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(54) **Dual mode voltage reference circuit and method.**

(57) A voltage reference circuit is described which is capable of providing either an internally generated voltage having a trimming capability, or an externally generated voltage, with the use of only two pins (2,4). The internal voltage is connected through an interrupt circuit (T2,T3,R4,R5,R7) to an input/output terminal (2), which can also receive an externally generated voltage. A trimming terminal (4) is used to apply trimming voltage signals to adjust the inter-

nally generated voltage. To convert from the internal (8,A1) to the external voltage source (20), an interrupt voltage is applied to the trimming terminal (4) which is outside of the normal trimming voltage range. This interrupt voltage actuates an interrupt circuit (T2,T3,R4,R5,R7) to interrupt the connection (T1) between the internal voltage source (8,A1) and input/output terminal (2), leaving the output terminal (2) available for the external voltage source (20).

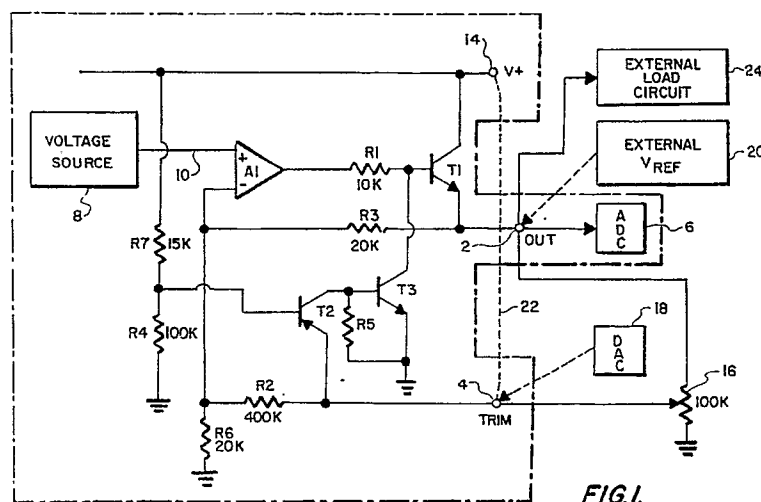


FIG. 1.

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EUROPEAN SEARCH REPORT

Application Number

EP 89 30 2113

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	WESCON CONFERENCE RECORD, North Hollywood, September 1977, pages 1-5; J. SIMMONS: "Microprocessor 8-bit D/A-converter" * Page 1, right-hand column, lines 33-51; page 3, right-hand column, lines 10-27; figures 2-6 * -- --	1,6	G 05 F 1/56
A	DE-A-3 710 865 (K.K. TOSHIBA) * Column 5, line 51 - column 7, line 22; figures 1,2 * -- --	1,2,6	
A	ELECTRONICS, 13th April 1978, pages 99-105, New York, US; P. BROKAW: "I2L puts it all together for 10-bit a-d converter chip" * Page 100, right-hand column, line 49 - page 101, left-hand column, line 3; page 103, right-hand column, lines 19-30; figure 2 * -- --	1,6	
A	GB-A-2 056 805 (NIPPON ELECTRIC CO., LTD) * Abstract; page 1, lines 23-83; figure 4 * -- -- -- --	1,6	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			G 05 F H 02 J H 03 M H 01 L
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of search 07 August 91	Examiner SAAWL.J.P.
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			