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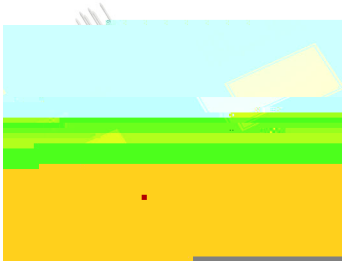
Automotive 1200 V, 450 A Dual Side Cooling Half-Bridge Power Module VE-Trac™ Dual NVG450A120L5DSC

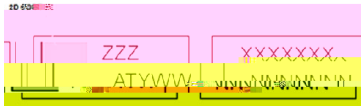


AHPM15−CEA
CASE 100DD

Product Description

The NVG450A12Side Cooling Integrated Chip Level Temperature & Current Sensor

MARKING DIAGRAM

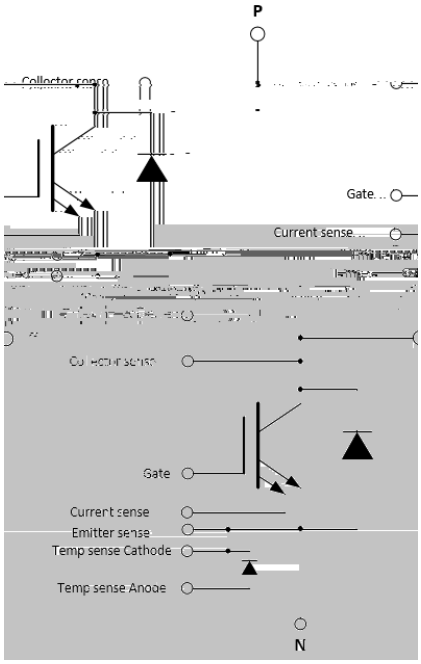


ZZZ = Assembly Lot Code
AT = Assembly & Test Site Code
Y = Year
WW = Work Week
XXXX = Specific Device Code
NNN = Serial Number

- $T_{vj\ max}$ = 175°C
- Low Stray Inductance
- Low Conduction and Switching Losses
- Automotive Grade
- 4.2 kV Isolated DBC Substrate
- This is a Pb−Free Device

Typical Applications

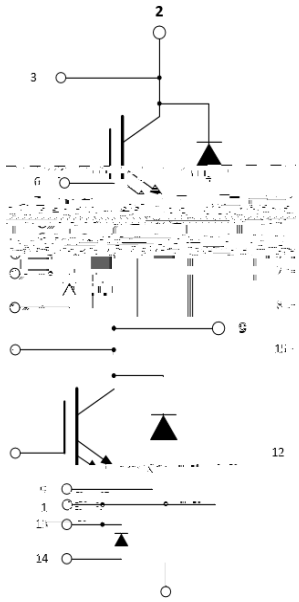
- Hybrid and Electric Vehicle Traction Inverter
- High Power DC−DC Converter



ORDERING INFORMATION

See detailed ordering and shipping information on page 9 of this data sheet.

PIN DESCRIPTION

Pin No.	Pin	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	s2T.7nt Sense		

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

Symbol	Parameter	Rating	Unit
IGBT			
V_{CES}	Collector to Emitter Voltage	1200	V
V_{GES}	Gate to Emitter Voltage	−15/+20	V
$V_{GES\ transient}$	Gate to Emitter Voltage, Limits under switching conditions	±20	V
I_{CN}	Implemented Collector Current	450	A
$I_{C\ nom}$	Continuous DC Collector Current, Tvjmax = 175°C, T_F = 65°C, Ref. Heatsink		

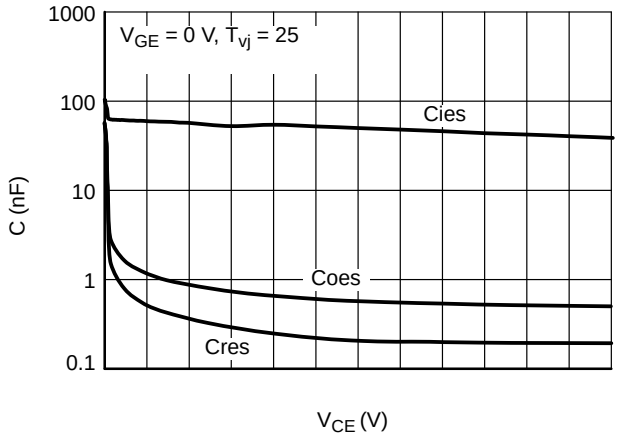
CHARACTERISTICS OF IGBT (Tvj = 25°C, unless otherwise specified)

Parameters		Conditions		Min	Typ	Max	unit
V_{CESAT}	Collector to Emitter Saturation Voltage (Terminal)	V_{GE} = 15 V, I_C = 300 A,	T_{vj} = 25°C	−	1.38	1.6	V
			T_{vj} = 150°C	−	1.50	−	
			T_{vj} = 175°C	−	1.53	−	
		V_{GE} = 15 V, I_C = 450 A,	T_{vj} = 25°C	−	1.59	−	
			T_{vj} = 150°C	−	1.82	−	
			T_{vj} = 175°C	−	1.87	−	
I_{CES}	Collector to Emitter Leakage Current	V_{GE} = 0 V, V_{CE} = 1200 V	T_{vj} = 25°C	−	−	1	mA
			T_{vj} = 175°C	−	7	−	
I_{GES}	Gate – Emitter Leakage Current	V_{CE} = 0 V, V_{GE} = +20 V/−15 V		−	−	±400	nA
V_{th}	Threshold Voltage	V_{CE} = V_{GE} , I_C = 500 mA		5.8	6.8	7.6	V
Q_G	Total Gate Charge						

