

Suntan Technology Company Limited

Unit A-B, 12/F., Everest Industrial Centre, 396 Kwun Tong Road, Kwun Tong, Kowloon, Hong Kong.
URL : www.suntan.com.hk E-mail : info@suntan.com.hk Tel: (852) 8202 8782 Fax :852) 8 8208 6246

TSC3 - CERAMIC TRIMMER CAPACITORS – 3mm

SPECIFICATIONS FOR THE APPROVAL

1. LIMIT OF APPLICATIONS

These specifications are applied to Ceramic Trimmer Capacitors TSC3 SERIES with the ceramic dielectric, which are used for the electronic communication and electronic applied equipment.

2. TEST CIRCUMSTANCE

The standard test circumstance is at 20°C, 65% RH and 1,013 hPa.

Unless Otherwise specified, tests and measurement shall be conducted at the standard condition

[ordinary temperature (15~35°C), ordinary humidity (relative humidity 45~85%) and ordinary atmospheric pressure (860~1,060hPa)]

3. PARTS AND MATERIAL

Part Name	Material	Plating
Rotor	Ceramic	Ag metalized
Stator	Polyester	None
Stator terminal	Brass	Ag plated
Rotor terminal	Phosphor bronze	Ag plated
Rotor Pin	Brass	Ag plated

4. SHAPE AND DIMENSIONS

Please refer to the attached drawings.

5. ELECTRICAL CHARACTERISTICS

5.1 CAPACITANCE

When measured at a frequency of 1 MHz, the MIN. capacitance shall be not greater than that specified in Table 1 and the MAX. capacitance shall be within the limits that specified in Table 1.

5.2 WITHSTANDING VOLTAGE

The capacitor shall be no remarkable mechanical damage throughout the complete rotation of the rotor with the 220 V.D.C applied between the rotor and stator terminals.

5.3 INSULATION RESISTANCE

The insulation resistance at approximately MAX. capacitance setting shall be not less than 10,000MΩ, when measured at the 100 V.D.C. applied between terminals for one minute.

5.4 Q(Quality Factor)

When measured at a frequency of 1MHz, the “Q” factor shall be not less than that specified in Table 1.

5.5 TEMPERATURE COEFFICIENT

Capacitance-change measurement at 80 to 90 percent of maximum rated capacitance, shall be made at the temperatures specified in the Table 2 and at a frequency of 1MHz. Each measurement shall be made after the capacitor has reached thermal stability.

(Thermal stability has been reached when no further change in capacitance in obtained between two successive measurements taken at 5 minutes intervals)

[Table 2]

Step	1	2	3	4	5
Temperature(°C)	20±2	-25±2	20±2	85±2	20±2

The capacitance-change shall be within the limits that specified in Table 1.

$$TC(PPM/C) = \frac{(C_2 - C_1) \cdot 10^6}{(T_2 - T_1) \cdot C_1}$$

where C₁: Initial capacitance value in pF at step 3

C₂: Capacitance at specified temperature in pF.

T₁: 20°C

T₂: Test temperature in °C (step 2 or 4)

5.6 TEMPERATURE CAPACITANCE DRIFT

Calculation of temperature capacitance drift shall be based on the maximum deviation between two of three times of measurements for capacitance at 20°C. (see Table2.)

The temperature capacitance drift shall be within ±3%

6. Mechanical characteristics

6.1 TORQUE

The torque required to start and maintain rotation of the rotor through one full turn shall be within 25~100 g.cm

6.2 VIBRATION

The capacitor set at 80 to 90 percent of maximum rated capacitance, shall be subjected to vibration test at 1.5mm amplitude, with the frequency range from 10 to 55 Hz and then return to 10 Hz for 1 minute applied for 2 hours in each of three mutually perpendicular planes.

(total 6 hours)

The capacitor shall be rigidly mounted by their normal mounting means.

The vibration resistance shall comply with table A.

