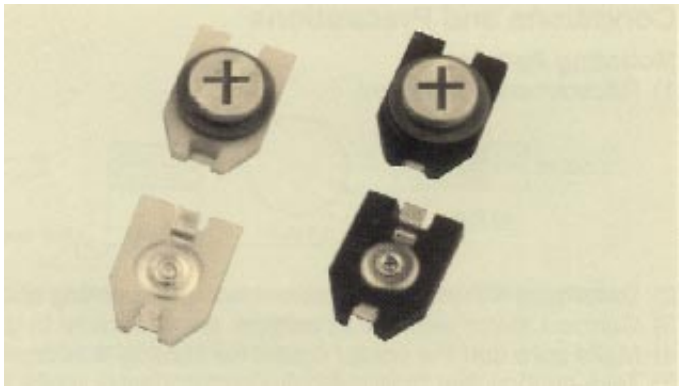
CTZ3 Series

Four Basic Types:

CTZ3-P	CTZ3S-P CTZ3E-P	Philips Adjust.
CTZ3-A	CTZ3S-A CTZ3E-A	Setting drift 1% w/ Philips Adjust.
CTZ3-1.5	CTZ3S-P1.5 CTZ3E-P1.5	Low profile w/ Philips Adjust.
CTZ3-PR	CTZ3S-PR CTZ3E-PR	Reverse ultra thin w/ Philips Adjust.



How To Order:

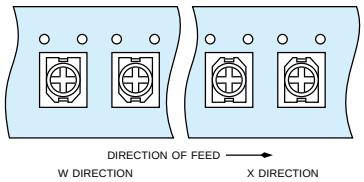
CTZ3 E – 03 A – W 1 – P F

Optional:
Blank = Straight Lead
F = Lead Form

Optional:
A = Setting drift ±1% (Philips adjust)
P = Philips adjust
P1.5 = Product height 1.5mm max. (Philips adjust)
PR = Reverse type (Bottom adjust)

Quantity Per Reel
1 = 1000 pcs
5 = 5000 pcs

Packaging Method
B = Bulk
W = Taping (W direction)
X = Taping (X direction option)



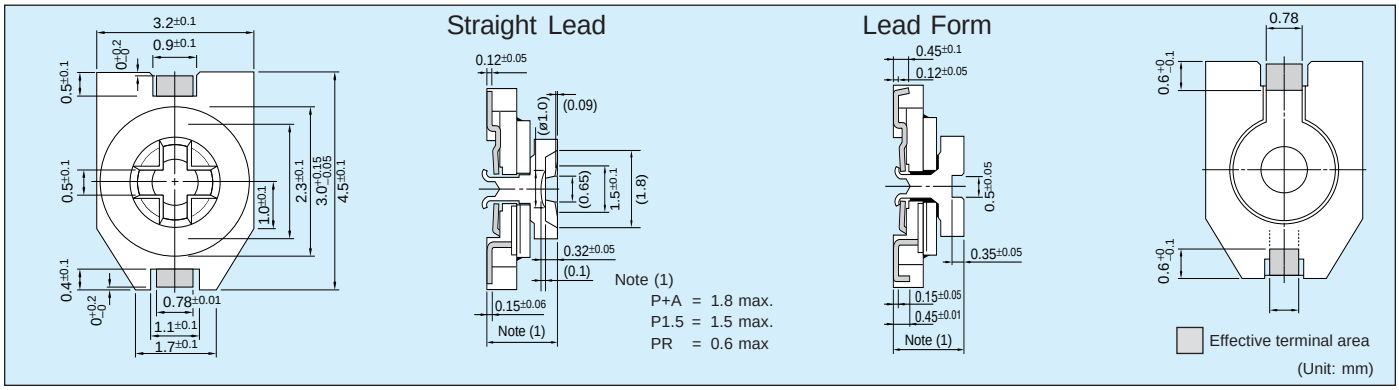
Temperature Characteristic
A = NPO ± 500 ppm/°C
B = N400 ± 500 ppm/°C
C = N750 ± 500 ppm/°C

Maximum Capacitance
03 = 3pF, +100, -0%
05 = 5pF, +100, -0%
10 = 10pF, +100, -0%
20 = 20pF, +100, -0%
30 = 30pF, +100, -0%
40 = 40pF, +100, -0%
50 = 50pF, +100, -0%

