

# IGDD6-1-426-D1616-E1N6-DL-FA



## IGBT Module Stack

### Three-phase inverter + input rectifier

#### SEMIKUBE - Size 0.5

IGDD6-1-426-D1616-E1N6-DL-FA

#### Preliminary Data

#### Features

- Highly compact
- Integrated current, voltage and temperature sensors
- Easy maintenance
- Easy mounting and dismounting
- Very high Life-Time Expectancy
- Very low inductive DC bus

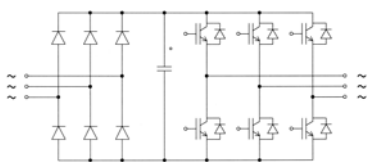
#### Typical Applications

- Industrial
- AC motor control
- UPS
- Solar inverter
- Oil and gas pumps

No. 08801001

#### Footnotes

Electrical parameters to be derated for  $T_{amb} > 40^{\circ}\text{C}$



B6U + B6C1

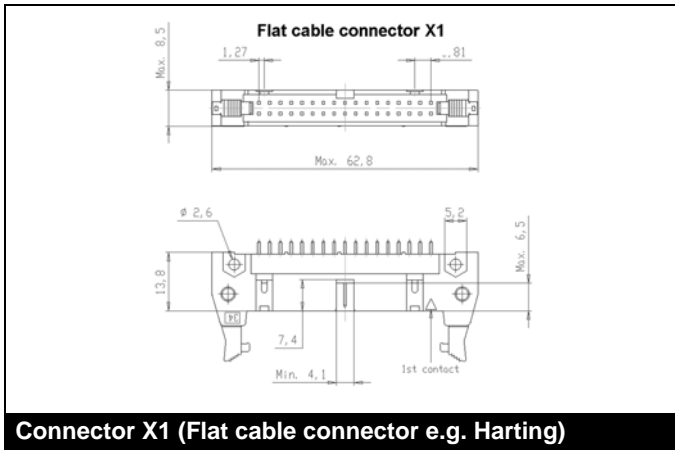
Characteristics						
Symbol	Conditions	min.	typ.	max.	Unit	
<b>Electrical Data</b>						
$I_{rms}$	$T_{amb}=40^{\circ}\text{C}$ , 3kHz, 650V <sub>dc</sub> , 400V <sub>ac</sub> , cos=0,85	no overload		180	A	
		110% overload, 60s every 10min		180	200	A
		150% overload, 60s every 10min		140	220	A
$V_{CES}$				1200	V	
$f_{sw}$	max. switching frequency			20	kHz	
$V_{DC}$	DC voltage applied to the capacitor bank			750	V	
$V_{AC}$	network voltage (line side), -20% / +15%			460	V	
$V_{isol}$	50Hz / 1min			2500	V	
$P_{tot}$	$T_{amb}=40^{\circ}\text{C}$		1710		W	
$T_j$	$T_{vj}$ for continuous operation	-40		125	$^{\circ}\text{C}$	
<b>Capacitor Data</b>						
$C_{DC}$	SKG4M7-40A1		7.05		mF	
C			Electrolyt			
LTE	expected lifetime calculated, forced air cooling	60			kHrs	
		30			kHrs	
<b>Controller Interface Data</b>						
$V_S$	supply voltage primary side	21.6	24	26.4	V	
$I_{SO}$	supply current primary side (+ external current sensors)	360		1500	mA	
$V_{IT+}$	Input threshold voltage (HIGH)			0,7*Vs	V	
$V_{IT-}$	Input threshold voltage (LOW)	0,3*Vs			V	
$R_{IN}$	Input resistance		17		k $\Omega$	
$I_{TRIPSC}$	Over current trip level		450		A <sub>PEAK</sub>	
$T_{tp}$	Over temperature protection level		100		$^{\circ}\text{C}$	
<b>Mechanical Data</b>						
dv/dt <sub>AIR</sub>	required airflow per fan	620			m <sup>3</sup> /h	
w	approx. total weight		20		kg	
Size	Width x Depth x Height (with fan)	397	573	487	mm	
$T_{stg}$	w/o need of reforming the caps	-20		40	$^{\circ}\text{C}$	
$T_{amb}$		-20		55	$^{\circ}\text{C}$	
$T_{hs}$					$^{\circ}\text{C}$	
Alltitude	installation height w/o derating			1000	m	
Protection			IP00			
Pollution	EN 50178		2			
<b>Fan Data</b>						
Fan	included in the stack ( <b>NO</b> )					
Type	(SKF 16 O-230-01)					
$V_{Fan}$	Fan voltage		230		V	
$f_{FAN}$	Fan frequency		50		Hz	
$I_{FAN}$	Fan current		1.3		A	
$P_{FAN}$	Fan power		300		W	

