TEMPERATURE SWITCH IC

S-5841 Series

The S-5841 Series is a temperature switch IC which detects the temperature with a temperature accuracy of $\pm 2.5°C$. This IC restores the output voltage when the temperature drops to the level of release temperature.

The S-5841 operates at the lower power supply voltage of 2.2 V and its current consumption is 10 μA Typ. due to CMOS configuration.

A temperature sensor with the negative temperature coefficient, a reference voltage generation circuit and a comparator are integrated on one chip, and enclosed into the small packages SNT-6A and SOT-23-5.

■ Features

- Detection temperature : +40 to +95°C, 1°C steps, detection accuracy : $\pm 2.5°C$
- Low voltage operation : V_{DD} (min.) = 2.2 V (When the detection temperature is +55 to +95°C)
-   : V_{DD} (min.) = 2.6 V (When the detection temperature is +40 to +54°C)
- Low current consumption : 10 μA typ. (Ta = +25°C)
- Hysteresis temperature can be switched in 0°C, 2°C, 4°C and 10°C
- Selectable output logic in active high or low
- Selectable output form in CMOS or Nch open drain
- Small packages : SNT-6A, SOT-23-5
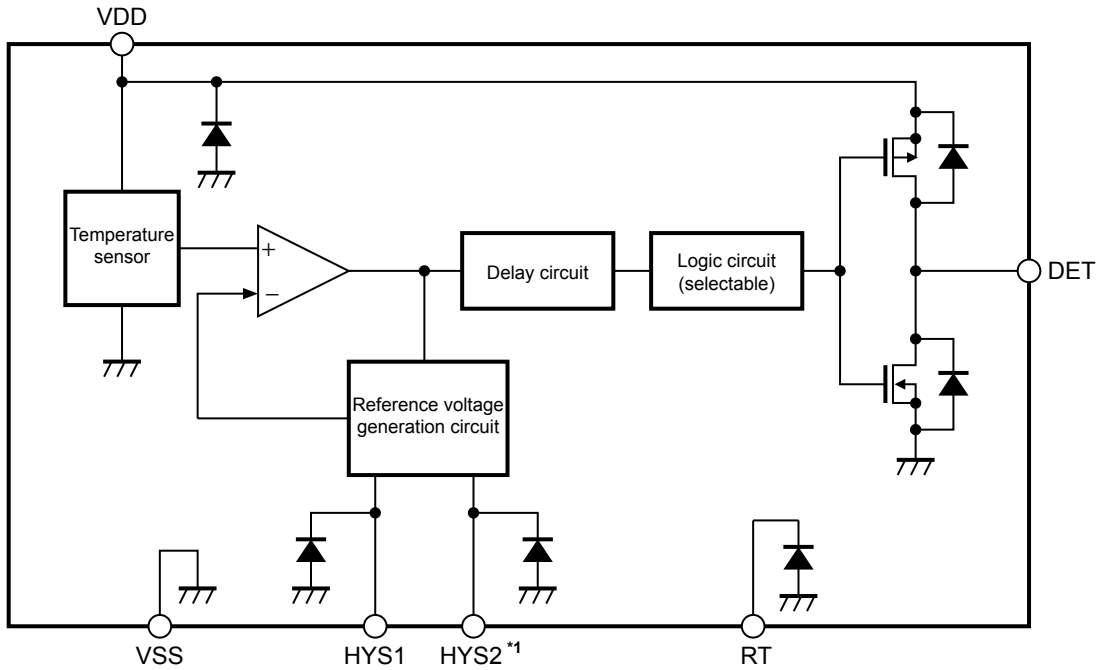- Lead-free product

■ Applications

- Fan control
- Air conditioning system
- Various electronic device

■ Packages

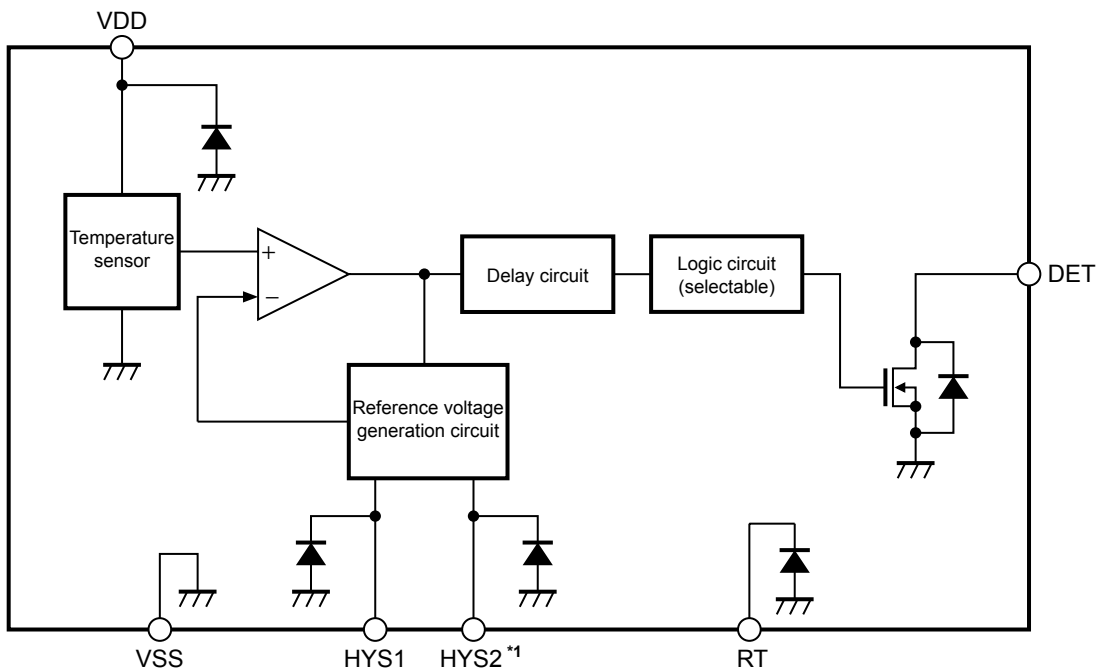| Package name	Drawing Code			
	Package	Tape	Reel	Land
SNT-6A	PG006-A	PG006-A	PG006-A	PG006-A
SOT-23-5	MP005-A	MP005-A	MP005-A	–

■ Block Diagram

1. CMOS output product

*1.   The HYS2 pin is not equipped for the S-5841 with SOT-23-5.