Type
S = Reflow non-washable type
E = Reflow washable type

CTZ3 Series

Philips Adjustment Dimensions



CTZ3 Series

Specifications

Type CTZ3-A (max. height=1.8mm, 1% setting drift)

Part number	Min. cap. value (pF)	Max. cap. value (pF)	TC (ppm/°C)
CTZ3□-03A	1.5	3	NP0±500
CTZ3□-05A	2	5	NP0±500
CTZ3□-05C	3	5	N750±500
CTZ3□-10A	4	10	NP0±500
CTZ3□-10B	2	10	N400±500
CTZ3□-10C	3	10	N750±500
CTZ3□-20C	7.5	20	N750±500
CTZ3□-30C	7.5	30	N750±500
CTZ3□-40C	7.5	40	N750±500
CTZ3□-50C	12.5	50	N750±500

Type CTZ3-P (max. height=1.8mm)

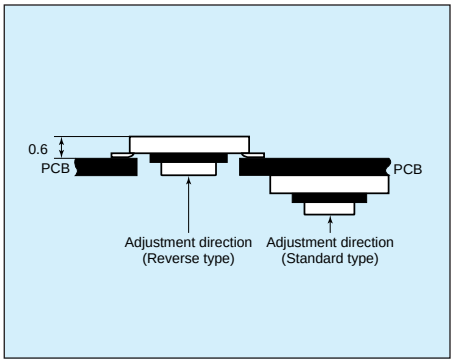
Part number	Min. cap. value (pF)	Max. cap. value (pF)	TC (ppm/°C)
CTZ3□-03A	1	3	NP0±500
CTZ3□-05A	1.5	5	NP0±500
CTZ3□-05C	2	5	N750±500
CTZ3□-10A	2.5	10	NP0±500
CTZ3□-10B	1.5	10	N400±500
CTZ3□-10C	3	10	N750±500
CTZ3□-20C	5	20	N750±500
CTZ3□-30C	5	30	N750±500
CTZ3□-40C	5	40	N750±500
CTZ3□-50C	7	50	N750±500

Type CTZ3-P1.5 (max. height=1.5mm)

Part number	Min. cap. value (pF)	Max. cap. value (pF)	TC (ppm/°C)
CTZ3□-03A	1	3	NP0±500
CTZ3□-05A	1.5	5	NP0±500
CTZ3□-05C	2	5	N750±500
CTZ3□-10A	2.5	10	NP0±500
CTZ3□-10B	1.5	10	N400±500
CTZ3□-10C	3	10	N750±500
CTZ3□-20C	5	20	N750±500
CTZ3□-30C	5	30	N750±500
CTZ3□-40C	5	40	N750±500
CTZ3□-50C	7	50	N750±500

Type CTZ3-PR (max. height=0.6mm, reverse type)

Part number	Min. cap. value (pF)	Max. cap. value (pF)	TC (ppm/°C)
CTZ3□-03A	1	3	NP0±500
CTZ3□-05A	1.5	5	NP0±500
CTZ3□-05C	2	5	N750±500
CTZ3□-10A	2.5	10	NP0±500
CTZ3□-10B	1.5	10	N400±500
CTZ3□-10C	3	10	N750±500
CTZ3□-20C	5	20	N750±500
CTZ3□-30C	5	30	N750±500
CTZ3□-40C	5	40	N750±500
CTZ3□-50C	7	50	N750±500

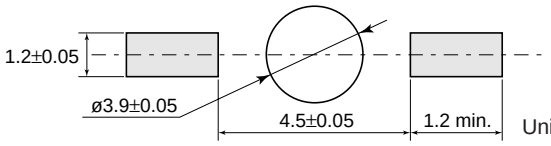


CTZ3-PR Series

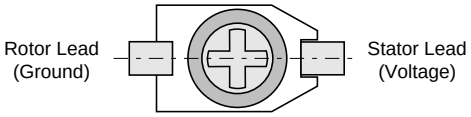
Conditions and Precautions

Mounting Pattern:

1) Recommended pattern:



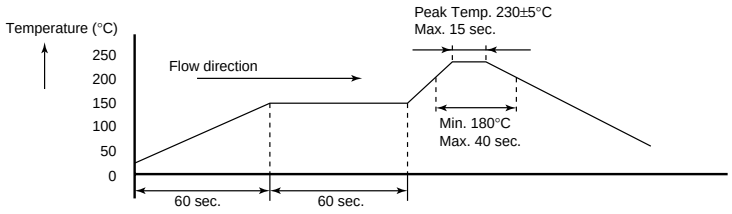
Unit: mm



2) Determine if there is adequate room for mounting according to pattern dimensions and set pattern dimensions.
3) Connect stator terminal to voltage, rotor terminal to ground.
4) Make sure that the solder cream for coating is sufficient. (We recommend 150µm.)
5) Take caution that the solder flux and adhesive paste does not flow in between rotor and stator.

