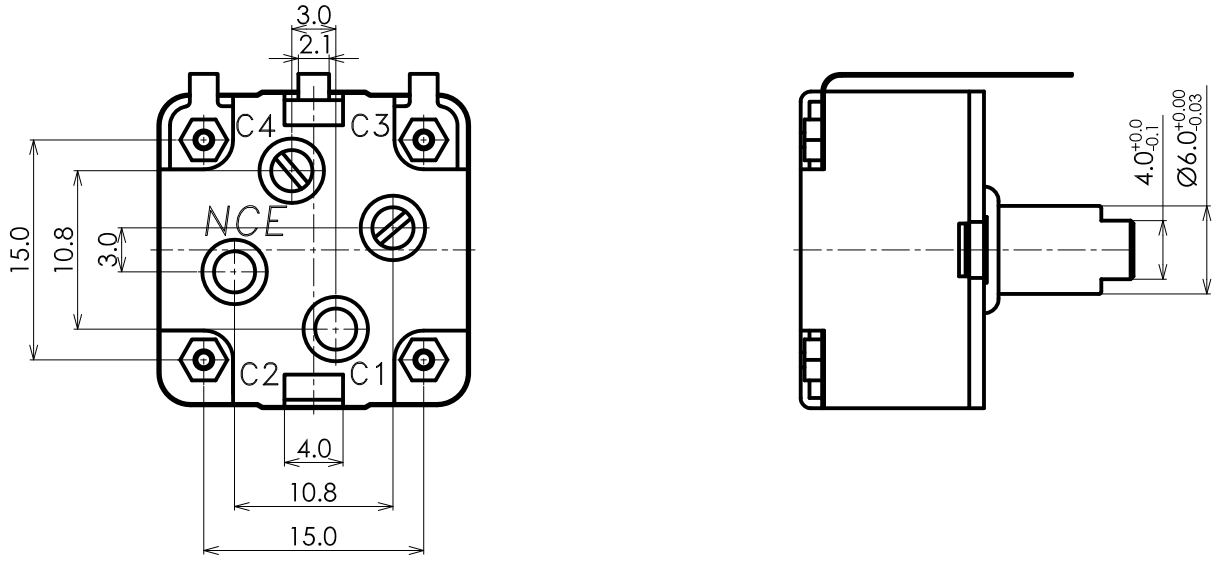
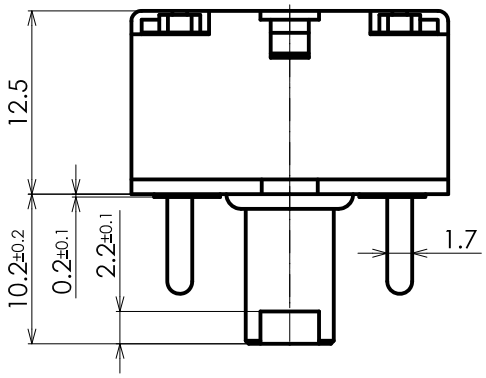
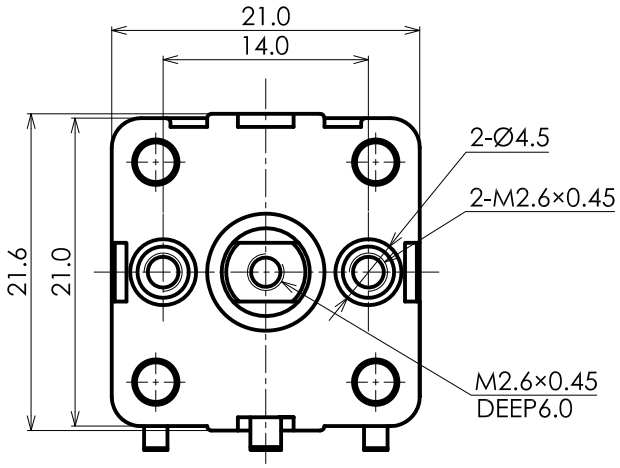
Outline drawing





C1:
C2:
C3: AM OSC
C4: AM ANT



REVISIONS	APPEARANCE		MODEL
	UNIT: mm	SCALE: 2/1	P223QP01L-A10
	DIMENSION TOLERANCE GENERAL ± 0.3		CODE NUMBER
	DESIGNED BY: Tian Zhi		190-01-17
	DRAWN BY: Tian Zhi		NCE
	CHECKED BY: Chen yi		
	APPROVED BY: Chen yi		

1. Application

This specification is applicable for 2 gangs capacitor , model **P223QP01L-A10** with 2 gangs of different capacitance on AM section, for tuned and oscillation circuit of transistor radio.

2. Electrical Characteristics

2-1. Capacitance

Effective capacitance at each position is shown on Table 1 , defining the rotation angle 180° is expressed 100%.

