

TITLE: PROTECTION DEVICE FOR SOLID STATE CONTINUOUS CURRENT WITH ACTIVE CURRENT LIMITATION AND SELF-ADJUSTABLE TRIP-OFF TIME

DESCRIPTION OF THE TECHNOLOGY

Protection device for limiting and interrupting current in Direct Current systems that includes an input terminal, an output terminal, a common terminal, a field-effect transistor, a fault current detection circuit, a current measurement circuit, a biasing circuit with an off-command, a field-effect transistor driving circuit, a timing circuit, a latching circuit, a reset command circuit and a shutdown command circuit. As long as the current through the main transistor is below the maximum value established, the device is in conduction mode with very low equivalent resistance. After a fault current has occurred, the device detects the magnitude of the fault for a certain time and auto-adjusts the time in which the device will remain in

current limitation mode before going into shutdown and latching state. The value of the maximum current allowed in the nominal state, the failure-detecting time, the trip-off time and the biasing current of the circuit can be self-adjusted with respect to another physical quantity using resistors dependent on said physical quantity.

MARKET APPLICATION SECTORS

Electric sector. Protection against overloads and electric arc can be achieved in Direct Current distribution systems (Vdc less than 1500V). Among others:

- Data Centers and telecommunications
- Microgrids
- Smart Grid
- Photovoltaic Systems
- Electrical mobility
- Aeronautical and Space Systems

TECHNICAL ADVANTAGES AND BUSINESS BENEFITS

The main advantages of this new device are:

- It is a solid-state device based on a field-effect transistor with a disconnection speed of several orders of magnitude lower compared to electromechanical devices
- It is a robust and very reliable since it does not require any programmable digital device for stand-alone operation.
- Self-powered with remote capability of disconnection and reset.
- Self-adjusting, that varies the time in which it is current-limiting mode according to the degree of failure, measuring only the current. Transistor voltage or power measurement are not required.

TITLE: PROTECTION DEVICE FOR SOLID STATE CONTINUOUS CURRENT WITH ACTIVE CURRENT LIMITATION AND SELF-ADJUSTABLE TRIP-OFF TIME

CURRENT STATE OF DEVELOPMENT

There is a prototype prepared for its development and commercialization

INTELLECTUAL PROPERTY RIGHTS

Protected by patent in Spain. The rights correspond to the Universidad Miguel Hernandez of Elche

COLLABORATION SOUGHT

Collaboration with interested companies to carry out technology concept tests that facilitate commercialization and industrial implementation

RELATED IMAGES

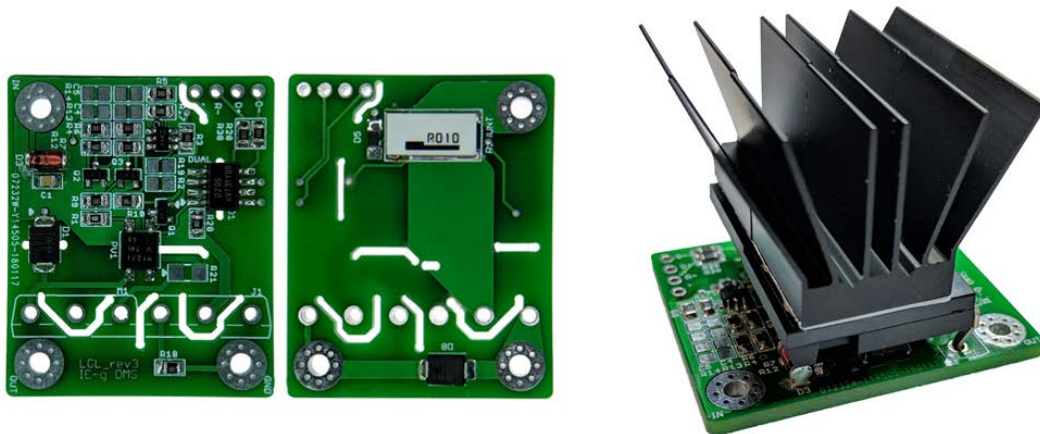


Image 1: Left to right: Top View, Bottom View, Perspective View.

CONTACT

Mariano Almela Alarcón

m.almela@umh.es

Servicio de Gestión de la Investigación – OTRI
UNIVERSIDAD MIGUEL HERNÁNDEZ DE ELCHE

Avda. de la Universidad s/n

Edificio Rectorado y Consejo Social

03202 ELCHE, Alicante

Teff.: 966658733