



# Series 220

## 7x7mm Compact Rotary DIP Switch

- Robust metal bracket design
- Standard through hole and surface mount gull-wing terminal configurations
- Binary coded decimal, Hexadecimal code and Single pole output
- Clockwise or counterclockwise rotation



### Ordering Information

Series	Terminal Type	Actuator Height	Number of Positions	Code Format	Packaging Type
220	AM	A	04	C	R

Code	Spec.
AM	Surface mount gull wing
AD	Standard through hole
AH	Standard through hole, right angle

Code	Spec.
A	Flush arrow rotor
B	Knurled, slotted, flatted shaft
C	Knurled, slotted shaft

Code	Spec.
Blank	Real code
C	Complementary code (only available for 16 positions AMA type)

Code	Spec.
04	4 Positions
10	10 Positions
16	16 Positions

Code	Spec.
Blank	Tube packaging only for through hole terminals
R	Tape & reel packaging only for surface mount terminals

\* Not all performance combinations and options may be available. Contact local CTS Representative or CTS Customer Service for availability.

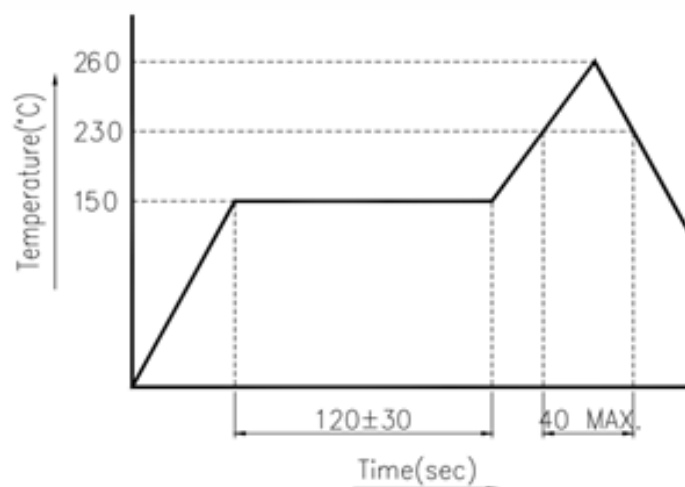
## Electrical Specifications

Parameter	Conditions & Remarks	Min	Max	Unit
Output	Binary coded decimal		10	position
	Hexadecimal		16	
	Single pole		4	
Contact Resistance			100	milliohms
Insulation Resistance	Between insulated terminals	1000		megohms
Dielectric Strength	250 Vac between adjacent switches		1	minute
Nonswitching Rating			100	mA
			50	or VDC
Load		1 $\mu$ A 20m		VDC

## Mechanical and Environmental

Soldering	Maximum reflow temperature, 260°C for 5 seconds Maximum wave temperature, 260°C for 10 seconds Maximum manual temperature, 350°C for 4 seconds
RoHS	Lead-Free. Fully compliant to RoHS
Rotational Torque:	40~200 gf-cm
Actuation Life	10,000 steps
Marking:	Special top marking available-consult CTS
Packaging :	Standard anti-static tube packaging for through hole terminal Standard tape and reel packaging for gull wing terminal
Operating Temperature Range	-40°C to +85°C
Storage Temperature Range:	-40°C to +85°C

