

Automotive 750 V, 600 A Dual Side Cooling Half-Bridge Power Module

VE-Trac™ Dual Gen II NVG600A75L4DSC2

Product Description

The NVG600A75L4DSC2 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.

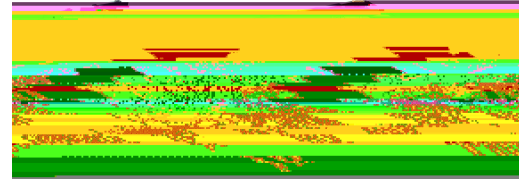
The module consists of two narrow mesa Field Stop (FS4) IGBTs in a half-bridge configuration. The chipset utilizes the new narrow mesa IGBT technology in providing high current density and robust short circuit protection with higher blocking voltage to deliver outstanding performance in EV traction applications.

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

Features

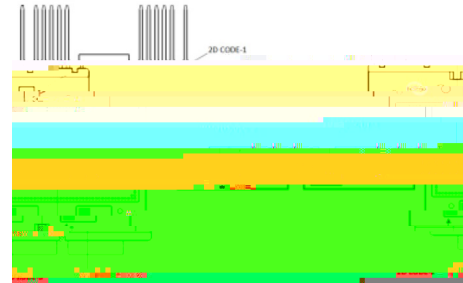
- Dual-Side Cooling
- Integrated Chip Level Temperature and Current Sensor
- $T_{vj\ max} = 175^{\circ}C$ for Continuous Operation
- Low-Stray Inductance
- Low Conduction and Switching Losses
- Automotive Grade
- 4.2 kV Isolated DBC Substrate
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High Power DC-DC Boost Converter

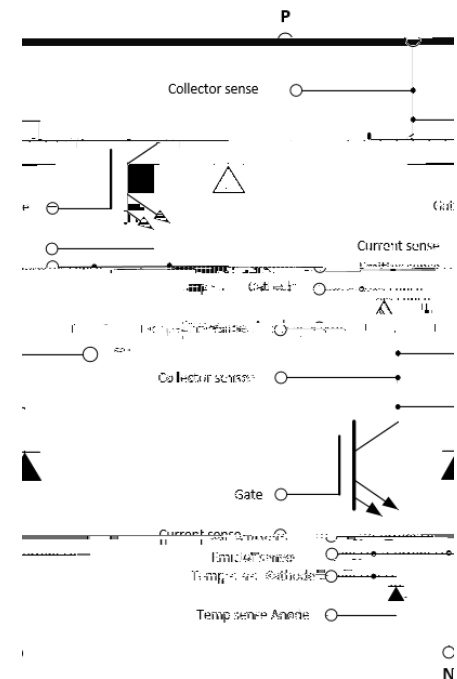


AHPM15-CEA
 CASE MODHS

MARKING DIAGRAM



- ZZZ = Assembly Lot Code
- AT = Assembly & Test Location
- Y = Year
- WW = Work Week
- XXXX = Specific Device Code



ORDERING INFORMATION

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

VE-Trac™ Dual Gen II NVG600A75L4DSC2

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)		

VE-Trac™ Dual Gen II NVG600A75L4DSC2

ABSOLUTE MAXIMUM RATINGS (T_{VJ} = 25°C, unless otherwise specified)

Symbol	Parameter	Rating	Unit
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IGBT

V _{CES}	Collector to Emitter Voltage	750	V
V _{GES}	Gate to Emitter Voltage	±20	V
I _{CN}	Implemented Collector Current	600	A
I _{C nom}	Continuous DC Collector Current, T _{vjmax} = 175°C, T _F = 65°C, Ref. Heatsink	500	A
I _{CRM}	Pulsed Collector Current @ V _{GE} = 15 V, t _p = 1 ms	1200	A

DIODE

V _{RRM}	Repetitive Peak Reverse Voltage	750	V
I _{FN}	Implemented Forward Current	600	A
I _F	Continuous Forward Current, T _{vjmax} = 175°C, T _F = 65°C, Ref. Heatsink	400	A
I _{FRM}	Repetitive Peak Forward Current, t _p = 1 ms	1200	A

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VE-Trac™ Dual Gen II NVG600A75L4DSC2

CHARACTERISTICS OF INVERSE DIODE (T_{vj} = 25°C, unless otherwise specified)

