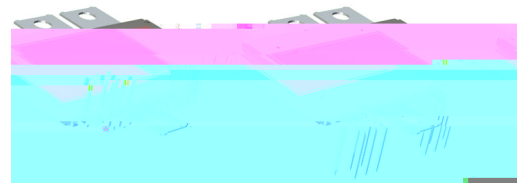


Automotive 750 V, 800 A Dual Side Cooling Half-Bridge Power Module

VE-Trac™ Dual Gen II NVG800A75L4DSB2



Product Description

The NVG800A75L4DSB2 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 narrow mesa Field Stop (FS4) 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.

Liquid cooling heatsink reference design, loss models and CAD models are available to support customers in inverter designs.

Features

- Dual-Side Cooling
- Integrated Chip Level Temperature and Current Sensor
- $T_{vj\ max} = 175^{\circ}\text{C}$ for Continuous Operation
- Low-stray Inductance
- Low Conduction and Switching Losses
- Automotive Grade
- 4.2 kV Isolated DBC Substrate
- AEC Qualified and PPAP Capable
- This Device is Pb-Free and is RoHS Compliant

Typical Applications

- Hybrid and Electric Vehicle Traction Inverter
- High Power DC-DC Converter

ORDERING INFORMATION

See detailed ordering and shipping information on page 5 of this data sheet.

VE Trac™ Dual Gen II NVG800A75L4DSB2

PIN DESCRIPTION

| Pin # | Pin | Pin Function Description | Pin Arrangement |
|-------|--------------------------|------------------------------------|-----------------|
| 1 | N | Low Side Emitter | |
| 2 | P | High Side Collector | |
| 3 | H/S COLLECTOR SENSE | High Side Collector Sense | |
| 4 | H/S CURRENT SENSE | High Side Current Sense | |
| 5 | H/S EMITTER SENSE | High Side Emitter Sense | |
| 6 | H/S GATE | High Side Gate | |
| 7 | H/S TEMP SENSE (CATHODE) | High Side Temp sense Diode Cathode | |
| 8 | H/S TEMP SENSE (ANODE) | High Side Temp sense Diode Anode | |
| 9 | ~ | Phase Output | |
| 10 | L/S CURRENT SENSE | Low Side Current Sense | |
| 11 | L/S EMITTER SENSE | Low Side Emitter Sense | |
| 12 | L/S GATE | Low Side Gate | |
| 13 | L/S TEMP SENSE (CATHODE) | Low Side Temp sense Diode Cathode | |
| 14 | L/S TEMP SENSE (ANODE) | Low Side Temp sense Diode Anode | |
| 15 | L/S COLLECTOR SENSE | Low Side Collector Sense | |

Materials

DBC Substrate: Al₂O₃ isolated substrate, basic isolation, and copper on both sides.

Lead Frame

Copper with Tin electro-plating.

Flammability Information

All materials present in the power module meet UL flammability rating class 94V-0.

MODULE CHARACTERISTICS

| Symbol | Parameter | Rating | Unit | | |
|----------------------|---|------------|------|-----|----|
| T _{vj} | Continuous Operating Junction Temperature Range | -40 to 175 | °C | | |
| T _{STG} | Storage Temperature range | -40 to 125 | °C | | |
| V _{ISO} | Isolation Voltage, AC, f = 50 Hz, t = 1 s | 4200 | V | | |
| Creepage | Minimum: Terminal to Terminal | 5.0 | mm | | |
| Clearance | Minimum: (Note 1) Terminal to Terminal | 3.2 | mm | | |
| CTI | Comparative Tracking Index | >600 | | | |
| | | Min | Typ | Max | |
| L _{sCE} | Stray Inductance | | 8 | | nH |
| R _{CC'+EE'} | Module Lead Resistance, Terminals – Chip | | 0.15 | | mΩ |
| G | Module Weight | | 75 | | g |
| M | M4 Screws for Module Terminals | | | 2.2 | Nm |

