

# Hiroaki Honjo

## List of Publications by Year in descending order

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78  
papers

1,183  
citations

516710

16  
h-index

552781

26  
g-index

79  
all docs

79  
docs citations

79  
times ranked

889  
citing authors

#	ARTICLE	IF	CITATIONS
1	Determination of the proton tunneling splitting of tropolone in the ground state by microwave spectroscopy. Journal of Chemical Physics, 1999, 110, 1969-1978.	3.0	76
2	A 1 Mb Nonvolatile Embedded Memory Using 4T2MTJ Cell With 32 b Fine-Grained Power Gating Scheme. IEEE Journal of Solid-State Circuits, 2013, 48, 1511-1520.	5.4	70
3	10.5 A 90nm 20MHz fully nonvolatile microcontroller for standby-power-critical applications. , 2014, , .		63
4	Nonvolatile Logic-in-Memory LSI Using Cycle-Based Power Gating and its Application to Motion-Vector Prediction. IEEE Journal of Solid-State Circuits, 2015, 50, 476-489.	5.4	53
5	High-speed simulator including accurate MTJ models for spintronics integrated circuit design. , 2012, , .		50
6	MRAM Cell Technology for Over 500-MHz SoC. IEEE Journal of Solid-State Circuits, 2007, 42, 830-838.	5.4	48
7	A Recent Progress of Spintronics Devices for Integrated Circuit Applications. Journal of Low Power Electronics and Applications, 2018, 8, 44.	2.0	48
8	Nonvolatile logic-in-memory array processor in 90nm MTJ/MOS achieving 75% leakage reduction using cycle-based power gating. , 2013, , .		41
9	First demonstration of field-free SOT-MRAM with 0.35 ns write speed and 70 thermal stability under 400Å°C thermal tolerance by canted SOT structure and its advanced patterning/SOT channel technology. , 2019, , .		41
10	A 47.14- $\mu\text{W}$ 200-MHz MOS/MTJ-Hybrid Nonvolatile Microcontroller Unit Embedding STT-MRAM and FPGA for IoT Applications. IEEE Journal of Solid-State Circuits, 2019, 54, 2991-3004.	5.4	39
11	Co/Pt multilayer based reference layers in magnetic tunnel junctions for nonvolatile spintronics VLSIs. Japanese Journal of Applied Physics, 2014, 53, 04EM02.	1.5	33
12	14ns write speed 128Mb density Embedded STT-MRAM with endurance $>10^{10}$ and 10yrs retention@85Å°C using novel low damage MTJ integration process. , 2018, , .		33
13	A 90nm 12ns 32Mb 2T1MTJ MRAM. , 2009, , .		26
14	Scalability of Quad Interface p-MTJ for 1X nm STT-MRAM With 10-ns Low Power Write Operation, 10 Years Retention and Endurance $>10^{11}$ . IEEE Transactions on Electron Devices, 2020, 67, 5368-5373.	3.0	26
15	Improvement of Thermal Stability of Magnetoresistive Random Access Memory Device with SiN Protective Film Deposited by High-Density Plasma Chemical Vapor Deposition. Japanese Journal of Applied Physics, 2008, 47, 2714.	1.5	25
16	Dual-Port SOT-MRAM Achieving 90-MHz Read and 60-MHz Write Operations Under Field-Assistance-Free Condition. IEEE Journal of Solid-State Circuits, 2021, 56, 1116-1128.	5.4	24
17	High-speed and reliable domain wall motion device: Material design for embedded memory and logic application. , 2012, , .		23
18	Fabrication of a magnetic tunnel junction-based 240-tile nonvolatile field-programmable gate array chip skipping wasted write operations for greedy power-reduced logic applications. IEICE Electronics Express, 2013, 10, 20130772-20130772.	0.8	22

