



US 20240244882A1

(19) **United States**

(12) **Patent Application Publication**
EGUCHI et al.

(10) **Pub. No.: US 2024/0244882 A1**

(43) **Pub. Date:**
Jul. 18, 2024

(54) **DISPLAY DEVICE AND MANUFACTURING METHOD OF DISPLAY DEVICE**

(71) Applicant: **SEMICONDUCTOR ENERGY LABORATORY CO., LTD.**,
Atsugi-shi, Kanagawa-ken (JP)

(72) Inventors: **Shingo EGUCHI**, Atsugi, Kanagawa (JP); **Kenichi OKAZAKI**, Atsugi, Kanagawa (JP); **Yukinori SHIMA**, Tatebayashi, Gunma (JP)

(21) Appl. No.: **18/558,233**

(22) PCT Filed: **Apr. 26, 2022**

(86) PCT No.: **PCT/IB2022/053835**
§ 371 (c)(1),
(2) Date: **Oct. 31, 2023**

(30) **Foreign Application Priority Data**
May 10, 2021 (JP) 2021-079792

Publication Classification

(51) **Int. Cl.**
H10K 59/12 (2006.01)
H10K 59/122 (2006.01)
H10K 59/35 (2006.01)

(52) **U.S. Cl.**
CPC **H10K 59/1201** (2023.02); **H10K 59/122** (2023.02); **H10K 59/35** (2023.02)

(57) **ABSTRACT**

A display device with high resolution is provided. The display device includes a light-emitting element including a first electrode, an organic compound layer, and a second electrode; a first transistor electrically connected to the first electrode; a second transistor electrically connected to a gate of the first transistor; and an insulator provided to cover an end portion of the first electrode. The first transistor contains silicon in a channel formation region. The second transistor includes an oxide semiconductor in a channel formation region. An end portion of the organic compound layer is positioned in the opening portion of the insulator.

