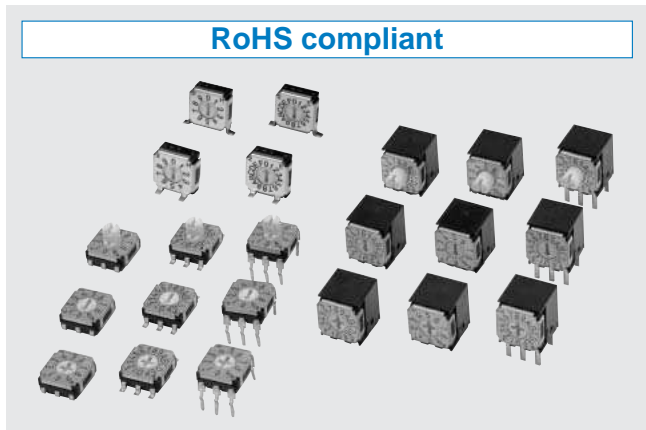


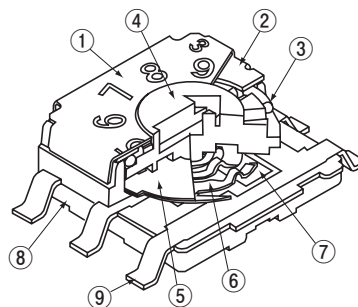
ROTARY CODED SWITCHES (SMD)

SA-7000

RoHS compliant



INTERNAL STRUCTURE

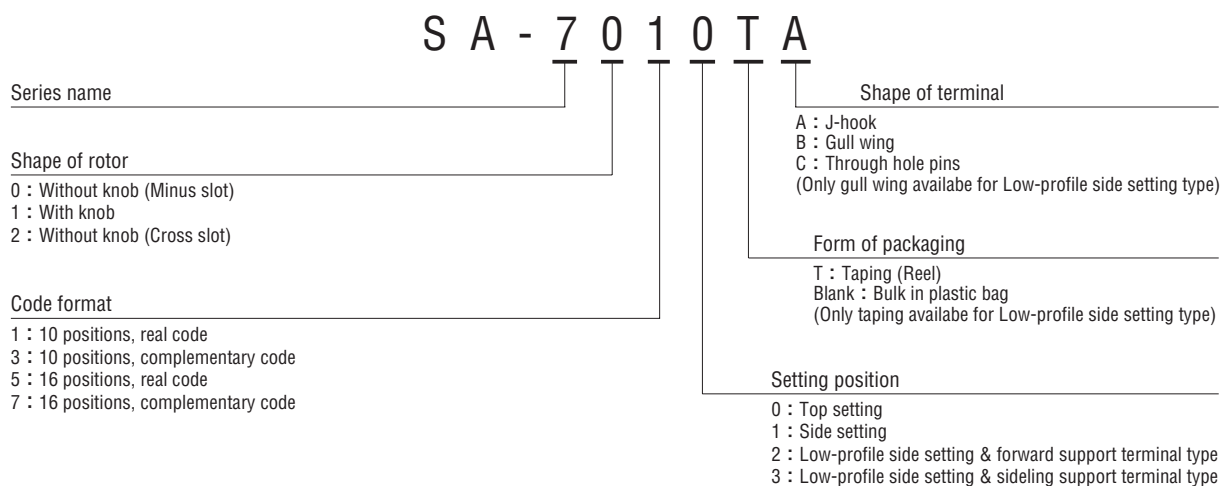


Part name	Material	Flammability
① Marking cover	Stainless steel (SUS 304)	—
② Cover		
③ "O" ring	Silicone rubber	UL-94HB
④ Rotor	PPS(Polyphenylenesulphide)	UL-94V-0
⑤ Spacer	Stainless steel (SUS 304)	—
⑥ Moving contact	Copper alloy, Gold-plated	
⑦ Fixed contact		
⑧ Housing	PPS(Polyphenylenesulphide)	UL-94V-0
⑨ Terminal pin	Copper alloy, Gold-plated	—

FEATURES

- RoHS compliant
- Low profile of 3.0 mm
- Wide variety (top or side setting, 10 or 16 positions, J-hook, gull wing or through hole pins) to choose from
- Easy to recognize
- Low-profile side setting type with support terminals is available

PART NUMBER DESIGNATION



※Please refer to the LIST OF PART NUMBERS when placing orders.

SA-7000

ROTARY CODED SWITCHES (SMD)

STANDARD SPECIFICATIONS

Circuit type	BCD (Real code, complementary code) BCH (Real code, complementary code)
Operating temperature range	-40 ~ 85 °C
Storage temperature range	
Sealing	Non Washable ※Please refer to A-218, A-219
Net weight	Approx. 0.32 g (Top setting type without knob) Approx. 0.34 g (Top setting type with knob) Approx. 0.69 g (Side setting type without knob) Approx. 0.71 g (Side setting type with knob) Approx. 0.42 g (Low-profile side setting type without knob) Approx. 0.44 g (Low-profile side setting type with knob)

MECHANICAL CHARACTERISTICS

No. of positions	10, 16
Adjustment torque	20 mN·m {204 gf·cm} maximum
Stepping angle	36° (10 positions) 22.5° (16 positions)
Solderability	245 ± 3 °C, 2 ~ 3 s
Soldering heat	Reflow : 255 °C (Peak temperature) Please refer to the profile below)
	Manual soldering : 350 ± 10 °C, 3 ~ 4 s Flow : 260 ± 3 °C, 5 ~ 6 s, two
Shear (adhesion)	5 N {0.51 kgf} 10 s
Substrate bending	Width 90 mm, bend 3 mm, 5 s, 1 time
Pull-off strength	5 N {0.51 kgf} 10s
Stop strength (With knob only)	5 N {0.51 kgf} 10s

{ } : Reference only

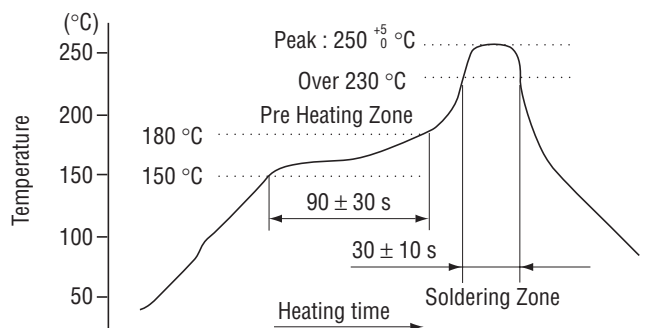
ELECTRICAL CHARACTERISTICS

Contact rating	DC50 V 100 mA DC5 V 100 mA DC20 mV 1 μA
Contact resistance	100 mΩ maximum
Insulation resistance	100 MΩ (DC100 V) minimum
Dielectric strength	AC250 V, 60 s

ENVIRONMENTAL CHARACTERISTICS

Vibration	(Amplitude) 1.5 mm or (Acceleration) 98 m/s ² , 10-500-10 Hz, 3 directions for 2 h each
Shock	490 m/s ² , 11 ms 6 directions for 3 times each
Load life	10000 steps minimum, DC5 V, 100 mA
Humidity (Steady state)	40 °C, Relative humidity 90 ~ 95 %, 240 h
High temperature exposure	85 °C, 96 h
Low temperature exposure	-40 °C, 96 h
Thermal shock	-40 (0.5 h) ~ 85 °C (0.5 h), 5 cycles

Reflow profile for soldering heat evaluation



Reflow : two times maximum

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ROTARY CODED SWITCHES (SMD)

