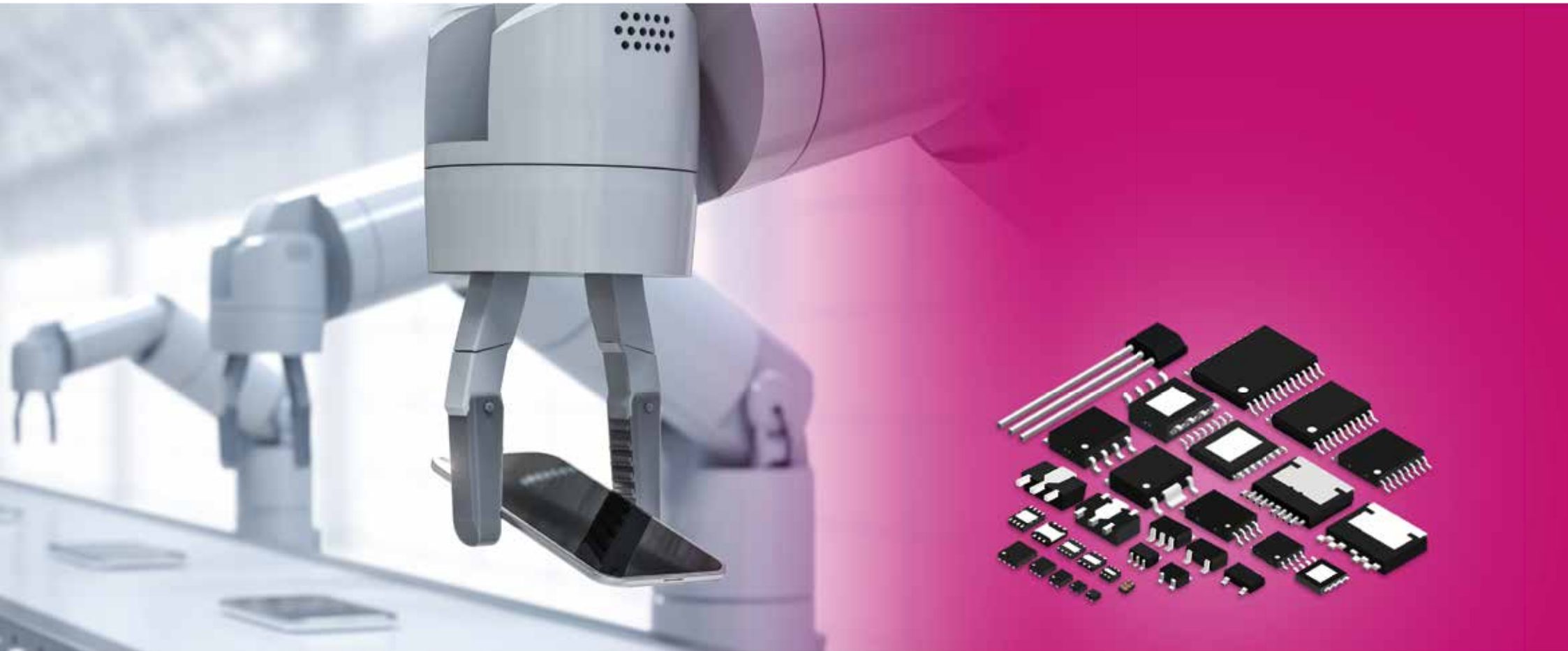


# Product Catalog

Amplifiers, Timer ICs, ASSPs

2023



**ABLIC Inc.**

Features	Series Name	Page
<b>Amplifiers</b>		
<b>Operational Amplifiers</b>		
1 circuit/2 circuits 0.5 $\mu$ A Rail-to-Rail CMOS OPERATIONAL AMPLIFIER	S-89430/89431 Series	7-3
1 circuit/2 circuits CMOS OPERATIONAL AMPLIFIER	S-89110/89120 Series	7-3
2 circuits CMOS OPERATIONAL AMPLIFIER	S-89130/89140 Series	7-3
2 circuits LOW INPUT OFFSET VOLTAGE CMOS OPERATIONAL AMPLIFIER	S-89713 Series	7-3
2 circuits 125°C OPERATION, LOW INPUT OFFSET VOLTAGE CMOS OPERATIONAL AMPLIFIER	S-89630A Series	7-4
<b>Comparators</b>		
1 circuit 0.7 $\mu$ A Rail-to-Rail CMOS COMPARATOR	S-89530A/89531A Series	7-4
1 circuit CMOS COMPARATOR	S-89210/89220 Series	7-4
2 circuits CMOS COMPARATOR	S-89230/89240 Series	7-4
<b>Timer ICs, ASSPs</b>		
<b>Real-Time Clock ICs</b>		
3-WIRE REAL-TIME CLOCK	S-35190A	7-5
2-WIRE REAL-TIME CLOCK	S-35390A	7-5
2-WIRE REAL-TIME CLOCK	S-35391A	7-5
3-WIRE REAL-TIME CLOCK	S-35192A	7-5
2-WIRE REAL-TIME CLOCK	S-35392A	7-6
2-WIRE REAL-TIME CLOCK	S-35399A03	7-6
<b>Wake-up Timer ICs</b>		
PROGRAMMABLE WAKE-UP TIMER IC WITH BUILT-IN QUARTZ CRYSTAL	S-35710M	7-7
PROGRAMMABLE WAKE-UP TIMER IC	S-35710 Series	7-7
PIN-SELECTABLE WAKE-UP TIMER IC	S-35720 Series	7-7