Figure 1
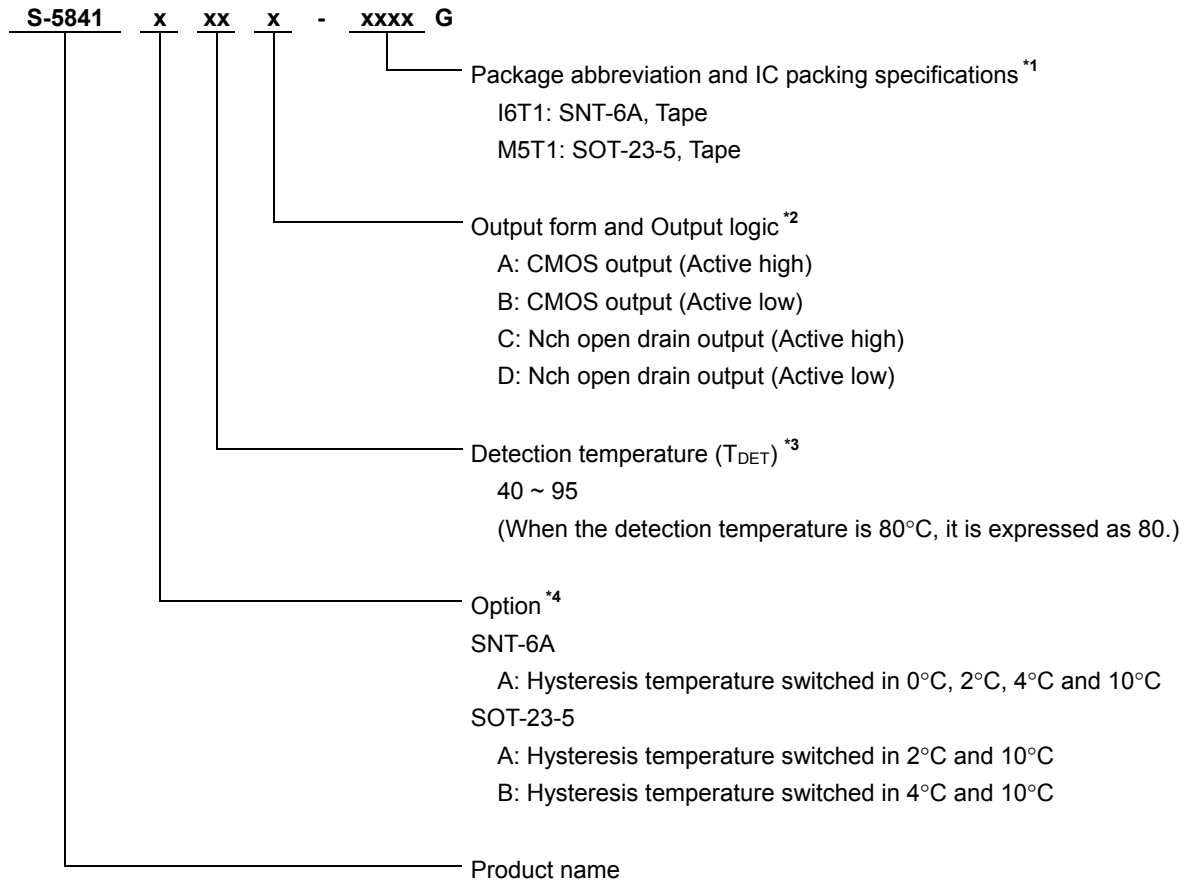

2. Nch open drain output product

*1.   The HYS2 pin is not equipped for the S-5841 with SOT-23-5.

Figure 2

■ Product Name Structure

1. Product name

S-5841 x xx x - xxxx G

Package abbreviation and IC packing specifications [*1]
 I6T1: SNT-6A, Tape
 M5T1: SOT-23-5, Tape

Output form and Output logic [*2]
 A: CMOS output (Active high)
 B: CMOS output (Active low)
 C: Nch open drain output (Active high)
 D: Nch open drain output (Active low)

Detection temperature (T_{DET}) [*3]
 40 ~ 95
 (When the detection temperature is 80°C, it is expressed as 80.)

Option [*4]
SNT-6A
 A: Hysteresis temperature switched in 0°C, 2°C, 4°C and 10°C
SOT-23-5
 A: Hysteresis temperature switched in 2°C and 10°C
 B: Hysteresis temperature switched in 4°C and 10°C

Product name

*1. Refer to the taping specifications.
*2. The output at the DET pin is selectable in either active high or low.
   The output at the DET pin is selectable in either CMOS or Nch open drain.
*3. The detection temperature (T_{DET}) can be set in the range of 40°C to 95°C at 1°C step.
   (We offer a detection temperature setting for each customer individually. Contact our sales office for details.)
*4. The hysteresis temperature can be switched in 0°C , 2°C, 4°C, 10°C, and is set by the HYS1 pin and HYS2 pin in the
   S-5841 with SNT-6A package.
   The hysteresis temperature is set by HYS1 pin in the S-5841 with SOT-23-5 package. By option, the hysteresis
   temperature of the product is selectable in 2°C and 10°C / 4°C and 10°C.

2. Product List

(1) SNT-6A

Table 1

Product name	Detection temperature (T_{DET})	DET Pin output logic	DET Pin output form	Hysteresis temperature
S-5841A70A-I6T1G	70°C	Active high	CMOS	0°C, 2°C, 4°C, 10°C
S-5841A80A-I6T1G	80°C	Active high	CMOS	0°C, 2°C, 4°C, 10°C
S-5841A90A-I6T1G	90°C	Active high	CMOS	0°C, 2°C, 4°C, 10°C
S-5841A50D-I6T1G	50°C	Active low	Nch open drain	0°C, 2°C, 4°C, 10°C

Remark   Please contact our sales office for products other than those specified above.

(2) SOT-23-5

Table 2

Product name	Detection temperature (T_{DET})	DET Pin output logic	DET Pin output form	Hysteresis temperature
S-5841A55D-M5T1G	55°C	Active low	Nch open drain	2°C, 10°C
S-5841A65D-M5T1G	65°C	Active low	Nch open drain	2°C, 10°C
S-5841A75D-M5T1G	75°C	Active low	Nch open drain	2°C, 10°C
S-5841A85D-M5T1G	85°C	Active low	Nch open drain	2°C, 10°C
S-5841A95D-M5T1G	95°C	Active low	Nch open drain	2°C, 10°C

Remark   Please contact our sales office for products other than those specified above.
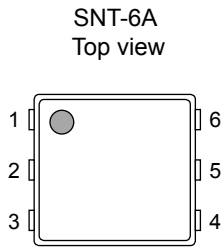
■ Pin Configuration

SNT-6A
Top view

Figure 3

Table 3

Pin No.	Symbol	Description
1	RT[*1]	Test pin
2	VSS	GND pin
3	HYS1[*2]	Hysteresis pin 1
4	DET	Output pin
5	HYS2[*2]	Hysteresis pin 2
6	VDD	Power supply pin

*1. Set the RT pin open in use.

*2. Fix the HYS1 pin and the HYS2 pin as VDD or VSS in use.
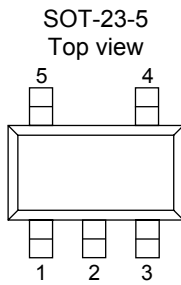
Remark See Dimensions for details of the package drawings.

SOT-23-5
Top view

Figure 4

Table 4

Pin No.	Symbol	Description
1	HYS1[*1]	Hysteresis pin 1
2	VSS	GND pin
3	RT[*2]	Test pin
4	VDD	Power supply pin
5	DET	Output pin

*1. The HYS2 pin is not equipped for the S-5841 with SOT-23-5.
Fix HYS1 pin as VDD or VSS.

*2. Set the RT pin open in use.

Remark See Dimensions for details of the package drawings.

■ **Absolute Maximum Ratings**

Table 5   Absolute Maximum Ratings

(Ta = 25°C unless otherwise specified)

Parameter		Symbol	Rating	Unit
Power supply voltage (V_{SS} = 0 V)		V_{DD}	V_{SS}+12	V
Pin voltage		V_{RT}, V_{HYS1}, V_{HYS2}	V_{SS}–0.3 to V_{DD}+0.3	V
Output voltage	CMOS output	V_{DET}	V_{SS}–0.3 to V_{DD}+0.3	V
	Nch open drain		V_{SS}–0.3 to V_{SS}+12	V
Power dissipation	SNT-6A	P_D	400[1]	mW
	SOT-23-5		600[1]	mW
Operating temperature		T_{opr}	–40 to +100	°C
Storage temperature		T_{stg}	–55 to +125	°C

*1. When mounted on board
   [Mounted board]
       (1)   Board size :   114.3 mm × 76.2 mm × t1.6 mm
       (2)   Board name :   JEDEC STANDARD51-7

Caution   The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.

■ DC Electrical Characteristics

1. CMOS output product

(1) SNT-6A package

Table 6

(Ta = 25°C, unless otherwise specified)

Item	Symbol	Condition		Min.	Typ.	Max.	Unit	Test circuit
Power supply voltage	V_{DD}	$+T_D$ = +55 to +95°C		2.2	–	10.0	V	1
		$+T_D$ = +40 to +54°C		2.6	–	10.0		
Detection temperature	$+T_D$	–		T_{DET}−2.5	T_{DET}	T_{DET}+2.5	°C	1
Hysteresis of detection temperature [*1]	T_{HYS}	HYS1	HYS2		–		–	–
		"H"	"H"	–	2	–	°C	1
		"H"	"L"	–	4	–	°C	1
		"L"	"H"	–	10	–	°C	1
		"L"	"L"	–	0	–	°C	1
Output current	I_{DETH}	V_{DD} = 3.0 V, apply for DET pin	V_{DET} = 2.2 V	2	9.4	–	mA	2
	I_{DETL}		V_{DET} = 0.4 V	0.5	2.3	–	mA	2
Current consumption during operation	I_{DD}	V_{DD} = 3.0 V		–	10	20	μA	1
HYS1 pin input voltage "H"	V_{IH}	–		$0.8 \times V_{DD}$	–	–	V	3
HYS1 pin input voltage "L"	V_{IL}	–		–	–	$0.2 \times V_{DD}$	V	3
HYS1 pin input current "H"	I_{IH}	V_{DD} = 3.0 V, V_{HYS1} = 3.0 V		−0.1	–	0.1	μA	3
HYS1 pin input current "L"	I_{IL}	V_{DD} = 3.0 V, V_{HYS1} = 0 V		−0.1	–	0.1	μA	3
HYS2 pin input voltage "H"	V_{IH}	–		$0.8 \times V_{DD}$	–	–	V	3
HYS2 pin input voltage "L"	V_{IL}	–		–	–	$0.2 \times V_{DD}$	V	3
HYS2 pin input current "H"	I_{IH}	V_{DD} = 3.0 V, V_{HYS2} = 3.0 V		−0.1	–	0.1	μA	3
HYS2 pin input current "L"	I_{IL}	V_{DD} = 3.0 V, V_{HYS2} = 0 V		−0.1	–	0.1	μA	3

*1. The hysteresis temperature can be switched in 0°C , 2°C , 4°C, 10°C, and is set by the HYS1 pin and HYS2 pin in the S-5841 with SNT-6A package.

