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VE-Trac™ Dual Kit

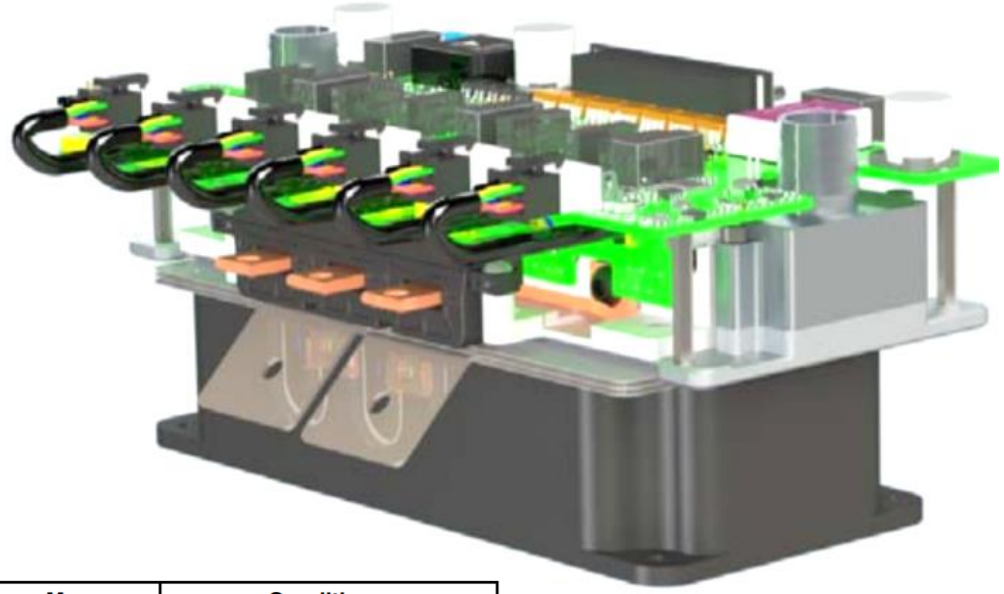
Public Information

VE-Trac™ Dual Kit - Introduction

Goal- To demonstrate **150KW traction inverter** solution for HEV based on ON Semiconductor's automotive power module **VE–Trac Dual NVG800A75L4DSC platform.**

