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Gate-Driver System Works With 1.7-kV To 4.5-kV IGBT And SiC Power Modules

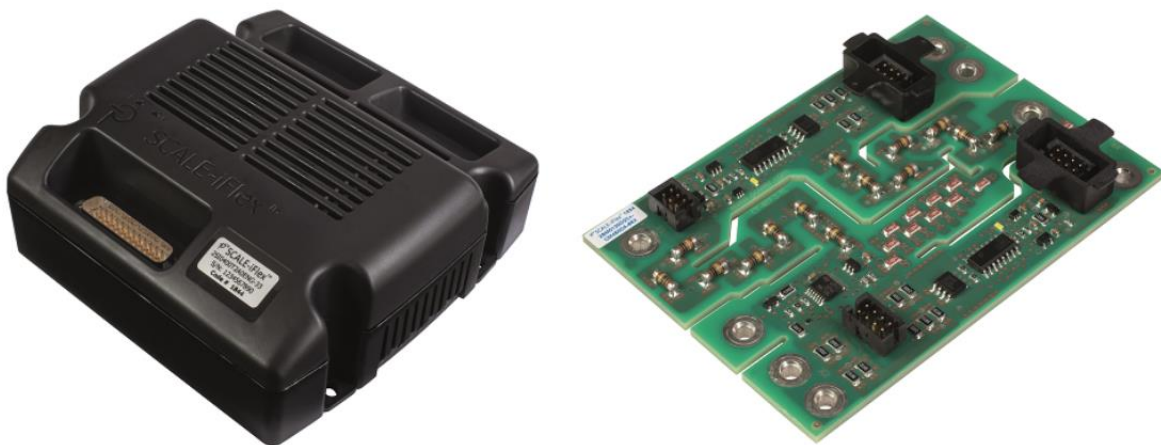
[Power Integrations](#) SCALE-iFlex is a gate-driver system for IGBT, hybrid and silicon-carbide (SiC) MOSFET power modules with blocking voltages from 1.7 kV to 4.5 kV. The system consists of a central Isolated Master Control (IMC) and one to four Module-Adapted Gate Drivers (MAGs). The IMC provides a 4.5-kV blocking voltage. A range of MAGs is available to service a variety of power modules, suppliers and semiconductor switch technologies across 1700-V, 3300-V and 4500-V voltage classes (Fig. 1).

The SCALE-iFlex gate-driver system enables easy paralleling of the industry's latest dual power modules, providing reliable and highly flexible system scalability with minimum development effort (Fig. 2). The MAG is placed adjacent to the modules' control terminals to provide excellent switching performance, and the IMC performs all necessary communication between the MAGs and the user's MCU handling functions such as PWM commands, short-circuit and undervoltage failure reporting, as well as NTC and dc-link voltage measurement.

The IMC is available with either an electrical or a fiber-optic interface with reinforced isolation, in accordance with EN 50124-1, IEC 61800-5-1 and UL 61800-5-1 for 1700-V and 3300-V power modules. The fiber-optic IMC also meets basic isolation requirements for 4500-V semiconductors. Devices feature double-sided conformal coating; units undergo full in-circuit tests (ICTs) and are 100% hipot and partial-discharge tested to ensure unmatched reliability. The devices include a full set of protection features such as undervoltage lockout, short-circuit protection with Advanced Soft Shut Down (ASSD) and NTC temperature sensing with reinforced isolation (up to 3300 V).

Comments Thorsten Schmidt, technical product manager at Power Integrations, "The SCALE-iFlex gate-driver system is optimized for the latest 1700-V to 3300-V rated power modules from all of the leading module manufacturers. The system provides the ultimate in reliability for demanding applications such as wind turbine inverters, industrial drives and the main propulsion and auxiliary inverters for railway applications."

The SCALE-iFlex IMC and MAG gate driver system will be available in August 2019. A typical use-case set comprising one IMC, four MAGs and associated cables is priced at \$693 in 100 piece quantities. Technical information is available from the Power Integrations [website](#).



Isolated Master Control

Module Adapted Gate Driver

Fig. 1. The SCALE-iFlex gate driver family consists of a central Isolated Master Control (IMC) (part number 2SI0400T2xxC) and up to four Module Adapted Gate Drivers (MAGs) (part number 2SM0120D2xxC) together with a cable set.



Fig. 2. The ready-to-use SCALE-iFlex system enables easy paralleling of up to four modules and factory conformal coating delivers unmatched reliability, according to the company.