## Soldering Profile



### Mechanical Specifications

Figure 1 – 220AM\_10, 16R - Surface Mount Gull Wing, 10 and 16 Position

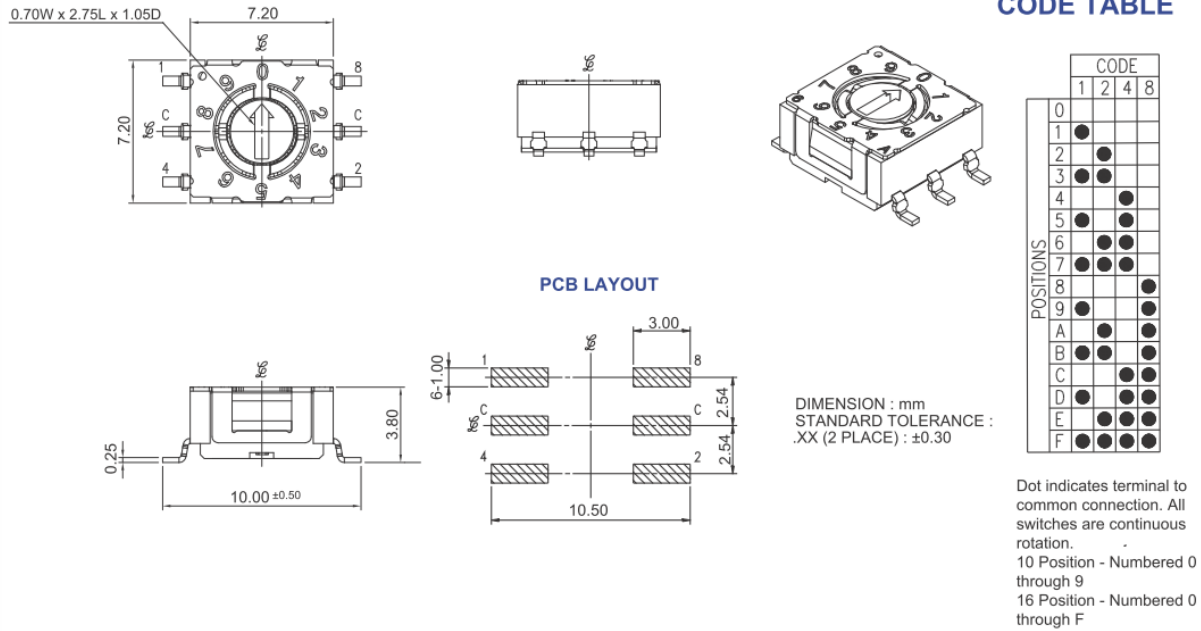


Figure 2 – 220AM\_16CR - Surface Mount Gull Wing, 16 Position, Complementary code.

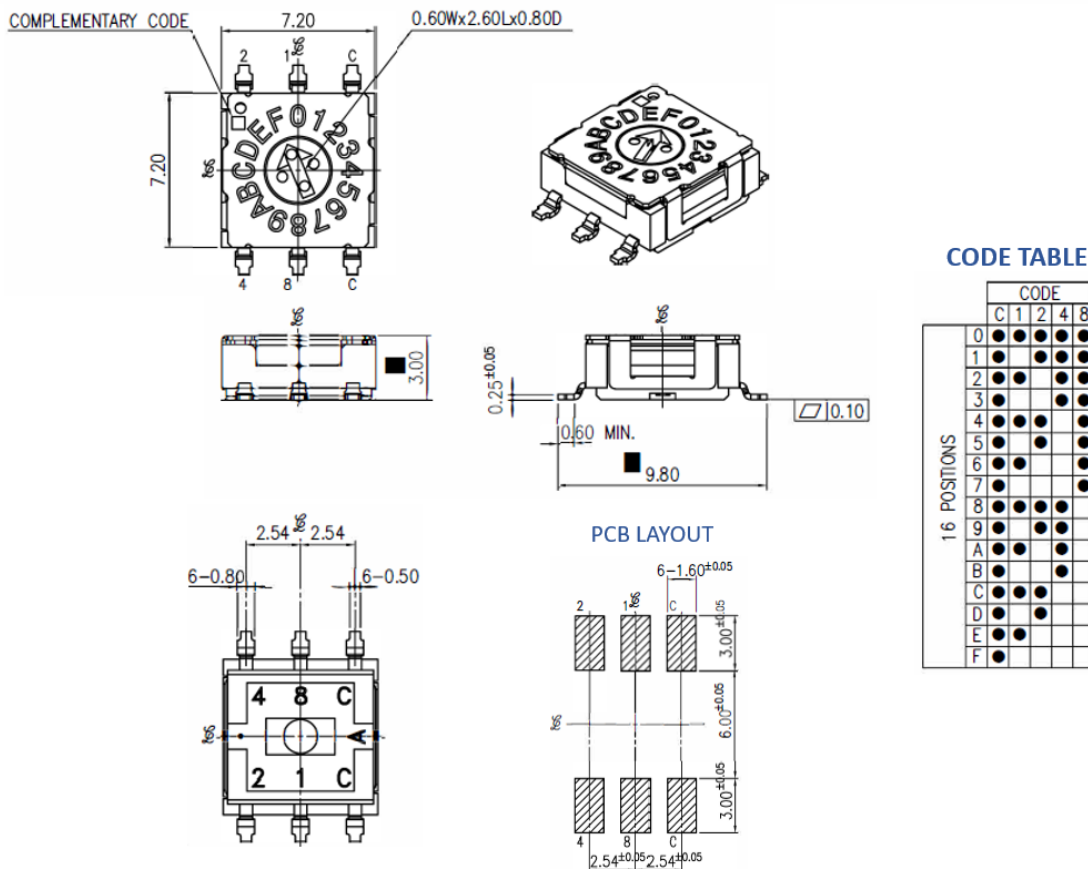
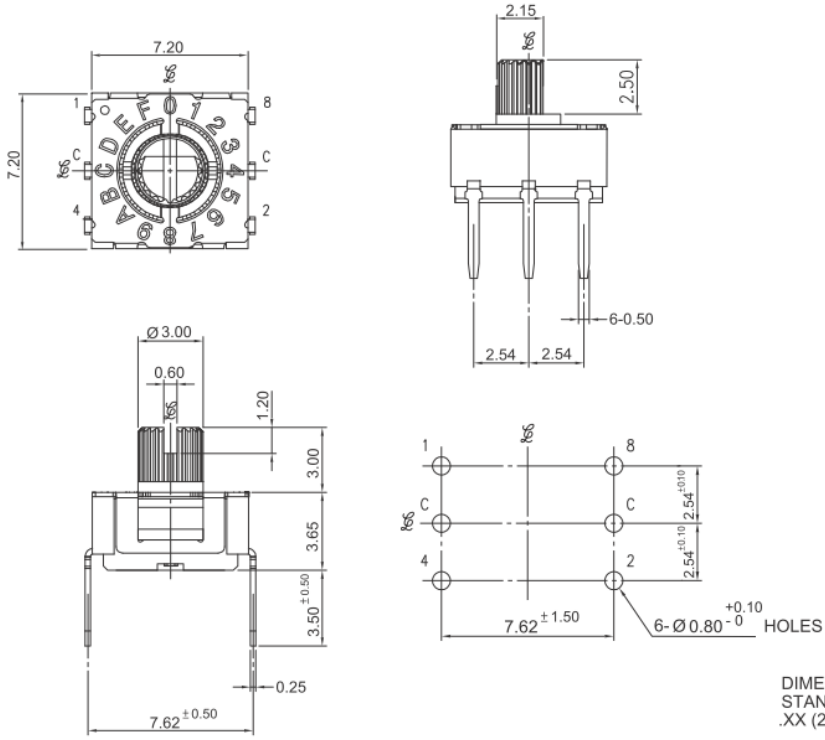


