

# CoolSiC™ gate driver solutions

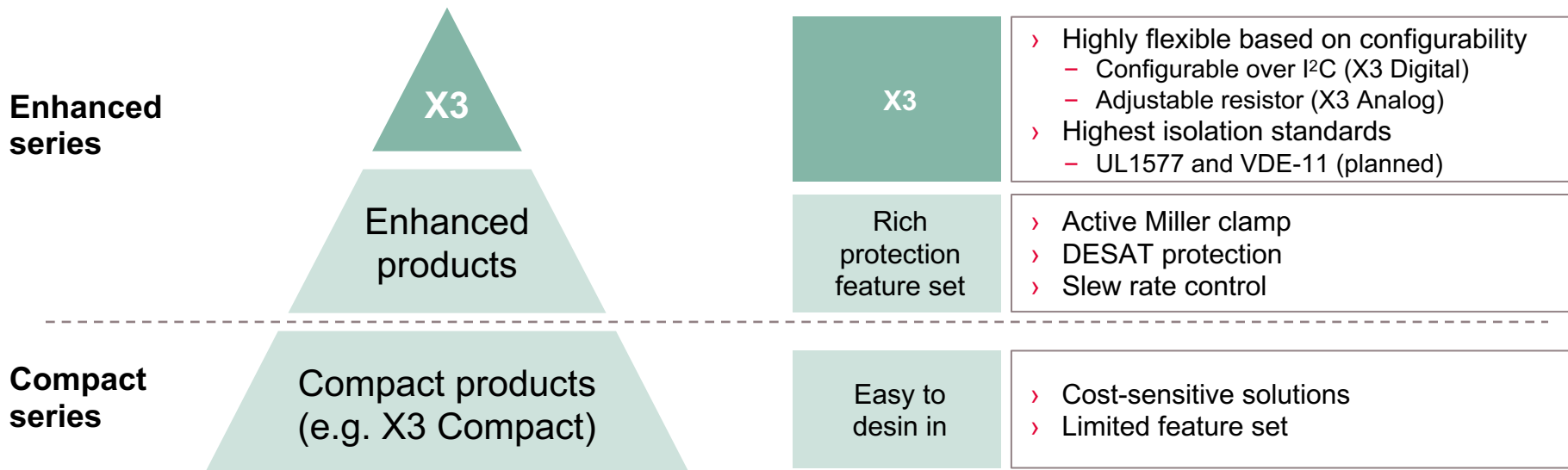


인피니언 전력반도체 솔루션  
가상부스에 오신 걸 환영합니다!



# EiceDRIVER™ isolated gate driver portfolio for CoolSiC™

Non-isolated GD	Level-shift GD	Isolated GD
Low voltage	Junction isolation (JI) & silicon-on-insulator (SOI)	Coreless transformer



X3 Analog & Digital – high-end gate driver solutions based on **configurability**  
 X3 Compact – enable easy design-in with optimized specs for SiC

# EiceDRIVER™ enhanced X3 Analog (1ED34xx)

## Product overview

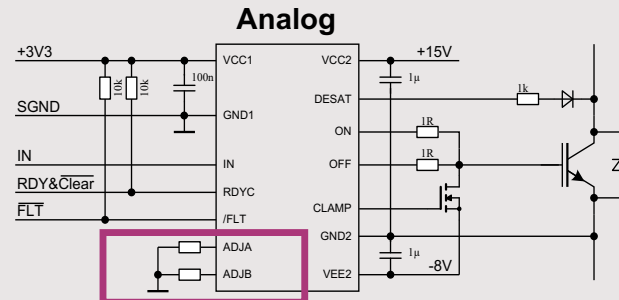


### Product highlights

- › Single-channel isolated gate driver with **3 / 6 / 9 A**
- › Active Miller clamp (clamp driver), DESAT, soft-off
- › Exceptional CMTI robustness > **200 kV/μs**
- › Thermal shutdown
- › **X3 Analog configurability**
  - Adjustable **DESAT filter time & blanking time** and **soft-off current** with external resistor
- › Isolation capabilities & certification
  - 1ED34x1MU12M: **UL 1577-certified  $V_{ISO}=5.7$  kV(rms)**
  - 1ED34x1MC12M: **UL 1577 & VDE 0884-11 (planned)**
- › **DSO-16 fine pitch, 300-mil wide-body package (8 mm creepage)**
- › For IGBTs, MOSFETs, CoolSiC™ SiC MOSFETs



### Sample schematic



### Value proposition

- › **Flexibility** due to **register-based configuration** adjustments
- › **Reduction in hardware complexity** with fewer variants
- › **Reduction in evaluation time** with adjustable parameters for **faster time-to-market**



