

Title (en)  
SOLAR CELL

Title (de)  
SOLARZELLE

Title (fr)  
CELLULE SOLAIRE

Publication  
**EP 2481092 A2 20120801 (DE)**

Application  
**EP 10754287 A 20100913**

Priority  
• DE 102009042018 A 20090921  
• EP 2010005596 W 20100913

Abstract (en)  
[origin: WO2011032672A2] The invention relates to a solar cell, comprising a silicon layer which has a dopant of a first dopant type, a front designed for the coupling in of light, and a rear, the silicon layer being a doped base layer, at least one textured layer and a metal layer being arranged on the rear of the silicon layer, optionally on additional intermediate layers, and the textured layer comprising a rear texture in at least a section thereof which rear texture is designed as an optical diffraction structure. It is essential that at least one textured intermediate structure (3, 23, 33) is arranged between the textured layer (2, 22, 32) and the metal layer (4, 24, 34), the metal layer (4, 24, 34) being connected to the textured layer (2, 22, 32) and/or to the base layer (1, 21, 31) in an electrically conducting manner. The textured intermediate structure (3, 23, 33) is substantially transparent at least in the wavelength range of 800 nm to 1100 nm and has a refractive index n smaller than the refractive index of the textured layer in at least this wavelength range. The refractive index of all layers arranged between the base layer (1, 21, 31) and the textured intermediate layer (3, 23, 33) deviates by not more than 30% relative to the refractive index of silicon and the layer which is arranged directly on the rear of the base layer (1, 21, 31) is a passivation layer which passivates the surface with respect to the recombination of minority charge carriers.

IPC 8 full level  
**H01L 31/0236** (2006.01); **H01L 31/075** (2012.01)

CPC (source: EP US)  
**H01L 31/0236** (2013.01 - EP US); **H01L 31/0547** (2014.12 - EP US); **H01L 31/056** (2014.12 - EP US); **H01L 31/075** (2013.01 - EP US); **Y02E 10/52** (2013.01 - EP US); **Y02E 10/548** (2013.01 - EP US)

Citation (search report)  
See references of WO 2011032672A2

Citation (examination)  
RECH B ET AL: "Texture etched ZnO:Al films as front contact and back reflector in amorphous silicon p-i-n and n-i-p solar cells", CONFERENCE RECORD OF THE 26TH IEEE PHOTOVOLTAIC SPECIALISTS CONFERENCE - 1997. PVSC '97. ANAHEIM, CA, SEPT. 29 - OCT. 3, 1997; [IEEE PHOTOVOLTAIC SPECIALISTS CONFERENCE], NEW YORK, NY : IEEE, US, 29 September 1997 (1997-09-29), pages 619 - 622, XP010267861, ISBN: 978-0-7803-3767-1, DOI: 10.1109/PVSC.1997.654165

Cited by  
CN109314150A

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 SE SI SK SM TR

DOCDB simple family (publication)  
**DE 102009042018 A1 20110324**; CN 102648529 A 20120822; EP 2481092 A2 20120801; US 2012227805 A1 20120913; WO 2011032672 A2 20110324; WO 2011032672 A3 20120503

DOCDB simple family (application)  
**DE 102009042018 A 20090921**; CN 201080042146 A 20100913; EP 10754287 A 20100913; EP 2010005596 W 20100913; US 201013497370 A 20100913