ABLIC
MinebeaMitsumi Group

Product Catalog

Memory ICs

2023

ABLIC Inc.

S-24C02D/04D/08D/16D

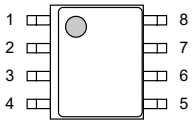
2-WIRE SERIAL E²PROM

Features

- Operation voltage range
  - Read: 1.7 V to 5.5 V
  - Write: 1.7 V to 5.5 V
- Operation frequency:
  - 1.0 MHz max. (V_{CC} = 2.5 V to 5.5 V)
  - 400 kHz max. (V_{CC} = 1.7 V to 5.5 V)
- Write time: 5.0 ms max.
- Page write
  - S-24C02D: 8 bytes / page
  - S-24C04D: 16 bytes / page
  - S-24C08D: 16 bytes / page
  - S-24C16D: 16 bytes / page
- Sequential read
- Noise suppression:
  Schmitt trigger and noise filter on input pins (SCL, SDA)
- Write protect function during low power supply voltage
- Endurance: 10^6 cycle / word*1 (Ta = +25 C)
- Data retention: 100 years (Ta = +25 C)
- Memory capacity
  - S-24C02D: 2 K-bit
  - S-24C04D: 4 K-bit
  - S-24C08D: 8 K-bit
  - S-24C16D: 16 K-bit
- Write protect: 100%
- Initial delivery state: FFh
- Operation temperature range: Ta = –40°C to +85°C
- Lead-free (Sn 100%), halogen-free

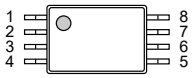
***1.** For each address (Word: 8-bit)

8-Pin SOP (JEDEC)



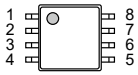
	S-24C02D	S-24C04D	S-24C08D	S-24C16D
1	A0	NC	NC	NC
2	A1	A1	NC	NC
3	A2	A2	A2	NC
4	GND	GND	GND	GND
5	SDA	SDA	SDA	SDA
6	SCL	SCL	SCL	SCL
7	WP	WP	WP	WP
8	VCC	VCC	VCC	VCC

8-Pin TSSOP



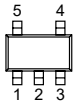
	S-24C02D	S-24C04D	S-24C08D	S-24C16D
1	A0	NC	NC	NC
2	A1	A1	NC	NC
3	A2	A2	A2	NC
4	GND	GND	GND	GND
5	SDA	SDA	SDA	SDA
6	SCL	SCL	SCL	SCL
7	WP	WP	WP	WP
8	VCC	VCC	VCC	VCC

TMSOP-8



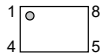
	S-24C02D	S-24C04D	S-24C08D	S-24C16D
1	A0	NC	NC	NC
2	A1	A1	NC	NC
3	A2	A2	A2	NC
4	GND	GND	GND	GND
5	SDA	SDA	SDA	SDA
6	SCL	SCL	SCL	SCL
7	WP	WP	WP	WP
8	VCC	VCC	VCC	VCC

SOT-23-5



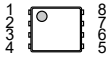
1	SCL
2	GND
3	SDA
4	VCC
5	WP

DFN-8(2030)



	S-24C02D	S-24C04D	S-24C08D	S-24C16D
1	A0	NC	NC	NC
2	A1	A1	NC	NC
3	A2	A2	A2	NC
4	GND	GND	GND	GND
5	SDA	SDA	SDA	SDA
6	SCL	SCL	SCL	SCL
7	WP	WP	WP	WP
8	VCC	VCC	VCC	VCC

SNT-8A



	S-24C02D	S-24C04D	S-24C08D	S-24C16D
1	A0	NC	NC	NC
2	A1	A1	NC	NC
3	A2	A2	A2	NC
4	GND	GND	GND	GND
5	SDA	SDA	SDA	SDA
6	SCL	SCL	SCL	SCL
7	WP	WP	WP	WP
8	VCC	VCC	VCC	VCC

S-24C32C/64C

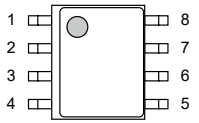
2-WIRE SERIAL E²PROM

Features

- Operating voltage range Read: 1.6 V to 5.5 V
  Write: 1.7 V to 5.5 V
- Page write: 32 bytes / page
- Sequen ial read
- Operation frequency: 400 kHz (V_{CC} = 1.6 V to 5 5 V)
- Write time: 5.0 ms max.
- Noise suppression: Schmitt trigger and noise filter on input pins (SCL, SDA)
- Write protect func ion during the low power supply voltage
- Endurance: 10^6cycles / word*1 (Ta = +25°C)
- Data retention: 100 years (Ta = +25°C)
- Memory capacity S-24C32C: 32 K-bit
  S-24C64C: 64 K-bit
- Write protect: 100%
- Initial shipment data: FFh
- Lead-free (Sn 100%), halogen-free*2

***1.** For each address (Word: 8-bit)
***2.** Refer to "■ **Product Name Structure**" for details.

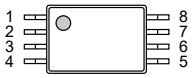
8-Pin SOP (JEDEC)