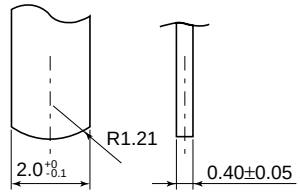
Soldering:

1) Recommended reflow temperature curve.
2) Recommended hand soldering conditions: tip temperature 270±5°, soldering time less than 5 seconds.

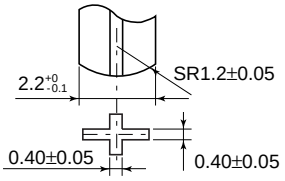


Adjustment:

1) After removing from reflow, let cool to room temperature (at least 4 hrs.) before adjustment.
2) Maximum pressure of screwdriver should be less than 100g.
3) Recommended screwdriver head dimensions:



(Minus tuning head)

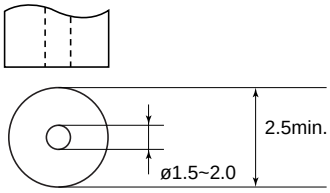


(Plus tuning head)

Unit: mm

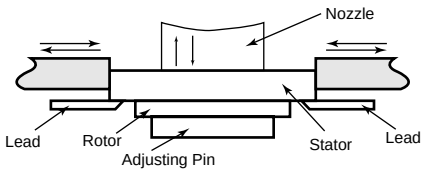
Mounting:

1) Recommended adhesive nozzle procedure:



Unit: mm

2) Mechanical centering method: when mounting automatically with mechanical centering method, adjust so that the centering hook touches the stator (take caution that centering hook does not touch lead).

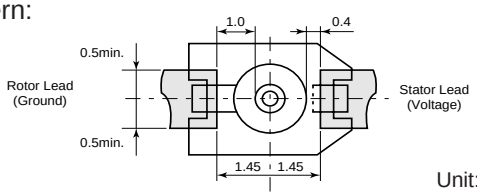


CTZ3-P/A/P1.5 Series

Conditions and Precautions

Mounting Pattern:

1) Recommended pattern:

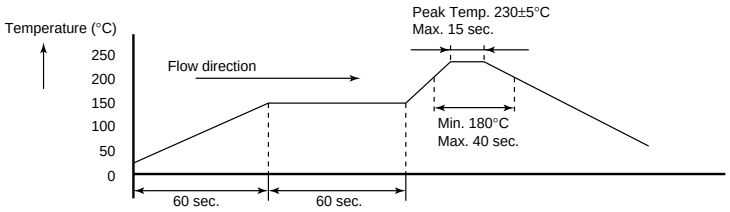


Unit: mm

2) Determine if there is adequate room for mounting according to pattern dimensions and set pattern dimensions.
3) Connect stator terminal to voltage, rotor terminal to ground.
4) Make sure that the solder cream for coating is sufficient. (We recommend 150µm.)
5) Take caution that the solder flux and adhesive paste does not flow in between rotor and stator.

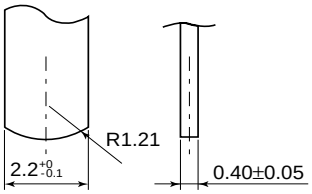
Soldering:

1) Recommended reflow temperature curve:
2) Recommended hand soldering conditions: tip temperature 270±5°, soldering time less than 5 seconds.

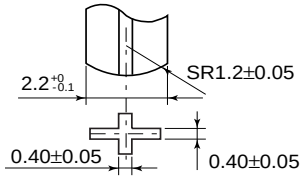


Adjustment:

1) After removing from reflow, let cool to room temperature (at least 4 hrs.) before adjustment.
2) Maximum pressure of screwdriver should be less than 100g.
3) Recommended screwdriver head dimensions:



(Minus tuning head)

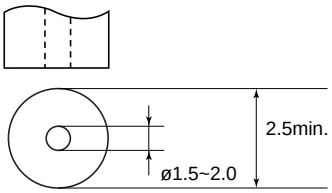


(Plus tuning head)

Unit: mm

Mounting:

1) Recommended adhesive nozzle procedure:



Unit: mm

2) Mechanical centering method: when mounting automatically with mechanical centering method, adjust so that the centering hook touches the stator (take caution that centering hook does not touch lead).

