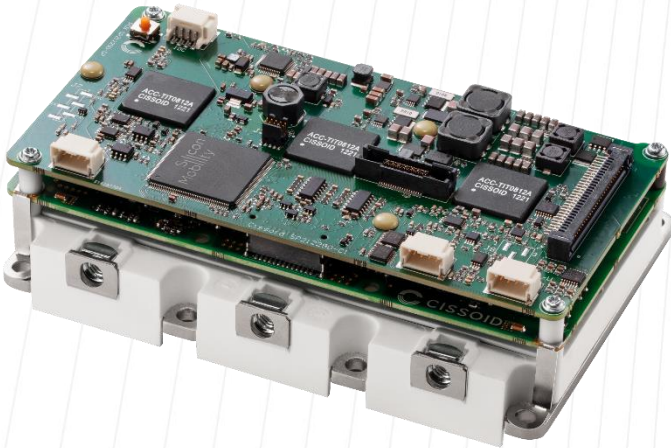


# Silicon Carbide Inverter Control Module



The SiC Inverter Control Module (ICM) forms the heart of CISSOID's modular inverter platform.

The ICM is based on the combination of CISSOID's CXT-PLA3S series of Intelligent Power Modules (IPM) and HADES2 gate driver chipset, adding the new control board to the stack.

Driven by the state-of-the-art Inverter Control Software, the module enables fast development of electric motor drives.

## KEY FEATURES

- Ultra-fast inverter control board
- 3-phase 1200V SiC power module
- Integrated gate driver board
- Up to 550A current range
- Supported by the Inverter Control Software

## ORDERING INFORMATION

Reference	Description
CXT-ICM3SA12340AAA	1200V / 340A control module, pin fin
CXT-ICM3SA12450AAA	1200V / 450A control module, pin fin
CXT-ICM3SA12550AAA	1200V / 550A control module, pin fin
CMT-ICM3SB12340AAA	1200V / 340A control module, flat baseplate



# CISSOID

POWER SEMICONDUCTORS

## INTELLIGENT POWER MODULE

- MAX DRAIN-TO-SOURCE VOLTAGE: 1200V
- MAX DC CURRENT: 340A-550A @  $T_c=25^\circ\text{C}$
- LOW ON-RESISTANCE: DOWN TO 2.53MOHM
- LOW SWITCHING ENERGIES
- MAX OPERATING JUNCTION TEMPERATURE ( $175^\circ\text{C } T_J$ )
- HIGH TEMPERATURE GATE DRIVER BOARD ( $125^\circ\text{C } T_A$ ) WITH PROTECTIONS (DESAT DETECTION, SSD, AMC)
- LIGHTWEIGHT ALSIC PIN-FIN OR FLAT BASEPLATE

## INVERTER CONTROL BOARD

- ARM® CORTEX-R5F IN LOCKSTEP
- ADVANCED MOTOR EVENT CONTROL
- REAL-TIME ACTUATOR/SENSOR CONTROL AND PROCESSING
- CAN COMMUNICATION PORTS
- LAUTERBACH TRACE INTERFACE FOR CALIBRATION AND DEBUG

## INVERTER SOFTWARE

- FIELD ORIENTED CONTROL (FOC)
- HIGH CONTROL LOOP AND SWITCHING FREQUENCIES (UP TO 50kHz)
- ADVANCED MODULATIONS (SVPWM, DPWM)
- FLUX WEAKENING FOR EXTENDED SPEED
- OPTIMIZED DEAD TIME COMPENSATION
- IMPROVED TOTAL HARMONICS DISTORTION (THD)
- REDUCED HVDC LINK VOLTAGE RIPPLE

## FUNCTIONAL SAFETY

- PROCESSOR & SOFTWARE:  
ISO 26262 ASIL-D CERTIFIED
- INVERTER CONTROL MODULE:  
ISO 26262 ASIL-C READY CERTIFIED

## QUALIFICATION

- COMPLETE INVERTER CONTROL MODULE ASSEMBLY QUALIFIED ACCORDING TO **AUTOMOTIVE AQG-324**



WWW.CISSOID.COM





# Silicon Carbide Inverter Control Module

ICM characteristics	CMT-ICM3SB12340	CXT-ICM3SA12340	CXT-ICM3SA12450	CXT-ICM3SA12550	Units
<b>V<sub>DS</sub> Breakdown Voltage</b>	1200				V <sub>DC</sub>
<b>R<sub>DS_ON</sub> (typical)</b>	3.25	4.19	3.25	2.53	mW
<b>Max Continuous Current (typical @ Tc=25°C)</b>	340	340	450	550	A <sub>RMS</sub>
<b>Maximum Continuous Current (typical @ Tc=90°C)</b>	295	260	350	450	A <sub>RMS</sub>
<b>Pulsed Drain Current</b>	720	720	720	720	A
<b>Max Short Circuit Resistance</b>	2	2	2	2	μs
<b>Thermal Resistance (J2C)</b>	0.183	0.167	0.130	0.106	°C/W
<b>Switching Energy Eon @600V/300A</b>	8.42	7.48	8.42	9	mJ
<b>Switching Energy Eoff @600V/300A</b>	7.05	7.39	7.05	7	mJ
<b>Turn-On/Off Delay (typ)</b>	180				ns
<b>Output Frequency</b>	DC to 2000				Hz
<b>Inverter PWM frequency</b>	Up to 50				kHz
<b>Isolation (1min)</b>	3000				V <sub>DC</sub>
<b>Common Mode Transient Immunity</b>	>50				kV/μs
<b>Operating Temperature</b>	-40 to +125				°C
<b>Weight</b>	550	590	590	590	g
<b>Dimensions (W – L – H)</b>	104 x 154 x 38	104 x 154 x 38	104 x 154 x 38	104 x 154 x 38	mm
<b>Peak Efficiency</b>	>99				%