#	ARTICLE	IF	CITATIONS
19	Novel Quad interface MTJ technology and its first demonstration with high thermal stability and switching efficiency for STT-MRAM beyond 2Xnm. , 2019, , .		22
20	Novel Quad-Interface MTJ Technology and its First Demonstration With High Thermal Stability Factor and Switching Efficiency for STT-MRAM Beyond 2X nm. IEEE Transactions on Electron Devices, 2020, 67, 995-1000.	3.0	19
21	Recent Progresses in STT-MRAM and SOT-MRAM for Next Generation MRAM. , 2020, , .		18
22	A power-gated MPU with 3-microsecond entry/exit delay using MTJ-based nonvolatile flip-flop. , 2013, , .		17
23	Process-induced damage and its recovery for a CoFeB/MgO magnetic tunnel junction with perpendicular magnetic easy axis. Japanese Journal of Applied Physics, 2014, 53, 103001.	1.5	17
24	10 nmphi perpendicular-anisotropy CoFeB-MgO magnetic tunnel junction with over 400°C high thermal tolerance by boron diffusion control. , 2015, , .		17
25	Improvement of Thermal Tolerance of CoFeB/MgO Perpendicular-Anisotropy Magnetic Tunnel Junctions by Controlling Boron Composition. IEEE Transactions on Magnetics, 2016, 52, 1-4.	2.1	17
26	Impact of Tungsten Sputtering Condition on Magnetic and Transport Properties of Double-MgO Magnetic Tunneling Junction With CoFeB/W/CoFeB Free Layer. IEEE Transactions on Magnetics, 2017, 53, 1-4.	2.1	17
27	Damage Recovery by Reductive Chemistry after Methanol-Based Plasma Etch to Fabricate Magnetic Tunnel Junctions. Japanese Journal of Applied Physics, 2012, 51, 08HA01.	1.5	16
28	A 600-µW ultra-low-power associative processor for image pattern recognition employing magnetic tunnel junction-based nonvolatile memories with autonomic intelligent power-gating scheme. Japanese Journal of Applied Physics, 2016, 55, 04EF15.	1.5	14
29	1T1MTJ STT-MRAM Cell Array Design with an Adaptive Reference Voltage Generator for Improving Device Variation Tolerance. , 2015, , .		13
30	A 16-Mb Toggle MRAM With Burst Modes. IEEE Journal of Solid-State Circuits, 2007, 42, 2378-2385.	5.4	12
31	Insertion Layer Thickness Dependence of Magnetic and Electrical Properties for Double-CoFeB/MgO-Interface Magnetic Tunnel Junctions. IEEE Transactions on Magnetics, 2019, 55, 1-4.	2.1	12
32	Performance of write-line inserted magnetic tunneling junction for low-write-current magnetic random access memory cell. Journal of Applied Physics, 2008, 103, 07A711.	2.5	11
33	Design and fabrication of a perpendicular magnetic tunnel junction based nonvolatile programmable switch achieving 40% less area using shared-control transistor structure. Journal of Applied Physics, 2014, 115, 17B742.	2.5	11
34	Evidence of a reduction reaction of oxidized iron/cobalt by boron atoms diffused toward naturally oxidized surface of CoFeB layer during annealing. Applied Physics Letters, 2015, 106, 142407.	3.3	11
35	Domain-wall-motion cell with perpendicular anisotropy wire and in-plane magnetic tunneling junctions. Journal of Applied Physics, 2012, 111, 07C903.	2.5	10
36	Demonstration of Yield Improvement for On-Via MTJ Using a 2-Mbit 1T-1MTJ STT-MRAM Test Chip. , 2016, , .		9

