IGD-8-424-P1F9-BH-FA

IGBT Module stack

SEMIKUBE - Size T3
Three phase inverter

Ordering No. 08800448
Description IGD-8-424-P1F9-BH-FA
Option 8C 0N 0P K - 3EX - 3F2

Features

- Designed in regards to EN50178 and UL508C (600V) recommandations
- RoHS compliant
- Fast mounting and dismounting
- Very high life-time expectancy
- Integrated voltage, current and temperature sensors
- Air cooled power stacks

Typical Applications

- Industrial applications
- Solar Inverters

Footnotes

1) the user shall ensure that the ambiant air shall be ventilated in order not to create temperature hot spots.

REMARKS

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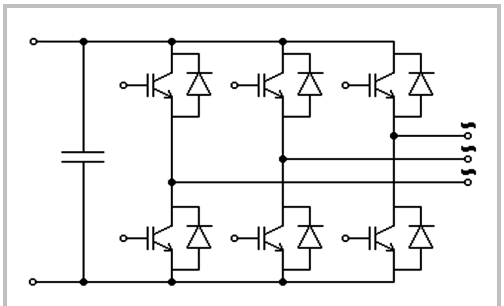

B6CI

Absolute maximun ratings		$T_{AMBIENT} = T_{AIR\ COOLING}$ = 40°C unless otherwise specified	
Symbol	**Conditions**	**Values**	**Unit**
$I_{OUT\ MAX}$	Maximum continuous output current	**1 470**	A_{RMS}
$V_{OUT\ MAX}$	Maximum output voltage	**500**	V_{AC}
$V_{BUS\ MAX}$	Maximum DC Bus voltage in operation	**900**	V_{DC}
F_{OUT}	Inverter Output frequency	**500**	Hz
F_{SW}	Maximum switching frequency	**12,5**	kHz

Electrical characteristics			$T_{AMBIENT} = T_{AIR\ COOLING}$ = 40°C unless otherwise specified			
Symbol	**Conditions**		**min**	**typ**	**max**	**Unit**
AC phase						
$I_{OUT\ RATED}$	Rated output current	V_{BUS}=750V_{DC}, No overload, Tj<150°C, Power factor PF = 1, Cabinet airflow in operation at 400m3/h Fan airflow through heatsink at 900 m3/h		**1 470**		A_{RMS}
V_{OUT}	Output voltage			**400**		V_{AC}
P_{OUT}	Output power			**1 000**		kW
F_{SW}	Inverter switching frequency			**3**		kHz
F_{OUT}	Output frequency			**50**		Hz
DC Bus						
V_{BUS}	Rated DC voltage			**750**		V_{DC}
Efficiency						
$P_{LOSS\ INV}$	Total power losses				**4 830**	W
η	Inverter efficiency				**>99**	%
Filtering characteristics						
V_{BUS}	Rated DC voltage applied to the caps bank without switching				**1 100**	V_{DC}
$V_{DC\ CAPACITOR}$	Max DC voltage applied to the caps bank (max 30% of LTE) without switching				**1 100**	V_{DC}
$\tau_{d5\%}$	Discharge time of the capacitors (5%)			**565**		s
C_{DC}	Capacitor bank capacity		**9,64**		**11,34**	mF
LTE	Calculated LTE of the caps with forced air cooling				**> 100**	kH
Stack Insulation						
V_{ISOL}	Frame / Power stage AC/DC (insulation test voltage DC, 60s)				**3 200**	V