(2) SOT-23-5 Package

Table 7

(Ta = 25°C, unless otherwise specified)

Item	Symbol	Condition		Min.	Typ.	Max.	Unit	Test circuit
Power supply voltage	V_{DD}	+T_D = +55 to +95°C		2.2	–	10.0	V	1
		+T_D = +40 to +54°C		2.6	–	10.0		
Detection temperature	+T_D	–		T_{DET}−2.5	T_{DET}	T_{DET}+2.5	°C	1
Hysteresis of detection temperature [*1]	T_{HYS}	Hysteresis option	HYS1		–		–	–
		A	"H"	–	2	–	°C	1
			"L"	–	10	–	°C	1
		B	"H"	–	4	–	°C	1
			"L"	–	10	–	°C	1
Output current	I_{DETH}	V_{DD} = 3.0 V, apply for DET pin	V_{DET} = 2.2 V	2	9.4	–	mA	2
	I_{DETL}		V_{DET} = 0.4 V	0.5	2.3	–	mA	2
Current consumption during operation	I_{DD}	V_{DD} = 3.0 V		–	10	20	µA	1
HYS1 pin input voltage "H"	V_{IH}	–		$0.8 \times V_{DD}$	–	–	V	3
HYS1 pin input voltage "L"	V_{IL}	–		–	–	$0.2 \times V_{DD}$	V	3
HYS1 pin input current "H"	I_{IH}	V_{DD} = 3.0 V, V_{HYS1} = 3.0 V		−0.1	–	0.1	µA	3
HYS1 pin input current "L"	I_{IL}	V_{DD} = 3.0 V, V_{HYS1} = 0 V		−0.1	–	0.1	µA	3

*1. In the S-5841 with SOT-23-5 package, the hysteresis temperature can be set by the HYS1 pin.

These two types are selectable by option.

Hysteresis option A : 2°C of hysteresis temperature during HYS1 = high level,

10°C of hysteresis temperature during HYS1 = low level

Hysteresis option B : 4°C of hysteresis temperature during HYS1 = high level,

10°C of hysteresis temperature during HYS1 = low level

2. Nch open drain output

(1) SNT-6A package

Table 8

(Ta = 25°C, unless otherwise specified)

Item	Symbol	Condition		Min.	Typ.	Max.	Unit	Test circuit
Power supply voltage	V_{DD}	+T_D = +55 to +95°C		2.2	–	10.0	V	1
		+T_D = +40 to +54°C		2.6	–	10.0		
Detection temperature	+T_D	–		T_{DET}–2.5	T_{DET}	T_{DET}+2.5	°C	1
Hysteresis of detection temperature [*1]	T_{HYS}	HYS1	HYS2		–		–	–
		"H"	"H"	–	2	–	°C	1
		"H"	"L"	–	4	–	°C	1
		"L"	"H"	–	10	–	°C	1
		"L"	"L"	–	0	–	°C	1
Output current	I_{DETL}	V_{DET} = 0.4 V, V_{DD} = 3.0 V		0.5	2.3	–	mA	2
Leakage current	I_{LEAK}	V_{DET} = 10.0 V, V_{DD} = 3.0 V		–	–	100	nA	2
Current consumption during operation	I_{DD}	V_{DD} = 3.0 V		–	10	20	µA	1
HYS1 pin input voltage "H"	V_{IH}	–		$0.8 \times V_{DD}$	–	–	V	3
HYS1 pin input voltage "L"	V_{IL}	–		–	–	$0.2 \times V_{DD}$	V	3
HYS1 pin input current "H"	I_{IH}	V_{DD} = 3.0 V, V_{HYS1} = 3.0 V		–0.1	–	0.1	µA	3
HYS1 pin input current "L"	I_{IL}	V_{DD} = 3.0 V, V_{HYS1} = 0 V		–0.1	–	0.1	µA	3
HYS2 pin input voltage "H"	V_{IH}	–		$0.8 \times V_{DD}$	–	–	V	3
HYS2 pin input voltage "L"	V_{IL}	–		–	–	$0.2 \times V_{DD}$	V	3
HYS2 pin input current "H"	I_{IH}	V_{DD} = 3.0 V, V_{HYS2} = 3.0 V		–0.1	–	0.1	µA	3
HYS2 pin input current "L"	I_{IL}	V_{DD} = 3.0 V, V_{HYS2} = 0 V		–0.1	–	0.1	µA	3

*1. The hysteresis temperature can be switched in 0°C , 2°C , 4°C, 10°C, and is set by the HYS1 pin and HYS2 pin in the S-5841 with SNT-6A package.

(2) SOT-23-5 package

Table 9

(Ta = 25°C, unless otherwise specified)

Item	Symbol	Condition		Min.	Typ.	Max.	Unit	Test circuit
Power supply voltage	V_{DD}	+T_D = +55 to +95°C		2.2	–	10.0	V	1
		+T_D = +40 to +54°C		2.6	–	10.0		
Detection temperature	+T_D	–		T_{DET}–2.5	T_{DET}	T_{DET}+2.5	°C	1
Hysteresis of detection temperature [*1]	T_{HYS}	Hysteresis option	HYS1		–		–	–
		A	"H"	–	2	–	°C	1
			"L"	–	10	–	°C	1
		B	"H"	–	4	–	°C	1
			"L"	–	10	–	°C	1
Output current	I_{DETL}	V_{DET} = 0.4 V, V_{DD} = 3.0 V		0.5	2.3	–	mA	2
Leakage current	I_{LEAK}	V_{DET} = 10.0 V, V_{DD} = 3.0 V		–	–	100	nA	2
Current consumption during operation	I_{DD}	V_{DD} = 3.0 V		–	10	20	μA	1
HYS1 pin input voltage "H"	V_{IH}	–		$0.8 \times V_{DD}$	–	–	V	3
HYS1 pin input voltage "L"	V_{IL}	–		–	–	$0.2 \times V_{DD}$	V	3
HYS1 pin input current "H"	I_{IH}	V_{DD} = 3.0 V, V_{HYS1} = 3.0 V		−0.1	–	0.1	μA	3
HYS1 pin input current "L"	I_{IL}	V_{DD} = 3.0 V, V_{HYS1} = 0 V		−0.1	–	0.1	μA	3

*1.   In the S-5841 with SOT-23-5 package, the hysteresis temperature can be set by the HYS1 pin.
These two types are selectable by option.
Hysteresis option A : 2°C of hysteresis temperature during HYS1 = high level,
10°C of hysteresis temperature during HYS1 = low level
Hysteresis option B : 4°C of hysteresis temperature during HYS1 = high level,
10°C of hysteresis temperature during HYS1 = low level

◼ AC Electrical Characteristics

Table 10

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Test circuit
Noise suppression time	t_{delay}	V_{DD} = 3.0 V, Ta = detection temperature	–	380	–	μs	–

■ Test circuit

1.
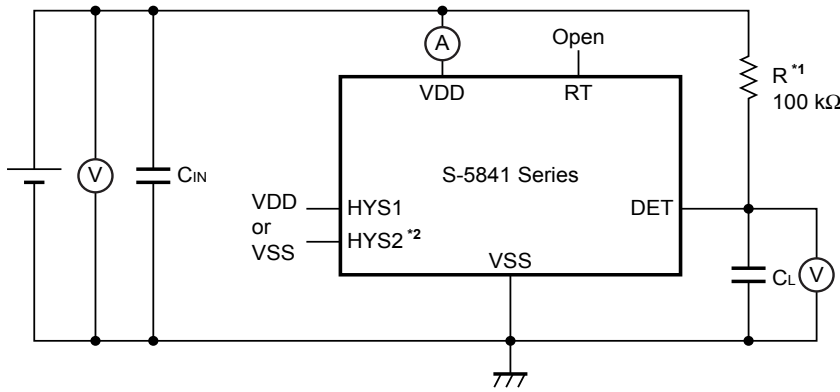
*1.   Resister is unnecessary for the CMOS output product.