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37	Origin of variation of shift field via annealing at 400Å°C in a perpendicular-anisotropy magnetic tunnel junction with [Co/Pt]-multilayers based synthetic ferrimagnetic reference layer. AIP Advances, 2017, 7, .	1.3	9
38	12.1 An FPGA-Accelerated Fully Nonvolatile Microcontroller Unit for Sensor-Node Applications in 40nm CMOS/MTJ-Hybrid Technology Achieving 47.14µW Operation at 200MHz. , 2019, .		9
39	A 250-MHz 1-Mbit embedded MRAM macro using 2T1MTJ cell with bitline separation and half-pitch shift architecture. , 2007, .		8
40	Power-gated 32 bit microprocessor with a power controller circuit activated by deep-sleep-mode instruction achieving ultra-low power operation. Japanese Journal of Applied Physics, 2015, 54, 04DE08.	1.5	8
41	First Demonstration of 25-nm Quad Interface p-MTJ Device With Low Resistance-Area Product MgO and Ten Years Retention for High Reliable STT-MRAM. IEEE Transactions on Electron Devices, 2021, 68, 2680-2685.	3.0	8
42	Toggling cell with four antiferromagnetically coupled ferromagnetic layers for high density MRAM with low switching current. , 0, .		7
43	A 500-MHz MRAM macro for high-performance SoCs. , 2008, .		7
44	Damage Recovery by Reductive Chemistry after Methanol-Based Plasma Etch to Fabricate Magnetic Tunnel Junctions. Japanese Journal of Applied Physics, 2012, 51, 08HA01.	1.5	7
45	Electrical endurance of Co/Ni wire for magnetic domain wall motion device. Applied Physics Letters, 2013, 102, 222410.	3.3	7
46	Wide operational margin capability of 1 kbit spin-transfer-torque memory array chip with 1-PMOS and 1-bottom-pin-magnetic-tunnel-junction type cell. Japanese Journal of Applied Physics, 2014, 53, 04ED13.	1.5	7
47	Plasma process induced physical damages on multilayered magnetic films for magnetic domain wall motion. Japanese Journal of Applied Physics, 2014, 53, 03DF03.	1.5	7
48	Novel Method of Evaluating Accurate Thermal Stability for MTJs Using Thermal Disturbance and its Demonstration for Single-/Double-Interface p-MTJ. IEEE Transactions on Magnetics, 2018, 54, 1-5.	2.1	7
49	Effect of surface modification treatment of buffer layer on thermal tolerance of synthetic ferrimagnetic reference layer in perpendicular-anisotropy magnetic tunnel junctions. Journal of Applied Physics, 2019, 126, .	2.5	7
50	Three-terminal magnetic tunneling junction device with perpendicular anisotropy CoFeB sensing layer. Journal of Applied Physics, 2014, 115, 17B750.	2.5	6
51	Change in chemical bonding state by thermal treatment in MgO-based magnetic tunnel junction observed by angle-resolved hard X-ray photoelectron spectroscopy. Journal of Applied Physics, 2019, 125, .	2.5	6
52	Influence of Hard Mask Materials on the Magnetic Properties of Perpendicular MTJs With Double CoFeB/MgO Interface. IEEE Transactions on Magnetics, 2020, 56, 1-4.	2.1	6
53	Enhancement of magnetic coupling and magnetic anisotropy in MTJs with multiple CoFeB/MgO interfaces for high thermal stability. AIP Advances, 2021, 11, .	1.3	6
54	Analysis of MTJ Edge Deformation Influence on Switching Current Distribution for Next-Generation High-Speed MRAMs. IEEE Transactions on Magnetics, 2009, 45, 3804-3807.	2.1	5

