REQUEST FOR PROPOSAL DESCRIPTION

NineSigma, representing a multi-billion dollar manufacturer, invites proposals for next generation power switch circuitry. Specifically, high-frequency semiconductor technologies, such as GaN transistors, are needed to minimize energy loss.

Successful technology should satisfy the following requirements for AC/DC power converters or DC/DC power converters.

AC/DC power converter:
- Input:
  - Frequency: 50-60Hz
  - Voltage: 100-240V
- Output: 45-90W class
- Switching frequency: 300-500kHz
- Conversion efficiency: ≥95%
- Low Component count: Preferably similar to Flyback converters;
  - Approaches with a large number of components are not of interest (e.g., Resonant converters)

DC/DC power converter:
- Input:
  - Voltage: 150-300V
- Output: 45-90W class
- Circuitry design: secondary circuit should be insulated from primary one
- Switching frequency: 300-500kHz
- Conversion efficiency: ≥95%
- Low Component count: Preferably similar to Flyback converters;
  - Approaches with a large number of components are not of interest (e.g., Resonant converters)

The most important requirements in this request are high conversion efficiency and smaller component count at the high operating frequency. Satisfying all the aforementioned requirements is not mandatory. Technologies that can reduce the component count without compromising the conversion efficiency are welcomed.
BACKGROUND

NineSigma’s client seeks to obtain switching circuit built on GaN in order to develop radically smaller AC adapters for information terminals. Due to high switching-frequency and low on-resistance, deployments of GaN devices are advancing in such applications as large-scale electric power supplies and communication base stations. It has been stated that the GaN device would improve the conversion efficiency and the size of the adapters. To the best of the client’s knowledge, however, no such products are commercially available.

With all the efforts so far, the client has not yet achieved the target size and efficiency of the AC adaptors by using a GaN device. In order to accelerate the development of the technology and the time to market, the client has issued this open request throughout the world.

The client anticipates proposals from those that already have key enablers for miniaturization and performance improvement in either GaN device or the surrounding switching circuit. Proposals of promising technologies based on joint development also are welcomed.

The anticipated volume at the time of successful mass production would be up to 10 Million unit per year.

POSSIBLE APPROACHES

Anticipated approaches include, but are not necessarily limited to, the technologies that have been studied or used in the following applications:

- Electric vehicles
- Solar battery
- Wireless communication
- Consumer electronics
- Inverter

ANTICIPATED PROJECT PHASES OR PROJECT PLAN

The client will review submitted proposals and possibly ask clarifying questions or request supporting data before selecting the most suitable candidates for collaboration. The client will execute non-disclosure agreements (NDA) with selected respondent(s), seek further information disclosure, and discuss specific development targets or potential opportunities. The client will select the best candidate through evaluations of supporting information, samples, etc.

The client will execute necessary agreement(s) with the selected respondent(s) and kick off the project to establish the technology. Anticipated period for the commercialization would be around 2 years.

ITEMS TO BE INCLUDED IN THE PROPOSAL

Responses should use the following template (https://www.myninesigma.com/sites/public/layout/ProposalTemplates/Response_Template_67590.doc) and include the following items:

- Overview of the proposed technology
  - Type of power transistor
  - Type of switching circuit
  - Type of converter
  - Features of the technology
  - Development stage
  - Anticipated applications
- Current performance
  - Input
  - Output
  - Switching frequency
  - Conversion efficiency
  - Size
- Justification of the proposed technology if no measured performance data is yet available
RESPONDING TO THIS REQUEST

NON-CONFIDENTIAL DISCLOSURE

By submitting a Response you represent that the Response does not and will not be deemed to contain any confidential information of any kind whatsoever.

Your Response should be an executive summary (about 3 pages). The Response should briefly describe the technical approach and provide information on technology performance, background, and description of the responding team and their related experience. A Response Template is available from our website.

By submitting a Response, you acknowledge that NineSigma’s client reserves the sole and absolute right and discretion to select for award all, some, or none of the Responses received for this announcement. NineSigma’s client also may choose to select only specific tasks within a proposal for award. NineSigma’s client has the sole and absolute discretion to determine all award amounts.

RESPONSE EVALUATION

NineSigma’s client will evaluate the Response using the following criteria:

- Overall scientific and technical merit of the proposed approach
- Approach to proof of concept or performance
- Potential for proprietary position (i.e., is the technology novel or protectable)
- Economic potential of concept
- Respondent’s capabilities and related experience
- Realism of the proposed plan and cost estimates

The client will contact respondents with highly responsive proposals for next steps.