

APPROVAL

DESCRIPTION :

NCE PARTS NO. : TCC3

PARTS NO. :

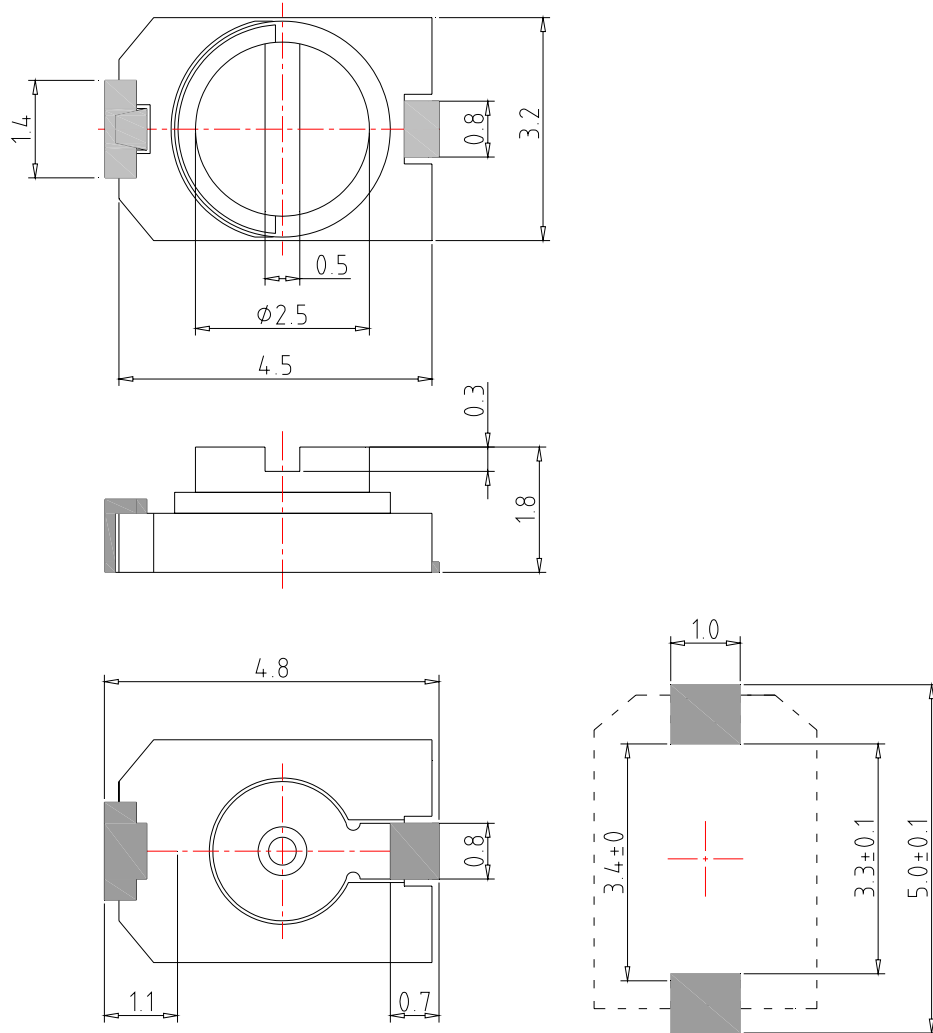
DRAWING :