Table 1 Capacitance & Coefficient

A M					
Rotation	OSC		ANT		Rotation
(%)	Coef.	Capa.(pF)	Coef.	Capa.(pF)	(%)
*100	100.00	59.20	100.00	141.60	*100
90	93.20	55.17	89.20	126.30	90
*80	86.00	50.91	78.50	111.20	*80
75	82.30	48.72	73.30	103.70	75
70	78.00	46.18	67.90	96.10	70
*60	69.30	41.03	56.80	80.40	*60
50	59.20	35.05	45.40	64.30	50
*40	48.00	28.42	34.30	48.50	*40
30	35.50	21.02	23.50	33.20	30
*25	28.70	16.99	18.20	25.70	*25
20	21.80	12.91	13.10	18.50	20
*10	8.10	4.80	4.40	6.20	*10
3	0.00	0.00	0.00	0.00	3

2-2. Minimum Capacitance

Minimum Capacitance shown on Table 2 is defined at the end stop, where shaft is rotated full clockwise. But trimmer capacitance is minimum.

Table 2

Section	Minimum Capacitance
AM	C3：3.5 ± 1.0pF , C4：3.0 ± 1.0pF

2-3. Tolerance of Capacitance

The tolerance of the effective capacitance is shown Table 3

Table 3

Condition	Section	Standard
At the angle of * marking of Table 1	OSC	AM ± (1.5% + 1.5 pF)
	ANT	AM ± (1.5% + 1.5 pF)

Clause	Item	Condition		Standard
2 - 4	Insulation Resistance	At D.C. 100V		More than 100 MΩ
2 - 5	Voltage Proof	Running D.C. 100V for 1 minute		Not to be found unusually
2 - 6	Q Characteristics	AM	Valued at 10MHz 50pF	More than 500
2 - 7	Contact Resistance	Valued at the tops of shaft and earth terminals when 1kHz ± 200Hz and 100mA are supplied(Rotation speed 30 times/minute)		Less than 20 mΩ

3. Mechanical Characteristics

Clause	Item	Condition	Standard
3 - 1	Direction of the rotation	Capacitance change when shaft is rotated clockwise	Decreasing
3 - 2	Shaft Rotation	Rotation range is defined 100% for 180 °	97% (+2 to -1%)
3 - 3	Rotation Torque	Torque application when shaft is rotated full at normal temperature condition	50 - 400 gf.cm
3 - 4	Strength of end stop	A specimen is left in the standard test condition for 1 minute after 5 kgf.cm rotations	Not to be found insulate both electrically and mechanically
3 - 5	Ratio of Max. and Min. torque	Max.: Min.	Within 3: 1

4. Trimmer ability

Clause	Item	Condition	Standard
4 - 1	Shaft Rotation	Rotation range	360 °
4 - 2	Rotation Torque	On the whole rotation range. Ratio of Max. and Min. torque	50 – 400 gf-cm Max.: Min. within 3 : 1
4 - 3	Effective Capacitance		More than 5 pF
4 - 4	Q Characteristics	At maximum capacitance and 10 MHz(main capacitance is minimum)	More than 200

5. Materials

5-1. Body Parts

Component	Materials
Base	Degeneration ABS included glass
Case	Degeneration PP or AS
Rotor Shaft	Brass
Rotor Plate	Aluminum/1200
Stator Plate	Aluminum/1200
Terminal	Iron/S12C(Sn-plating)

5-2. Trimmer Parts

Component	Materials
Trimmer Base	Degeneration ABS included glass
Trimmer Shaft	Brass or Copper Alloys
Trimmer Rotor Plate	Aluminum/1200
Trimmer Stator Plate	LZ08(Sn-plating)

6. Specific Examinations

Clause	Item	Condition	Standard
6 - 1	Vibration	By the vibration with frequency 10-55-10HZ/minute. 2.0mm to three directions of maximum capacitance for 2 hours.	Clattering or loosening shall not be occurred. Satisfying clauses 2-4, 2-5, 2-6, 2-7 and 3-3. Capacitance drift within ± 0.5pF against initial value at maximum effective capacitance.
6 - 2	Load (at maximum capacitance)	Parallel load: 2kg weight is loaded to the shaft for 10 second and removing.	
		Perpendicular load: 1kg weight is loaded to the shaft for 10 second	
6 - 3	Impact	By letting a specimen fall down from the height of 50 cm three times to a wooden board, or by giving impact of 80 grams to 6 faces of the specimen on time each.	
6 - 4	Rotation Life	By 10000 rotations with 10-15 rotations per minute 80±5% rotation range.	
6 - 5	Heat Endurance	A specimen is kept in a chamber with constant temperature 70±2 ℃ for 16 hours and left in the standard test condition for one or two hours.	Satisfying clauses 2-4 , 2-6 , 4-2 , 4-3 and 4-4
6 - 6	Cold Endurance	A specimen is kept in a chamber with constant temperature -20±2 ℃ for 16 hours and left in the standard test condition for one or two hours.	
6 - 7	Soldering (Terminals)	The end part 2mm of the terminal are given temperature 270±5 ℃ for 2±0.5 seconds.	Satisfying clauses 2-4, 2-5, 2-6, 2-7, 3 and 4.

