

GaN Power ICs Drive Ease-Of-Use, Lower System Cost And Energy Savings

[Navitas Semiconductor's](#) GaNSlim, a new generation of highly-integrated GaN power ICs, is said to further simplify and speed the development of small form factor, high-power-density applications by offering the highest level of integration and thermal performance. According to the company, GaNSlim enables the simplest, fastest, and smallest system design by integrating drive, control, and protection, with integrated EMI control and lossless current sensing.

All these features are provided within a thermally efficient, proprietary DPAK-4L package (see the figure). Additionally, with an ultra-low startup current below 10 μ A, GaNSlim devices are compatible with industry-standard SOT23-6 controllers and eliminate HV startup.

Devices in the NV614x GaNSlim family are rated at 700 V with $R_{DS(ON)}$ values from 120 m Ω to 330 m Ω and are available in versions optimized for both isolated and non-isolated topologies. This initial offering of GaNSlim ICs includes the NV6148C, NV6146C, NV6145C, NV6144C and NV6143C models.

Integrated features such as lossless current sensing eliminate external current sensing resistors and optimize system efficiency and reliability. Overtemperature protection ensures system robustness and auto sleep-mode increases light and no-load efficiency. Autonomous turn-on/off slew rate control maximizes efficiency and power density while reducing external component count, system cost and EMI.

GaNSlim's patented 4-pin DPAK package provides low-profile and low-inductance along with its high thermal performance. This package enables 7°C lower temperature operation versus conventional alternatives, supporting high-power-density designs with ratings up to 500 W. Target applications include chargers for mobile devices and laptops, TV power supplies, lighting, etc.

"Our GaN focus is on integrated devices that enable high-efficiency, high-performance power conversion with the simplest designs and the shortest possible time-to-market," says Reyn Zhan, Sr. manager of technical marketing. "Our new GaNSlim portfolio—built on integration, ease-of-use, and low-cost manufacturing methods—continues to grow the customer pipeline with over 50 new projects already identified. GaNSlim increases our GaN addressable market by enabling lower system costs compared to silicon designs for many applications, targeting applications under 500 W across mobile, consumer and home appliance."

As with other Navitas GaN ICs, GaNSlim devices are supplied with a twenty-year warranty—an industry best according to the company. Meanwhile demo boards for QR flyback, single-stage PFC, boost PFC plus QR flyback and TV power supply designs allow for rapid evaluation and selection of the optimum device for a given application. For more information, see the GaN Power ICs [page](#) or contact info@navitassemi.com.



Figure. Continuing the evolution of Navitas' highly-integrated GaN power ICs, the newest generation—GaNSlim—is designed to further simplify and speed the development of small form factor, high-power-density applications by offering the highest level of integration and thermal performance. It integrates drive, control, and protection, with EMI control and lossless current sensing, all within a high-thermal-performance, proprietary DPAK-4L package. It targets mobile, consumer and home appliance applications under 500 W.