Parameters		Conditions	Min	Typ	Max	unit	
V _F	Diode Forward Voltage	V _{GE} = 0 V, I _C = 400 A,	T _{vj} = 25°C	–	1.34	1.47	V
			T _{vj} = 150°C	–	1.30	–	
			T _{vj} = 175°C	–	1.29	–	
		V _{GE} = 0 V, I _C = 600 A,	T _{vj} = 25°C	–	1.48	–	
			T _{vj} = 150°C	–	1.47	–	
			T _{vj} = 175°C	–	1.46	–	
E _{rr}	Reverse Recovery Energy	V _R = 400 V, I _F = 400 A, R _{GON} = 3.9 Ω, –di/dt = 3.61 A/ns (175°C) V _{GE} = –8 V	T _{vj} = 25°C	–	1.05	–	mJ
			T _{vj} = 150°C	–	4.93	–	
			T _{vj} = 175°C	–	5.90	–	
				–	–	–	
Q _{RR}	Recovered Charge	V _R = 400 V, I _F = 400 A, R _{GON} = 3.9 Ω, –di/dt = 3.61 A/ns (175°C) V _{GE} = –8 V	T _{vj} = 25°C	–	11.60	–	μC
			T _{vj} = 150°C	–	25.72	–	
			T _{vj} = 150°C	–	29.28	–	
				–	–	–	
I _{rr}	Peak Reverse Recovery Current	V _R = 400 V, I _F = 400 A, R _{GON} = 3.9 Ω, –di/dt = 3.61 A/ns (175°C) V _{GE} = –8 V	T _{vj} = 25°C	–	241	–	A
			T _{vj} = 150°C	–	294	–	
			T _{vj} = 175°C	–	304	–	
				–	–	–	

SENSOR CHARACTERISTICS (T_{vj} = 25°C, unless otherwise specified)

Parameters		Conditions	Min	Typ	Max	unit	
T _{sense}	Temperature Sense	I _F = 1 mA,	T _{vj} = 25°C	–	2.5	–	V
			T _{vj} = 150°C	–	1.7	–	
			T _{vj} = 175°C	–	1.5	–	
I _{sense}	Current Sense	R _{shunt} = 10 Ω,	I _C = 1200 A	–	416	–	mV
			I _C = 600 A	–	223	–	
			I _C = 100 A	–	50	–	

ORDERING INFORMATION

Part Number	Package	Shipping
NVG600A75L4DSC2	AHPM15–CEA Module Case MODHS (Pb–Free)	18 Units / 3x Tub

VE-Trac™ Dual Gen II NVG600A75L4DSC2

TYPICAL CHARACTERISTICS

VE-Trac™ Dual Gen II NVG600A75L4DSC2

VE-Trac™ Dual Gen II NVG600A75L4DSC2

AHPM15 55x55
CASE MODHS
ISSUE B

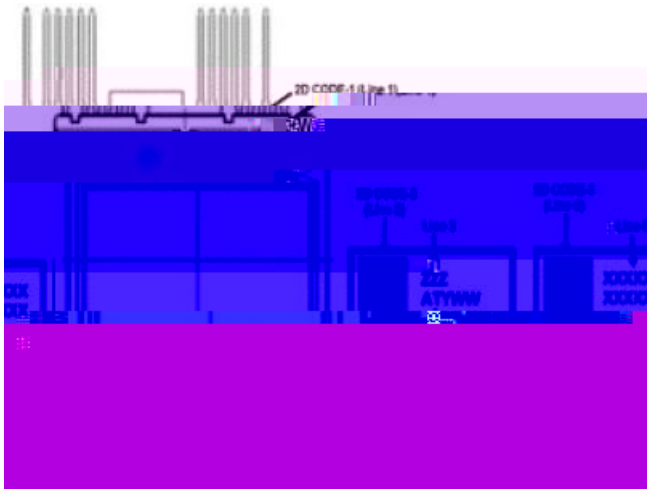
DATE 06 MAY 2022

4. DIMENSIONS b,b1,b2 .□

**AHPM15 55x55
CASE MODHS
ISSUE B**

DATE 06 MAY 2022

**GENERIC
MARKING DIAGRAM***



- ZZZ = Assembly Lot Code
- AT = Assembly & Test Location
- Y = Year
- WW = Work Week
- XXXX = Specific Device Code

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

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