6-8. Temperature Cycles

A specimen at maximum capacitance is kept in the chamber (one is cold, another is hot) with constan temperature and humidity in every stage on table 4 and left in the standard test condition for 1 hour, clattering or loosening shall not be occurred. Satisfying clauses 2-4, 2-6, and 3-3.
Maximum capacitance variation rate : within 2.0%

Table 4

Stage	1	2	3	4	5	6	7	8
Temperature ± 2℃	-20	70	-20	70	-20	70	-20	70
Time (Hour)	1	1	1	1	1	1	1	1

6-9. Humidity Endurance

A specimen is kept in a chamber with temperature 40±2℃ and relative humidity 90% to 95% for 96 hours. And after leaving in the standard test condition for one or two hours. The specimen is valued, and the results shall satisfy table 5.

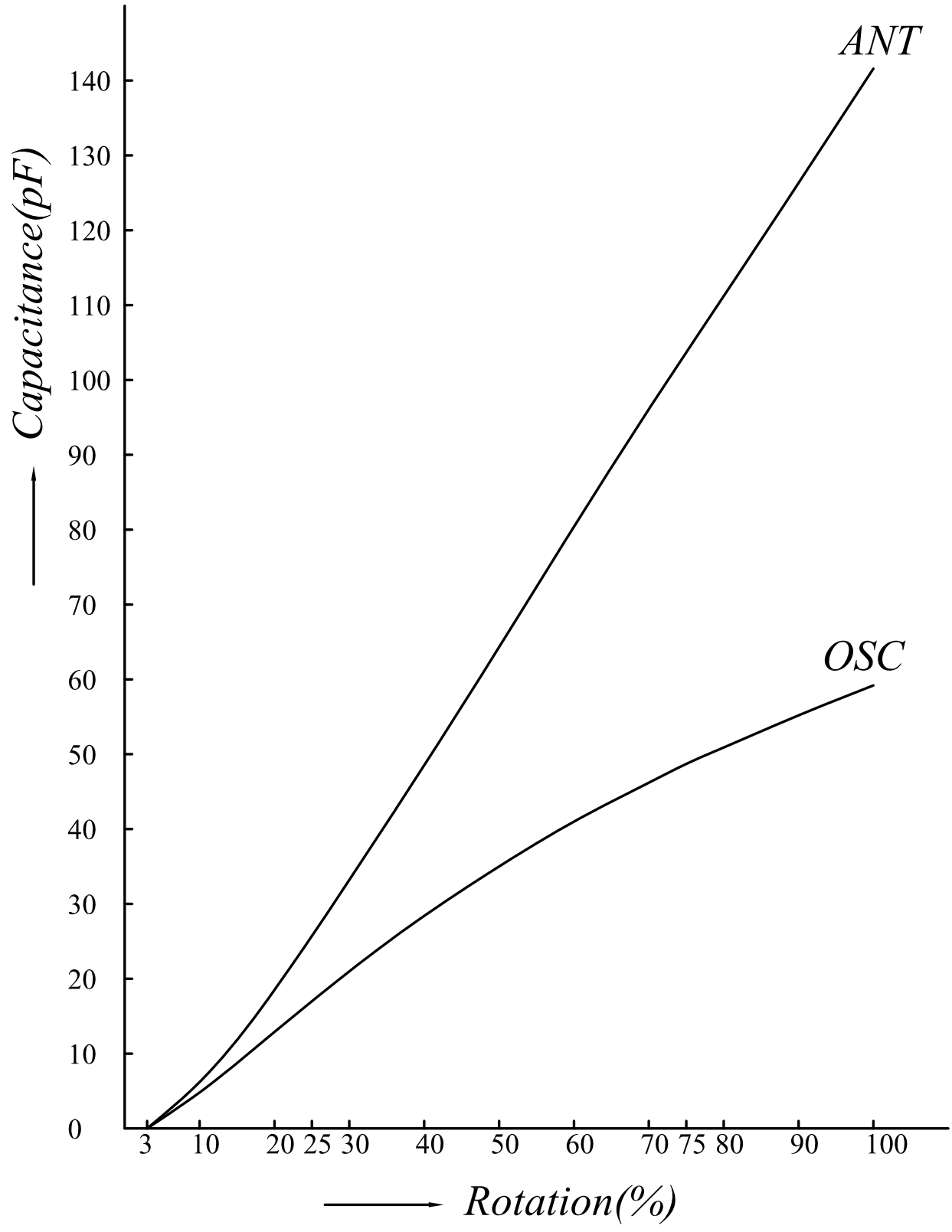
Table 5

		FM side
Insulation Resistance		More than 50 MΩ(D.C. 100V)
Q	Body	More than 150 (100MHz 10pF)
Characteristics	Trimmer	More than 150 (10 MHz Cmax)
Maximum Capacitance Drift		Within ± 2%

※The standard test condition

This means the condition of temperature 5 to 35℃ and relative humidity 45 to 85% , but that of 20±2℃ and 65±5% if there is any doubt.

AM curve-PQP


ANT
OSC
Capacitance(pF)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
3
10
20
25
30
40
50
60
70
75
80
90
100
Rotation(%)