Newsbite

N4714I

STMicroelectronics' miniature thyristor driver saves space in small appliances

Innovation at driver level yields major advance for simple AC power controls

Geneva, Switzerland, February 9, 2026 -- STMicroelectronics has revealed an ultra-compact thyristor gate driver, developed for small AC-powered appliances such as hairdryers, which features an innovative new isolation transformer that enables simpler, slimmer designs.

The tiny new driver, STSID140-12, is housed in a 5.35mm x 3.45mm leadless DFN package only 1.2mm high. The transformer embedded in the device substrate ensures safety and reliability with an insulation voltage of 1250V (RMS) inside the minuscule dimensions.

Also featuring enhanced immunity to interference, the STSID140-12 requires only minimal AC-input filter capacitance for conducted and radiation emission thereby saving more space and lowering the bill of materials (BOM). In addition, the surface-mount package is suited to automated assembly and saves manual wiring during product manufacture.

Thyristors, or silicon-controlled rectifiers (SCRs), are proven and inexpensive in applications operated at domestic line voltages and frequency, including dimmers, heaters, and motor-

driven appliances. With key strengths including simple triggering, natural commutation, and resilience against transients and inrush currents, a thyristor can directly control resistive or inductive loads with minimal additional circuitry. While the technology is mature and stable, ST's new driver now permits a significant advance in thyristor circuit design, realizing smaller size, lower BOM, and increased robustness.

The STSID140-12 supports both zero-cross switching and phase-angle control for power adjustment in dimmers or motor drives. Generating the gate-control signal directly from a 3.3V logic input, the maximum output current of 40mA can trigger large thyristors, triacs (bidirectional SCRs), and solid-state relays. The driver has undervoltage-lockout (UVLO) protection built-in, high ESD immunity, and 3.92mm creepage distance.

The STEVAL-SID140V1 evaluation board helps developers jumpstart new SCR- and triac-based projects with the miniaturized, BOM-saving driver. The board qualification is ongoing and will be completed in Q2 2026.

The STSID140-12 is in mass production and available at distributors and the eStore from $0.92 for orders of 10,000 pieces.

Please visit www.st.com/stsid140-12 for more information.