



Infineon EiceDRIVER™ gate driver ICs

Selection guide 2019

Every switch needs a driver



Dear Customer and Partner,

Power electronics applications employ power device switches. And power device switches require optimum gate drive solutions.

Applications such as battery-driven power tools, small and major home appliances, computing and telecom servers, EV charging, solar, and robotics all have special requirements. An optimum gate drive configuration is essential for all power switches, whether they are in discrete form or in a power module. State-of-the-art discrete switch families including CoolMOS™ and OptiMOS™ silicon MOSFETs, TRENCHSTOP™ IGBTs, CoolGaN™ gallium nitride HEMTs, and CoolSiC™ silicon carbide MOSFETs as well as open-frame modules such as Easy and Econo power modules, require tuning of gate drive circuits to take full advantage of their capacity and capabilities. One of the most common questions for our new wide-bandgap power devices such as CoolGaN™ or CoolSiC™ is “how do you drive one of these?”

Infineon gate drivers provide a wide range of typical output current options, from 0.1-A up to 10-A, suitable for any power device size. Robust gate drive protection features such as fast short-circuit protection, programmable dead-time, shoot-through protection, and active shutdown, make the drivers well-suited for all power devices, including CoolGaN™ and CoolSiC™. Infineon gate drivers also provide advanced features such as integrated bootstrap diodes, enable and fault reporting functions, input filters, OPAMP and DESAT functions. Active Miller clamps and separate sink and source outputs options also provide design flexibility for all applications. Infineon EiceDRIVER™ family of gate drivers makes it easier for our customers to drive all power switches and power modules. For galvanic isolation requirements, both basic and reinforced isolated product options are available.

We do what we promise. That’s quality made by Infineon. With our modern and proactive quality management system, we support the operational excellence of Infineon by translating customer requirements into actions. We are committed to being the best in class on cost, quality and time to market. Our quality guidelines serve as a security fence to prevent productivity measures that compromise our quality.

Infineon is a world leader in power semiconductor solutions that make your life easier, safer, and greener. We empower the efficient generation, transmission and consumption of electrical energy. In short, we empower a world of unlimited energy. The EiceDRIVER™ Gate Driver Selection Guide 2019 provides innovative and optimum gate driver solutions to take full advantage of our state-of-the-art switch technologies to come closer to this goal.



A handwritten signature in blue ink, appearing to read 'R. Stele'.

Roland Stele
GM and VP
Gate Driver ICs
Industrial Power Control

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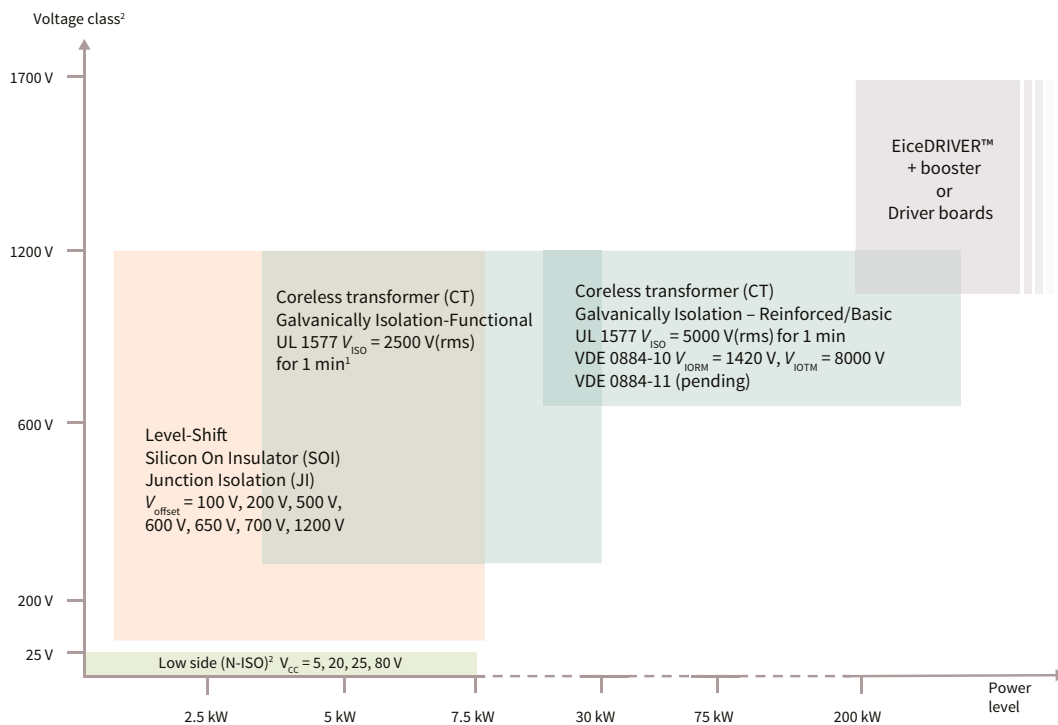
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Infiniteon EiceDRIVER™ gate driver IC

Overview

Gate driver ICs serve as the interface between control signals (digital or analog controllers) and power switches (IGBTs, MOSFETs, SiC MOSFETs, and GaN HEMTs). The integrated gate-driver solutions reduce your design complexity, development time, bill of materials (BOM), and board space while improving reliability over discretely-implemented gate-drive solutions.

Every switch needs a driver, and every driver needs a switch. Infiniteon offers a comprehensive portfolio of driver ICs with a variety of configurations, voltage classes, isolation levels, protection features, and package options. These flexible gate driver ICs are complementary to Infiniteon IGBT discretes and modules, silicon (CoolMOS™, OptiMOS™ and StrongIRFET™) and silicon carbide MOSFETs (CoolSiC™), gallium nitride HEMTs (CoolGaN™), or as part of integrated power modules (CIPOS™ IPM and iMOTION™ smart IPM).



Note 1: IEDC Compact only

Note 2: Voltage class is defined based on different driver configurations.

1. For single high-side, high- and low-side, half bridge and three phase gate drivers, voltage class is defined as switch break down voltage in applications.

2. For low side drivers, voltage class is defined as maximum operating range supply voltage.

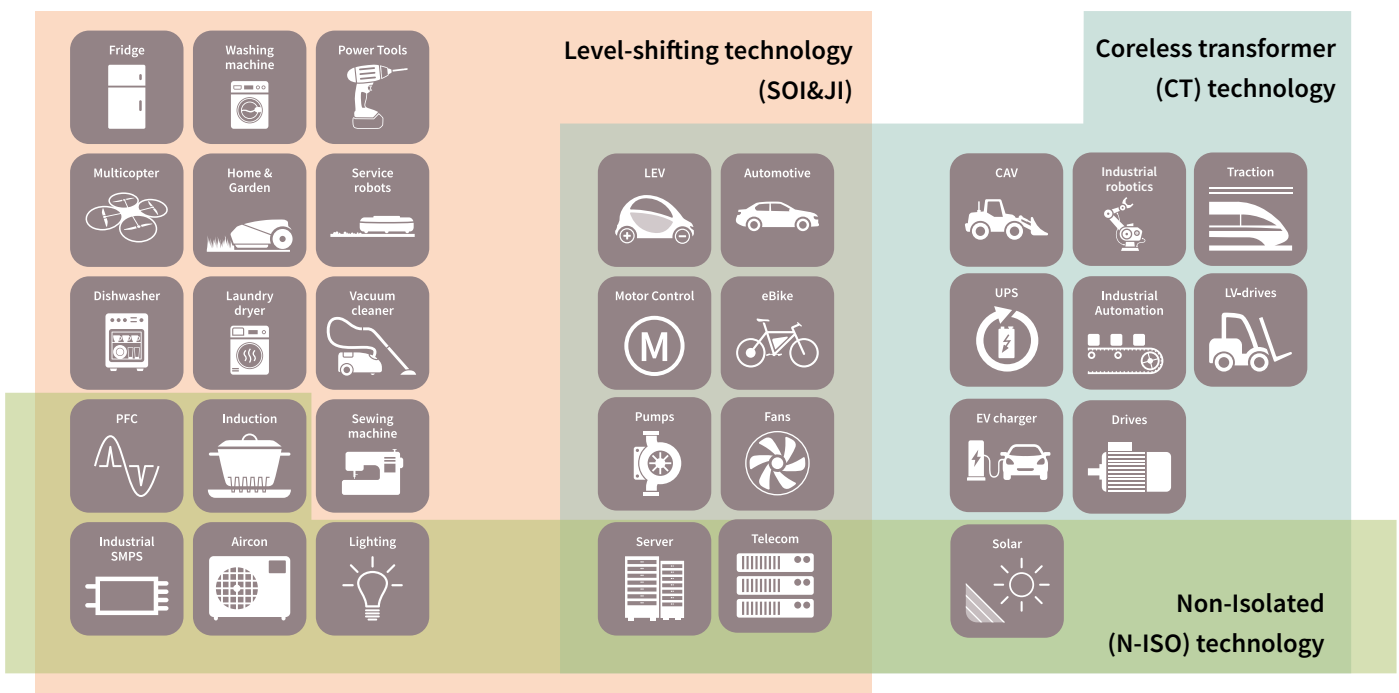
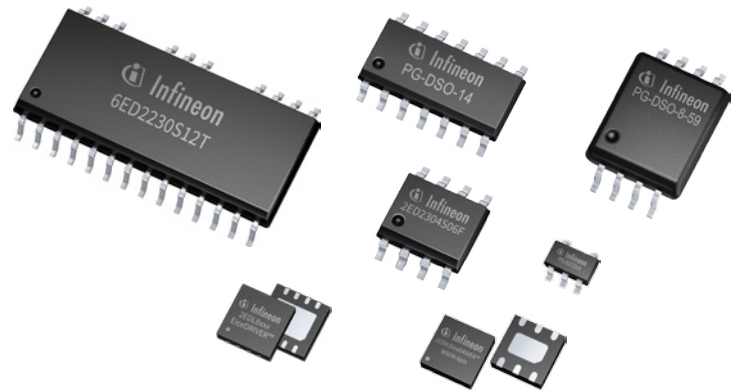
3. For special cases as 1EDNx550 (1EDN-TDI), common mode rejection (CMR) voltage range up to 80 V.

Gate driver configuration			5 V	25 V	100 V	200 V	500 V	600 V	650 V	1200 V
Gate drivers	1-Channel	High-side			●	●	●	●	●	●
		Low-side	●	●						
	2-Channel	High-side							●	●
		Low-side		●						
		High- and low-side				●	●	●	●	●
	4-Channel	Half-bridge			●	●		●	●	●
		Full-bridge			●					
6-Channel	Three-phase				●		●	●	●	
System building blocks	Current sense							●		●
	Start-up					●				

● Non-isolated (N-ISO) ● Junction isolation (JI) ● Silicon on insulator (SOI) ● Coreless transformer (CT)

Infineon gate driver IC applications

Leveraging the application expertise and advanced technologies of Infineon and International rectifier, our gate driver ICs are well-suited for many applications such as industrial motor drives, major home appliances, solar inverters, automotive applications, EV charging, UPS, switch-mode power supplies (SMPS), high-voltage lighting, battery-powered applications, and small home appliances.



Infineon gate driver IC technologies

Low-side only	Level-shift		Galvanic isolation
● Non-isolated	● Junction isolation	● Silicon on insulator	● Coreless transformer
<ul style="list-style-type: none"> Comprehensive families of single- and dual-low-side drivers with flexible output current, logic configurations, and UVLOs Rugged technology of the high-voltage gate drivers, and the state-of-the-art 130-nm process 	<ul style="list-style-type: none"> 20 years proven technology Largest portfolio of 200 V, 600 V, 700 V and 1200 V industry standard gate drivers using rugged proprietary HVIC process 	<ul style="list-style-type: none"> Infineon SOI technology for high-voltage applications with inherent integrated bootstrap diode capability and lower level-shift losses Industry best-in-class robustness against negative transient voltage spikes on VS pin 	<ul style="list-style-type: none"> Magnetically-coupled isolation technology provides galvanic isolation (functional, basic and reinforced) Strongest gate-drive output currents (up to 10 A) reducing need for external booster circuits

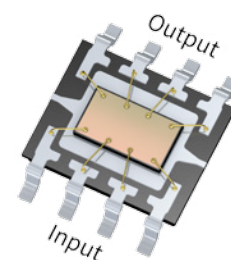
Infinion non-isolated (N-ISO) technology



Non-isolated (N-ISO) technology refers to gate driver ICs utilizing low-voltage circuitry with the robust technology of high-voltage gate drivers, and the state-of-the-art 0.13- μm process. Infineon's world-class fabrication techniques enable high-current gate drivers for high-power-density applications in industry-standard DSO-8 and small form-factor SOT23 and WSON packages. Infineon offers comprehensive families of single-low-side and dual-low-side gate driver ICs with flexible options for output current, logic configurations, packages, and protection features such as under-voltage lockout (UVLO), integrated overcurrent protection (OCP), and truly differential inputs (TDI).

Truly differential inputs (TDI)

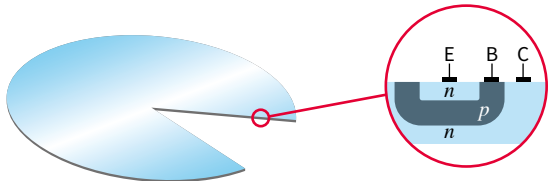
- › The input signal levels of conventional low-side gate driver ICs are referenced to the ground potential of the gate driver IC. If in the application the ground potential of the gate driver IC shifts excessively, false triggering of the gate driver IC can occur.
- › The 1EDN7550/1EDN8550 gate driver ICs have truly differential inputs. Their control signal inputs are largely independent from the ground potential. Only the voltage difference between its input contacts is relevant.
- › This prevents false triggering of power MOSFETs.



Infineon junction-isolation (JI) technology



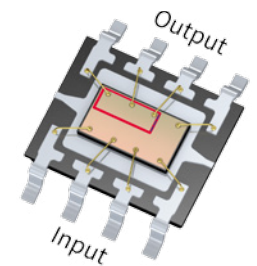
Infineon p-n junction-isolation (JI) technology is a mature, proven industry-standard MOS/CMOS fabrication technique. Infineon's proprietary HVIC and latch-immune CMOS technologies enable rugged monolithic construction. The advanced process allows monolithic high-voltage and low-voltage circuitry construction with the best price per performance for specific motor-control and switch-mode power applications.



Main benefits of Infineon JI technology:

- > High current capability
- > Precision analog circuitry (tight timing/propagation delay)
- > Most comprehensive portfolio with industry-standard gate driver ICs
- > Voltage classes: 1200 V, 600 V, 500 V, 200 V, and 100 V
- > Configurations: three phase, half bridge, single channel, and more
- > Driver ICs tailored towards the best price-performance ratio

Pioneered by International Rectifier (IR) since 1989 with the introduction of the first monolithic product, the high-voltage integrated circuit (HVIC) technology uses patented and proprietary monolithic structures integrating bipolar, CMOS, and lateral DMOS devices with breakdown voltages above 700 V and 1400 V for operating offset voltages of 600 V and 1200 V.



Using this mixed-signal HVIC technology, both high-voltage level-shifting circuits and low-voltage analog and digital circuits can be implemented. With the ability to place high-voltage circuitry (in a 'well' formed by polysilicon rings), that can 'float' 600 V or 1200 V, on the same silicon away from the rest of the low-voltage circuitry, high-side power MOSFETs or IGBTs exist in many popular off-line circuit topologies such as buck, synchronous boost, half-bridge, full-bridge and three-phase.

These HVIC gate drivers with floating switches are well-suited for topologies requiring high-side, half-bridge, and three-phase configurations.

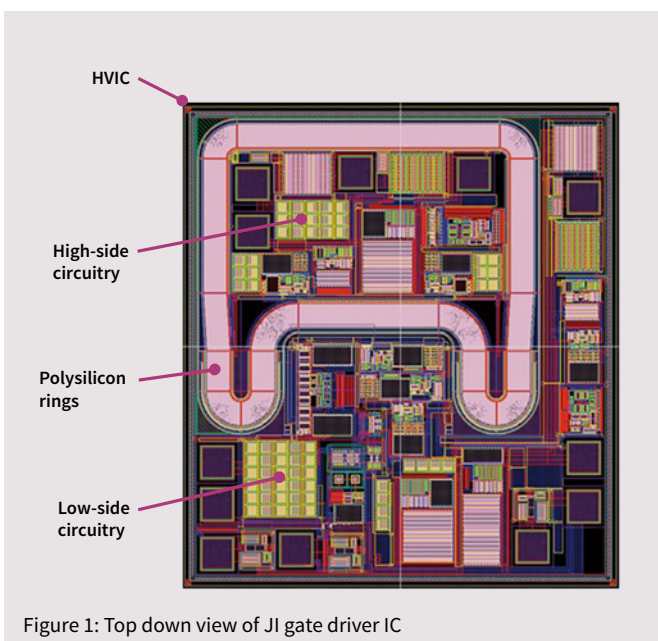


Figure 1: Top down view of JI gate driver IC

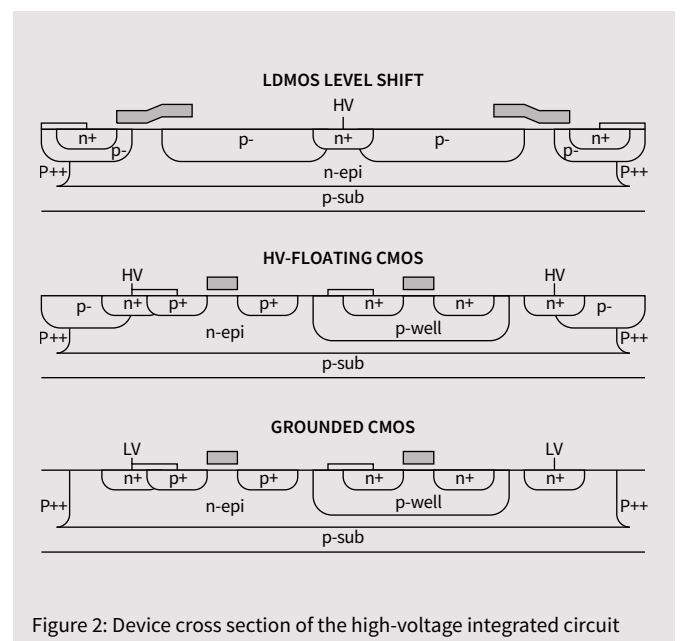
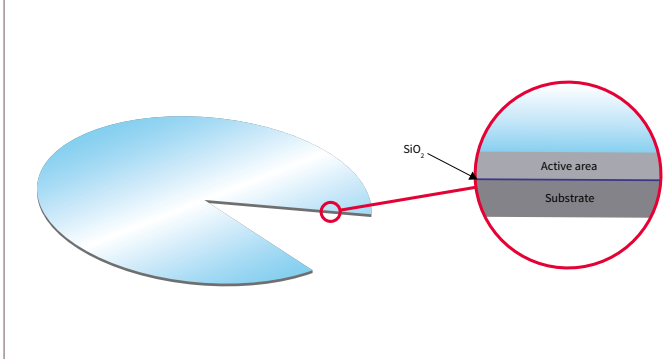


Figure 2: Device cross section of the high-voltage integrated circuit

Infinion silicon-on-insulator (SOI) technology



Infinion silicon-on-insulator (SOI) technology is a high-voltage, level-shift technology providing unique, measurable and best-in-class advantages, including integrated bootstrap-diode (BSD) and industry-best-in-class robustness to protect against negative transient voltage spikes. Each transistor is isolated by buried silicon dioxide, which eliminates the parasitic bipolar transistors that causing latch-up. This technology can also lower the level-shift power losses to minimize device-switching power dissipation. The advanced process allows monolithic high-voltage and low-voltage circuitry construction with technology-enhanced benefits.

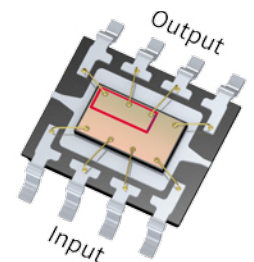


Main benefits of Infineon SOI technology:

- › Best-in-class immunity to negative transient voltage prevents erratic operation and latch-up while improving reliability
- › Low ohmic integrated bootstrap diodes (BSD) have the lowest reverse recovery and forward losses resulting in increased efficiency, faster switching, lower temperature, and increased reliability
- › Minimum level-shift losses improve driver efficiency and allow flexible housing designs
- › Integrated input filters enhance noise immunity
- › 200 V, 600 V, 650 V and 1200 V withstand voltages for each voltage design class providing operating margin

Operation robustness of negative transient voltage at the VS pin (-VS)

Today's high-power switching inverters and drives carry a large load current. The voltage swing on VS pin does not stop at the level of the negative DC bus. It swings below the level of the negative DC bus due to the parasitic inductances in the power circuit and from the die bonding to the PCB tracks. This undershoot voltage is called "negative transient voltage".



EiceDRIVER™ high-voltage level-shift gate driver IC products using Infineon SOI technology have the best-in-the-industry operational robustness. In Figure 4, the safe operating line of 6ED2230S12T* is shown at $V_{BS} = 15\text{ V}$ for pulse widths up to 1000 ns. In the green area, the products do not show unwanted functional anomalies or permanent damage to the IC.

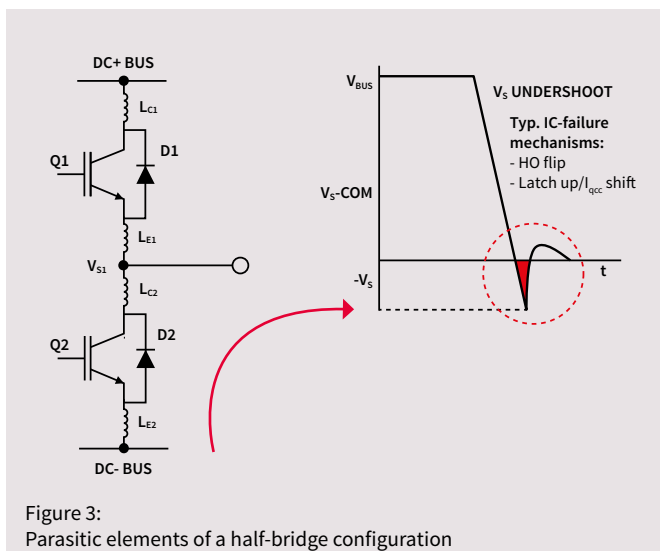


Figure 3: Parasitic elements of a half-bridge configuration

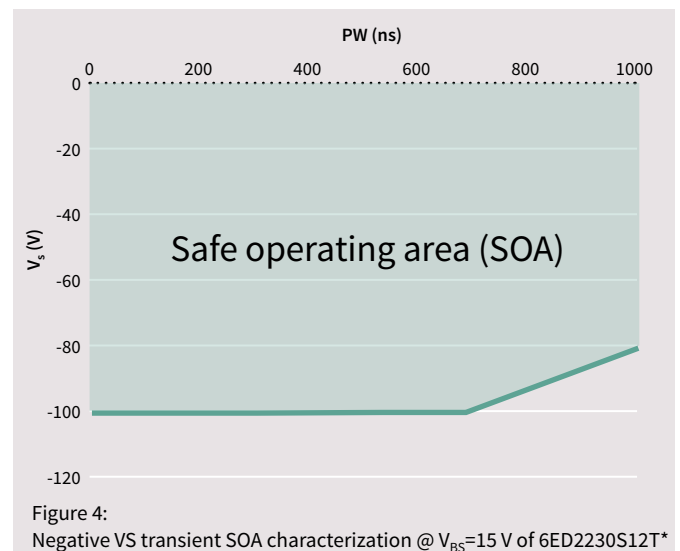


Figure 4: Negative VS transient SOA characterization @ $V_{BS}=15\text{ V}$ of 6ED2230S12T*

*Coming soon

Infineon silicon-on-insulator (SOI) technology

Integrated bootstrap diode (BSD)

The bootstrap power supply is one of the most common techniques for supplying power to the high-side driver circuitry due to its simplicity and low cost. As shown in Figure 5, the bootstrap power supply consists of a bootstrap diode and capacitor. The floating channel of level-shift gate drivers is typically designed for bootstrap operation. Infineon SOI drivers feature excellent integrated ultra-fast bootstrap diodes. The low diode resistance of $R_{BS} \leq 40 \Omega$ enables a wide operating range.

The Infineon SOI drivers with this feature can drive larger IGBTs without the risk of self-heating, minimize BOM count, and reduce system cost.

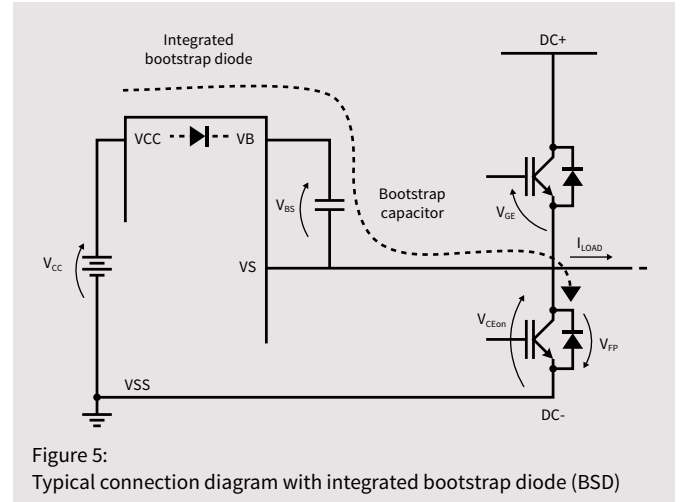


Figure 5: Typical connection diagram with integrated bootstrap diode (BSD)

Low level-shift losses

Level-shift losses count as a significant part when the operating frequency increases. A level-shift circuit is used to transmit the switching information from the low-side to the high-side. The necessary charge of the transmission determines the level-shift losses.

EiceDRIVER™ high-voltage level-shift gate driver IC products using the Infineon SOI technology require a very low charge to transmit the information. Minimizing level-shifting power consumption allows the design flexibility of higher frequency operations, as well as longer lifetime, improved system efficiency and application reliability.

In Figure 6, the thermal diagrams on the same PCB board show a temperature difference of 55.6°C lower in the power dissipation of the Infineon SOI-based products (2ED2106S06F*).

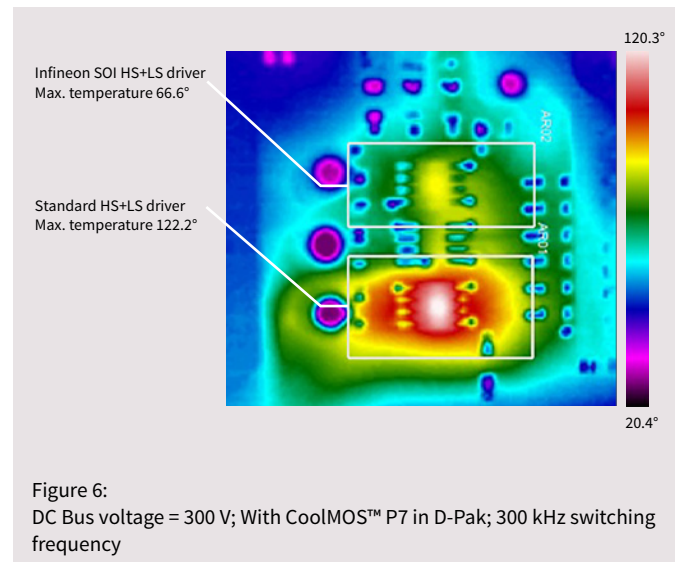


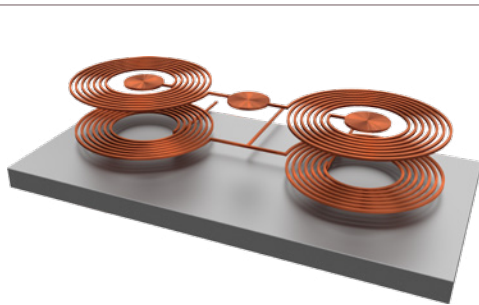
Figure 6: DC Bus voltage = 300 V; With CoolMOS™ P7 in D-Pak; 300 kHz switching frequency

*Coming soon

Infineon galvanically isolated coreless transformer (CT) technology



Infineon coreless transformer (CT) technology is a magnetically coupled, galvanically isolated technology which uses semiconductor manufacturing processes to integrate an on-chip transformer consisting of metal spirals and silicon oxide insulation. The on-chip coreless transformers are used for transmitting switching information between the input chip and output chip(s) and other signals. The technology provides short propagation delays, excellent delay matching, and strong robustness for driving SiC MOSFETs and state-of-the-art IGBTs.

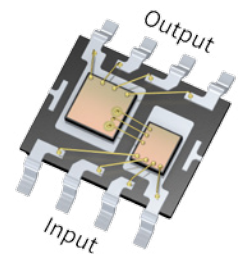


Main benefits of Infineon CT technology:

- › Galvanic isolation (functional, basic, reinforced)
- › Allows very large voltage swings of ± 1200 V or larger
- › Immunity against negative and positive transients
- › Increases reliability of the end product
- › Low power losses for switching frequencies into MHz range
- › Flexible configurations and options such as
 - Output current (up to 10 A)
 - DESAT protection
 - Active Miller clamp
 - Short-circuit clamp
 - Isolation rating and certification
 - 150 mil and 300 mil packages

Robustness

- › Extremely robust signal transfer independent of common mode noise
- › Common mode transit immunity (CMTI) up to 100 V/ns
- › Tight propagation-delay matching: tolerance improves application robustness without variations due to aging, current, and temperature

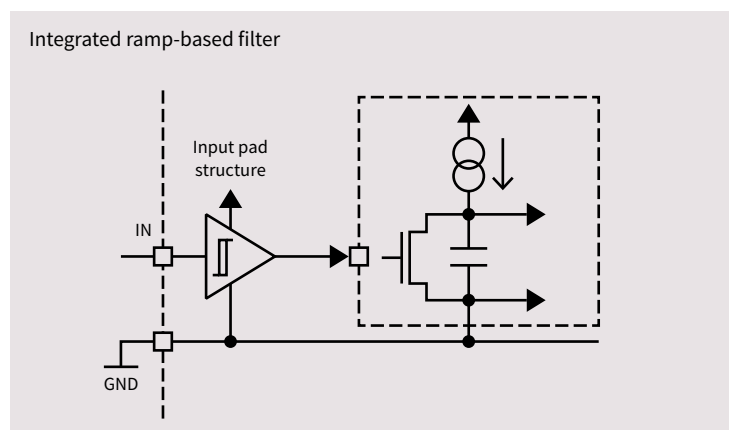


Design flexibility

- › Wide range of gate voltages up to 40 V, including negative gate voltage
- › CT technology is ready for use with silicon carbide (SiC) MOSFETs
- › Closed-loop gate current control option

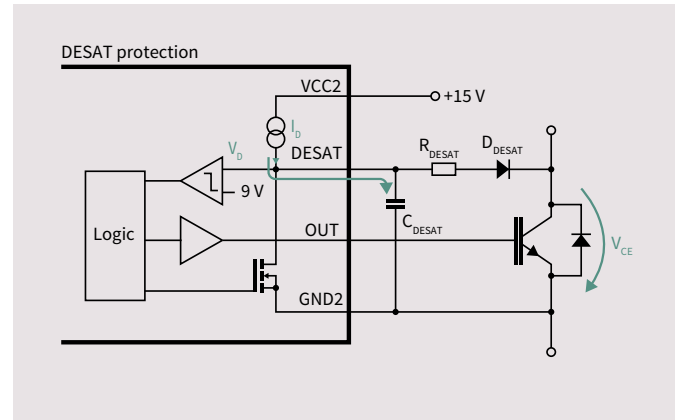
Precise timing control

- › Precise, integrated filters reduce propagation-delay variation over a wide range of operating conditions
- › Integrated filters reduce the need of external filters
- › Tight propagation delay allows minimum deadtime improving system efficiency and decreasing harmonic distortion



Protection

- > Reliable short-circuit detection via accurate desaturation (DESAT) detection circuits (current source and comparator) protects the power switches from damage during short-circuit condition
- > Two-level turn-off (TLTO) for short-circuit current protection to lower collector-emitter voltage overshoot
- > Active Miller clamping option protects against parasitic turn-on due to high dV/dt
- > Built in short-circuit clamping limits the gate voltage during short circuit



Safety certification

- > Safety certification available for VDE 0884 and UL 1577

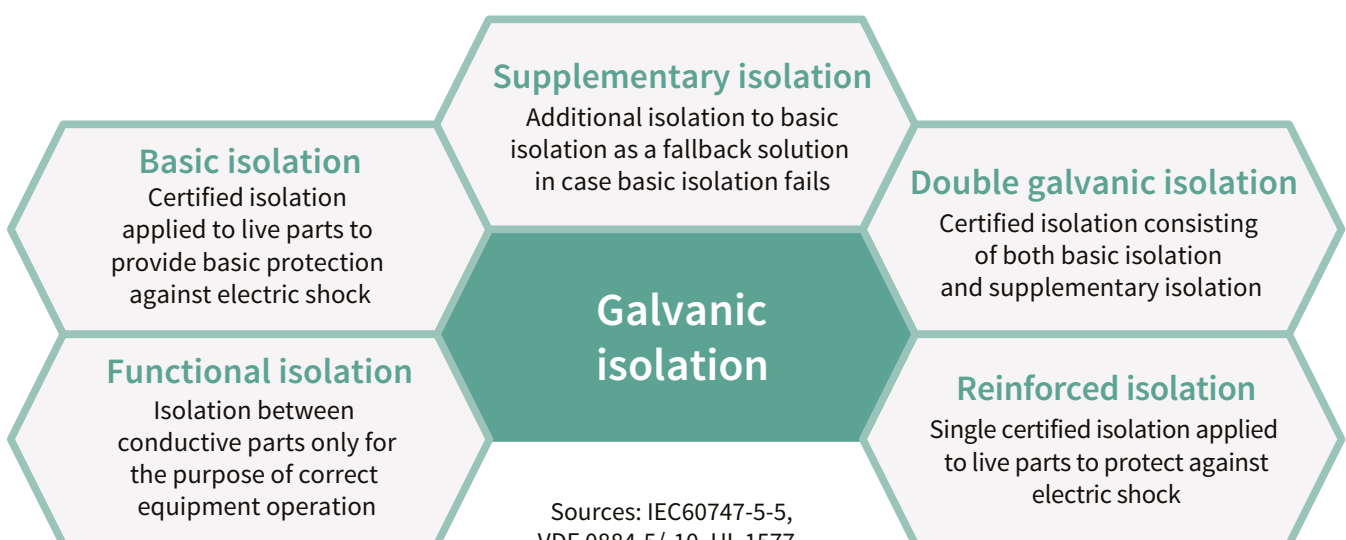


For SiC MOSFET switching

- > Ideal for ultra-fast switching 1200 V and 650 V silicon carbide power transistors such as CoolSiC™ MOSFETs
- > The drivers incorporate most important key features and parameters for SiC driving:
 - DESAT for short circuit protection
 - Active Miller clamp
 - Tight propagation delay matching
 - Precise input filters
 - Wide output side supply range
 - Negative gate voltage capability
 - Extended common mode transient immunity (CMTI) capability



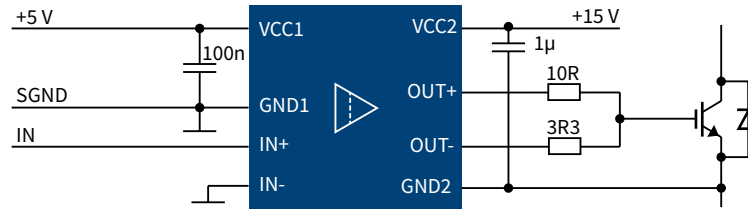
Definitions of the various isolation types



