# Every switch needs a driver

## Gate driver application matrix

www.infineon.com/gatedriver

# Home Appliances

## Discover the next level of power and efficiency

Infineon's gate driver ICs utilize level-shift silicon-on-insulator technology (SOI), and level-shift junction isolation technology (JI) to meet the high performance requirements in home appliance applications.

| Recommended Gate Drivers | Aircon | Charger | Lighting | Power tools | Fans | Fridge | Vacuum cleaner | Washing machine | Laundry dryer | Dishwasher |
|---|---|---|---|---|---|---|---|---|---|---|

| Home Appliances | General | Air Conditioner (Residential) | Commercial Lighting | Electric Tools (Battery) | Hood Fan/ Ceiling Fan/ Freezer Fan | Power Tools (AC) | Refrigerator/ Washer/ Dryer | Vacuum Cleaner |
|---|---|---|---|---|---|---|---|---|
| PFC | IRS4427S<br>IRS44273L<br>2EDN8524F | | IRS44273L<br>2EDN8524F<br>1EDN8511B | | | | IRS4427S<br>IRS44273L<br>2EDN8524F | |
| SMPS | ICE5QR4770AZ (CoolSET™) | 2EDN8524F<br>IRS4427S<br>IRS2153(1)D | | | | | | |
| DC-DC | 1EDI20N12AF | | | | | | | |
| Inverter (<1 kW) | | 6EDL04I06PT<br>IR2136S<br>IRS2890DS<br>2ED2304S06F | | 6EDL04N02PR<br>IRS2007S<br>IRS2301S | 6EDL04I06PT<br>IR2136S<br>2ED2304S06F | 6EDL04I06PT<br>IR2136S<br>2EDL05I06PF | 6EDL04I06PT<br>IRS2890DS<br>2ED2304S06F | |
| Inverter (<3 kW) | | | | | | IR2235<br>2EDL23I06PJ<br>IR2214SS | | |
| SR Motor Inverter | | | | | | | | 2EDL05I06PF<br>IRS2181(4)<br>IRS2890DS |
| Half-bridge Topology | | | 2EDL05N06PF<br>2ED2304S06F<br>IRS2153(1)D | | | | | |
| HS-Buck | | | IRS2117<br>IRS25752L<br>IRS20752L | | | | | |
| Sync-Buck | | | 2EDL05N06PF<br>2ED2304S06F | | | | | |

# Industrial

## Reliable, high quality solutions for the most rugged situations

Infineon'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 every industrial application.

### Recommended Gate Drivers

| Industrial | Air Conditioner (Commercial) | Automatic Door Opening Systems | Building Fans & Pumps | Commercial Sewing Machine | Drives | Forklift Truck/ CAV | UPS |
|---|---|---|---|---|---|---|---|
| Compressor/ Fan/CAC | 1ED020I12-F2<br>1EDI10I12MF<br>2ED020I12-F2 | | | | | | |
| Inverter (<5 kW) | | 6EDL04I06PT<br>IR2136S<br>IRS2103 | 6EDL04(I,N)06PT<br>2EDL23I06PJ<br>IR2214SS | 6EDL04I06PT<br>IR2136S<br>IRS2334 | 6EDL04I06PT<br>IR2133<br>2EDL23I06PJ | | 1EDI60I12AF<br>2EDL23I06PJ<br>IR7106S |
| Inverter (<30 kW) | | | 1EDI30I12MF<br>1EDI60I12AF<br>1EDU20I12SV | | 1EDI40I12AF<br>1ED020I12-BT<br>2ED020I12-FI | 1EDI60N12AF<br>2EDL23I06PJ<br>IRS2127(1) | |
| Inverter (<200 kW) | | | | | 1EDI60I12AF<br>1ED020I12-B2<br>1EDU20I12SV | 1EDU20I12SV<br>1ED020I12-B2<br>1EDI60I12AF | 1EDI60I12AF<br>1ED020I12-F2<br>1EDU20I12SV |
| PFC | | | IRS4427S<br>IRS44273L<br>2EDN8524F | | | | IRS4427S<br>IRS44273L<br>2EDN8524F |
| DC-DC (1 kW - 100 kW) | | | | | | | 2EDL05N06PJ<br>2EDL23N06PJ<br>1EDI20N12AF<br>1EDI60N12AF |
| SMPS | | | | | 2EDN8524F<br>IR7106S<br>IRS2186(4) | | IRS4427S<br>IRS44273L<br>2EDN7524F |
| Brake Chopper | | | | | 1EDI05I12AF<br>1EDI10I12MF<br>IRS44273L | | |
| Active Bridge Rectifier | | | | | | | 2ED020I12-F2<br>1ED020I12-F2<br>1ED020I12-FT |

