

SCALE™-2 for PrimePACK™3+ 2SP0430T2xx



February 2019



ac-dc converters



led drivers



gate drivers

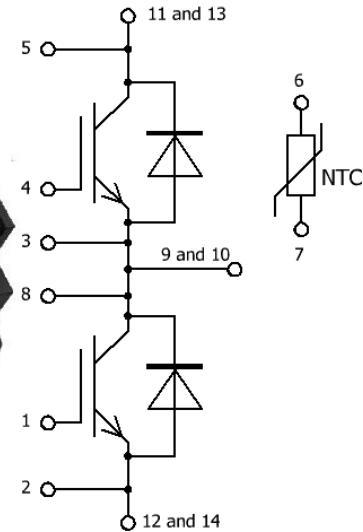
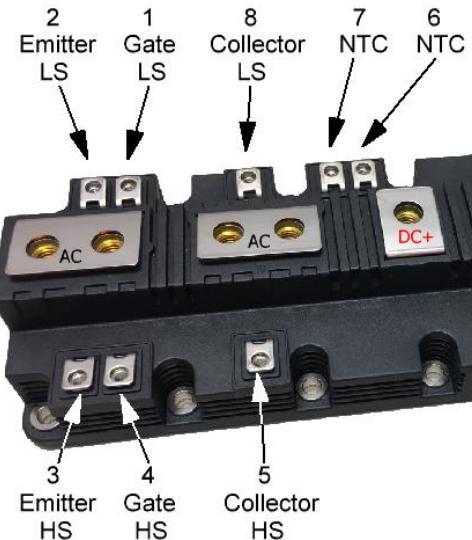
SCALE™-2 for PrimePACK™3+

Step 1 (Infineon):

- **FF1800R12IE5 (1200V)**
- **FF1800R17IP5 (1700V)**
- **FF1500R12IE5 (1200V)**
- **FF1500R17IP5 (1700V)**

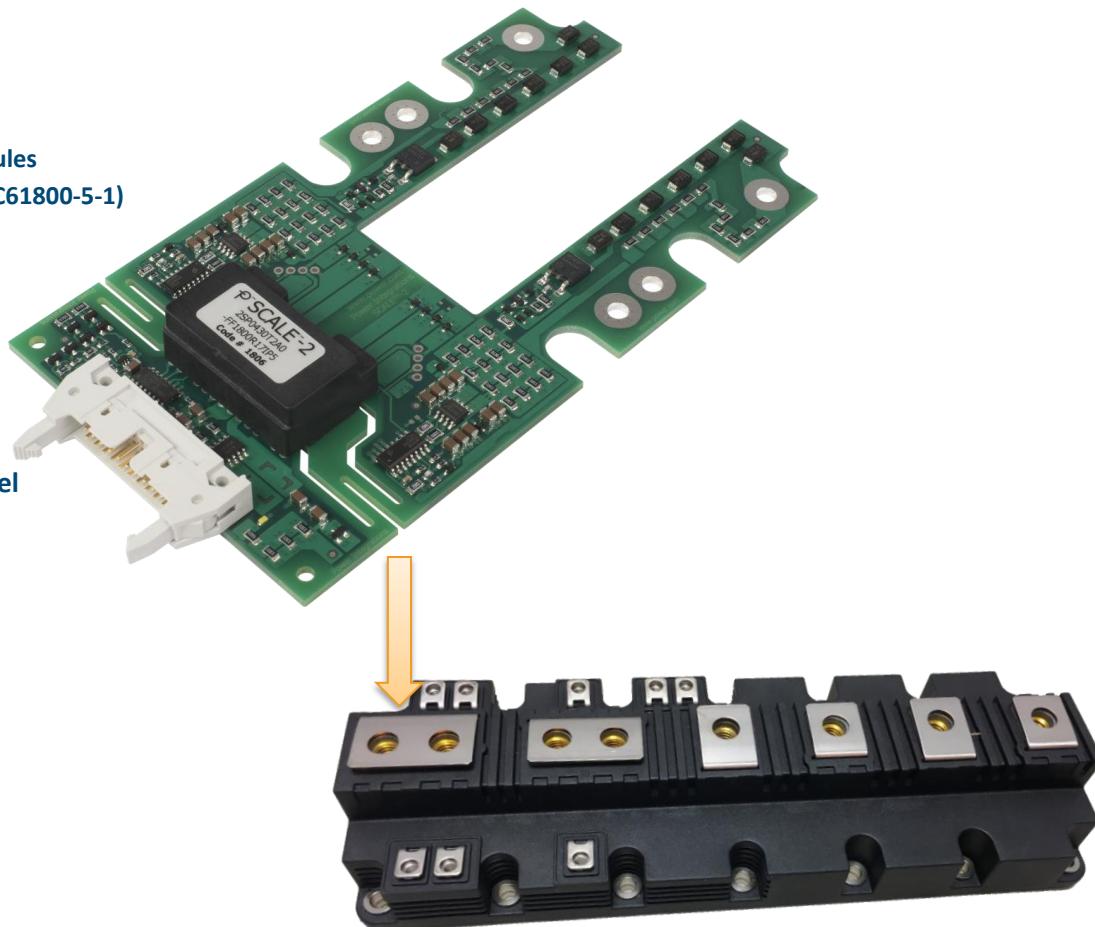
Step 2 (Fuji):