*2.   The HYS2 pin is not equipped for the S-5841 with SOT-23-5.

Figure 5

2.
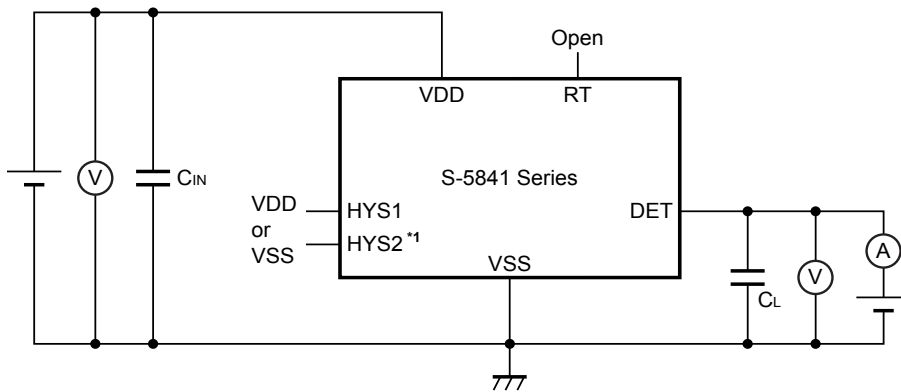
*1.   The HYS2 pin is not equipped for the S-5841 with SOT-23-5.

Figure 6

3.
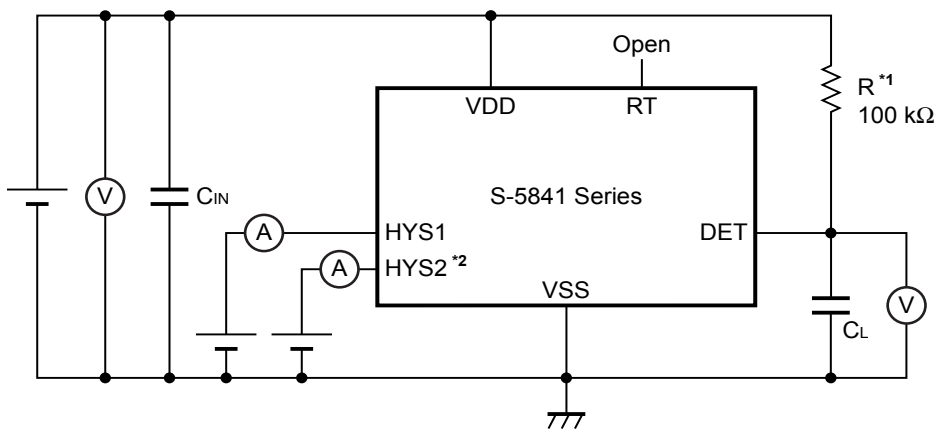
*1.   Resister is unnecessary for the CMOS output product.

*2.   The HYS2 pin is not equipped for the S-5841 with SOT-23-5.

Figure 7
Seiko Instruments Inc.   11

■ Operation

Basic operation

The S-5841 series is a temperature switch IC which detects a certain temperature and sends a signal to an external device. Various combinations of the parameters such as the detection temperature, output form and output logic can be selected.

The following explains the case when DET output is assumed to be active high and CMOS output.
After applying the power supply, the IC starts to detect the temperature. If it is lower than the detection temperature ($+T_D$), the DET pin keeps its status in low level. The temperature rises and exceeds the detection temperature, the DET pin becomes high level. After the detection, the temperature drops and reaches the release temperature ($+TD–T_{HYS}$), the DET pin returns to low level.
Figure 8 is the timing chart.
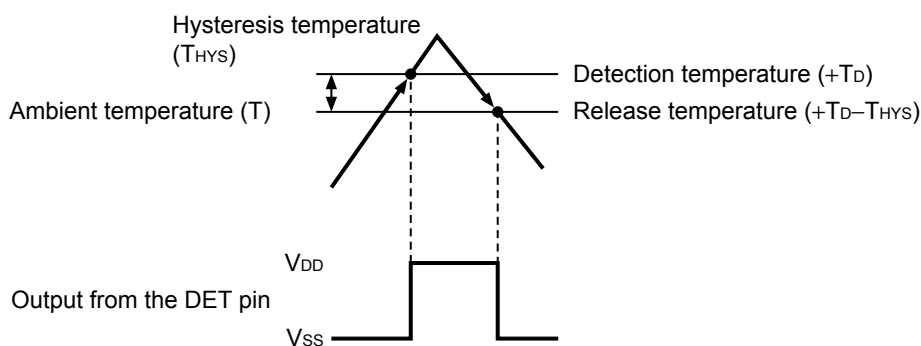
Figure 8   Operation when the output from DET pin is active high

[Hysteresis setting]

In the S-5841 with SNT-6A package, The hysteresis temperature can be switched in 0°C, 2°C , 4°C, 10°C, and is set by the HYS1 pin and HYS2 pin. In the S-5841 with SOT-23-5 package, the hysteresis temperature can be set by the HYS1 pin. By option, the hysteresis temperature of the product is selectable in 2°C and 10°C / 4°C and 10°C.

Table 11   SNT-6A package

Setting pin		Hysteresis temperature (°C)
HYS1	HYS2	
"H"	"H"	2
"H"	"L"	4
"L"	"H"	10
"L"	"L"	0

Table 12 SOT-23-5 package

(1) Hysteresis option = A

Setting pin	Hysteresis temperature
HYS1	(°C)
"H"	2
"L"	10

(2) Hysteresis option = B

Setting pin	Hysteresis temperature
HYS1	(°C)
"H"	4
"L"	10

[Delay circuit]

In order to prevent error, S-5841 Series has delay time for noise cancellation (t_{delay}). The followings are about the action when DET output is in active high.

If the temperature is lower than the detection temperature ($+T_D$), the DET pin is in low level. Although the output from the comparator goes in active due to noise, if the period in which this status continues is shorter than delay time for noise cancellation, the DET pin keeps its setting low level. After that, the output from the comparator goes in active because the temperature rises and exceeds the detection temperature, so that the period exceeds more than delay time for noise cancellation, the DET pin is set in high level.

■ **Application Circuit**
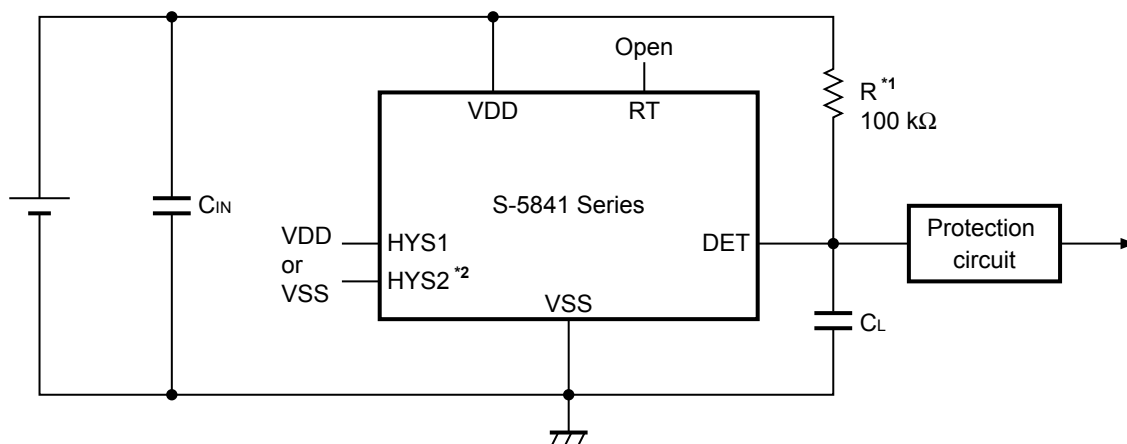
*1.   Resister is unnecessary for the CMOS output product.
*2.   The HYS2 pin is not equipped for the S-5841 with SOT-23-5.

