

2025

# **Product Catalog**

# Automotive ICs (Memory ICs, Magnetic sensor ICs, Amplifiers, Timer ICs)



# ABLIC Inc.

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### Automotive Serial EEPROMs (SPI, I<sup>2</sup>C, Microwire)

Automotive Serial EEPROMs (SPI, I<sup>2</sup>C, Microwire) on ablic.com

Series Name	Interface	Density [bit]	Operating voltage	Operating voltage	Clock frequency	Write time	Endurance (85°C)	Data retention	Operation temp. min.	Operation temp. max.	Package	Page
					max. [MHz]	maxii [iiio]	(00 0)	[years]	[°C]	[°C]		
S-25A010A/020A/040A	SPI bus	1 K, 2 K, 4 K	2.50	5.50	6.50	4.0	1 million	50	-40	125	8-pin SOP, 8-pin TSSOP, TMSOP-8	1
S-25A080A/160A/320A, S-25A080B/160B/320B	SPI bus	8 K, 16K, 32K	2.50	5.50	6.50	4.0, 5.0	0.7 million, 1 million	50	-40	125	8-pin SOP, 8-pin TSSOP, TMSOP-8	2
S-25A640A/640B	SPI bus	64K	2.50	5.50	5.00, 6.50	4.0, 5.0	0.7 million, 1 million	50	-40	125	8-pin SOP, 8-pin TSSOP, TMSOP-8	3
S-25A128B	SPI bus	128K	2.50	5.50	6.50	5.0	0.7 million	50	-40	125	8-pin SOP, 8-pin TSSOP	4
S-25A256B	SPI bus	256K	2.50	5.50	5.00	5.0	0.7 million	50	-40	125	8-pin SOP	5
S-25C010A/020A/040A H	SPI bus	1 K, 2 K, 4 K	2.50	5.50	6.50	4.0	1 million	50	-40	105	8-pin SOP, 8-pin TSSOP, TMSOP-8	6
S-25C080A0H	SPI bus	8 K	2.50	5.50	6.50	4.0	1 million	50	-40	105	8-pin SOP, 8-pin TSSOP	7
S-25C160A0H	SPI bus	16K	2.50	5.50	5.00	5.0	0.3 million	25	-40	105	8-pin SOP, 8-pin TSSOP, TMSOP-8	8
S-25C320A/640A H	SPI bus	32K, 64K	2.50	5.50	5.00	5.0	0.3 million	25	-40	105	8-pin SOP, 8-pin TSSOP, TMSOP-8	9
S-25C128A0H	SPI bus	128K	2.50	5.50	5.00	5.0	0.3 million	25	-40	105	8-pin SOP, 8-pin TSSOP	10
S-24CS01A/02A/04A H	2-wire (I <sup>2</sup> C)	1 K, 2 K, 4 K	2.55	5.50	0.35	10.0	1 million	20	-40	105	8-pin SOP, 8-pin TSSOP, TMSOP-8	11
S-24C08CH	2-wire (I <sup>2</sup> C)	8 K	2.50	5.50	0.40	5.0	0.3 million	25	-40	105	8-pin SOP, 8-pin TSSOP, TMSOP-8	12
S-24C16CH	2-wire (I <sup>2</sup> C)	16K	2.50	5.50	0.40	5.0	0.3 million	25	-40	105	8-pin SOP, 8-pin TSSOP, TMSOP-8	13
S-24C32C/64C H	2-wire (I <sup>2</sup> C)	32K, 64K	2.50	5.50	0.40	5.0	0.3 million	25	-40	105	8-pin SOP, 8-pin TSSOP, TMSOP-8	14
S-24C128CH	2-wire (I <sup>2</sup> C)	128K	2.50	5.50	0.40	5.0	0.3 million	25	-40	105	8-pin SOP, 8-pin TSSOP	15
S-93S46A/56A/66A	3-wire (Microwire)	1 K, 2 K, 4 K	4.00	5.50	1.00	10.0	1 million	20	-40	150	8-pin SOP	16
S-93A46B/56B/66B/76B/86B	3-wire (Microwire)	1 K, 2 K, 4 K, 8 K, 16K	2.50	5.50	2.00	4.0	1 million	50	-40	125	8-pin SOP, 8-pin TSSOP, TMSOP-8, HSNT-8(2030)	' 17
S-93C46C/56C/66C/76C/86C H	3-wire (Microwire)	1 K, 2 K, 4 K, 8 K, 16K	1.60	5.50	2.00	4.0	1 million	50	-40	105	8-pin SOP, 8-pin TSSOP, TMSOP-8, HSNT-8(2030)	' 18

### Automotive Magnetic sensor ICs (Hall effect ICs)

#### Automotive Magnetic sensor ICs (Hall effect ICs) on ablic.com

Series Name	Pole detection	Output delay time typ. [µs]	Chopping frequency typ. [kHz]	Supply voltage min. [V]	Supply voltage max. [V]	Magnetic sensitivity BOP typ. ±[mT]	Operation temp. min. [°C]	Operation temp. max. [°C]	Package	Page
S-57TZ S	ZCL	8	500	2.7	26.0	-	-40	150	TSOT-23-3S, HSNT-6(2025)	19
S-57RB S	Bipolar	8	500	2.7	26.0	0.5, 2.2, 3.0, 6.0, 10.0	-40	150	TSOT-23-3S, HSNT-6(2025)	20
S-57P1 S	Bipolar	8	500	2.7	26.0	0.5, 1.5, 2.2, 3.0	-40	150	SOT-23-3S	21
S-57K1 A	Bipolar	8	500	3.5	26.0	3.0, 6.0	-40	125	SOT-23-3	22
S-57GS/GN S	S pole, N pole	8	500	2.7	26.0	3.0, 6.0, 10.0, 15.0	-40	150	TSOT-23-3S, HSNT-6(2025)	23
S-57GD S	Omnipolar	16	500	2.7	26.0	3.0, 6.0, 10.0, 15.0	-40	150	TSOT-23-3S, HSNT-6(2025)	24
S-57A1 A	S pole, N pole	16	250	3.5	26.0	3.0, 6.0	-40	125	SOT-23-3	25

### Automotive Real-time Clock (RTC)

#### Automotive Real-time Clock (RTC) on ablic.com

Series Name	Features	Interface	Current consumption (3.0V, 25°C) [µA]	Operation voltage min. [V]	Operation voltage max. [V]	Operation temp. min. [°C]	Operation temp. max. [°C]	Package	Page
S-35190A H	Clock correction, free user register	3-wire	0.25	1.3	5.5	-40	105	8-Pin SOP, 8-Pin TSSOP	26
S-35390A H	Clock correction, free user register	2-wire	0.25	1.3	5.5	-40	105	8-Pin SOP, 8-Pin TSSOP	27

#### Automotive Convenience Timer

#### Automotive Convenience Timer on ablic.com

Series Name	Features	Quartz Crystal	Current consumption typ. [µA]	Operating voltage min. [V]	Operating voltage max. [V]	Operation temp. min. [°C]	Operation temp. max. [°C]	Package	Page
S-35710 A	2-wire (I <sup>2</sup> C-bus)	External	0.20	1.8	5.5	-40	125	TMSOP-8	28
S-35710M A	Built-in Quartz Crystal, 2-wire (I <sup>2</sup> C-bus)	Built-in	0.25	1.8	5.5	-40	125	HSOP-8Q	29
S-35720 A	With interrupt time setting pin	External	0.20	1.8	5.5	-40	125	TMSOP-8	30
S-35730 A	Clock pulse output with frequency setting pin	External	0.70	1.8	5.5	-40	125	TMSOP-8	31
S-35740 A	2-wire (I <sup>2</sup> C-bus) interval timer	External	0.20	1.8	5.5	-40	125	TMSOP-8	32
S-35770 A	2-wire (I <sup>2</sup> C-bus) counter	-	0.01	1.5	5.5	-40	125	TMSOP-8	33

### Automotive Operational Amplifiers

#### Automotive Operational Amplifiers on ablic.com

Series Name	Features	Number of circuits	Input Rail-to- Rail	Operating voltage min. [V]	Operating voltage max. [V]	Current consumption (per circuit) [µA]	Input offset voltage max. [mV] (All temp.)	Input offset voltage drift [µV/°C]	Gain bandwidth product [kHz]	Slew rate [V/µs]	Operation temp. min. [°C]	Operation temp. max. [°C]	Package	Page
S-19630A	High-withstand voltage, High-accuracy, Zero-drift amplifier, Rail-to-Rail	2 circuits	Yes	4.00	36.00	250	0.05	0.025	1200	0.45	-40	125	TMSOP-8	34
S-19611A	Low voltage operation, Zero-drift amplifier, Rail-to-Rail	2 circuits	Yes	2.65	5.50	200	0.10	0.100	320	0.22	-40	105	TMSOP-8	35
S-19610A		2 circuits	-	2.70	5.50	1000	6.00	3.000	3000	2.00	-40	125	TMSOP-8	36

# S-25A010A/020A/040A

### FOR AUTOMOTIVE 125°C OPERATION SPI SERIAL E<sup>2</sup>PROM

This IC is a SPI serial  $E^2$ PROM which operates under the high temperature, at high speed, with the wide range operation for automotive components. This IC has the capacity of 1 K-bit, 2 K-bit, 4 K-bit and the organization of 128 words × 8-bit, 256 words × 8-bit, 512 words × 8-bit. Page write and Sequential read are available.

# Caution Before using the product in automobile control unit or medical equipment, contact to ABLIC Inc. is indispensable.

Features		Packages
Operating voltage range		• 8-Pin SOP (JEDEC)
Read:	2.5 V to 5.5 V	
Write:	2.5 V to 5.5 V	5
<ul> <li>Operation frequency:</li> </ul>	6.5 MHz max.	
Write time:	4.0 ms max.	° d A d
• SPI mode (0, 0) and (1, 1	)	
<ul> <li>Page write:</li> </ul>	16 bytes / page	1
<ul> <li>Sequential read</li> </ul>		
Write protect:	Software, Hardware	$(5.0 \times 6.0 \times t1.75 \text{ mm})$
Protect area:	25%, 50%, 100%	
<ul> <li>Monitoring of a write mem</li> </ul>	nory state by the status register	
<ul> <li>Function to prevent malful</li> </ul>	nction by monitoring clock pulse	8-Pin TSSOP
<ul> <li>Write protect function dur</li> </ul>	ing the low power supply voltage	
CMOS schmitt input (CS	, SCK, SI, WP, HOLD)	5
• Endurance <sup>*1</sup> :	$10^{6}$ cycle / word <sup>*2</sup> (Ta = +25°C)	8
	$5 \times 10^5$ cvcle / word <sup>*2</sup> (Ta = +125°C)	4
<ul> <li>Data retention:</li> </ul>	100 years (Ta = +25°C)	
	50 years (Ta = $+125^{\circ}$ C)	
<ul> <li>Memory capacity</li> </ul>	, , , , , , , , , , , , , , , , , , ,	$(3.0 \times 6.4 \times t1.1 \text{ mm})$
S-25A010A:	1 K-bit	
S-25A020A:	2 K-bit	
S-25A040A:	4 K-bit	<ul> <li>TMSOP-8</li> </ul>
<ul> <li>Initial delivery state:</li> </ul>	FFh, BP1 = 0, BP0 = 0	
Burn-in specification:	Wafer level burn-in	5
Operation temperature ra	nge: Ta = -40°C to +125°C	8
<ul> <li>Lead-free (Sn 100%), hall</li> </ul>	ogen-free <sup>*3</sup>	4
<ul> <li>AEC-Q100 qualified<sup>*4</sup></li> </ul>	-	1
*1. Refer to "■ Endurance	e" for details.	(2.9 $\times$ 4.0 $\times$ t0.8 mm)
*2. For each address (Wo	rd: 8-bit)	

- \*3. Refer to "■ Product Name Structure" for details.
- \*4. Contact our sales office for details.