- **2MBI1800XXG170-50**

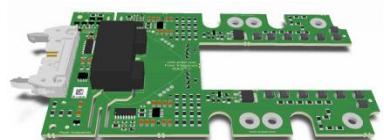
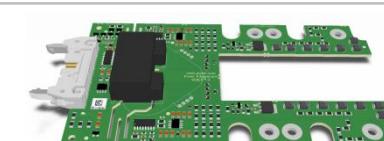
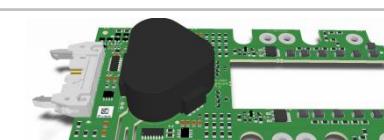


2SP0430T2XX

- Dual channel Plug-and-Play driver for PrimePACK3+ modules
- Reinforced Isolation for 1200V and 1700V application (IEC61800-5-1)
- For 2-Level and 3-Level NPC1
- Two different Isolation Classes
 - ▷ 5000 V_{AC} (50Hz/1min)
 - ▷ 9150 V_{AC} (50Hz/1min)
- Propagation delay time <100ns, jitter ± 4 ns
- ± 30 A peak output gate current
- +15V/-10V regulated gate output voltage
- 4W output power per channel @TA=85°C per channel
- Dynamic Advanced Active Clamping (DAAC)
- Short Circuit protection
- Electrical interface +15V logic level
- Under voltage lockout for primary & secondary side
- Standard with Conformal Coating
- UL compliant
- Application:
 - ▷ PV (Photo Voltaic) 3L NPC1
 - ▷ Traction Main Inverter
 - ▷ 2 Level Industrial Application



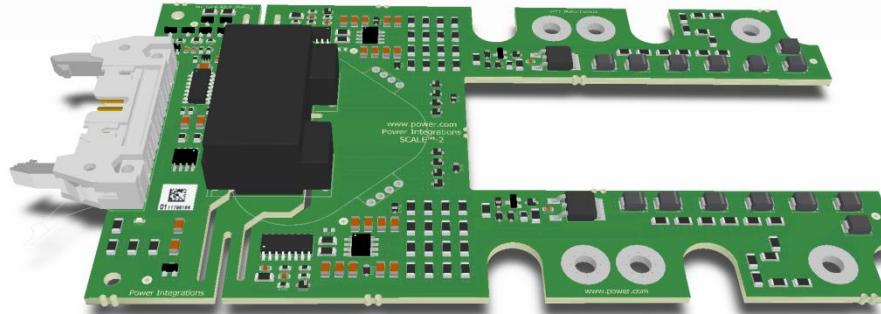
Product Overview – Step 1

Product name	Semiconductor V_{CES}	Interface	Isolation Class (Primary to Secondary Side)	Product Picture
2SP0430T2A0C- FF1800R12IE5	1200V	Electric +15V	5000 V _{AC} (50Hz/1min)	
2SP0430T2A0C- FF1500R12IE5				
2SP0430T2B0C- FF1800R12IE5	1200V	Electric +15V	9150 V _{AC} (50Hz/1min)	
2SP0430T2B0C- FF1500R12IE5				
2SP0430T2A0C- FF1800R17IP5	1700V	Electric +15V	5000 V _{AC} (50Hz/1min)	
2SP0430T2A0C- FF1500R17IP5				
2SP0430T2B0C- FF1800R17IP5	1700	Electric +15V	9150 V _{AC} (50Hz/1min)	
2SP0430T2B0C- FF1800R17IP5				