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55	Properties of perpendicular-anisotropy magnetic tunnel junctions fabricated over the bottom electrode contact. Japanese Journal of Applied Physics, 2015, 54, 04DM06.	1.5	5
56	Study on initial current leakage spots in CoFeB-capped MgO tunnel barrier by conductive atomic force microscopy. Japanese Journal of Applied Physics, 2016, 55, 04EE05.	1.5	5
57	Large Exchange Coupling in Synthetic Antiferromagnet With Ultrathin Seed Layer. IEEE Transactions on Magnetics, 2006, 42, 2636-2638.	2.1	4
58	STEM tomography study on structural features induced by MTJ processing. Applied Physics A: Materials Science and Processing, 2018, 124, 1.	2.3	4
59	Material Stack Design With High Tolerance to Process-Induced Damage in Domain Wall Motion Device. IEEE Transactions on Magnetics, 2014, 50, 1-4.	2.1	3
60	Effect of capping layer material on thermal tolerance of magnetic tunnel junctions with MgO/CoFeB-based free layer/MgO/capping layers. AIP Advances, 2019, 9, .	1.3	3
61	40 nm 1T1MTJ 128 Mb STT-MRAM With Novel Averaged Reference Voltage Generator Based on Detailed Analysis of Scaled-Down Memory Cell Array Design. IEEE Transactions on Magnetics, 2021, 57, 1-9.	2.1	3
62	Effect of surface modification treatment on top-pinned MTJ with perpendicular easy axis. AIP Advances, 2021, 11, .	1.3	3
63	Perpendicular Magnetic Tunnel Junctions With Four Anti-Ferromagnetically Coupled Co/Pt Pinning Layers. IEEE Transactions on Magnetics, 2022, 58, 1-5.	2.1	3
64	Magnetic tunneling junction with Fe/NiFeB free layer for magnetic logic circuits. Journal of Applied Physics, 2012, 111, 07C709.	2.5	2
65	A spin transfer torque magnetoresistance random access memory-based high-density and ultralow-power associative memory for fully data-adaptive nearest neighbor search with current-mode similarity evaluation and time-domain minimum searching. Japanese Journal of Applied Physics, 2017, 56, 04CF08.	1.5	2
66	1T-1MTJ Type Embedded STT-MRAM with Advanced Low-Damage and Short-Failure-Free RIE Technology down to 32 nm† MTJ Patterning. , 2018, , .		2
67	Critical Role of W Insertion Layer Sputtering Condition for Reference Layer on Magnetic and Transport Properties of Perpendicular-Anisotropy Magnetic Tunnel Junction. IEEE Transactions on Magnetics, 2019, , 1-4.	2.1	2
68	Effect of Magnetic Coupling Between Two CoFeB Layers on Thermal Stability in Perpendicular Magnetic Tunnel Junctions With MgO/CoFeB/Insertion Layer/CoFeB/MgO Free Layer. IEEE Transactions on Magnetics, 2022, 58, 1-6.	2.1	2
69	Scalability of Quad Interface p-MTJ for 1Å– nm STT-MRAM with 10 ns Low Power Write Operation, 10 Years Retention and Endurance &gt; 1011. , 2020, , .		2
70	Review of STT-MRAM circuit design strategies, and a 40-nm 1T-1MTJ 128Mb STT-MRAM design practice. , 2020, , .		2
71	Reduction of Writing Field Distribution in a Magnetic Random Access Memory With Toggle Switching. IEEE Transactions on Magnetics, 2007, 43, 3512-3516.	2.1	1
72	A delay circuit with 4-terminal magnetic-random-access-memory device for power-efficient time-domain signal processing. , 2014, , .		1

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73	Effect of metallic Mg insertion in CoFeB/MgO interface perpendicular magnetic tunnel junction on tunnel magnetoresistance ratio observed by Synchrotron x-ray diffraction. Journal of Vacuum Science and Technology B:Nanotechnology and Microelectronics, 2020, 38, 033801.	1.2	1
74	A free-extendible and ultralow-power nonvolatile multi-core associative coprocessor based on MRAM with inter-core pipeline scheme for large-scale full-adaptive nearest pattern searching. Japanese Journal of Applied Physics, 2020, 59, SGGB18.	1.5	1
75	Influence of Iridium Sputtering Conditions on the Magnetic Properties of Co/Pt-Based Iridium-Synthetic Antiferromagnetic Coupling Reference Layer. IEEE Transactions on Magnetics, 2022, 58, 1-5.	2.1	1
76	A 16Mb toggle MRAM with burst modes. , 2006, , .		0
77	Structural Analysis of CoFeB/MgO-Based Perpendicular MTJs With Junction Size of 20 nm by STEM Tomography. IEEE Transactions on Magnetics, 2021, 57, 1-7.	2.1	0
78	Improvement of Thermal Stability of MRAM Device with SiN Protective Film Deposited by HDP CVD. , 2007, , .		0