Figure 3 – 220AD\_10, 16 - Standard Through Hole, 10 and 16 Position



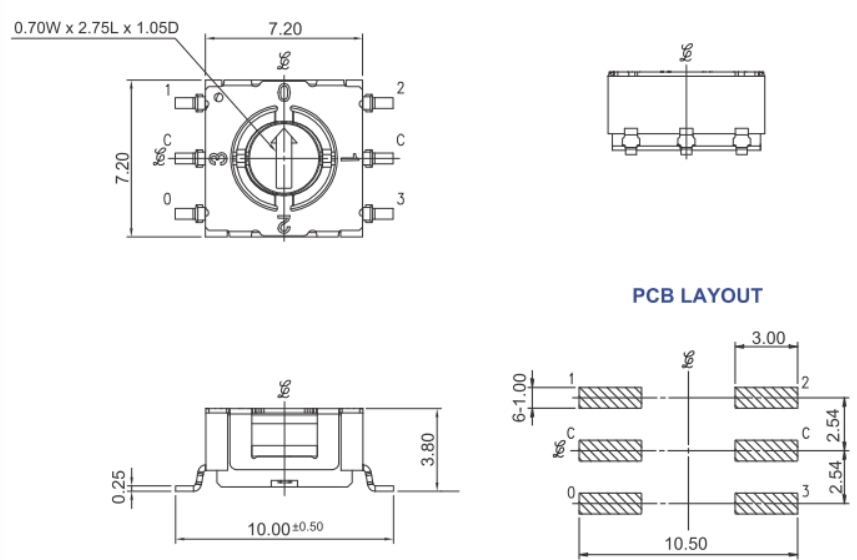
**CODE TABLE**

POSITIONS	CODE			
	1	2	4	8
0				
1	●			
2		●		
3	●	●		
4			●	
5	●			
6			●	
7	●	●	●	
8				●
9	●			●
A	●	●		●
B	●			●
C			●	●
D	●	●	●	●
E	●	●	●	●
F	●	●	●	●

Dot indicates terminal to common connection. All switches are continuous rotation.  
10 Position - Numbered 0 through 9  
16 Position - Numbered 0 through F