S-24C32C/64C

1	A0
2	A1
3	A2
4	GND
5	SDA
6	SCL
7	WP
8	VCC

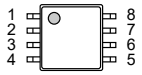
8-Pin TSSOP



S-24C32C/64C

1	A0
2	A1
3	A2
4	GND
5	SDA
6	SCL
7	WP
8	VCC

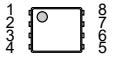
TMSOP-8



S-24C32C/64C

1	A0
2	A1
3	A2
4	GND
5	SDA
6	SCL
7	WP
8	VCC

SNT-8A



S-24C32C

1	A0
2	A1
3	A2
4	GND
5	SDA
6	SCL
7	WP
8	VCC

S-24C128C

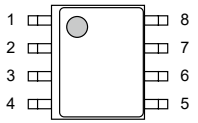
2-WIRE SERIAL E²PROM

Features

- Operating voltage range Read: 1.6 V to 5.5 V
  Write: 1.7 V to 5.5 V
- Page write: 64 bytes / page
- Sequential read
- Operation frequency: 400 kHz (V_{CC} = 1.6 V to 5.5 V)
- Write ime: 5 0 ms max.
- Noise suppression: Schmitt trigger and noise filter on input pins (SCL, SDA)
- Write protect function during the low power supply voltage
- Endurance: 10^6cycles / word*1 (Ta = +25°C)
- Data reten ion: 100 years (Ta = +25°C)
- Memory capacity: 128 K-bit
- Write protect: 100%
- Initial shipment data: FFh
- Lead-free (Sn 100%), halogen-free*2

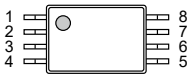
***1.** For each address (Word: 8-bit)
***2.** Refer to "■ **Product Name Structure**" for details.

8-Pin SOP (JEDEC)



1	A0
2	A1
3	A2
4	GND
5	SDA
6	SCL
7	WP
8	VCC

8-Pin TSSOP



1	A0
2	A1
3	A2
4	GND
5	SDA
6	SCL
7	WP
8	VCC

S-24C256C

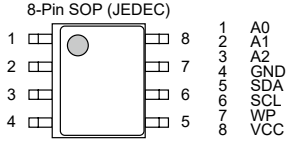
2-WIRE SERIAL E²PROM

Features

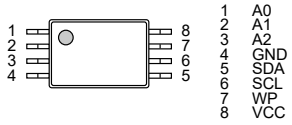
- Operating voltage range: Read: 1.6 V to 5.5 V; Write: 1.7 V to 5.5 V
- Page write: 64 bytes / page
- Sequen ial read
- Operation frequency: 1.0 MHz (V_{CC} = 2.5 V to 5.5 V); 400 kHz (V_{CC} = 1.6 V to 2.5 V)
- Write time: 5.0 ms max.
- Noise suppression: Schmitt trigger and noise filter on input pins (SCL, SDA)
- Write protect func ion during the low power supply voltage
- Endurance: 10^6cycles / unit*1 (Ta = +25°C)
- Data retention: 100 years (Ta = +25°C)
- Memory capacity: 256 K-bit
- Write protect: 100%
- Initial shipment data: FFh
- Lead-free (Sn 100%), halogen-free*2

***1.** For each unit (unit: the 4 bytes with the same address of W14 to W2)
***2.** Refer to "■ **Product Name Structure**" for details.

8-Pin SOP (JEDEC)



8-Pin TSSOP



S-24C512C

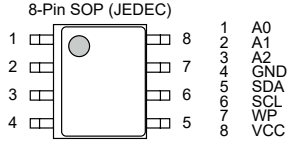
2-WIRE SERIAL E²PROM

Features

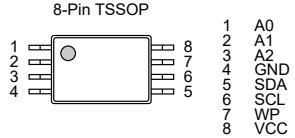
- Operating voltage range: Read: 1.6 V to 5 5 V; Write: 1.7 V to 5 5 V
- Page write: 128 bytes / page
- Sequential read
- Operation frequency: 1.0 MHz (V_{CC} = 2.5 V to 5.5 V); 400 kHz (V_{CC} = 1.6 V to 2.5 V)
- Write ime: 5.0 ms max.
- Noise suppression: Schmitt trigger and noise filter on input pins (SCL, SDA)
- Write protect function during the low power supply voltage
- Endurance: 10^6 cycles / unit*1 (Ta = +25°C)
- Data reten ion: 100 years (Ta = +25°C)
- Memory capacity: 512 K-bit
- Write protect: 100%
- Initial shipment data: FFh
- Lead-free (Sn 100%), halogen-free*2

***1.** For each unit (unit: the 4 bytes wi h the same address of W15 to W2)
***2.** Refer to "■ **Product Name Structure**" for details.

8-Pin SOP (JEDEC)



8-Pin TSSOP



S-24CM01C

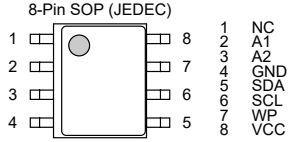
2-WIRE SERIAL E²PROM

Features

- Operating voltage range: Read: 1.6 V to 5.5 V; Write: 1.7 V to 5.5 V
- Page write: 256 bytes / page
- Sequential read
- Operation frequency: 1.0 MHz (V_{CC} = 2.5 V to 5.5 V); 400 kHz (V_{CC} = 1.6 V to 2.5 V)
- Write time: 5.0 ms max.
- Noise suppression: Schmitt trigger and noise filter on input pins (SCL, SDA)
- Write protect function during the low power supply voltage
- Endurance: 10^6cycles / unit*1 (Ta = +25°C)
- Data retention: 100 years (Ta = +25°C)
- Memory capacity: 1 M-bit
- Write protect: 100%
- Initial shipment data: FFh
- Lead-free (Sn 100%), halogen-free*2

***1.** For each unit (unit: the 4 bytes with the same address of P0, W15 to W2)
***2.** Refer to "■ **Product Name Structure**" for details.