Galvanically isolated gate driver ICs

Galvanically isolated gate driver ICs

Typical connection



Configuration	Voltage class [V]	Isolation type	Isolation rating	I_{O+}/I_{O-} typ. [mA]
Single high-side	1200	Functional isolation	$V_{ISO} = \pm 1200$ V	1300/900
Single high-side	1200	Functional isolation	$V_{ISO} = \pm 1200$ V	2200/2300
Single high-side	1200	Functional isolation	$V_{ISO} = \pm 1200$ V	4000/3500
Single high-side	1200	Functional isolation	$V_{ISO} = \pm 1200$ V	4000/3500
Single high-side	1200	Functional isolation	$V_{ISO} = \pm 1200$ V	4000/3500
Single high-side	1200	Functional isolation	$V_{ISO} = \pm 1200$ V	4400/4100
Single high-side	1200	Functional isolation	$V_{ISO} = \pm 1200$ V	5900/6200
Single high-side	1200	Functional isolation	$V_{ISO} = \pm 1200$ V	7500/6800
Single high-side	1200	Functional isolation	$V_{ISO} = \pm 1200$ V	10000/9400
Single high-side	1200	Functional isolation	$V_{ISO} = \pm 1200$ V	10000/9400
Single high-side	1200	Functional isolation	$V_{ISO} = \pm 1200$ V	2000/2000
Single high-side	1200	Functional isolation	$V_{ISO} = \pm 1200$ V	2000/2000
Single high-side	1200	Functional isolation	$V_{ISO} = \pm 1200$ V	SRC/2000
Single high-side	1200	Functional isolation	$V_{ISO} = 2500$ V(rms) for 1 min	1300/900
Single high-side	1200	Functional isolation	$V_{ISO} = 2500$ V(rms) for 1 min	2200/2300
Single high-side	1200	Functional isolation	$V_{ISO} = 2500$ V(rms) for 1 min	4000/3500
Single high-side	1200	Functional isolation	$V_{ISO} = 2500$ V(rms) for 1 min	4000/3500
Single high-side	1200	Functional isolation	$V_{ISO} = 2500$ V(rms) for 1 min	4400/4100
Single high-side	1200	Functional isolation	$V_{ISO} = 2500$ V(rms) for 1 min	5900/6200
Single high-side	1200	Functional isolation	$V_{ISO} = 2500$ V(rms) for 1 min	7500/6800
Single high-side	1200	Functional isolation	$V_{ISO} = 2500$ V(rms) for 1 min	10000/9400
Single high-side	1200	Functional isolation	$V_{ISO} = 2500$ V(rms) for 1 min	10000/9400
Single high-side	1200	Functional isolation	$V_{ISO} = 5000$ V(rms) for 1 min	SRC/2000
Single high-side	1200	Basic isolation	$V_{IORM} = 1420$ V; $V_{IOTM} = 6000$ V; $V_{ISO} = 3750$ V(rms) for 1 min	2000/2000
Single high-side	1200	Basic isolation	$V_{IORM} = 1420$ V; $V_{IOTM} = 6000$ V; $V_{ISO} = 3750$ V(rms) for 1 min	2000/2000
Single high-side	1200	Basic isolation	$V_{IORM} = 1420$ V; $V_{IOTM} = 6000$ V; $V_{ISO} = 3750$ V(rms) for 1 min	2000/2000
Single high-side	1200	Basic isolation	$V_{IORM} = 1420$ V; $V_{IOTM} = 6000$ V; $V_{ISO} = 3750$ V(rms) for 1 min	2100/2100
Single high-side	1200	Basic isolation	$V_{IORM} = 1420$ V; $V_{IOTM} = 6000$ V; $V_{ISO} = 3750$ V(rms) for 1 min	2000/2000
Single high-side	1200	Basic isolation	$V_{IORM} = 1420$ V; $V_{IOTM} = 6000$ V; $V_{ISO} = 3750$ V(rms) for 1 min	2000/2000
Single high-side	1200	Basic isolation	$V_{IORM} = 1420$ V; $V_{IOTM} = 6000$ V; $V_{ISO} = 3750$ V(rms) for 1 min	2000/2000
Single high-side	1200	Reinforced isolation	$V_{IORM} = 1420$ V; $V_{IOTM} = 8000$ V; $V_{ISO} = 5000$ V(rms) for 1 min	SRC/2000
Single high-side	650	Reinforced isolation	$V_{IORM} = 1000$ V(rms); $V_{IOTM} = 8000$ V; $V_{ISO} = 5700$ V(rms) for 1 min	4000/8000
Single high-side	650	Functional isolation	$V_{IORM} = 510$ V(rms); $V_{ISO} = 1500$ V(rms) for 10 ms	4000/8000
Single high-side	250	Functional isolation	$V_{IORM} = 460$ V(rms); $V_{ISO} = 1500$ V(rms) for 10 ms	4000/8000
Half-bridge	1200	Functional isolation on high-side	$V_{ISO} = \pm 1200$ V	1500/2500
Half-bridge	650	Functional isolation on high-side	$V_{ISO} = \pm 650$ V	1500/2500
Dual high-side/half-bridge	1200	Functional isolation	$V_{ISO} = \pm 1200$ V	2000/2000
Dual high-side/half-bridge	1200	Basic isolation	$V_{IORM} = 1420$ V; $V_{IOTM} = 6000$ V; $V_{ISO} = 3750$ V(rms) for 1 min	2000/2000
Dual high-side/half-bridge	650	Reinforced isolation	$V_{IOWM} = 1000$ V(rms); $V_{IOTM} = 8000$ V; $V_{ISO} = 5700$ V(rms) for 1 min	4000/8000
Dual high-side/half-bridge	650	Reinforced isolation	$V_{IOWM} = 1000$ V(rms); $V_{IOTM} = 8000$ V; $V_{ISO} = 5700$ V(rms) for 1 min	1000/2000
Dual high-side/half-bridge	650	Functional isolation	$V_{IOWM} = 510$ V(rms); $V_{ISO} = 1500$ V(rms) for 10 ms	4000/8000
Dual high-side/half-bridge	650	Functional isolation	$V_{IOWM} = 510$ V(rms); $V_{ISO} = 1500$ V(rms) for 10 ms	1000/2000
Dual high-side/half-bridge	250	Functional isolation	$V_{IOWM} = 460$ V(rms); $V_{ISO} = 1500$ V(rms) for 10 ms	4000/8000
Dual high-side/half-bridge	250	Functional isolation	$V_{IOWM} = 460$ V(rms); $V_{ISO} = 1500$ V(rms) for 10 ms	4000/8000

SRC=Turn on slew rate control

UVLO on/off typ. [V]	Prop delay off/on typ. [ns]	Base PN	Technology	Active Miller clamp	Automotive qualified	Comparator	Desaturation protection	Enable	Fault reporting	Fault reset	Operational amplifier	Over-current protection	Separate pin for logic ground	Separate sink/source outputs	Shoot-through protection	Shutdown	Soft over-current shutdown	Two-level turn-off	UL 1577	VDE 0884-10	DSO-8	DSO-8 300mil	DSO-16	DSO-16 WB	DSO-18	DSO-20	DSO-36	TFLGA-13
			Features (see page 58)																	Package (see page 59)								
12/11.1	300/300	1EDI05I12A	CT											✓	✓						✓	✓						
12/11.1	300/300	1EDI10I12M	CT	✓										✓							✓	✓						
9.1/8.5	120/115	1EDI20N12A	CT											✓	✓						✓							
12/11.1	125/120	1EDI20H12A	CT											✓	✓							✓						
12/11.1	300/300	1EDI20I12A	CT											✓	✓						✓	✓						
12/11.1	300/300	1EDI20I12M	CT	✓										✓							✓	✓						
12/11.1	300/300	1EDI30I12M	CT	✓										✓							✓	✓						
12/11.1	300/300	1EDI40I12A	CT											✓	✓						✓	✓						
12/11.1	125/120	1EDI60H12A	CT											✓	✓						✓							
12/11.1	300/300	1EDI60I12A	CT											✓	✓						✓	✓						
12/11	165/170	1ED020I12-F2	CT	✓			✓	✓	✓					✓												✓		
12/11	1750/1750	1ED020I12-FT	CT	✓			✓	✓	✓	✓				✓					✓						✓			
11.9/11	460/460	1EDI20I12SV NEW	CT				✓	✓	✓				✓	✓				✓	✓								✓	
12/11.1	300/300	1EDC05I12A NEW	CT											✓	✓					✓		✓						
12/11.1	300/300	1EDC10I12M NEW	CT	✓										✓						✓		✓						
12/11.1	125/120	1EDC20H12A NEW	CT											✓	✓					✓		✓						
12/11.1	300/300	1EDC20I12A NEW	CT											✓	✓					✓		✓						
12/11.1	300/300	1EDC20I12M NEW	CT	✓										✓						✓		✓						
12/11.1	300/300	1EDC30I12M NEW	CT	✓										✓						✓		✓						
12/11.1	300/300	1EDC40I12A NEW	CT											✓	✓					✓		✓						
12/11.1	125/120	1EDC60H12A NEW	CT																	✓		✓						
12/11.1	300/300	1EDC60I12A NEW	CT																	✓		✓						
11.9/11	460/460	1EDU20I12SV NEW	CT				✓	✓	✓				✓	✓				✓	✓	✓	✓							✓
12.5/11.7	215/215	1EDI2001AS	CT		✓	✓	✓	✓	✓				✓	✓						✓	✓	✓					✓	
12.5/11.7	215/215	1EDI2002AS	CT		✓	✓	✓	✓	✓				✓	✓						✓	✓	✓					✓	
12.5/11.7	215/215	1EDI2010AS	CT		✓	✓	✓	✓	✓				✓	✓						✓	✓	✓					✓	
12/11	165/170	1ED020I12FA2	CT		✓	✓	✓	✓												✓	✓					✓		
12/11	1900/1750	1ED020I12FTA	CT		✓	✓	✓	✓												✓	✓	✓				✓		
12/11	165/170	1ED020I12-B2	CT	✓			✓	✓	✓				✓							✓	✓			✓				
12/11	1750/1750	1ED020I12-BT	CT	✓			✓	✓	✓				✓							✓	✓	✓		✓				
11.9/11	460/460	1EDS20I12SV NEW	CT				✓	✓	✓				✓	✓					✓	✓	✓	✓					✓	
5.8/5.2	37/37	1EDS5663H NEW	CT				✓						✓							✓	✓	✓			✓			
5.8/5.2	37/37	1EDF5673F NEW	CT				✓						✓							✓			✓					
5.8/5.2	37/37	1EDF5673K NEW	CT				✓						✓							✓								✓
12.2/11.2	85/85	2ED020I12-FI	CT			✓					✓				✓	✓									✓		✓	
13.5/0	85/85	2ED020I06-FI	CT												✓	✓									✓			
12/11	165/170	2ED020I12-F2	CT	✓			✓	✓	✓				✓															
12/11	165/170	2ED020I12FA	CT		✓		✓	✓	✓						✓					✓	✓						✓	
8/7	37/37	2EDS8265H NEW	CT				✓													✓	✓			✓				
8/7	37/37	2EDS8165H NEW	CT				✓													✓	✓			✓				
4.2/3.9	37/37	2EDF7275F NEW	CT				✓															✓						
4.2/3.9	37/37	2EDF7175F NEW	CT				✓																✓					
4.2/3.9	37/37	2EDF7275K NEW	CT				✓																				✓	
4.2/3.9	37/37	2EDF7235K NEW	CT				✓																				✓	



Infineon power switch and iMOTION™ technologies



OptiMOS™ and StrongIRFET™ power MOSFET

Highest quality and performance

Infineon’s semiconductors are designed to bring more efficiency, power density and cost effectiveness. The full range of OptiMOS™ and StrongIRFET™ power MOSFETs enables innovation and performance in applications such as switch mode power supplies (SMPS), motor control and drives, inverters and computing.

Infineon’s highly innovative OptiMOS™ and StrongIRFET™ families consistently meet the highest quality and performance demands in key specifications for power system design such as on-state resistance and figure-of-merit characteristics.

OptiMOS™ power MOSFETs provide excellent best-in-class performance. Features include ultra-low $R_{DS(on)}$, as well as low charge for high switching-frequency applications. StrongIRFET™ power MOSFETs are designed for rugged applications, and are ideal for designs with a low switching frequency as well as those that require a high current-carrying capability.

OptiMOS™	StrongIRFET™
Best-in-class technology	Robust and excellent price/performance ratio
Designed for high performance applications	Product validation according to JEDEC standard
Optimized for high switching frequency	Optimized for low switching frequency
Industry’s best figure-of-merit	High current carrying capability
High efficiency and power density	Rugged silicon
	

CoolMOS™ SJ MOSFETs

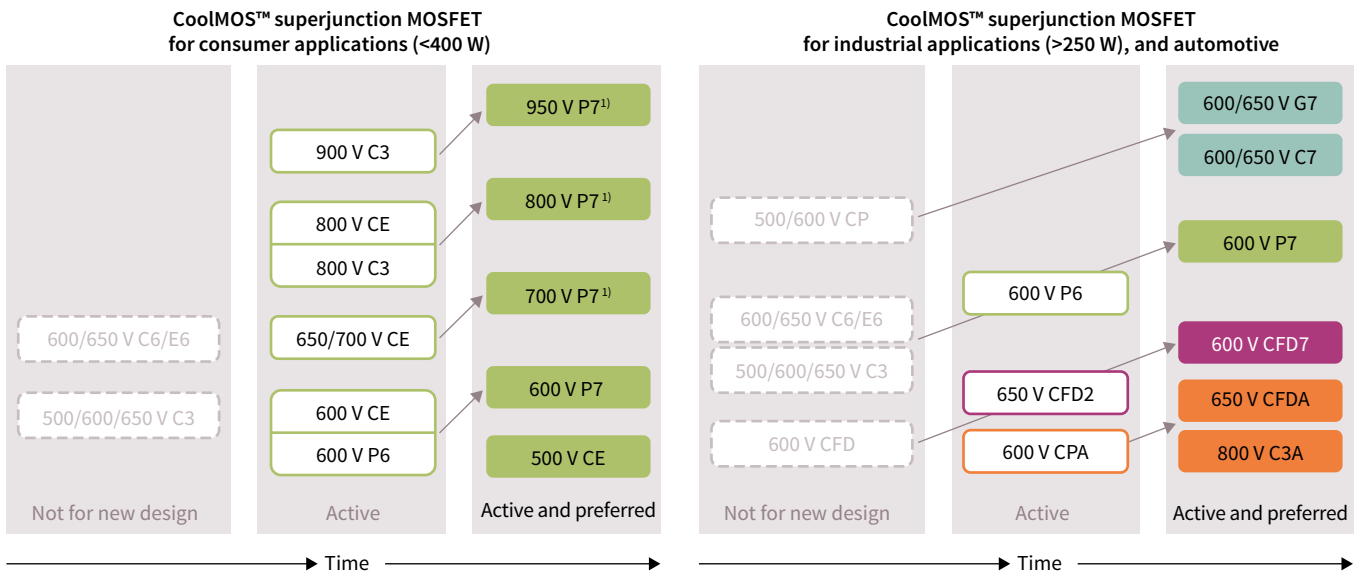
Trusted leader in high voltage MOSFETs

The revolutionary CoolMOS™ power MOSFET family sets new standards in the field of energy efficiency. Our CoolMOS™ products offer a significant reduction of conduction, switching and driving losses, and enable high power density and efficiency for superior power conversion systems.

High voltage superjunction MOSFETs address consumer applications, such as smartphone/tablet chargers, notebook adapters, LED lighting, PC Power, as well as audio and TV power supplies. Increasingly, customers replace standard MOSFETs by superjunction MOSFETs to benefit from higher efficiency and less power consumption for the end users. CoolMOS™ P7 sets a new benchmark by offering high performance and competitive price all at once.

Also for industrial applications such as server, telecom, PC power, solar, UPS, EV-charging and others, Infineon's latest CoolMOS™ 7 superjunction MOSFETs with C7, G7, CFD7 and P7 product families offer what you need - from highest efficiency to best price performance. Infineon meanwhile has also complemented the portfolio with first CoolGaN™ e-mode HEMTs products to further optimize efficiency and system cost.

Infinion's CoolMOS™ superjunction MOSFET offering is complemented by the automotive qualified series 600 V CPA, 650 V CFDA and 800 V C3A. Gain your momentum in the rapidly growing on-board charger and DC-DC converter markets with our excellent performing automotive series with proven outstanding quality standards that go well beyond AEC Q101.



The following Infineon gate driver ICs are recommended as most suitable for Infineon MOSFETs

Application	Power switch family	Gate driver configuration	Typically recommended gate driver part number
PFC	CoolMOS™ C7/P7	Single low-side	1ED44176N01F NEW , 1EDN8550B NEW , IRS44273L, 1EDN8511B
		Dual low-side	IRS4427S, 2EDN8524F
		Half-bridge	2EDF7175F NEW , 2EDF7275F NEW , 2EDL23N06PJ
Battery powered application – inverter	StrongIRFET™ OptiMOS™ 3/5	High and low-side	IRS2005S/M, IRS2011S, IRS2301S, IRS21867S
		Half-bridge	IRS2008S/M NEW , IRS2007S/M NEW , 2EDL05N06PF, IRS2302S, 2EDL8xxx*
		Three-phase	6EDL04N02PR, 6ED003L02-F2, 6ED003L06-F2, 6EDL04N06PT
	CoolMOS™ P7	Half-bridge	IRS2183S, 2EDL23N06PJ
Major home appliance – inverter	CoolMOS™ CFD2/CE	Half-bridge	2ED2304S06F NEW , IRS2890DS
Major home appliance – SMPS	CoolMOS™ P7	Dual low-side	2EDN8524F, IRS4427S
		High and low-side	IRS2186(4)S
		Half-bridge	IRS2153(1)DS
Lighting	CoolMOS™ P7	Single high-side	IRS10752L, IRS20752L, IRS2117S, IRS25752L
		Half-bridge	2ED2304S06F NEW , 2EDL05N06PF, IRS2153(1)DS, 2ED2106S06F*
Drives – inverter <3.5 kW	StrongIRFET™ OptiMOS™ 3/5	Single high-side	IRS2127S
Drives – SMPS	CoolMOS™ P7/C7	Dual low-side	2EDN8524F
		High and low-side	IRS2186(4)S, 2ED2106S06F*, 2ED218xS06F/J*
EV charging – DC-DC	CoolMOS™ CFD7	Single high-side	1EDI20I12AF, IR2214SS, 1EDI40I12AF, 1EDI60I12AF, 1EDS20I12SV NEW
		High and low-side	IRS2113S, IRS2186(4)S, 2ED218xS06F/J*, 2EDS8265H NEW , 2EDS8165H NEW
EV-Charging – PFC	CoolMOS™ P7/C7/CFD2/CFD7	Single high-side	1EDI20N12AF, 1EDF5673F NEW
		Dual high-side	2EDF7275F NEW
		Single low-side	1ED44176N01F NEW , IRS44273L, 1EDN8511B, 1EDN8550B NEW
		Dual low-side	IRS4427S, 2EDN8524F
Solar inverter – boost/SMPS	CoolMOS™ C7	Single low-side	1ED44176N01F NEW , IRS44273L
		Dual low-side	IRS4427S, 2EDN8524F
		Single high-side	1EDI20N12AF, 1EDI60I12AF
Solar – micro inverter	OptiMOS™ 5 CoolMOS™ C7/CFD2	Single high-side	1EDI20N12AF
		Half-bridge	2ED2304S06F NEW , IR2114SS, 2EDL05N06PJ, 2EDF7175F NEW , 2EDF7275F NEW
Solar – string/central inverter	OptiMOS™ 5	Single high-side	1EDI60N12AF, 1ED020I12-F2
		Dual high-side	2ED020I12-F2
		High and low-side	IR2213S
		Half-bridge	IR2214SS
UPS – main inverter	StrongIRFET™	Half-bridge	2EDL23N06PJ
		High and low-side	IRS2186(4)S, 2ED2106S06F*, 2ED218xS06F/J*
UPS – active bridge rectifier	CoolMOS™ P7/C7	Single high-side	1ED020I12-F2, 1ED020I12-FT
SMPS – Vienna rectifier	CoolMOS™ C7/P7	Dual high-side	2EDF7175F NEW , 2EDF7275F NEW
SMPS – Sync rectifier	OptiMOS™ 5	Single low-side	1ED44176N01F NEW , 1EDN7550B NEW
		Dual low-side	IR11688S (synchronous rectification), 2EDN7524F
		Dual high-side	2EDF7275K NEW
SMPS – LLC/ZVS PSFB	CoolGaN™	Single high-side	1EDF5673K NEW
		Single high-side	1EDS5663H NEW
	CoolMOS™ P7/CFD7	Dual high-side	2EDS8165H NEW , 2EDS8265H NEW
		Dual low-side	2EDN7524F, 2EDN8524F
Electric and hybrid vehicle – on-board charger & DC-DC converter	CoolMOS™ CFDA	High and low-side	IRS2186(4)S
		High and low-side	AUIRS2113S, AUIRS2181/4S, AUIRS2191S
		Single low-side	AUIRS1170S (synchronous rectification)
		Dual low-side	AUIRB24427S
		Half-bridge	AUIR2085S
Electric and hybrid vehicle – wireless in-cabin phone charging	OptiMOS™ 5	Dual high-side	2ED020I12FA
		High and low-side	AUIRS2301S

* Coming soon

Discrete IGBTs

Nomenclature: IGBT

IKpccNvvvdH3 – IGBT + diode

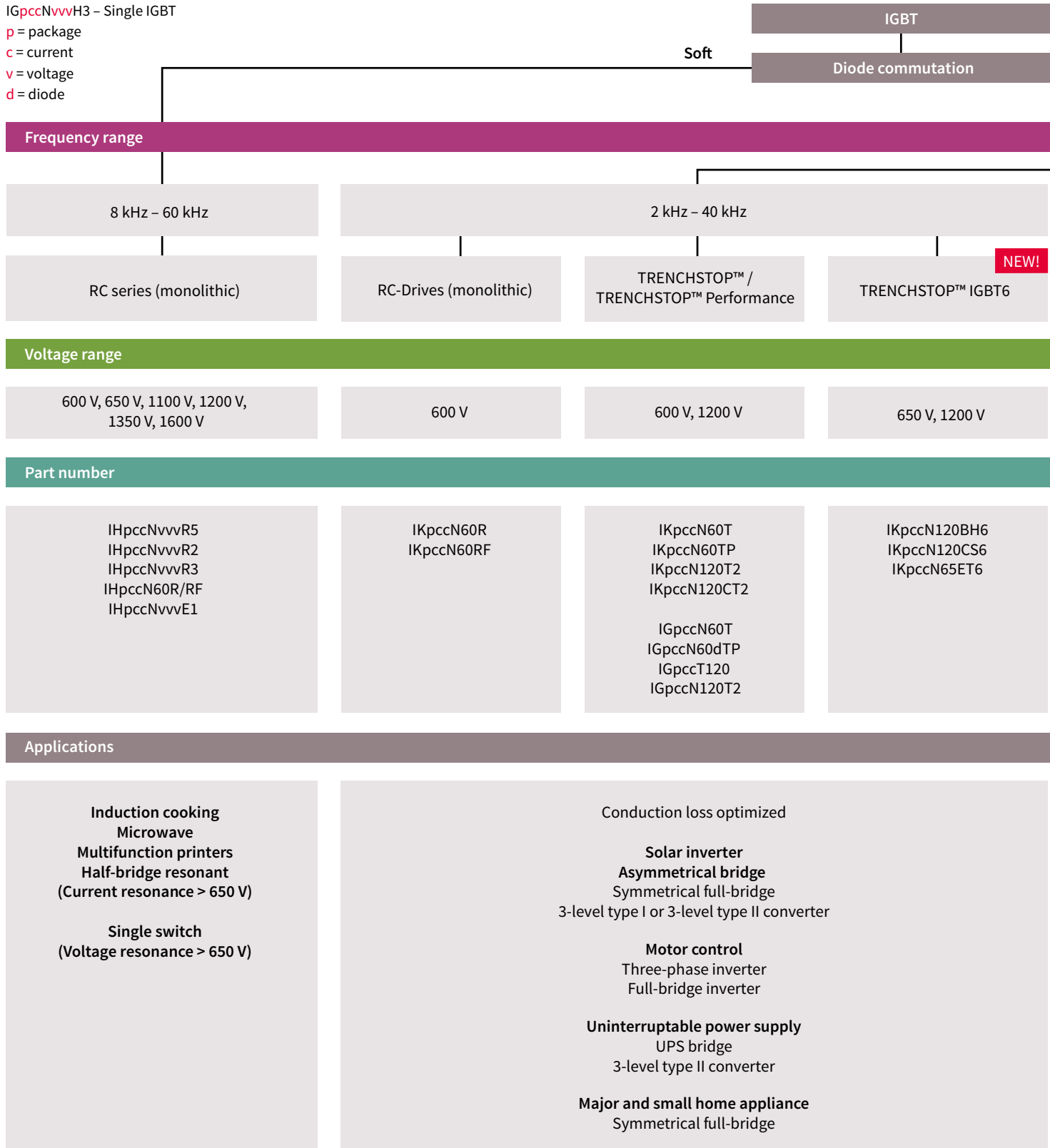
IGpccNvvvH3 – Single IGBT

p = package

c = current

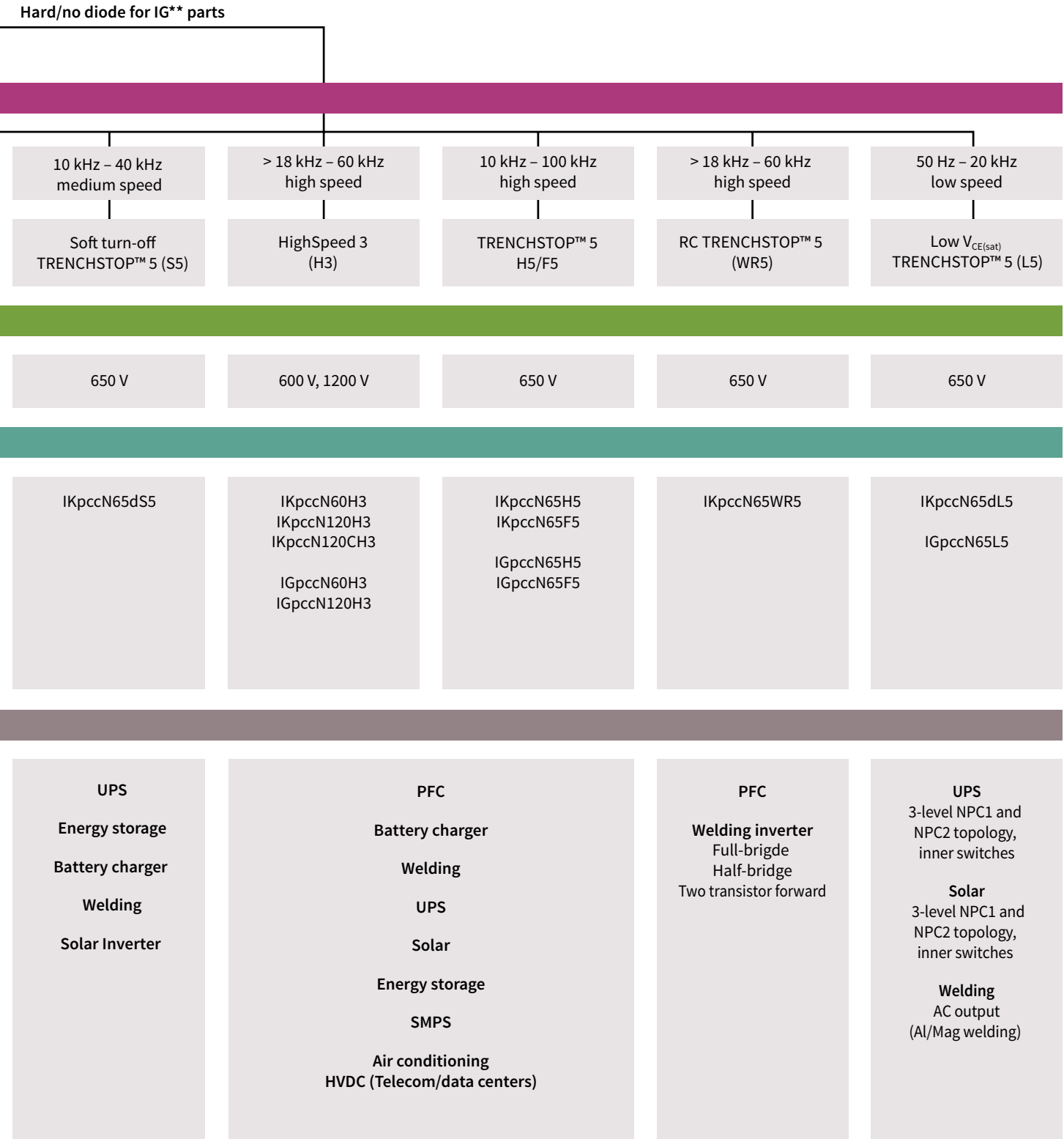
v = voltage

d = diode



Market leadership through groundbreaking innovation and application focus

From the low-power applications such as motor drives for fans to multi-megawatt applications of wind and traction, Infineon provides a comprehensive IGBT family of 600 V, 650 V, and 1200 V technologies in multiple package choices. Our new IGBT chip technologies, combined with innovative packaging, use trench structures and a field stop concept, and are partially empowered by SiC freewheeling diodes. The technologies guarantee robust and reliable devices with maximum power integration and minimum power losses.



Low to medium power modules

The EasyPIM™/EasyPACK™ and the EconoPIM™/EconoPACK™ families

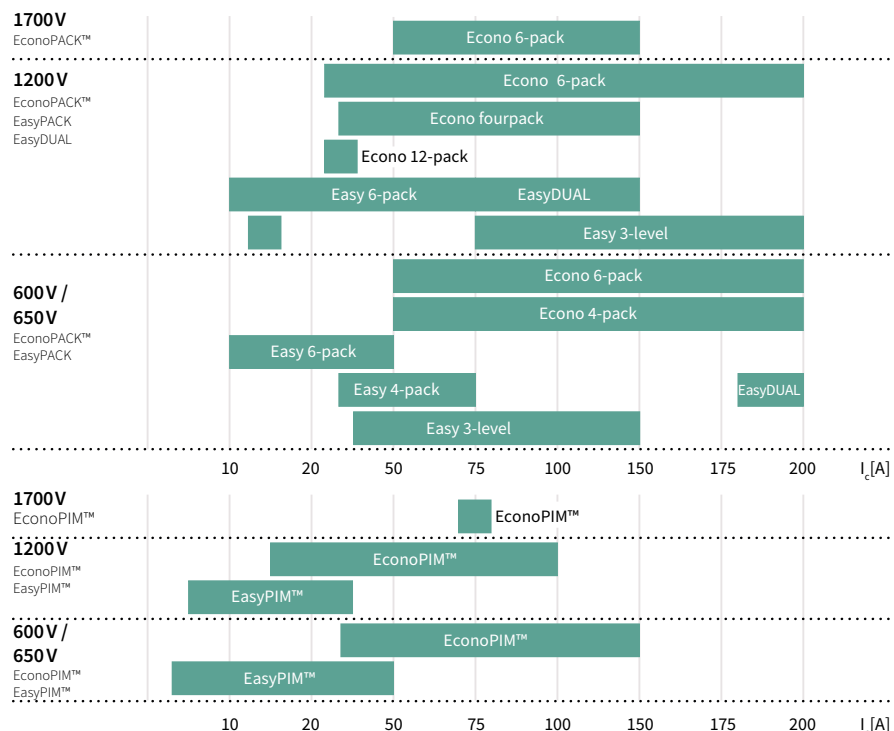
The EasyPIM™/EasyPACK™ as well as the EconoPIM™/EconoPACK™ families have been developed to provide a cost-effective, compact design as well as simplified and reliable assembly. With these modules, we offer an optimized product generation for low- and medium-power industrial drives.

The Easy family with its EasyPIM™, EasyPACK™ and EasyDUAL™ configurations covers the full power range from I_C 6 A up to 200 A at 600 V, 650 V, and 1200 V. The modules are without base plates, and include the latest IGBT4 technology. The screw clamp provides a new, fast and reliable, low-cost mounting concept.

This series has been extended to include the Easy1B and Easy2B sizes to offer more flexibility, with reduced height from 17 mm to 12 mm, and injected screw clamps for mounting.

The Econo family extends the power range from 15 A up to 300 A with nominal current at 600 V, 650 V, 1200 V and 1700 V. The available configurations are the well-known EconoPIM™ and EconoPACK™ series. The Econo housing features a copper base plate for optimized heat spread, and includes a thermistor (NTC). The Econo modules are available with solderable pins or PressFIT pins, and an increasing number of Econo modules are available with pre-applied TIM.

Besides the standard planar IGBT chip technology for low switching losses, saturation voltage and high-switching frequency, the Econo family also includes the optimized IGBT4 in 650 V, 1200 V and 1700 V. For ease of design, IGBTs with 10 μ s short-circuit robustness are now available in 650 V, 1200 V and 1700 V in the same mechanical design. Selected Econo modules feature integrated shunts for accurate and cost-efficient current sensing.



www.infineon.com/Easy
www.infineon.com/Econo

The following Infineon gate driver ICs are recommended as most suitable for Infineon IGBT discretés and modules.

Application	Power switch family	Gate driver configuration	Typically recommended gate driver part number
PFC	TRENCHSTOP™ 5	Single low-side	1ED44176N01F NEW , IRS44273L, 1EDN8511B
	HighSpeed 3	Dual low-side	IRS4427S, 2EDN8524F
Home appliance – inverter/compressor/drive	RC drives fast	Half-bridge	2ED2304S06F NEW , IRS2890DS
		High-bridge	2EDL23I06PJ, 2EDL05I06PF, IRS2183S
	TRENCHSTOP™ IGBT6	High and low-side	IRS2113S
		Three-phase	6EDL04I06PT, IRS2334S, 6ED003L06-F2
Drives – inverter	TRENCHSTOP™ IGBT6; TRENCHSTOP™ 5 TRENCHSTOP™ Performance; RC Drives	Half-bridge	2EDL23I06PJ
		Three-phase	6EDL04I06PT
		Single high-side	1EDC20I12AH NEW , 1EDC30I12MH NEW , 1EDI30I12MF
	TRENCHSTOP™ TRENCHSTOP™ 2	Half-bridge	2ED020I12-FI, IR2214SS
		Three-phase	6ED2230S12T*
		Single high-side	IRS2127S
	EasyPIM™ 1B/2B EasyPACK™ 1B/2B EconoPIM™ 2	Half-bridge	2EDL23I06PJ, IR2214SS
		Three-phase	6ED2230S12T*, 6EDL04I06PT
		Single high-side	1EDC20I12AH NEW , 1EDC30I12MH NEW , 1EDI30I12MF, 1ED020I12-BT, 1EDI60I12AF, 1EDS20I12SV NEW , 1ED020I12-B2
	EasyPIM™ 1B/2B; EasyPACK™ 1B EconoPIM™ 2/3; EconoPACK™ 2/3/4 EconoDUAL™ 3; EconoPACK™+ 34 / 62 mm module CoolSiC™ SiC MOSFET module	Dual high-side	2ED020I12-F2
Half-bridge		2ED020I12-FI, 2EDL23I06PJ, IR2214SS	
Dual low-side		2EDN8524F	
Drives – SMPS	TRENCHSTOP™ 5	High and low-side	IRS2186(4)S, 2ED2106S06F*, 2ED218xS06F*
		Single low-side	IRS44273L
Drives – brake chopper	TRENCHSTOP™ 2	Single high-side	1EDI05I12AF, 1EDI10I12MF
		Single high-side	1EDI40I12AF, 1EDI20I12AF, 1EDS20I12SV NEW
EV charging – DC-DC	EasyPACK™ 1B/2B; EconoPIM™ 2 EconoPACK™ 2/3/4; EconoDUAL™ 3 EconoPACK™+ ; 34 / 62 mm module CoolSiC™ SiC MOSFET module HighSpeed 3; TRENCHSTOP™ IGBT6	Half-bridge	IR2214SS
		High and low-side	IRS2113S, IRS2186(4)S
	TRENCHSTOP™ 5	Single low-side	1ED44176N01F NEW , IRS44273L
Solar inverter – boost	TRENCHSTOP™ EasyPACK™ 1B/2B CoolSiC™ SiC MOSFET module	Dual low-side	IRS4427S, 2EDN8524F
		Single high-side	1EDI20N12AF, 1EDI60I12AF
		Single high-side	1EDI60I12AF, 1ED020I12-F2, 1EDI20I12AF
Solar – string/central inverter/ Heat pump – inverter >2 kW	EasyPACK™ 1B/2B; EconoPACK™ 2/3 EconoDUAL™ 3; EconoPACK™+ 34 / 62 mm module CoolSiC™ SiC MOSFET module HighSpeed 3; TRENCHSTOP™ IGBT6	Dual high-side	2ED020I12-F2
		High and low-side	IR2213S
		Half-bridge	IR2214SS
	EasyPACK™ 1B/2B TRENCHSTOP™ IGBT6; HighSpeed 3	Three-phase	IR2235S
		Half-bridge	2ED2304S06F NEW , 2EDL05I06PF
Heat pump – inverter <2 kW	TRENCHSTOP™ 5 TRENCHSTOP™	Three-phase	6EDL04I06PT
		Half-bridge	2EDL05I06PJ, 2EDL23I06PJ, IR2114SS
UPS	TRENCHSTOP™ 5 TRENCHSTOP™	Single high-side	1EDI20I12AF, 1EDI60I12AF, 1EDS20I12SV NEW , 1ED020I12-FT
		Single high-side	1EDI20I12MF, 1EDI60I12AF, 1ED020I12-F2, 1EDS20I12SV NEW , 1ED020I12-FT
	EasyPACK™ 1B/2B EconoPIM™ 2/3 EconoPACK™ 2/3/4 EconoDUAL™ 3 EconoPACK™+ 34 / 62 mm module CoolSiC™ SiC MOSFET module	Dual high-side	2ED020I12-F2
		High and low-side	IRS2186(4)S, 2ED2106S06F*, 2ED218xS06F/J*
		Half-bridge	2EDL05I06PJ, 2EDL23I06PJ, IR2114SS
	Electric and hybrid vehicle – main inverter	IGBT3 / TRENCHSTOP™ Trench Gen 6.2 HybridPACK™ Family	Single high-side
High and low-side			AUIRS2113S, AUIRS2181/4S, AUIRS2191S
Electric and hybrid vehicle – on-board charger & DC-DC converter	TRENCHSTOP™ 5 AUTO Planar Gen 5 CooliR Gen 1 EasyPACK™ 1B/2B	Single low-side	AUIRS1170S synchronous rectification
		Dual low-side	AUIRB24427S
		Half-bridge	AUIR2085S
		Dual high-side	2ED020I12FA
Electric and hybrid vehicle – auxiliaries	IGBT3 / TRENCHSTOP™ Trench Gen6.2 CooliR Gen 2 EasyPACK™ 1B/2B	High and low-side	AUIRS2113S, AUIRS2181/4S
		Single high-side	AUIRS2123, AUIRS2127S
		Three-phase	AUIRS2336S

* Coming soon

CoolSiC™ Silicon Carbide MOSFET

A revolution to rely on

Infineon's CoolSiC™ technology enables radical new product designs

Infineon's CoolSiC™ silicon carbide (SiC) MOSFETs open up new degrees of freedom for designers to improve efficiency and system flexibility.

