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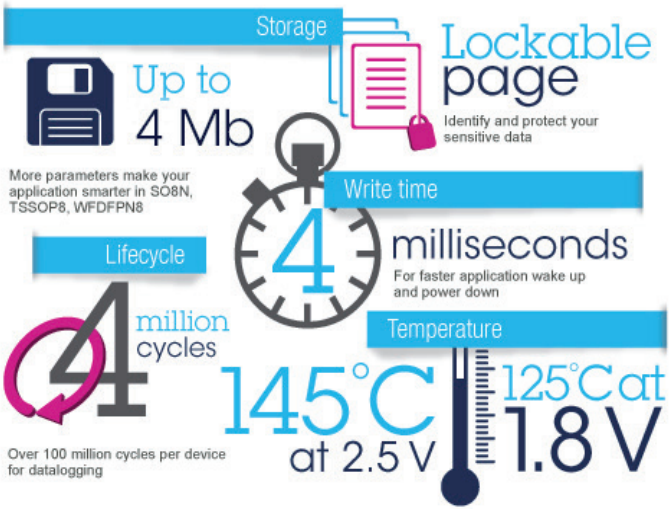
Advanced Automotive EEPROM

Introduction to Advanced Automotive EEPROM

Serial EEPROM is the most flexible type of non-volatile memory. When many parameters, heavy cycling requirements, safe data retention and high temperature mission profiles are required, EEPROM is the ideal product for high-quality and flexible parameter storage.

For the past 15 years, ST's automotive serial EEPROM has been ranked #1 offering a wide portfolio covering automotive needs and requirements. ST's Advanced Automotive series is designed to answer new automotive trends while providing increased robustness with AEC-Q100 Grade 0 qualification, PPAP Level 3 compliancy, zero-defect built-in quality and embedded Error Correction Code for safe and long-lasting data retention.

Three industry standard serial buses are supported: I2C, SPI and Microwire.



Thanks to an advanced proprietary manufacturing process, ST's Advanced Automotive series proposes an enlarged portfolio and offers a complete range of densities from 1 Kbit to 4 Mbits:

- Available in standard SO8N, TSSOP8 and small leadless DFN8 packages
- Temperature trends with 125 °C and 145 °C in-package solutions
- Operating from 5 V down to 1.8 V for compatibility with advanced controllers used in ADAS applications
- Ensuring fast application wake-up with 20 MHz for SPI and 1 MHz for I2C as well as data storage in 4 ms
- Supporting datalogging and event recording with 4 million E/W cycles at 25 °C (per byte) as well as over 100 million cycles per device
- Offering best-in-class retention times of 100 years at 25 °C and 50 years at 125 °C

Advanced Automotive series also offer an embedded lockable identification page to identify the EEPROM device and safely store the most sensitive parameters. With a specific set of instructions, data such as traceability, serial number, as well as unique ID can be stored and locked.

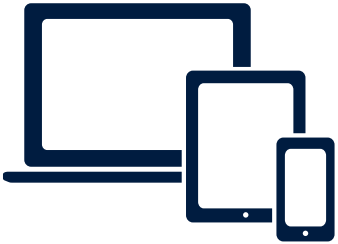
IBIS and Verilog models are available in the CAD resources of EEPROM webpages.