Figure 9   Application circuit

**Caution   The above connection diagram will not guarantee successful operation. Perform thorough evaluation
using actual application to set the constant.**

■ **Precautions**

- Set a capacitor (C_{IN}) of about 0.1 μF between the VDD and VSS pin for stabilization.
- Set a capacitor (C_L) of about 1 μF for the DET pin to prevent malfunction caused by the noise when the power supply is applied.
- The IC may oscillate by setting a capacitor to the RT pin. Set the RT pin open in use.
- If the RT pin is short-circuited to VSS, the DET pin becomes active in this IC.
- Fix the HYS1 pin and the HYS2 pin VDD or VSS in use.
- Do not apply an electrostatic discharge to this IC that exceeds the performance ratings of the built-in electrostatic protection circuit.
- SII claims no responsibility for any disputes arising out of or in connection with any infringement by products, including this IC, of patents owned by a third party.

■ Characteristics (Typical Data)

1. Current consumption vs. Power supply voltage characteristics

Graph: I_{DD} [μA] (y-axis, 8 to 14) vs. V_{DD} [V] (x-axis, 0 to 12). Curves labeled −40°C, 100°C, 25°C.
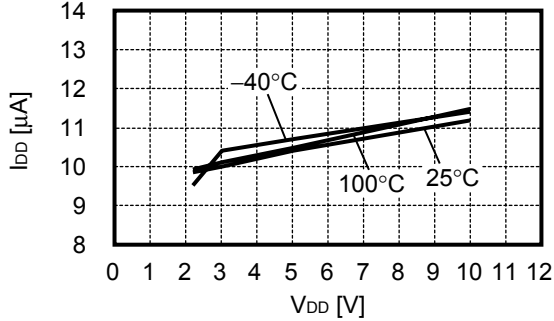
2. DET pin current H vs. Power supply voltage characteristics (CMOS output product only)

Graph: I_{DETH} [mA] (y-axis, 0 to 30) vs. V_{DD} [V] (x-axis, 0 to 12). Curves labeled −40°C, 100°C, 25°C.
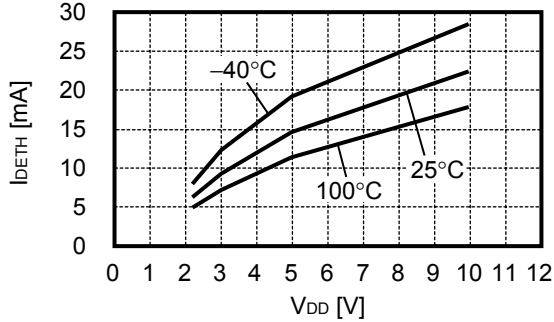
3. DET pin current L vs. Power supply voltage characteristics

Graph: I_{DETL} [mA] (y-axis, 0 to 10) vs. V_{DD} [V] (x-axis, 0 to 12). Curves labeled −40°C, 100°C, 25°C.
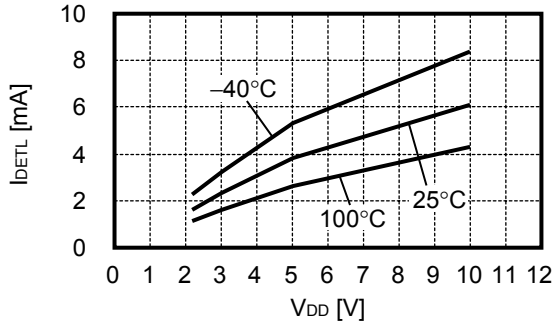
4. Noise suppression time (t_{delay}) vs. Power supply voltage characteristics

Graph: t_{delay} [μs] (y-axis, 0 to 1500) vs. V_{DD} [V] (x-axis, 0 to 12).
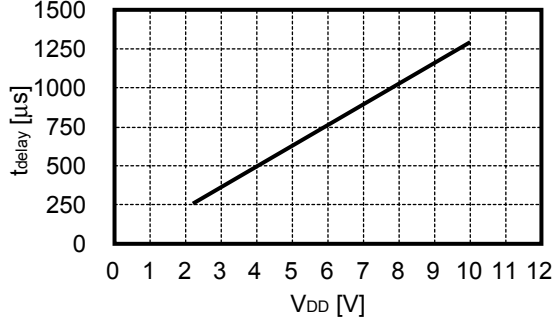
5. Response against heat   Output voltage (V_{DET}) vs. Time (t)

(1) When packages are put into the air of 100 degrees from the air of 25 degrees at t = 0 [s]

V_{DD} = 3.0 V, C_L = 0 μF, Detection temperature = 70°C, Active low
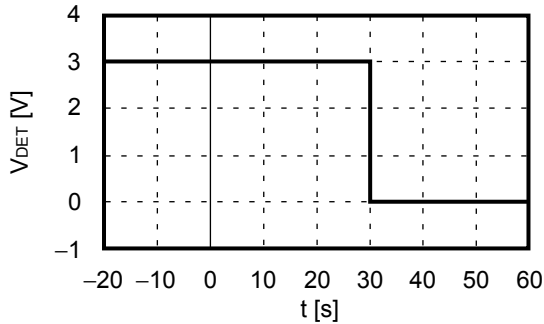
(2) When packages are put into the liquid of 100 degrees from the air of 25 degrees at t = 0 [s]

V_{DD} = 3.0 V, C_L = 0 μF, Detection temperature = 70°C, Active low
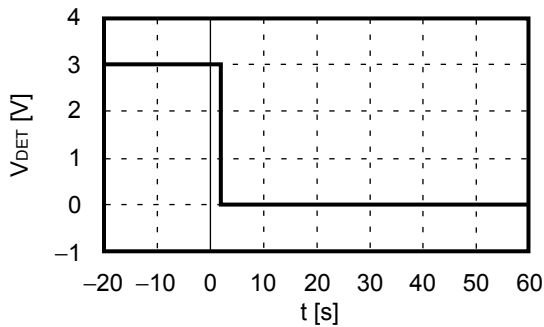
6. Response against startup

(1) The detection temperature or lower (T ≤ +T_D)

C_L = 0 μF, Active low
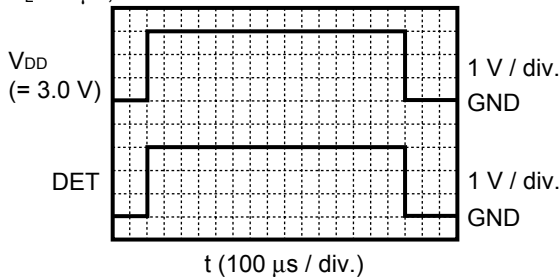
(2) Higher than the detection temperature (T > +T_D)

C_L = 0 μF, Active low
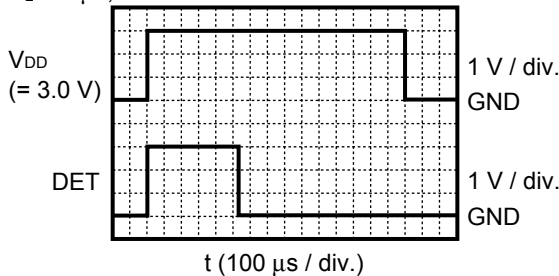
■ Marking Specification

1. SNT-6A

SNT-6A
Top view
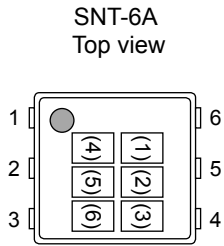
(1) to (3) : Product code (refer to **Product name vs. Product code**)
(4) to (6) : Lot number

Product name vs. Product code

Product Name	Product Code		
	(1)	(2)	(3)
S-5841A70A-I6T1G	T	I	G
S-5841A80A-I6T1G	T	I	H
S-5841A90A-I6T1G	T	I	I
S-5841A50D-I6T1G	T	H	A

Remark Please contact our sales office for the products other than those specified above.