**Remark** Refer to "3. **Product name list**" in "**■ Product Name Structure**" for details of package and product.

### S-25A080A/160A/320A, S-25A080B/160B/320B

### FOR AUTOMOTIVE 125°C OPERATION SPI SERIAL E<sup>2</sup>PROM

This IC is a SPI serial  $E^2$ PROM which operates under the high temperature, at high speed, with the wide range operation for automotive components. This IC has the capacity of 8 K-bit, 16 K-bit, 32 K-bit and the organization of 1024 words × 8-bit, 2048 words × 8-bit, 4096 words × 8-bit. Page write and Sequential read are available.

Caution Before using the product in automobile control unit or medical equipment, contact to ABLIC Inc. is indispensable.

■ Features		Packages
<ul> <li>Operating voltage range</li> </ul>		• 8-Pin SOP (JEDEC)
Read:	2.5 V ~ 5.5 V	
Write:	2.5 V ~ 5.5 V	5,
<ul> <li>Operation frequency:</li> </ul>	6.5 MHz max.	
Write time		8 4
S-25A080A/160A/320A:	4.0 ms max.	
S-25A080B/160B/320B:	5.0 ms max.	~~ <u>1</u>
• SPI mode (0, 0) and (1, 1)		
Page write:	32 bytes / page	$(5.0 \times 6.0 \times t1.75 \text{ mm})$
<ul> <li>Sequential read</li> </ul>		
Write protect:	Software, Hardware	
Protect area:	25%, 50%, 100%	
<ul> <li>Monitoring of a write memory</li> </ul>	/ state by the status register	8-Pin TSSOP
<ul> <li>Function to prevent malfunct</li> </ul>	ion by monitoring clock pulse	
Write protect function during	the low power supply voltage	5
CMOS schmitt input ( CS , Section 2)	CK, SI, WP, HOLD)	8
Endurance <sup>*1</sup>	· · · · <b>,</b>	4
S-25A080A/160A/320A:	$10^6$ cycle / word <sup>*2</sup> (Ta = +25°C)	1
	$5 \times 10^5$ cycle / word <sup>*2</sup> (Ta = +125°C)	
S-25A080B/160B/320B:	$10^{6} \text{ cycle / word}^{*2} (Ta = +25^{\circ}\text{C})$	$(3.0 \times 6.4 \times t1.1 \text{ mm})$
	$3 \times 10^5$ cycle / word <sup>*2</sup> (Ta = +125°C)	
<ul> <li>Data retention:</li> </ul>	100 years (Ta = $+25^{\circ}$ C)	
	50 years (Ta = $\pm 125^{\circ}$ C)	
<ul> <li>Memory capacity</li> </ul>		TMSOP-8
S-25A080A, S-25A080B:	8 K-bit	
S-25A160A, S-25A160B:	16 K-bit	5
S-25A320A S-25A320B	32 K-bit	8 per
<ul> <li>Initial delivery state:</li> </ul>	FFh SRWD = 0 BP1 = 0 BP0 = 0	<b>4</b>
Burn-in specification:	Wafer level burn-in	1
Operation temperature range	$a: Ta = -40^{\circ}C \text{ to } +125^{\circ}C$	
Lead-free (Sn 100%) haloge	en-free <sup>*3</sup>	$(2.9 \times 4.0 \times t0.8 \text{ mm})$
AFC-Q100 gualified <sup>*4</sup>		
*1. Refer to "■ Endurance" f	or details.	

- \*2. For each address (Word: 8-bit)
- \*3. Refer to "■ Product Name Structure" for details.
- \*4. Contact our sales office for details.

Remark Refer to "3. Product name list" in "■ Product Name Structure" for details of package and product.

### ABLIC Inc.

S-25A640A, S-25A640B

### FOR AUTOMOTIVE 125°C OPERATION SPI SERIAL E<sup>2</sup>PROM

This IC is a SPI serial  $E^2$ PROM which operates under the high temperature, at high speed, with the wide range operation for automotive components. This IC has the capacity of 64 K-bit and the organization of 8192 words × 8-bit. Page write and Sequential read are available.

Caution Before using the product in automobile control unit or medical equipment, contact to ABLIC Inc. is indispensable.

Features		Packages
Operating voltage range		• 8-Pin SOP (JEDEC)
Read:	2.5 V ~ 5.5 V	
Write:	2.5 V ~ 5.5 V	5,
<ul> <li>Operation frequency</li> </ul>		a straight and a straight and a straight and a straight
S-25A640A:	5.0 MHz max.	8
S-25A640B:	6.5 MHz max.	4
Write time		1
S-25A640A:	4.0 ms max.	
S-25A640B:	5.0 ms max.	$(5.0 \times 6.0 \times 11.75 \text{ mm})$
• SPI mode (0, 0) and (1, 1	)	
Page write:	32 bytes / page	
Sequential read		
Write protect:	Software Hardware	8-Pin TSSOP
Protect area:	25% 50% 100%	
<ul> <li>Monitoring of a write mer</li> </ul>	porv state by the status register	5 ~
Eunction to prevent malful	inction by monitoring clock pulse	8
Write protect function dur	ing the low power supply voltage	
$\sim CMOS$ ashmitt input ( $\overline{CS}$		
	, SCK, SI, WP, HOLD)	
Endurance	*2	$(2.0 \times 6.4 \times t1.1 \text{ mm})$
S-25A640A:	$10^{\circ}$ cycle / word <sup>2</sup> (Ta = +25°C)	$(3.0 \times 0.4 \times (1.1 \text{ mm}))$
	$5 \times 10^3$ cycle / word <sup>2</sup> (Ta = +125°C)	
S-25A640B:	$10^{\circ}$ cycle / word <sup>2</sup> (Ta = +25°C)	
	$3 \times 10^{\circ}$ cycle / word <sup>2</sup> (Ta = +125°C)	
Data retention:	100 years (Ta = +25°C) 50 years (Ta = +125°C)	• TMSOP-8
<ul> <li>Memory capacity:</li> </ul>	64 K-bit	5
<ul> <li>Initial delivery state:</li> </ul>	FFh, SRWD = 0, BP1 = 0, BP0 = 0	8
Burn-in specification:	Wafer level burn-in	<b>C</b> 4
<ul> <li>Operation temperature ra</li> </ul>	nge: Ta = -40°C to +125°C	1
<ul> <li>Lead-free (Sn 100%), hal</li> </ul>	ogen-free <sup>*3</sup>	
<ul> <li>AEC-Q100 gualified<sup>*4</sup></li> </ul>	<u> </u>	$(2.9 \times 4.0 \times t0.8 \text{ mm})$
*4 Dofor to " <b>= Endurana</b>	e" for dataile	

- \*2. For each address (Word: 8-bit)
- \*3. Refer to "■ Product Name Structure" for details.
- \*4. Contact our sales office for details.

**Remark** Refer to "3. Product name list" in "
Product Name Structure" for details of package and product.

### ABLIC Inc.

# S-25A128B

### FOR AUTOMOTIVE 125°C OPERATION SPI SERIAL E<sup>2</sup>PROM

This IC is a SPI serial  $E^2$ PROM which operates under the high temperature, at high speed, with the wide range operation for automotive components. This IC has the capacity of 128 K-bit and the organization of 16384 words × 8-bit. Page write and Sequential read are available.

Caution Before using the product in automobile control unit or medical equipment, contact to ABLIC Inc. is indispensable.

Features		Packages
Operating voltage range		• 8-Pin SOP (JEDEC)
Read:	2.5 V ~ 5.5 V	
Write:	2.5 V ~ 5.5 V	5
<ul> <li>Operation frequency:</li> </ul>	6.5 MHz max.	
Write time:	5.0 ms max.	8 c A
• SPI mode (0, 0) and (1, 1)	)	The second se
Page write:	64 bytes / page	1
<ul> <li>Sequential read</li> </ul>		
Write protect:	Software, Hardware	$(5.0 \times 6.0 \times t1.75 \text{ mm})$
Protect area:	25%, 50%, 100%	
<ul> <li>Monitoring of a write mem</li> </ul>	nory state by the status register	
<ul> <li>Function to prevent malful</li> </ul>	nction by monitoring clock pulse	
Write protect function duri	ing the low power supply voltage	8-Pin TSSOP
• CMOS schmitt input ( $\overline{CS}$	SCK SI WP HOLD)	
• Endurance <sup>*1.</sup>	$10^{6}$ cycle / word <sup>*2</sup> (Ta = +25°C)	5
	$3 \times 10^5$ cycle / word <sup>*2</sup> (Ta = +125°C)	8
<ul> <li>Data retention:</li> </ul>	$100 \text{ years} (Ta = +25^{\circ}\text{C})$	4
	50 years (Ta = $\pm 125^{\circ}$ C)	1
<ul> <li>Memory capacity:</li> </ul>	128 K-bit	
<ul> <li>Initial delivery state:</li> </ul>	FEb SRWD = 0 BP1 = 0 BP0 = 0	$(3.0 \times 6.4 \times t1.1 \text{ mm})$
Burn-in specifications:	Wafer level burn-in	
<ul> <li>Operation temperature rate</li> </ul>	nge: Ta = $-40^{\circ}$ C to $\pm 125^{\circ}$ C	
<ul> <li>Lead-free (Sn 100%) hall</li> </ul>	ngen-free <sup><math>^{3}</math></sup>	
<ul> <li>AEC-O100 gualified<sup>*4</sup></li> </ul>		
*1. Refer to "■ Endurance	e" for details.	
*2. For each address (Wo	rd: 8-bit)	
	- · · · · ·	

- \*3. Refer to "■ Product Name Structure" for details.
- \*4. Contact our sales office for details.

**Remark** Refer to "3. **Product name list**" in "**■ Product Name Structure**" for details of package and product.

# S-25A256B

### FOR AUTOMOTIVE 125°C OPERATION SPI SERIAL E<sup>2</sup>PROM

This IC is a SPI serial  $E^2$ PROM which operates under the high temperature, at high speed, with the wide range operation for automotive components. This IC has the capacity of 256 K-bit and the organization of 32768 words × 8-bit. Page write and Sequential read are available.

Caution Before using the product in automobile control unit or medical equipment, contact to ABLIC Inc. is indispensable.

