

Powering fTOF ASIC Board & RDO

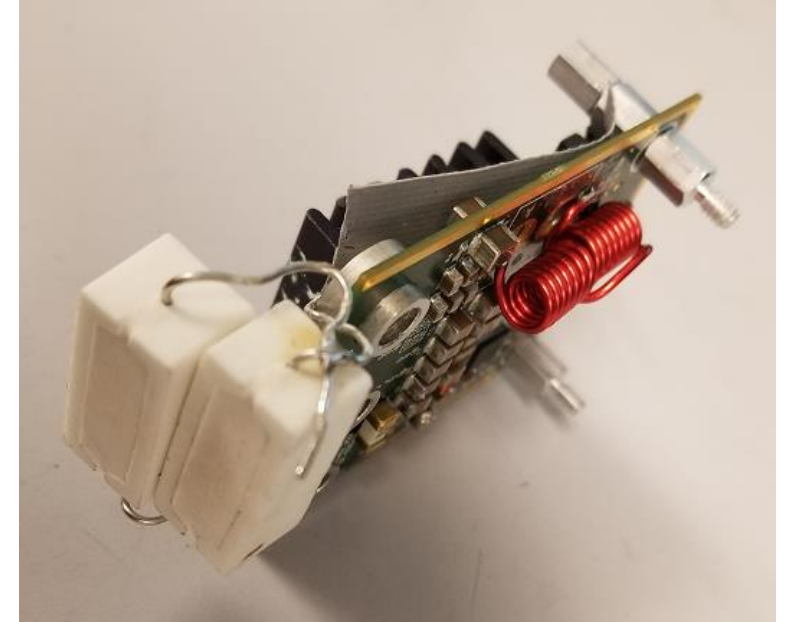


Evaluation of the bPOL48V_2.3 looks to be a good candidate for the LGAD ASIC Power Board:

- Power density
- Noise/ripple
- Decent efficiency (~70%)
- Radiation hardness & high field magnetic tolerance

Additionally:

For RDO & FPGA power we are looking at the lower power bPOL12V with combination of commercial linear regulators that were evaluated for radiation environment.



bPOL48V CERN evaluation board

Tim Camarda for BNL, JUNE 2024



RICE



Brookhaven
National Laboratory

fTOF ASCI & RDO POWER BOARD PROTOTYPES



- CERN DC group has agreed to send us 5x bPOL48V_2.3 DC|DC rad hardened buck converter chips
Thanks Wei!
- BNL is to build and evaluate power circuit for powering LGAD ASIC board & RDO
- Testing to be done to evaluate & optimize power density, noise/ripple, heat transfer characteristics, etc....
- ASCI power board should be able to provide ~16W at 1.2Vout (15V input)\

Preliminary Prototype Budget:

- Printed Circuit Board procurement: ~\$150/ PCB
- Assembly + components: ~\$350.00

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fTOF ASIC power board project details

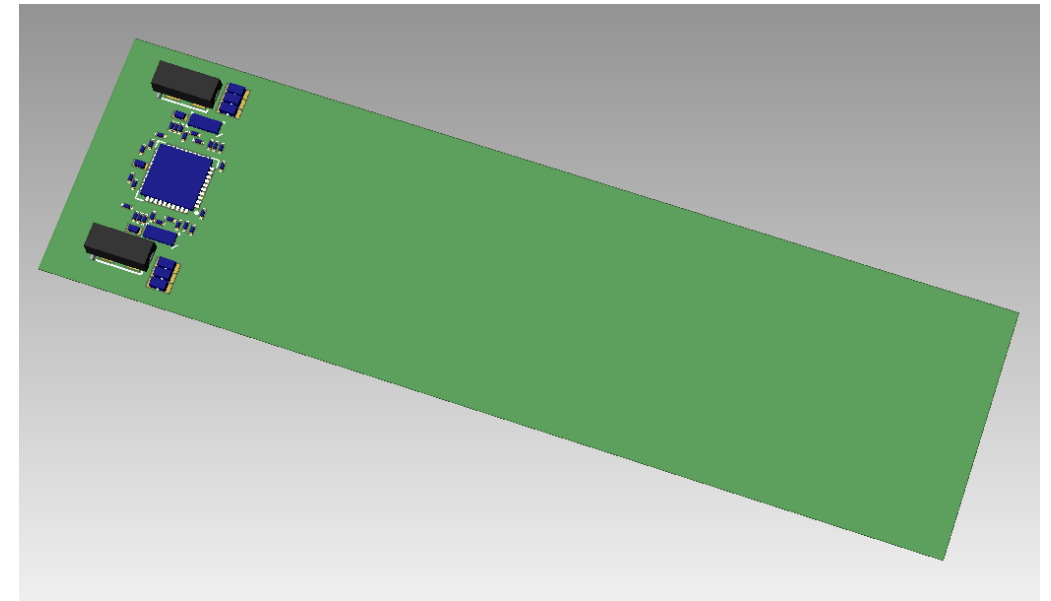


BNL responsibility's

- Derive specifications + requirements with Rice fTOF group
- Engineering & design of circuits & layout
- Procure and assemble circuit cards
- Testing & evaluations
- Acceptance testing & qualification

Deliverables

- Complete ASIC power CCA w/ test & evaluation report



fTOF 100mm x 28mm ASIC power board concept view

Question: Can we get bPOL12V for evaluating (primarily for RDO power)