**NGUYEN DUC BINH**

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| **SUMMARY** | |
| * Ability to design power supply and high frequency circuits with high reliability based on basic knowledge of electronic circuits and analysis of technical requirements given to select appropriate principles for modules and components. * Familiar with the design software and simulations: * PCB design tools: Altium, Allegro; * Simulate electronic circuits: LTspice, Pspice, Proteus; * Simulate high frequency circuits: ADS, HFSS; | |
| **EDUCATION** | |
| **2018-2023** | * Hanoi University of Science and Technology * Engineer Degree in Electronics and Telecommunications * Join the circuit theory lab, design and analyze signals in power source circuits, learn about high frequency circuits |
| **PROJECTS** | |
| |  | | --- | | **Graduation Thesis: 04/2023 - 08/2023**  **Design a Micro-Grid based grid-tied inverter for photovoltaic systems**   * Input: 12VDC. * Output: 220VAC/50Hz/300VA. * Topology of the inverter: 12VDC -----> 400VDC ----> 220VAC/50Hz ----> Grid * DC-DC block uses Push-Pull topology with IC SG3525 to control Mosfet and pulse transformer. Indirect overload protection via DC-AC block. DC-DC efficiency reaches 90%. * DC-AC block uses H-bridge, unipolar SPWM modulation, combined with 50Hz sine wave LC filter at the output. Direct Mosfet protection across Low-side Shunt resistors. DC-AC efficiency reaches 98%. * When synchronizing successfully with the grid, the control circuit turns on the Relay connecting the inverter to the grid. * Using direct phase-frequency synchronization method by zero detector circuit. Correct phase delay using high speed MCU. * Circuit operation is controlled by MCU STM32G474VET6: * Integrate peripheral analog for detecting abnormalities to protect the Mosfet with a very small delay not depending on the clock pulse; * DC-DC block operation control; * SPWM modulation at DC-AC block; * Frequency detection by Timer in PWM input mode; * The pulse generation processing phase synchronization program is based on the time of recording the zero detector signal; * Displayed on the LCD screen 128x64, the interface displays the parameters of current, voltage, monitor operation and change settings via the key; * Programming MCU on Arm Keil in C language, debugging via SWD interface. * Design circuit and layout on Altium, simulate circuit blocks with LTspice. * Measure the sine waveform and analyze the inverter harmonics to achieve THD of 1%. * Total circuit efficiency 88%. | |  | | **Project 3: 11/2022 – 03/2023**  **Driver Led COB 100W**   * Input voltage range 185VAC-250VAC. * COB LED 3A-100W. * Quasi resonant Flyback converter using IC STMicroelectronics - L6565. * Programmable brightness control by changing the constant current level through the LED by microcontroller STM32F030F4P6. * Arm Keil tool supports C programming language and debugging. * 09/2022 to 10/2022 Successfully tested at Rang Dong company with the method of controlling Led brightness by applying I-P (Current - Power) characteristic. | |  | | **Project 2: 10/2021 – 01/2022**  **Ambient temperature alarm display and monitoring circuit**   * Using AVR family microcontroller (Atmega16) and LM35 sensor. * 128x64 LCD display, parameter setting via 4 keys. * C programming language with Atmel Studio. * Simulate on Proteus, design PCB on Altium. | |  | | |
| **OTHER PROJECTS** | |
| * Design switching power supply with topology: Half-Bridge, Flyback, Push-Pull, Buck, Boost; * Design audio amplifier using discrete transistor and R-L-C components; * Comparator design and simulation; * Design and simulate a Microstrip antenna 3.5GHz, bandwidth 175MHz using HFSS; * Design and simulate bandpass filter GSM1800, bandwidth 75MHz using ADS; | |
| **ACHIEVEMENT** | |
| * Best presentation award at Graduation Thesis Defense 2023. | |