World's First 12 kW PSU for Hyper-Scale AI Data Centers using GaN and SiC

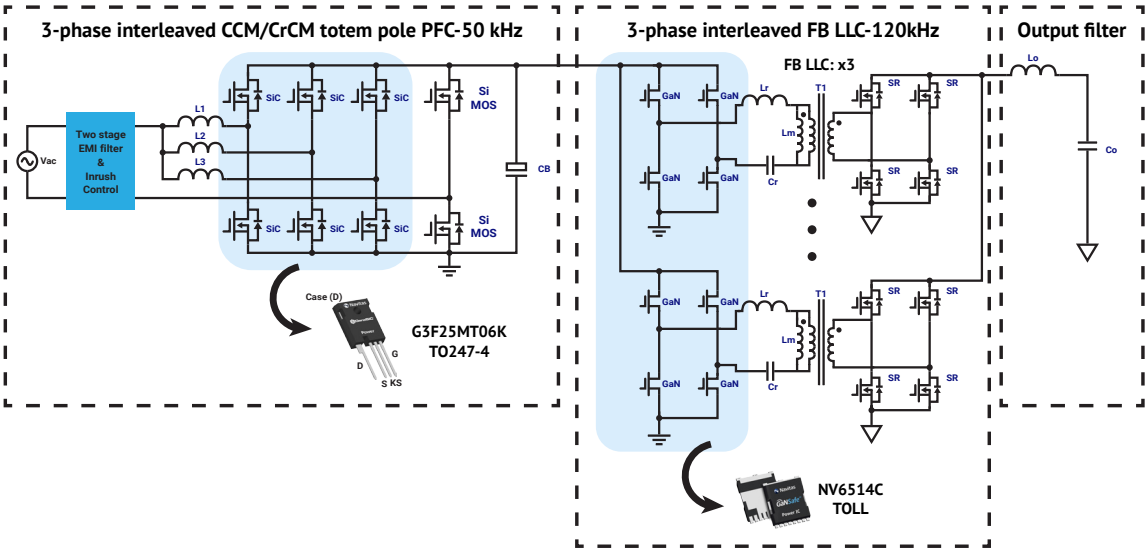
Navitas
Electrify Our World™

Navitas introduces a **'designed for production'** 12 kW AI data center power supply unit (PSU) powered by GaN and SiC, achieving OCP guidelines and complies to ORv3.0. Using IntelliWeave PFC digital control strategy enables a hybrid CCM/CrCM switching solution that results in highest efficiency, performance, with lowest component count.

12 kW, (50 V_{OUT}), OCP PSU

- *97.8% peak efficiency*
- *>20ms hold-up time*
- *Inrush current <3x steady state current*
- *IntelliWeave digital control for highest efficiency & simplest design*

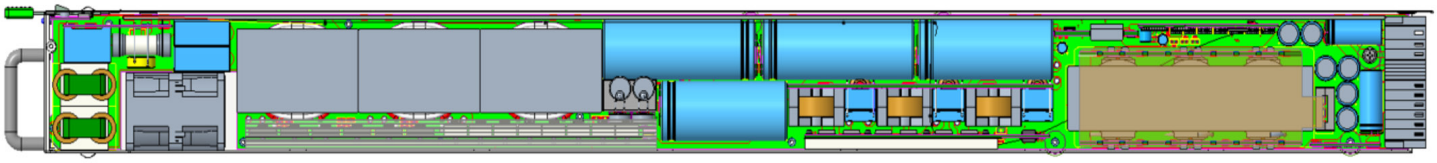
Navitas' OCP 12 kW solution adopts a 3-phase interleaved TP-PFC topology that uses IntelliWeave digital control to provide CCM or CrCM switching techniques, powered by Gen 3-Fast SiC MOSFETs, and a 3-phase interleaved FB LLC topology using high-power GaNSafe ICs.