8-Pin SOP (JEDEC)



S-25C010A/020A/040A

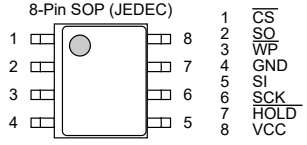
SPI SERIAL E²PROM

Features

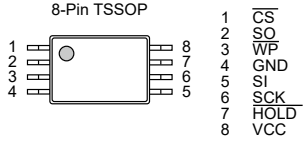
- Operating voltage range: Read 1.6 V to 5.5 V; Write 1.7 V to 5.5 V
- Operation frequency: 5.0 MHz (V_{CC} = 2.5 V to 5.5 V)
- Write time: 4.0 ms max.
- SPI mode (0, 0) and (1, 1)
- Page write: 16 bytes / page
- Sequential read
- Write protect: Software, Hardware
  Protect area: 25%, 50%, 100%
- Monitors write to the memory by a status register
- Function to prevent malfunction by monitoring clock pulse
- Write protect function during the low power supply
- CMOS schmitt input ($\overline{CS}$, SCK, SI, $\overline{WP}$, $\overline{HOLD}$)
- Endurance: 10^6cycles / word*1 (Ta = +25°C)
- Data retention: 100 years (Ta = +25°C)
- Memory capacity: S-25C010A 1 K-bit; S-25C020A 2 K-bit; S-25C040A 4 K-bit
- Initial delivery state: FFh, BP1 = 0, BP0 = 0
- Operation temperature range: Ta = –40°C to +85 C
- Lead-free, Sn 100%, halogen-free*2

***1.** For each address (Word: 8-bit)
***2.** Refer to "■ **Product Name Structure**" for details.

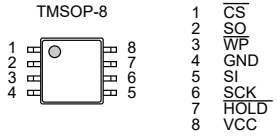
8-Pin SOP (JEDEC)



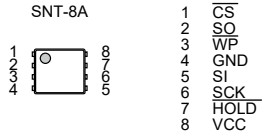
8-Pin TSSOP



TMSOP-8



SNT-8A



S-25C080A

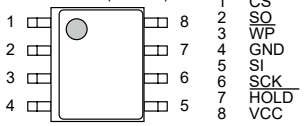
SPI SERIAL E²PROM

Features

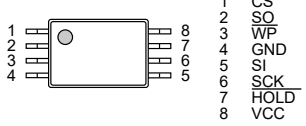
- Operating voltage range: Read 1.6 V to 5.5 V
  Write 1.7 V to 5.5 V
- Operation frequency: 5.0 MHz (V_{CC} = 2.5 V to 5.5 V)
- Write time: 4.0 ms max.
- SPI mode (0, 0) and (1, 1)
- Page write: 32 bytes / page
- Sequential read
- Write protect: Software, Hardware
  Protect area: 25%, 50%, 100%
- Monitors write to the memory by a status register
- Function to prevent malfunction by monitoring clock pulse
- Write protect function during the low power supply
- CMOS schmitt input ($\overline{CS}$, SCK, SI, $\overline{WP}$, $\overline{HOLD}$)
- Endurance: 10^6cycles / word*1 (Ta = +25°C)
- Data retention: 100 years (Ta = +25°C)
- Memory capacity: 8 K-bit
- Initial delivery state: FFh, SRWD = 0, BP1 = 0, BP0 = 0
- Operation temperature range: Ta = −40°C to +85°C
- Lead-free, Sn 100%, halogen-free*2

***1.** For each address (Word: 8-bit)
***2.** Refer to "■ **Product Name Structure**" for details.

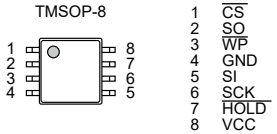
8-Pin SOP (JEDEC)



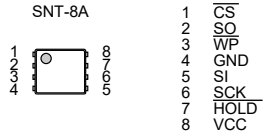
8-Pin TSSOP



TMSOP-8



SNT-8A



S-25C160A

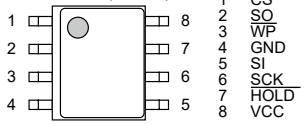
SPI SERIAL E²PROM

Features

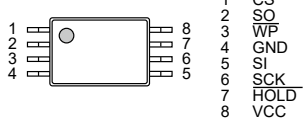
- Operating voltage range: Read 1.6 V to 5.5 V
  Write 1.7 V to 5.5 V
- Operation frequency: 5.0 MHz (V_{CC} = 2.5 V to 5.5 V)
- Write time: 5.0 ms max.
- SPI mode (0, 0) and (1, 1)
- Page write: 32 bytes / page
- Sequential read
- Write protect: Software, Hardware
  Protect area: 25%, 50%, 100%
- Monitors write to the memory by a status register
- Function to prevent malfunction by monitoring clock pulse
- Write protect function during the low power supply
- CMOS schmitt input ($\overline{CS}$, SCK, SI, $\overline{WP}$, $\overline{HOLD}$)
- Endurance: 10^6cycles / word*1 (Ta = +25°C)
- Data retention: 100 years (Ta = +25°C)
- Memory capacity: 16 K-bit
- Initial delivery state: FFh, SRWD = 0, BP1 = 0, BP0 = 0
- Operation temperature range: Ta = −40°C to +85 C
- Lead-free, Sn 100%, halogen-free*2