## PIN Array X1

PIN	Signal	Function	Specifications
X1:01	IF_PWR_VP	Power Supply	Supply voltage +24V <sub>DC</sub> (±10%) IN
X1:02	IF_PWR_GND	GND_for_IF_PWR_VP	
X1:03	IF_PWR_VP	Power Supply	Supply voltage +24V <sub>DC</sub> (±10%) IN
X1:04	IF_PWR_GND	GND_for_IF_PWR_VP	
X1:05	IF_PWR_VP	Power Supply	Supply voltage +24V <sub>DC</sub> (±10%) IN
X1:06	IF_PWR_GND	GND_for_IF_PWR_VP	
X1:07	IF_CMN_rsvd	Reserved	
X1:08	IF_CMN_GND	GND for IF_CMN_nHALT, IF_CMNrsrvd	
X1:09	IF_CMN_nHALT	Status signal	Digital IF_PWR_VP logic LOW (dominant) = not ready to operate HIGH (recessive) = ready to operate
X1:10	IF_CMN_rsvd	Reserved [dominant recessive]	
X1:11	IF_CMN_ANLG0	Temperature analog out	Max. output current: 5mA Turns ratio: 10 mV/°C Max. voltage range: +15V Nominal voltage range: 0...10V
X1:12	IF_CMN_AGND0	GND for IF_CMN_ANLG0	
X1:13	IF_CMN_ANLG1	U <sub>DC</sub> analog out	Max. output current: 5mA Turns ratio: 10mV/V Max. voltage range: +15V Nominal voltage range: 0...10V
X1:14	IF_CMN_AGND1	GND for IF_CMN_ANLG1	
X1:15	IF_HB1_TOP	Switching signal input (HB1 TOP switch)	Digital IF_PWR_VP logic LOW = TOP switch off HIGH = TOP switch on
X1:16	IF_HB1_BOT	Switching signal input (HB1 BOT switch)	Digital IF_PWR_VP logic LOW = BOT switch off HIGH = BOT switch on
X1:17	IF_HB1_rsvd	Reserved	
X1:18	IF_HB1_GND	GND for IF_HB1_TOP, IF_HB1_BOT, IF_HB1_rsvd	
X1:19	IF_HB1_ANLG	I analog out HB1	Max. output current: 5mA Turns ratio: 12 / 24mV/A Max. voltage range: +15V Nominal voltage range: 0...10V
X1:20	IF_HB1_AGND	GND for IF_HB1_ANLG	
X1:21	IF_HB2_TOP	Switching signal input (HB2 TOP switch) [push pull]	Digital IF_PWR_VP logic LOW = TOP switch off HIGH = TOP switch on
X1:22	IF_HB2_BOT	Switching signal input (HB2 BOT switch) [push pull]	Digital IF_PWR_VP logic LOW = BOT switch off HIGH = BOT switch on
X1:23	IF_HB2_rsvd	Reserved [dominant recessive]	

# IGDD6-1-426-D1616-E1N6-DL-FA

PIN	Signal	Function	Specifications
X1:24	IF_HB2_GND	GND for IF_HB2_TOP, IF_HB2_BOT, IF_HB2_rsvd	
X1:25	IF_HB2_ANLG	I analog out HB2	Max. output current: 5mA Turns ratio: 12 / 24mV/A Max. voltage range: +15V Nominal voltage range: 0 ... 10V
X1:26	IF_HB2_AGND	GND for IF_HB2_ANLG	
X1:27	IF_HB3_TOP	Switching signal input (HB3 TOP switch) [push pull]	Digital IF_PWR_VP logic LOW = TOP switch off HIGH = TOP switch on
X1:28	IF_HB3_BOT	Switching signal input (HB3 BOT switch) [push pull]	Digital IF_PWR_VP logic LOW = BOT switch off HIGH = BOT switch on
X1:29	IF_HB3_rsvd	Reserved [dominant recessive]	
X1:30	IF_HB3_GND	GND for IF_HB3_TOP, IF_HB3_BOT, IF_HB3_rsvd	
X1:31	IF_HB3_ANLG	I analog out HB3	Max. output current: 5mA Turns ratio: 12 / 24mV/A Max. voltage range: +15V Nominal voltage range: 0 ... 10V
X1:32	IF_HB3_AGND	GND for IF_HB3_ANLG	
X1:33	IF_rsvd	Reserved	
X1:34	IF_GND_rsvd	Reserved	