2. SOT-23-5

SOT-23-5
Top view
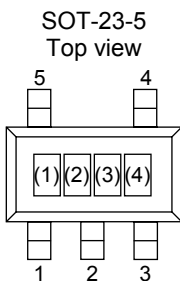
(1) to (3) : Product code (refer to **Product name vs. Product code**)
(4) : Lot number

Product name vs. Product code

Product name	Product Code		
	(1)	(2)	(3)
S-5841A55D-M5T1G	T	H	B
S-5841A65D-M5T1G	T	H	C
S-5841A75D-M5T1G	T	H	D
S-5841A85D-M5T1G	T	H	E
S-5841A95D-M5T1G	T	H	F

Remark Please contact our sales office for the products other than those specified above.

1.57±0.03

6   5   4

(0.1)

1.6±0.04

1.80±0.03

1   2   3

0.5

(0.2)

(0.2)

0.08 +0.05 / -0.02

0.48±0.02

0.2±0.05
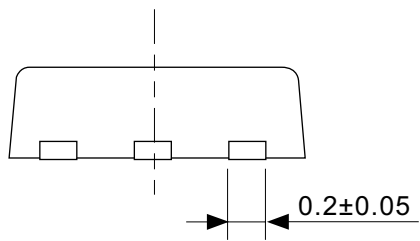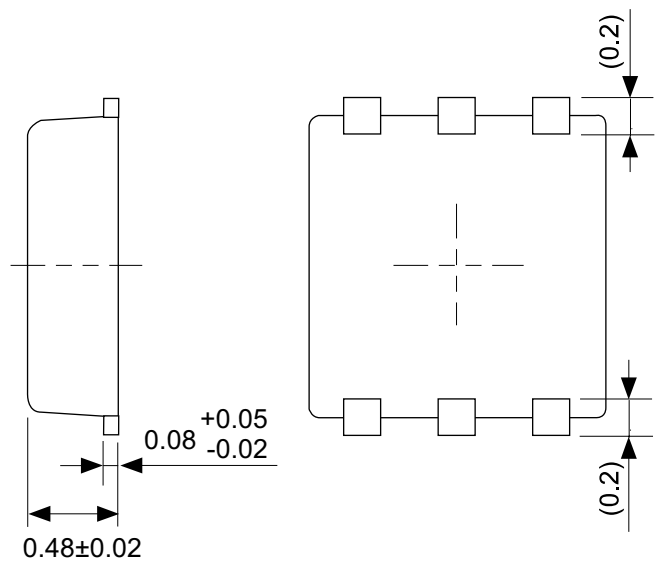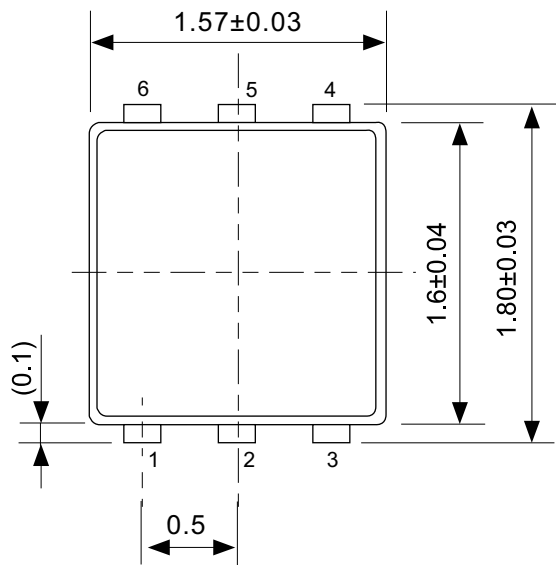
No. PG006-A-P-SD-2.0

TITLE	SNT-6A-A-PKG Dimensions
No.	PG006-A-P-SD-2.0
SCALE	
UNIT	mm

Seiko Instruments Inc.

ø1.5 $^{+0.1}_{-0}$

2.0±0.05

4.0±0.1

1.75±0.1

0.25±0.05

3.5±0.05

8.0±0.2

2.05±0.05

5°

1.85±0.05

5°

ø0.5 $^{+0.1}_{-0}$

4.0±0.1

0.65±0.05

3 2 1

4 5 6

Feed direction
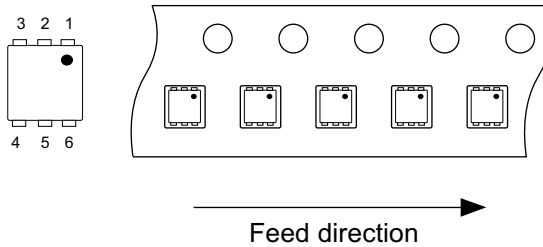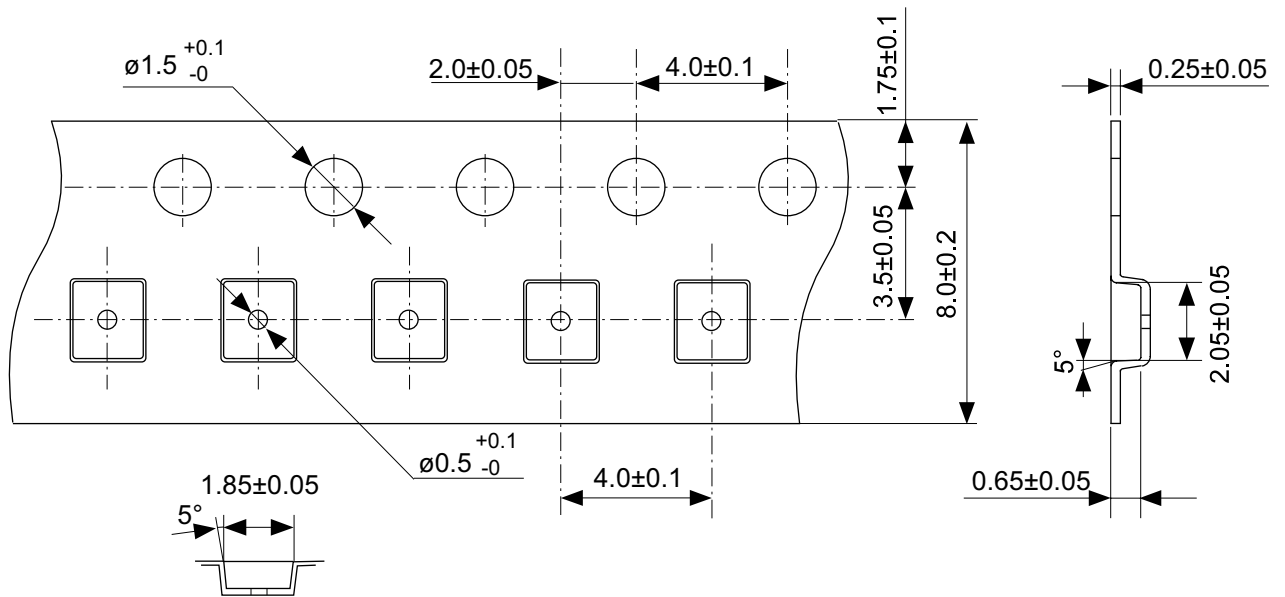
No. PG006-A-C-SD-1.0

TITLE	SNT-6A-A-Carrier Tape
No.	PG006-A-C-SD-1.0
SCALE	
UNIT	mm
Seiko Instruments Inc.	

12.5max.

