

Title (en)

POWER SEMICONDUCTOR MODULE WITH IMPROVED BONDING CONNECTION STRUCTURE

Title (de)

LEISTUNGSHALBLEITERMODUL MIT VERBESSERTER BONDVERBINDUNGSTRUKTUR

Title (fr)

MODULE DE SEMI-CONDUCTEUR DE PUISSANCE POURVU D'UNE STRUCTURE DE CONNEXION PAR SOUDAGE AMÉLIORÉE

Publication

EP 3268989 A1 20180117 (DE)

Application

EP 16708666 A 20160308

Priority

- DE 102015103667 A 20150312
- EP 2016054894 W 20160308

Abstract (en)

[origin: WO2016142372A1] The invention relates to a power semiconductor module (10) comprising • at least one substrate (4); • at least one power semiconductor device (2) arranged on the substrate (4) and having a land (21) on its surface facing away from the substrate; • a load potential surface (23), arranged on the substrate (4) next to the power semiconductor device (2), which surface is optionally segmented; and • a plurality of bonding connections (25, 26) for the parallel electrically conductive connection of the land (21) to the load potential surface (23), each bonding connection (25, 26) having at least one first bond heel (31) on the load potential surface (23) and several second bond heels (32) on the land (21), the land (21) of each bonding connection (25, 26) having at least one end, the plurality of bonding connections (25, 26) being grouped in at least two groups (25 or 26) of several bonding connections with the same number of bond heels and the second bond heels (32) of each bonding connection of one group being arranged in a segment defined by a surface portion of the land or in a region (22a or 22b) of the land (21) only and the groups differing in that their first bond heels (31) are located on the load potential surface (23) at a different distance (a1 or a2) from the power semiconductor device (2), preferably however at a distance that is the same within each group.

IPC 8 full level

H01L 23/49 (2006.01); **H01L 23/485** (2006.01); **H01L 25/07** (2006.01)

CPC (source: CN EP RU)

H01L 23/49 (2013.01 - RU); **H01L 24/06** (2013.01 - CN EP); **H01L 24/49** (2013.01 - CN EP); **H01L 25/072** (2013.01 - CN EP); **H01L 25/18** (2013.01 - EP); **H01L 24/05** (2013.01 - CN EP); **H01L 24/29** (2013.01 - CN EP); **H01L 24/32** (2013.01 - CN EP); **H01L 24/45** (2013.01 - CN EP); **H01L 24/48** (2013.01 - CN EP); **H01L 24/73** (2013.01 - CN EP); **H01L 24/85** (2013.01 - CN EP); **H01L 2224/05552** (2013.01 - EP); **H01L 2224/0603** (2013.01 - CN EP); **H01L 2224/06131** (2013.01 - CN EP); **H01L 2224/06151** (2013.01 - CN EP); **H01L 2224/29101** (2013.01 - CN EP); **H01L 2224/32225** (2013.01 - CN EP); **H01L 2224/45014** (2013.01 - CN EP); **H01L 2224/45015** (2013.01 - CN EP); **H01L 2224/45124** (2013.01 - CN EP); **H01L 2224/45147** (2013.01 - CN EP); **H01L 2224/4811** (2013.01 - CN EP); **H01L 2224/48137** (2013.01 - CN EP); **H01L 2224/48227** (2013.01 - CN EP); **H01L 2224/4846** (2013.01 - CN EP); **H01L 2224/48472** (2013.01 - CN EP); **H01L 2224/4901** (2013.01 - CN EP); **H01L 2224/49111** (2013.01 - CN EP); **H01L 2224/4917** (2013.01 - CN EP); **H01L 2224/49175** (2013.01 - CN EP); **H01L 2224/49431** (2013.01 - CN EP); **H01L 2224/49433** (2013.01 - CN EP); **H01L 2224/73265** (2013.01 - CN EP); **H01L 2224/83424** (2013.01 - CN EP); **H01L 2224/83447** (2013.01 - CN EP); **H01L 2224/85205** (2013.01 - CN EP); **H01L 2924/00014** (2013.01 - CN EP); **H01L 2924/1203** (2013.01 - CN EP); **H01L 2924/1301** (2013.01 - CN EP); **H01L 2924/1305** (2013.01 - CN EP); **H01L 2924/13055** (2013.01 - CN EP); **H01L 2924/13091** (2013.01 - EP); **H01L 2924/15787** (2013.01 - CN EP); **H01L 2924/351** (2013.01 - CN EP)