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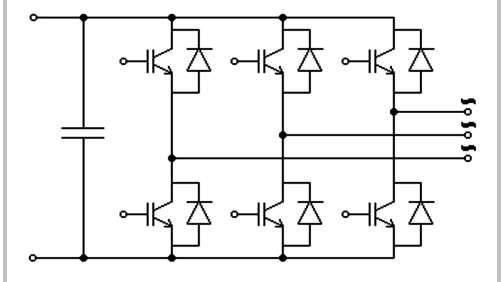
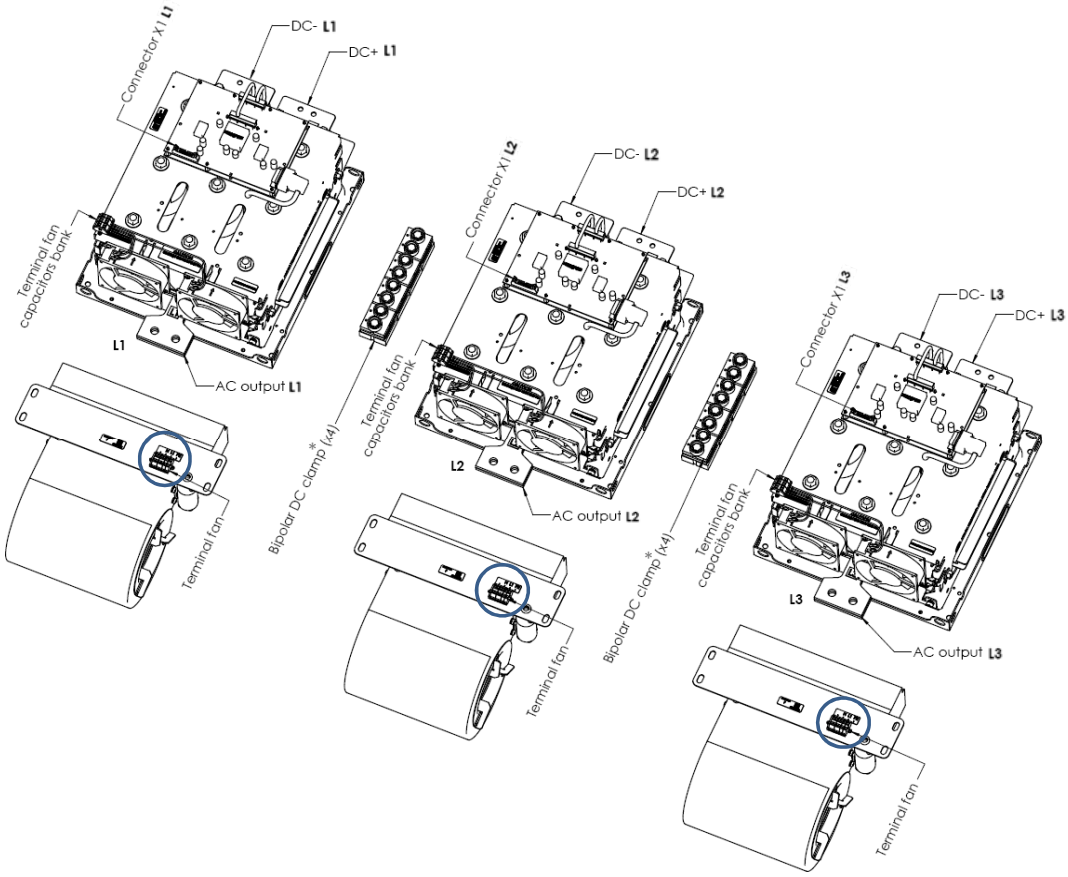


B6CI

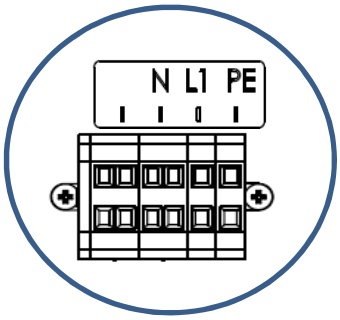
Environmental conditions					
Characteristics	**Conditions**	**min**	**typ**	**max**	**Unit**
Climatic					
Ambient temperature 1)	IEC 60721-3-3, class 3K3 extended In operation	**-25**		**55**	°C
Humidity	IEC 60721-3-3, class 3K3 no condensation no icing	**5**		**85**	%
Mechanical					
Installation altitude	without derating			**1 000**	m
Protection index	IEC 60529		**IP00**		-
Pollution degree	EN 50178		**2**		-
Total weight	3-phase inverter, including DC clamps and heatsink fans		**145**		kg
Thermal data					
V_{SUPPLY}	Heatsink fan AC voltage supply		**230**		V_{AC}
P_{FAN} at 50Hz	Rated power at V_{SUPPLY} (per heatsink fan)		**300**		W
V_{SUPPLY}	Capacitor bank fan AC voltage supply		**230**		V_{AC}
P_{FAN} at 50Hz	Rated power at V_{SUPPLY} per capacitor bank fan		**15**		W

