

# EVERSPIN Technologies MRAM Memory



This product is RoHS compliant.

## MRAM (MAGNETORESISTIVE RANDOM ACCESS MEMORY) MEMORY

Everspin MRAM is a revolutionary memory that uses the magnetism of electron spin to provide non-volatility without wear-out. Everspin MRAM stores information in magnetic material integrated with silicon circuitry to deliver the speed of SRAM with the non-volatility of Flash in a single unlimited-endurance device. Everspin MRAM devices are designed to combine the best features of non-volatile memory and RAM to enable "instant-on" capability and power loss protection for an increasing number of electronic systems.

### Features:

- Non-Volatile: Data retention - ≥20 years
- Fast: Symmetrical read/write - 35ns
- Unlimited Endurance: Unlimited endurance - No wear-out mechanism
- Modular Integration: Easily integrated with CMOS
- Extended Temperatures: -40°C < T < 150°C operation demonstrated
- Highly Reliable: Intrinsic reliability exceeds 20 year lifetime at 125°C

### Serial MRAM

These devices offers serial EEPROM and serial Flash compatible read/write timing with no write delays and unlimited read/write endurance. Unlike other serial memories, both reads and writes can occur randomly in memory with no delay between writes. They are the ideal memory solution for applications that must store and retrieve data and programs quickly using a small number of I/O pins.



### Features:

- No write delays
- Block write protection
- Fast, simple SPI interface with up to 40MHz clock rate
- Automatic data protection on power loss
- Low current sleep mode
- Direct hardware replacement for serial EEPROM, Flash, FeRAM

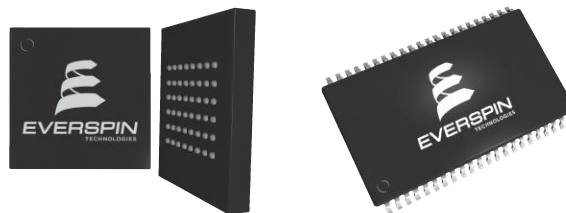
### ◆ Surface Mount Device

For quantities greater than listed, call for quote.

MOUSER STOCK NO.	Everspin Part No.	Case Type	Density	Organization	Max. Bus Speed (MHz)	Temperature Range (°C)	Supply Voltage (V)	Price Each			
								1	25	100	500
<b>SPI Mode</b>											
◆ 936-MR25H256CDC	MR25H256CDC	DFN-8 5x6mm	256K	32Kx8	40	-40 to +85	2.7-3.6	3.68	2.83	2.73	2.57
◆ 936-MR25H256MDC	MR25H256MDC	DFN-8 5x6mm	256K	32Kx8	40	-40 to +125	2.7-3.6	4.80	3.70	3.56	3.35
◆ 936-MR25H10CDC	MR25H10CDC	DFN-8 5x6mm	1M	128Kx8	40	-40 to +85	2.7-3.6	6.59	5.07	4.89	4.60
◆ 936-MR25H10MDC	MR25H10MDC	DFN-8 5x6mm	1M	128Kx8	40	-40 to +125	2.7-3.6	8.57	6.59	6.36	5.98
◆ 936-MR25H40CDC	MR25H40CDC	DFN-8 5x6mm	4M	512Kx8	40	-40 to +85	3.0-3.6	13.74	10.57	10.19	9.59

### Parallel MRAM

These devices offers SRAM compatible 35 ns read/write timing with unlimited endurance. Data is always non-volatile for greater than 20-years. Data is automatically protected on power loss by low-voltage inhibit circuitry to prevent writes with voltage out of specification. They are ideal memory solution for applications that must store and retrieve critical data and programs quickly.



### Features:

- SRAM compatible timing
- Unlimited read and write endurance
- Data always non-volatile for >20-years at temperature
- One memory that replaces FLASH, SRAM, EEPROM and BBSRAM in systems for simpler, more efficient designs
- Improves reliability by replacing battery-backed SRAM

### ◆ Surface Mount Device

For quantities greater than listed, call for quote.