6.3 SOLDERABILITY

The tested under the condition of Table 3, the dipped surface of the terminals shall be at least 75% wetted with a new solder coating.

{ TABLE 3 }

Item	Condition
Flux	Rosin(25%)+Methanol
Solder Temperature	250±5°C
Dipping duration	3 ± 0.5 seconds

7. SPECIAL TEST

7.1 MOISTURE RESISTANCE

The capacitor set at 80 to 90 percent of maximum rated capacitance, shall be kept to 40 ± 2°C, at 90 to 95 percent relative humidity for 96 ± 4 hours. After removed from the humidity chamber, the capacitor shall be kept for 24 hours at the ambient conditions specified for the initial measurements. The moisture resistance shall comply with Table A.

7.2 ROTATIONAL LIFE

The capacitor set at the maximum capacitance position, and then its rotor shall be rotated for 180° counter clockwise, and returned to the original position and then rotated 180° counter clockwise, and returned to the original position, this being counted as 1 cycle. BY changing the direction of rotation successively, the rotor shall be rotated continuously for 20 cycles. Measurement shall be made at the maximum capacitance position.

The rotation resistance shall comply with Table A.

7.3 LIFE (High Temperature Loading)

The capacitor set at 80 to 90 percent of maximum rated capacitance, shall be subjected to 96 ± 4 hours at $85 \pm 3^\circ\text{C}$ with 200 percent loading of rated voltage. After life test, the life shall comply with Table A.

7.4 RESISTANCE TO SOLDERING HEAT

The Capacitor shall be tested under condition of Table 4.

Then, it shall be kept for 24 ± 2 hours at the ambient condition specified for the initial measurements.

Resistance to soldering heat shall comply with Table A.

TABLE 4

Soldering Condition	Temperature (°C)	Time (sec)
Pre-heating	120~150	30
Soldering-heating	230±5	30

8. CARRIER TAPE SPECIFICATION

(1) Taping is a clockwise roll.

When the leader is took out, feeding hole is right side.

(2) When the tape is took out of reel completely, tape is come off easily from the reel.

(3) For each reel, the label printed Juseong's part number, lot number and Quantity is sticked.

(4) Cover tape does not overlap on the feeding holes , and also does not come out from plastic tape.

TABLE 1

Item /Part No.	Capacitance (pF)		Q (at 1 MHz, Cmax)	Temperature Coefficient (ppm/°C)	Color Marking
	Minimum	Maximum			
	Max	+50 -0%			
TSC3-030	1.7	3.0	500min	NPO±300	Brown
TSC3-060	2.5	6.0	500min	NPO±300	Blue
TSC3-100	3.5	10.0	500min	N750±300	White
TSC3-200	5.5	20.0	300min	N1200±500	Red
TSC3-300	7.5	30.0	300min	N1800±600	Green

(TABLE A)

