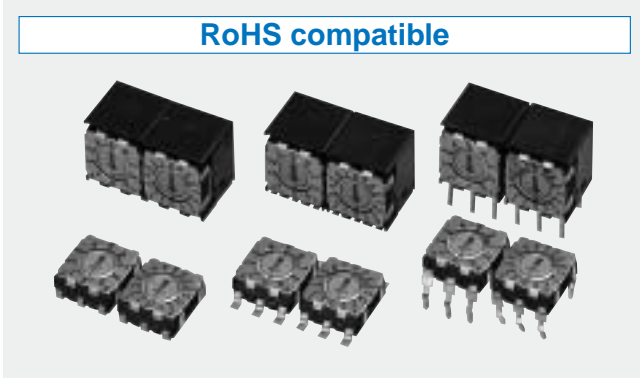


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ROTARY CODED SWITCHES (SMD)

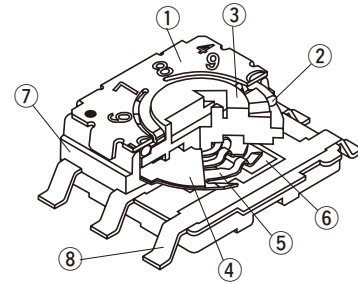
RoHS compatible



FEATURES

- Lead-free soldering
- Low profile of 2.9 mm
- Wide variety (top or side setting, 6, 10 or 16 positions, J-hook, gull wing or through hole pins) to choose from
- Compatible with flow (top setting only) / reflow soldering
- Washable

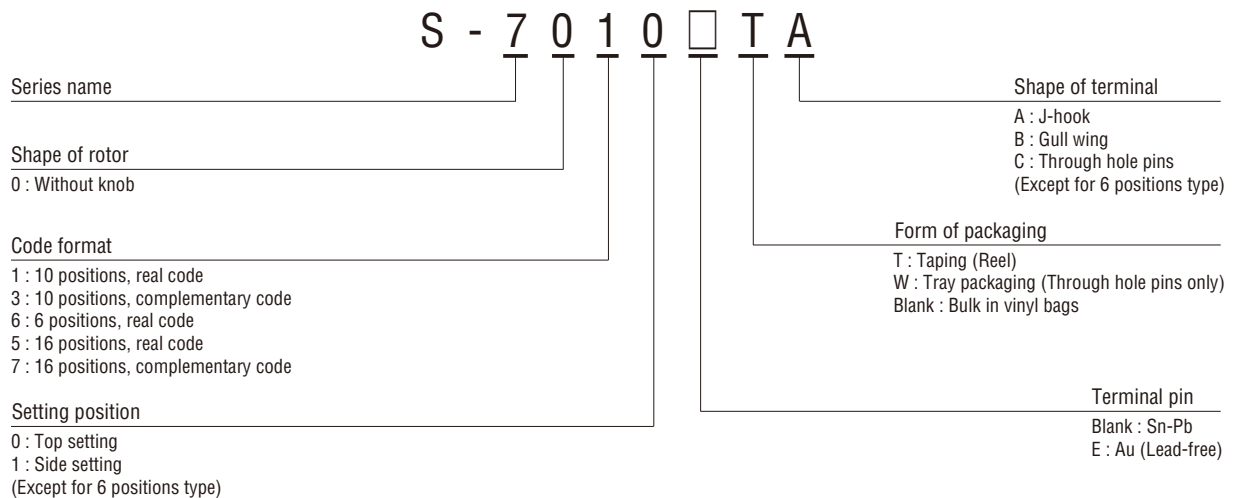
INTERNAL STRUCTURE



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

CFCs, Halon, Carbon tetrachloride and designated bromic flame retardant PBBOs and PBBs are not used in our products.

