MODULAR
SiC INVERTER
REFERENCE DESIGN

CISSOID
P O W E R   S E M I C O N D U C T O R S

THIS MODULAR HARDWARE AND SOFTWARE, DEVELOPED IN PARTNERSHIP WITH SILICON MOBILITY, SUPPORTS FAST DEVELOPMENT OF ELECTRIC MOTOR DRIVES UP TO 350KW/850V.

KEY FEATURES
- HIGH VOLTAGE SIC-BASED POWER MODULE
- INTEGRATED GATE DRIVER BOARD
- A CONTROL BOARD ULTRA-FAST OLEA® T222 FPCU
- DC AND PHASE CURRENT SENSORS
- DC LINK CAPACITOR & EMI FILTER
- LIQUID COOLING

MOTOR INTERFACE
- 1 x MOTOR TEMPERATURE MEASUREMENT WITH SIGNAL CONDITIONING CIRCUITRY FOR PT1000 SENSOR.
- 1 x RESOLVER INTERFACE (EXC/SIN/COS)
- 1 x QUADRATURE ENCODER INTERFACE (A/B/I)
- 3 x DIGITAL HALL EFFECT INTERFACE
- 2 x ANALOG INPUT SIGNALS
- 4 x DIGITAL INPUT SIGNALS
- 6 x DIGITAL I/O FOR RELAY INTERFACES
- 1 x FILTERED BATTERY POWER OUTPUT
- 2 x AUXILIARY 5V

EV-ECU INTERFACE
- 1 x CAN FLEXIBLE DATA RATE INTERFACE UP TO 8 MBIT/S
- 1 x CAN HIGH SPEED RATE INTERFACE UP TO 1 MBIT/S
- 1 x USB CONNECTION
- 3 x ANALOG INPUT SIGNALS
- 4 x DIGITAL INPUT SIGNALS
- 3 x DIGITAL OUTPUT FOR RELAY INTERFACES
- 1 x BATTERY INPUT CONNECTION
- 1 x FILTERED BATTERY POWER OUTPUT
- 2 x AUXILIARY 5V

CALIBRATION AND DEBUG
- 1 x PROGRAMMING AND CONFIGURATION CONNECTOR (LAUTERBACH TRACE INTERFACE)
- 1 x SWD DEBUG INTERFACE

SUPPORT BOTH SVPWM AND DPWM

FUNCTIONAL SAFETY
COMPATIBLE WITH ISO26262 VEHICLE SAFETY CERTIFICATION (NOT YET STANDALONE COMPLIANT)

Inverter characteristics	Values	Units
DC Bus Voltage - operating	100 to 800	V_{DC}
Maximum DC Bus Voltage non-operating	850	V_{DC}
Motor Current Continuous	320	A_{RMS}
Motor Current Peak (60s)	566	A
Nominal Output Power	300	kW
Peak Output Power (60s)	350	kW
Output Frequency	100 to 2000	Hz
Nominal Efficiency	>99	%
DC link capacitor	135 - 500	µF
DC Bus Discharge	Active <2	s
Inverter PWM frequency	10 to 50	kHz
Vehicle Battery Voltage Supply	6 to 36	V_{DC}
Operating Temperature Range (coolant)	-40 to +65	°C
Coolant Flow Rate	2 to 20	L/min
Coolant Pressure Drop	1 (14.5)	bar (PSI)
Maximum Coolant Pressure (@70°C / 10L/min)	2.75 (40)	bar (PSI)
Cable Gland Size	M32	
Conductor Size	#(1/0)/50 to #(5/0)/120	AWG/mm²
Cable Outside Diameter	16 to 25	mm
Outline dimensions	394 x 404 x 94	mm

ISO 9001
BUREAU VERITAS
Certification

BUREAU VERITAS
1828