

RUTRONIK TechTalk meets **Gate Driver**

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selection tool on www.infineon.com

Olaf Bendix | Application Engineer



Infineon Technologies AG

EiceDRIVER™ Gate Driver Ics – MOSFETs, IGBTs, SiC MOSFETs

> High Side Drivers	> Full Bridge Drivers
> Low Side Drivers	> Three Phase Drivers
> High and Low Side Drivers	> Driver Boards
> Half-Bridge Drivers	> Gate Driver Support ICs
> Synchronous-Buck Drivers	> Automotive Gate Driver ICs

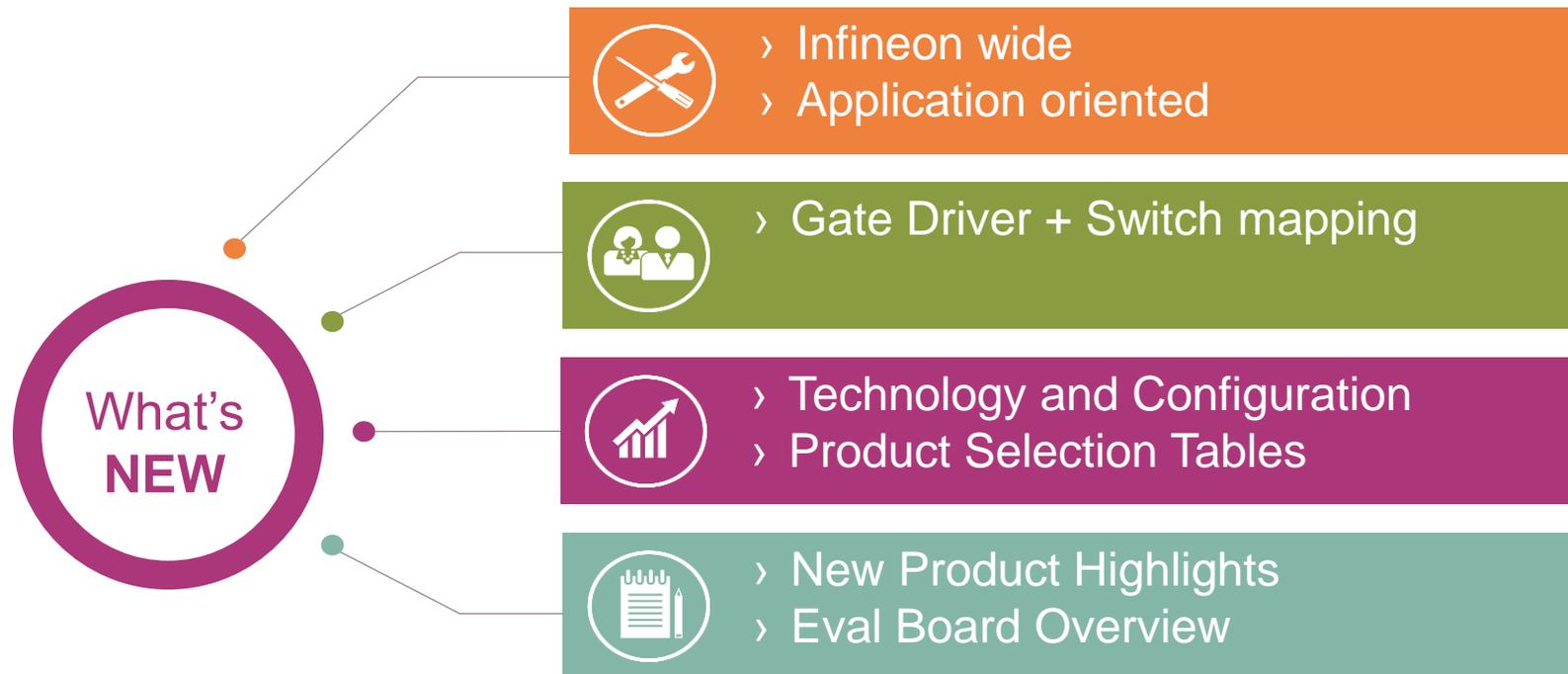
> 500 parts

- > EiceDRIVER™ gate drivers provide a wide range of typical output current options, from 0.1 A up to 14 A
- > EiceDRIVER™ gate drivers provide a wide range of isolation voltages, from 25 V up to 2300 V (X3, functional isolation)

Gate driver selection – How to select the right device?

Two great tools:

- 1.) Infineon EiceDRIVER™ internet page (new designed)
- 2.) Infineon EiceDRIVER™ gate driver ICs selection guide 2019



Gate driver selection guide – how to find?

> Home > Produkte > Power > Gate Driver ICs

Überblick
Produkte
Highlights
Details
Dokumente
Boards
Tools & Software
Simulation
Videos
Partner
Trainings
Support

By configuration

- Low side
- High side
- Half bridge
- High and low side
- Full bridge
- Three phase
- Driver boards
- Gate driver support ICs
- Synchr. buck

By isolation

- Level shift
- Isolated
- Non isolated

By switch device

- CoolSiC™ MOSFET gate drivers
- MOSFET gate drivers
- IGBT gate drivers
- CoolHE™ MOSFET gate drivers

Gate driver forum

Gate driver selection guide

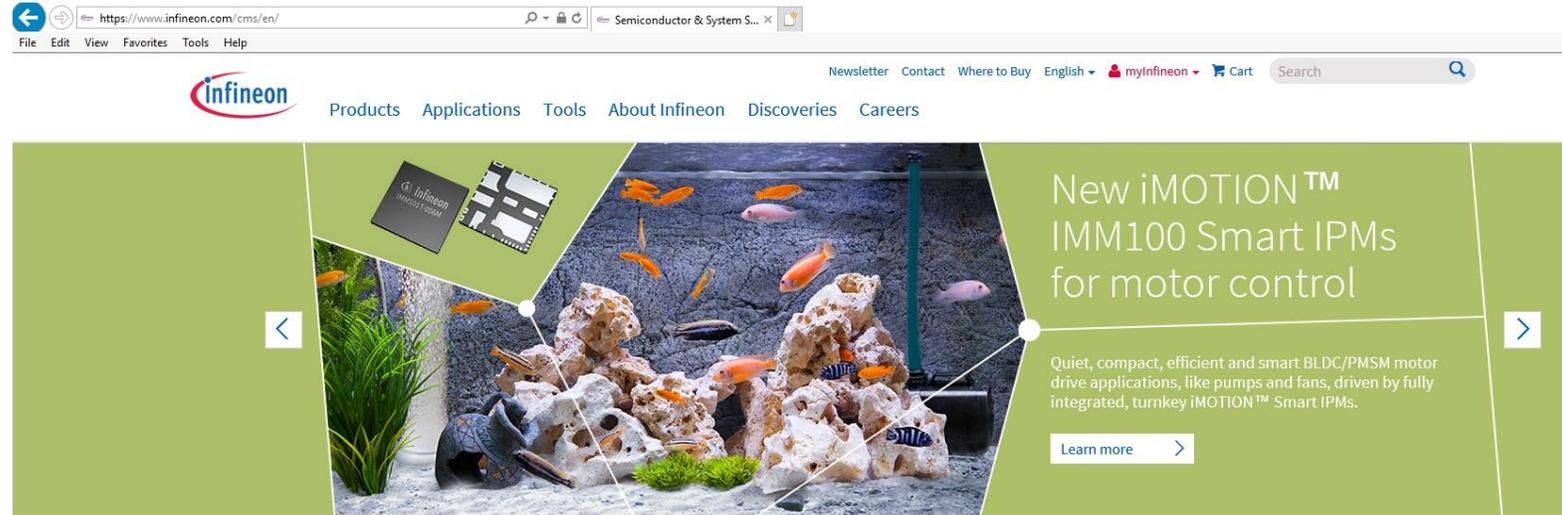
Gate driver finder

Automotive qualified AEC Qualified

www.infineon.com/gdbrochure

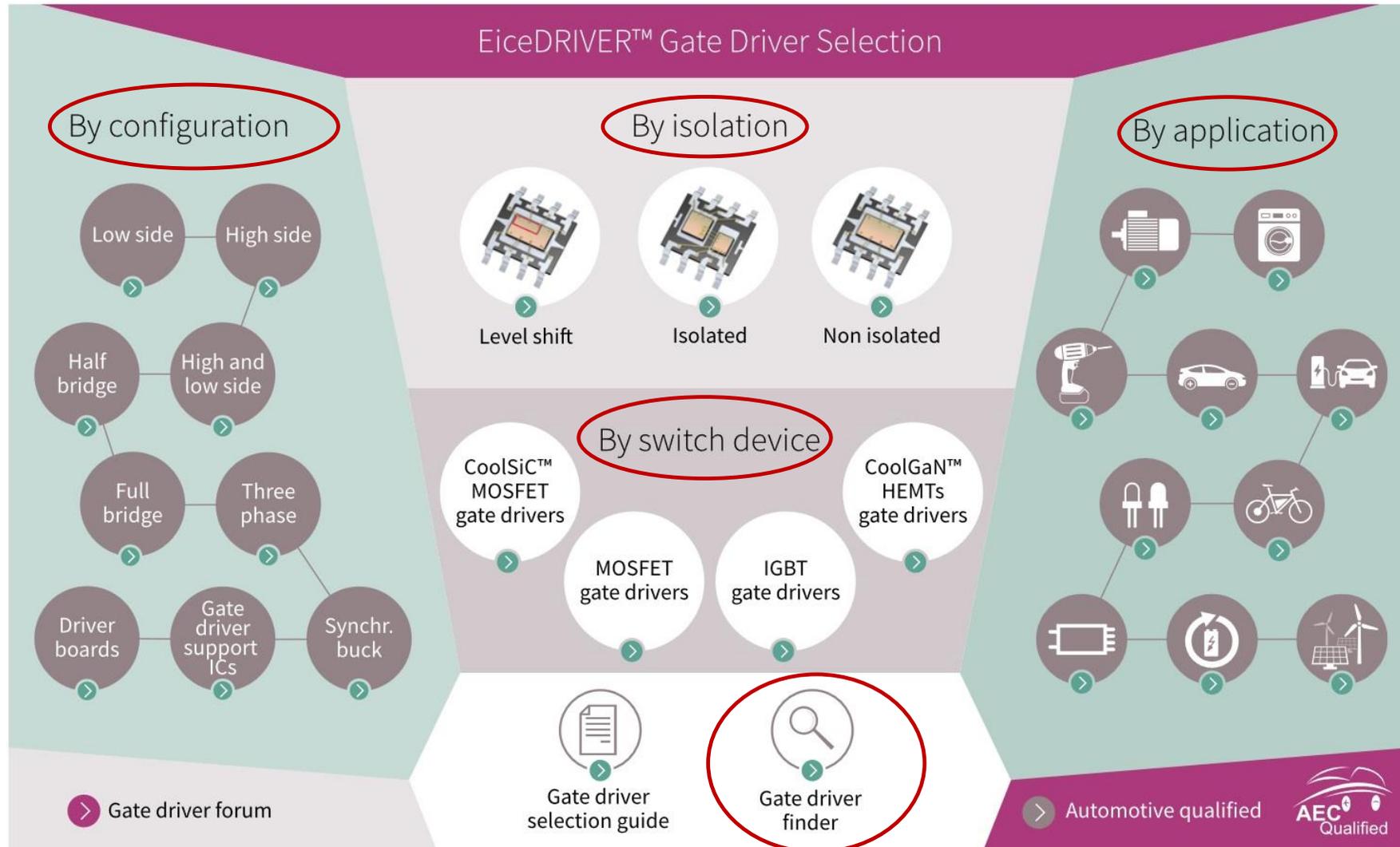
Gate driver selection with internet page

www.infineon.com



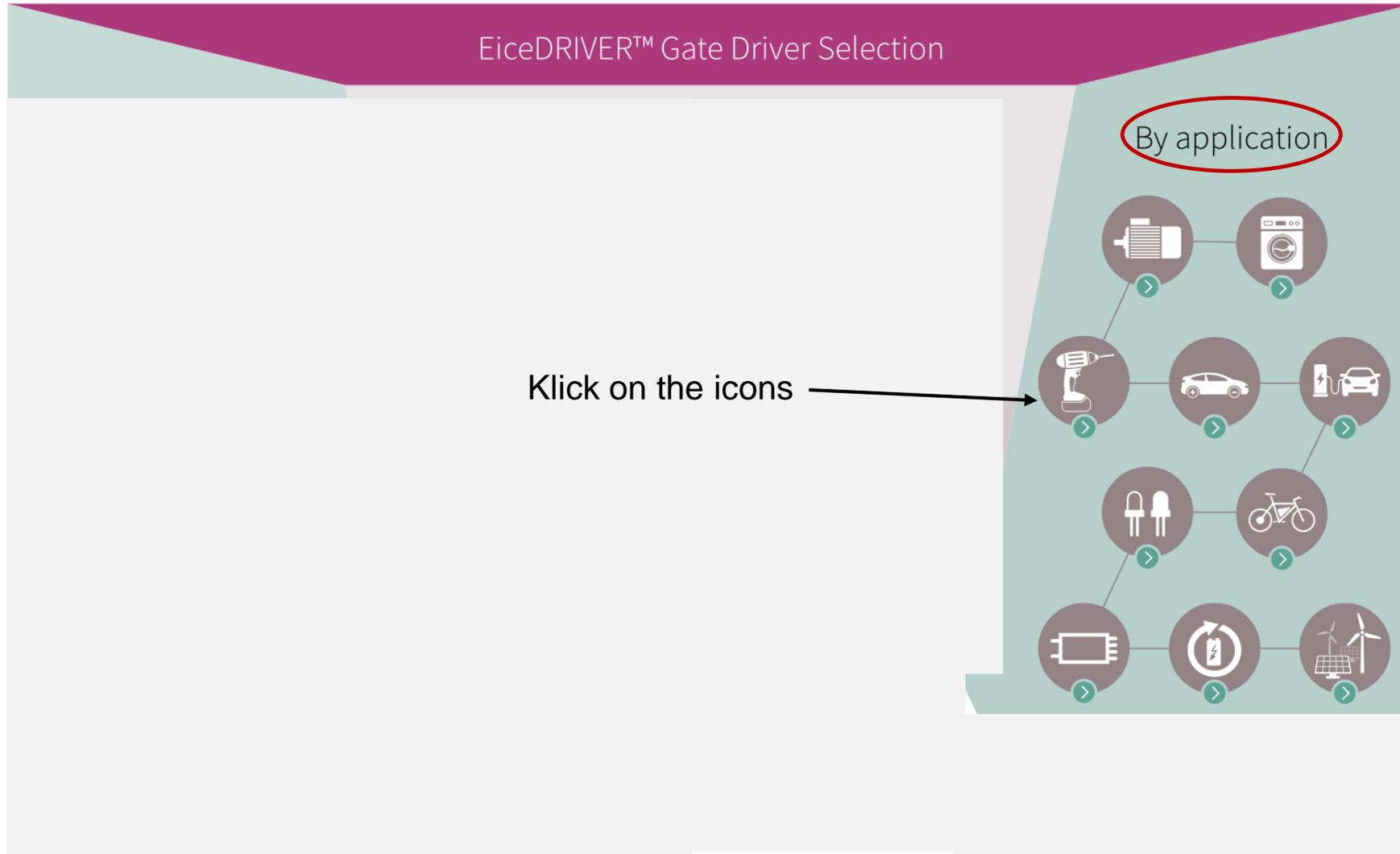
Gate driver selection with internet page

Gate driver landing page



Gate driver selection with internet page

Selection by application



Gate driver selection with internet page

By isolation

EiceDRIVER™ Gate Driver Selection

By isolation

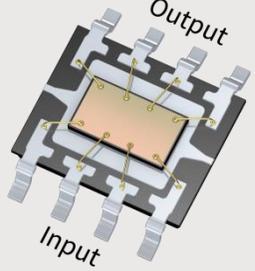
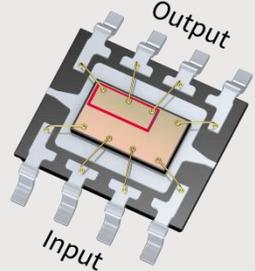
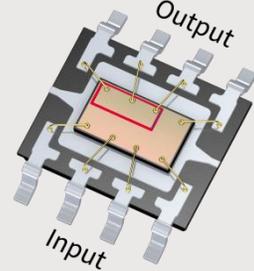
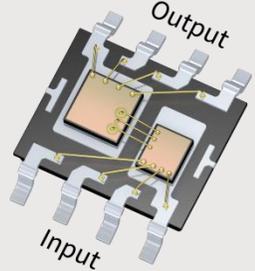


Level shift Isolated Non isolated

The image shows a screenshot of the Infineon EiceDRIVER™ Gate Driver Selection interface. The title 'EiceDRIVER™ Gate Driver Selection' is at the top. Below it, the text 'By isolation' is circled in red. Three gate driver ICs are displayed in circular icons: 'Level shift', 'Isolated', and 'Non isolated'. Each icon has a green arrow pointing right below it.

Gate driver selection with internet page

Type of isolation

Low-side only	Level-Shift		Galvanic isolation
<p>● Non-isolated (N-ISO)</p>	<p>● Junction Isolation (JI)</p>	<p>● Silicon on insulator (SOI)</p>	<p>● Coreless Transformer (CT)</p>
 <p>Low voltage only (≤ 80 V)</p> <p>Comprehensive Families of single- and dual-low-side drivers with flexible options for output current, logic configurations, and UVLOs</p> <p>Rugged technology of the high-voltage gate drivers, and on the latest state-of-the-art 130-nm process</p>	 <p>20 years proven JI technology</p> <p>Largest portfolio of 200 V, 600 V, 700 V and 1200 V industry-standard gate drivers</p>	 <p>Infineon SOI technology with integrated boot-strap diode, lower level-shift losses</p> <p>Industry best-in-class robustness against –VS transient spikes</p>	 <p>Magnetically-coupled isolation technology provides galvanic isolation for industrial applications</p> <p>Strongest gate-drive output currents (up to 10 A) reducing need for external booster circuits</p>

Gate driver selection with internet page

Isolation and configuration

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-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)

Single channel EiceDRIVER™ family

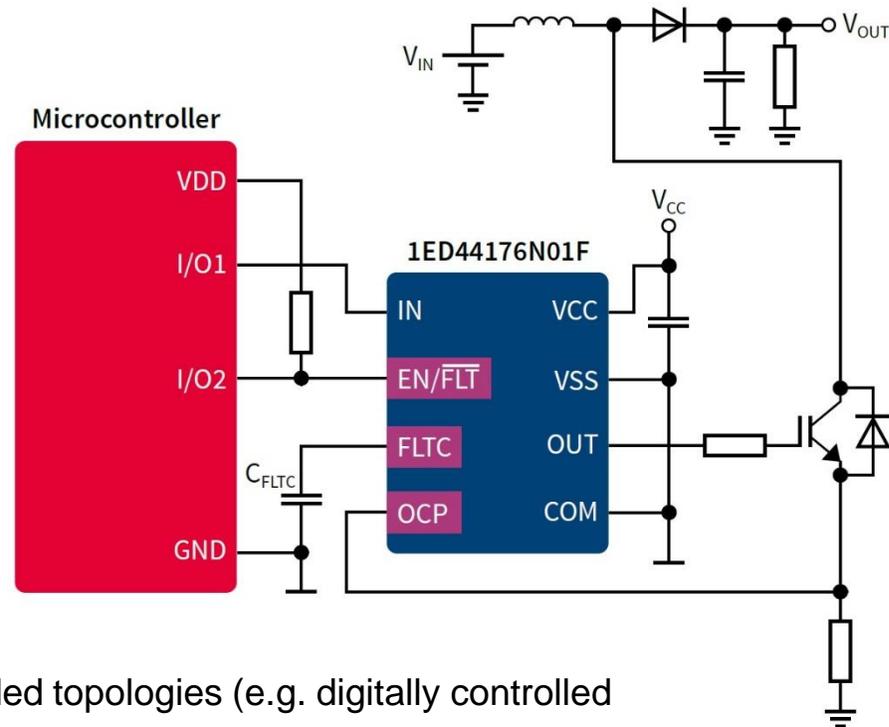
Example: 1ED44176N01F

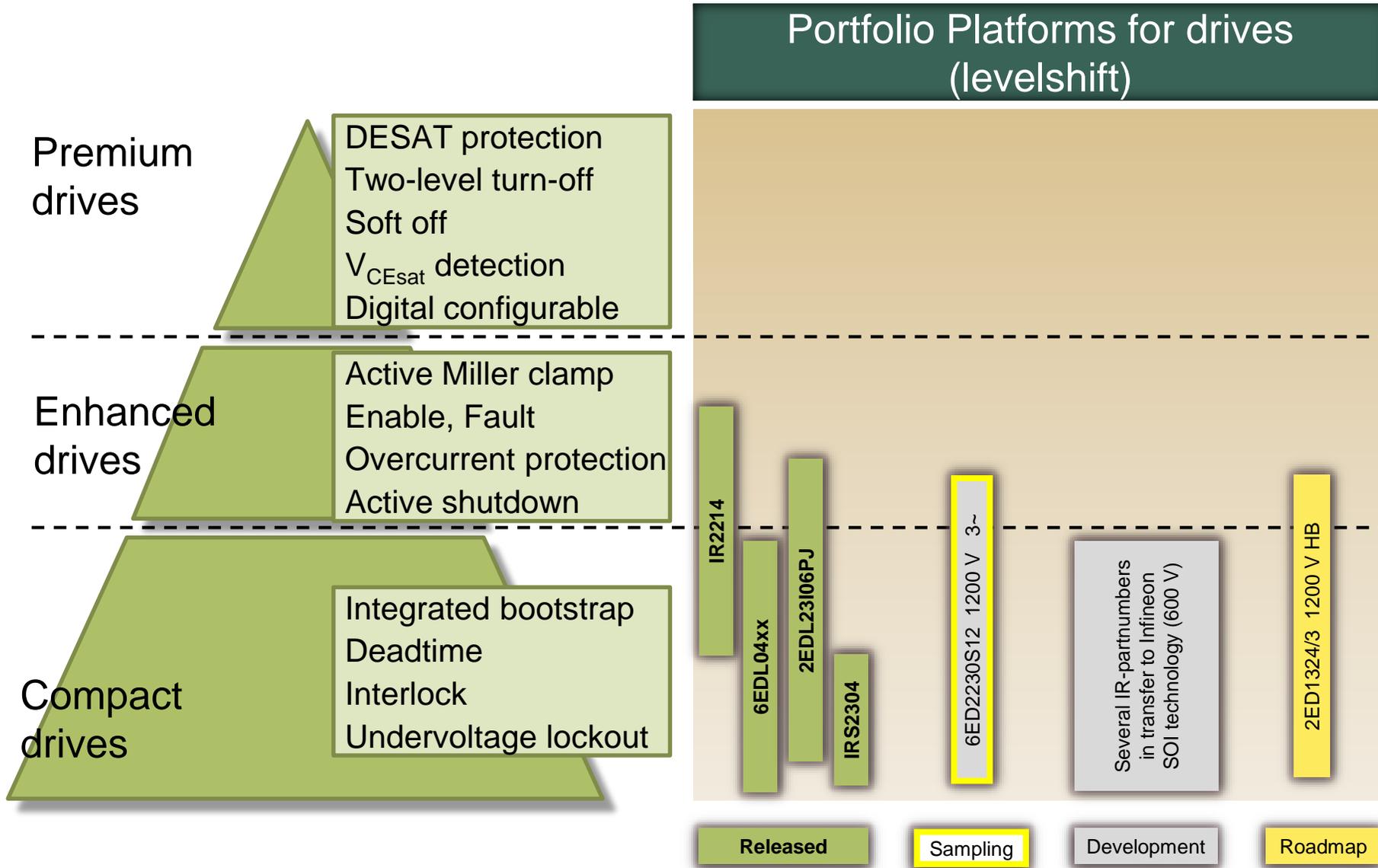
Product features:

- › 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
- › 3.3 V, 5 V and 15 V input logic-compatible

