SEMISTACK - IGBT

SEMIX Stack 1)

Three-phase inverter

SKS 50F B6U+E1CIF+B6CI 18 V06

SEMiX 101GD066Ds

SKD 116/12-L75

P 16/410F

SKHI 20opA

Preliminary Data

Features

- Vce monitoring
- Circuit for soft charge the capacitors
- IGBT Braking chopper
- Hall Effect Current Sensor

Temperature sensor

Typical Applications

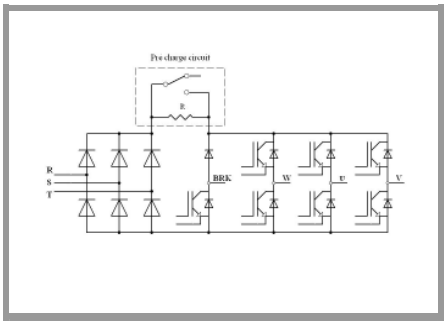
- Elevator
- AC Motor Control
- Industrial
- UPS

1) Photo non- contractual
2) Electrical parameters to be derated for tamb > 35 ºC

Circuit	I_{rms}	V_{ac} (V_{dc})	Types
B6CI	50	220 350 - -	SKS 50F B6U+E1CIF+B6CI 18 V06

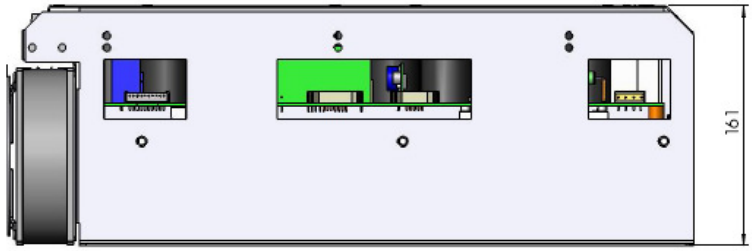
Symbol	Conditions	Values	Units
I_{rms} max	No overload; 10 kHz	50 3)	A
T_{amb} = 35 ℃	150% overload, 60s every 10min (I_{ov}/I_N)	52/35	A
	200% overload, 10s every 10min (I_{ov}/I_N)	54/27	A
V_{ce}max		600	V
f_{sw}max	Absolute maximum switching frequency	15	kHz
f_{sw}maxCsl	Advise maximum switching frequency	10	kHz
C	Type EPCOS B43303A0158	1500/200	µF/V
C_{eqvl}	Equivalent capacitor bank	5250/400	µF/V
$T_{ds\%}$	Discharge time of the capacitor bank	190	s
V_{DC}max	Max DC voltage applied to capacitor bank	350	V
Rectifier		220	V_{ac}
V_{net}max	Max network voltage (line side)	-20%/+15%	
T_{vj}	Junction temperature for continous operation	-40…+125	ºC
T_{stg}	without requirement of reforming of capacitors	-20…+40	ºC
T_{amb}		-20…+55 2)	ºC
V_{isol}	60Hz/1min	2500	V
w	Aprox. total weight	15	Kg
Cooling	Fan, DC power supply	24	V
	Current Consumption (per fan)	0,28	A
	Required air flow (per fan)	150	m^3/h
Losses	B6CI , Converter at P_{max}, T_{amb}= 35 ºC	370	W
	Efficiency	98	%
Current sensor	Hall-type Honeywell CSNF161		
Thermal trip	normally closed	71	ºC
Others components	Relay Metaltex AT1 RC 3		
Options			
Tests	Functional Test Short Circuit Test Visual Inspection -		

