

CONCEPT

CONCEPT

May, 2011

CONCEPT Product Portfolio

CT-Concept Technologie AG

Contents

SCALE Drivers



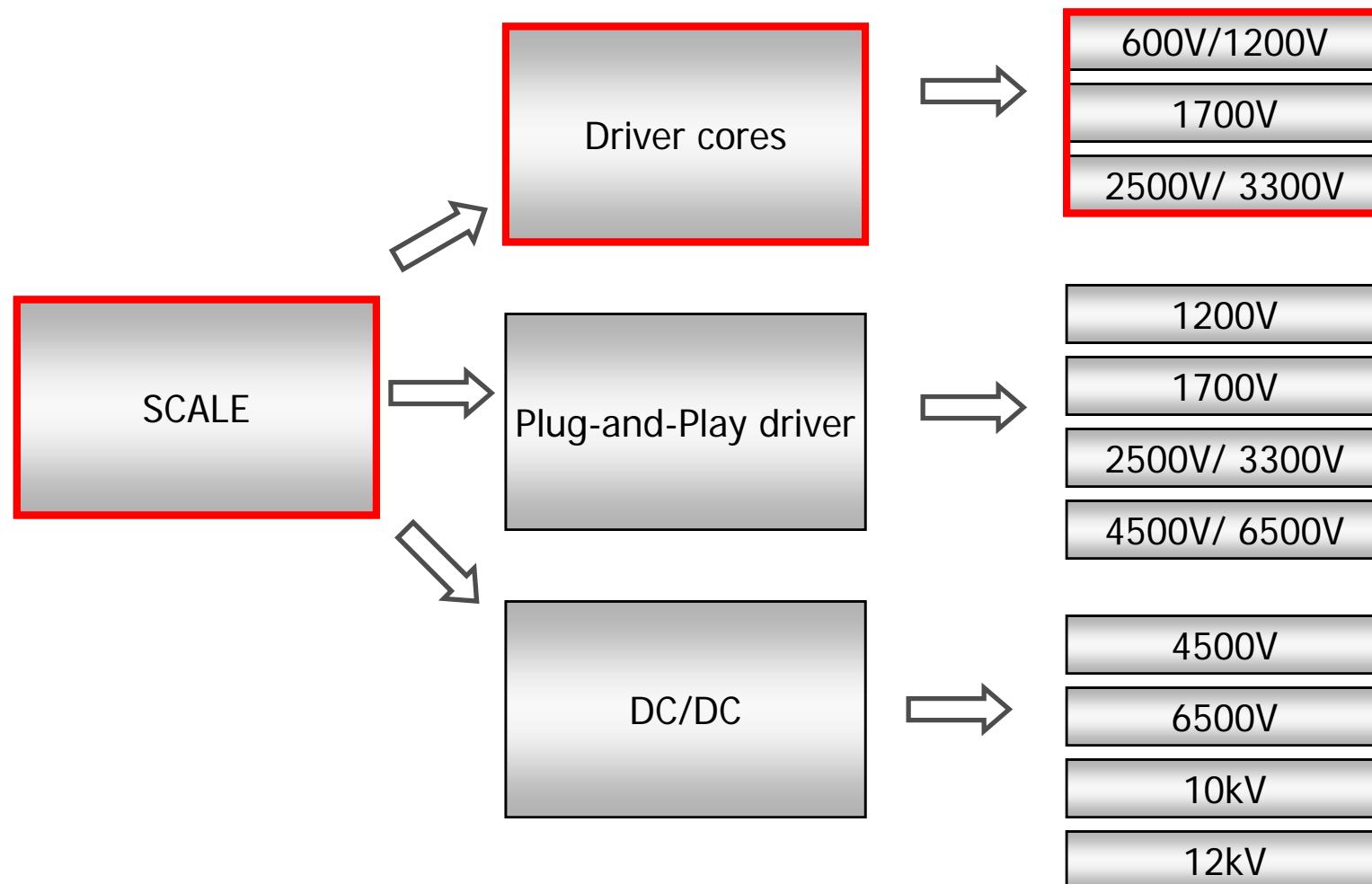
- ▶ Driver cores
- ▶ Plug-and-Play driver
- ▶ DC/DC power supply

SCALE-2 Drivers



- ▶ Driver cores
- ▶ Plug-and-Play driver

SCALE Driver Overview



SCALE Driver Cores

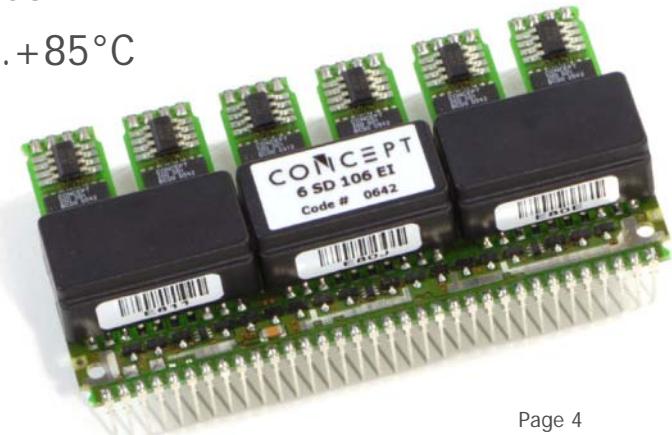
2SD106AI / 2SD106AI-17

- ▶ Compact dual driver
- ▶ 600V/1200V and 1700V IGBTs
- ▶ $\pm 6A$ gate current, $\pm 15V$
- ▶ 1W per channel
- ▶ Short-circuit protection
- ▶ Under-voltage lockout
- ▶ Up to 100kHz
- ▶ Delay time 300ns
- ▶ 100kV/us
- ▶ -40°C...+85°C



6SD106EI / 6SD106EI-17

- ▶ Compact 6-channel driver core
- ▶ 600V/1200V and 1700V IGBTs
- ▶ $\pm 6A$ gate current, $\pm 15V$
- ▶ 1W per channel
- ▶ Short-circuit protection
- ▶ Under-voltage lockout
- ▶ Up to 100kHz
- ▶ Delay time 300ns
- ▶ 100kV/us
- ▶ -40°C...+85°C



SCALE Driver Cores

2SD315AI

- ▶ Industry-standard dual driver
- ▶ 2SD315AI for 600V to 1700V IGBTs
- ▶ 2SD315AI-25 for 2500V IGBTs
- ▶ 2SD315AI-33 for 3300V IGBTs
- ▶ $\pm 15A$ gate current, $\pm 15V$
- ▶ 3W per channel
- ▶ Short-circuit protection
- ▶ Under-voltage lockout
- ▶ Up to 100kHz
- ▶ Delay time 300ns
- ▶ 100kV/us
- ▶ $-40^{\circ}\text{C} \dots +85^{\circ}\text{C}$



SCALE Driver Cores

1SD1548AI

- ▶ Single channel high-power driver
- ▶ IGBTs from 600V to 1700V
- ▶ $\pm 48A$ gate current, $\pm 15V$
- ▶ 15W per channel
- ▶ Short-circuit protection
- ▶ Advanced active clamping option
- ▶ Under-voltage lockout
- ▶ Up to 150kHz
- ▶ Delay time 335ns
- ▶ 100kV/us
- ▶ $-40^{\circ}C \dots +85^{\circ}C$



SCALE Driver Cores

IHD260, IHD660

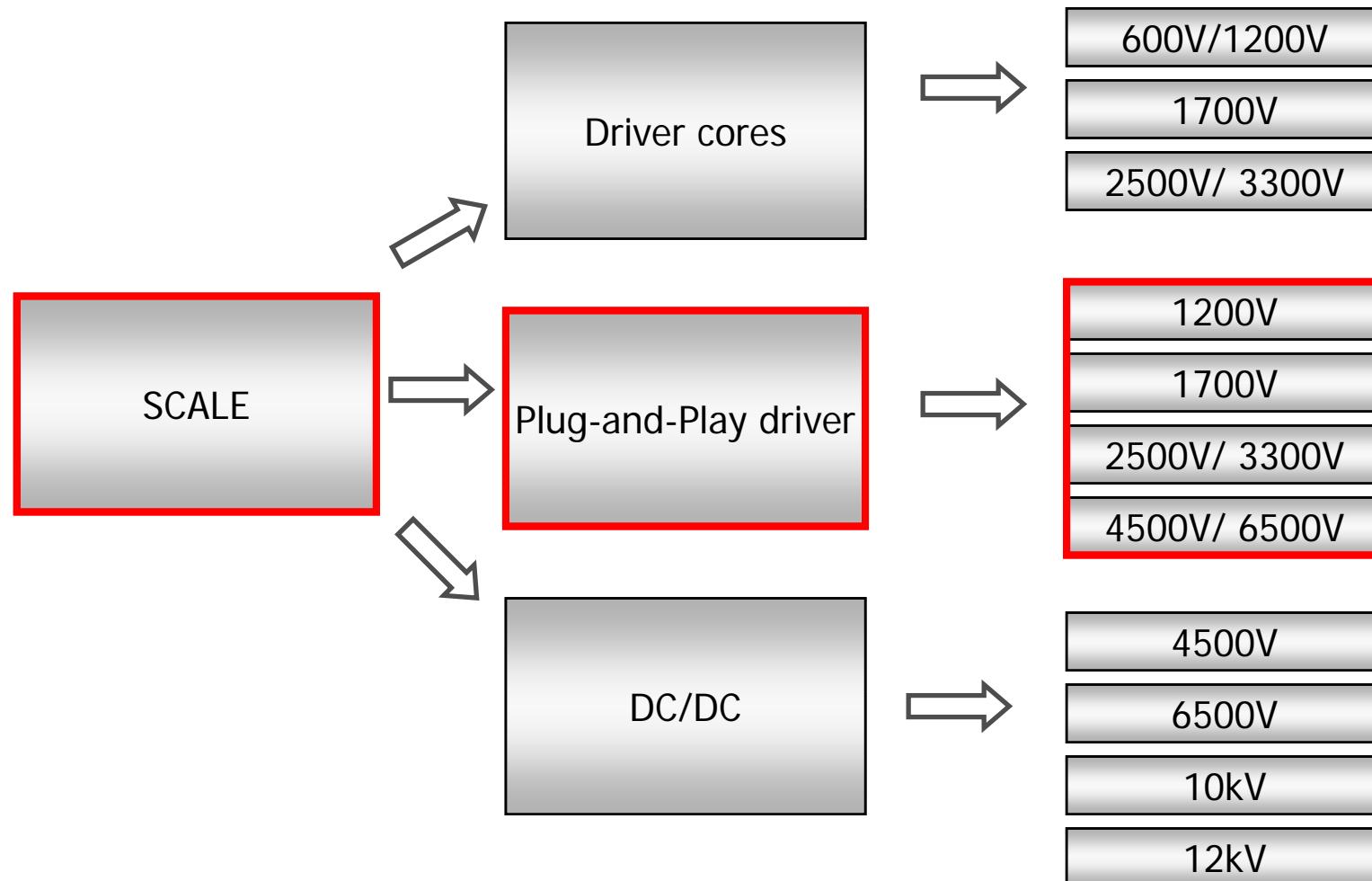
- ▶ Replacement of IHD215/280/680
- ▶ Compact dual channel driver
- ▶ 1200V and 1700V IGBTs
- ▶ $\pm 6A$ gate current, $\pm 15V$
- ▶ 1W or 3W per channel
- ▶ Short-circuit protection
- ▶ Under-voltage lockout
- ▶ Up to 100kHz
- ▶ Delay time 315ns
- ▶ 100kV/us
- ▶ $-40^{\circ}C...+85^{\circ}C$