1. Verified by design / not by test.

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CHARACTERISTICS OF IGBT (T_{vj} = 25°C, Unless Otherwise Specified)

| Parameters | Conditions | Min | Typ | Max | Unit |
|--------------------|------------|-----|-----|-----|------|
| V _{CESAT} | | | | | |

VE Trac™ Dual Gen II NVG800A75L4DSB2

TYPICAL CHARACTERISTICS

| | | | | |
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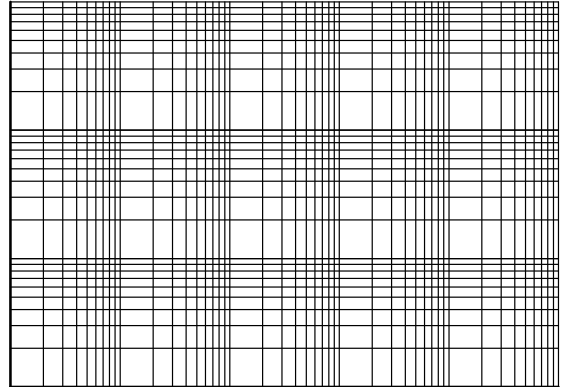
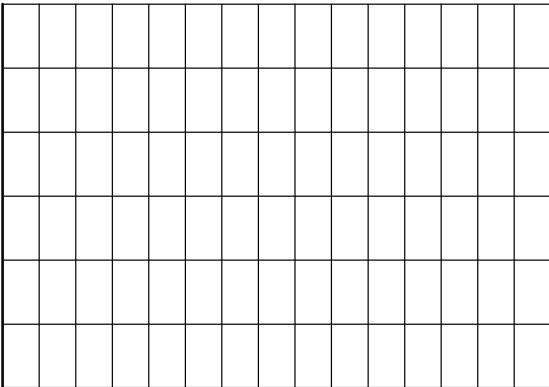
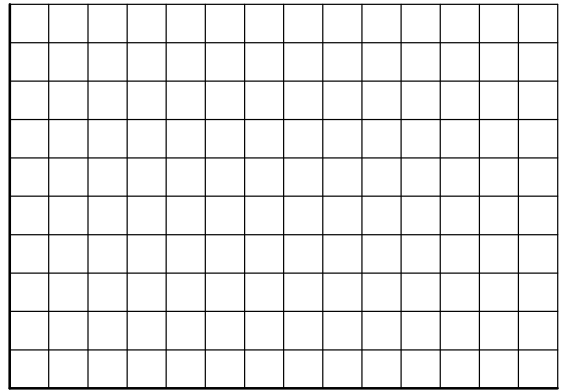
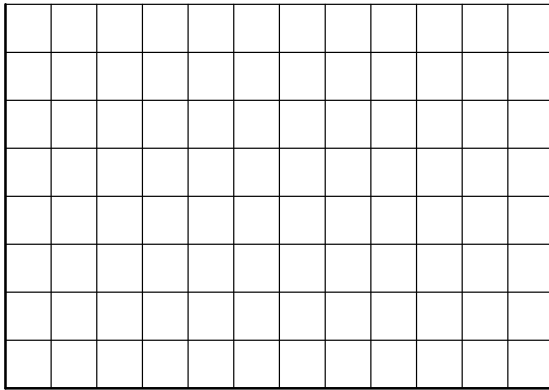
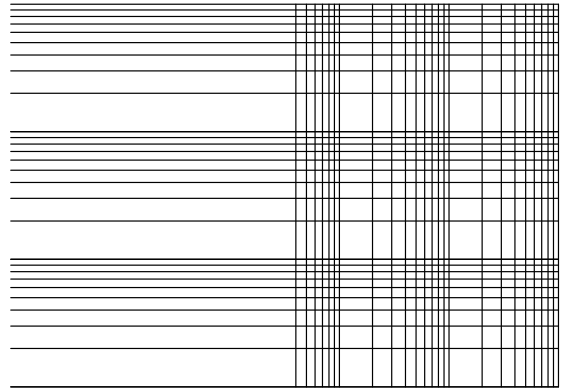
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TYPICAL CHARACTERISTICS