Product Details

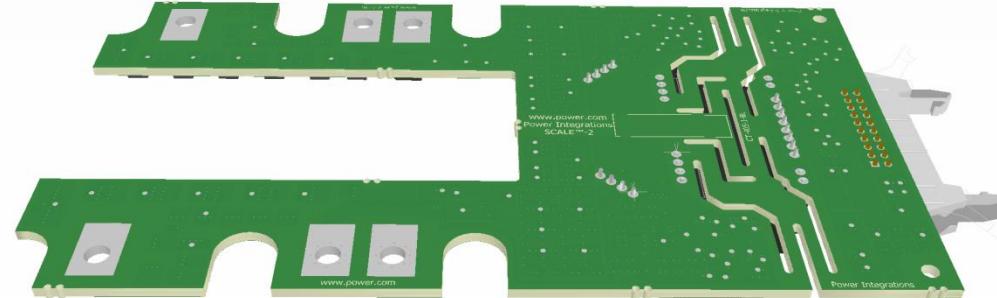
■ Top Side view

- ▶ Minimum count of components
- ▶ Two different Transformers for different isolation voltage



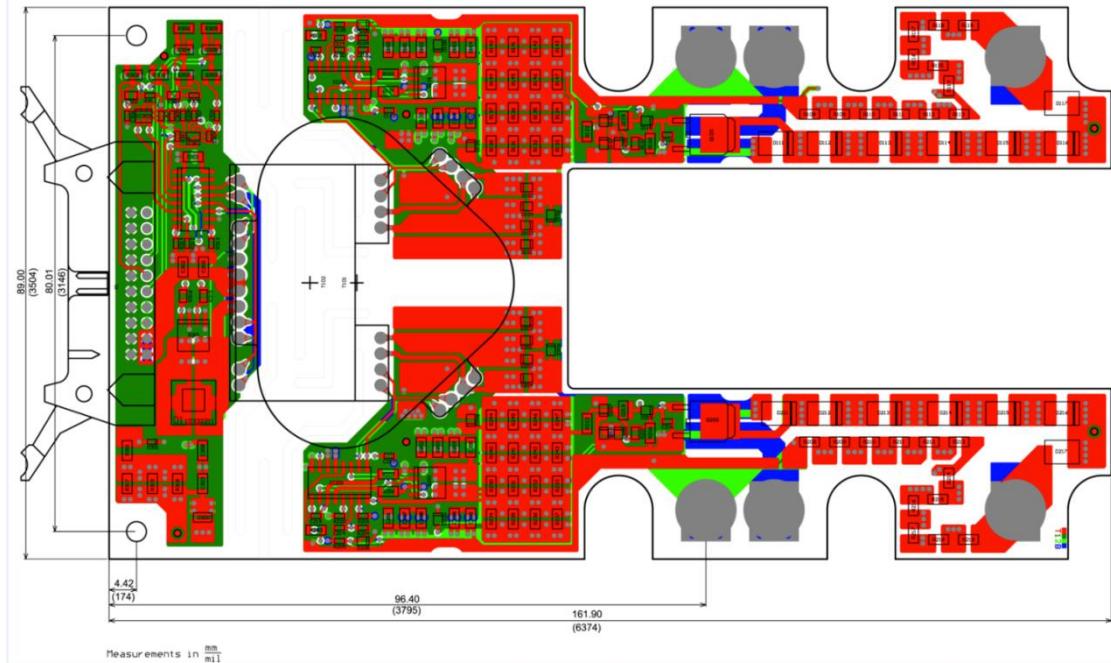
■ Back side view

- ▶ No back side Components



Product Details Dimension

Product name	Height (max over all)	Length	Width
2SP0430T2A0C-FF1800R12IE5	18mm	161.9mm	89mm
2SP0430T2B0C-FF1800R12IE5	24mm	161.9mm	89mm
2SP0430T2A0C-FF1800R17IP5	18mm	161.9mm	89mm
2SP0430T2B0C-FF1800R17IP5	24mm	161.9mm	89mm



