

Silicon Carbide Intelligent Power Module



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



POWER MODULE

- MAX DRAIN-TO-SOURCE VOLTAGE: 1200V
- MAX DC CURRENT: 340A-550A @ $T_C=25^\circ\text{C}$
- 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: $E_{ON}=7.5\text{mJ}$ TO 9mJ / $E_{OFF}=7\text{mJ}$ 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



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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 @ T _c =25°C)	340	340	450	550	A _{RMS}
Maximum Continuous Current (typical @ T _c =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		%