Product information of suitable female connectors and distributor contact information is available at e.g. <http://www.harting.com> (part number 09 18 520 7 813 – female connector with strain relief clamp).

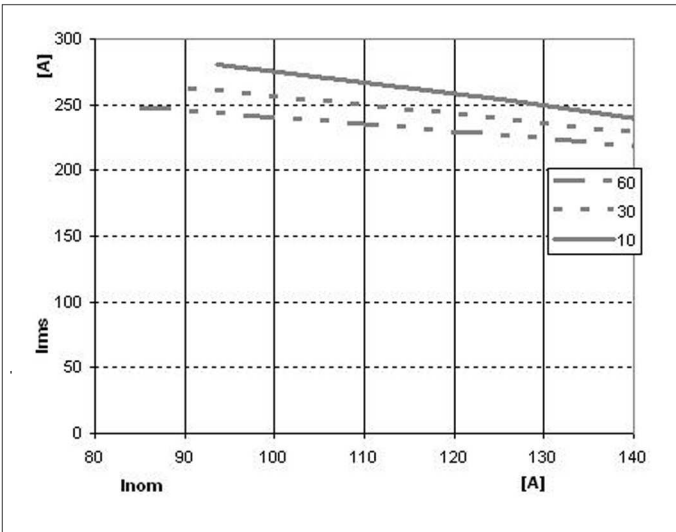


Fig. 1 Maximum overload current,  $T_{amb} = 40\text{ °C}$

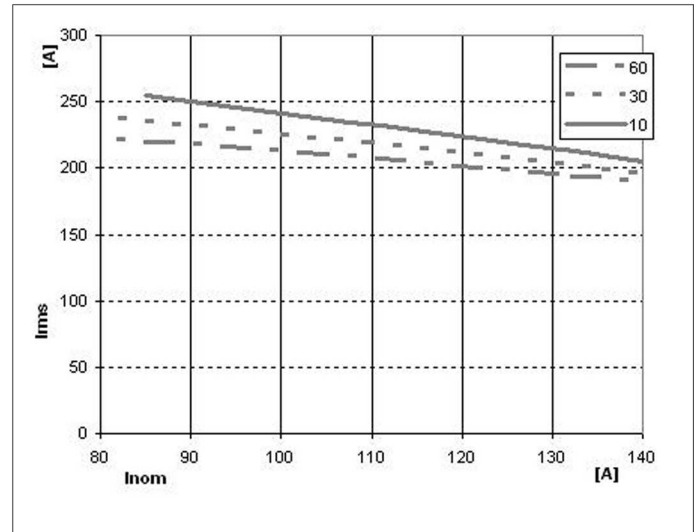


Fig. 2 Maximum overload current,  $T_{amb} = 50\text{ °C}$