DIMENSION : mm  
STANDARD TOLERANCE :  
.XX (2 PLACE) : ±0.30

Figure 4 – 220AM\_04R - Surface Mount Gull Wing, 4 Position



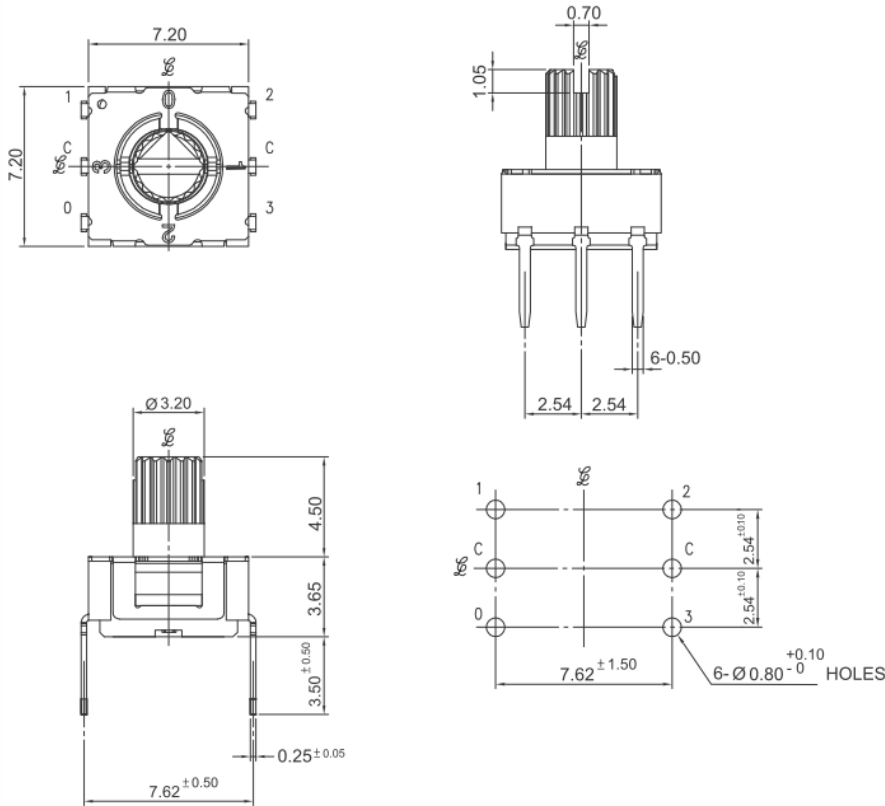
**CODE TABLE**

POSITIONS	CODE			
	0	1	2	3
0	●			
1		●		
2			●	
3				●

Dot indicates terminal to common connection. All switches are continuous rotation.  
4 Position - Single pole