$\phi 60^{+1}_{-0}$

$\phi 180^{+0}_{-3}$

9.0±0.3

Enlarged drawing in the central part

$\phi 21±0.5$

$\phi 13±0.2$

2±0.5

(60°) (60°)
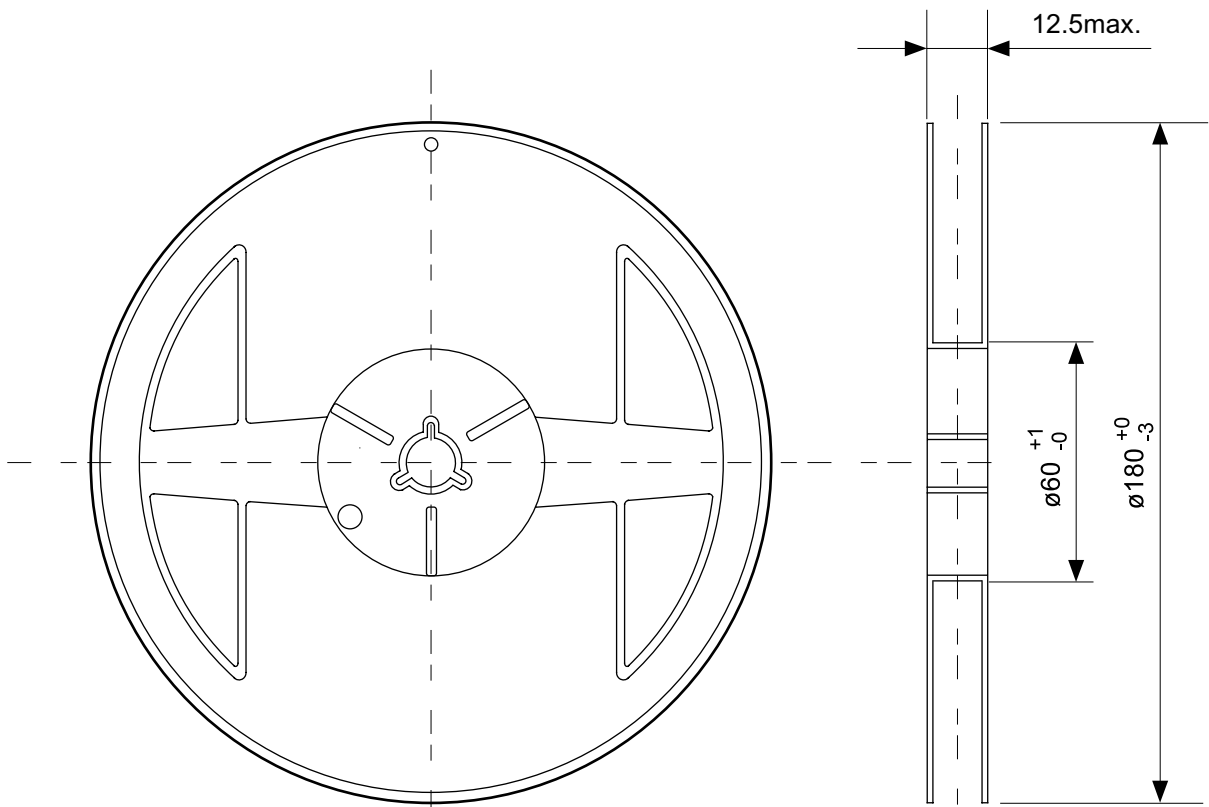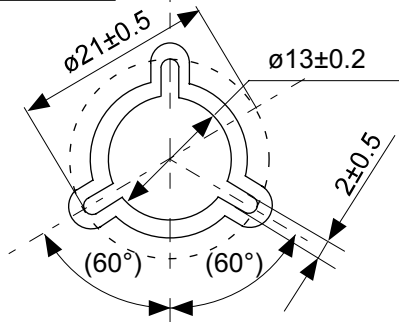
No. PG006-A-R-SD-1.0

TITLE	SNT-6A-A-Reel		
No.	PG006-A-R-SD-1.0		
SCALE		QTY.	5,000
UNIT	mm		
Seiko Instruments Inc.			

0.52

1.36

0.52

0.3 0.2 0.3 0.2 0.3
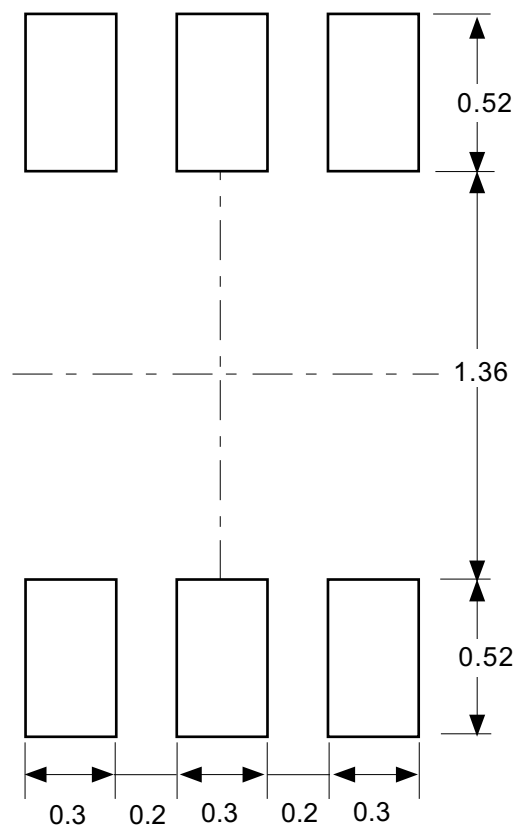
Caution   Making the wire pattern under the package is possible. However, note that the package
may be upraised due to the thickness made by the silk screen printing and of a solder
resist on the pattern because this package does not have the standoff.

注意   パッケージ下への配線パターン形成は可能ですが、本パッケージはスタンドオフ
が無いので、パターン上のレジスト厚み、シルク印刷の厚みによってパッケージ
が持ち上がることがありますのでご配慮ください。

No. PG006-A-L-SD-3.0

TITLE	SNT-6A-A-Land Recommendation
No.	PG006-A-L-SD-3.0
SCALE	
UNIT	mm
Seiko Instruments Inc.	

2.9±0.2

1.9±0.2

5   4

1   2   3

1.6

2.8 +0.2 -0.3

0.45

0.16 +0.1 -0.06

1.1±0.1

1.3max.

0 to 0.15

0.95±0.1

0.4±0.1
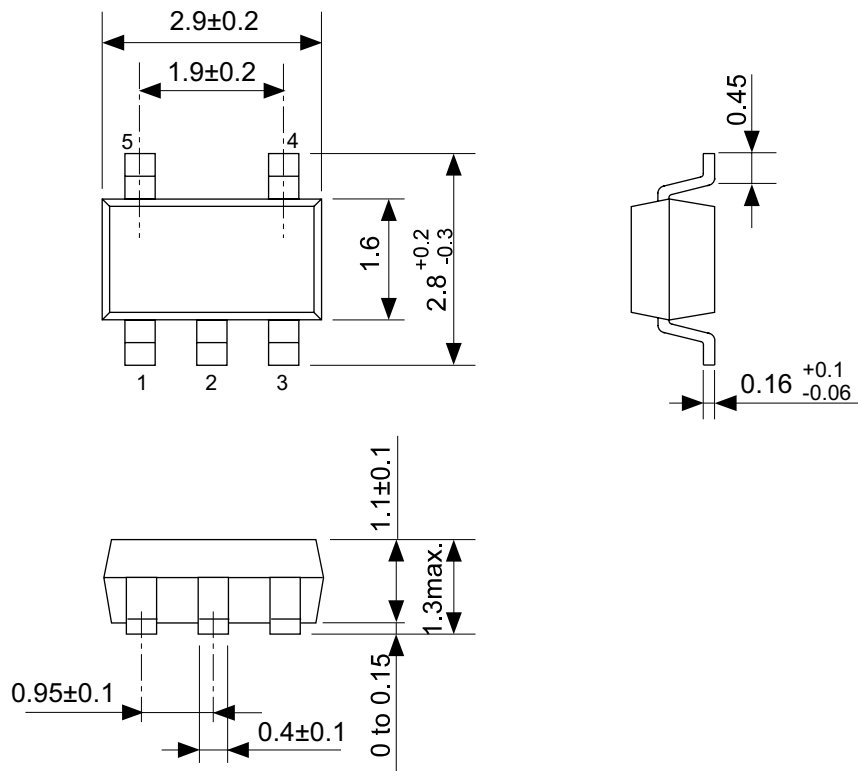
No. MP005-A-P-SD-1.2

TITLE	SOT235-A-PKG Dimensions
No.	MP005-A-P-SD-1.2
SCALE	
UNIT	mm

Seiko Instruments Inc.

