

Everspin MRAM Magnetic Field Immunity

Everspin Technologies, Inc. is the worldwide leader in designing, manufacturing, and commercially shipping discrete and embedded MRAM memories into markets and applications where data persistence and integrity, low latency, and security are paramount.

Over 50 Million Everspin MRAM products are functioning reliably in discrete and embedded MRAM products deployed in data center, cloud storage, energy, industrial, automotive, and transportation products worldwide. This is over 2 trillion field device hours of reliable MRAM operation.

It is a major design objective that all Everspin MRAM be immune to any data modification due to ambient magnetic fields encountered in these and other applications where MRAM is an effective and valuable design element.

Case Studies

For more detailed descriptions of some current applications using Everspin MRAM, see the Case Studies on our web site: www.everspin.com.

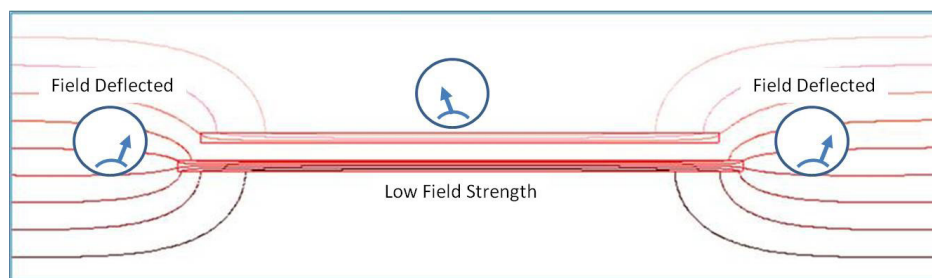
Everspin MRAM Magnetic Immunity Exceeds the IEC Magnetic Immunity Standard

The International Electrotechnical Commission (IEC) Standard IEC-61000-4-8 specifies that all electronics devices must function within a magnetic field of at least 13 Oersted (1,034 A/m).

All Everspin MRAM products have a Magnetic Immunity rating of at least 25 Oersted (2,000 A/m) under all operating and handling conditions.

Magnetic Shielding in the Package

All Everspin MRAM products contain embedded magnetic shielding within their packages. The shields are fabricated from high permeable metal which redirects ambient magnetic fields, significantly reducing field strength at the die.



Embedded Magnetic Shields

Magnetic Immunity (H_{max}) Specifications for Everspin MRAM

The maximum magnetic field immunity specification value is the demonstrated maximum magnetic field strength that the MRAM can be subjected to without affecting the memory data.

The H_{max} value for READ or Standby also applies to all unpowered handling cases for an MRAM, including manufacturing.

Table 1 – Parallel Interface 256Kb and 1Mbx8 MRAM Products

Magnetic Immunity (H_{max})				
MRAM Family Part Number	Mode	Temp Rating	Package	Max. Field (A/m)
MR256A08B	WRITE	All Ratings	All	2,000
MR0A08B	READ or Standby	All Ratings	All	8,000

All values are advisory. Please consult the latest Everspin product data sheet for current Magnetic Immunity values.

Table 2 – Parallel Interface 1Mbx16 and 4Mb MRAM Products

Magnetic Immunity (H_{max})					
MRAM Family Part Number	Mode	Temp Rating	Package	Max. Field (A/m)	
MR0A16A MR2A08A MR2A16A	WRITE	Commercial	TSOP2, BGA	2,000	
		Industrial and Extended	BGA	2,000	
			TSOP2	10,000	
	AEC-Q100 Grade 1	TSOP2	2,000		
	READ or Standby	READ or Standby	Commercial	TSOP2, BGA	8,000
			Industrial and Extended	BGA	8,000
				TSOP2	10,000
AEC-Q100 Grade 1			TSOP2	8,000	

All values are advisory. Please consult the latest Everspin product data sheet for current Magnetic Immunity values.

Table 3 – Parallel Interface 16Mb MRAM Products

Magnetic Immunity (H_{max})				
MRAM Family Part Number	Mode	Temp Rating	Package	Max. Field (A/m)
MR4A08B	WRITE	All Ratings	All	8,000
MR4A16B	READ or Standby	All Ratings	All	8,000

All values are advisory. Please consult the latest Everspin product data sheet for current Magnetic Immunity values.

Table 4 – Serial Peripheral Interface (SPI) MRAM Products

Magnetic Immunity (H_{max})				
MRAM Family Part Number	Mode	Temp Rating	Package	Max. Field (A/m)
MR25H256 MR25H10 MR20H40	WRITE	All Ratings	All	12,000
MR25H40 MR10Q010	READ or Standby	All Ratings	All	12,000

All values are advisory. Please consult the latest Everspin product data sheet for current Magnetic Immunity values.

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