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(54) **BIAS CURRENT WITH HYBRID TEMPERATURE PROFILE**

(57) Aspects of the present disclosure include a scalable proportional to absolute temperature (PTAT) hybrid circuit, comprising a bias mirror circuit configured to provide a zero temperature coefficient (ZTC) current, a PTAT control circuit configured to generate, based on the ZTC current, a PTAT current with a slope having a non-zero value, alter the PTAT current by at least scaling the

PTAT current or changing the slope of the PTAT current to generate an altered PTAT current, and provide the altered PTAT current, a hybrid circuit configured to receive the ZTC current and the altered PTAT current, and output a larger current of the ZTC current and the altered PTAT current as a hybrid current.

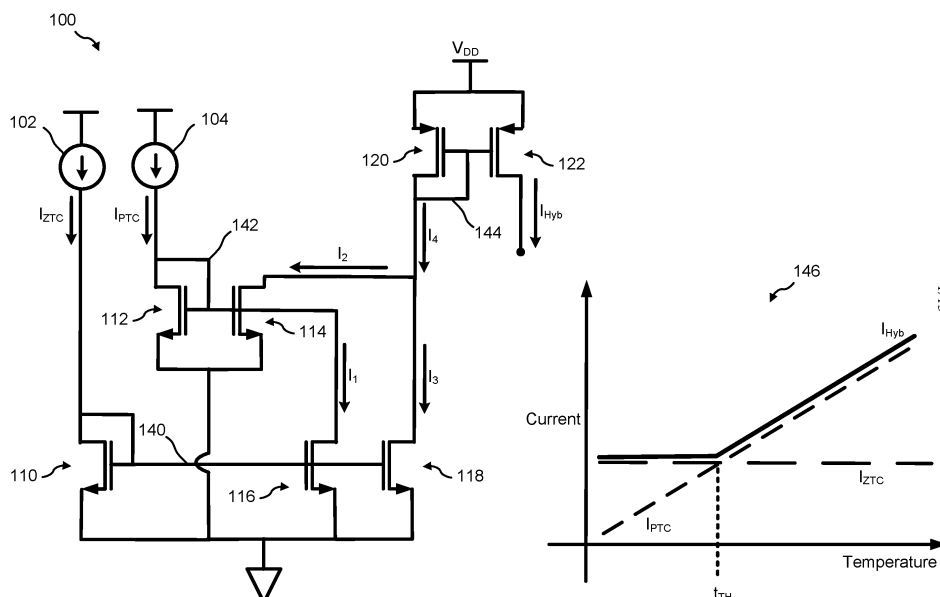


FIG. 1



PARTIAL EUROPEAN SEARCH REPORT

Application Number

under Rule 62a and/or 63 of the European Patent Convention.
This report shall be considered, for the purposes of
subsequent proceedings, as the European search report

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DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 11 112 315 B1 (ABOUZIED MOHAMED [US] ET AL) 7 September 2021 (2021-09-07)	1-9,15	INV. G05F3/24 G05F3/26
Y	* figures 7,9 *	10,11	
A	US 11 714 446 B1 (YUE XIN [US]) 1 August 2023 (2023-08-01) * abstract; figure 2 *	2-7	
A	US 2014/117967 A1 (MITSUISHI SYOU [JP] ET AL) 1 May 2014 (2014-05-01) * abstract; figure 6 *	2-7	
A	US 2021/157351 A1 (KANG HYUNWOOK [KR] ET AL) 27 May 2021 (2021-05-27) * abstract; figure 7 *	2-7	
Y	US 4 978 868 A (GIORDANO RAYMOND L [US] ET AL) 18 December 1990 (1990-12-18) * abstract; figures 1-4 *	10,11	
			TECHNICAL FIELDS SEARCHED (IPC)
			G05F
INCOMPLETE SEARCH			
The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC so that only a partial search (R.62a, 63) has been carried out.			
Claims searched completely :			
Claims searched incompletely :			
Claims not searched :			
Reason for the limitation of the search:			
see sheet C			
Place of search		Date of completion of the search	Examiner
The Hague		9 May 2025	Arias Pérez, Jagoba
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone			
Y : particularly relevant if combined with another document of the same category			
A : technological background			
O : non-written disclosure			
P : intermediate document			
T : theory or principle underlying the invention			
E : earlier patent document, but published on, or after the filing date			
D : document cited in the application			
L : document cited for other reasons			
& : member of the same patent family, corresponding document			

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INCOMPLETE SEARCH
SHEET C

Application Number

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Claim(s) completely searchable:

1-11, 15

Claim(s) not searched:

12-14

Reason for the limitation of the search:

Multiple independent claims in the same category have been identified in the original application (apparatus claims 1 and 12). These claims do not fall within any of the exceptions laid down in Rule 43(2) EPC, as these claims relate to the same type of circuit (a scalable PTAT hybrid circuit), and therefore not to a plurality of interrelated products (as these circuits are not intended to interact with one another), they do not relate to different uses of a product or apparatus (no uses have been claimed) and they do not constitute alternative solutions to a particular problem, as they relate to the same solution to said problem, defined in functional terms (claim 1) and in structural terms (claim 12).

An invitation pursuant to Rule 62a(1) EPC has therefore been sent to the applicant on 15 January 2025.

The applicant has replied on 11 March 2025 that they wish claim 1 to be treated; therefore among the apparatus claims only independent claim 1 and its dependent claims have been searched and will be addressed in the present communication.

Claims 12 to 14 should be deleted by the applicant and any amendment may not result in claims which relate to subject-matter not searched in accordance with Rule 62a EPC.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

09 - 05 - 2025

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US 11714446	B1	01-08-2023	NONE
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82