The CoolSiC™ MOSFET offers advantages of the low gate charge and device capacitance levels in 1200 V switches, negligible reverse-recovery losses of the internal body diode, temperature-independent low switching losses. Infineon's unique 1200 V SiC MOSFET adds additional advantages of superior gate-oxide reliability enabled by state-of-the-art trench design, best-in-class switching and conduction losses, highest transconductance (gain), and short-circuit robustness at gate voltage at 15 V.

The result is a robust SiC MOSFET which is ideal for hard and resonant-switching topologies. It can be driven like an IGBT using standard drivers delivering the highest level efficiency at switching frequencies unreachable by Si-based switches, which allows for system size reduction, higher power density and improved lifetime.

CoolSiC™ MOSFET features

- › Revolutionary semiconductor material - Silicon Carbide
- › Very low switching losses
- › Threshold-free on state characteristic
- › Wide gate-source voltage range
- › Benchmark gate threshold voltage, $V_{GS(th)} = 4.5\text{ V}$
- › Fully controllable dV/dt
- › Commutation robust body diode, ready for synchronous rectification
- › Temperature independent turn-off switching losses

Benefits

- › Best-in-class system performance
- › Efficiency improvement and reduced cooling effort
- › Significant reduction in junction temperature for longer lifetime and higher reliability
- › Enables higher frequency operation for reduction in system costs
- › Allows for increase in power density
- › 2-level can replace 3-level topologies with the same efficiency at lower complexity and cost
- › Excellent for hard-switching and resonant-switching topologies like LLC and ZVS

Sales product	$R_{DS(on)}$	V_{DS}	Package
IMW120R045M1*	45 mΩ	1200 V	TO-247 3pin
IMZ120R045M1*	45 mΩ	1200 V	TO-247 4pin

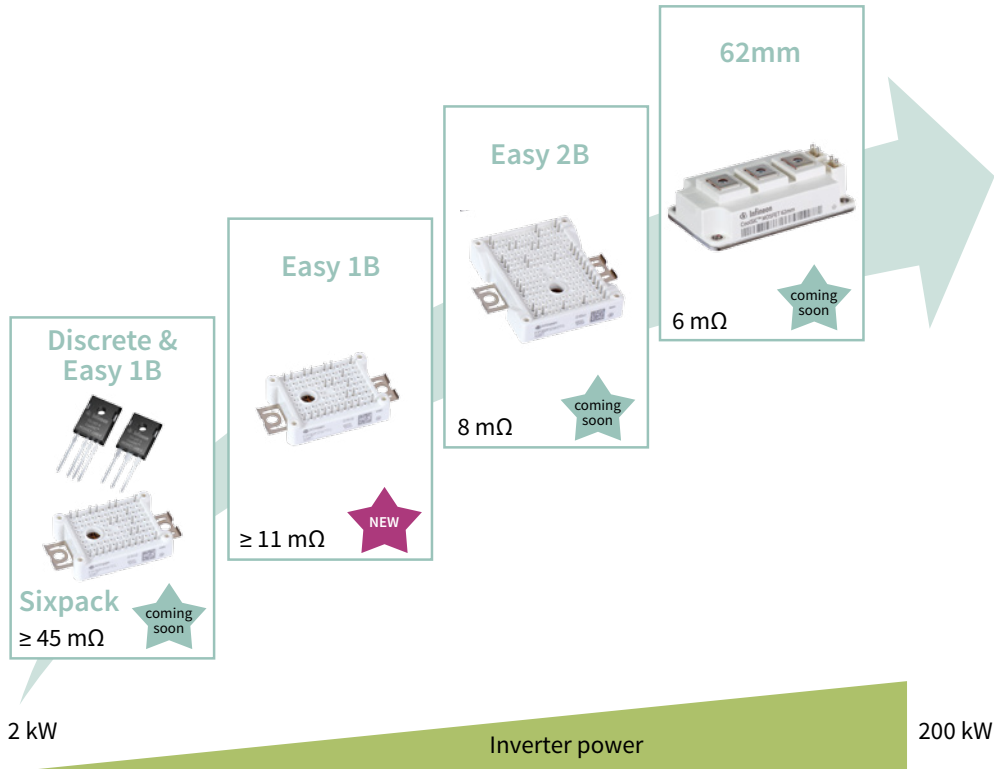
* Coming soon

The TO-247 4-pin package contains an additional connection to the source (Kelvin connection) that is used as a reference potential for the gate-driving voltage, thereby eliminating the effect of voltage drops over the source inductance. The result is even lower switching losses than for the TO-247 3-pin version, especially at higher currents and higher switching frequencies.

CoolSiC™ Silicon Carbide MOSFET Modules

Based on our experience and expertise in the area of compatibility, Infineon has introduced the revolutionary CoolSiC™ MOSFET technology, which enables radically new product designs. Easy1B modules, for example, offer a very good thermal interface, a low stray inductance and robust design as well as PressFIT connections.

Easy 1B (Sixpack, booster, Half-bridge)	Easy 2B (Half-bridge)	62 mm (Half-bridge)
FF11MR12W1M1_B11 DF11MR12W1M1_B11 FF23MR12W1M1_B11 DF23MR12W1M1_B11 FS45MR12W1M1_B11	FF8MR12W2M1_B11	FF6MR12KM1










Silicon carbide MOSFET gate driver ICs

Ultra-fast switching 1200 V power transistors such as CoolSiC™ MOSFETs can be more easily handled by means of isolated gate output sections. Therefore, the following EiceDRIVER™ galvanically isolated gate-driver ICs based on Infineon’s core-less transformer technology are recommended as most suitable.

For a larger selection of isolated gate drivers, refer to the page 14 of this selection guide. These drivers incorporate most important key features and parameters for SiC MOSFET driving such as tight propagation delay matching, precise input filters, wide output-side supply range, negative gate voltage capability, extended CMTI capability, active Miller clamp, and DESAT short circuit protection.

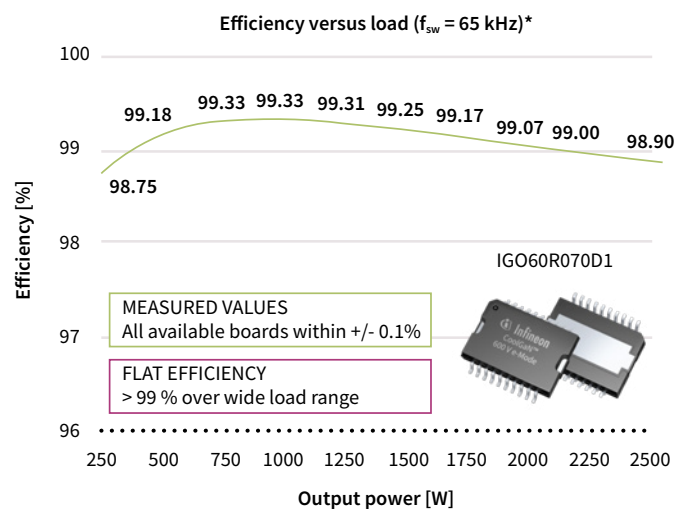
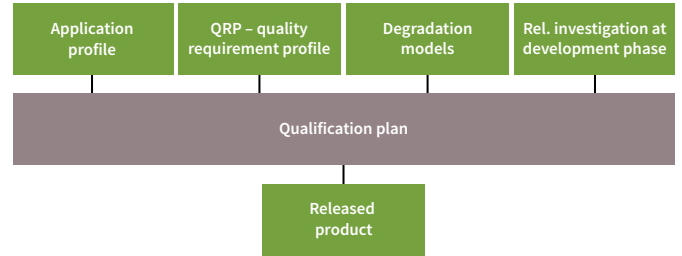
Product	Part number	Typ. peak drive current	VCC2-VEE2	Typ. UVLO thresholds	Typ. prop. delay	Active Miller clamp	Other key features	Package
1ED Compact Isolated high-side Driver Family	1EDI20I12MF	3.5 A	20 V	11.9 V / 11 V	≤ 300 ns	Yes	Functional isolation	DSO-8 
	1EDC20H12AH NEW	3.5 A	35 V	12 V / 11.1 V	≤ 125 ns	No	8 mm creepage clearance; UL 1577-certified with V _{ISO} = 2500 V(rms) for 1 min	DSO-8 
	1EDC60H12AH NEW	9.4 A	35 V	12 V / 11.1 V	≤ 125 ns	No		
	1EDC20I12MH NEW	3.5 A	20 V	11.9 V / 11 V	≤ 300 ns	Yes		
1ED-F2 Isolated high-side Driver with Integrated Protection	1ED020I12-F2	2.0 A	28 V	12 V / 11 V	≤ 170 ns	Yes	Short circuit clamping; DESAT protection; Active shutdown	DSO-16 
2ED-F2 Isolated Dual high-side driver with Integrated Protection	2ED020I12-F2	2.0 A	28 V	12 V / 11 V	≤ 170 ns	Yes		DSO-36 
1EDU Slew rate control (SRC) isolated High-side driver	1EDU20I12SV NEW	2.0 A	28 V	11.9 V / 11 V	≤ 485 ns	Yes	Real-time adjustable gate current control; Over-current protection; Soft turn-off shut down; Two-level turn-off; UL 1577-certified with V _{ISO} = 5000 V(rms) for 1 min	DSO-36 

CoolGaN™ e-mode HEMTs

Tailor-made for the highest efficiency and power density in switch mode power supplies

CoolGaN™ – in comparison to the next best silicon alternative – enables higher power density through the ability to switch at high frequencies and highest efficiency, especially in the partial load range, through novel topologies such as the CCM totem pole PFC stage. GaN enhancement mode (e-mode) HEMT performance features low reverse recovery charge and excellent dynamic performance in reverse conduction compared to silicon FET solutions. This enables more efficient operation at existing frequencies, and much higher frequency operation which can improve power density by shrinking the size of passive components in power electronics. CoolGaN™ enables doubled output power in a given energy storage slot size, freeing up space and realizing higher efficiency at the same time.

Infinion’s CoolGaN™ is the one of most reliable and globally qualified GaN solutions in the market. During the quality management process not only the device is tested, but also its behavior in the application. The performance of CoolGaN™ goes beyond other GaN products in the market. It offers a predicted lifetime of more than 15 years, with a failure rate less than 1 FIT.



* No external power supplies – everything included.
V_{in} = 230 V_{AC}, V_{out} = 390 V_{DC}, T_{ambient} = 25 °C

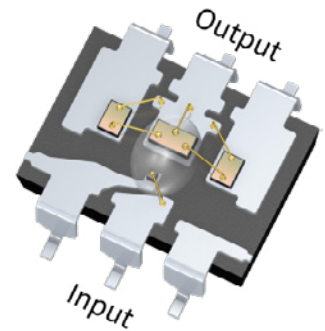
Application	Power switch family	Gate driver configuration	Typically recommended gate driver part number	Benefits
SMPS PFC Vienna rectifier Multi-level switches			1EDF5673K NEW 1EDF5673F NEW	
SMPS LLC/ZVS PSFB	High-voltage CoolGaN™ IGO60R070D1 NEW IGOT60R070D1 NEW IGT60R070D1 NEW IGT60R190D1S NEW IGLD60R070D1 NEW	Single high-side	1EDS5663H NEW	<p>Power: source: 0.85 Ω, sink: 0.35 Ω Pace: 18 ns minimum output pulse-width Precision: 13 ns propagation delay window Protection: Functional isolation and Reinforced isolation, V_{IoTm} = 8 kV_{pk}, VDE 0884-10, CMTI > 200 V/ns</p> <p>Two-level negative gate-drive voltage, even for 1st pulse</p> <ul style="list-style-type: none"> > Less spurious GaN HEMT turn-on > Robust SMPS operation > Up to 50% lower dead-time losses <p>GaN turn-on transient independent of duty cycle or switching speed</p> <ul style="list-style-type: none"> > Constant GaN HEMT switching slew rates > Great operational robustness > Least R&D effort > Integrated galvanic isolation > Strong CMTI > Robust for hard switching Half-bridges

Infineon solid-state relays (SSR) technologies

Using Infineon power-switch technologies, Infineon solid-state relays (SSRs) are remotely controlled switches (on/off) with complete galvanic isolation from input to output. No power supply is needed on the output.

Two main sub-groups:

- > Photovoltaic isolators (PVI)
 - Isolated, low-power DC voltage sources capable of driving MOSFET or IGBT gates directly
- > Photovoltaic relays (PVR)
 - PVI plus internal power MOSFET



Main benefits of Infineon SSR technology:

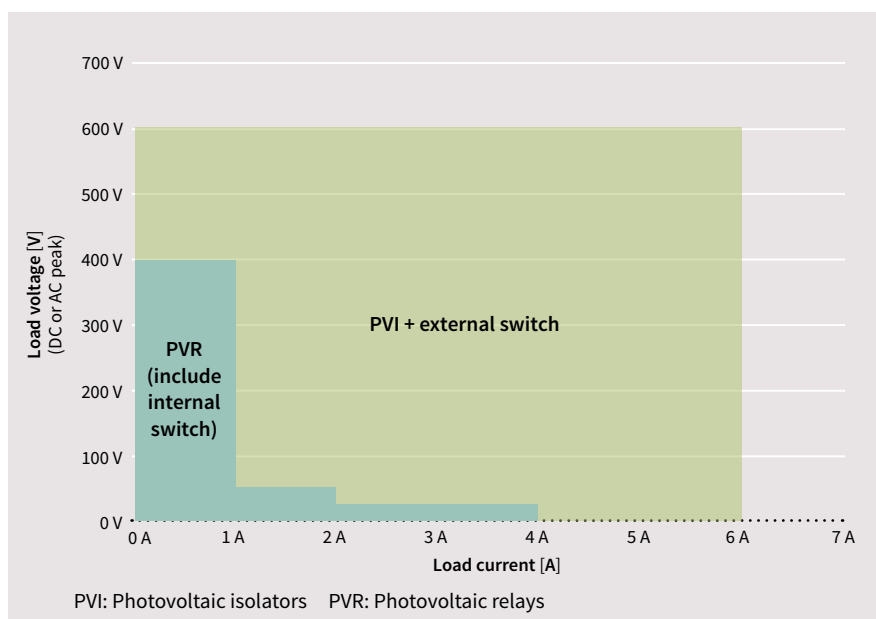
- > **Optically isolated** technology provides galvanic isolation for **safety** applications
- > **Wide range of applications** from industrial automation to test equipment
- > Established and reliable products with **over 20 years of history**

Key advantages over electromechanical relays:

- > Silent operation
- > No contact bounce
- > Compact solution
- > Fast response time
- > High input sensitivity
- > High reliability with long operational life
- > Insensitivity to stray EMF, shock and vibration
- > Stable contact resistance over life

Infineon SSRs can be used in a wide range of applications:

- > Electro-mechanical relay (EMR) replacement
- > Battery management systems
- > UPS
- > Automatic test equipment
- > Instrumentation systems
- > Industrial automation
- > Thermostats
- > Programmable logic controllers

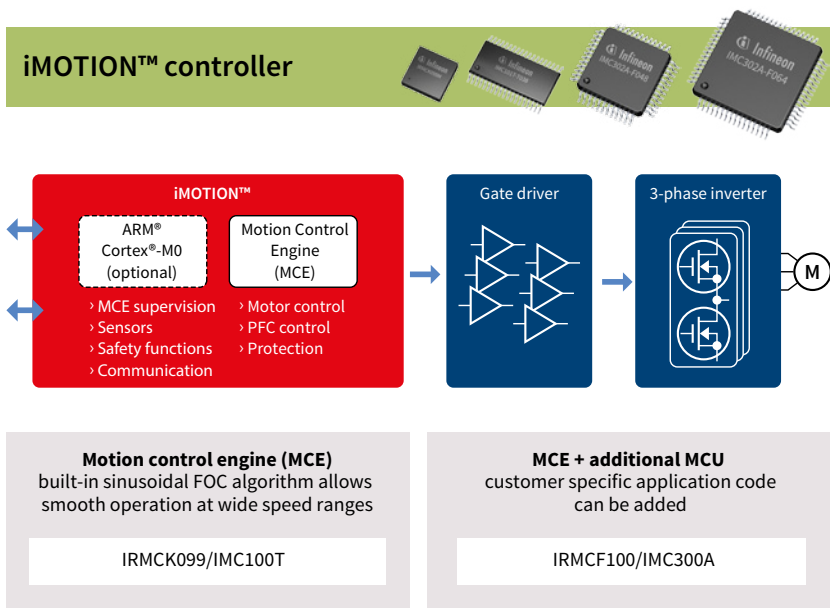


Infineon iMOTION™ technologies

Flexible and scalable platform for motor control solutions

iMOTION™ products are highly integrated devices used to control variable speed drives. By integrating both the required hardware and algorithms to perform control of Permanent Magnet Synchronous Motors (PMSM), they provide the shortest time-to-market and highest efficiency for inverterized motor systems at the lowest system and development cost.

iMOTION™ product offering



Market requirements

- > Energy-efficiency regulations drive inverterization rate
- > Shorter design cycles are driven by reduced product life cycles
- > Focus on key differentiators drives trend to outsourcing
- > Increased price pressure requires system cost reduction

Key benefits

- > Easy to use – no special motor control know-how required
- > High performance and energy-optimized solution
- > Simplify the system solution by eliminating the Hall sensor for control
- > Fastest time-to-market

Application	Power controller family	Gate driver configuration	Typically recommended gate driver part number
Battery powered applications – motor inverter/BLDC <2 kW	iMOTION™ (IMC101T, IMC301A*)	High and low-side	IRS2005S/M, IRS2011S
		Half-bridge	IRS2008S/M NEW , IRS2007S/M NEW
		Three-phase	6EDL04N02PR, 6ED003L02-F2
Home appliance – PFC	iMOTION™ (IMC102T, IMC302A*)	Single low-side	1ED44176N01F NEW , IRS44273L, 1EDN8511B
		Dual low-side	IRS4427S, 2EDN8524F
Home appliance – inverter/compressor/drive	iMOTION™ (IMC101T, IMC301A*)	High and low-side	IRS2113S
		Half-bridge	2ED2304S06F NEW , IRS2890DS, 2EDL23I06PJ, 2EDL05(I,N)06PF, IRS2183S
		Three-phase	6EDL04(I,N)06xT, IRS2334S, 6ED003L06-F2

* Coming soon

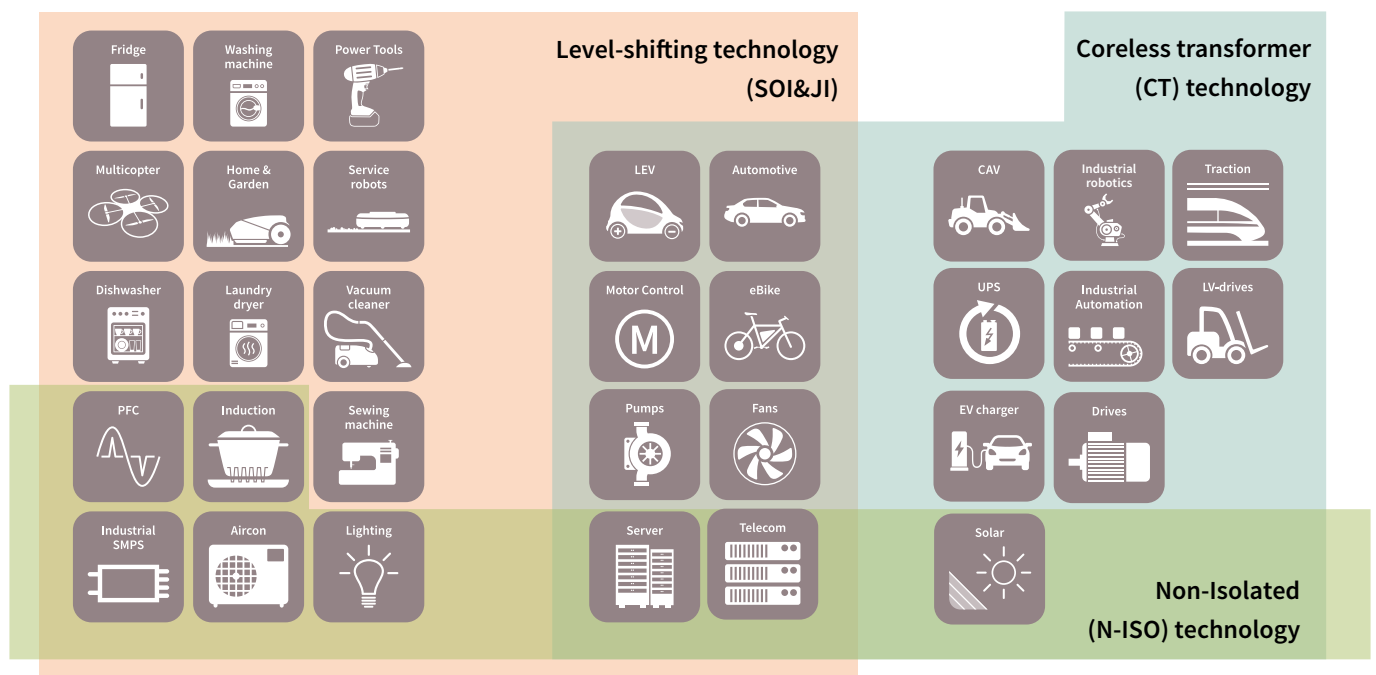


Typical gate-driver applications

A system is a set of interacting or independent components forming an integrated whole.

From product thinking to system understanding, Infineon enables total solutions which make generation, transmission and conversion of electrical energy more efficient and reliable.

The following pages describe typical applications using Infineon gate drivers, power switches and modules.





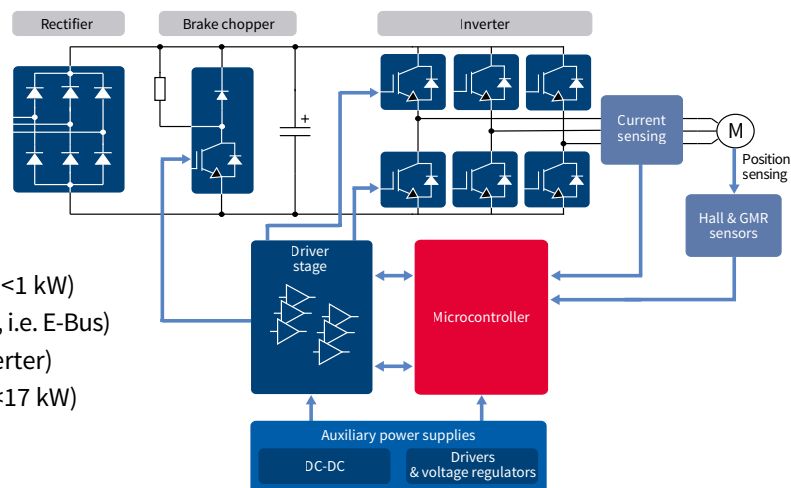
Drives

Electronic speed-control systems for energy and performance gains

Infinion's gate driver ICs are the expert's choice. With the breadth and depth of the portfolio, customers can quickly design and build efficient and robust systems for motor drive application.

Drive applications

- > Commercial sewing machines
- > Elevators/escalators
- > Fans and pumps (PFC, inverter)
- > General purpose drives
- > Heavy duty drives (<200 kW)
- > Servo and stepper motors
- > Automatic gate and door opening system (inverter <1 kW)
- > Commercial, construction & agricultural vehicles (CAV, i.e. E-Bus)
- > Forklift trucks (hydraulic pump inverter, motor inverter)
- > Commercial air-conditioner (CAC compressor, fan <17 kW)
- > Robotics



Recommended gate drivers (Drives)

Application	Driver voltage class [V]	Driver configuration	Part number	Source/sink current typ. [A]	Packages	Description	Suitable power switches and modules
Inverter (<3.5 kW)	200	Half-bridge	IRS2007S/M NEW	0.29/0.6	DSO-8, VQFN-14	200 V half-bridge with V_{CC} & V_{BS} UVLO	StrongIRFET™ (IRF135B203, IRF135SA204) OptiMOS™ 3 (IPB072N15N3, IPB042N10N3 G, IPB107N20N3)
	600	Single high-side	IRS2127S	0.29/0.6	DSO-8	600 V single high-side driver with FAULT-RPT, OCP	TRENCHSTOP™ IGBT+Diode (IKD10N60RF, IKA15N65ET6, IKW30N60DTP, IKB40N65ES5) EasyPIM™ 1B/2B module (FP10R06W1E3_B11, FP15R06W1E3_B11, FB20R06W1E3, FP20R06W1E3_B11, FB30R06W1E3) EasyPACK™ 1B module (FS20R06W1E3_B11)
		Half-bridge	2EDL23I06PJ	2.3/2.8	DSO-14	Infinion SOI technology with integrated bootstrap diode, OCP, EN, FAULT-RPT	
		High and low-side	IRS2186(4)S	4/4	DSO-14, DSO-8	600 V high and low-side driver with high current	
		Three-phase	6EDL04I06PT	0.165/0.375	DSO-28 300 mil	Infinion SOI technology with integrated bootstrap diode, OCP, EN, FAULT-RPT	
	IR2136S/J		0.2/0.23	DSO-28 300 mil, LCC-32	OCP, EN, FAULT-RPT		
1200	Half-bridge	IR2214SS	2/3	SSOP-24	1200 V half-bridge driver with DESAT, Synchronization, soft shutdown, FAULT-RPT	TRENCHSTOP™ IGBT+Diode (IKW25N120T2, IKW40N120T2, IKQ75N120CT2) EasyPIM™ 1B/2B module (FP15R12W1T4_B11, FP15R12W2T4) EasyPACK™ 1B/2B module (FS25R12W1T4_B11) Easy 1B/2B 3-Level module (F3L15R12W2H3_B27) EconoPIM™ 2 module (FP25R12KT4_B15)	
	Three-phase	6ED2230S12T*	0.35/0.65	DSO-24	Infinion SOI technology with integrated bootstrap diode, OCP, EN, FAULT-RPT	TRENCHSTOP™ IGBT+Diode (IKW08T120, IKW15N120T2) EasyPIM™ 1B/2B module (FP15R12W1T4, FP15R12W1T4_B11, FP15R12W2T4)	
Inverter (<7.5 kW)	1200	Single high-side	1EDC20I12AH NEW	4/3.5	DSO-8 300 mil	Functional isolation, ≥ 100 kV/ μ s CMTI, short circuit clamping, $V_{ISO} = 2500$ V(rms) for 1 min (1EDC only), active Miller clamp (MH/MF only), separate sink/source output (AH only)	CoolSiC™ SiC MOSFET (IMZ120R045M1* - 4-pin) TRENCHSTOP™ IGBT+Diode (IKW40N120T2, IKQ50N120CT2, IKQ75N120CT2) EasyPIM™ 1B/2B module (FP25R12W2T4_B11, FP35R12W2T4_B11) EasyPACK™ 1B module (FS25R12W1T4_B11, FS50R12W2T4_B11) Easy 1B/2B 3-level (F3L15R12W2H3_B27) EconoPIM™ 2 module (FP25R12KT4_B15, FP50R12KT4G) EconoPACK™ 2/3 module (FS50R12KT4_B15)
			1EDC30I12MH NEW	5.9/6.2	DSO-8 300 mil		
			1EDI30I12MF	5.9/6.2	DSO-8		
	Three-phase	6ED2230S12T*	0.35/0.65	DSO-24	Infinion SOI technology with integrated bootstrap diode, OCP, EN, FAULT-RPT	TRENCHSTOP™ IGBT+Diode (IKW40N120T2) EasyPIM™ 1B/2B module (FP15R12W1T4, FP15R12W1T4_B11, FP15R12W2T4)	
	Half-bridge	2ED020I12-FI	1.5/2.5	DSO-18	Functional isolation on high-side, comparator, OPAMP, SD	TRENCHSTOP™ IGBT+Diode (IKW40N120T2, IKQ50N120CT2, IKQ75N120CT2) EasyPIM™ 1B/2B module (FP15R12W1T4_B11, FP15R12W2T4, FP25R12W2T4_B11) EasyPACK™ 1B module (FS25R12W1T4_B11) Easy 1B/2B 3-level (F3L15R12W2H3_B27)	

* Coming soon



Drives

Electronic speed-control systems for energy and performance gains

Recommended gate drivers (Drives) continued

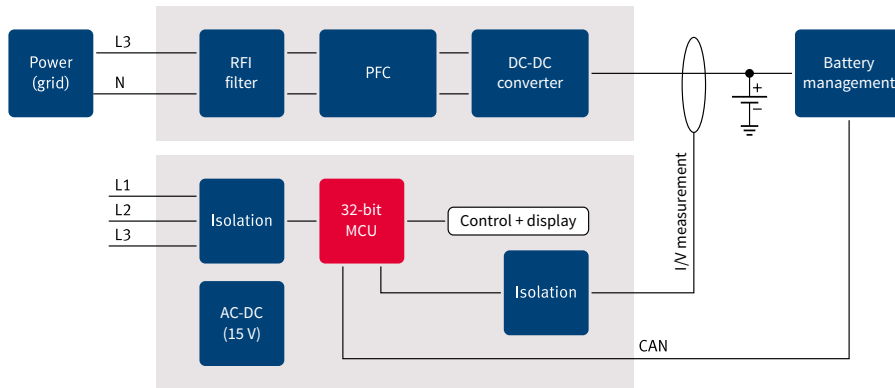
Application	Driver voltage class [V]	Driver configuration	Part number	Source/Sink current typ. [A]	Packages	Description	Suitable power switches and modules
Inverter (<30 kW)	1200	Single high-side	1ED020112-F2	2/2	DSO-16 300mil	Functional isolation, ≥ 100 kV/ μ s CMTI, active Miller clamp, DESAT, short circuit clamping, FAULT-RST	CoolSiC™ SiC MOSFET (IMZ120R045M1* – 4-pin) EasyPIM™ 1B/2B module (FP15R12W1T4_B11, FP25R12W2T4_B11) EasyPACK™ 1B module (FS25R12W1T4_B11, FS50R12W2T4_B11) EconoPIM™ 2 module (FP25R12KT4_B15, FP50R12KT4G) EconoPACK™ 2/3 module (FS50R12KT4_B15)
		Dual high-side	2ED020112-F2	2/2	DSO-36		
		Single high-side	1ED020112-BT	2/2	DSO-16 300mil	Basic isolation, VDE 0884-10 certified, $V_{ORM} = 1420$ V, $V_{OTM} = 6000$ V; UL 1577 certified, $V_{ISO} = 3750$ V(rms) for 1 min, ≥ 100 kV/ μ s CMTI, active Miller clamp, DESAT, short circuit clamping, two level turn off, FAULT-RST	
Inverter (<200 kW)	1200	Single high-side	1EDI60H12AH	10/9.4	DSO-8 300mil	Functional isolation, ≥ 100 kV/ μ s CMTI, Separate sink/source output, short circuit clamping, 125-ns propagation delay	CoolSiC™ SiC MOSFET module (FF11MR12W1M1_B11; FF23MR12W1M1_B11) EconoPIM™ 2/3 module (FP150R12KT4(P)_B11) EconoPACK™ 2/3/4 module (FS150R12KT4(P)_B11) EconoDUAL™ 3 module (FF300R12ME4_B11) EconoPack™+ module (FS300R12OE4, FS450R12OE4) 34 mm module (FF150R12RT4) 62 mm module (FF300R12KE4)
			1EDS20112SV NEW	SRC/2	DSO-36	Reinforced isolation, VDE 0884-10, $V_{ORM} = 1420$ V, $V_{OTM} = 8000$ V; UL 1577; $V_{ISO} = 5000$ V(rms); soft shutdown, DESAT, FAULT-RPT, OCP, slew rate control, TLTO	CoolSiC™ SiC MOSFET module (FF11MR12W1M1_B11; FF23MR12W1M1_B11) EasyPACK™ 1B module (FS50R12W2T4_B11, FS75R12W2T4_B11) Easy 1B/2B 3-level (FS3L50R07W2H3F_B11, F3L75R12W1H3_B11, F3L100R12W2H3_B11) EconoPIM™ 2/3 module (FP75R12KT4_B15, FP100R12KT4(P)_B11) EconoPACK™ 2/3/4 module (FS75R12KT4_B15, FS100R12KT4G(P)_B11) 34 mm module (FF50R12RT4, FF100R12RT4)
			1ED020112-B2	2/2	DSO-16 300mil	Basic isolation, VDE 0884-10 certified, $V_{ORM} = 1420$ V, $V_{OTM} = 6000$ V; UL 1577 certified, $V_{ISO} = 3750$ V(rms) for 1 min, ≥ 100 kV/ μ s CMTI, active Miller clamp, DESAT, short circuit clamping, FAULT-RST, TLTO	
PFC	25	Single low-side	1ED44176N01F NEW	0.8/1.75	DSO-8	Low-side gate driver with integrated overcurrent protection ($\pm 5\%$), fault reporting, and enable functionality	TRENCHSTOP™ IGBT+Diode (IKW30N65H5, IKW40N65WR5, IKFW40N60DH3E, IKFW50N60DH3E) Rapid Diode (IDW30E65D1, IDW60C65D1) CoolIMOS™ MOSFET (IPP60R060P7, IPP60R080P7, IPP60R099P7, IPP60R120P7, IPP60R180P7, IPP60R280P7, IPP60R360P7)
			IRS44273L	1.5/1.5	SOT23-5	Low-side gate driver in small, easy-to-use package	CIPOS™ Mini (IFCM15S60GD, IFCM15P60GD, IFCM10P60GD, IFCM10S60GD)
	20	Single low-side	1EDN8511B	4/8	SOT23-6	Low-side gate driver with fast propagation delay and high drive current	
		Dual low-side	2EDN8524F	5/5	DSO-8	Industry proven dual-low-side gate driver	
SMPS (<3 kW)	20	Dual low-side	2EDN8524F	5/5	DSO-8	20 V non-inverting dual-low-side driver with CMOS inputs	TRENCHSTOP™ IGBT+Diode (IKP30N65F5, IKB40N65EF5) CoolIMOS™ MOSFET (IPP60R060P7, IPP60R080P7, IPP60R099P7, IPP60R120P7, IPP60R180P7, IPP60R280P7, IPP60R360P7, IPW65R019C7, IPW65R045C7, IPW65R065C7, IPW65R095C7, IPW65R125C7, IPW65R190C7)
	600	High and low-side	IRS2186(4)S	4/4	DSO-14, DSO-8	600 V high and low-side driver with high current	
Brake chopper (<3.5 kW)	25	Single low-side	IRS44273L	1.5/1.5	SOT23-5	non-inverting low-side driver with CMOS inputs in small 5 pin SOT-23 package	TRENCHSTOP™ IGBT+Diode (IKW40N120T2, IKQ50N120CT2, IKQ75N120CT2)
	1200	Single high-side	1EDI0512AF	1.3/0.9	DSO-8	Functional isolation, ≥ 100 kV/ μ s CMTI, short circuit clamping, separate sink/source output (AF only), active Miller clamp (MF only)	
1EDI1012MF			2.2/2.3	DSO-8			

*Coming soon



Electric vehicles and hybrid vehicles

In (hybrid) electric vehicles, efficiency is a key success factor for extending the range of the vehicle, which also applies to auxiliary applications. Our automotive-qualified gate driver ICs help simplify design, and optimize performance in all MOSFETs and IGBTs driving stages.



