Application Sheet

Power Hold-Up

MIL-STD-704/DO-160

Supported Platforms

F-15 Eagle	*F-35 Lightening*
F-18 Hornet	*E-2D Hawkeye*
F-22 Raptor	*Boeing 787*

Design Challenge

Avionics engineers must select an energy storage solution that ensures airborne electric systems meet the requirements of MIL-STD-704/DO-160, providing reliable power to the critical avionics systems throughout all phases of flight, including brief power interruptions.

Our Solution

Quantic™ Evans hybrid capacitors are purposefully crafted to meet the stringent requirements of MIL-STD-704/DO-160, delivering power-dense, ultra-low ESR and reliable performance across wide temperature fluctuations, and the ability to withstand high altitude and vibration challenges, fluctuations, shock, vibration, and altitude variations.

What is Power Hold-Up MIL-STD-704/D-160?

MIL-STD-704/DO-160 is a United States military standard that defines the requirements for aircraft electric power characteristics. Power hold up is a requirement specified in MIL-STD-704/DO-160 requiring that airborne electric systems maintain power output during brief interruptions in the input power source. These brief interruptions can occur due to power fluctuations or momentary power interruptions, such as when the aircraft is starting up or shutting down its engines or switching from a generator to a battery. Capacitors are used in power hold up applications, particularly in situations where a very short duration of backup power is required. Capacitors can store electrical energy and release it quickly when needed, making them ideal for providing temporary power during brief interruptions or voltage sags. This requirement is important for ensuring that critical systems on the aircraft, such as avionics and flight control systems, continue to receive power even during brief interruptions in the power supply. By maintaining power during these interruptions, the power hold up requirement helps to ensure the safety and reliability of the aircraft's electrical systems.

Technology Advantages

In power hold up MIL-STD-704/DO-160 applications, Quantic™ Evans hybrid capacitors possess a self healing dielectric providing unlimited shelf life and are often preferred over aluminum electrolytic capacitors which are heavier and larger, and have a limited shelf-life.

Key Features

- **SWaP-Optimized—the Most Power Dense in the Industry**
  This is crucial for power hold-up applications where a compact form factor is necessary allowing for integration into space-constrained systems.
- **Ultra-Low ESR**
  Quantic™ Evans hybrid capacitors are distinguished by their remarkable capacity for efficient charge and discharge cycles attributed to their ultra-low ESR. This characteristic not only reduces power losses but also minimizes heat dissipation, leading to superior energy efficiency in airborne electric systems.
- **Reliable Performance Across a Wide Temperature Range**
  Quantic™ Evans hybrid capacitors are suitable for applications operating in both high and low temperatures.
- **Ruggedized**
  Our hybrid capacitors withstand high altitude and vibration challenges.
- **Hermetically Sealed**
  Quantic™ Evans hybrid capacitors are hermetically sealed, which prevents moisture and other contaminants from entering the capacitor, causing degradation over time. This ensures that the capacitors provide excellent resistance to mechanical and thermal stress, as well as resistance to high altitudes.
- **Long service life**
- **Unlimited shelf life**

Quantic™ Evans

About Quantic Evans—Quantic Evans, a Quantic® Electronics company since 2020, is an AS9100/ISO 9001 certified developer and manufacturer of high-reliability, power dense capacitors. Its products provide superior size, weight, power, and reliability, enabling customers to develop next-generation electronic systems for aerospace, defense, and industrial applications.

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