

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
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 Jeekai & Partners

PCT

WRITTEN OPINION OF THE
 INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing (day/month/year) 28 September 2017	
Applicant's or agent's file reference Z16121454PCT	FOR FURTHER ACTION See paragraph 2 below
International application No. PCT/CN2016/112125	International filing date (day/month/year) 26 December 2016
Priority date (day/month/year)	
International Patent Classification (IPC) or both national classification and IPC G05F 1/567(2006.01)i	
Applicant Texas Instruments Incorporated et al.	

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/ STATE INTELLECTUAL PROPERTY OFFICE OF THE P.R.CHINA China 6, Xitucheng Rd., Jimen Bridge, Haidian District, Beijing 100088	Date of completion of this opinion 25 September 2017	Authorized officer WANG, Xiaoxi
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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/CN2016/112125

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - the international application in the language in which it was filed.
 - a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a)).
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:
 - a. (means)
 - on paper
 - in electronic form
 - b. (time)
 - in the international application as filed
 - together with the international application in electronic form
 - subsequently to this Authority for the purposes of search
4. In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

**WRITTEN OPINION OF THE
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Box No. V **Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	<u>1-14</u>	YES
	Claims	<u>None</u>	NO
Inventive step (IS)	Claims	<u>1-14</u>	YES
	Claims	<u>None</u>	NO
Industrial applicability (IA)	Claims	<u>1-14</u>	YES
	Claims	<u>None</u>	NO

2. Citations and explanations :

[1] D1: CN101330252A (24.12.2008)

[2] I. Novelty and Inventive Step

[3] D1 discloses a DC-DC converter with a temperature compensating circuit and method for the DC-DC converter (description, pages 8-9 and figure 3), the DC-DC converter comprising: a reference circuit 27 to generate a reference voltage; a resistor divider 25 to generate a resistor divider voltage; a temperature compensating circuit 300 to apply a temperature compensating current to the resistor divider 25 to create a temperature compensating resistor divider voltage; comparing the temperature compensating resistor divider voltage with the reference voltage; and a power transistor 21 to be switched based on the result of the comparing.

[4] Claim 1 differs from D1 in that: a power transistor is enabled when the temperature compensated resistor divider voltage is less than the bandgap reference voltage. Therefore, claim 1 and independent claims 2-9 are novel in the sense of PCT Article 33(2).

[5] Claim 10 differs from D1 in: a method for applying negative voltage active clamping; in response to determining that the temperature compensated resistor divider voltage is less than the bandgap reference voltage, enabling a power transistor. Therefore, claim 10 and independent claims 11-14 are novel in the sense of PCT Article 33(2).

[6] The differences relate to avoiding reaching the breakdown voltage of the power transistor, they are neither disclosed by the prior art nor common practices in the art. Therefore, claims 1 -14 involve an inventive step in the sense of PCT Article 33(3).

[7] II. Industrial Applicability

[8] Claims 1-14 are industrially applicable in the sense of PCT Article 33(4).