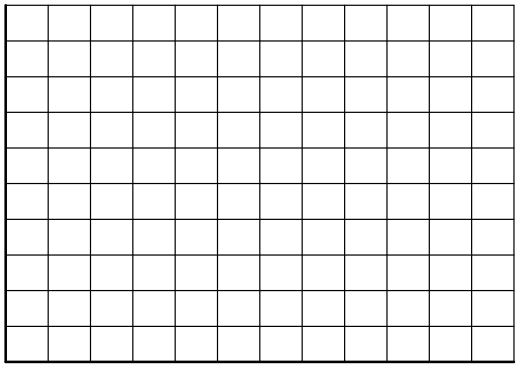
CHARACTERISTICS OF INVERSE DIODE (Tvj = 25°C, unless otherwise specified)

Parameters		Conditions		Min	Typ	Max	unit
V_F	Diode Forward Voltage (Terminal)	V_{GE} = 0 V, I_C = 300 A,	T_{vj} = 25°C	−	1.58	1.82	V
			T_{vj} = 150°C	−	1.56	−	
			T_{vj} = 175°C	−	1.54	−	
		V_{GE} = 0 V, I_C = 450 A,	T_{vj} = 25°C	−	1.80	−	
			T_{vj} = 150°C	−	1.81	−	
			T_{vj} = 175°C	−	1.78	−	
E_{rr}	Reverse Recovery Energy						

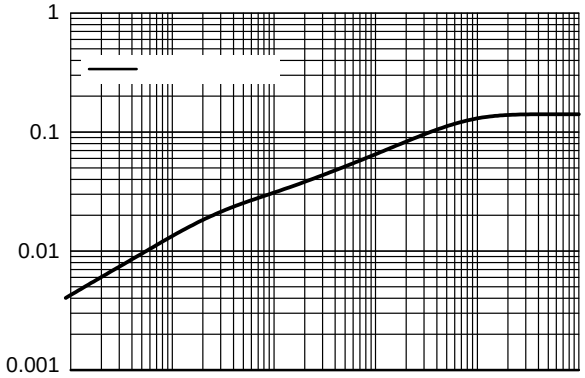
TYPICAL CHARACTERISTICS

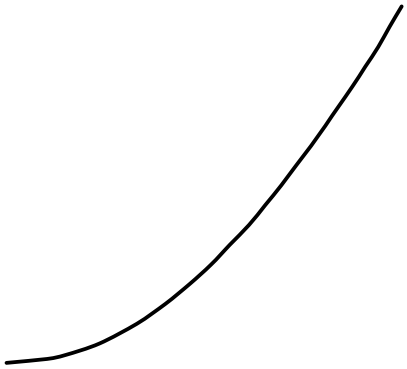


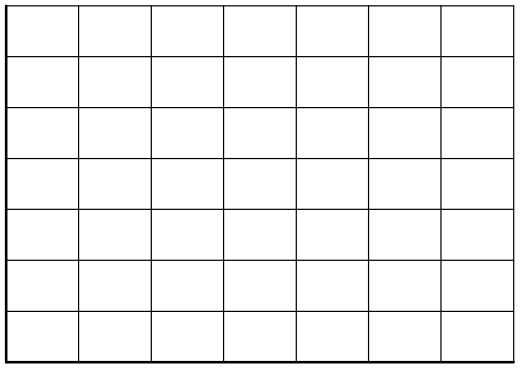
TYPICAL CHARACTERISTICS

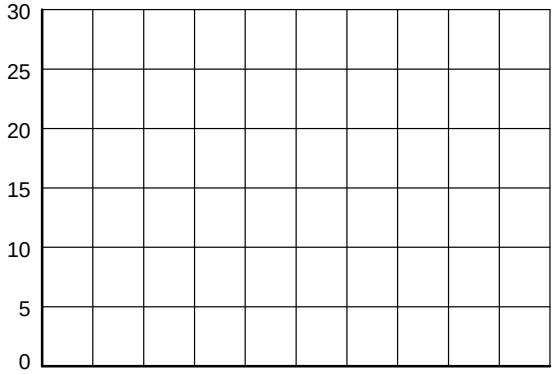


V_{CE} (V)









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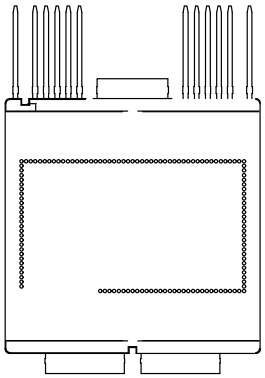
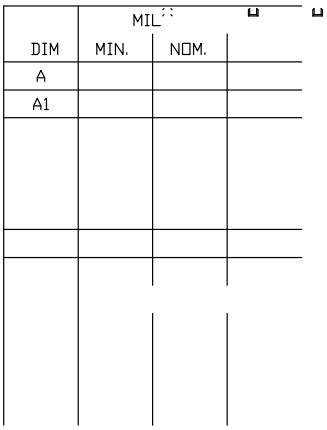
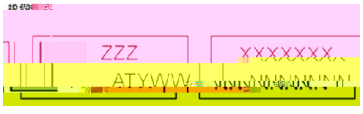
ISSUE B

DATE 28 SEP 2022





GENERIC MARKING DIAGRAM*



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*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.