Gate Driver Characteristcs					*$T_{AMBIENT}$=25°C unless otherwise specified*
Symbol	**Conditions**	**min**	**typ**	**max**	**Unit**
Gate Driver / controler data					
V_S	supply voltage	**21,6**	**24**	**26,4**	V_{DC}
I_{SO}	Supply primary current No load		**270**		mA
	Max. Supply primary current			**1 200**	mA
ViT+	input threshold voltage HIGH			**0.7 x Vs**	V_{DC}
ViT-	input threshold voltage LOW	**0.3 x Vs**			V_{DC}
R_{IN}	Input resistance		**10**		kΩ
C_{IN}	Input capacitance		**1**		nF
Measurement & protection					
DC link voltage sensing $U_{DC\ analogue\ OUT}$	Scaling		**10**		$mV.V^{-1}$
	Accuracy of analogue signal @ 600V / T_a=25°C	**-4,5**		**+4,5**	%
	Temperature coefficient			**0,03**	$\%.K^{-1}$
	max. load current			**5**	mA
	Max. voltage range			**15**	V_{DC}
	Max measurable DC Link Voltage			**1 000**	V_{DC}
Current sensing $I_{analogue\ OUT}$	Scaling		**3**		$mV.A^{-1}$
	Accuracy of analogue signal	**-5**		**+5**	%
	Temperature coefficient			**0,07**	$\%.K^{-1}$
	Max. output current			**5**	mA
	Max. voltage range			**15**	V_{DC}
I_{TRIPSC}	Over current trip level		**3 000**		A_{PEAK}
Temperature sensing $T_{analogue\ OUT}$	Scaling		**100**		$mV.°C^{-1}$
	Minimum measurable temperature	**25**			°C
	Max. output current			**5**	mA
	Max. voltage range			**15**	V_{DC}
T_{tp}	Over temperature protection	**95**	**100**	**105**	°C
T_{th}	Threshold level for reset after failure event	**70**			°C