Features		Package
Operating voltage range		• 8-Pin SOP (JEDEC)
Read:	2.5 V ~ 5.5 V	
Write:	2.5 V ~ 5.5 V	5
<ul> <li>Operation frequency:</li> </ul>	5.0 MHz max.	
Write time:	5.0 ms max.	° 4
<ul> <li>SPI mode (0, 0) and (1, 1)</li> </ul>		
<ul> <li>Page write:</li> </ul>	64 bytes / page	1
<ul> <li>Sequential read</li> </ul>		
Write protect:	Software, Hardware	$(5.0 \times 6.0 \times t1.75 \text{ mm})$
Protect area:	25%, 50%, 100%	
<ul> <li>Monitoring of a write mem</li> </ul>	ory state by the status register	
<ul> <li>Function to prevent malful</li> </ul>	nction by monitoring clock pulse	
<ul> <li>Write protect function duri</li> </ul>	ng the low power supply voltage	
<ul> <li>CMOS schmitt input ( CS</li> </ul>	, SCK, SI, WP, HOLD)	
• Endurance <sup>*1</sup> :	$10^6$ cycle / word <sup>*2</sup> (Ta = +25°C)	
	$3 \times 10^5$ cycle / word <sup>*2</sup> (Ta = +125°C)	
<ul> <li>Data retention:</li> </ul>	100 years (Ta = +25°C)	
	50 years (Ta = $+125^{\circ}C$ )	
<ul> <li>Memory capacity:</li> </ul>	256 K-bit	
<ul> <li>Initial delivery state:</li> </ul>	FFh, SRWD = 0, BP1 = 0, BP0 = 0	
Burn-in specifications:	Wafer level burn-in	
<ul> <li>Operation temperature rar</li> </ul>	nge: Ta = -40°C to +125°C	
<ul> <li>Lead-free (Sn 100%), halo</li> </ul>	ogen-free <sup>*3</sup>	
<ul> <li>AEC-Q100 gualified<sup>*4</sup></li> </ul>	0	
*1 Defer to "E Endurance	" for detaile	
*2 For each address (Max		
Z. FOI each address (WOI	u. o-bitj	

\*3. Refer to "
Product Name Structure" for details.

**\*4.** Contact our sales office for details.

**Remark** Refer to "3. **Product name list**" in "**■ Product Name Structure**" for details of package and product.

# S-25C010A/020A/040A H Series

### 105°C OPERATION SPI SERIAL E<sup>2</sup>PROM FOR AUTOMOTIVE

The S-25C010A/020A/040A H series devices are high-temperature operation SPI serial  $E^2$ PROMs for automotive components. The S-25C010A/020A/040A H series has the capacity of 1 K-bit, 2 K-bit, and 4 K-bit, and the organization is 128 words × 8-bit, 256 words × 8- bit, and 512 words × 8-bit, respectively. Page write and sequential read are available.

# Caution Before using the product in automobile control unit or medical equipment, contact to ABLIC Inc. is indispensable.

#### Features

<ul> <li>Operating voltage range:</li> </ul>	Read	2.5 V to 5	.5 V
	Write	2.5 V to 5	.5 V
<ul> <li>Operation frequency:</li> </ul>	6.5 MHz (	(4.5 V to 5.	5 V)
Write time:	4.0 ms m	ax.	
• SPI mode (0, 0) and (1, 1)			
Page write:	16 bytes	/ page	
<ul> <li>Sequential read</li> </ul>			
• Monitors write to the memory by a sta	atus regist	er	
Write protect:	Software,	Hardware	
Protect area:	25%, 50%	6, 100%	
• Function to prevent malfunction by m	nonitoring o	lock pulse	
• Write protect function during the low	power sup	ply voltage	
• CMOS schmitt input ( CS , SCK, SI,	WP , HOL	D)	
Endurance:	10 <sup>6</sup> cycles	/word <sup>*1</sup> (Ta	= +85°C)
	$8 \times 10^5$ cy	cles/word*1	(Ta = +105°C)
Data retention:	100 years	s (Ta = +25	°C)
	50 years	(Ta = +105	°C)
<ul> <li>Memory capacitance:</li> </ul>	S-25C01	AC	1 K-bit
	S-25C02	AC	2 K-bit
	S-25C04	AC	4 K-bit
<ul> <li>Initial delivery state:</li> </ul>	FFh, BP1	= 0, BP0 =	= 0
<ul> <li>Operation temperature range:</li> </ul>	Ta = -40°	°C to +105°	С
• Lead-free (Sn 100%), halogen-free			
<ul> <li>AEC-Q100 qualified<sup>*2</sup></li> </ul>			

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

**\*2.** Contact our sales office for details.

- 8-Pin SOP (JEDEC)
- 8-Pin TSSOP
- TMSOP-8

# S-25C080A H Series

### 105°C OPERATION SPI SERIAL E<sup>2</sup>PROM FOR AUTOMOTIVE

The S-25C080A H series devices are high-temperature operation SPI serial  $E^2$ PROMs for automotive components. The S-25C080A H series has the capacity of 8 K-bit and the organization is 1024 words × 8-bit. Page write and sequential read are available.

# Caution Before using the product in automobile control unit or medical equipment, contact to ABLIC Inc. is indispensable.

#### Features

- Operating voltage range: Read 2.5 V to 5.5 V Write 2.5 V to 5.5 V
- Operation frequency: 6.5 MHz (4.5 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
- Monitors write to the memory by a status register
- Write protect: Software, Hardware
- Protect area: 25%, 50%, 100%
- 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:  $10^{6} \text{ cycles/word}^{*1} (Ta = +85^{\circ}\text{C})$ • Data retention:  $100 \text{ years} (Ta = +25^{\circ}\text{C})$ • Memory capacitance: 8 K-bit

  - Initial delivery state: FFh, SRWD = 0, BP1 = 0, BP0 = 0
  - Operation temperature range:  $Ta = -40^{\circ}C$  to  $+105^{\circ}C$
  - Lead-free (Sn 100%), halogen-free
  - AEC-Q100 qualified<sup>\*2</sup>

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

\*2. Contact our sales office for details.

- 8-Pin SOP (JEDEC)
- 8-Pin TSSOP

### S-25C160A H Series

### **105°C OPERATION** SPI SERIAL E<sup>2</sup>PROM FOR AUTOMOTIVE

The S-25C160A H series devices are high-temperature operation SPI serial E<sup>2</sup>PROMs for automotive components. The S-25C160A H series has the capacity of 16 K-bit and the organization of 2048 words × 8-bit. Page write and sequential read are available.

Caution Before using the product in automobile control unit or medical equipment, contact to ABLIC Inc. is indispensable.

#### Features

- Operating voltage range: Read 2.5 V to 5.5 V
- Write 2.5 V to 5.5 V • Operation frequency: 5.0 MHz (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
- Monitors write to the memory by a status register
- Write protect: Software, Hardware
- Protect area: 25%, 50%, 100%
- Function to prevent malfunction by monitoring clock pulse
- · Write protect function during the low power supply voltage
- CMOS schmitt input (CS, SCK, SI, WP, HOLD)
- Endurance:  $10^{6}$  cycles/word<sup>\*1</sup> (Ta = +25°C)  $3 \times 10^5$  cycles/word<sup>\*1</sup> (Ta = +85°C)  $2 \times 10^5$  cycles/word<sup>\*1</sup> (Ta = +105°C) 100 years (Ta =  $+25^{\circ}$ C)
- Data retention:
- 30 years (Ta =  $+85^{\circ}C$ ) 25 years (Ta =  $+105^{\circ}$ C)
- Memory capacitance: 16 K-bit
- Initial delivery state: FFh, SRWD = 0, BP1 = 0, BP0 = 0
- $Ta = -40^{\circ}C \text{ to } +105^{\circ}C$ • Operation temperature range:
- Lead-free (Sn 100%), halogen-free
- AEC-Q100 qualified<sup>\*2</sup>

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

\*2. Contact our sales office for details.

- 8-Pin SOP (JEDEC)
- 8-Pin TSSOP
- TMSOP-8

## S-25C320A/640A H Series

### 105°C OPERATION SPI SERIAL E<sup>2</sup>PROM FOR AUTOMOTIVE

The S-25C320A/640A H series devices are high-temperature operation SPI serial E<sup>2</sup>PROMs for automotive components. The S-25C320A/640A H series has the capacity of 32 K-bit and 64 K-bit, and the organization is 4096 words  $\times$  8-bit, 8192 words  $\times$  8-bit, respectively.

Page write and sequential read are available.

Caution Before using the product in automobile control unit or medical equipment, contact to ABLIC Inc. is indispensable.

#### Features

<ul> <li>Operating voltage range:</li> </ul>	Read	2.5 V to 5	.5 V
	Write	2.5 V to 5	.5 V
<ul> <li>Operation frequency:</li> </ul>	5.0 MHz	(2.5 V to 5.	5 V)
Write time:	5.0 ms m	ax.	
<ul> <li>SPI mode (0, 0) and (1, 1)</li> </ul>			
Page write	32 bytes	/ page	
<ul> <li>Sequential read</li> </ul>			
Monitors write to the memory by a	status regi	ster	
Write protect:	Software,	Hardware	
Protect area:	25%, 50%	6, 100%	
• Function to prevent malfunction by	monitoring	g clock puls	е
Write protect function during the low	w power su	upply voltag	je
CMOS schmitt input ( CS , SCK, SI	, WP, HO	DLD)	
Endurance:	10 <sup>6</sup> cycles	/word <sup>*1</sup> (Ta	u = +25°C)
	$3 \times 10^5$ cy	cles/word*1	(Ta = +85°C)
	$2 \times 10^5$ cy	cles/word*1	$(Ta = +105^{\circ}C)$
<ul> <li>Data retention:</li> </ul>	100 years	s (Ta = +25	°C)
	30 years	(Ta = +85°0	C)
	25 years	(Ta = +105	°C)
<ul> <li>Memory capacitance:</li> </ul>	S-25C320	DA	32 K-bit
	S-25C640	DA	64 K-bit
<ul> <li>Initial delivery state:</li> </ul>	FFh, SRV	VD = 0, BP	1 = 0, BP0 = 0
<ul> <li>Operation temperature range:</li> </ul>	$Ta = -40^{\circ}$	°C to +105°	°C
• Lead-free (Sn 100%), halogen-free	1		
<ul> <li>AEC-Q100 qualified<sup>2</sup></li> </ul>			

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

\*2. Contact our sales office for details.

- 8-Pin SOP (JEDEC)
- 8-Pin TSSOP
- TMSOP-8

# S-25C128A H Series

### 105°C OPERATION SPI SERIAL E<sup>2</sup>PROM FOR AUTOMOTIVE

The S-25C128A H series devices are high-temperature operation SPI serial  $E^2$ PROMs for automotive components. The S-25C128A H series has the capacity of 128 K-bit and the organization of 16384 words × 8-bit. Page write and sequential read are available.

# Caution Before using the product in automobile control unit or medical equipment, contact to ABLIC Inc. is indispensable.

