SKAI Solutions

1200V IGBT Advanced Drive System

SKAI 3001GD12 1452 W
SemiKron Advanced Integration (SKAI) module
Liquid-cooled version
Preliminary Data

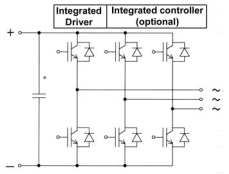
Features

- 1200V Trench IGBT technology on AIN DCB substrate
- Integrated DC-link film capacitor
- Pressure contact technology for improved power cycling performance
- Optimal thermal management with integrated liquid-cooled heatsink
- Two integrated current sensors with option to include three
- Integrated gate drive and power supply with under-voltage protection. 25-pin DB connector is standard on driver only versions
- Option to include an integrated controller based on TMS320LF2407ADSP. 14-pin AMP SEAL connector is standard on controller versions.

Typical Applications

- Vehicles
- Hybrid vehicles
- Motor Drives
- Regenerative Drives

[1] Contact SEMIKRON for power loss calculations
[2] "s" referenced to built-in Temp. Sensor
[3] 50% Water, 50% Glycol



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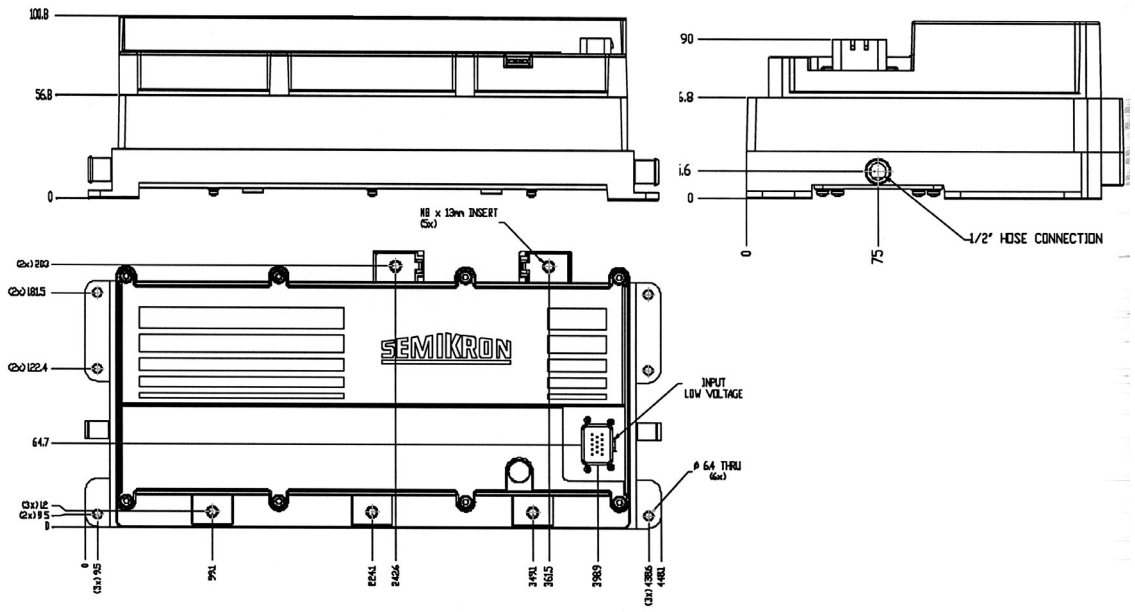
Circuit	I_{rms}	V_{dc}	Types
B6CI	300	900	SKAI 3001GD12 1452 W

Symbol	Conditions	Values	Units
I_{rms} [1]	no overload, $T_{coolant}$= 50°C, 5kHz, p.f.=0,8	300	A
	overload, t<20s	400	A
V_{CES}		1200	V
	IGBT		
V_{CEO}	T_j= 125°C	0,85	V
r_{CE}	T_j= 125°C	3,1	mΩ
V_{CEsat}	400A, T_j= 25 / 125 °C	1,76 / 2,2	V
E_{ON} + E_{OFF}	V_{cc}= 600/800V, I_c= 400A, T_j= 125°C	101 / 151	mJ
	Inverse diode		
V_{TO}	T_j= 125°C	0,80	V
r_T	T_j= 125°C	1,87	mΩ
V_F=V_{EC}	400A, T_j= 25 / 125 °C	1,56 / 1,55	V
E_{ON} + E_{OFF}	V_{cc}= 600/800V, I_c= 400A, T_j= 125°C	32 / 38	mJ
	Thermal Characteristics / Heatsink		
R_{thjs} [2]	per IGBT	0,065	K/W
R_{thjs} [2]	per diode	0,13	K/W
R_{thsa} [2]	Heatsink to coolant[3], flow rate V_l= 15 l/min	9,3	K/kW
	Heatsink to coolant[3], flow rate V_l= 5 l/min	13,4	K/kW
Pa_{DR}	Pressure drop, Coolant flow rate V_l= 5 l/min	0,05	bar
	Pressure drop, Coolant flow rate V_l= 15 l/min	0,55	bar
	Capacitor bank		
C_{eqvl}	total equivalent capacitance	1	mF
V_{DC}max	max. DC voltage applied to capacitor bank	900	V
	Driver		
V_s	Power supply: typ value	24	V
	Power supply: min / max values	8 / 30	V
I_s	Supply current	500	mA
dV/dt	Primary to Secondary Side	15	kV/µs
f_{SW}max	Max. Switching Frequency	15	kHz
V_{isol}	power terminals to heatsink and signal connector: AC, 1 min.	3000	V
T_{vj}	Junction temperature	-40...+150	°C
T_{stg}	Storage Temperature	-40...+125	°C
T_{amb}	Operating ambient temperature	-40...+85	°C
	Protection		
I_{TRIPSC}	Short Circuit Protection	1000	A
T_{TRIP}	Over-Temp. Protection	115	°C
U_{DCTRIP}	V_{CC} Overvoltage Protection	917	V
	Dimensions		
L x W x H	Length x Width x Height	400 x 215 x 100	mm
w	approx.	8,2	kg



SKAI 3001GD12 1452 W: General dimensions