**IGD616**

- ▶ Replacement of IHD608/615
- ▶ Compact single channel driver
- ▶ 1200V and 1700V IGBTs
- ▶ $\pm 16A$ gate current, $\pm 15V$
- ▶ 6W per channel
- ▶ Short-circuit protection
- ▶ Under-voltage lockout
- ▶ Up to 150kHz
- ▶ Delay time 315ns
- ▶ 100kV/us
- ▶ $-40^{\circ}C...+85^{\circ}C$



SCALE Driver Overview



SCALE Plug-and-Play Driver

2SB315A/ 2SB315B

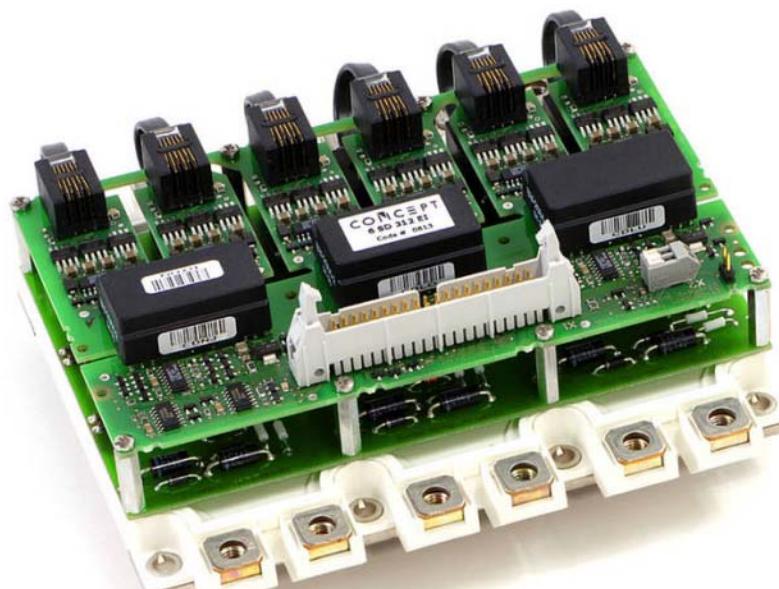
- ▶ Dual channel driver for 130mmx140mm IGBT dual modules
- ▶ IGBTs from 1200V to 1700V
- ▶ Fuji, ABB, Mitsubishi, Infineon, Dynex
- ▶ DIC-20 (A) or Fiber-optic (B) interface
- ▶ $\pm 15\text{A}$ gate current, $\pm 15\text{V}$
- ▶ 3W per channel
- ▶ Active clamping
- ▶ Short-circuit protection
- ▶ Under-voltage lockout
- ▶ Up to 20kHz
- ▶ Delay time 400ns
- ▶ 100kV/us
- ▶ -40°C...+85°C



SCALE Plug-and-Play Driver

2SD316EI/6SD312EI

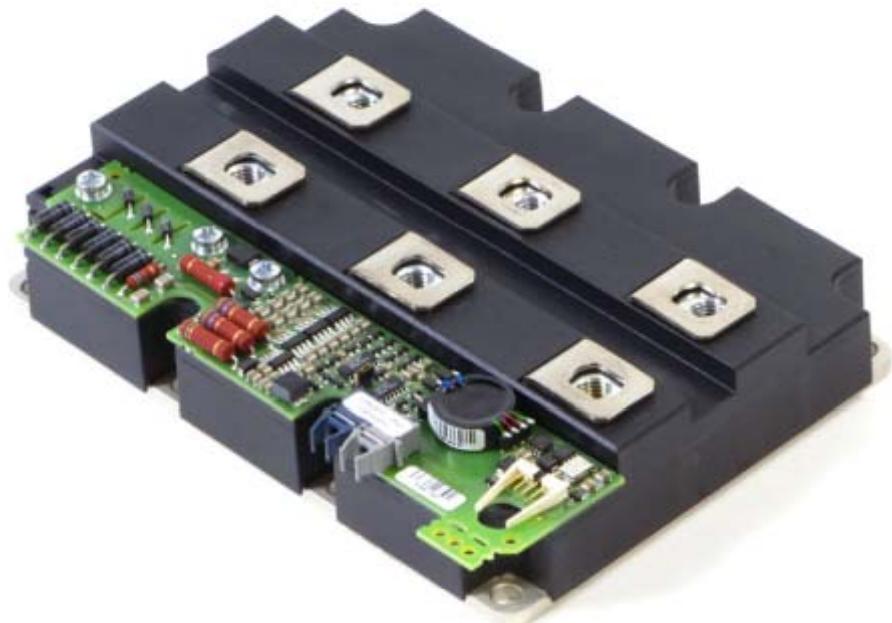
- ▶ 1200V and 1700V version
- ▶ +16A/-6A gate current, ±15V dual version
- ▶ +12A/-6A gate current, ±15V 6-pack version
- ▶ Infineon IGBT Modules 150A to 450A
- ▶ 3W per channel
- ▶ Active clamping
- ▶ Short-circuit protection
- ▶ Under-voltage lockout
- ▶ NTC output
- ▶ Up to 70kHz
- ▶ Delay time 360ns
- ▶ 100kV/us
- ▶ -40°C...+85°C



SCALE Plug-and-Play Driver

1SD418F2

- ▶ IGBTs from 1700V to 3300V
- ▶ Suitable for 130mmx140mm and 190mmx140mm IGBT Modules
- ▶ ABB, Infineon, Mitsubishi
- ▶ $\pm 18A$ gate current, $\pm 15V$
- ▶ 4W output power
- ▶ Advanced active clamping
- ▶ Short-circuit protection
- ▶ Under-voltage lockout
- ▶ Up to 6kHz
- ▶ Delay time 400ns
- ▶ -40°C...+85°C



SCALE Plug-and-Play Driver

1SD536F2

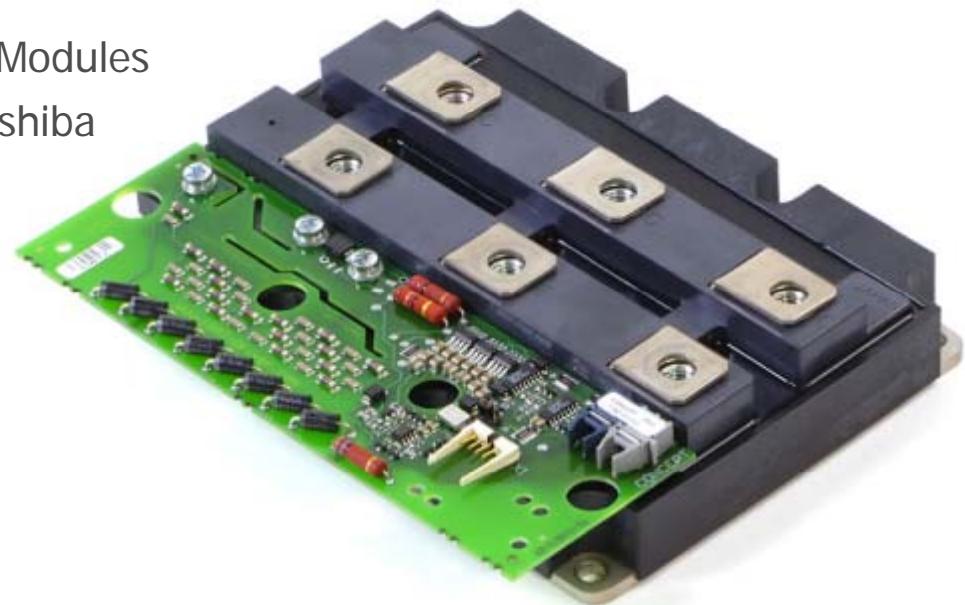
- ▶ IGBTs from 1200V to 3300V
- ▶ Suitable for 130mmx140mm and 190mmx140mm IGBT Modules
- ▶ Fuji, ABB, Infineon, Mitsubishi, Dynex, Toshiba
- ▶ $\pm 36A$ gate current, $\pm 15V$
- ▶ 5W output power
- ▶ Advanced active clamping
- ▶ di/dt feedback during turn-off
- ▶ Short-circuit protection
- ▶ Under-voltage lockout
- ▶ Up to 8kHz
- ▶ Delay time 400ns
- ▶ $-40^{\circ}C \dots +85^{\circ}C$