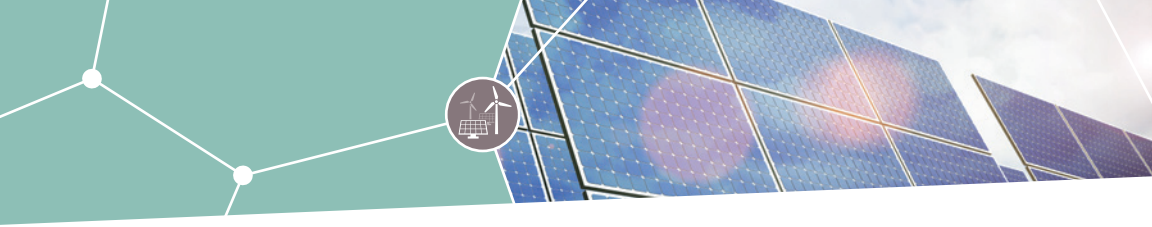
# Mobility & Battery Driven

## Full range of best-in-class components

From EV charger and light electric vehicle (LEV) to service robotics and drones, Infineon's family of configurable half-bridge and three-phase gate driver ICs can be combined with powerful Infineon MOSFETs to provide the required power and efficiency. Automotive-specific gate drivers qualified according to AEC-Q100 are also available.

For battery-driven applications, saving battery power is the key. Infineon offers an excellent selection of gate driver ICs providing the highest-possible energy efficiency and top precision.

| Recommended Gate Drivers | Drones/ E-Bike/ E-Scooter | EV Charger/ Battery Charger | General Traction | Light Electric Vehicle (LEV) | Lawn Mower/ Vacuum/ Service Robotics |
|---|---|---|---|---|---|
| **Mobility & Battery Driven** | Multicopter, eBike | EV charger, Charger | Traction | LEV | Vacuum cleaner, Home & garden |
| **Inverter** | ● 6EDL04N02PR<br>● IRS2334<br>● IRS2007S | ● IRS2186S | ● 1EDI60I12AF<br>● IR2214SS<br>● IR2213 | ● 6EDL04N02PR<br>● IR2136S<br>● 2EDL05N06PF<br>● IRS2183 | ● 6EDL04N02PR |
| **DC-DC** | | ● 1EDI20I12AF<br>● 1EDI40I12AF<br>● IR2214SS | | | |
| **PFC** | | ● IRS4427S<br>● IRS44273L<br>● 2EDN7524F | | | |
| **HB (LLC)** | | ● 1EDI60I12AF<br>● 1EDU20I12SV | | | |
| **Sync-Buck** | | ● IR2010S | | | |
| **BLDC** | | | | | ● 6EDL04N02PR<br>● IR2136S<br>● IRS2007S |



# Renewable Energy

## Powering an energy-smart world

Improving efficiency is the number one objective in the field of photovoltaics. Efficiency gains of as little as one percent can still yield enormous returns in renewable energy segment.

Infineon provides a comprehensive portfolio of high-performance gate driver ICs for photovoltaic inverters. By combining EiceDRIVER™ with super-junction MOSFETs such as CoolMOS™, IGBTs, Silicon Carbide (SiC) MOSFET such as CoolSiC™, as well as IGBT and SiC modules, Infineon enables solutions that maximizing uptime and energy production.

| Recommended Gate Drivers | Heat Pump | Solar Inverter |
|---|---|---|
| **Renewable Energy** | | |
| **Inverter (<2 kW)** | 6EDL04I06PT<br>IR2136S<br>2ED2304S06F | |
| **Inverter (>2 kW)** | IR2214SS<br>IR2213<br>IR2235<br>1EDI20I12AF | |
| **µInverter Boost** | | IRS4427S<br>2EDN7524F<br>IRS44273L |
| **µInverter DC-AC** | | 2ED2304S06F<br>IR2114SS<br>2EDL05N06PJ |
| **String Boost** | | 2EDN8524F<br>IRS4427S<br>1EDI20N12AF |
| **String Inverter** | | 1ED020I12-F2<br>IR7106S<br>1EDI60N12AF |
| **Central Boost/SMPS** | | 2EDN8524F<br>1EDI60I12AF |
| **Central Inverter** | | 1EDI60I12AF<br>1ED020I12-F2<br>IR2214SS |

# +SiC Silicon Carbide Drive Requirements

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

For a larger selection of isolated gate drivers, refer to the product portfolio overview section of the selection guide. The drivers incorporate most important key features and parameters for SiC driving such as tight propagation delay matching, precise input filters, wide output-side supply range, negative gate voltage capability, and extended CMTI capability.

| Product | Part Number | Typical Peak Drive Current | VCC2- VEE2 | Typical Propogation Delay | Active Miller Clamp | Other Key Features | Package |
|---|---|---|---|---|---|---|---|
| 1EDI Compact Isolated High-Side Driver Family | ● 1EDI20I12MF | 3.5 A | 20 V | ≤ 300 ns | ✓ | Functional isolation | DSO-8  |
| | ● 1EDC20H12AH | 3.5 A | 40 V | ≤ 125 ns | - | 8 mm creepage clearance; UL 1577 certified with $V_{ISO}$ =2500 V(rms) for 1 min | DSO-8  |
| | ● 1EDC60H12AH | 9.4 A | 40 V | ≤ 125 ns | - | | |
| | ● 1EDC20I12MH | 3.5 A | 20 V | ≤ 300 ns | ✓ | | |
| 1ED-F2 Isolated High- Side Driver with Integrated Protection | ● 1ED020I12-F2 | 2.0 A | 28 V | ≤ 170 ns | ✓ | 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 | ≤ 170 ns | ✓ | | DSO-36  |
| 1EDU Slew Rate Control (SRC) Isolated High-Side Driver | ● 1EDU20I12SV | 2.0 A | 28 V | ≤ 485 ns | ✓ | 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  |

