

Title (en)

ROOT RAT BALUN AND METHOD OF REDUCING ROOT RAT BALUN FOOTPRINT THEREFOR

Title (de)

RATTEN-RACE-TRAP UND VERFAHREN ZUR REDUZIERUNG DES STAUS EINES RATTEN-RACE-PUMPS DAFÜR

Title (fr)

BALUN RAT-RACE ET PROCÉDÉ DE RÉDUCTION D'ENCOMBREMENT DE BALUN RAT-RACE ASSOCIÉ

Publication

EP 4395069 A1 20240703 (FR)

Application

EP 23218484 A 20231220

Priority

FR 2214617 A 20221229

Abstract (en)

[origin: US2024222839A1] A rat-race balun includes a transmission line loop and 4 input-output ports P₁, P₂, P₃, P₄ connected to the transmission line loop, the balun being designed to receive a first signal on the port P₁, and to divide the first signal into a second signal that is delivered to the port P₂ and a third signal that is delivered to the port P₄, the second signal and the third signal being in phase opposition with one another, the balun wherein the balun is kidney-shaped and the ports P₂, P₄ each comprise at least a first section connected to the transmission line, the first section of the port P₂ being parallel to the first section of the port P₄.

Abstract (fr)

L'invention concerne un Balun Rat-Race, comprenant une boucle de ligne de transmission et 4 ports d'entrée-sortie P₁, P₂, P₃, P₄ connectés à ladite boucle de ligne de transmission, ledit balun étant adapté pour recevoir un premier signal sur le port P₁, et pour diviser ledit premier signal en un deuxième signal délivré sur le port P₂ et un troisième signal délivré sur le port P₄, ledit deuxième signal et ledit troisième signal étant en opposition de phase l'un avec l'autre, ledit balun étant caractérisé en ce que :- le balun présente une forme de haricot et- les ports P₂, P₄ comportent chacun au moins une première section connectée à la ligne de transmission, la première section du port P₂, étant parallèle à la première section du port P₄.

IPC 8 full level

H01P 5/22 (2006.01)

CPC (source: EP US)

H01P 5/10 (2013.01 - US); **H01P 5/22** (2013.01 - EP US)

Citation (applicant)

- US 2022263212 A1 20220818 - BIANCHI GIOVANNI [DE], et al
- KHAIR AL SHAMAILEHMOHAMMAD ALMALKAWIVIJAY DEVABHAKTUNINIHAD DIB: "Compact Tunable 3 dB Hybrid and Rat-Race Couplers with Harmonics Suppression", INTERNATIONAL JOURNAL OF MICROWAVE AND OPTICAL TECHNOLOGY, vol. 7, no. 6, November 2012 (2012-11-01)

Citation (search report)

- [XY] US 2022263251 A1 20220818 - NABKI FREDERIC [CA], et al
- [X] TETSUO HIROTA ET AL: "Reduced-size branch-line and rat-race hybrids for uniplanar MMIC's", IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, IEEE, USA, vol. 38, no. 3, 1 March 1990 (1990-03-01), pages 270 - 275, XP000137493, ISSN: 0018-9480, DOI: 10.1109/22.45344
- [X] TIAN YANG ET AL: "Low-Loss Microcoaxial Rat-Race Hybrid for Si-Based Microwave Integrated Circuits", IEEE MICROWAVE AND WIRELESS COMPONENTS LETTERS, IEEE SERVICE CENTER, NEW YORK, NY, US, vol. 26, no. 3, 1 March 2016 (2016-03-01), pages 162 - 164, XP011602432, ISSN: 1531-1309, [retrieved on 20160309], DOI: 10.1109/LMWC.2016.2524657
- [YDA] AL SHAMAILEH KHAIR ET AL: "Compact Tunable 3 dB Hybrid and Rat-Race Couplers with Harmonics Suppression", 1 November 2012 (2012-11-01), pages 372 - 379, XP093060851, Retrieved from the Internet <URL:https://www.just.edu.jo/~nihad/files/pap/80.pdf> [retrieved on 20230704]
- [A] PSYCHOGIOU D ET AL: "Comparing miniaturization techniques for microstrip 180° hybrid ring junctions", MICROWAVE SYMPOSIUM (MMS), 2010 MEDITERRANEAN, IEEE, PISCATAWAY, NJ, USA, 25 August 2010 (2010-08-25), pages 29 - 32, XP031777706, ISBN: 978-1-4244-7241-3

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 ME MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA

Designated validation state (EPC)

KH MA MD TN

DOCDB simple family (publication)

EP 4395069 A1 20240703; FR 3144711 A1 20240705; US 2024222839 A1 20240704

DOCDB simple family (application)

EP 23218484 A 20231220; FR 2214617 A 20221229; US 202318399476 A 20231228