***1.** For each address (Word: 8-bit)
***2.** Refer to "■ **Product Name Structure**" for details.

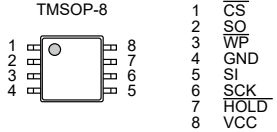
8-Pin SOP (JEDEC)



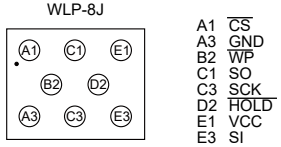
8-Pin TSSOP



TMSOP-8



WLP-8J



S-25C320A/640A

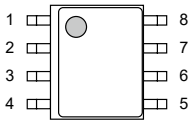
SPI SERIAL E²PROM

Features

- Operating voltage range: Read 1.6 V to 5.5 V
  Write 1.7 V to 5.5 V
- Operation frequency: 5.0 MHz (V_{CC} = 2.5 V to 5.5 V)
- Write time: 5.0 ms max.
- SPI mode (0, 0) and (1, 1)
- Page write: 32 bytes / page
- Sequential read
- Write protect: Software, Hardware
  Protect area: 25%, 50%, 100%
- Monitors Write to the memory by a status register
- Function to prevent malfunction by monitoring clock pulse
- Write protect function during the low power supply voltage
- CMOS schmitt input ($\overline{CS}$, SCK, SI, $\overline{WP}$, $\overline{HOLD}$)
- Endurance: 10^6cycles / word*1 (Ta = +25°C)
- Data retention: 100 years (Ta = +25°C)
- Memory capacity: S-25C320A 32 K-bit
  S-25C640A 64 K-bit
- Initial delivery state: FFh, SRWD = 0, BP1 = 0, BP0 = 0
- Operation temperature range: Ta = −40°C to +85 C
- Lead-free (Sn 100%), halogen-free*2

***1.** For each address (Word: 8-bit)
***2.** Refer to "■ **Product Name Structure**" for details.

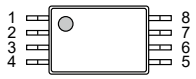
8-Pin SOP (JEDEC)



S-25C320A/640A

1	$\overline{CS}$
2	$\overline{SO}$
3	$\overline{WP}$
4	GND
5	SI
6	SCK
7	$\overline{HOLD}$
8	VCC

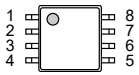
8-Pin TSSOP



S-25C320A/640A

1	$\overline{CS}$
2	$\overline{SO}$
3	$\overline{WP}$
4	GND
5	SI
6	SCK
7	$\overline{HOLD}$
8	VCC

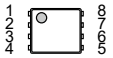
TMSOP-8



S-25C320A/640A

1	$\overline{CS}$
2	$\overline{SO}$
3	$\overline{WP}$
4	GND
5	SI
6	SCK
7	$\overline{HOLD}$
8	VCC

SNT-8A



S-25C320A

1	$\overline{CS}$
2	$\overline{SO}$
3	$\overline{WP}$
4	GND
5	SI
6	SCK
7	$\overline{HOLD}$
8	VCC

S-25C128A

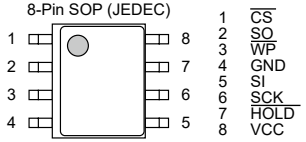
SPI SERIAL E²PROM

Features

- Operating voltage range: Read 1.6 V to 5.5 V
  Write 1.7 V to 5.5 V
- Operation frequency: 5.0 MHz (V_{CC} = 2.5 V to 5.5 V)
- Write time: 5.0 ms max.
- SPI mode (0, 0) and (1, 1)
- Page write: 64 bytes / page
- Sequential read
- Write protect: Software, Hardware
  Protect area: 25%, 50%, 100%
- Monitors write to the memory by a status register
- Function to prevent malfunction by monitoring clock pulse
- Write protect function during the low power supply voltage
- CMOS schmitt input （ $\overline{CS}$, SCK, SI, $\overline{WP}$, $\overline{HOLD}$ ）
- Endurance: 10^6cycles / word*1 (Ta = +25°C)
- Data retention: 100 years (Ta = +25°C)
- Memory capacity: 128 K-bit
- Initial delivery state: FFh, SRWD = 0, BP1 = 0, BP0 = 0
- Operation temperature range: Ta = −40°C to +85 C
- Lead-free (Sn 100%), halogen-free*2

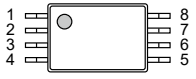
***1.** For each address (Word: 8-bit)
***2.** Refer to "■ **Product Name Structure**" for details.