#### Features

- Operating voltage range: Read 2.5 V to 5.5 V
- Operation frequency: 5.0 MHz (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
- Monitors write to the memory by a status register
- Write protect: Software, Hardware Protect area: 25%, 50%, 100%
- Function to prevent malfunction by monitoring clock pulse
- Write protect function during the low power supply voltage
- CMOS schmitt input ( CS , SCK, SI, WP , HOLD )
- Endurance:  $10^{6} \text{ cycles/word}^{*1} (Ta = +25^{\circ}\text{C})$  $3 \times 10^{5} \text{ cycles/word}^{*1} (Ta = +85^{\circ}\text{C})$  $2 \times 10^{5} \text{ cycles/word}^{*1} (Ta = +105^{\circ}\text{C})$  $2 \times 10^{5} \text{ cycles/word}^{*1} (Ta = +105^{\circ}\text{C})$  $100 \text{ years} (Ta = +25^{\circ}\text{C})$  $30 \text{ years} (Ta = +25^{\circ}\text{C})$  $25 \text{ years} (Ta = +105^{\circ}\text{C})$  $25 \text{ years} (Ta = +105^{\circ}\text{C})$ 128 K-bitInitial delivery state: FFh, SRWD = 0, BP1 = 0, BP0 = 0 $\text{Operation temperature range:} \text{Ta} = -40^{\circ}\text{C} \text{ to} +105^{\circ}\text{C}$ Lead-free (Sn 100%), halogen-free
- AEC-Q100 qualified<sup>\*2</sup>

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

\*2. Contact our sales office for details.

- 8-Pin SOP (JEDEC)
- 8-Pin TSSOP

### S-24CS01A/02A/04A H Series

### FOR AUTOMOTIVE 105°C OPERATION 2-WIRE SERIAL E<sup>2</sup>PROM

The S-24CS01A/02A/04A H series is a high temperature operation 2-wire serial E<sup>2</sup>PROM for automotive components. The S-24CS01A/02A/04A H series has the capacity of 1 K-bit, 2 K-bit and 4 K-bit, and the organization is 128 words  $\times$  8 bits, 256 words  $\times$  8 bits and 512 words  $\times$  8 bits.

Page write and sequential read are available.

# Caution Before using the product in automobile control unit or medical equipment, it is imperative to contact our sales representatives.

#### Features

Operating voltage range:	Read 2.55 V to 5.5 V (	Γa = -40°C to +105°C) Γa = -40°C to +105°C)
Page write:	8 bytes / page (S-24CS)	)1A/02A)
	16 bytes / page (S-24CS	504A)
<ul> <li>Sequential read</li> </ul>		
<ul> <li>Operating Frequency:</li> </ul>	400 kHz (V <sub>CC</sub> = 2.55 V te	o 5.5 V, Ta = −40°C to +85°C)
	350 kHz (V <sub>CC</sub> = 2.55 V te	o 5.5 V, Ta = +85°C to +105°C)
Write time:	10.0 ms max.	
• Write protect function during the lo	w power supply voltage	
Endurance:	$10^6$ cycles/word <sup>*1</sup> (Ta = +85°C)	
	$5 \times 10^5$ cycles/word <sup>*1</sup> (Ta	a = +105°C)
Data retention:	100 years (Ta = +25°C)	
	20 years (Ta = +105°C)	
<ul> <li>Memory capacity:</li> </ul>	S-24CS01A	1 Kbit
	S-24CS02A	2 Kbit
	S-24CS04A	4 Kbit
Write protect:	100%	
<ul> <li>Initial delivery state:</li> </ul>	FFh	
Operation temperature range:	Ta = -40°C to +105°C	
• Lead-free (Sn 100%), halogen-free	e	

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

- 8-Pin SOP(JEDEC)
- 8-Pin TSSOP
- TMSOP-8

# S-24C08C H Series

### FOR AUTOMOTIVE 105°C OPERATION 2-WIRE SERIAL E<sup>2</sup>PROM

(SCL, SDA)

The S-24C08C H series is a high temperature operation 2-wire serial  $E^2$ PROMs for automotive components. The S-24C08C H series has the capacity of 8 K-bit, and the organization is 1024 words × 8-bit. Page write and sequential read are available.

# Caution Before using the product in automobile control unit or medical equipment, contact to ABLIC Inc. is indispensable.

#### Features

<ul> <li>Operation voltage range:</li> </ul>	Read	2.5 V to 5.5 V
	Write	2.5 V to 5.5 V
Page write:	16 byte	s / page
<ul> <li>Sequential read</li> </ul>		
<ul> <li>Operation frequency:</li> </ul>	400 kHz	z (V <sub>CC</sub> = 2.5 V to 5.5 V)
Write time:	5.0 ms	max.
<ul> <li>Noise suppression:</li> </ul>	Schmitt	trigger and noise filter on input pins
• Write protect function during the	low powe	er supply voltage
Endurance:	10 <sup>6</sup> cycle	es / word <sup>*1</sup> (Ta = +25°C)
	$3 \times 10^{5}$	cycles / word <sup>*1</sup> (Ta = +85°C)
	$2 \times 10^{5}$	cycles / word <sup>*1</sup> (Ta = +105°C)
<ul> <li>Data retention:</li> </ul>	100 yea	ars (Ta = +25°C)
	30 year	s (Ta = +85°C)
	25 year	s (Ta = +105°C)
<ul> <li>Memory capacity:</li> </ul>	8 K-bit	
Write protect:	100%	
<ul> <li>Initial delivery state:</li> </ul>	FFh	
<ul> <li>Operation temperature range:</li> </ul>	Ta = -4	0°C to +105°C
• Lead-free (Sn 100%), halogen-fre	е	
<ul> <li>AEC-Q100 qualified<sup>*2</sup></li> </ul>		
*1. For each address (Word: 8-bit	t)	

\*2. Contact our sales office for details.

- 8-Pin SOP (JEDEC)
- 8-Pin TSSOP
- TMSOP-8

# S-24C16C H Series

### FOR AUTOMOTIVE 105°C OPERATION 2-WIRE SERIAL E<sup>2</sup>PROM

The S-24C16C H series is a high temperature operation 2-wire serial  $E^2$ PROM for automotive components. The S-24C16C H series has the capacity of 16 K-bit, and the organization is 2048 words × 8-bit. Page write and sequential read are available.

# Caution Before using the product in automobile control unit or medical equipment, contact to ABLIC Inc. is indispensable.

#### Features

<ul> <li>Operation voltage range:</li> </ul>	Read	2.5 V to 5.5 V
	Write	2.5 V to 5.5 V
Page write:	16 bytes / p	age
<ul> <li>Sequential read</li> </ul>		
<ul> <li>Operation frequency:</li> </ul>	400 kHz (V	<sub>CC</sub> = 2.5 V to 5.5 V)
Write time:	5.0 ms max	, 
<ul> <li>Noise suppression</li> </ul>	Schmitt trig	ger and noise filter on input pins (SCL, SDA)
• Write protect function during the low	w power sup	ply voltage
Endurance:	10 <sup>6</sup> cycles /	word <sup>*1</sup> (Ta = $+25^{\circ}$ C)
	3 × 10 <sup>5</sup> cycle	es / word <sup>*1</sup> (Ta = +85°C)
	2 × 10 <sup>5</sup> cycle	es / word <sup>*1</sup> (Ta = +105°C)
Data retention:	100 years (	Ta = +25°C)
	30 years (T	a = +85°C)
	25 years (T	a = +105°C)
<ul> <li>Memory capacity:</li> </ul>	16 K-bit	
Write protect:	100%	
<ul> <li>Initial delivery state:</li> </ul>	FFh	
<ul> <li>Operation temperature range:</li> </ul>	Ta = -40°C	to +105°C
• Lead-free (Sn 100%), halogen-free		
<ul> <li>AEC-Q100 qualified<sup>*2</sup></li> </ul>		
*1 Ear agab address (Mard: 9 bit)		

\*1. For each address (Word: 8-bit)\*2. Contact our sales office for details.

- 8-Pin SOP (JEDEC)
- 8-Pin TSSOP
- TMSOP-8

### S-24C32C/64C H Series

### FOR AUTOMOTIVE 105°C OPERATION 2-WIRE SERIAL E<sup>2</sup>PROM

The S-24C32C/64C H series is a high temperature operation 2-wire serial  $E^2$ PROM for automotive components. The S-24C32C/64C H series has the capacity of 32 K-bit and 64 K-bit, and the organization is 4096 words × 8-bit, 8192 words × 8-bit, respectively. Page write and sequential read are available.

# Caution Before using the product in automobile control unit or medical equipment, contact to ABLIC Inc. is indispensable.

#### Features

Operating voltage range:	Read Write	2.5 V to 5.5 V 2.5 V to 5.5 V
<ul> <li>Page write:</li> <li>Sequential read</li> </ul>	32 bytes / p	age
Operation frequency:     Write time:	400 kHz (V	<sub>CC</sub> = 2.5 V to 5.5 V)
Noise suppression:	Schmitt trig	ger and noise filter on input pins (SCL, SDA)
<ul> <li>Write protect function during the low</li> </ul>	v power sup	oly voltage
• Endurance:	$10^{\circ}$ cycles/w	$rord^{*1}$ (Ta = +25°C)
	$3 \times 10$ Cycle $2 \times 10^5$ cycle	(1a = +65 C) es/word <sup>*1</sup> (Ta = +105°C)
Data retention:	100 years (	Ta = +25°C)
	30 years (T	$a = +85^{\circ}C)$
	25 years (1)	$a = +105^{\circ}C)$
<ul> <li>Memory capacity:</li> </ul>	S-24C32C	32 K-bit
	S-24C64C	64 K-bit
Write protect:	100%	
<ul> <li>Initial delivery state:</li> </ul>	FFh	
<ul> <li>Operation temperature range:</li> </ul>	Ta = -40°C	to +105°C
• Lead-free (Sn 100%), halogen-free		
AEC-Q100 qualified <sup>*2</sup>		

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

\*2. Contact our sales office for details.

- 8-Pin SOP (JEDEC)
- 8-Pin TSSOP
- TMSOP-8

# S-24C128C H Series

### FOR AUTOMOTIVE 105°C OPERATION 2-WIRE SERIAL E<sup>2</sup>PROM

The S-24C128C H series is a high temperature operation 2-wire serial  $E^2$ PROM for automotive components. The S-24C128C H series has the capacity of 128 K-bit, and the organization is 16384 words × 8-bit. Page write and sequential read are available.

# Caution Before using the product in automobile control unit or medical equipment, contact to ABLIC Inc. is indispensable.

#### Features

<ul> <li>Operating voltage range:</li> </ul>	Read	2.5 V to 5.5 V
	Write	2.5 V to 5.5 V
Page write:	64 bytes / page	•
<ul> <li>Sequential read</li> </ul>		
<ul> <li>Operation frequency:</li> </ul>	400 kHz (V <sub>CC</sub> =	2.5 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 function during the low powe	r supply voltage	
Endurance:	10 <sup>6</sup> cycles/word	I <sup>*1</sup> (Ta = +25°C)
	$3 \times 10^5$ cycles/v	vord <sup>*1</sup> (Ta = +85°C)
	$2 \times 10^5$ cycles/w	vord <sup>*1</sup> (Ta = +105°C)
Data retention:	100 years (Ta =	= +25°C)
	30 years (Ta =	+85°C)
	25 years (Ta =	+105°C)
<ul> <li>Memory capacity:</li> </ul>	128 K-bit	
Write protect:	100%	
<ul> <li>Initial delivery state:</li> </ul>	FFh	
<ul> <li>Operation temperature range:</li> </ul>	$Ta = -40^{\circ}C$ to -	+105°C
Lead-free (Sn 100%), halogen-free		
AEC-Q100 qualified <sup>*2</sup>		

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

\*2. Contact our sales office for details.

