

## **Intelligent Power Modules Offer More Packages, More Features For Appliances**

[STMicroelectronics](#) has extended its SLLIMM nano series of Intelligent Power Modules (IPMs) for motor drives with more package options that help minimize overall size and complexity, extra integrated features, and greater efficiency leveraging the latest-generation 500-V MOSFETs. With a current rating of 1 A or 2 A, the new IPMs target applications up to 100 W such as refrigerator compressors, washing-machine or dishwasher motors, draining and recirculation pumps, fans, and other drives running at less than 20 kHz in hard-switching circuits. Operation up to 150°C allows use in harsh environments.

The modules integrate a three-phase MOSFET bridge and gate-driver HVICs, with value-added features including an unassigned op-amp and comparator for functions such as overcurrent protection and current sensing. Additional built-in safety features include interlocking to prevent shoot-through currents from damaging bridge MOSFETs, a fault-status output, shutdown input, and smart-shutdown capability. An optional built-in thermistor helps simplify overtemperature protection.

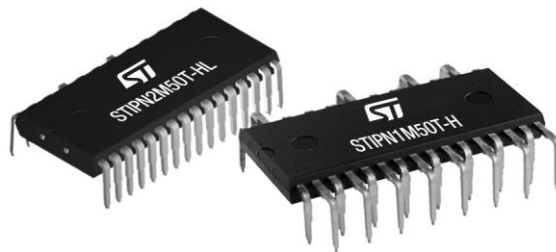
In addition to the zig-zag lead option, the series is also available in a line-lead package. These give designers extra flexibility to simplify the board layout and minimize controller size in mechatronic assemblies and other space-constrained applications.

The high thermal performance of the packages, combined with the superior efficiency of ST's latest 500-V MOSFETs, enhances designers' freedom to minimize heatsink size or create heatsink-free solutions for lower-power applications. The low MOSFET on-resistance of 3.6  $\Omega$  and 1.7  $\Omega$ , in 2-A and 1-A variants, respectively, combines with low switching losses to ensure high overall energy efficiency.

In addition, the MOSFETs have separate open-emitter connections to module pins, which simplifies use of three-shunt current sensing for field-oriented motor control (FOC) or single-shunt sensing for trapezoidal control. The modules also integrate the bootstrap diodes needed to control the high-side MOSFET gates, further minimizing demand for external components.

The STIPN1M50T-H, STIPN1M50-H, STIPN2M50T-H (L), and STIPN2M50-H are in production now, priced from \$4.50 each in the dual inline package for orders of 1000 pieces. For further information visit [www.st.com/ipm](http://www.st.com/ipm).

### MOSFET-based SLLIMM™-nano modules



*Figure. Targeting applications up to 100 W, the SLLIMM nano series Intelligent Power Modules for motor drives integrate a three-phase MOSFET bridge and gate-driver HVICs, with value-added features such as an unassigned op-amp and comparator for functions such as overcurrent protection and current sensing.*