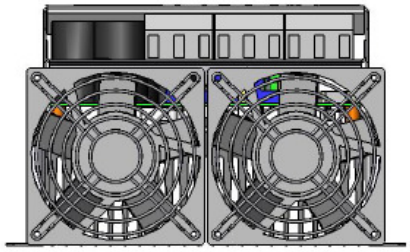
3) I_{rms} max (6 kHz) = 72 A

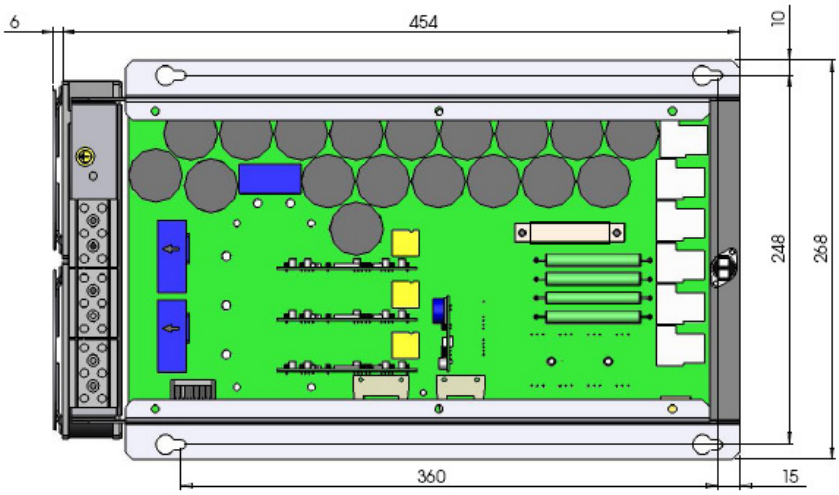


B6U+E1CIF+B6CI

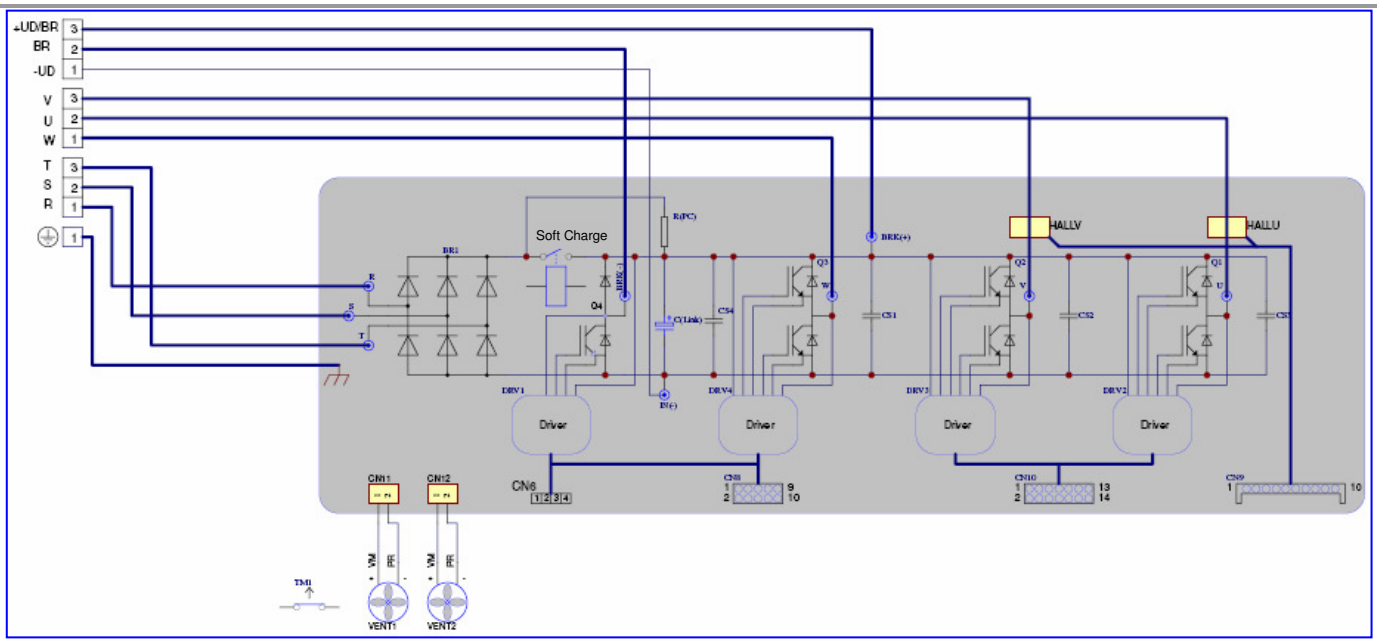
Dimensions in mm







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



Electrical Data

Soft charge connector						
Connector Pin	Symbol	Description	Values			Units
CN6			min.	typical	max.	
Pin 1	TBRD+	Output rectifier temperature sensor [2)]	1,0 (T=25°C)			KΩ
Pin 2	+24V	Input pré –charge signal [1)]	+24 V dc			V
Pin 3	Gnd	Ground	0			V
Pin 4	TBRD-	Output rectifier temperature sensor [2)]	1,0 (T=25°C)			KΩ

