

Title (en)

METHOD FOR REDUCING A THERMAL LOAD ON A CONTROLLABLE SWITCHING ELEMENT

Title (de)

VERFAHREN ZUR REDUKTION EINER THERMISCHEN BELASTUNG EINES STEUERBAREN SCHALTELEMENTS

Title (fr)

PROCÉDÉ DE RÉDUCTION D'UNE CONTRAINTE THERMIQUE D'UN ÉLÉMENT DE COMMUTATION COMMANDABLE

Publication

EP 3776783 A1 20210217 (DE)

Application

EP 19716825 A 20190329

Priority

- EP 18169794 A 20180427
- EP 2019058037 W 20190329

Abstract (en)

[origin: WO2019206564A1] The invention relates to a method for reducing a thermal load on a switching element (SE) of an electronic fuse (SI) when switching on a load (L), said switching element being actuated by an actuation signal (AS) with a specified actuation period. At least one output voltage (UA) applied to the load, an output current (IA) flowing into the load, and/or the temperature of the switching element (SE) are continuously ascertained (102), and set values at which a specified maximally allowable temperature increase of the switching element (SE) is kept within a specified actuation period are specified (100, 110) for the switch-on duration of the switching element and/or for a switch-off current and for the switch-off duration of the switching element. Additionally, the following steps are carried out: a. switching on the switching element (SE, 101); b. switching off the switching element (SE) at least upon reaching a set value of the switch-off current or the switch-on duration (106); and c. switching on the switching element (SE) again after reaching the set value of the switch-off duration (108). Steps b and c are repeated until the output voltage (UA) reaches a value which falls below a specified difference with respect to the input voltage of the electronic fuse (SI) or the output current (IA) reaches a specified duration current (IL). The set values of the switch-on duration and/or switch-off current and the switch-off duration are maintained until new set values have been determined (103) on the basis of the output voltage (UA), the output current (IA), and/or the temperature, wherein a pulse duty factor between the switch-on duration and the switch-off duration is adapted, and the specified maximally allowable temperature increase of the switching element is further observed.

IPC 8 full level

H02H 9/00 (2006.01); **H02H 9/02** (2006.01); **H03K 17/08** (2006.01); **H03K 17/082** (2006.01)

CPC (source: EP US)

H02H 9/001 (2013.01 - EP US); **H02H 9/025** (2013.01 - US); **H03K 17/0822** (2013.01 - EP US); **H02H 9/02** (2013.01 - EP); **H03K 2017/0806** (2013.01 - EP US)

Citation (search report)

See references of WO 2019206564A1

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

DOCDB simple family (publication)

EP 3561981 A1 20191030; CN 112292793 A 20210129; CN 112292793 B 20221213; EP 3776783 A1 20210217; US 11349472 B2 20220531; US 2021044288 A1 20210211; WO 2019206564 A1 20191031; WO 2019206964 A1 20191031

DOCDB simple family (application)

EP 18169794 A 20180427; CN 201980043097 A 20190329; EP 19716825 A 20190329; EP 2019058037 W 20190329; EP 2019060466 W 20190424; US 201917050644 A 20190329