RECEIVED

TRIMMER CAPACITORS

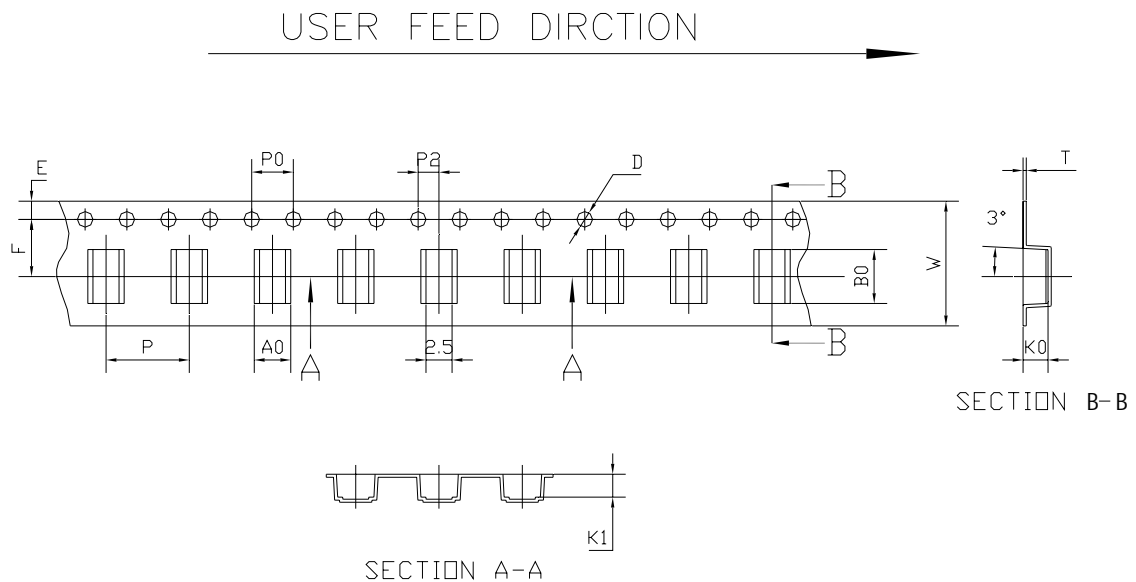
MODEL: TCC3

Outline drawing



 3rd ANGLE PROJ.		coated						
CAD FILE:								
change tags	数量	更改单号	签名	日期	(3MM微调电容) 外型图			
设计								
制图	WISDOM TIAN 25/8 2KY							
审核								
工艺								
标准					等级	标记	质量	比例
批准	puma bao 25/8 2008				第	张	共	张

ITEM	W	A0	B0	K0	K1	P	F	E	D	P0	P2	T	packaging	
DIM	12.0	3.60	5.20	2.20	2.00	8.00	5.50	1.75	1.50	4.00	2.00	0.30	diameter/di sh	quantity
TOLE	+0.30 -0.10	+0.10 -0.10	+0.10 -0.10	+0.10 -0.10	+0.10 -0.10	+0.10 -0.10	+0.10 -0.10	+0.10 -0.10	+0.10 -0.10	+0.10 -0.10	+0.10 -0.10	+0.05 -0.05	φ180mm	1000PCS



Technical requirements:

1. 10 ratchet arbitrary cumulative error does not exceed ± 0.20 ;
2. Materials with the thickness of the edge in the set, whichever measurement;
3. 100MM set distance with the length of the non-parallelism of not more than 1MM;
4. 250MM not be more than a cumulative error;
5. Unless specified tolerance range: ± 0.10 MM;
6. AO.BO up to the very bottom of the inner cavity measured 0.1MM prevail;
7. KO internal depth;
8. Materials for the PS, transparent color.

TRIMMER CAPACITORS

1. Scope

This specification applies to the type CERAMIC trimmer capacitor using CERAMIC as a dielectric.

2. Construction

2.1 Dimensions and materials

Refer to page 1.

	Items	Contents
1	Dimension	See attached drawing
2	Dielectric	ceramic
3	External	There are not remarkable stain

Table 1

No	Part NO	Capacitance(pf)		Temperature Coefficient(ppm/)	Q factor (1MHZ Cmax)	Marking Color
		MIN	MAX			
1	TCC3-030	1.2 Or less	3 +50%-0	NPO ± 300PPM	500 Or more	Brown
2	TCC3-060	2.0 Or less	6 +50%-0	NPO ± 300PPM	500 Or more	Blue
3	TCC3-100	3.0 Or less	10 +50%-0	N750 ± 300PPM	500 Or more	White
4	TCC3-200	5.0 Or less	20 +50%-0	N1200 ± 500PPM	300 Or more	Red
5	TCC3-300	6.5 Or less	30 +50%-0	N2200 ± 500PPM	300 Or more	Green

Naming rules:

TC-----C3 -----100-----A00

Ceramic Trimmer Capacitors

3 mm size

Maximum standard capacity

Tape and reel package

5 *				
4 *				
3 *				
2 *				
1 *				
HISTORY *COUNT	ECN-NO	DATE	REVISION	SIGN

TRIMMER CAPACITORS

3. Characteristics

Standard atmospherics conditions:

Unless otherwise specified, the standard range of atmospherics conditions for making measurements and tests are as follows:

Ambient temperature	:	5	to	35	;
Relative humidity	:	45%	to	85%	;
Air pressure	:	86kPa	to	106kPa.	

If there is any doubt about the results, measurement shall be made within the following limits:

Ambient temperature	:	20	±	2	;
Relative humidity	:	60%	to	70%	;
Air pressure	:	86kPa	to	106kPa.	