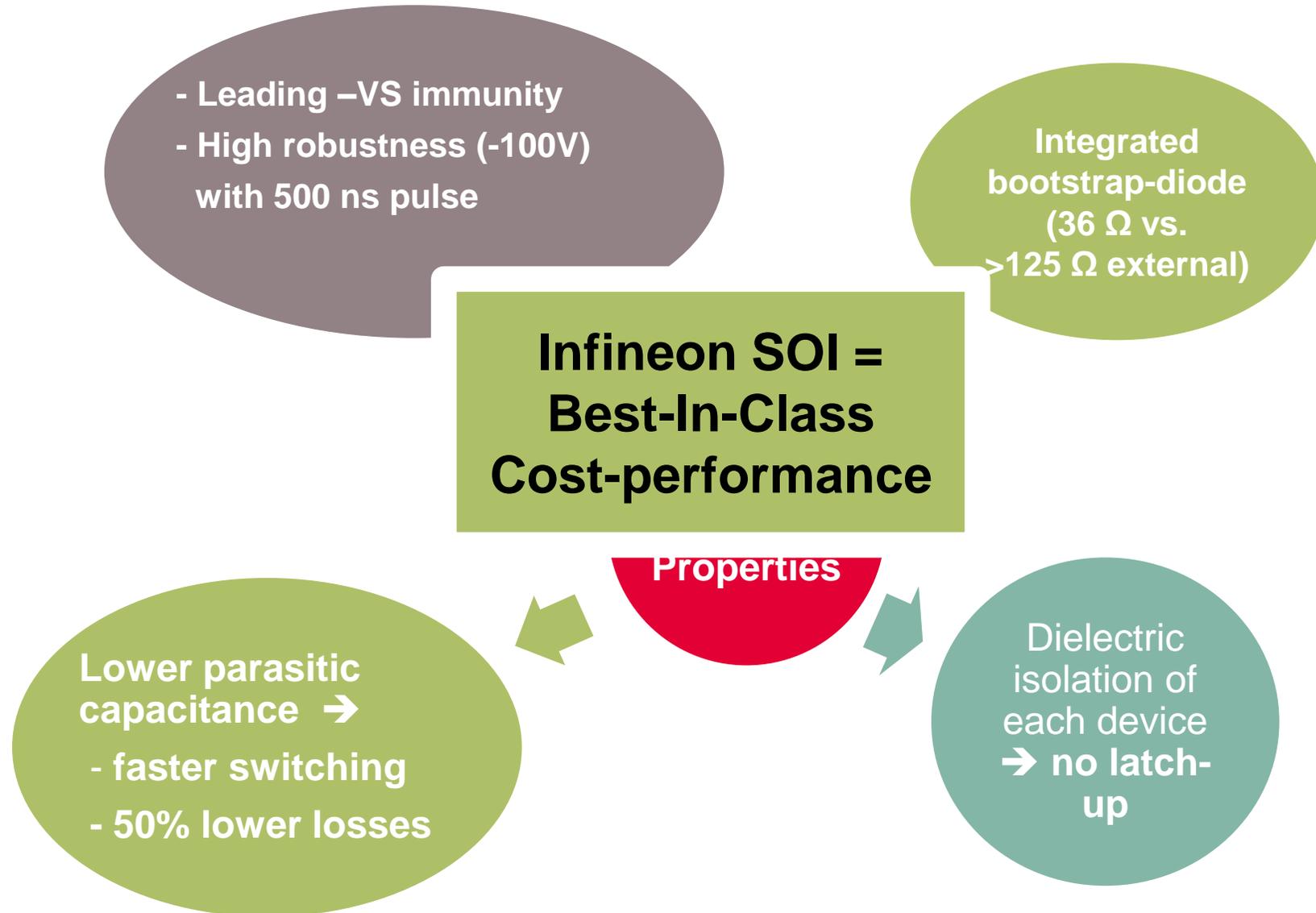
Potential applications:

- › 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





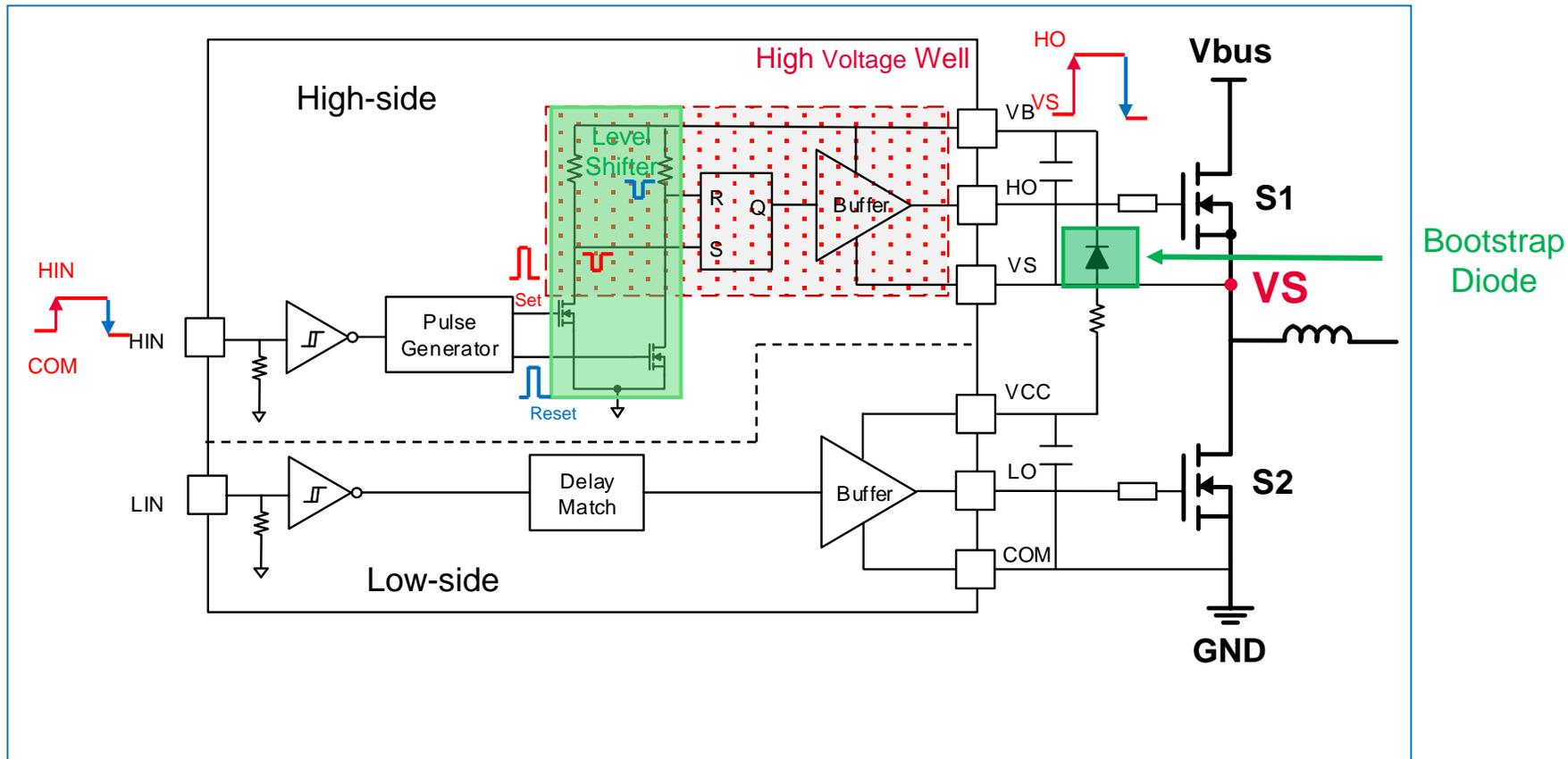
EicDRIVER™ - Infineon SOI levelshift Cost/Performance Benefit



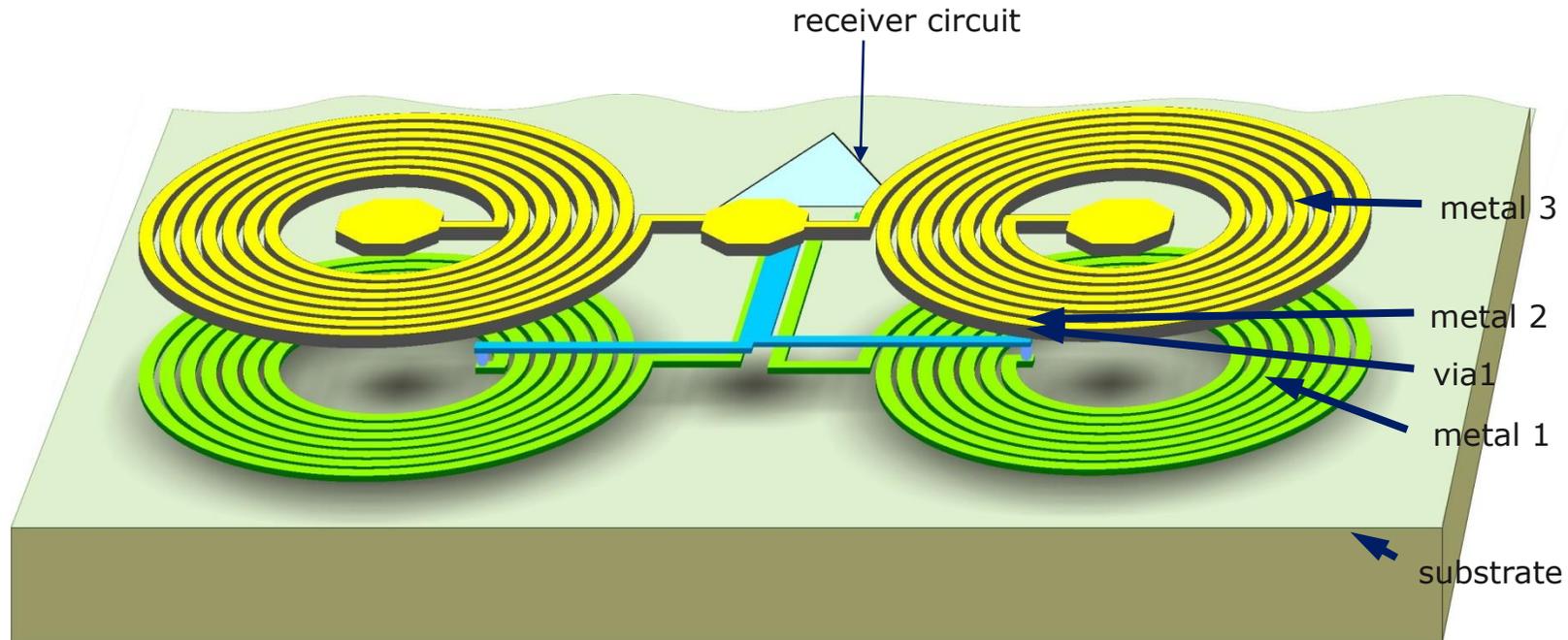
EicDRIVER™ - Infineon levelshift

How does Level-Shift works ?

- › Shift input (HIN) signal from GND to VS reference potential



EiceDRIVER™ Coreless Transformer (CT) family



- › **1200V Galvanic Isolation**
- › **Thick layer of Silicon-oxide separates the planar primary and secondary windings**

EiceDRIVER™ CT feature set

Control Input pins

- incl. pull up and pull down
- incl. noise filters
- incl. Schmitt-Triggers
- selectable active low or active high

Gate driver buffer

- rail to rail
- source 2 A
- sink 2 A

/RST signal

- Clear Fault
- acts as shutdown

RDY signal

- open drain output
- active, when UVLO (HS and LS)
- No CLT Com.

/FLT signal

- open drain output
- active, when DESAT

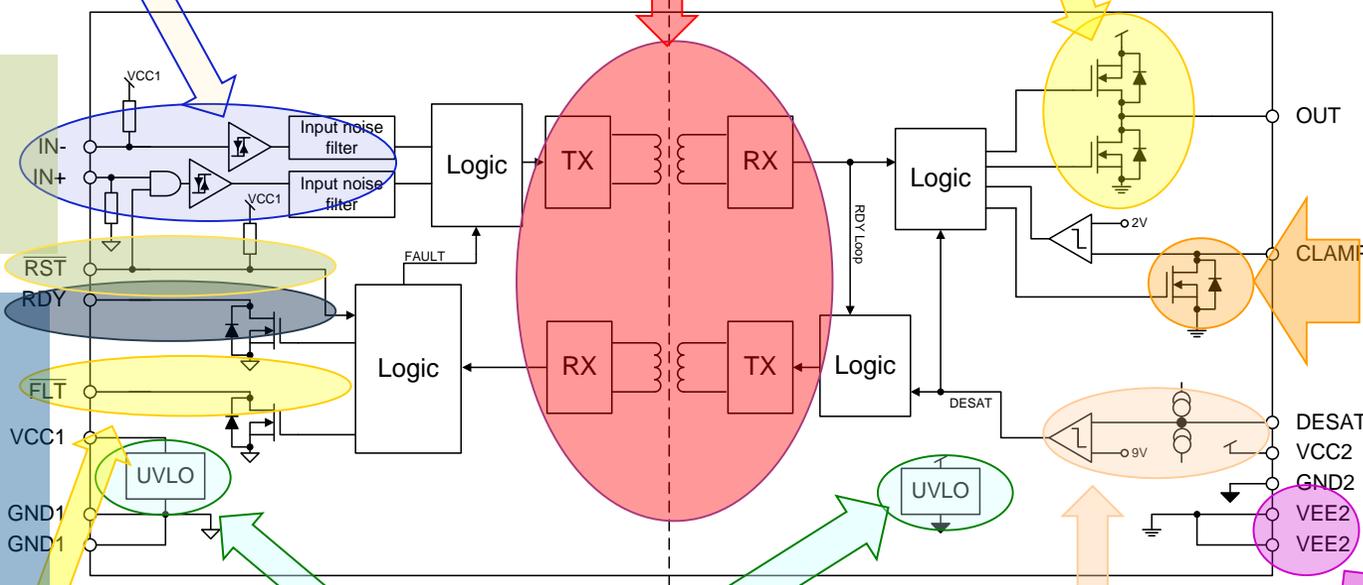
Under voltage lock out control / output section

Desat detection

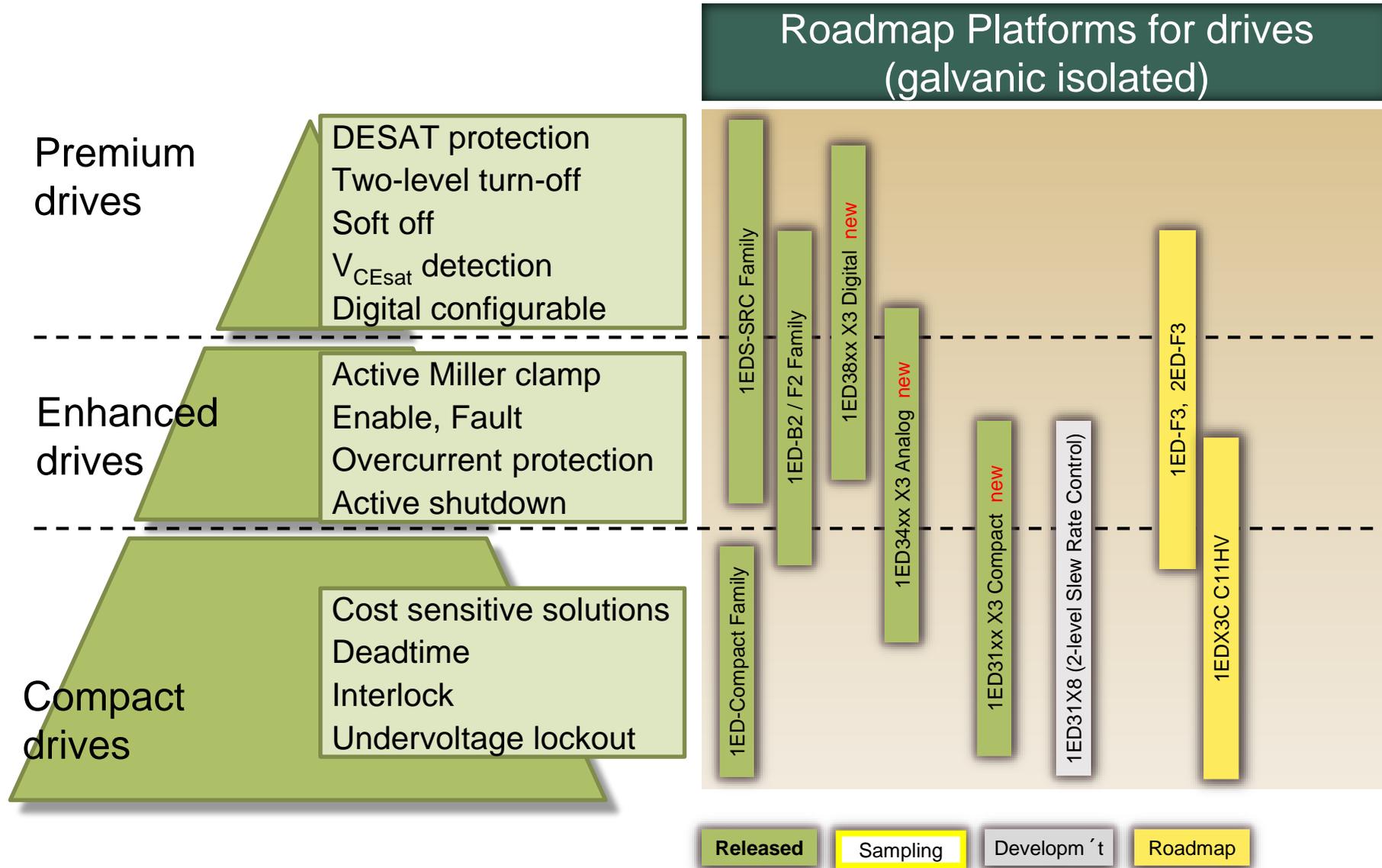
Negative supply of output section (min. -12 V)

Coreless Transformer

Active Miller clamp (-2A)



EiceDRIVER™ CT portfolio positioning

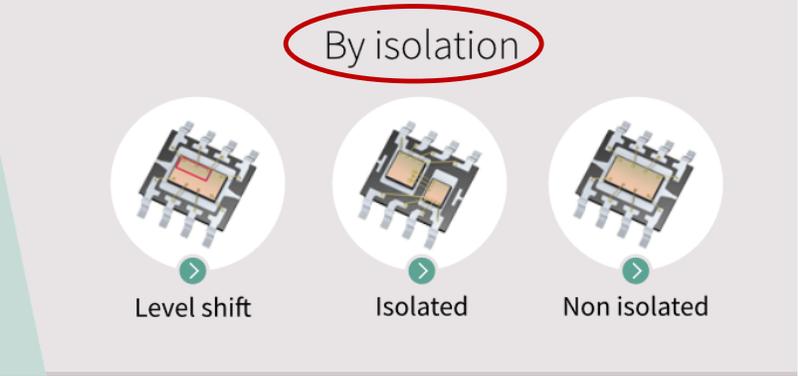


Gate driver selection with internet page

Selection by isolation

EiceDRIVER™ Gate Driver Selection

By isolation

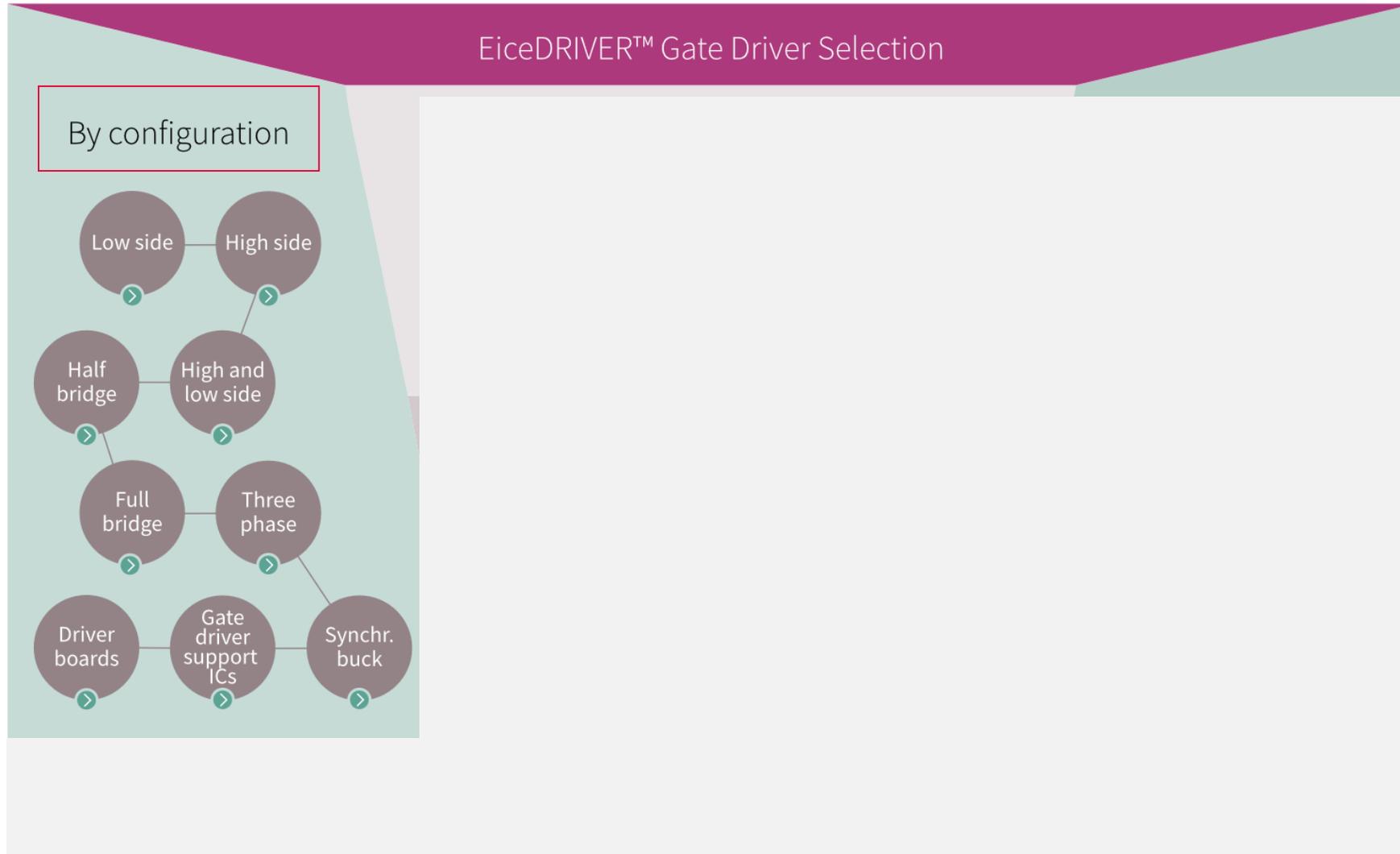


Level shift Isolated Non isolated

Klick on the icons

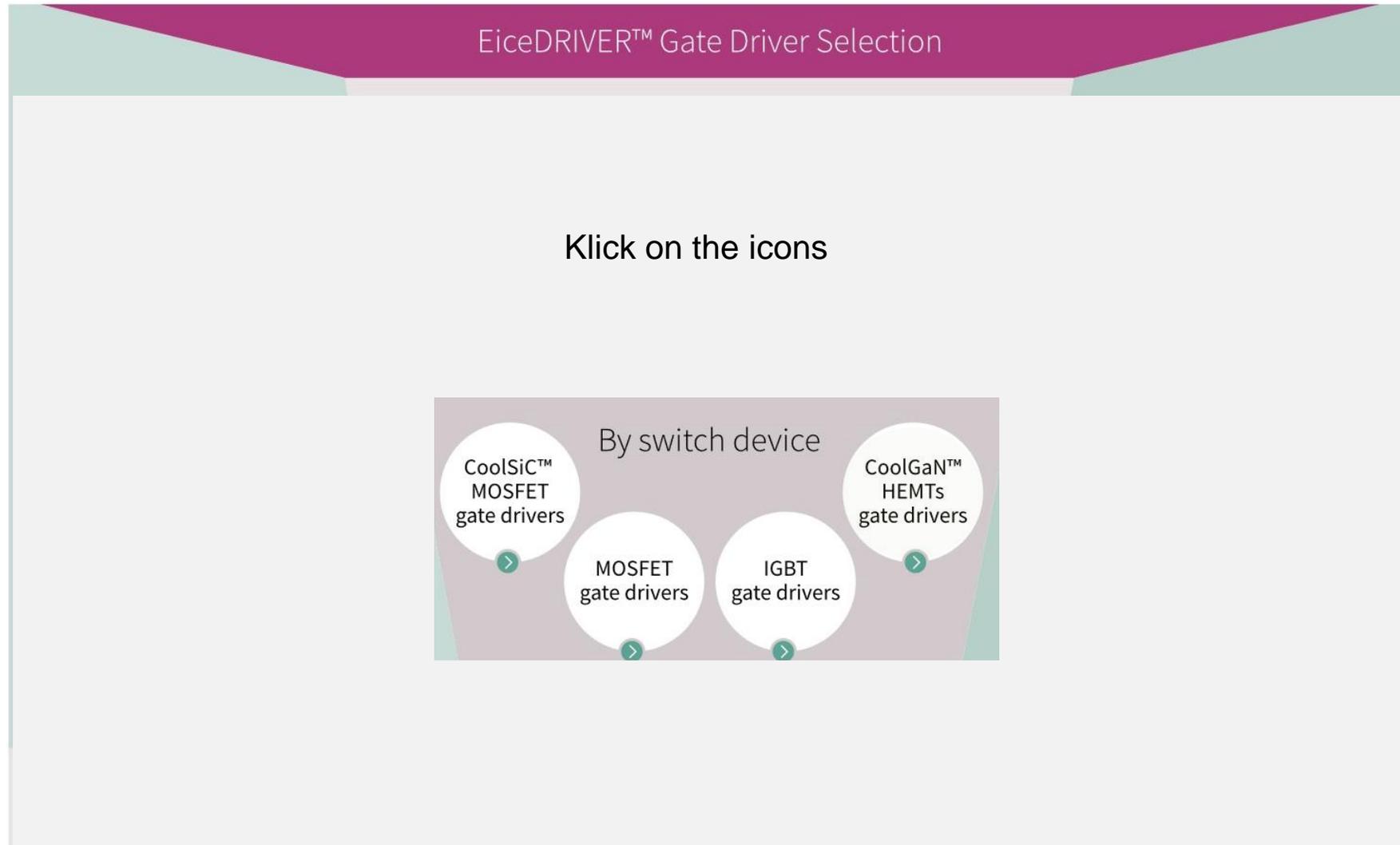
Gate driver selection with internet page

