG1400HF12H1-S300)
Rated voltage/current	380V_{RMS}/1200A_{RMS}
Rated DC voltage	800V_{DC}
DC-link capacitor	1.68mF
AC short-time overload current	1400A_{RMS}
Switching frequency	3.5kHz
Cooling method	Forced air cooling
Blowing rate	2500m^3/h
Wind pressure	1000Pa
Inlet air temperature	-25℃~55℃
Heat sink material	Aluminium
Dimensions	610×267.5×177mm^3

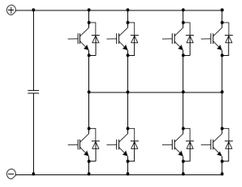
200V_{RMS}/1400A_{RMS} Single-Phase Power Stack



FPS140H124GW001

Key Features

- Single-Phase half bridge, 4-in-parallel
- Adopting 600A/1200V IGBT, typical output is 200V_{RMS}/1400A_{RMS}
- Liquid cooling



Applications

- Wind power converter
- Central PV inverter
- Energy storage system PCS

General information	
Topology	Single-Phase/2-level
Rated voltage/current	200V_{RMS}/1400A_{RMS}
Rated DC voltage	750V_{DC}
DC-link capacitor	3.36mF
Rated AC continuous current	1400A_{RMS}
Power loss	5060W (typical)
Cooling method	Liquid cooling
Coolant flow rate	16L/min
Thermal resistance from junction to case - IGBT	0.037 K/W
Thermal resistance from junction to case - Diode	0.065 K/W
Thermal resistance from case to heat sink - IGBT	0.035 K/W
Thermal resistance from case to heat sink - Diode	0.039 K/W
Dimensions	648×500×148.6mm^3

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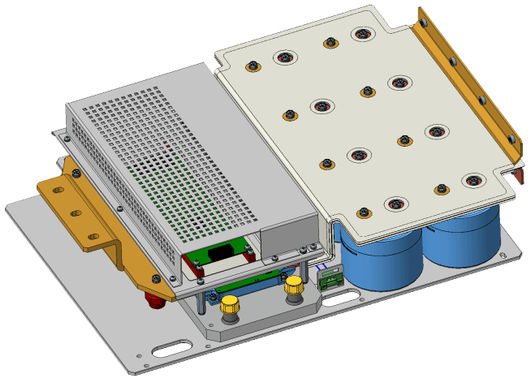
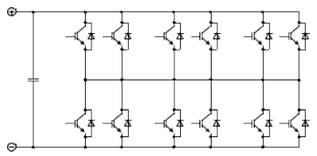
690V_{RMS}/1500A_{RMS} Single-Phase Power Stack



FPS150H176XW001

Key Features

- Single-Phase half bridge, 6-in-parallel
- Adopting 450A/1700V IGBT, typical output is 690V_{RMS}/1500A_{RMS}
- Liquid cooling

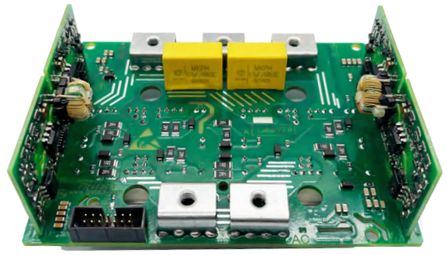


Applications

- Wind power converter
- Central PV inverter
- Energy storage system PCS

General information	
Topology	Single-Phase/2-level (6*FF450R17ME4)
Rated voltage/current	690V_{RMS}/1500A_{RMS}
Rated DC voltage	1080V
DC over-voltage shutdown	1300V
DC-link capacitor	3.36mF
Rated AC continuous current	1500A_{RMS}
Power loss	7524W
Cooling method	Liquid cooling
Coolant flow rate	30L/min
Thermal resistance from junction to case - IGBT	0.06 K/W
Thermal resistance from junction to case - Diode	0.1 K/W
Thermal resistance from case to heat sink - IGBT	0.029 K/W
Thermal resistance from case to heat sink - Diode	0.048 K/W
Dimensions	525.2×512.3×198.2mm^3