SCALE Plug-and-Play Driver

1SD312F2

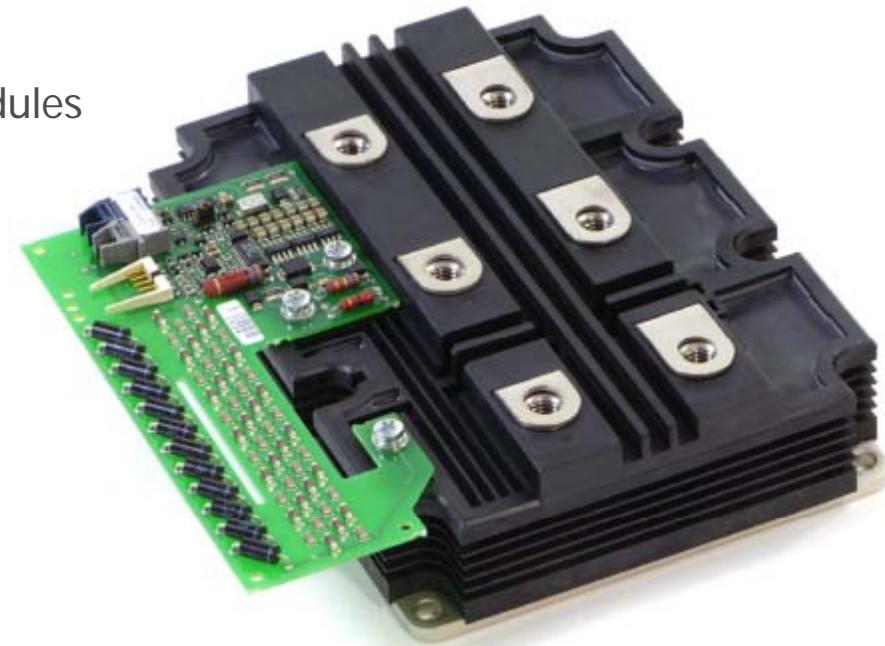
- ▶ For 4500V IGBTs
- ▶ Suitable for 190mmx140mm IGBT Modules
- ▶ ABB, Mitsubishi, Dynex, Hitachi, Toshiba
- ▶ +10A/-6A gate current, ±15V
- ▶ Output Power 3W
- ▶ Power Supply ISO3116I-45
- ▶ Active clamping
- ▶ Short-circuit protection
- ▶ Under-voltage lockout
- ▶ Maximum 2...6kHz
- ▶ Delay time 430ns
- ▶ -40°C...+85°C



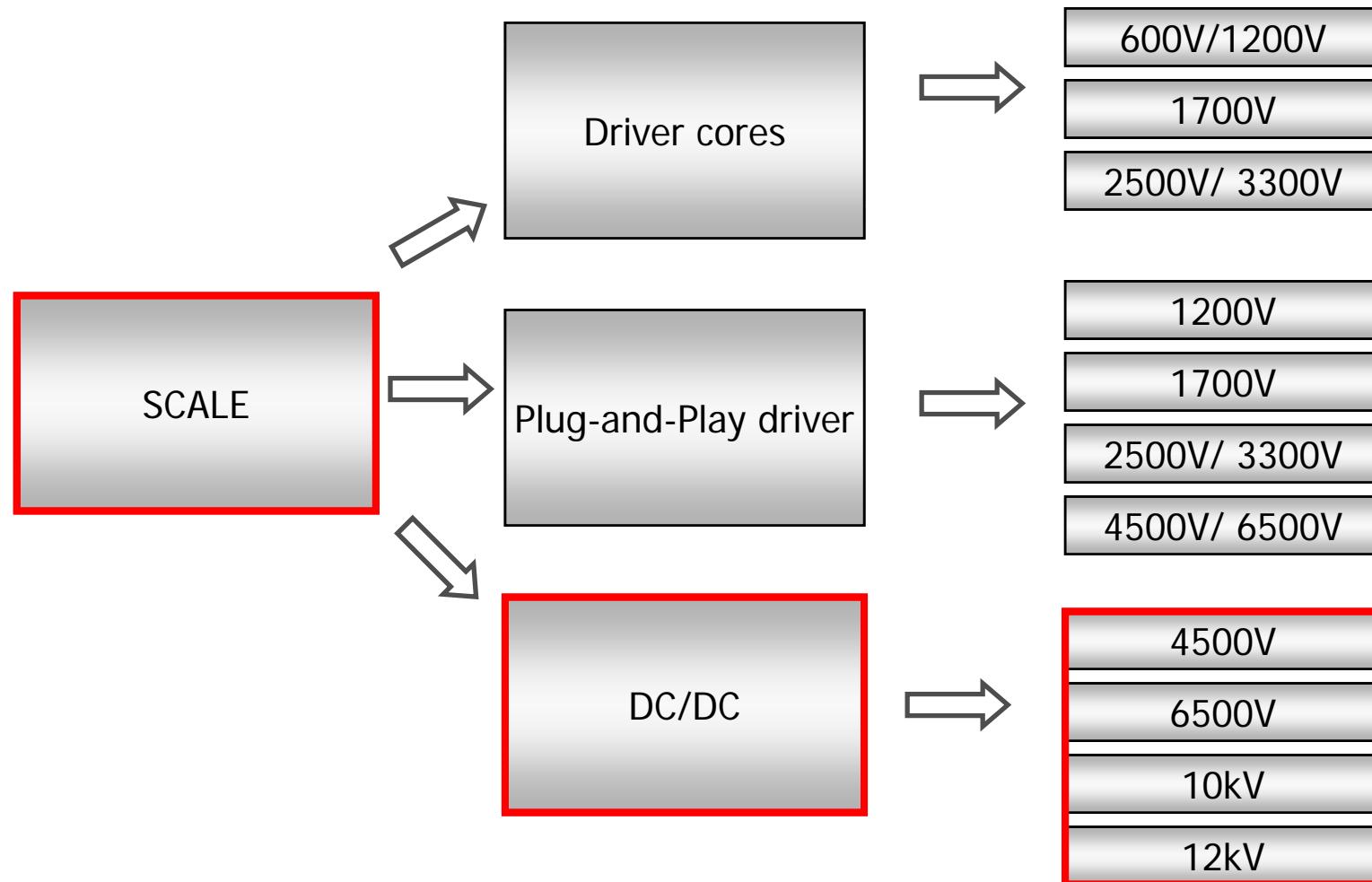
SCALE Plug-and-Play Driver

1SD210F2

- ▶ IGBTs from 4500V to 6500V
- ▶ Suitable for 190mmx140mm IGBT Modules
- ▶ ABB, Infineon, Mitsubishi
- ▶ +10A/-6A gate current, ±15V
- ▶ 2W output power
- ▶ External Power Supply ISO3116I-65
- ▶ Active clamping
- ▶ Short-circuit protection
- ▶ Under-voltage lockout
- ▶ Up to 6kHz
- ▶ Delay time 430ns
- ▶ -40°C...+85°C



SCALE Driver Overview



DC/DC Converters (Power Supplies)

ISO316I

- ▶ For SCALE driver 4.5kV and 6.5kV
- ▶ Up to 12kV operation voltage
- ▶ Dielectric test voltage up to 18kV_{AC}
- ▶ +15V input
- ▶ 3W output power
- ▶ Coupling capacitance 3pf
- ▶ -40°C...+85°C