# EiceDRIVER™ enhanced X3 Digital (1ED38xx)

## Product overview

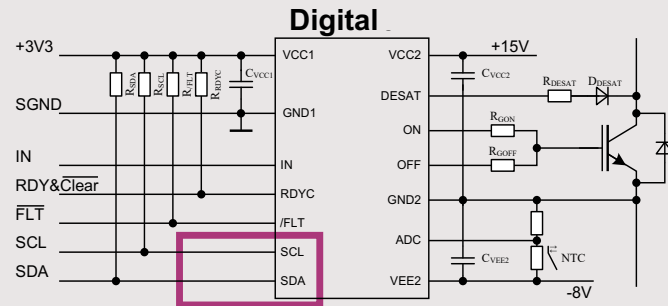


### Product highlights

- › Single-channel isolated gate driver with **3 / 6 / 9 A**
- › Active Miller clamp (clamp driver), DESAT, soft-off
- › Exceptional CMTI robustness > **200 kV/μs**
- › Thermal **monitoring and** shutdown
- › **X3 Digital configurability**
  - **Fully adjustable via I<sup>2</sup>C bus**: 3-address configuration, 27-parameter configuration, 16 status
  - **Configurable** UVLO, **DESAT<sup>2</sup>**, TLTO, soft-off, Miller clamp
- › Isolation capabilities & certification
  - 1ED38x0MU12M: **UL 1577-certified**  $V_{ISO}=5.7 \text{ kV(rms)}$
  - 1ED38x0MC12M: **UL 1577 & VDE 0884-11 (planned)**
- › **DSO-16 fine pitch, 300-mil wide-body package (8 mm creepage)**
- › For IGBTs, MOSFETs, CoolSiC™ SiC MOSFETs



### Sample schematic



### Value proposition

- › **Highest level of flexibility** introduced by **register-based adjustments via I<sup>2</sup>C**
- › **Reduction in hardware complexity** with fewer variants
- › **Reduction in evaluation time** with adjustable parameters for **faster time-to-market**



# EiceDRIVER™ X3 Compact (1ED31xx)

## Product overview

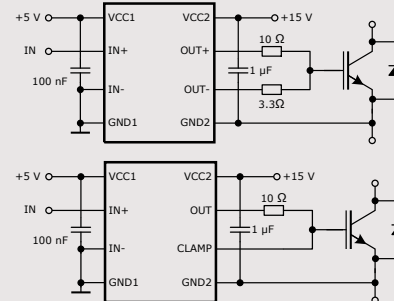


### Product highlights

- › Single-channel isolated gate driver with **5.5 / 10 / 14 A** (no booster required)
- › **90 ns** propagation delay with **30 ns** input filter
- › **7 ns** propagation delay matching
- › **Active Miller clamp or separate outputs**
- › Exceptional CMTI robustness > **200 kV/μs**
- › **40 V absolute maximum** output supply voltage
- › Isolation capabilities & certification
  - 1ED34x1MU12M: **UL 1577-certified**  $V_{ISO}=5.7$  kV(rms)
  - 1ED34x1MC12M: **UL 1577 & VDE 0884-11** (planned)
- › **DSO-8 150-mil (4 mm creepage) & 300-mil wide-body package (8 mm creepage)**
- › For IGBTs, MOSFETs, CoolSiC™ SiC MOSFETs



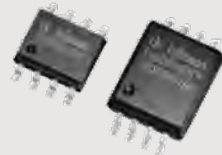
### Sample schematic



SiC

### Value proposition

- › **8-pin gate driver** (with **150-mil and 300-mil** bodies) enabling **easy design-in**
- › **Optimized specifications** for driving **SiC**
- › Fulfilling **highest isolation standards**
  - UL 1577 and VDE-11 (planned)



TODO: Add 2ED24427 from Tom

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# Recommended EiceDRIVER™ for CoolSiC™ MOSFETs

## Compact family








Product	Part number	Typ. peak drive current	VCC2-VEE2	UVLO thresholds	Typ. prop. delay	Miller clamp	Other key features	Package
<b>Compact family</b>  X3 Compact isolated high-side driver family	<a href="#">1ED31xxMU12H</a>	5.5 / 10 / 14 A	35 V	12.5 V / 10.5 V 10 V / 8 V	≤ 100 ns	Yes	8 mm creepage/clearance; short circuit clamping; active shutdown; UL 1577-certified with $V_{ISO} = 5.7$ kV (rms) for 1 s, Miller clamp option	DSO-8 300 mil  
<b>Compact family</b>  1ED Compact isolated high-side driver family	<a href="#">1EDI20I12MF</a>	4.1 A	20 V	12.7 V / 10.5 V	≤ 300 ns	Yes	Functional isolation	DSO-8 150 mil  
	<a href="#">1EDC20H12AH</a>	3.5 A	35 V	12.7 V / 10.5 V	≤ 125 ns	No	8 mm creepage/clearance; UL 1577-certified with $V_{ISO} = 3$ kV (rms) for 1 s	DSO-8 300 mil  
	<a href="#">1EDC60H12AH</a>	9.4 A	35 V	12.7 V / 10.5 V	≤ 125 ns	No		
	<a href="#">1EDC20I12MH</a>	4.1 A	20 V	12.7 V / 10.5 V	≤ 300 ns	Yes	Miller clamp option	DSO-8 150 mil  
<b>Compact family</b>  1ED Compact isolated high-side driver family	<a href="#">1EDBx275F</a>	11.5 A / 5.7 A	20 V	3.9 V / 4.4 V 7 V / 8.4 V 12.9 V / 14.2 V	< 49 ns	No	4 mm creepage/clearance; UL 1577-certified with $V_{ISO} = 3$ kV (rms) for 1 s Targeting 650 V CoolSiC™	DSO-8 150 mil  
<b>Compact family</b>  2ED dual-channel Compact isolated high-side driver family	<a href="#">2EDFxx75F</a> <a href="#">2EDSxx65H</a>	4 A / 8 A 1 A / 2 A	20 V	3.9 V / 4.4 V 7 V / 8.4 V 12.9 V / 14.2 V	< 44 ns	No	8 mm creepage/clearance; UL 1577-certified with $V_{ISO} = 5.7$ kV (rms) for 1 s Targeting 650 V CoolSiC™	DSO-16 150 mil    LGA-13 DSO-16 300 mil

