



US 20220368124A1

(19) **United States**(12) **Patent Application Publication****Furuuchi et al.**(10) **Pub. No.: US 2022/0368124 A1**(43) **Pub. Date: Nov. 17, 2022**(54) **PROTECTION CIRCUIT, BATTERY PACK,
AND PROTECTION CIRCUIT OPERATING
METHOD****H02H 5/04** (2006.01)**H02J 7/00** (2006.01)(71) Applicant: **DEXERIALS CORPORATION,**
Tochigi (JP)(52) **U.S. Cl.**CPC **H02H 7/18** (2013.01); **H01H 37/76**
(2013.01); **H02H 5/047** (2013.01); **H02J**
7/00304 (2020.01); **H02J 7/0031** (2013.01)(72) Inventors: **Yuji Furuuchi, Yuji (JP); Chisato**
Komori, Shimotsuke-shi (JP)(21) Appl. No.: **17/755,373**

(57)

ABSTRACT(22) PCT Filed: **Nov. 9, 2020**(86) PCT No.: **PCT/JP2020/041709**

§ 371 (c)(1),

(2) Date: **Apr. 27, 2022**(30) **Foreign Application Priority Data**

Nov. 8, 2019 (JP) 2019-203246

Publication Classification(51) **Int. Cl.****H02H 7/18** (2006.01)**H01H 37/76** (2006.01)

Provided is a protection circuit capable of reliably preventing an overcurrent or a sneak current after cutoff to improve safety, implementing cost reduction with a device configuration simpler than conventional device configurations, and further reducing a failure rate of a device. In a protection circuit, after one of two fuse elements provided in each of a plurality of protection elements is blown due to an overcurrent flowing along a current-carrying path, a heater provided in at least one of the plurality of protection elements generates heat due to a sneak current flowing via the plurality of protection elements on the current-carrying path which is remained and the current-carrying path which is remained is cut off due to destruction of the heater.

