

Title (en)  
NEURAL NETWORK CIRCUITS HAVING NON-VOLATILE SYNAPSE ARRAYS

Title (de)  
SCHALTUNGEN NEURONALER NETZE MIT NICHTFLÜCHTIGEN SYNAPSENARRAYS

Title (fr)  
CIRCUITS DE RÉSEAU NEURONAL COMPRENANT DES SÉRIES DE SYNAPSES NON VOLATILES

Publication  
**EP 3743857 A4 20211229 (EN)**

Application  
**EP 19744289 A 20190122**

Priority  
• US 201862620947 P 20180123  
• US 201862655074 P 20180409  
• US 201816196617 A 20181120  
• US 201916252640 A 20190120  
• US 2019014442 W 20190122

Abstract (en)  
[origin: WO2019147522A2] A synapse circuit of a non-volatile neural network. The synapse includes: an input signal line (265); a reference signal line (265); an output line (266), and a cell (2032) for generating the output signal (203). The cell (2032) includes: an upper select transistor (311) having a gate that is electrically coupled to the input signal line (265); and a resistive changing element (313) having one end connected to the upper select transistor (311) in series and another end electrically coupled to the reference signal line (264). The value of the resistive changing element (311) is programmable to change the magnitude of an output signal (203). The drain of the upper select transistor (311) is electrically coupled to the output line (266).

IPC 8 full level  
**G06N 3/04** (2006.01); **G06N 3/063** (2006.01); **G06N 3/08** (2006.01); **G11C 11/54** (2006.01); **G11C 11/56** (2006.01); **G11C 13/00** (2006.01)

CPC (source: EP KR)  
**G06N 3/048** (2023.01 - EP KR); **G06N 3/063** (2013.01 - KR); **G06N 3/065** (2023.01 - EP); **G06N 3/08** (2013.01 - EP KR); **G11C 11/54** (2013.01 - EP KR); **G11C 11/5614** (2013.01 - KR); **G11C 11/5685** (2013.01 - KR); **G11C 13/0028** (2013.01 - EP KR); **G11C 13/003** (2013.01 - EP KR); **G11C 13/004** (2013.01 - EP KR); **G11C 13/0069** (2013.01 - EP KR); **G11C 13/0097** (2013.01 - EP KR); **G11C 11/5614** (2013.01 - EP); **G11C 11/5685** (2013.01 - EP); **G11C 2013/0092** (2013.01 - EP KR); **G11C 2213/79** (2013.01 - EP KR); **G11C 2213/82** (2013.01 - EP KR)

Citation (search report)  
• [E] EP 3718055 A1 20201007 - ANAFLASH INC [US]  
• [X] US 2003183871 A1 20031002 - DUGGER JEFFERY DON [US], et al  
• [X] EP 0644597 A1 19950322 - SHIBATA TADASHI [JP], et al  
• [A] US 7167392 B1 20070123 - POPLEVINE PAVEL [US], et al  
• [A] WO 2017078886 A1 20170511 - QUALCOMM INC [US]  
• [A] US 2016048755 A1 20160218 - FREYMAN LAURA [US], et al  
• See also references of WO 2019147522A2

Designated contracting state (EPC)  
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**US 2019014442 W 20190122**; CN 201980009706 A 20190122; EP 19744289 A 20190122; KR 20207024195 A 20190122; TW 108102597 A 20190123