CODE FORMAT

● ...Contact closed

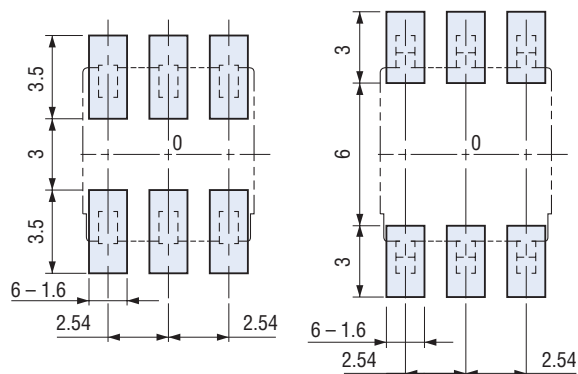
No. of positions		16 positions																
		10 positions																
Position		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
Code	Real code	8								●	●	●	●	●	●	●	●	
		4					●	●	●	●				●	●	●	●	
		2			●	●			●	●			●	●			●	●
	Complementary code	1		●		●		●		●		●		●		●		●
		$\bar{8}$	●	●	●	●	●	●	●	●			●	●				
		$\bar{4}$	●	●	●	●					●	●	●	●				
	$\bar{2}$	●	●			●	●			●	●			●	●			
	$\bar{1}$	●		●		●		●		●		●		●		●		

RECOMMENDED P.C.B. PAD OUTLINE DIMENSIONS

<Top setting>

● A type

● B type

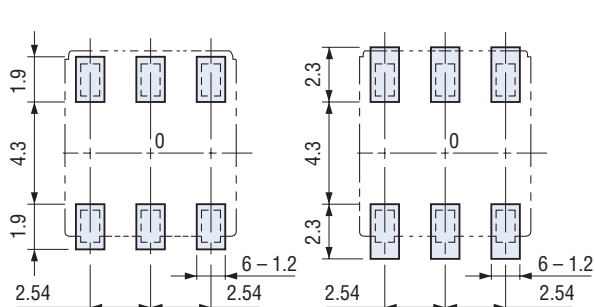


<Side setting>

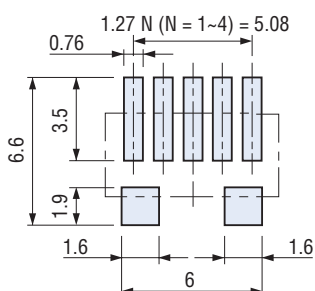
● A type

● B type

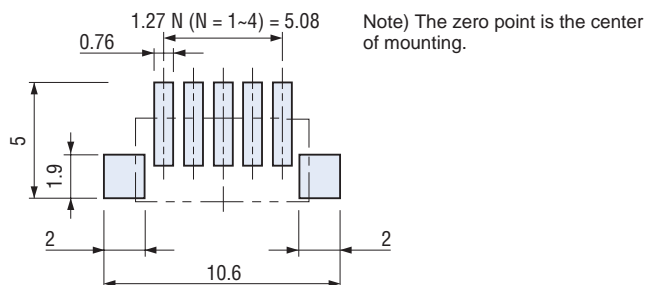
(Unit: mm)



<Low-profile side setting & forward support terminal type (B type)>



<Low-profile side setting & sideling support terminal type (B type)>

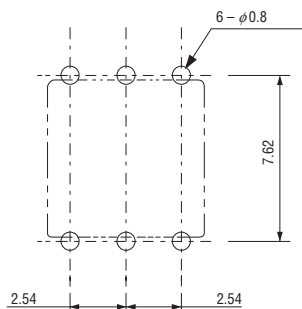


Note) The zero point is the center of mounting.

SIZE OF P.C.B. PROCESSING

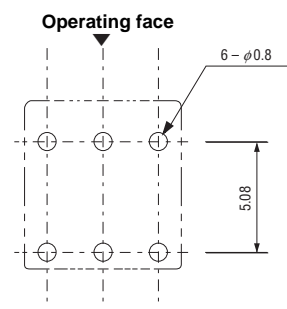
<Top setting>

● C type



<Side setting>

● C type



Specifications are subject to change without notice.

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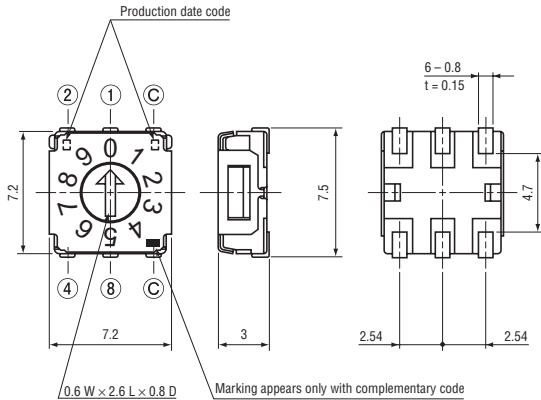
ROTARY CODED SWITCHES (SMD)

OUTLINE DIMENSIONS

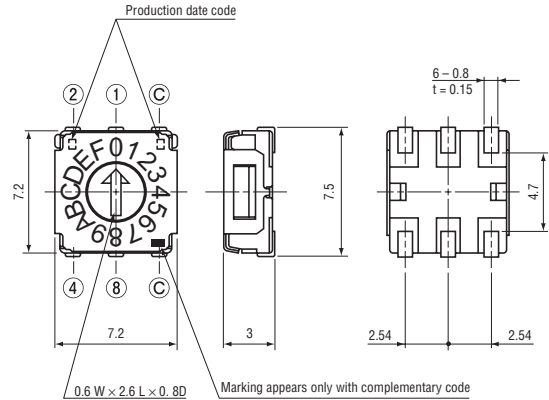
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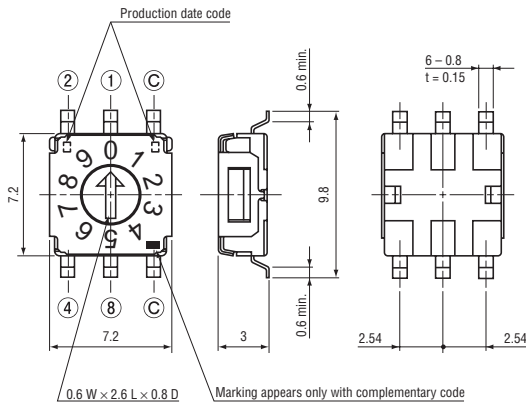
- SA-7010A (Real code)
- SA-7030A (Complementary code)



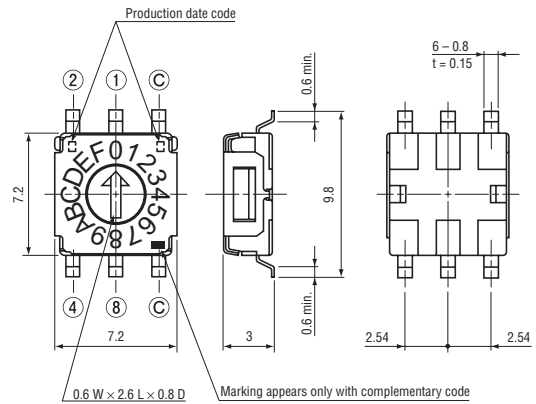
- SA-7050A (Real code)
- SA-7070A (Complementary code)



