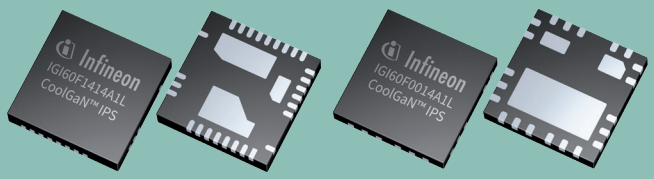


Product brief

CoolGaN™ IPS half-bridge 600 V

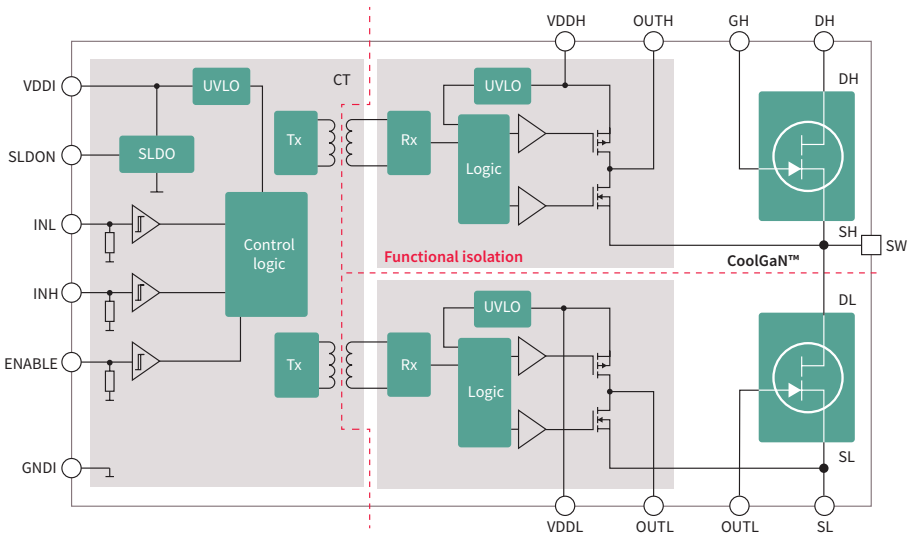
Ease of use with integrated drivers for highest efficiency and power density

Infineon's CoolGaN™ Integrated Power Stage (IPS) 600 V leverages the market's most reliable GaN technology, uniting ultimate efficiency and reliability with ease of use. The IGI60F1414A1L combines a half-bridge power stage consisting of two 140 mΩ (typ. $R_{DS(on)}$) / 600 V enhancement-mode CoolGaN™ switches with dedicated gate drivers in a thermally enhanced 8x8 mm QFN-28 package.

By using two digital PWM inputs, the device enables an easy-to-use digital-in-to-power-out solution, ideally suited to support the design of compact appliances in the low-to-medium power area (30-500 W).

The integrated isolation function, the clean separation of digital and power ground and the reduced complexity of the PCB layout are crucial in achieving shorter development time, lower system bill-of-material and lower total cost. Both the gate driver's input-to-output isolation and the level-shifting to the high-side are based on Infineon's proven on-chip coreless transformer (CT) technology that guarantees high speed and excellent robustness even for extremely fast switching transients with voltage slopes exceeding 150 V/ns.

Block diagram IGI60F1414A1L



Key features

- Isolated digital input with digital-in, power-out building block
- Application configurable switching behavior
- Fast, highly accurate, and stable timing
- Thermally enhanced 8x8mm QFN-28 and 6x8mm QFN-26 packages

Key benefits

- Easy to drive with 2x digital PWM input
- Low system BOM
- Complete configurability of gate path via simple RC circuit
- Allows short dead-time setting to maximize system efficiency
- Small package for compact system designs

www.infineon.com/coolgan-ips

CoolGaN™ IPS half-bridge 600 V

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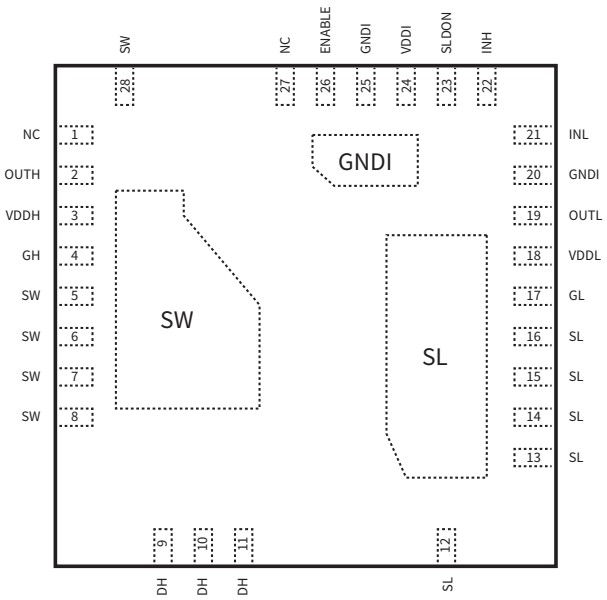
Pin configuration and exposed pads for QFN-28 8 x 8 mm package, top view (not to scale)



Pin description

Pin number	Symbol	Description
1	–	Do not connect (floating)
2	OUTH	Driver output high-side
3	VDDH	Supply voltage for high-side driver (typ. 8 V referred to SW)
4	GH	Gate connection high-side switch
5-8, 28	SW	Half-bridge output (switching node)
9-11	DH	Drain connection high-side switch
12-16	SL	Source connection low-side switch
17	GL	Gate connection low-side switch
18	VDDL	Supply voltage for low-side driver (typ. 8 V referred to SL)
19	OUTL	Driver output low-side
20, 25	GNDI	Ground connection of driver Input stage
21	INL	Input signal (default state “Low”); controls low-side switch
22	INH	Input signal (default state “Low”): controls high-side switch
23	SLDON	Connected to VDDI (or not connected): VDDI directly supplies driver input circuitry Connected to GNDI: Internal shunt regulator activated to generate VDDI (3.3 V)
24	VDDI	Supply voltage driver input stage (+3.3 V); can be either applied directly or generated by internal SLDO (e.g by connecting VDDI via resistor R_{VDD1} to VDDL)
26	ENABLE	Input signal (default state “Low” - both outputs set to low slate); logic “High” required to activate outputs
27	–	Do not connect (floating)

CoolGaN™ IPS half-bridge 600 V product portfolio

$R_{DS(on)}$ typ.	8x8mm QFN-28 package	6x8mm QFN-26 package
140 mΩ	IGI60F1414A1L	
200 mΩ	IGI60F2020A1L	
270 mΩ	IGI60F2727A1L	IGI60F2727A1M
500 mΩ	IGI60F5050A1L	

Sampling/available

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