

Ceramic Matrix Composites

42_AUTO_CMC_ASIL

Title: ASIL factor calculation for Battery disconnection fuse

Description:

Battery disconnection fuse is a device for disconnecting direct electric circuits, which takes advantages of the method of disconnecting an electric circuit with pyro switches and melting fuses in parallel connection with pyro switches. The product has several patents (Pat. Nr. W0 2019/027373 A1, W0 2019/027373 A1) related to the principles of operation and actuation. The Battery disconnection fuse allows a rated current of 600A at a maximum voltage of 800V d.c. and overloaded up to 2700A for 10s. Triggering is external (ECU or BMS) and internal (REED contact, pat. Nr. W0 2019/027373 A1). The product is fully developed and internally and externally validated and customer homologated and has a superior performance/weight ratio. It is used in the serial electric super cars which is the fastest EV car on the world with speed world record (412km/h). The Battery disconnection fuse design is superior compared to the fusible link design and other solutions that exist on the market. Technical Breaking capacity factor (kA d.c.)/weight is much greater than that achieved by the fusible link and other similar pyro-switch solutions. By obtaining the ASIL product reliability factor, according to standard ISO26262, the potential market for sales in the automotive and other markets will increase greatly.

Objectives

1. Calculation and acquisition of FIT (failure in time) factors from suppliers for individual Battery disconnection fuse components.
2. Based on FIT factors perform calculation of ASIL factor for Battery disconnection fuse (according to standard ISO26262). Technical data of the Battery disconnection fuse will be provided by the challenge giver at the start of the project.
3. Minimum ASIL B is final requirement for automotive market.