

Embedded Circuit Block for Power Electronics Three Phase Inverter (GaN)

HGCB-6B-401120

Embedded circuit block Three-phase inverter (GaN)



Overview

- Circuit block with GaN E-HEMT by GaN Systems.
- 6 GaN E-HEMT, gate-drive circuit, and sensor circuit are installed in a three-phase inverter, with boards, heat sinks, and fans included.
- Gating signals and power supply for driving the GaN E-HEMT are supplied from external. And the analog signals that released are under close monitoring by the voltage and current sensor circuits.
- In order to use this product, it is necessary to prepare 24V/5V power supplies, wiring between boards, controllers, etc. separately.
- The controller and main circuit are insulated from each other.
- It has an arm short-circuit prevention function, which protect the circuit against gate drive unit voltage drop, overvoltage/overcurrent. It is designed so that if the gate pulse pattern is incorrect, it will not be cause damage even if the control changes.

Feature

GaN E-HEMT, gate-drive circuit, voltage/current sensor circuit

- Realization of simple test environments with GaN E-HEMT 3-phase inverters
 - ✓ Voltage/current feedback can be built from sensor signals.
 - ✓ Chopper circuit and single-phase inverter circuit can be constructed by changing connection.
 - ✓ Compatible for Headspring Standard Controller

Disclosure of design materials such as circuit diagrams

- Simple implementation covering theoretical to operational evaluation
 - ✓ Available as Design Reference
 - ✓ User can modify it to suit the application (*)

※Customization and prototype applications can be made according to your needs.

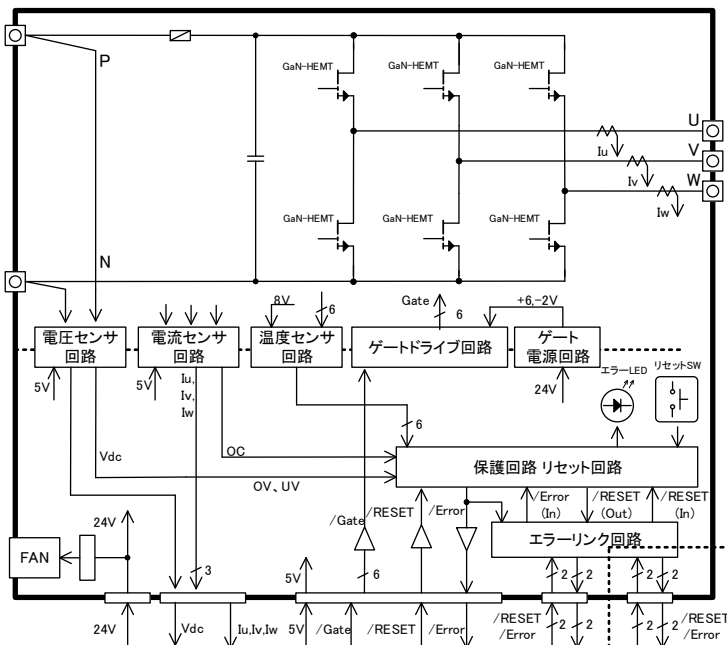


Specifications (model number: HGCB-6B-401120)

Item	Specification	Note:
Equipment size	W 209mm D 130mm H 125mm	Excluding protrusions
Mass	1.9kg	
DC voltage range	0V~400V	P-N terminal voltage
Maximum current on the AC side	~12Arms	With derating depending on the switching frequency
AC side rated power	4kVA	
Switching frequency	~5MHz	
Dead-time	30 ns over	Dead time generation function is not mounted. Arm short-circuit prevention function is mounted.
Voltage sensor circuit	400V / 4V	<ul style="list-style-type: none"> • P-N terminal voltage • When over-voltage or low-voltage is applied Gate block • Protection threshold is adjustable with volume
Current sensor circuit	±50A / ±4V	<ul style="list-style-type: none"> • Three-phase current • Overcurrent (peak) Gate block • Protection threshold is adjustable with volume
Control power enter 5V	0.6A max	
Control Power Enter 24V	0.8A max	

※Product specifications may change without notice during development

Functional block diagram



External interface

Signal Name	I/O	Specification
Gating signal	Input	<ul style="list-style-type: none"> • 5V TTL • Negative logic • The enter is pulled up at 4.7 kΩ.
Error reset Signalling	Input	<ul style="list-style-type: none"> • 5V TTL • Negative logic (low at reset) • The enter is pulled up at 4.7 kΩ.
Error signal	Output	<ul style="list-style-type: none"> • 5V TTL • Negative logic (low in error) • Protection detection output
Analog signal	Output	<ul style="list-style-type: none"> • DC voltage sensor 1 point • Three AC current sensors
Error signal (Error link function)	Input/Output	<ul style="list-style-type: none"> • 5V TTL • Positive logical • Share error information
Reset-signal (Error link function)	Input/Output	<ul style="list-style-type: none"> • 5V TTL • Positive logical • Share reset information

Derating

