

Title (en)  
PRECISION REFERENCE-VOLTAGE SOURCE

Publication  
**EP 0466717 B1 19930811 (DE)**

Application  
**EP 90904754 A 19900321**

Priority  
• DE 3910511 A 19890401  
• DE 4005756 A 19900223

Abstract (en)  
[origin: WO9012353A1] Proposed is a monolithic-integrated precision reference-voltage source based on the bandgap principle and suitable for use over a wide temperature range. The parabolic temperature/reference-voltage curve produced by the source is made linear using the processing means available in the monolithic integration without the need for additional active components such as transistors and diodes. The precision voltage-reference source includes two resistors (21, 22) represented by the n-doped emitter diffusion zone.

IPC 1-7  
**G05F 3/30**

IPC 8 full level  
**G05F 3/30** (2006.01)

CPC (source: EP US)  
**G05F 3/30** (2013.01 - EP US)

Citation (examination)  
• US 4250445 A 19810210 - BROKAW ADRIAN P [US]  
• Handbook of Semiconductor Electronics, Lloyd P. Hunter. McGraw Hill Book Company, New York, U.S.A. Third Edition, 1970

Designated contracting state (EPC)  
DE ES FR GB IT

DOCDB simple family (publication)  
**WO 9012353 A1 19901018**; DE 4005756 A1 19901004; DE 59002341 D1 19930916; EP 0466717 A1 19920122; EP 0466717 B1 19930811; ES 2042287 T3 19931201; JP 2818289 B2 19981030; JP H04504320 A 19920730; US 5258702 A 19931102

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**DE 9000212 W 19900321**; DE 4005756 A 19900223; DE 59002341 T 19900321; EP 90904754 A 19900321; ES 90904754 T 19900321; JP 50487490 A 19900321; US 76828391 A 19911001