PART NUMBER DESIGNATION



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

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ROTARY CODED SWITCHES (SMD)

CODE FORMAT

No. of positions		16 positions															
		10 positions															
Position		6 positions															
		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		●		●		●		●		●		●		●	
		8	●	●	●	●	●	●	●								
		4	●	●	●	●					●	●	●	●			
		2	●	●			●	●			●	●			●	●	
	1	●		●		●		●		●		●		●		●	

● ... Contact closed

LIST OF PART NUMBERS

Setting position	Shape of terminal	Form of packaging	Terminal pin	Binary coded hexal	Binary coded decimal		Binary coded hexadecimal		Pieces in package
				Real code	Real code	Complementary code	Real code	Complementary code	
Top setting	A J-hook	Taping	Sn-Pb	⤴ S-7060TA	S-7010TA	S-7030TA	S-7050TA	S-7070TA	500 pcs. / reel
			Au (Lead-free)	S-7060ETA	S-7010ETA	S-7030ETA	S-7050ETA	S-7070ETA	500 pcs. / reel
		Vinyl pack	Sn-Pb	⤴ S-7060A	S-7010A	S-7030A	S-7050A	S-7070A	50 pcs. / pack
			Au (Lead-free)	S-7060EA	S-7010EA	S-7030EA	S-7050EA	S-7070EA	50 pcs. / pack
	B Gull wing	Taping	Sn-Pb	⤴ S-7060TB	S-7010TB	S-7030TB	S-7050TB	S-7070TB	500 pcs. / reel
			Au (Lead-free)	S-7060ETB	S-7010ETB	S-7030ETB	S-7050ETB	S-7070ETB	500 pcs. / reel
		Vinyl pack	Sn-Pb	⤴ S-7060B	S-7010B	S-7030B	S-7050B	S-7070B	50 pcs. / pack
			Au (Lead-free)	S-7060EB	S-7010EB	S-7030EB	S-7050EB	S-7070EB	50 pcs. / pack
	C Through hole pin	Tray packaging	Sn-Pb	⤴	S-7010WC	S-7030WC	S-7050WC	S-7070WC	50 pcs. / tray
			Au (Lead-free)	⤴	S-7010EWC	S-7030EWC	S-7050EWC	S-7070EWC	50 pcs. / tray
		Vinyl pack	Sn-Pb	⤴	S-7010C	S-7030C	S-7050C	S-7070C	50 pcs. / pack
			Au (Lead-free)	⤴	S-7010EC	S-7030EC	S-7050EC	S-7070EC	50 pcs. / pack
Side setting	A J-hook	Taping	Sn-Pb	⤴	⤴ S-7011TA	⤴ S-7031TA	⤴ S-7051TA	⤴ S-7071TA	500 pcs. / reel
			Au (Lead-free)	⤴	⤴ S-7011ETA	⤴ S-7031ETA	⤴ S-7051ETA	⤴ S-7071ETA	500 pcs. / reel
		Vinyl pack	Sn-Pb	⤴	⤴ S-7011A	⤴ S-7031A	⤴ S-7051A	⤴ S-7071A	50 pcs. / pack
			Au (Lead-free)	⤴	⤴ S-7011EA	⤴ S-7031EA	⤴ S-7051EA	⤴ S-7071EA	50 pcs. / pack
	B Gull wing	Taping	Sn-Pb	⤴	⤴ S-7011TB	⤴ S-7031TB	⤴ S-7051TB	⤴ S-7071TB	500 pcs. / reel
			Au (Lead-free)	⤴	⤴ S-7011ETB	⤴ S-7031ETB	⤴ S-7051ETB	⤴ S-7071ETB	500 pcs. / reel
		Vinyl pack	Sn-Pb	⤴	⤴ S-7011B	⤴ S-7031B	⤴ S-7051B	⤴ S-7071B	50 pcs. / pack
			Au (Lead-free)	⤴	⤴ S-7011EB	⤴ S-7031EB	⤴ S-7051EB	⤴ S-7071EB	50 pcs. / pack
	C Through hole pin	Tray packaging	Sn-Pb	⤴	⤴ S-7011WC	⤴ S-7031WC	⤴ S-7051WC	⤴ S-7071WC	50 pcs. / tray
			Au (Lead-free)	⤴	⤴ S-7011EWC	⤴ S-7031EWC	⤴ S-7051EWC	⤴ S-7071EWC	50 pcs. / tray
		Vinyl pack	Sn-Pb	⤴	⤴ S-7011C	⤴ S-7031C	⤴ S-7051C	⤴ S-7071C	50 pcs. / pack
			Au (Lead-free)	⤴	⤴ S-7011EC	⤴ S-7031EC	⤴ S-7051EC	⤴ S-7071EC	50 pcs. / pack

⊠ : Not manufactured

* : Verify the above part numbers when placing orders.