Contents

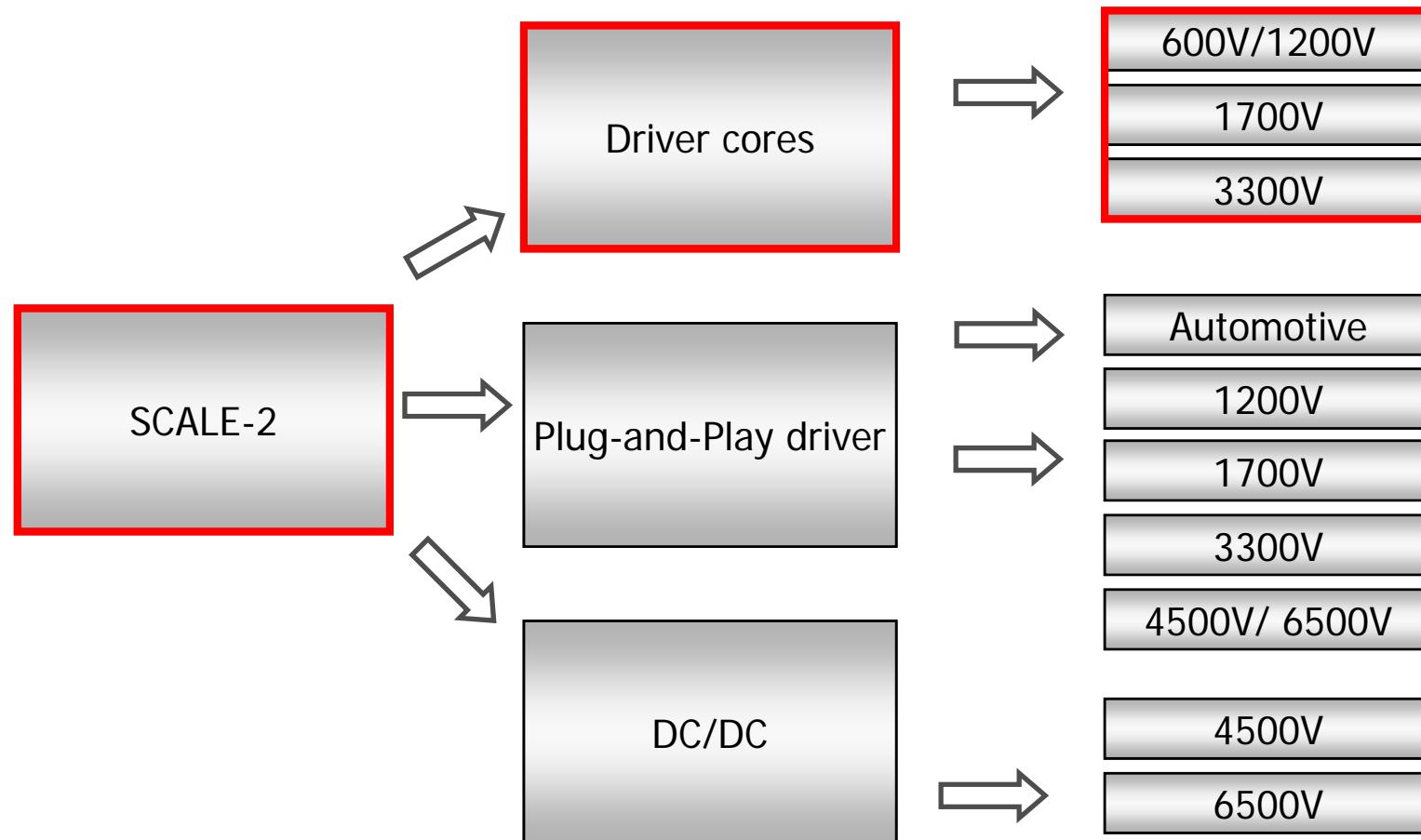
SCALE Drivers

- ▶ Driver cores
- ▶ Plug-and-Play driver
- ▶ DC/DC power supply

SCALE-2 Drivers

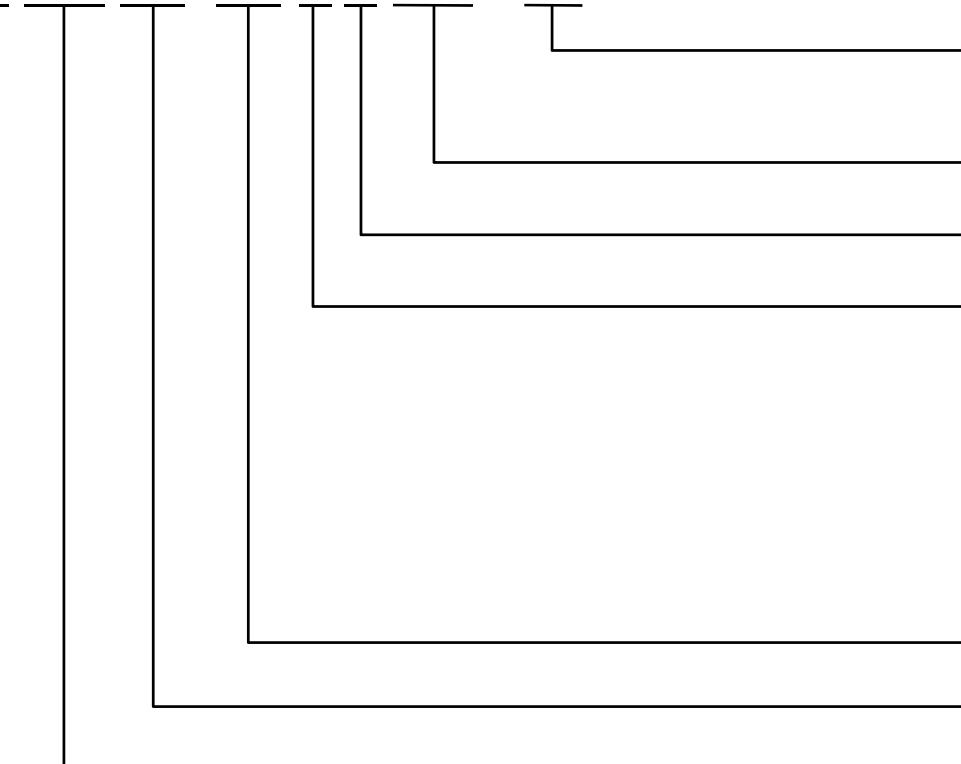
- ▶ Driver cores
- ▶ Plug-and-Play driver

SCALE-2 Driver Overview



SCALE-2 Driver Core Nomenclature

2 S C 0 1 0 8 T 2 A 0 -17



Voltage Class

A0: A=-25°C; B-40°C 2SC0108T

A=-40°C Standard; -50°C 2SC=535

SCALE Generation 2: A=-25°C; B-40°C

Insulation Technology

C: Coreless (PCB)

V: Versatile Fiber-optic

P: Planar Core

S: ST Fiber-optic

T: Ring Core

Output Current per Channel in A

Output Power per Channel in W

SCALE Driver Family

SC: Driver Cores

SP: Plug and Play Driver

Number of Channels

*Only for Plug and play drivers

** Only for Driver Cores

SCALE-2 Driver Cores

2SC0108T

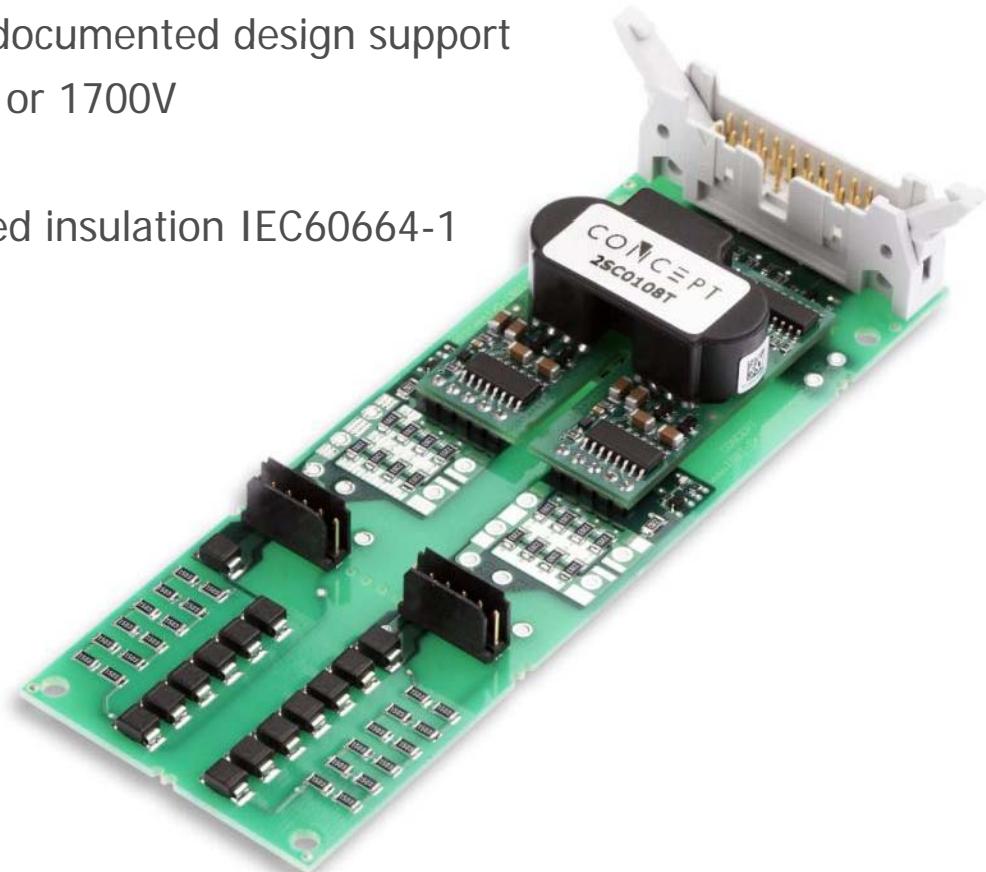
- ▶ Ultra-compact dual channel driver core
- ▶ Short and Long Pin
- ▶ For IGBTs 600V to 1700V
- ▶ $\pm 8A$ gate current, +15V/-8V
- ▶ 1W per channel
- ▶ Direct paralleling capability
- ▶ Regulated gate-emitter voltage
- ▶ Short-circuit protection
- ▶ Under-voltage lockout
- ▶ Up to 50kHz
- ▶ Delay time <100ns, jitter < ± 4 ns
- ▶ 75kV/us
- ▶ Safe isolation EN50178, reinforced insulation IEC60664-1
- ▶ UL compliant
- ▶ Two Types: 2SC0108T2Ax-17 (-20°C...+85°)
 2SC0108T2Bx-17 (-40°C...+85°)



SCALE-2 Driver Cores

2BB0108T

- ▶ Basis board for 2SC0108T
- ▶ For IGBTs 600V to 1700V
- ▶ Available as a product or as full documented design support
- ▶ Active clamping for 600V, 1200V or 1700V
- ▶ Standard DIC-20 interface
- ▶ Safe isolation EN50178, reinforced insulation IEC60664-1
- ▶ UL compliant
- ▶ -40°C...+85°C