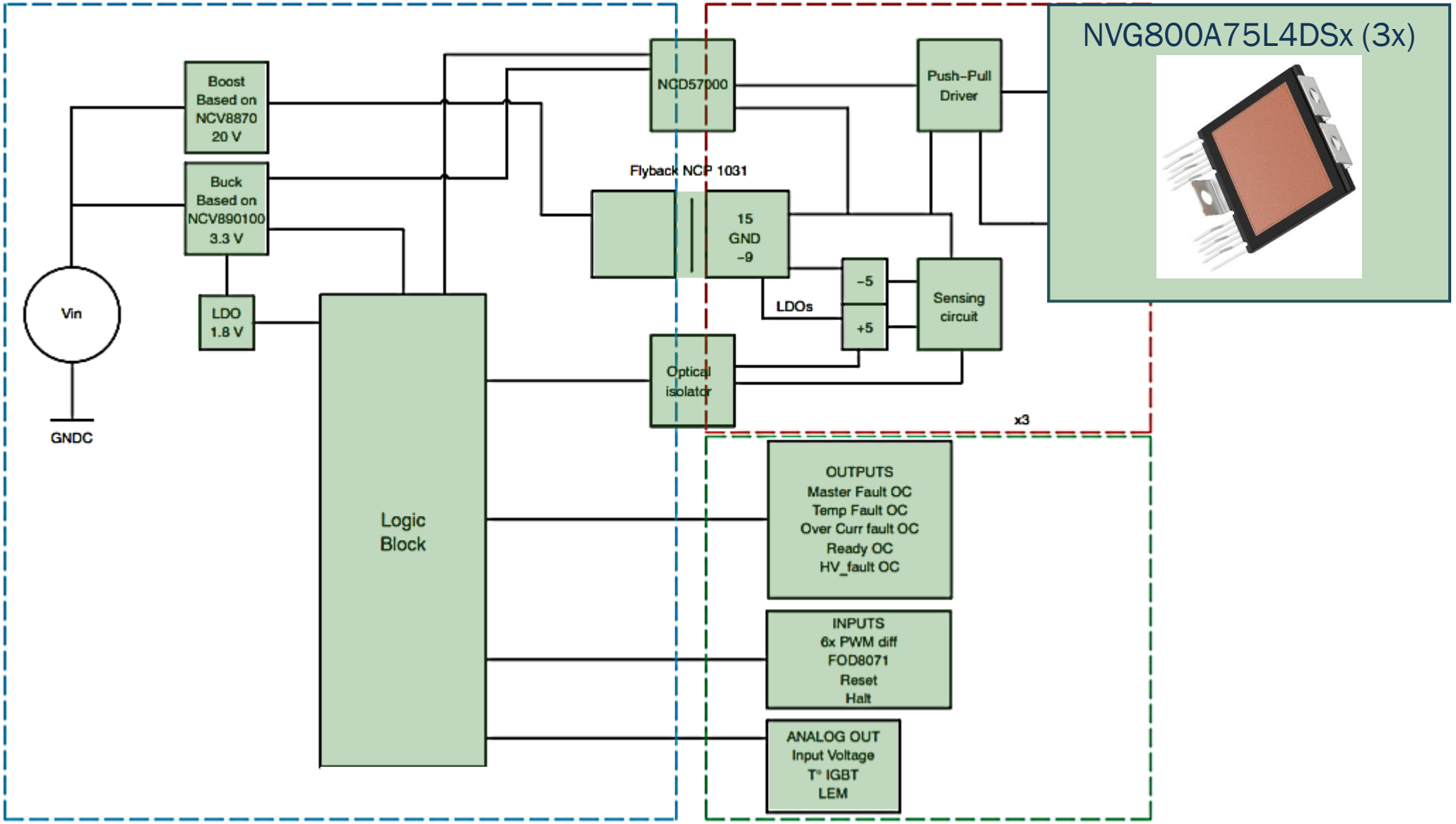
Design Features-

- ✓ Inverter evaluation Hardware kit for EV/HEV Traction Inverter applications (up to 150 kW)
- ✓ VE–Trac Dual NVG800A75L4DSC with 800 A, 750 V Field stop 4 IGBT/Diode chipset
- ✓ Automotive Isolated high current and high efficiency IGBT gate driver with internal galvanic isolation NCV57001.



Parameter	Symbol	Min	Max	Conditions
Gate Driver Board Control Power	V_{Driv}	9 V	15 V	
DC Link Voltage	V_{BUS}	0 V	500 V	Limited by Capacitor
Peak Collector Phase Current (1 ms)	I_{CPEAK}	−1600 A	1600 A	Limited by Tvj_Max
Maximum IGBT/FWD Junction Temperature	T_{VJ_Max}	−40°C	175°C	
Wait time after short circuit	SC	1 s	–	
PCB Temperature	T_{PCB}	–	85°C	
Switching frequency	F_{SW}	–	12 kHz	
Coolant Temperature	T_c	−40°C	65°C	

VE-Trac™ Dual Kit– Block Diagram



VE-Trac™ Dual Kit – Major component

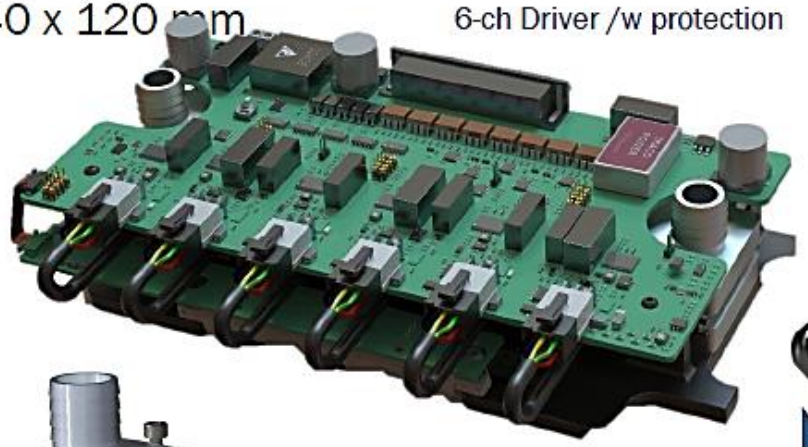
440VDC, 560Arms, up to 160kW 3-ph Inverter