(Hybrid) electric vehicles applications

- > On-board charger
- > HV/LV DC-DC converter
- > Auxiliary loads
- > Wireless in-cabin phone charging

Recommended gate drivers (Electric vehicles & hybrid vehicles)

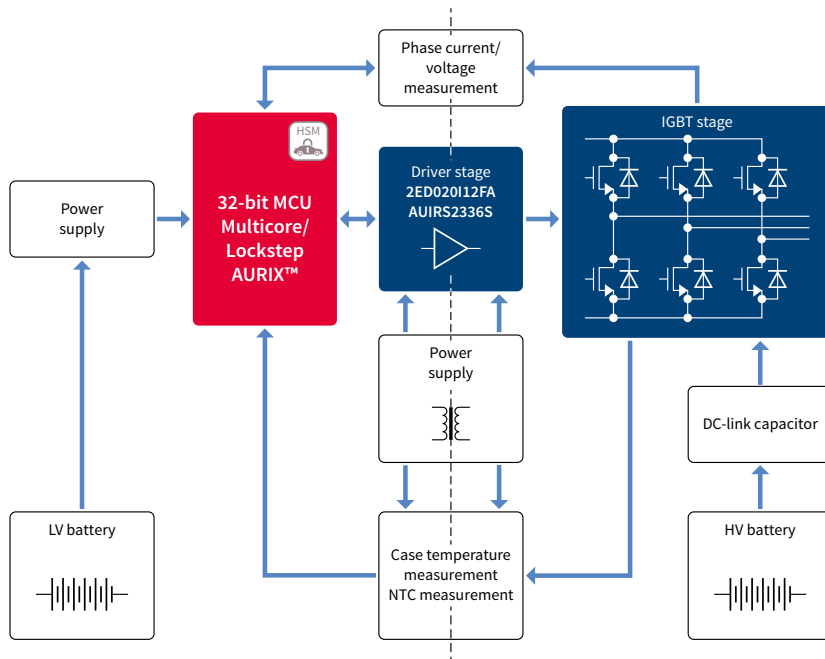
Application	Driver voltage class [V]	Driver configuration	Part number	Source/ Sink current typ. [A]	Packages	Description	Suitable power switches and modules
On-board charger & DC-DC converter	20	Dual low-side	AUIRB24427S	6/6	DSO-8	Booster for automotive motor drives above 10 kW, peak current up to ±15 A, support for active clamping with very fast reaction time, active clamping disable, ASC input signals	AIGW40N65H5, AIGW40N65F5, AIKW40N65DH5, AIKW40N65DF5, AIGW50N65H5, AIGW50N65F5, AIKW50N65DH5, AIKW50N65DF5, AUIRGP35B60PD, AUIRGP35B60PD-E, AUIRGP50B60PD1, AUIRGP65G40D0, AUIRGF65G40D0, AUIRGP66524D0, AUIRGF66524D0; CoolMOS™ CPA (IPB60R099CPA, IPP60R099CPA IPW60R045CPA, IPI60R099CPA)
	100	Half bridge	AUIR2085S	1/1	DSO-8	Enable half-bridge DC-bus converters for 48 V distributed systems with reduced component count and board space, programmable switching frequency < 500 kHz, adjustable dead-time	CoolMOS™ CFDA (IPD65R420CFDA, IPB65R110CFDA, IPP65R110CFDA, IPW65R048CFDA)
	200	Single low-side	AUIRS1170S	3/6	DSO-8	Secondary side high speed synchronous rectification controller, ccm operation with SYNC function, > 500 kHz, cycle by cycle MOT check	EasyPACK™ 1B/2B (FS75R07W2E3)
	600	High and low-side	AUIRS2113S	2.5/2.5	DSO-16	Tolerant to negative transient voltage, UVLO	
Auxiliary drives (fans, pumps, HVAC, heat pump, PTC heater)	600	High and low-side	AUIRS21814S	1.9/2.3	DSO-14	Tolerant to negative transient voltage, UVLO, matched propagation delay	AUIRG4BC30U-S, AUIRG4PC40S-E AUIRGB4062D1, AUIRGS4062D1 AUIRGS4062D1, AUIRGP4062D AUIRGP4062D-E, AUIRGP4063D AUIRGP4063D-E, AUIRGR4045D AUIRGU4045D, AUIRGP4066D1 AUIRGS30B60K, AUIRGS130B60K AIKB20N60CT, AIKP20N60CT AIKW20N60CT, AIKW30N60CT AIKW50N60CT EasyPACK™ 1B/2B (FS75R07W2E3)
		Three-phase	AUIRS2336S	0.2/0.35	DSO-28	Drives up to six IGBT/MOSFET power devices, OCP, over-temperature shutdown input, advanced input filter, integrated dead-time protection, shoot-through protection, UVLO	
	700	Single high-side	AUIR2114SS*	3/3	SSOP-24	UVLO on both supply lines (with hysteresis), desaturation detection on both sides, with internal biasing resistor, soft shutdown function and pin	AUIRG4PH50S AUIRGDC0250
Wireless in-cabin phone charging	600	High and low-side	AUIRS2301S	0.2/0.35	DSO-8	Tolerant to negative transient voltage, UVLO, matched propagation delay	IPG20N04S4L-11A IPZ40N04S5L-4R8 IPZ40N04S5L-7R4

*Coming soon



Electric vehicles and hybrid vehicles – main inverter

Typical application diagram - main inverter



In vehicles with an electric drive train, the inverter controls the electric motor, and is a key component in the car, as it determines driving behavior. Regardless of whether the motor is synchronous, asynchronous or brushless DC, the inverter is controlled by an integrated PCB, which should be designed to minimize switching losses and maximize thermal efficiency, as the range of the vehicle is directly related to the efficiency of the main inverter. The Infineon EiceDRIVER™ gate driver family includes single and dual-channel automotive IGBT driver ICs that provide galvanic isolation and bidirectional signal transmission. These products are ideal for the main inverter systems in automotive applications where efficiency, space savings and monitoring functions are priorities. Our automotive-qualified gate driver ICs help simplify design and optimize performance in all MOSFETs and IGBTs driving stages.

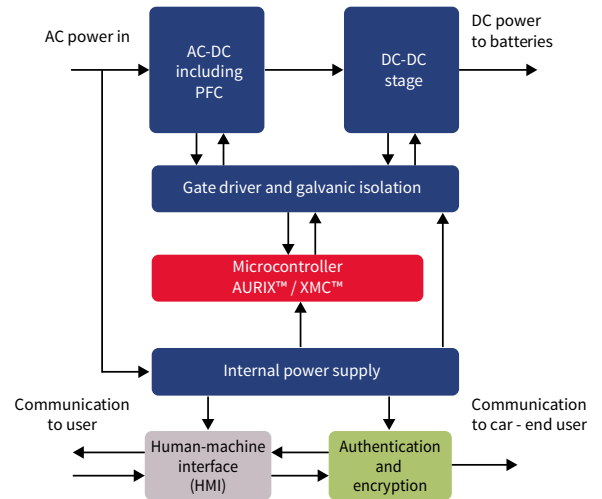
Recommended gate drivers (Electric vehicles & hybrid vehicles - main inverter)

Application	Driver voltage class [V]	Driver configuration	Part number	Output current [A]	Packages	Description	Suitable power switches
Main inverter	400	Single high-side	1EBN1001AE	15	DSO-14	IGBT / MOSFET gate driver booster for automotive motor drives above 10 kW, peak current up to ±15 A, support for active clamping with very fast reaction time, active clamping disable, ASC Input signals	IGBT3 / TRENCHSTOP™ (AIKW75N60CT, AIKQ100N60CT, AIKQ120N60CT, AUIRGSPS4070D0) Trench Gen 6.2 HybridPACK™ Family (FS200R07A02E3_S6, FS820R08A6P2B, FS820R08A6P2LB, FS400R07A1E3_S7, FS200R07A1E3)
		Single high-side	1EDI2001AS	2	DSO-36	On-chip galvanic insulation (up to 6 kV), support of 5 V logic levels, 16-bit standard SPI interface (up to 2 Mbaud) with daisy chain support, enable input pin, pseudo-differential inputs for critical signals. Power-on reset pin, debug mode, pulse suppressor, TLTO	
	1200	Single high-side	1EDI2002AS	2	DSO-36	On-chip galvanic insulation (up to 6 kV), support of 5 V logic levels, 16-bit standard SPI interface (up to 2 Mbaud) with daisy chain support, enable input pin, pseudo-differential inputs for critical signals. Power-on reset pin, debug mode, pulse suppressor, TLTO, integrated ADC	
		Single high-side	1EDI2010AS	2	DSO-36	On-chip galvanic insulation (up to 6 kV), support of 5 V logic levels, 16-bit standard SPI interface (up to 2 Mbaud) with daisy chain support, enable input pin, pseudo-differential inputs for critical signals. Power-on reset pin, debug mode, pulse suppressor, TLTO, integrated ADC	



EV Charging

As electro-mobility increasingly becomes part of our daily lives, there is a growing need for more efficient charging solutions. Today, a DC charger with 150 kW can supply an EV with a 200 km charge in around 15 minutes. As fast-charging and battery technologies continue to evolve and improve, experts anticipate that charging time will drop even further. The unique expertise in e-mobility and power supplies makes Infineon the natural partner for advancing DC electric vehicle charging in terms of efficiency, performance, optimal cost and innovation.



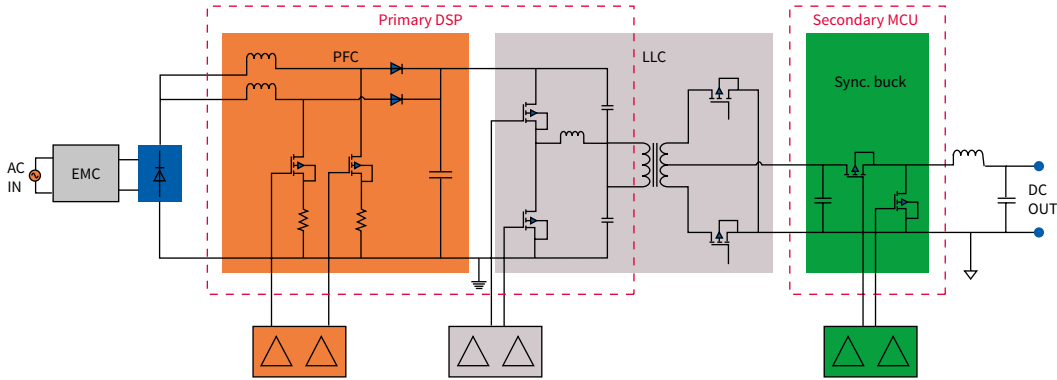
Recommended gate drivers (EV charging)

Application	Driver Voltage class [V]	Driver configuration	Part number	Source/ Sink current typ. [A]	Packages	Description	Suitable power switches and modules
DC-DC (<3 kW)	600	High and low-side	IRS2113S/M	2.5/2.5	DSO-16 300mil, VQFN-14	600 V high and low-side gate driver with SD	TRENCHSTOP™ IGBT+Diode (IKB40N65EH5, IKW75N65EH5, IKZ75N65EH5) CoolMOS™ MOSFET (IPP65R110CFD, IPP65R310CFD, IPP65R420CFD, IPP65R660CFD, IPW60R105CFD7, IPW60R145CFD7, IPP60R170CFD7, IPP60R280CFD7)
			IRS2186(4)S	4/4	DSO-14, DSO-8	600 V high and low-side driver with high current	
	1200	Single high-side	1EDI05I12AF	1.3/0.9	DSO-8	Functional isolation, ≥ 100 kV/μs CMTI, separate sink/source output, short circuit clamping	
DC-DC (<30 kW)	1200	Single high-side	1EDC20H12AH NEW	4/3.5	DSO-8 300 mil	Functional isolation, ≥ 100 kV/μs CMTI, separate sink/source output, short circuit clamping, 125-ns propagation delay	CoolSiC™ SiC MOSFET (IMW120R045M1* - 3-pin, IMZ120R045M1* - 4-pin) TRENCHSTOP™ IGBT+Diode (IKQ50N120CH3, IKQ75N120CS6)
			1EDI40I12AF	7.5/6.8	DSO-8	Functional isolation, ≥ 100 kV/μs CMTI, separate sink/source output, short circuit clamping	
DC-DC (<60 kW)	650	Dual high-side	2EDS8265H NEW	4/8	DSO-16 300 mil	Reinforced isolation, 150 kV/μs CMTI, EN	CoolMOS™ MOSFET (IPW65R041CFD, IPW65R080CFD, IPW60R018CFD7, IPW60R040CFD7, IPW60R070CFD7, IPW60R090CFD7, IPL60R060CFD7) CoolSiC™ SiC MOSFET module (FF11MR12W1M1_B11; FF23MR12W1M1_B11; DF11MR12W1M1_B11; DF23MR12W1M1_B11) EasyPack™ 1B/2B module (F4-3L50R07W2H3F_B11) EconoPIM™ 2 module (FP50R07N2E4_B11) EconoPACK™ 2/3/4 module (FS75R12KT4_B15, FS100R12KT4G(P)_B11, FS200R12KT4R(P)_B11, FS225R12OE4) EconoDUAL™ 3 module (FF225R12ME4_B11) 34mm module (FF50R12RT4, FF150R12RT4) 62mm module (FF200R12KE4)
	1200	Single high-side	1EDC60H12AH NEW	10/9.4	DSO-8	Functional isolation, ≥ 100 kV/μs CMTI, separate sink/source output, short circuit clamp, 125-ns propagation delay	
			1EDS20I12SV NEW	SRC/2	DSO-36	Reinforced isolation, VDE 0884-10, V _{IORM} = 1420 V, V _{IOTM} = 8000 V; UL 1577, V _{ISO} = 5000 V(rms); slew rate control, soft shutdown, DESAT, FAULT-RPT, OCP, TLTO	
PFC	650	Dual high-side	2EDF7275F NEW	4/8	DSO-16 150mil	Dual-channel galvanically isolated gate-driver ICs	TRENCHSTOP™ 5 H5 (IKW50N65EH5, IKZ50N65EH5, IKW75N65EH5, IKZ75N65EH5) CoolMOS™ MOSFET (IPP60R060P7, IPP60R120P7, IPP60R180P7, IPP60R360P7, IPW65R019C7, IPW65R065C7, IPW65R125C7, IPW65R190C7)
	1200	Single high-side	1EDI40I12AH	7.5/6.8			
	20 ¹	Single low-side	1EDN8550B NEW	4/8	SOT23-6	20 V non-inverting signal Low-side driver with truly differential inputs, especially for kelvin source 4 pin device in PFC boost	
	20	Single low-side	1EDN8511B	4/8	SOT23-6	20 V non-inverting single low-side driver with CMOS inputs in small 6-pin SOT-23 package	
	25	Dual low-side	IRS4427S	2.3/3.3	DSO-8	25 V non-inverting dual low-side driver with CMOS inputs	

Note 1: Common mode rejection (CMR) voltage range up to 80 V.
*Coming soon



Lighting



Lighting applications

- > Commercial lighting
- > Industrial lighting
- > Agricultural lighting

Recommended gate drivers (Lighting)

Application	Drige voltage class [V]	Drive configuration	Part number	Source/ Sink current typ. [A]	Packages	Description	Suitable power switches
PFC	25	Single low-side	1ED44176N01F NEW	0.8/1.75	DSO-8	OCP ($\pm 5\%$), EN, FAULT-RPT, programmable fault clear time	CoolMOS™ MOSFET (IPP60R060P7, IPP60R080P7, IPP60R099P7, IPP60R120P7, IPP60R180P7, IPP60R280P7, IPP60R360P7)
			IRS44273L	1.5/1.5	SOT23-5	25 V non-inverting single low-side driver with CMOS inputs in small 5 pin SOT-23 package	
	20	Dual low-side	1EDN8511B	4/8	SOT23-6	20 V non-inverting single low-side driver with CMOS inputs in small 6 pin SOT-23 package	
			2EDN8524F	5/5	DSO-8	20 V non-inverting dual low-side driver with CMOS inputs	
HS buck (<100 W)	100	Single high-side	IRS10752L	0.16/0.24	SOT23-6	100 V single high-side driver in small 6 pin SOT-23 package	CoolMOS™ MOSFET (IPP80R280P7, IPP80R360P7, IPP80R450P7, IPP80R600P7, IPP80R750P7, IPP80R900P7, IPP80R1K2P7, IPP80R1K4P7, IPD80R2K0P7, IPD80R2K4P7, IPD80R3K3P7, IPD80R4K5P7)
	200		IRS20752L	0.16/0.24	SOT23-6	200 V single high-side driver in small 6 pin SOT-23 package	
	600		IRS2117S	0.29/0.6	DSO-8	600 V single high-side gate driver	
			IRS25752L	0.16/0.24	SOT23-6	600 V single high-side driver in small 6 pin SOT-23 package	
HB(LLC) (<200 W)	650	High and low-side	2ED2106S06*	0.29/0.7	DSO-8	Infineon SOI technology with integrated bootstrap diode	CoolMOS™ MOSFET (IPP60R060P7, IPP60R080P7, IPP60R099P7, IPP60R120P7, IPP60R180P7, IPP60R280P7, IPP60R360P7)
	600		IRS2101S	0.29/0.6	DSO-8	600 V high-side and low-side gate driver	
	650	Half-bridge	2ED2304S06F NEW	0.36/0.7	DSO-8	Infineon SOI technology with integrated bootstrap diode	
			IRS2153(1)DS	0.18/0.26	DSO-8	Self-oscillating, Integrated bootstrap FET, SD and SD-PROG	
Sync buck	200	High and low-side	IR2010S	3/3	DSO-8	200 V high and low-side driver with SD	CoolMOS™ MOSFET (IPP80R280P7, IPP80R360P7, IPP80R450P7, IPP80R600P7, IPP80R750P7, IPP80R900P7, IPP80R1K2P7, IPP80R1K4P7, IPD80R2K0P7, IPD80R2K4P7, IPD80R2K4P7, IPD80R4K5P7)
	600	Half-bridge	2EDL05N06PF	0.36/0.7	DSO-8	Infineon SOI technology with integrated bootstrap diode	

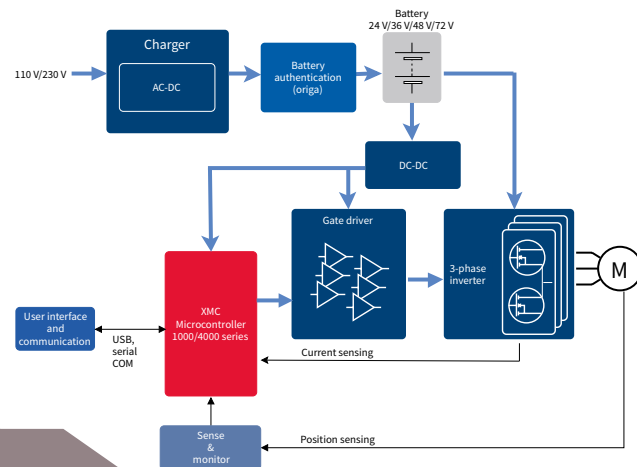
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Light electric vehicles (LEV)

Light electric vehicles applications

- > E-bikes/E-scooters (<2 kW)
- > Low-speed electric vehicles (forklift, golf cart; <15 kW, <70 km/h)
- > Small electric vehicle (<30 kW, <200 km/h)



Recommended gate drivers (Light electric vehicles)

Application	Driver voltage class [V]	Driver configuration	Part number	Source/Sink current typ. [A]	Packages	Description	Suitable power switches modules and controllers
Motor inverter/BLDC (<2 kW)	200	High and low-side	IRS2005S/M	0.29/0.6	DSO-8, VQFN-14	200 V high and low-side driver with V_{CC} & V_{BS} UVLO	StrongIRFET™ (IRFB7530PBF, IRFS7530PBF, IRF100B201, IRF100S201, IRF135B203, IRF135S203, IRFB4115, IRFS4115) OptiMOS™ 3/5 (IPB017N06N3, IPT012N06N, IPB017N08N5, IPB017N10N5, IPB042N10N3, IPB048N15N5, IPB073N15N5, IPB107N20N3, IPT015N10N5, IPT059N15N3)
			IRS2011S	1/1	DSO-8	200 V, 1-A high and low-side driver with V_{CC} & V_{BS} UVLO	
		Half-bridge	IRS2008S/M NEW	0.29/0.6	DSO-8, VQFN-14	200 V half-bridge with SD, V_{CC} & V_{BS} UVLO	
			IRS2007S/M NEW	0.29/0.6	DSO-8, VQFN-14	200 V half-bridge with V_{CC} & V_{BS} UVLO	
		Three-phase	6EDL04N02PR	0.165/0.375	TSSOP-28	Infineon SOI technology with integrated bootstrap diode, OCP, EN, FAULT-RPT	
			6ED003L02-F2	0.165/0.375	TSSOP-28	Infineon SOI technology with OCP, EN, FAULT-RPT	
Motor inverter (<15 kW)	650	Dual high-side	2EDF7275F NEW	4/8	DSO-16 150 mil	Functional isolation, disable	TRENCHSTOP™ IGBT+Diode (IKD10N60RF, IKA15N65ET6, IKW30N60DTP, IKB40N65ES5, IKW50N60DTP, IKW75N60T) StrongIRFET™ (IRFB7530PBF, IRFS7530PBF, IRF100B201, IRF100S201, IRF135B203, IRF135S203, IRFB4115, IRFS4115) OptiMOS™ 3/5 (IPB017N06N3, IPT012N06N, IPB017N08N5, IPB017N10N5, IPB042N10N3, IPB048N15N5, IPB072N15N5, IPB107N20N3, IPT015N10N5, IPT059N15N3)
			2EDF7175F NEW	1/2			
	High and low-side	IRS21867S	4/4	DSO-8	600 V high and low-side gate driver with Low UVLO (6 V/5.5 V)		
		IRS2301S	0.2/0.35	DSO-8	600 V high and low-side gate driver		
	600	Half-bridge	2EDL05N06PF	0.36/0.7	DSO-8	Infineon SOI technology with integrated bootstrap diode	
			IRS2302S	0.2/0.35	DSO-8	600 V high and low-side gate driver with SD	
	Three-phase	6ED003L06-F2	0.165/0.375	DSO-28 300mil	Infineon SOI technology with OCP, EN, FAULT-RPT		
		6EDL04N06PT	0.165/0.375	DSO-28 300mil	Infineon SOI technology with integrated bootstrap diode, OCP, EN, FAULT-RPT		
Motor inverter (<30 kW)	600	Half-bridge	IRS2183S	1.9/2.3	DSO-8	600 V half-bridge gate driver	CoolMOS™ MOSFET (IPP60R060P7, IPP60R080P7, IPP60R099P7, IPP60R120P7, IPP60R180P7, IPP60R280P7, IPP60R360P7) EasyPIM™ 1B/2B module family (FP20R06W1E3_B11, FP50R06W2E3_B11) EasyPACK™ 1B module family (FS30R06W1E3_B11, FS50R06W1E3_B11) EasyPIM™ 1B/2B module family (FP25R12W2T4_B11) EasyPACK™ 1B module family (FS35R12W1T4_B11, FS50R12W2T4_B11) EconoPIM™ 2 module family (FP35R12KT4_B15, FP50R12KT4G) EconoPACK™ 2/3 module family (FS50R12KT4_B15) EasyPIM™ 1B/2B module family (FP15R12W1T4_B11, FP15R12W2T4)
			2EDL23N06PJ	2.3/2.8	DSO-14	Infineon SOI technology with integrated bootstrap diode, OCP, EN, FAULT-RPT	
	1200	Single high-side	1EDI60(I,N)12AF	10/9.4	DSO-8	Functional isolation, ≥ 100 kV/ μ s CMTI, separate sink/source output, short circuit clamping	
			Three-phase	6ED2230S12T*	0.35/0.65	DSO-24	
	IR2235S/J	0.25/0.5		DSO-28 300mil, LCC-32	1200 V 3-phase driver with OCP, SD, OPAMP, FAULT-RPT		

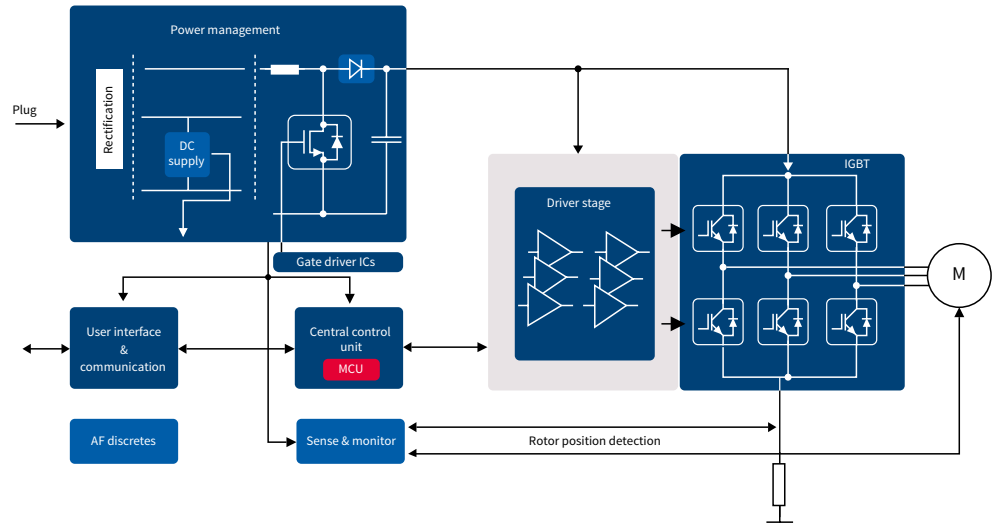
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Major home appliances (MHA)

Major home appliance applications

- > Refrigerators (compressors)
- > Air-conditioners (PFC, compressors, fans, SMPS)
- > Washing machines (drum motors, drain pumps)
- > Dryers (drum drives, compressors, fan drives)
- > Dish washers (drain pumps, spray/main circulator pumps)



Recommended gate drivers (Major home appliances)

Application	Driver voltage class [V]	Driver configuration	Part number	Source/Sink current typ. [A]	Packages	Description	Suitable power switches IPMs and controllers
PFC	25	Single low-side	1ED44176N01F NEW	0.8/1.75	DSO-8	OCP (±5%), EN, FAULT-RPT, programmable fault clear time	TRENCHSTOP™ (IKW30N65H5, IKW40N65WR5, IKFW40N60DH3E, IKFW50N60DH3E) Rapid diode (IDW30E65D1, IDW60C65D1, IDFW40E65D1E, IDFW60C65D1) CoolMOS™ MOSFET (IPP60R060P7, IPP60R099P7, IPP60R120P7, IPP60R180P7, IPP60R280P7, IPP60R360P7) CIPOS™ Mini (IFCM15S60GD, IFCM15P60GD, IFCM10P60GD, IFCM10S60GD) iMOTION™ (IMC102T, IMC302A*)
			IRS44273L	1.5/1.5	SOT23-5	non-inverting single low-side driver with CMOS inputs in small SOT-23 package	
	20	Dual low-side	1EDN8511B	4/8	SOT23-6		
			IRS4427S	2.3/3.3	DSO-8	non-inverting dual low-side driver with CMOS inputs	
	25	Dual low-side	2EDN8524F	5/5	DSO-8		
	20		2EDL23(I,N)06PJ	2.3/2.8	DSO-14	Infineon SOI technology with integrated bootstrap diode, OCP, EN, FAULT-RPT	
Inverter/ compressor/ drive/fans	650	Half-bridge	2ED2304S06F NEW	0.36/0.7	DSO-8	Infineon SOI technology with integrated bootstrap diode	TRENCHSTOP™ IGBT+Diode (IKD03N60RF, IKD04N60RF, IKD06N60RF) TRENCHSTOP™ IGBT6 (IKA08N65ET6, IKA10N65ET6, IKA15N65ET6, IKD06N65ET6*, IKD08N65ET6*) CoolMOS™ MOSFET (IPD65R1K4CFD, IPD65R950CFD, IPN60R1K0CE, IPN60R1K5CE, IPD60R1K5CE, IPD60R1K0CE) iMOTION™ (IMC101T, IMC301A*)
			IRS2890DS NEW	0.22/0.48	DSO-14	Integrated bootstrap FET, FAULT-RPT, OCP	
			2EDL23(I,N)06PJ	2.3/2.8	DSO-14	Infineon SOI technology with integrated bootstrap diode, OCP, EN, FAULT-RPT	
			2EDL05(I,N)06PF	0.36/0.7	DSO-8	Infineon SOI technology with integrated bootstrap diode	
	600	Three-phase	6EDL04(I,N)06xT	0.165/0.375	DSO-28 300mil	Infineon SOI technology with integrated bootstrap diode, OCP, EN, FAULT-RPT	
			IRS2334S/M	0.2/0.35	DSO-20 300mil, VQFN-28	600 V Three-phase gate driver IC	
			6ED003L06-F2	0.165/0.375	DSO-28 300mil	Infineon SOI technology with OCP, EN, FAULT-RPT	
SMPS (100 W)	20	Dual low-side	2EDN8524F	5/5	DSO-8	non-inverting dual low-side driver with CMOS inputs	CoolMOS™ MOSFET (IPP60R060P7, IPP60R080P7, IPP60R099P7, IPP60R120P7, IPP60R180P7, IPP60R280P7, IPP60R360P7)
	25		IRS4427S	2.3/3.3	DSO-8		
	650	High and low-side	2ED2106S06*	0.29/0.7	DSO-8	Infineon SOI technology with integrated bootstrap diode	
	600	High and low-side	IRS2186(4)S	4/4	DSO-14, DSO-8	600 V high and low-side driver with high current	
		Half-bridge	IRS2153(1)DS	0.18/0.26	DSO-8	Self-oscillating, Integrated bootstrap FET, SD and SD-PROG	

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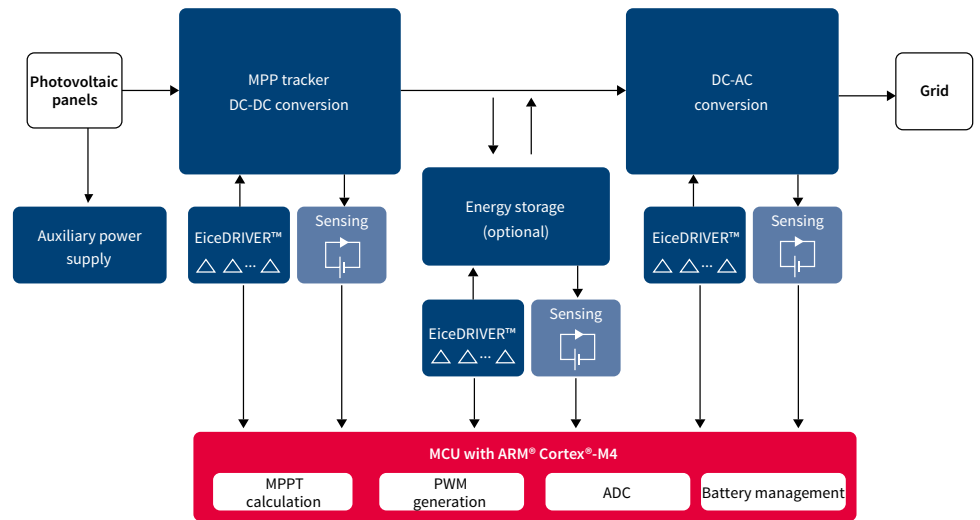




Renewable energy

Renewable energy applications

- > Solar (string & central inverters)
- > Solar (micro inverters)
- > Heat pumps (pump inverters)



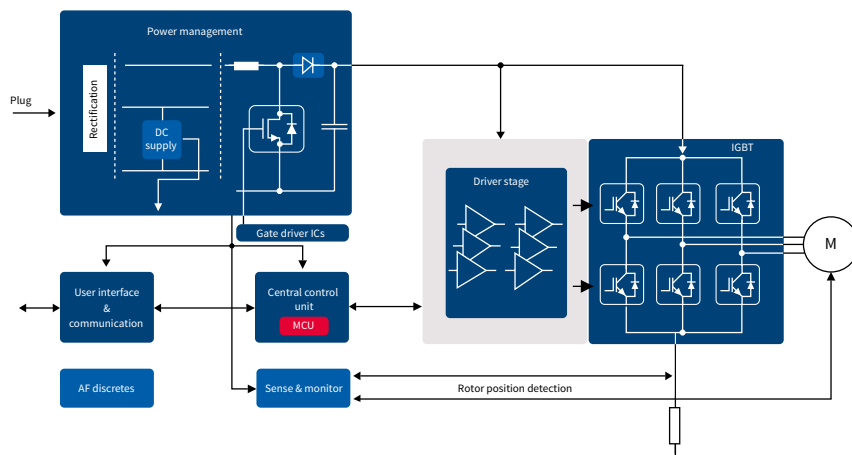
Recommended gate drivers (Renewable energy)

Application	Driver voltage class [V]	Driver configuration	Part number	Source/ Sink current typ. [A]	Packages	Description	Suitable power switches
Solar inverter Boost/SMPS	25	Single low-side	1ED44176N01F NEW	0.8/1.75	DSO-8	OCP (±5%), EN, FAULT-RPT, programmable fault clear time non-inverting low-side driver with CMOS inputs	CoolMOS™ MOSFET (IPW65R019C7, IPW65R065C7, IPW65R095C7, IPW65R190C7)
			IRS44273L	1.5/1.5	SOT23-5		
	20	Dual low-side	IRS4427S	2.3/3.3	DSO-8		
				2EDN8524F	5/5	DSO-8	
Solar inverter Boost/SMPS	1200	Single high-side	1EDI20N12AF	4/3.5	DSO-8	Functional isolation, ≥ 100 kV/μs CMTI, separate sink/source output, short circuit clamping, 125-ns propagation delay	CoolSiC™ SiC MOSFET module (DF11MR12W1M1_B11, DF23MR12W1M1_B11) EasyPACK™ 1B/2B module family (DF100R07W1H5FP_B54, DF160R12W2H3F_B11) CoolMOS™ MOSFET (IPW65R019C7, IPW65R065C7, IPW65R095C7, IPW65R190C7)
			1EDC60H12AH NEW	10/9.4	DSO-8 300mil		
Solar micro inverter DC-AC (<200 W)	650	Half-bridge	2ED2304S06F NEW	0.36/0.7	DSO-8	Infinion SOI technology with integrated bootstrap diode	OptiMOS™ 5 (BSC035N10NS5, BSC093N15NS5)
	600		IR2114SS	2/3	SSOP-24	DESAT, Synchronization, SD-SOFT, FAULT-RPT	
	650	Dual high-side	2EDL05N06PJ	0.36/0.7	DSO-14	Infinion SOI technology with integrated bootstrap diode	CoolMOS™ MOSFET (IPP65R110CFD, IPP65R190CFD, IPP65R420CFD, IPP65R660CFD, IPW65R019C7, IPW65R065C7, IPW65R095C7, IPW65R190C7)
	1200	Single high-side	2EDF7275F NEW	4/8	DSO-16 150 mil	Functional isolation	
Solar string/ central inverter DC-AC (>200 W)	1200	Single high-side	1EDI60(I,N)12AF	10/9.4	DSO-8	Functional isolation, ≥ 100 kV/μs CMTI, separate sink/source output, short circuit clamping, 120-ns propagation delay	CoolSiC™ SiC MOSFET (IMW120R045M1* - 3-pin, IMZ120R045M1* - 4-pin) CoolSiC™ SiC MOSFET module
			1ED020I12-F2	2/2	DSO-16 300mil		
		Dual high-side	2ED020I12-F2	2/2	DSO-36	Functional isolation, ≥ 100 kV/μs CMTI, active Miller clamp, DESAT, short circuit clamping, FAULT-RST	(FF11MR12W1M1_B11; FF23MR12W1M1_B11; DF11MR12W1M1_B11; DF23MR12W1M1_B11) TRENCHSTOP™ IGBT+Diode (IKW40N120CS6, IK(Q/Y)75N120CS6, IK(W/Z)75N65ES5, IK(W/Z)75N65EH5) EasyPACK™ 1B/2B module (F3L75R12W1H3_B11, F3L200R12W2H3_B11, F4-3L50R07W2H3F_B11, F4-75R07W2H3_B51) EconoPACK™ 2 module (F3L200R12N2H3) EconoDUAL™ 3 module (FF225R12ME4_B11, FF300R12ME4_B11) EconoPack™+ module (FS225R12OE4, FS300R12OE4) 34 mm module (FF50R12RT4, FF150R12RT4) 62 mm module (FF200R12KE4, FF300R12KE4)
		High and low-side	IR2213S	2/2.5	DSO-16 300mil	1200 V high and low side gate driver with SD and Separate power supply	
		Half-bridge	IR2214SS	2/3	SSOP-24	1200 V Half-bridge driver with DESAT, Synchronization, SD-SOFT, FAULT-RPT	
		Three-phase	6ED2230S12T*	0.35/0.65	DSO-24	Infinion 1200 V SOI technology with integrated bootstrap diode, OCP (±5%), EN, FAULT-RPT	TRENCHSTOP™ IGBT+Diode (IKW40N120H3, IKW40N120CS6, IKQ50N120CH3) EasyPACK™ 1B/2B module (FS25R12W1T4_B11, FS50R12W2T4_B11)
Heat pump inverter (<2 kW)	650	Half-bridge	2ED2304S06F NEW	0.36/0.7	DSO-8	Infinion SOI technology with integrated bootstrap diode	TRENCHSTOP™ (IKW30N65H5, IKW75N65ES5, IKFW75N60ET) EasyPACK™ 1B/2B module (F3L225R07W2H3P_B63)
	600		2EDL05I06PF	0.36/0.7	DSO-8		
	600	Three-phase	6EDL04I06xT	0.165/0.375	DSO-28 300mil	Infinion SOI technology with integrated bootstrap diode, OCP, EN, FAULT-RPT	
Heat pump inverter (>2 kW)	1200	Single high-side	1EDI20I12AF	4/3.5	DSO-8	Functional isolation, ≥ 100 kV/μs CMTI, separate sink/source output, short circuit clamping	CoolSiC™ SiC MOSFET module (FF11MR12W1M1_B11, FF23MR12W1M1_B11) TRENCHSTOP™ IGBT+diode (IKW40N120H3, IKQ50N120CH3, IKQ75N120CS6)
		High and low side	IR2213S	2/2.5	DSO-16 300mil	1200 V high and low side gate driver with SD and separate power supply	EasyPACK™ 1B/2B module (FS25R12W1T4_B11, FS50R12W2T4_B11, F4-3L50R07W2H3F_B11, F4-75R06W1E3) EconoPIM™ 2 module (FP25R12KT4_B15, FP50R12KT4G) EconoPACK™ 2/3 module (FS50R12KT4_B15) 34 mm module (FF50R12RT4, FF150R12RT4)
		Half-bridge	IR2214SS	2/3	SSOP-24	1200 V Half-bridge driver with DESAT, Synchronization, SD-SOFT, FAULT-RPT	
		Three-phase	6ED2230S12T*	0.35/0.65	DSO-24	Infinion 1200-V SOI technology with integrated bootstrap diode, OCP (±5%), EN, FAULT-RPT	TRENCHSTOP™ IGBT+diode (IKW40N120H3, IKW40N120CS6, IKQ50N120CH3) EasyPACK™ 1B/2B module (FS25R12W1T4_B11, FS50R12W2T4_B11)