DIMENSION : mm  
STANDARD TOLERANCE :  
.XX (2 PLACE) : ±0.30

Figure 5 – 220AD\_04 - Standard Through Hole, 4 Position



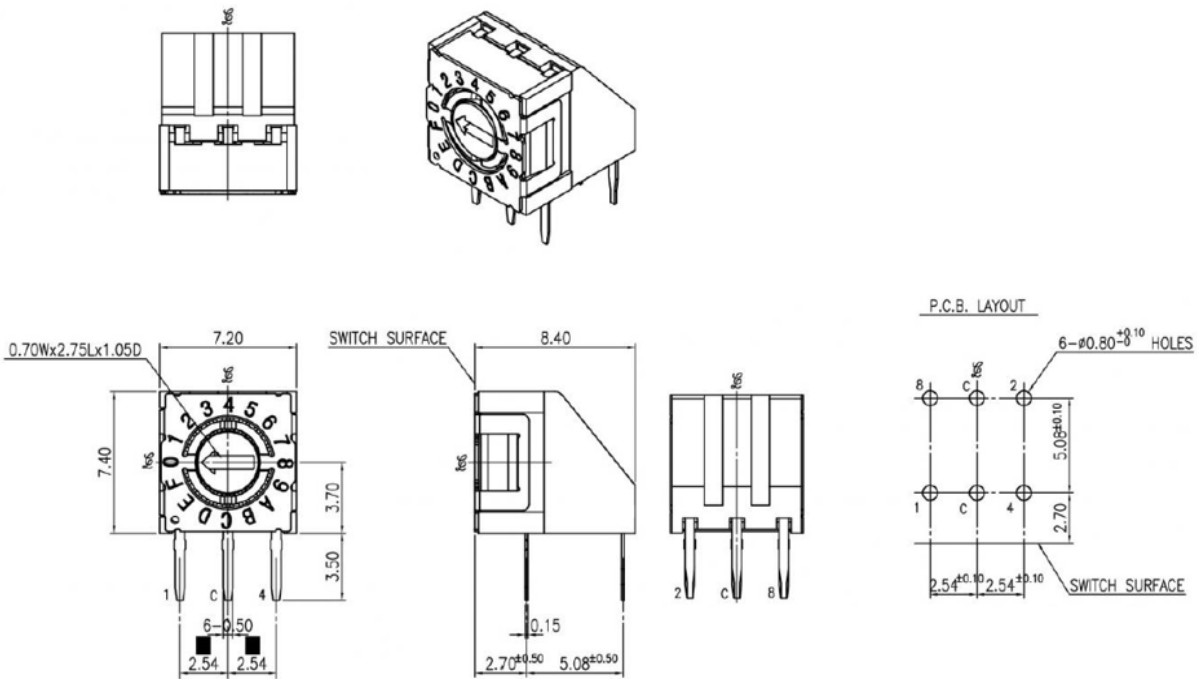
**CODE TABLE**

		CODE			
		0	1	2	3
POSITIONS	0	●			
	1		●		
	2			●	
	3				●

Dot indicates terminal to common connection. All switches are continuous rotation.  
4 Position - Single pole

DIMENSION : mm  
STANDARD TOLERANCE :  
.XX (2 PLACE) : ±0.30

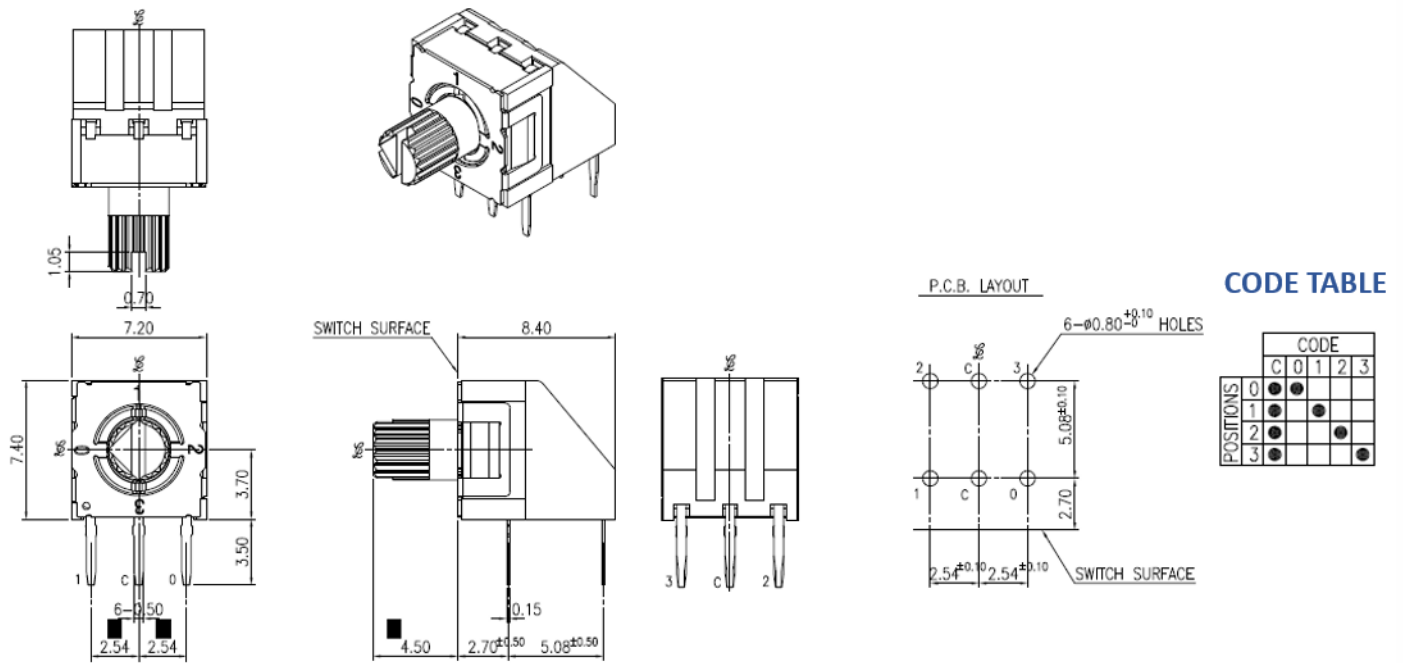
Figure 6 – 220AH\_10, 16 - Standard Through Hole Right Angle, 10 and 16 Position