Operating temperature range:

The operating temperature range is the range of ambient temperature of which the trimmer capacitor can be operated continuously within rated voltage.

-25 to +85

Storage temperature range:

The Storage temperature range is the range of ambient temperature at which the trimmer capacitor can be Stored without damage, conditions are as specified elsewhere in these specification.

-40 to +85

3.1 Mechanical characteristics:

	Items	Conditions	Specification
1	Rotational torque	When the spindle is rotated at a rate of 10 rpm	1.5~10.0mNm (15~100gf.cm)
2	Difference between the maximum and minimum value of rotational torque	Difference between the maximum value and the minimum value when the shaft is rotated at a rate of 10 rpm	3 : 1 or less
3	Shaft load	A load of 1 N shall be applied perpendicular to the shaft for 10s.	Clauses 3-1-1 and 3-1-2 should be satisfied
4	Backlash		Without backlash When rotating

3-2 Electrical characteristics

	Items	Conditions	Specification
1	Rated voltage		100 V d.c.
2	Nominal capacitance	Nominal capacitance(Measured at 1MHz)	See table 1
3	Q	Measured at 1 MHz	See table 1

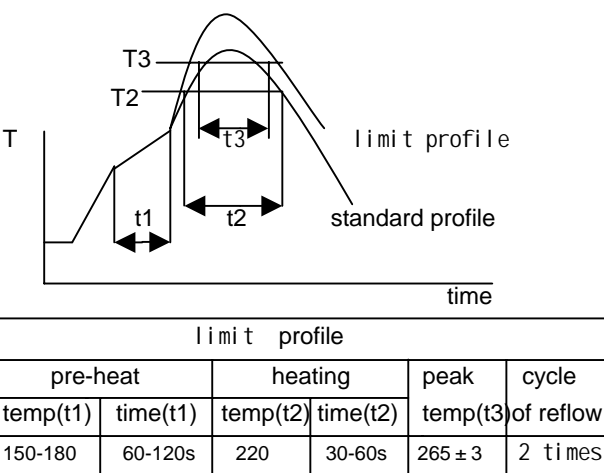
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	Items	Conditions	Specifications														
4	Insulation resistance	A voltage of 100 V DC. shall be applied for 1 min, after which measurement shall be made	100 M or more														
5	Dielectric strength	100 V D.C. for 1 min	Without damage														
6	Capacitance drift after adjustment	Rotation shall be made for 1 cycles for 180 degree at a rate of 20 rpm. Difference between the capacitance value immediately after the shaft is stopped at the position of the maximum capacitance value and the value after 1.5min later.(measured at 1 MHZ)	± 2% within														
7	Jump-off and sudden change of capacitance	Within the total capacitance range	Without jump-off and sudden change of capacitance														
8	Temperature characteristics and change in capacitance	<p>Test condition :</p> <p>Capacitance shall be 80% to 90% of the maximum value.</p> <table border="1" data-bbox="528 1077 1075 1417"> <thead> <tr> <th>Step</th> <th>Temperature</th> <th>Duration</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>20 ± 2</td> <td rowspan="5">60min</td> </tr> <tr> <td>2</td> <td>-25 ± 3</td> </tr> <tr> <td>3</td> <td>20 ± 2</td> </tr> <tr> <td>4</td> <td>85 ± 2</td> </tr> <tr> <td>5</td> <td>20 ± 2</td> </tr> </tbody> </table> <p>Temperature coefficient $=(C2-C1)/C1(T2-T1)X10^6(\text{ppm/ })$ however: C1= capacitance at step3 C2= capacitance at step2/or step4 T1= measuring temperature at step3 T2= measuring temperature at step2/or step4</p> <p>Change in capacitance For difference of maximum capacitance at steps 1,3 or 5, refer to the value at step 3</p>	Step	Temperature	Duration	1	20 ± 2	60min	2	-25 ± 3	3	20 ± 2	4	85 ± 2	5	20 ± 2	<p>See table 1</p> <p>5% within</p>
Step	Temperature	Duration															
1	20 ± 2	60min															
2	-25 ± 3																
3	20 ± 2																
4	85 ± 2																
5	20 ± 2																

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3-3 Endurance characteristics

Test capacity shall be 80% to 90% of the maximum value excluding clauses 3-3-1, 3-3-3 and 3-3-12