Step file by request available



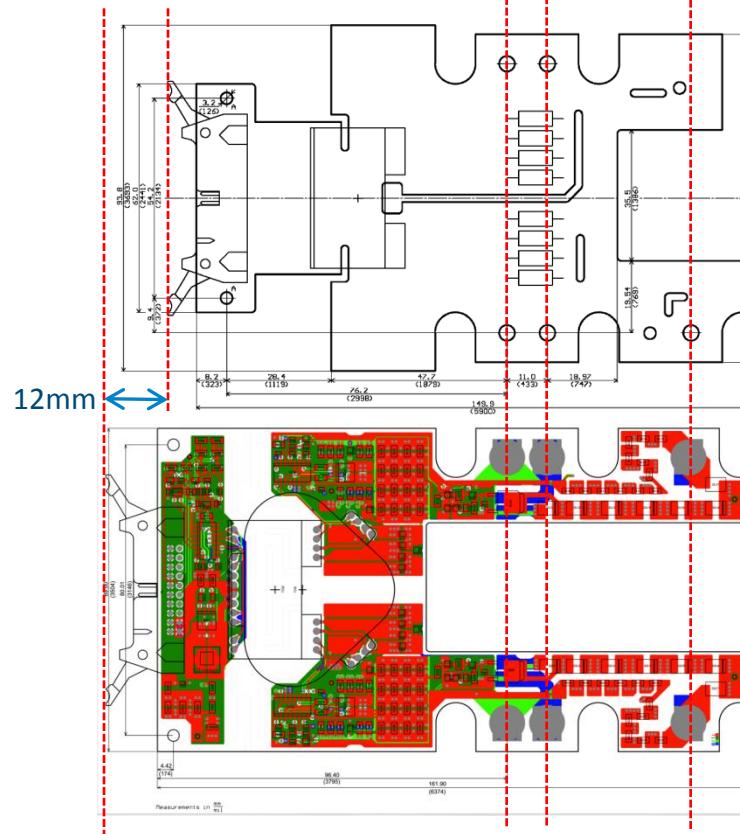
Comparison 2SP0320T with 2SP0430T

- PrimePack 3 2SP0320T

- Length 149.9mm

- PrimePACK 3+ 2SP0430T

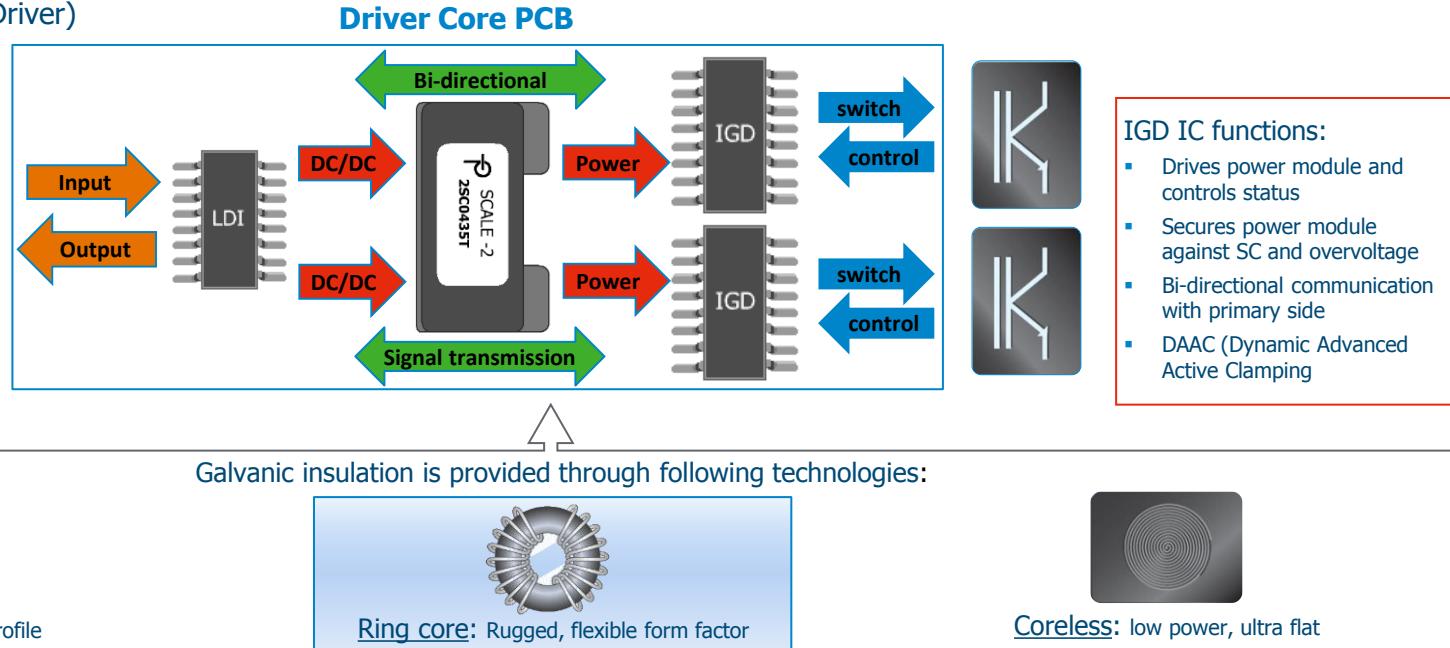