- 8-Pin SOP (JEDEC)
- 8-Pin TSSOP

# S-93S46A/56A/66A

### FOR AUTOMOTIVE 150°C OPERATION 3-WIRE SERIAL E<sup>2</sup>PROM

This IC is a high temperature operation 3-wire serial E<sup>2</sup>PROM for automotive components. This IC has the capacity of 1 K-bit, 2 K-bit and 4 K-bit, and the organization is 64 words  $\times$  16-bit, 128 words  $\times$  16-bit and 256 words  $\times$  16-bit, respectively. Sequential read is available, at which time addresses are automatically incremented in 16-bit blocks. The communication method is by the Microwire bus.

Caution Before using the product in automobile control unit or medical equipment, it is imperative to contact our sales representatives.

#### Features

· Operation voltage range Read: 4.0 V to 5.5 V (Ta =  $-40^{\circ}$ C to  $+150^{\circ}$ C) Write: 4.0 V to 5.5 V (Ta = -40°C to +150°C) • Operation frequency: 1 MHz  $(4.5 \text{ V to } 5.5 \text{ V}, \text{ Ta} = -40^{\circ}\text{C to } +150^{\circ}\text{C})$ • Write time: 10.0 ms max. Sequential read · Write protect function during the low power supply voltage · Function to protect against write due to erroneous instruction recognition CMOS schmitt input (CS, SK) • Endurance<sup>\*1</sup>:  $2 \times 10^5$  cycle / word<sup>\*2</sup> (Ta = +150°C) • Data retention: 100 years (Ta =  $+25^{\circ}C$ ) 50 years (Ta =  $+125^{\circ}$ C) 20 years (Ta =  $+150^{\circ}$ C)

٠	Memory capacity	
	S-93S46A:	1 K-bit
	S-93S56A:	2 K-bit
	S-93S66A:	4 K-bit
•	Initial delivery state:	FFFFh
•	Burn-in specification:	Wafer level burn-in
•	Operation temperature range:	Ta = -40°C to +150°C
•	Lead-free (Sn 100%), halogen-free	

- AEC-Q100 qualified<sup>\*3</sup>
- \*1. Refer to "Endurance" for details.
- \*2. For each address (Word: 16-bit)
- \*3. Contact our sales representatives for details.

#### Package

• 8-Pin SOP (JEDEC)



 $(5.0 \times 6.0 \times t1.75 \text{ mm})$ 

### S-93A46B/56B/66B/76B/86B

### FOR AUTOMOTIVE 125°C OPERATION 3-WIRE SERIAL E<sup>2</sup>PROM

This IC is a high temperature operation 3-wire serial E<sup>2</sup>PROM for automotive components. This IC has the capacity of 1 K-bit, 2 K-bit, 4 K-bit, 8 K-bit and 16 K-bit, and the organization is 64 words  $\times$  16-bit, 128 words  $\times$  16-bit, 256 words  $\times$  16-bit, 512 words  $\times$  16-bit and 1024 words  $\times$  16-bit, respectively. Sequential read is available, at which time addresses are automatically incremented in 16-bit blocks. The communication method is by the Microwire bus.

# Caution Before using the product in automobile control unit or medical equipment, it is imperative to contact our sales representatives.



 $(3.0\times2.0\times t0.5~\text{mm})$ 

# S-93C46C/56C/66C/76C/86C H Series

### FOR AUTOMOTIVE 105°C OPERATION 3-WIRE SERIAL E<sup>2</sup>PROM

This IC is a high speed, low current consumption, 3-wire serial E<sup>2</sup>PROM with a wide operating voltage range. This IC has the capacity of 1 K-bit, 2 K-bit, 4 K-bit, 8 K-bit and 16 K-bit, and the organization is 64 words  $\times$  16-bit, 128 words  $\times$  16-bit, 256 words  $\times$  16-bit, 512 words  $\times$  16-bit and 1024 words  $\times$  16-bit, respectively. Sequential read is available, at which time addresses are automatically incremented in 16-bit blocks. The communication method is by the Microwire bus.

# Caution Before using the product in automobile control unit or medical equipment, it is imperative to contact our sales representatives.





 $(3.0\times2.0\times t0.5~\text{mm})$ 

# S-57TZ S Series

### AUTOMOTIVE, 150°C OPERATION, HIGH-WITHSTAND VOLTAGE, HIGH-SPEED, ZCL<sup>™</sup> HÁLL EFFECT IĆ

This IC, developed by CMOS technology, is a high-accuracy Hall effect IC that operates with high temperature and high-withstand voltage.

The IC switches output voltage level when the IC detects magnetic flux density (magnetic field) polarity changes. The ZCL (Zero Crossing Latch) detection method realizes polarity changes detection with the higher accuracy than the conventional bipolar latch method. Using this IC with a magnet makes it possible to detect the rotation status in various devices.

ABLIC Inc. offers a "magnetic simulation service" that provides the ideal combination of magnets and our Hall effect ICs for customer systems. Our magnetic simulation service will reduce prototype production, development period and development costs. In addition, it will contribute to optimization of parts to realize high cost performance. For more information regarding our magnetic simulation service, contact our sales representatives.

#### Caution This product can be used in vehicle equipment and in-vehicle equipment. Before using the product for these purposes, it is imperative to contact our sales representatives.

#### Features

- Uses a thin (t0.80 mm max.) TSOT-23-3S or ultra-thin (t0.50 mm max.) HSNT-6(2025) package, allowing for device miniaturization
- Contributes to reduction of mechanism operation dispersion through high accuracy detection of magnetic flux density (magnetic field) polarity changes
- Suitable for devices which require high quality due to the production system of this IC which certifies automotive application quality
- · Contributes to device safe design with a built-in reverse voltage protection circuit and output current limit circuit

#### Specifications

Pole detection:	ZCL detection	<ul> <li>DC brushless motor for</li> </ul>
<ul> <li>Output logic<sup>*1</sup>:</li> </ul>	Vout = "L" at S pole detection	automotive applications
	Vout = "H" at S pole detection	<ul> <li>Automobile equipment</li> </ul>
<ul> <li>Output form<sup>*1</sup>:</li> </ul>	Nch open-drain output	<ul> <li>Housing equipment</li> </ul>
	Nch driver + built-in pull-up resistor (1.2 k $\Omega$ typ.)	<ul> <li>Industrial equipment</li> </ul>
<ul> <li>Zero crossing latch point:</li> </ul>	Bz = 0.0 mT typ.	
<ul> <li>Release point (S pole)<sup>*1</sup>:</li> </ul>	$B_{RS} = 3.0 \text{ mT}$ typ.	
	$B_{RS} = 6.0 \text{ mT}$ typ.	
<ul> <li>Chopping frequency:</li> </ul>	$f_{\rm C} = 500 \text{ kHz typ.}$	Packages
<ul> <li>Output delay time:</li> </ul>	t <sub>D</sub> = 8.0 μs typ.	U
<ul> <li>Power supply voltage range<sup>*2</sup>:</li> </ul>	V <sub>DD</sub> = 2.7 V to 26.0 V	• TSOT-23-3S
Built-in regulator		• HSNT-6(2025)
Built-in reverse voltage protection	on circuit	
Built-in output current limit circu	it	
<ul> <li>Operation temperature range:</li> </ul>	Ta = -40°C to +150°C	

- Lead-free (Sn 100%), halogen-free
- AEC-Q100 qualified<sup>\*3</sup>
  - \*1. The option can be selected.
  - \*2.  $V_{DD} = 2.7 \text{ V}$  to 5.5 V when output form is Nch driver + built-in pull-up resistor (1.2 k $\Omega$  typ.)
  - \*3. Contact our sales representatives for details.

Applications

# S-57RB S Series

Applications

### AUTOMOTIVE, 150°C OPERATION, HIGH-WITHSTAND VOLTAGE, HIGH-SPEED, BIPOLAR HALL EFFECT LATCH IC

This IC, developed by CMOS technology, is a high-accuracy Hall effect latch IC that operates with high temperature and high-withstand voltage.

The output voltage level changes when this IC detects the intensity level of magnetic flux density and a polarity change. Using this IC with a magnet makes it possible to detect the rotation status in various devices.

ABLIC Inc. offers a "magnetic simulation service" that provides the ideal combination of magnets and our Hall effect ICs for customer systems. Our magnetic simulation service will reduce prototype production, development period and development costs. In addition, it will contribute to optimization of parts to realize high cost performance. For more information regarding our magnetic simulation service, contact our sales representatives.

ABLIC Inc. offers FIT rate calculated based on actual customer usage conditions in order to support customer functional safety design.

For more information regarding our FIT rate calculation, contact our sales representatives.

# Caution This product can be used in vehicle equipment and in-vehicle equipment. Before using the product for these purposes, it is imperative to contact our sales representatives.

#### Features

- Uses a thin (t0.80 mm max.) TSOT-23-3S or ultra-thin (t0.50 mm max.) HSNT-6(2025) package, allowing for device miniaturization
- Contributes to reduction of mechanism operation dispersion with high-accuracy magnetic characteristics (Typ. value ± 1.0 mT) (Refer to " **Magnetic Characteristics**" for details.)
- Our production system certifies automotive application quality, which allows for use in devices which require high quality
- Contributes to device safe design with a built-in reverse voltage protection circuit and output current limit circuit

#### Specifications

Pole detection:	Bipolar latch	<ul> <li>DC brushless motor for</li> </ul>
<ul> <li>Output logic<sup>*1</sup>:</li> </ul>	Vout = "L" at S pole detection	automotive applications
	Vout = "H" at S pole detection	<ul> <li>Automobile equipment</li> </ul>
<ul> <li>Output form<sup>*1</sup>:</li> </ul>	Nch open-drain output	<ul> <li>Housing equipment</li> </ul>
	Nch driver + built-in pull-up resistor (1.2 k $\Omega$ typ.)	<ul> <li>Industrial equipment</li> </ul>
<ul> <li>Magnetic sensitivity<sup>*1</sup>:</li> </ul>	$B_{OP} = 0.5 \text{ mT typ.}$	
	$B_{OP} = 2.2 \text{ mT typ.}$	
	$B_{OP} = 3.0 \text{ mT typ.}$	Packages
	$B_{OP} = 6.0 \text{ mT typ.}$	
	$B_{OP} = 10.0 \text{ mT typ.}$	• ISOI-23-3S
<ul> <li>Chopping frequency:</li> </ul>	$f_c = 500 \text{ kHz typ.}$	• HSNT-6(2025)
<ul> <li>Output delay time:</li> </ul>	t <sub>D</sub> = 8.0 μs typ.	
<ul> <li>Power supply voltage range<sup>*2</sup>:</li> </ul>	V <sub>DD</sub> = 2.7 V to 26.0 V	
<ul> <li>Built-in regulator</li> </ul>		

- Built-in reverse voltage protection circuit
- Built-in output current limit circuit
- Operation temperature range:  $Ta = -40^{\circ}C$  to  $+150^{\circ}C$
- Lead-free (Sn 100%), halogen-free
- AEC-Q100 qualified\*3

\*1. The option can be selected.