	Items	Conditions	Specification																								
1	vibration	At maximum capacitance., only endurance conditioning by a frequency shall be made .the entire frequency range , from 10Hz to 50Hz and return to 10Hz , shall be transverse in 1 min. Amplitude (total excursion) : 1.5 mm This motion shall be applied for a period of 2 h in each of mutually perpendicular axis (a total of 6 h)	Table 2 shall be satisfied.																								
2	Reflow soldering Profile	 <table border="1" data-bbox="528 851 1161 1043"> <thead> <tr> <th colspan="6">limit profile</th> </tr> <tr> <th colspan="2">pre-heat</th> <th colspan="2">heating</th> <th>peak</th> <th>cycle</th> </tr> <tr> <th>temp(t1)</th> <th>time(t1)</th> <th>temp(t2)</th> <th>time(t2)</th> <th>temp(t3)</th> <th>of reflow</th> </tr> </thead> <tbody> <tr> <td>150-180</td> <td>60-120s</td> <td>220</td> <td>30-60s</td> <td>265 ± 3</td> <td>2 times</td> </tr> </tbody> </table>	limit profile						pre-heat		heating		peak	cycle	temp(t1)	time(t1)	temp(t2)	time(t2)	temp(t3)	of reflow	150-180	60-120s	220	30-60s	265 ± 3	2 times	Table 2 shall be satisfied.
limit profile																											
pre-heat		heating		peak	cycle																						
temp(t1)	time(t1)	temp(t2)	time(t2)	temp(t3)	of reflow																						
150-180	60-120s	220	30-60s	265 ± 3	2 times																						
3	Shock	At maximum capacitance. Peak acceleration : 981 m/s ² (100 G) Duration of pulse : 6 ms Three successive shall be applied in both directions of mutually perpendicular axis (a total of 18 shock).	Table 2 shall be satisfied.																								
4	Cold	Placed in tank at -25 ± 3 for 48 ± 4hours,left at room temperature for 1 hour after which measurement shall be made.	Table 2 shall be satisfied.																								
5	Dry heat	Placed in tank at 85 ± 2 for 48 ± 4hours,left at room temperature for 1 hour after which measurement shall be made.	Table 2 shall be satisfied.																								
6	Damp heat	Placed in tank at 40 ± 2 ,90% to 95%RH for 96 ± 4hours,left at room temperature for 1 hour after which measurement shall be made.	Table 2 shall be satisfied.																								
7	Damp heat with load	Twice as much of the rated voltage shall be applied continuously to the capacitor at a temperature of 40 ± 2 with relative humidity of 90% to 95% for 96 ± 4h. And then it shall be subjected to the controlled recovery conditions for 1h. after which measurement shall be made.	Table 2 shall be satisfied.																								
8	Electrical endurance	Twice as much of the rated voltage shall be applied continuously to the capacitor at a temperature of 85 ± 2 for 96 ± 4h. And then it shall be subjected to the controlled recovery conditions for 1h. after which measurement shall be made.	Table 2 shall be satisfied.																								

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Items	Conditions	Specification
9 Change of temperature	The capacitor shall be subject to 5 continuous cycles, such as shown in table below . And then it shall be subjected to the controlled recovery conditions for 1 hour, after which measurement shall be made.	
	Step	Temperature
	1	-25 ± 3
	2	Standard atmosphere conditions
	3	85 ± 2
4	Standard atmosphere conditions	
10 Operating endurance	The capacitor shall be subject to 10 cycles(5 cycles for each left and right) at a speed of 10 rpm to 15rpm	Table 2 shall be satisfied.

Table 2

1 Appearance		There shall be no deformation, excessive looseness, or damage
2 Rotational torque	Refer to clauses 3-1-1and 3-1-2	Clauses 3-1-1 and 3-1-2 should be satisfied
3 Change in capacitance	Refer to clauses 3-2-2	Relative to previously (± 5%)within specified value
4 Q	Refer to clauses 3-2-3	Clauses 3-2-3 should be satisfied
5 Insulation resistance	Refer to clauses 3-2-4	Clauses 3-2-4should be satisfied
6 Dielectric strength	Refer to clauses 3-2-5	Clauses 3-2-5should be satisfied

Change in capacitance =(C2-C1)/C1X100(%)

C1=value measured before test

C2=value measured after test

4. Marking

The following items shall be marked indelibly and legibly on the capacitor or on each unit pack.

4-1 Products name.

4-2 Type name or part number.

4-3 Month and year of or production code (including lot No.)

4-4 Manufacturer's name (abbreviated manufacturer's name permitted) or trademark.

4-5 Country of origin, china.

5.The CFCs of not used.

6.The PBDE ,PBBS of not used.

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