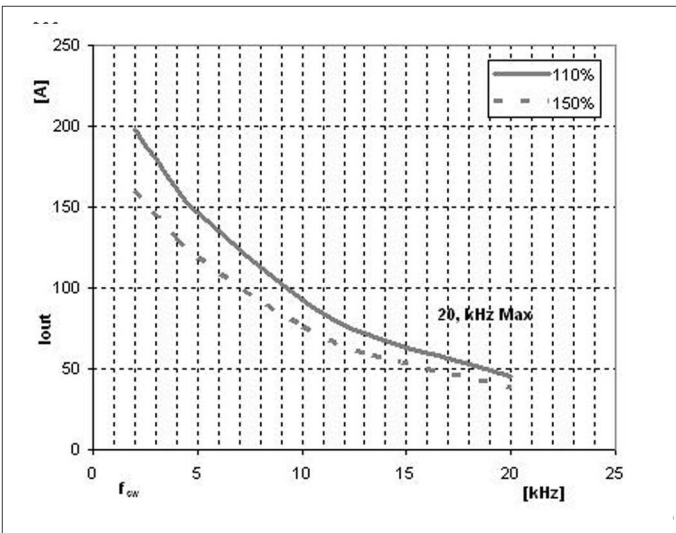


Fig. 3 Max permanent inverter curr. vs.  $f_{sw}$ ,  $T_{amb}=40\text{ °C}$

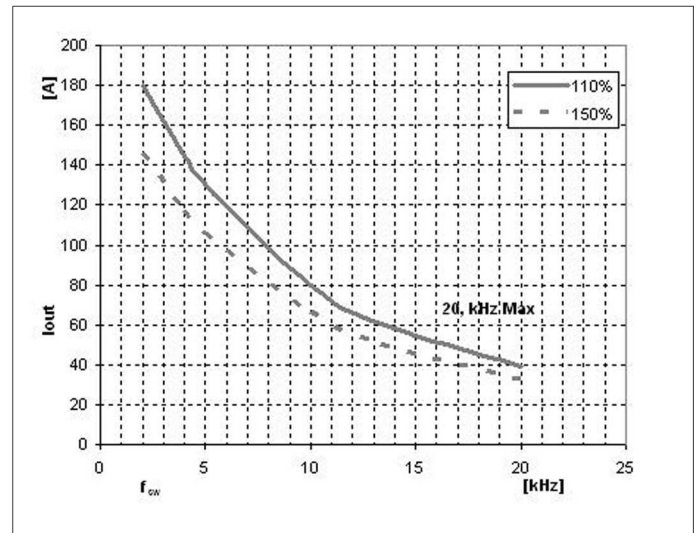


Fig. 4 Max. permanent inverter curr. vs.  $f_{sw}$ ,  $T_{amb}=50\text{ °C}$

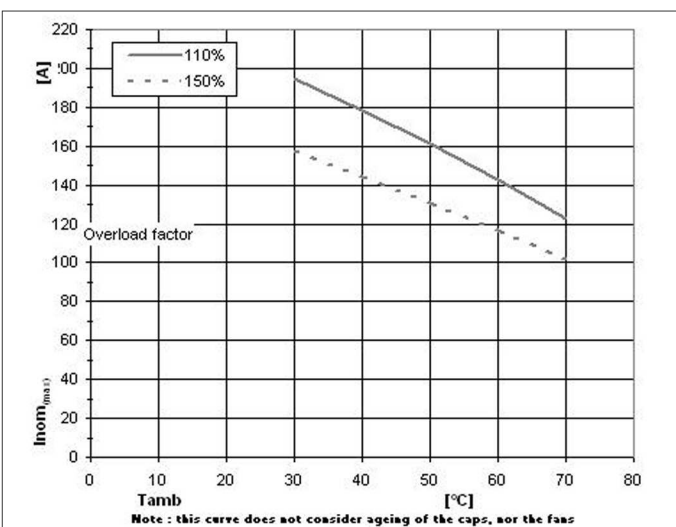


Fig. 5 Max. nominal curr. vs. ambient temperature

