

US 20240237186A9

# (19) United States

# (12) Patent Application Publication LEE et al.

## (10) Pub. No.: US 2024/0237186 A9

# (48) **Pub. Date: Jul. 11, 2024 CORRECTED PUBLICATION**

## (54) POWER SUPPLY DEVICE HAVING THERMAL INSULATION FUNCTION

(71) Applicant: ELEMENTS PERFORMANCE
TECHNOLOGY INC., KAOHSIUNG

CITY (TW)

(72) Inventors: JERRYSON LEE, KAOHSIUNG

CITY (TW); Ethan Lee, KAOHSIUNG

CITY (TW); Yu-Jia Huang, KAOHSIUNG CITY (TW);

KUO-SUNG HUANG, KAOHSIUNG

CITY (TW)

(21) Appl. No.: 18/313,358

(22) Filed: May 7, 2023

### **Prior Publication Data**

(15) Correction of US 2024/0138049 A1 Apr. 25, 2024See (22) Filed.See (30) Foreign Application Priority Data.

(65) US 2024/0138049 A1 Apr. 25, 2024

(30) Foreign Application Priority Data

Oct. 21, 2022 (TW) ...... 111139948

#### **Publication Classification**

(51) Int. Cl. H05K 1/02 (2006.01) F21V 23/02 (2006.01) H05K 1/18 (2006.01)

(52) U.S. Cl.

CPC ........ *H05K 1/0201* (2013.01); *F21V 23/02* (2013.01); *H05K 1/18* (2013.01); *F21Y 2115/10* (2016.08); *H05K 2201/062* (2013.01); *H05K 2201/10015* (2013.01)

### (57) ABSTRACT

A power supply device having a thermal insulation function includes a circuit board, and at least one heat-sensitive component and a plurality of heat-generating electronic components that are disposed on the circuit board and spaced apart from one another. The heat-generating electronic components include a transformer, an inductor, an integrated circuit, or a metal oxide semiconductor (MOS). A minimum distance between the heat-sensitive component and the heat-generating electronic components is 7 mm. A thermal insulation area is defined between the heat-sensitive component and the heat-generating electronic components, and none of the heat-generating electronic components is disposed within a 270° range of the thermal insulation area. The heat-generating electronic components are disposed outside the thermal insulation area to separate the heatsensitive component from a heat source on the circuit board, such that a high temperature of the heat source has less influence on the heat-sensitive component.