Taping and tray version can be supplied only in reel or tray unit.

The products indicated by ⤴ mark are manufactured upon receipt of order basis.

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ROTARY CODED SWITCHES (SMD)

■ STANDARD SPECIFICATIONS

Circuit type	BCD (Real code, complementary code) BCH (Real code, complementary code)
Operating temperature range	-25 ~ 70 °C
Storage temperature range	
Sealing	Washable by "O" ring
Net weight	Approx. 0.26 g (A or B type in top setting) Approx. 0.28 g (C type in top setting) Approx. 0.62 g (Side setting type)

■ ELECTRICAL CHARACTERISTICS

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

■ MECHANICAL CHARACTERISTICS

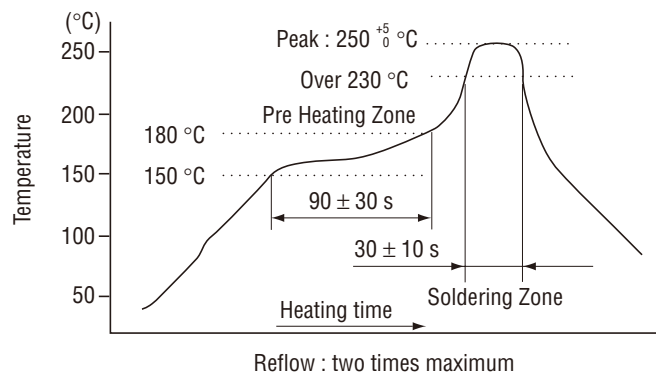
No. of positions	6, 10, 16	
Adjustment torque	20 mN·m {204 gf·cm} maximum	
Stepping angle	60° (6 positions) 36° (10 positions) 22.5° (16 positions)	
Solderability	Sn-Pb	235 ± 5 °C, 2 ± 0.5 s
	Au	245 ± 3 °C, 2 ~ 3 s
Soldering heat	Sn-Pb	260 ± 5 °C, 10 s
	Au	Reflow : 255 °C (Peak temperature) (Please refer to the profile below) Flow : 260 ± 3 °C, 5 ~ 6 s, two times maximum Manual soldering : 350 ± 10 °C, 3 ~ 4 s
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}, 10 s	

{ } : Reference only

■ ENVIRONMENTAL CHARACTERISTICS

Vibration	Amplitude 1.5 mm 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, DC5 V, 100 mA
Humidity (Steady state)	40 °C, Relative humidity 90 ~ 95 %, 240 h
High temperature exposure	70 °C, 96 h
Low temperature exposure	-25 °C, 96 h
Thermal shock	-25 (0.5 h) ~ 70 °C (0.5 h), 5 cycles

Reflow profile for soldering heat evaluation



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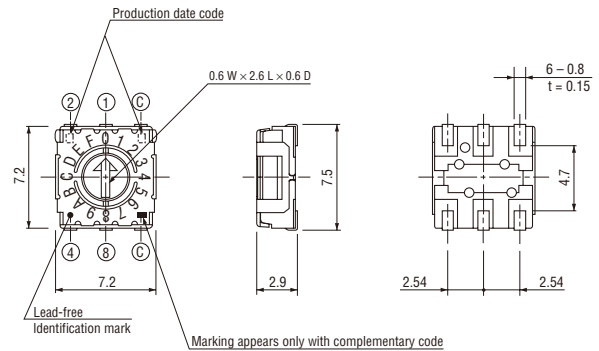
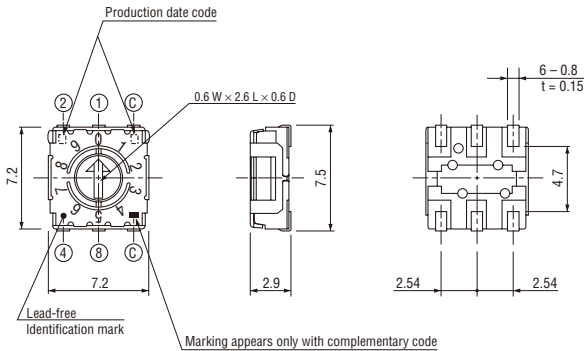
ROTARY CODED SWITCHES (SMD)