Small home appliances and battery-powered applications

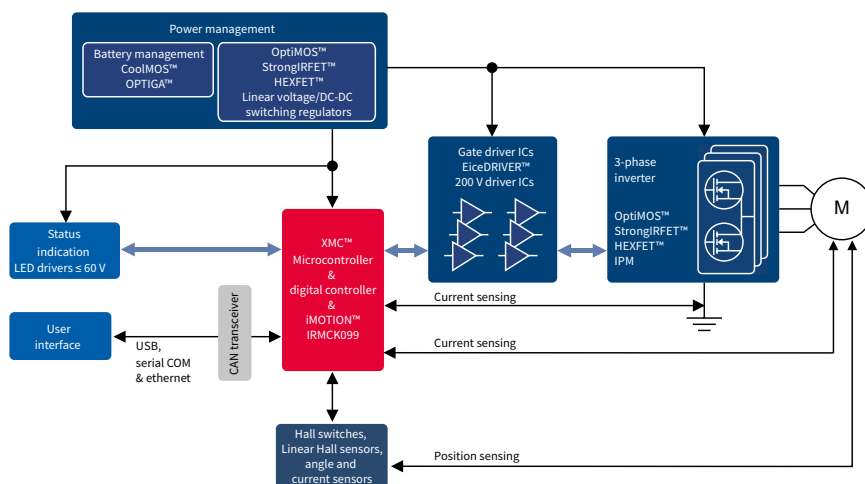
Typical small home appliance application diagram



Small home appliance applications

- > Vacuum cleaner (SR motor, BLDC, PFC)
- > Hair dryers
- > Induction heating (half bridge-topology)
- > Microwave ovens
- > Fans (hood fans, ceiling fans, freezer fans)
- > Battery chargers (PFC)

Typical battery powered three-phase system: a one-stop-shop for battery powered drives



Battery-powered applications

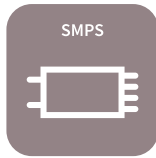
- > Drones / multicopters (<1 kW)
- > Lawn mower (<1 kW)
- > Cordless power tools (<1 kW)
- > Service robotics (<1 kW)
- > Cordless vacuum cleaners (<1 kW)
- > Toys (RC cars) (<1 kW)
- > Fast battery chargers

Recommended gate drivers (Small home appliances and battery-powered applications)

Application	Driver voltage class [V]	Driver configuration	Part number	Source/Sink current typ. [A]	Packages	Description	Suitable power switches and controllers
PFC	25	Single low-side	1ED44176N01F NEW	0.8/1.75	DSO-8	OCF ($\pm 5\%$), EN, FAULT-RPT, programmable fault clear time	TRENCHSTOP™ (IKW30N65H5, IKW40N65WR5, IKFW40N60DH3E, IKFW50N60DH3E) Rapid Diode (IDW30E65D1, IDW60C65D1) CoolMOS™ MOSFET (IPP60R060P7, IPP60R099P7, IPP60R180P7, IPP60R360P7) iMOTION™ (IMC102T, IMC302A*)
			IRS44273L	1.5/1.5	SOT23-5	Non-inverting low-side driver with CMOS inputs	
	20	Dual low-side	1EDN8511B	4/8	SOT23-6		
			IRS4427S	2.3/3.3	DSO-8		
	20	2EDN8524F	5/5	DSO-8			
Battery powered Motor Inverter/BLDC (<1 kW)	20 ¹	Single low-side	1EDN7550B NEW	4/8	SOT23-6	Single-channel gate driver IC with truly differential inputs	StrongIRFET™ (IRL40SC209, IRL40SC228, IRL40T209) OptiMOS™ 5 (BSC0925ND, BSZ0909ND, IPT004N03L, IRL40T209, BSC054N04NS) iMOTION™ (IMC101T, IMC301A*)
	200	High and low side	IRS2005S/M	0.29/0.6	DSO-8, VQFN-14	200 V driver with V_{CC} & V_{BS} UVLO, and shutdown (IRS2008 only)	
			IRS2011S	1/1	DSO-8		
	200	Half-bridge	IRS2008S/M NEW	0.29/0.6	DSO-8, VQFN-14	Infineon SOI technology with integrated bootstrap diode (6EDL only), OCP, EN, FAULT-RPT	
			IRS2007S/M NEW				
	200	Three-phase	6EDL04N02PR	0.165/0.375	TSSOP-28		
6ED003L02-F2			0.165/0.375	TSSOP-28			
Inverter/ Compressor/ Drive	650	Half-bridge	2ED2304S06F NEW	0.36/0.7	DSO-8	Infineon SOI technology with integrated bootstrap diode	TRENCHSTOP™ IGBT+Diode (IKD03N60RF, IKD04N60RF, IKD06N60RF) TRENCHSTOP™ IGBT6 (IKA08N65ET6, IKA10N65ET6, IKA15N65ET6) TRENCHSTOP™ RC-H5 (IHW20N120R5, IHW40N120R5, IHW20N135R5, IHW40N135R5) iMOTION™ (IMC101T, IMC301A*)
			IRS2890DS NEW	0.22/0.48	DSO-14	Integrated bootstrap FET, FAULT-RPT, OCP	
			IRS2183S	1.9/2.3	DSO-8	600-V Half-bridge gate driver	
			2EDL23106PJ	2.3/2.8	DSO-14	Infineon SOI technology with integrated bootstrap diode, OCP, EN, FAULT-RPT	
			2EDL05(I,N)06PF	0.36/0.7	DSO-8	Infineon SOI technology with integrated bootstrap diode	
	600	High and low side	IRS2113S/M	2.5/2.5	DSO-16 300mil, VQFN-14	600-V High and low side gate driver with SD	
			IRS2186(4)S	4/4	DSO-8 DSO-14	600-V high and low side driver with high current	
		Three-phase	6EDL04(I,N)06xT	0.165/0.375	DSO-28 300 mil	Infineon SOI technology with integrated bootstrap diode, OCP, EN, FAULT-RPT	
			IRS2334S/M	0.2/0.35	DSO-20 300 mil, VQFN-28	600-V Three-phase gate driver IC	

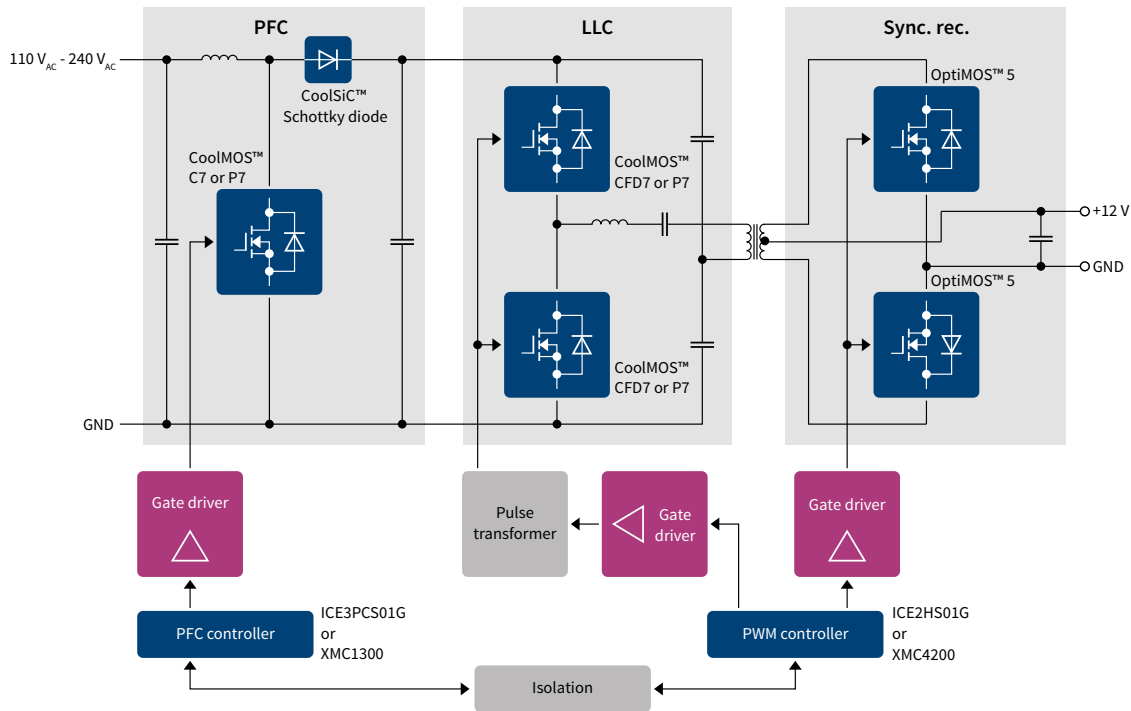
Note¹: Common mode rejection (CMR) voltage range up to 80 V.
* Coming soon





Switch-mode power supply (SMPS)

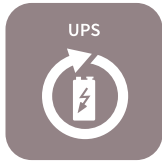
Typical application diagram



Recommended gate drivers (Switch-mode power supply)

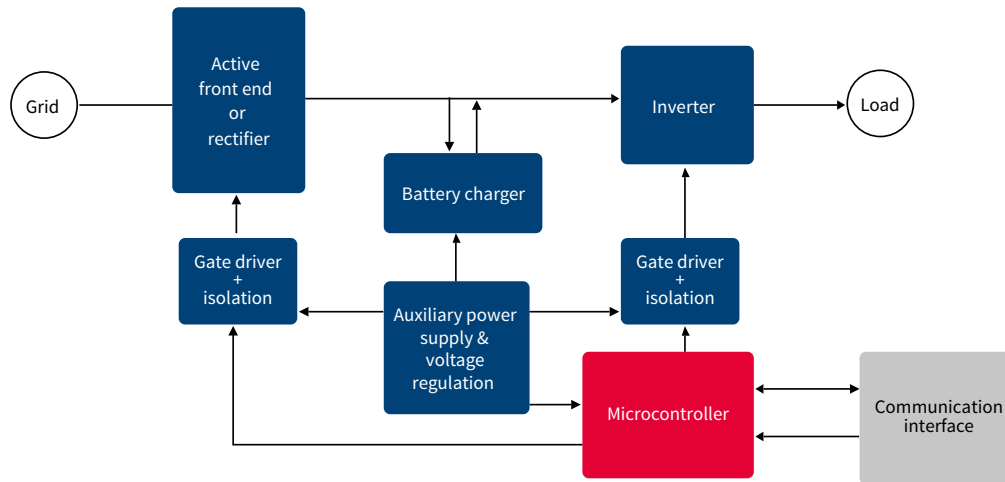
Application	Driver voltage class [V]	Driver configuration	Part number	Source/Sink current typ. [A]	Packages	Description	Suitable power switches
PFC	20 ⁺	Single low-side	1EDN8550B NEW	4/8	SOT23-6	Non-inverting signal low-side driver with truly differential inputs, especially for kelvin source 4 pin device in PFC boost	CoolMOS™ 7 series: IPP60RyyyC7 → x: T = HSOF-8; yyy: R _{DS(on)} range (017 mW - 99 mW); IPP65RyyyC7 → x: Z = TO-247-4pin; yyy: R _{DS(on)} range (019 mW - 95 mW); IPP60RyyyG7 → x: DD = DDPACK, T = HSOF-8; yyy: R _{DS(on)} range (028 mW - 190 mW); IPP65RyyyG7 → x: T = HSOF-8; yyy: R _{DS(on)} range (033 mW - 195 mW); IPP60RyyyP7 → x: Z = TO-247-4pin; yyy: R _{DS(on)} range (037 mW - 180 mW);
	25	Single low-side	1ED44176N01F NEW	0.8/1.75	DSO-8	OCP (±5%), EN, FAULT-RPT, programmable fault clear time	CoolMOS™ 7 series: IPP60RyyyC7 → x: P = TO-220, W=TO-247, T = HSOF-8; yyy: R _{DS(on)} range (017 mW - 180 mW); IPP65RyyyC7 → x: P = TO-220, W=TO-247; yyy: R _{DS(on)} range (019 mW - 225 mW); IPP60RyyyG7 → x: DD = DDPACK, T = HSOF-8; yyy: R _{DS(on)} range (028 mW - 190 mW); IPP65RyyyG7 → x: T = HSOF-8; yyy: R _{DS(on)} range (033 mW - 195 mW); IPP60RyyyP7 → x: P = TO-220, W=TO-247; yyy: R _{DS(on)} range (037 mW - 380 mW); IPP60RyyyCFD7 → x: P = TO-220, W=TO-247; yyy: R _{DS(on)} range (018 mW - 280 mW);
	20		1EDN8511B	4/8	SOT23-6	20 V non-inverting signal low-side driver with CMOS inputs	
			Dual low-side	2EDN8524F	5/5	DSO-8	20 V non-inverting dual low-side driver with CMOS inputs
Totem pole PFC	650	Single high-side	1EDF5673F NEW	4/8	DSO-16 150 mil	Functional isolation	CoolGaN™ IGxx60RyyyD1 → Ron 70 mW and 190 mW; DSO-20-87, DSO-20-85, HDSOF-8-3 and DFN 8x8. (CCM)
		Dual high-side	2EDF7275F NEW	4/8	DSO-16 150 mil	Functional isolation	
	600	Half-bridge	2EDL23106PJ	2.3/2.8	DSO-14	Infineon SOI technology with integrated bootstrap diode, OCP, EN, FAULT-RPT	IPP60RyyyCFD7 → x: P = TO-220, W=TO-247; yyy: R _{DS(on)} range (018 mW - 280 mW). (TCM)
Vienna rectifier	650	Dual high-side	2EDF8275F NEW	4/8	DSO-16 150 mil	Functional isolation, 150 kV/μs CMTI, EN	IPP60RyyyG7/C7 → x: P = TO-220, W=TO-247, T = HSOF-8; yyy: R _{DS(on)} range (017 mW - 180 mW); IPP65RyyyC7 → x: P = TO-220, W=TO-247; yyy: R _{DS(on)} range (019 mW - 225 mW) IPP60RyyyP7 → x: P = TO-220, W=TO-247; yyy: R _{DS(on)} range (037 mW - 380 mW);
Sync rectifier	25	Single low-side	1ED44176N01F NEW	0.8/1.75	DSO-8	OCP (±5%), EN, FAULT-RPT, programmable fault clear time	OptiMOS™ 5 (BSC035N10NS5) OptiMOS™ 3 (BSC030N04NS)
	20 ⁺		1EDN7550B NEW	4/8	SOT23-6	Non-inverting low-side driver with truly differential inputs	
	20	Dual low-side	2EDN7523F	5/5	DSO-8	20 V non-inverting dual low-side driver with CMOS inputs	
	200	Dual low-side	IR11688S	1/4	DSO-8	Dual synchronous rectification control IC	
	250	Dual high-side	2EDF7275K NEW	4/8	LGA-13	Functional isolation, 150 kV/μs CMTI, Disable	
		Single high-side	1EDF5673K NEW	4/8	LGA-13	Functional isolation	
LLC/ZVS PSFB	650	Single high-side	1EDS5663H NEW	4/8	DSO-16 300 mil	Reinforced isolation, 200 kV/μs CMTI, EN	CoolGaN™ → R _{on} 70 mW and 190 mW; DSO-20-87, DSO-20-85, HDSOF-8-3 and DFN 8x8. (CCM)
		Dual high-side	2EDS8265H NEW	4/8	DSO-16 300 mil	Reinforced isolation, 150 kV/μs CMTI, EN	
	600	High and low-side	IRS2186(4)S	4/4	DSO-14, DSO-8	600-V high and low side driver with high current	IPP60RyyyCFD7 → x: P = TO-220, W=TO-247; yyy: R _{DS(on)} range (018 mW - 280 mW);

Note 1: Common mode rejection (CMR) voltage range up to 80 V.



Uninterruptible power supply (UPS)

Typical application diagram



Recommended gate drivers (Uninterruptible power supply)

Application	Driver voltage class [V]	Driver configuration	Part number	Source/ Sink current typ. [A]	Packages	Description	Suitable power switches
Battery DC-DC (<3.5 kW)	600	Half-bridge	2EDL05I06PJ	0.36/0.7	DSO-14	Infineon SOI technology with integrated bootstrap diode	TRENCHSTOP™ and TRENCHSTOP™ 5 (IK(W/Z)50N65EH5, IK(W/Z)50N65ES5, IKFW50N60ET)
			2EDL23I06PJ	2.3/2.8	DSO-14	Infineon SOI technology with integrated bootstrap diode, OCP, EN, FAULT-RPT	EasyPACK™ 1B/2B module (FS20R06W1E3_B11, FS50R06W1E3_B11, F4-75R06W1E3)
	1200	Single high-side	1EDI20I12AF	4/3.5	DSO-8	Functional isolation, ≥ 100 kV/μs CMTI, separate sink/source output, short circuit clamping	TRENCHSTOP™ IGBT+Diode (IKW40N120CS6) EasyPIM™ 1B/2B module (FP15R12W1T4_B11, FP15R12W2T4)
		High and low side	IR2213S	2/2.5	DSO-16 300 mil	SD and Separate power supply	EasyPACK™ 1B/2B module (FS25R12W1T4_B11)
Battery DC-DC (<100 kW)	1200	Single high-side	1EDI60H12AH	10/9.4	DSO-8 300mil	Functional isolation, ≥ 100 kV/μs CMTI, separate sink/source output, short circuit clamping	CoolSiC™ SiC MOSFET (IMW120R045M1*- 3-pin, IMZ120R045M1*- 4-pin) CoolSiC™ SiC MOSFET module (FF11MR12W1M1_B11, FF23MR12W1M1_B11) TRENCHSTOP™ IGBT (IKW40N120CS6, IK(Q/Y)75N120CS6, IK(W/Z)75N65ES5, IK(W/Z)75N65EH5) EasyPACK™ 1B/2B module family (F3L100R07W2E3_B11, F3L150R07W2E3_B11, FS50R12W2T4_B11, F4-3L50R07W2H3F_B11) EconoPIM™ 2/3 module family (FP75R12KT4_B15, FP150R12KT4(P)_B11) EconoPACK™ 2/3/4 module family (FS75R12KT4_B15, FS100R12KT4G(P)_B11, FS100R12PT4, FS150R12KT4(P)_B11, FS150R12PT4) EconoDUAL™ 3 module family (FF225R12ME4_B11, FF300R12ME4_B11) EconoPack™+ module family (FS225R12OE4, FS300R12OE4) 34 mm module family (FF50R12RT4, FF150R12RT4) 62 mm module family (FF200R12KE4, FF300R12KE4)

* Coming soon

Recommended gate drivers
(Uninterruptible power supply) continued

Application	Driver voltage class [V]	Driver configuration	Part number	Source/sink current typ. [A]	Packages	Description	Suitable power switches
Mains inverter (<5 kVA)	600	Half-bridge	2EDL23I06PJ	2.3/2.8	DSO-14	Infineon SOI technology with integrated bootstrap diode, OCP, EN, FAULT-RPT	TRENCHSTOP™ (IKW50N65H5, IKW75N65ES5, IKZ75N65ES5, IKFW75N60ET) StrongIRFET™ (IRF200P222, IRF250P224, IRF300P226) EasyPACK™ 1B/2B module family (FS20R06W1E3_B11, FS50R06W1E3_B11, FB20R06W1E3, FB30R06W1E3)
			IR2114SS	2/3	SSOP-24	DESAT, Synchronization, SD-SOFT, FAULT-RPT	
		High and low side	IRS2186(4)S	4/4	DSO-14, DSO-8	600-V high and low side driver with high current	
	1200	Single high-side	1EDI60H12AH	10/9.4	DSO-8 300mil	Functional isolation, ≥ 100 kV/μs CMTI, separate sink/source output, short circuit clamping, 125-ns propagation delay	CoolSiC™ SiC MOSFET (IMW120R045M1* - 3-pin, IMZ120R045M1* - 4-pin) CoolSiC™ SiC MOSFET module (FF11MR12W1M1_B11; FF23MR12W1M1_B11) TRENCHSTOP™ IGBT+Diode (IKW40N120CS6) EasyPACK™ 1B/2B module family (FS25R12W1T4_B11) EconoPIM™ 2 module family (FP25R12KT4_B15)
1EDI20I12MF			4/3.5	DSO-8	Functional isolation, ≥ 100 kV/μs CMTI, active Miller clamp, short circuit clamping		
Mains inverter (<100 kVA)	1200	Single high-side	1EDS20I12SV NEW	SRC/2	DSO-36	Reinforced isolation, VDE 0884-10, V _{ORM} = 1420 V, V _{OTM} = 8000 V; UL 1577, V _{ISO} = 5000 V(rms); slew rate control, DESAT, FAULT-RPT, OCP, SD-SOFT, two level turn off	CoolSiC™ SiC MOSFET (IMW120R045M1* - 3-pin, IMZ120R045M1* - 4-pin) CoolSiC™ SiC MOSFET module (FF11MR12W1M1_B11; FF23MR12W1M1_B11) TRENCHSTOP™ IGBT+Diode (IKW40N120H3, IKW40N120CS6, IKQ50N120CH3, IKQ75N120CS6) EasyPACK™ 1B module (FS50R12W2T4_B11, FS75R12W2T4_B11) Easy 1B/2B 3-level (FS3L50R07W2H3F_B11, F3L100R12W2H3_B11) Easy 1B/2B Booster module (DF75R12W1H4F_B11, DF120R12W2H3_B27) EconoPIM™ 2/3 module (FP75R12KT4_B15, FP150R12KT4(P)_B11)
			1ED020I12-FT	2/2	DSO-16 300mil	Functional isolation, ≥ 100 kV/μs CMTI, DESAT, active Miller clamp, short circuit clamping, FAULT-RST, two level turn off (FT only)	EconoPACK™ 2/3/4 module (FS75R12KT4_B15, FS150R12KT4(P)_B11, FS150R12PT4) 34 mm module (FF50R12RT4, FF150R12RT4)
			1ED020I12-F2	2/2	DSO-16 300mil		
		Dual high-side	2ED020I12-F2	2/2	DSO-36		
	Single high-side	1EDI60I12AF	10/9.4	DSO-8	Functional isolation, ≥ 100 kV/μs CMTI, separate sink/source output, short circuit clamping		
PFC/SMPS	25	Single low-side	1ED44176N01F NEW	0.8/1.75	DSO-8	OCP (±5%), EN, FAULT-RPT, programmable fault clear time	TRENCHSTOP™ IGBT+Diode (IKW30N65H5, IKW40N65WR5, IKFW40N60DH3E, IKW50N60DH3E, IKW50N65F5) CoolMOS™ MOSFET (IPP60R060P7, IPP60R080P7, IPP60R099P7, IPP60R120P7, IPP60R180P7, IPP60R280P7, IPP60R360P7, IP(W/Z)65R019C7, IPP60R360P7, IP(W/Z)65R045C7, IP(W/Z)65R065C7, IP(W/Z)65R095C7, IPW65R125C7, IPW65R190C7)
			IRS44273L	1.5/1.5	SOT23-5		
	20	Dual low-side	1EDN8511B	4/8	SOT23-6	Non-inverting low-side driver with CMOS inputs	
	2EDN8524F		5/5	DSO-8			
25		IRS4427S	2.3/3.3	DSO-8			
Active bridge rectifier (<100 kVA)	1200	Single high-side	1ED020I12-F2	2/2	DSO-16 300 mil		CoolSiC™ SiC MOSFET (IMW120R045M1* - 3-pin, IMZ120R045M1* - 4-pin) CoolSiC™ SiC MOSFET module (FF11MR12W1M1_B11; FF23MR12W1M1_B11) TRENCHSTOP™ 5 IGBT (IK(W/Z)75N65ES5, IK(W/Z)75N65EH5) EasyPACK™ 1B/2B module family (FS50R12W2T4_B11, FS75R12W2T4_B11, F3L75R07W2E3_B11, F3L100R07W2E3_B11) 34 mm module family (FF50R12RT4, FF150R12RT4)
		Single high-side	1ED020I12-FT	2/2	DSO-16 300 mil	Functional isolation, 100 kV/μs CMTI, DESAT, active Miller clamp, short circuit clamping, FAULT-RST, two level turn off (FT only)	CoolMOS™ MOSFET (IPP60R060P7, IPP60R099P7, IPP60R180P7, IPP60R360P7, IP(W/Z)65R019C7, IP(W/Z)65R045C7, IP(W/Z)65R095C7, IPW65R190C7)
		Dual high-side	2ED020I12-F2	2/2	DSO-36		

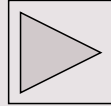
* Coming soon



Driver configuration overview

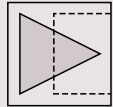
Single-channel low-side driver

Allows low offset of the voltage between input and output



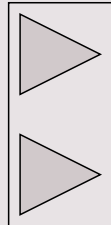
Single-channel high-side driver

Allows high voltage offset between input and output



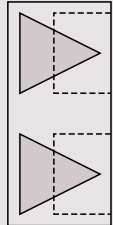
Dual-channel low-side driver

Both channels allow individual low voltage offsets, no interlock



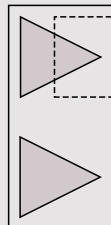
Dual-channel high-side driver

Both channels allow individual high voltage offsets, no interlock



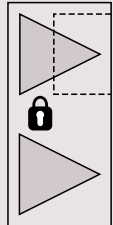
High and low-side driver

Two non-interlocked channels, one for high, one for low voltage offsets



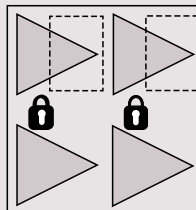
Half-bridge driver

Two interlocked channels where one of the channel allows a high voltage offset



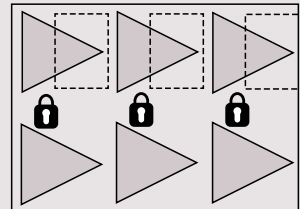
Full-bridge driver

Four channels in a package with two independent half bridges



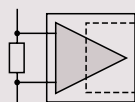
Three-phase bridge

Six channels in a package with three independent half bridges



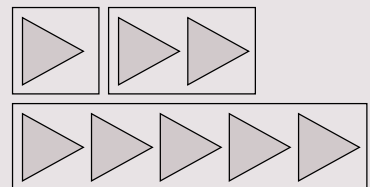
Current sense

Current sensing across a high-voltage offset between sense input and data output



Synchronous-buck driver

High speed drivers for dual high side and low side MOSFETs in synchronous rectified buck converters

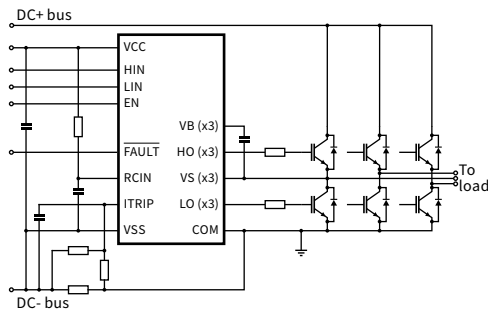


Product portfolio overview

Infineon’s gate driver IC solutions are the expert’s choice. With more than 500 reliable and efficient gate driver solutions, we provide a comprehensive portfolio for virtually any application. To ease the selection process, this overview is structured along the configurations of the gate driver ICs, as opposed to application topology.

Three-phase gate driver ICs

Typical connection

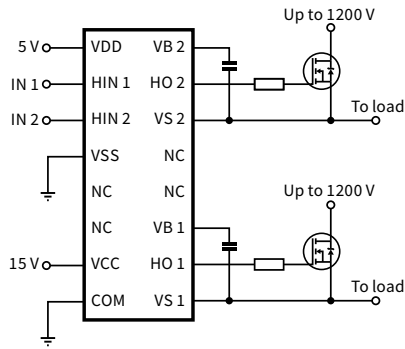


Voltage class [V]	I _{O+} /I _{O-} typ. [mA]	UVLO on/off typ. [V]	Prop delay off/on typ. [ns]	Base PN	Technology	Features (see page 58)														Package (see page 59)																				
						Brake chopper	Operational amplifier	Desaturation protection	Enable	Fault reporting	Integrated bootstrap diode	Over-current protection	Programmable dead time	Separate pin for logic ground	Shoot-through protection	Shutdown	DSO-20 WB	DSO-24	DSO-28 WB	DIP-28	LCC-32	MQFP-64	TSSOP-28	VQFN-28	VQFN-34	CHIP ¹														
1200	350/650	11.4/10.4	600/600	6ED2230S12*	SOI																																			
			700/750	IR2233	J1																																			
	250/500	10.4/9.4	IR2235	J1																																				
		350/540	11.2/10.2	550/550	IR2238	J1																																		
600	165/375	11.7/9.8	490/530	6ED003L06-F2	SOI																																			
				6EDL04I06(N,P)	SOI																																			
				6EDL04N06P	SOI																																			
	200/350	8.9/8.2	400/425		IR2136	J1																																		
					IR21363	J1																																		
					IR21365	J1																																		
		8.9/8.2	530/500		IR21368	J1																																		
					IR21364	J1																																		
		8.9/8.2	530/530		IRS2334	J1																																		
					IRS2336	J1																																		
					IRS2336D	J1																																		
					IRS23364D	J1																																		
					IRS23365D	J1																																		
		8.9/8.2	530/530		IR2131	J1																																		
	IR2133				J1																																			
	IR2135				J1																																			
	IR2136				J1																																			
	250/500	11.7/9.8	490/530	6ED003L02-F2	SOI																																			
				6EDL04N02P	SOI																																			
9/8.1				530/530	6EDL04N02P	SOI																																		
200	165/375	11.7/9.8	490/530	6ED003L02-F2	SOI																																			
				9/8.1	530/530	6EDL04N02P	SOI																																	

*Coming soon Note 1: Please contact sales team for additional information
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Dual high-side/half-bridge

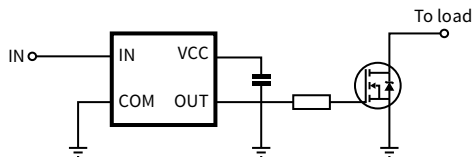
Typical connection



Voltage class [V]	I _{o1} /I _{o2} typ. [mA]	UVLO on/off typ. [V]	Prop delay off/on typ. [ns]	Base PN	Technology	Features (see page 58)											Package (see page 59)	
						Active Miller clamp	Deadtime control	Desaturation protection	Disable	Fault reporting	Fault reset	Separate pin for logic ground	UL 1577	VDE 0884-10	DSO-16	DSO-16 WB	DSO-36 (w/o 4 pins)	TFLGA-13
1200	2000/2000	12/11	165/170	2ED020I12-F2	CT	✓	✓	✓	✓	✓	✓						✓	
	4000/8000	4.2/3.9		2EDF7275F	NEW	CT			✓					✓				
650	1000/2000	8/7	37 / 37	2EDF7175F	NEW	CT			✓				✓					
	4000/8000			2EDS8265H	NEW	CT			✓				✓	✓				
	1000/2000	2EDS8165H		NEW	CT			✓				✓	✓	✓				
250	4000/8000	4.2/3.9		2EDF7235K	NEW	CT			✓								✓	
				2EDF7275K	NEW	CT		✓	✓									✓

Single low-side gate driver ICs

Typical connection

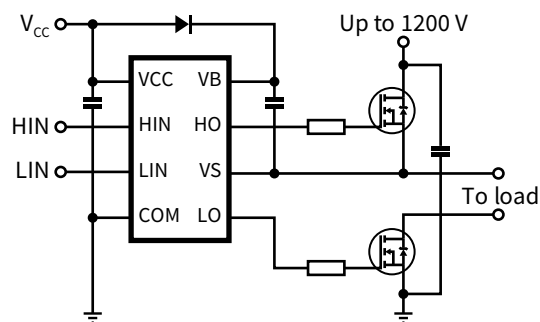


Voltage class [V]	I _{o1} /I _{o2} typ. [mA]	UVLO on/off typ. [V]	Prop delay off/on typ. [ns]	Base PN	Technology	Features (see page 58)											Package (see page 59)	
						Automatic minimum on time protection Enable	Fault reporting	Over-current protection	Programmable fault clear time	Programmable minimum on time	Separate sink/source outputs	Synchronous rectification	Truly differential inputs	DSO-8	DIP-8	SOT23-5	SOT23-6	WSON-6
200	1000/4000	10.55/9	50/60	IR11662	N-ISO	✓	✓			✓	✓	✓						
	2000/7000	10.55/9	50/60	IR11672A	N-ISO	✓	✓			✓	✓	✓						
	1000/2500	4.5/4.4	50/50	IR1161	N-ISO	✓				✓	✓				✓			
20 ¹	4000/8000	4.2/3.9	45 / 45	1EDN7550	NEW	N-ISO						✓					✓	
		8/7	45 / 45	1EDN8550	NEW	N-ISO						✓					✓	
25	800/1750	11.9/11.4	50/50	1ED44176N01	NEW	N-ISO	✓	✓	✓	✓			✓					
	1500/1500	10.2/9.2	50/50	IRS44273	N-ISO										✓			
20	300/550	5/4.15	50/50	IR44252	N-ISO										✓			
		5/4.15	50/50	IR44272	N-ISO		✓								✓			
		5/4.15	50/50	IR44273	N-ISO										✓			
	4000/8000	4.2/3.9	19/19	1EDN7511	N-ISO												✓	
		8/7		1EDN8511	N-ISO												✓	
5	1600/3300	4.2/3.9	200/150	1EDN7512	N-ISO										✓		✓	
		8.9/8		IR2121	N-ISO		✓	✓						✓				

Note 1: Common mode rejection (CMR) voltage range up to 80 V.

