

Title (en)
UNIT AND METHOD FOR SYNCHRONOUS RECTIFICATION CONTROL

Title (de)
EINHEIT UND VERFAHREN ZUR SYNCHRONEN GLEICHRICHTUNGSSTEUERUNG

Title (fr)
UNITÉ ET PROCÉDÉ DE COMMANDE DE REDRESSEMENT SYNCHRONE

Publication
EP 3149851 A1 20170405 (EN)

Application
EP 14736346 A 20140701

Priority
EP 2014063900 W 20140701

Abstract (en)
[origin: WO2016000754A1] A unit and a method for synchronous rectification control unit is disclosed. The synchronous rectification control unit includes a voltage sensing circuit 25 configured to detect body diode conduction for a power switch 14, and to output a voltage pulse signal VDC corresponding to the body diode conduction. The synchronous rectification control unit further includes a capture unit 24 configured to determine a time duration Tc for the voltage pulse signal VDC, and to store the time duration Tc in a memory. The synchronous rectification control unit further includes a control algorithm circuit 26 configured to determine a turn-on time Ton and a turn-off time Toff to be used for a synchronous pulse width modulation, PWM, control signal SQ1 or a non-synchronous PWM control signal Q1 during an upcoming switching cycle, wherein the determination of the turn-on Ton and turn-off Toff times is based on the stored time duration Tc. The synchronous rectification control unit further includes a PWM signal generator 32 configured to generate, by use of the determined turn-on Ton time and turn-off Toff time, the synchronous PWM control signal SQ1 for controlling switching of the power switch 14 when the power switch is in a synchronous side of a circuit; or the non-synchronous PWM control signal Q1 for controlling switching of the power switch 14 when the power switch is in a non-synchronous side of the circuit 100.

IPC 8 full level
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Citation (search report)
See references of WO 2016000754A1

Citation (examination)
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• US 2013063984 A1 20130314 - SANDNER CHRISTOPH [AT], et al
• WO 9952200 A1 19991014 - SEMI TECH DESIGN INC [US], et al
• WEIYI FENG ET AL: "A Universal Adaptive Driving Scheme for Synchronous Rectification in LLC Resonant Converters", IEEE TRANSACTIONS ON POWER ELECTRONICS, INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, USA, vol. 27, no. 8, 1 August 2012 (2012-08-01), pages 3775 - 3781, XP011441715, ISSN: 0885-8993, DOI: 10.1109/TPEL.2012.2184304
• ZHAO A ET AL: "One-step digital dead-time correction for DC-DC converters", APPLIED POWER ELECTRONICS CONFERENCE AND EXPOSITION (APEC), 2010 TWENTY-FIFTH ANNUAL IEEE, IEEE, PISCATAWAY, NJ, USA, 21 February 2010 (2010-02-21), pages 132 - 137, XP031742759, ISBN: 978-1-4244-4782-4

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