CTZ2/CTZ3 Series

Test Methods

Item	Specification	Measuring Condition
Humidity Test	Δ C : ±10% Max Q : 150 Min IR : 103MΩ Min	Expose at 40±2°C, 90~95% RH for 96±4 hours and keep at normal conditions for 1 hour
High Temperature Load Test	Δ C : ±5% Max. Q : 200 Min. IR : 103MΩ Min.	Apply 2 × rated voltage at 85±3°C in high temperature chamber for 96±4 hours and keep at normal conditions for 24 hours
Temperature Cycling Test	Δ C : ±7% Max. Q : 200 Min. IR : 103 MΩ Min	Perform 5 cycles as follows: -25°C (30 min.) → room temperature (5 min.) → +85°C (30 min.) and keep at normal conditions for 24±1 hour
Vibration Test	Δ C : ±5% Max. Q : 250 Min. IR : 103MΩ Min. no problem observed	Vibration frequency range: 10~55Hz Time: 2 hours each in three different vertical directions (X, Y and Z axes, total 6 hours) Amplitude: 1.5 mm
Shock Resistance Test		Fix on 50 gram metal case and drop onto the concrete floor from a height of 1 meter
Solderability	coverage ≥ 75% ea. termination end	Immerse in Pb-Sn solder at 230±5°C for 5 +1/-0 seconds
Resistance to Solder Heat Test	Δ C : ±10% Max. Q : 250 Min. IR : 103MΩ Min.	Put on a hot plate at 270±5°C for 5±1 seconds and keep at normal conditions for 24 hours
Low Temperature Exposure	Δ C : ±5% Max. Q : 250 Min. IR : 103MΩ Min.	Expose in low temperature chamber at -25°C for 96±4 hours and keep at normal conditions for 1 hour
Mechanical Load	Δ C : ±5% Max.	Apply a 100 gram load in the axis of the rotor
Setting Drift	Δ C : ±5% Max.	Rotate rotor 3 times until rotor slot is perpendicular to mounting pads, at 10 rpm. After that, take an initial reading of capacitance after 5 seconds. Measure again after 1 hour

Recommended Washing Conditions

Solvent	Maker	Measuring Condition	Results
AK225	Asahi Glass Company	Immerse 50 ~ 55°C 5 min.	O.K.
AK14lb	Asahi Glass Company	Immerse 32±1°C 5 min.	O.K.
Pine Alph (ST100S)	Arakawa Chemical Industries, Ltd.	Immerse 70±1°C Immerse into water 60±1°C 3 min.	O.K.
Clean slough (750H)	KAO Corporation	Immerse 60°C. 5 min. Rinse with pure water. Dry 85°C	O.K.
San Elec (FS813D)	Sanyo Chemical Industries, Ltd.	Immerse 60°C 5 min. Dry 85°C 10min.	O.K.
Techno Care	Toshiba	Immerse into FRW17 (ultrasonic 10 min) Rinse out of FRW1 (ultrasonic 3 min)	O.K.
Terpene Cleaner (EC-7R)	Alpha Metals	Immerse room temperature 10 min. and ultrasonic 2 min. Rinse with water 40~50°C	O.K.
IPA		Immerse room temperature 1 min.	O.K.
Methylene Chloride		Immerse room temperature 10 min.	O.K.
Hot Water		Immerse 65°C 10 min.	O.K.

Recommended Cleaning Precautions for CTZ-E types only

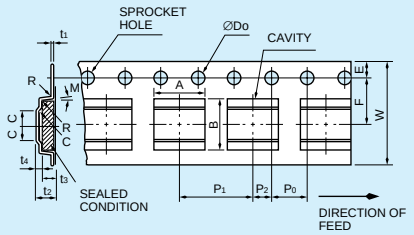
1) When washing with solution (IPA), follow conditions below:
   a) Ultrasound wave washing under 1 minute.
   b) Soak washing under 5 minutes. However, if using both ultrasound and soak washing, the total washing time should be under 3 minutes.
2) When revolving, the silicon coating will break and the torque will increase. This is not irregular. Once the silicon coating breaks, the torque will return to normal value.