- Length 161.9mm



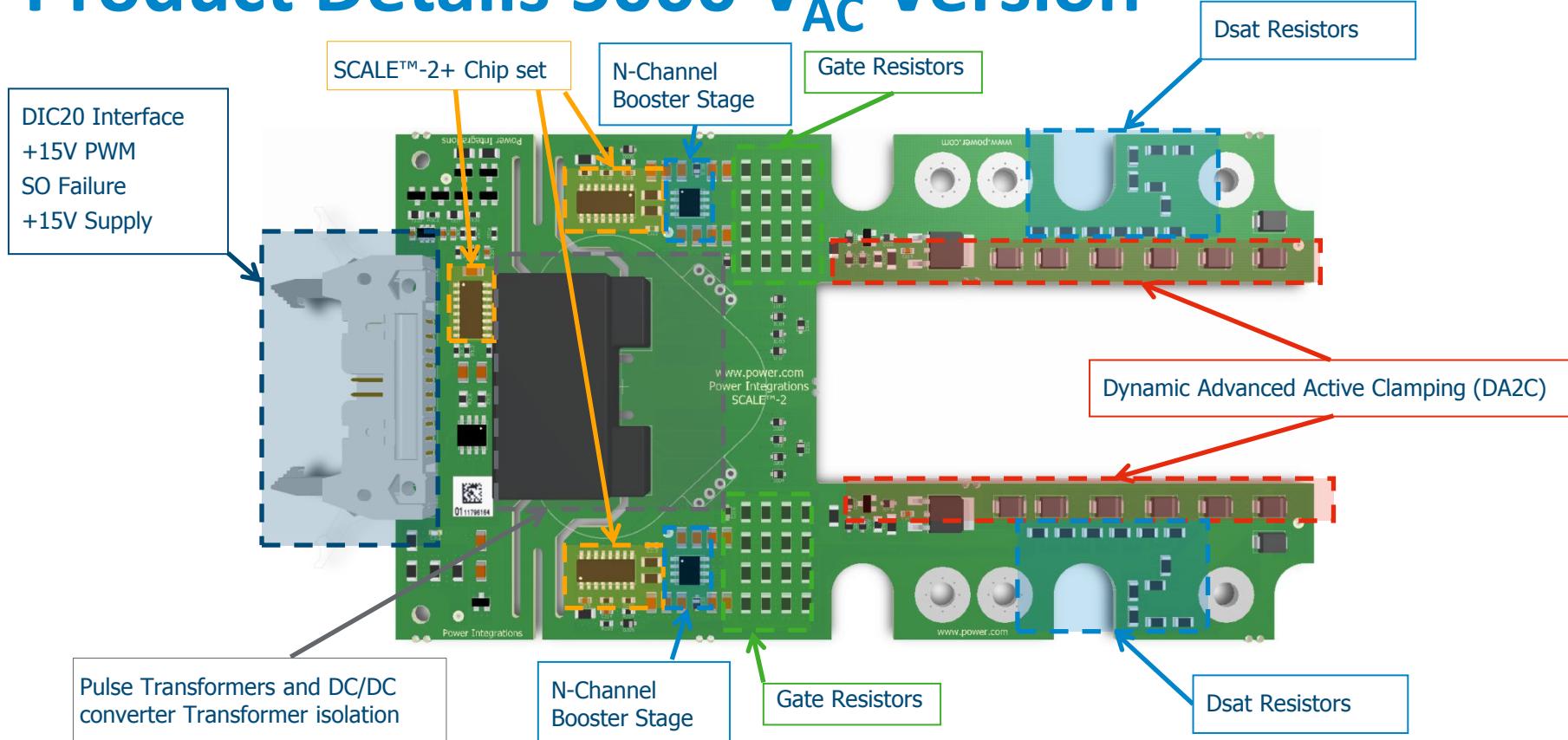
SCALE™-2+ Chip Set Philosophy

Driver Core is equipped with a SCALE™-2+ chip set. Hence, a small number of discrete components assembled onto PCB has been achieved:

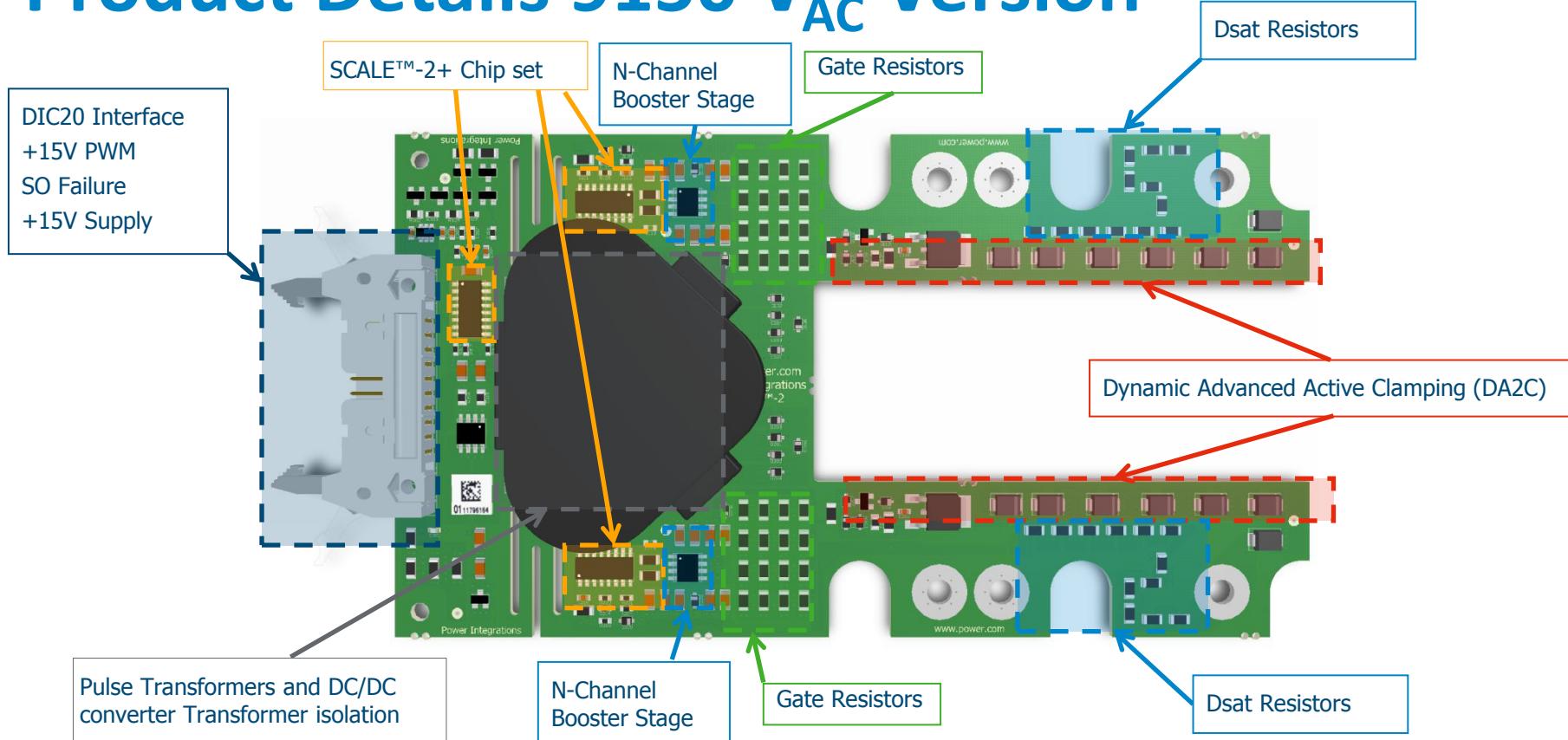
- LDI (Logic to Driver Interface)
- IGD (Intelligent Gate Driver)