\*2.  $V_{DD}$  = 2.7 V to 5.5 V when output form is Nch driver + built-in pull-up resistor (1.2 k $\Omega$  typ.)

\*3. Contact our sales representatives for details.

### ABLIC Inc.

# S-57P1 S Series

### FOR AUTOMOTIVE 150°C OPERATION HIGH-WITHSTAND VOLTAGE HIGH-SPEED BIPOLAR HALL EFFECT LATCH IC

This IC, developed by CMOS technology, is a high-accuracy Hall effect latch IC that operates with high temperature and high-withstand voltage.

The output voltage changes when this IC detects the intensity level of magnetic flux density and a polarity change. Using this IC with a magnet makes it possible to detect the rotation status in various devices.

This IC includes a reverse voltage protection circuit and an output current limit circuit.

High-density mounting is possible by using the small SOT-23-3S package.

Due to its high-accuracy magnetic characteristics, this IC enables the user to reduce the operational variation in the system.

ABLIC Inc. offers a "magnetic simulation service" that provides the ideal combination of magnets and our Hall effect ICs for customer systems. Our magnetic simulation service will reduce prototype production, development period and development costs. In addition, it will contribute to optimization of parts to realize high cost performance. For more information regarding our magnetic simulation service, contact our sales office.

# Caution This product can be used in vehicle equipment and in-vehicle equipment. Before using the product in the purpose, contact to ABLIC Inc. is indispensable.

#### Features

Bipolar latch
Vout = "L" at S pole detection
V <sub>OUT</sub> = "H" at S pole detection
Nch open-drain output
Bop = 0.5 mT typ.
Bop = 1.5 mT typ.
B <sub>OP</sub> = 2.2 mT typ.
B <sub>OP</sub> = 3.0 mT typ.
$f_{\rm C}$ = 500 kHz typ.
t <sub>D</sub> = 8.0 μs typ.
V <sub>DD</sub> = 2.7 V to 26.0 V
Ta = -40°C to +150°C

• AEC-Q100 qualified \*2

**\*1.** The option can be selected.

**\*2.** Contact our sales office for details.

#### Applications

• Automobile equipment

Home appliance

DC brushless motor

- Housing equipment
- Industrial equipment

#### Package

• SOT-23-3S

# S-57K1 A Series

### FOR AUTOMOTIVE 125°C OPERATION HIGH-WITHSTAND VOLTAGE HIGH-SPEED BIPOLAR HALL EFFECT LATCH IC

This IC, developed by CMOS technology, is a high-accuracy Hall effect latch IC that operates with high temperature and high-withstand voltage.

The output voltage changes when this IC detects the intensity level of magnetic flux density and a polarity change. Using this IC with a magnet makes it possible to detect the rotation status in various devices.

This IC includes a reverse voltage protection circuit and an output current limit circuit.

High-density mounting is possible by using the small SOT-23-3 package.

Due to its high-accuracy magnetic characteristics, this IC can make operation's dispersion in the system combined with magnet smaller.

ABLIC Inc. offers a "magnetic simulation service" that provides the ideal combination of magnets and our Hall effect ICs for customer systems. Our magnetic simulation service will reduce prototype production, development period and development costs. In addition, it will contribute to optimization of parts to realize high cost performance. For more information regarding our magnetic simulation service, contact our sales office.

# Caution This product can be used in vehicle equipment and in-vehicle equipment. Before using the product in the purpose, contact to ABLIC Inc. is indispensable.

#### Features

Pole detection:	Bipolar latch
<ul> <li>Output logic<sup>*1</sup>:</li> </ul>	V <sub>OUT</sub> = "L" at S pole detection
	Vout = "H" at S pole detection
<ul> <li>Output form<sup>*1</sup>:</li> </ul>	Nch open-drain output,
	Nch driver + built-in pull-up resistor
<ul> <li>Magnetic sensitivity<sup>*1</sup>:</li> </ul>	B <sub>OP</sub> = 3.0 mT typ.
	B <sub>OP</sub> = 6.0 mT typ.
Chopping frequency:	$f_c = 500 \text{ kHz typ.}$
Output delay time:	t <sub>D</sub> = 8.0 μs typ.
<ul> <li>Power supply voltage range:</li> </ul>	V <sub>DD</sub> = 3.5 V to 26.0 V
Built-in regulator	
Built-in reverse voltage protection circuit	
Built-in output current limit circuit	
Operation temperature range:	Ta = -40°C to +125°C
• Lead-free (Sn 100%), halogen-free	
• AEC-Q100 qualified*2	
·	

**\*1.** The option can be selected.

\*2. Contact our sales office for details.

#### Applications

- Automobile equipment
- Home appliance
- DC brushless motor
- Housing equipment
- Industrial equipment

#### Package

• SOT-23-3

# S-57GS/GN S Series

### AUTOMOTIVE, 150°C OPERATION, HIGH-WITHSTAND VOLTAGE, HIGH-SPEED, UNIPOLAR DETECTION TYPE HALL EFFECT SWITCH IC

This IC, developed by CMOS technology, is a high-accuracy Hall effect switch IC that operates with high temperature and high-withstand voltage.

The output voltage level changes when this IC detects the intensity level of magnetic flux density. Using this IC with a magnet makes it possible to detect the open / close in various devices.

ABLIC Inc. offers a "magnetic simulation service" that provides the ideal combination of magnets and our Hall effect ICs for customer systems. Our magnetic simulation service will reduce prototype production, development period and development costs. In addition, it will contribute to optimization of parts to realize high cost performance. For more information regarding our magnetic simulation service, contact our sales representatives.

ABLIC Inc. offers FIT rate calculated based on actual customer usage conditions in order to support customer functional safety design.

For more information regarding our FIT rate calculation, contact our sales representatives.

#### Caution This product can be used in vehicle equipment and in-vehicle equipment. Before using the product for these purposes, it is imperative to contact our sales representatives.

#### Features

- Uses a thin (t0.80 mm max.) TSOT-23-3S or ultra-thin (t0.50 mm max.) HSNT-6(2025) package, contributing to the enhancement of the designs of devices
- Contributes to accurate mechanism operation with high-accuracy magnetic characteristics (Refer to " Characteristics" for details.)
- Suitable for devices which require high quality due to the production system of this IC which certifies automotive application quality
- Contributes to device safe design with a built-in reverse voltage protection circuit and output current limit circuit

#### Specifications

<ul> <li>Pole detection:</li> </ul>	Unipolar detection	<ul> <li>Automobile equ</li> </ul>
<ul> <li>Output logic<sup>*1</sup>:</li> </ul>	Active "L"	<ul> <li>Housing equipr</li> </ul>
	Active "H"	<ul> <li>Industrial equip</li> </ul>
<ul> <li>Output form<sup>*1</sup>:</li> </ul>	Nch open-drain output	
	Nch driver + built-in pull-up resistor (1.2 k $\Omega$ typ.)	
<ul> <li>Magnetic sensitivity<sup>*1</sup>:</li> </ul>	$B_{OP} = 3.0 \text{ mT typ.}$	Packages
	$B_{OP} = 6.0 \text{ mT typ.}$	
	$B_{OP} = 10.0 \text{ mT typ.}$	• TSOT-23-3S
	B <sub>OP</sub> = 15.0 mT typ.	• HSNT-6(2025)
<ul> <li>Chopping frequency:</li> </ul>	$f_c = 500 \text{ kHz typ.}$	
<ul> <li>Output delay time:</li> </ul>	t <sub>D</sub> = 8.0 μs typ.	
<ul> <li>Power supply voltage range<sup>*2</sup>:</li> </ul>	V <sub>DD</sub> = 2.7 V to 26.0 V	
<ul> <li>Built-in regulator</li> </ul>		
• Built-in reverse voltage protection	on circuit	
Duilt in autout automat limit aireu	:.	

- Built-in output current limit circuit
- Operation temperature range:  $Ta = -40^{\circ}C$  to  $+150^{\circ}C$
- Lead-free (Sn 100%), halogen-free
- AEC-Q100 qualified<sup>\*3</sup>
  - \*1. The option can be selected.
  - \*2.  $V_{DD}$  = 2.7 V to 5.5 V when output form is Nch driver + built-in pull-up resistor (1.2 k $\Omega$  typ.)
  - \*3. Contact our sales representatives for details.

#### Applications

- uipment
- ment
- oment

ABLIC Inc.

# S-57GD S Series

### AUTOMOTIVE, 150°C OPERATION, HIGH-WITHSTAND VOLTAGE, HIGH-SPEED, **OMNIPOLAR DETECTION TYPE HALL EFFECT SWITCH IC**

This IC, developed by CMOS technology, is a high-accuracy Hall effect switch IC that operates with high temperature and high-withstand voltage.

The output voltage level changes when this IC detects the intensity level of magnetic flux density. Using this IC with a magnet makes it possible to detect the open / close in various devices.

ABLIC Inc. offers a "magnetic simulation service" that provides the ideal combination of magnets and our Hall effect ICs for customer systems. Our magnetic simulation service will reduce prototype production, development period and development costs. In addition, it will contribute to optimization of parts to realize high cost performance. For more information regarding our magnetic simulation service, contact our sales representatives.

ABLIC Inc. offers FIT rate calculated based on actual customer usage conditions in order to support customer functional safety design.

For more information regarding our FIT rate calculation, contact our sales representatives.

#### Caution This product can be used in vehicle equipment and in-vehicle equipment. Before using the product for these purposes, it is imperative to contact our sales representatives.