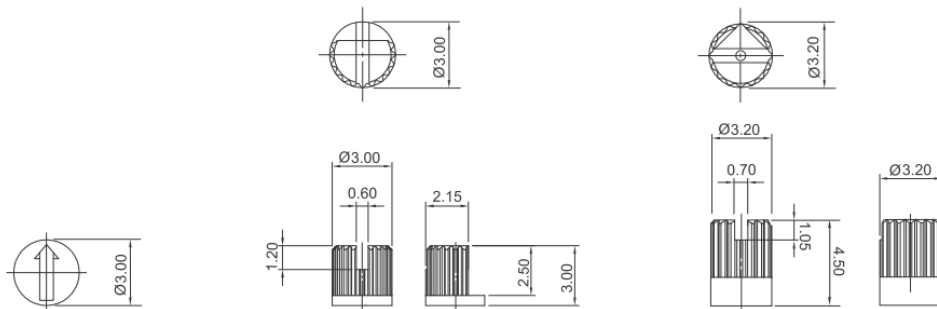
**CODE TABLE**

		CODE			
		C	1	2	4 8
16 POSITIONS	0	●	●	●	●
	1	●	●	●	●
	2	●	●	●	●
	3	●	●	●	●
	4	●	●	●	●
	5	●	●	●	●
	6	●	●	●	●
	7	●	●	●	●
	8	●	●	●	●
	9	●	●	●	●
	A	●	●	●	●
	B	●	●	●	●
	C	●	●	●	●
	D	●	●	●	●
	E	●	●	●	●
	F	●	●	●	●