High-side and low-side gate driver ICs

Typical connection



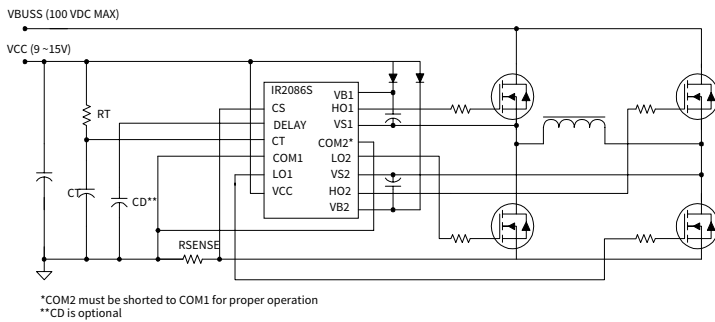
Voltage class [V]	I _o /I _o typ. [mA]	UVLO on/off typ. [V]	Prop delay off/on typ. [ns]	Base PN	Technology	Features (see page 58)			Package (see page 59)								
						Integrated bootstrap diode	Separate pin for logic ground	Shutdown	DSO-8	DSO-14	DSO-16 WB	DIP-8	DIP-14	VQFN-14	CHIP ¹		
1200	2000/2500	10.2/9.3	225/280	IR2213	J1	✓	✓	✓			✓	✓	✓	✓	✓		
650	290/700	9.1/8.2	200/200	2ED2106S06*	SOI	✓			✓						✓		
	2500/2500			2ED21064S06*	SOI	✓			✓							✓	
				2ED2181S06*	SOI	✓			✓							✓	
				2ED21814S06*	SOI	✓			✓							✓	
600	200/350	8.9/8.2	200/220	IR2106	J1			✓		✓							
		8.9/8.2		IR21064	J1		✓		✓		✓						
		4.1/3.8		IR2301	J1				✓		✓						
		8.9/8.2		IR25604	J1				✓								
		4.1/3.8		IRS2301	J1				✓								
		210/360		8.9/8.2	150/160	IR2101	J1				✓		✓				✓
	290/600	250/500	8.6/8.2	105/125	IR2112	J1			✓			✓		✓			
			8.6/8.2	130/135	IRS2112	J1		✓	✓			✓		✓		✓	
		8.9/8.2	200/220	150/160	IRS2101	J1				✓			✓				✓
				200/220	IRS2106	J1				✓			✓				✓
				200/220	IRS21064	J1		✓			✓			✓			
				360/700	12.5/11.6	400/420	2EDL05I06BF	SOI	✓			✓					
		1900/2300	8.9/8.2	220/180	IRS2181	J1				✓			✓				✓
					IR2181	J1				✓			✓				
					IR21814	J1		✓			✓			✓			
					IRS21814	J1		✓			✓			✓	✓		
		2500/2500	8.6/8.2	94/120	IR2113	J1		✓	✓			✓		✓			✓
					IR25607	J1		✓	✓			✓					
	IRS2113				J1		✓	✓			✓		✓	✓	✓		
	4000/4000	8.9/8.2	170/170	IRS2186	J1				✓			✓				✓	
				IRS21864	J1		✓			✓			✓				
				IRS21867	J1				✓								
	500	2500/2500	8.6/8.2	94/120	IR2110	J1		✓	✓			✓		✓			
			8.5/8.2	120/130	IRS2110	J1		✓	✓			✓		✓		✓	
200	290/600	8.9/8.2	150/160	IRS2005	NEW J1				✓						✓		
	1000/1000	9/8.2	60/60	IRS2011	J1				✓			✓			✓		
		9/8.2	75/80	IR2011	J1				✓			✓					
3000/3000	8.6/8.2	65/95	IR2010	J1		✓	✓			✓		✓					

*Coming soon

Note ¹: Please contact sales team for additional information

Full bridge gate driver ICs

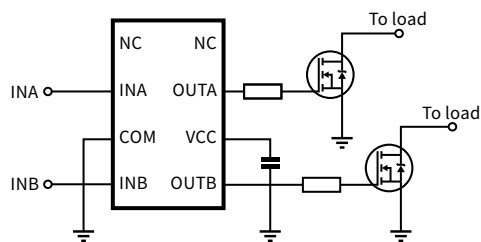
Typical connection



Voltage class [V]	I_{O+}/I_{O-} typ. [mA]	UVLO on/off typ. [V]	Prop delay off/on typ. [ns]	Base PN	Technology	Features (See page 58)			Package (see page 59)
100	1200/1200	7.25/6.8	40/60	IR2086S	J1	✓	✓	✓	PG-DSO-16

Dual low-side gate driver ICs

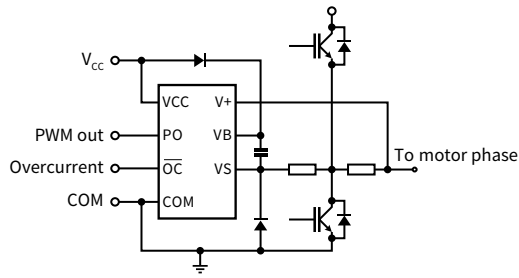
Typical connection



Voltage class [V]	I_{O+}/I_{O-} typ. [mA]	UVLO on/off typ. [V]	Prop delay off/on typ. [ns]	Base PN	Technology	Features (see page 58)				Package (see page 59)				
200	1000/4000	8.1/7.6	70/60	IR1168	N-ISO	✓			✓	✓				
	1000/4000	8.1/7.6	80/100	IR11682	N-ISO	✓			✓	✓				
	1000/4000	4.55/4.35	60/250	IR11688	N-ISO	✓		✓	✓	✓				
25	2300/3300	10.2/9.2	50/50	IRS44262	N-ISO					✓				
		N.A.		IRS4426	N-ISO					✓				
		65/85	IRS4427	N-ISO					✓	✓				
		IR25600	N-ISO						✓	✓				
		IR442(6,7)	N-ISO						✓	✓				
20	5000/5000	4.2/3.9	19/19	2EDN752(3,4)	N-ISO		✓			✓		✓	✓	
		8/7		2EDN852(3,4)	N-ISO		✓			✓			✓	
	4000/4000	4.2/3.9	19/19	2EDN7424	N-ISO		✓			✓			✓	

Complementary: current sense ICs

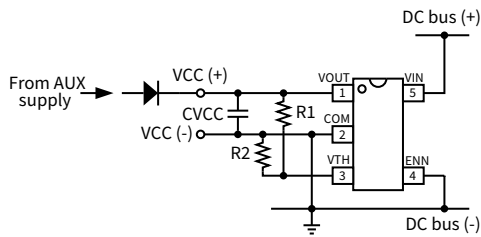
Typical connection



Voltage class [V]	Base PN	Technology	Current sense	Over-current protection	Package (see page 59)			
600	IR2175	J1	✓	✓	✓		✓	
	IR25750	J1	✓					✓

Complementary: high-voltage start-up IC

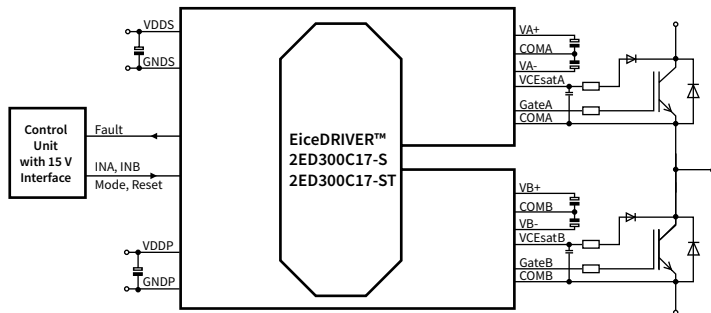
Typical connection



Voltage class [V]	Base PN	Technology	Enable	High voltage start-up	Over temperature shutdown	Package (see page 59)	
480	IRS25751	N-ISO	✓	✓	✓	SOT23-5	

Driver boards

Typical connection



Voltage class [V]	I_{o+}/I_{o-} typ. [mA]	UVLO on/off typ. [V]	Prop delay o ff/on typ. [ns]	Base PN	Features (See page 58)				Package (see page 59)
1700	30/30	10.9/9.3	670/580	2ED300C17-S	✓	✓	✓	✓	✓
1700	30/30	10.9/9.3	670/580	2ED300C17-ST	✓	✓	✓	✓	✓

AG-EICE-45

Automotive gate driver ICs



Configuration	Work. volt. class [V]	I _O /I _o typ. [mA]	UVLO on/off typ. [V]	Prop delay off/on typ. [ns]	Base PN	Technology	Features (See page 58)																			Package (see page 59)										
							Buffer	Operational amplifier	Desaturation protection	Enable	Fault reporting	Over-current protection	Programmable frequency	Programmable dead time	Self-oscillating (Oscillator)	Separate pin for logic ground	Shoot-through protection	Shutdown	Synchronous rectification	Two-level turn-off	UL 1577	VDE 0884-10	DSO-8	DSO-14	DSO-16 NB	DSO-16 WB	DSO-20	DSO-28	DSO-36							
Single high-side	1200	2000/2000	12.5/11.7	215/215	1EDI2001AS	CT																														
Single high-side	1200	2000/2000	12.5/11.7	215/215	1EDI2002AS	CT																														
Single high-side	1200	2000/2000	12.5/11.7	215/215	1EDI2010AS	CT																														
Single high-side	1200	2100/2100	12/11	165/170	1ED02012FA2	CT																														
Single high-side	1200	2000/2000	12/11	1900/1750	1ED02012FTA	CT																														
Single high-side	600	500/500	8.6/8	140/140	AUIRS2123	JI																														
Single high-side	600	290/600	8.6/8.2	140/140	AUIRS2117S	JI																														
Single high-side	600	290/600	7.2/6.8	150/150	AUIRS21271S	JI																														
Single high-side	600	290/600	10.3/9	150/150	AUIRS2127S	JI																														
Single high-side	600	290/600	8.6/8.2	140/140	AUIRS2118S	JI																														
Single high-side	600	500/500	8.6/8	140/140	AUIRS2124	JI																														
High and low-side	600	1900/2300	8.9/8.2	135/135	AUIRS21811S	JI																														
High and low-side	600	1900/2300	8.9/8.2	200/160	AUIRS21814S	JI																														
High and low-side	600	1900/2300	8.9/8.2	200/160	AUIRS2181S	JI																														
High and low-side	600	3500/3500	8.9/8.2	90/90	AUIRS2191S	JI																														
High and low-side	600	200/350	4.1/3.8	200/220	AUIRS2301S	JI																														
High and low-side	600	2500/2500	8.5/8.2	120/140	AUIRS2113S	JI																														
Half-bridge	1200	2000/2000	12/11	165/170	2ED02012FA	CT																														
Half-bridge	100	1000/1000	7.3/6.8	N.A.	AUIR2085S	JI																														
Three-phase	600	200/350	8.9/8.2	530/530	AUIRS2336S	JI																														
Single low-side	200	3000/6000	10.2/9.3	60/90	AUIRS1170S	N-ISO																														
Single low-side	40	10000/10000	11.7/10.5	230/150	AUIR08152S	N-ISO																														
Dual low-side	20	6000/6000	11.5/10	55/40	AUIRB24427S	N-ISO																														

Automotive three-phase bridge driver IC

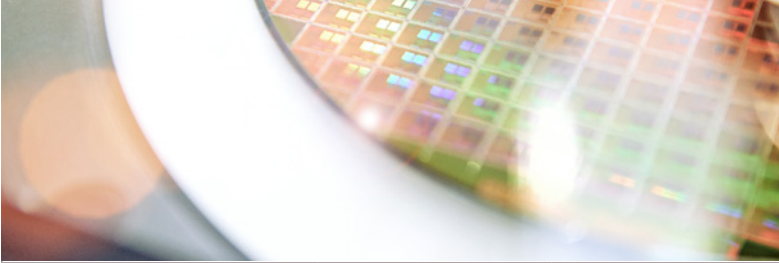
Product name	Operating range [V]	Drives stage	D.C.-range @20 kHz [%]	Numbers of integrated OpAmps for load current measurement	Adjustable dead time	SIL3 features	Diagnosis	Package
TLE7183F	5.50 ... 28.00	1.50/1.50 A	0 ... 100	1	●		OT, UV, OV, OC, OCD	VQFN-48
TLE7183QU	5.50 ... 28.00	1.50/1.50 A	0 ... 100	1	●		OT, UV, OV, OC, SCD	TQFP-48 EP
TLE7184F TLE7184F-3V ¹ TLE7186F	7.00 ... 32.00	12.50/9.00 Ω 12.50 Ω	0 ... 95	1	●		UV, OV, OC, SCD, OT, VDD supervision	VQFN-48
TLE7185E	5.50 ... 32.00	12.50/9.00 Ω	0 ... 95	0	●		UV, OV, SCD, OT	DSO-36 EP
TLE7189F	5.50 ... 28.00	1.50/1.50 A	0 ... 100	3		●	UV, OV, SCD, OT, VDD supervision	VQFN-48
TLE7189QK	5.50 ... 28.00	1.50/1.50 A	0 ... 100	3		●	UV, OV, SCD, OT, VDD supervision	LQFP-64
AUIRS20302	8.00 ... 17.00 Output offset 200 V	0.20/0.35 A	0 ... 95	1 (SC protection)			One error flag for OTW, UV, CS	DSO-28 (28 lead SOIC)

¹: System IC for fans and pumps with integrated LDO and PWM interface



Gate driver IC chips for integrators

Infinion offers gate driver IC chips and wafers to address the on-going trend of integrating the driver, power stages, controllers and other components into a smaller, more efficient single package.

					Technology	Features (See page 58)													CHIP ¹		
Driver configuration	Voltage class [V]	I _o /I _o typ [mA]	typ prop delay: off/on [ns]	Base PN		Operational amplifier	Current sense	Enable	Fault reporting	Integrated bootstrap diode	Over-current protection	Programmable dead time	Programmable shutdown	Self-oscillating (oscillator)	Separate pin for logic ground	Shoot-through protection	Shutdown	Under voltage lockout			
Single high-side driver	600	250/500	105/250	IR2117	J1													✓	✓		
			150/200	IR2127	J1	✓		✓		✓							✓	✓	✓		
		290/600	105/125	IRS211(7,8)	J1		✓		✓								✓	✓	✓		
			150/150	IRS2127	J1	✓		✓		✓								✓	✓	✓	
High-side and low-side	1200	2000/2500	225/280	IR2213	J1										✓			✓	✓		
	650	290/700	200/200	2ED2106S06*	SOI					✓								✓	✓		
				2ED21064S06*	SOI					✓								✓	✓		
		2500/2500	2ED2181S06*	SOI					✓										✓	✓	
			2ED21814S06*	SOI					✓											✓	✓
	600	210/360	150/160	IR2101	J1														✓	✓	
		290/600	130/135	IRS2112	J1										✓		✓	✓	✓	✓	
			150/160	IRS2101	J1												✓	✓	✓	✓	
			200/220	IRS2106	J1														✓	✓	
		1900/2300	220/180	IRS2181	J1												✓	✓	✓	✓	
		2500/2500	94/120	IR2113	J1										✓				✓	✓	
	500	2500/2500	120/130	IRS2113	J1										✓		✓	✓	✓	✓	
			170/170	IRS2186	J1														✓	✓	
	200	1000/1000	120/130	IRS2110	J1										✓				✓	✓	
3000/3000			60/60	IRS2011	J1														✓	✓	
Half bridge	650	2500/2500	200/200	2ED2182S06*	SOI					✓							✓	✓	✓		
				2ED21824S06*	SOI					✓		✓			✓	✓		✓	✓	✓	
				2ED2183S06*	SOI					✓						✓	✓		✓	✓	✓
				2ED21834S06*	SOI					✓		✓				✓	✓		✓	✓	✓
				2ED2184S06*	SOI					✓						✓	✓		✓	✓	✓
				2ED21844S06*	SOI					✓		✓				✓	✓		✓	✓	✓
				2ED2108S06*	SOI					✓						✓	✓		✓	✓	✓
				2ED21084S06*	SOI					✓		✓				✓	✓		✓	✓	✓
				2ED2109S06*	SOI					✓						✓	✓		✓	✓	✓
				2ED21094S06*	SOI					✓		✓				✓	✓		✓	✓	✓
	360 / 700	300 / 310	2ED21091S06*	SOI					✓		✓			✓	✓		✓	✓	✓		
		2ED2304S06F	NEW	SOI					✓							✓			✓	✓	
	600	180/260	na	IR21531	J1									✓	✓		✓	✓	✓	✓	
				IRS2153(1)D	J1									✓	✓		✓	✓	✓	✓	
		290/600	150/150	IRS2304	J1												✓	✓	✓	✓	
				IRS2103	J1												✓	✓	✓	✓	
			150/680	IRS2104	J1												✓	✓	✓	✓	
				150/750	IRS2111	J1											✓	✓	✓	✓	
200/220			IRS2108	J1												✓	✓	✓	✓		
			IRS2308	J1												✓	✓	✓	✓		
1900/2300		200/750	IRS2109	J1											✓	✓	✓	✓			
		220/180	IRS2183	J1											✓	✓	✓	✓			
270/680	700/750	IRS2184	J1											✓	✓	✓	✓				
	IR2233	J1	✓				✓		✓				✓		✓	✓	✓	✓			
Three-phase	1200	250/500	490/530	6ED003L06-F2	SOI				✓					✓			✓	✓			
			530/530	6EDL04106(N,P)	SOI				✓	✓	✓	✓		✓		✓	✓	✓			
			6EDL04N06P	SOI				✓	✓	✓	✓			✓		✓	✓	✓			
	600	200/350	400/425	IR2136	J1				✓	✓	✓	✓		✓				✓	✓		
				IR21363	J1				✓	✓		✓		✓				✓	✓		
				IR21368	J1				✓	✓		✓		✓					✓	✓	
		530/500	IR21364	J1				✓	✓		✓		✓					✓	✓		
			IRS2336D	J1				✓	✓	✓	✓		✓					✓	✓		
		530/530	IRS23364D	J1				✓	✓	✓	✓		✓					✓	✓		
			250/500	425/675	IR213(0,2)	J1	✓			✓		✓			✓				✓	✓	
700/750	IR2135	J1		✓			✓		✓				✓		✓		✓	✓			

*Coming soon



Features

Addressing various application requirements, Infineon delivers solutions with an assortment of features intended to optimize performance, minimize size and reduce cost. Below is a table of additional gate driver IC features available in the current portfolio.

Features	Abbreviation	Benefits
Active Miller clamp	M-CLAMP	Protection against inadvertent dynamic turn-on because of parasitic Miller effects
Active shutdown	SD-ACT	Ensures a safe IGBT off-state in case the output chip is not connected to the power supply or an undervoltage lockout is in effect
Brake chopper	BRAKE	Integrated brake IGBT driver with protection
Comparator	CMP	General purpose comparator included
Current sense	CS	Senses the motor phase current through an external shunt resistor, converts from analog to digital signal, and transfers the signal to the low side
Dedicated JFET control	JFETDRIVE	Optimized to drive SiC JFET
Desaturation protection	DESAT	Protects the IGBT at short circuit
Enable	EN	Dedicated pin terminates all outputs
Fault reporting	FAULT-RPT	Indicates an overcurrent or under-voltage shutdown has occurred
Fault reset	FAULT-RST	Dedicated pin resets the DESAT-FAULT-state of the chip
High-voltage start-up	HVSTART	Provides easy and fast circuit start-up while enabling low circuit standby losses
Integrated bootstrap diode	BSD	Integrated bootstrap reduces BOM
Operational amplifier	OPAMP	An independent op-amp for current measurement or overcurrent detection
Self-oscillating (oscillator)	OSC	Integrated front end oscillator
Over-current protection (ITRIP)	OCP	Ensures safe application operation in case of overcurrent
Over temperature shutdown	SD-OT	Internal over temperature protection circuit protects the IC against excessive power loss and overheating
Programmable deadtime	DT-PROG	Deadtime is programmable with external resistor for flexible design
Programmable fault clear time	FLTC	The length of the fault clear time period (t_{FLTC}) is programmed by external capacitor which connected between FLTC and VSS (C_{FLTC}).
Programmable shutdown	SD-PROG	A shutdown feature has been designed into a pin
Separate pin for logic ground	SEP-GND	Dedicated pin or logic ground for improved noise immunity
Separate sink/source outputs	SEP-OUT	Simplifies gate resistor selection, reduces BOM, and improves dV/dt control
Shoot-through protection	STP	Additional shoot-through protection logic such as interlock
Short-circuit clamping	SC-CLAMP	During short circuit the IGBT's gate voltage tends to rise because of the feedback via the Miller capacitance. An additional protection circuit connected to OUT+ limits this voltage to a value slightly higher than the supply voltage.
Shutdown	SD	Dedicated pin disables the IC outputs
Soft overcurrent shutdown	SD-SOFT	Dedicated pin turns off the desaturated transistor, preventing overvoltages
Truly Differential Inputs	TDI	$\pm 70 V_{DC}$ and $\pm 150 V_{AC}$ ground-shift robustness of low-side gate driver ICs
Two-level turn-off	TLTO	Lowers VCE overshoots at turn-off during short circuits or overcurrent events
UL 1577	UL	Double galvanic isolation certification
Undervoltage lockout	UVLO	Ensures safe application operation by avoiding unexpected driver behavior at low voltages
VDE 0884-10 or VDE 0884-11	VDE	Reinforced galvanic isolation certifications for non-optical couplers

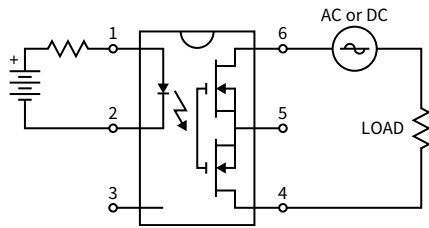


Infineon gate driver package options

<p>DSO-8 (SOIC-8N)</p> 	<p>DSO-8 300-mil (SOIC-8WB)</p> 	<p>DSO-14 (SOIC-14N)</p> 	<p>DSO-16 (SOIC-16N)</p> 	<p>DSO-16 300-mil (SOIC-16WB)</p> 	<p>DSO-18</p> 
<p>DSO-19</p> 	<p>DSO-20 (SOIC-20WB)</p> 	<p>DSO-24 (DSO-28 w/o 4 pins)</p> 	<p>DSO-28 (SOIC-28WB)</p> 	<p>DSO-36</p> 	<p>DIP-8 (PDIP-8)</p> 
<p>DIP-14 (PDIP-14)</p> 	<p>DIP-28 (PDIP-28)</p> 	<p>LLC-32 (PLCC-44)</p> 	<p>LQFP-64</p> 	<p>MQFP-64</p> 	<p>SOT23-5</p> 
<p>SOT23-6</p> 	<p>SSOP-24</p> 	<p>TFLGA-13</p> 	<p>TQFN-48</p> 	<p>TSSOP-8</p> 	<p>TSSOP-28</p> 
<p>VQFN-14 (MLPQ 4X4 14L)</p> 	<p>VQFN-28 (MLPQ 5X5 28L)</p> 	<p>VQFN-34 (MLPQ 7X7 48L)</p> 	<p>VQFN-48</p> 	<p>WSON-6</p> 	<p>WSON-8</p> 
<p>Driver board</p> 	<p>CHIP</p> 				

Complementary: Opto-isolated solid state relays

Typical connection

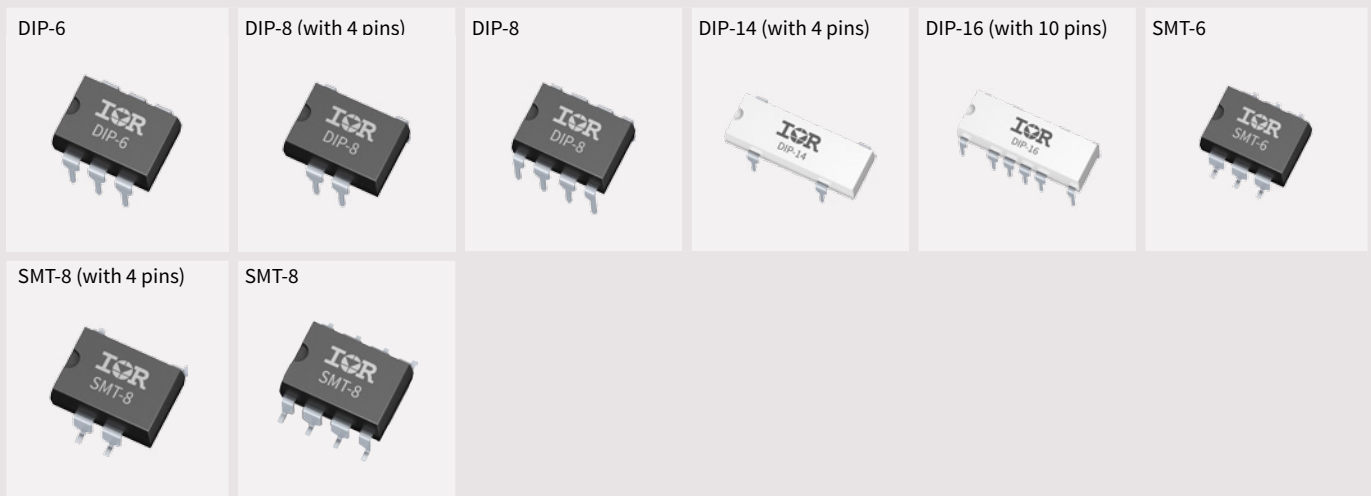


Microelectronic relays (MER) are power MOSFET or IGBT output photovoltaic relays where the output switch is controlled by radiation from a GaAlAs light emitting diode (LED) optically isolated from the output. MERs are a good choice to replace mechanical relays.

Load voltage [V]	Load current [mA]	$R_{DS(on)}$ [Ω]	Isolation voltage [V_{RMS}]	Base PN	Package (see page 61)									
					DIP-14 (with 4 pins)	DIP-6	SMT-6	DIP-8	SMT-8	DIP-4	SMT-8 (with 4 pins)	DIP-16 (with 10 pins)		
400	1000 AC-DC	---	3750	PVX6012	✓									
	140 AC-DC	27/7	4000	PVU414		✓	✓							
	120 AC-DC	35/9	4000	PVT412L	✓	✓								
	240 AC-DC	6/2	4000	PVT412A		✓	✓							
	140 AC-DC	27/7	4000	PVT412		✓	✓							
	120 AC-DC	35	4000	PVT422				✓	✓					
300	150 AC-DC	24	4000	PVA3354N						✓	✓			
		24	4000	PVA3324N						✓	✓			
	50 AC-DC	160	4000	PVA3055N						✓	✓			
		160	4000	PVA3054N						✓	✓			
250	170 AC-DC	15/4.25	4000	PVT312L		✓	✓							
	190 AC-DC	10/3	4000	PVT312		✓	✓							
	170 AC-DC	8	4000	PVT322A				✓	✓					
	170 AC-DC	10	4000	PVT322				✓	✓					
200	150 AC-DC	24	4000	PVA2352N						✓	✓			
150	550 AC-DC	0.7/0.25	4000	PVT212		✓	✓							
100	360 AC	5	1500	PVR130(0,1)									✓	
		5	4000	PVD1354N						✓	✓			
	550 DC	1.5	4000	PVD1352N						✓	✓			
		1.5	4000	PVA1354N						✓	✓			
		1.5	4000	PVA1352N						✓	✓			
60	1500 DC	0.25	4000	PVDZ172N						✓	✓			
	1000 AC	0.5	4000	PVAZ172N						✓	✓			
	1000 AC/2000 DC	0.5/0.15	4000	PVG613 ¹		✓	✓							
	2000 AC/4000 DC	0.1/0.035	4000	PVG612A		✓	✓							
	1000 AC/2000 DC	0.5/0.15	4000	PVG612		✓	✓							
	2500 AC/4500 DC	0.1/0.04	4000	PVN013 ¹		✓	✓							
20	4000 AC/6000 DC	0.05/0.015	4000	PVN012A		✓	✓							
	2500 AC/4500 DC	0.1/0.04	4000	PVN012		✓	✓							

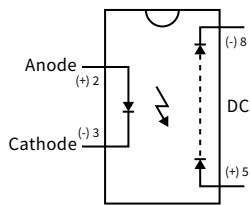
¹10 nA leakage current

Infineon solid-state relay package options



Complementary: Opto-isolated gate drivers/voltage sources

Typical connection



Photovoltaic isolators generate an electrically isolated DC voltage upon receipt of a DC input signal and are capable of directly driving MOSFET or IGBT gates. The output is controlled by radiation from a GaAlAs light emitting diode (LED) optically isolated from the output

DIP-8	SMT-8	DIP-8 (with 4 pins)	SMT-8 (with 4 pins)
-------	-------	---------------------	---------------------

Output voltage DC [V]	Short current [μ A]	Nominal control current (DC) [mA]	Isolation voltage [V_{RMS}]	Base PN	Package (see page 61)			
5/10	10/5	5	3570	PVI5033R	✓	✓		
3/6	2/1	5	3570	PVI5013R	✓	✓		
5/10	10/5	10	2500	PVI1050N	✓	✓		
5	8	10	4000	PVI5080N			✓	✓
5	5	10	4000	PVI5050N			✓	✓

New product highlights

1EDC Compact - 1200 V single-channel, galvanically isolated gate driver family in 300 mil package with UL certification **NEW**

Infineon's new EiceDRIVER™ 1EDC Compact galvanically isolated family is recognized under UL 1577 with an insulation test voltage of $V_{ISO} = 2500$ V(rms) for 1 min. The galvanically isolated 1EDI Compact 150 mil and 300 mil families without UL certification are also available.



1EDC Compact	Typ. output current [A]	Output configuration	Prop. delay [ns]
1EDC60I12AH	10 / -9.4	Separate sink/ source outputs	300
1EDC40I12AH	7.5 / -6.8		300
1EDC20I12AH	4 / -3.5		300
1EDC05I12AH	1.3 / -0.9		300
1EDC60H12AH	10 / -9.4		125
1EDC20H12AH	4 / -3.5		125
1EDC30I12MH	5.9 / -6.2	Active Miller clamp	300
1EDC20I12MH	4.4 / -4.1		300
1EDC10I12MH	2.2 / -2.3		300

Product features

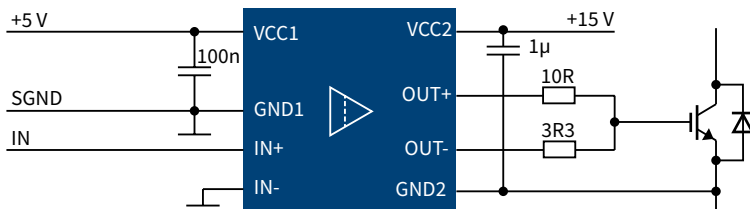
- > 1200 V input-to-output isolation voltage
- > Functional isolation
- > DSO-8 300 mil wide body package with 8 mm creepage distance
- > For 600 V/1200 V IGBT, MOSFET and SiC MOSFET devices and modules
- > Up to 10 A typical peak rail-to-rail output
- > More than 100 kV/μs CMTI
- > Suitable for operation at high ambient temperature
- > Separate source and sink outputs or active Miller clamp
- > Optimized pin-out for low inductance power supply
- > No need to adapt signal voltage levels between microcontroller and driver
- > Short-circuit clamping
- > Active shutdown

Potential applications

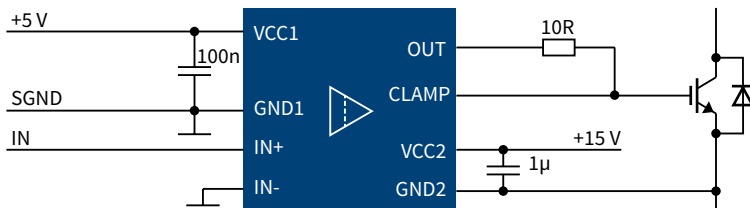
- > Photovoltaic string inverters, EV charging
- > Industrial drives, AC and brushless DC motor drives, high-voltage DC-DC converter and DC-AC inverter
- > UPS systems
- > Active shutdown

Typical application diagram

Separate sink/source outputs



Active Miller clamp



Evaluation board available:
EVAL-1EDC20H12AH-SiC

1EDS-SRC - 1200 V single-channel, reinforced-isolated driver family with slew-rate control **NEW**

The new EiceDRIVER™ slew-rate control (SRC) family serves the latest generation of highly efficient low-EMI electric drive systems with improved efficiency. This is the first high-voltage isolated gate driver on the market with dynamic slew-rate control (SRC) which allows on-the-fly dV/dt control of electric drives through precise gate current control, providing the best trade-off between minimum power dissipation and minimum EMI depending on operating conditions.



Product features

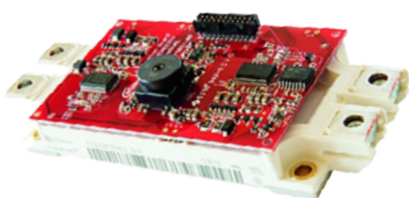
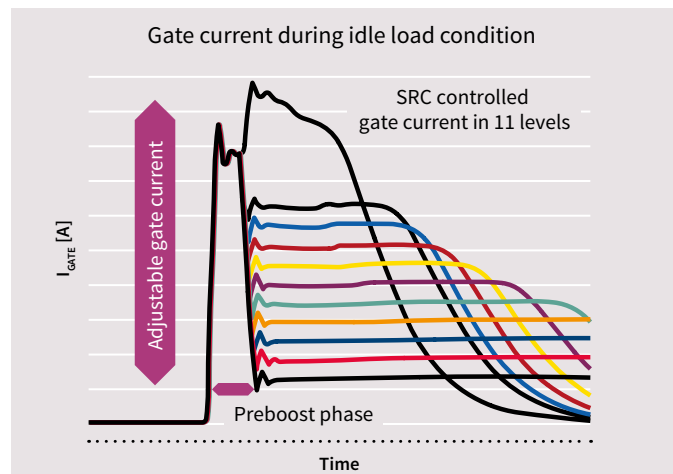
- › Real-time adjustable gate current control
- › DESAT short circuit protection
- › Overcurrent protection
- › Soft turn-off shut-down
- › Two-level turn-off
- › Drive power modules up to 900 A
- › Unique: NPC1 short-circuit protection for three-level inverters
- › Low EMI during low-load conditions and high efficiency during high-load conditions
- › Reduction or elimination of dV/dt filter

Potential applications

- › AC and brushless DC motor drives
- › High-voltage DC-DC converters
- › UPS systems
- › Welding
- › Servo drives

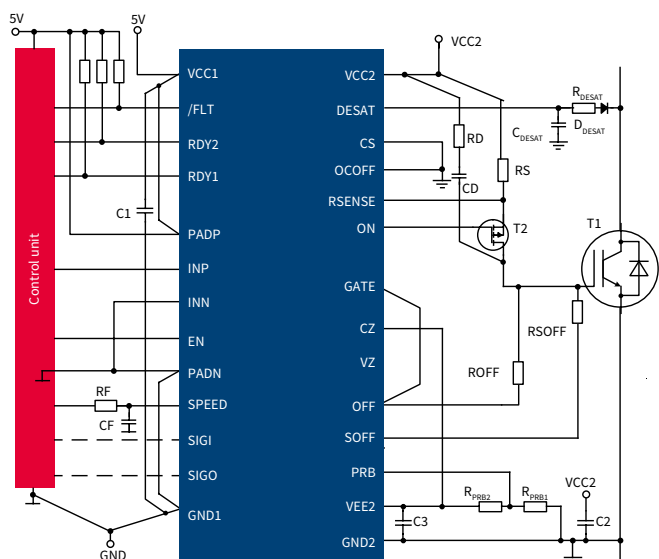
Part number	Isolation rating
1EDS20I12SV	Reinforced isolation according VDE 0884-10 ($V_{IORM} = 1420\text{ V}$) and UL 1577 certified with $V_{ISO} = 5\text{ kV(rms)}$ for 1 min
1EDU20I12SV	UL 1577 certified with $V_{ISO} = 5\text{ kV(rms)}$ for 1 min
1EDI20I12SV	Functional isolation

Feature - real time gate current control:



Evaluation board available:
EVAL-1EDS20I12SV

Simplified application diagram

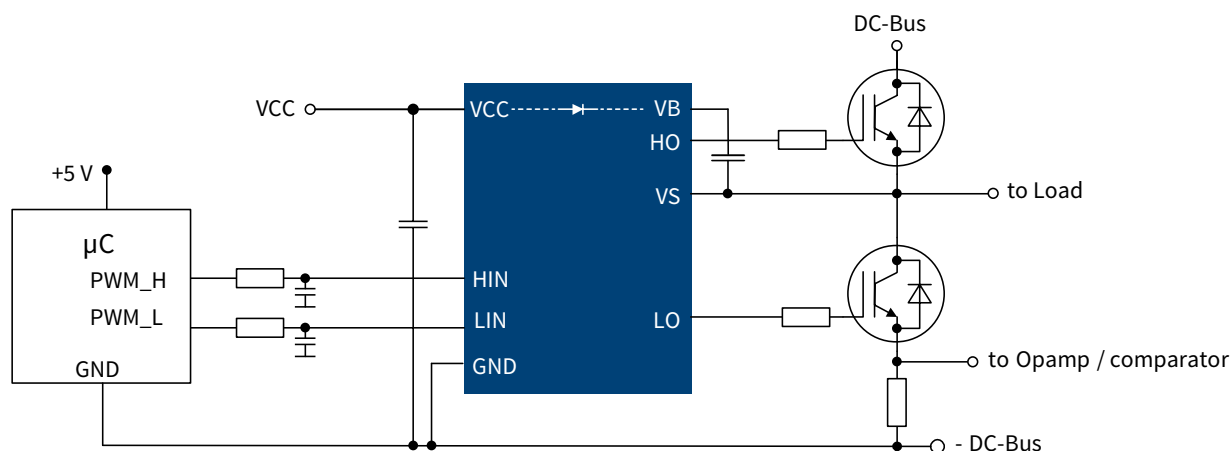


2ED2304S06F - 650 V Half-bridge gate driver with integrated bootstrap diode (BSD) **NEW**

The 2ED2304S06F is a 650-V Half-bridge gate driver. Its Infineon thin-film-SOI technology provides excellent ruggedness and noise immunity. The output drivers features a high pulse current buffer stage designed for minimum driver cross-conduction. The floating channel can be used to drive an N-channel power MOSFET or IGBT in the high side configuration which operates up to 650 V. Additionally, the offline clamping function provides an inherent protection of the parasitic turn-on by floating gate conditions when IC is not supplied.