OUTLINE DIMENSIONS

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

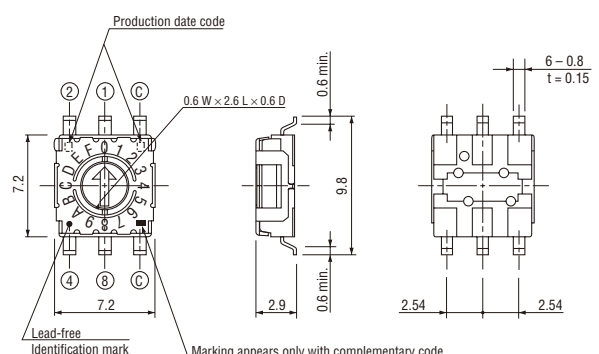
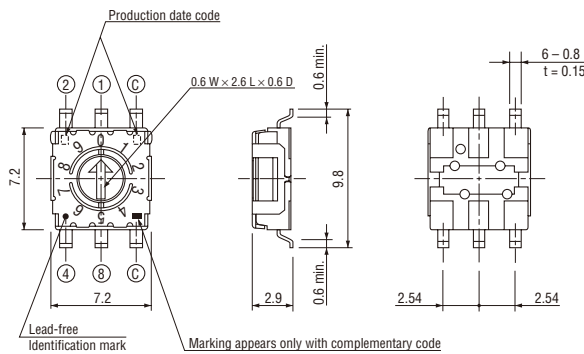
- S-7010A, S-7010EA (Real code)
- S-7030A, S-7030EA (Complementary code)

- S-7050A, S-7050EA (Real code)
- S-7070A, S-7070EA (Complementary code)



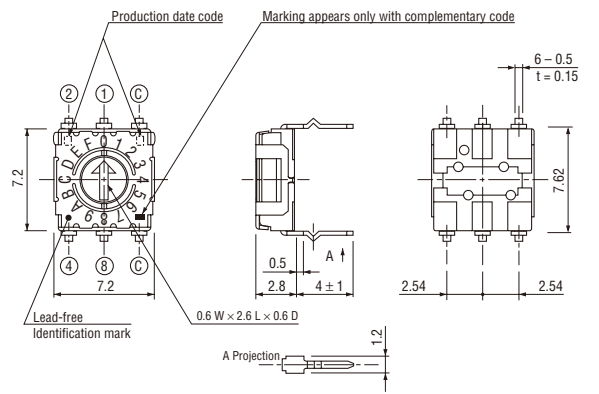
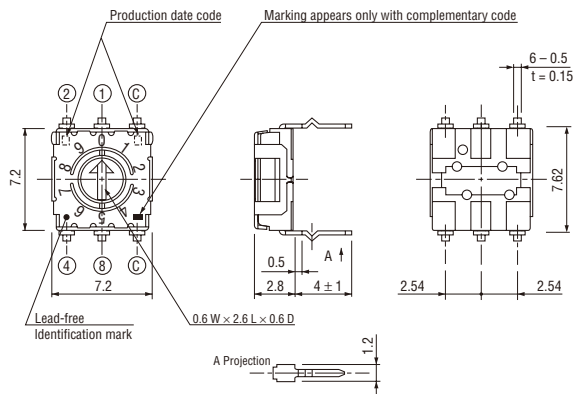
- S-7010B, S-7010EB (Real code)
- S-7030B, S-7030EB (Complementary code)

- S-7050B, S-7050EB (Real code)
- S-7070B, S-7070EB (Complementary code)



- S-7010C, S-7010EC (Real code)
- S-7030C, S-7030EC (Complementary code)

- S-7050C, S-7050EC (Real code)
- S-7070C, S-7070EC (Complementary code)