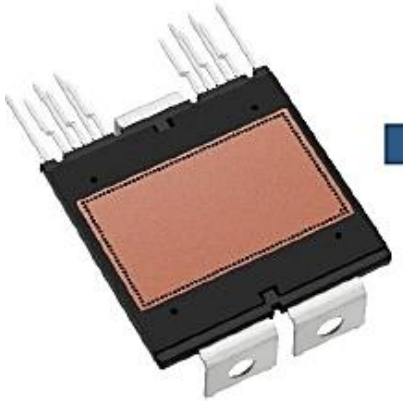
Compact size: 110 x 240 x 120 mm

Design kit makes it easy to test performance

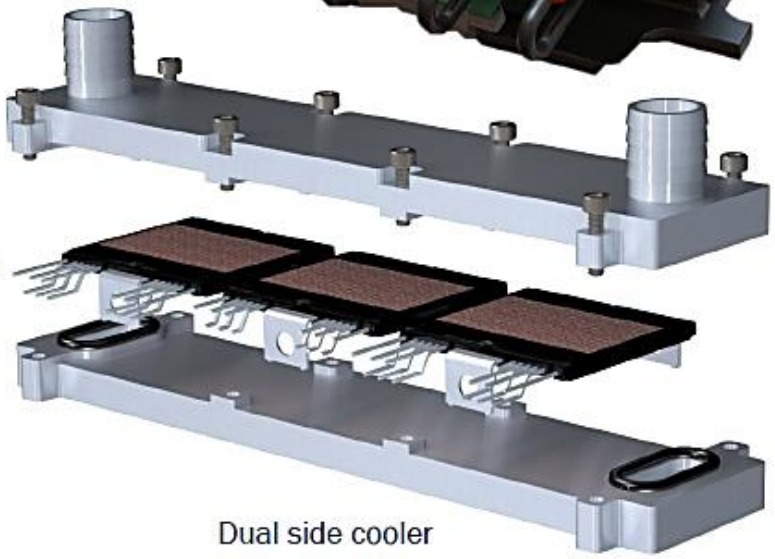
2-ch Isolated Driver

6-ch Driver /w protection

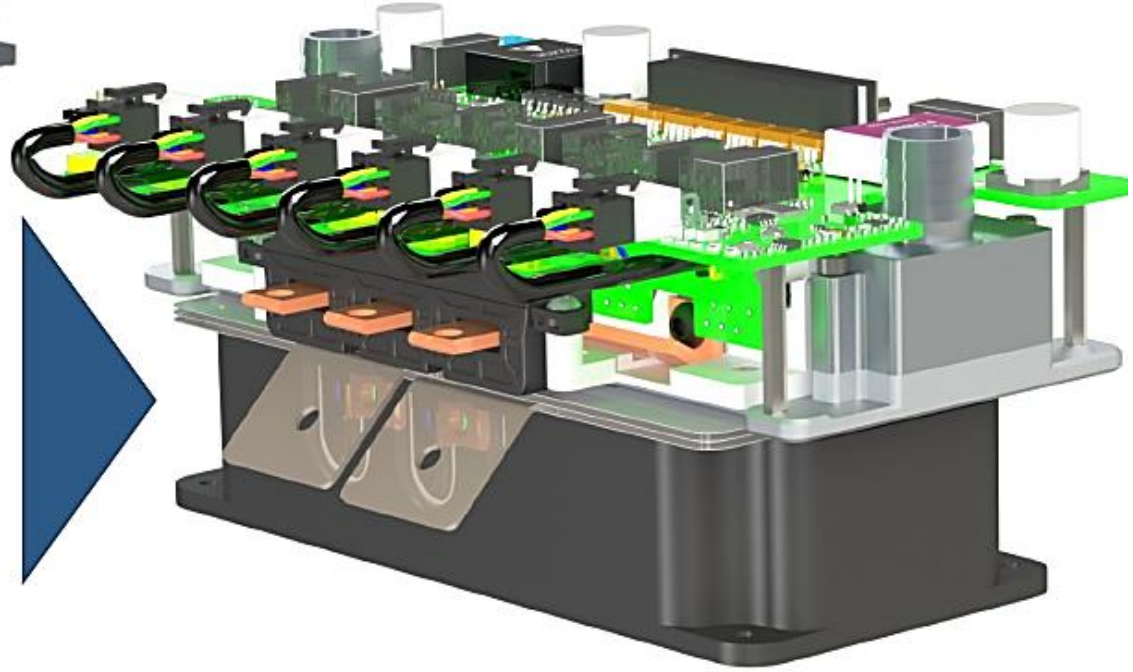




VE-Trac Dual HB Module



Dual side cooler



Complete Inverter Kit

VE-Trac™ Dual - NVG800A75L4DSx

General Information

The NVG800A75L4DSx is part of a family of power modules with dual side cooling and compact footprints for Hybrid (HEV) and Electric Vehicle (EV) traction inverter application. The module consists of two Field Stop 4 (FS4) Narrow Mesa IGBTs in a half-bridge configuration. The chipset utilizes the new narrow mesa IGBT technology in providing high current density and robust short circuit protection with higher blocking voltage to deliver outstanding performance in EV traction applications.