<b>Interval Timer ICs</b>		
PIN-SELECTABLE INTERVAL TIMER IC	S-35730	7-8
PROGRAMMABLE INTERVAL TIMER IC	S-35740	7-8

Features	Series Name	Page
<b>Counter IC</b>		
COUNTER IC WITH 2-WIRE (I <sup>2</sup> C-bus) INTERFACE	S-35770	7-8
<b>Power Sequencers</b>		
POWER SEQUENCER	S-77100/77101 Series	7-8
<b>Wireless Power ICs</b>		
WIRELESS POWER RECEIVER CONTROL IC	S-8471 Series	7-9
WIRELESS POWER RECEIVER CONTROL IC WITH CHARGE FUNCTION	S-8473 Series	7-9
WIRELESS POWER TRANSMITTER CONTROL IC	S-8474 Series	7-9
<b>CMOS IC Packages</b>		
Package List		7-10

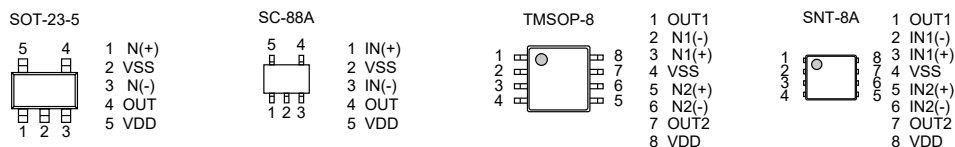
## S-89430/89431 Series

1 circuit/2 circuits  
0.5  $\mu$ A Rail-to-Rail CMOS OPERATIONAL AMPLIFIER

### Features

- Lower operating voltage than the conventional general-purpose:  $V_{DD} = 0.9\text{ V to }5.5\text{ V}$
- Low current consumption (per circuit):  $I_{DD} = 0.5\ \mu\text{A Typ.}$
- Wide I/O voltage range (Rail-to-Rail):  $V_{CMR} = V_{SS}\text{ to }V_{DD}$
- Low input offset voltage:  $V_{IO} = 10.0\text{ mV Max. (S-89430 Series)}$   
 $V_{IO} = 5.0\text{ mV Max. (S-89431 Series)}$
- No external capacitors required for internal phase compensation
- Lead-free, Sn 100%, halogen-free\*1

\*1. Refer to "■ Product Name Structure" for details.