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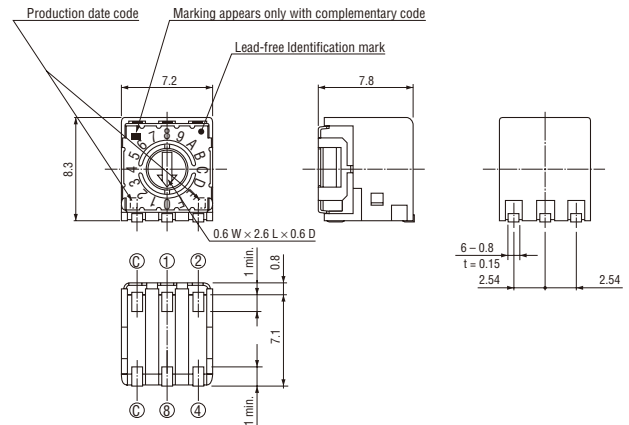
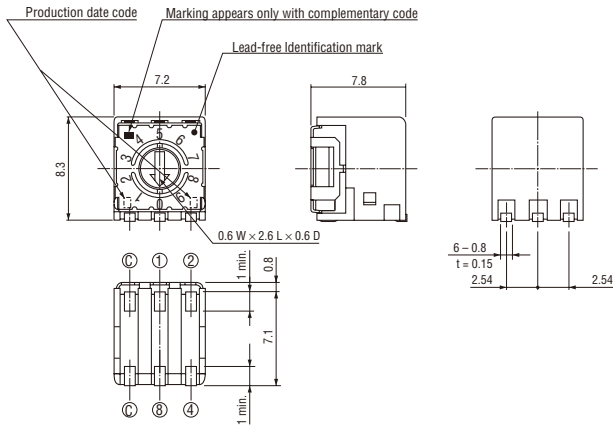
ROTARY CODED SWITCHES (SMD)

OUTLINE DIMENSIONS

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

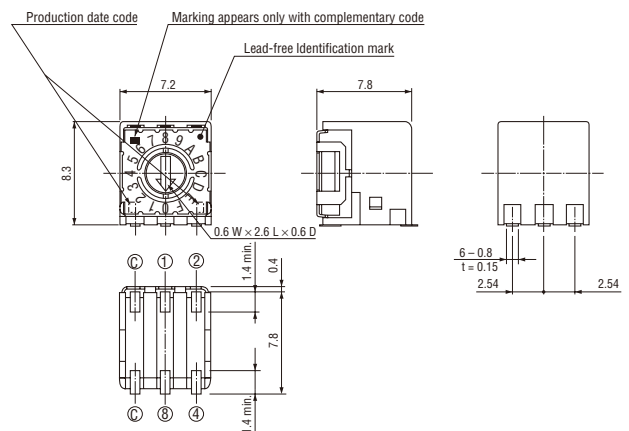
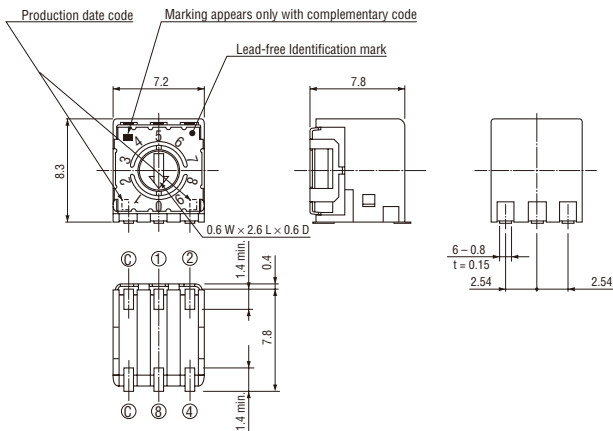
- S-7011A, S-7011EA (Real code)
- S-7031A, S-7031EA (Complementary code)

- S-7051A, S-7051EA (Real code)
- S-7071A, S-7071EA (Complementary code)



