Energy storage discharge detonator

How does an EFI detonator work?
(Online version in colour.) The EFI detonator is similar to the design of a EBW in that a thin foil is exploded by the discharge of a high voltage capacitor; however,the energy from the exploding conductive foil (often copper) drives a thin plastic disc (often Kapton) situated on top at 2-5 km s -1.

Why do electric detonators have secondary explosive charges?
Secondary explosive charges of electric detonators are intended to increase the energy of the primary initiating impulse and transfer the detonation process to the main charge.

How much impact energy can a detonator withstand?
This detonator withstands an impact energy of up to 50 Jwithout spontaneous detonation. In connection with high initiation energy and the need to use special explosive devices,the detonator has no prospect of wide industrial application.

How does electricity affect a detonator?
The main sources of electrical energy that could affect detonators during handling and use include electrostatic discharge (ESD),most likely from static electricity on the human body and also machine bodies. ESD,lightning and some stray current effects are short duration.

What is a detonator used for?
tonators and primers (igniters). Detonators are designed to provide an explosive shockwave and are typically used to trigger less sensitive,more powerful secondary explosives(either in a booster or main charge) via sympathetic detonation,and their applications range from explosive

How does an electronic detonator fire a fuse?
The current that can flow through an electronic detonator is not enough to fire the fuse; energy must be stored in the capacitor for later release in a burst of energyto fire the fuse. The ASIC is the last electronic element on the printed circuit board (PCB) protecting the fusehead against extraneous electrical energy.

Energy Management Systems play a critical role in managing SOC by optimizing time of use hense allowing the energy storage system to be ready for charge and discharge operation when needed. 2 ...

As an added safety feature, these pulse discharge capacitors can be supplied with integral bleed resistors at various resistance values. With exceptionally low ESR and low signal distortion, additional applications at high temperature include power supply filtering, energy storage and coupling/decoupling. When operated

duration and large-scale energy storage solutions in the future [5]. Existing electrical energy storage technologies encompass pumped hydro storage [6], compressed air energy storage [7], batteries [8],

superconductors [9], [10], and capacitors [11]. Each of these storage methods exhibits distinct performance characteristics

The RP-3 EBW detonator is a miniature detonator containing less than 30 mg of PETN explosive. Although small this detonator will initiate most common military explosives. The RP-3 is used in situations which cannot tolerate blast or fragment damage but still requires the safety and reliability of an EBW detonator.

Initiating explosive devices (IEDs) refer to disposable work devices or gunpowder or explosive-containing devices that burn or explode under external energy stimulation and then detonate explosives. 1 With the rapid development of modern science and technology, IEDs play an important role in a fuze weapon system. 2 However, due to their large structures, low ...

Squibs are miniature explosive devices found in the discharge valve of fire extinguishing agent containers. These electrically activated tools act as a charge for an aircraft"s storage bottles, releasing the fire suppressant when needed. ... These are typically high-energy devices, triggered similarly to an initiator.

The working principle of the discharge circuit is as follows: after receiving the instruction concerning ignition control, the control switch enables the discharge circuit to conduct current, following which the capacitor releases its stored energy to activate the electric detonator. 8 The instantaneous discharge current was large due to the ...

INTRODUCTION. Dielectric capacitors, as fundamental components in high-power energy storage and pulsed power systems, play an important role in many applications, including hybrid electric vehicles, portable electronics, medical devices and electromagnetic weapons, due to their high power density, ultrafast charge-discharge rates and long lifetimes ...

An energy storage and discharge module for a digital electronic detonator comprises the following characteristics: the ignition device and the energy storage unit are arranged between the grounding electrode and the charging switch in parallel; the ignition device is connected with a detonation switch in series; the charging switch is connected to the power supply module; the ...

Discharge pulse width which is typically less than 100 nanoseconds will vary with load conditions which are influenced by inductive and resistive load components. With exceptionally low ESR and low signal distortion, additional applications at high temperature include power supply filtering, energy storage and coupling/decoupling.

Energy issue has always been a topic from which mankind cannot escape. It has inspired people to develop more efficient energy storage devices to store fossil energy and/or clean renewable energy [].Among them, lithium-ion batteries (LIBs) with high energy density and supercapacitors (SCs) with high-power density, as two representatives for energy storage, ...

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The energy at each detonator is normally stored in a capacitor and as the capacitor discharge is exponential it can be necessary to wait for a considerable period. If however energy discharge takes place along a path which is defective or damaged then it cannot be said with certainty that, after a predetermined time period, the energy level at ...

By mating the shorting plug to the "Discharge" connector, the energy storage capacitor is completely and immedi-ately discharged thus precluding inadvertent arming of the firing module and detonation of the EBW detonator. Caution: While EBW and EFI Initiators are inherently less susceptible to accidental detonation during handling and set-

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When electric explosion testing, the self-developed ALG-CN1 energy storage discharge detonator was used as an excitation power source. A 47 mF solid tantalum capacitor with a charging voltage of ...

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