



United States (US) Patent Marking for Everspin Toggle MRAM products are identified below. The patents apply to all configurations and skus, unless stated differently. The products may be sold individually or as part of a solution. If you have any questions about this list, please contact our Patent Counsel: Dinesh Melwani - [dmelwani@bomcip.com](mailto:dmelwani@bomcip.com); 202.808.3497.

**Toggle MRAM Product Families covered by these patents include:**

MR256A08B	MR4A08B	MR25H256
MR256D08B	MR0A16A	MR25H10
MR256DL08B	MR2A16A	MR25H40
MR0A08B	MR4A16B	MR20H40
MROD08B	MR1A16A	MR25H128A
MRODL08B	MR3A16A	MR10Q010
MR2A08A	MR5A16A	

Patents listed in numerical order:

<b><u>Patent Number</u></b>	<b><u>Patent Title</u></b>
6205052	MAGNETIC ELEMENT WITH IMPROVED FIELD RESPONSE AND FABRICATING METHOD THEREOF
6392923	MAGNETORESISTIVE MIDPOINT GENERATOR AND METHOD
6418046	MRAM ARCHITECTURE AND SYSTEM
6445612	MRAM WITH MIDPOINT GENERATOR REFERENCE AND METHOD FOR READOUT
6545906	METHOD OF WRITING TO SCALABLE MAGNETORESISTANCE RANDOM ACCESS MEMORY ELEMENT
6549454	TMR MATERIAL HAVING A SUBSTANTIALLY SMOOTH AND CONTINUOUS ULTRA-THIN MAGNETIC LAYER
6657889	MEMORY HAVING WRITE CURRENT RAMP RATE CONTROL
6711052	MEMORY HAVING A PRECHARGE CIRCUIT AND METHOD THEREFOR
6711068	BALANCED LOAD MEMORY AND METHOD OF OPERATION
6714440	MEMORY ARCHITECTURE WITH WRITE CIRCUITRY AND METHOD THEREFOR
6714442	MRAM ARCHITECTURE WITH A GROUNDED WRITE BIT LINE AND ELECTRICALLY ISOLATED READ BIT LINE
6744663	CIRCUIT AND METHOD FOR READING A TOGGLE MEMORY CELL
6760266	SENSE AMPLIFIER AND METHOD FOR PERFORMING A READ OPERATION IN A MRAM
6784510	MAGNETORESISTIVE RANDOM ACCESS MEMORY DEVICE STRUCTURES AND METHODS FOR FABRICATING THE SAME
6801415	NANOCRYSTALLINE LAYERS FOR IMPROVED MRAM TUNNEL JUNCTIONS
6831312	AMORPHOUS ALLOYS FOR MAGNETIC DEVICES
6842365	WRITE DRIVER FOR A MAGNETORESISTIVE MEMORY
6881351	METHODS FOR CONTACTING CONDUCTING LAYERS OVERLYING MAGNETOELECTRONIC ELEMENTS OF MRAM DEVICES



<b><u>Patent Number</u></b>	<b><u>Patent Title</u></b>
6888743	MRAM ARCHITECTURE
6890770	MAGNETORESISTIVE RANDOM ACCESS MEMORY DEVICE STRUCTURES AND METHODS FOR FABRICATING THE SAME
6909631	MRAM AND METHODS FOR READING THE MRAM
6911156	METHODS FOR FABRICATING MRAM DEVICE STRUCTURES
6936763	MAGNETIC SHIELDING FOR ELECTRONIC CIRCUITS WHICH INCLUDE MAGNETIC MATERIALS
6943038	A METHOD FOR FABRICATING A FLUX CONCENTRATING SYSTEM FOR USE IN AN MAGNETOELECTRONICS DEVICE
6946697	SYNTHETIC ANTIFERROMAGNET STRUCTURES FOR USE IN MTJS IN MRAM TECHNOLOGY
7031183	MRAM DEVICE INTEGRATED WITH OTHER TYPES OF CIRCUITRY
7067331	METHOD OF MAKING AMORPHOUS ALLOYS FOR SEMICONDUCTOR DEVICE
7098495	MAGNETIC TUNNEL JUNCTION ELEMENT STRUCTURES AND METHODS FOR FABRICATING THE SAME
7105903	METHODS AND STRUCTURES FOR ELECTRICAL COMMUNICATION WITH AN OVERLYING ELECTRODE FOR A SEMICONDUCTOR ELEMENT
7144744	MAGNETORESISTIVE RANDOM ACCESS MEMORY DEVICE STRUCTURES AND METHODS FOR FABRICATING THE SAME
7184300	METHOD OF WRITING TO SCALABLE MAGNETORESISTANCE RANDOM ACCESS MEMORY ELEMENT
7224630	ANTIFUSE CIRCUIT
7370260	MRAM HAVING ERROR CORRECTION CODE CIRCUITRY AND METHOD THEREFOR
7476329	METHODS FOR CONTACTING CONDUCTING LAYERS OVERLYING MAGNETOELECTRONIC ELEMENTS OF MRAM DEVICES
7532533	ANTIFUSE CIRCUIT AND METHOD FOR SELECTIVELY PROGRAMMING THEREOF
7543211	TOGGLE MEMORY BURST
7635654	MAGNETIC TUNNEL JUNCTION DEVICE WITH IMPROVED BARRIER LAYER
7684161	METHODS AND APPARATUS FOR A SYNTHETIC ANTI-FERROMAGNET STRUCTURE WITH REDUCED TEMPERATURE DEPENDENCE
7829980	MAGNETORESISTIVE DEVICE AND METHOD OF PACKAGING SAME
8184476	RANDOM ACCESS MEMORY ARCHITECTURE INCLUDING MIDPOINT REFERENCE
9135970	TAMPER DETECTION AND RESPONSE IN A MEMORY DEVICE
9569640	TAMPER DETECTION AND RESPONSE IN A MEMORY DEVICE