

Title (en)

Method for fabricating tantalum contacts on a N-type conducting silicon semiconductor substrate.

Title (de)

Verfahren zum Herstellen von Tantal-Kontakten auf einem aus N-leitendem Silicium bestehenden Halbleitersubstrat.

Title (fr)

Procédé pour la fabrication des contacts de tantale sur un substrat semi-conducteur de silicium à conductibilité du type N.

Publication

EP 0000743 A1 19790221 (DE)

Application

EP 78100525 A 19780727

Priority

US 82791277 A 19770826

Abstract (en)

[origin: US4215156A] A silicon semiconductor device having contacts which include tantalum. The tantalum is useful in particular for fabricating Schottky barrier diodes having a low barrier height. The method includes: precleaning the silicon substrate prior to depositing the tantalum; depositing the tantalum at low pressure and low substrate temperature to avoid oxidation of the tantalum; and sintering the contact to reduce any interfacial charges and films remaining between the silicon and tantalum. When a metal which reacts with silicon during processing, such as aluminum, is used as interconnection metallurgy, a layer of chrome must be deposited between the tantalum and aluminum.

Abstract (de)

Das Verfahren zum Herstellen von Tantalkontakten auf Siliciumhalbleitersubstraten eignet sich besonders für die Herstellung von Schottky - Sperrschicht - Dioden mit niedriger Potentialschwelle. Das Substrat wird vor dem Aufbringen der Tantalschicht gereinigt. Dann wird die Tantalschicht (28) bei niedrigem Druck und niedriger Substrattemperatur aufgebracht, wodurch eine Oxidation der Tantalschicht vermieden wird. Anschliessend wird der Kontakt gesintert, wodurch Grenzflächenladungen und zwischen Tantal und Substrat vorhandene Filme beseitigt werden. Wenn während der Verarbeitung ein Metall verwendet wird, das mit Silicium reagiert, wie zum Beispiel Aluminium für Verbindungsleitungen, dann muss zwischen der Tantalschicht (28) und der Aluminiumschicht (32) eine Chromschicht (30) niedergeschlagen werden.

IPC 1-7

H01L 21/285; **H01L 21/60**; **H01L 23/48**; **H01L 29/40**

IPC 8 full level

H01L 21/28 (2006.01); **H01L 21/285** (2006.01); **H01L 21/338** (2006.01); **H01L 21/60** (2006.01); **H01L 21/768** (2006.01); **H01L 23/532** (2006.01); **H01L 29/43** (2006.01); **H01L 29/45** (2006.01); **H01L 29/47** (2006.01); **H01L 29/872** (2006.01)

CPC (source: EP US)

H01L 21/28512 (2013.01 - EP US); **H01L 21/28537** (2013.01 - EP US); **H01L 23/53223** (2013.01 - EP US); **H01L 24/03** (2013.01 - EP US); **H01L 24/05** (2013.01 - EP US); **H01L 29/456** (2013.01 - EP US); **H01L 29/47** (2013.01 - EP US); **H01L 29/66848** (2013.01 - EP US); **H01L 2224/05083** (2013.01 - EP US); **H01L 2224/05171** (2013.01 - EP US); **H01L 2224/05181** (2013.01 - EP US); **H01L 2224/05624** (2013.01 - EP US); **H01L 2224/05647** (2013.01 - EP US); **H01L 2924/01005** (2013.01 - EP US); **H01L 2924/01006** (2013.01 - EP US); **H01L 2924/01013** (2013.01 - EP US); **H01L 2924/01014** (2013.01 - EP US); **H01L 2924/01022** (2013.01 - EP US); **H01L 2924/01024** (2013.01 - EP US); **H01L 2924/01029** (2013.01 - EP US); **H01L 2924/01032** (2013.01 - EP US); **H01L 2924/01033** (2013.01 - EP US); **H01L 2924/01037** (2013.01 - EP US); **H01L 2924/01046** (2013.01 - EP US); **H01L 2924/01068** (2013.01 - EP US); **H01L 2924/01072** (2013.01 - EP US); **H01L 2924/01073** (2013.01 - EP US); **H01L 2924/01074** (2013.01 - EP US); **H01L 2924/01078** (2013.01 - EP US); **H01L 2924/01079** (2013.01 - EP US); **H01L 2924/01082** (2013.01 - EP US); **H01L 2924/12032** (2013.01 - EP US); **H01L 2924/14** (2013.01 - EP US); **Y10S 438/951** (2013.01 - EP US); **Y10S 438/974** (2013.01 - EP US)

C-Set (source: EP US)

1. **H01L 2924/12032** + **H01L 2924/00**
2. **H01L 2924/14** + **H01L 2924/00**

Citation (search report)

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EP0017021A1; EP0194569A1; EP0100999A3; US6183685B1

Designated contracting state (EPC)

BE DE FR GB

DOCDB simple family (publication)

EP 0000743 A1 19790221; **EP 0000743 B1 19800917**; CA 1111570 A 19811027; DE 2860169 D1 19801218; IT 1158954 B 19870225; IT 7826099 A0 19780726; JP S5436178 A 19790316; JP S5932069 B2 19840806; US 4215156 A 19800729

DOCDB simple family (application)

EP 78100525 A 19780727; CA 307591 A 19780718; DE 2860169 T 19780727; IT 2609978 A 19780726; JP 8410378 A 19780712; US 82791277 A 19770826