8-Pin SOP (JEDEC)



1	$\overline{CS}$
2	$\overline{SO}$
3	$\overline{WP}$
4	GND
5	SI
6	SCK
7	$\overline{HOLD}$
8	VCC

8-Pin TSSOP



1	$\overline{CS}$
2	$\overline{SO}$
3	$\overline{WP}$
4	GND
5	SI
6	SCK
7	$\overline{HOLD}$
8	VCC

S-25C256A

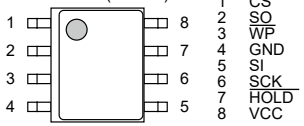
SPI SERIAL E^{2}PROM

Features

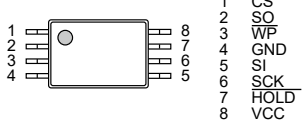
- Operating voltage range: Read 1.6 V to 5.5 V
  Write 1.7 V to 5.5 V
- Operation frequency: 10.0 MHz (V_{CC} = 2.5 V to 5.5 V)
- Write time: 5.0 ms max.
- SPI mode (0, 0) and (1, 1)
- Page write: 64 bytes / page
- Sequential read
- Write protect: Software, Hardware
  Protect area: 25%, 50%, 100%
- Monitors write to the memory by a status register
- Function to prevent malfunction by monitoring clock pulse
- Write protect function during the low power supply voltage
- CMOS schmitt input ($\overline{CS}$, SCK, SI, $\overline{WP}$, $\overline{HOLD}$)
- Endurance: 10^6cycles / unit *1 (Ta = +25°C)
- Data retention: 100 years (Ta = +25°C)
- Memory capacity: 256 K-bit
- Initial delivery state: FFh, SRWD = 0, BP1 = 0, BP0 = 0
- Operation temperature range: Ta = −40°C to +85 C
- Lead-free (Sn 100%), halogen-free*2

***1.** For each unit (unit: the 4 bytes with the same address of A14 to A2)
***2.** Refer to "■ **Product Name Structure**" for details.

8-Pin SOP (JEDEC)



8-Pin TSSOP



S-25C512A

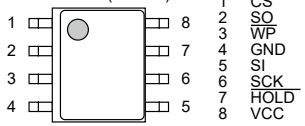
SPI SERIAL E^{2}PROM

Features

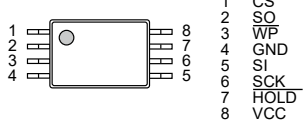
- Operating voltage range: Read 1.6 V to 5.5 V
  Write 1.7 V to 5.5 V
- Operation frequency: 10.0 MHz (V_{CC} = 2.5 V to 5.5 V)
- Write time: 5.0 ms max.
- SPI mode (0, 0) and (1, 1)
- Page write: 128 bytes / page
- Sequential read
- Write protect: Software, Hardware
  Protect area: 25%, 50%, 100%
- Monitors write to the memory by a status register
- Function to prevent malfunction by monitoring clock pulse
- Write protect function during the low power supply voltage
- CMOS schmitt input ($\overline{CS}$, SCK, SI, $\overline{WP}$, $\overline{HOLD}$)
- Endurance: 10^6cycles / unit *1 (Ta = +25°C)
- Data retention: 100 years (Ta = +25°C)
- Memory capacity: 512 K-bit
- Initial delivery state: FFh, SRWD = 0, BP1 = 0, BP0 = 0
- Operation temperature range: Ta = −40°C to +85 C
- Lead-free (Sn 100%), halogen-free*2

***1.** For each unit (unit: the 4 bytes with the same address of A15 to A2)
***2.** Refer to "■ **Product Name Structure**" for details.

8-Pin SOP (JEDEC)



8-Pin TSSOP



S-25CM01A

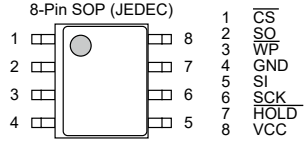
SPI SERIAL E²PROM

Features

- Operating voltage range: Read 1.6 V to 5.5 V
  Write 1.7 V to 5.5 V
- Operation frequency: 10.0 MHz (V_{CC} = 2.5 V to 5.5 V)
- Write time: 5.0 ms max.
- SPI mode (0, 0) and (1, 1)
- Page write: 256 bytes / page
- Sequential read
- Write protect: Software, Hardware
  Protect area: 25%, 50%, 100%
- Monitors write to the memory by a status register
- Function to prevent malfunction by monitoring clock pulse
- Write protect function during the low power supply voltage
- CMOS schmitt input ($\overline{CS}$, SCK, SI, $\overline{WP}$, $\overline{HOLD}$)
- Endurance: 10^6cycles / unit*1 (Ta = +25°C)
- Data retention: 100 years (Ta = +25°C)
- Memory capacity: 1 M-bit
- Initial delivery state: FFh, SRWD = 0, BP1 = 0, BP0 = 0
- Operation temperature range: Ta = −40°C to +85 C
- Lead-free (Sn 100%), halogen-free*2

***1.** For each unit (unit: the 4 bytes with the same address of A16 to A2)
***2.** Refer to "■ **Product Name Structure**" for details.