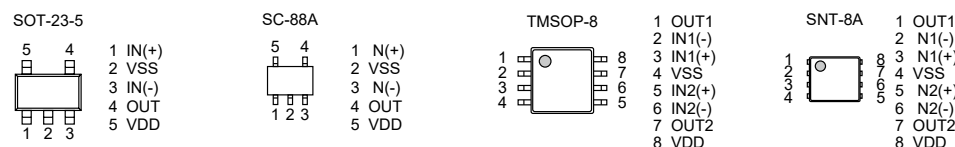
## S-89110/89120 Series

1 circuit/2 circuits  
CMOS OPERATIONAL AMPLIFIER

### Features

- Lower operating voltage than the conventional general-purpose:  $V_{DD} = 1.8\text{ V to }5.5\text{ V}$
- Low current consumption (per circuit):  $I_{DD} = 50\ \mu\text{A (S-89110 Series)}$   
 $I_{DD} = 10\ \mu\text{A (S-89120 Series)}$
- Low input offset voltage:  $4.0\text{ mV max.}$
- No external capacitors required for internal phase compensation
- Output full swing
- Lead-free, Sn 100%, halogen-free\*1

\*1. Refer to "■ Product Name Structure" for details.



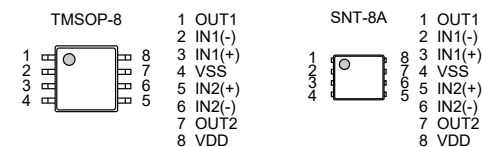
## S-89130/89140 Series

2 circuits  
CMOS OPERATIONAL AMPLIFIER

### Features

- Lower operating voltage :  $V_{DD} = 2.7\text{ V to }5.5\text{ V}$
- Low current consumption (per circuit) :  $I_{DD} = 1.00\text{ mA typ. (S-89130 Series, }V_{DD} = 5.0\text{ V)}$   
 $I_{DD} = 0.27\text{ mA typ. (S-89140 Series, }V_{DD} = 5.0\text{ V)}$
- Low input offset voltage :  $V_{IO} = 6.0\text{ mV max. (S-89130 Series)}$   
 $V_{IO} = 7.0\text{ mV max. (S-89140 Series)}$
- Operational temperature range :  $-40\text{ C to }+125\text{ C}$
- No external capacitors required for internal phase compensation
- Lead-free (Sn 100%), halogen-free\*1

\*1. Refer to "■ Product Name Structure" for details.

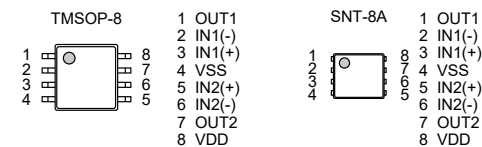


## S-89713 Series

2 circuits  
LOW INPUT OFFSET VOLTAGE CMOS OPERATIONAL AMPLIFIER

### Features

- Low input offset voltage:  $V_{IO} = 10\ \mu\text{V max. (Ta = }+25^\circ\text{C)}$
- Operation power supply voltage range:  $V_{DD} = 2.65\text{ V to }5.50\text{ V}$
- Low current consumption:  $I_{DD} = 165\ \mu\text{A typ. (Per circuit, Ta = }+25^\circ\text{C)}$   
 $I_{DD} = 330\ \mu\text{A typ. (2 circuits, Ta = }+25^\circ\text{C)}$
- Internal phase compensation: No external parts required
- Rail-to-Rail input and output
- Operation temperature range:  $Ta = -40^\circ\text{C to }+85^\circ\text{C}$
- Lead-free (Sn 100%), halogen-free

