

Product Brief

3-Level configurations

650V/1200V/1700V 3-level modules

Our new family of 3-level modules offers significant advantages for designers of highly efficient UPS, solar inverters and high-speed drive applications.

The 3-level topology is ideal for power ranges up to 125 kW, which require high switching frequencies, complex filtering and high efficiency. These are typical requirements for double conversion UPS and solar inverter applications.

EasyPACK 1B and 2B PressFIT provide a complete phase leg from 15 A up to 200 A. The power connection uses up to eight pins in parallel to minimize stray inductances and reduce PCB heating. SiC diodes are available to increase efficiency further.

The EconoPACK™ 4 package is suitable for a power range up to 125 kW, in NPC1 topology up to 300 A and in NPC2 topology up to 400 A. The three DC power terminals (+, N, -) are all located on the same side of the module to enable a low inductive connection as needed for 3-level converters, while the two terminals on the opposite side are used as parallel output terminals.

The EconoDUAL™ 3 package forms one 3-level leg with two modules. The modules are available in 400 A/650 V and 300 A/1200 V. They can easily be configured in parallel to achieve higher power ratings.

The 62 mm package offers high power 3-level solution with combination of standard half bridge modules and common emitter modules. This solution is available with current range from 300 A/1200 V up to 600 A/1200 V.



Key features

- > High reliability due to PressFIT pins
- > Optimized thermal performance
- > RoHS compliant

Applications

- > Uninterruptible power supplies
- > Solar inverters
- > High speed drives



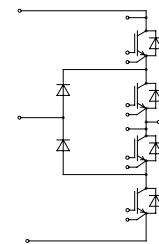
3-level module configurations

Product overview



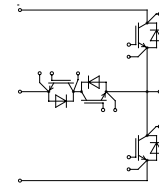
NPC1 topology

I_c [A]	650 V EasyPACK 2B Full bridge	600 V EasyPACK 1B Phase leg	650 V EasyPACK 2B Phase leg	650 V EconoPACK™ 4 Phase leg	650 V EconoDUAL™ 3 1/2 Phase leg	1200 V EconoDUAL™3 1/2 Phase leg
400						
300						
200						
150						
100						
75						
50						
30						



NPC2 topology

I_c [A]	1200 V EasyPACK 2B Full bridge	1200 V EasyPACK 1B Phase leg	1200 V EasyPACK 2B Phase leg	650 V EconoPACK™ 4 Phase leg	1200 V EconoPACK™ 4 Phase leg	1200 V 62 mm common emitter
600						
450						
400						
300						
200						
100						
80						
15						



The degree of efficiency for the two 3-level topologies, NPC1 and NPC2, has to be evaluated depending on the switching frequency.

- > NPC2 topology for low and medium switching frequencies (approx. $f_{sw} \leq 12$ kHz);
NPC2 topology with SiC Schottky diodes also for high switching frequencies
- > NPC1 topology for high switching frequencies (approx. $f_{sw} \geq 12$ kHz)

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