



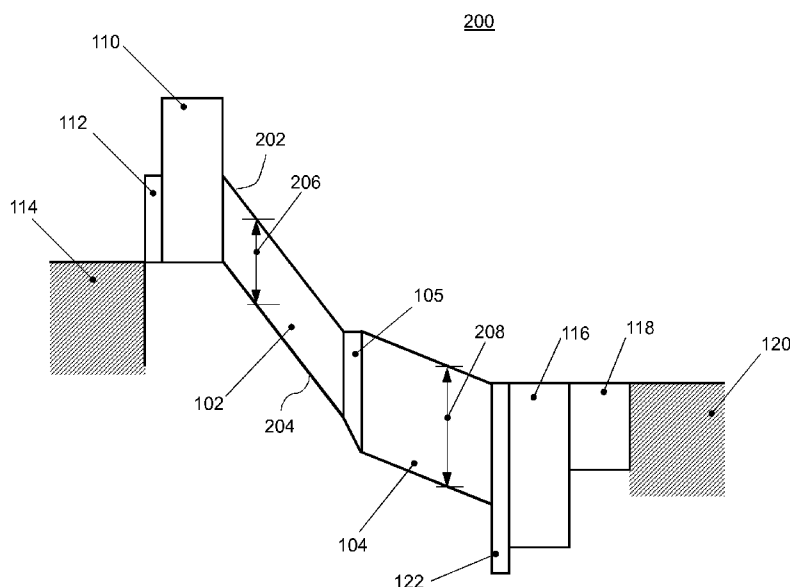
- (51) **International Patent Classification:**  
*H01L 31/105* (2006.01)
- (21) **International Application Number:**  
PCT/EP2014/060432
- (22) **International Filing Date:**  
21 May 2014 (21.05.2014)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**  
13002838.4 31 May 2013 (31.05.2013) EP
- (71) **Applicant:** TYCO ELECTRONICS SVENSKA HOLD-  
INGS AB [SE/SE]; Bruttovägen 7, S-175 26 Järfälla (SE).
- (72) **Inventors:** CHACINSKI, Marek Grzegorz; Hauptvägen  
55, S-123 58 Farsta (SE). CHITICA, Nicolae Pantazi;  
Mariehamngatan 28, S-164 71 Kista (SE).
- (74) **Agent:** KUHLMANN, Dietmar; Grünecker, Kinkeldey, Stock-  
mair & Schwanhäusser, Leopoldstrasse 4, 80802 München  
(DE).
- (81) **Designated States** (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,  
BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,  
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,  
HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR,  
KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME,  
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,  
OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,  
SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM,  
ZW.

- (84) **Designated States** (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ,  
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,  
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,  
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,  
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,  
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,  
KM, ML, MR, NE, SN, TD, TG).

**Published:**

— with international search report (Art. 21(3))

(54) **Title:** HIGH SPEED PHOTODETECTOR**FIG. 2**

(57) **Abstract:** A high-speed pin-based photo-  
detector comprises a thin light absorbing layer  
(102) where the applied electric field is high,  
combined with a drift layer (104) exposed to a  
significantly lower electric field. Only the  
charge carriers with the higher mobility will  
have to travel across the drift layer (104) while  
the charge carriers with lower mobility will  
only have to travel over a distance that is less  
or at most equal to the thickness of the light  
absorbing layer (102). The band gap energy  
(208) of the drift layer (104) is larger than the  
band gap energy (206) of the light absorption  
layer (102). The transition of the higher elec-  
tric field light absorption layer to the lower  
electric field drift layer is implemented by the  
grading layer (105). The reduction of the elec-  
tric field in the drift layer (104) with respect to  
the light absorption layer (102) is realized by  
the distribution of the dopant concentration in  
the light absorption layer (102), the drift layer  
(104) and the grading layer (105).