8-Pin SOP (JEDEC)



S-93C46C/56C/66C/76C/86C

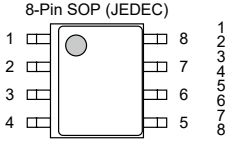
3-WIRE SERIAL E²PROM

Features

- Memory capacity
  S-93C46C: 1 K-bit (64-word × 16-bit)
  S-93C56C: 2 K-bit (128-word × 16-bit)
  S-93C66C: 4 K-bit (256-word × 16-bit)
  S-93C76C: 8 K-bit (512-word × 16-bit)
  S-93C86C: 16 K-bit (1024-word × 16-bit)
- Operation voltage range
  Read: 1.6 V to 5.5 V
  Write: 1.8 V to 5.5 V
- Operation frequency: 2.0 MHz max.
- Write time: 4.0 ms max.
- Sequential read
- Write protect function during the low power supply voltage
- Function to protect against write due to erroneous instruction recognition
- Endurance: 10^6 cycle / word*1 (Ta = +85 C)
- Data retention: 100 years (Ta = +25 C)
  50 years (Ta = +85 C)
- Initial delivery state: FFFFh
- Operation temperature range: Ta = −40°C to +85°C
- Lead-free (Sn 100%), halogen-free

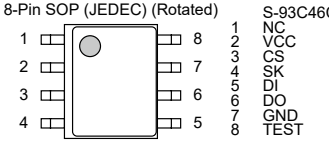
***1.** For each address (Word: 16-bit)

8-Pin SOP (JEDEC)



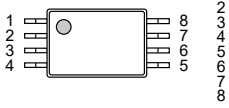
S-93C46C/56C/66C/76C/86C

8-Pin SOP (JEDEC) (Rotated)



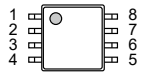
S-93C46C/56C/66C

8-Pin TSSOP



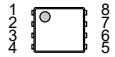
S-93C46C/56C/66C/76C/86C

TMSOP-8



S-93C46C/56C/66C/76C/86C

SNT-8A



S-93C46C/56C/66C/76C/86C

S-34C02B

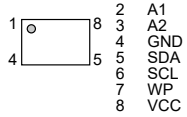
2-WIRE SERIAL E²PROM FOR DIMM SERIAL PRESENCE DETECT

Features

- Operation voltage range
  Read: 1.7 V to 5.5 V
  Write: 1.7 V to 5.5 V
- Operation frequency:
  400 kHz max. (V_{CC} = 1.7 V to 5.5 V)
- Write time: 5.0 ms max.
- Page write: 16 bytes / page
- Sequential read
- Noise suppression:
  Schmitt trigger and noise filter on input pins (SCL, SDA)
- Write protect function during low power supply voltage
- Endurance: 10^6 cycle / word*1 (Ta = +25°C)
- Data retention: 100 years (Ta = +25°C)
- Memory capacity: 2 K-bit
- Initial delivery state: FFh
- Operation temperature range: Ta = –40°C to +85°C
- Write protect:
  Hardware protect 100%
  (addresses 00h to FFh)
  Software protect for the lower address of 50%
  (addresses 00h to 7Fh)
- Lead-free (Sn 100%), halogen-free

***1.** For each address (Word: 8-bit)

DFN-8(2030)A



1	A0
2	A1
3	A2
4	GND
5	SDA
6	SCL
7	WP
8	VCC

S-34C04A

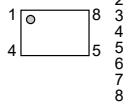
2-WIRE SERIAL E²PROM FOR DIMM SERIAL PRESENCE DETECT

Features

- Page write: 16 bytes / page
- Sequential read
- Write protect function during low power supply voltage
- Write protect:
  Individual software data protection for each of four 128-byte blocks
- Endurance: 10^6 cycle / word*1 (Ta = +25°C)
- Data retention: 100 years (Ta = +25°C)
- Memory capacity: 4 K-bit
- Initial delivery state: FFh
- JEDEC standard compliant: EE1004-1
- Current consumption:
  Standby mode: 3.0 µA max.
  Read operation mode: 0.4 mA max.
  Write operation mode: 2.0 mA max.
- Operation voltage range: 1.7 V to 3.6 V
- Operation frequency: 1.0 MHz max. (V_{DD} = 2.2 V to 3.6 V)
  400 kHz max. (V_{DD} = 1.7 V to 3.6 V)
- Noise suppression: Schmitt trigger and noise filter on input pins (SCL, SDA)
- Operation temperature range: Ta = –20°C to +125°C
- Lead-free (Sn 100%), halogen-free

***1.** For each address (Word: 8-bit)

DFN-8(2030)A



1	SA0
2	SA1
3	SA2
4	VSS
5	SDA
6	SCL
7	NC
8	VDD

S-34TS04A

2-WIRE SERIAL E²PROM WITH TEMPERATURE SENSOR FOR DIMM SERIAL PRESENCE DETECT

Features

E²PROM block

- Page write: 16 bytes / page
- Sequential read
- Write protect function during low power supply voltage
- Write protect:
  Individual software data protection for each of four 128-byte blocks
- Endurance: 10^6 cycle / word*1 (Ta = +25°C)
- Data retention: 100 years (Ta = +25°C)
- Memory capacity: 4 K-bit
- Initial delivery state: FFh

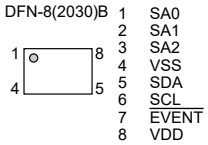
Temperature sensor block

- Temperature accuracy: 0.5°C typ. (Ta = +75°C to +95°C)
  1.0°C typ. (Ta = +40°C to +125°C)
- Temperature sample rate: 8 samples / s min.
- Selectable hysteresis width: No hysteresis, 1.5°C, 3.0°C, 6.0°C