SCALE-2 Driver Cores

2SC0435T

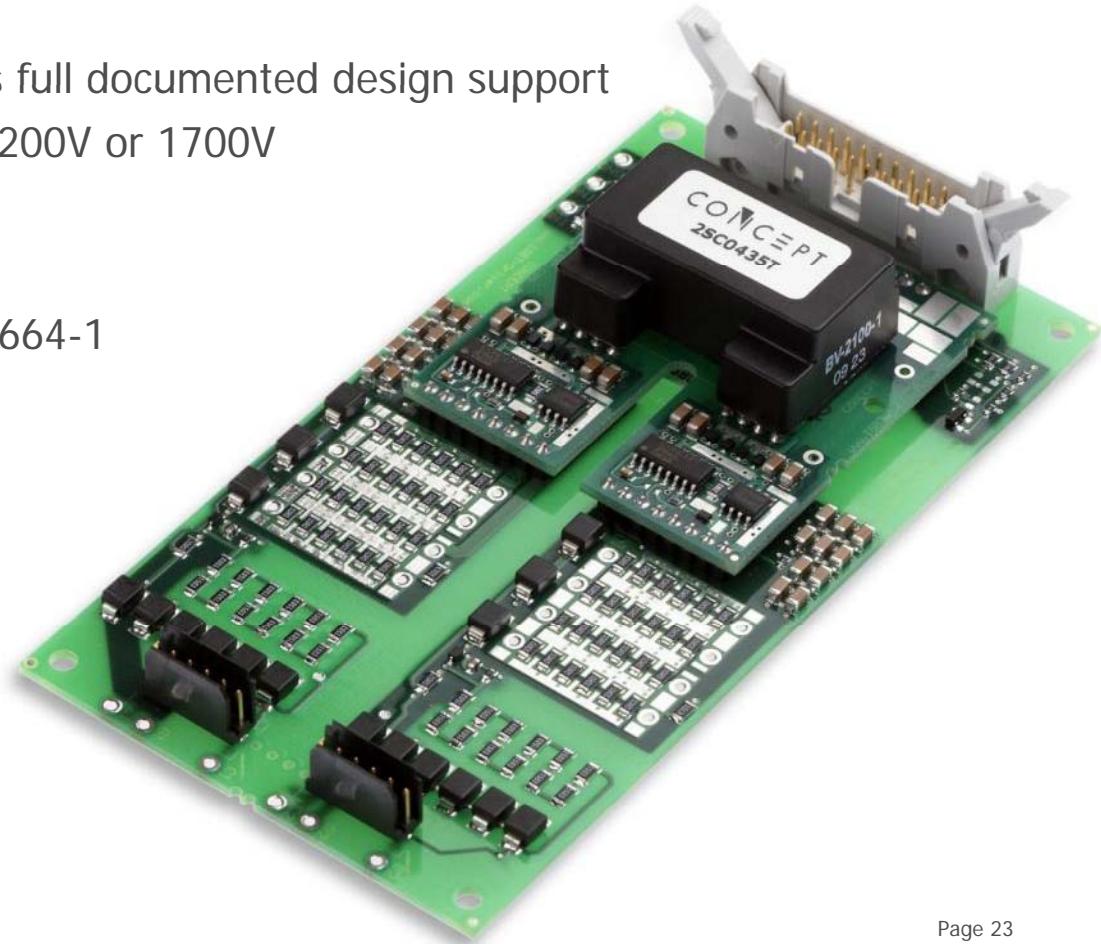
- ▶ Ultra-compact dual channel driver core.
- ▶ Four Version. RoHS compined. No RoHS complined. Long and short pin.
- ▶ For IGBTs 600V to 1700V
- ▶ $\pm 35A$ gate current, +15V/-10V
- ▶ 4W per channel
- ▶ Direct paralleling capability
- ▶ Regulated gate-emitter voltage
- ▶ Advanced active clamping
- ▶ Short-circuit protection
- ▶ Under-voltage lockout
- ▶ Up to 100kHz
- ▶ Delay time <100ns, jitter < ± 4 ns
- ▶ 75kV/us
- ▶ Safe isolation EN50178, reinforced insulation IEC60664-1
- ▶ UL compliant
- ▶ -40°C...+85°C



SCALE-2 Driver Cores

2BB0435T

- ▶ Basis board for 2SC0435T
- ▶ For IGBTs 600V to 1700V
- ▶ Available as a product or as full documented design support
- ▶ Active clamping for 600V, 1200V or 1700V
- ▶ Standard DIC-20 interface
- ▶ Safe isolation EN50178,
reinforced insulation IEC60664-1
- ▶ UL compliant
- ▶ -40°C...+85°C



SCALE-2 Driver Cores

2SC0535T

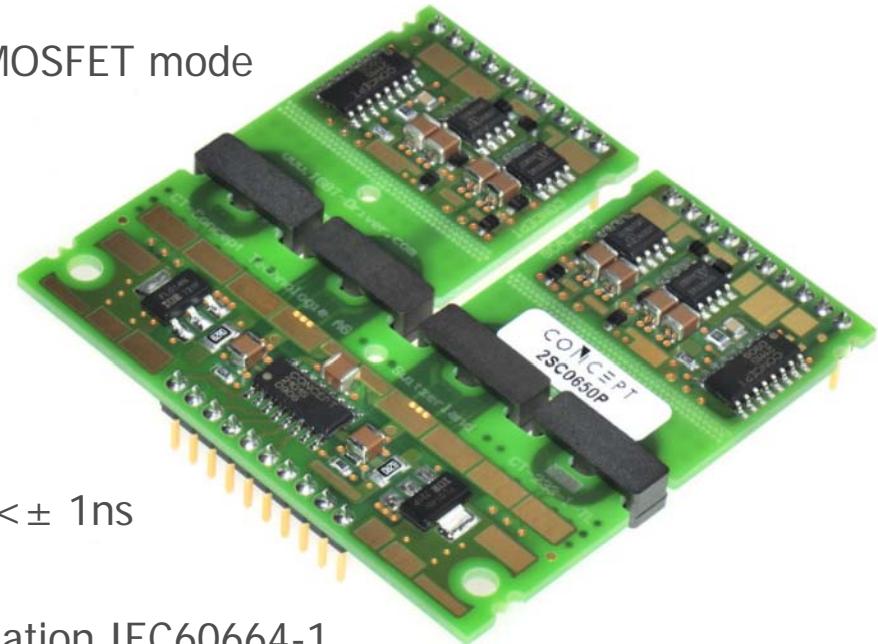
- ▶ Ultra-compact dual channel driver core for 3,3kV IGBT Modules
- ▶ For IGBTs 1700V to 3300V
- ▶ $\pm 35A$ gate current, +15V/-10V
- ▶ 4W per channel
- ▶ Direct paralleling capability
- ▶ Regulated gate-emitter voltage
- ▶ Advanced active clamping
- ▶ Short-circuit protection
- ▶ Under-voltage lockout
- ▶ Up to 100kHz
- ▶ Delay time <100ns, jitter < ± 4 ns
- ▶ Safe isolation EN50178, reinforced insulation IEC60664-1
- ▶ EN50124 Traction application
- ▶ UL compliant
- ▶ -55°C...+85°C



SCALE-2 Driver Cores

2SC0650P

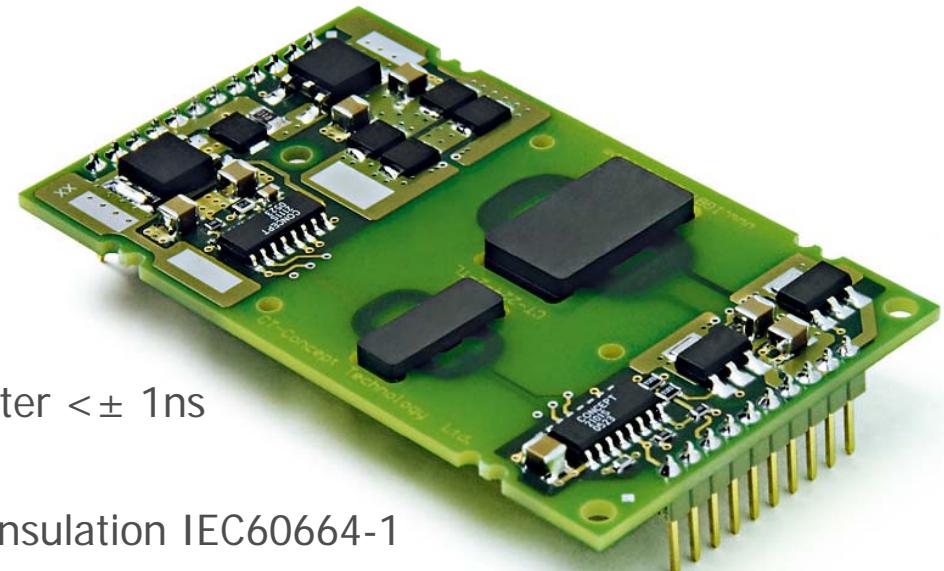
- ▶ Ultra-flat and highest power density dual channel driver core
- ▶ For IGBTs and MOSFETs up to 1700V
- ▶ ±50A gate current
- ▶ +15V/-10V IGBT mode, +10...20V/0V MOSFET mode
- ▶ 6W per channel
- ▶ Direct paralleling capability
- ▶ Regulated gate-emitter voltage
- ▶ Advanced active clamping
- ▶ Short-circuit protection
- ▶ Under-voltage lockout
- ▶ Up to 150kHz, delay time <80ns, jitter <± 1ns
- ▶ 100kV/us
- ▶ Safe isolation EN50178, reinforced insulation IEC60664-1
- ▶ UL compliant
- ▶ -40°C...+85°C