Product Details 5000 V_{AC} Version



Product Details 9150 V_{AC} Version



DIC-20 Interface Description

Pin Number	Function
1	VDC +15V
2	GND
3	VDC +15V
4	GND
5	VCC +15V
6	GND
7	VCC +15V
8	GND
9	SO2 Failure High Side
10	GND
11	INB High Side Switch
12	GND
13	SO1 Failure Low Side
14	GND
15	INA Low Side Switch
16	GND
17	Not connected
18	GND
19	Not Connected
20	GND

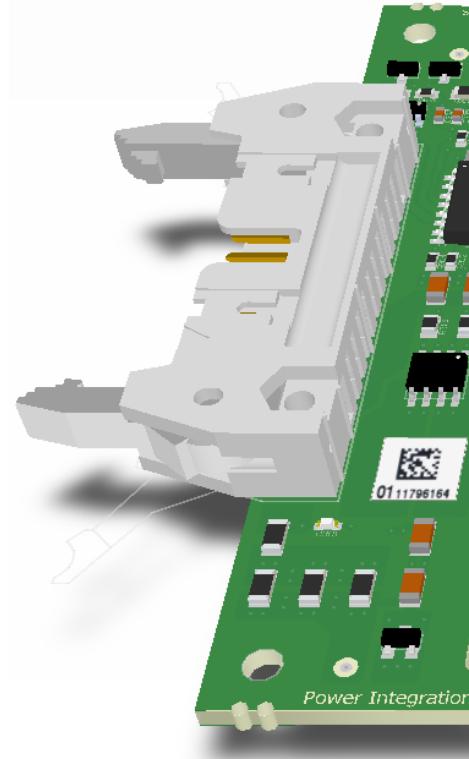
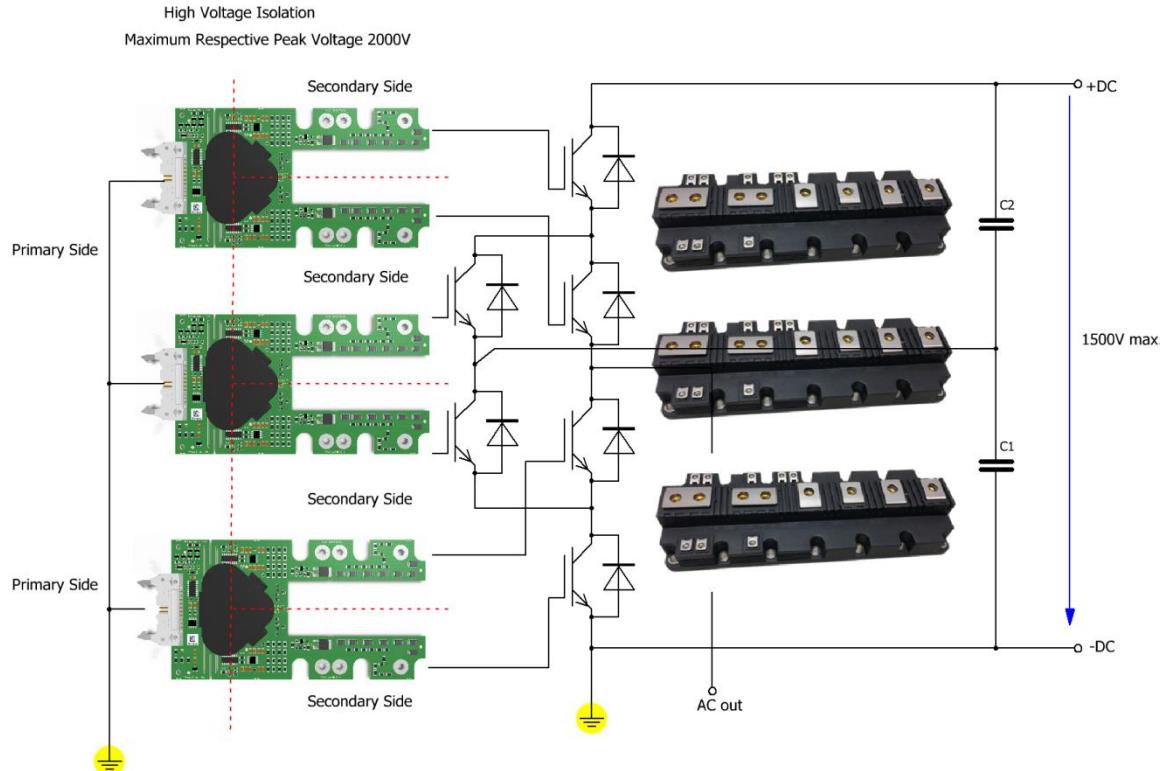
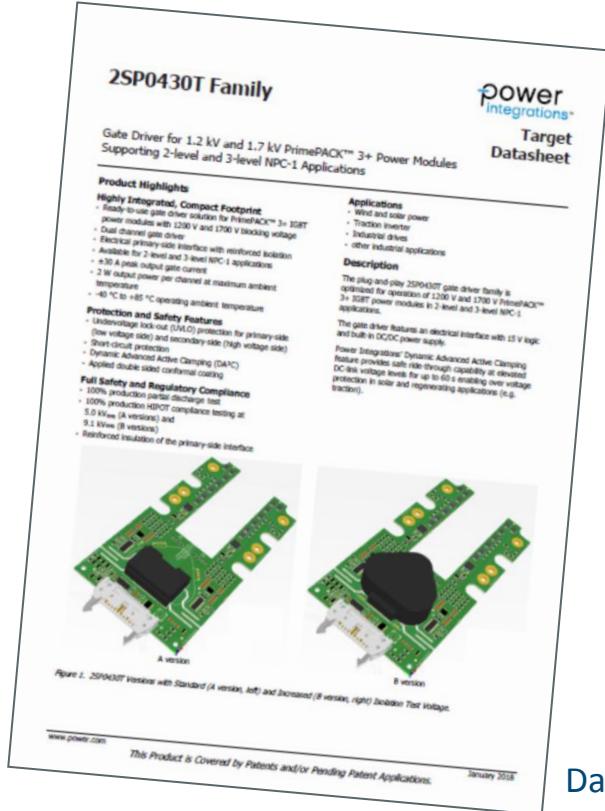