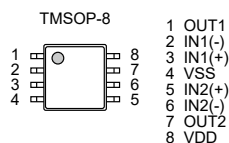


## S-89630A

2 circuits 125°C OPERATION,  
LOW INPUT OFFSET VOLTAGE CMOS OPERATIONAL AMPLIFIER

### Features

- Low input offset voltage:  $V_{IO} = +50 \mu\text{V max.}$  ( $T_a = -40^\circ\text{C to } +125^\circ\text{C}$ )
- Low input offset voltage drift:  $\frac{\Delta V_{IO}}{\Delta T_a} = \pm 25 \text{ nV}/^\circ\text{C typ.}$  ( $V_{DD} = 30.0 \text{ V, } T_a = -40^\circ\text{C to } +125^\circ\text{C}$ )
- Operation power supply voltage range:  $V_{DD} = 4.0 \text{ V to } 36.0 \text{ V}$  (Single supply)  
 $V_{DD} = \pm 2.0 \text{ V to } \pm 18.0 \text{ V}$  (Dual supply)
- Low current consumption (Per circuit):  $I_{DD} = 250 \mu\text{A typ.}$
- Low input noise voltage:  $V_{NOISE\_pp} = 0.8 \mu\text{Vpp typ.}$  ( $f = 0.1 \text{ Hz to } 10 \text{ Hz}$ )
- Low input noise voltage density:  $V_{NOISE} = 25 \text{ nV}/\sqrt{\text{Hz typ.}}$  ( $f = 1 \text{ kHz}$ )
- Built-in output current limit circuit: Overcurrent limit when output p n is short-circuited
- Internal phase compensation: No external parts required
- Rail-to-Rail input and output
- Operation temperature range:  $T_a = -40^\circ\text{C to } +125^\circ\text{C}$
- Lead-free (Sn 100%), halogen-free



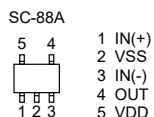
## S-89530A/89531A Series

1 circuit  
0.7  $\mu\text{A}$  Rail-to-Rail CMOS COMPARATOR

### Features

- Can be driven lower voltage than existing general-purpose comparators:  $V_{DD} = 0.9 \text{ V to } 5.5 \text{ V}$
- Low current consumption:  $I_{DD} = 0.7 \mu\text{A (Typ.)}$
- Rail-to-Rail wide input and output voltage range:  $V_{CMR} = V_{SS} \text{ to } V_{DD}$
- Low input offset voltage:  $5.0 \text{ mV max.}$
- Lead-free, Sn100%, halogen-free<sup>\*1</sup>

\*1. Refer to "■ Product Code List" for details.



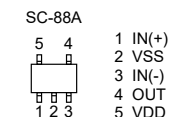
## S-89210/89220 Series

1 circuit  
CMOS COMPARATOR

### Features

- Lower operating voltage than the conventional general-purpose:  $V_{DD} = 1.8 \text{ V to } 5.5 \text{ V}$
- Low current consumption:  $I_{DD} = 50 \mu\text{A Typ.}$  (S-89210 Series)  
 $I_{DD} = 10 \mu\text{A Typ.}$  (S-89220 Series)
- Low input offset voltage:  $4.0 \text{ mV Max.}$
- Lead-free, halogen-free<sup>\*1</sup>

\*1. Refer to "■ Product Name Structure" for details.



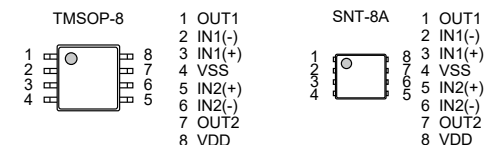
## S-89230/89240 Series

2 circuits  
CMOS COMPARATOR

### Features

- Lower operating voltage than the conventional general-purpose:  $V_{DD} = 1.8 \text{ V to } 5.5 \text{ V}$
- Low current consumption (per circuit):  $I_{DD} = 23 \mu\text{A Typ.}$  (S-89230 Series)  
 $I_{DD} = 5 \mu\text{A Typ.}$  (S-89240 Series)
- Low input offset voltage:  $4.0 \text{ mV Max.}$
- Output full swing
- A dual comparator (with 2 circuits)
- Lead-free, Sn 100%, halogen-free<sup>\*1</sup>

\*1. Refer to "■ Product Name Structure" for details.



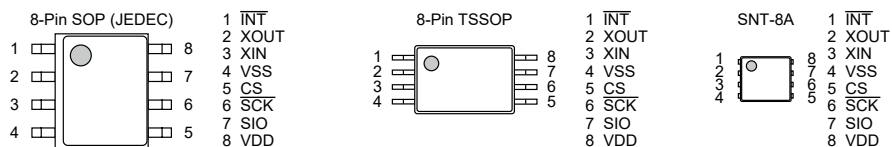
## S-35190A

### 3-WIRE REAL-TIME CLOCK

#### Features

- Low current consumption: 0.25  $\mu$ A typ. ( $V_{DD} = 3.0$  V,  $T_a = +25$  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  $C_d$ , external  $C_g$ )
- Lead-free, Sn 100%, halogen-free<sup>\*1</sup>

\*1. Refer to "■ Product Name Structure" for details.