By configuration



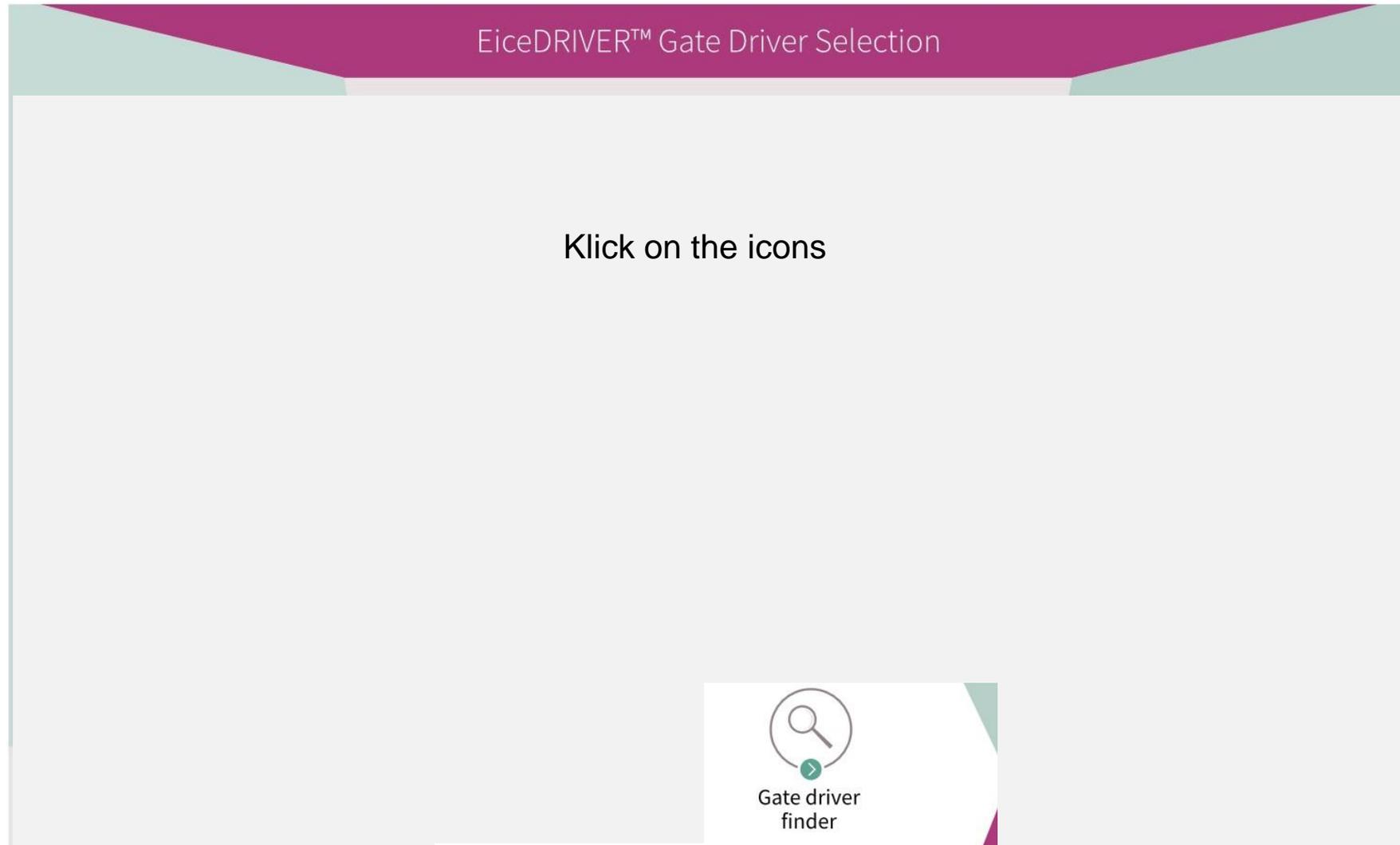
Gate driver selection with internet page

Selection by switch device



Gate driver selection with internet page

Selection by Gate driver finder



1ED3124MU12H

Overview

14 A, 5.7 kV (rms) single-channel isolated gate driver with separate output, UL 1577 certified, 10.5 V UVLO

Diagrams

Parametrics

Documents

Order

Boards

Simulation

Videos

Partners

Training

Support

EiceDRIVER™ Compact single-channel **isolated gate driver** with 14 A typical sinking and sourcing peak output current in DSO-8 wide-body package with large creepage distance (>8 mm) for **IGBTs**, **MOSFETs** and **SiC MOSFETs**

1ED3124MU12H belongs to the EiceDRIVER™ Compact 1ED31xx family (X3 compact family). 1ED3124 offers separate sink and source output, accurate and stable timing, active shutdown to ensure a safe IGBT off-state in case the output chip is not connected to the power, short-circuit clamping to limit the gate voltage during short circuit. The driver can operate over a wide supply voltage range, either unipolar or bipolar.

Summary of Features

- EiceDRIVER™ Compact single channel isolated gate driver 1ED31xx family (X3 compact family)
- For use with 650 V/1200 V/1700 V/2300 V IGBTs, Si and SiC MOSFETs
- 2300 V functional offset voltage capable for selected applications
- Galvanically isolated coreless transformer gate driver
- 14 A typical sinking and sourcing peak output current

Benefits

- Integrated filters reduce the need of external filters
- Tight IC-to-IC turn on propagation delay matching (7 ns max.), tolerance improves application robustness without variations due to aging, current, and temperature
- Suitable for operation at high ambient temperature and in fast switching applications
- UL 1577 (planned) VISO = 6.8 kV (rms) for 1 s, 5.7 kV (rms) for 1 min
- Tight propagation delay allows minimum deadtime

Follow



Buy online



1ED31xxMU12H Datasheet
> EN < Share
02_01 | 2021-03-01 | pdf |
438 KB



Gate Driver
Solution Finder

Find your solution!



Gate driver selection with internet page

Click on device - Overview

Overview

Diagrams

Parametrics

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Support

- 40 V absolute maximum output supply voltage
- 90 ns propagation delay with 30 ns input filter
- High common-mode transient immunity CMTI >200 kV/ μ s
- Separate source and sink outputs
- Short-circuit clamping and active shutdown
- DSO-8 300 mil wide-body package with large creepage distance (>8 mm)
- 10.5 V/12.5 V undervoltage lockout (UVLO) protection with hysteresis

Applications

- > Fast EV charging
- > Motor control and drives
- > Server power supply
- > Solutions for solar energy systems
- > Uninterruptible Power Supply (UPS)

Designers who used this product also designed with



F3L400R10W3S7F_B



F3L400R10W3S7_B1



FS3L200R10W3S7F_

improving system efficiency and decreasing harmonic distortion

- The precise threshold and timings, combined with UL 1577 certification enable superior application safety
- High isolation capability, can be used in 1500 V DC solar inverter application

MOSFET Finder

Select Breakdown Voltage

I_D (max) \geq A

$R_{DS(on)}$ (max) $<$ m Ω

Automotive Industrial Any

Reset

IGBT Discrete Finder

Select V_{CE} (Voltage Class)

I_C (max) \geq A

Frequency \geq kHz

Integrated Diode

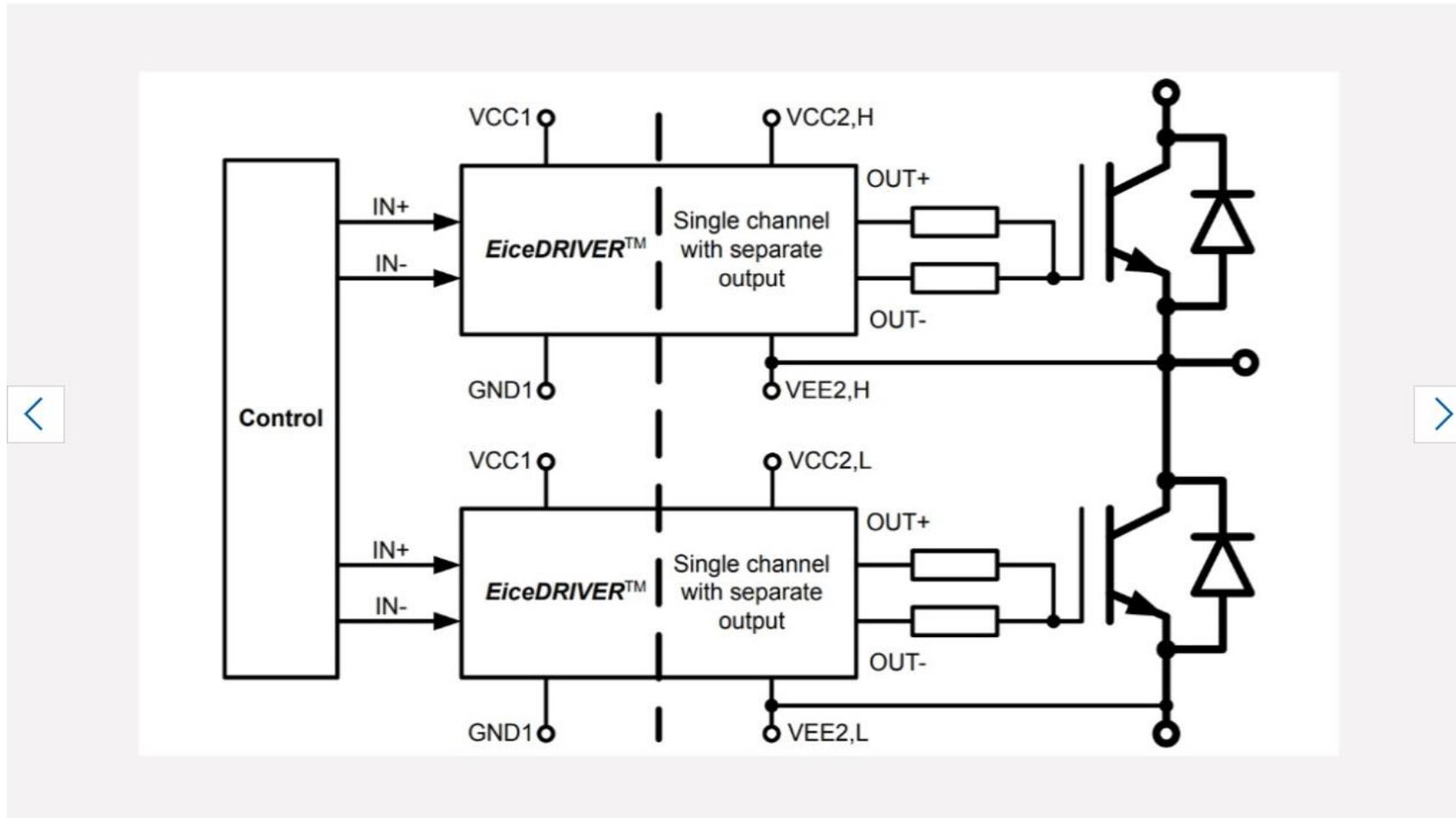
Automotive Industrial Any

Reset

Gate driver selection with internet page

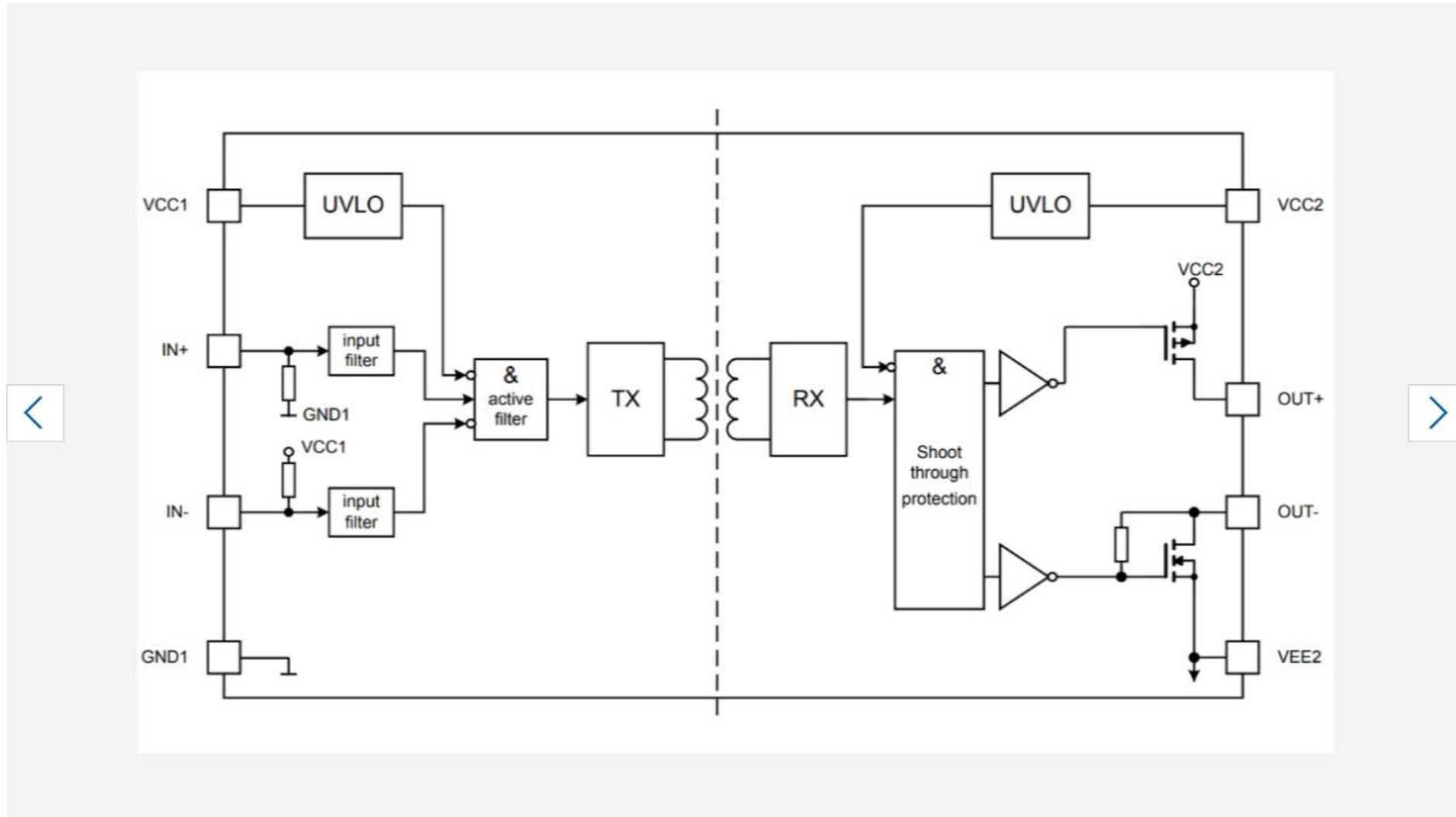
Click on device - Diagrams

Diagrams



Gate driver selection with internet page

Click on device - Diagrams



Gate driver selection with internet page

Click on device - Parametrics

[Overview](#)

[Diagrams](#)

[Parametrics](#)

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Parametrics

Parametrics	1ED3124MU12H
Channels	1.0
Configuration	High-side
Input Vcc min max	3.1 V 17.0 V
Isolation Type	Galvanic isolation - Functional
Output Current (Source)	13.5 A
Output Current (Sink)	14.0 A
Turn Off Propagation Delay	90.0 ns
Turn On Propagation Delay	90.0 ns
V _{BS} UVLO (On)	12.5 V
V _{BS} UVLO (Off)	10.5 V
V _{CC} UVLO (On)	3.1 V
V _{CC} UVLO (Off)	2.5 V
Voltage Class	2300.0 V

Gate driver selection with internet page

Click on device - Documents



- Overview
- Diagrams
- Parametrics
- Documents
- Order
- Boards
- Simulation
- Videos
- Training
- Support

Documents

The following documents contain sensitive information restricted to Infineon employees and their partners. Please be aware with whom you share it.
The  indicates access to Infineon employees only.
The  indicates access to Infineon employees and partners only.

+ Expand all

+ Data Sheets

+ Application Notes

+ FIT Report

+ Material Content Sheet  info

+ Application Brochure

+ Editorials

+ Product Selection Guide

+ Certificates

+ Fighting Guide

+ Customer Connector

+ New Product Introduction

+ Product Presentation

+ Training

Gate driver selection with internet page

Click on device - Boards

- Overview
- Diagrams
- Parametrics
- Documents
- Order
- Boards**
- Simulation
- Videos
- Training
- Support

Image	Board	Family	Description	Status
	EVAL-1ED3124MX12H Buy online	Gate Driver, IGBT Discrete	Evaluation board for 1ED3124MX12H - 2300 V, 14 A, 5.7 kV (rms) single-channel isolated gate driver with separate output, UL 1577 certified, 10.5 V UVLO > 1ED3124MU12H > IKQ75N120CH3	active and preferred
	EVAL-1ED3121MX12H Buy online	Gate Driver, IGBT Discrete	Evaluation board for 1ED3121MX12H - 2300 V, 5.5 A, 5.7 kV (rms) single-channel isolated gate driver with separate output, UL 1577 certified, 10.5 V UVLO > 1ED3121MU12H > IKQ75N120CH3	active and preferred
	EVAL-1ED3122MX12H Buy online	Gate Driver, IGBT Discrete	Evaluation board for 1ED3122MX12H - 2300 V, 10 A, 5.7 kV (rms) single-channel isolated gate driver with active Miller clamp, UL 1577 certified, 8 V UVLO > 1ED3122MU12H > IKQ75N120CH3	active and preferred

— PCB Design Data

[Copy link](#)

Gate driver selection with internet page

Click on device - Simulation

- Overview
- Diagrams
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- Documents
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- Simulation
- Videos
- Partners
- Training
- Support

Simulation

+ Expand all

— Simulation Models

Copy link



Spice Model for 1ED3124MU12H > EN < Share
01_02 | 2021-02-09 | zip | 2.2 MB

— Simulation Tool

Copy link



Simulate ONLINE - 1200 V, 14 A, 5.7 kV Single Channel Isolated Gate Driver IC EiceDRIVER™ 1ED3124MU12H with separate output > EN
< Share
01_02 | 2021-01-21 | htm | 960 B

Gate driver selection with internet page

Extracted Pspice files - documentations

- Automotive
- F3_Datasheets
- F3_Family
- GAN_MOSFET_EiceDriver
- IGBT_EiceDriver
- IGBT_MOSFET_SiC
- Isolation_Classes
- SOI
- SRC
- X3_Family
- 1ED-X3
- Compact
- Datasheet**
 - 150mil
 - 300mil
 - Simulation
 - Infineon-Spice_1ED3124MU12H-SimulationMode
 - Documentation**
 - Model
 - results

 Disclaimer.pdf	26.01.2021 08:58	Adobe Acrobat D...	131 KB
 GettingStarted.pdf	26.01.2021 08:58	Adobe Acrobat D...	2.122 KB