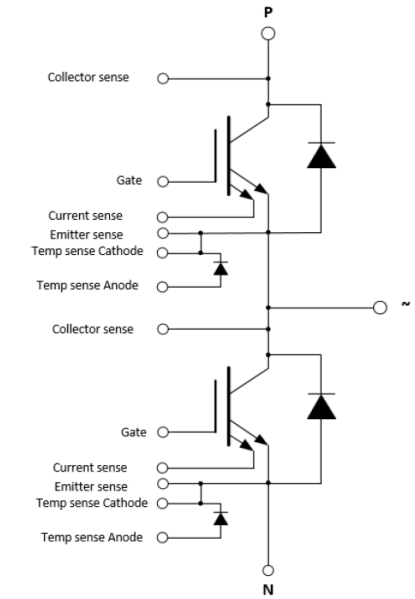
Features

- Half Bridge Dual-Side Cooling
- Ultra-Low Stray Inductance 6.5nH
- Smart On Chip Current and Temperature Sensor
- Wirebond-Free Structure
- Tj_max = 175°C continuous operation
- Low VCESAT and Switching losses
- AQG324 Qualified FS4 750V Narrow Mesa IGBT and UFS 1200V Trench IGBT

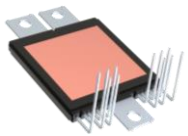
Benefits

- Scalable, Modular, and Compact
- Lower Energy Losses
- Fast Reaction Time and Better Accuracy
- Longer Power Cycle and Operation Lifetime
- Higher Inverter Peak Output Power
- Improved Inverter Efficiency
- Optimized for Automotive Traction Applications

Block Diagram



Package



DSB Package

DSC Package

Featured Product - NCV57001

General Information

NCV57001 is a high-current single channel IGBT driver with internal galvanic isolation, designed for high system efficiency and reliability in high power applications. Its features include complementary inputs, open drain FAULT and Ready outputs, active Miller clamp, accurate UVLOs, DESAT protection, soft turn-off at DESAT, and separate high and low (OUTH and OUTL) driver outputs for system design convenience

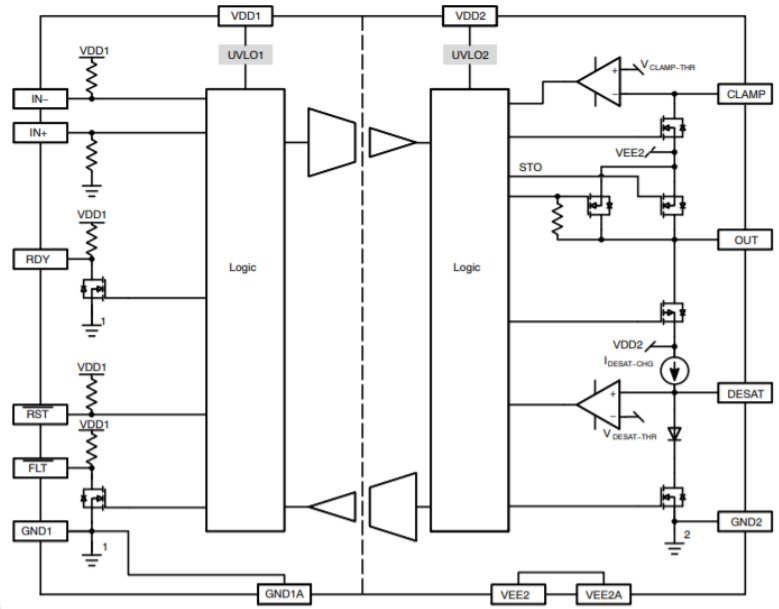
Features

- High Current Output(+4/-6 A) at IGBT Miller Plateau Voltages
- Short Propagation Delays with Accurate Matching
- DESAT with Soft Turn Off
- Active Miller Clamp and Negative Gate Voltage
- High Transient & Electromagnetic Immunity
- 5 kV Galvanic Isolation

Benefits

- Improves system efficiency
- Improves PWM signal integrity
- Protection against overload and short circuits
- Prevents spurious gate turn-on
- Ruggedness in fast slew rate high voltage and high current switching applications
- Galvanic isolation to separate high voltage and low voltage sides to provide safety and protection

Block Diagram



Package

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SOIC−16 WB
CASE 751G−03

Thank you!

https://www.onsemi.com/products/power-modules/igbt-modules/