## S-35391A

### 2-WIRE REAL-TIME CLOCK

#### Features

- Low current consumption: 0.25  $\mu$ A typ. ( $V_{DD} = 3.0$  V,  $T_a = +25$  C)
- Wide range of operating voltage: 1.3 V to 5.5 V
- 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  $C_d$ , external  $C_g$ )
- Lead-free Sn 100%, halogen-free<sup>\*1</sup>

\*1. Refer to "■ Product Name Structure" for details.



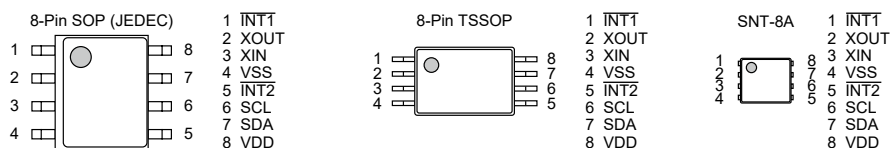
## S-35390A

### 2-WIRE REAL-TIME CLOCK

#### Features

- Low current consumption: 0.25  $\mu$ A typ. ( $V_{DD} = 3.0$  V,  $T_a = +25$  C)
- Wide range of operating voltage: 1.3 V to 5.5 V
- 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  $C_d$ , external  $C_g$ )
- Lead-free, Sn 100%, halogen-free<sup>\*1</sup>

\*1. Refer to "■ Product Name Structure" for details.

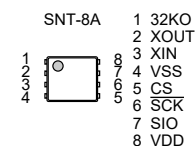


## S-35192A

### 3-WIRE REAL-TIME CLOCK

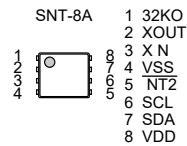
#### Features

- Low current consumption: 0.45  $\mu$ A typ. ( $V_{DD} = 3.0$  V,  $T_a = +25$  C)
- Constant output of 32.768 kHz clock pulse (Nch open-drain output)
- 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 function
- 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  $C_d$ , external  $C_g$ )
- Lead-free (Sn 100%), halogen-free

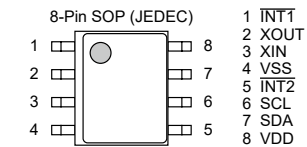


**S-35392A****2-WIRE REAL-TIME CLOCK****● Features**

- Low current consumption: 0.45  $\mu\text{A}$  typ. ( $V_{\text{DD}} = 3.0 \text{ V}$ ,  $T_a = +25 \text{ C}$ )
- Constant output of 32.768 kHz clock pulse (Nch open-drain output)
- Wide range of operating voltage: 1.3 V to 5.5 V
- 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  $C_d$ , external  $C_g$ )
- Lead-free (Sn 100%), halogen-free

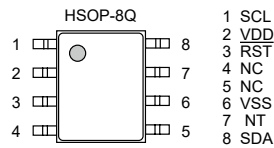
**S-35399A03****2-WIRE REAL-TIME CLOCK****● Features**

- Low current consumption: 0.34  $\mu\text{A}$  typ. ( $V_{\text{DD}} = 3.0 \text{ V}$ ,  $T_a = +25^\circ\text{C}$ )
- Wide range of operating voltage: 1.3 V to 5.5 V
- Built-in clock correction function
- Built-in 24-bit binary up counter
- 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  $C_d$ , external  $C_g$ )
- Lead-free (Sn 100%), halogen-free

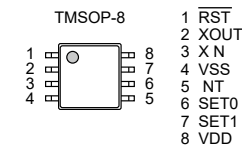


**S-35710M****PROGRAMMABLE WAKE-UP TIMER IC  
WITH BUILT-IN QUARTZ CRYSTAL****Features**

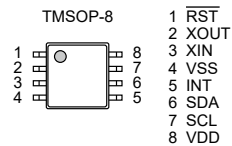
- Built-in 32.768 kHz quartz crystal
- Wake-up function (Alarm interrupt function): Settable on the second time scale from 1 second to 194 days (Approximately half a year)
- Low current consumption: 0.25  $\mu$ A typ. ( $V_{DD} = 3.0$  V,  $T_a = +25^\circ\text{C}$ )
- Wide range of operation voltage: 1.8 V to 5.5 V
- 2-wire (I<sup>2</sup>C-bus) CPU interface
- Operation temperature range:  $T_a = -40^\circ\text{C}$  to  $+85^\circ\text{C}$
- Lead-free (Sn 100%), halogen-free