SCALE-2 Driver Cores

1SC2060P

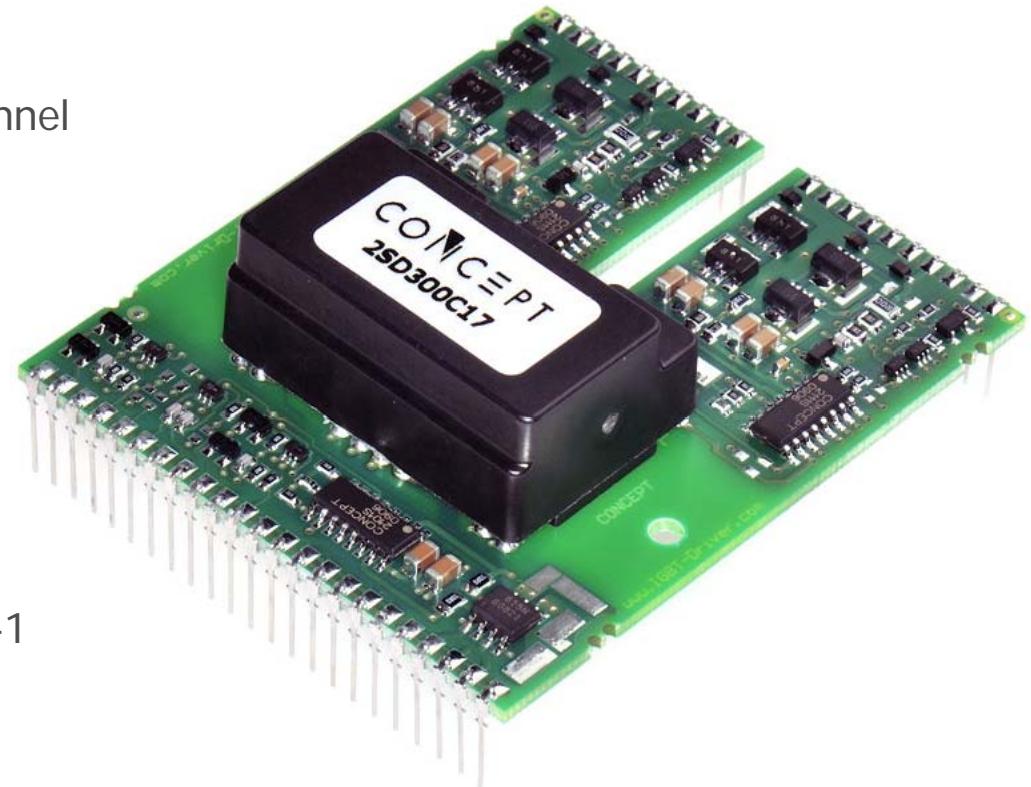
- ▶ Ultra-flat and highest power density single channel driver core
- ▶ For IGBTs and MOSFETs up to 1700V
- ▶ ±60A gate current
- ▶ +15V/-10V IGBT mode; +10...20V/0V MOSFET mode
- ▶ 20W output power
- ▶ Direct paralleling capability
- ▶ Regulated gate-emitter voltage
- ▶ Advanced active clamping
- ▶ Short-circuit protection
- ▶ Under-voltage lockout
- ▶ Up to 500kHz, delay time <80ns, jitter <± 1ns
- ▶ 100kV/us
- ▶ Safe isolation EN50178, reinforced insulation IEC60664-1
- ▶ UL compliant
- ▶ -40°C...+85°C



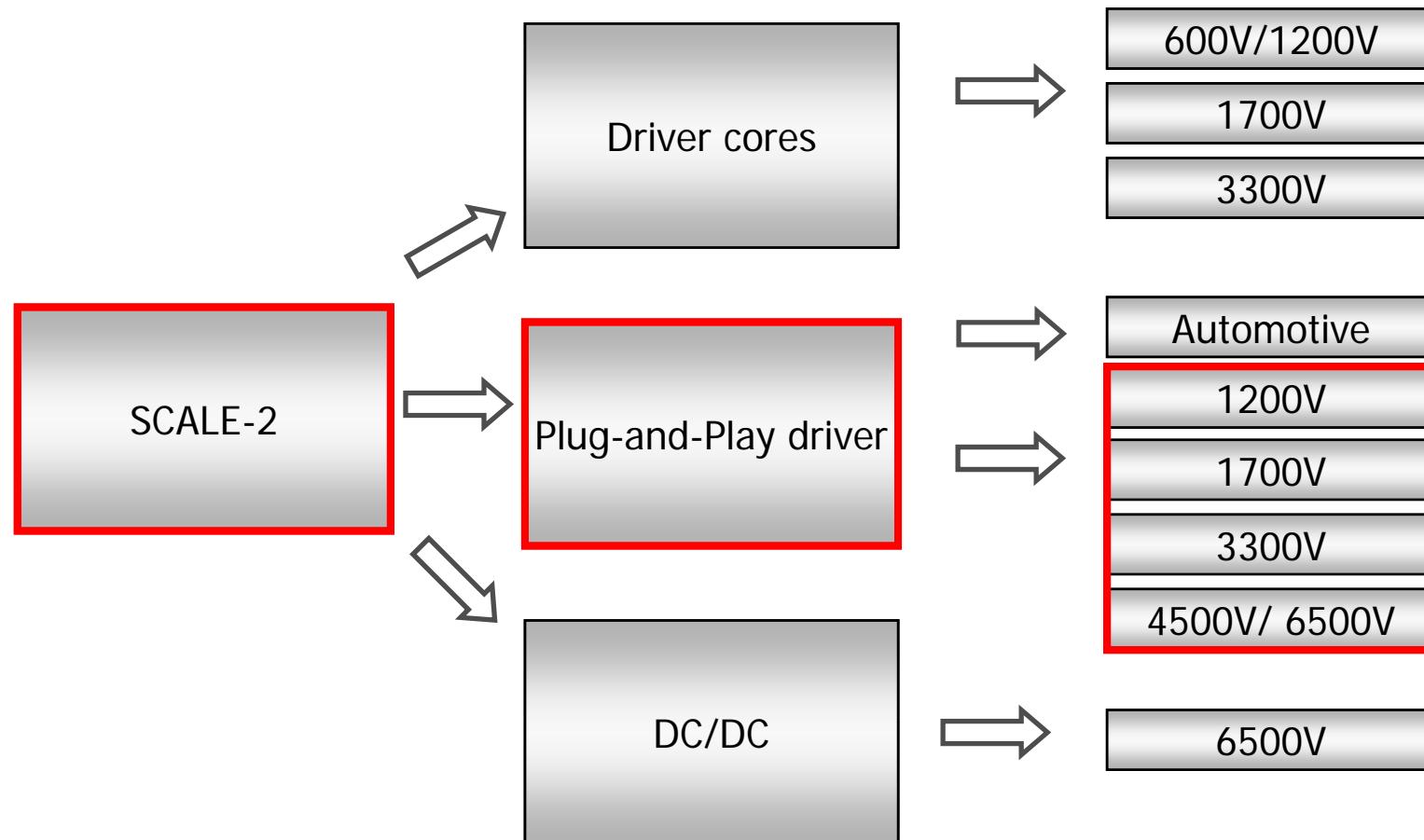
SCALE-2 Driver Cores

2SD300C17

- ▶ Second source for Infineon 2ED300C17-S (ST coating on request)
- ▶ For IGBTs 600V to 1700V
- ▶ $\pm 30A$ gate current, $\pm 15V$
- ▶ Gate output power 4W per channel
- ▶ Advanced active clamping
- ▶ Short circuit protection
- ▶ Soft turn-off after SC detection
- ▶ Under-voltage lockout
- ▶ Up to 50kHz, delay time 690ns
- ▶ 75kV/us
- ▶ Safe isolation EN50178,
Reinforced insulation IEC60664-1
- ▶ UL compliant
- ▶ $-40^{\circ}C \dots +85^{\circ}C$

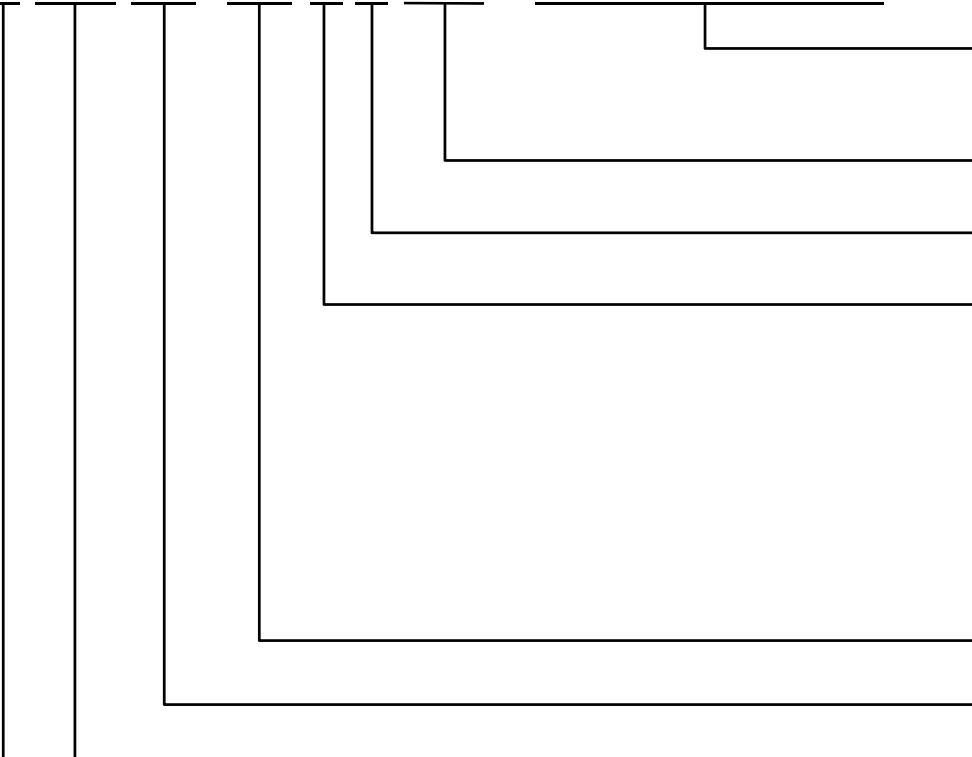


SCALE-2 Plug & Play Driver Overview



Driver Nomenclature

2 S P 0 3 2 0 T 2 A 0 - FF1000R17IE4



Module Type Designation*/Voltage Class**

Options A0: Standard (for others check web)