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TYPICAL CHARACTERISTICS

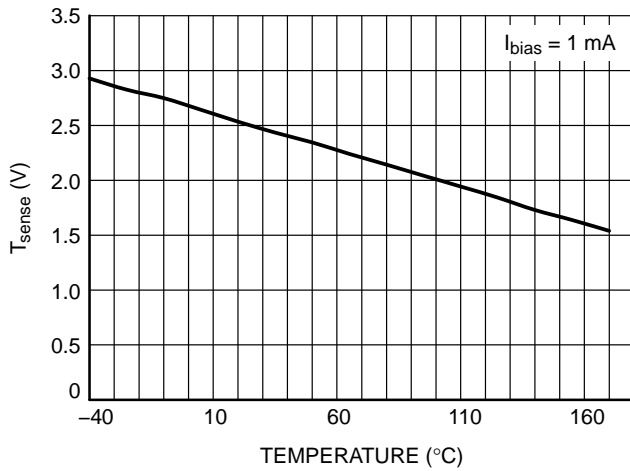


Figure 19. Temperature Sensor Characteristics

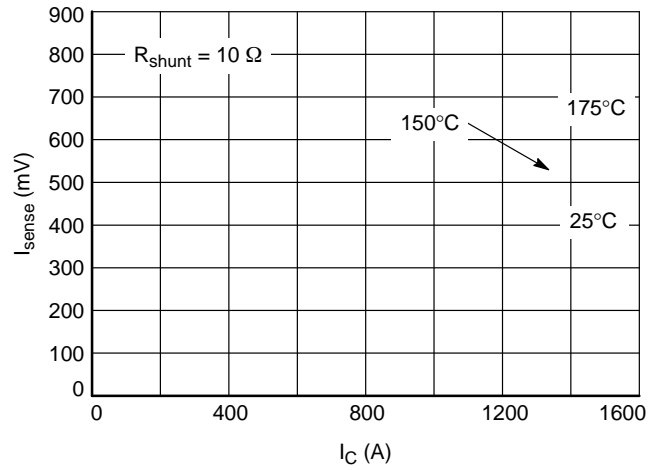


Figure 20. Current Sensor Characteristic

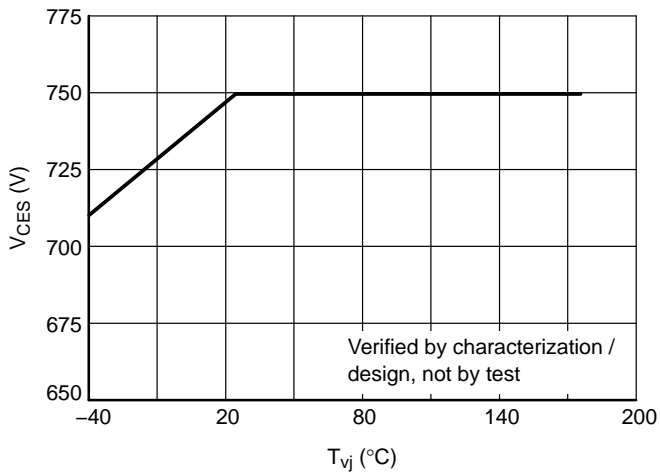
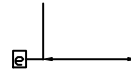
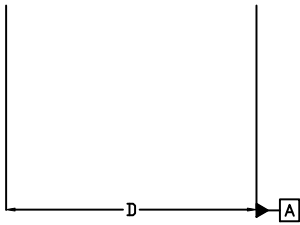


Figure 21. Maximum Allowed V_{CE}

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B



| DIM | MILLIMETERS | | |
|-----|----------------|------------------|------------------|
| | MIN. | NOM. | MAX. |
| A | 4.65 | 4.70 | 4.75 |
| A1 | 1.2 | 19.17 | 19.52 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Gen II DSC AHPM15-CEC
CASE MODHV
ISSUE O

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