**S-35720 Series****PIN-SELECTABLE WAKE-UP TIMER IC****Features**

- Wake-up function (Alarm interrupt function): Settable wake-up time (interrupt time) Selectable as the option on the second time scale from 1 second to 194 days (Approximately half a year)
- Low current consumption: 0.2  $\mu$ A typ. (Quartz crystal:  $C_L = 6.0$  pF,  $V_{DD} = 3.0$  V,  $T_a = +25^\circ\text{C}$ )
- Wide range of operation voltage: 1.8 V to 5.5 V
- Built-in 32.768 kHz crystal oscillation circuit
- Operation temperature range:  $T_a = -40^\circ\text{C}$  to  $+85^\circ\text{C}$
- Lead-free (Sn 100%), halogen-free

**S-35710 Series****PROGRAMMABLE WAKE-UP TIMER IC****Features**

- Wake-up function (Alarm interrupt function): Settable on the second time scale from 1 second to 194 days (Approximately half a year)
- Low current consumption: 0.2  $\mu$ A typ. (Quartz crystal:  $C_L = 6.0$  pF,  $V_{DD} = 3.0$  V,  $T_a = +25^\circ\text{C}$ )
- Wide range of operation voltage: 1.8 V to 5.5 V
- 2-wire (I<sup>2</sup>C-bus) CPU interface
- Built-in 32.768 kHz crystal oscillation circuit
- Operation temperature range:  $T_a = -40^\circ\text{C}$  to  $+85^\circ\text{C}$
- Lead-free (Sn 100%), halogen-free

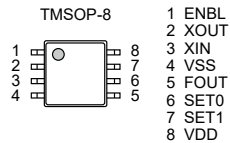


## S-35730

### PIN-SELECTABLE INTERVAL TIMER IC

#### ● Feature

- Interval signal output function (Clock pulse output function): Selectable interval signal (clock pulse frequency), with an output control pin
- Low current consumption: 4.0  $\mu\text{A}$  typ. (Quartz crystal:  $C_L = 6.0 \text{ pF}$ ,  $V_{DD} = 3.0 \text{ V}$ , ENBL pin = "H",  $T_a = +25^\circ\text{C}$ , FOUT pin output = 32.768 kHz)
- Wide range of operation voltage: 1.8 V to 5.5 V
- Built-in 32.768 kHz crystal oscillation circuit
- Operation temperature range:  $T_a = -40^\circ\text{C}$  to  $+85^\circ\text{C}$
- Lead-free (Sn 100%), halogen-free

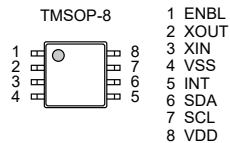


## S-35740

### PROGRAMMABLE INTERVAL TIMER IC

#### ● Features

- Interval signal output function: (Fixed-cycle interrupt signal output function) Settable interval signal frequency and duty ratio, with an output control pin
- Low current consumption: 0.2  $\mu\text{A}$  typ. (Quartz crystal:  $C_L = 6.0 \text{ pF}$ ,  $V_{DD} = 3.0 \text{ V}$ , ENBL pin = "H",  $T_a = +25^\circ\text{C}$ )
- Wide range of operation voltage: 1.8 V to 5.5 V
- 2-wire (I<sup>2</sup>C-bus) CPU interface
- Built-in 32.768 kHz crystal oscillation circuit
- Operation temperature range:  $T_a = -40^\circ\text{C}$  to  $+85^\circ\text{C}$
- Lead-free (Sn 100%), halogen-free

