

附件四、技術說明表



嵌入式蕭基超接面元件結構與製造方式

(以下內容一頁為限，不可揭露關鍵技術內容；填表完成後請刪除此行)

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簡歷：(可列出相關連結，例如系所、研究室網頁)

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市場及需求：

再生能源及電動車之電力系統需要能在高壓、高溫下穩定運作的功率元件，來提高能源轉換效率，降低功率損耗。高功率元件的需求隨著科技發展越來越高，元件的效率也逐漸受重視，高崩潰電壓及低導通電阻都是高功率元件發展的重點之一。因此，提高元件的崩潰電壓及降低導通電阻是設計的主要目標。

技術摘要(含成果)：

本專利技術「嵌入式蕭基超接面元件結構與製造方式」，具如下特色：

1. 在超接面結構中嵌入蕭基二極體結構
2. 不對稱式超接面金氧半場效電晶體結構

優勢：

1. 崩潰電壓提升
2. 導通電阻下降
3. 電能轉換效率提升
4. 改善超接面金氧半場效電晶體的切換特性
5. 元件可靠度提升

競爭產品：

此專利結合超接面結構與嵌入蕭基二極體，不僅使導通電阻下降，還可以使切換特性提升，相較於傳統的超接面結構，逆向回復時間減少，切換損失變少。

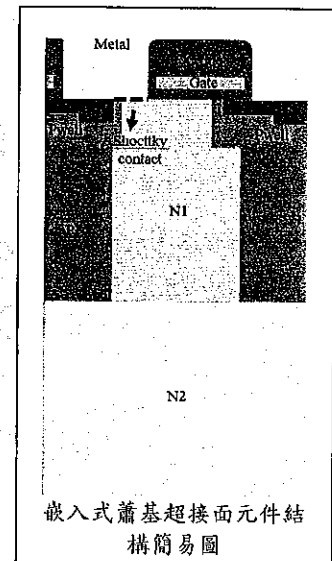
專利現況：

相較於，世界知識產權組織的“一種集成蕭特基二極管的 SiC 雙溝槽型 MOSFET 器件及其制備方法”(WO 2018/161412 A1)，有更低的導通電阻。

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The Structure and Process of Embedded SBD Super Junction

(Below is limited to 1-page only; be careful not to disclose vital technology content. Please delete these words when the document is finished)

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Experience:

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Market Demand:

To enhance the transmission efficiency in power systems, power devices have to be performed stably under both high reverse bias and high temperature conditions. The demand of power devices is increasing with the advanced technology development. Therefore, increasing the breakdown voltage and reducing the specific on-resistance are the major targets of the power devices design.

Our Technology:

To summary our technology:

1. The structure of embedded SBD is merged with the structure of super junction.
2. The structure of asymmetric super junction MOSFET is achieved.

Strength:

1. Higher breakdown voltage
2. Lower specific on-resistance
3. High transmission efficiency
4. The structure of the embedded SBD super junction could improve the switching performance.
5. The reliability of devices is enhanced.

Competing Products:

In this patent, combining a super junction structure and a SBD, which not only reduces the specific on-resistance, but also improves the switching characteristics. To compare this patent with the conventional super junction structure, the super junction embedded SBD has lower reverse recovery time and less switching loss.

Intellectual Properties:

In this patent, the device has lower specific on-resistance and better switching characteristics than (World Intellectual Property Organization, W O 2018/161412 A1)

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