Gate driver selection with internet page

Click on device – Pspice models

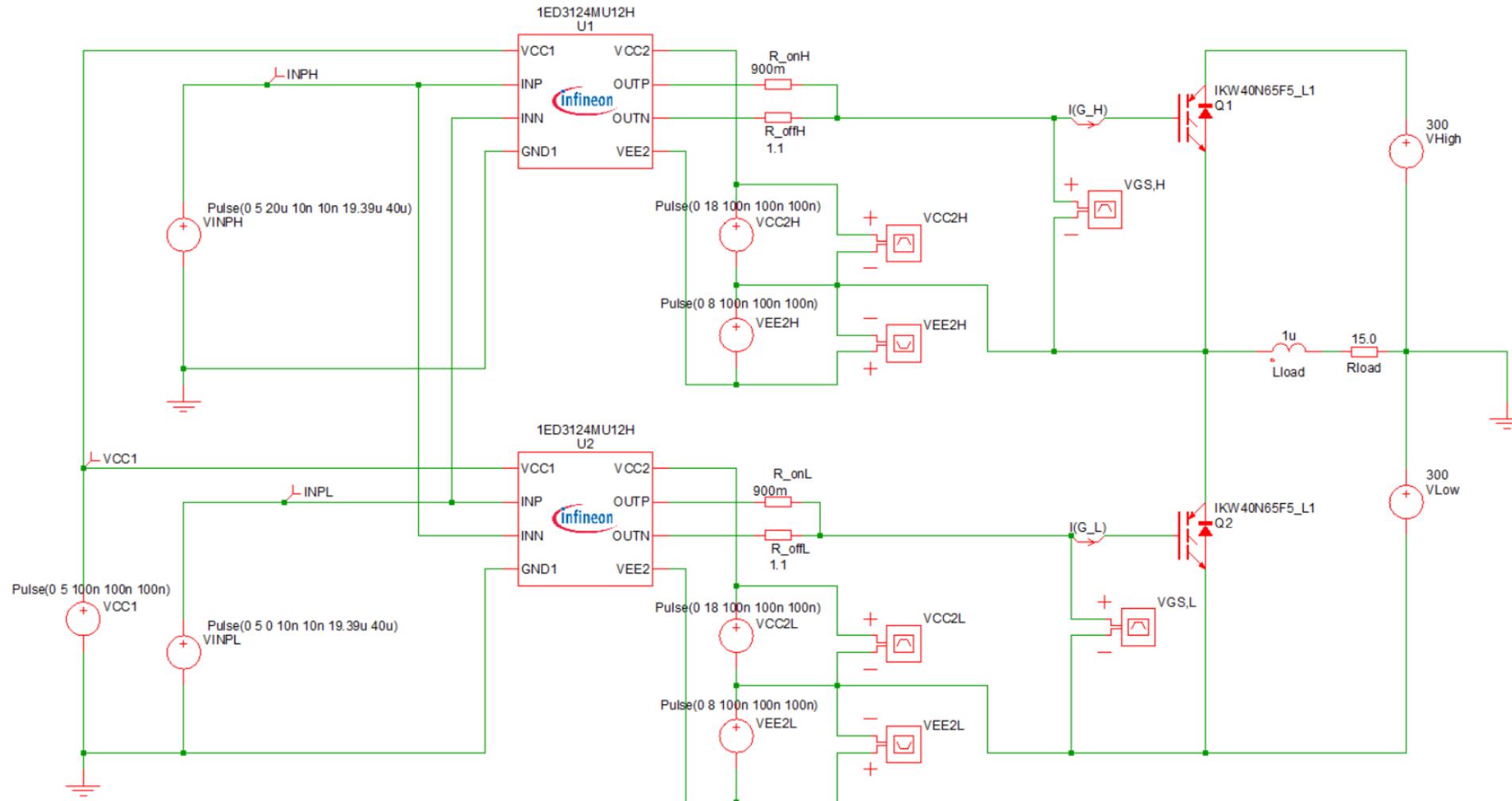
- Automotive
- > F3_Datasheets
- F3_Family
- GAN_MOSFET_EiceDriver
- > IGBT_EiceDriver
- IGBT_MOSFET_SiC
- > Isolation_Classes
- > SOI
- > SRC
- ▼ X3_Family
 - > 1ED-X3
 - ▼ Compact
 - ▼ Datasheet
 - 150mil
 - ▼ 300mil
 - ▼ Simulation
 - ▼ Infineon-Spice_1ED3124MU12H-SimulationMode
 - Documentation
 - ▼ Model

results	26.01.2021 08:59	File folder	
1ED3124MU12H.lib	26.01.2021 08:58	LIB File	16 KB
1ED3124MU12H.sxslb	26.01.2021 08:58	SXSLB File	28 KB
DEMO_TESTBENCH.sxsch	26.01.2021 08:59	SIMetrix Schematic	138 KB
design.net	12.04.2021 15:21	Altium Netlist File	4 KB
design.out	12.04.2021 15:22	OUT File	28 KB
lxx40N65F5_L1_V2.sxslb	26.01.2021 08:58	SXSLB File	3 KB
lxx40N65F5_L1_V2_Ex.lib	26.01.2021 08:58	LIB File	19 KB

.sxsch -> SIMetrix

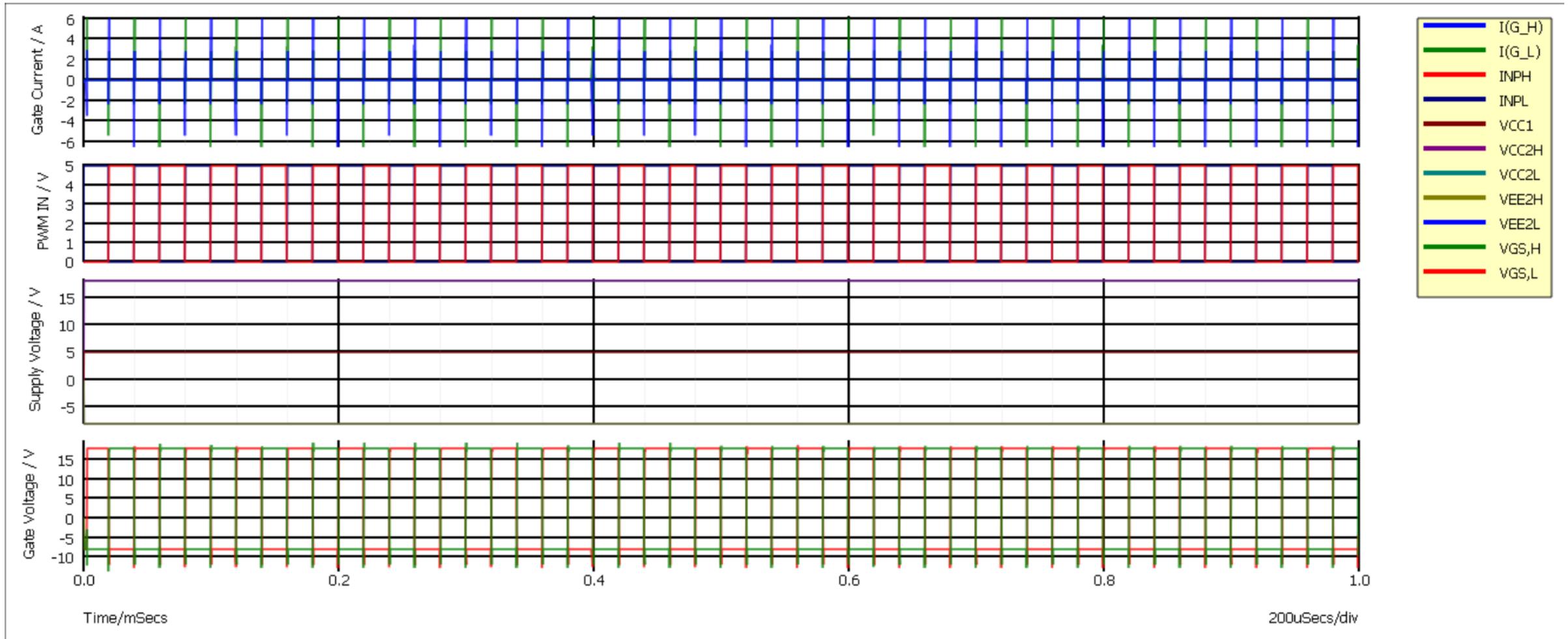
Gate driver selection with internet page

Pspice demo with SIMatrix



Gate driver selection with internet page

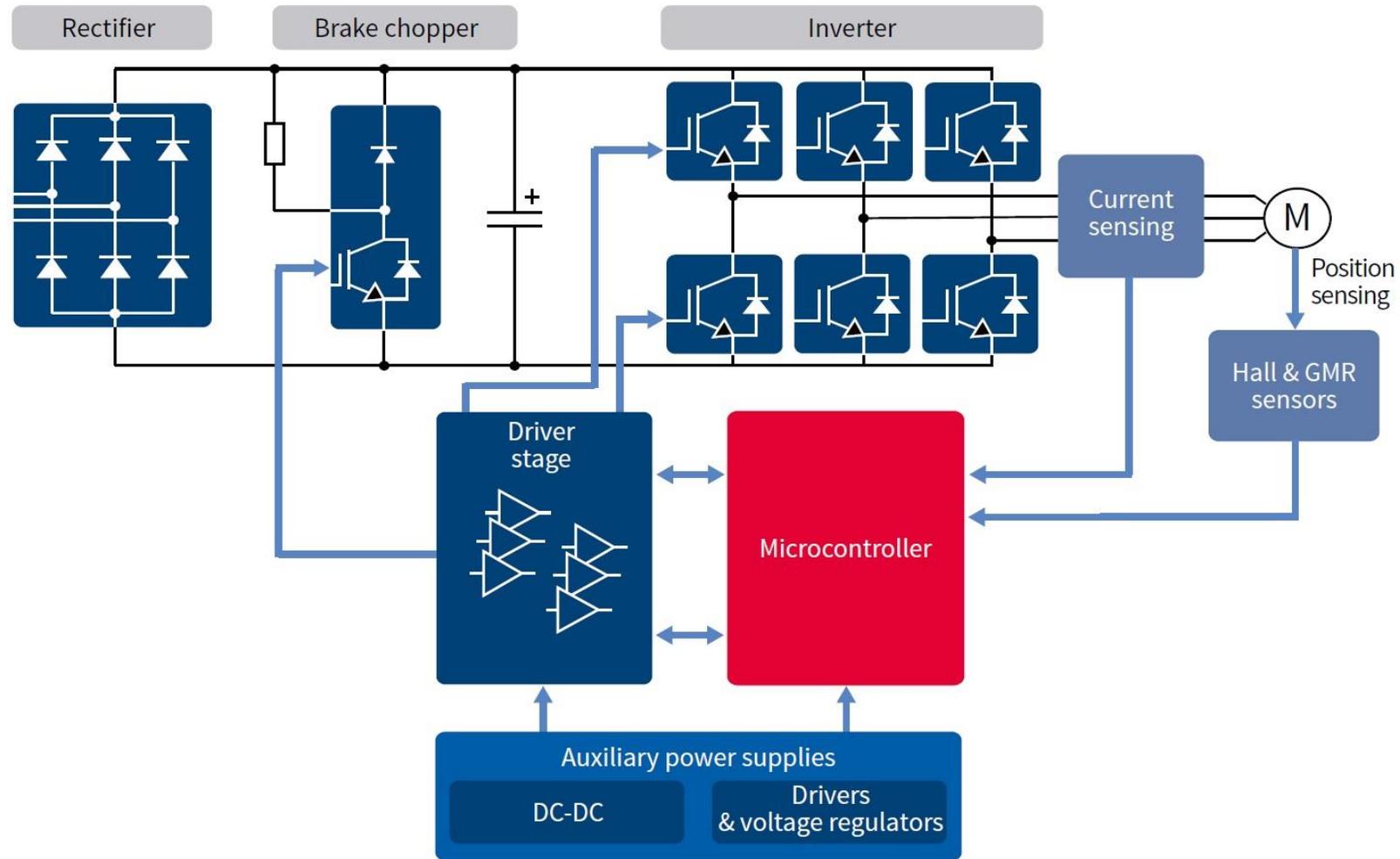
Pspice demo with SIMatrix - Output





Part of your life. Part of tomorrow.

Application



+ Recommended gate drivers for Drives

Recommended gate drivers for “Drives”

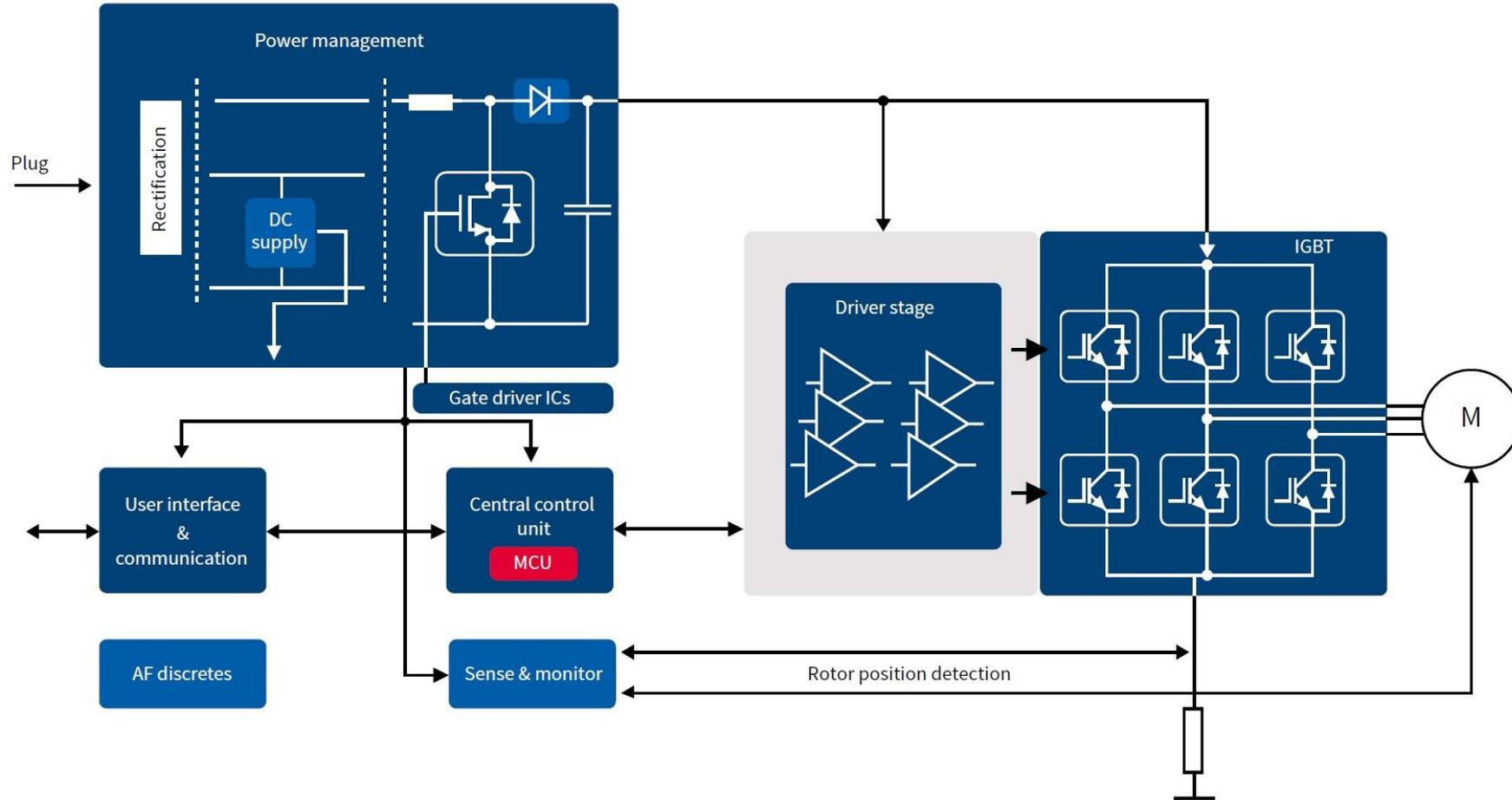
— Recommended gate drivers for Drives

Application	Driver Voltage class [V]	Configuration	Driver	Description	Suitable switches
	200	Half-bridge	IRS2007S/M	with V_{CC} & V_{BS} UVLO	<p>StrongIRFET™ IRF135B203, IRF135SA204</p> <p>OptiMOS™ 3 IPB072N15N3, IPB042N10N3 G, IPB107N20N3 G</p>
	600	Single high-side	IRS2127S	with FAULT-RPT, OCP	<p>TRENCHSTOP™ IGBT+Diode IKD10N60RF, IKA15N65ET6, IKW30N60DTP, IKB40N65ES5</p> <p>EasyPIM™ 1B/2B module FP10R06W1E3_B11, FP15R06W1E3_B11, FB20R06W1E3, FP20R06W1E3 R11</p>
		Half-bridge	2EDL23I06PJ	Infineon SOI technology with integrated bootstrap diode, OCP, EN, FAULT-RPT	
		High and low-side	IRS2186(4)S	with high current	



Major home appliances (MHA)

Page 36 in “driver selection guide”



+ Recommended gate drivers for “major home appliances”

Recommended gate drivers for “Major home appliances”

Page 36 in “driver selection guide”

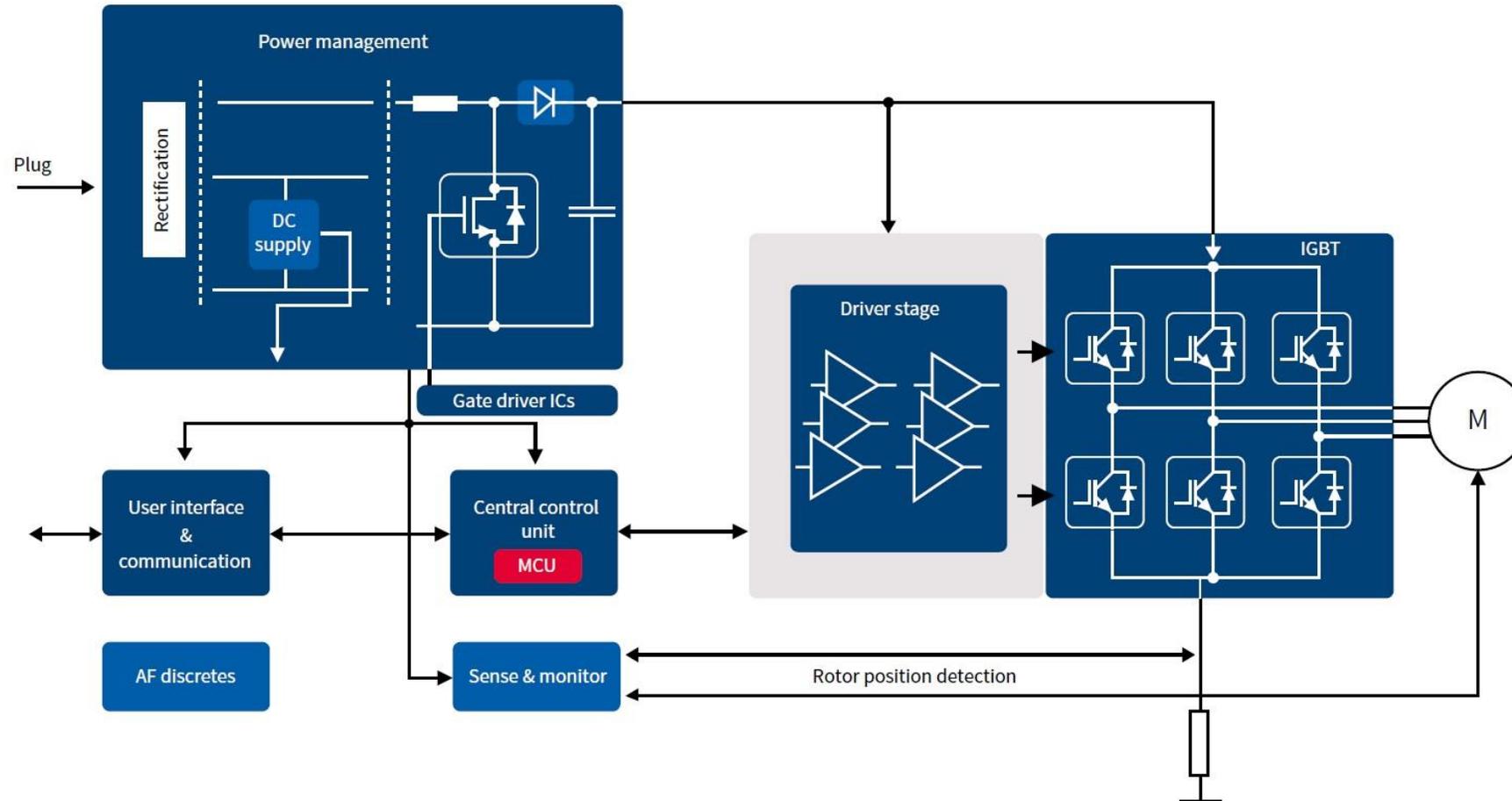
— Recommended gate drivers for Major home appliances

Application	Driver Voltage class [V]	Configuration	Driver	Description	Suitable switches
PFC	25	Single low-side	1ED44176N01F	OCP ($\pm 5\%$), EN, FAULT-RPT, programmable fault clear time	TRENCHSTOP™ IKW30N65H5, IKW40N65WR5, IKFW40N60DH3E, IKFW50N60DH3E
			IRS44273L	non-inverting single low-side driver with CMOS inputs in small SOT-23 package	Rapid diode IDW30E65D1, IDW60C65D1, IDFW40E65D1E, IDFW60C65D1
	20		1EDN8511B		CoolMOS™ MOSFET IPP60R060P7, IPP60R099P7, IPP60R120P7, IPP60R180P7, IPP60R280P7, IPP60R360P7
	25		IRS4427S	non-inverting dual low-side driver with CMOS inputs	CIPOS™ Mini
	20	Dual low-side			



Small home appliances

Page 40 in “driver selection guide”



+ Recommended gate drivers for “Small home appliances”

Recommended gate drivers for “Small home appliances”

Page 41 in “driver selection guide”

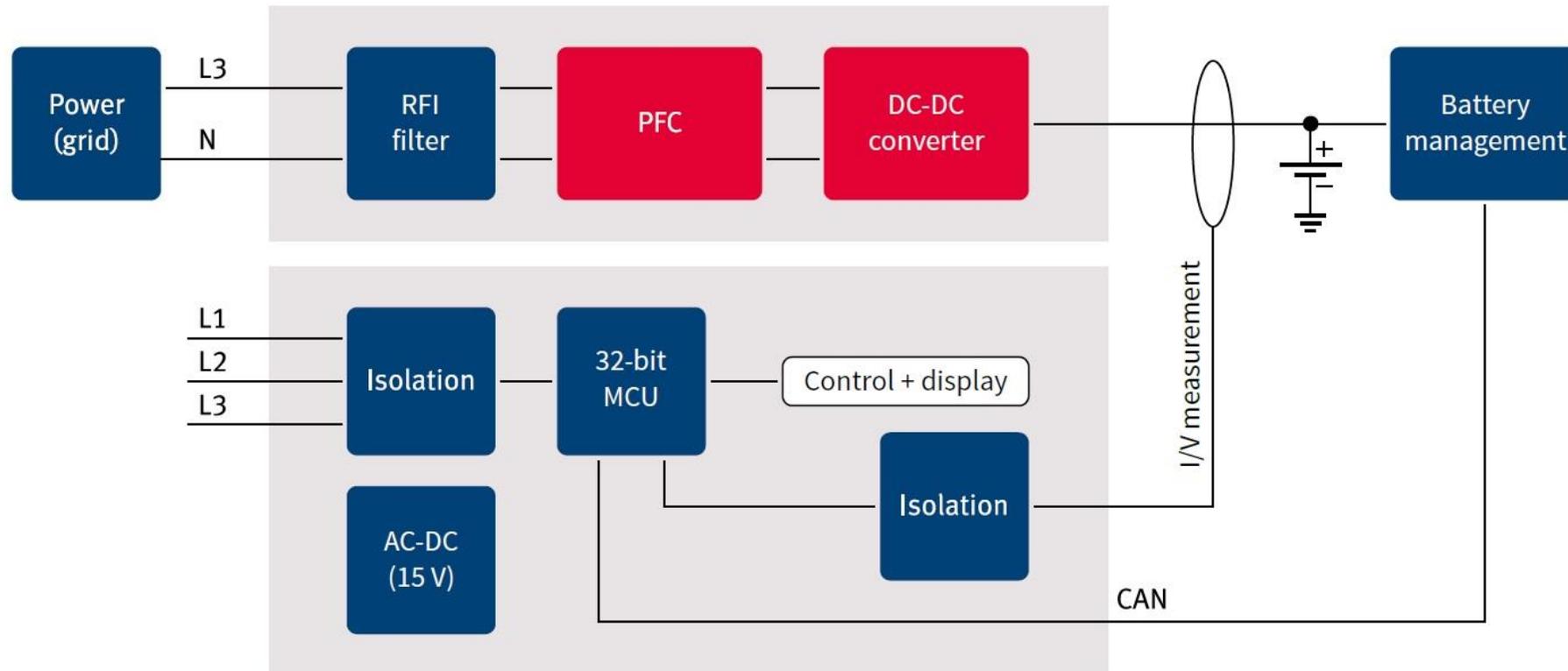
— Recommended gate drivers for Small home appliances and battery-powered applications

Application	Driver Voltage class [V]	Configuration	Driver	Description	Suitable switches
PFC	25	Single low-side	1ED44176N01F	OCP ($\pm 5\%$), EN, FAULT-RPT, programmable fault clear time	TRENCHSTOP™ IKW30N65H5, IKW40N65WR5, IKFW40N60DH3E, IKFW50N60DH3E
			IRS44273L	Non-inverting low-side driver with CMOS inputs	Rapid Diode IDW30E65D1, IDW60C65D1
	20	1EDN8511B	CoolMOS™ MOSFET IPP60R060P7, IPP60R099P7, IPP60R180P7, IPP60R360P7		
	25	Dual low-side	IRS4427S		iMOTION™ IMC102T, IMC302A*
20			2EDN8524F		
	80 ¹	Single low-side	1EDN7550B	Single-channel gate driver IC with truly differential inputs	



Electric & hybrid vehicles

Page 31 in “driver selection guide”



+ Recommended gate drivers for “Electric & hybrid vehicles”

Recommended gate drivers for “Electric & hybrid vehicles”