Figure 7 – 220AH\_04 - Standard Through Hole Right Angle, 4 Position



**Actuator Options**



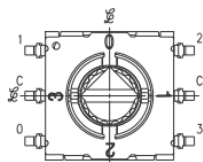
**A: FLUSH ARROW ROTOR**

**B: KNURLED, SLOTTED, FLATTED SHAFT**

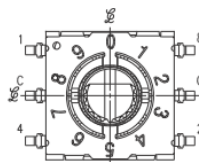
**C: KNURLED, SLOTTED SHAFT**

DIMENSION : mm  
STANDARD TOLERANCE :  
XX (2 PLACE) :  $\pm 0.30$

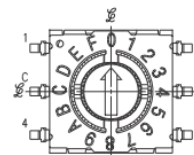
**Position Options**



**04: 4 POSITIONS**



**10: 10 POSITIONS**

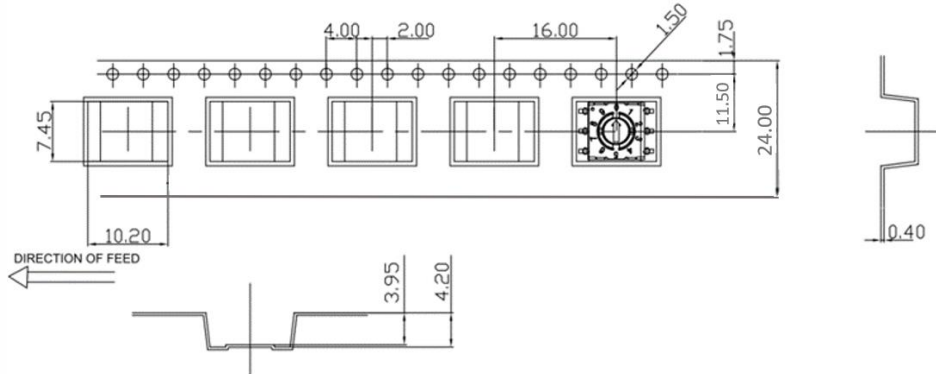


**16: 16 POSITIONS**

Packing: Tape and Reel

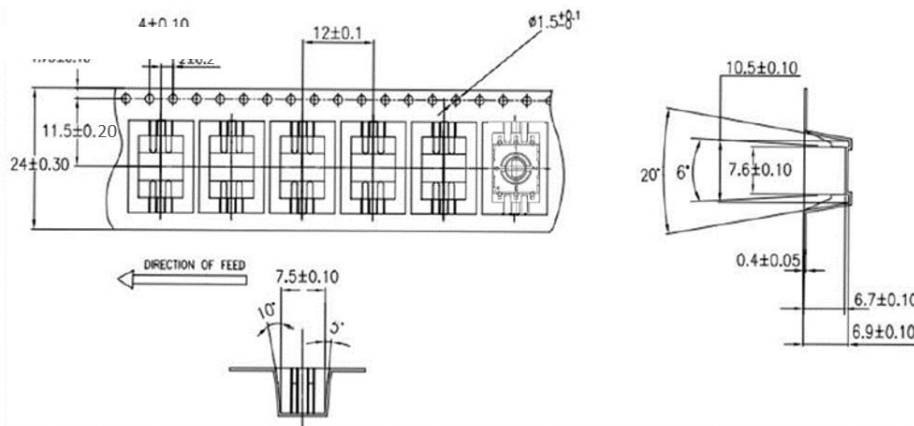
**TAPE :**

**(A) 220AMAxxR – MATERIAL & DIMENSIONS:**



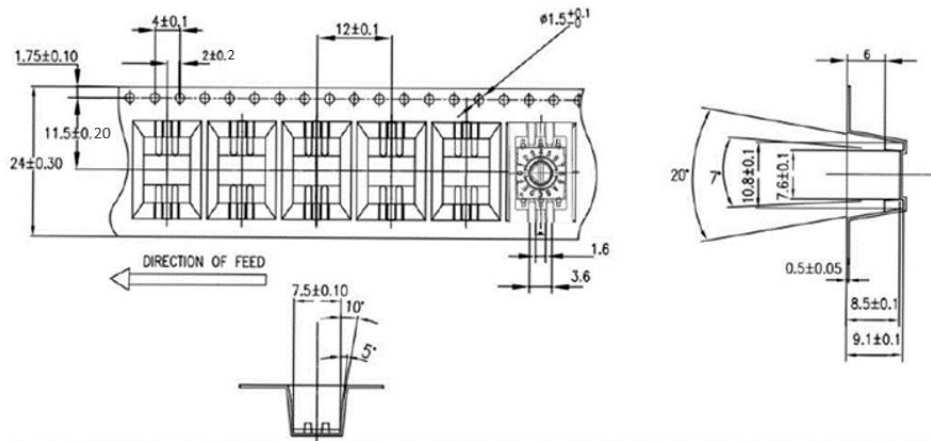
**MATERIAL: CONDUCTIVE POLYSTYRENE, BLACK COLOR**  
**ALL DIMENSIONS MEET EIA-481-2A REQUIREMENTS**  
**CARRIER TAPE THICKNESS: 0.40±0.05MM.**  
**PACKING LENGTH PER 13" REEL: 16.6 METERS.**  
**COMPONENT LOADED PER 13" REEL: 1038 PCS.**  
**SPQ: 1000 PCS/ REEL**