Electrical connection

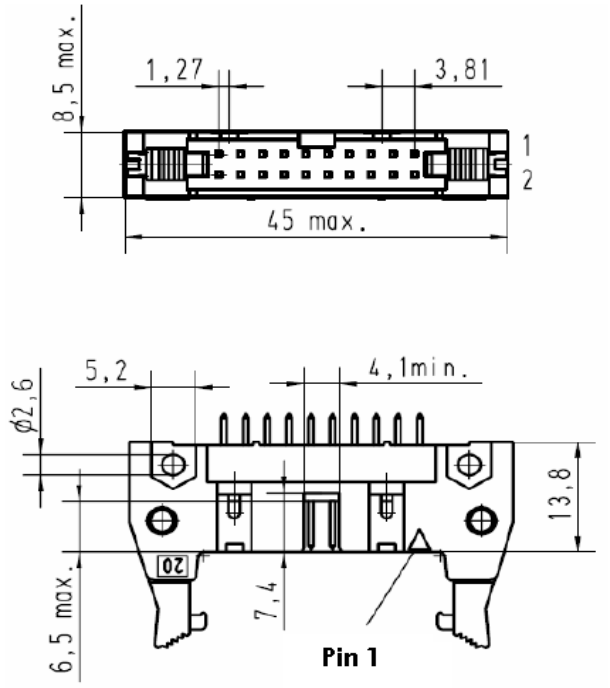


Terminal fan power supply connection



** For Bipolar DC clamps mounting, please refer to Work Instruction : IT10121602*

Drive connector assignment



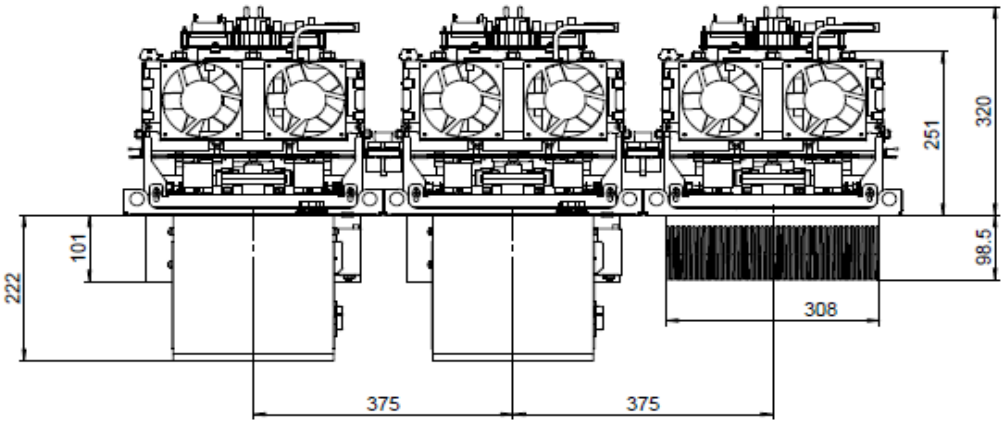
X1(L1), X1(L2), X1(L3)

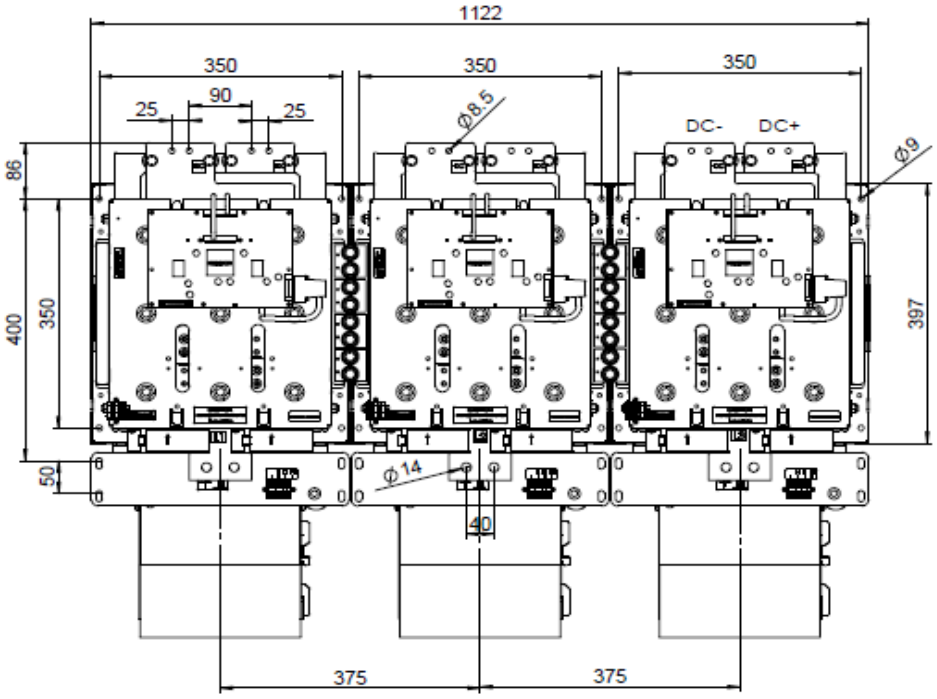
Pin	Signal	Remark
1	Vs IN	Power supply +24VDC
2	GND	Ground for Power Supply
3	Vs IN	Power supply +24VDC
4	GND	Ground for Power Supply
5	Vs IN	Power supply +24VDC
6	GND	Ground for Power Supply
7	[Reserved]	[Dominant/Recessive]
8	GND	Ground for Signal Status OUT
9	Signal Status *Bidirectional*	24VDC digital logic LOW (dominant) = "Not ready to operate" HIGH (recessive) = "Ready to operate"
10	General Purpose IO	[Dominant/Recessive]
11	Temp. Analogue OUT	[Analogue output] Nominal voltage range 0..10V
12	GND	Ground for Temperature Analogue OUT
13	UDC analogue OUT	[Analogue output] Nominal voltage range 0..10V
14	GND	Ground for UDC Analogue OUT
15	TOP IN	24VDC digital logic input, push pull LOW = TOP switch OFF HIGH = TOP switch ON
16	BOT IN	24VDC digital logic input, push pull LOW = BOT switch OFF HIGH = BOT switch ON
17	[Reserved]	[Dominant/Recessive]
18	GND	Ground for TOP IN and BOT IN
19	I analogue OUT	[Analogue output] Nominal voltage range -10..10V
20	GND	Ground for I analogue OUT