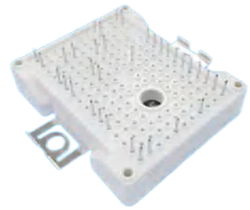
380V_{RMS}/150A_{RMS} Single-Phase Power Stack



FPI-2FSC0210L-db-B

Key Features

- Single-Phase I-type 3-level, 2-in-parallel
- Adopting 150A/650V IGBT, typical output is 380V_{RMS}/150A_{RMS}
- Short-circuit soft shut down
- Power supply under-voltage protection



Applications

- Power quality
- Wind power converter
- Central PV inverter
- Energy storage system PCS

General information	
Topology	Single-Phase/ I-type 3-level
Rated power	100kW
Rated voltage/current	380V_{RMS}/150A_{RMS}
Rated DC voltage	800V
Power stack component	Integrated IGBT, snubber capacitor
Snubber capacitor	0.15μF
Switching frequency	20kHz (typical)
Ambient temperature	40℃ (typical)
Dimensions	140×108×54.4mm^3
Gate driver protection function	1)Short-circuit soft shut down 2)Power supply under-voltage protection 3)Fault timing protection 4)GE short-circuit protection
Current or NTC sampling	1)Short-circuit soft shut down 2)Power supply under-voltage protection 3)Fault timing protection 4)GE short-circuit protection

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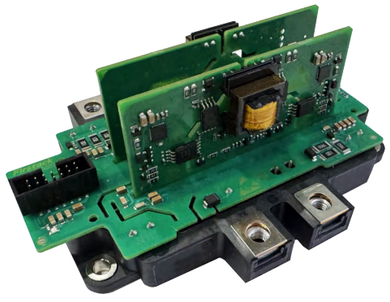
690V_{RMS}/150A_{RMS} Single-Phase Power Stack



FPI-2FSC0210L-db-A5

Key Features

- Single-Phase I-type 3-level
- Adopting 300A/1200V IGBT, typical output is 690V_{RMS}/150A_{RMS}
- Short-circuit soft shut down
- Power supply under-voltage protection
- Power quality

Applications

- Wind power converter
- Central PV inverter
- Energy storage system PCS

General information	
Topology	Single-Phase/ I-type 3-level
Rated power	180kW
Rated voltage/current	690V_{RMS}/150A_{RMS}
Rated DC voltage	1500V
Power stack component	Integrated IGBT
DC capacitor	External DC capacitor board
Switching frequency	16kHz (typical)
Ambient temperature	40℃ (typical)
Dimensions	140×104×60mm^3
Gate driver protection function	1)Short-circuit soft shut down 2)Power supply under-voltage protection 3)Fault timing protection
Current or NTC sampling	NTC terminals lead directly to the connector

380V_{RMS}/150A_{RMS} Three-Phase Power Stack

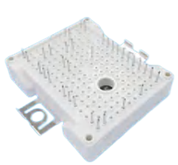
FPS015TI072LA001

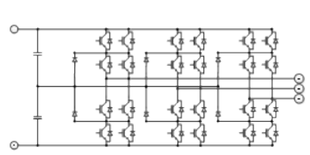
Key Features

- Three-Phase I-type 3-level, 2-in-parallel
- Adopting 150A/650V IGBT, typical output is 380V_{RMS}/150A_{RMS}
- Forced air cooling

Applications

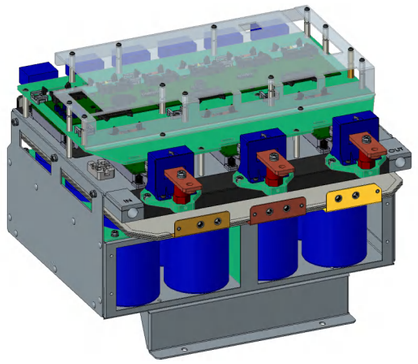
- Power quality
- Wind power converter
- Central PV inverter
- Energy storage system PCS