**(B) 220AMBxxR – MATERIAL & DIMENSIONS:**



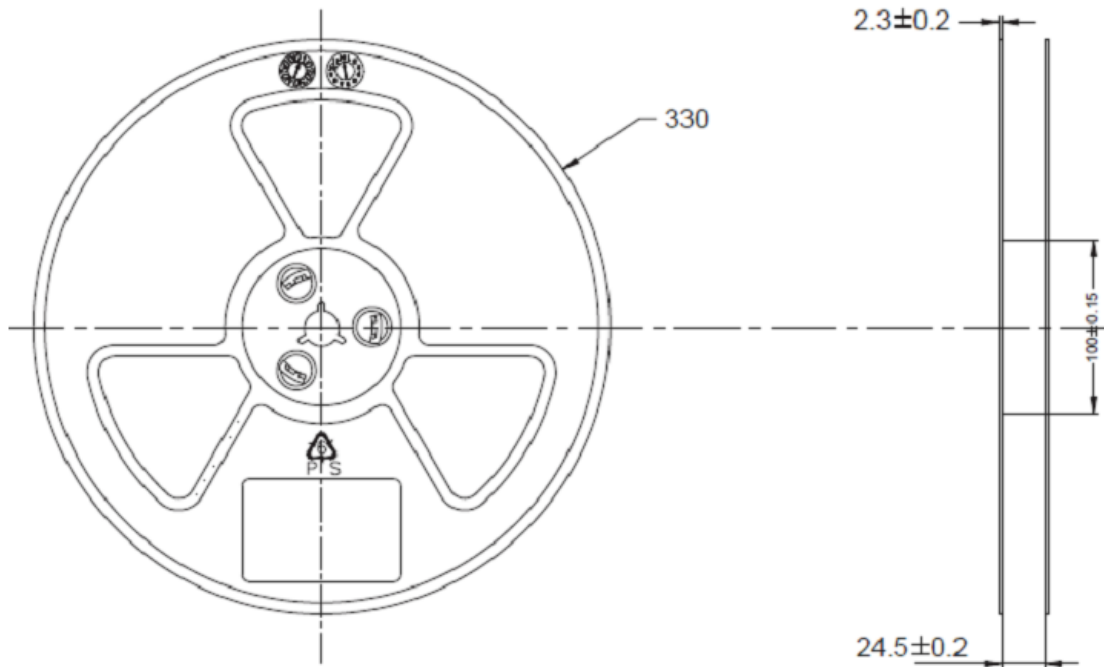
**MATERIAL: ANTI-STATIC POLYSTYRENE, TRANSPARENT, BLACK COLOR**  
**ALL DIMENSIONS MEET EIA-481-B REQUIREMENTS**  
**CARRIER TAPE THICKNESS: 0.40±0.05MM.**  
**PACKING LENGTH PER 13" REEL: 8.93 METERS.**  
**COMPONENT LOADED PER 13" REEL: 744 PCS.**  
**SPQ: 700 PCS/REEL**

**(C) 220AMCxxR – MATERIAL & DIMENSIONS:+**

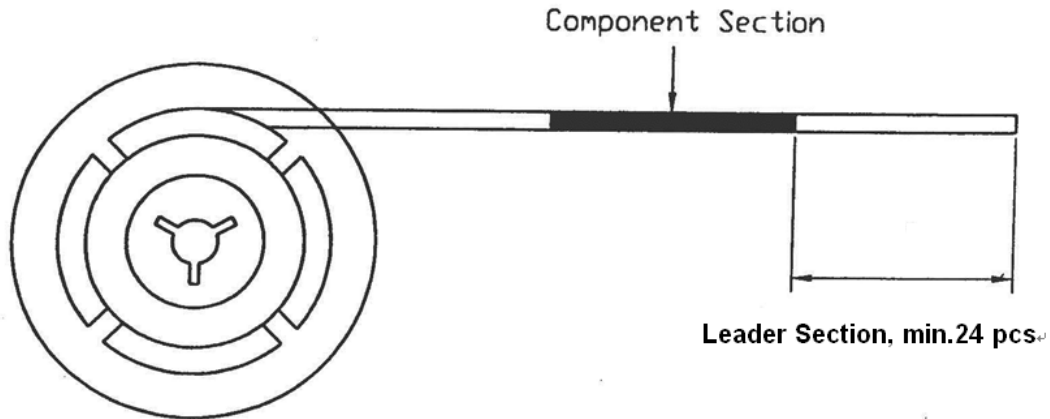


**REEL:**

(A) SPECIFIED REEL PARTS DIMENSIONS: (COMMON TO ALL SMT COMPONENTS)

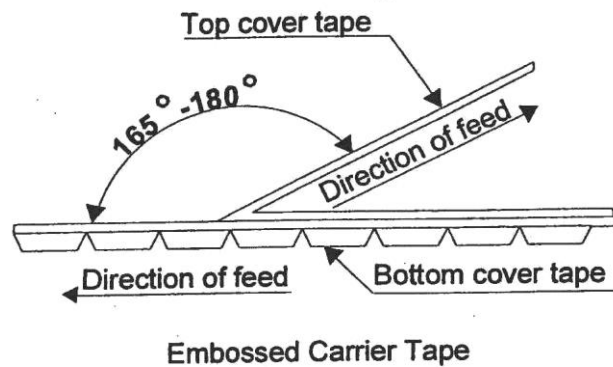






**TAPE BREAK FORCE, PEEL STRENGTH AND ANGLE:  
REQUIRED SETTINGS :**

- TOP COVER TAPE PEEL FORCE : 10 ~ 140 gm
- ANGLE BETWEEN THE TOP COVER TAPE AND THE DIRECTION OF FEED DURING PEEL OFF : 165° ~ 180°



**THE COVER TAPES MAY NOT EXTEND OVER THE EDGE OF THE CARRIER TAPE OR COVER ANY PART OF THE SPROCKET HOLES.**