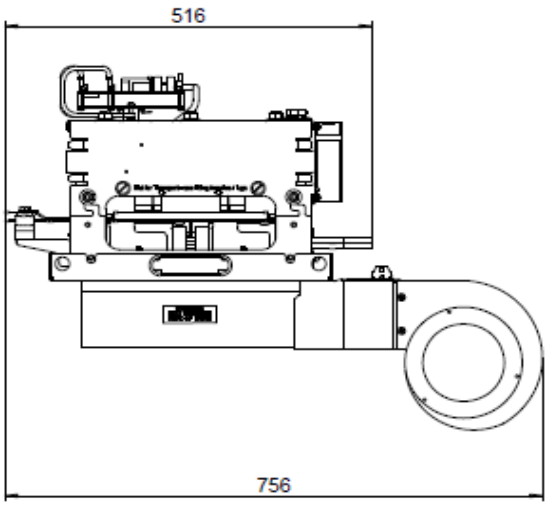
Suitable female connector

Manufacturer: Harting

Part number: 09 18 520 7813







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Dimensions

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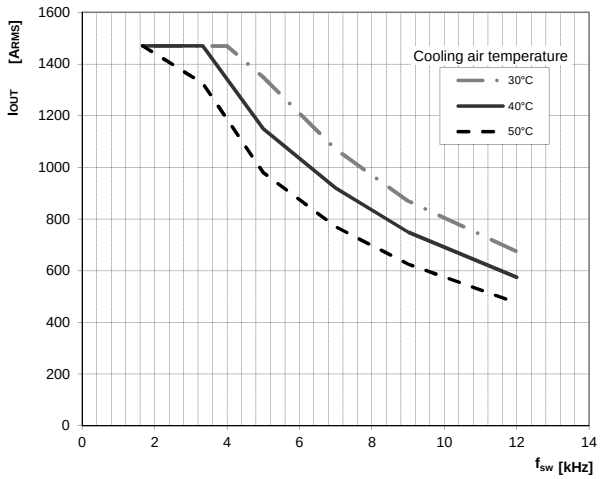
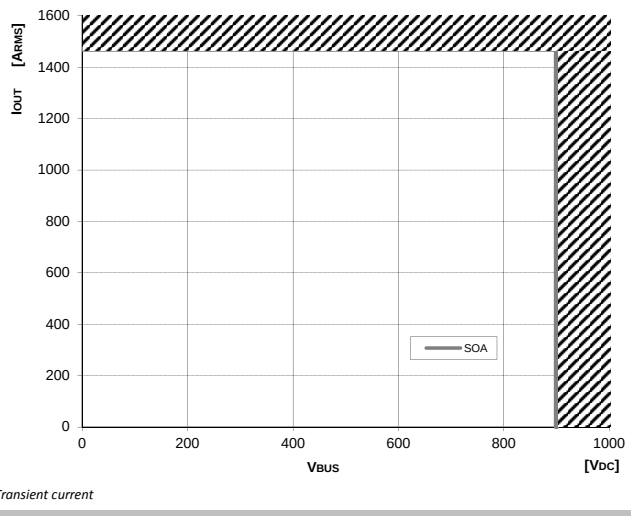
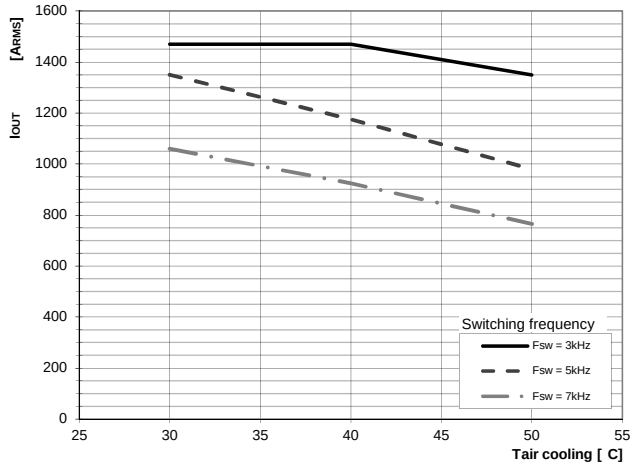