MOUSER STOCK NO.	Everspin Part No.	Case Type	Density	Organization	Access Time (ns)	Temperature Range (°C)	Supply Voltage (V)	Price Each			
								1	25	100	500
◆ 936-MR256A08BCMA35	MR256A08BCMA35	BGA-48	256K	32Kx8	35	-40 to +85	3.0-3.6	5.50	4.23	4.08	3.83
◆ 936-MR256A08BCYS35	MR256A08BCYS35	TSOP-44	256K	32Kx8	35	-40 to +85	3.0-3.6	5.50	4.23	4.08	3.83
◆ 936-MR256A08BMA35	MR256A08BMA35	BGA-48	256K	32Kx8	35	0 to +70	3.0-3.6	5.13	3.95	3.81	3.58
◆ 936-MR256A08BSO35	MR256A08BSO35	SOIC-32	256K	32Kx8	35	0 to +70	3.0-3.6	5.13	3.95	3.81	3.58
◆ 936-MR256A08BYS35	MR256A08BYS35	TSOP-44	256K	32Kx8	35	0 to +70	3.0-3.6	5.13	3.95	3.81	3.58
◆ 936-MR256D08BMA45	MR256D08BMA45	BGA-48	256K	32Kx8	45	0 to +70	3.0-3.6	5.13	3.95	3.81	3.58
◆ 936-MR0A08BCMA35	MR0A08BCMA35	BGA-48	1M	128Kx8	35	-40 to +85	3.0-3.6	11.94	9.18	8.86	8.33
◆ 936-MR0A08BCYS35	MR0A08BCYS35	TSOP-44	1M	128Kx8	35	-40 to +85	3.0-3.6	11.94	9.18	8.86	8.33
◆ 936-MR0A08BMA35	MR0A08BMA35	BGA-48	1M	128Kx8	35	0 to +70	3.0-3.6	11.17	8.60	8.29	7.80
◆ 936-MR0A08BSO35	MR0A08BSO35	SOIC-32	1M	128Kx8	35	0 to +70	3.0-3.6	11.17	8.60	8.29	7.80
◆ 936-MR0A08BYS35	MR0A08BYS35	TSOP-44	1M	128Kx8	35	0 to +70	3.0-3.6	11.17	8.60	8.29	7.80
◆ 936-MR0D08BMA45	MR0D08BMA45	BGA-48	1M	128Kx8	45	0 to +70	3.0-3.6	11.17	8.60	8.29	7.80
◆ 936-MR0A16ACMA35	MR0A16ACMA35	BGA-48	1M	64Kx16	35	-40 to +85	3.0-3.6	11.94	9.18	8.86	8.33
◆ 936-MR0A16ACYS35	MR0A16ACYS35	TSOP-44	1M	64Kx16	35	-40 to +85	3.0-3.6	11.94	9.18	8.86	8.33
◆ 936-MR0A16AMA35	MR0A16AMA35	BGA-48	1M	64Kx16	35	0 to +70	3.0-3.6	11.17	8.60	8.29	7.80
◆ 936-MR0A16AVMA35	MR0A16AVMA35	BGA-48	1M	64Kx16	35	-40 to +105	3.0-3.6	13.96	10.74	10.35	9.74
◆ 936-MR0A16AVYS35	MR0A16AVYS35	TSOP-44	1M	64Kx16	35	-40 to +105	3.0-3.6	13.96	10.74	10.35	9.74
◆ 936-MR0A16AYS35	MR0A16AYS35	TSOP-44	1M	64Kx16	35	0 to +70	3.0-3.6	11.17	8.60	8.29	7.80
◆ 936-MR2A16ACMA35	MR2A16ACMA35	BGA-48	4M	256Kx16	35	-40 to +85	3.0-3.6	23.90	18.38	17.73	16.67
◆ 936-MR2A16ACYS35	MR2A16ACYS35	TSOP-44	4M	256Kx16	35	-40 to +85	3.0-3.6	23.90	18.38	17.73	16.67
◆ 936-MR2A16AMA35	MR2A16AMA35	BGA-48	4M	256Kx16	35	0 to +70	3.0-3.6	22.22	17.09	16.48	15.50
◆ 936-MR2A16AYS35	MR2A16AYS35	TSOP-44	4M	256Kx16	35	0 to +70	3.0-3.6	22.22	17.09	16.48	15.50
◆ 936-MR2A08ACMA35	MR2A08ACMA35	BGA-48	4M	512Kx8	35	-40 to +85	3.0-3.6	23.90	18.38	17.73	16.67
◆ 936-MR2A08ACYS35	MR2A08ACYS35	TSOP-44	4M	512Kx8	35	-40 to +85	3.0-3.6	23.90	18.38	17.73	16.67
◆ 936-MR2A08AMA35	MR2A08AMA35	BGA-48	4M	512Kx8	35	0 to +70	3.0-3.6	22.22	17.09	16.48	15.50
◆ 936-MR2A08AMYS35	MR2A08AMYS35	TSOP-44	4M	512Kx8	35	-40 to +125	3.0-3.6	33.34	25.65	24.73	23.26
◆ 936-MR2A08AYS35	MR2A08AYS35	TSOP-44	4M	512Kx8	35	0 to +70	3.0-3.6	22.22	17.09	16.48	15.50
◆ 936-MR2A16AVYS35	MR2A16AVYS35	TSOP-44	4M	256Kx16	35	-40 to +105	3.0-3.6	27.77	21.36	20.60	19.38
◆ 936-MR4A08BCYS35	MR4A08BCYS35	TSOP-54	16M	2Mx8	35	-40 to +85	3.0-3.6	35.91	27.62	26.64	25.05
◆ 936-MR4A08BYS35	MR4A08BYS35	TSOP-54	16M	2Mx8	35	0 to +70	3.0-3.6	33.42	25.70	24.79	23.31
◆ 936-MR4A16BCMA35	MR4A16BCMA35	BGA-48	16M	1Mx16	35	-40 to +85	3.0-3.6	35.91	27.62	26.64	25.05
◆ 936-MR4A16BCYS35	MR4A16BCYS35	TSOP-54	16M	1Mx16	35	-40 to +85	3.0-3.6	35.91	27.62	26.64	25.05
◆ 936-MR4A16BMA35	MR4A16BMA35	BGA-48	16M	1Mx16	35	0 to +70	3.0-3.6	33.42	25.70	24.79	23.31
◆ 936-MR4A16BYS35	MR4A16BYS35	TSOP-54	16M	1Mx16	35	0 to +70	3.0-3.6	33.42	25.70	24.79	23.31