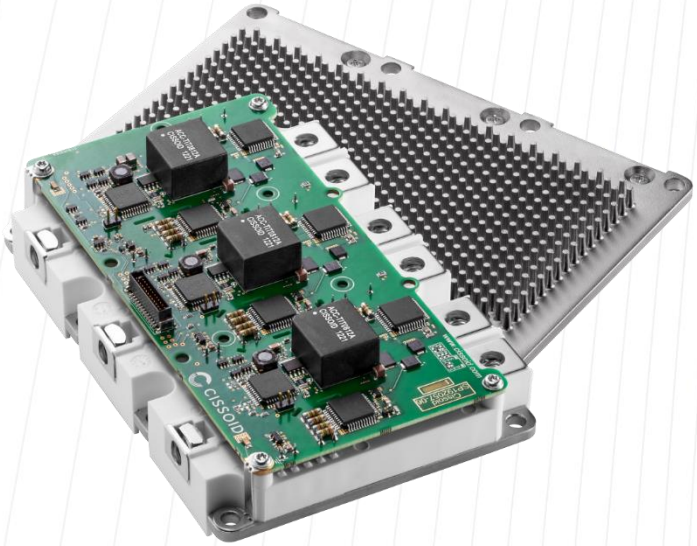
Silicon Carbide Intelligent Power Module

CISSOID
POWER SEMICONDUCTORS



POWER MODULE

- Max Drain-to-Source voltage: 1200V
- Max DC current: 340A-550A @ Tc=25°C
- Low on resistance: 2.53mOhms to 4.19mOhms
- Low parasitic capacitance: typ 11pF per phase (primary-secondary)
- Isolation: 3600VAC @50Hz (1min) (baseplate - power pins)
- Common mode transient immunity: >50kV/ms
- Switching energy@ 600V/300A: Eon=7.5mJ to 9mJ/Eoff=7mJ to 7.4mJ
- Switching frequency: 50kHz max
- High temperature gate driver board (125°C Ta)
- Max operating junction temperature (175°C Tj)
- Lightweight AlSiC pin-fin or flat baseplate

GATE DRIVER PROTECTIONS

- Under Voltage Lockout (UVLO)
- Desaturation Protection
- Soft Shutdown turn-off (SSD)
- Negative gate drive (-3V)
- Active Miller Clamping (AMC)
- Gate-Source Short-circuit Protection

Qualification

- Complete Intelligent Power Module assembly qualified according to **Automotive AQG-324**

Our 3-phase 1200V Silicon Carbide (SiC) MOSFET Intelligent Power Module platform integrates high-performance power switches and gate drivers, built on the CISSOID HADES2® chipset. Designed for high power density applications, these modules enable efficient operation at junction temperatures up to 175°C, fully leveraging the benefits of SiC technology—namely, low switching losses and high thermal resilience.

By integrating gate drivers within the power module, the solution delivers a fully validated and optimized design for fast switching, minimal losses, and high robustness against dI/dt and dV/dt stress. It also ensures comprehensive protection of the power stage, including features like desaturation detection, undervoltage lockout (UVLO), active Miller clamping (AMC), soft shutdown (SSD), and anti-overlap control.

Ordering Information

Reference	Description
CXT-PLA3SA12340AAA	1200V / 340A control module, pin fin
CXT-PLA3SA12450AAA	1200V / 450A control module, pin fin
CXT-PLA3SA12550AAA	1200V / 550A control module, pin fin
CMT-PLA3SB12340AAA	1200V / 340A control module, flat baseplate

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IPM characteristics	CMT-PLA3SB12340	CXT-PLA3SA12340	CXT-PLA3SA12450	CXT-PLA3SA12550	Units
V_{DS} Breakdown Voltage	1200				V_{DC}
R_{DS_ON} (typical)	3.25	4.19	3.25	2.53	mW
Max Continuous Current (typical @ Tc=25°C)	340	340	450	550	A_{RMS}
Maximum Continuous Current (typical @ Tc=90°C)	295	260	350	450	A_{RMS}
Pulsed Drain Current	720	720	720	720	A
Short Circuit Resistance	>2	>2	>2	>2	µs
Thermal Resistance (J2C)	0.183	0.167	0.130	0.106	°C/W
Switching Energy Eon @600V/300A	8.42	7.48	8.42	9	mJ
Switching Energy Eoff @600V/300A	7.05	7.39	7.05	7	mJ
Turn-On/Off Delay (typ)	180				ns
Output Frequency	DC to 2000				Hz
Inverter PWM frequency	< 50				kHz
Isolation (1min)	3000				V_{DC}
Common Mode Transient Immunity	>50				kV/µs
Operating Temperature	-40 to +125				°C
Weight	550	590	590	590	g
Dimensions (W – L – H)	104 x 154 x 34	104 x 154 x 34	104 x 154 x 34	104 x 154 x 34	mm
Heatsink	Flat baseplate	Pinfin baseplate	Pinfin baseplate	Pinfin baseplate	
Peak Efficiency	>99				%