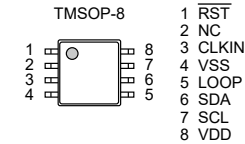


## S-35770

### COUNTER IC WITH 2-WIRE (I<sup>2</sup>C-bus) INTERFACE

#### ● Features

- External clock signal function: Countable from 0 to 16,777,215, with output pin for counter loop flag
- Low current consumption: 0.01  $\mu\text{A}$  typ. ( $V_{DD} = 3.0 \text{ V}$ ,  $T_a = +25^\circ\text{C}$ , output of communication (CLKIN pin) 0 V)
- Wide range of operation voltage: 1.5 V to 5.5 V
- 2-wire (I<sup>2</sup>C-bus) CPU interface
- Operation temperature range:  $T_a = -40^\circ\text{C}$  to  $+85^\circ\text{C}$
- Lead-free (Sn 100%), halogen-free

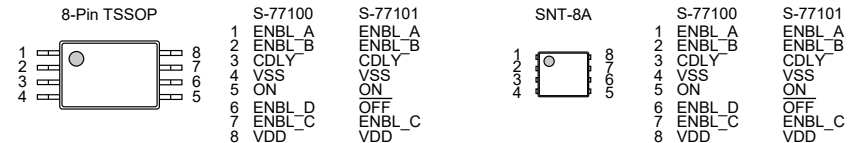


## S-77100/77101 Series

### POWER SEQUENCER

#### ● Features

- Easy support for sequencing of multiple power supplies.
- Delay time can be set by the external capacitor.
- Sequence operations of 4 channels can be controlled by 1 input signal. (S-77100 Series)
- On-sequence operation and off-sequence operation can be controlled by the separate input signal. (S-77101 Series)
- Enable output can be increased by cascade connection.
- Low current consumption: 3.0  $\mu\text{A}$  typ. (Off period, power-good period,  $V_{DD} = 3.3 \text{ V}$ ,  $T_a = +25^\circ\text{C}$ )
- Wide range of operation voltage: 2.2 V to 5.5 V
- Operation temperature range:  $T_a = -40^\circ\text{C}$  to  $+85^\circ\text{C}$
- Output form is selectable: CMOS output, Nch open-drain output
- Output logic is selectable: Active "H", active "L"





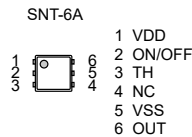
## S-8471 Series

### WIRELESS POWER RECEIVER CONTROL IC

#### Features

- Current consumption:
 

During operation:	$I_{SS1} = 30 \mu\text{A typ.}$
During power-off:	$I_{SS2} = 1.0 \mu\text{A max.}$
- Overvoltage detection voltage range: 4.00 V to 5.50 V, selectable in 50 mV step
- Overvoltage detection accuracy:  $\pm 2.0\%$
- ON / OFF pin control logic is selectable: Active "H", active "L"
- ON / OFF pin internal resistor connection is selectable: Unavailable, pull-up, pull-down
- Built-in ON / OFF circuit
- Over temperature protection function: Available by connecting a thermistor to the TH pin.
- Operation temperature range:  $T_a = -40^\circ\text{C to } +85^\circ\text{C}$
- Lead-free (Sn 100%), halogen-free



## S-8473 Series

### WIRELESS POWER RECEIVER CONTROL IC WITH CHARGE FUNCTION

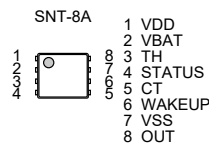
#### Features

- Power supply voltage:  $V_{DD} = 2.2 \text{ V to } 5.0 \text{ V}$
- Current consumption during charge operation:  $I_{SS1} = 250 \mu\text{A typ.}$
- VBAT pin current consumption during power-down:  $I_{PDN} = 1.0 \mu\text{A max.}$
- UVLO detection voltage:  $V_{UVLO-} = 2.0 \text{ V typ.}$
- Charge function to a small lithium-ion rechargeable battery
 

Charge current:	$I_{LIM} = 33 \text{ mA typ.}$
Precharge current:	$I_{PRE} = 3.3 \text{ mA typ.}$
Precharge completion voltage:	2.4 V to 3.4 V (50 mV step)
Charge completion voltage:	4.0 V to 4.5 V (50 mV step)
Recharge start voltage:	3.6 V to 4.45 V <sup>*1</sup>
Short-circuit detection voltage:	1.5 V to 2.0 V (50 mV step)
Charge timer function:	The charge operation stops after the elapse of 4.0 hours. ( $C_{CT} = 4.7 \text{ nF}$ ) The time is settable by connecting an external capacitor to the CT pin.
- High temperature / low temperature protection function: Available by connecting a thermistor to the TH pin.
- Status display function: Available by connecting an external LED to the STATUS pin.
 