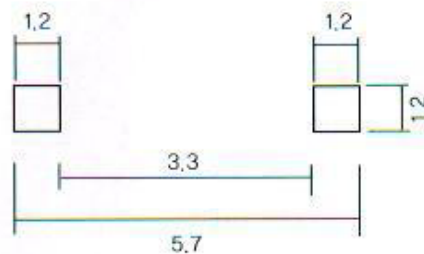
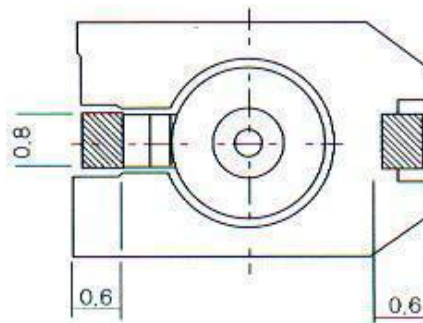
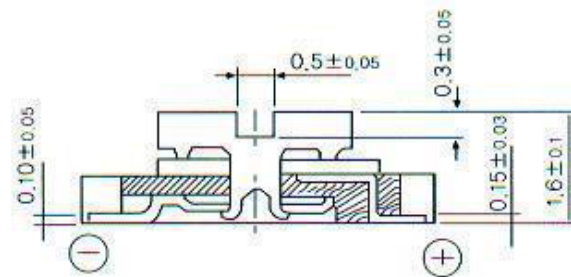
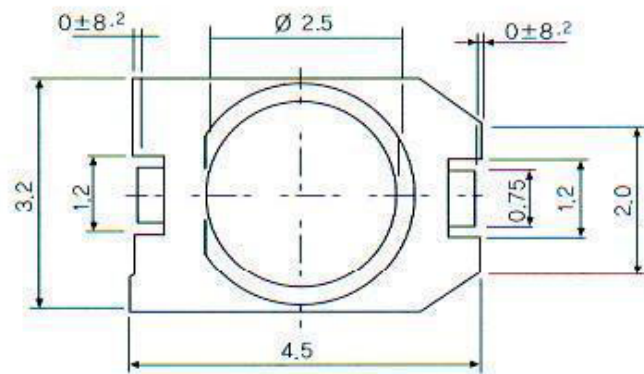
		6-2 Vibration	7-1 Moisture resistance	7-2 Rotation Life	7-3 Life	7-4 Resistance to soldering heat
Capacitance Change	TSC3-030	±0.25pF	±5%MAX	±12% or 0.75pF MAX. whichever is greater	±5% or 0.5pF MAX. whichever is greater	Shall comply with 5-1
	TSC3-060	MAX.				
	TSC3-100	±2% or				
	TSC3-200	±0.25pF				
	TSC3-300	MAX. whichever is greater				
Q (at 1 MHz)		Shall comply with 5-4	200 MIN. (Rated value is 500 Min.) 150 MIN. (Rated value is 300 min.)	Shall comply with 5-4	200 MIN. (Rated value is 500 Min.) 150 MIN. (Rated value is 300 min.)	Shall comply with 5-4
Insulation Resistance		Shall comply with 5-3			1000MΩ min.	Shall comply with 5-3
Withstanding Voltage		Shall comply with 5-2				
Torque		Shall comply with 5-2				
Appearance		No mechanical damage				

CAUTION IN HANDLING FOR TSC3 SERIES
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- (1) Do not apply excessive force to trimmer when mounting on PCB.
- (2) Do not mistake dot and ground terminals. The trimmer has polarity correct cathode and anode.
- (3) Please avoid sticking trimmer capacitor by adhesive on PCB for a temporary fixing. (It is technically dangerous, because it causes staking part of trimmer Capacitor to fix.)
- (4) Recommended thickness of cream solder is 180 to 250um.
- (5) Soldering time must be less than 3 seconds at 260°C.
- (6) When reflow-soldering, it must be done less than 30seconds at 230°C or must be done less than 20 seconds at 240°C.
And pre-heat must be less than 30 seconds at 130°C.
- (7) Do not clean or wash by solvent.
- (8) The force applied to trimmers with the screw driver, should be as small as possible. (Recommended screw driver load is max. 100 gf.)
- (9) The screw driver must fit a slot of trimmer. Recommendable
dimensions of bit is 2.1X0.5.
- (10) Do not pour lock-paint or other fluid into the trimmer capacitor to fix the rotor position.
- (11) Preservable conditions are as follows.
 - (A) Temperature: -10 to +40°C, humidity: 70% RH max.
 - (B) Keep the trimmer out of sulphurizing or oxidizing gas.
 - (C) Period: 6 months max.
 - (D) Open a package just before the use.
 - (E) For a package to have been opened, it needs heat-seal again.
- (12) There is the case which silicone oil of trimmer capacitor's inside come out of product slightly, but it does not exert any influence on the characteristics and soldering process.

DIMENSIONS (NOT TO SCALE)

■ Dimensions (not to scale)



Unit : mm
Tolerance : ± 0.1