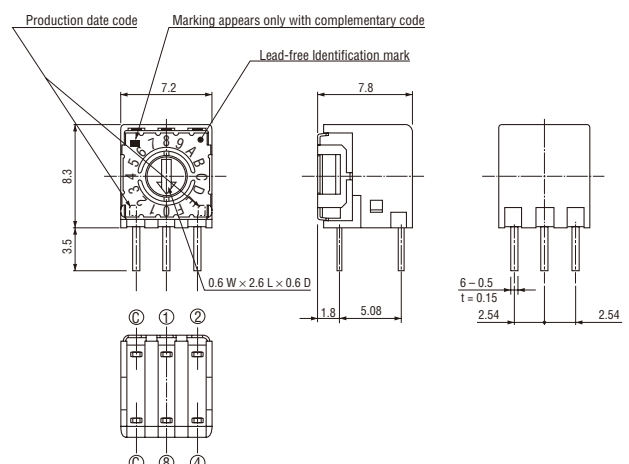
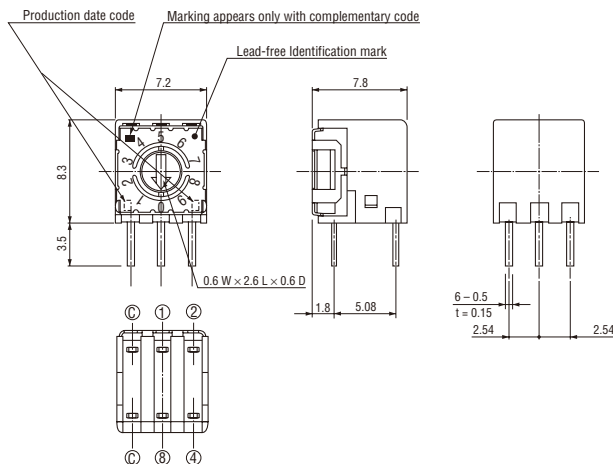
- S-7011B, S-7011EB (Real code)
- S-7031B, S-7031EB (Complementary code)

- S-7051B, S-7051EB (Real code)
- S-7071B, S-7071EB (Complementary code)



- S-7011C, S-7011EC (Real code)
- S-7031C, S-7031EC (Complementary code)

- S-7051C, S-7051EC (Real code)
- S-7071C, S-7071EC (Complementary code)



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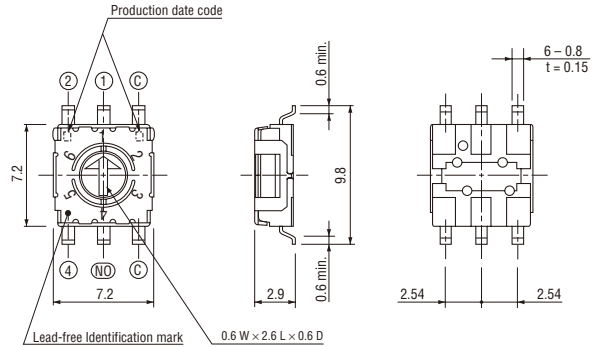
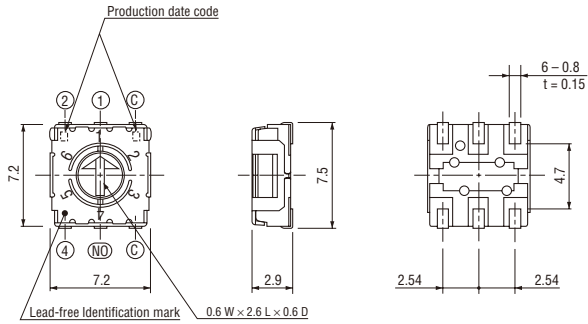
ROTARY CODED SWITCHES (SMD)

OUTLINE DIMENSIONS

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

● S-7060A, S-7060EA (Real code)

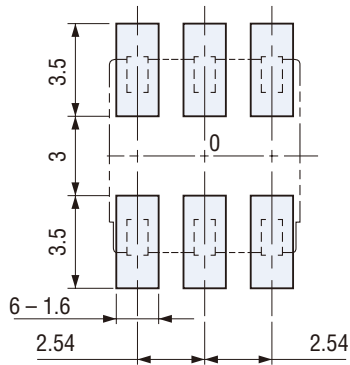
● S-7060B, S-7060EB (Real code)