C-Set (source: CN EP)

CN

1. **H01L 2224/85205 + H01L 2924/00014**
2. **H01L 2924/00014 + H01L 2224/85399**
3. **H01L 2924/00014 + H01L 2224/05599**
4. **H01L 2224/29101 + H01L 2924/014 + H01L 2924/00014**
5. **H01L 2224/45015 + H01L 2924/2076**
6. **H01L 2224/45147 + H01L 2924/01047 + H01L 2924/14**
7. **H01L 2224/45147 + H01L 2924/01014 + H01L 2924/14**
8. **H01L 2224/45147 + H01L 2924/01012 + H01L 2924/14**
9. **H01L 2224/45124 + H01L 2924/01047 + H01L 2924/14**
10. **H01L 2224/45124 + H01L 2924/01014 + H01L 2924/14**
11. **H01L 2224/45124 + H01L 2924/01012 + H01L 2924/14**
12. **H01L 2224/45124 + H01L 2924/01204**
13. **H01L 2224/45147 + H01L 2924/01204**
14. **H01L 2924/15787 + H01L 2924/05042**
15. **H01L 2924/15787 + H01L 2924/05032**
16. **H01L 2924/15787 + H01L 2924/05432**
17. **H01L 2224/73265 + H01L 2224/32225 + H01L 2224/48227 + H01L 2924/00**

EP

1. **H01L 2224/85205 + H01L 2924/00014**
2. **H01L 2924/00014 + H01L 2224/85399**
3. **H01L 2924/00014 + H01L 2224/05599**
4. **H01L 2224/29101 + H01L 2924/014 + H01L 2924/00014**
5. **H01L 2224/45015 + H01L 2924/2076**
6. **H01L 2224/45147 + H01L 2924/01047 + H01L 2924/14**
7. **H01L 2224/45147 + H01L 2924/01014 + H01L 2924/14**
8. **H01L 2224/45147 + H01L 2924/01012 + H01L 2924/14**
9. **H01L 2224/45124 + H01L 2924/01047 + H01L 2924/14**
10. **H01L 2224/45124 + H01L 2924/01014 + H01L 2924/14**
11. **H01L 2224/45124 + H01L 2924/01012 + H01L 2924/14**
12. **H01L 2224/45124 + H01L 2924/01204**
13. **H01L 2224/45147 + H01L 2924/01204**

14. H01L 2924/15787 + H01L 2924/05042
15. H01L 2924/15787 + H01L 2924/05032
16. H01L 2924/15787 + H01L 2924/05432
17. H01L 2224/73265 + H01L 2224/32225 + H01L 2224/48227 + H01L 2924/00
18. H01L 2224/48472 + H01L 2224/48227 + H01L 2924/00
19. H01L 2924/00014 + H01L 2224/45014 + H01L 2924/206
20. H01L 2924/13091 + H01L 2924/00

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

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BA ME

DOCDB simple family (publication)

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JP 2018508126 A 20180322; JP 6479207 B2 20190306; RU 2676190 C1 20181226; WO 2016142372 A1 20160915

DOCDB simple family (application)

DE 102015103667 A 20150312; CN 201680009758 A 20160308; EP 16708666 A 20160308; EP 2016054894 W 20160308;
JP 2017548171 A 20160308; RU 2017124848 A 20160308