Typical application diagram



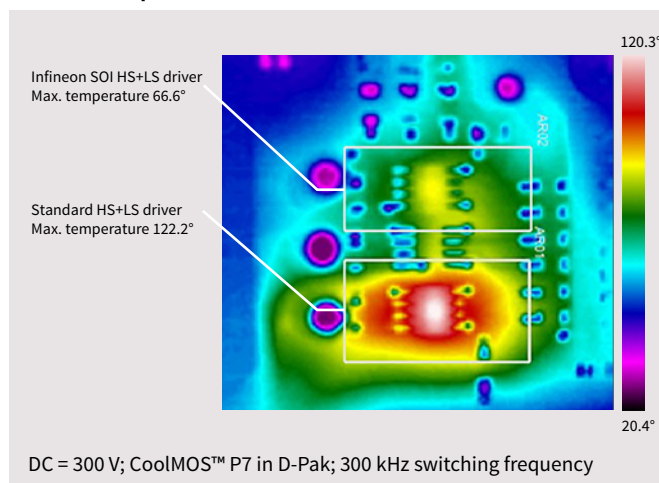
Product features

- > Infineon thin-film-SOI-technology
- > Fully operational to +650 V
- > Floating channel designed for bootstrap operation
- > Output source/sink current capability +0.36 A/-0.7 A
- > Integrated ultra-fast, low RDS(ON) Bootstrap Diode
- > Tolerant to negative transient voltage up to 100 V (pulse width is up 300 ns) given by SOI-technology
- > 10 ns typ., 60 ns max. propagation delay matching
- > dV/dt immune ± 50 V
- > Gate drive supply range from 10 V to 20 V
- > Undervoltage lockout for both channels
- > 3.3 V, 5 V and 15 V input logic compatible
- > RoHS compliant

Potential applications

- > Motor drives, general purpose inverters
- > Refrigeration compressors
- > Half-bridge and full-bridge converters in offline AC-DC power supplies for telecom and lighting

Power dissipation of Infineon SOI



6ED2230S12T - 1200 V Three-phase gate driver with integrated bootstrap diodes (BSD) and overcurrent protection (OCP)*

The 6ED2230S12T is a 1200-V Three-phase SOI gate driver with integrated bootstrap diode and overcurrent protection, with typical 0.35 A source and 0.65 A sink currents in a DSO-24 package (DSO-28 with 4 pins removed) for driving IGBTs. Proprietary HVIC and latch-immune CMOS technologies enable a robust monolithic design. A current-trip function which terminates all six outputs can also be derived from this resistor. An open-drain FAULT signal is provided to indicate that an overcurrent or undervoltage shutdown has occurred. Fault conditions are cleared automatically after a delay programmed externally via an RC network. The output drivers feature a high-pulse current buffer stage designed for minimum driver cross conduction. Propagation delays are matched to simplify the driver's use in high-frequency applications.



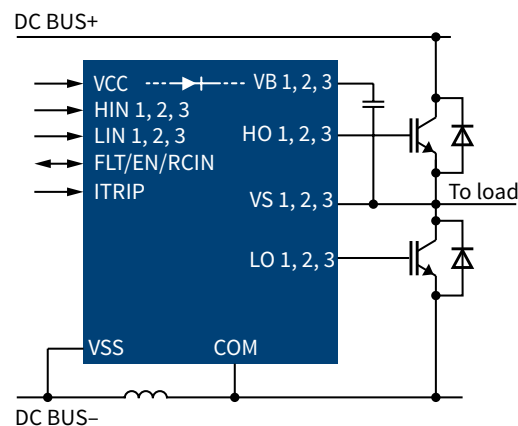
Product features

- › Infineon thin-film SOI technology
- › Fully operational to +1200 V
- › Floating channel designed for bootstrap operation
- › Output source/sink current capability +0.35 A/-0.65 A
- › Integrated ultra-fast, low RDS(ON) bootstrap diode
- › Tolerant to negative transient voltage up to -100 V (pulse width is up 700 ns) given by SOI-technology
- › Undervoltage lockout for both channels
- › 3.3 V, 5 V, and 15 V input logic compatible
- › Overcurrent protection (ITRIP $\pm 5\%$ reference)
- › Fault reporting, automatic fault clear and enable function on the same pin (RFE)
- › Matched propagation delay for all channels
- › Integrated 460 ns deadtime protection
- › Shoot-through (cross-conduction) protection
- › 2.5 kV HBM ESD protection



Evaluation board available:
EVAL-M1-6ED2230-B1

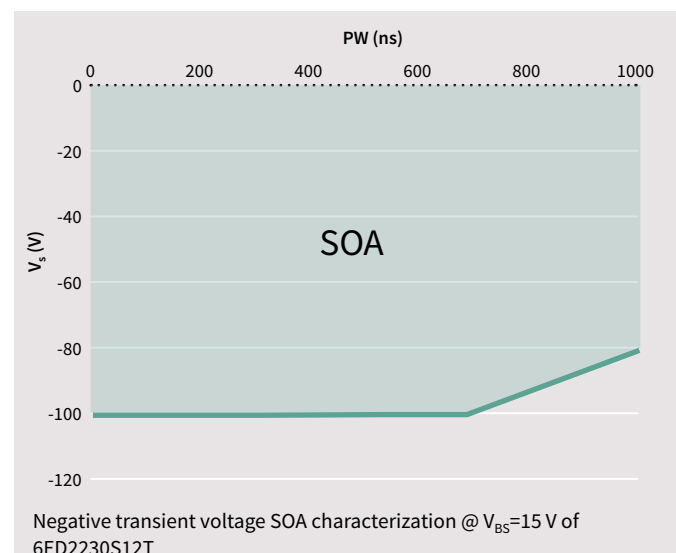
Typical application diagram



Typical applications

- › Industrial drives, motor control, general purpose inverters
- › Commercial air-conditioning (CAC)

Negative transient voltage robustness of Infineon SOI



* Coming soon

2ED2106/08/09/091S06 Gate driver family*

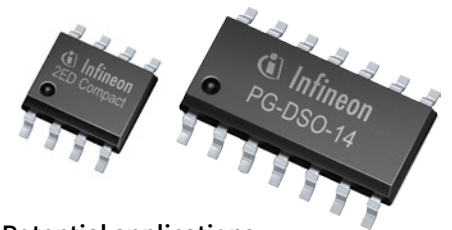
2ED2181/82/83/84S06 High-current gate driver family*

650 V Half-bridge & high and low-side gate driver with integrated BSD

The 2ED2106/08/09/091S06 gate driver family and 2ED2181/83/84S06 high-current gate driver family are high-voltage power MOSFET and IGBT driver families with Half-bridge & high and low-side configuration. Based on SOI-technology, this device has excellent robustness and noise immunity with the capability to maintain operational logic at negative voltages of up to $-11 V_{DC}$ on the VS pin ($V_{CC}=15 V$) on transient voltages. With no parasitic structures, the device is immune to parasitic latch-up at all temperature and voltage conditions. The logic input is compatible with standard CMOS or LSTTL output, down to 3.3 V logic. The output drivers feature a high-pulse current buffer stage designed for minimum driver cross-conduction. The floating channel can be used to drive an N-channel power MOSFET or IGBT in the high-side configuration which operates up to 650 V.

Product features

- > Infineon 650 V thin-film SOI-technology
- > Ultra-fast bootstrap diode integration
- > Tolerant to negative transient voltage at least -80 V with 500 ns pulse width
- > dV/dt immune to $\pm 50 V$
- > Logic input withstands swing to -5 V
- > Logic and power ground $\pm 5 V$ offset
- > Gate drive supply range from 10 to 20 V
- > Undervoltage lockout for both channels
- > 3.3 V, 5 V and 15 V input logic compatible
- > Schmitt trigger inputs with hysteresis and pull-up or pull-down



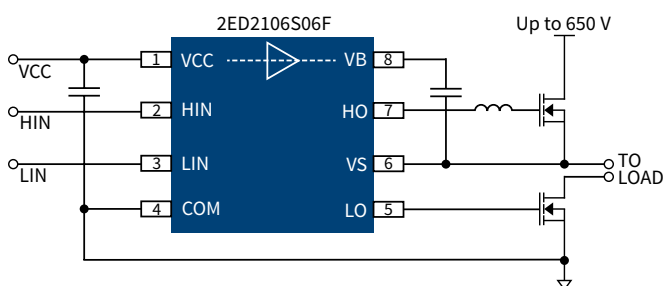
Potential applications

- > Motor drives, general purpose inverter drives
- > Half-bridge and full-bridge converters in offline AC-DC power supplies for telecom and lighting
- > Solar inverter and UPS drives

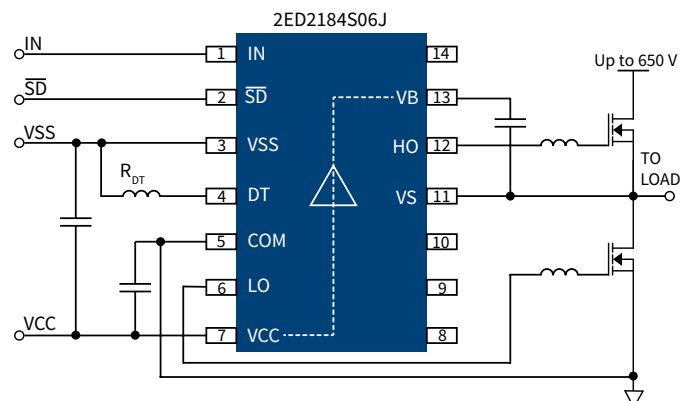
Part	Output source/sink current	Input logic	Configuration	Deadtime	Package
2ED2106S06F*	+0.29 A/-0.7 A	HIN, LIN	Hide side + Low side	none	DSO-8
2ED21064S06J*					DSO-14
2ED2108S06F*		Half-bridge	HIN, /LIN	540 ns	DSO-8
2ED21084S06J*				Programmable	DSO-14
2ED2109S06F*			IN, /SD	540 ns	DSO-8
2ED21094S06J*				Programmable	DSO-14
2ED21091S06F*					DSO-8
2ED2181S06F*	+2.5 A/-2.5 A	HIN, LIN	Hide side + Low side	None	DSO-8
2ED21814S06J*					DSO-14
2ED2182S06F*		Half-bridge	HIN, /LIN	400 ns	DSO-8
2ED21824S06J*				Programmable	DSO-14
2ED2183S06F*			IN, /SD	400 ns	DSO-8
2ED21834S06J*				Programmable	DSO-14
2ED2184S06F*				400 ns	DSO-8
2ED21844S06J*		Programmable	DSO-14		

* Coming soon

Simplified application diagrams



* Coming soon



1ED44176N01F - 25 V Low-side gate driver with integrated overcurrent protection, fault reporting, and enable functionality **NEW**

The 1ED44176N01F is a low-voltage, non-inverting gate driver designed for ground-referenced applications such as digitally controlled power-factor correction (PFC) circuits requiring overcurrent protection (OCP). OCP is typically implemented using a current measurement circuit with a comparator such as LM293 and a network of resistors and capacitors. 1ED44176N01F provides up to 20% cost and 50% space savings by integrating the OCP comparator, which features an accurate current-sensing threshold tolerance of $\pm 5\%$. 1ED44176N01F also integrates fault-output reporting to the controller and driver enable functionality on the same pin. The driver IC also has separate logic and power ground pins for operational robustness.



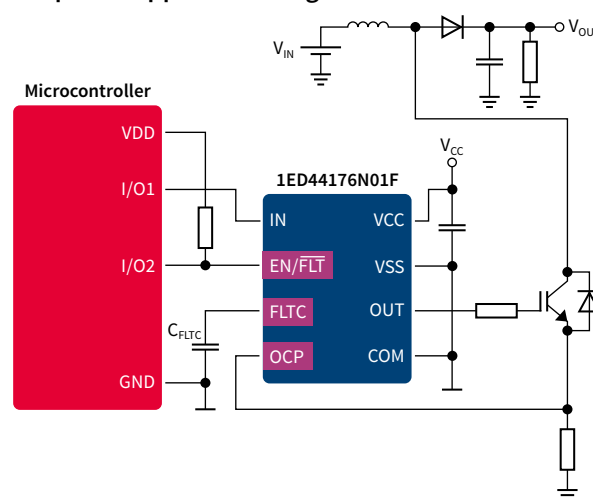
Product features

- > Overcurrent detection with positive voltage input
- > +0.8 A/-1.75 A output source/sink current capability
- > +0.5 V overcurrent threshold with $\pm 5\%$ tolerance
- > Single pin for fault output and enable function
- > Programmable fault clear time
- > CMOS Schmitt-triggered inputs
- > 3.3 V, 5 V and 15 V input logic-compatible
- > Output in phase with input
- > Separate logic and power ground
- > 2 kV ESD HBM

Potential applications

- > General purpose low-side gate driver for single-ended topologies (e.g. digitally controlled PFC or digital power supplies)
- > Residential and commercial air conditioners
- > Home appliances
- > Industrial applications

Simplified application diagram



Application note, PSPICE or SiMetrix models, and evaluation board, **EVAL-1ED44176N01F** are available at www.infineon.com/1ED44176

Key features	Key specifications	System benefits
> Integrated overcurrent protection comparator with accurate OCP threshold	> 0.5 V overcurrent threshold with accurate $\pm 5\%$ percent tolerance	> Potential space savings up to 50 percent and cost savings up to 20 percent compared to the discrete solution
> Single pin for fault output and enable function	> Internal Schmitt trigger comparator for the enable function	> Flexible fault clear time set-up for different microcontroller processing speeds
> Programmable fault clear time	> External capacitor (C_{FLT}) sets the length of the fault clear time	> Minimizes power consumption
> Low quiescent supply current	> Max I_{QCC} : 750 μ A	> Avoids noise coupling from output to input which improves noise immunity
> Separate logic ground and gate driver return	> VSS and COM pins	> Eliminates switching loss at low V_{CC} supply voltage
> Undervoltage lockout (UVLO) protection	> Specific UVLO level for IGBTs (typ. on/off = 11.9 V / 11.4 V)	

1EDN7550 and 1EDN8550 - 1-channel low-side gate driver family with truly differential inputs prevents false triggering of power MOSFETs **NEW**

The input signal levels of conventional low-side gate driver ICs are referenced to the ground potential of the gate driver IC. If in the application the ground potential of the gate driver IC shifts excessively false triggering of the gate driver IC can occur.

The 1EDN7550/1EDN8550 gate driver ICs have truly differential inputs. Their control signal inputs are largely independent from the ground potential. Only the voltage difference between its input contacts is relevant. This prevents false triggering of power MOSFETs.

Product features

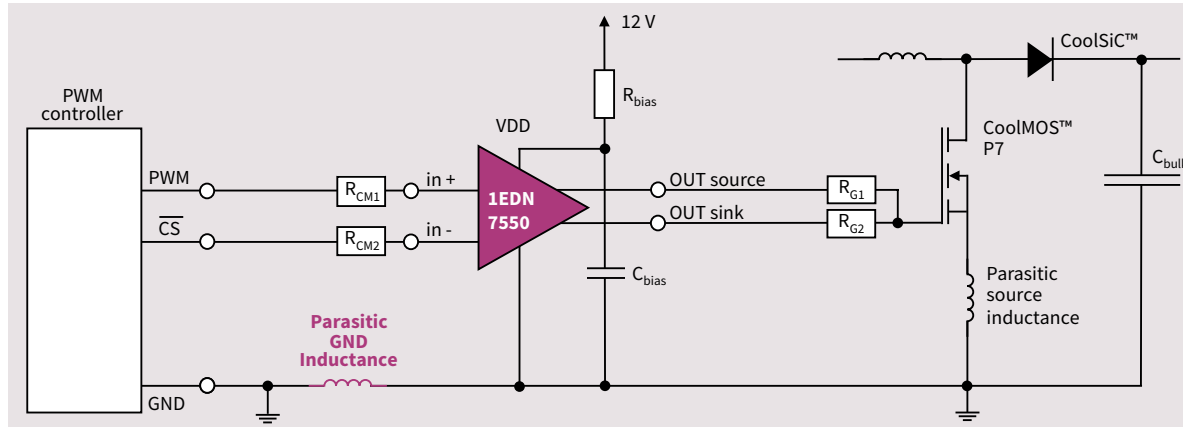
- > Truly differential inputs
- > 4 A source current
- > 8 A sink current
- > Separate source/sink outputs
- > Low-ohmic output stage
- > 29 ns input minimum pulse width
- > 7 ns propagation delay accuracy
- > 5 A reverse current robustness of the outputs
- > 4 V and 8 V UVLO versions
- > SOT-23 package, 6 pins

Potential applications

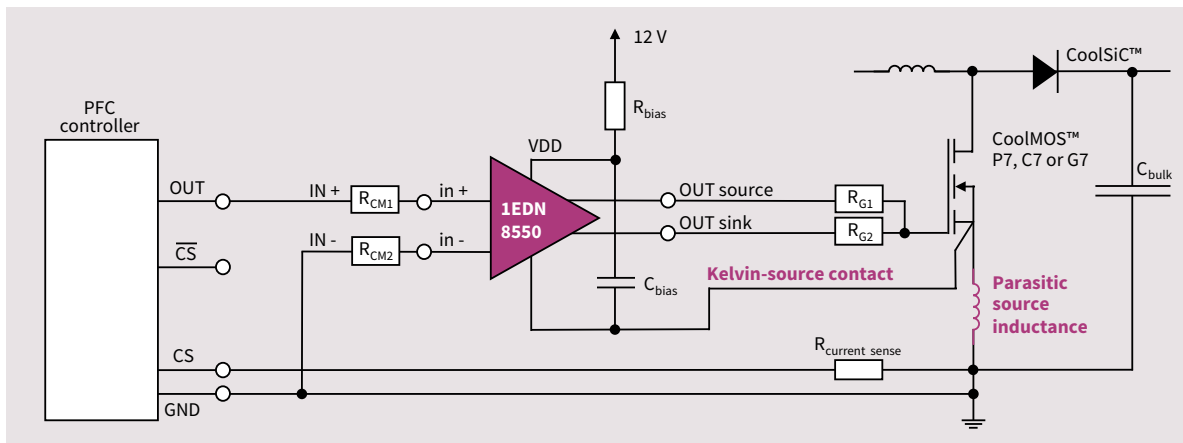
- > Servers
- > Telecom
- > DC-DC converters
- > Telecom bricks
- > Power tools
- > Industrial SMPS
- > Wireless charging
- > Solar micro inverters



1EDN7550 driving CoolMOS™ SJ MOSFET on 1-layer PCB



1EDN8550 driving Kelvin source CoolMOS™ superjunction (SJ) MOSFET in boost PFC



GaN EiceDRIVER™ family **NEW** Single-channel isolated gate driver ICs for high voltage GaN switches

CoolGaN™ e-mode HEMTs are best driven by Infineon’s EiceDRIVER™ ICs, the 1EDF5673K, 1EDF5673F and 1EDS5663H. They ensure robust and highly efficient high voltage GaN switch operation whilst concurrently minimizing R&D efforts and shortening time-to-market.

Product features

- > Low ohmic outputs:
 - Source: 0.85 Ω
 - Sink: 0.35 Ω
- > Single-channel galvanic isolation:
 - Functional: $V_{IO} = 1500 V_{DC}$
 - $V_{IOWM} = 510 V_{rms}$ (16-pin DSO)
 - $V_{IOWM} = 460 V_{rms}$ (LGA 5x5)
 - Reinforced: $V_{IOTM} = 8000 V_{pk}$
(VDE 0884-10 pending)
 - $V_{IOWM} = 1420 V_{DC}$
 - CMTI min: 200 V/ns
- > Timing:
 - Minimum output pulse width: 18 ns
 - Propagation delay accuracy: 13 ns

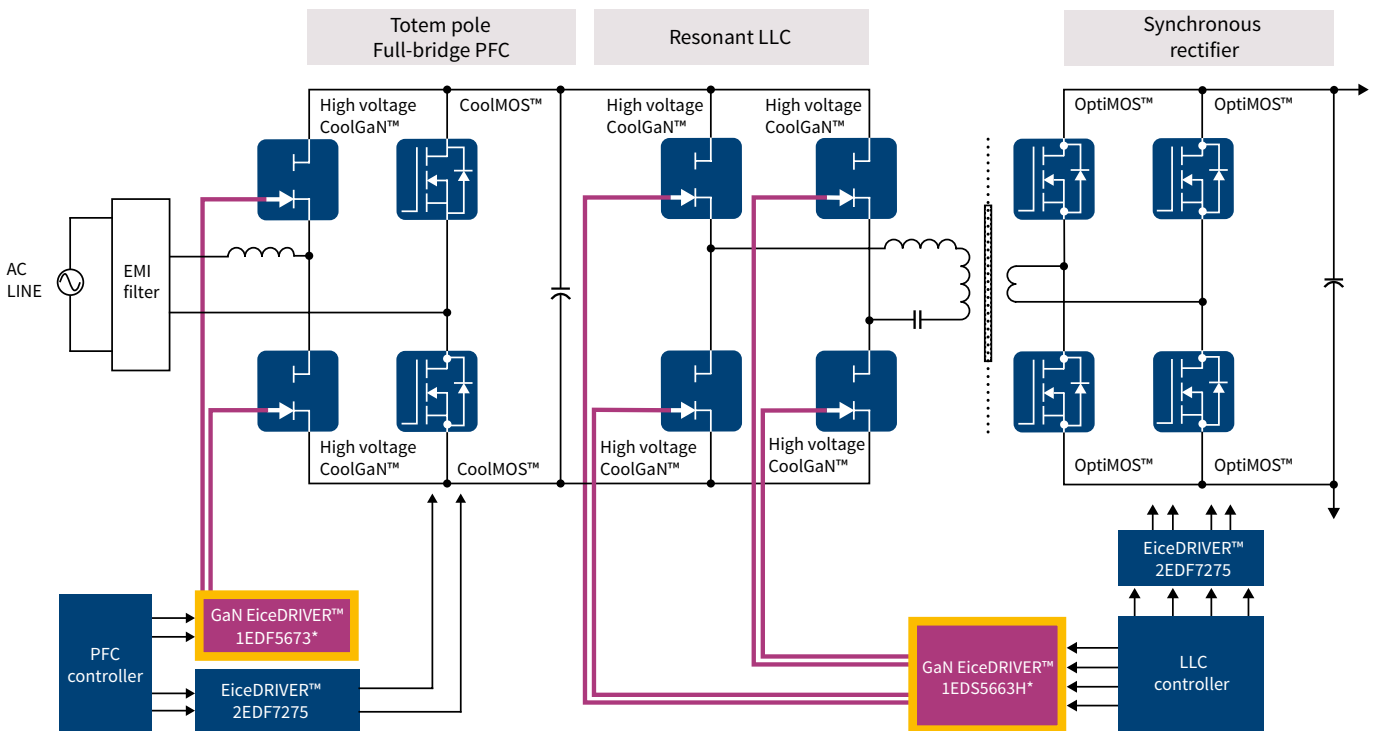
Potential applications

- > Totem-pole PFCs
- > Vienna rectifiers
- > Multi-level topologies
- > Resonant LLC



Evaluation board available:
EVAL_1EDF_G1_HB_GAN

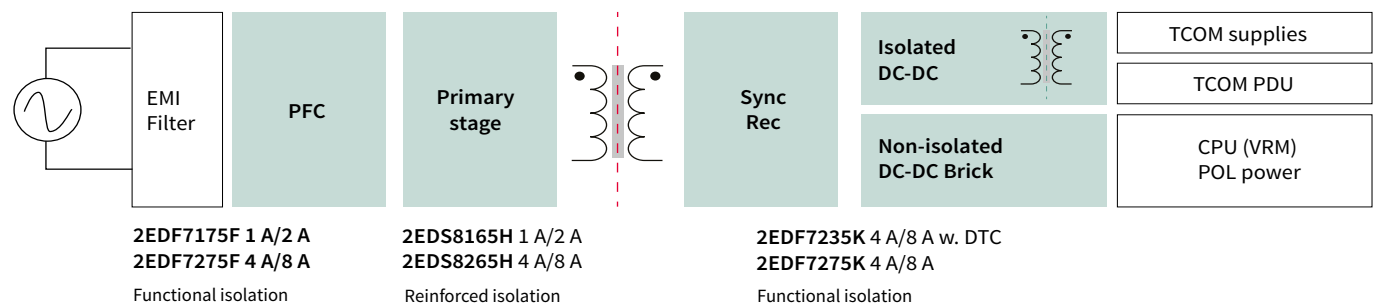
High power SMPS application example



*GaN EiceDRIVER™ ICs are single-channel products

2EDi Dual-channel functional and reinforced-isolated gate driver family for MOSFETs with accurate and stable timing **NEW**

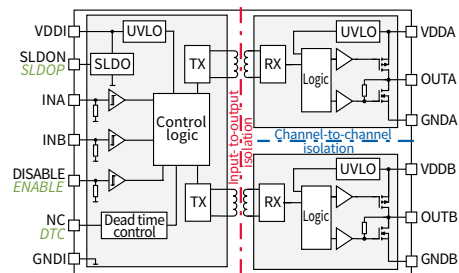
The EiceDRIVER™ 2EDi product family is designed for use in high-performance power-conversion applications. Very strong 4 A/8 A source/sink dual-channel gate drivers increase efficiency in CoolMOS™ and OptiMOS™ MOSFET Half-bridges. The low propagation delay of 37 ns, combined with highly accurate and stable timing over temperature and production, enables further efficiency gains within and across galvanically isolated power stages or in multi-phase/multi-level topologies. The availability of functional and reinforced isolated drivers in different packages makes these a perfect fit for both primary-side and (safe) secondary-side control. Gate driver outputs come with a high 5 A reverse-current capability and 150 V/ns CMTI robustness for high dV/dt power loops. For slower switching or driving smaller MOSFETs, 1 A/2 A peak current product variants are available as well.



Product features

- Easy-to-use small form factor driver + isolation in one package
- Stable and high-resolution PWM timing accuracy within and across power stages for optimizing full and light-load efficiency
- Galvanic isolation with 150 V/ns CMTI robustness for noisy high-voltage MOSFET power-switching environment
- Competitive overall system-component cost with improved protection
- Faster time to market with planned UL 1577, VDE 0884-1x, IEC 60950/62386 reinforced safety certifications

Device overview



Potential applications

- Telecom DC-DC
- Servers
- Industrial SMPS
- UPS
- Batteries
- EV-Charging
- DC-DC
- Smart grid

Product portfolio

Part number	Orderable part number (OPN)	Package	PWM Input type	Driver source/sink current	Gate driver UVLO	Input to output isolation				Dead-time control	
						Isolation class	Rating	Surge testing	Safety certification*		
2EDF7175F	2EDF7175FXUMA1	NB-DSO16 10 x 6 mm	Dual-mode (IN_A, IN_B)	1 A/2 A	4 V	Functional	$V_{IO} = 1.5 \text{ kV}_{DC}$	n.a.	n.a.	no	
2EDF7275F	2EDF7275FXUMA1			4 A/8 A							
2EDS8165H	2EDS8165HXUMA1	WB-DSO16 10.3 x 10.3 mm		1 A/2 A	8 V	Reinforced*	$V_{IOTM} = 8 \text{ kV}_{peak}$ (VDE0884-10) $V_{ISO} = 5.7 \text{ kV}_{rms}$ (UL1577)	$V_{IOSM} = 10 \text{ kV}_{peak}$ (IEC60065)	VDE0884-10 UL1577 IEC60950 IEC62368 CQC		
2EDS8265H	2EDS8265HXUMA1			4 A/8 A							
2EDF7235K	2EDF7235KXUMA1	LGA13 5.0 x 5.0 mm		4 A/8 A	4 V	Functional	$V_{IO} = 1.5 \text{ kV}_{DC}$	n.a.	n.a.		yes
2EDF7275K	2EDF7275KXUMA1			4 A/8 A							no

*Certification coming soon

1EDI2004AS* - EiceDRIVER™ SIL 1200 V galvanically isolated automotive gate driver IC

1EDI2004AS is a high-voltage IGBT gate driver designed for automotive motor drives above 5 kW. It is based on Infineon's coreless transformer (CT) technology, providing galvanic isolation between low-voltage and high-voltage domains. The device has been designed to support 400 V, 600 V and 1200 V IGBTs. 1EDI2004AS can be connected on the low-voltage side (primary side) to 5 V logic. A standard SPI interface allows the logic to configure and to control the advanced functions implemented in the driver. On the high-voltage side (secondary side), it is dimensioned to drive an external booster stage, or directly, small IGBTs. Short propagation delays and controlled internal tolerances lead to minimal distortion of the PWM signal. The 1EDI2004AS can be used optimally with 1EBN100XAE 'EiceDRIVER™ Boost' booster stage family.



Product features

- > Low-propagation delay and minimal PWM distortion
- > Support of 5 V logic levels (primary side)
- > 16-bit standard SPI interface (up to 2 MBaud) with daisy-chain support (primary side)
- > Fully programmable active clamping inhibit signal (secondary side)
- > Operation with unipolar secondary supply possible
- > Automotive-qualified (as per AEC Q100)

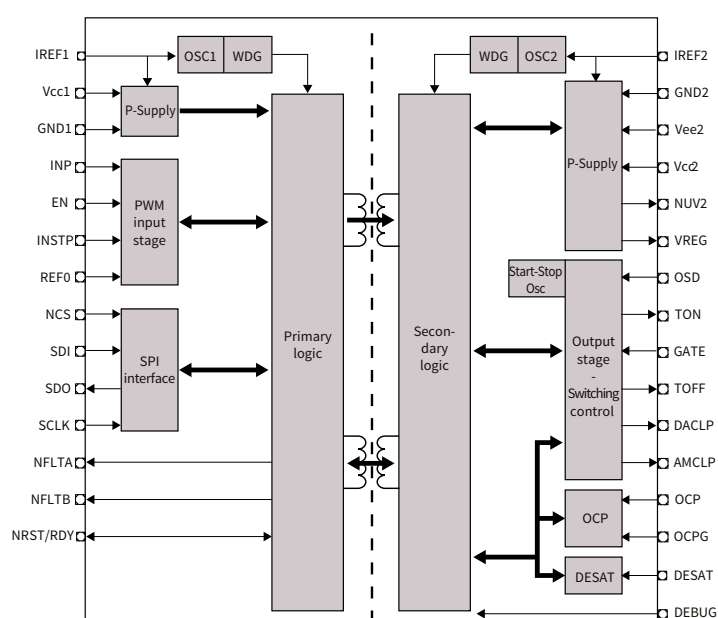
Safety features

- > Desaturation monitoring
- > Overcurrent protection
- > Fully programmable two-level turn-off
- > Support for active short-circuit (ASC) strategies
- > Compliant to ISO 26262 standard - ASIL A (suitable for systems up to ASIL D requirements)

Potential applications

- > Main inverters for automotive (hybrid) electric vehicles
- > High-voltage DC-DC converter
- > Industrial drive

Simplified application diagram



AUIR2x14SS* – 1200 V Half-bridge automotive gate driver IC

The AUIR2x14SS gate driver family is suited to drive a single half bridge in automotive power-switching applications. These drivers provide high gate-driving capability (2 A source, 3 A sink) and require low quiescent current, which allows for the use of bootstrap power supply techniques in medium power systems. These drivers feature full short-circuit protection by means of power-transistor desaturation detection, and manage all Half-bridge faults by smoothly turning off the desaturated transistor via the dedicated soft shutdown pin, therefore preventing over-voltages and reducing electromagnetic emissions.



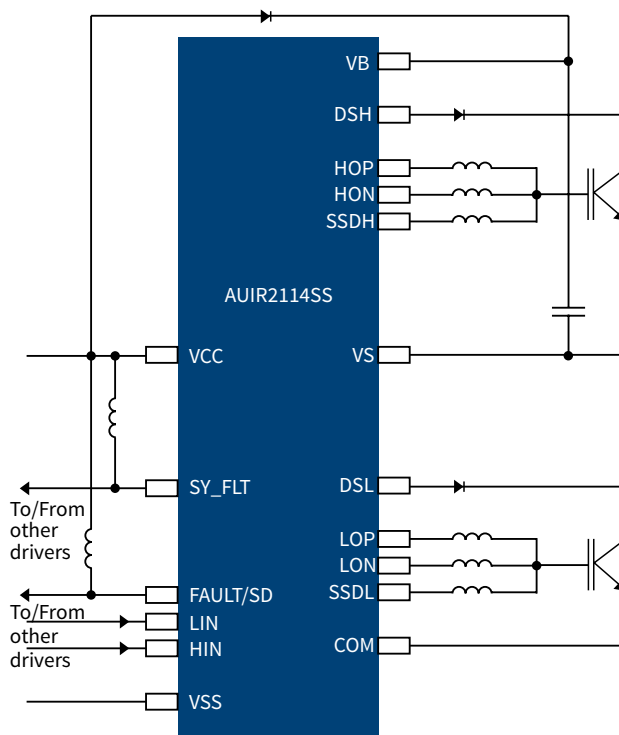
Product features

- > First Q100-qualified single-die 1200 V device
- > Floating channel up to 700 V (AUIR2114SS) or 1200V (AUIR2214SS)
- > Soft overcurrent shutdown
- > Synchronization signal to synchronize shutdown with the other phases
- > Integrated desaturation detection circuit
- > Two-stage turn-on output for di/dt control
- > Separate pull-up/pull-down output drive pins
- > Matched delay outputs
- > Undervoltage lockout with hysteresis band

Potential applications

- > Automotive auxiliaries
- > Fans
- > (Heat) Pumps
- > HVAC compressors
- > Brushless automotive applications

Simplified application diagram





















Infineon gate driver evaluation boards

Board Picture	Application	Product	Product description	Highlighted products	Target Application	Topology
	Battery powered applications	EVAL-6EDL04N02PR	Evaluation board for 3-Phase gate driver IC with LS-SOI technology to control MOSFET	6EDL04N02PR	Battery powered drives; Stepper motor; e-bikes, e-scooters, e-toys; Drones; Robotic vacuums	B6 bridge
	Electric vehicles	1EDI2002AS EVALKIT (1EDI2002ASEVALKITTOBO1)	EiceDRIVER™ SIL Evaluation Kit	1EDI2002AS 1EBN1001AE	Inverters for E-Vehicles; High-voltage DC-DC converter for E-Vehicles; Industrial drive	Half-bridge
	Electric vehicles	1EDI2004AS EVALKIT (1EDI2004ASEVALKITTOBO1)		1EDI2004AS 1EBN1001AE		
	Electric vehicles	1EDI2010AS EVALKIT (1EDI2010ASEVALKITTOBO1)	EiceDRIVER™ Sense IGBT gate driver evaluation kit for traction inverter applications	1EDI2010AS 1EBN1001AE	Inverters for E-Vehicles; High-voltage DC-DC converter for E-Vehicles; Industrial drive	Half-bridge
	Electric vehicles	AUIRS1170S EVALKIT (AUIRS1170SEVALKITTOBO1)	Secondary side high speed synchronous rectification Evaluation Kit	AUIRS1170S	High-voltage DC-DC converter for E-Vehicles; On-Board Charger; Industrial drive	Full-bridge
	Electric vehicles	2ED020I12FAEVALKITTOBO1	Dual channel isolated IGBT Driver, For 600V/1200V IGBTs	2ED020I12FA	Inverters for E-Vehicles; High-voltage DC-DC converter for E-Vehicles; Industrial drive; On-Board Charger	Full-bridge
	Electric vehicles	EVAL-6ED100HPDRIVE-AS (EVAL6ED100HPDRIVEAS-TOBO1)	Gate driver evaluation board for FSxxxR08A6P2xx with EiceDriver Sense/Lite/Boost, Standalone	1EDI2010AS	Inverters for E-Vehicles; High-voltage DC-DC converter for E-Vehicles; Industrial drive	
	EV Charging	EVAL-1EDC20H12AH-SIC	Demonstrate the functionality and key features of 1EDC20H12AH and CoolSiC™ MOSFET	1EDC20H12AH IZM120R045M1*	Drives, EV Charging, Telecom, Solar	Half-bridge
	Home appliance	EVAL-1ED44176N01F	Show the functionalities and key features of Infineon's low-side gate driver with integrated overcurrent protection, 1ED44176N01F.	1ED44176N01F IRLML2803TRPBF	Home Appliances, PFC; digital power supplies; Residential and commercial air conditioners; Industrial	Single low-side
	Home appliance	EVAL_100W_DRIVE_CFD2	Motor drive board offers a sensorless synchronous rectification BLDC/PMSM control algorithm to reduce reverse-current hard-commutation stress	IPD65R1K4CFD 2EDL05N06PF	Air conditioner fan; Water pump; Refrigerator compressors Dish washers; Heating systems Draining and recirculation pumps	3-Phase Motor
	Home appliance	EVAL-2EDL05I06PF	Evaluation Board for 600 V half bridge gate driver IC with LS-SOI technology to control IGBTs.	2EDL05I06PF	Consumer; Induction heating Industrial; Motor control & drives, CAV E-Bikes, E-Scooter, E-Forklift & Small E-Vehicles	Half-bridge
	Home appliance	EVAL-2EDL23I06PJ	Evaluation Board for 600 V HB gate driver IC with LS-SOI technology to control Highspeed3-IGBT	2EDL23I06PJ IKP20N60H3	Air conditioners; Drives; Fans; Power management; Pumps,	Half-bridge
	Home appliance	EVAL-2EDL23N06PJ	Evaluation Board for 600 V half bridge gate driver IC with LS-SOI technology to control MOSFET	2EDL23N06PJ	Consumer, LEV, Power Management Server; Solar Inverter	Half-bridge
	Home appliance	EVAL-6EDL04I06PT	Evaluation Board for 3-Phase gate driver IC with LS-SOI technology to control power devices like MOSFET or 600 V IGBTs	6EDL04N02PR	Fan; Refrigerator; Washing machine	B6 bridge
	Home appliance	WM_MOTOR_CONTROL_01	Demonstrate sensorless FOC for washing machine PMSM motor control	IKD10N60R 6EDL04I06NT	Motor control & drives	3-Phase motor
	Industrial	2ED100E12-F2	Evaluation Driver Board for EconoDU-AL™3 Modules using a coreless transformer single-channel driver	1ED020I12-F2	Industrial; CAV; Induction motor control & drives; Solar/Wind energy systems	Half-bridge

*Coming soon












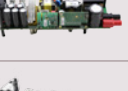
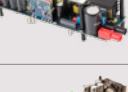



