

## Title (en)

HIGH ELECTRON MOBILITY TRANSISTOR (HEMT), TRANSISTOR ARRANGEMENT, METHOD OF CONTROLLING AN HEMT AND METHOD OF PRODUCING AN HEMT

## Title (de)

TRANSISTOR MIT HOHER ELEKTRONENBEWEGLICHKEIT (HEMT), TRANSISTORANORDNUNG, VERFAHREN ZUM STEUERN EINES HEMTS UND VERFAHREN ZUM HERSTELLEN EINES HEMTS

## Title (fr)

TRANSISTOR À HAUTE MOBILITÉ ÉLECTRONIQUE (HEMT), ENSEMBLE TRANSISTOR, PROCÉDÉ DE COMMANDE D'UN HEMT ET PROCÉDÉ DE FABRICATION D'UN HEMT

## Publication

**EP 4282007 A1 20231129 (DE)**

## Application

**EP 22712307 A 20220223**

## Priority

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- EP 2022054576 W 20220223

## Abstract (en)

[origin: WO2022180127A1] A high electron mobility transistor (HEMT) having a first layer (110) and a second layer (120) is described. The first layer includes a first material (111) composed of a first nitride compound. The first nitride compound includes a group III element. The second layer includes a second material (121) composed of a second nitride compound. The second nitride compound includes a group III element. A main surface (122) of the second layer is arranged opposite a main surface (112) of the first layer, such that a charge zone (160) is formed along the main surface of the second layer. The HEMT also has a gate electrode (170) arranged opposite at least regions of the second layer, such that the second layer is disposed between the first layer and the gate electrode. In addition, the HEMT has a third layer (130) disposed between the gate electrode and the second layer. The third layer includes a ferroelectric third material (131) composed of a third nitride compound, or a ferroelectric third material composed of an oxide compound including zinc.

## IPC 8 full level

**H01L 29/778** (2006.01); **H01L 21/336** (2006.01); **H01L 29/20** (2006.01); **H01L 29/40** (2006.01); **H01L 29/417** (2006.01); **H01L 29/51** (2006.01)

## CPC (source: EP US)

**H01L 29/2003** (2013.01 - US); **H01L 29/516** (2013.01 - EP); **H01L 29/66462** (2013.01 - US); **H01L 29/7786** (2013.01 - EP); **H01L 29/7787** (2013.01 - US); **H01L 29/78391** (2014.09 - EP); **H01L 29/2003** (2013.01 - EP); **H01L 29/402** (2013.01 - EP); **H01L 29/41766** (2013.01 - EP); **H01L 29/432** (2013.01 - EP); **H01L 29/66462** (2013.01 - EP)

## Citation (search report)

See references of WO 2022180127A1

## 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

## Designated validation state (EPC)

KH MA MD TN

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