# Recommended EiceDRIVER™ for CoolSiC™ MOSFETs

## Enhanced family



Product	Part number	Typ. peak drive current	VCC2-VEE2	Typ. UVLO thresholds	Typ. prop. delay	Miller clamp	Other key features	Package
<b>Enhanced family</b> X3 isolated high-side driver with integrated protection	<a href="#">1ED34x1MU12M</a>	3 / 6 / 9 A	35 V	12.6 V / 10.4 V	≤ 255 ns	Yes	Short circuit clamping; fast & accurate DESAT protection; active shutdown, soft turn-off; UL 1577-certified with $V_{ISO} = 5.7$ kV (rms) for 1 s	DSO-16 
<b>Enhanced family</b> X3 isolated high-side driver with I <sup>2</sup> C configurability & integrated protection	<a href="#">1ED38x0MU12M</a>	3 / 6 / 9 A	35 V	12.6 V / 10.4 V default, but adjustable	≤ 255 ns	Yes	Short circuit clamping; fast & accurate DESAT protection; active shutdown; soft turn-off; UL 1577-certified with $V_{ISO} = 5.7$ kV (rms) for 1 s	DSO-16 
<b>Enhanced family</b> 1ED-F2 isolated high-side driver with integrated protection	<a href="#">1ED020I12-F2</a>	2.0 A	28 V	12.6 V / 10.4 V	≤ 170 ns	Yes	Short circuit clamping; DESAT protection; active shutdown	DSO-16 
<b>Enhanced family</b> 2ED-F2 isolated dual high-side driver with integrated protection	<a href="#">2ED020I12-F2</a>	2.0 A	28 V	12.6 V / 10.4 V	≤ 170 ns	Yes		DSO-36 
<b>Enhanced family</b> 1EDS slew rate control (SRC) isolated high-side driver	<a href="#">1EDS20I12SV</a>	2.0 A	28 V	12.6 V / 10.4 V	≤ 485 ns	Yes	Real-time adjustable gate current control; OCP; soft turn-off shutdown; TLTO; UL 1577-certified with $V_{ISO} = 5$ kV (rms) for 1 s	DSO-36 



# EiceDRIVER™ evaluation boards

Evaluation boards available for non-isolated, level-shift & isolated gate driver solutions



Examples, orderable via ISAR

Type	Mat No.	Description
EVAL-1ED3491MX12M	SP005411273	<b>X3 Analog</b> evaluation board
EVAL-1ED3121MX12H	SP005347597	<b>X3 Compact</b> evaluation boards
EVAL-1ED3122MX12H	SP005347593	
EVAL-1ED3124MX12H	SP005347599	

# Support materials

## Support materials

- › Gate driver selection guide brochure (PDF)
- › Gate driver application selection matrix (PDF)/ 中文
- › Gate driver product portfolio presentation (PPT)
- › Gate driver application selection matrix (PPT)
- › Isolated gate driver selection guide (PDF)/ Chinese
- › Gate driver selection & support tools manual (PPT)
- › Solid-state relay product portfolio presentation (PPT)
- › Solid-state relay cross reference (Excel)
- › Solid-state relay simple selection tool (Excel)

- › [www.infineon.com/gdbrochure](http://www.infineon.com/gdbrochure)
- › [www.infineon.com/gdapplication](http://www.infineon.com/gdapplication) / [www.infineon.com/gdapplication-cn](http://www.infineon.com/gdapplication-cn)
- › [www.infineon.com/gdpresentation](http://www.infineon.com/gdpresentation)
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- › [www.infineon.com/gdsupport](http://www.infineon.com/gdsupport)
- › [www.infineon.com/ssrpresentation](http://www.infineon.com/ssrpresentation)
- › [www.infineon.com/SSRx-ref](http://www.infineon.com/SSRx-ref)
- › [www.infineon.com/SSRselection](http://www.infineon.com/SSRselection)



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