During charge operation:	Lighting
During charge operation stop:	Lights-out
During error detection:	Blinking
- Operation temperature range:  $T_a = -40^\circ\text{C to } +85^\circ\text{C}$
- Lead-free (Sn 100%), halogen-free

\*1. Recharge start voltage = charge completion voltage – charge hysteresis voltage  
(The charge hysteresis voltage can be selected from a range of 0.05 V to 0.40 V in 50 mV step.)



## S-8474 Series

### WIRELESS POWER TRANSMITTER CONTROL IC

#### Features

- Power supply voltage:  $V_{DD} = 4.5 \text{ V to } 6.5 \text{ V}$
- Current consumption:
 

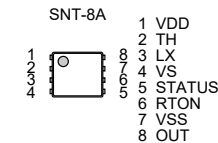
During operation:	$I_{SS1} = 200 \mu\text{A typ.}$
During standby:	$I_{STB} = 3.0 \mu\text{A max.}$
- UVLO detection voltage:  $V_{UVLO-} = 4.1 \text{ V typ.}$
- $t_{ON}$  time is settable by connecting an external resistor to the RTON pin.
- Power saving is possible by intermittent operation during standby time of a receiver module.
 

Active time:	$t_{ACT} = 5.0 \text{ ms typ.}$
Sleep time:	$t_{SLEEP} = 25.0 \text{ ms typ.}$
- TH pin detection voltage is selectable: 0.667 V, 0.577 V, 0.500 V, 0.429 V, 0.370 V
- Built-in reception detection circuit
- Status display function: Available by connecting an external LED to the STATUS pin.
 

Continuous operation mode:	Lighting
Intermittent operation mode:	Lights-out
High temperature protection mode:	Blinking

 Available by connecting a thermistor to the TH pin.
 

Operation temperature range:	$T_a = -40^\circ\text{C to } +85^\circ\text{C}$
------------------------------	---
- Over temperature protection function:
- Operation temperature range:  $T_a = -40^\circ\text{C to } +85^\circ\text{C}$
- Lead-free (Sn 100%), halogen-free

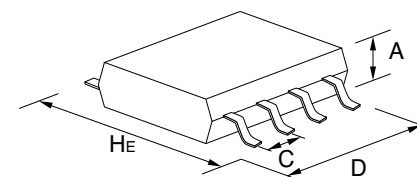


## Package List

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.



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 Inc.**

[www.ablic.com](http://www.ablic.com)

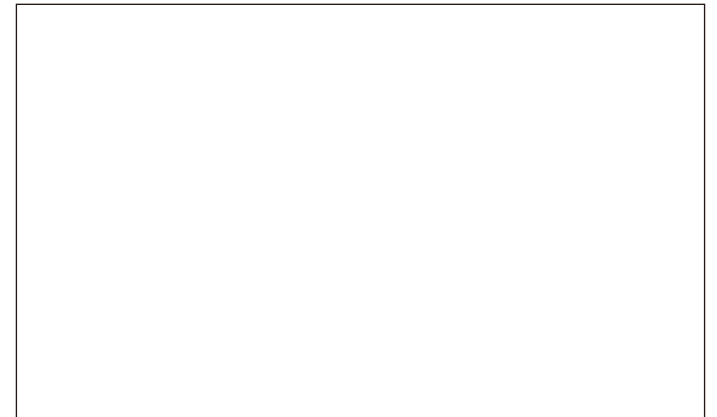
Contact us

[www.ablic.com/en/semicon/sales](http://www.ablic.com/en/semicon/sales)



Released in March 2023

ABLIC Inc. is a group company of MinebeaMitsumi Inc.



(Specifications are subject to change without notice.)