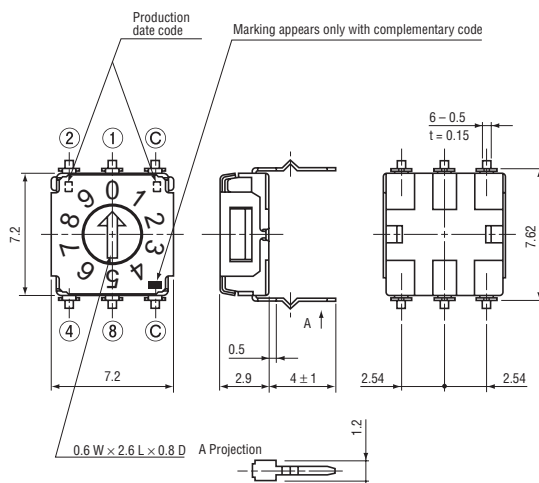
- SA-7010B (Real code)
- SA-7030B (Complementary code)



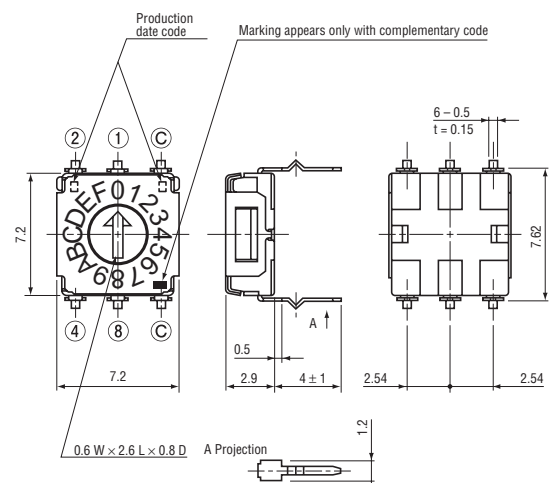
- SA-7050B (Real code)
- SA-7070B (Complementary code)



- SA-7010C (Real code)
- SA-7030C (Complementary code)



- SA-7050C (Real code)
- SA-7070C (Complementary code)



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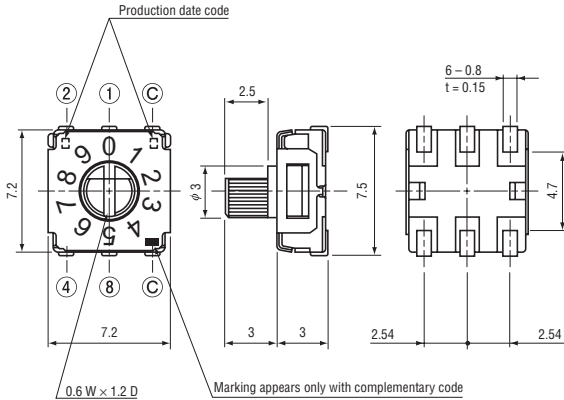
ROTARY CODED SWITCHES (SMD)

OUTLINE DIMENSIONS

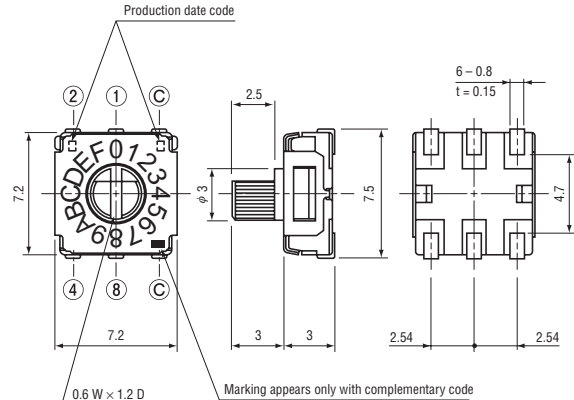
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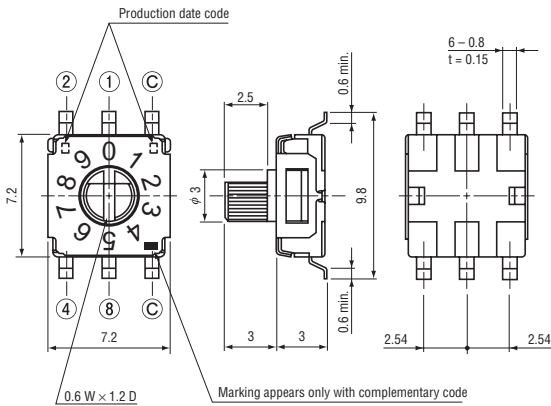
- SA-7110A (Real code)
- SA-7130A (Complementary code)



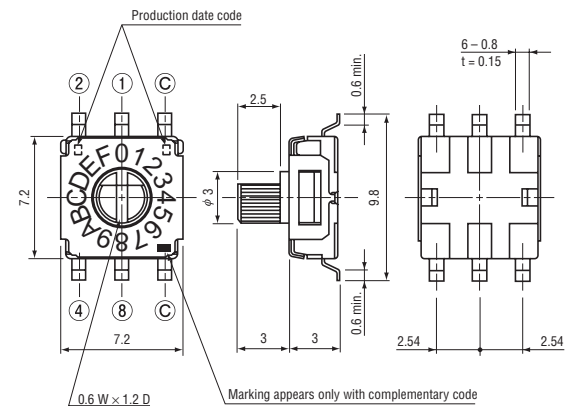
- SA-7150A (Real code)
- SA-7170A (Complementary code)



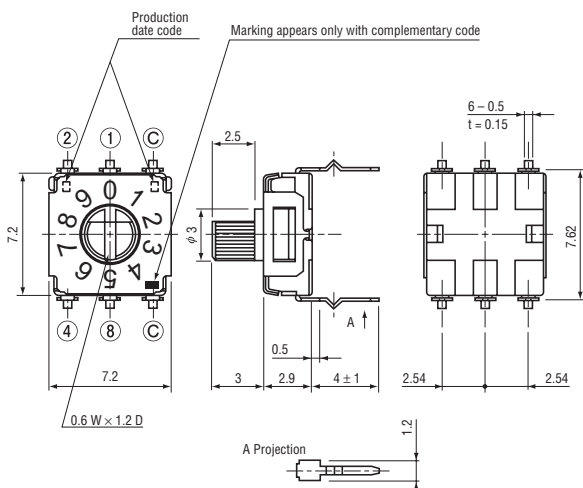
- SA-7110B (Real code)
- SA-7130B (Complementary code)



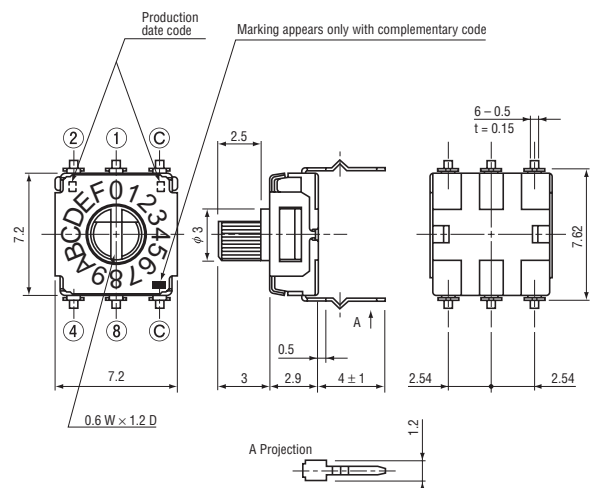
- SA-7150B (Real code)
- SA-7170B (Complementary code)



- SA-7110C (Real code)
- SA-7130C (Complementary code)



- SA-7150C (Real code)
- SA-7170C (Complementary code)



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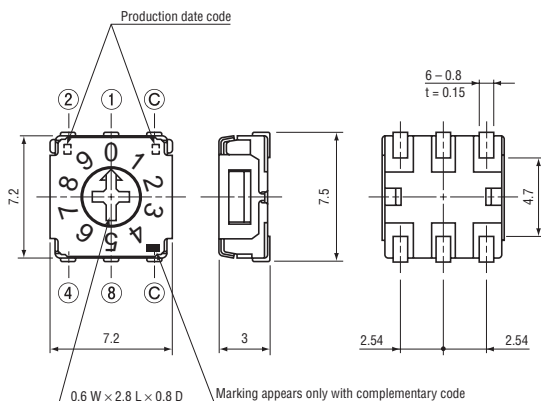
ROTARY CODED SWITCHES (SMD)