SCALE Generation 2: SCALE-2

Insulation Technology

C: Coreless (PCB)

V: Versatile Fiber-optic

P: Planar Core

S: ST Fiber-optic

T: Ring Core

Output Current per Channel in A

Output Power per Channel in W

SCALE Driver Family

SC: Driver Cores

SP: Plug and Play Driver

Number of Channels

*Only for Plug and play drivers

** Only for Driver Cores

SCALE-2 Plug-and-Play Driver

2SP0115T

- ▶ Dual channel driver for 17mm dual IGBTs
- ▶ Infineon, Fuji, Mitsubishi IGBTs 600V to 1700V
- ▶ DIC-20 interface
- ▶ 1W output power per channel
- ▶ Direct paralleling capability
- ▶ Regulated gate-emitter voltage
- ▶ Advanced active clamping
- ▶ Short-circuit protection
- ▶ Under-voltage lockout
- ▶ Up to 30kHz, delay time <100ns, jitter < \pm 4ns
- ▶ NTC output
- ▶ Safe isolation EN50178, reinforced insulation IEC60664-1
- ▶ UL compliant
- ▶ Two Types: 2SP0115T2Ax (-20°C...+85°)
2SP0115T2Bx (-40°C...+85°)



SCALE-2 Plug-and-Play Driver

2SP0320T

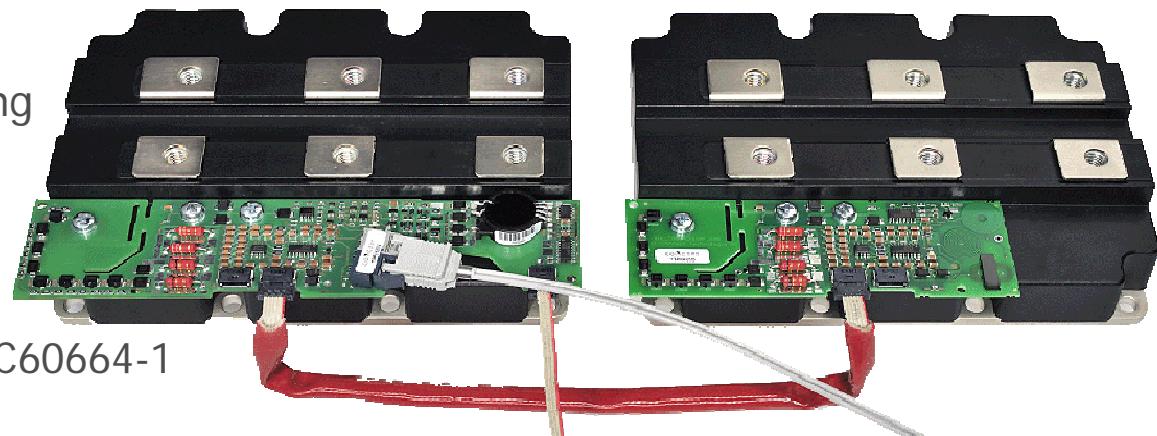
- ▶ Dual channel driver for PrimePACK™, Infineon, Fuji, Danfoss IGBTs 600V to 1700V
- ▶ DIC-20 or fiber-optic interface
- ▶ 3W output power per channel
- ▶ Direct paralleling capability
- ▶ Regulated gate-emitter voltage
- ▶ Advanced active clamping
- ▶ Short-circuit protection
- ▶ Under-voltage lockout
- ▶ Up to 30kHz
- ▶ Safe isolation EN50178R
- ▶ Reinforced insulation IEC60664-1
- ▶ UL compliant
- ▶ -40°C...+85°C



SCALE-2 Plug-and-Play Driver

1SP0635 (Master & Slave)

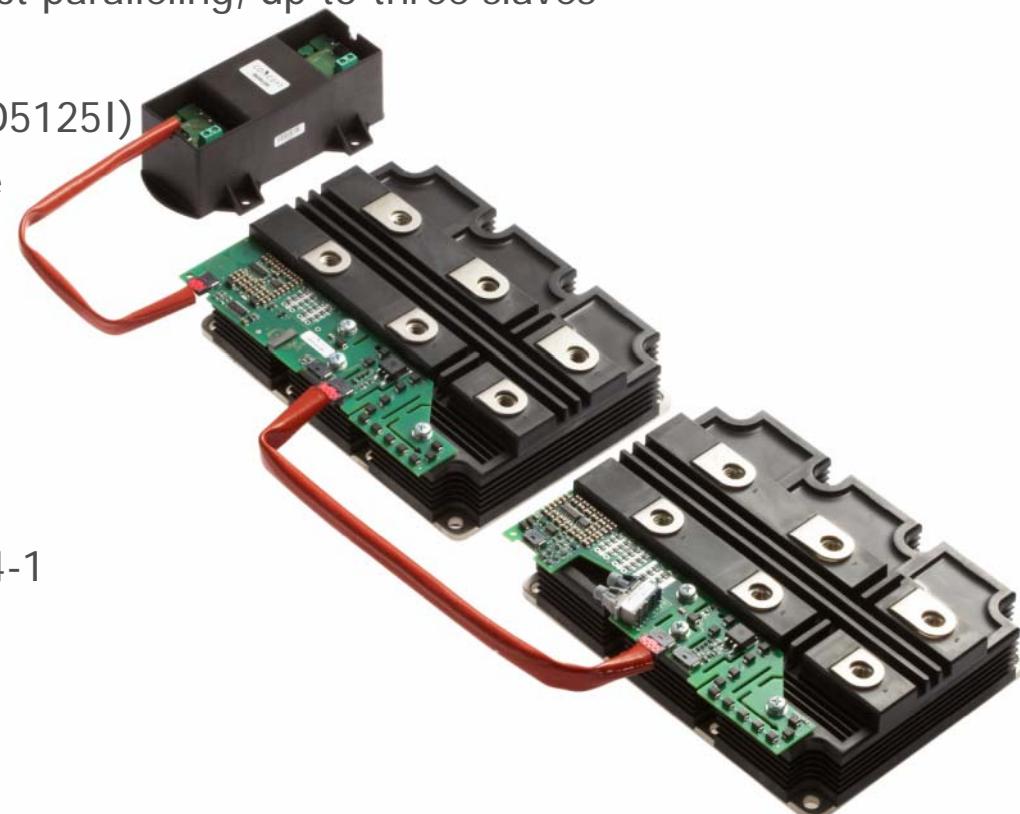
- ▶ IGBTs from 1200V to 3300V
- ▶ Suitable for 130mmx140mm and 190mmx140mm IGBT modules
- ▶ Fuji, ABB, Infineon, Mitsubishi, Dynex, Toshiba
- ▶ Master-slave operation for direct paralleling, up to three slaves
- ▶ 10W power supply on master
- ▶ Regulated gate-emitter voltage
- ▶ Gate monitoring
- ▶ Advanced active clamping
- ▶ Short-circuit protection
- ▶ Under-voltage lockout
- ▶ Safe isolation EN50178
- ▶ Reinforced insulation IEC60664-1
- ▶ UL compliant
- ▶ -40°C...+85°C



