

Title (en)  
Railway sensor including a coreless transformer with high galvanic insulation

Title (de)  
Eisenbahnsensor mit einem kernlosen Transformator mit höher galvanischer Trennung

Title (fr)  
Capteur ferroviaire à transformateur sans noyau à haute isolation galvanique

Publication  
**EP 2348516 B1 20200916 (FR)**

Application  
**EP 11151262 A 20110118**

Priority  
FR 1050405 A 20100121

Abstract (en)  
[origin: EP2348516A1] The transformer (10) has a printed circuit type insulating element (13) and conductive coils (11, 12) positioned in a superposed manner on opposite faces of the insulating element. The conductive coils are in circular, elliptical, square or rectangular shapes. The coils are in a form of flexible or rigid plastic plate. Each coil includes flat metallic winding turns provided with central ends. Electric wires are positioned at a surface of the insulating element. The coils are separated by the insulating element. An independent claim is also included for an electrical apparatus comprising a printed circuit on which electrical components are arranged.

IPC 8 full level  
**H01F 30/08** (2006.01); **H01F 5/00** (2006.01); **H01F 27/28** (2006.01); **H01F 38/14** (2006.01)

CPC (source: EP)  
**H01F 5/003** (2013.01); **H01F 27/2804** (2013.01); **H01F 30/08** (2013.01); **H01F 2027/2819** (2013.01); **H01F 2038/143** (2013.01)

Citation (examination)  

- US 2003095027 A1 20030522 - SHU YUEN HUI RON [HK], et al
- EP 0491214 A1 19920624 - ASEA BROWN BOVERI [CH]
- TANG S C ET AL: "Characterization of coreless printed circuit board (PCB) transformers", POWER ELECTRONICS SPECIALISTS CONFERENCE, 1999. PESC 99. 30TH ANNUAL IEEE CHARLESTON, SC, USA 27 JUNE-1 JULY 1999, PISCATAWAY, NJ, USA, IEEE, US, vol. 2, 27 June 1999 (1999-06-27), pages 746 - 752, XP010346787, ISBN: 978-0-7803-5421-0, DOI: 10.1109/PESC.1999.785593

Citation (opposition)  
Opponent : Knick/Rau Schneck  

- US 2008179963 A1 20080731 - FOUQUET JULIE E [US], et al
- US 2006039169 A1 20060223 - CHEN BAOXING [US], et al
- JP H08306540 A 19961122 - MURATA MANUFACTURING CO
- ANONYMOUS: "Durchkontaktierung", WIKIPEDIA, pages 1 - 2, XP055815860
- S.C. TANG ET AL.: "A Low-Profile Wide-Band Three-Port Isolation Amplifier With Coreless Printed-Circuit-Board (PCB) Transformers", IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS, vol. 48, no. 6, December 2001 (2001-12-01), pages 1180 - 1187, XP011023915

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

DOCDB simple family (publication)  
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