

Innovative Power Solutions for SPRD: The AEQ Series Solution

INDUSTRY

Defense & Aerospace

SOLUTION

AEQ Series

APPLICATION

Thermal Imaging

CHALLENGE

A global manufacturer of thermal imaging and advanced threat detection systems was developing their range of next generation Spectroscopic Personal Radiation Detectors (SPRD). SPRD's are small electronic devices that alert the wearer to changes in background radiation levels and measure the energy spectrum of the radiation to identify the radionuclide present.

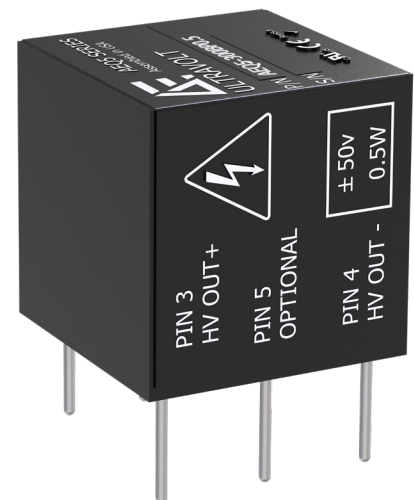
The device will be battery operated, with the high voltage power supply required to provide a high voltage bias to a SiPM (Silicon Photomultiplier).

Previous generations of devices had used a custom, discrete power supply design on board. This used up valuable PCB space and was prone to damage from the outside environment (dust and water).

While accuracy of detection is paramount, the equipment will be hand carried/worn by the responder where size and weight are critical considerations. The equipment can be used in harsh environments so resistance to shock, drops and dust ingress are also important. Primary to secondary isolation was another critical requirement of the design.

SOLUTION

The system requires a regulated 100 V supply for the SiPM. Reviewing the requirements, Advanced Energy's Field Application Engineer (FAE) proposed the AEQ5-100FL0.5. This product is part of the AEQ series of miniature high voltage DC-DC converters. This ultra compact device measured just 12.5 x 12.5 x 12.5 mm in total, thereby helping to reduce the overall PCB sizes significantly. Having 500 V isolation built in, the AEQ allowed them to eliminate another isolation transformer



from their design, saving even more space and weight.

The AEQ series are fully encapsulated power supplies, making them very robust for shock and vibration. Being fully encapsulated, there were no power supply components exposed, making it ideal to be protected against the ingress of dust and water.

RESULT

Advanced Energy (AE) supplied five samples of the AEQ5V-100FL0.5 for testing. The encapsulated power supply greatly simplified the work of the system designers in meeting the IP65 rating of the product. Additionally, during their drop testing, the power supply was proven to meet their shock and vibration specifications first time, reducing system design time HALT testing cost. As the power supply is a UL recognised component, system safety compliance was much easier to attain, and allowed them to launch their system ahead of their original schedule.

Using a standard product from Advanced Energy simplified their supply chain and gave piece of mind with guaranteed continuity of supply for many years. Ultimately AE helped them reduce their system development time by 6 months, accelerate their market launch and improved their market penetration and time to revenue.



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