Page 31 in “driver selection guide”

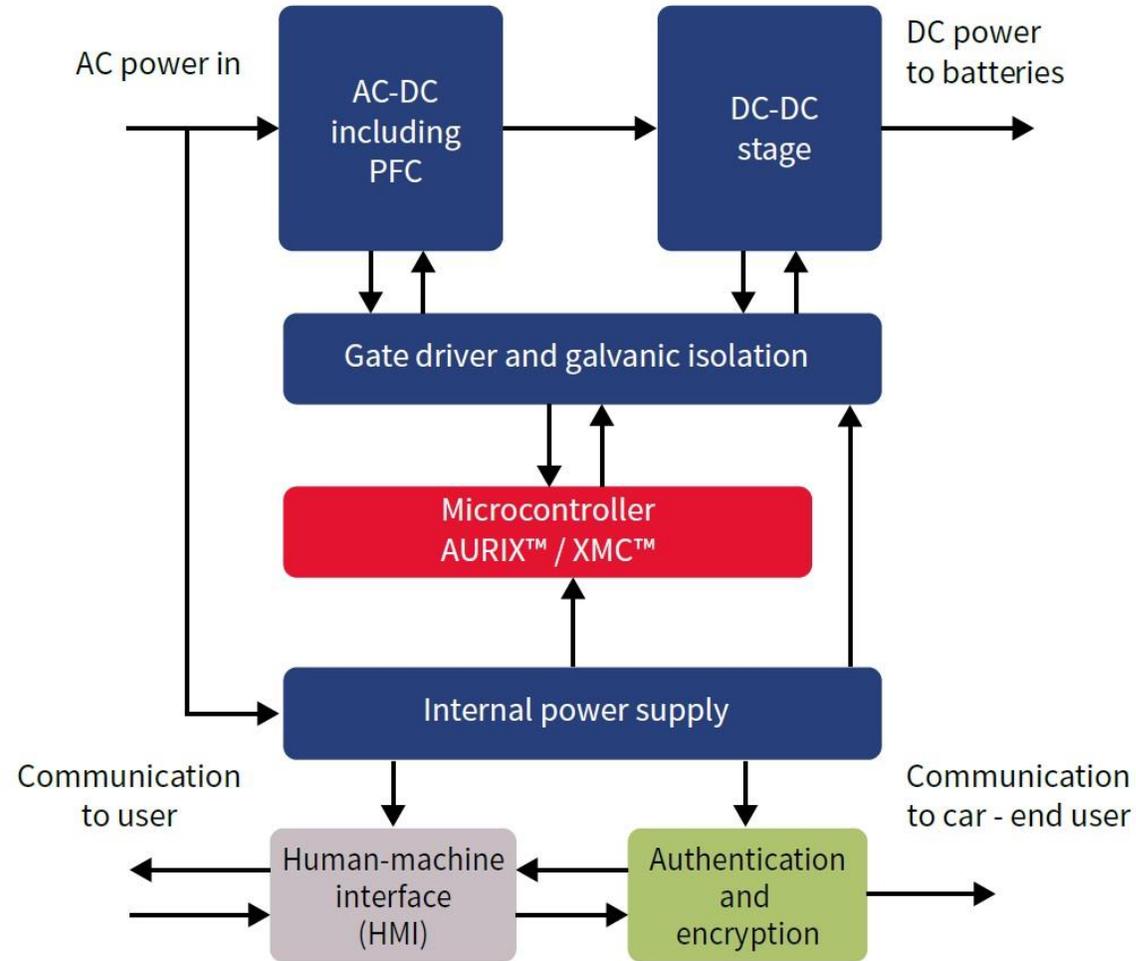
— Recommended gate drivers for Electric vehicles & hybrid vehicles

Application	Driver Voltage class [V]	Configuration	Driver	Description	Suitable switches
On-board charger & DC-DC converter	20	Dual low-side	AUIRB24427S	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	Automotive IGBT Discretes AIGW40N65H5 , AIGW40N65F5 , AIKW40N65DH5 , AIKW40N65DF5 , AIGW50N65H5 , AIGW50N65F5 , AIKW50N65DH5 , AIKW50N65DF5 , AUIRGP35B60PD , AUIRGP35B60PD-E , AUIRGP50B60PD1 , AUIRGP65G40D0 , AUIRGF65G40D0 , AUIRGP66524D0 , AUIRGF66524D0
	100	Half bridge	AUIR2085S	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™ CPA IPB60R099CPA , IPP60R099CPA , IPW60R045CPA ,
	200	Single low-side	AUIRS1170S	Secondary side high speed synchronous rectification controller, ccm operation	CoolMOS™ CPA IPB60R099CPA , IPP60R099CPA , IPW60R045CPA ,



EV charging

Page 33 in “driver selection guide”



+ Recommended gate drivers for “EV charging”

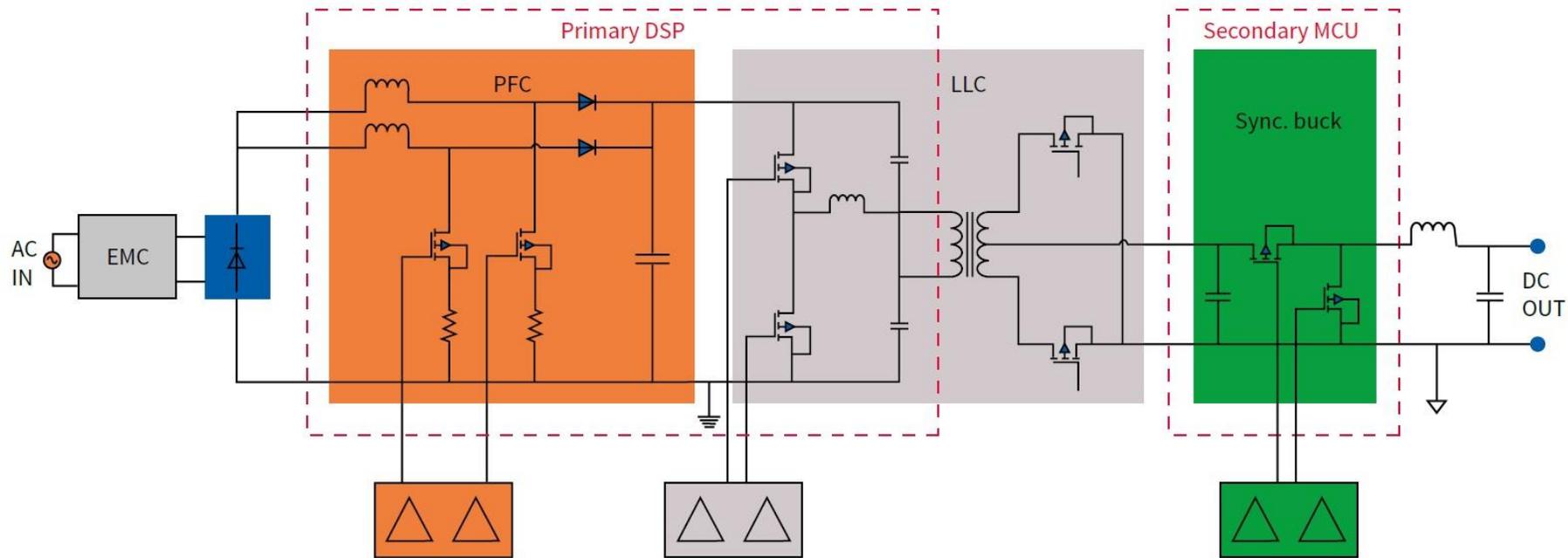
Recommended gate drivers for “EV charging”

Page 33 in “driver selection guide”

— Recommended gate drivers for EV charging

Application	Driver Voltage class [V]	Configuration	Driver	Description	Suitable switches
DC-DC (<3 kW)	600	High and low-side	IRS2113S/M	with SD	TRENCHSTOP™ IGBT+Diode IKB40N65EH5, IKW75N65EH5, IKZ75N65EH5 CoolMOS™ MOSFET IPP65R110CFD, IPP65R310CFD, IPP65R420CFD, IPP65R660CFD, IPW60R105CFD7, IPW60R145CFD7, IPP60R170CFD7, IPP60R280CFD7
			IRS2186(4)S	with high current	TRENCHSTOP™ IGBT+Diode IKW40N120H3 CoolMOS™ MOSFET IPP65R110CFD, IPP65R310CFD, IPP65R420CFD,
	1200	Single high-side	1EDI05I12AF	Functional isolation, ≥ 100 kV/μs CMTI, separate sink/source	TRENCHSTOP™ IGBT+Diode IKW40N120H3 CoolMOS™ MOSFET IPP65R110CFD, IPP65R310CFD, IPP65R420CFD,





+ Recommended gate drivers for “Lighting”

Recommended gate drivers for “Lighting”

Page 34 in “driver selection guide”

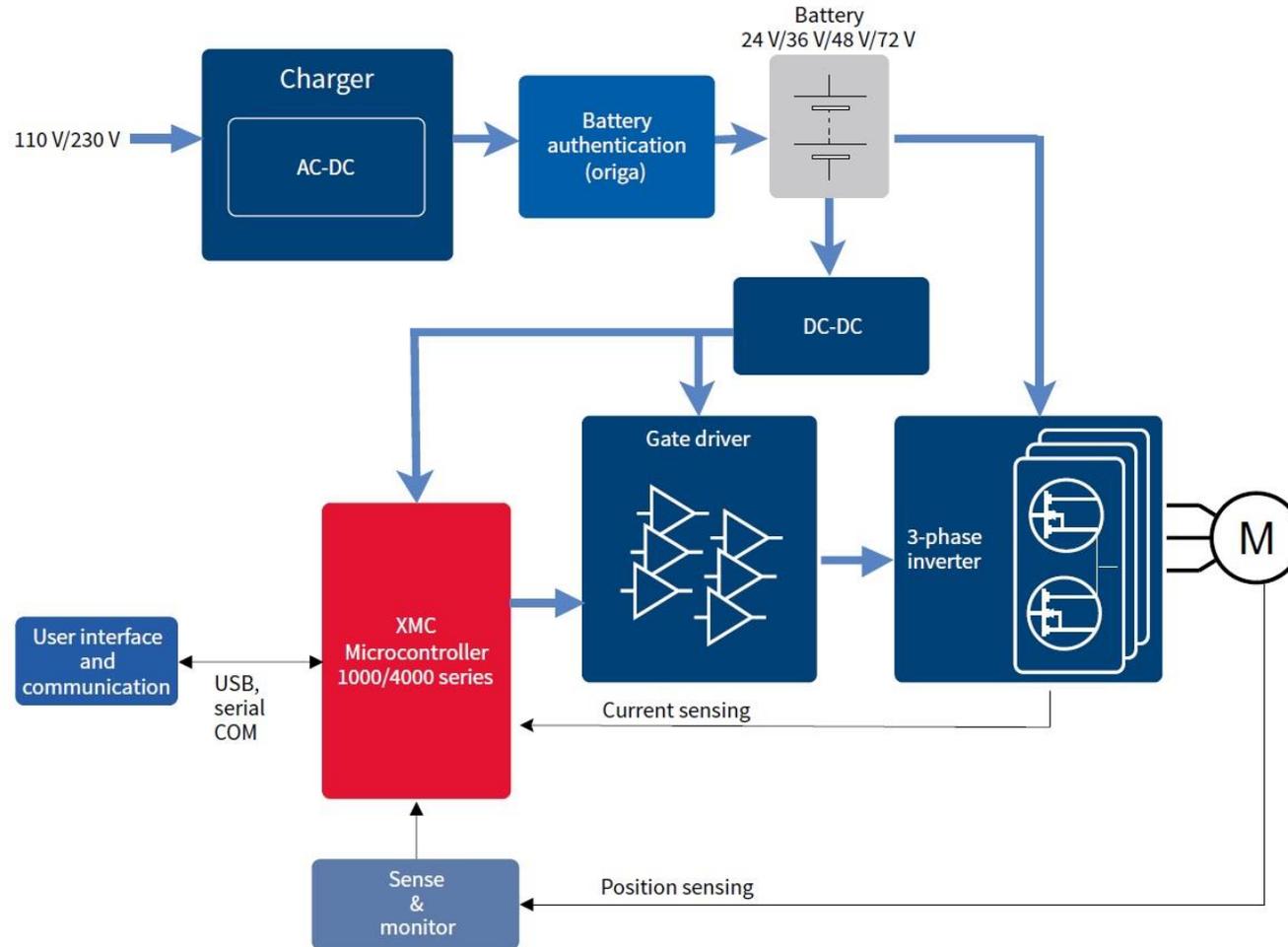
— Recommended gate drivers for Lighting

Application	Driver Voltage class [V]	Configuration	Driver	Description	Suitable switches
PFC	25	Single low-side	1ED44176N01F	OCP ($\pm 5\%$), EN, FAULT-RPT, programmable fault clear time	CoolMOS™ MOSFET IPP60R060P7 , IPP60R080P7 , IPP60R099P7 , IPP60R120P7 , IPP60R180P7 , IPP60R280P7 , IPP60R360P7
			IRS44273L	Non-inverting single low-side driver with CMOS inputs in small 5 pin SOT-23 package	
	20		1EDN8511B	Non-inverting single low-side driver with CMOS inputs in small 6 pin SOT-23 package	
	25	Dual low-side	IRS4427S	Non-inverting dual low-side driver with CMOS inputs	



Light electric vehicles

Page 35 in “driver selection guide”



+ Recommended gate drivers for “Light electric vehicles”

Recommended gate drivers for “Light electric vehicles”

Page 35 in “driver selection guide”

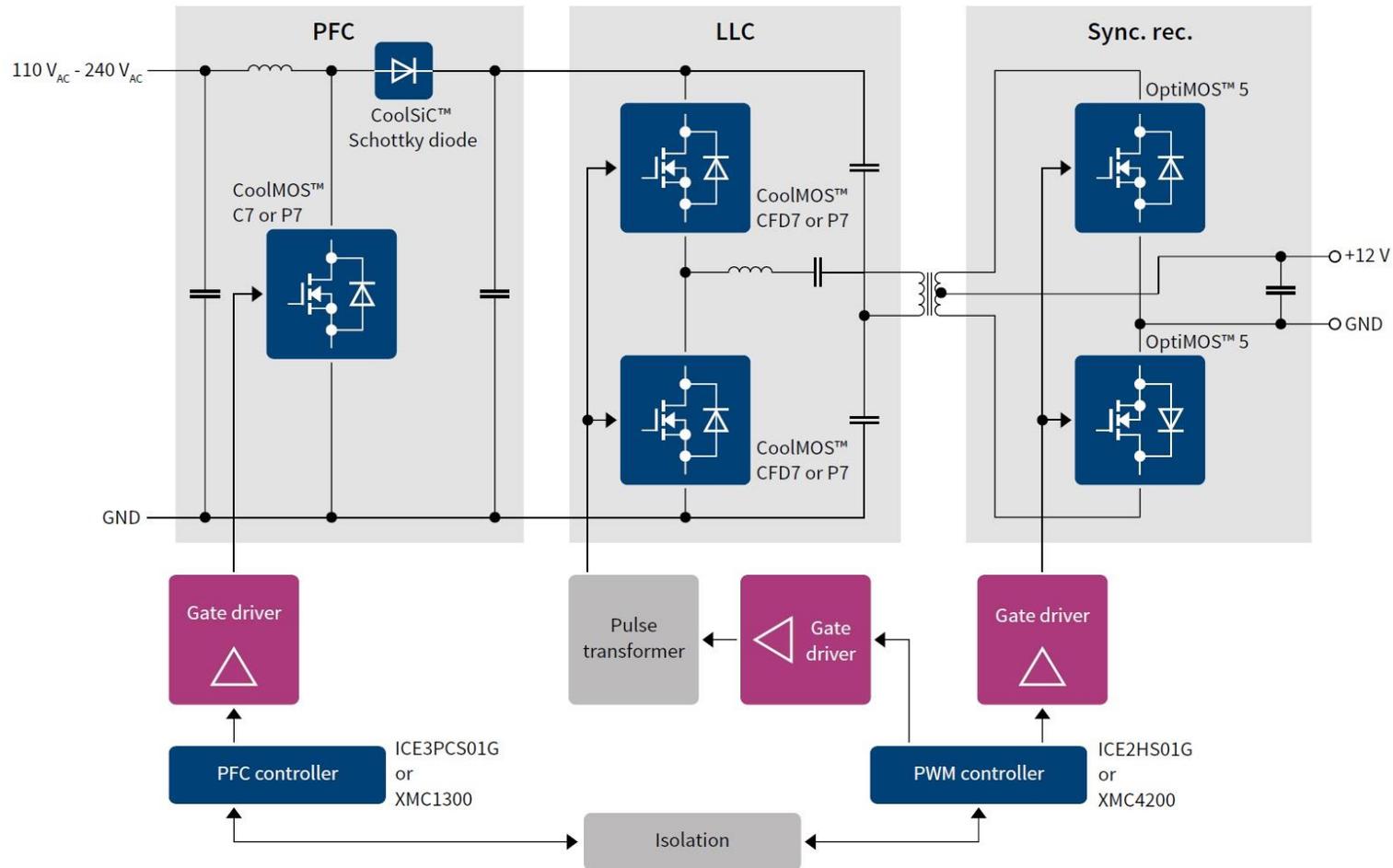
— Recommended gate drivers for Light electric vehicles

Application	Driver Voltage class [V]	Configuration	Driver	Description	Suitable switches	
Motor inverter /BLDC (<2 kW)	200	High and low-side	IRS2005S/M	with V_{CC} & V_{BS} UVLO	StrongIRFET™ IRFB7530PBF, IRFS7530PBF, IRF100B201, IRF100S201, IRF135B203, IRF135S203, IRFB4115, IRFS4115	
			IRS2011S			
		Half-bridge	IRS2008S/M			
			IRS2007S/M			
		Three-phase	6EDL04N02PR			Infineon SOI technology with integrated bootstrap diode, OCP, EN, FAULT-RPT
						Infineon SOI



Switch-mode power supply (SMPS)

Page 42 in “driver selection guide”



+ Recommended gate drivers for “Switch-mode power supply”

Recommended gate drivers for “Switch-mode power supply”

Page 43 in “driver selection guide”

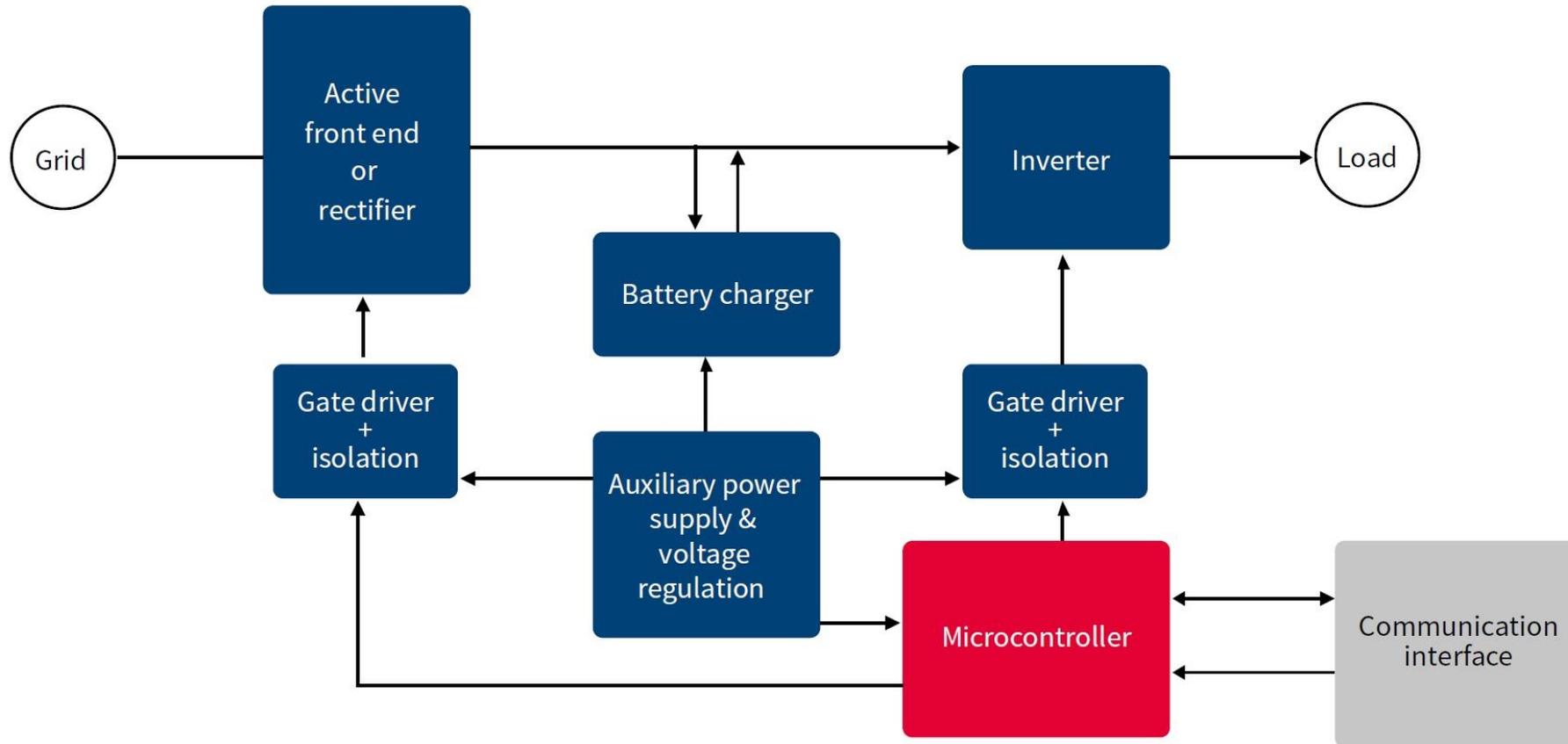
— Recommended gate drivers for Switch-mode power supply

Application	Driver Voltage class [V]	Configuration	Driver	Description	Suitable switches
PFC	80 ¹	Single low-side	1EDN8550B	Non-inverting signal low side driver with truly differential inputs, especially for kelvin source 4 pin device in PFC boost	CoolMOS™ 7 series
	25		1ED44176N01F	OCP (±5%), EN, FAULT-RPT, programmable fault clear time	
	20		1EDN8511B	non-inverting signal low-side driver with CMOS inputs	
		Dual low-side	2EDN8524F	non-inverting dual low-side driver with CMOS inputs	
	650	Single high-side	1EDF5673F	Functional isolation	CoolGaN™
		Dual high-side	2EDF7275F		



Uninterruptible power supply (UPS)

Page 44 in “driver selection guide”



+ Recommended gate drivers for “UPS”

Recommended gate drivers for “UPS”