Overall

- JEDEC standard compliant: TSE2004B2
- Current consumption:
  E²PROM in standby mode and temperature sensor in shutdown mode: 3.0 µA max.
  E²PROM in standby mode and temperature sensor in active mode: 0.1 mA max.
  E²PROM in read operation mode and temperature sensor in active mode: 0.4 mA max.
  E²PROM in write operation mode and temperature sensor in active mode: 2.0 mA max.
- Operation voltage range: 2.2 V to 3.6 V
- Operation frequency: 1.0 MHz max. (V_{DD} = 2.2 V to 3.6 V)
- Noise suppression: Schmitt trigger and noise filter on input pins (SCL, SDA)
- Operation temperature range: Ta = –20°C to +125°C
- Lead-free (Sn 100%), halogen-free

***1.** For each address (Word: 8-bit)



S-34TS04L

2-WIRE SERIAL E²PROM WITH TEMPERATURE SENSOR

Features

E²PROM block

- Page write: 16 bytes / page
- Sequential read
- Write protect function during low power supply voltage
- Write protect:
  Individual software data protection for each of four 128-byte blocks
- Endurance: 10^6 cycle / word*1 (Ta = +25°C)
- Data retention: 100 years (Ta = +25°C)
- Memory capacity: 4 K-bit
- Initial delivery state: FFh

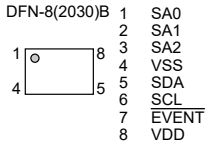
Temperature sensor block

- Temperature accuracy: 0.5°C typ. (Ta = +75°C to +95°C)
  1.0°C typ. (Ta = +40°C to +125°C)
- Temperature sample rate: 8 samples / s min.
- Selectable hysteresis width: No hysteresis, 1.5°C, 3.0°C, 6.0°C

Overall

- Current consumption:
  E²PROM in standby mode and temperature sensor in shutdown mode: 3.0 µA max.
  E²PROM in standby mode and temperature sensor in active mode: 0.1 mA max.
  E²PROM in read operation mode and temperature sensor in active mode: 0.4 mA max.
  E²PROM in write operation mode and temperature sensor in active mode: 2.0 mA max.
- Operation voltage range: 1.7 V to 3.6 V
- Operation frequency: 1.0 MHz max. (V_{DD} = 2.2 V to 3.6 V)
- Noise suppression: Schmitt trigger and noise filter on input pins (SCL, SDA)
- Supported SMBus timeout function
- Operation temperature range: Ta = –20°C to +125°C
- Lead-free (Sn 100%), halogen-free

***1.** For each address (Word: 8-bit)



S-585AA

BUILT-IN ARP FUNCTION 2-WIRE SERIAL E²PROM WITH TEMPERATURE SENSOR

Features

E²PROM block

- Page write: 16 bytes / page
- Sequential read
- Write protect function during low power supply voltage
- Write protect:
  Individual software data protection for each of four 128-byte blocks
- Endurance: 10^6 cycle / word*1 (Ta = +25°C)
- Data retention: 100 years (Ta = +25°C)
- Memory capacity: 4 K-bit
- Initial delivery state: FFh

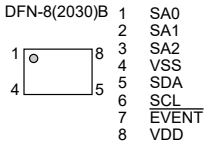
Temperature sensor block

- Temperature accuracy: ±0.25°C typ. / ±1.0°C max. (Ta = 0°C to +85°C)
  ±0.25°C typ. / ±1.5°C max. (Ta = –40°C to +125°C)
- Temperature sample rate: 8 samples / s min.
- Selectable hysteresis width: No hysteresis, 1.5°C, 3.0°C, 6.0°C

Overall

- Support for SMBus ARP function
- Support for Alert Response Address function (ARA)
- Support for Default Slave Address (DSA)
- Current consumption:
  E²PROM in standby mode and temperature sensor in shutdown mode: 3.0 µA max.
  E²PROM in standby mode and temperature sensor in active mode: 0.1 mA max.
  E²PROM in read operation mode and temperature sensor in active mode: 0.4 mA max.
  E²PROM in write operation mode and temperature sensor in active mode: 2.0 mA max.
- Operation voltage range: 1.7 V to 3.6 V
- Operation frequency: 1.0 MHz max. (V_{DD} = 2.2 V to 3.6 V)
  400 kHz max. (V_{DD} = 1.7 V to 3.6 V)
- Noise suppression: Schmitt trigger and noise filter on input pins (SCL, SDA)
- Operation temperature range: Ta = –40°C to +125°C
- Lead-free (Sn 100%), halogen-free