#### Features

- Uses a thin (t0.80 mm max.) TSOT-23-3S or ultra-thin (t0.50 mm max.) HSNT-6(2025) package, contributing to the enhancement of the designs of devices
- Contributes to accurate mechanism operation with high-accuracy magnetic characteristics (Refer to " Characteristics" for details.)
- Suitable for devices which require high quality due to the production system of this IC which certifies automotive application quality
- Contributes to device safe design with a built-in reverse voltage protection circuit and output current limit circuit

#### Specifications

Pole detection:	Omnipolar detection	<ul> <li>Automobile equipme</li> </ul>		
<ul> <li>Output logic<sup>*1</sup>:</li> </ul>	Active "L"	<ul> <li>Housing equipment</li> </ul>		
	Active "H"	<ul> <li>Industrial equipment</li> </ul>		
<ul> <li>Output form<sup>*1</sup>:</li> </ul>	Nch open-drain output			
	Nch driver + built-in pull-up resistor (1.2 k $\Omega$ typ.)			
<ul> <li>Magnetic sensitivity<sup>*1</sup>:</li> </ul>	$B_{OP} = 3.0 \text{ mT typ.}$			
	$B_{OP} = 6.0 \text{ mT typ.}$	Packages		
	B <sub>OP</sub> = 10.0 mT typ.	<b>.</b>		
	B <sub>OP</sub> = 15.0 mT typ.	• TSOT-23-3S		
<ul> <li>Chopping frequency:</li> </ul>	$f_c = 500 \text{ kHz typ.}$	<ul> <li>HSNT-6(2025)</li> </ul>		
<ul> <li>Output delay time:</li> </ul>	t <sub>D</sub> = 16.0 μs typ.			
<ul> <li>Power supply voltage range<sup>*2</sup>:</li> </ul>	V <sub>DD</sub> = 2.7 V to 26.0 V			
<ul> <li>Built-in regulator</li> </ul>				
• Built-in reverse voltage protection	on circuit			

- Built-in output current limit circuit
- Operation temperature range:  $Ta = -40^{\circ}C$  to  $+150^{\circ}C$
- Lead-free (Sn 100%), halogen-free
- AEC-Q100 qualified<sup>\*3</sup>
  - \*1. The option can be selected.
  - \*2.  $V_{DD}$  = 2.7 V to 5.5 V when output form is Nch driver + built-in pull-up resistor (1.2 k $\Omega$  typ.)
  - \*3. Contact our sales representatives for details.

### ABLIC Inc.

#### Applications

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### S-57A1 A Series

### FOR AUTOMOTIVE 125°C OPERATION HIGH-WITHSTAND VOLTAGE HIGH-SPEED UNIPOLAR DETECTION TYPE HALL EFFECT SWITCH IC

This IC, developed by CMOS technology, is a high-accuracy Hall effect switch IC that operates with high temperature and high-withstand voltage.

The output voltage changes when this IC detects the intensity level of magnetic flux density. Using this IC with a magnet makes it possible to detect the open / close and rotation status in various devices.

This IC includes a reverse voltage protection circuit and an output current limit circuit.

High-density mounting is possible by using the small SOT-23-3 package.

Due to its high-accuracy magnetic characteristics, this IC can make operation's dispersion in the system combined with magnet smaller.

ABLIC Inc. offers a "magnetic simulation service" that provides the ideal combination of magnets and our Hall effect ICs for customer systems. Our magnetic simulation service will reduce prototype production, development period and development costs. In addition, it will contribute to optimization of parts to realize high cost performance. For more information regarding our magnetic simulation service, contact our sales office.

# Caution This product can be used in vehicle equipment and in-vehicle equipment. Before using the product in the purpose, contact to ABLIC Inc. is indispensable.

Detection of S pole Detection of N pole

Nch open-drain output

 $B_{OP} = 3.0 \text{ mT typ.}$  $B_{OP} = 6.0 \text{ mT typ.}$ 

fc = 250 kHz typ.

 $t_D$  = 16.0 µs typ.

 $V_{DD}$  = 3.5 V to 26.0 V

Ta =  $-40^{\circ}$ C to  $+125^{\circ}$ C

Nch driver + built-in pull-up resistor

Active "L" Active "H"

#### Features

- Pole detection<sup>\*1</sup>:
- Output logic\*1:
- Output form\*1:
- Magnetic sensitivity\*1:
- Chopping frequency:
- Output delay time:
- Power supply voltage range:
- Built-in regulator
- Built-in reverse voltage protection circuit
- Built-in output current limit circuit
- Operation temperature range:
- Lead-free (Sn 100%), halogen-free
- AEC-Q100 qualified\*2

**\*1.** The option can be selected.

\*2. Contact our sales office for details.

#### Applications

- Automobile equipment
- Home appliance
- DC brushless motor
- Housing equipment
- Industrial equipment

#### Package

• SOT-23-3

# S-35190A H Series

### FOR AUTOMOTIVE 105°C OPERATION 3-WIRE REAL-TIME CLOCK

The S-35190A H Series is a 105°C operation CMOS 3-wire real-time clock IC which operates with the very low current consumption in the wide range of operation voltage. The operation voltage is 1.3 V to 5.5 V so that the S-35190A H Series can be used for various power supplies from main supply to backup battery. Due to the 0.25  $\mu$ A current consumption and wide range of power supply voltage at time keeping, the S-35190A H Series makes the battery life longer. In the system which operates with a backup battery, the included free registers can be used as the function for user's backup memory. Users always can take back the information in the registers which is stored before power-off the main power supply, after the voltage is restored.

The S-35190A H Series has the function to correct advance / delay of the clock data speed, in the wide range, which is caused by the crystal oscillation circuit's frequency deviation. Correcting according to the temperature change by combining this function and a temperature sensor, it is possible to make a high precise clock function which is not affected by the ambient temperature.

Caution This product can be used in vehicle equipment and in-vehicle equipment. Before using the product in the purpose, contact to ABLIC Inc. is indispensable.

#### Features

• Low current consumption:

0.25  $\mu A$  typ. (V\_{DD} = 3.0 V, Ta = +25  $^{\circ}C)$ 

- Wide range of operating voltage: 1.3 V to 5.5 V
- Built-in clock correction function
- Built-in free user register
- 3-wire (MICROWIRE) CPU interface
- Built-in alarm interrupter
- Built-in flag generator during detection of low power voltage or at power-on
- Auto calendar up to the year 2099, automatic leap year calculation function
- Built-in constant-voltage circuit
- Built-in 32.768 kHz crystal oscillation circuit (built-in Cd, external Cg)
- Operating temperature range:  $Ta = -40^{\circ}C \text{ to } +105^{\circ}C$
- Lead-free (Sn 100%), halogen-free
- AEC-Q100 qualified<sup>\*1</sup>
- \*1. Contact our sales office for details.

- 8-Pin SOP (JEDEC)
- 8-Pin TSSOP

# S-35390A H Series

### FOR AUTOMOTIVE 105°C OPERATION 2-WIRE REAL-TIME CLOCK

The S-35390A H Series is a 105°C operation CMOS 2-wire real-time clock IC which operates with the very low current consumption in the wide range of operation voltage. The operation voltage is 1.3 V to 5.5 V so that the S-35390A H Series can be used for various power supplies from main supply to backup battery. Due to the 0.25  $\mu$ A current consumption and wide range of power supply voltage at time keeping, the S-35390A H Series makes the battery life longer. In the system which operates with a backup battery, the included free registers can be used as the function for user's backup memory. Users always can take back the information in the registers which is stored before power-off the main power supply, after the voltage is restored.

The S-35390A H Series has the function to correct advance / delay of the clock data speed, in the wide range, which is caused by the crystal oscillation circuit's frequency deviation. Correcting according to the temperature change by combining this function and a temperature sensor, it is possible to make a high precise clock function which is not affected by the ambient temperature.

Caution This product can be used in vehicle equipment and in-vehicle equipment. Before using the product in the purpose, contact to ABLIC Inc. is indispensable.

1.3 V to 5.5 V

0.25 μA typ. (V<sub>DD</sub> = 3.0 V, Ta = +25°C)

#### Features

- Low current consumption:
- Wide range of operating voltage:
- Built-in clock correction function
- Built-in free user register
- 2-wire (I<sup>2</sup>C-bus) CPU interface
- Built-in alarm interrupter
- · Built-in flag generator during detection of low power voltage or at power-on
- Auto calendar up to the year 2099, automatic leap year calculation function
- Built-in constant voltage circuit
- Built-in 32.768 kHz crystal oscillation circuit (built-in C<sub>d</sub>, external C<sub>g</sub>)
  - Operating temperature range:  $Ta = -40^{\circ}C \text{ to } +105^{\circ}C$
- Lead-free (Sn 100%), halogen-free
- AEC-Q100 qualified<sup>\*1</sup>

\*1. Contact our sales office for details.

#### Packages

- 8-Pin SOP (JEDEC)
- 8-Pin TSSOP

ABLIC Inc.

### S-35710 A Series

**CONVENIENCE TIMER** 

### AUTOMOTIVE, 125°C OPERATION, 2-WIRE TIMER

The convenience timer is a CMOS timer IC which operates with low current consumption, and is suitable for the time management of the relative time.

The S-35710 Series compares the timer value and the value written to the internal register, and outputs an interrupt signal when the values match each other.

The timer of the S-35710 Series is a 24-bit binary-up counter.

The internal register data can be set freely by users via a 2-wire serial interface. Consequently, the time before the occurrence of an interrupt signal can be set freely.

# Caution This product can be used in vehicle equipment and in-vehicle equipment. Before using the product for these purposes, it is imperative to contact our sales representatives.

(Approximately half a year)

 $Ta = -40^{\circ}C \text{ to } +125^{\circ}C$ 

1.8 V to 5.5 V

Settable on the second time scale from 1 second to 194 days

0.2  $\mu$ A typ. (Quartz crystal: C<sub>L</sub> = 6.0 pF, V<sub>DD</sub> = 3.0 V, Ta = +25°C)

#### Features

- Alarm interrupt function:
- Low current consumption:
- Wide range of operation voltage:
- 2-wire (I<sup>2</sup>C-bus) CPU interface
- Built-in 32.768 kHz crystal oscillation circuit
- Operation temperature range:
- Lead-free (Sn 100%), halogen-free
- AEC-Q100 qualified<sup>\*1</sup>
- \*1. Contact our sales representatives for details.

#### Application

• Time management of various systems during the sleep period

#### Package

TMSOP-8

# S-35710M A Series

**CONVENIENCE TIMER** 

### AUTOMOTIVE, 125°C OPERATION, 2-WIRE TIMER WITH BUILT-IN QUARTZ CRYSTAL

The convenience timer is a CMOS timer IC which operates with low current consumption, and is suitable for the time management of the relative time.

The S-35710M compares the timer value and the value written to the internal register and outputs an interrupt signal when the values match each other.

The timer of the S-35710M is a 24-bit binary-up counter.

The internal register data can be set freely by users via a 2-wire serial interface. Consequently, the time before the occurrence of an interrupt signal can be set freely.

Since the S-35710M has a built-in quartz crystal, a matching assessment of the IC and the quartz crystal is unnecessary. Moreover, the number of external parts can also be reduced.

# Caution This product can be used in vehicle equipment and in-vehicle equipment. Before using the product for these purposes, it is imperative to contact our sales representatives.

 $Ta = -40^{\circ}C to +125^{\circ}C$ 

#### Features

- Built-in 32.768 kHz quartz crystal
- Alarm interrupt function:
- Low current consumption:
- Wide range of operation voltage:
- 2-wire (I<sup>2</sup>C-bus) CPU interface
- Operation temperature range:
- Lead-free (Sn 100%), halogen-free
- AEC-Q100/Q200 qualified<sup>\*1</sup>
- \*1. Contact our sales representatives for details.

#### Application

• Time management of various systems during the sleep period

#### Package

• HSOP-8Q

Settable on the second time scale from 1 second to 194 days (Approximately half a year) 0.25  $\mu$ A typ. (V<sub>DD</sub> = 3.0 V, Ta = +25°C) 1.8 V to 5.5 V

# S-35720 A Series

**CONVENIENCE TIMER** 

### AUTOMOTIVE, 125°C OPERATION, TIMER WITH INTERRUPT TIME SETTING PIN

The convenience timer is a CMOS timer IC which operates with low current consumption, and is suitable for the time management of the relative time.