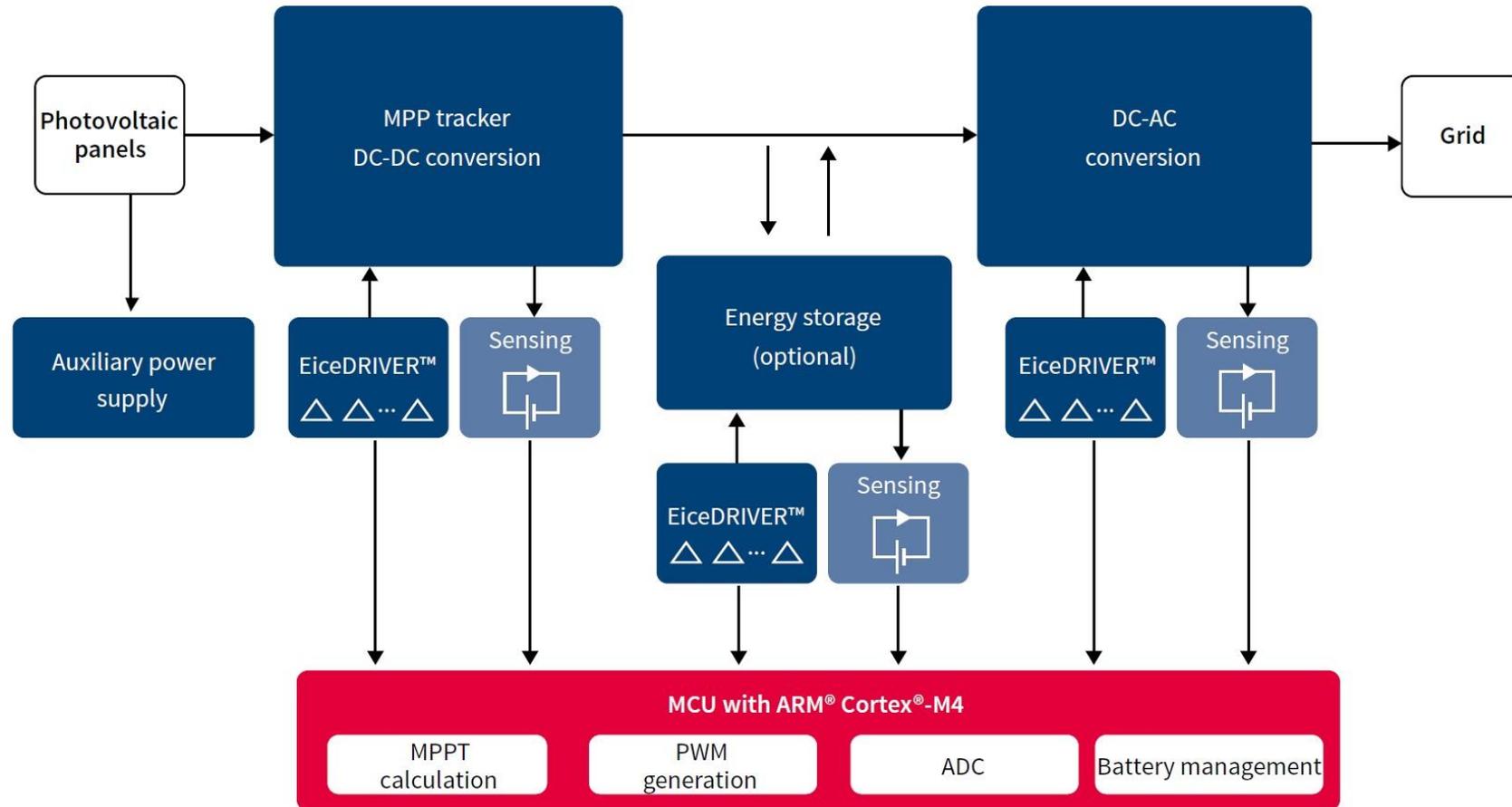
— Recommended gate drivers for Uninterruptible power supply

Application	Driver Voltage class [V]	Configuration	Driver	Description	Suitable switches
Battery DC-DC (<3.5 kW)	600	Half-bridge	2EDL05I06PJ	Infineon SOI technology with integrated bootstrap diode	TRENCHSTOP™ and TRENCHSTOP™ 5 IK(W/Z)50N65EH5, IK(W/Z)50N65ES5, IKFW50N60ET
			2EDL23I06PJ	Infineon SOI technology with integrated bootstrap diode, OCP, EN, FAULT-RPT	EasyPACK™ 1B/2B module FS20R06W1E3_B11, FS50R06W1E3_B11, F4-75R06W1E3
		Single high-side	1EDI20I12AF	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	SD and Separate power supply	EasyPACK™ 1B/2B module FS25R12W1T4_B11
					CoolSiC™ SiC MOSFET



Renewable energy

Page 38 in “driver selection guide”



+ Recommended gate drivers for “Renewable energy”

Recommended gate drivers for “Renewable energy”

Page 39 in “driver selection guide”

— Recommended gate drivers for Renewable energy

Application	Driver Voltage class [V]	Configuration	Driver	Description	Suitable switches
Solar inverter Boost / SMPS	25	Single low-side	1ED44176N01F	OCP ($\pm 5\%$), EN, FAULT-RPT, programmable fault clear time	CoolMOS™ MOSFET IPW65R019C7 , IPW65R065C7 , IPW65R095C7 , IPW65R190C7
			IRS44273L		
	Dual low-side	IRS4427S	non-inverting low-side driver with Dual CMOS inputs		
		2EDN8524F			
	20				
1200	Single high-side	1EDI20N12AF	Functional isolation, ≥ 100 kV/ μ s CMTI, separate sink/source	CoolSiC™ SiC MOSFET module DF11MR12W1M1_B11 , DF23MR12W1M1_B11 EasyPACK™ 1B/2B module family DF100R07W1H5FP_B54 , DF160R12W2H3F_B11	



Isolation

Selection not isolated

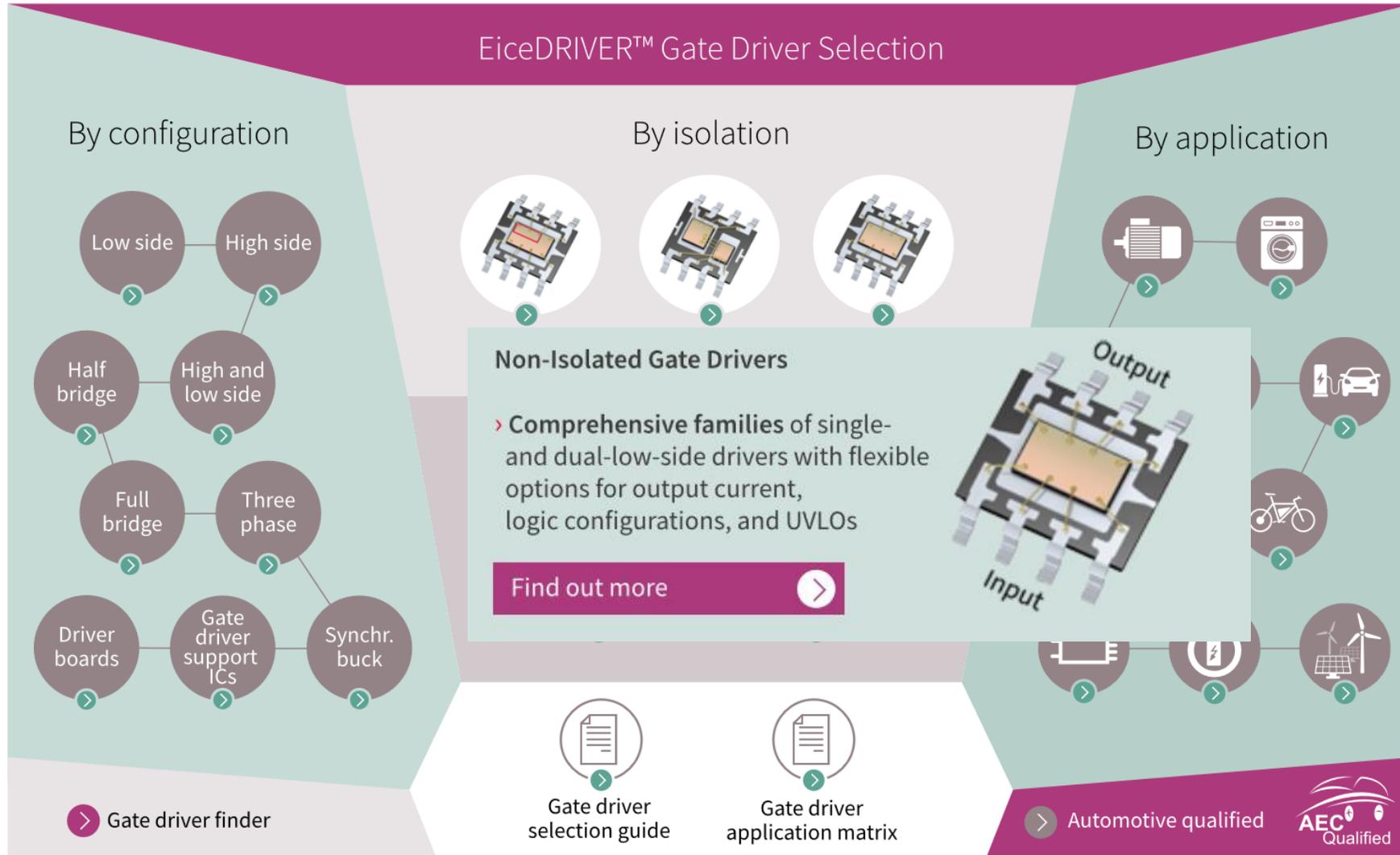


Table non isolated driver

Close configuration Compare Share Download 38 Results

Filter	Product	OPN	Product Status	Order online	Voltage Class	Output Current Source	Output Current Source min
Filter	> 1EDN7550B	1EDN7550BXTSA1	active and preferred	Buy Online	80 V	4 A	-
Filter	> 1EDN8511B	1EDN8511BXUSA1	active and preferred	Buy Online	20 V	4 A	-
Filter	> 1EDN8550B	1EDN8550BXTSA1	active and preferred	Buy Online	80 V	4 A	-
Filter	> 2EDN7424F	2EDN7424FXTMA1	active and preferred	Buy Online	-	4 A	-
Filter	> 2EDN7424R	2EDN7424RXUMA1	active and preferred	Buy Online	-	4 A	-
Filter	> 2EDN7523F	2EDN7523FXTMA1	active and preferred	Buy Online	20 V	5 A	-

Filter Edit Table
 Product OPN Product Status Order online Voltage Class Output Current Source Output Current Source min
 Channels Configuration
 Reset all Hide filters

Selection isolated

EiceDRIVER™ Gate Driver Selection

By configuration

- Low side >
- High side >
- Half bridge >
- High and low side >
- Full bridge >
- Three phase >
- Driver boards >
- Gate driver support ICs >

By isolation

By application

- >
- >
- >
- >
- >
- >
- >
- >

Isolated Gate Drivers

- > **Strongest gate-drive output currents** (up to 10 A) reducing need for external booster circuits
- > **Reliable and accurate protection** of precise & tight DESAT, active Miller clamp, UL & VDE certified

Find out more >

> Gate driver finder

> Gate driver selection guide

> Gate driver application matrix

> Automotive qualified

Table isolated driver

Close configuration Compare Share Download 54 Results

Filter Edit Table

	Product	OPN	Product Status	Order online	Voltage Class	Output Current Source min	Output Current Source
	Filter	Filter	Filter	Filter	Filter	Filter	Filter
Product	> 1ED020I12-FT	1ED020I12FTXUMA1	active and preferred	Buy Online	1200 V	1.5 A	2 A
OPN	> 1EDC05I12AH	1EDC05I12AHXUMA1	active and preferred	Buy Online	1200 V	0.5 A	1.3 A
Product Status	> 1EDC10I12MH	1EDC10I12MHXUMA1	active and preferred	Buy Online	1200 V	1 A	2.2 A
Order online	> 1EDC20H12AH	1EDC20H12AHXUMA1	active and preferred	Buy Online	1200 V	2 A	4 A
Voltage Class	> 1EDC20I12AH	1EDC20I12AHXUMA1	active and preferred	Buy Online	1200 V	2 A	4 A
Output Current Source min	> 1EDC20I12MH	1EDC20I12MHXUMA1	active and preferred	Buy Online	1200 V	2 A	4.4 A
Output Current Source	> 1EDC30I12MH	1EDC30I12MHXUMA1	active and preferred	Buy Online	1200 V	3 A	5.9 A
Output Current Sink min							
Output Current Sink							
Channels							
Configuration							

Reset all Hide filters

Selection level shift

EiceDRIVER™ Gate Driver Selection

By configuration

- Low side >
- High side >
- Half bridge >
- Full bridge >
- Driver boards >

By isolation

By application

- Motor >
- Washing machine >
- Drill >
- Car >
- EV charging >
- Lighting >
- Bicycle >
- Power supply >
- Battery >
- Renewable energy >

Level Shift Gate Drivers

- > **Infineon SOI technology** with integrated bootstrap diode, low level-shift losses, and best robustness against -VS transient spikes
- [Find out more >](#)
- > **JI technology** trustfully used in all high-voltage gate drive applications for 20 years
- [Find out more >](#)

Discover our portfolio

200 V >

500-700 V >

1200 V >

> Gate driv

> Selection gate
> application matrix

> Automotive qualified

Table level shift driver

Close configuration Compare Share Download 185 Results

Filter Edit Table

Product	OPN	Product Status	Order online	Voltage Class	Output Current Source min	Output Current Source
> 6EDL04I06PT	6EDL04I06PTXUM...	active and preferred	Free Sample Buy Online	600 V	0.12 A	0.165 A
> 6EDL04N06PC	6EDL04N06PCX1S...	active and preferred	Buy Online	600 V	-	0.17 A
> 6EDL04N06PT	6EDL04N06PTXU...	active and preferred	Buy Online	600 V	0.12 A	0.165 A
> IR2102	IR2102PBF	active and preferred	Buy Online	600 V	0.13 A	0.21 A
> IR2102S	IR2102SPBF	active and preferred	Buy Online	600 V	0.13 A	0.21 A
> IR2114SS	IR2114SSSTRPBF	active and preferred	Buy Online	600 V	1 A	2 A
> IR2125	IR2125PBF	active and preferred	Buy Online	500 V	1 A	1.6 A
> IR2125S	IR2125SPBF	active and preferred	Buy Online	500 V	1 A	1.6 A

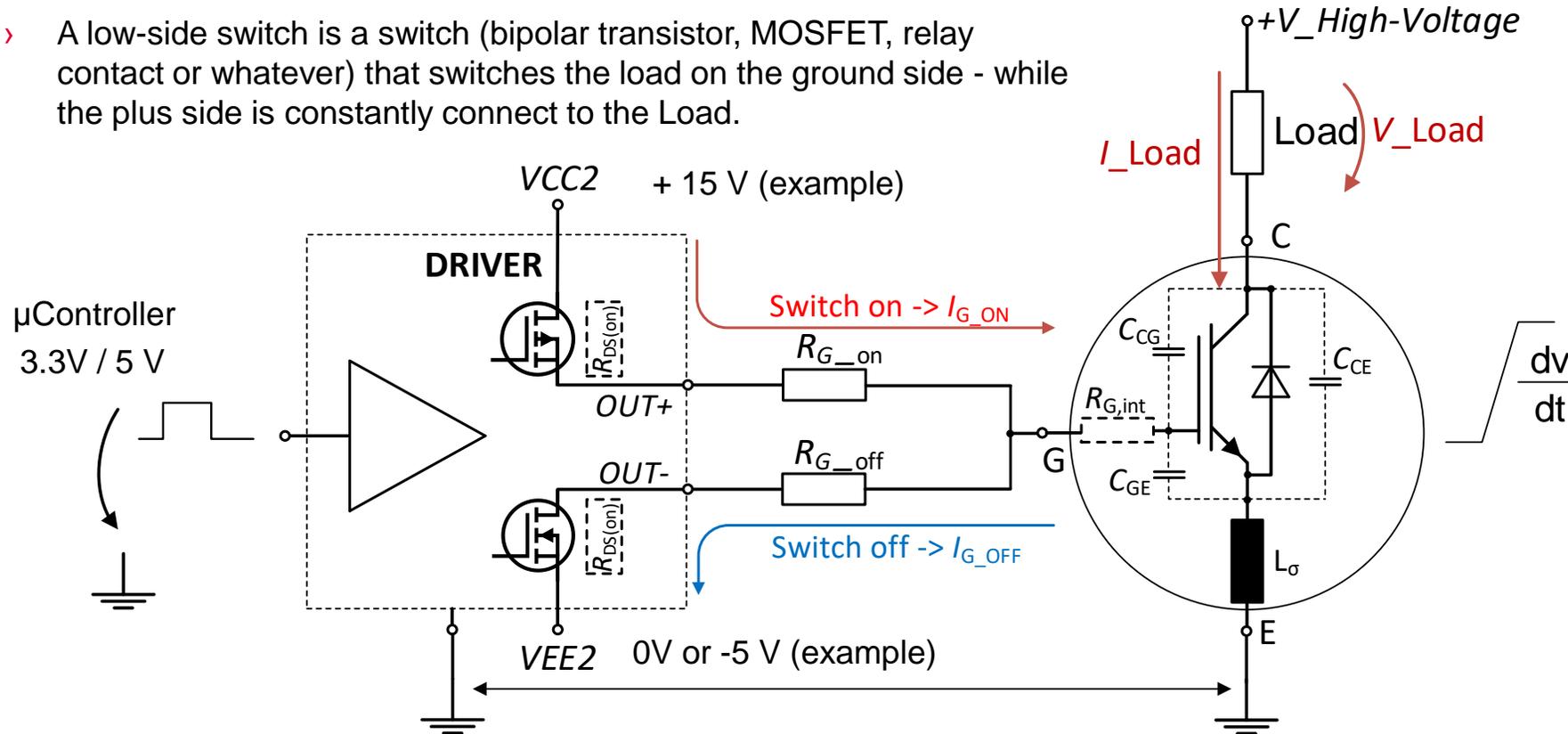
Reset all Hide filters



EiceDRIVER™ Driver configuration

Basics -> low-side driver

- A low-side switch is a switch (bipolar transistor, MOSFET, relay contact or whatever) that switches the load on the ground side - while the plus side is constantly connect to the Load.



Advantage:

- Much simpler control
- Simpler way to measure (Reference to ground)

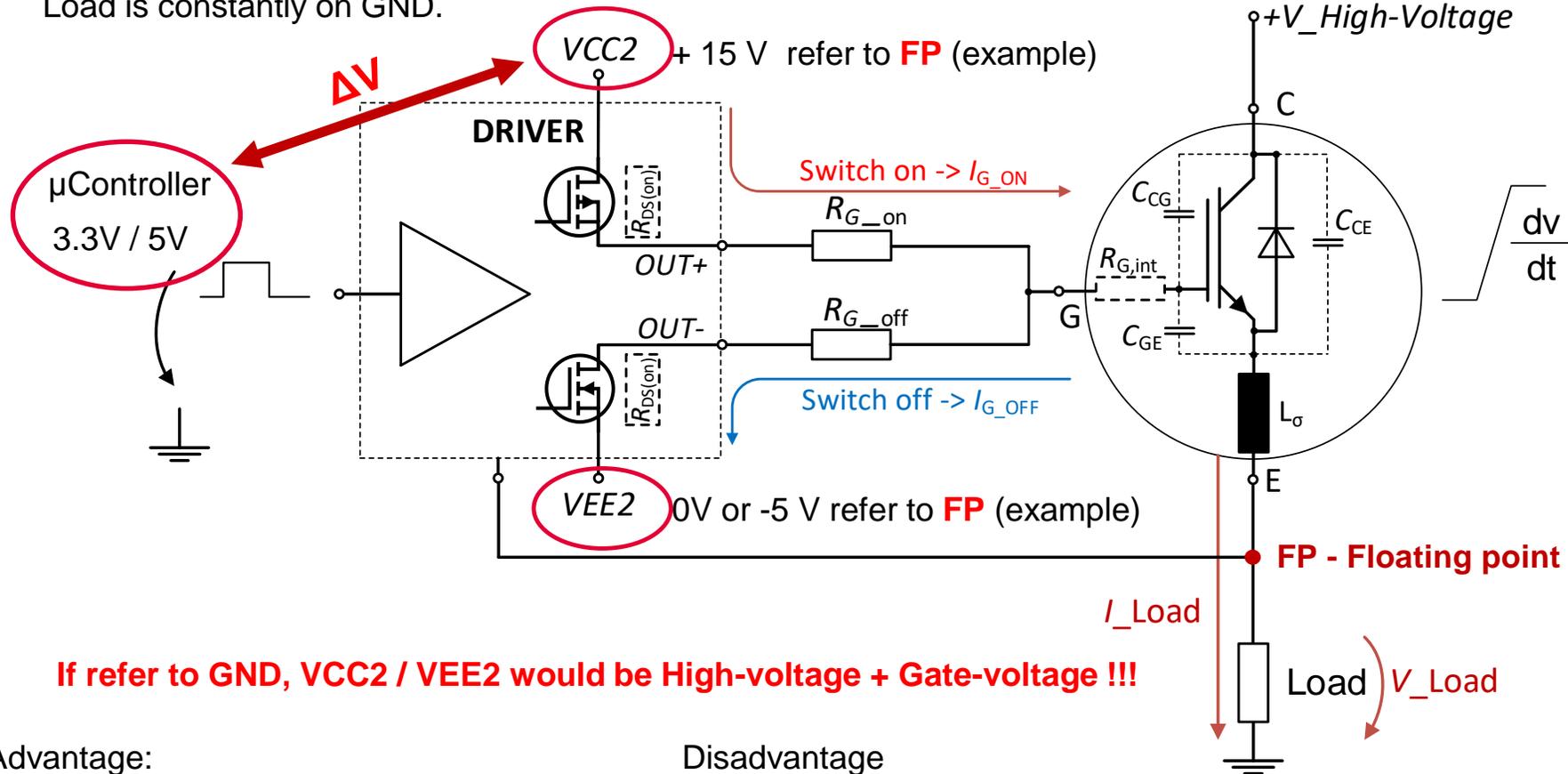
Disadvantage:

- **Load** always connected to **high-voltage** (at both poles)

EiceDRIVER™ Driver configuration

Basics -> high-side driver

- › A high-side switch is a switch (bipolar transistor, MOSFET, relay contact or whatever) that switches the load on the high-side - while the Load is constantly on GND.