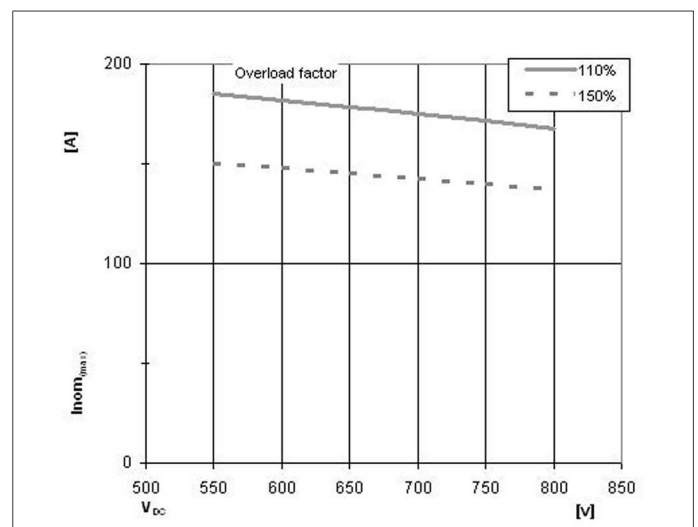
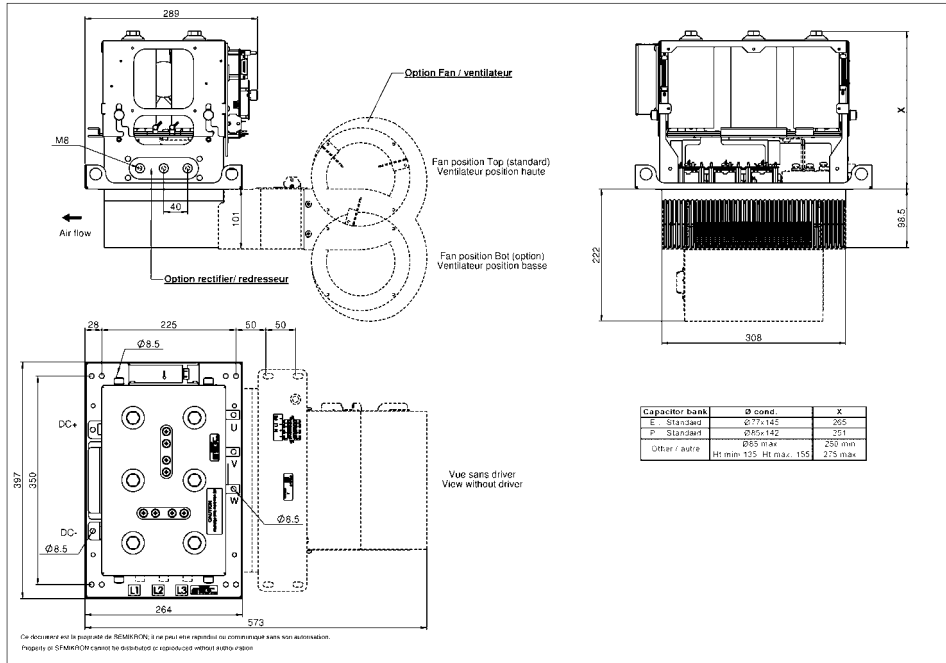
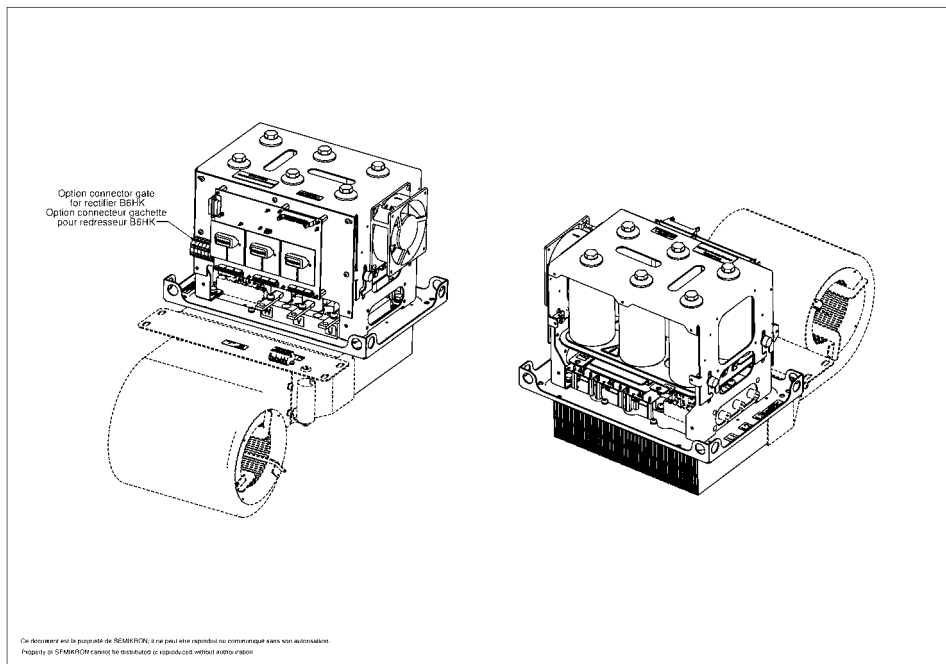


Fig. 6 Maximum nominal current vs. DC Link voltage

# IGDD6-1-426-D1616-E1N6-DL-FA



Note: Stack design may vary depending upon the version. Please contact SEMIKRON for further details.



3D view of the SEMIKUBE Size '0.5'

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.