***1.** For each address (Word: 8-bit)

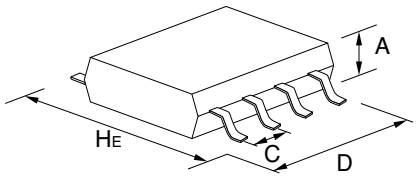


Package List

Package Type	Pin Count	Package Name	Package Size (mm)			Pitch (mm)
			HE	D	A (max.)	C
Lead insertion type	3	TO-92	7.0	5.2	4.2	2.5/1.27
	3	TO-92S	4.95	4.1	1.62	2.5/1.27
Flat-lead type	3	SOT-89-3	4.0	4.5	1.6	1.5
	5	SOT-89-5	4.5	4.5	1.6	1.5
Gull-wing type	4	SC-82AB	2.1	2.0	1.1	1.3
	5	SC-88A	2.1	2.0	1.1	0.65
	3	SOT-23-3	2.8	2.9	1.3	1.9
	3	SOT-23-3S	2.8	2.9	1.2	1.9
	3	TSOT-23-3S	2.85	2.9	0.8	1.9
	5	SOT-23-5	2.8	2.9	1.3	0.95
	6	SOT-23-6	2.8	2.9	1.35	0.95
	6	SOT-23-6W	2.8	2.9	1.3	0.95
	8	8-Pin SOP (JEDEC)	6.0	5.02	1.75	1.27
	8	8-Pin TSSOP	6.4	3.0	1.1	0.65
	8	8-Pin TSSOP	6.4	3.0	1.1	0.65
	16	16-Pin TSSOP	6.4	5.1	1.1	0.65
	20	20-Pin TSSOP	6.4	6.5	1.2	0.65
	24	24-Pin SSOP	7.6	7.9	1.4	0.65
	8	TMSOP-8	4.0	2.9	0.8	0.65
	8	HTMSOP-8	4.0	2.9	0.8	0.65
	16	HTSSOP-16	6.4	5.12	1.1	0.65
	6	HSOP-6	6.0	5.02	1.75	1.91
	8	HSOP-8A	6.0	5.02	1.68	1.27
	8	HSOP-8A	6.0	5.02	1.65	1.27
	8	HSOP-8Q	6.0	5.02	1.68	1.27
	5	TO-252-5S(A)	6.5	6.5	1.4	1.27
	9	TO-252-9S	6.5	6.5	1.4	0.65

Package Type	Pin Count	Package Name	Package Size (mm)			Pitch (mm)
			HE	D	A (max.)	C
Non-lead type	6	6-Pin HSON(A)	3.0	2.9	0.9	0.95
	6	SON-6C	2.55	1.56	0.65	0.5
	4	SNT-4A	1.6	1.2	0.5	0.65
	6	SNT-6A SNT-6A(H)	1.8	1.57	0.5	0.5
	8	SNT-8A	2.46	1.97	0.5	0.5
	4	HSNT-4(0808)	0.8	0.8	0.4	0.4
	4	HSNT-4(0808)B	0.8	0.8	0.41	0.4
	4	HSNT-4(1010)	1.0	1.0	0.4	0.65
	4	HSNT-4(1010)B	1.0	1.0	0.41	0.65
	6	HSNT-6A	2.46	1.96	0.5	0.5
	6	HSNT-6(1212)	1.2	1.2	0.4	0.4
	6	HSNT-6D (HSNT-6(1618))	1.8	1.6	0.4	0.5
	6	HSNT-6(2025)	2.46	1.96	0.5	0.5
	8	HSNT-8(1616)	1.6	1.6	0.4	0.4
	8	HSNT-8(2030)	3.0	2.0	0.5	0.5
	6	DFN-6(1414)A	1.4	1.4	0.6	0.5
	6	DFN-6(1518)A	1.8	1.5	0.33	0.5
	8	DFN-8(1616)A	1.6	1.6	0.6	0.4
	8	DFN-8(2030)	3.0	2.0	0.5	0.5
	8	DFN-8(2030)A	3.0	2.0	0.6	0.5
	8	DFN-8(2030)B	3.0	2.0	0.8	0.5

Remark Please contact our sales representatives regarding WLP package products.



- The information herein is subject to change without notice.
- Neither reproduction, duplication nor unauthorized use of this catalog in whole or part is allowed without the prior written approval of ABLIC Inc.
- The colors of the products reproduced herein (“Products”) may be different from the actual colors. Check colors on actual products before using the Products.
- Circuits and respective application methods described herein are for reference only. ABLIC Inc. shall not be liable for any damages or losses resulting from any claim by third parties that any Products or application methods described herein infringe any right intellectual property right. All intellectual property rights with respect to the Products belong exclusively to ABLIC Inc.
  ABLIC Inc. does not grant users of the Products any right or license to the Products hereunder.
- When Products include Strategic Products (or Services) stipulated in the Foreign Exchange and Trade Control Law, they shall not be exported without permission of governmental authorities.
- The Products cannot be used as part of any device or equipment which influences the human body or requires a significantly high reliability, such as physical exercise equipment, medical equipment, disaster prevention equipment, gas related equipment, vehicles, in-vehicle equipment, aviation equipment, aerospace equipment, and nuclear-related equipment.
- The products described herein are not designed to be radiation-proof.
- Although ABLIC Inc. exerts the greatest possible effort to ensure high quality and reliability, the failure or malfunction of semiconductor products may occur. The user of these products should therefore give thorough consideration to safety design, including redundancy, fire-prevention measures, and malfunction prevention, to prevent any accidents, fires, or community damage that may ensue.

INSPIRATIONAL
SEMICONDUCTOR SOLUTIONS

Smaller footprint. Energy efficiency. Safe, reliable, dependable.
ABLIC world class watch manufacturing yielded ultra low current consumption, low voltage operation, and super-small package technology for ABLIC's solutions.
Fine craftsmanship delivering the highest quality and reliability semiconductor products meeting and exceeding industry standards for automotive, consumer, and other demanding applications. ABLIC's solutions - moving technology forward.

ABLIC

ABLIC Inc.
www.ablic.com

Contact us
www.ablic.com/en/semicon/sales

Released in March 2023

ABLIC Inc. i a group company of MinebeaMit umi Inc.

(Specifications are subject to change without notice.)

C1011EJ-03H2303