**Technology leadership**

› Rugged and proven high-voltage processes
› Coreless transformer technology for galvanic isolation
› Highest performance and best-in-class protection features

**System knowledge**

› Optimum solutions based on detailed understanding of the system
› Comprehensive range of products for different system requirements

# Every Switch Needs A Driver

**Comprehensive portfolio**

› Over 500 gate driver ICs

**Support**

› Regional application support centers
› Detailed application notes and evaluation boards
› Supply continuity for long-term production

**Quality**

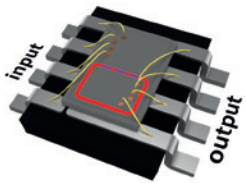
› Proactive quality management of products and processes
› Highest reliability for demanding industrial applications

## Gate Driver Support

**Tools and Materials**

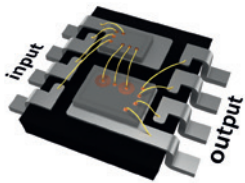
| | |
|---|---|
| › Infineon Gate Drivers Home Page | – www.infineon.com/gatedriver |
| › Selection Guide Brochure | – www.infineon.com/gdbrochure |
| › Gate Driver Finder Tool | – www.infineon.com/gdfinder |
| › Cross Reference Search Tool | – www.infineon.com/crs |
| › Simulation Tools | – www.infineon.com/ifxdesigner |

# Infineon Gate Driver IC Technologies



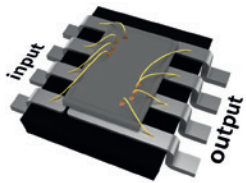

**Level-shift junction isolation (JI) & silicon-on-insulator (SOI)**

› International Rectifier pioneering junction-isolation technology and new-generation Infineon SOI technology.




**Coreless transformer (CT)**

› Magnetcially-coupled technology for galvanic isolation.



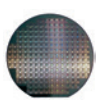

**Non-isolated (N-ISO)**

› Industry-leading non-isolated mixed-signal low-voltage process technologies.

| Driver Configuration | | | 5 V | 25 V | 100 V | 200 V | 500 V | 600 V | 700 V | 1200 V |
|---|---|---|---|---|---|---|---|---|---|---|
| Drivers | 1-Channel | High-Side | | | ● | ● | ● | ● | | ● |
| | | Low-Side | ● | ● | | | | | | |
| | 2-Channel | High-Side | | | | | | | | ● |
| | | Low-Side | | ● | | | | | | |
| | | High-Side + Low-Side | | | | ● | ● | ● ● | ● | ● |
| | | Half-Bridge | | | ● | ● | | ● ● ● | ● | ● ● |
| | 4-Channel | H Bridge | | | ● | | | | | |
| | 6-Channel | Three-Phase Bridge | | | | ● | | ● ● | | ● ● |
| 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 Package Options

| | | | | | |
|---|---|---|---|---|---|
| DSO-8 (SOIC-8N) |  | DSO-28 (SOIC-28WB) |  | MQFP-64 |  |
| DSO-8 300-mil (SOIC-8WB) |  | DSO-36 |  | WSON-6 |  |
| DSO-14 (SOIC-14N) |  | DIP-8 (PDIP-8) |  | WSON-8 |  |
| DSO-16 300-mil (SOIC-16WB) |  | DIP-14 (PDIP-14) |  | SSOP-24 |  |
| DSO-18 |  | DIP-28 (PDIP-28) |  | TSSOP-28 |  |
| DSO-19 |  | SOT23-5 |  | TSSOP-8 |  |
| DSO-20 (SOIC-20WB) |  | SOT23-6 |  | VQFN-14 (MLPQ 4X4 14L) |  |
| VQFN-34 (MLPQ 7X7 34L) |  | LCC-32 (PLCC-44) |  | VQFN-28 (MLPQ 5X5 28L) |  |
| CHIP |  | | | | |

# Where to buy

Infineon distribution partners and sales offices:
www.infineon.com/WhereToBuy

# Service hotline

Infineon offers its toll-free 0800/4001 service hotline as one central number, available 24/7 in English, Mandarin and German.

- Germany ..... 0800 951 951 951 (German/English)
- China, mainland ..... 4001 200 951 (Mandarin/English)
- India ..... 000 800 4402 951 (English)
- USA ..... 1-866 951 9519 (English/German)
- Other countries ..... 00* 800 951 951 951 (English/German)
- Direct access ..... +49 89 234-0 (interconnection fee, German/English)

* Please note: Some countries may require you to dial a code other than "00" to access this international number. Please visit www.infineon.com/service for your country!

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**Warnings**
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