PRODUCT NOTE

New LoPak for 1200V applications
Familiar package for higher power ratings

The new 1200 V LoPak modules carry the same DNA for high reliability and robustness as the entire family of Hitachi ABB Power Grids’ high-power semiconductors.

Building on its experience of high-performance, high-reliability devices for voltages above 3.3 kV, Hitachi ABB Power Grids has expanded its product portfolio by introducing a family of 1200 V power modules to complement the existing 1700 V family, starting with a 1200 V, 900 A x 2 module using an upgraded LoPak module package.

Benefits
For the active Front End, or machine-side converter, that connects the DC-link to the motor, Hitachi ABB Power Grids’ LoPak modules are a popular choice. Even at lower voltages, engineers not only want to create new inverter designs but would also like the ability to upgrade their existing designs to handle higher power using the same module package. This allows a faster time-to-market, less disruption of manufacturing lines, and potentially lower unit costs.

These new modules feature the next generation of ultra-low-loss, rugged Trench IGBT technology used to fabricate the silicon switch and optimized diodes.

Features LoPak 1200 V power modules

- Special treated Cu-baseplate, controlled bow and reduced airgap to heat sink
- Spacers for substrate solder, homogeneous solder thickness and less delamination
- Press-fit auxiliary connections, press-fit auxiliary pins allow a solder-free connection to the gate-driver PCB
- Copper wire bonds for high current terminal and substrate inter-connects
- Maximum junction temperature of 175 °C
Housing improvements
In addition to the standard use of a copper (Cu) base plate, press-fit connectors for the control terminals, and an option for pre-applied TIM on the base plate, the improved LoPak housing includes:

- A new Cu pattern on the DBC substrate to place the chips in the best locations to minimize the temperature interactions, stray inductance/capacitance/resistance of the package, and to optimize the current sharing between the IGBT/diode pairs.

- Use of Cu bond wire for the DBC/DBC and DBC/power terminal connections and an increased number of wires.

### Ratings LoPak

<table>
<thead>
<tr>
<th>Availability</th>
<th>Voltage (V)</th>
<th>Current (A)</th>
<th>Housing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase leg IGBT</td>
<td>1200</td>
<td>2 x 600</td>
<td>LoPak</td>
</tr>
<tr>
<td>Phase leg IGBT, samples available</td>
<td>1200</td>
<td>2 x 900</td>
<td>LoPak</td>
</tr>
</tbody>
</table>

Typical applications
- Wind power converters
- Variable speed drives
- Power supplies
- Power quality
- UPS
- Renewable energies

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