OUTLINE DIMENSIONS

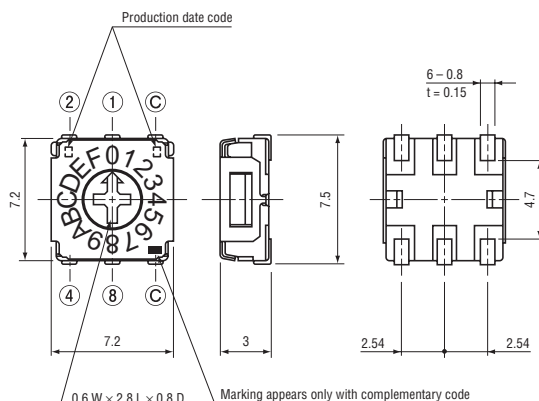
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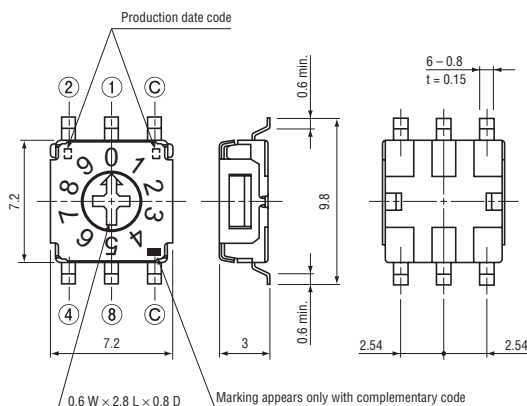
- SA-7210A (Real code)
- SA-7230A (Complementary code)



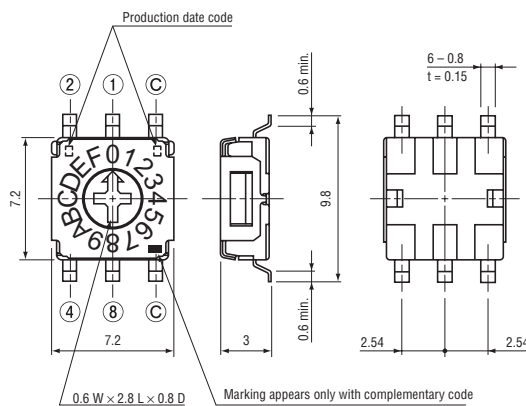
- SA-7250A (Real code)
- SA-7270A (Complementary code)



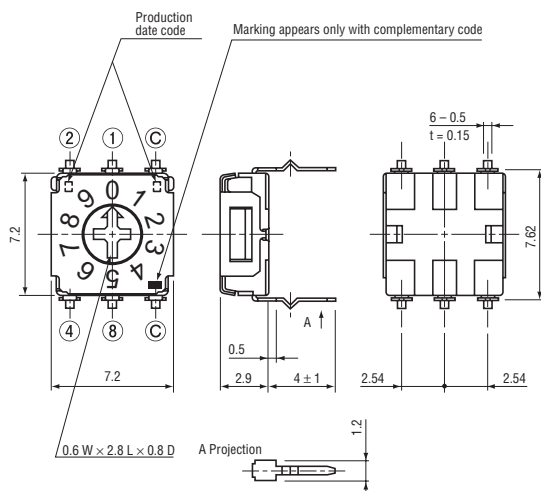
- SA-7210B (Real code)
- SA-7230B (Complementary code)



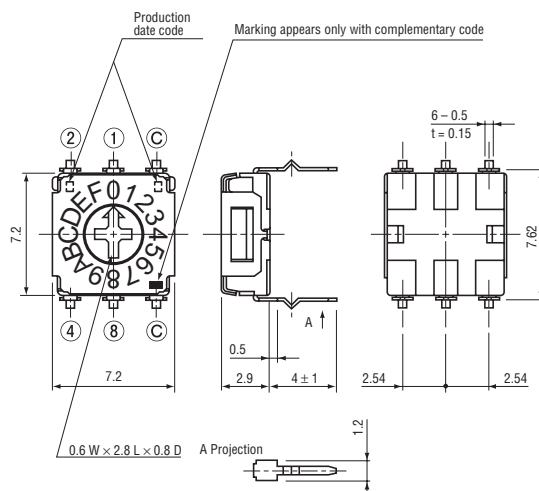
- SA-7250B (Real code)
- SA-7270B (Complementary code)



- SA-7210C (Real code)
- SA-7230C (Complementary code)



- SA-7250C (Real code)
- SA-7270C (Complementary code)



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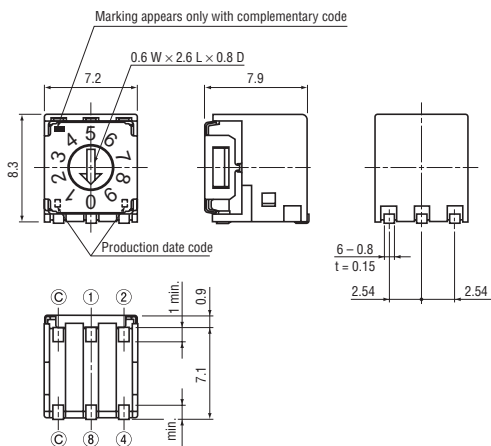
ROTARY CODED SWITCHES (SMD)

OUTLINE DIMESIONS

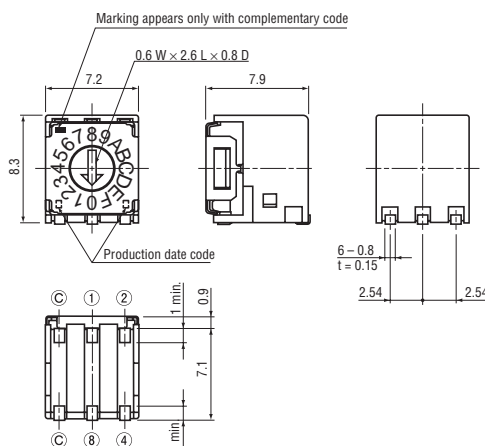
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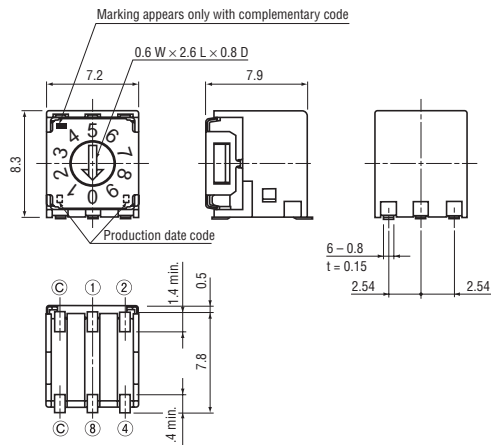
- SA-7011A (Real code)
- SA-7031A (Complementary code)



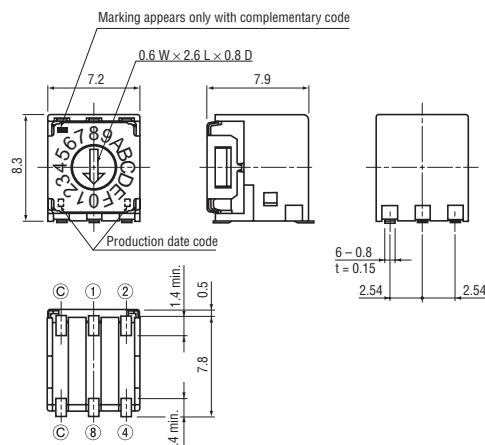
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- SA-7071A (Complementary code)