Advantage:

- › If switch is off, Load has GND potential

Disadvantage

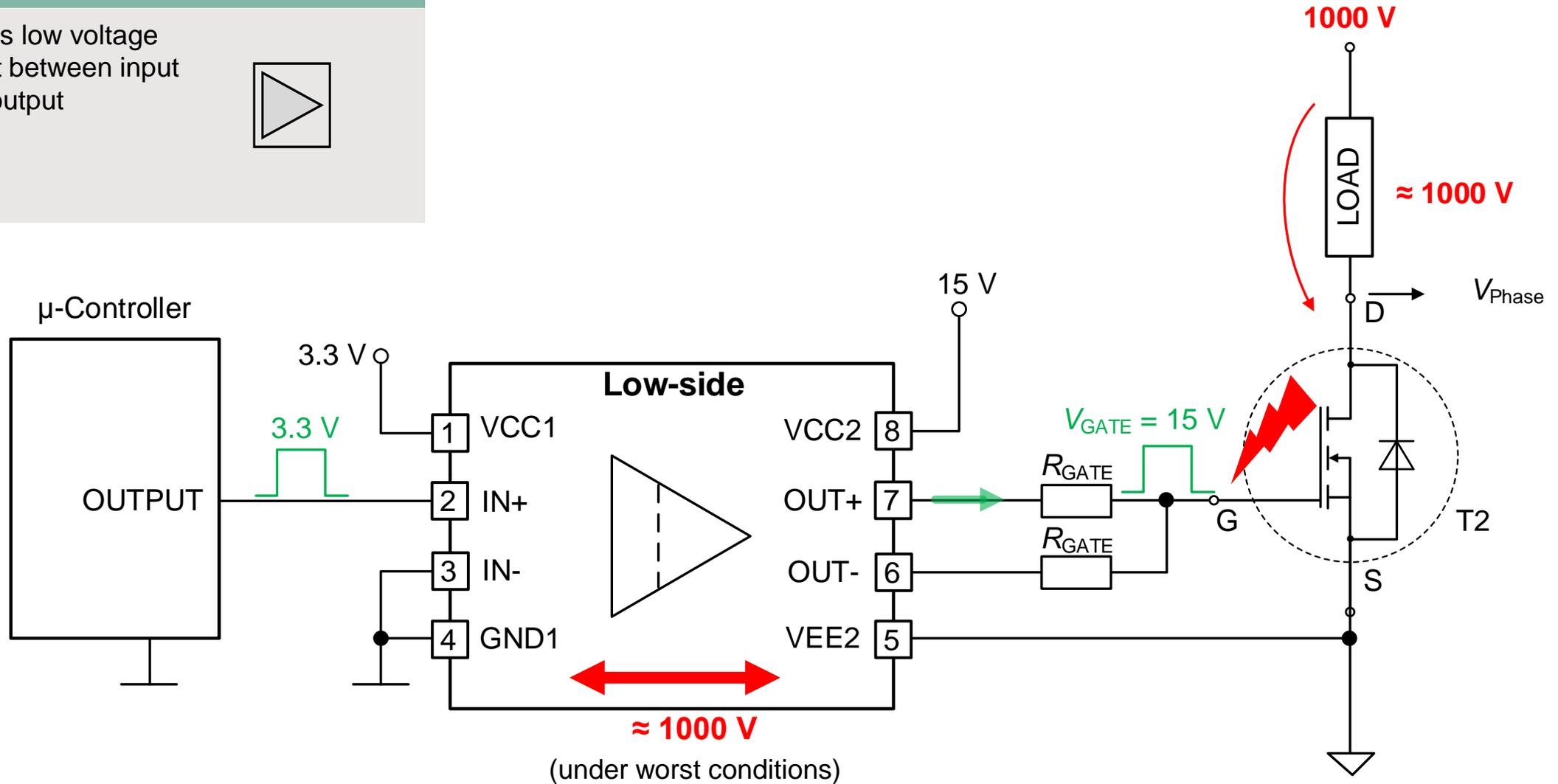
- › Driver needs power supply (VCC2; VEE2) which is independent of ground whose reference potential is at the source or emitter terminal of the switching transistor

EiceDRIVER™ Driver configuration

Low-Side Driver

Single-channel low-side driver

Allows low voltage offset between input and output



EiceDRIVER™ Driver configuration

Single-channel low-side driver

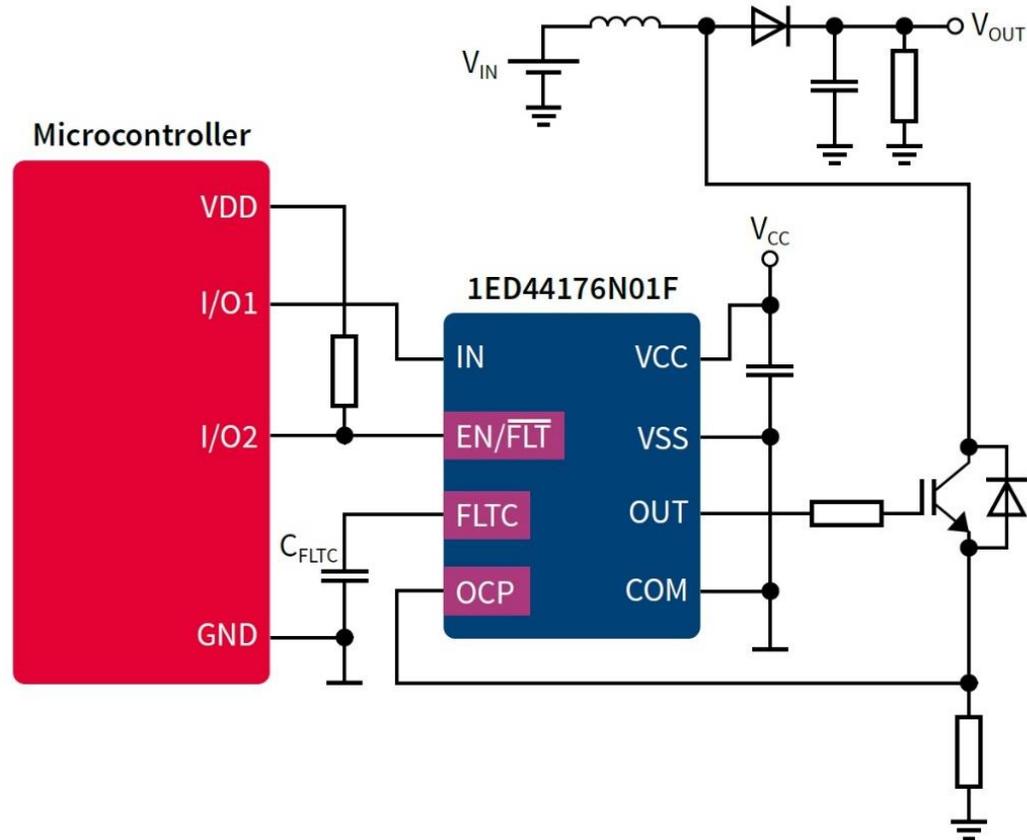
Single-channel low-side driver

Allows low voltage offset between input and output



Features

- 25 V single-channel device
- Single pin for fault output and enable
- Programmable fault clear time
- Under voltage lockout
- CMOS Schmitt-triggered inputs
- Over-current detection with positive voltage input
- 0.5 V over-current threshold with accurate $\pm 5\%$ tolerance
- CMOS Schmitt-triggered inputs
- 3.3 V, 5 V and 15 V input logic compatible



EiceDRIVER™ Driver configuration

Dual-channel low-side driver

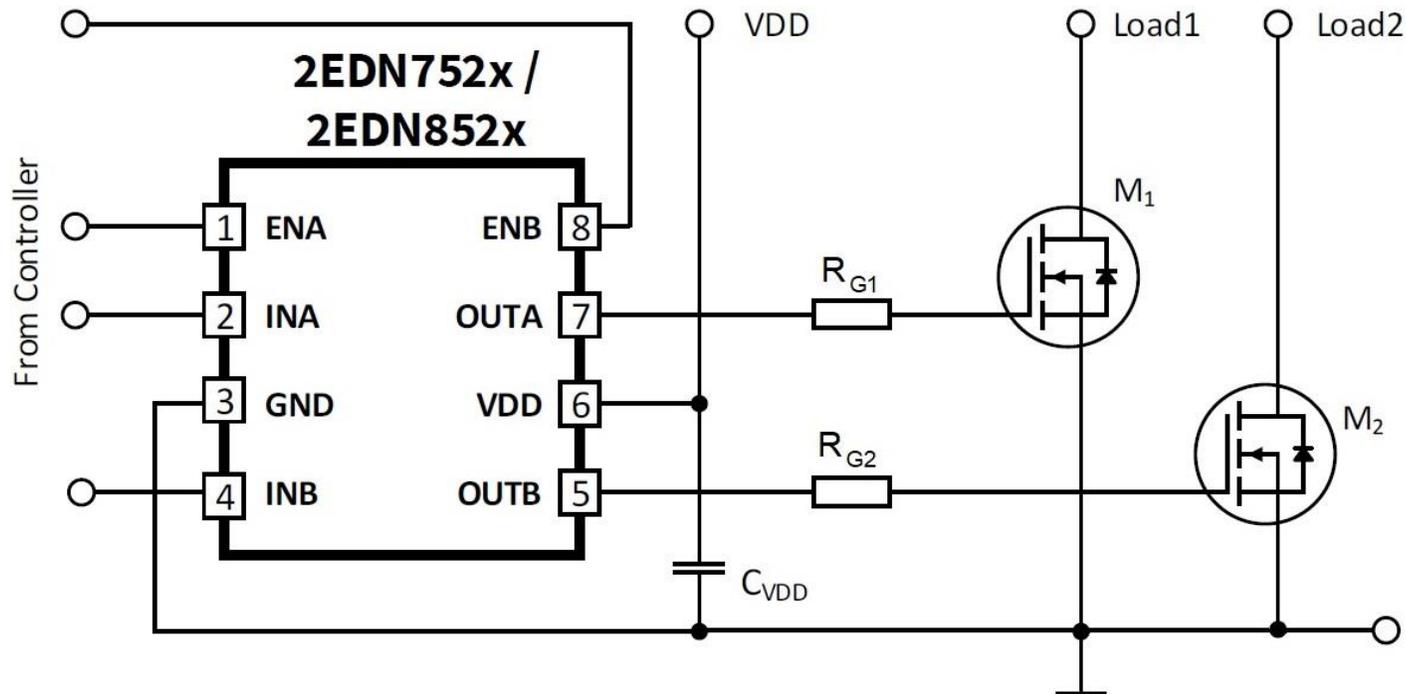
Dual-channel low-side driver

Both channels allow individual low voltage offsets, **no interlock**



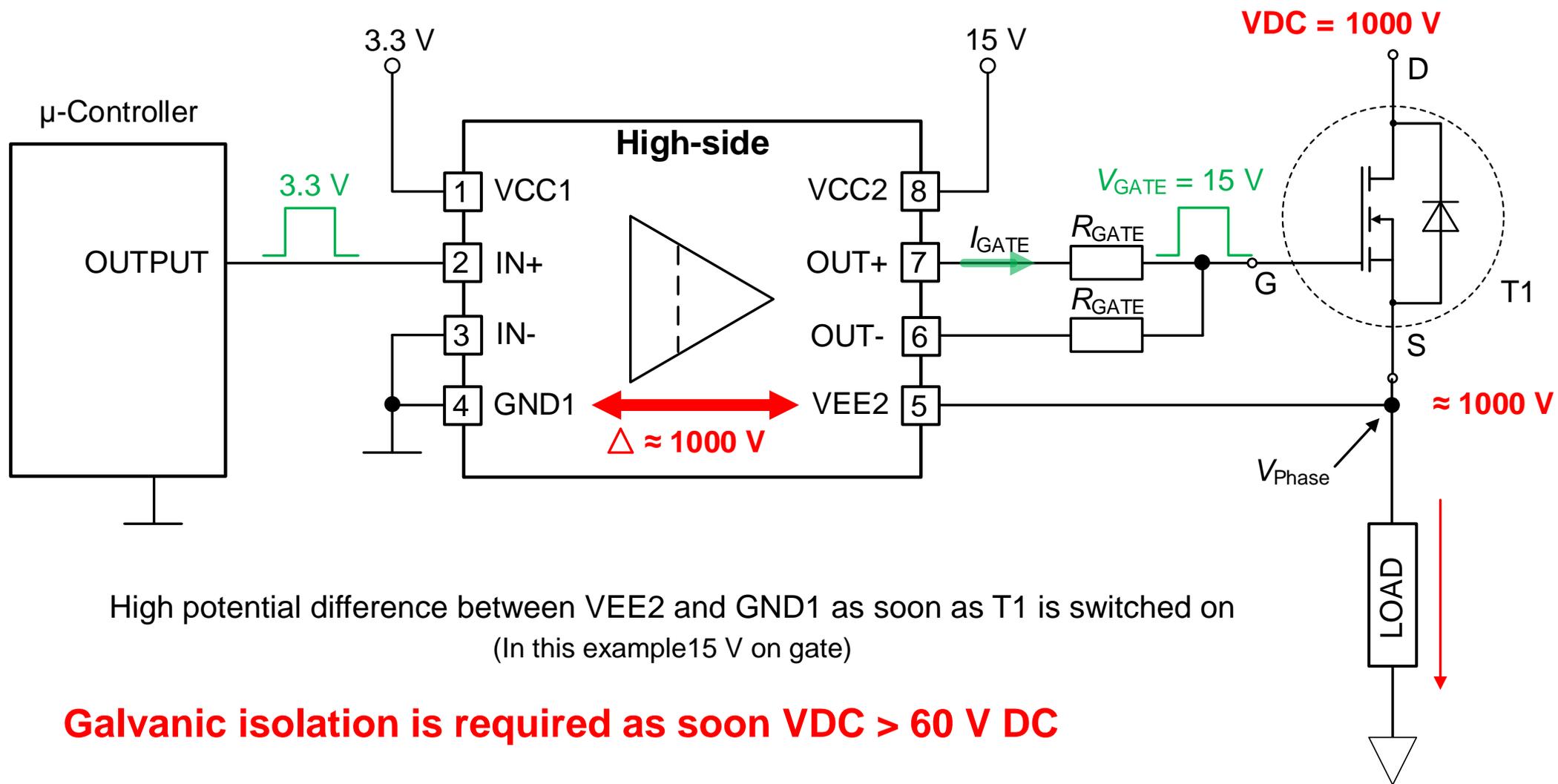
Fast, precise, strong and compatible

- 20 V dual-channel
- Highly efficient SMPS enabled by 5 ns fast slew rates and propagation delay off 17 ns for fast MOSFET and GaN
- 1 ns channel-to-channel propagation delay accuracy enables safe use of two channels in parallel
- Two independent 5 A channels



EiceDRIVER™ Driver configuration

High-Side Driver



High potential difference between VEE2 and GND1 as soon as T1 is switched on
(In this example 15 V on gate)

Galvanic isolation is required as soon $V_{DC} > 60 \text{ V DC}$

EiceDRIVER™ Driver configuration

Single-channel High-Side driver

Single-channel high-side driver

Allows high voltage offset between input and output

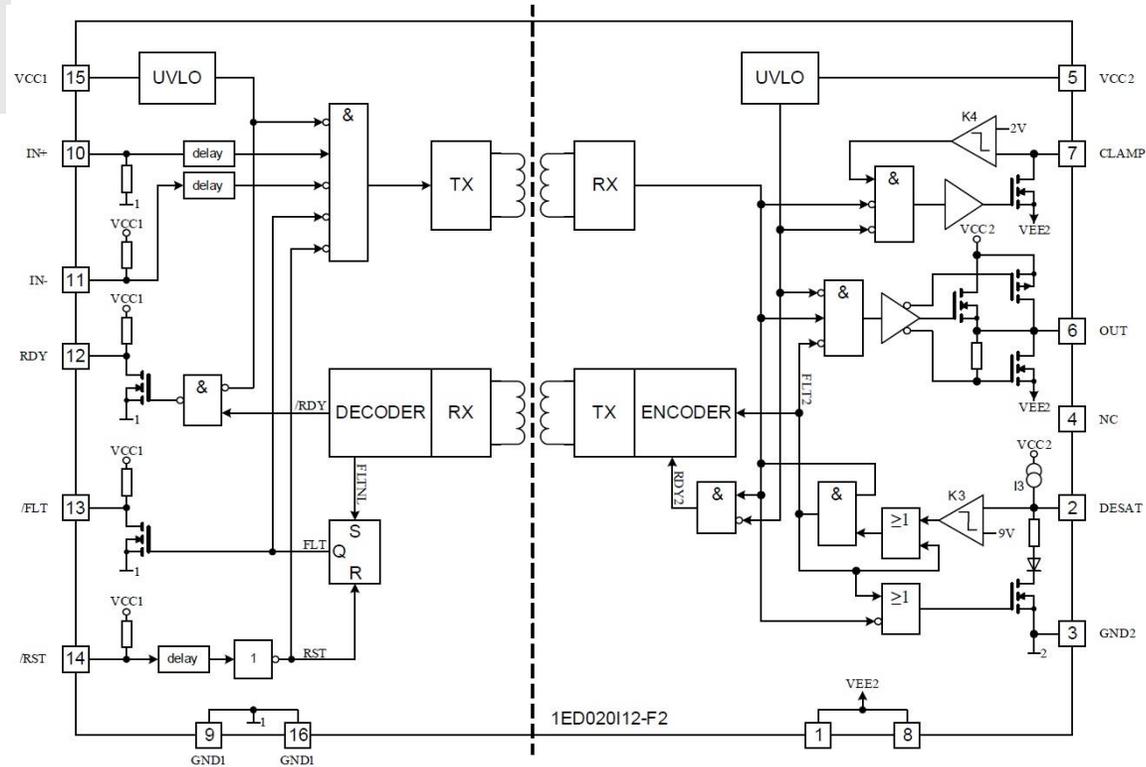
Features

- single channel isolated IGBT Driver
- Coreless transformer technology
- For 600V/1200 V IGBTs
- 2 A rail-to-rail output
- Vcesat-detection
- Active Miller Clamp

CT type

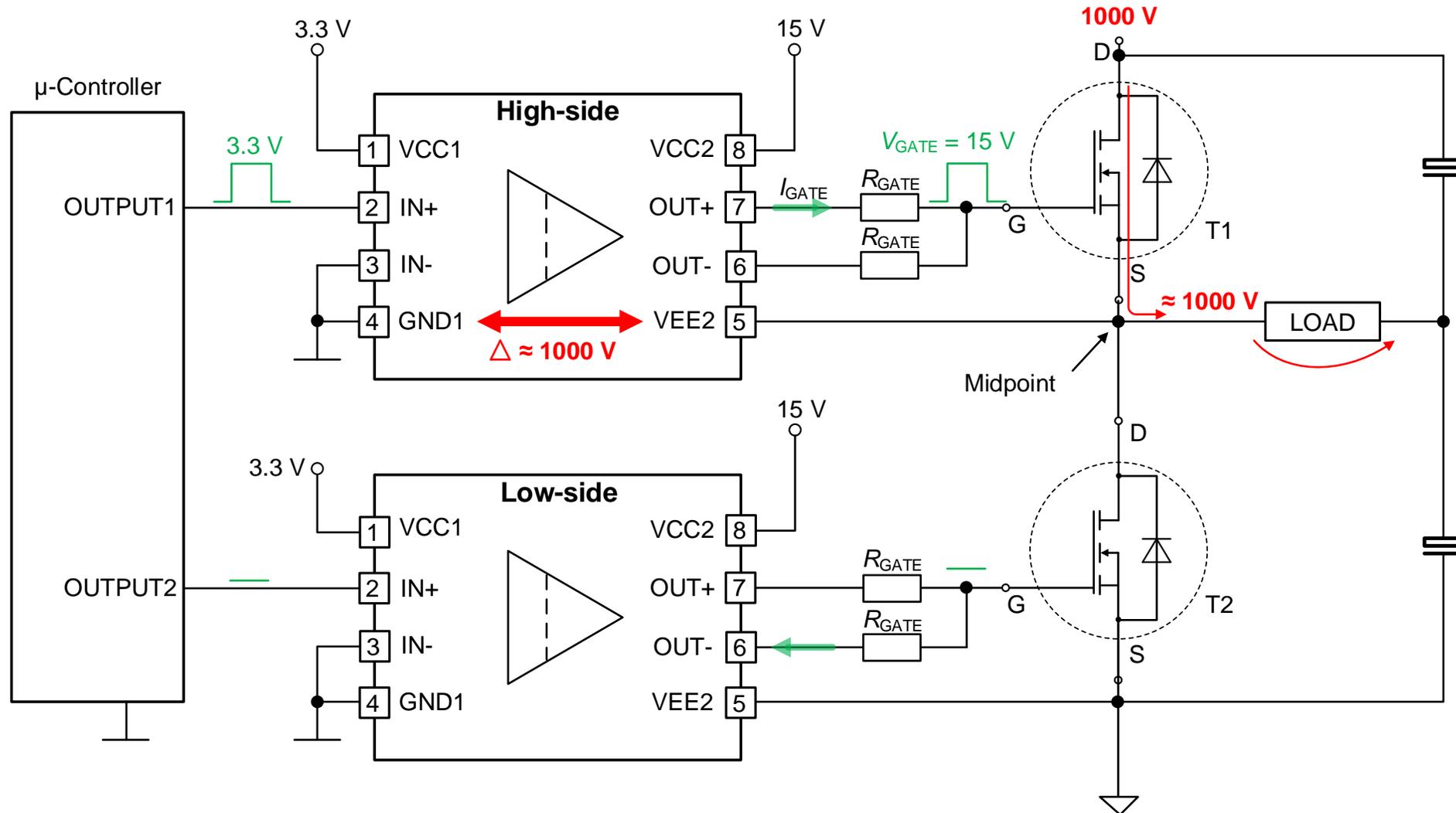
Example: 1ED020112-F2

← Galvanic isolation



EiceDRIVER™ Driver configuration

High- and Low-Side Driver or Half-Bridge Configuration



EiceDRIVER™ Driver configuration

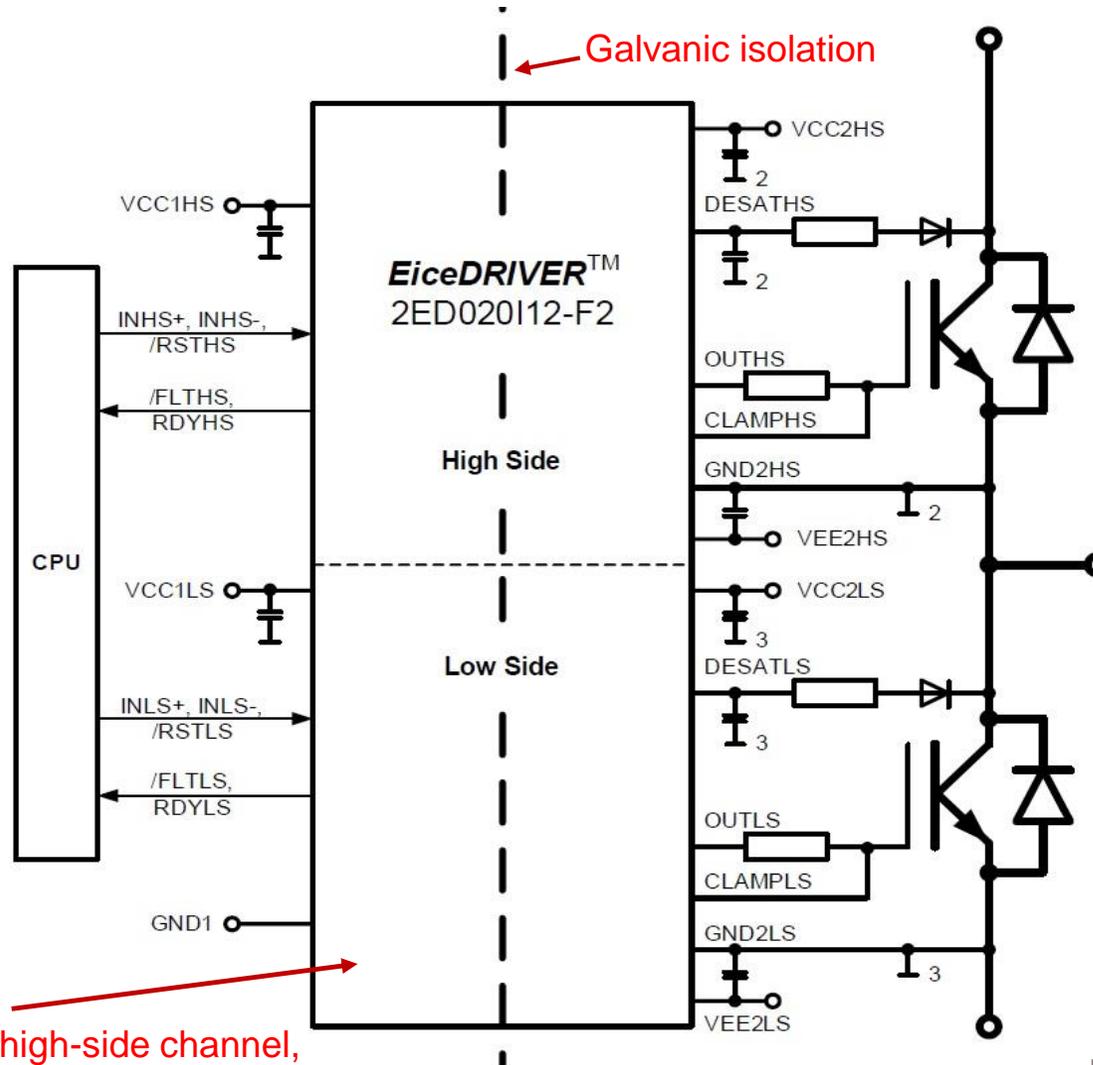
Dual-channel High-Side Driver

Dual-channel high-side driver

Both channels allow individual high voltage offsets, **no interlock**

Features

- Dual channel isolated IGBT Driver
- Coreless transformer technology
- For 600V/1200 V IGBTs
- 2 A rail-to-rail output
- Vcesat-detection
- Active Miller Clamp