4.0±0.1(10 pitches:40.0±0.2)

ø1.5 +0.1 -0

2.0±0.05

1.75±0.1

0.25±0.1

3.5±0.05

8.0±0.2

3.25±0.15

ø1.0 +0.2 -0

4.0±0.1

1.4±0.2

3.2±0.2

3 2 1

4   5

Feed direction
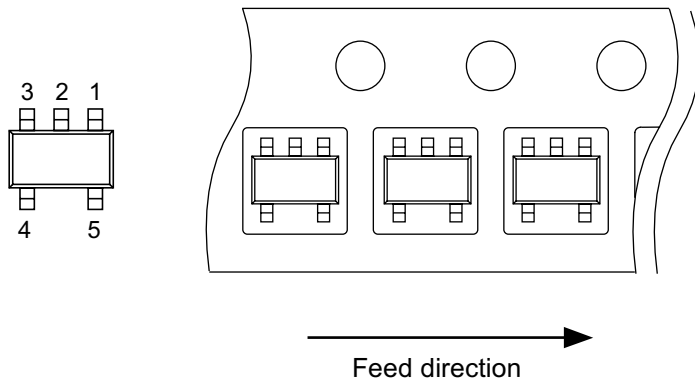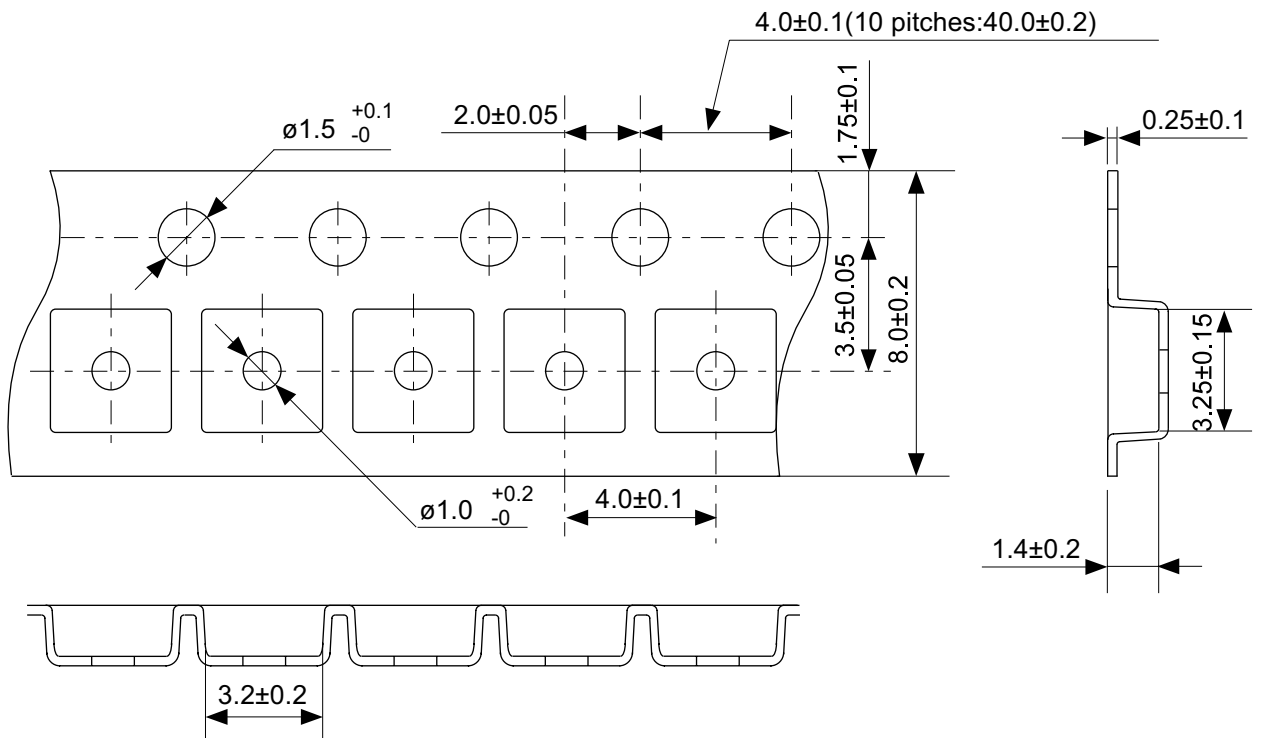
No. MP005-A-C-SD-2.1

TITLE	SOT235-A-Carrier Tape
No.	MP005-A-C-SD-2.1
SCALE	
UNIT	mm
Seiko Instruments Inc.	

12.5max.

$\varnothing 60^{+1}_{-0}$

$\varnothing 180^{+0}_{-3}$

9.0±0.3

Enlarged drawing in the central part

$\varnothing 21±0.5$

$\varnothing 13±0.2$

2±0.2

(60°) (60°)
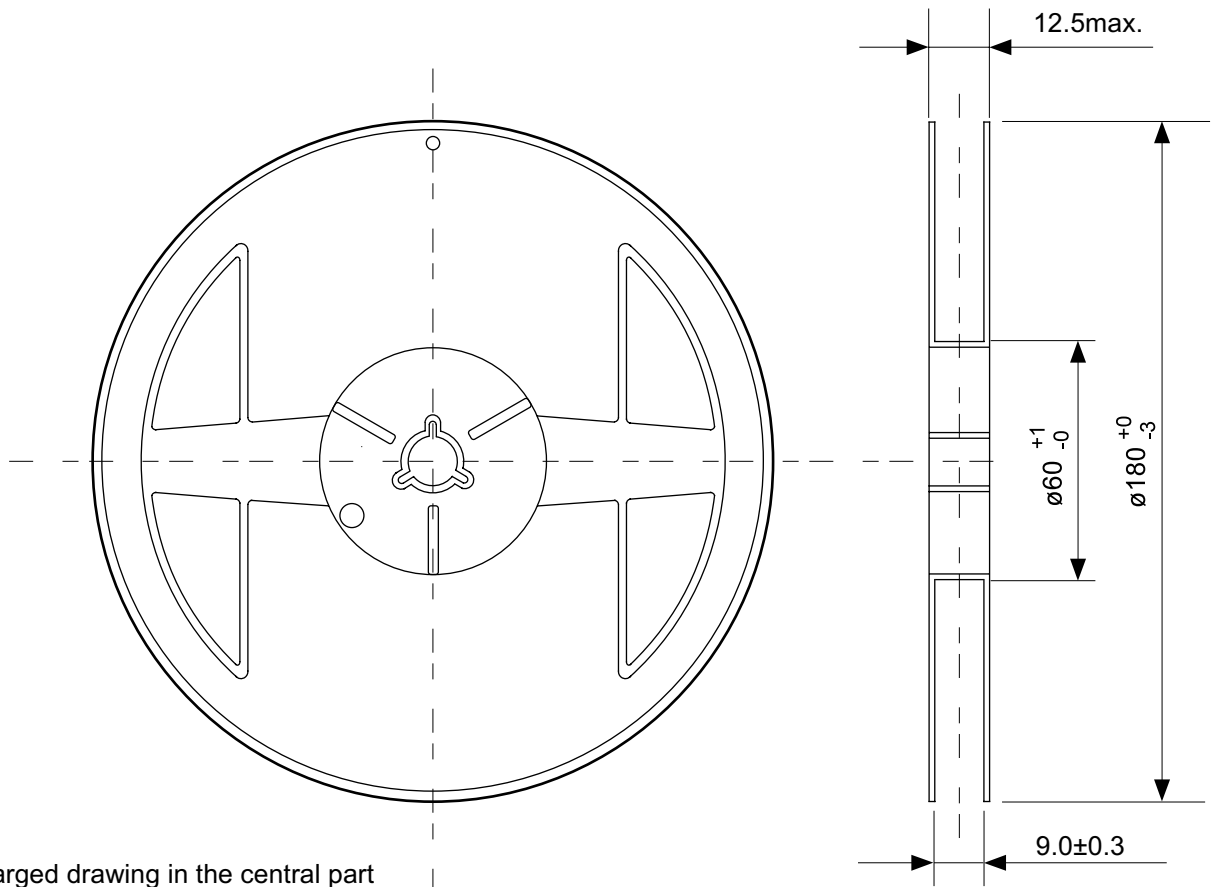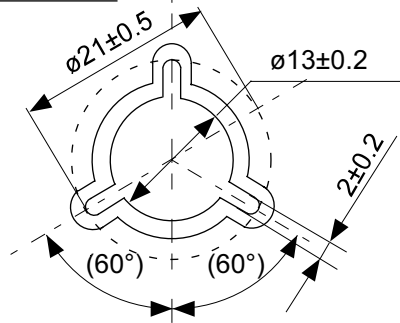
No. MP005-A-R-SD-1.1

TITLE	SOT235-A-Reel		
No.	MP005-A-R-SD-1.1		
SCALE		QTY.	3,000
UNIT	mm		
Seiko Instruments Inc.			