Chip Trimmer Capacitor Packaging

CTZ2 / CTZ3 Series

Carrier Tape Dimensions

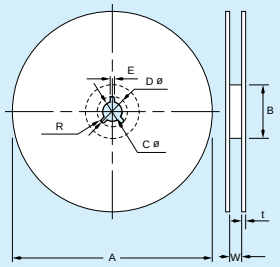
(Unit: mm)



Items	A	B	W	F
CTZ3	3.35 ± 0.1	4.60 ± 0.1	12.00 ± 0.3	5.50 ± 0.05
CTZ2	2.70 ± 0.1	3.20 ± 0.1	12.00 ± 0.3	5.50 ± 0.05
Items	**E**	**P_0**	**P_1**	**P_2**
CTZ3	1.75 ± 0.1	4.00 ± 0.1	8.00 ± 0.1	2.00 ± 0.05
CTZ2	1.75 ± 0.1	4.00 ± 0.1	4.00 ± 0.1	2.00 ± 0.05
Items	**∅Do**	**M**	**R**	**t_1**
CTZ3	1.50 ± 0.1	3° + 0	0.30 + 0	0.30 ± 0.1
CTZ2	1.50 ± 0.1	3° + 0	0.30 + 0	0.30 ± 0.1
Items	**t_2**	**t_3**	**t_4**	**C**
CTZ3	2.50 ±0.1	2.00 ±0.1	0.30 ± 0.05	1.50 ± 0.1
CTZ2	2.00 ± 0.1	1.30 ± 0.1	0.30 ± 0.1	1.03 ± 0.1

Reel Dimensions

(Unit: mm)



CTZ3

Items	A	B	C	D∅	E	W	t	R
1000 pcs	178 ± 2.0	>50	13.0 ± 0.5	21.0 ± 0.8	2.0 ± 0.5	14.0 ± 2.0	2.5 ± 0.5	1.0
5000 pcs	420 ± 2.0	80.0 ± 2.0	13.0 ± 0.5	21.0 ± 1.0	2.0 ± 0.5	14.0 ± 2.0	2.0 ± 0.5	5.0

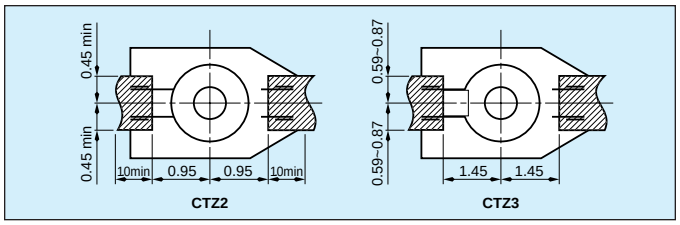
CTZ2

Items	A	B	C	D∅	E	W	t	R
2000 pcs	178 ± 2.0	>50	13.0 ± 0.5	21.0 ± 0.8	2.0 ± 0.5	14.0 ± 2.0	2.5 ± 0.5	1.0

Application Cautions

Mounting:

1) Solder reflow temperature should not exceed 240°C.
2) Prevent flux or wax from flowing between rotor and stator.
3) Do not run conductor patterns underneath the mounted trimmer capacitor.



Adjustment:

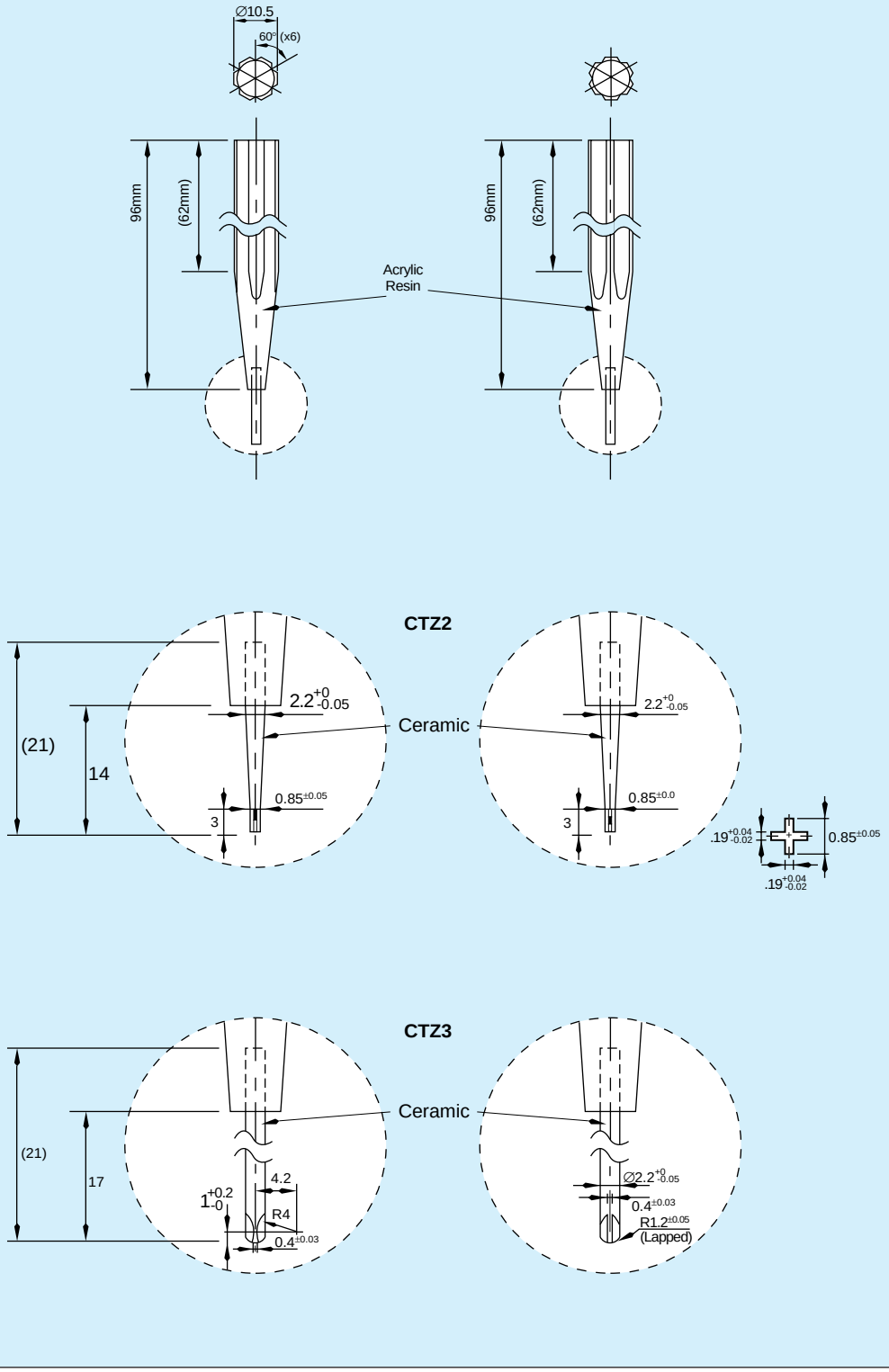
1) Any capacitance adjustments should be executed 12 hours after reflow soldering has been completed.
2) Maximum load on rotor by adjusting screw driver should not exceed 100 grams (3.53 ounces).
3) For critical and/or accurate capacitance adjustments rotate 360° before finding setting. When tight tolerance of a CTZ's setting is needed in a circuit add a fixed capacitor as a "stray capacitor" in series or parallel with the CTZ to tighten the tolerance of the CTZ's setting drift.

Store in normal ambient conditions.
Avoid high temperatures, humid air, and dust.

Application cautions, inclusive for CTZ3 E and CTZ2 E series:

1) Maintain the following conditions when washing with solvents such as freon etc.
   (1) Ultrasonic wave wash within 1 minute
   (2) Immersion wash within 5 minutes
   When using ultrasonic wave wash with immersion wash total time should remain under 3 minutes.
2) Do not wash after rotating the rotor.
3) When rotation is started, torque is temporarily high (maximum 200 g•cm) due to the silicon coating. Torque should be normal after first rotation.

NOTE: For CTZ2 S and CTZ3 S series avoid the use of solvent washes.


∅10.5
60° (x6)
96mm
(62mm)
Acrylic
Resin
CTZ2
(21)
14
2.2 +0 -0.05
Ceramic
0.85 ±0.05
3
.19 +0.04 -0.02
CTZ3
17
4.2
1 +0.2 -0
R4
0.4 ±0.03
∅2.2 +0 -0.05
R1.2 ±0.05
(Lapped)

(Unit: mm)