Signal control connector						
Connector Pin	Symbol	Description	Values			Units
CN8			min.	typical	max.	
Pin 1	TOP W	Top IGBT 1 input signal	0/15 (CMOS)			V
Pin 2	ERROR W	Vce Error output signal [3)]	0/15 (CMOS)			V
Pin 3	BOT W	Bottom IGBT 2 input signal	0/15 (CMOS)			V
Pin 4	NC	No connected				
Pin 5	BOT BRK	Brake input signal	0/15 (CMOS)			V
Pin 6	ERROR BRK	Vce Error output signal [3)]	0/15 (CMOS)			V
Pin 7	+Vs	Supply voltage	14,0	15,0	15,6	V
Pin 8	+Vs	Supply voltage	14,0	15,0	15,6	V
Pin 9	GND	Ground	0			V
Pin 10	GND	Ground	0			V

Hall sensor connector						
Connector Pin	Symbol	Description	Values			Units
CN9			min.	typical	max.	
Pin 1	+V	Supply voltage (positive)	+14,5	+15	+15,5	V
Pin 2	-V	Supply voltage (negative)	-14,5	-15	+15,5	V
Pin 3	GND	Ground	0			V
Pin 4	O/P	Output hall phase U				
Pin 5	O/P	Output hall phase V				
Pin 6	NC	Not connected				
Pin 7	GND	Ground	0			V
PIN 8	+V	Supply voltage (positive)	+14,5	+15	+15,5	V
Pin 9	-V	Supply voltage (negative)	-14,5	-15	-15,5	V
Pin 10	GND	Ground		0		V

Signal control connector						
Connector Pin	Symbol	Description	Values			Units
CN10			min.	typical	max.	
Pin 1	TOP U	Top IGBT 3 input signal	0/15 (CMOS)			V
Pin 2	ERROR U	Vce Error output signal [3)]	0/15 (CMOS)			V
Pin 3	BOT U	Bottom IGBT 4 input signal	0/15 (CMOS)			V
Pin 4	NC	No connected				
Pin 5	TOP V	Top IGBT 5 input signal	0/15 (CMOS)			V
Pin 6	ERROR V	Vce Error output signal [3)]	0/15 (CMOS)			V
Pin 7	BOT V	Bottom IGBT 6 input signal	0/15 (CMOS)			V
PIN 8	NC	No connected				
Pin 9	+Vs	Supply voltage	14,0	15,0	15,6	V
Pin 10	+Vs	Supply voltage	14,0	15,0	15,6	V
Pin 11	GND	Ground	0			V
Pin 12	GND	Ground	0			V
Pin 13	T1	Output SEMiX temperature sensor [4)]	5±10% (Tc = 25°C)			KΩ
Pin 14	T2	Output SEMiX temperature sensor [4)]	5±10% (Tc = 25°C)			kΩ

Power connector						
Connector Pin	Symbol	Description	Values			Units
			min.	typical	max.	
Pin 1	R	Phase R input (AC)	304	380	437	V
Pin 2	S	Phase S input (AC)	304	380	437	V
Pin 3	T	Phase T input (AC)	304	380	437	V
Pin 1	W	Phase W Output (AC)		380	437	V
Pin 2	U	Phase U Output (AC)		380	437	V
Pin 3	V	Phase V Output (AC)		380	437	V
Pin 1	-UD	Negative DC Link Output (sample)		0		V
Pin 2	BR	Brake Chopper Output	0		750	V
Pin 3	+UD/BR	Brake & Positive DC Link Ouput	0	513	750	V
Pin 1	Earth	Earth				

1) A 24V signal applied to the relays turn they on bypassing the DC-link pre-charge resistors
2) internal temperature sensor inside the semiconductor (SKD). Please refer to Semikron Web site, section "Semitop explanations details" (http://www.semikron.com/internet/webcms/objects/a_part/A05_det_eng.pdf)
3) logic level LOW means ERROR
4) internal temperature sensor inside the semiconductor (SEMiX). Please refer to Semikron Web site, section "SEMiX explanations details" (http://www.semikron.com/internet/webcms/objects/a_part/A02_det_eng.pdf)

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