RECOMMENDED P.C.B. PAD OUTLINE DIMENSIONS

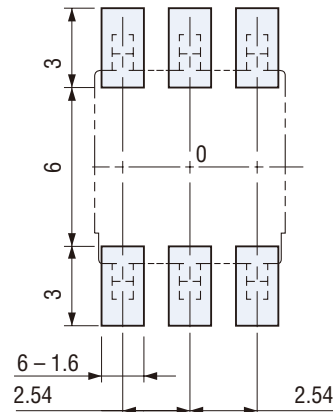
<Top setting>

● A type



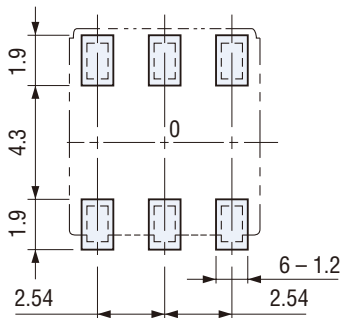
● B type

(Unit: mm)

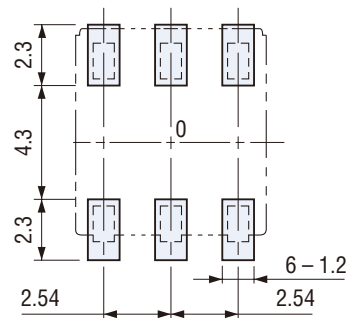


<Side setting>

● A type



● B type



Note) The zero point is the center of mounting.

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ROTARY CODED SWITCHES (SMD)

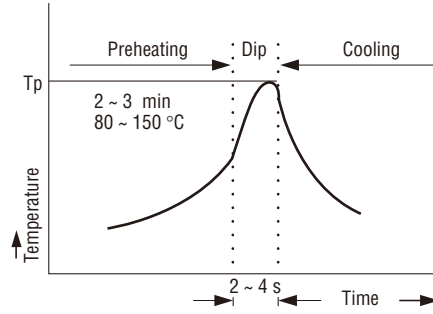
■ SOLDERING CONDITIONS

● **Soldering iron**

Manual soldering

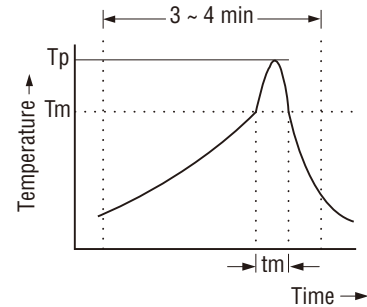
Soldering shall be done at 350 °C (lead-free : 380 °C) for 3 seconds (max.).

● **Flow soldering**



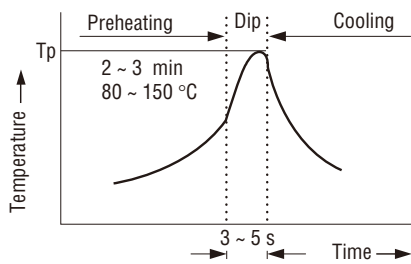
$T_p \leq 260$ °C (Peak temperature)

● **Infrared reflow soldering**



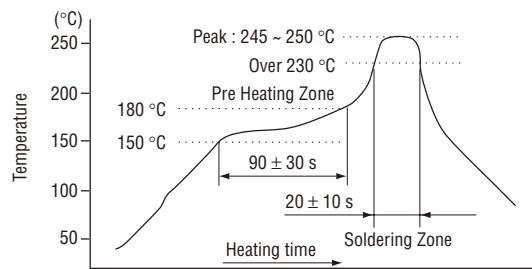
$T_p \leq 240$ °C (Peak temperature)
 $T_m = 180$ °C (Melting point temperature)
 $t_m \leq 10$ s (Melting time)

● **Flow soldering (Lead-free)**



$T_p \leq 260$ °C (Peak temperature)

● **Infrared reflow soldering (Lead-free)**



Reflow : two times maximum

Recommended profile for Lead-free soldering

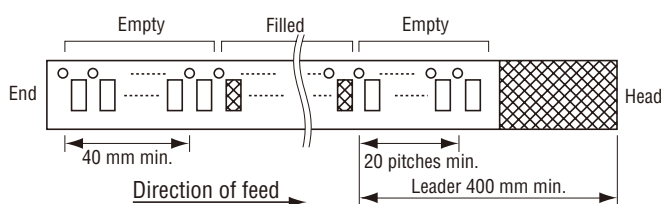
■ PACKAGING SPECIFICATIONS

<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.).