Infineon gate driver evaluation boards

Board picture	Application	Product	Product Description	Highlighted products	Target application	Topology
	Industrial	2ED250E12-F	Evaluation Driver Board for PrimePACK™ Modules up to 1200 V using a coreless transformer single-channel driver	1ED020I12-F2	Industrial; CAV; Motor control & drives Solar/Wind energy systems	Half-bridge
	Industrial	2ED300E17-SFO	This evaluation board for the IGBT driver board can be used for all medium and high power IGBT modules up to 1700 V.	2ED300C17-S / -ST	CAV; Drives; Power supply Renewable energy; solar; Wind traction	Half-bridge
	Industrial	6ED100E12-F2	Evaluation Driver board for EconoPACK™+ IGBT modules, using a coreless transformer single-channel driver	1ED020I12-F2	Industrial; CAV; Motor control & drives Solar/Wind energy systems	B6 bridge
	Industrial	7ED020E12-FI-U1	Evaluation Driver Board for SmartPIM 1 Modules up to 1200 V. Coreless transformer HB drivers are used for gate control and protection.	2ED020I12-FI	Industrial; Motor control & drives	B6 bridge
	Industrial	7ED020E12-FI-W2	Evaluation Driver Board for EasyPIM™ 2B PressFIT Modules up to 1200 V. Coreless transformer HB drivers are used for gate control and protection.	2ED020I12-FI	Industrial; Motor control & drives	B6 bridge
	Industrial	EVAL-M1-6ED2230-B1*	A complete power evaluation board including an EasyPIM™ 1200V Easy1B Three-phase module for motor-drive application.	6ED2230S12T*	Industrial drives; Motor control, General Purpose Inverters; Commercial air Conditioning (CAC)	Three-phase
	Industrial	EVAL-1ED020I12-B2	Evaluation Board for galvanic isolated Single channel driver IC with CT technology for 600V/1200V IGBTs	1ED020I12-B2	Industrial; UPS Motor control & drives Power supplies; Smart grid Solar energy systems	Half-bridge
	Industrial	EVAL-1ED020I12-BT	Evaluation Board for galvanic isolated Single channel driver IC with CT technology for 600V/1200V IGBTs	1ED020I12-BT	Data Processing E-mobility; UPS Industrial; Motor control & drives Power supplies; Smart grid solar energy systems	Half bridge
	Industrial	EVAL-1EDS20I12SV	Evaluation of the product features of 1EDS20I12SV (SRC) in combination with EconoDUAL™3 modules	1EDS20I12SV	Drives	Dual channel high-side Half-bridge
	Industrial	EVAL-2ED020I12-F2	Evaluation Board for galvanic isolated dual channel driver IC with CT technology for 600V/1200V IGBTs	2ED020I12-F2 IKP20N60H3	CAV; Motor control & drives Power supplies; Solar energy systems	Half-bridge
	Industrial	F3L020E07-F-P	Evaluation Driver board for 650 V 3-level EconoPACK™ 4 modules in NPC1-topology. Coreless transformer drivers are used for gate control and protection.	1ED020I12-F2	Industrial; CAV Motor control & drives Solar/Wind energy systems	Half-bridge
	Industrial	F3L030E07-F-W2	Evaluation Driver board for 650 V Easy2B 3-level modules in NPC1-topology. Coreless transformer drivers are used for gate control and protection.	1ED020I12-F2	Drives; Renewable energy Solar; UPS	Half-bridge
	Industrial	F3L2020E07-F-P	Evaluation Driver board for 650 V 3-level EconoPACK™ 4 modules in NPC2-topology. Coreless transformer drivers are used for gate control and protection.	1ED020I12-F2	Industrial; Motor control & drives Solar/Wind energy systems	Half-bridge
	Industrial	F3L2020E12-F-P_EVAL	Evaluation Driver board for 1200 V EconoPACK™ 4 3-Level Modules in NPC2-Topology. Coreless transformer drivers are used for gate control and protection.	1ED020I12-F2	Industrial; CAV Motor control & drives Solar/Wind energy systems	Half-bridge

*Coming soon



Infineon gate driver evaluation boards

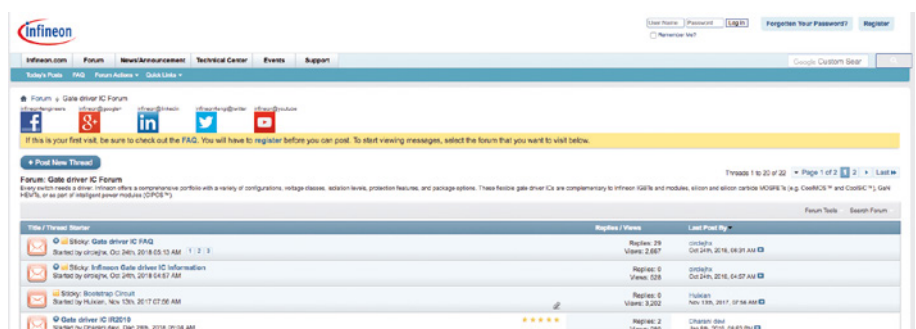
Board Picture	Application	Product	Product Description	Highlighted products	Target Application	Topology
	Industrial	IRUCS1	IR25750L D2PAK/DPAK In-Circuit Evaluation Board	IR25750L	Current sense application	
	Industrial	KIT_XMC_DP_EXP_01	The new XMC™ digital power explorer kit features synchronous buck converter with on-board resistive load banks	BSC0924ND1 IRS2011S	Industrial, server and telecom DC/DC power conversion	Buck
	Multicopter	KIT_XMCI45_LARIX_PINU_1	Quadcopter demonstrator kit with 9-axis motion tracking, pressure sensor and authentication representation	BSC0925ND IR2301S	Multicopter	B6 bridge
	SMPS	EVAL_1K6W_PSU_G7_DD	1600 W Titanium server power supply with 600 V CoolMOS™ G7 SJ MOSFET in DPAK package	IPDD60R150G7 IPDD60R050G7 IDDD08G65C6 BSC007N04LS6 1EDI20N12AF 2EDN7524F	Server	PFC LLC
	SMPS	EVAL_2K5W_CCM_4P_V2	2500 W CCM PFC, 110/230 AC to 400 DC,	1EDI60N12AF IPZ60R040C7	Server,UPS,PC Power,- Telecom	Buck PFC Continuous conduction mode (CCM)
	SMPS	EVAL_3KW_2LLC_C7_20	3.0kW Dual LLC Evaluation Board	IPP60R040C7 BSC093N15NS5 2EDN7524R 1EDI60N12AF 2N7002 BSS316N	Telecom / Industrial SMPS	LLC
	SMPS	EVAL_3KW_2LLC_CFD7	Full Infineon solution for the high voltage DC-DC stage of a 3kW telecom/ industrial SMPS	IPW60R031CFD7 1EDI60N12AF BSC093N15NS5 2EDN7524R	Telecom / Industrial SMPS	LLC
	SMPS	EVAL_3KW_2LLC_P7_47	Full IFX solution for the HV DCDC stage of a 3kW Telecom/industrial SMPS	IPW60R037P7 1EDI60N12AF BSC093N15NS5 2EDN7524	Telecom /Industrial power supply	LLC
	SMPS	EVAL_3KW_DB_PFC_C7	Full IFX solution for a Bridgeless Dual Boost PFC for a 3kW Server/Telecom/ Industrial SMPS	IPZ65R045C7 IPW65R045C7 2EDN7524F 1EDI60N12AF	Server/Telecom/Industrial power supply	PFC
	SMPS	EVAL_600W_12V_LLC_C7	600W DCDC/LLC stage, 400V/12V DC, 97.8% peak efficiency	IPP60R180C7 BSC010N04LS 2EDL05N06PF 2EDN7524F	Server PC Power	Half-bridge LLC
	SMPS	EVAL_600W_12V_LLC_CFD7	Full Infineon solution for the high voltage DC-DC stage of a 600W server and industrial SMPS	IPP60R170CFD7 2EDL05N06PF BSC010N04LS 2EDN7524	Server Telecom	Half-bridge LLC
	SMPS	EVAL_600W_12V_LLC_P7	Half bridge LLC stage of a server SMPS with the target to meet 80+ Titanium standard efficiency requirements	IPP60R180P7 2EDL05N06PF BSC010N04LS 2EDN7524	Server /Industrial power supply	Half-bridge LLC
	SMPS	EVAL_800W_PSU_3P_P7	This 800 W evaluation board is a cost optimized form, fit and function test platform for server applications	IPW60R099P7 IPP60R280P7 BSC014N04LS 1EDI20N12AF 2EDN7524F	Server power supplies	PFC LLC
	SMPS	EVAL_800W_PSU_4P_C7	This 800 W evaluation board is intended to be a form, fit and function testplatform for server applications	IPZ60R099C7 IPP60R180C7 BSC014N04LS 1EDI20N12AF 2EDN7524F	Server power supplies	PFC LLC

Board picture	Application	Product	Product description	Highlighted products	Target application	Topology
	SMPS	EVAL-600W-12V-LLC-A	600W DC-DC/LLC stage 400/12VDC, 97.4% peak efficiency (digital and analog version available)	2EDL05N06PF 2EDN7524F BSC010N04LS IPP60R190P6	Power supplies(DC-DC Resonant Converters)	Half-bridge LLC
	SMPS	EVAL-IGBT-1200V-247	Adaptable double pulse tester for IGBTs in TO-247 4pin package	IKY75N120CH3 1EDI60I12AH	Server/Telecom power supplies Solar energy systems	Half-bridge
	SMPS	EVAL-IGBT-650V-TO247-4	Adaptable double pulse tester for IGBTs in TO-247 4pin package	IKZ50N65EH5 IKZ50N65NH5 IKW50N65H5 1EDI60I12AF	Server/Telecom power supplies Solar energy systems	Half-bridge
	SMPS	KIT_DRIVER_2EDN7524F	This evaluation kit provides a test platform for Infineon's dual-channel non-isolated gate driver IC EiceDRIVER™ 2EDN7524 in DSO 8pin package, WSON 8pin package and TSSOP 8pin package	2EDN7524F	Industrial power supply/ Server/Telecom	Dual low-side
	SMPS	KIT_DRIVER_2EDN7524G		2EDN7524G		Dual low-side
	SMPS	KIT_DRIVER_2EDN7524R		2EDN7524R		Dual low-side
	SMPS	KIT_DRIVER_2EDF7275F	This evaluation kit provides a test platform for Infineon's dual-channel functional isolated gate driver IC EiceDRIVER™ 2EDF7275F in DSO 16pin 150 mil package	2EDF7275F	Industrial power supply/ Server/Telecom	Dual low-side
	SMPS	KIT_DRIVER_1EDN7550B	This evaluation kit provides a test platform for Infineon's single-channel non-isolated gate driver IC EiceDRIVER™ 1EDN7550B in SOT-23 6pin package.	1EDN7550B	Industrial power supply/ Server/Telecom	Dual low-side
	SMPS	EVAL_HB_BC_1EDN8550B	This board is intended to evaluate the robustness of the EiceDRIVER™ 1EDN TDI (1EDN8550B) gate driver, based on an innovative truly differential inputs (TDI) concept. This allows to regulate DC and AC shifts between the microcontroller ground and the driver ground.	1EDN8550B BSC026N08NS5	Industrial power supply/ Server/Telecom	Half-bridge buck converter
	SMPS	EVAL_3K3W_BIDI_PSFb*	The EVAL_3K3W_BIDI_PSFb design consists of a phase shift full bridge with synchronous rectification (SR) in full bridge configuration	2EDS8265H	Industrial power supply/ Server/Telecom	Full-bridge
	SMPS	EVAL_1EDF_G1_HB_GAN	This 600V gallium nitride (GaN) half-bridge evaluation board enables easy, rapid setup and test of CoolGaN™ transistors. The generic topology can be configured for boost or buck operation, pulse testing or continuous full-power operation.	IGOT60R070D1 1EDF5673K	Power Supplies	Boost Buck Half Bridge LLC

Gate driver IC forum

Discuss your technical topics directly with Infineon gate driver experts.
www.infineon.com/gdforum

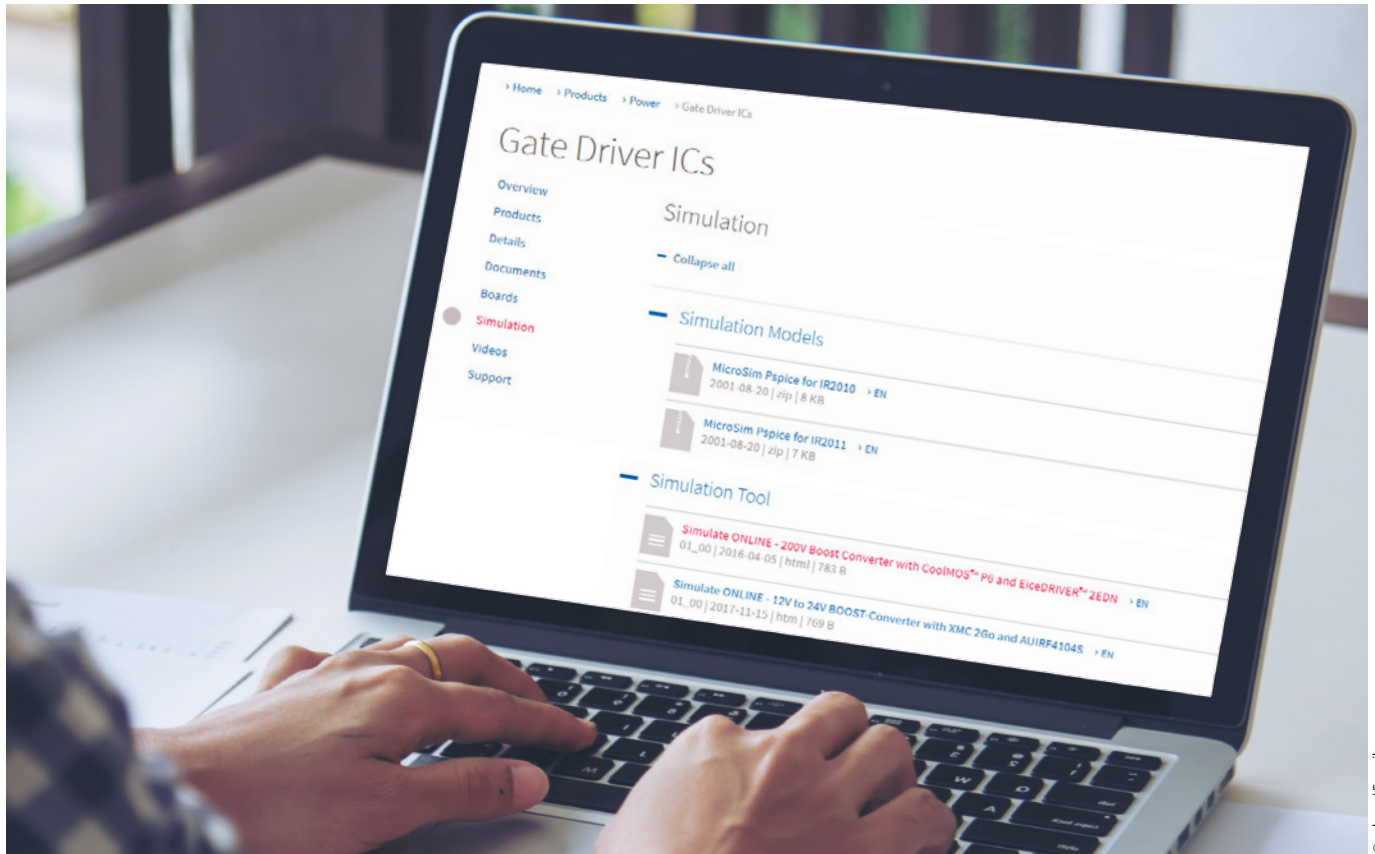
*Coming soon





Gate driver IC simulation model

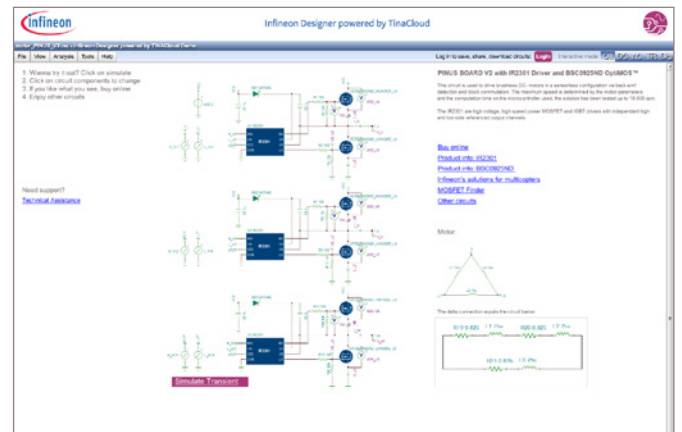
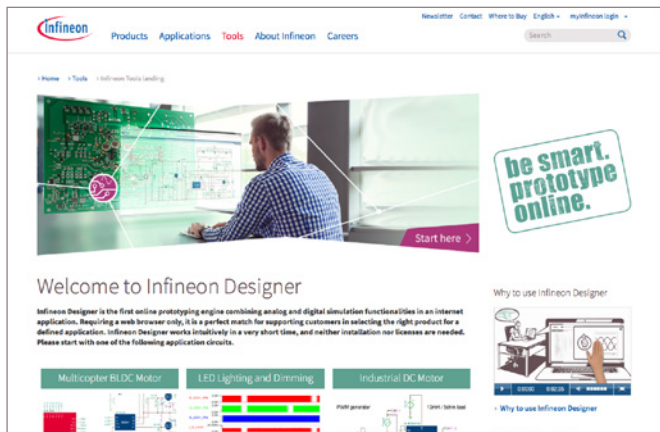
SPICE model



© sulksao / Freepik

Infineon Designer

Gate driver prototypes are available on www.infineon.com/ifxdesigner. Infineon Designer is an online prototyping engine combining analog and digital simulation functionalities in an Internet application. Requiring a web browser only, it is a perfect match for supporting customers in selecting the right product for a defined application.





Gate driver IC brochures



Infineon EiceDRIVER™ gate driver ICs
Selection guide 2018
Every switch needs a driver

Gate Driver Selection Guide
(This document)
www.infineon.com/gdbrochure



Power and Sensing
Selection guide 2018

Power and Sensing Selection Guide
<http://www.infineon.com/powerandsensing-selectionguide>



Automotive application guide
We make cars clean, safe and smart.

Automotive application guide



Every switch needs a driver
Gate driver application matrix

Gate Driver Application Matrix
www.infineon.com/gdapplication



每一个功率器件都需要一个驱动芯片
门极驱动应用选型指南

门极驱动应用选型指南
www.infineon.com/gdapplication-cn



Industrial galvanically isolated gate driver ICs
Selection guide 2018

Industrial Galvanically Isolated Gate Driver
www.infineon.com/gdiso



工业级隔离型门极驱动芯片
选型指南2018

工业级隔离型门极驱动芯片
www.infineon.com/gdiso-cn

Home Appliances
Essential for optimal power and efficiency
Infineon gate driver ICs offer fast and efficient switching technology, ESD, and built-in protection features, making them the leading gate driver solutions for many industrial applications.

Industrial
Meeting high quality solutions for the most rugged situations
Infineon gate driver ICs offer the robustness, with the breadth and depth of the portfolio, customer support, design and production resources and delivery systems for many industrial applications.

Mobility & Battery Driven
Full range of drive-injection components
Power MOSFETs and IGBTs within 2EDN to sense reliability and safety, Infineon's family of intelligent technology and development support tools, like the embedded gate driver ICs, are designed for the most demanding applications.

Renewable Energy
Powering a sustainable world
Meeting efficiency in the market over the lifetime of photovoltaics, offering power at 100% over your product's lifetime, and supporting the growth of green energy.

EiceDRIVER™ 1ED Compact gate driver IC family
2EDN galvanically isolated compact gate driver ICs
This family of gate driver ICs is designed for high efficiency, low EMI, and high reliability applications. It features a compact footprint, low power consumption, and high switching speed.

EiceDRIVER™ Enhanced gate driver IC family
2EDN galvanically isolated enhanced gate driver ICs
The EiceDRIVER™ Enhanced gate driver IC family is designed for high efficiency, low EMI, and high reliability applications. It features a compact footprint, low power consumption, and high switching speed.



1EDN-2EDN EiceDRIVER™ MOSFET gate driver ICs-Application Selection Guide



1EDN/2EDN Sample Kit ISAR ordering code: KIT_1EDN_2EDN_SA_V1



Gate driver selection tool

To simplify the gate driver selection process, Infineon offers an online easy-to-use gate driver selection tool. By selecting a few key parameters, the tool quickly guides you in finding the right driver for your application.

Visit the gate driver selection tool by going to www.infineon.com/gdfinder

The screenshot shows the 'Gate Driver Finder' interface with the following sections:

- Parameter Selection:** Voltage Class (Select Voltage Class), Output Current (sink) at least [] [A], Switching Frequency at least [] [kHz].
- Feature Selection:** Switch Type (Select Switch Type), Topology (Select Topology), Isolation (Select Isolation).
- Availability:** Automotive, Industrial, Any (radio buttons); Package (Select Packages); Product Status (Select Product Status).

At the bottom, there are buttons for 'Configure table', 'Compare', 'Share', 'Download', and a '380 Results' indicator.

This is a smaller version of the tool interface, showing the same selection parameters as the main screenshot, including 'I_{drv} ≥ [] A', 'Voltage Class ≥ [] V', and 'Find' button.

www.infineon.com/gdfinder

Cross Reference Search

Important Notice

All information presented in IFX cross reference search tool is based on IFX best estimate of other manufacturers' published information at the time this information was collected by IFX. This information is for suggestion purposes only and shall in no event be regarded as a guarantee of conditions or characteristics. Customers who are interested in such cross reference will be encouraged to communicate with IFX local representatives in order to clarify their details of the needs and requests. IFX is not responsible for any incorrect or incomplete information.

Enter partial or full manufacturer's device number and manufacturer

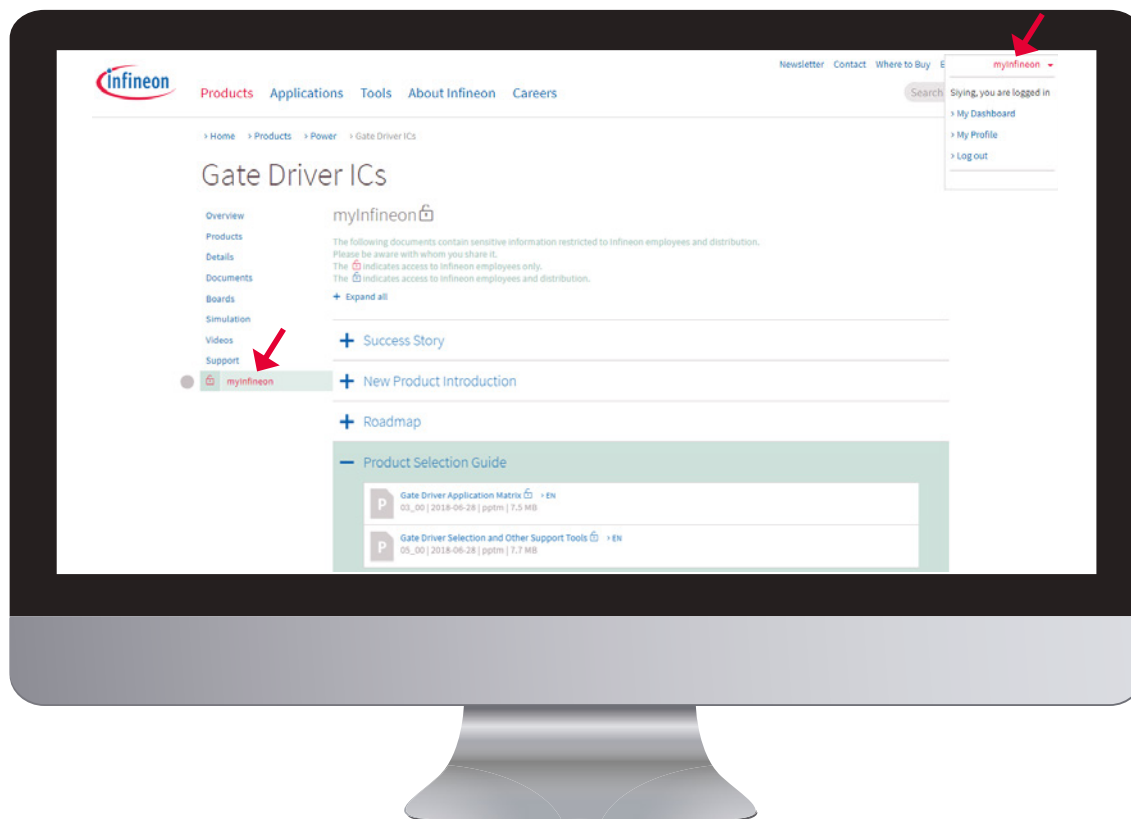
The search bar contains the text 'FAN7380' and a magnifying glass icon. To the right is a gear icon labeled 'Advanced Search'.

Products for 'FAN7380' (6)

Vendor Product	Vendor Name	Infineon Product	Datasheet	Product Status	Order Online	Short Description	Similarity Info
FAN7380	Fairchild Semiconductor	> IRS2304	IRS2304	active and preferred	Buy online	Half Bridge Driver, high voltage, high speed power MOSFET and IGBT driver with independent high and low side referenced output channels	Direct
FAN / 380	Fairchild Semiconductor	> IR2304	IR2304	active	Buy online	Half Bridge Driver, Soft Turn-On, Noninverting Inputs in a 8-Lead package	Direct
FAN7380	Fairchild Semiconductor	> IR2308	IR2308	active	Buy online	High Voltage and High Speed power MOSFET and IGBT Half Bridge Driver in a 8-Lead package	Similar
FAN7380	Fairchild Semiconductor	> IRS2308	IRS2308	active and preferred	Buy online	High Voltage and High Speed power MOSFET and IGBT Half Bridge Driver in a 8-Lead package	Similar
FAN7380	Fairchild Semiconductor	> 2EDL05N06PF	2EDL05N06PF	active and preferred	Buy online	EiceDRIVER™ Compact - Optimized 600V half bridge gate driver IC with LS-SOI technology to control MOS-transistors	Similar



My Infineon sharing platform



Website Tools

- › Infineon gate drivers home page / 中文版
- › Gate driver finder tool (Web)
- › Gate driver X-reference (Web)
- › Simulation tools (Web)
- › Evaluation boards (Web)
- › Introduction to gate drivers (Video)
- › 1EDN EiceDRIVER™ Gate Driver ICs (Video)
- › 2EDL EiceDRIVER™ Gate Driver ICs (Video)

- › www.infineon.com/gatedriver / www.infineon.com/gatedriver-cn
- › www.infineon.com/gdfinder
- › www.infineon.com/crs
- › www.infineon.com/ifxdesigner
- › www.infineon.com/gdevalboards
- › www.infineon.com/gdvideointro
- › www.infineon.com/gdvideo1EDN
- › www.infineon.com/gdvideo2EDL

Product promotion page

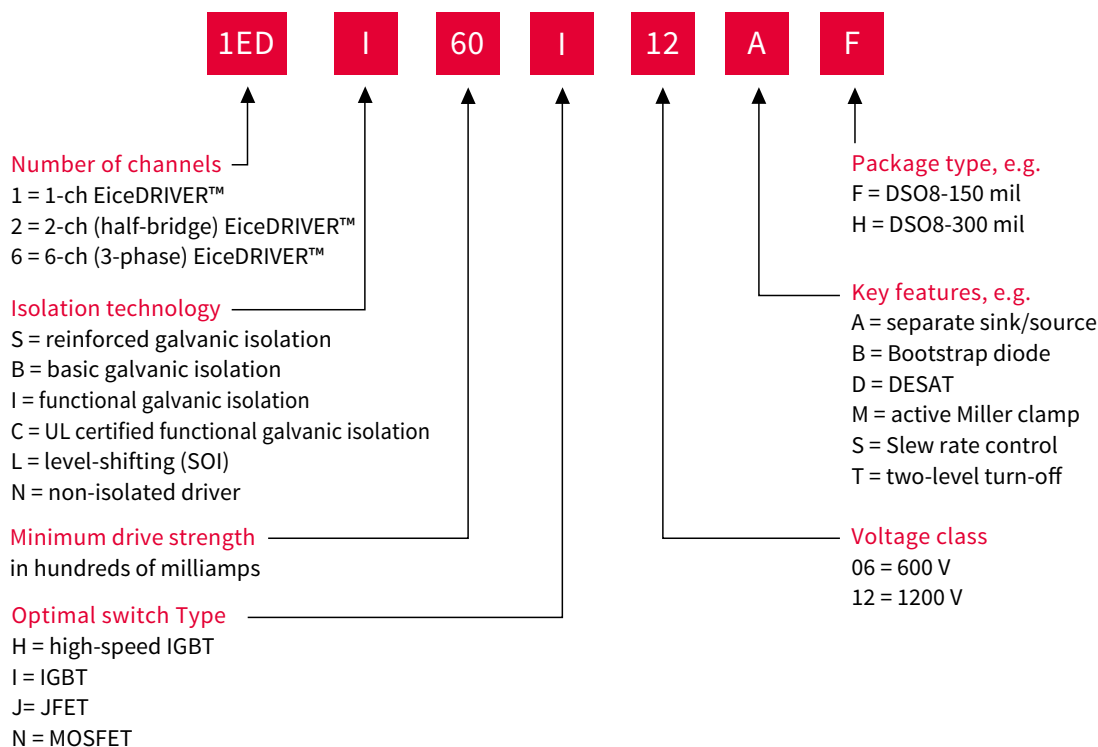
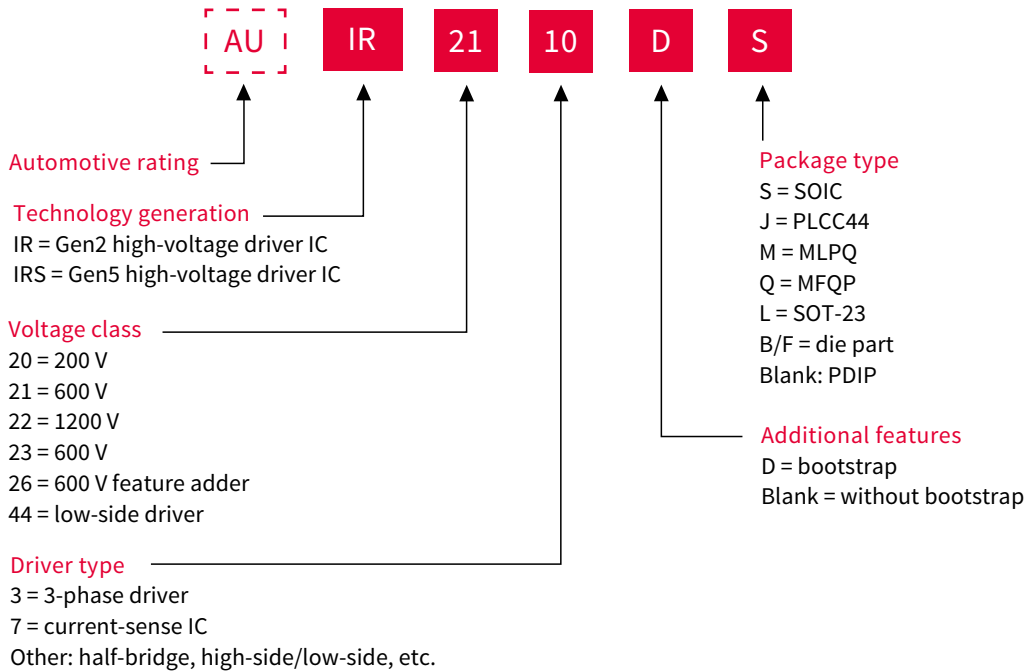
- › 200 V Level-Shift Gate Driver ICs
- › 500 - 700 V Level-Shift Gate Driver ICs
- › 1200 V Level-Shift Gate Driver ICs
- › SiC MOSFET Gate Driver ICs / 中文版
- › 1EDI/1EDC EiceDRIVER™ Compact / 中文版
- › The Slew-Rate Control EiceDRIVER™ / 中文版
- › 1EDN EiceDRIVER™ Gate Driver IC home page
- › 2EDN EiceDRIVER™ Gate Driver IC home page
- › μHVIC™ Family

- › www.infineon.com/200vhvic
- › www.infineon.com/700vhvic
- › www.infineon.com/1200vhvic
- › www.infineon.com/gdsic / www.infineon.com/gdsic-cn
- › www.infineon.com/1edcompact / www.infineon.com/1edcompact-cn
- › www.infineon.com/src / www.infineon.com/src-cn
- › www.infineon.com/1EDN
- › www.infineon.com/2EDN
- › www.infineon.com/microhvic



Infineon gate driver naming convention

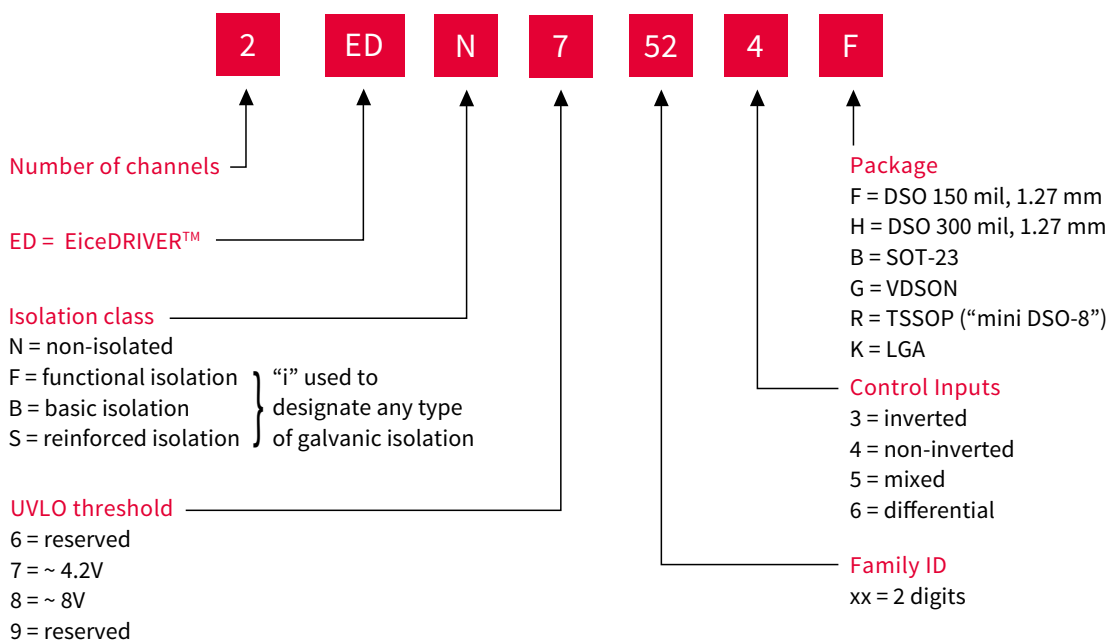
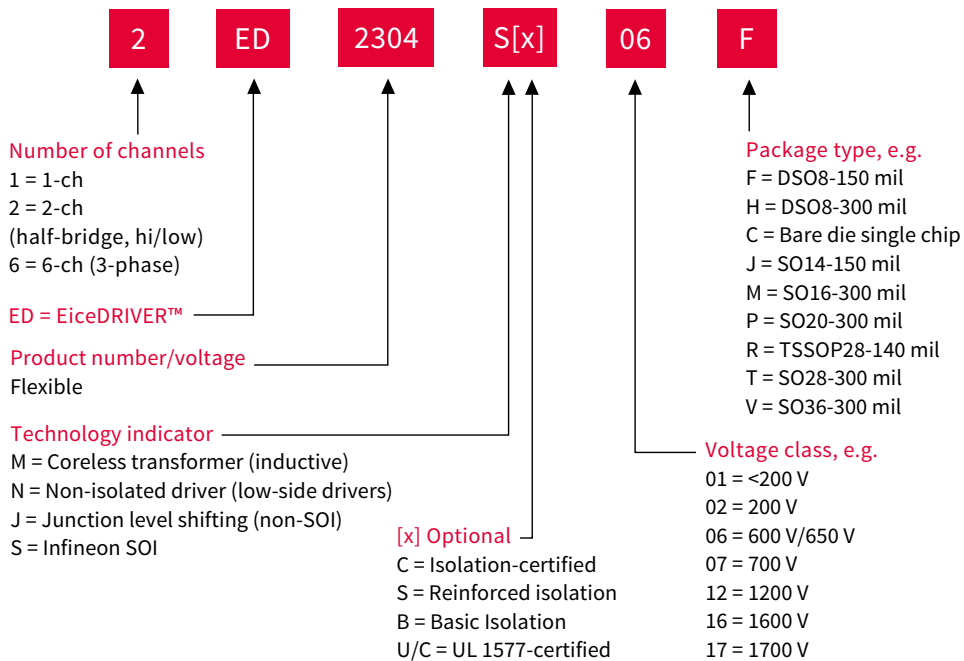
Naming convention for existing families of gate driver ICs





Infineon gate driver naming convention

Naming convention for existing and upcoming families of gate driver ICs



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