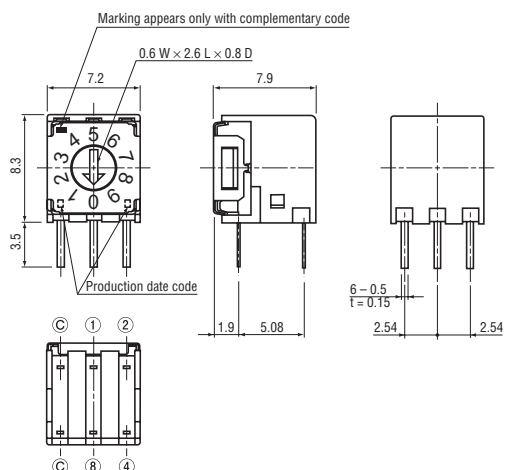
- SA-7011B (Real code)
- SA-7031B (Complementary code)



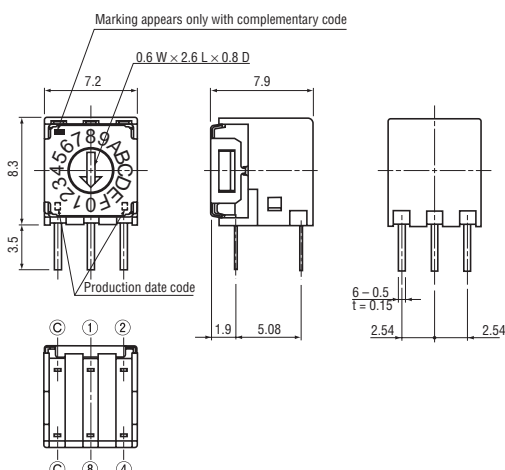
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- SA-7071B (Complementary code)



- SA-7011C (Real code)
- SA-7031C (Complementary code)



- SA-7051C (Real code)
- SA-7071C (Complementary code)



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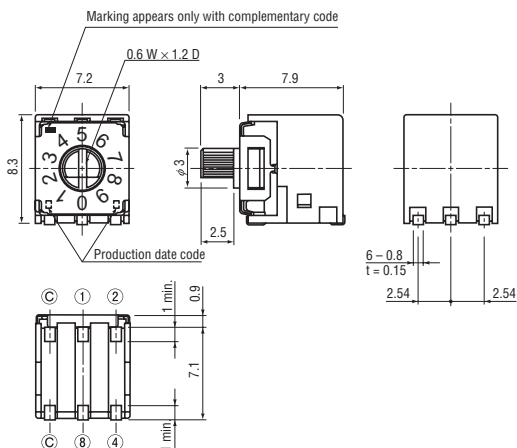
ROTARY CODED SWITCHES (SMD)

OUTLINE DIMENSIONS

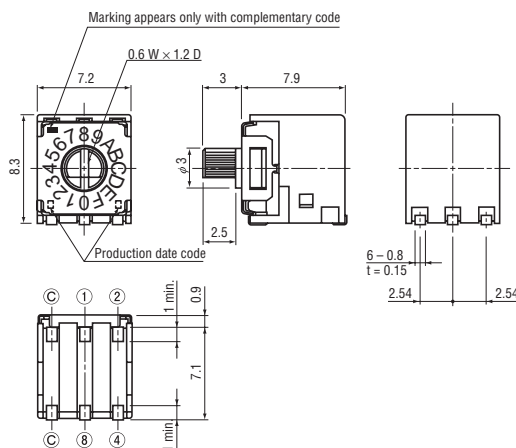
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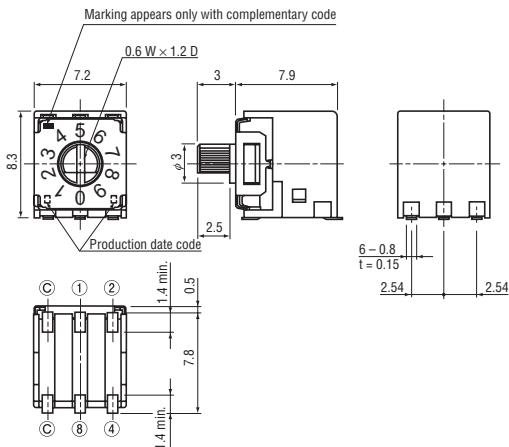
- SA-7111A (Real code)
- SA-7131A (Complementary code)



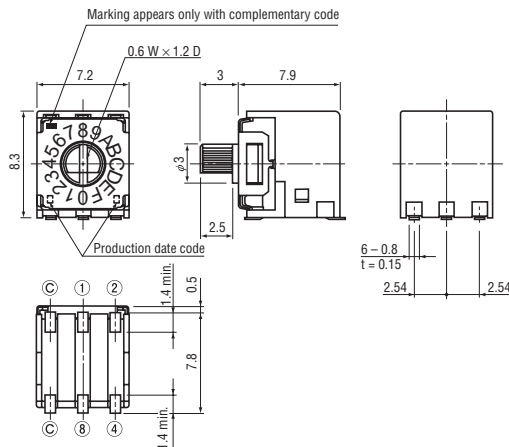
- SA-7151A (Real code)
- SA-7171A (Complementary code)



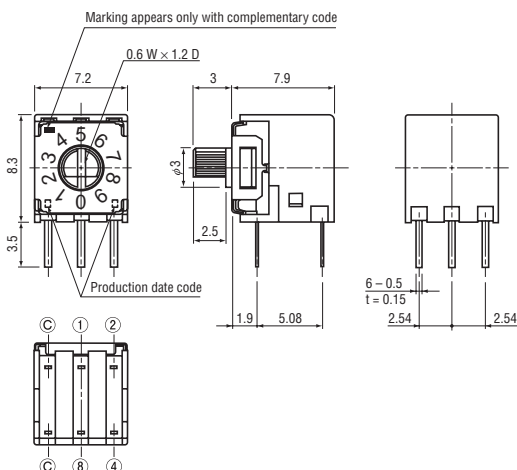
- SA-7111B (Real code)
- SA-7131B (Complementary code)



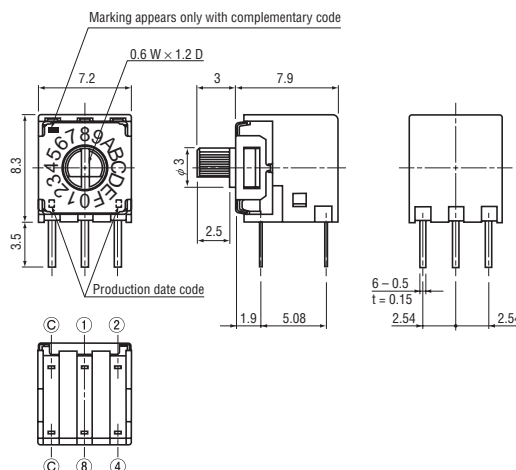
- SA-7151B (Real code)
- SA-7171B (Complementary code)



- SA-7111C (Real code)
- SA-7131C (Complementary code)



- SA-7151C (Real code)
- SA-7171C (Complementary code)