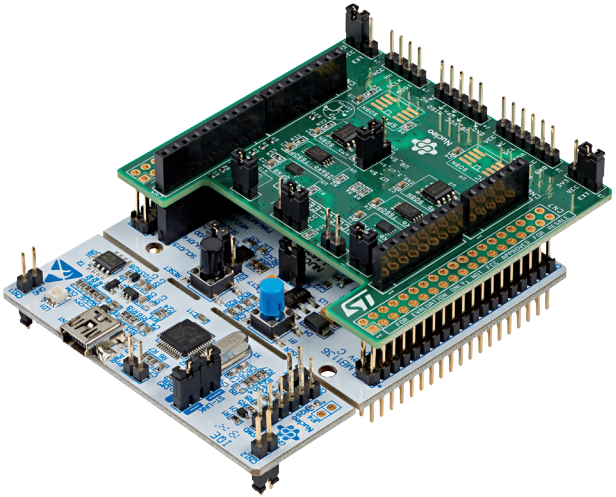
EEPROM

For easy product selection, donwload our ST-EEPROM-Finder APP

GET IT ON Google Play

Available on the App Store





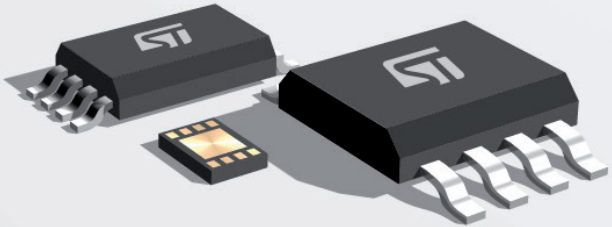
Visit st.com to discover our X-Nucleo-EEPRMA2 shield for fast prototyping.

Package options

Name	Package	Overall width (max)	Overall length (max)	Projected PCB area (mm²)	Overall height (max)	Pitch	Weight (mg)	Number of pins/ balls	Comments
SO8N		5	6.2	31	1.75	1.27	80	8	
TSSOP8		3.1	6.6	20	1.2	0.65	34	8	
DFN8		2.1	3.1	6.5	0.8	0.5	22	8	Leadless package

All dimensions in mm

3D package models are available in the CAD resources of EEPROM webpages.



Automotive EEPROM Portfolio

SPI

All products are AEC-Q100 qualified and PPAP Level 3-compliant

Part number	Storage capacity (Kbit)	Temperature range (°C)	Power supply range (V)	Max. clock frequency (MHz)[1]	Package options [2]		
					SO8N	TSSOP8	DFN8
M95020-A125	2	-40 to 125	1.7 to 5.5	20	X	X	X
M95040-A125	4	-40 to 125	1.7 to 5.5	20	X	X	X
M95080-A125	8	-40 to 125	1.7 to 5.5	20	X	X	X
M95160-A125	16	-40 to 125	1.7 to 5.5	20	X	X	X
M95320-A125	32	-40 to 125	1.7 to 5.5	20	X	X	X
M95640-A125	64	-40 to 125	1.7 to 5.5	20	X	X	X
M95128-A125	128	-40 to 125	1.7 to 5.5	20	X	X	X
M95256-A125	256	-40 to 125	1.7 to 5.5	20	X	X	X
M95512-A125	512	-40 to 125	1.7 to 5.5	16	X	X	X
M95M01-A125	1024	-40 to 125	2.5 to 5.5	16	X	X	
M95M02-A125	2048	-40 to 125	2.5 to 5.5	5	X		
M95M04-A125	4096	-40 to 125	2.9 to 5.5	10	X	X	

SPI (CONT'D)

All products are AEC-Q100 qualified and PPAP Level 3-compliant

Part number	Storage capacity (Kbit)	Temperature range (°C)	Power supply range (V)	Max. clock frequency (MHz)[1]	Package options [2]		
					SO8N	TSSOP8	DFN8
M95040-A145	4	-40 to 145	2.5 to 5.5	10		X	
M95080-A145	8	-40 to 145	2.5 to 5.5	10		X	
M95160-A145	16	-40 to 145	2.5 to 5.5	10		X	
M95320-A145	32	-40 to 145	2.5 to 5.5	10		X	
M95640-A145	64	-40 to 145	2.5 to 5.5	10		X	
M95128-A145	128	-40 to 145	2.5 to 5.5	10	X	X	
M95256-A145	256	-40 to 145	2.5 to 5.5	10		X	
M95512-A145	512	-40 to 145	2.5 to 5.5	10		X	
M95M01-A145	1024	-40 to 145	2.5 to 5.5	10		X	
M95M04-A145	4096	-40 to 145	2.9 to 5.5	10		X	

Notes:

1. The clock frequency value depends on the Vcc applied. The values given here are based on a 5 V supply.
2. For more options contact your nearest ST sales office or online support at st.com.