General information	
Topology	Three-Phase/ I-type 3-level
Rated voltage/current	380V_{RMS}/150A_{RMS}
Rated DC voltage	800V_{DC}
DC over-voltage shutdown	850V_{DC} (within 150 μs)
DC-link capacitor	6.56mF
AC over-current shutdown	420A_{peak} (within 15 μs)
Cooling method	Forced air cooling
Thermal resistance from junction to case - IGBT	0.68 K/W
Thermal resistance from junction to case - FRD	0.98 K/W
Thermal resistance from junction to case - D_5/D_6	0.41 K/W
Thermal resistance from case to heat sink - IGBT	0.45 K/W
Thermal resistance from case to heat sink - FRD	0.50 K/W
Thermal resistance from case to heat sink - D_5/D_6	0.45 K/W
Thermal resistance from heat sink to air	0.15 K/W
Heat sink material	Aluminium
Dimensions (including power stack and heat sink)	440×120×148.4mm^3
Dimensions (including busbar and capacitor)	430.5×145×65mm^3

750V_{RMS}/360A_{RMS} Three-Phase Power Stack



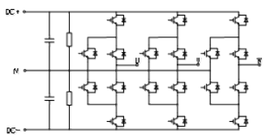
FPS036TA121XWP001

Key Features

- Three-Phase 3-level ANPC
- Adopting 600A/1200V IGBT, typical output is 750V_{RMS}/360A_{RMS}
- Liquid cooling

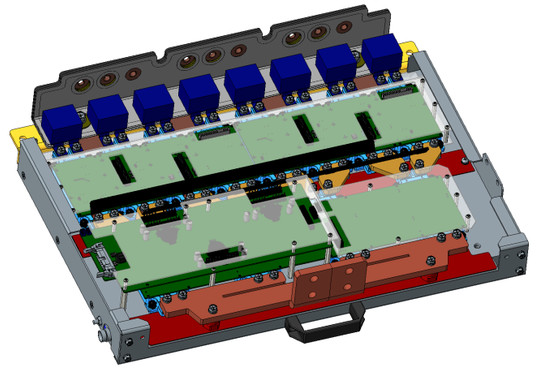
Applications

- Energy storage system PCS



General information	
Topology	Three-Phase/3-level ANPC
Rated power	450kW
Rated voltage/current	750V_{RMS}/360A_{RMS}
Rated DC voltage	1600V_{DC}
DC-link capacitor	1740μF
Rated AC continuous current	360A_{RMS}
Power loss	4000W (typical)
Cooling method	Liquid cooling
Coolant flow rate	10L/min
Maximum temperature at coolant inlet	50℃
Coolant pressure difference	≤40kPa
Temperature difference between coolant outlet and inlet	6K (typical)
Dimensions	424×324.5×451mm^3

690V_{RMS}/2100A_{RMS} Three-Phase Power Stack



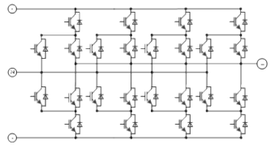
FPS210HA124TW004

Key Features

- Single-Phase 3-level ANPC, 4-in-parallel
- Adopting 900A/1200V IGBT, typical output is 690V_{RMS}/2100A_{RMS}
- Liquid cooling

Applications

- Wind power converter
- Central PV inverter
- Energy storage system PCS



General information	
Topology	Single-Phase/3-level ANPC
Rated voltage/current	690V_{RMS}/2100A_{RMS}
Rated DC voltage	1500V_{DC}
Rated AC continuous current	2100A_{RMS}
Switching frequency	4kHz
Power loss	13000W (typical)
Cooling method	Liquid cooling
Coolant flow rate	25L/min
Coolant pressure difference	0.8 Bar
Inlet water temperature	45℃
Dimensions	598×463.2×117.5mm^3