EMI filter, surge protection circuit, etc. to meet safety/regulation requirements

Supports RS485 & CAN communication protocols

Input/Output connector



12 x NV6514 TOLL

6 x G3F25MT06K TO247-4

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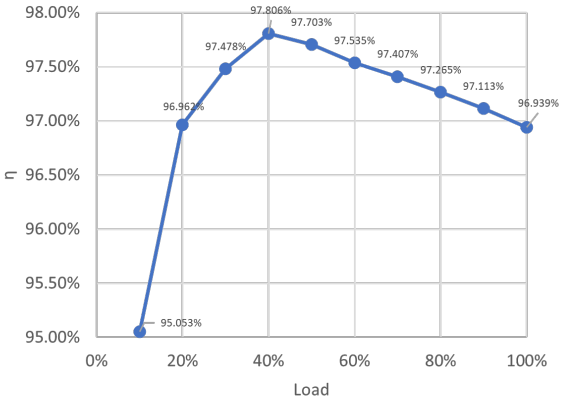
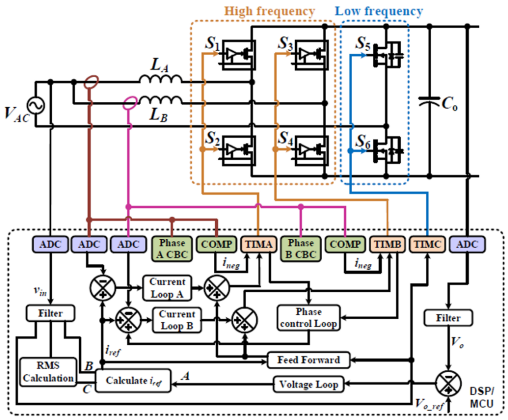
12 kW PSU Efficiency



*277 V_{AC} @25°C, excluding fan

IntelliWeave™ - Interleaving PFC Dual-Loop & Dual Feed-Forward Control System



IntelliWeave digital control provides a hybrid control strategy of both CCM & CrCM for light-load to full-load conditions, ensuring maximum efficiency while maintaining a simplistic design with low component count.

- Simple design, highest efficiency, fewer components, with low ripple current & minimized EMI.
- 3-Phase solution delivers very low ripple current which extends lifetime of bus capacitors to meet OCP reliability regulations.
- 30% reduction in power losses compared to existing CCM solutions.

Specification

Input voltage range	180 ~ 305 Vac, (Typical: 277 Vac)
Frequency	47 ~ 63 Hz
Output power	12 kW @ 207-305 Vac, 10 kW @ 180-206 Vac
Output voltage & current	50 V/240 A Max
Efficiency	>97.5% @ Peak (230, 240, 277 Vac), >96.5% @ Full Load
Operating temperature range	-5°C ~ +45°C
Hold up time	≥20ms @ 12 kW
Inrush Current	≤3 times of the steady-state current for less than 20ms
Power Density	85 W/inch³
Oring	Yes
Special Features	Active current sharing, OC/OV/UV/OT, I²C
MECHANICAL SPECIFICATION	
Size L x W x H mm	790, 73.5, 40
Cooling	Internal Fan

Portfolio

Family	Part Number	$V_{DS(CONT)}$ (V)	$V_{DS(TRAN)}$ (V)	$R_{DS(ON)}$ (typ, mΩ)	$I_{DS(CONT)}$ (A)	Package
GaNSafe™	NV6511	650	800	70	22	TOLL
	NV6512C			40	34	
	NV6513			32	48	
	NV6515			25	57	
	NV6514C			18	80	
	NV6522			40	34	TOLT
	NV6523			32	48	
	NV6525			25	57	
	NV6524			18	80	

Family	Part Number	V_{DS} (V)	$R_{DS(ON)}$ (mΩ)	ID (A)	Package
Gen-3Fast™	G3F25MT06K	650	20	100	TO-247-4
	G3F33MT06K		29	74	
	G3F45MT06K		42	37	
	G3F60MT06K		55	30	
	G3F25MT06L		20	90	TOLL
	G3F33MT06L		29	90	
	G3F45MT06L		42	61	
	G3F60MT06L		55	48	

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