All products benefit from a lockable identification page and support datalogging and event recording with 4 million E/W cycles at 25 °C, 1.2 million at 85 °C and 0.4 million at 145 °C (per byte) as well as over 100 million cycles per device.

I2C

All products are AEC-Q100 qualified and PPAP Level 3-compliant

Part number	Storage capacity (Kbit)	Temperature range (°C)	Power supply range (V)	Max. clock frequency (MHz)	Package options		
					SO8N	TSSOP8	DFN8
M24C02-A125	2	-40 to 125	1.7 to 5.5	1	X	X	X
M24C04-A125	4	-40 to 125	1.7 to 5.5	1	X	X	X
M24C08-A125	8	-40 to 125	1.7 to 5.5	1	X	X	X
M24C16-A125	16	-40 to 125	1.7 to 5.5	1	X	X	X
M24C32-A125	32	-40 to 125	1.7 to 5.5	1	X	X	X
M24C64-A125	64	-40 to 125	1.7 to 5.5	1	X	X	X
M24128-A125	128	-40 to 125	1.7 to 5.5	1	X	X	X
M24256-A125	256	-40 to 125	1.7 to 5.5	1	X	X	X
M24512-A125	512	-40 to 125	1.7 to 5.5	1	X	X	X
M24M01-A125	1024	-40 to 125	2.5 to 5.5	1	X	X	
M24M02-A125	2048	-40 to 125	2.5 to 5.5	1	X		

All products benefit from a lockable identification page and support datalogging and event recording with 4 million E/W cycles at 25 °C, 1.2 million at 85 °C and 0.4 million at 145 °C (per byte) as well as over 100 million cycles per device.

MICROWIRE

All products are AEC-Q100 qualified and PPAP Level 3-compliant

Root part number	Storage capacity (Kbit)	Temperature range (°C)	Power supply range (V)	Clock frequency max (MHz)	Package options		Specific features
					SO8N	TSSOP8	
M93C46-A125	1	-40 to 125	1.8 to 5.5	2	X	X	8- or 16-bit organization
M93C56-A125	2	-40 to 125	1.8 to 5.5	2	X	X	8- or 16-bit organization
M93C66-A125	4	-40 to 125	1.8 to 5.5	2	X	X	8- or 16-bit organization
M93C76-A125	8	-40 to 125	1.8 to 5.5	2	X	X	8- or 16-bit organization
M93C86-A125	16	-40 to 125	1.8 to 5.5	2	X	X	8- or 16-bit organization

All products support datalogging and event recording with 4 million E/W cycles at 25 °C, 1.2 million at 85 °C and 0.4 million at 145 °C (per byte) as well as over 100 million cycles per device.

Please check for up-to-date information on our website www.st.com/advautoeeeprom

Ordering Information

Family

M24	I²C Serial Bus
M95	SPI Serial Bus
M35	ASSP
M93C	MICROWIRE Serial Bus

Density

	I²C	SPI	MICROWIRE
1 Kbit	C01	010	46
2 Kbit	C02	020	56
4 Kbit	C04	040	66
8 Kbit	C08	080	76
16 Kbit	C16	160	86
32 Kbit	C32	320	
64 Kbit	C64	640	
128 Kbit	128	128	
256 Kbit	256	256	
512 Kbit	512	512	
1 Mbit	M01	M01	
2 Mbit	M02	M02	
4 Mbit	M04	M04	

Lockable page

D	Additional lockable identification page

Voltage range (V)

R	1.7 to 5.5
W	2.5 to 5.5

Package

MN	SO8N
DW	TSSOP8
MF	DFN8

Temperature range (°C)

3	-40 to 125
4	-40 to 145

Packing

T	Tape & Reel
Blank	Tube

Plating

P, G	Legacy digit for RoHS-compliant and halogen-free

Process

K	F8H
V	F9V

Notes

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MIX
Paper from responsible sources
FSC® C003379
www.fsc.org

Order code: SGAUEEPROM0521