Photo Voltaic 3L NPC1 with Grounded DC-



Samples and Datasheet



2SP0430T Family

Gate Driver for 1.2 kV and 1.7 kV PrimePACK™ 3+ Power Modules Supporting 2-level and 3-level NPC-1 Applications

power integrations®

Target Datasheet

Product Highlights

- Highly Integrated, Compact Footprint
- Ready-to-use gate driver solution for PrimePACK™ 3+ ISBT power modules with 1200 V and 1700 V blocking voltage
- Dual channel driver
- Electrical primary-side interface with reinforced isolation
- Available for 2-level and 3-level NPC-1 applications
- ±10% peak output gate current
- 2.4 nA quiescent power per channel at maximum ambient temperature
- 40 °C to +85 °C operating ambient temperature

Protection and Safety Features

- Undervoltage lock-out (UOL) protection for primary-side (low voltage side) and secondary side (high voltage side)
- Overcurrent protection
- Dynamic Advanced Active Clamping (DAA)
- Applied diode-sided confluence clamping (DCC)
- Reinforced insulation of the primary-side interface

Full Safety and Regulatory Compliance

- 100% production primary-side test
- 100% production HSPOT compliance testing at 8.0 kVrms (A version) and 9.1 kVrms (B version)
- Reinforced insulation of the primary-side interface

Applications

- Wind and solar power
- Traction inverter
- Industrial drives
- other industrial applications

Description

The plug-and-play 2SP0430T gate driver family is designed for operation of 1200 V and 1700 V PrimePACK™ 3+ ISBT power modules in 2-level and 3-level NPC-1 applications.

The gate driver features an electrical interface with 15 V logic and built-in DC/DC power supply.

Power Integrations' Dynamic Advanced Active Clamping feature provides safe ride-through capability without DC link voltage levels for up to 60 s enabling over-voltage protection in solar and regenerative applications (e.g. traction).

Figure 1. 2SP0430T Version with Standard (A version, left) and Increased (B version, right) Isolation Test Voltage.

www.power.com

This Product is Covered by Patents and/or Pending Patent Applications.

January 2018



Figure: PRT Sample of 2SP0430T2B0-FF1800R12IE5

Datasheet available

power integrations™



ac-dc converters



led drivers



gate drivers

power.com