Max. Output current vs. Switching frequency

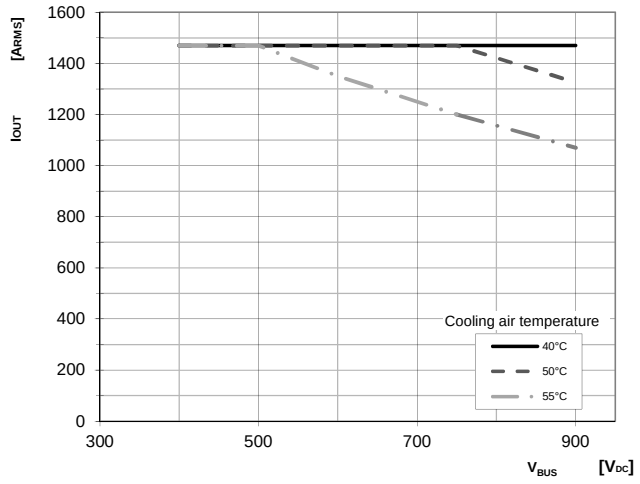


Transient current

Safe Operating Area

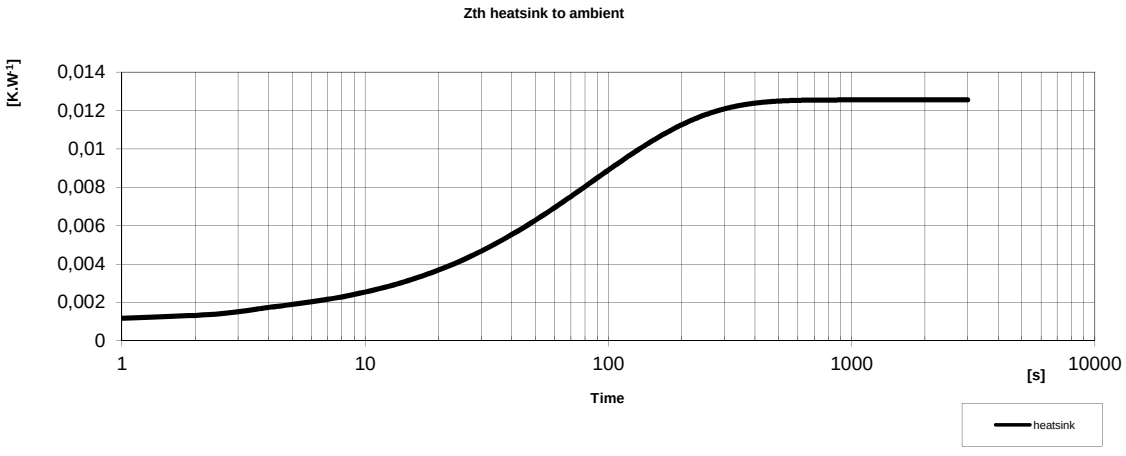


Max. Output current vs. Ambient temperature



Switching frequency = 3 kHz

Max. Output current vs. DC bus voltage



Thermal characteristics