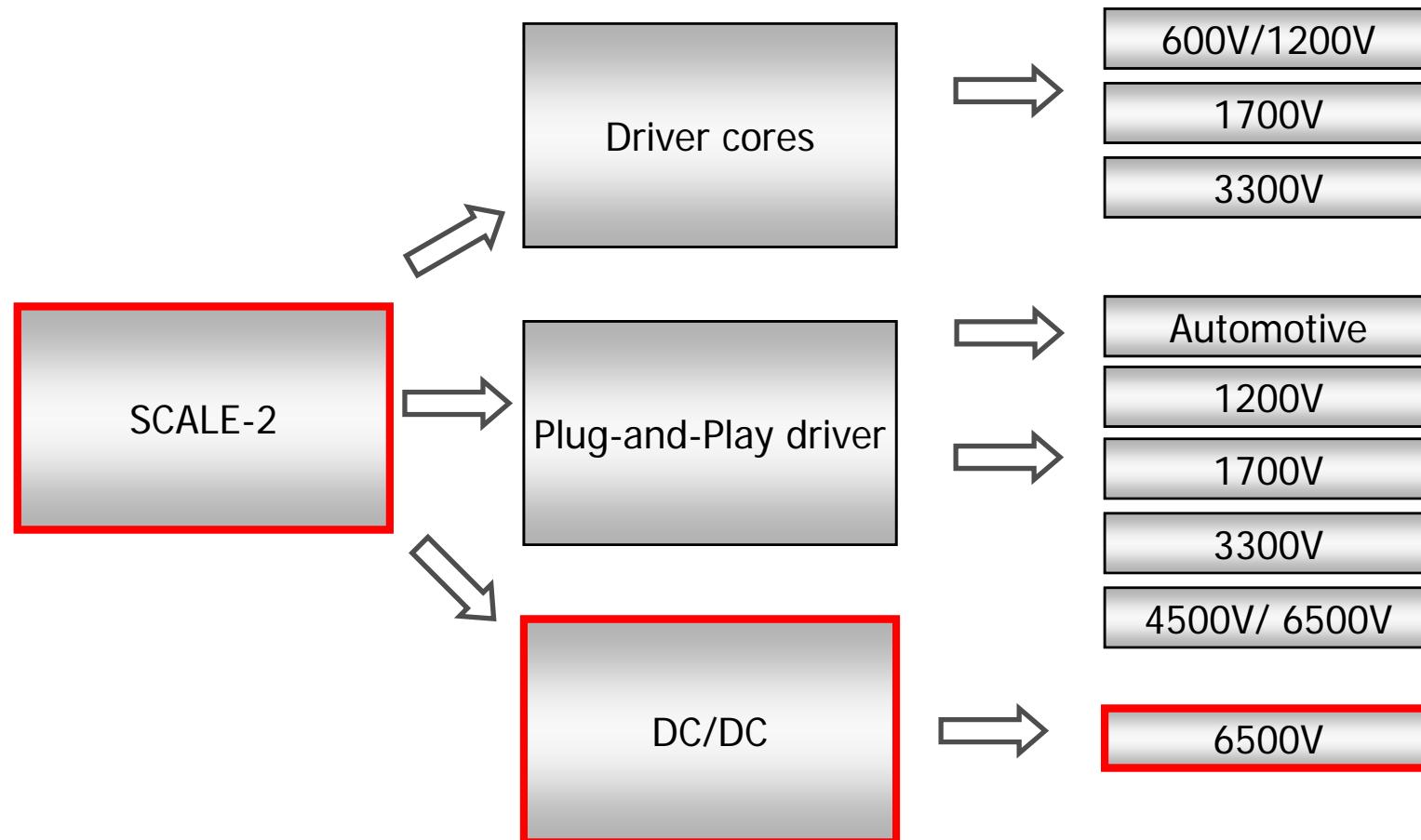
SCALE-2 Plug-and-Play Driver

1SP0335 (Master & Slave)

- ▶ IGBTs from 3300V to 6500V
- ▶ Suitable for 190mmx140mm IGBT modules
- ▶ Master-slave operation for direct paralleling, up to three slaves
- ▶ ABB, Infineon, Mitsubishi
- ▶ 5W external power supply (ISO5125I)
- ▶ Regulated gate-emitter voltage
- ▶ Gate monitoring
- ▶ Dynamic active clamping
- ▶ Short-circuit protection
- ▶ Under-voltage lockout
- ▶ Safe isolation EN50178
- ▶ Reinforced insulation IEC60664-1
- ▶ UL compliant
- ▶ -40°C...+85°C



SCALE-2 Driver Overview



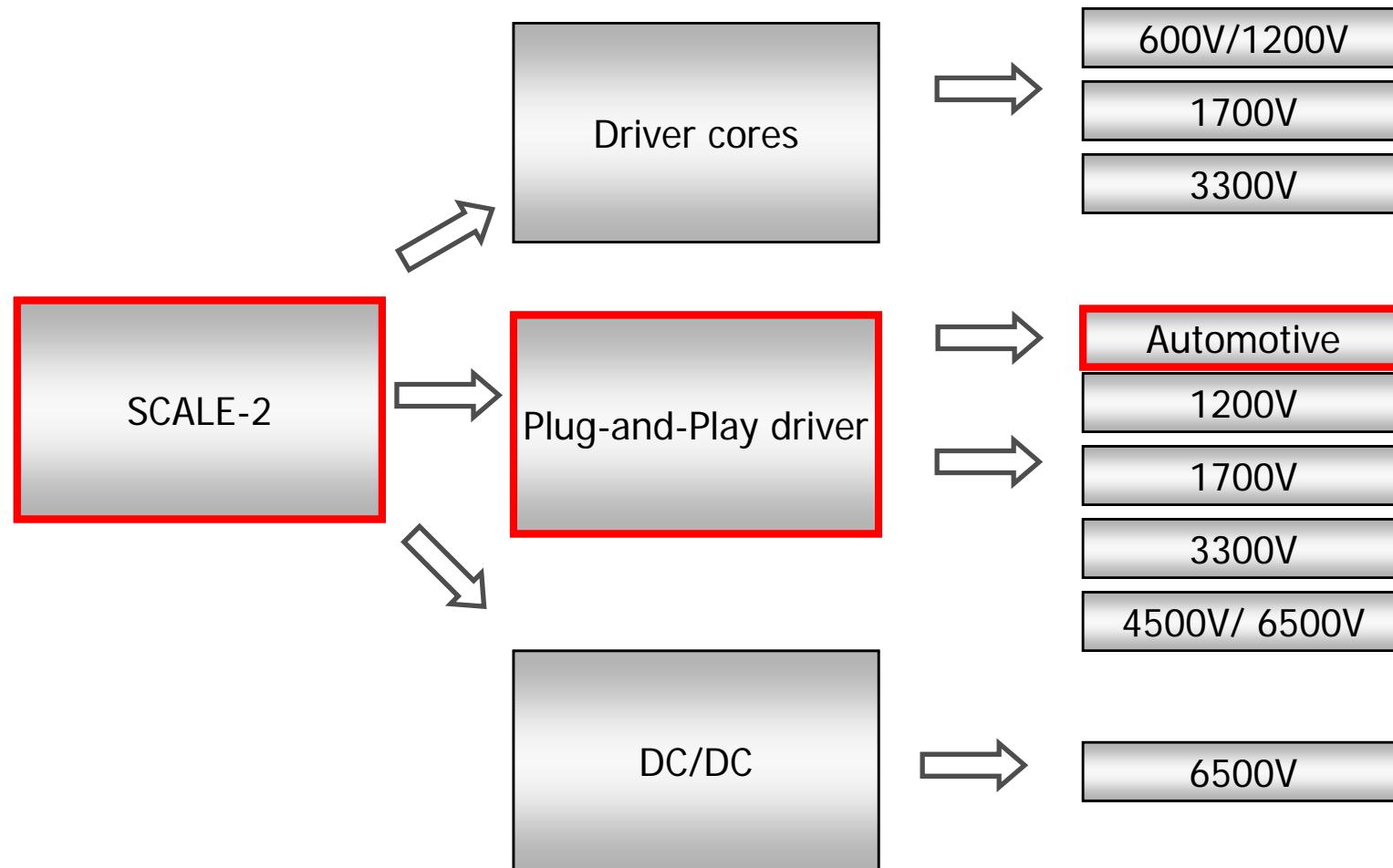
DC/DC Converters (Power Supplies)

ISO5125I

- ▶ For SCALE-2 driver 1SP0335
- ▶ +15V input; +25V output
- ▶ Up to 12kV operation voltage
- ▶ Dielectric test voltage up to 18kV_{AC}
- ▶ 3W output power
- ▶ Two connectors.
- ▶ Coupling capacitance 3pf
- ▶ -40°C...+85°C



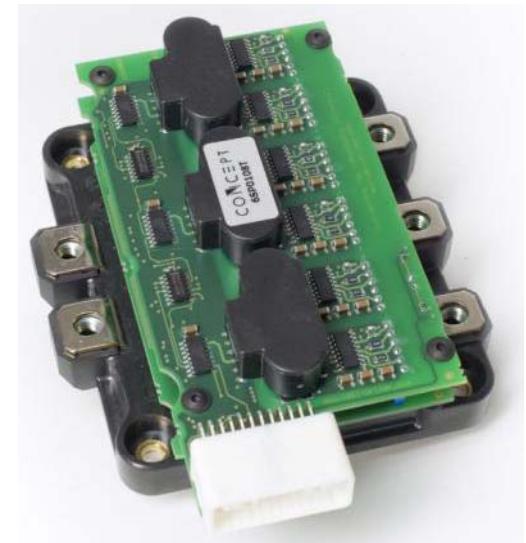
SCALE-2 Driver Overview



SCALE-2 Plug-and-Play Automotive Driver

Automotive Solution

- ▶ SCALE-2 gate driver for Fuji and Infineon automotive IGBT modules
- ▶ Tyco automotive interface
- ▶ Reinforced insulation IEC60664-1
- ▶ UL compliant
- ▶ -40°C...+85°C



Many Thanks!

IGBT-Driver – Power Electronics: Home

Datei Bearbeiten Ansicht Verlauf Lesezeichen Fenster ?

http://www.igbt-driver.com/ Q Google

Home Products Support Sales Company CONCEPT INTELLIGENT POWER ELECTRONICS


CLEVER
Brand-new SCALE-2 based Plug-and-play
Driver for EconoDUAL IGBT Modules



February 2010 2SP0115T is the the ultimate new driver platform for EconoDUAL™ IGBT modules. As a member of the CONCEPT Plug-and-play driver family, it satisfies the requirements for optimized electrical performance and noise immunity. Shortest design cycles are achieved without compromising overall system efficiency in any way. Specifically adapted drivers are available for all module types. A direct paralleling option allows integrated inverter design covering higher power ratings. Finally, the highly integrated SCALE-2 chipset reduces the component count by 80% compared to conventional solutions, thus significantly increasing reliability and reducing cost.

► [2SP0115T product page - the new driver platform for EconoDUAL](#)

Top News

Advantages of Advanced Active Clamping
Advanced Active Clamping is one of the most important features of a modern driver for high-power IGBTs.
Read our latest cover story from Power Electronic Europe Magazine...
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► [SCALE-2 - the Next Generation](#)
► [SCALE-2 Plus-and-play Drivers](#)
► [SCALE-2 Driver Cores](#)
► [2SC0435T - Low-cost High-power Core](#)
► [Product Overview](#)

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