This is the second high-side channel, but woks as low-side in this case

EiceDRIVER™ Driver configuration

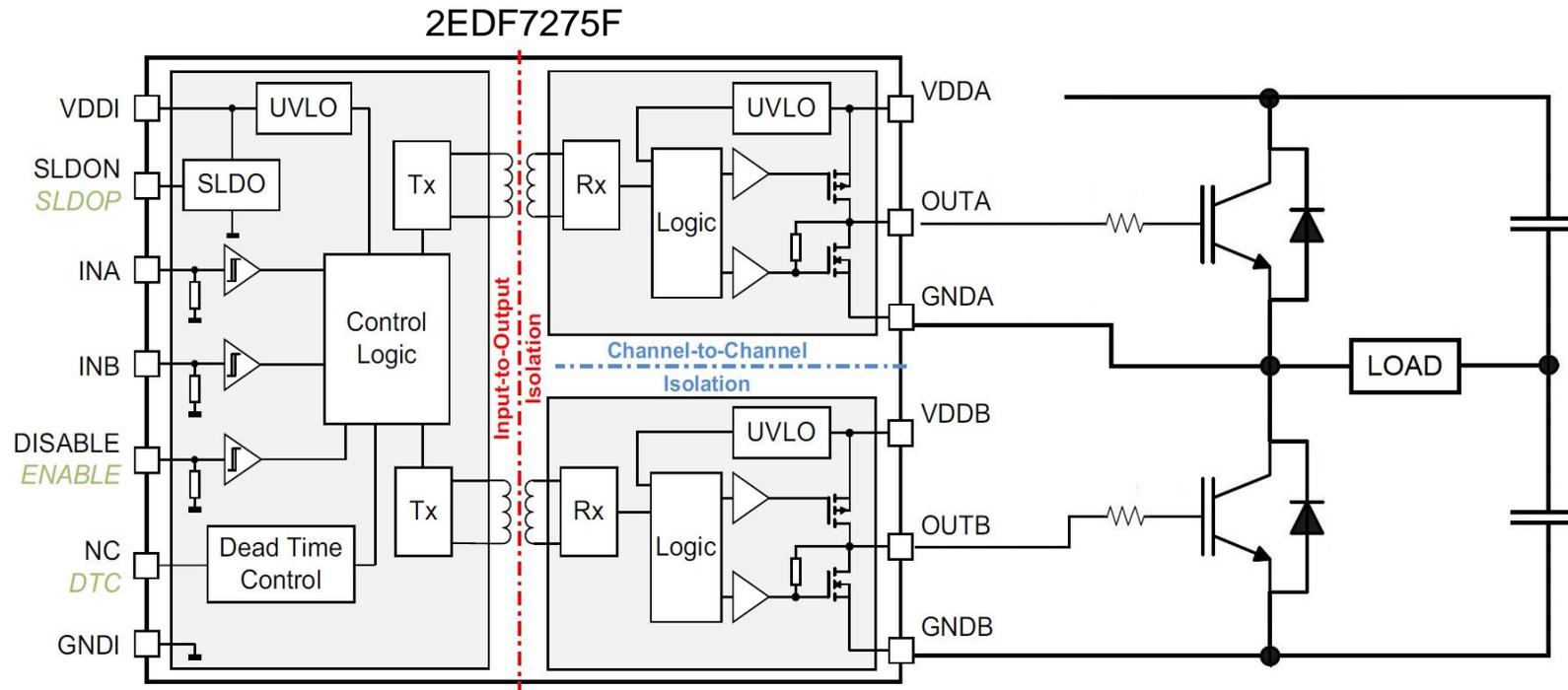
High- and Low-Side driver

High and low-side driver

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

Features

- 4 A / 8 A source / sink output current
- Up to 10 MHz PWM switching frequency
- PWM signal propagation delay typ. 37 ns with
 - 3 ns channel-to-channel mismatch
 - +7/-6 ns propagation delay variance



EiceDRIVER™ Driver configuration

Half-bridge driver

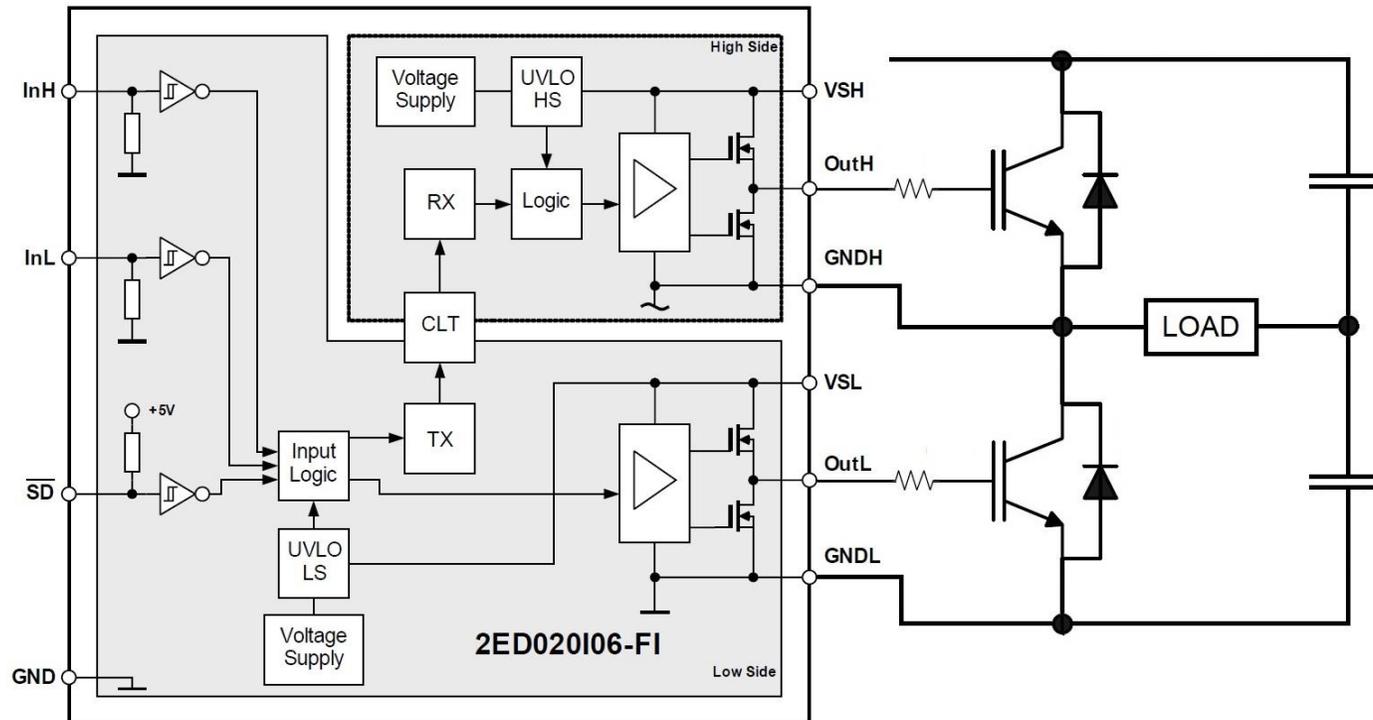
Half-bridge driver

Two **interlocked** channels, one for high, one for low voltage offsets



Features

- Fully operational to $\pm 650\text{V}$
- Power supply operating range from 14 to 18 V
- Gate drive currents of +1 A / -2 A
- Matched propagation delay for both channels
- High dV/dt immunity
- Low power consumption
- Interlocking inputs

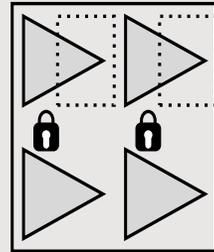


EiceDRIVER™ Driver configuration

Full-bridge driver

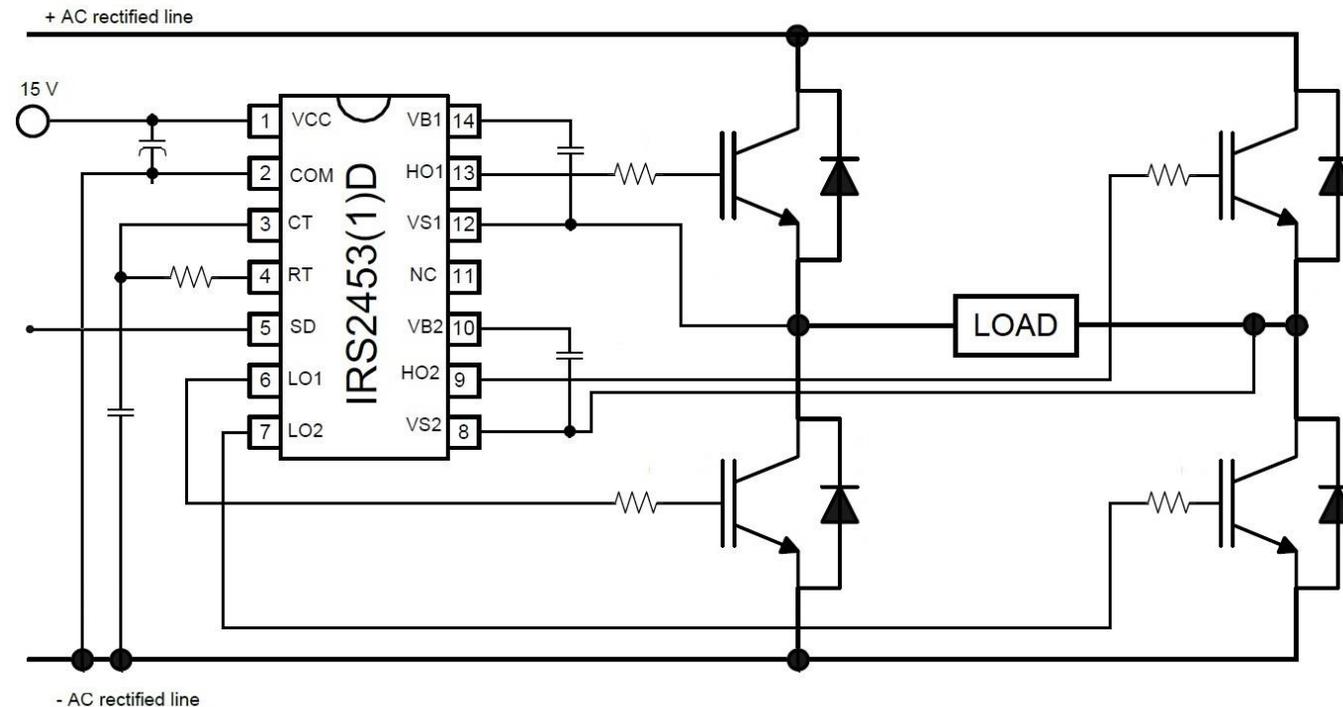
Full-bridge driver

Four channels in a package with two independent half bridges



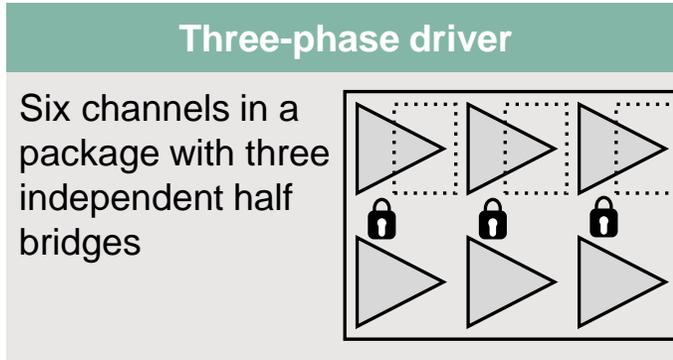
Features

- Integrated 600 V full-bridge gate driver
- CT, RT programmable oscillator
- 15.6 V Zener clamp on VCC
- Micropower startup
- Logic level latched shutdown pin
- Non-latched shutdown on CT pin (1/6th VCC)
- Internal bootstrap FETs



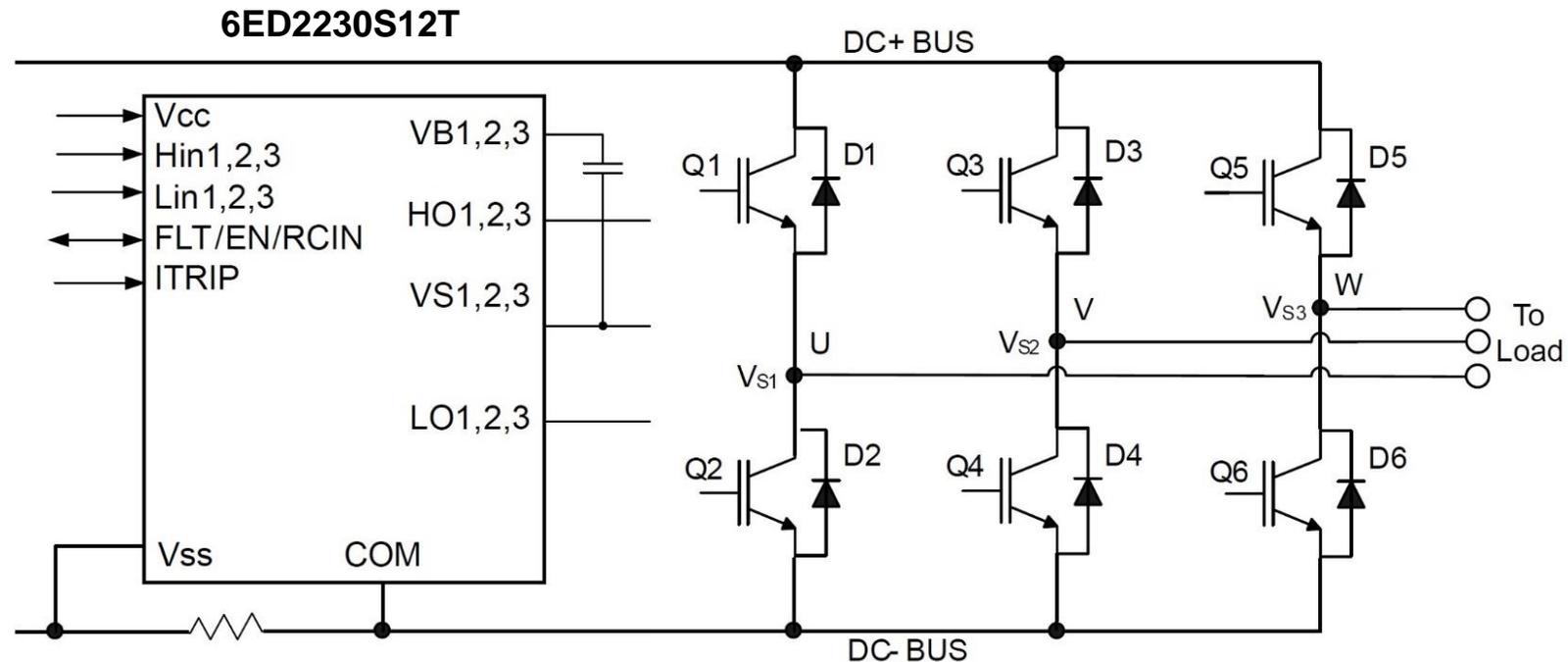
EiceDRIVER™ Driver configuration

Three-phase driver



Features

- Infineon Thin-Film-SOI technology
- Fully operational to +1200 V
- Integrated Ultra-fast Bootstrap Diode
- Floating channel designed for bootstrap operation
- Output source/sink current capability +0.35 A/-0.65 A
- 3.3 V, 5 V and 15 V input logic compatible





Selection by gate driver finder

Gate Driver Finder [Change Product Finder](#) [Cross Reference](#)

Parameter Selection

Switch Product

Configuration

Switch Type

Voltage Class [V]

Full Bridge
Gate-Driver Support ICs
Half Bridge
High-side
High-side and low-side
Low side
Three Phase

Feature Selection

Output Current (sink) at least [A]

Output Current (source) [A]

Isolation Type

Number of Channels

Availability

Automotive Industrial Any

Product Status

Package

[Reset all](#)

[Close configuration](#) [Compare](#) [Share](#) [Download](#) **368 Results**

Drag and drop to add, remove and reorder. (⋮).

Active columns

- OPN
- Product Status
- Order online

Product	OPN	Product Status	Order online	Package name	Budgetary Price €/1k	Configuration	Output Current Source min	Output Current Source max
> 2ED2183S06F NEW	2ED2183S06FXUMA1	active and preferred	-	> PG-DSO-8	-	Half Bridge	-	2.5
> IRS21531DS	IRS21531DSPBF IRS21531DSTRPBF	active and preferred active and preferred	Buy Online Buy Online	> SOIC 8N > SOIC 8N	-	Half Bridge	-	0.1
> 2ED2182S06F NEW	2ED2182S06FXUMA1	active and preferred	-	> PG-DSO-8	-	Half Bridge	-	2.5

Selection by gate driver finder

Gate Driver Finder [Change Product Finder](#) [Cross Reference](#)

Parameter Selection

Switch Product

Configuration

Switch Type

- IGBT
- MOSFET
- SIC MOSFET

Voltage Class [V]

Feature Selection

Output Current (sink) at least [A]

Output Current (source) [A]

Isolation Type

Number of Channels

Availability

Automotive Industrial Any

Product Status

Package

[Reset all](#)

[Close configuration](#) [Compare](#) [Share](#) [Download](#) **27 Results**

Drag and drop to add, remove and reorder.

Active columns

- OPN
- Product Status
- Order online

Product	OPN	Product Status	Order online	Package name	Budgetary Price €/1k	Configuration	Output Current Source min	Output Current Source max
> 2EDF7275K	2EDF7275KXUMA1	active and preferred	Buy Online	> PG-TFLGA-13	1.91	Half Bridge High-side Low-side	-	4 A
> 2EDN7523F	2EDN7523FXTMA1	active and preferred	Buy Online	> PG-DSO-8	0.56	Low-side	-	5 A



Selection by switching device SiC

[Home](#) > [Products](#) > [Power](#) > [Gate Driver ICs](#) > [EiceDRIVER™ SiC MOSFET Gate Driver ICs](#)

Products

[Close configuration](#)
[Compare](#)
[Share](#)
[Download](#)
7 Results

Product	Voltage Class	Output Current Sink	Channels	Configuration	Isolation Type	Certifications	Isolation Voltage	Switch Type	Package name	UVLO Input Off min
> 1ED020I12-F2	1200 V	2 A	1	High-side	Galvanic isolation - Functional	-	-	IGBT SiC MOSFET	> PG-DSO-16	3.5 V
> 1EDC20H12AH	1200 V	3.5 A	1	High-side	Galvanic isolation - Functional	UL 1577	VISO = 2500 V(rms) for 1 min	IGBT SiC MOSFET	> PG-DSO-8	2.55 V
> 1EDC20I12MH	1200 V	4.1 A	1	High-side	Galvanic isolation - Functional	UL 1577	VISO = 2500 V(rms) for 1 min	IGBT SiC MOSFET	> PG-DSO-8	2.55 V
> 1EDC60H12AH	1200 V	9.4 A	1	High-side	Galvanic isolation - Functional	UL 1577	VISO = 2500 V(rms) for 1 min	IGBT SiC MOSFET	> PG-DSO-8	2.55 V
> 1EDI20I12MF	1200 V	4.1 A	1	High-side	Galvanic isolation - Functional	-	-	IGBT SiC MOSFET	> PG-DSO-8	2.55 V
> 1EDU20I12SV	1200 V	2 A	1	High-side	Galvanic isolation - Functional	UL 1577	VISO = 5000 V(rms) for 1 min	IGBT MOSFET	> PG-DSO-36	3.5 V
> 2ED020I12-F2	1200 V	2 A	2	High-side Half Bridge	Galvanic isolation - Functional	-	-	IGBT SiC MOSFET	> PG-DSO-36	3.5 V



Selection by switching device MOSFETS

Home > Products > Power > Gate Driver ICs > Gate Driver ICs for MOSFETS

Products

Close configuration Compare Share Download

291 Results 291 Results

Product	Voltage Class	Output Current Source	Output Current Sink	Channels	Configuration	Qualification	Isolation Type	Certifications	Switch Type	Package name	UVLO Input Off min
> 2ED2109S06F NEW	650 V	0.29 A	0.7 A	2	Half Bridge	Industrial	Functional levelshift	-	IGBT MOSFET	> PG-DSO-8	7.5 V
> 2ED21814S06J NEW	650 V	2.5 A	2.5 A	2	High-side and low...	Industrial	Functional levelshift	-	IGBT MOSFET	-	7.5 V
> 2ED2181S06F NEW	650 V	2.5 A	2.5 A	2	High-side and low...	Industrial	Functional levelshift	-	IGBT MOSFET	> PG-DSO-8	7.5 V
> 2ED21824S06J NEW	650 V	2.5 A	2.5 A	2	Half Bridge	Industrial	Functional levelshift	-	IGBT MOSFET	-	7.5 V
> 2ED2182S06F NEW	650 V	2.5 A	2.5 A	2	Half Bridge	Industrial	Functional levelshift	-	IGBT MOSFET	> PG-DSO-8	7.5 V
> 2ED21834S06J NEW	650 V	2.5 A	2.5 A	2	Half Bridge	Industrial	Functional levelshift	-	IGBT MOSFET	> PG-DSO-14	7.5 V
> 2ED2183S06F NEW	650 V	2.5 A	2.5 A	2	Half Bridge	Industrial	Functional levelshift	-	IGBT MOSFET	> PG-DSO-8	7.5 V
> 2ED21844S06J NEW	650 V	2.5 A	2.5 A	2	Half Bridge	Industrial	Functional levelshift	-	IGBT MOSFET	-	7.5 V
> 2ED2184S06F NEW	650 V	2.5 A	2.5 A	2	Half Bridge	Industrial	Functional levelshift	-	IGBT MOSFET	> PG-DSO-8	7.5 V
> 6ED2230S12T NEW	1200 V	0.35 A	0.65 A	6	Three Phase	Industrial	Functional levelshift	-	IGBT	-	9.3 V



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Product	Voltage Class	Output Current Source	Output Current Sink	Channels	Configuration	Qualification	Isolation Type	Switch Type	Package name	UVLO Input Off min
Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter
> 2ED2109S06F NEW	650 V	0.29 A	0.7 A	2	Half Bridge	Industrial	Functional levelshift	IGBT MOSFET	> PG-DSO-8	7.5 V
> 2ED21814S06J NEW	650 V	2.5 A	2.5 A	2	High-side and low...	Industrial	Functional levelshift	IGBT MOSFET	-	7.5 V
> 2ED2181S06F NEW	650 V	2.5 A	2.5 A	2	High-side and low...	Industrial	Functional levelshift	IGBT MOSFET	> PG-DSO-8	7.5 V
> 2ED21824S06J NEW	650 V	2.5 A	2.5 A	2	Half Bridge	Industrial	Functional levelshift	IGBT MOSFET	-	7.5 V
> 2ED2182S06F NEW	650 V	2.5 A	2.5 A	2	Half Bridge	Industrial	Functional levelshift	IGBT MOSFET	> PG-DSO-8	7.5 V
> 2ED21834S06J NEW	650 V	2.5 A	2.5 A	2	Half Bridge	Industrial	Functional levelshift	IGBT MOSFET	> PG-DSO-14	7.5 V
> 2ED2183S06F NEW	650 V	2.5 A	2.5 A	2	Half Bridge	Industrial	Functional levelshift	IGBT MOSFET	> PG-DSO-8	7.5 V
> 2ED21844S06J NEW	650 V	2.5 A	2.5 A	2	Half Bridge	Industrial	Functional levelshift	IGBT MOSFET	-	7.5 V
> 2ED2184S06F NEW	650 V	2.5 A	2.5 A	2	Half Bridge	Industrial	Functional levelshift	IGBT MOSFET	> PG-DSO-8	7.5 V
> 6ED2230S12T NEW	1200 V	0.35 A	0.65 A	6	Three Phase	Industrial	Functional levelshift	IGBT	-	9.3 V



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Product	Voltage Class	Output Current Source	Output Current Sink	Channels	Configuration	Qualification	Isolation Type	Certifications	Switch Type	Package name	UVLO Input Off
Filter 1EDF5673F	650 V	4 A	8 A	1	High-side	Industrial	Galvanic isolation - Functional	-	GaN	PG-DSO-16	2.7 V
Filter 1EDF5673K	650 V	4 A	8 A	1	High-side	Industrial	Galvanic isolation - Functional	-	GaN	PG-TFLGA-13	2.7 V
Filter 1EDS5663H	650 V	4 A	8 A	1	High-side	Industrial	Galvanic isolation - Reinforc...	UL 1577 VDE 0884-10	GaN	PG-DSO-16	2.7 V