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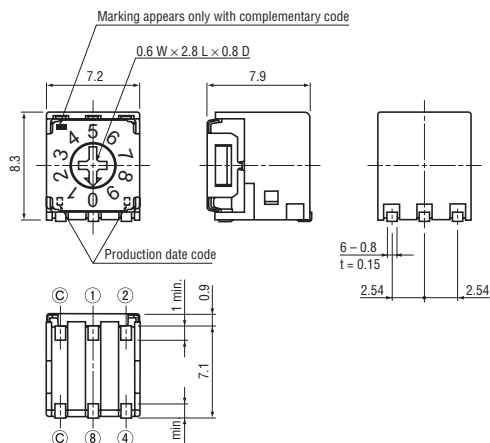
ROTARY CODED SWITCHES (SMD)

OUTLINE DIMENSIONS

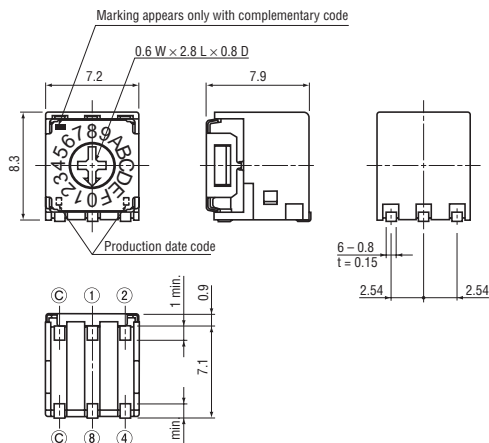
Unless otherwise specified, tolerance: ± 0.3 (Unit: mm)

<Side setting>

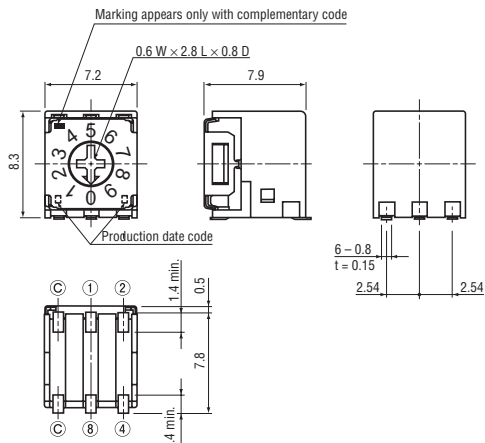
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- SA-7231A (Complementary code)



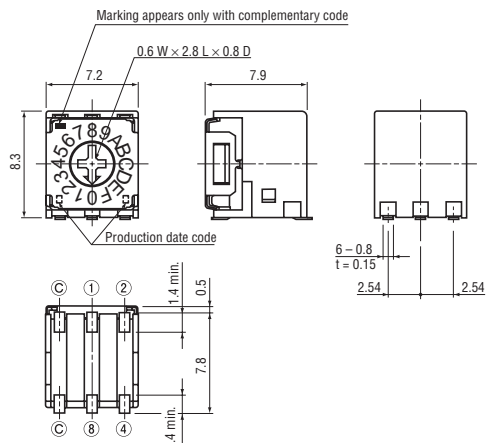
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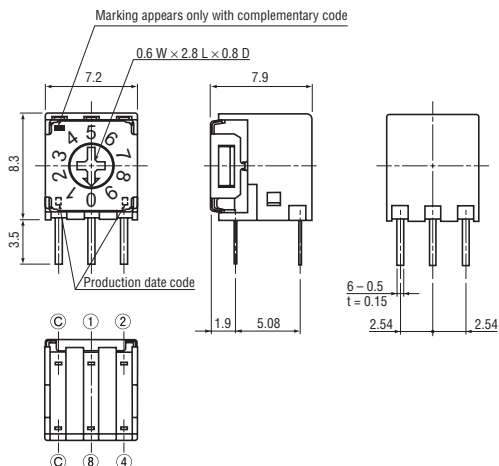
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- SA-7231B (Complementary code)



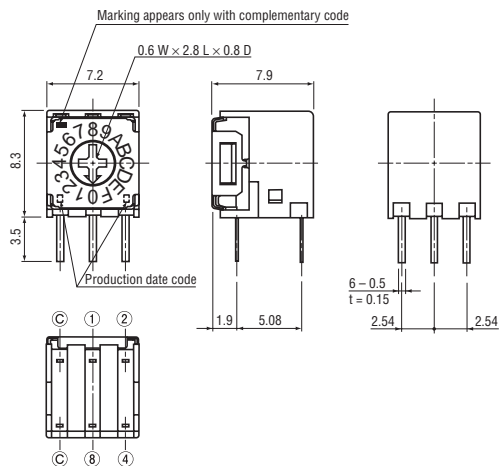
- SA-7251B (Real code)
- SA-7271B (Complementary code)



- SA-7211C (Real code)
- SA-7231C (Complementary code)



- SA-7251C (Real code)
- SA-7271C (Complementary code)



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ROTARY CODED SWITCHES (SMD)

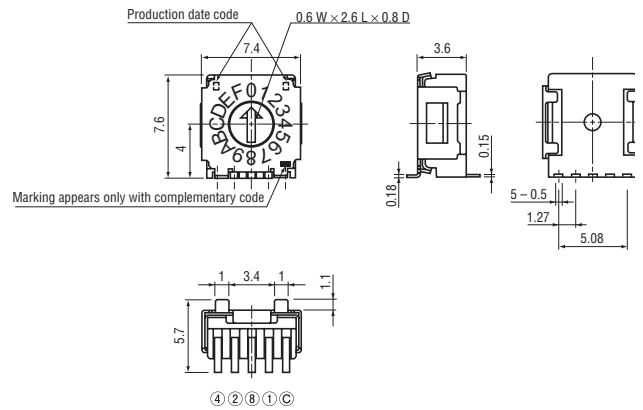
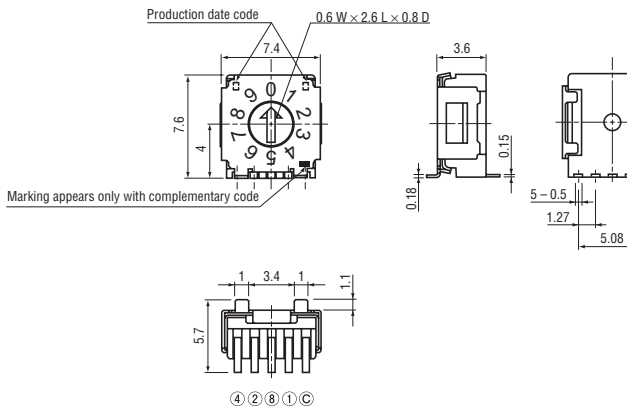
OUTLINE DIMENSIONS

Unless otherwise specified, tolerance: ± 0.3 (Unit: mm)

<Low-profile side setting & forward support terminal type>

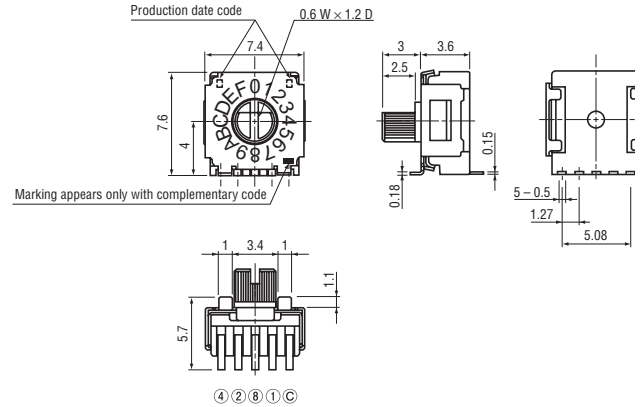
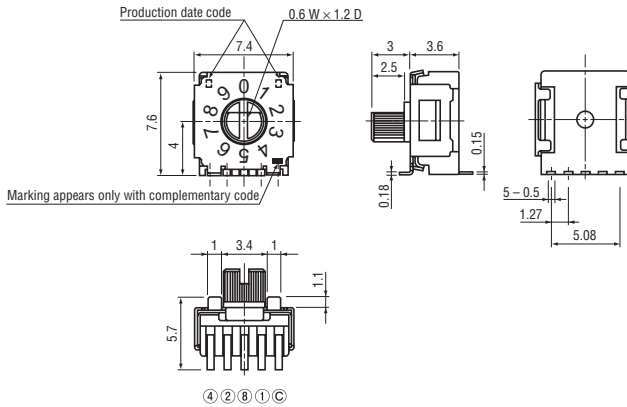
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- SA-7032B (Complementary code)