The S-35720 Series compares the timer value and the value set to the SET0 pin and the SET1 pin, and outputs an interrupt signal when the values match each other.

The timer of the S-35720 Series is a 24-bit binary-up counter.

4 types of interrupt time can be selected depending on the SET0 pin and the SET1 pin settings.

# Caution This product can be used in vehicle equipment and in-vehicle equipment. Before using the product for these purposes, it is imperative to contact our sales representatives.

#### Features

<ul> <li>Alarm interrupt function:</li> </ul>	Settable interrupt time		
	Selectable as the option on the second time scale from 1 second to 194 days		
	(Approximately half a year)		
<ul> <li>Low current consumption:</li> </ul>	0.2  uA typ (Quartz crystal: Ci = 6.0 pF Vpp = 3.0 V Ta = +25°C)		

- Low current consumption:  $0.2 \,\mu A$  typ. (Quartz crystal:  $C_L = 6.0 \,pF$ ,  $V_{DD} = 3.0 \,V$ ,  $Ta = +25^{\circ}C$ )
- Wide range of operation voltage: 1.8 V to 5.5 V
- Built-in 32.768 kHz crystal oscillation circuit
- Operation temperature range:  $Ta = -40^{\circ}C$  to  $+125^{\circ}C$
- Lead-free (Sn 100%), halogen-free
- AEC-Q100 qualified<sup>\*1</sup>
- \*1. Contact our sales representatives for details.

#### Application

• Time management of various systems during the sleep period

#### Package

# S-35730 A Series

#### **CONVENIENCE TIMER**

### AUTOMOTIVE, 125°C OPERATION, CLOCK PULSE OUTPUT, TIMER WITH FREQUENCY SETTING PIN

The convenience timer is a CMOS timer IC which operates with low current consumption, and is suitable for the time management of the relative time.

The S-35730 Series outputs the clock pulse.

4 types of clock pulse frequency can be selected from 1 Hz to 32.768 kHz depending on the SET0 pin and the SET1 pin settings.

# Caution This product can be used in vehicle equipment and in-vehicle equipment. Before using the product in the purpose, contact to ABLIC Inc. is indispensable.

#### Features

Clock pulse output function:Low current consumption:

Settable clock pulse frequency, with an output control pin 0.7  $\mu$ A typ. (Quartz crystal: C<sub>L</sub> = 6.0 pF, V<sub>DD</sub> = 3.0 V, ENBL pin = "H", Ta = +25°C,

FOUT pin = Nch open-drain output)

- Wide range of operation voltage: 1.8 V to 5.5 V
- Built-in 32.768 kHz crystal oscillation circuit
- Operation temperature range:  $Ta = -40^{\circ}C \text{ to } +125^{\circ}C$
- Lead-free (Sn 100%), halogen-free
- AEC-Q100 qualified<sup>\*1</sup>
- \*1. Contact our sales office for details.

#### Applications

- Intermittent operation of various systems
- Regular status monitoring of various systems

#### Package

# S-35740 A Series

**CONVENIENCE TIMER** 

### AUTOMOTIVE, 125°C OPERATION, 2-WIRE INTERVAL TIMER

The convenience timer is a CMOS timer IC which operates with low current consumption, and is suitable for the time management of the relative time.

The S-35740 Series outputs the fixed-cycle interrupt signal. The frequency and duty ratio of the fixed-cycle interrupt signal can be set freely by users via a 2-wire serial interface.

The S-35740 Series has a 24-bit timer. For example, users can obtain the cumulative energization time of the system since the timer performs a count-up action every second.

# Caution This product can be used in vehicle equipment and in-vehicle equipment. Before using the product in the purpose, contact to ABLIC Inc. is indispensable.

#### Features

• Fixed-cycle interrupt signal output function: Settable frequency and duty ratio, with an output control pin

1.8 V to 5.5 V

- Low current consumption: (Quartz crystal:  $C_L = 6.0 \text{ pF}$ ,  $V_{DD} = 3.0 \text{ V}$ , ENBL pin = "H", Ta = +25°C)
- Wide range of operation voltage:
- 2-wire (I<sup>2</sup>C-bus) CPU interface
- Built-in 32.768 kHz crystal oscillation circuit
- Operation temperature range:

 $Ta = -40^{\circ}C \text{ to } +125^{\circ}C$ 

- Lead-free (Sn 100%), halogen-free
- AEC-Q100 qualified<sup>\*1</sup>

\*1. Contact our sales office for details.

#### Application

- Intermittent operation of various systems
- Regular status monitoring of various systems

#### Package

# S-35770 A Series

**CONVENIENCE TIMER** 

### AUTOMOTIVE, 125°C OPERATION, 2-WIRE COUNTER

The convenience timer is a CMOS timer IC which operates with low current consumption, and is suitable for the time management of the relative time.

The S-35770 Series counts the number of clocks input from an external device. The counter of the S-35770 Series is a 24-bit binary-up counter.

The counter data can be read via a 2-wire serial interface.

Caution This product can be used in vehicle equipment and in-vehicle equipment. Before using the product in the purpose, contact to ABLIC Inc. is indispensable.

 $Ta = -40^{\circ}C$  to  $+125^{\circ}C$ 

#### Features

- External clock signal count function:
- Low current consumption:
- Wide range of operation voltage:
- 2-wire (I<sup>2</sup>C-bus) CPU interface
- Operation temperature range:
- Lead-free (Sn 100%), halogen-free
- AEC-Q100 qualified\*1
  - ed<sup>\*1</sup>
  - \*1. Contact our sales office for details.

### Application

• Various pulse counters

### Package

• TMSOP-8

Countable from 0 to 16,777,215, with output pin for counter loop flag 0.01  $\mu$ A typ. (V<sub>DD</sub> = 3.0 V, Ta = +25°C, out of communication (CLKIN pin = 0 V)) 1.5 V to 5.5 V

# S-19630A

### AUTOMOTIVE, 125°C OPERATION, LOW INPUT OFFSET VOLTAGE CMOS OPERATIONAL AMPLIFIER

This IC incorporates a general purpose analog circuit in a small package. This is a zero-drift operational amplifier with Rail-to-Rail input and output, which uses chopper-stabilizing techniques to provide low input offset voltage. The S-19630AB is a dual operational amplifier (2 circuits), which is suitable for applications requiring less offset voltage.

# Caution This product can be used in vehicle equipment and in-vehicle equipment. Before using the product for these purposes, it is imperative to contact our sales representatives.

#### Features

- Low input offset voltage:
- Low input offset voltage drift:
- Operation power supply voltage range:
- Low current consumption (Per circuit):
- Low input noise voltage:
- Low input noise voltage density:
- Built-in output current limit circuit:
- Internal phase compensation:
- Rail-to-Rail input and output
- Operation temperature range:
- Lead-free (Sn 100%), halogen-free
- AEC-Q100 qualified<sup>\*1</sup>

\*1. Contact our sales representatives for details.

### Applications

- High-accuracy current detection
- Various sensor interfaces
- Strain gauge amplifier

#### Package

• TMSOP-8

 $V_{IO}$  = +50 µV max. (Ta = -40°C to +125°C)  $\frac{\Delta V_{IO}}{\Delta Ta}$  = ±25 nV/°C typ. (V<sub>DD</sub> = 30.0 V, Ta = -40°C to +125°C)

 $V_{DD}$  = 4.0 V to 36.0 V I<sub>DD</sub> = 250 µA typ.

 $V_{\text{NOISE_pp}} = 0.8 \,\mu\text{Vpp}$  typ. (f = 0.1 Hz to 10 Hz)

 $V_{\text{NOISE}}$  = 25 nV/ $\sqrt{\text{Hz}}$  typ. (f = 1 kHz)

- Overcurrent limit when output pin is short-circuited No external parts required
- Ta = -40°C to +125°C

# S-19611A

### AUTOMOTIVE, 105°C OPERATION, LOW INPUT OFFSET VOLTAGE CMOS OPERATIONAL AMPLIFIER

This IC incorporates a general purpose analog circuit in a small package. This is a zero-drift operational amplifier with Rail-to-Rail input and output, which uses auto-zeroing techniques to provide low input offset voltage. This IC is suitable for applications requiring less offset voltage. The S-19611AB is a dual operational amplifier (2 circuits).

# Caution This product can be used in vehicle equipment and in-vehicle equipment. Before using the product for these purposes, it is imperative to contact our sales representatives.

#### Features

- Low input offset voltage:
- Operation power supply voltage range:
- Low current consumption (Per circuit):
- Internal phase compensation:
- Rail-to-Rail input and output
- Operation temperature range:
- Lead-free (Sn 100%), halogen-free
- AEC-Q100 qualified<sup>\*1</sup>

\*1. Contact our sales representatives for details.

#### Applications

- High-accuracy current detection
- Various sensor interfaces
- Strain gauge amplifier

#### Package

• TMSOP-8

 $Ta = -40^{\circ}C \text{ to } +105^{\circ}C$ 

# S-19610A

### AUTOMOTIVE, 125°C OPERATION, CMOS OPERATIONAL AMPLIFIER

This IC incorporates a general purpose analog circuit in a small package. This is a CMOS type operational amplifier with phase compensation circuit, which operates at a low voltage and low current consumption. The S-19610AB is a dual operational amplifier (2 circuits).

# Caution This product can be used in vehicle equipment and in-vehicle equipment. Before using the product in the purpose, contact to ABLIC Inc. is indispensable.

 $I_{DD} = 1.00 \text{ mA typ.}$ 

No external parts required  $Ta = -40^{\circ}C$  to  $+125^{\circ}C$ 

#### Features

- Low input offset voltage:
- $V_{IO}$  = +6.0 mV max. (Ta = -40°C to +125°C)  $V_{DD}$  = 2.70 V to 5.50 V
- Operation power supply voltage range:
- Low current consumption (Per circuit):
- Internal phase compensation:
- Operation temperature range:
- Lead-free (Sn 100%), halogen-free
- AEC-Q100 qualified<sup>\*1</sup>
- \*1. Contact our sales office for details.

#### Applications

- Current sensing
- Signal amplification
- Buffer
- Active filter

#### Package

### Package List

Package Type	Pin Count	Package Name	Package Size (mm)			Pitch (mm)
			HE	D	A (max.)	С
Lead insertion type	3	TO-92	14.5	5.2	4.2	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
	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-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
Non-lead type	6	6-Pin HSON(A)	3.0	2.9	0.9	0.95
	4	SNT-4A	1.6	1.2	0.5	0.65
	6	SNT-6A	1.8	1.57	0.5	0.5
	6	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 4 6 6 6 8 8 8 8 8 8 6 6 6 8 8 8 8 8 8	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(1616)B	1.6	1.6	0.41	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(2020)A	2.0	2.0	0.6	0.5
	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

Remarks 1. For more details, please refer to our website. Package List on ablic.com

2. Please contact our sales representatives regarding WLP package products.



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