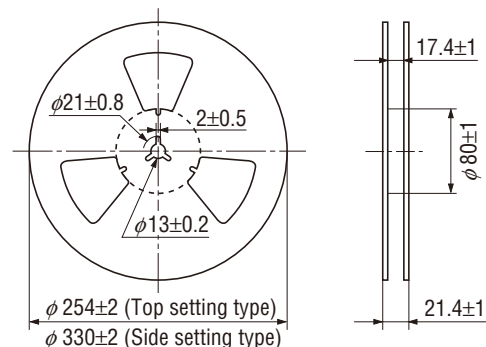
Maximum number of consecutive missing pieces = 2
 Leader length and reel dimension are shown in the diagrams below:

● **Embossed tape dimensions**



● **Reel dimensions** (Unit: mm)

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



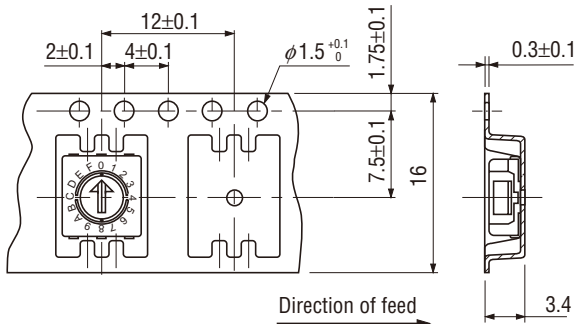
S-7000

ROTARY CODED SWITCHES (SMD)

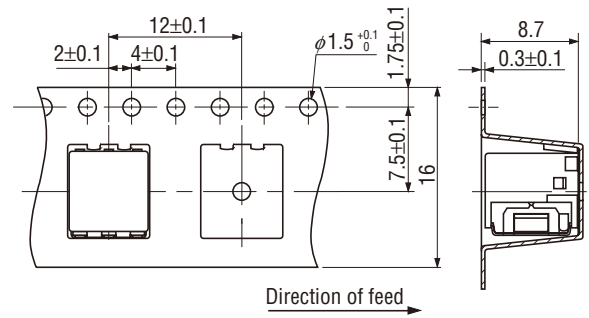
(Conforms to JIS C 0806-3)

● S-70□□TA, S-70□□ETA

<Top setting>



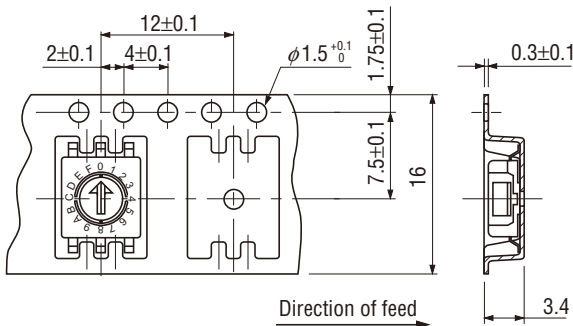
<Side setting>



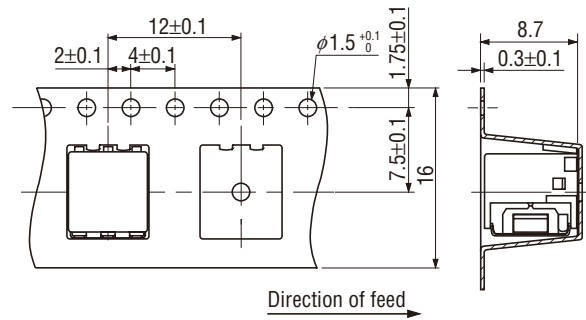
(Unit: mm)

● S-70□□TB, S-70□□ETB

<Top setting >



<Side setting >



<Tray packaging specifications>

- Tray version is packaged in 50 pcs. per tray. Orders will be accepted for units of 50 pcs., i. e., 50, 100, 150 pcs. etc.
- Tray version is boxed with 10 trays.

<Vinyl pack specifications>

- The smallest unit of bulk in vinyl bag packaging 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 in vinyl bags (top setting type) is performed with 50 pcs. (standard 200 pcs.) per box.
Only that side setting type is 100 pcs. (standard 200 pcs.) per box.