- SA-7052B (Real code)
- SA-7072B (Complementary code)



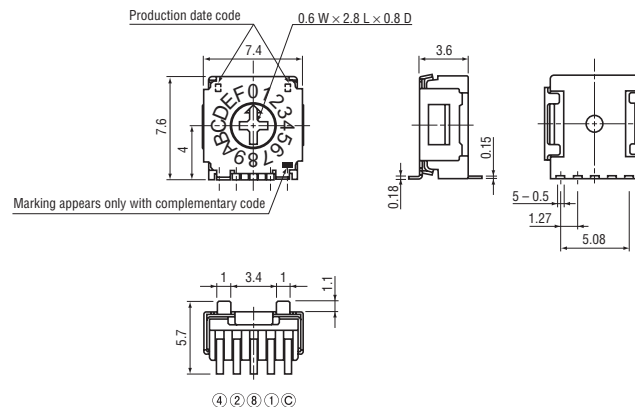
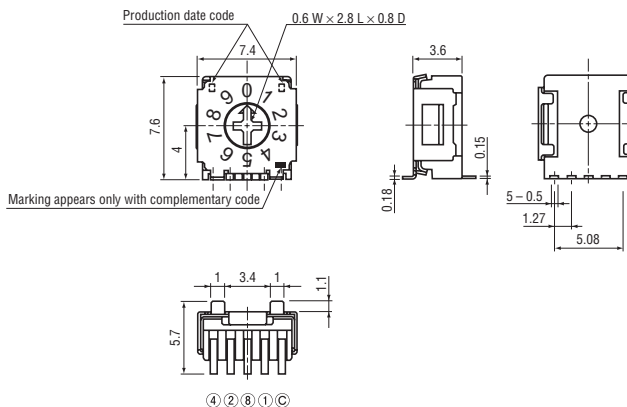
- SA-7112B (Real code)
- SA-7132B (Complementary code)

- SA-7152B (Real code)
- SA-7172B (Complementary code)



- SA-7212B (Real code)
- SA-7232B (Complementary code)

- SA-7252B (Real code)
- SA-7272B (Complementary code)



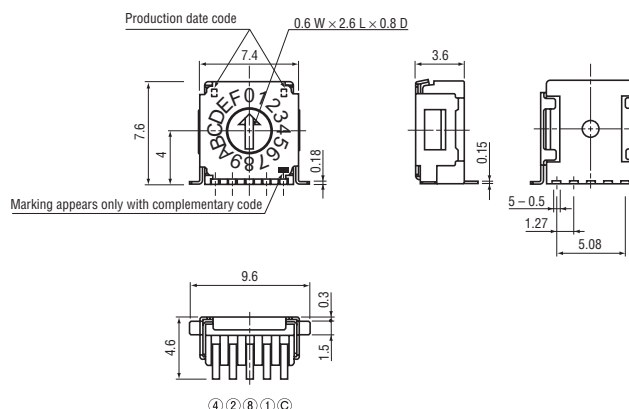
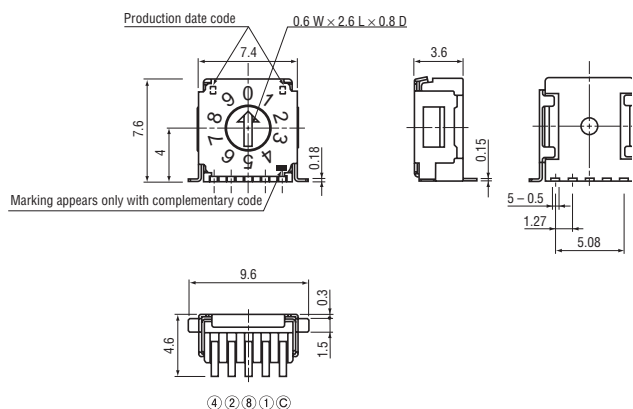
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ROTARY CODED SWITCHES (SMD)

<Low-profile side setting & sideling support terminal type>

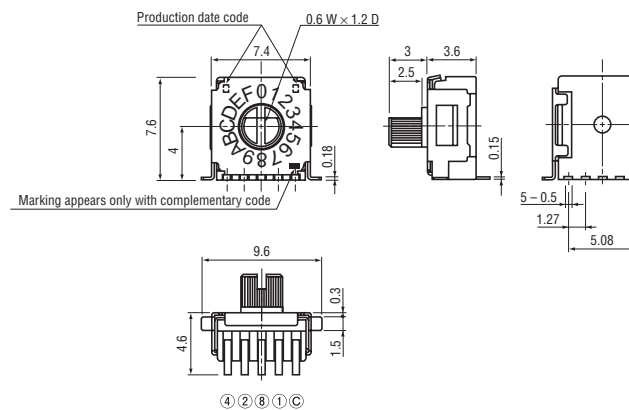
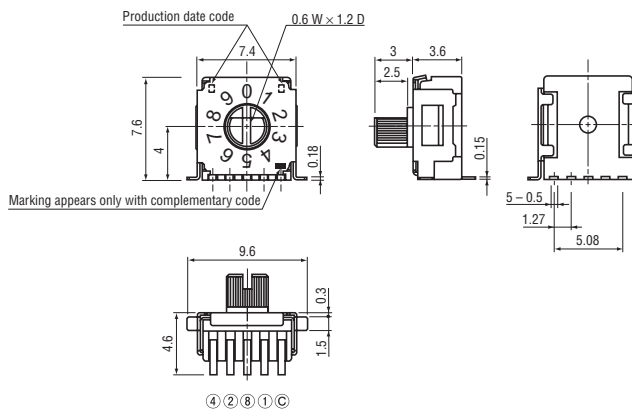
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- SA-7033B (Complementary code)

- SA-7053B (Real code)
- SA-7073B (Complementary code)



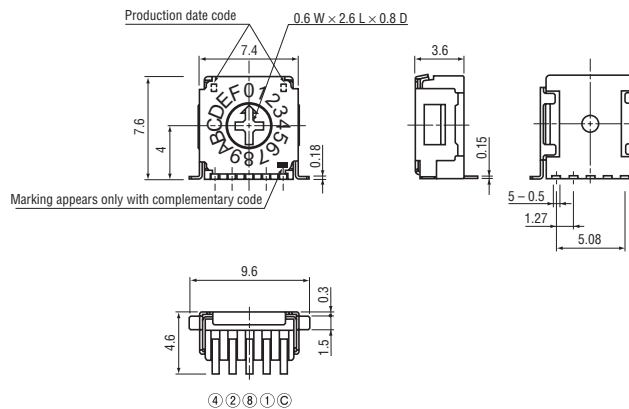
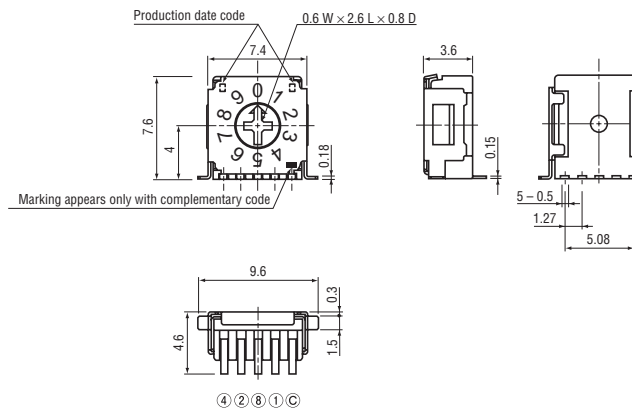
- SA-7113B (Real code)
- SA-7133B (Complementary code)

- SA-7153B (Real code)
- SA-7173B (Complementary code)



- SA-7213B (Real code)
- SA-7233B (Complementary code)

- SA-7253B (Real code)
- SA-7273B (Complementary code)



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ROTARY CODED SWITCHES (SMD)

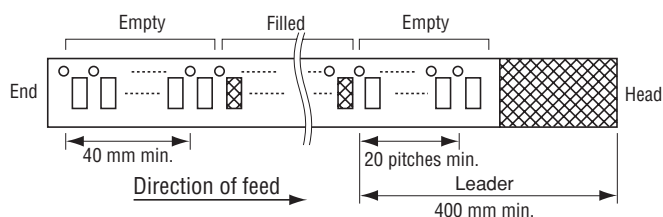
PACKAGING SPECIFICATIONS

<Taping packaging specifications>

- Taping version is packaged in 500 pcs. per reel.
 Orders will be accepted for units of 500 pcs., i.e., 500, 1000, 1500, pcs., etc.
- Taping version is boxed with one reel (500 pcs.).

Maximum number of consecutive missing pieces=2
 Leader length and reel dimension are shown in the diagrams below:

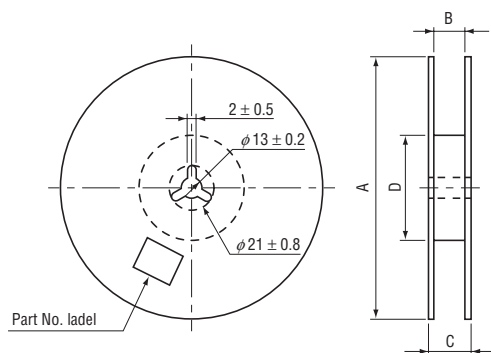
● Embossed tape dimensions



● Reel dimensions

(Unit: mm)

(Conforms to JIS C 0806-3)
 (In accordance with EIAJ ET-7200A)



Part number	A	B	C	D
SA-70□0 • SA-72□0TA/TB	$\phi 254 \pm 2$	17.4 ± 1	21.4 ± 1	$\phi 50 \text{ min.}$
SA-71□0TA/TB	$\phi 330 \pm 2$	17.4 ± 1	21.4 ± 1	$\phi 80 \pm 1$
SA-70□1 • SA-72□1TA/TB	$\phi 330 \pm 2$	17.4 ± 1	21.4 ± 1	
SA-71□1TA/TB	$\phi 330 \pm 2$	17.4 ± 1	21.4 ± 1	
SA-7□□2 • SA-7□□3 TB	$\phi 330 \pm 2$	25.4 ± 1	29.4 ± 1	

● SA-70□0T□

● SA-72□0T□

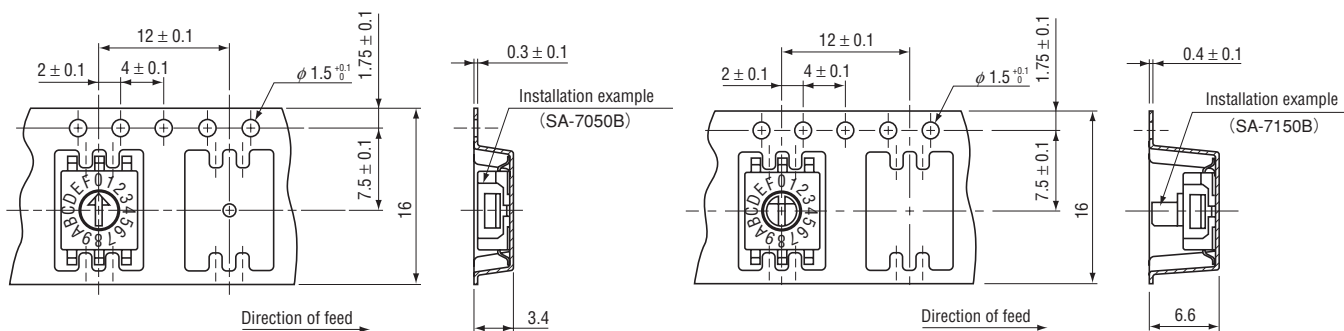
<Top setting without knob>

● SA-71□0T□

<Top setting with knob>

(Unit: mm)

(Conforms to JIS C 0806)



SA-7000

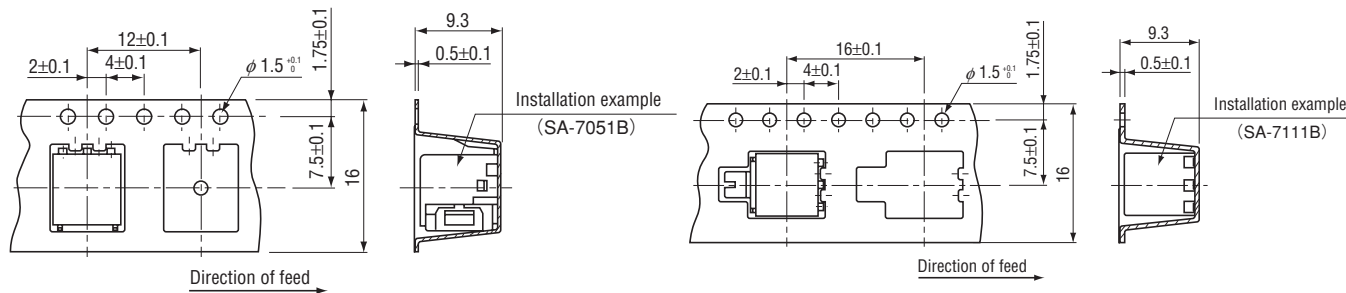
ROTARY CODED SWITCHES (SMD)

- SA-70□1T□
 - SA-72□1T□
- <Side setting without knob>

- SA-71□1T□
- <Side setting with knob>

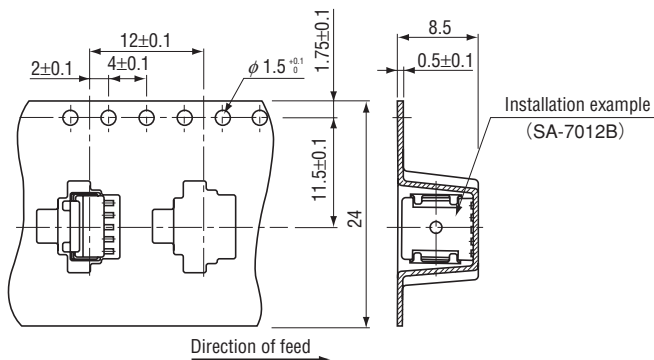
(Unit: mm)

(Conforms to JIS C 0806-3)



- SA-7□□2TB
 - SA-7□□3TB
- <Low-profile side setting>

(JConforms to JIS C 0806-3)



<Bulk pack specifications>

- The smallest unit of bulk pack in a plastic bag is 10 pcs. per pack. Orders will be accepted for unit of minimum 10 pcs., i.e., 10, 20, 30 pcs., etc.
- Boxing of bulk pack in a plastic bag is performed with 50 pcs. (Top setting type is 200 pcs., side setting type is 100 pcs.) per box.